This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.



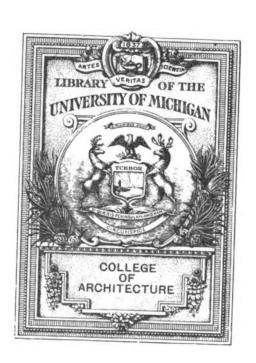
https://books.google.com





Google







Architect Librar NA

INDEX

BUILDING AGE

AND THE

BUILDERS' JOURNAL

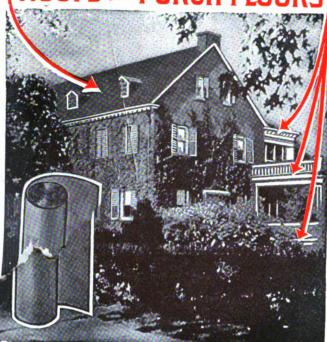
VOL. XLV—1923



BUILDING AGE PUBLISHING CORPORATION
239 WEST 39TH STREET, NEW YORK



GON-SER-TEX-ROOFS PORCH FLOORS



CANVAS ROOFING

For Flat Roofs and Porch Floors

—an attractive, water-proof, rot-proof, mildew-proof covering that will not crack, stretch, shrink, curl or peel. The chemical treatment applied during manufacture makes it the most advantageous material for use in covering floors, flat roofs, sun parlors, sleeping balconies and the like. Easy to keep clean. All these features explain why it has become such a favorite with owners.

Carpenters and builders should push "Conser-tex" Canvas Roofing, because it enables them to secure many contracts for work on which more expensive material would be out of consideration. If you show your clients how to save money on roofing, they will let you show what service you can render them in other directions too. Conser-tex is easy to lay, and brings a good margin of profit.

Write for illustrated booklet, "Roofing Facts and Figures," and for samples.

WILLIAM L. BARRELL CO. of N. Y., Inc.

50 Leonard Street

New York City

Chicago Distributors: Geo. B. Carpenter & Co. 439-446 North Wells St.

California Distributors: Waterhouse-Wilcox Co. San Francisco & Los Angeles

FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana

Home
Builders!

Home Buyers!

A daily shower for health!



The Kenney Shower!!

No Curtain

It means increased energy, efficiency.

Congress Conceale

The daily bath, now the habit universally, has emphasized the importance of and the demand for showers.

The Kenney Shower, curtainless, in portable or stationary models, is the last word in shower bathing.

CONVERGING NEEDLE STREAMS

envelop the body from the shoulders down-no splashing, no deluge from overhead.

HOME BUILDERS and HOME BUYERS recognize the completeness of the bathroom equipped with Kenney Showers.

Send for the booklet "Your Bathroom with the Kenney Shower."

The Kenney Cutting Products Corporation
507 Fifth Avenue New York

Digitized by Google

INDEX

BUILDING AGE

AND THE BUILDERS' JOURNAL

Volume XLV—1923

Issue Pa	ge	Issue Pa	ge	Issue Pa	-
A		Artistic Terracing, Beautifying the Home	45	Eook NoticesJuly,	
A City That Is Set on a HillDec.,	36	Setting by	90		94
Acceptance of Job, Owner's Taking Possession of Building as	86	Aspects of Mechanics Lien Claims Aug.,	81	Books, Use of PlanMar.,	79
Accepting Bids, Architect's Power to Bind	•	Assembly Hall, Movie Theatre andMar.,	48	Boom? How Can We Best Handle the Building	47
	86 80	Attached, Convenient Colonial House with GarageOct.,	46	Roost Profits Some Home Building Hints	
	71	Attractive, How to Make Concrete Walls		ThatMar.,	74
Act, Illinois Workmen's Compensation Sept.,	88	Attractive as the Fronts, Let Us Build the	76	Braced Frame House Construction, Detail of	54
Activity in Building, Present Prosperity of Our Country Assures ContinuedJune,	56	Backs of Our Home asJune,	41	Bracing Extra Wide Buildings for Movings,	
Add Charm, Pergolas and GatesApr.,	69	Attractive Bungalow HomesJuly,	38	Simple Method of Trussing andJune,	70
Add to Your Field Equipment, Plan Now	80	Attractive Bungalow Homes, Four Designs ofMay,	52	Brick, Clapboards and Shingles Are Here CombinedDec.,	48
toJan., Advertise Home Building, FloatsMar.,	61	Attractive Design, Church ofJune,	51	Brick, Ideal Homes ofJan.,	60
Advertises Home Building, Novel Auto		Attractive Gravel Faced WallsJuly,		Brick Laying in Cold WeatherDec.,	63
Body Feb., Advertising Building Products Sept.,	66 70	Auto, for theMay, Auto Body Advertises Home Building;	84	Brick, New Method of Manufacturing Concrete	77
Advertising for Customers	86	NovelFeb.,	66	Brick, School of	42
Advertising for Workmen's Validity and Effect of Law Governing	- /			Brick, School of	67
Effect of Law Governing	76	В		Prick Bonds, Details of	81 50
less Cottage. How Building AgeSept.,	60	Back Yard, Beautifying theAug.,	74	Brick Church, Small Nov., Brick Homes, Designs of Beauty for Jan.	54
Advising Home OwnersApr.,	7 9	Backs of Our Homes as Attractive as the Fronts, Let Us Build theJune,	41	Brick House Construction, Detail of Apr.,	04
Aid in Reconstruction Work, Japan Looks to America forOct.,	37	Balloon Frame House Construction, Details	74	Brick House of Colonial DesignMay, Brick Veneer DwellingFeb.,	80 58
Aid to Building, Government'sApr.,	56	ofApr.,	53	Bricklaying as a Trade for Young Men. July.	
Air, Heating a Small House by HotNov.,	60	Bank, Dignified Design forOct.,	44	Build a Servantless Cottage; How Building	
America for Aid in Reconstruction Work; Japan Looks to	37	Bank, Imposing Interior a Feature of This	57	Age Advertising Pages HelpedSept., Build Our Homes So They Won't Burn,	60
Amateur BuildersDec.,	71	Bank Building Due to Careful Planning,		How toJuly,	49
America Week, Better Homes inMay,	85	BetterJan.,	52	Build the Backs of Our Homes as Attractive	
America Week, Better Homes inJune, American Construction Council, One Year's	44	Bank Building Forms a Community Center May,	64	as the Fronts, Let UsJune,	41
Progress ofOct.,	88	Bank Home, ArtisticAug.,	63	Builder, From Carpenter to Large Scale SpeculativeOct.,	58
American Style of Architecture, Creating	~	Bar to Successful Concrete Construction; Cold	62	Builder, Radio and the	83
an	29	Weather No		Builder Entitled to Compensation? On What	~~
anOct.,	54	Barn Framing, SimpleFeb.,	62	Basis Is This	90
And Now the Built-In PianoSept.,	72	Barn New, Making the OldOct.,	66	Selected the	60
And They Thought They Saved Money. June, Anti-Tip Lantern, ConcreteJan.,	79 90	Barn Roof Stand? Will theAug., Basement Construction, Damages for De-	77	Builder Thinks About Training Our Future	
Apartment, Financing a CooperativeAug.,		fectiveJune,	92	Workers, What OneSept., Builder to a Newcomer in the Business,	56
Apartment, Kitchen in a Closet for		Basement Windows, Use of SteelMar.,	51	Letter of a SuccessfulJan.,	50
Small	90	Basis Is This Builder Entitled to Compensation? On WhatSept.,	90	Builders Are a Success, Why SomeSept.,	
Anti-Tip Lantern; ConcreteJan., Apartment, Spanish Architecture Adapted	,,	Bathrooms, ConcerningOct.,		Builders, AmateurDec., Fuilders Can Win Success by Careful Esti-	71
to Modernlan.	82	Be the Wallboard Expert in Your Locality?		mating, HowAug.,	71
Apartment, Twelve-FamilyOct.,	50 58	Why NotJune, Beam Construction for Walls, Cellar Floors	73	mating, How	69
Apartment House, The JamesAug., Apartments, New Style forMay,	79	and DrivesNov.,	67	Ruilders' Exchange Meetings; Nature and Frequency of	40
Apparatus Needed in Many Towns, Modern		Beautiful Finish of Concrete	74	Builders' Insurance, Saving Money on. Nov.,	51
Homes for FireJan., Appearance, Watch TruckMay,	46 82	Beautifying the Back YardAug., Beautifying the Home Setting by Artistic	74	Builders of Pittsburgh, Two Master Nov.,	68
Apprentice? Why Use the WordAug.,	75	Terracing	45	Builders of the FutureJuly, Puilders' Responsibility for Modern Methods	69
Apprentices and CraftsmanshipJuly,	43	Beauty, From Ugliness toJuly,		in ConstructionAug.	45
Apprenticeship, ForgettingNov., Architect, The Services of anNov.,	69 45	Beauty of Brick Homes, Designs ofJan., Bed Forms Day Couch or Seat, Built-	54	Builders' Right to Compensation for Drawing	
Architect to His Employer, Duties of	-13	InAug.,	88	Plans Oct., Builders Should Know About Truck Oper-	92
anJune,	92	Bed, Folding, for ApartmentsDec.,	76	ations, FactsJune,	77
Architect's Control Over ContractorOct., Architects Must Know Building LawFeb.,		Before the House Is Built, Selecting the Plumbing FixturesAug.,	76	Builders That Succeed and WhyJuly,	
Architect's Power to Bind Owner by Ac-		Berkeley, This WasOct.,	71	Building, Business of	
cepting BidsApr.,		Best Known Home in the WorldApr.,	43	Building, Foreign Material forMay,	85
Architect's Right as to CompensationApr., Architect's Rights as to PlansAug.,	80 81	Better Bank Buildings Due to Careful Plan- ning	52	Building, Government's Aid toApr.,	56
Architectural Services, Right to Compen-		Better Homes in America WeekMay,	85	Building, Moving the Front of aSept., Building, Novel Auto Body Advertises Home,	53
sation for Unused	100	Better Homes in America Week June,		Feb	66
Architecture, Creating an American Style		Better Schools, BuildingNov., Better Store Buildings by Careful Planning.	38	Building, Shoddy	85
ofFeb.,	29	Jan.,	40	Building, Signing the	69
Architect's Right to Pay for Use of Plan	99	Bids, Architect's Power to Bind Owner by		CompletedSept.	90
Architecture, Evolving an "American Style"	00	Accepting	86	Building, Who Is Who in Modern Home Apr.	911
Oct.,	54	Bin, Convenient ClothesJuly.	72	Building a Cathedral for the MoviesSept., Building a Community ChurchJuly.	38 46
Architecture Adapted to Modern Apartment,	02	Bit, Emergency Charcoal Furnace for the		Building Age Advertising Pages Helped Build	
Spanish	52	Soldering Oct., Rlock for Steel Sash, Concrete Sept.,	73 76	a Servantless Cottage, HowSept.,	60
Arrangement and Electric Features, Row		Block House Construction, Details of Cement,	70	Building as Acceptance of Job, Owner's Tak- ing Possession of	86
of Modern Two-Family Houses with Novel	40	Apr.,		Ruilding Better SchoolsNov	38
Floor	***	Board. Portable SketchingMar	72	Huilding Boom! How Can We Best Handle	
Apr.,	80	Boards. Selection of Building Inspectors by		the June, Ruilding Code, New Feb.	47
Art of Remodelling Buildings. TheAug.,	50	PublicAug.,	80	runding CongestionApr.	79
Artistic, Flat Roof Garages Made June. Artistic Bank Home	63	Roards, Unique Improvement in Sign. Mar., Robtail Eave Finish. RepairingFeb	82 74	Building Contractors, Correct Cost Keeping	
Artistic Design for SchoolFeb.,	39	Body Advertises Home Building, Novel		for	77
Artistic Houses of Stucco Finish Jan., Artistic Possibilities of Wall BoardApr.,	58	AutoFeb	66	IOF Tune	80
Artistic Stucco ResidenceNov.,	46	Bolts That Turn, Removing Nuts from Sept Bonds, Details of Brick]6 9 1	building Contractor's Liability for Injury to	
			01	PedestriansOct.,	90

Issue Page	Issue Page	Issue Page
Building Contractor's Rights? What Are theOct., 90	Bungalow Homes, AttractiveJuly, 38 Bungalow Homes of All Wood Construction.	Closets, Building Moth ProofDec., 80
Building Contracts, Modification ofFeb., 60	Four CharmingJan., 56	Closing Difficult SalesOct., 77 Clothes Bin, ConvenientJuly, 72
Building Contracts, Substantial Performance of	Bungalow on a SlopeJuly, 48 Bungalow With Two Different Exteriors,	Code, New BuildingFeb. 59
of	Aug., 73	Cold Weather No Bar to Successful Concrete Construction
Not Specifically Called for byMay, 98	Bungalow With Two ExteriorsJuly, 45	Cold Weather, Laying Brick inDec., 63
Building Due to Careful Planning, Better Bank	Bungalows, Curved Roofs Feature These Two	Collecting Wages in Connecticut Nov., 76 Colonial Design, Brick House of May, 80
Building Earthquake Proof HousesOct., 43	Burn, How to Build Our Homes so They	Colonial Home, DutchApr., 48
Building Easier, Making HomeMar., 60 Building ExpositionsFeb., 59	Won'tJuly, 49 Bury the Feed Lines? Why NotNov., 86	Colonial Home, Livable DutchFeb., 40 Colonial Home, Quantity Survey of Livable
Building for Future School NeedsAug., 46	Business, Planning for More	DutchFeb., 41
Euilding Forms a Community Center, Bank, May, 64	Business, Trouble of GoodApr., 79 Business by Moving and Remodelling Old	Colonial House, Quantity Survey of Oct., 47 Colonial House With Garage Attached, Con-
Building Hints That Boost Profits, Some	Buildings, Creating MoreFeb., 52	venientOct., 46
Home Mar., 74 Puilding Homes of Coral Sept., 35	Business Getting MethodsAug. 75 Business in Other States, Construction Com-	Colony, Houses in a Row Form English HomeSept., 42
Building Houses and Selling Clients Some	panies Doing	Color Effects in Slate, Charming Sept., 68
EquipmentJune, 82 Building Industry Is the Shortage of Men,	Business Name, Right to Use Company in	Color Harmony in Interior Decorating Aug., 84 Combination Heating Systems for Mild
The Most Important Problem Now Con-	Business of Building	Weather
fronting the	ing Material to Ultimate	Comfortable and Efficient Factories in Demand
lection ofAug., 80	Buying Fire InsuranceDec., 67	Comments, News, Notes andJuly, 74
Building Inspectors, MunicipalDec., 64 Building Jobs, Legal Pitfalls in Undertak-	C	Comments, News, Notes andOct., 98 Common Level to Obtain Grades, How to
ing	Cabinet, Disappearing or Built-In Sewing,	Use a
Building Law, Architects Must Know. Feb., 61 Building Material, Novel Office for the Sale	May, 75 California Designs, FourJuly, 39	Common Stone, Using
of	Cambridge CourtSept., 48	Against
Building Material to Ultimate Buyers, Liability of Manufacturer of	Can We Best Handle the Building Boom?	Community Center, Bank Building Forms a, May, 64
Building Mechanics, Let Us Have Training	How June, 47 Capacity Wood Press, Large Oct., 73	Community Church, Building aJuly, 46
Schools for	Careful Estimating, How Builders Can Win Success by	Compact Six-Room House, TheJan., 42 Companies Doing Business in Other States,
Building Moth Proof ClosetsDec., 80	Careful Planning, Better Bank Buildings Due	Construction
Building Now Being Erected by One of Our Oldest Subscribers, Million Dollar Mem-	Careful Planning, Better Store Buildings by,	Company in Business Name, Right to Use, Nov., 78
orial	Jan., 40	Comparative Strength of WoodJune, 72
Building Operations, FinancingAug., 75 Building Products, AdvertisingSept., 79	Carpenter to Large Scale Speculative Builder, FromOct., 58	Compensation, Architect's Right as to Apr., 86 Compensation? On What Basis is This
Building Project, Large Railroad Terminal	Carpenters Are "Independent Contractors,"	Builder Entitled toSept., 90
May, 73 Building Shortage and Probable 1924 Con-	Carpenters Estimate Preparing aNov. 58	Compensation Act, Illinois Workmen'sSept., 88 Compensation for Drawing Plans, Builder's
struction, The PresentNov., 35	Carpentry Plus Poor Materials Cannot Equal a Good Job, Unskilled	Right toOct., 92
Building Situation, Review ofJan., 96 Building Situation, Review ofFeb., 76	Catalog File, Keeping aJan., 77	Compensation for Preparing PlanDec., 64 Compensation for Unused Architectural
Building Situation, Review of theMar., 96	Catalogs, UsefulJan., 78	Services, Right to
Building Situation, Review of theApr., 98 Building Situation, Review of theMay, 94	Catalogs, Useful Feb., 72 Catalogs, Useful Mar., 94	Compensation Insurance in N. Y., Workmen's
Building Situation, Review of theJune, 88	Cataloge Useful ADT. 102	Completed Building, When Fire Destroys a
Building Situation, Review of theJuly, 86 Building Situation, Review of theAug., 96	Catalogs, Useful May, 90 Catalogs, Useful June, 100	Nearly Sept., 90 Completion? Who Should Replace Wall
Building Situation, Review ofSept., 80	Catalogs, UsefulJuly, 82	AiterSept., 88
Building Situation, Review of theOct., 94 Building Situation, Review of theNov., 82	Catalogs, Useful Aug., 90 Catalogs, Useful Sept., 92	Concerning BathroomsOct., 79 Concrete, Beautiful Finish ofMay, 74
Building Situation (See Review of Building	Catalogs, UsefulOct., 82	Concrete Block for Steel SashSept 76
Situation). Building Trades, Near Contracts in the Apr., 86	Catalogs, Useful	Concrete Blocks Gain in Popularity Apr., 72 Concrete Brick, New Method of Manufac-
Building Trades, Reducing Unemployment in	Cathedral for the Movies, Building a. Sept., 38	turing
Building Trades, Why Young Men Do Not	Ceiling Plaster, How to Treat Defective, Jan., 90	Concrete Construction, Cold Weather No Bar to Successful
EnterAug., 48	Cellar Floors and Drives, Beam Construction	Concrete Slabs, Diagonal Reinforcement
Building Work in the Office, Planning. Feb., 45 Buildings, Art of Remodelling 50	for Walls	Sometimes Desirable in
Buildings, Deconstruction and Demolishing	Cement Block House Construction, Details	Concrete Walls Attractive, How to Make,
of	of	Sept., 76 Congestion, BuildingApr., 79
ing and Remodelling OldFeb., 52	Work Interpreted in Relation to a June, 94	Connecticut, Collecting Wages in Nov., 76
Buildings, Demand for FarmJan., 88 Buildings, Doors in PublicJuly, 69	Cement Making Pictured in New Film. July. 74 Cement Surfaces With Paint and Stain.	Construction, Builder's Responsibility for Modern Methods inAug., 45
Buildings, Modern Merchandising Demands	TreatingApr., 82	Construction, Cold Weather No Bar to Suc-
Modern	Center, Bank Building Forms a Community, May, 64	cessful Concrete
Buildings, Raising and Moving Frame. May, 71	Chandeliers, DecoratingDec., 72	mentJune, 92
Buildings, Steel Construction for Small. Feb., 56 Buildings, Steel Sash for FarmOct., 72	Changing PlansSept., 78 Charcoal Furnace for the Soldering Bit,	Construction, Detail of Balloon Frame House,Apr., 53
Buildings Super Span Roof Trusses for	EmergencyOct., 73 Charm, English Type Cottage ofAug 54	Construction, Detail of Braced Frame House, Apr., 54
Modern May, 54 Buildings, Ventilation of Office Sept. 66	Charm, Pergolas and Gates AddApr., 69	Construction, Detail of Brick Houses Apr., 64
Buildings, Ventilation of OfficeSept., 66 Buildings by Careful Planning, Better Store,	Charming Bungalow Homes of All Wood	Construction, Details of Cement Block House,
Jan., 40	Construction	Construction, Details of Hollow Tile Apr., 67
Buildings During Moving, Pivoting July. 64 Buildings for Moving, Simple Method of	Chimneys, Four OrnamentalMar., 78 Chisel Handles and Sawing Kinks, Loose,	Construction, Details of Hollow TileApr., 67 Construction, Financing Home
Trussing and Bracing Extra WideJune, 70	Apr., 90	Construction, Four Charming Bungalow
Buildings of Small and Medium Size, Fire	Church Design, Two Extremes of Dec., 66	Homes of All WoodJan., 56 Construction, FrameSept., 77
Protection	Church, Small BrickNov., 50	Construction, Quality
fore the House is	Church, Well Planned SmallMay, 50 Church of Attractive DesignJune, 51	Construction, The Present Building Shortage and Probable 1924
Built-In Piano, And Now	Church Steeple RepairJuly, 71	Construction Companies Doing Business in
Built-In Sewing Cabinet, Disappearing or. May, 75	City, Rebuilding a	Other States
Built This? WhoAug., 75	Civil Service Examination, U. SJuly, 74	Construction Costs by Having Some Experts Pass on Plans, Saving Money on,
Bungalow, GarageJuly, 51 Bungalow, Quantity Survey of SemiMar., 52	Claim, Aspects of Mechanics LienJuly, 90	Oct., 55 Construction Council, One Year's Progress
Rungalow, Southern	Claims, The Liberty of, Against Bankrupt	of AmericanOct., 88
Bungalow, Quantity Survey ofOct. 62 Bungalow, Spanish Architecture forOct. 5?	Client	Construction Despite High Prices, Stimulating Home
Bungalow Along Spanish Lines, Semi Mar., 52	Clapboards, Stucco, Brick and Shingles Are	Construction Features Used in This Modern
Bungalow Homes, Four Designs of Attractive	Here Combined	Factory. Some UnusualJune, 63 Construction for Small Buildings, Steel. Feb., 56
Bungalow Design, StoneAug., 70	and SellingJune, 82	Construction for Walls, Cellar Floors and
Bungalow Home, Cost Figures ofMar., 69 Bungalow Home, FloridaJuly, 40	Close of a Prosperous YearDec., 71 Closet for Small Apartment, Kitchen in a,	Drives, Beam
Bungalow HomesJuly, 69	Apr., 50	Construction. Industry Progress Mar., 45

Issue Page	re	Issue Pa	ge	Issue Pag	ze
Constitution to the Prospective Owner, How to Sell Good HomeApr., 51	:1		47 76	Drives, Beam Construction for Walk, Cellar	67
Continuity of EmploymentSept., 79	79	Cover Design, OurFeb.,	70 59	Floors and	
Contract, Evidence as to TermsJune, 92 Contract, Term Mason Work Interpreted	12	Craftsmanship, Apprentices andJuly, Creating an American Style of Archi-	43	Documents, Nesessity for Work Not Specifically Called for by BuildingMay,	02
in Relation to a Cement Floor Sub- June, 9	94	tectureFeb.,	29	Dutch Colonial Home, LivableFeb.,	40
Contract, Validity of Oral Modification of, Feb., 6:	61	Creating Home Ownership Interest by Story Told in Moving PictureMay,	68	Dutch Colonial Home, Quantity Survey of LivableFeb.	41
Contract Determined, Rights for Millwork, June, 9		Told in Moving PictureMay, Creating More Business by Moving and Remodelling Old BuildingsFeb.,	52	Duties of an Architect to His Employer. June, Dwelling, Brick VeneerFeb	92
Contract Did Not Imply Exclusive Use on		Cure Against Communism, Financing a	-	Dwening, Brick veneer	38
One Job, Material Sales	88	Home as a	84 84	E .	
nanga Cast Plus Aug., 8	80	Curved Roofs Feature These Two Bunga-		Early Start, Making AnFeb., Earthquake Proof Houses, BuildingOct.,	54
Contractor, Dispute with a Plaster and	90	lows	86	Casement for Stair RailJan.,	43 68
Stuccojuly 9	92 81	Customers, Impress YourFeb., Cutter Head; CylinderDec.,	59 69	Casement for Stair RailJan., Eave Finish, Repairing BobtailFeb., Editorial The Situation	74 85
Contractor, If I Were aSept., 7	73	Customs as Factors in Contracts, Trade. July,	90	Editorial, The SituationJune, Effect of Law Governing Advertising for	
Contractor, Painting Equipment for the Jan., 8 Contractors, Correct Cost Keeping for	86	Cylinder Cutter HeadDec.,	œ	Workmen, Validity andNov., Effects in Slate, Charming ColorSept.,	70 68
Contractors, Correct Cost Keeping for Building	77	D. Delaw Branch Declared for Lorent Man	00	Efficient Factories in Demand, Comfortable and Jan.,	
BuildingJune, 8	80	Dairy Barn, Design for LargeMar., Damages for Defective Basement Construc-	ou.	Efficient Labor ManagementSept	79
Contractors, When Carpenters are IndependentJune, 9	94	tionJune, Dawn of a Prosperous YearJan.,	92 83	Electric Features, Row of Modern Two- Family Houses with Novel Floors Arrang	e-
Contractors' Book ShelfJan., 9 Contractor's Default, When the Owner	94	Day Couch or Seat, Built In Bed Forms,	88	ment	48
Takes Work Over on theJuly 9	92	Deconstruction and Demolishing of Build-		Have, SomeJune,	96
Contractor's Liability for Injury to Pedes- trians, BuildingOct., 9	90		54 84	Electrical Provisions of the Modern Home,	74
Contractor's Overhead ProblemFeb., 3 Contractor's Responsibility as to Floor	37	Decorative Treatment of Interior Walls. Dec.,	82	Elevators, SaferOct., Emergency Charcoal Furnace for the	98
DrainageSept., 8	88	Default, When the Owner Takes Work Over on the ContractorsJuly,	92	Soldering BitOct.,	73
Contractor's Rights? What are the BuildingOct., 9	90	Defective Basement Construction, Damages forJune,	92	Employer, Duties of an Architect to His, June,	92
Contracts, Modification of BuildingFeb., 6 Contractors, Substantial Performance of	60	Decorating the Chandeliers and Covers to Harmonize with Other DetailsDec.,	70	Employment, Continuity ofSept., Enamel Painting on Various Surfaces. July,	79
BuildingAug. 8	80	Defective Ceiling Plaster, How to Treat. Jan.,	90	End, Tax Exemption at anApr.	79
Contracts, Sufficiency of Performance UnderJune, 9	94	Demand, Comfortable and Efficient Fac- tories in	92	English Cottage, Quantity Survey ofAug., English Design, Convenient Six-Room Cot-	33
Contracts, Trade Customs as Factors in July, 9	90 .	Demand for Farm BuildingJan., Demand for Garages, BigJan.,	88	tage of	62
Contracts In the Building Trades; Near. Apr., 8	86	Demands Modern Buildings, Modern Mer-		English Farm House Design, Cottage of,	
Convenience Outlets Conveniently, Plac-	9 0	chandising	58	English Home, Quantity Survey of Apr., English Home Colony, Houses in a Row	59
Conveniences Houses Should Have, Some	92		54 80	rormSept.	42
Electrical June, 9 Convenient, Making the Apr., 7	96 76	Design, Church of AttractiveJune,	51	English Type Cottage of CharmAug., Enter the Building Trades, Why Young	54
Convenient Clothes BinJuly, 7		Design, Convenient Six-Room Cottage of EnglishMay,	62	_ Men Do NotAug.,	48
Convenient Colonial House with Garage AttachedOct., 4	46	Design, Cottage of English Farm House, Sept.,	44	Enterprising Garage Has Quaint Rest Room, July,	71
Convenient Six Room Cottage of English Design	62	Design, Our CoverFeb.,	59 58	Entitled to Compensation? On What Basis is This Builder	90
Conveniently, Placing Convenience Out-	<u>~</u>	Design, Quantity Survey for CottageMay,	57		62
lets	83	Design, Stone BungalowAug., Design and Plan, Unique House in Both,	70	Chents Somelune.	82
Cooperative Apartment, Financing a Aug., 6 Coral, Building Homes ofSept., 3		June,	52 44	Equipment, Plan Now to Add to Your Field, Jan.,	80
Cord Roller, ExtensionJuly, 7 Correct Cost Keeping for Building Con-	72	Design for Large Dairy BarnMar.,	80	Equipment for the Contractor, Painting Jan. Equipment Installation, Requirements in	86
tractors	77		56 39	HeatingFeb.,	60
Correct Cost Keeping for Building Con- tractorsJune, 8	80	Designs, Four CaliforniaJuly, Designs of Attractive Bungalow Homes,	39	Equipment Presents Accidents, Modern. Nov., Erected by One of Our Oldest Subscribers,	80
Correspondence	90 74	Four	52	Millfon Dollar Memorial Buildings Now Being	71
Correspondence	82	Desk, Novel Idea for FoldingJan.,	54 90	Establishing a ReputationMay, Estimate, Preparing a Carpenter'sNov.,	85
Correspondence	68	Destroys a Nearly Completed Building, When FireSept.,	90	Estimates, PreparingFeb.,	58 59
Correspondence July, 7 Correspondence Department Sept., 76	70 76	Detail of Balloon Frame House Construc-	F 2	Estimating, How Builders Can Win Success by Careful	71
Correspondence DepartmentOct., 7	72	tion	33	Estimating, Rapid	21
Correspondence	76	tion	54 81	Estimating, Success inOct.,	69
Cost Figures of Bungalow HomeMar., 6 Cost Finding; AccurateDec., 7		Detail of Brick House ConstructionApr., Details of Cement Block House Construc-	64	Evidence as to Terms of ContractJune, Evolving an "American Style" Architecture,	92
Cost Keeping for Building Contractors, Correct		tionApr.,	73	O-4	54 74
Cost Keeping for Building Contractors,			57	Examination, U. S. Civil Service July, Examination, U. S. Civil Service Oct., Example of Successful Cooperation Jan., Exphang? Have You a Pull-day.	98
CorrectJune, 8 Cost Plus Contract Does Not Include Over-	80	Diagonal Reinforcement Sometimes Desirable in Concrete Slabs	61	Exchange: Have fou a Builders July,	69 69
head Expense	80	Difference Between Heartwood and Sap-		Exclusive Use on One Job, Material Saled Did Not Imply	88
Costs by Having Some Experts Pass on		wood	/4	Exemption Again, Tax	69
Plans, Saving Money on Construction.Oct., 5 Cottage, Graceful Roof Lines Feature	55	Aug.,	73 77	Exemption in Force Again, TaxMay, Expert in Your Locality? Why Not Be	85
This	54		44	the WallboardJune	73
Cottage, How Building Age Advertising Pages Helped Build a ServantlessSept., 6	60	vey, SimpleJune,	64	the WallboardJune Experts Pass on Plans, Saving Money on Construction Costs by Having SomeOct.	55
Cottage, Quantity Survey ofSept., 4 Cottage, Quantity Survey of English. Aug., 5 Cottage, Quantity Survey of Six Room. May, 6	45 55	Disappearing or Built in Sewing Cabinet, May.		Expositions, BuildingsFeb. Exposition, Fire PreventionOct.	59
Cottage, Quantity Survey of Six RoomMay, 6 Cottage Design, Quantity Survey forMay, 5	63 57	Dispute with a Plaster and Stucco Con-		Extension Cord Roller	72
Cottage Design for Narrow LotMay, 5	56	Do Not Enter the Building Trades, Why	40	House With UnusualJuly	53
Cottage of English Design, Convenient Six		Young Men Aug, Door, Hand of aOct.,	72	Exterior, Six-Room House with Unusual July Exterior to this School, Pleasing June	52
Room	62	Door and Window Frames, How to Fasten, Sept.,		Exteriors, Bungalow with Two	45
SignSept., 4 Cottage on Wheels	44 63	Door Knockers, History of Sept., Door Repair Hint	50	Exteriors, Bungalow with two DifferentAug.	73
Couch or Seat; Built-in Bed Forms		Doors, StormNov.	64	F	
Council, One Year's Progress of American	88	Doors in Public BuildingsJuly, Drainage, Contractors' Responsibility as to		Faced Walls, Attractive GravelJuly Factories in Demand, Comfortable and Ef-	
Country Assures Continued Activity in	88	Floor		ficient	92 on
Building, Present Prosperity of Our. June, 5	56 49	Drawing Plans, Builder's Right to Com-		Factory. Some Unusual Construction Fra.	
Court, CambridgeSept., 4	40	pensation forOct.,	74	tures Used in This ModernJune	63

Issue Pa		Issue Pa	or.	Issue Page
Factory Buildings, Super Open Roof Trusses	g c	G	•	Home Improvements by Installments, Pay-
for Modern	54	G		ing forJuly 60
Facts Builders Should Know About Truck	77	Gain in Popularity, Concrete BlocksApr.	72	Home in the World, Best KnownApr. 43
OperationJune Facts Worth Knowing About Truck Opera-	′′	Garage and GreenhouseApr.		Home of English Design, LivableApr. 38 Home Owners, AdvisingApr. 79
tion. Some MoreSept.	96	Garage Attached, Convenient Colonial House		Home Ownership, Our Government is Urging
Fair Treatment of Sub-Contractors Oct.	81	withOct.	46	Oct. 53
Family Apartment, TwelveOct. Farm, For theOct.	50 76	Garage BungalowJuly Garage Has Quaint Rest Room, Enterprising	51	Home Ownership Interest by Story Told in
Farm Buildings, Demand forJan.	88	July	71	Moving Pictures
Farm Buildings, Steel Sash forOct.	72	Garage Problem, The House andAug.	64	fyingApr. 79
Farm House Design, Cottage of English. Sept.	44	Garages, Big Demand forJan.	84 84	Home Sweet HomeApr. 79
Farmer Likes, Some Things theJune Farmer Likes, Some Things theJuly	66 57	Garages Made Artistic, Flat RoofJune Garden, Laying Out theApr.	68	Home Sweet Home, Formal Opening of July 68 Homes, Arranging Plumbing for Modern. Apr. 80
Fasten Door and Window Frames, How to	·	Gates Add Charm, Pergolas andApr.	69	Homes, Attractive BungalowJuly 38
Sept.		Germany, Housing inFeb.	34	Homes Bungalow
Fatigue, Measuring StoneOct.	98	Get in Debt to Own Real Estate, Urge Men	50	Homes, Designs of Beauty for BrickJan. 54
Feature of This Bank, Imposing Interior a Sept.	57	Give Thanks, Let UsNov.	69	Homes, Financing Small
Features, Row of Modern Two-Family Houses	••	Give Me a Price on WheelbarrowsSept.	69	May 52
with Novel Floor Arrangement and Elec-		Good Business, Trouble ofApr.	79	Homes as Attractive as the Fronts, Let Us
ricMay Features Used in This Modern Factory, Some	48	Good Home Construction to the Prospective Owner, How to Sell	51	Build the Backs of OurJune 41
Unusual ConstructionJune	63	Governing Advertising for Workmen, Validity		Homes for Fire Apparatus Needed in Many
Feed Lines? Why Not Bury theNov.	86	and Effect of LawNov.	76	Towns, ModernJan. 46 Homes in a Row, ModernFeb. 36
Few Useful Notes on Finishing Interior	92	Government is Urging Home Ownership, Our Oct.	53	Homes in America Week, BetterMay 85
Woodwork, ASept. Field Equipment, Plan Now to Add to	04	Government's Aid to BuildingApr.	56	Homes of All Wood Construction, Four Charming BungalowJan. 56
YourJan.	80	Graceful Roof Lines Feature This Cottage	٠.	Homes of Brick, Ideallan. 60
Figures of Bungalow Home, CostMar.	69	Dec.	54	Homes of Coral, Building Sept. 35 Homes So They Won't Burn, How to Build
File, Keeping a CatalogueJan.	77 74	Grades, How to Use a Common Level to Ob-	84	Homes So They Won't Burn, How to Build
	60	tain	70	Our July 49 Homes Week, How to Make Sales by Put-
Financing a Home as a Cure Against Com-	-	Greenhouse, Garage and	66	ting on a NewApr. 53
munismApr.	84	Grounds for Round SurfacesJune	69	Hot Air, Heating a Small House by Nov. 60
Financing Building OperationsAug. Financing Home ConstructionMay	/5 85			Hot Water ValveJuly 73 House, Compact Six-RoomJan. 42
Financing Small HomesDec.	71	H		House, Modern Six RoomDec. 50
Finish, Artistic Houses of StuccoJan.	58			House The lames Apartment
Finish, Repairing Bobtail EaveFeb.	74 74	Hall, Movie Theatre and AssemblyMar.	48	House, Quantity Survey of Colonial Oct. 47 House, Quantity Survey of Six-Room Jan. 43 House, Quantity Survey of Two-FamilyFeb. 48
Finish of Concrete, BeautifulMay Finished Floors, The Value ofJune	98	Hall, Restoration of IndependenceJuly Hand of a DoorOct.	35 72	House, Quantity Survey of Six-Room Jan. 43 House, Quantity Survey of Two-Family. Feb. 48
Finishing Interior Woodwork, A Few Useful	,,	Handle the Building Boom? How Can We		riouse, Quantity Survey of UniqueJune 33
Notes onSept.	82	BestJune	47	House, Quantity Survey for ModernDec. 51
Fire Apparatus Needed in Many Towns,	46	Handles and Sawing Kinks, Loose Chisel Apr.	90	House and Garage Problem, TheAug. 64 House and Land, Title toAug. 81
Modern Home forJan. Fire Destroys a Nearly Completed Building,	40	Handy Jack, ANov.	66	House by Hot Air, Heating a SmallNov. 60
WhenSept.	90	Hardwoods and Softwoods, What is Meant by	••	House Construction, Detail of Balloon Frame .
Fire Insurance, BuyingDec.	67	by	77	Apr. 53
Fire PreventionOct. Fire Prevention ExpositionOct.	81 98	Harmony in Interior Decorating, ColorAug.	84	House Construction, Detail of Braced Frame Apr. 54
Fire Prevention for Buildings of Small and	,,	Have Training Schools for Building Me- chanics, Let UsSept.	84	House Construction, Detail of Brick Apr. 64
Medium Size	60	Have You a Builders' Exchange?July	69	House Construction, Details of Cement Block
"Fire Stopping" Construction	58 15	Having Some Experts Pass on Plans, Saving Money on Construction Costs byOct.	55	Apr. 73 House Design, Cottage of English Farm Sept. 44
Fixtures Before the House is Built, Selecting		Heartwood and Sapwood, Difference Between	•	House in Both Design and Plan, Unique. June 52
the PlumbingAug.	76	Sept.	74	House is Built, Selecting the Plumbing Fix-
Flat Root Garages Made ArtisticJune	84 61	Heating a Small House by Hot Air Nov.	60	tures Before theAug. 76 House Moving, Some Helpful Hints on. Mar. 64
Floats Advertise Home BuildingMar. Floor Arrangement and Electric Features,	01	Heating Equipment Installation, Requirements inFeb.	60	House of Colonial Design, BrickMay &
Row of Modern Two-Family Houses with		Heating Systems for Mild Weather, Com-		House on Our Cover
NovelMay	48	bination	58	House on Our CoverJune 76
Floor Drainage, Contractor's Responsibility as toSept.	88	Heating the Livable HomeApr. Helpful Hints on House Moving, SomeMar.	92 64	House with Garage Attached, Convenient ColonialOct. 4
Floor Sub-Contract, Term Mason Work In-		High Prices, Stimulating Home Construction	٠.	House with Unusual Exterior, Quantity Sur-
terpreted in Relation to a CementJune	94	Despite	6 5	vey of Six-RoomJuly 53
Flooring, Wood MosaicDec. Floors, The Value of FinishedJune	08	Highway Use, Serviceable Snow Plow for Nov.	67	House with UnusualExterior, Six-RoomJuly 5
Floors and Drives, Beam Construction for	70	Hint, Door RepairJune	68	Houses, Building Earthquake ProofOct. 4 Houses in a Row Form English Home
Walls, CellarNov.	67	Hint That Saves Times, ConstructionJune	68	ColonySept. 4
Florida Bungalo HomeJuly Folding Desk, Novel Idea forJan.	40	Hints on House Moving, Some Helpiul. Mar.	64	Houses, New From the OldDec. 6
For the Auto	84	Hints That Boost Profits, Some Home Building	74	Houses of Stucco Finish, ArtisticJan. 5 Houses of Worship, PlanningJan. 4
For the FarmOct.	76	History of Door KnockersSept.	50	Houses Should Have, Some Electrical Con-
For the Movies and Vaudeville, Modern The-	70	Hold Our Men, How WeAug.	66	veniencesJune 9
atres are PlannedJan. Foreign Material for BuildingMay		Holes, Repairing KnotOct. Hollow Tile Construction, Details ofApr.	73 6 7	Houses, Two FamilyFeb. 4 Houses and Selling Clients Some Equipment,
Foremen, TrainingSept.	79	Home, Artistic BankAug.	63	BuildingJune,8
Forgetting ApprenticeshipNov.	69	Home, Cost Figure of BungalowMar.	69	Houses in a Row, SixJuly 7
Formal Opening of Home Sweet HomeJuly Four California DesignsJuly	95 39	Home, Dutch Colonial	48 74	Housing in GermanyFeb. 3 How Builders Can Win Success by Careful
Four Charming Bungalow Homes of All Wood		Home, Florida BungalowJuly	40	EstimatingAug. 7
Construction	56	Home, Heating the LivableApr. Home, Livable Dutch ColonialFeb.	92	How Building Age Advertising Pages Helped
		Home, Livable Dutch ColonialFeb.	40 69	Build a Servantless CottageSept. 6
Four Ornamental ChimneysMar.		Home, Quantity Survey of EnglishApr. Home, Quantity Survey of Livable Dutch	U7	How Can We Best Handle the Building Boom?June 4
Frame Buildings, Raising and Moving May	71	ColonialFeb.	41	How I Make Sales
Frame ConstructionSept.	77	Home, Why They Selected the Builder for		How Panel Work is Made and Set Up Sept. 6
Frame House Construction, Detail of Balloon	53	Their New	60	How Panel Work is Made and Set UpOct. 7 How to Build Our Homes So They Won't
Frame House Construction, Detail of Braced		ing aApr.	84	BurnIuly 4
Apr.	54	Home Building Floats AdvertiseMar.	61	How to Fasten Door and Window Frames
Frames, How to Fasten Door and Window Sept.	77	Home Building, Novel Auto Body Advertises Feb.	66	Sept. 7 How to Make Concrete Walls Attractive
Framing, Simple BarnFeb.	62	Home Building, Who is Who in Modern Apr.	90	Sept. 7
French Apartments, New Style for May	79	Home Building Easier, MakingMar. Home Building Hints That Boosts Profits.	60	How to Make Sales by Putting on a New
From Carpenter to Large Scale Speculative BuilderOct.	SQ.	Some Building Hints That Boosts Profits,	74	Homes Week
From Ugliness to BeautyJuly	80	Some		How to Read a Survey (Transit Article). Aug.
Front of a Building, Moving theSept. Fronts, Let Us Build the Backs of Our	5 3	Dec.	55	How to Read a Survey (Transit Article Con-
Homes as Attractive as the	41	Home Colony, Houses in a Row Form Eng-	42	cluded)Sept.
Homes as Attractive as theJune Furnace for the Soldering Bit, Emergency	71	lish	42 85	How to Read a Survey (On Levels)Oct. (How to Read a Survey (Transit Level in
CharcoalOct.		Home Construction Despite High Prices,		Construction)
Future, Builders of theJuly		Stimulating	65	How to Read a Survey, Simple Directions
Future School Needs, Building forAug. Future Workers, What One Builder Thinks	40	Home Construction to the Prospective Owner, How to Sell GoodApr.	51	ExplainingJune (How to Sell Good Home Construction to the
About Training OurSept.	56	Home Convenient, Making theApr.	76	Prospective OwnerApr.
nurure Workman The Temping of this Aug	47	Home Idea Selling the	70	How to Treat Defective Cailing Placter Ion 4

Issue Pag	e	Issue Page	Issue Page	
How to Use a Common Level to Obtain		Legal DepartmentOct. 90	Men Do Not Enter the Building Trades,	
GradesMar.	84	Legal DepartmentNov. 76	Why YoungAug. 48	
How We Hold Our MenAug.	66	Legal DepartmentDec. 64	Merchandising Demands Modern Buildings,	
ī		Legal Pitfalls in Undertaking Building Jobs,	ModernSept. 58	
		Let the Entrance Bespeak a WelcomeApr. 62	Methods, Business GettingAug. 75	
I Were a Contractor, IfSept.	73	Let the Entrance Bespeak a WelcomeApr. 62 Let There Be LightMar. 57	Methods in Construction, Builders' Responsibility for ModernAug. 45	
	79	Let Us Build the Backs of Our Homes as	Method of Manufacturing Concrete Brick,	
	50	Attractive as the FrontsJune 41	New	
	73	Let Us Give Thanks	Method of Measuring Sand, NewApr. 72	
Illinois Workmen's Compensation ActSept.	00	Let Us Have Training Schools for Building	Method of Trussing and Bracing Extra Wide	
Important Problem Now Confronting the Building Industry is the Shortage of Men,		MechanicsSept. 84	Building for Moving, SimpleJune 70	
	39	Let's GoApr. 71	Mild Weather, Combination Heating Systems	
Imposing Interior a Feature of This Bank	0,	Letter of a Successful Builder to a New-	forMar. 58	
Sept.	57	comer in the BusinessJan. 50	Million Dollar Memorial Building Now Being	
	59	Level to Obtain Grades, How to Use a Com-	Erected by One of Our Oldest Subscribers,	
	82	mon	Apr. 71	
Improvements by Installments, Paying for		Liability for Injury to Pedestrians, Building	Millwork Contract Determined, Rights for	
HomeJuly	60	Contractor'sOct. 90	June 94	
Include Overhead Expense, Cost Plus Con-		Liability of Manufacturer of Building Ma-	Miter-Cut with a RuleDec. 76	
tract Does NotAug.	80	terial to Ultimate BuyersMar. 86	Modern Apartment, Spanish Architecture Adapted to	
	35	Lien Claim, Aspects of MechanicsJuly 90		
"Independent Contractors," When Carpenters		Lien Claims. Aspects of MechanicsAug. 81 Light, Let There Be	Modern Buildings, Modern Merchandising Methods	
AreJune	94	Lighting of the Residence, ProperAug. 82	Modern Equipment Prevents Accidents, Nov. 80	
Industry is the Shortage of Men, The Most		Lines, Semi-Bungalow Along SpanishMar. 52	Modern Factory, Some Unusual Construc- tion Features Used in ThisJune 63	
Important Problem Now Confronting the BuildingAug.	30	Lines? Why Not Bury the FeedNov. 86	tion Features Used in ThisJune 63	
Industry Progress, ConstructionMar.	45	Livable Dutch Colonial HomeFeb. 40	Modern Factory Buildings, Super Span Roof	
Injury to Pedestrians, Building Contractors	40	Livable Dutch Colonial Home, Quantity Sur-	Trusses for	
Liability forOct.	90	veyFeb. 41	Modern Home, Electrical Provisions of the	
	42	Livable Home, Heating theApr. 92	Apr. 74	
Inspectors by Public Boards, Selecting of		Livable Home of English DesignApr. 58	Modern Home, Building, Who is Who in	
BuildingAug.	80	Loading and Unloading TrucksFeb. 74	Apr. 90	
Installation, Requirements in Heating Equip-		Locality? Why Not Be the Wallboard Ex-	Modern Homes, Arranging Plumbing for Apr. 80	
	60	pert in YourJune 73 Lock on Steel Windows, Self-Centering. Nov. 66	Modern Homes for Fire Apparatus Needed in Many TownsJan. 46	
	69	Look Out for the PasserbyJan. 83	Modern Homes in a RowFeb. 36	
Installments, Paying for Home Improve-	٠,	Loose Chisel Handles and Sawing Kinks	Modern Inn	
ments byJuly	0U 47	Apr. 90	Modern Merchandising Demands Modern	
	67 51	Lots, Representation in SellingDec. 65	BuildingsSept. 58	
Insurance in N. Y., Workmen's Compensa-	31	Lot, Cottage Design for NarrowMay 56	Modern Methods in Construction, Builders'	
tion	78	Lot, Novel Division of, to Secure Maximum	Responsibility forAug. 45	
Insurance ProtectionNov.	69	FrontageDec. 58	Modern Moving of BuildingsSept. 52	
Interest by Story Told in "Moving Pictures," Creating Home OwnershipMay	-		Modern Six-Room House	٠
tures," Creating Home OwnershipMay	68	M	Modern Theatres Are Planned for the Movies	
Interesting Newcomers in Home Building		Made and Set Up, How Panel Work is Oct. 74	and VaudevilleJan. 79	
	55	Maintenance, Motor TruckMar. 90	Modern Six-Room House, Quantity Survey forDec. 51	
Interior a Feature of This Bank, Imposing	57	Make Concrete Walls Attractive, How to	Modern Two-Family Houses with Novel	
	3/ 84	Sept. 76	Floor Arrangement and Electric Features,	
Interior Woodwork, A Few Useful Notes on	01	Make Sales, How I	Row of	į
FinishingSept.	82	Make Sales by Putting on a New Homes	Modification of Building ContractsFeb. 60	į
•	_	Week, How toApr. 55	Modification of Contract, Validity of Oral,	
J		Making an Early StartFeb. 54 Making Home Building EasierMar. 60	Money, And They Thought They Saved. June 79	
Jack, A HandyNov.	66	Making Home Building EasierMar. 60 Making the Home ConvenientApr. 76	Money, And They Thought They Saved. June 79	į
James Apartment House, TheAug.	58	Making the Old Barn NewOct. 66	Money Can't Buy, The Home ThatDec. 57 Money on Builders' Insurance, Saving. Nov. 51	
Japan Looks to America for Aid in Recon-		Man, The Result, The Place, TheNov. 40	Money on Construction Costs by Having	
struction WorkOct.	37	Management, Efficient LaborSept. 79	Some Experts Pass on Plans, Saving.Oct. 55	į
Joh. Material Sales Did Not Imply Exclusive	00	Manufacturer of Building Material to Ulti-	More Business, Planning forJan. 35	,
Use on OneApr. Job, Owners Taking Possession of Building	00	mate Buyers, Liability of	More Facts Worth Knowing About Truck	
	86	Manufacturing Concrete Brick, New Method of	Operations, SomeSept. 96	į
Job, Unskilled Carpentry Plus Poor Ma-	•	Of	Mortar Color Experimenter Dec. 69	1
	60	Marking a Miter-Cut with a RuleDec. 76 Mason Work Interpreted in Relation to a	Most Important Problem Now Confronting the Building Industry is the Shortage of	
Job, What Will it CostDec.	60	Cement Floor Sub-Contract, Term June 94	Men, The	,
v		Master Builders of Pittsburgh, TwoNov. 68	Moth Proof Closets)
K		Material, Novel Office for the Sale of Build-	Motor Truck MaintenanceMar. 90	J
Keep the Saws SharpJuly	73	ing	Movie Theatre and Assembly HallMar. 48	Ś
Keeping a Catalogue FileJan.	77	Material for Building, ForeignMay 85	Movies, Building a Cathedral for the Sept. 38	þ
Keeping Your MenAug. Keeping the White House WhiteDec.	75	Material Prices, Trend ofJan. 98	Movies and Vaudeville Modern Theatres Are	
Kinks Loose Chies! Handles and Saming	04	Material Prices, Trend of	Planned, For theJan. 79	•
Kinks, Loose Chisel Handles and Sawing Apr.	00	Material Prices, Trend ofMar. 98 Material Prices, Trend ofApr. 100	Moving, Pivoting Building DuringJuly 64	!
Kitchen in a Closet for Small Apartment	20	Material Prices, Trend of	Moving, Simple Method of Trussing and Bracing Extra Wide Buildings forJune 70	ì
Apr.	50	Material Prices, Trend ofJune 90	Moving, Some Helpful Hints on House. Mar. 64	ı
Knockers History of DoorSept.	50	Material Prices, Trend ofJuly 88	Moving and Remodelling Old Buildings,	
Knot Holes, RepairingOct.	73	Material Prices, Trend ofAug. 94	Creating More Business by Feb. 52 Moving Frame Buildings, Raising May 71	,
Know Building Laws, Architects Must Feb.	O.I.	Material Prices, Trend ofSept. 86	moving Frame Buildings, Raising May 71	:
Knowing About Truck Operation Come Many		Material Prices, I rend of		ě
Knowing About Truck Operation, Some More		Material Prices Trend of One Of	Moving of Buildings, ModernSept. 52	
Knowing About Truck Operation, Some More		Material Prices (See Trend of Material Prices)	Moving Pictures, Creating Home Ownership	ì
Knowing About Truck Operation, Some More Facts WorthSept. Known Home in the World, BestApr.		Material Prices, Trend of	Moving Pictures, Creating Home Ownership	1
Knowing About Truck Operation, Some More Facts WorthSept. Known Home in the World, BestApr.	96 43	Material Sales Contract Did Not Imply Ex-	Moving Pictures, Creating Home Ownership Interest by Story Told in	1
Knowing About Truck Operation, Some More Facts Worth Sept. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept.	96 43 79	Material Sales Contract Did Not Imply Exclusive Use on One JobApr. 88 Material to Ultimate Buyers, Liability of	Moving Pictures, Creating Home Ownership	
Knowing About Truck Operation, Some More Facts Worth Sept. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring Feb.	96 43 79 59	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	
Knowing About Truck Operation, Some More Facts Worth	96 43 79 59 51	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	
Knowing About Truck Operation, Some More Facts Worth Sept. Known Home in the World, Best Apr. L Labor Management, Efficient Sept. Lack of Proper Shoring Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and Aug.	96 43 79 59 51 81	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	1
Knowing About Truck Operation, Some More Facts Worth	96 43 79 59 51 81 90	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	1
Knowing About Truck Operation, Some More Facts Worth	96 43 79 59 51 81 90 73	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	1
Knowing About Truck Operation, Some More Facts Worth	96 43 79 59 51 81 90 73	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	8
Knowing About Truck Operation, Some More Facts Worth Sept. Known Home in the World, Best Apr. L Labor Management, Efficient Sept. Lack of Proper Shoring Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and Aug. Lantern. Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for Mar. Large Railroad Terminal Building Project May	96 43 79 59 51 81 90 73 80	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	3 5 9
Knowing About Truck Operation, Some More Facts Worth. Sept. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and. Aug. Lantern, Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for Mar. Large Railroad Terminal Building Project Large Railroad Terminal Building Project Lattice and Trellis. May	96 43 79 59 51 81 90 73 80 73 62	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	3 5 9
Knowing About Truck Operation, Some More Facts Worth. Sept. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring Caused This. Feb. Land, Title to House and Aug. Lantern. Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for Mar. Large Railroad Terminal Building Project Lattice and Trellis. May Lattice and Trellis. Mar. Law, Architects Must Know Building. Feb. Law, Architects Must Know Building. Feb.	96 43 79 59 51 81 90 73 80 73 62	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	3
Knowing About Truck Operation, Some More Facts Worth	96 43 79 59 51 81 90 73 80 73 62 61	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	3 5 9 5
Knowing About Truck Operation, Some More Facts Worth. Sept. Known Home in the World, Best	96 43 79 59 51 81 90 73 80 73 62	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	8 9 5 8
Knowing About Truck Operation, Some More Facts Worth. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring Caused This. Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and. Aug. Land, Title to House and. Aug. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for Mar. Large Railroad Terminal Building Project Lattice and Trellis. Mar. Law, Architects Must Know Building. Feb. Lawn Governing Advertising for Workmen, Validity and Effect of. Nov. Law Void, Wage. 1uly	96 43 79 59 51 81 90 73 80 73 62 61 76	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	8 6 6 6
Knowing About Truck Operation, Some More Facts Worth. Sept. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and. Aug. Lantern, Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for. Mar. Large Railroad Terminal Building Project May. Architects Must Know Building. Feb. Lawn Governing Advertising for Workmen, Validity and Effect of. Nov. Law Void, Wage. July Laying Out the Garden.	96 43 79 59 51 81 90 73 80 73 62 61 76 92 68	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	8 9 6 6
Knowing About Truck Operation, Some More Facts Worth. Sept. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring Caused This. Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and. Aug. Lantern. Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for Mar. Large Railroad Terminal Building Project Large Railroad Terminal Building Project Law, Architects Must Know Building. Feb. Lawn Governing Advertising for Workmen, Validity and Effect of. Nov. Law Void, Wage. July Laying Out the Garden. Apr. Laying Brick in Cold Weather. Dec.	96 43 79 59 51 81 90 73 80 73 62 61 76 92 68 63	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	8 9 5 9 8 6 6 9
Knowing About Truck Operation, Some More Facts Worth	96 43 79 59 51 81 90 73 80 73 62 61 76 92 68 63 73	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	8 9 5 9 8 6 6 9
Knowing About Truck Operation, Some More Facts Worth. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring Caused This. Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and. Aug. Lantern. Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for Mar. Large Railroad Terminal Building Project Large Railroad Terminal Building Project Law, Architects Must Know Building. Feb. Lawn Governing Advertising for Workmen, Validity and Effect of. Nov. Law Void, Wage. July Laying Out the Garden. Apr. Laying Brick in Cold Weather. Dec. Lexing Roof Problems. Oct. Legal Department Feb.	96 43 79 59 59 51 81 90 73 80 73 62 61 76 92 68 63 73 86	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Knowing About Truck Operation, Some More Facts Worth	96 43 79 55 51 81 80 73 80 73 62 61 76 92 68 63 73 60 68 63 76 60 60 60 60 60 60 60 60 60 60 60 60 60	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Knowing About Truck Operation, Some More Facts Worth. Sept. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring Caused This. Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and. Aug. Lantern. Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for. Mar. Large Railroad Terminal Building Project Large Railroad Terminal Building Project May. Architects Must Know Building. Feb. Lawn Governing Advertising for Workmen, Validity and Effect of. Nov. Law Void, Wage. July Laying Out the Garden. Apr. Laying Brick in Cold Weather. Dec. Leaking Roof Problems. Oct. Legal Department Feb. Legal Department Mar. Legal Department Apr. Legal Department Mar.	96 43 79 55 18 190 73 80 73 62 61 76 92 68 63 73 60 60 86 63 73 60 60 60 60 60 60 60 60 60 60 60 60 60	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	85 95 0 85 694 0 5
Knowing About Truck Operation, Some More Facts Worth. L Labor Management, Efficient. Lack of Proper Shoring Lack of Proper Shoring Lack of Proper Shoring Caused This. Lack of Proper Shoring Lantern. Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for. Mar. Large Railroad Terminal Building Project May Lattice and Trellis. Mar. Law, Architects Must Know Building. Feb. Lawn Governing Advertising for Workmen, Validity and Effect of. Nov. Law Void, Wage. July Laying Out the Garden. Apr. Laying Brick in Cold Weather. Dec. Leaking Roof Problems Oct. Legal Department	96 43 79 55 55 18 190 73 80 73 66 66 76 66 66 76 76 76 76 76 76 76 76	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	85 95 0 85 694 0 5
Knowing About Truck Operation, Some More Facts Worth. Sept. Known Home in the World, Best. Apr. L Labor Management, Efficient. Sept. Lack of Proper Shoring . Feb. Lack of Proper Shoring Caused This. Feb. Land, Title to House and. Aug. Lantern, Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for . Mar. Large Railroad Terminal Building Project Makes Anti-tip. Jan. Large Railroad Terminal Building Project Large Dairy Barn, Design for . Mar. Law, Architects Must Know Building. Feb. Lawn Governing Advertising for Workmen, Validity and Effect of . Nov. Law Void, Wage. July Laying Out the Garden. Apr. Laying Brick in Cold Weather . Dec. Leaking Roof Problems . Oct. Legal Department . Feb. Legal Department . Mar. Legal Department . Mar. Legal Department . May Legal Department . June . Legal Dep	96 43 79 55 55 18 190 73 80 73 66 66 76 66 76 66 76 66 76 66 76 66 76 7	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	866940
Knowing About Truck Operation, Some More Facts Worth. L Labor Management, Efficient. Lack of Proper Shoring Lack of Proper Shoring Lack of Proper Shoring Caused This. Lack of Proper Shoring Lantern. Concrete Makes Anti-tip. Jan. Large Capacity Wood Press. Oct. Large Dairy Barn, Design for. Mar. Large Railroad Terminal Building Project May Lattice and Trellis. Mar. Law, Architects Must Know Building. Feb. Lawn Governing Advertising for Workmen, Validity and Effect of. Nov. Law Void, Wage. July Laying Out the Garden. Apr. Laying Brick in Cold Weather. Dec. Leaking Roof Problems Oct. Legal Department	9643 79551 819073 8073 8073 8073 8073 8073 8073 8073 8	Material Sales Contract Did Not Imply Exclusive Use on One Job	Moving Pictures, Creating Home Ownership Interest by Story Told in	85 95 0 85694 0 58 7



Issue I		Issue Pag	e	Issue Page
New Style for French ApartmentsMay New York, Workmen's Compensation Insur-	79	Painting Equipment for the Contractor.Jan.	86	Probable Nineteen Twenty-four Construc- tion, The Present Building Shortage and
ance inNov.	78	Painting on Various Surfaces, Enamel. July	76 86	Nov. 3
Newcomer in the Business, Letter of a Successful Builder to aJan.	50	Painting SpecificationsOct. Painting Structural Steel WorkMay	88	Problem, Contractor's OverheadFeb. 3 Problem, The House and GarageAug. 6
Newcomers in Home Building, interesting,	•	Panel Work is Made and Set Up, How. Sept. Panel Work is Made and Set Up, How. Oct.	64 74	Problems, Leaking RoofOct. 7
Dec.	55	l'aper, Architectural Uses of WallSept.	62	Problem Now Confronting the Building In-
News, Making the Old BarnOct. News, Notes and CommentsJuly	24	Parking Cars on a RoofJan. Party Walls, Rights as to	51 98	dustry in the Shortage of Men, The Most ImportantAug. 3
News. Notes and Comments	98	l'ass on Plans, Saving Money on Construc-	,,,	Products, Advertising BuildingSept. 7. Profits, Some Home Building Hints That
Nineteen Twenty-four Construction, The Present Building Shortage and Probable.		tion Costs by Having Some ExpertsOct.	55 83	Boost
Nov.	35	Passerby, Look Out for the	80	Progress, Industry ConstructionMar. 4
Note, The Liberty ofDec. Notes and Comments, NewsJuly	65 74	Mar.	88	Progress of American Construction Council, One Year's
Notes and Comments, News	98	Paying for Home Improvements by InstallmentsJuly	60	Project, Large Railroad Terminal Building
Notes on Finishing Interior Woodwork, A Few UsefulSept.	82	Peace for a TimeJuly	69	May 7.
Notices. BookJuly		Pedestrians, Building Contractor's Liability for Injury toOct.	90	Proof Houses, Building EarthquakeOct. 4 Proper Lighting of the ResidenceAug. 8
Novel Auto Body Advertises Home Building, Feb.	66	l'erformance of Building Contracts, Sub-	•	Proper Shoring, Lack ofFeb. 5
Novel Division of Lot to Secure Maximum	00	stantialAug.	80	Proper Shoring Caused This, Lack ofFeb. 5. Prospective Owner, How to Sell Good Home
FrontageDec.	58	Performance Under Contract, Sufficiency of June	94	Construction to theApr. 5
Novel Floor Arrangement and Electric Fea- tures, Row of Modern Two-Family Houses		l'ergolas and Gates Add CharmApr.	69 70	Prosperity of Our Country Assures Con-
with	48	Photographs, Value of	72	Prosperity of Our Country Assures Continued Activity in Building, PresentJune 5
Novel Idea for Folding Desk	75 90	l'ictured in New Film, Cement Making. July	74	Prosperous Year, Dawn of aJan. 8 Prosperous Year, Close ofDec. 7
Novel Idea for Folding Desk		Pictures, Creating Home Ownership Interest by Story Told in Moving PicturesMay	68	Protection, InsuranceNov. 6
Now the Built-in Piano, AndSept.	76 72	Pilasters, Curtain Walls andMar.	64	Protection for Buildings of Small and Medium Size, FireJune
Nuts from Bolts That Turn, Removing. Sept.		Pitfalls in Undertaking Building Jobs, Legal	47	Provisions of the Modern Home, Electrical
0		Pittsburgh, Two Master Builders ofNov.	68	Apr. 7
Office, Our NewJan.	83	l'ittsburgh, Watkins Development ofDec.	35 64	Public Boards, Selection of Building Inspectors by
Office Planning Ruilding Work in the Feb.	45	Pivoting Buildings During MovingJuly Place, the Man, the Result, TheNov.	40	Public Buildings, Doors inJuly 6
Office and Shop, Fitting Up theJan.	65 66	Placing Convenience Outlets Conveniently,	~	Putting on a New Homes Week, How to Make Sales by
Office Buildings, Ventilation of		Mar. Plan, Architect's Right to Pay For Use of	92	_
Novel	76	Mar.	88	Q
Old Barn New, Making theOct. Old Buildings. Creating More Business by	66	Plan, Unique House in Both DesignJune Plan Books, Use of	52 79	Quaint Rest Room, Enterprising Garage Has
Old Buildings, Creating More Business by Moving and RemodellingFeb.	52	Plan, Compensation for PreparingDec.	64	July 7
Old Walls, Saving theNov. Oldest Subscribers, Million Dollar Memorial	59	Plan Now to Add to Your Field Equip-	80	Quality ConstructionDec. 7 Quality PaysNov. 6
Building Now Being Erected by One of		ment Jan. Planned, For the Movies and Vaudeville	•	Quantity Survey for Modern Six-Room
Our	71	Modern Theatres Are	79 50	House Dec. 5 Quantity Survey for Cottage DesignMay 5
Compensation?Sept.	90	Planned Small Church, WellMay Planning, Better Bank Buildings Due to	30	Quantity Survey of BungalowOct. 6
One Builder Thinks About Training Our Future Workers, WhatSept.	56	Careful	52	Quantity Survey of Colonial HouseOct. 4
One Year AgoOct.	80	Jan.	40	Quantity Survey of CottageSept. 4 Quantity Survey of English CottageAug. 5
One Year's Progress of American Construc-	00	Planning Building Work in the Office Feb.	45	Quantity Survey of English HomeApr. 5
tion CouncilOct. Opening of Home Sweet Home, Formal July	68	Planning for More Business	35 48	Quantity Survey of Livable Dutch Colonial Home Feb. 4
Operation, Facts Builders Should Know	27	Planning Our SchoolsJan.	62	Quantity Survey of Semi-Bungalow Mar. 5.
Operation, Some More Facts Worth Know-	77	Plans, Architect's Rights as toAug. Plans, Builders' Right to Compensation for	81	Quantity Survey of Six-Room CottageMay 6 Quantity Survey of Six-Room HouseJan. 4
ing About TruckSept.	96	DrawingOct.	92	Quantity Survey of Six-Room House with
Operation in Winter, TruckJan. Operation in Winter, TruckFeb.	66 66	Plans, ChangingSept. Plans, Saving Money on Construction Costs	78	Unusual ExteriorJuly 5 Quantity Survey of Stucco ResidenceNov.
Operations, Financing BuildingAug.	75	by Having Some Experts Pass onOct.	55	Quantity Survey of Two Family House Feb. 4
Oral Modification of Contract, Validity of Feb. Ornamental Chimneys, Four	.61 78	Plans, Value of Complete and Correct. Jan. Plans and Specifications, Variances Between	70	Quantity Survey of Unique HouseJune 5
Other States, Construction Companies Doing		Mar.	86	R
Business in	98	Plaster, How to Treat Defective Ceiling. Jan.	90	
Building, Present Prosperity ofJune	56	Plaster and Stucco Contractor, Dispute with aJuly	92	Radio and the BuilderJan. 8. Rail, Easement for StairJan. 6
Our Cover, House onMar. Our Cover DesignFeb.	47 59	Pleasing Exterior to This SchoolJune	59	Railroad Terminal Building Project, Large
Our Future Workers, What One Builder		Plow for Highway Use, Serviceable Snow Nov.	67	Raising and Moving Frame Buildings. May 7
Ininks About IrainingSept.	56 42	Plumbing Fixtures Before the House is		Kapid Estimating
Our Future Workmen, The Training of Aug. Our Government is Urging Home Owner-	44	Built, Selecting theAug. Plumbing for Modern Homes, Arranging.Apr.		Read a Survey, How to (Transit Article) Aug. 6
ship	53	Poor Materials Cannot Equal a Good Job,		Read a Survey, How to (Transit Article
Our Homes as Attractive as the Fronts, Let Us Build the Backs of OurJune	41	Unskilled Carpentry PlusFeb. Popularity, Concrete Blocks Gain inApr.	72	Concluded)
Our Men, How We HoldAug.	66	Portable Sketching BoardMar.	82	Read a Survey, How to (Transit Level in
Our New Office	ω	Possession of Building as Acceptance of Job, Owner's TakingApr.	85	Construction)
morial Building Now Being Erected by	71	Possibilities of Wall Board, ArtisticApr.	70	How toJune 6
One of	70	Power to Bind Owner by Accepting Bids,	86	Real Estate, Urge Men to Get in Debt to OwnFeb. 5
Our Shortage of Men, The Cause of Aug.	41	Architect's	58	Rebuilding a City Non 4
Outlets Conveniently, Placing Convenience Mar.	92	Preparing EstimatesFeb. Present Building Shortage and Probable	59	Reconstruction Work, Japan Looks to
Overhead Problem, Contractor'sFeb.		Nineteen Twenty-tour Construction Nov.	35	America for Aid inOct. 3 Record to Be proud ofMar. 7
Own Real Estate, Urge Men to Get in Debt	50	Present Prosperity of Our Country Assures Continued Activity in BuildingJune	56	Reducing Unemployment in Building Trades
to Feb. Owner, How to Sell Good Home Construc-		Presidents, Tombs of OurSept.	79	Reinforcement Sometimes Desirable in Con-
tion to the ProspectiveApr. Owner by Accepting Bids, Architects Power	51	Press, Large Capacity WoodOct.	73	crete Slabs, DiagonalMay
to BindApr.	86	Prevention, FireOct. Prevention Exposition, TheOct.	98	crete Slabs, Diagonal
Owner Takes Work Over on the Contrac- tor's Default, WhenJuly	92	Prevents Accidents Modern Equipment Nov.	80	Business by Moving and
Owners, Advising HomeApr.	7 9	Price on Wheelbarrows, Give Me aSept. Prices, Stimulating Home Construction	69	Removing Nuts From Bolts That Turn. Sept. 7 Repair, Church Steeple
Owner's Taking Possession of Building as		Despite flight	03	Repair, Church Steeple
Acceptance of JobApr. Ownership, Our Government is Urging		Prices, Trend of Material	98 78	Repairing Bobtail Eave FinishFeb. 7 Repairing Knot HolesOct. 7
HomeOct. Ownership Interest by Story Told in Mov-	53	Prices, Trend of MaterialMar.	98	Repairing Steel TapesJune 6
ing Pictures, Creating HomeMay	68	Prices, Trend of Material	96 100	Replace Wall After Completion? Who Should Sept. 8
P		Prices, Trend of MaterialJune	90	Representation in Selling LotsDec. 6
Pages Helped Build a Servantless Cottage,		Prices, Trend of MaterialJuly Prices, Trend of MaterialAug.		Reputation, Establishing
How Building Age AdvertisingSept. Paint and Stain, Treating Cement Surfaces	60	Prices, Trend of MaterialSept.	86	stallationFeb. 6
Paint and Stain, Treating Cement Surfaces	82	Prices, Trend of MaterialOct. Prices, Trend of MaterialNov.	96 81	Residence, Artistic Stucco
Apr.	04		04	Accounted a rober ragnitud of And.

Issue Pag	e	Issue Page	•	Issue .	Page
Residence, Quantity Survey of Stucco Nov.		Self Centering Lock on Steel Windows, Nov., 66	6 Sc	outhern Skies, Under	., 39
Responsibility as to Floor Drainage, Con- tractor's	RR	Sell Good Home Construction to the Prospective Owner, How to	ı ^S	pan Roof Trusses for Modern Factor Buildings, SuperMay	, 54
Responsibility for Modern Methods in Con-	_	Selling Clients Some Equipment, Building	Si	panish Architecture Adapted to Modern	n
	45	Houses andJune, 82 Selling the Home IdeaApr., 79	2 9 9,	ApartmentJan panish Architecture for BungalowOct	. S
Rest Room, Enterprising Garage Has Quaint July	71	Semi-Bungalow, Quantity Survey ofMar., 52	2 Ši	panish Lines, Semi-Bungalow Along. Mar.	., 52
Restoration of Independence HallJuly	35	Semi-Bungalow Along Spanish LinesMar., 32	2 နှ	panish Lines, Semi-Bungalow AlongMar. pecifications, PaintingOct.	., 80
	40 96	Servantless Cottage, How Building Age Advertising Pages Helped Build a Sept., 60		pecifications, Variances Between Plans and Mar.	
Review of the Building SituationFeb.	76	Service Examination, U. S. CivilJuly, 74	4 S ₁	peculative Builder, From Carpenter to	<u>.</u>
Review of the Building SituationMar.	96	Service Examination, U. S. CivilOct., 98	8	Large ScaleOct. tain, Treating Cement Surfaces with Pain	., 50
	98 94	Serviceable Snow Plow for Highway Use, Nov., 67		andApr.	
tocvice of the Dunaing Distantion	88	Services, Right to Compensation for Unused	St	air Rail, Easement forJan.	, 68
Review of the Building SituationJuly	86	Architectural		airs, Drawers inJune tart, Making an EarlyFeb	
Review of the Building SituationAug. Review of the Building SituationSept.	90 80	Set Up, How Panel Work is Made and Oct., 74	4 Si	ates, Construction Companies Doing Busi	
Review of the Building SituationOct.	94	Setting by Artistic Terracing, Beautifying		ness in Other	, 90
	82	the Home	າ ລາ Si	teel Basement Windows, Use ofMar. teel Cellar SashJuly	., 3. 7. 70
Review of the Building SituationDec. Reviews, BookOct.	98	May, 75	5 S1	teel Construction for Small Buildings Feb.	50
Right as to Compensation, Architect'sApr.	86	Sharp, Keep the SawsJuly, 73 Shelf, Contractors' BookJan., 94	3 S1	teel Sash, Concrete Block forSept.	., 70
Right to Compensation for Drawing Plans, Builders'Oct.	92	Shingles Are Here Combined with Stucco,	Š	teel Sash, InstallingJune teel Sash for Farm BuildingsOct.	., 7
Right to Compensation for Preparing Plan,		Brick and ClapboardsDec., 48	8 S	teel Sash Used in Small GarageDec.	., 72
etc	64	Shoddy Building	5 S	teel Tape, Using theJuly teel Square Cuts Easily MadeDec	7, 62 72
tectural Services	00	Shoring, Lack of ProperFeb., 59	9 S1	teel Tapes, RepairingJune	:, 6
Right to Pay for Use of Plan, Architect's		Shoring Caused This, Lack of ProperFeb., 51 Shortage and Probable Nineteen Twenty-		teel Square, Take DownDec teel Windows, Self Centering Lock or	
Mar. Right to Use Company in Business Name,	88	Four Construction, The Present Building,		Nov	60
Nov.	78	Nov., 35	5 St	teel Work, Painting StructuralMay	, 8
Rights? What Are This Building Contrac-	90	Shortage of Building MechanicsMar., 79 Shortage of MechanicsDec., 71	1 S	teeple Repair, ChurchJuly timulating Home Construction Despite Hig	, /
tor'sOct. Rights as to Party WallsMay	98	Shortage of MenOct., 81	1	PricesMay	7. 6
Rights as to Plans, ArchitectsAug.,	81	Shortage of Men, The Cause of OurAug., 41 Shortage of Men, The Most Important Prob-	1 5	tone, Using CommonMar tone Bungalow DesignAug	., 6
Rights for Millwork Contract Determined, June,	04	lem Now Confronting the Building Indus-	S	tone Fatigue. MeasuringOct.	91
	72	try is theAug., 39	9 S1	tore Buildings by Careful PlanningJan	., 4(
Roof, Parking Cars on aJan.,	51	Should Wages be Lowered?May, 85 Sign Boards, Unique Improvement inMar., 82	2 S	torm DoorsNov. tory Told in Moving Pictures, Creatin	., 6
Roof Garages Made Artistic, FlatJune, Roof Lines Feature This Cottage, Graceful,	84	Signing the BuildingNov., 69	9	Home Ownership Interest byMay	, 68
Dec.,	54	Signs of ProsperityOct., 81 Simple Barn FramingFeb., 62	1 S	trength of Wood, ComparativeJune trong SchoolJuly	e, 7
Roof Problems, LeakingOct., Roof Stand? Will the BarnAug.,	73 77	Simple Directions Explaining How to Read	Š	tructural Steel Work, PaintingMay	, 8
Roof Trusses for Modern Factory Building,		a Survey	4 Ş	tudy? WhyJuly	r, 69
Super Span	54	Simple Method of Trussing and Bracing Extra Wide Buildings for MovingJune, 70	0	tucco, Brick, Clapboard and Shingles at Here CombinedDec	., 4
lowsDec.,	70	Simply Made ScraperNov., 67	7 S	tucco Contractor, Dispute with a Plaste	r
Room, Enterprising Garage Has Quaint Rest, July,	71	Situation, Review of BuildingJan., 96 Situation, Review of BuildingFeb., 76	6 S	andJuly tucco Finish, Artistic Houses ofJan	5
Round Surfaces, Grounds forJune,		Situation, Review of the BuildingMar., 96	6 S	tucco Residence, ArtisticNov	., 4
Row, Modern Homes in aFeb.,	36	Situation, Review of the BuildingApr., 98 Situation, Review of the BuildingMay, 94	8 S	tucco Residence, Quantity Survey of Nov	. 5
Row, Six Houses in aJuly. Row Form English Home Colony, Houses	78	Situation, Review of the BuildingJune, 88	8 "	tucco Work, Details of	ï-
in aSept.,	42	Situation, Review of the BuildingJuly, 86 Situation, Review of the BuildingAug., 96	6 6 S	can"Oct tyle for French Apartments, NewMay	., 5
Row of Modern Two-Family Houses with Novel Floor Arrangement and Electric		Situation, Review of the Building Sept., 80	ŏŠ	tyle of Architecture, Creating an American	1,
FeaturesMay,	48	Situation, Review of the BuildingOct., 94 Situation, Review of the BuildingNov., 82	4 5	Feb ub-Contract, Term Mason Work Interprete	
Rule, Miter Cut with aDec.,	76	Situation, The (Editorial)June, 85	5	in Relation to a Cement FloorJune	e, 94
S		Six Houses in a RowJuly, 78 Six Room Cottage, Quantity Survey of May, 63	8 5	ub-Contractors, Fair Treatment ofOct ubscriber, Thirty-Five Years aMar	., 8
Safer ElevatorsOct.,	98	Six-Room Cottage of English Design, Con-	S	ubscribers, Million Dollar Memorial Build	۱-
Sale of Building Material, Novel Office for	74	venient	2	ing Now Being Erected by One of Ou Oldest	ır ,
the	77	Six-Room House, Conpactlan., 42 Six-Room House, ModernDec., 50 Six-Room House, Quantity Survey of Jan., 43 Six-Room House, Quantity Survey for Dec., 51 Six-Room House with Unusual Exterior,	ő s	ubstantial Performance of Building Con	
Sales, How I Make	56	Six-Room House, Quantity Survey of Jan., 43	3	tractsAug	;., 8
Sales by Putting on a New Homes Week,	55	Six-Room House with Unusual Exterior.	ı s	ucceed and Why, Builders thatJuly uccess, Why Some Builders Are aSept	y, 6
How to MakeApr., Sales Contract Did Not Imply Exclusive Use		. July, 52		uccess by Careful Estimating, How Build	1-
on One Job, MaterialApr., Sand, New Method of MeasuringApr.,	88	Six-Room House with Unusual Exterior, Quantity Survey ofJuly, 53	1 S	ers Can WinAuguccess in EstimatingSept	., 7
Sapwood, Difference Between Heartwood and,	,,	Size, Fire Protection for Buildings of Small	S	uccess in EstimatingOct	t. 6
Sept.,	74	and MediumJune, 60	10 S	uccessful Builder to a Newcomer in the	ie _
Sash, Concrete Block for SteelSept., Sash, Installing SteelJune,	76 6 9	Sketching Board, PortableMar., 82 Skies, Under SouthernMar., 39	19 S	Business; Letter of	id 5
Sash, St ee l CellarJuly,	70	Slabs, Diagonal Reinforcement Sometimes		uccessful Concrete Construction, Col Weather No Bar toNov	., 6
Sash, Steel, in Small GarageOct., Saved Money, And They Thought They. June,	72 70	Desirable in Concrete	51 S	uccessful Cooperation, Example ofJan ufficiency of Performance Under Contract	i., 8
Saves Time, Construction Hint ThatJune,	68	Slope, Bungalow on aJuly, 48	R 3	Jun	
Saves Time, Construction Hint ThatJune, Saving Money on Builders' InsuranceNov.,	51	Small and Medium Size, Fire Protection for Buildings ofJune, 60	s, S	uper Span Roof Trusses for Modern Fac	
Saving Money on Construction Costs by Having Some Experts Pass on Plans. Oct.,	55	Small Apartment, Kitchen in a Closet for,	ະ s	tory Building	y, 7
Saving the Old WallsNov.,	59	Apr., 50	50 S	urtaces, Grounds for RoundJun-	e, 6
Sawing Kinks, Loose Chisel Handles and, Apr.,	90	Small Brick Church	υ 3 56	curfaces with Paint and Stain, Treatin	8
Saws Sharp, Keep theJuly,		Small Church, Well PlannedMay, 50		urvey, How to Read a (Transit Article),
School, Artistic Design forFeb., School, Pleasing Exterior to thisJune,	39 59	Small House by Hot Air, Heating aNov., 60 Snow Plow for Highway Use, Serviceable,		Aug urvey, How to Read a (Transit Artic	
School of Brick	44	Nov., 67	57	Concluded)Sept	t., 7
School of BrickMay, School Strong	67 42	Softwoods, What is Meant by Hardwoods and	77 S	urvey, How to Read a (On Levels)Oct urvey, How to Read a (Transit Level	., 6 in
School, Strong	46	Soldering Bit, Emergency Charcoal Furnace		Construction)Nov	7., 5
Schools, Building Better	38 62	for theOct., 73 Some Builders are a Success, WhySept., 55	ານ S 55 S	curvey, How to Read aDecourvey, Simple Directions Explaining Ho	:., 7 w
Schools for Building Mechanics, Let Us Have		Some Electrical Conveniences Houses Should	_	to Read aJun	e, 6
Training Sept., Scraper, Simply Made Nov., Sea and Neglect, Wind May,	84 67	Some Helpful Hints on House Moving. Mar., 64	70 S	urvey for Cottage Design, QuantityMa urvey of Bungalow. QuantityQc	y, 5
Sea and Neglect, WindMay,	86	Some Home Building Hints that Boost	Š	urvey of Bungalow, QuantityOcturvey of Colonial House, QuantityOct	i., 4
Seat, Built In Bed Forms Day Couch or, Aug.,		Profits	74 S	urvey of Cottage, QuantitySep- urvey of English Cottage. QuantityAug	t., 4
Selected the Builder for Their New Home,		Truck OperationSept., 96	76 S	urvey of English Home, QuantityApr	r., 5
Why TheyMay, Selecting the Plumbing Fixtures Before the	60	Some Things the Farmer LikesJune, 66 Some Things the Farmer LikesJuly, 57	56 S 57	ourvey of Livable Dutch Colonial Hom	è,
House is BuiltAug.,	76	Some Unusual Construction Features Used in	S	survey of Semi-Bungalow. QuantityMan	r 9
Selection of Building Inspectors by Public		This Modern FactoryJune, 63	63 S	urvey of Six-Room Cottage, Quantity.Ma urvey of Six-Room House, QuantityJar	у, б
BoardsAug.,	ďυ	Southern Bungalow		ruites of Six-room mouse, QuantityJar	1., 4

Isano Domo	I D	I Dame
Issue Page	Issue Page Unamployment in Building Trades Peducing	Issue Page What Are This Building Contractor's Pights?
Survey of Six-Room House with Unusual Exterior, QuantityJuly, 53	Unemployment in Building Trades, Reducing, Nov., 70	What Are This Building Contractor's Rights? Oct., 90
Survey of Stucco Residence, Quantity Nov., 47	Unique House, Quantity Survey ofJune, 53	What Basis is This Builder Entitled to
Survey of Stuceo Residence, Quantity. Nov., 47 Survey of Two-Family House, Quantity.	Unique House in Both Design and Plan. June, 52	Compensation? OnSept., 90
Feb., 48 Survey of Unique House, QuantityJune, 53	Unique Improvement in Sign BoardsMar., 82	What is Meant by Hardwoods and Soft-
Systems for Mild Weather, Combination	U. S. Civil Service ExaminationJuly, 74 U. S. Civil Service ExaminationOct., 98	What is New
Heating	Unloading Trucks, Loading andFeb., 74	What One Builder Thinks About Training
Take Down Steel SquareDec., 69	Unskilled Carpentry Plus Poor Materials	Our Future WorkersSept., 56
Tape, Using the SteelJuly, 62 Tapes, Repairing SteelJune, 69	Cannot Equal a Good JobFeb., 60 Unused Architectural Services, Right to	What the Editor Thinks
Tax Exemption AgainJuly, 69	Compensation for	What the Editor Thinks
Tax Exemption at an EndApr., 79	Unusual Construction Features Used in This	What the Editor Thinks
Tax Exemption in Force AgainMay, 85	Modern Factory, SomeJune, 63 Unusual Exterior, Quantity Survey of Six-	What the Editor Thinks May 85
Term Mason Work Interpreted in Relation to a Cement Floor Sub-ContractJune, 94	Room House withJuly, 53	What the Editor Thinks July, 69 What the Editor Thinks Aug, 75 What the Editor Thinks Sept., 79 What the Editor Thinks Oct., 81 What the Editor Thinks Dec., 71
Terminal Building Project, Large Railroad,	Unusual Exterior, Six-Room House with,	What the Editor ThinksSept 79
May, 73	July, 52	What the Editor ThinksOct., 81
Terms of Contract, Evidence as toJune, 92	Urge Men to Get in Debt to Own Real	What the Editor ThinksDec., 71
Terracing, Beautifying the Home Setting by Artistic	Urging Home Ownership, Our Government	What the Editor Thinks
The Home That Money Can't BuyDec., 57	isOct., 53	Wheelbarows, Give Me a Price OnSept., 69
Theatre and Assembly Hall, MovieMar., 48	Use, Serviceable Snow Plow for Highway,	Wheels, Cottage onJuly, 63
Theatres Are Planned, For the Movies and	Nov., 67	When Carpenters Are "Independent Con-
Vaudeville Modern	Use a Common Level to Obtain Grades, How to	tractors"
June, 79	Use Company in Business Name, Right to,	BuildingSent. 90
They Thought They Saved Money; And,	Nov., 78	When the Owner Takes Work Over on the
Things the Farmer Likes, SomeJune, 66	Use of Plan; Architect's Right to Pay for, Mar., 88	Contractor's DefaultJuly, 92
Things the Farmer Likes, SomeJuly, 57	Use of Plan Books	White House, Keeping the, WhiteDec., 84 Who Built This?Aug., 75
Thirty-Five Years a SubscriberMar., 76	Use of Steel Basement WindowsMar., 51	Who Is Who in Modern Home Building,
This Was BerkeleyOct., 71	Use on One Job, Material Sales Did Not	Apr., 90
Thought They Saved Money, And They, June, 79	Imply Exclusive	Who Should Replace Wall After Completion, Sept., 88
Tile Construction, Details of HollowApr., 67	Useful Catalogues	Why, Builders That Succeed andJuly, 66
Time, Construction Hint That SavesJune, 68	Useful CataloguesFeb., 72	Why Not Be the Wallboard Expert in Your
Title to House and LandAug., 81	Useful Catalogues	LocalityJune, 73
Trade Customs as Factors in Contracts. July, 90	Useful Catalogues	Why Not Bury the Feed Lines?Nov., 86 Why Some Builders Are a SuccessSept., 55
Trade for Young Men, Bricklaying as a. July, 74	Useful CataloguesJune, 100	Why Study?July. 69
Trades, Near Contracts in the Building. Apr., 86	Useful CataloguesJuly, 82	Why They Selected the Builder for Their
Trades, Reducing Unemployment in the	Useful CataloguesAug., 90	New Home
Trades, Why Young Men Do Not Enter the Ruilding	Useful Catalogues Sept., 92 Useful Catalogues Oct., 82	Why Young Men Do Not Enter the Building
	Useful Catalogues	TradesAug. 48
Training Foremen Sept 79	Useful Catalogues	Wide Buildings for Moving. Simple Method
Training of Our Future Workmen, The, Aug., 42	Useful Notes on Finishing Interior Wood-	of Trussing and Bracing ExtraJune, 70 Will the Barn Roof Stand?Aug., 77
Training Our Future Workers, What One	work, A Few	Win Success by Careful Estimating, How
Builder Thinks AboutSept., 56	Using Common Stone	Builders Can
Training Schools for Building Mechanics,	Using the Steel TapeJuly, 62	Wind, Sea and NeglectMay, 86
Let Us HaveSept., 84 Treating Cement Surfaces with Paint and	17	Window Frames, How to Fasten Door and, Sept., 77
StainApr., 82	V	Windows, Self Centering Lock on Steel, Nov., 66
Treatment of Sub-Contracts, FairOct., 81	Validity and Effect of Law Governing Ad-	Windows, Use of Steel BasementMar., 51 Winter, Truck Operation inJan., 66
Trellis, Lattice and	vertising for WorkmenNov., 76	Winter, Truck Operation inJan., 66
Trend of Material Prices	Validity of Claims Against Bankrupt Client, Dec., 64	Winter, Truck Operation in Feb. 68 Winter Work Oct., 81
Trend of Material Prices	Validity of Oral Modification of Contract,	Winter Work
Trend of Material PricesApr., 100	Feb., 61	Wood, Comparative Strength of June 72
Trend of Material Prices	Validity of Note QuestionedDec., 65	Wood Construction, Four Charming Bunga-
Trend of Material PricesJune, 90 Trend of Material PricesJuly, 88	Value of Complete and Correct Plans. Jan., 70 Value of Finished Floors, TheJune, 98	low Homes of All
Trend of Material Prices	Value of PhotographsMar., 79	wood Press, Large CapacityOct., 73
Trend of Material PricesSept., 86	Valve, Hot WaterJuly, 73	Woodwork, A Few Useful Notes on Finish.
Trend of Material PricesOct., 96	Variances between Plans and Specifications,	work, Details of Stucco
Trend of Material Prices	War., 86 Various Surfaces, Enamel Painting on July, 76	Work, Details of Stucco
Trouble of Good BusinessApr., 79	Vaudeville, Modern Theatres Are Planned	ConstructionOct., 37
Truck Appearance, Watch	for the Movies andJan., 79	Work, Painting Structural SteelMay, 88
Truck Maintenance, Motor	Vencer Dwelling, Brick	Work, Winter
Know About	Ventilation of Office BuildingsSept., 66	Work in the Office, Planning Building, Feb. 45
Truck Operation, Some More Facts Worth	Void, Wage LawJuly, 92	work interpreted in Relation to a Cement
Knowing About Sept., 96 Truck Operation in Winter		Floor Sub-Contract, Term MasonJune, 94 Work Is Made and Set Up, How Panel,
I Fuck (Poetation in Winter Fab. 49	W	Sent A
Trucks, Loading and UnloadingFeb., 74	Wage Law VoidJuly, 92	Work Is Made and Set Up, How Panel,
Trucks, Loading and Unloading. Feb., 74 Trusses for Modern Factory Building, Super	Wages Be Lowered?, ShouldMay, 85	Work Not Specifically Called for by Build-
Span Roof		ing Documents, Necessity for May 98
101 MOVILLE, SIMBLE METRON OF Time 70	Wall after Completion?' Who Should Re- place. Sept. 88	Work Over on the Contractor's Default, When the Owner TakesJuly, 92
Twelve-Family ApartmentOct., 50	place, Sept., 88 Wall Paper, Architectural Uses of Sept., 62	When the Owner TakesJuly, 92
Turn, Removing Nuts from Bolts That. Sept., 76 Two Different Exteriors, Bungalow with,	Wallboard, Artistic Possibilities ofApr., 70 Walboard Expert in Your Locality? Why	Workers, What One Builder Thinks About
Δ	Walboard Expert in Your Locality? Why	Training Our Future
IWO Exteriors Hungalow with Inly 45	Not Be theJune, 73 Walls, Attractive Gravel FacedJuly, 70	Workmen, Validity and Effect of Law Gov-
1 WO Extremes of Church Design Dec 66	Walls, Decorative Treatment of Interior Dec., 82	erning Advertising for
Two-Family House, Quantity Survey of,	Walls, Rights as to Party	Workmen's Compensation Act, Illinois. Sept., 88 Workmen's Compensation Insurance in New
Two-Family Houses Feb., 48	Walls, Saving the Old	York
I wo-ramily Houses with Novel Floor Ar-	Walls Attractive, How to Make Concrete,	World, Best Known Home in the Apr. 43
rangement and Electric Features, Row of Modern	Sept., 76	Worth Knowing About Truck Operation, Some More FactsSept., 96
wo master Builders of PittsburghNov 68	Walls, Cellar Floors and Drives, Beam Con- struction for	эери, эо
Type Cottage of Charm, EnglishAug., 54	Watch Truck AppearanceMay, 82	XYZ
	Water Valve Hot Tuly 72	
U	Watkins Development at PittsburghDec. 35	Yard, Beautifying the Back
	We Hold Our Men, HowAug., 66 Weather, Combination Heating System for	Year, Dawn of a Prosperous
Ugliness to Beauty, FromJuly, 80	Mud . Mae 50	Year, Close of a Prosperous
Ultimate Buyers, Liability of Manufacturer of Building Material toMar., 86	weather No Bar to Successful Concrete Con-	Years a Subscriber, Thirty-FiveMar., 76 Year's Progress of American Construction
Under Contracts, Sufficiency of Performance,	week, Better Homes In AmericaMay, 85	Council One One 00
Tune 04	week, better flomes in America June. 44	Young Men, Bricklaying As a Trade for,
Under Southern Skies	Week, How to Make Sales by Putting on a	Young Men Do Not Enter the Building
Undertaking Building Jobs, Legal Pitfalls inJan., 47	New Homes	Irades, Why
	went Flanned Small ChurchMay, 50	Your Men, Keeping Aug. 75



BUILDING AGE

AND

THE BUILDERS' JOURNAL

New York, January, 1923



PLANNING FOR MORE BUSINESS

A Story of Successful Cooperation by Builders

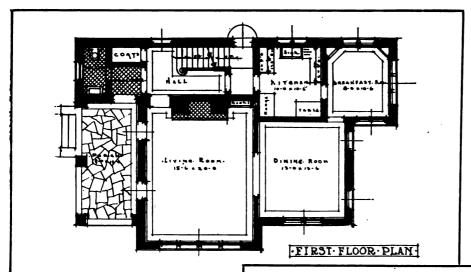
VERY profession seems to have an organization to better the condition of its members and their community in general. This is along the right road of progress and in the building industry, to its credit, we find quite a number of local organizations usually referred to as "The Builders' Exchange." The meetings which these builders attend, create a better spirit among the different members.

Your problem was also the problem of other builders and by exchanging experiences, the result is beneficial to all. No builder should distrust or dislike a brother builder who is trying to do the right thing.

One of the most successful builders' exchanges in the country is located at Akron, Ohio. Their members seem to be real live wires and take an active part in the development of their city. One of their recent enterprises to interest the public in good home building construction was the erection of a model home, which created a great deal of interest, not only locally but throughout Ohio.

"No organization has a right to live unless it justifies its existence."

With the above maxim in mind, the Akron Builders' Exchange has grown from a small group of master builders, organized in 1916 to an organization with a membership of approximately two hundred, including general contractors, sub-contractors, manufacturers of building material, building supply dealers, lumber dealers and brokers, so that the organization now comprehensively represents the construction industry in the district.



walk. Hundreds of people drove up to The Modern Home, but seeing the long line decided to wait until a more opportune time. This did not develop, however, owing to the fact that the attendance increased during the latter part of the exhibition. Sunday, October 1, was the record day for attendance, when 1,622 adults visited The Modern Home. The largest week day was Thursday, September 28th, when 1,308 adults visited The Modern Home.

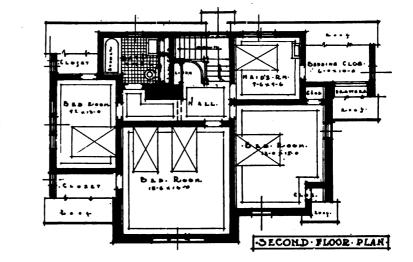
The exhibition was of great personal benefit to members of the Builders' Exchange. Ninety-six in-

The Modern Home enterprise was placed in the hands of a committee consisting of eight members and their efforts were successful beyond the dreams of the most enthusiastic Builders' Exchange member.

One of the many reasons given for the success of this exhibition was that it definitely answered a civic need without in any way attempting to commercialize it. The Modern Home committee did not attempt to secure any list of visitors nor did they ask them whether they owned their own home nor whether they expected to build in the near future. No attempt will be made to call on the visitors privately to sell any particular object.

However, thousands of people became familiar with the functions of the Builders' Exchange and if they have any building problems in the future they certainly will place it before the Builders' Exchange to their own benefit as well as the builders of Akron. Nothing has ever been done there in the building line that has created so much good will and given the public such understanding of the building business as this exhibition house erected by the builders of Akron.

Every visitor to the house received a copy of a very interesting book of sixteen well printed pages describing the house and illustrated by pictures of its exterior and interior together with the floor plans of the first and second floors. Also some very good and pertinent

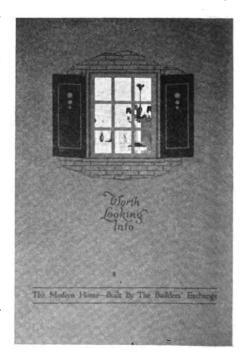


information regarding relations of the home owners with builders and some remarks on finance, etc. It certainly was a most interesting book for the prospective homeowner to receive.

The Modern Home, located at 169 Storer Avenue, Akron, Ohio, attracted a good deal of attention while it was being built, and it was sold without difficulty before completion.

The house completely furnished was opened to the public from 2 P. M., September 23rd, to 10 P. M., October 7th. It was opened daily, including Sundays, from 2 P. M. to 10 P. M., and during that time 16,094 adult persons, by actual count, visited The Modern Home. Many of these visitors came from different cities.

During every evening of the exhibition there was a line extending from the front porch to the side-

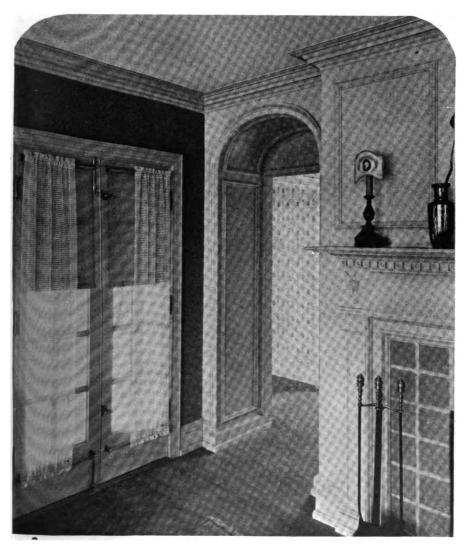


Reprouction of Cover of the Booklet
Presented to Each Visitor

View in the Living Room Note the Paneled Walls, Cornice and Arch Effect



Another
View in
Living Room
Showing
Arched
Entry from
Hall



dividuals, representing seventynine memberships, assisted in the
exhibition by acting as guides. At
all times during the exhibition
there were at least ten men, and at
times when the largest number were visiting The Modern
Home, as high as twenty-five
members of the Builders' Exchange were acting as hosts. This
work gave them greater individual
knowledge of one another, established greater confidence among
them and gave them an opportunity of meeting their competitors
upon a different basis.

Inasmuch as every guide acted as host to ten or fifteen visitors every thirty minutes it gave them an unusual opportunity to meet people and to point out the most important features of not only their competitors, but of the many other trades employed in the building of the home.

Owing to its success, the Akron Builders' Exchange on October 18th decided to repeat this experiment and hold another exhibition in 1923. A committee was selected, on whom will devolve the selection of the site, the type of house and other details. Here is an idea for other communities—why not club together with your fellow builders and erect a model home in your town?



View in Breakfast Room

In the erection of The Modern Home, the thought was not to have a big, showy house, but a real comfortable, livable home which people of refinement would appreciate and be able to own. This sort of a home is the kind that it is a pleasure for the contractor to build because he will not only be able to please his clients, but add to his reputation, and make a decent profit.

The Model Home was built of brick veneer construction with stucco on the gables and unfading mottled purple and green slate for the roof. The different guides at the exhibition were instructed not to recommend any particular type of construction, but to call attention to the fact that there are at least six different good types of home construction, i. e.: frame, brick veneer, brick with tile backing, solid brick, hollow tile with stucco, and concrete, or any combination of these. The selection of the type of construction is usually determined by the surrounding district, the amount

of money to be invested and the individual preference of the owner.

Hall and Stairway

The stairway was finished with walnut colored treads and a walnut rail, the rest of the woodwork being in a dull glaze ivory finish, which gave the appearance of having been aged by time rather than just having been newly applied.

The Living Room

The home as opened to the public was tastefully decorated and furnished. As one entered the living room, a picture of restfulness and comfort was disclosed, yet plenty of color was used. The walls were painted a cool gray green. An oriental rug was laid on the floor, the various pieces of furniture and printed linen draperies reflecting the color from the rug. The mantlepiece was treated in rather an unusual manner, as our illustration shows. A mirror for the center, electric candlesticks and the ornaments included some black and gold vases and blue jars.

Particular attention was called to the plaster cornices and arched entrance from the hall which added so largely to the decorative effect of the room. The wall space above the mantle was panelled as the illustration clearly shows.

All of the ceilings on the first floor and panelling received several coats of paint and were finished with shell enamels having a stippled effect so as to give the appearance of age. The plaster cornice



Showing Cupboards in Kitchen

was also given the same paint as the woodwork, so that both have a like appearance. The wood floors were treated with acid stains and then waxed to bring out the appearance of age. Four electric outlets conveniently located were placed in this room, besides the central candelabra effect chandelier.

Dining Room

The dining room walls were papered with a black trellis design over gray background with touches of mulberry and blue. The hangings were of blue with the rug of small figured gray background and a touch of blue. The furniture was of mahogany of straight, simple lines.

The radiators were painted to harmonize with other decorations and were so constructed and placed as to be inconspicuous and requiring the minimum of space but hav-



View of the Crowd Awaiting Admission to The Modern Hom

ing the requisite square feet of heating surface.

• There were also four duplex electric outlets, sufficient to attach any number of electric appliances. Both the living room and dining room had direct natural light on three sides.

Breakfast Room

The breakfast room, adjacent, seemed to reflect the dining room, except that the colors were much

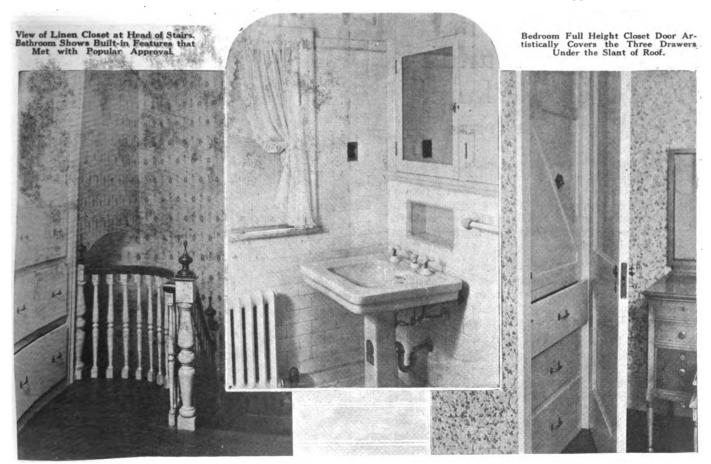
brighter and more cheery. The breakfast room here does away with the need of a pantry ard may be used as a serving room and maid's sitting room.

The casement windows had substantial hinges and were secured by fasteners at top and bottom. All of the outside doors and windows were weather - stripped. The china closets and cupboards were convenient and add-

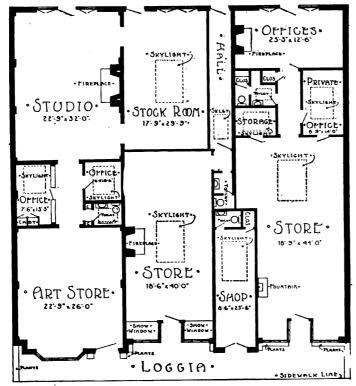
ed distinction to the room. The cove ceiling was also a distinctive feature.

Kitchen

An electric refrigerator; the swinging faucet on kitchen sink; the large, roomy cupboards with new style of cupboard trays on inside of cupboard doors; the automatic electric range; the natural and artificial light with individual lights over sink and range, were features that appealed.



It will be observed, that the two end stores are partitioned into a number of subdivisions each. Toilet and lavatory, however, are private features of each main section, and all, except the one very small shop, have either direct or indirect access to the back alley, one of the stores communicating therewith by means of a long narrow hall. The closets and built-in cabinets indicated in the plan also deserve to be noted. Open fireplaces are features



of 80 feet. It is comprised of four separate shops, or store and office quarters, each provided with its own private entrance.

Known as the Cheesewright Building, this very attractive group of shops is located in Pasadena, California, and was designed by Kenneth A. Gordon, of J. H. Woodworth & Son, of that city which company were also the builders.

The building, as to its walls, is constructed of brick. On the On the front, however, the walls are finished with cement-stucco, which is painted in light greenish-gray. This, it will be seen, applies to the front in the major sense only, for underneath the windows the walls consist of exposed dark red brick, laid in white mortar and worked into the design of panels of herring-bone pattern. Also, two of the doorways which are designed with the Tudor arch, are framed with terra cotta, while cornices and over doorway ornamentations of the same material and color shade further help to vary the character of the front appearance. The windows, as well as the upper part of

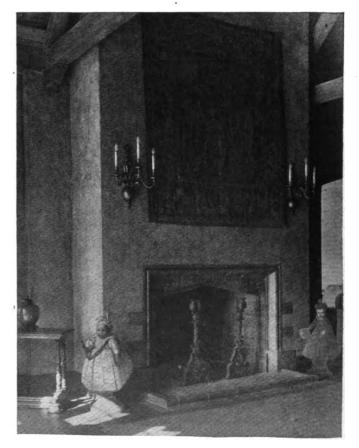
Better Store Buildings by Careful Planning

By CHARLES ALMA BYERS

PON inspection of the shopping district of the average small town, village, or city suburb, one is quite justified in wondering why the building of shops and other structures for commercial purposes which combine real architectural attractiveness with utility is not made far more general than it has been.

Store buildings of artistic appearance are both self-advertising and beauty-improving to the neighborhood, and hence any investment increase that may be occasioned by their being brought to this standard will surely yield commensurate returns.

The store building illustrated herewith offers a particularly interesting illustration of what can be done toward making the small shop truly attractive, if the desire to do so but exist. In architecture, the building is of English style, and is exceptionally well handled to the minutest of detail. It is 72 feet in street frontage, and, including the space it is set back from the sidewalk, has a depth

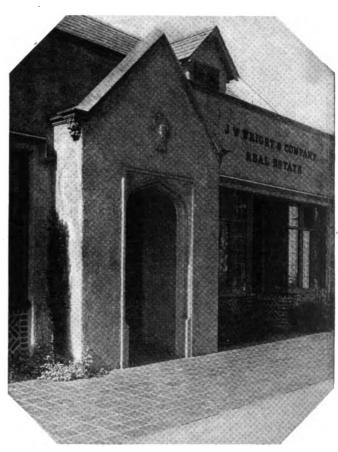




the doors, are comprised of small panes with metal mullions, the left-store group also being extended in bay fashion. The trim represented in the windows and doors is of copper-brown color.

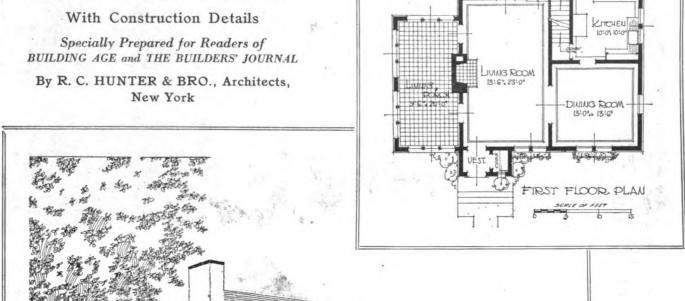
The shops are set back a minimum distance of 6 feet from the sidewalk, which gives very desirable space for "window-shopping," as well as adding attractiveness to the street appearance of the building. This space, including the different entrances, is paved with light brown paving tile, and, at various places about the walls, contains small plots and trenches of earth for the growing of plants.





Unquestionably shops like these are a most desirable asset of any shopping center in which they may be located. They improve street appearances; they win the hearty approval and praise of the people of the community, and, because they attract notice, they help to draw patronage for their proprietors. They, moreover, require no glaring, street-disfiguring, big-lettered signs to advertise them. In truth, does any store ever permanently profit from the inartistic, unsightly signs one commonly finds on display?

The Compact Six Room House



Compare a r c h itects' perspective sketch with photograph on opposite page showing the house as actually erected.

HIS house has been well designed around an economical plan. To gain the most available living space for the money expended has resulted in the adoption of several unusual features in the plan.

First, there is the elimination of all hall space in the first floor, thus giving a large living room; then there is the entrance vestibule which is placed in a one-story extension so as not to encroach on the living room and a coat closet is also provided.

The stairs start up from the living rom and land in the center of the house at the second floor; this arrangement allows the rooms to be reached with the shortest possible hall and permits the attic stairs to start up at the outside wall and land in the center of the attic where there is good headroom. No service stairs are required, since the main stairs connect from a platform to the kitchen.

There is no pantry between the dining room and kitchen; the cup-

boards are placed in the kitchen proper. Pantries in small houses are of doubtful value; they simply increase the number of steps between the dining room and the kitchen, requiring extra effort in serving a meal.

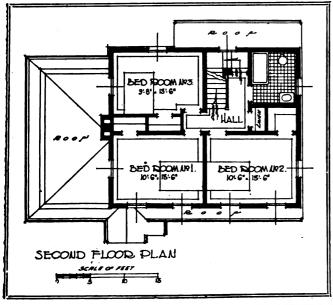
The ice box and kitchen closet are close to the rear entrance, the sink is placed under a window, and the range and cupboards are convenient to the dining room. The entire arrangement of the kitchen is compact and workable.

Quantity Survey of Six Room House

HE quantities given are for estimating. All measurements are net unless otherwise noted; areas given for such items as sheathing, flooring, etc., are net areas to be covered, with no allowance for matching, waste, etc. Minor outs have been disregarded.

EXCAVATION

(Excavation for pipe trenches not inclu	ided.)	
Excavation for cellar	187 cu.	yds.
Excavation for footings	20 cu.	yds.
Excavation for areas	6 cu.	yds.
Excavation for trench walls	14 cu.	yds.
Excavation for leader drains and dry wells	12 cu.	yds.
Backfilling around walls, etc	35 cu.	yds.
Leader drains and dry wells.		
Field stone for dry wells	10 cu.	yds.
4" salt glazed tile drain pipe	36 lin.	ft.
4" cibows	6	



Such items as clearing site, temporary work and protection, scaffolding and general equipment and supplies, have not been included.

Such items as are marked "Unit," are to be estimated in a lump sum, following requirements of plans and specifications.

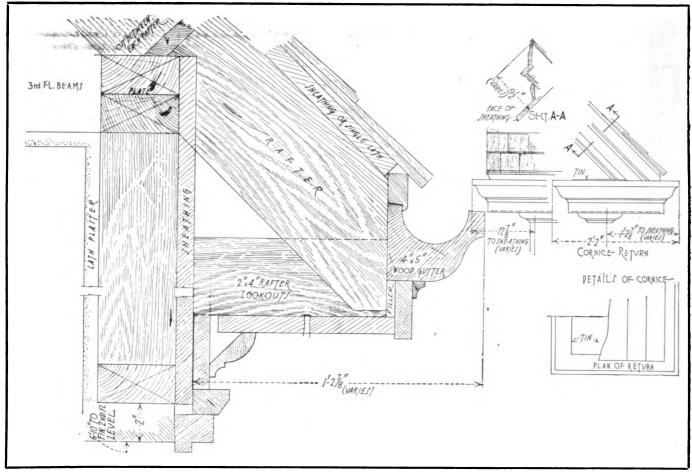
MASONRY

MASONRY
Concrete for cellar walls
BRICK WORK
Common brickwork for chimney 140 cu. ft. (or 2.8 M.)
Face brick for hearth and jambs 15 sq. ft.
Firebrick for fireplace
Face brick for porch borders 50 lin. ft.
8" x 12" T. C. flue lining
MASON'S IRON WORK
Fireplace damper (3'0" opg. with throat, etc.) C. I. ash dump
PLASTERING
Three coat Patent plaster on metal lath, gross 670 sq. yds. (net, 555 sq. yds.) Keene's cement plaster on metal lath. Kitchen, net
Run cap

On the second floor each bedroom occupies a corner of the house, so that each has cross ventilation. Proper space is provided for the furniture. The bathroom is good size and convenient to the bedrooms. It is located over the kitchen, so that one line of plumbing serves both.

A generous attic is provided, where rooms can be finished off if desired. The living porch is completely enclosed and adds another room to the first floor. A cellar is provided under the entire house and here is located the laundry, heater and coal spaces, and such. This is a simple, practical and economical house, costing about \$7,200 for substantial erection.

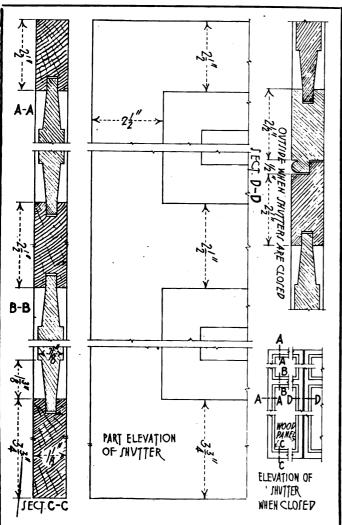




TILE WORK
Tile work for bath rooms.
Floor (1" hex. white)
Wainscot (3" x 6" white wall tile) 108 sq. ft.
6" Sanitary base
Moulded cap
Mounded cap 27 Int. It.
SHEET METAL WORK
Tin roof on living porch
Tin flashing for roofs, etc 167 lin. ft.
Copper flashing and counter-flashing for chimney 8 lin. ft.
3" x 4" Copper leaders 80 lin. ft.
Bends for same
Gutter thimbles 9
3" x 4" G. I. gas range vent
Cap and thimble for same
Slate roofing
State footing to squares
CARPENTRY
(All timber No. 1 common stock, hemlock, rough,
unless noted.) Cellar girders, 6" x 10"—spc. 2/14
Cellar girders, 6" x 10"—spc, 2/14 140 F. B. M.
$3'' \times 10''$ —spc. 2/12
2" x 3" nailer—26 lin. ft
Sille A" ~ 6"5/14 9/12 6/10 2/9 364 F P M
Posts 4" x 6"-4/18 2/12 4/10 272 F B M
Stude girts and plates 1st floor 2" v 4"-240/8 1280 F R M
Stude, etc. 2nd floor 2" x 4"—105/8 1040 F. B.M.
Stude, etc., 2nd floor, 2" x 4"—155/6
let floor joints 2" x 10" - 37/14 963 F B M
Posts, 4" x 6"—4/18, 2/12, 4/10
3d floor joists, 2" x 8"—37/14
Collar ties, 2" x 6"—15/12
Defance 2" of 40/10
Rafters, 2" x 6"-48/18
Ridge, 2" x 8"—2/16
Living porch rafters, 2" x 6"—12/10 120 F. B. M.
Exterior and nood ratters, $Z'' \times 4'' - 36/12$, $10/8$. 355 F. B. M.
Porch ceiling beams, $2^{\prime\prime} \times 4^{\prime\prime}-22/10$
Exterior and hood rafters, 2" x 4"—36/12, 10/8. 355 F. B. M. Porch ceiling beams, 2" x 4"—22/10
Cornice outlookers, 2" x 2"—9/8

Cellar partitions (studs), 2" x 4"-13/14 122 F. B. M.
Sheathing (3/8" x 8" shiplap, no outs).
Walls, to cover
Roofs, to cover
Sheathing paper (waterproof)2500 sq. ft.
Sheathing paper (waterproof)
Sheathing for cellar partitions.
78" x 8" shiplap, to cover 260 sq. ft.
Rough flooring (7/8" x 8" shiplap),
1st and 2nd floors, to cover
Furring, %" x 2"
EXTERIOR FINISH
Watertable (%" x 2" strip) 150 lin. ft.
Cornice and hood.
4" x 5" moulded wood gutter 195 lin. ft.
7/8" x 6" fascia 195 lin. ft.
56" x 76" cove
58" x 21/4" M. & B. ceiling, to cover 300 sq. ft.
Raking cornice.
4" crown mould
76" x 3" fascia
Entrance porch fascia—5'0" x 3'0"
Brackets, 8" face, 16" deep, 16" proj 2
Coping for living porch.
1¾" x 9½" coping
2 7 3
Lattice panel—2'8" x 7'6"
Wood brackets
Cellar bulkhead.
7/8" x 31/4" M. & B. ceiling 50 sq. ft.
5%" x 7%" cove
Windows.
Frames complete with sash, outside trim, etc.
Sash 1½" thick, glazed D. T.
Cellar windows (trim both sides).
Single top hung casem. sash, 3'0" x 2'0", 4 light 4
Single top hung casem. sash, 1'8" x 2'0", 2 light
Single top hung casem. sash, 3'0" x 2'0", 4 light 4 Single top hung casem. sash, 1'8" x 2'0", 2 light Mull. top hung casem. sash, ea.3'0"x2'0", 4 light 1

EXTERIOR FINISH—Continued
First floor windows.
Mull. D. H. sash, ea. 2'6" x 4'10", 7 light 2
Single D. H. sash. 2'10" x 4'10". 7 light 2
Mull. D. H. sash 2'6" x 3'0" 7 light
Single casem, sash, $1'6'' \times 3'0''$, 6 light
Triplet casem, sash, ea. 2'2" x 4'10", 12 light 4
Single casem. sash, 1'6" x 3'0", 6 light 1 Triplet casem. sash, ea. 2'2" x 4'10", 12 light 4 Single casem. sash, 1'2" x 1'6", 4 light 1
Second floor windows.
Single D. H. sash, 2'10" x 4'6", 12 light9
Single D. H. sash, 2'10" x 3'0", 12 light 1
Attic windows.
Single D. H. sash, 2,10" x 4'0", 12 light 1
Single casem, sash 1'8" x 3'6" 6 light
Shutters (11/4" thick, solid paneled).
2'6" x 4'11" pr 1 pr.
Shutters (11/4" thick, solid paneled). 2'6" x 4'11" pr
2'6" x 3'1" pr 1 pr.
Blinds (11/8" thick, movable louvres).
2'10" x 4'7" pr 9 pr.
2'10" x 3'1" pr 1 pr.
2'10" x 4'1" pr 1 pr.
Exterior door frames (1¾" thick, rabbeted).
Complete with outside trim.
Front entrance frame, door 3'0" x 7'0" 1
Frame for rear entrance door, 2'8" x 7'0" 1
Exterior doors. (All to detail.)
Front entrance door, 3'0" x 7'0" x 134" glazed
D. T 1
D. 1
Finished flooring—Living Room, Dining Room,
Vestibule, plain sawed white oak, 13/16 x
2¼" to cover
Kitchen, etc., No. 1 maple, 13/16" x 21/4" to
• • • • • • • • • • • • • • • • • • • •



cover
21/4" to cover
Third story, %" x 4" N. C. pine, to cover275 sq. ft. Lining paper under floors
Cement filled pipe cols. in cellar.
(4" dia. x 7'6" long with cape and bases) 4
Joist hangers (¼" x 2" W. I.). For 2" x 10" beams
For 4" x 10" beams 4
For 4" x 8" beams 2
INTERIOR FINISH Door trim (whitewood), %" jambs, ½" stopa,
7/2" x 44/", moulded and mitered trim. Trim
both sides. For doors 3'0" x 7'0" 3 sets For doors 2'8" x 6'10" 1 set For doors 2'6" x 6'10" 2 sets For doors 2'4" x 6'10" 2 sets For doors 2'4" x 7'0" 1 set For doors 2'6" x 6'8" 4 sets
For doors 2'8" x 6'10" 1 set
For doors 2'4" x 6'10"
For doors 2'4" x 6'10"
Trim for inside of exterior doors.
Front entrance, 3'0" x 7'0"
Rear entrance, 2'8" x 7'0"
Trimmed openings finished same as for doors
opg. 5'0" x 7'0"
mitered trim, ½" stops. 1½" moulded stool.
mitered trim, ½" stops, 1½" moulded stool, ½" moulded apron, ½" x ½" cove under
stool. For windows, mull., ea. $2'6'' \times 4'10'' \dots 2$ sets
For windows, single, 2'10" x 4'10"
For windows, mull. ea. 2'6" x 3'0"
For windows, triplet, ea. 2'2" x 4'10" 4 sets
For windows, single, 1'2" x 1'6" 1 set
For windows, single, 2'10" x 4'6" 9 sets For windows, single, 2'10" x 3'0" 1 set
For windows, single, 2'10" x 4'0" 1 set
Kase
76" x 6½", moulded
7%" x 4", plain (closets)
½" quarter round floor moulding450 lin. ft
Picture moulding (%" x 21/4")
Interior doors.
(Glazed) 3'0' x 7'0" x 1"
(2 cross panel birch veneer) Door 2'8" x 6'10" x 1½"
Door 2'6" x 6'10" x 1½"
Door 2'4" x 6'10" x 1½"
Door 2'6" x 6'8" x 1½" 4
Door 2'6" x 6'6" x 1½"
Closet shelving (%" x 12" pine)
Rabbeted shelf cleat
1" dia. pipe clothes rod
Countershelf, drawers, doors, etc 1 Unit
Slat Floor under laundry tubs,
3'0" x 4'0"
3'3" wide newels, balustrade, etc., (whitewood) 1 Flight
Cellar stairs, 12 risers, box pattern, 3'0" wide,
yellow pine, wall hand rail, etc
pine, 2'8" wide, balustrade at 3rd floor, etc 1 Flight
GENERAL CONDITIONS Add for permits, fees for water and sewer connections
etc., insurance and general overhead charges.
Allow for general work not listed, such as grading, plant-
ing, etc. Include sub-bids: Hardware and applying same,
painting and decorating, plumbing and gas niting nearing
painting and decorating, plumbing and gas fitting, heating and electric work.

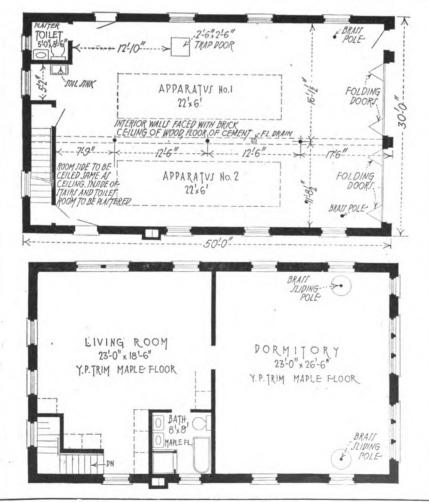


Modern Homes for Fire Apparatus Needed in Many Towns



Plans of Fire Engine House at Oak Park, Ills.

> E. E. ROBERTS, Architect



ARELESSNESS in most cases is the cause of fires. Better building construction and vigilance on the part of the occupants will do much to prevent disastrous fires, but they do occur, therefore, every locality should have on hand the means for fighting flames.

The apparatus and men required for this work deserve good housing. The fire house of today is a big advance over that of fifty years ago. The picturesque and faithful fire horse has disappeared and now in its place is the fast auto machine.

The design of fire house shown here is a real model of convenience in a small space. It houses two machines on the ground floor. The interior of the walls of the apparatus room is of face brick with the ceiling in varnished wood and the floor is of cement. The other rooms are plastered. A toilet room is situated in the rear on this floor. The basement contains storage room and heating plant.

Upstairs there is a large living room fitted with sanitary metal lockers for each man. Adjoining this is a good size and well-ventilated dormitory. Brass sliding poles at either side provide for rapid descent of the firemen when answering an alarm.

Legal Pitfalls in Undertaking Building Jobs

By ARTHUR L. H. STREET

UITE a good sized book could be written on this Within the space subject. of a short article it is not possible to give more than a rough outline of some of the things that a builder should bear in mind in negotiating a building contract and in approaching performance of it. The suggestions made below are inspired by the fact that courts have been called upon to consider all of the phases mentioned in cases which have actually arisen in the building industry.

Experience shows that frequently too little care is used in the matter of forming building contracts. A paper may be headed "Building Contract," contain ever so many "saids," "whereases," etc., and be signed by both parties, and yet prove as useless as an automobile without an engine in it. Whether required to be in writing (as is the case in some jurisdictions) or not, every important building contract should be stated in writing and signed by both parties. The writing should contain in express terms, or by reference to plans and specifications or other definite documents, a statement of all of the essential terms of the agreement. Otherwise the owner may have a loophole to refuse to permit performance of the contract on the ground that no valid agreement was entered into. In California, New Jersey, and perhaps in a few other states certain building contracts are not valid unless filed or recorded.

Before expense is incurred toward performance of the ordinary building contract it should be ascertained that the person contracting as owner either has such title as will support mechanic's lien proceedings, should resort to that form of security become desirable or necessary, or is acting under proper authority from the true owner. Much litigation has arisen on disputed points as to whether a husband was empowered to bind his wife by contracts for the improvement of her property, whether a lien was enforceable against property on account of improvements made at the instance of a lessee or one holding a mere contract for deed, etc.

If part of the work is to be sublet, care should be taken to see that binding contracts are made with the subcontractors, to hedge against excessive costs of the work to be sublet, or responsibility for delays. Manifestly, it is shortsighted policy for a general contractor to undertake to erect a certain building by a certain time, or at a certain price, without first, or concurrently, binding materialmen and subcontractors to furnish materials or subcontracted work within time that will permit timely and profitable performance of the general contract.

THE desirability of effecting insurance covering the builder's interest, or to comply with an agreement to insure for the owner's benefit, should be considered.

As materials are delivered at the site, special diligence should be used to see that they are piled or stored in such way as not negligently to imperil workmen and other persons coming upon the premises in the course of the construction.

Thought should be given to whether all workmen to be engaged in the work are properly and sufficiently covered by employers' liability insurance. And as work commences, and constantly while it progresses, the alert and efficient superintendent will bear in mind all the safety laws and regulations that apply to the particular work in hand.

As dealings with the owner's supervising architect arise and continue, sight is not to be lost of limitations on his authority as representative of the owner. For example, it must be remembered that the architect has no implied power to dispense with performance of contract requirements, nor to bind the owner by calling for extra work, etc.

No departure from a building contract in a substantial respect should be made unless the owner directly assents thereto, or unless he has plainly constituted the architect with authority to order or permit a particular change. Where a building contract specifies that modifications shall be evidenced by written agreement, no mere verbal assurance on the architect's part should be accepted in lieu of such written agreement.

If the contractor is arranging for the shipment of tools, appliances or materials from one point to another for use on a particular job, the transporting railway company or companies should be distinctly informed that the same are being shipped for use on that job, and that failure to promptly deliver will entail special loss by causing workmen to remain idle, delaying performance of the contract, etc. Such notice to the railway company will be necessary in order to preserve full right to damages in case of negligent delay in delivery.

If the work in hand involves a hazard to adjacent property owners, special pains are to be taken in the matter of shoring up nearby structures, etc.

R NOUGH has been said to indicate that there are very numerous points where the build-er comes in contact with possible legal liabilities in the performance of the ordinary building job. Only by using good sound "horse sense" and diligence in the matter of dealing with the owner, his employees, and others concerned in the work in the same way that he would like to be dealt with were he in the other fellow's shoes can he enjoy a reasonable prospect of getting by without getting involved in litigation. Unfortunately, there is nothing that one can do to make himself absolutely proof against lawsuits. But he can approach a state of security by keeping in mind the suggestions above made, and by taking prompt legal coursel when controversy looms up.



By the Architect of St. Peters at Rome "Nothing makes the soul so pure, so religious, as the endeavor to create something perfect; for God is perfection, and whoever strives for it, strives for something that is Godlike."—

Planning Houses of Worship

THE cost of churches to be built in 1923 is estimated to amount to about \$500,000,000. This sum of money will be spent in many different communities and for worshippers of various denominations.

When a congregation desires to build a new edifice, the one desire is to erect something that will be substantial and a credit to its founders and locality; to serve its present purpose and future needs for the next few decades.



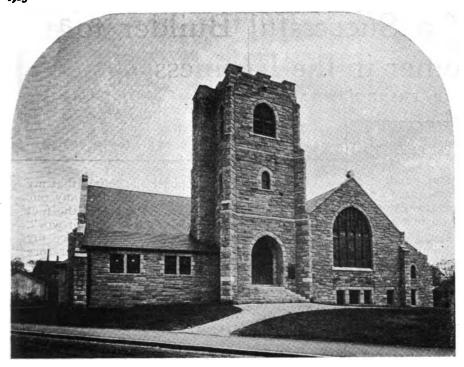
Michael Angelo.



Of course, for congregations who cannot afford a more substantial affair, a frame church answers the purpose. It is a place to worship in and excellent designs for frame churches have been built and in our present time where stucco is so easily used, many very meritorious frame structures can be erected at a reasonable cost.

It is however in the more lasting building materials that church building finds its best expression, and different varieties of such materials are available to the builder.

Stone is used to quite an extent, both local field stone, and quarried



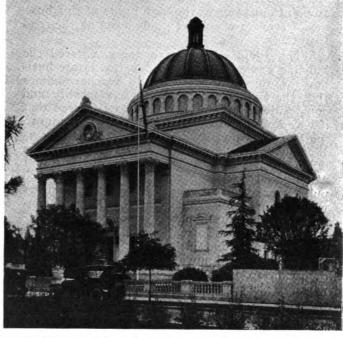
fireproof floors in all church buildings. The finished floor can be either in wood, or finished in tile or composition. Of course, in the more elaborate structures, marble floors will be used. We seem to be getting away from the idea of having a carpet floor in our public gathering places, therefore, wood floors are largely giving place to the more sanitary modern types of flooring.

The roof of practically every church forms a very important part of its architectural appearance, and as the item of cost is usually no bar, the more expensive and lasting roofing materials can be provided. Churches are not built for a day; in our own country we have many churches erected over one hundred years ago that are in use by worshipful congregations that revere the work of their ancestors who built

stone, such as granite, marble, limestone, brown stone, etc. Various interesting examples of stone churches will be built in the future and 1923 will see many of them started.

Brick, both face and common, play a most important part in church architecture. With stone and terra cotta trimmings and inserts, many handsome designs of brick church architecture are to be found, while hollow tile also finds a most useful field in church construction.

It is well, at this time of low cost steel construction, to consider the advisability of having The church holds an important place in every community and prestige is gained by the builder of such edifices.



so well. Of course, in Europe, it is no unusual thing to find churches in use that were built five hundred or more years ago.

For structures with domes, steeples, etc., some form of sheet metal is most appropriate. As all ornamental parts can be stamped, there is no trouble in carrying out architectural lines and details to a nicety. Many fine examples of copper domes are now being erected

The Letter of a Successful Builder to a Newcomer in the Business

By FRANK H. WILLIAMS

New York, Dec. 28, 1922.

Dear Ed:

So you've decided to take a shot at building homes instead of merely selling them the way you've been doing since entering the real estate business and you want me to tell you just how to make a success of the venture?

Some day, Ed, when I find that building homes doesn't need my immediate and whole-hearted attention every minute of the day and far into the night, I'll take a couple of months off and get a good start giving you some pointers as to how to make the dough in this fascinating game. But, don't hold your breath while waiting for me to do so.

In the meantime, I want to tell you that I think you're making a wise move and I'm going to point out some of the high lights of this business I see 'em which are guide posts on the road to success.

When I did what you're doing, entered the building game from the strictly real estate business, there wasn't the demand for new homes that there's been this year in my locality and competition was pretty keen. So I figured that if I wanted to get over in a big way it was up to me to get as much publicity and advertising as I could without spending too much money in doing so, if I was to get the business. And I also figured that one of the best ways to get such publicity and advertising was by playing up my work prominently in front of the homes I constructed. I noticed that new homes always attract a great lot of attention and that people are interested not alone in knowing who is building them but also in knowing who is going to occupy them, so I framed signs reading like this which I placed in front of all the homes I erected:

BUILT BY HARRIS
Sold to Mr. and Mrs. Spiegel
Mr. Spiegel is foreman at the General
Electric Works
Other Homes Recently Erected or
Now Building by HARRIS
918 Organ Avenue
1314 Elmwood Avenue
722 Dryer Boulevard

This sort of a sign emphasized the fact that my building activities were not confined to any one section of the city and also emphasized the fact that I was doing a considerable amount of work. And these two things combined to enhance my reputation as a successful builder and therefore worked together to get me more business.

Also the stunt of telling who was going to occupy the house and what the purchaser of the home worked at, always pleased the purchasers as it gave them some pleasing publicity and this made them eager to direct friends and relatives to me when these friends or relatives were thinking of putting up homes.

Another thing that I always did was to furnish the local newspapers with photos of the houses I put up and with descriptions of the houses and the names of occupants. At that time I was the only builder in the city doing this and in this way I got a lot of photos into the papers and had my name as builder mentioned when the photos were published and in this way got a very large amount of highly desirable publicity. I don't know the situation in your city regarding this possible avenue of publicity, but it would be worth your while to look into the matter and to see whether or not you couldn't put the same sort of a thing over.

I also used these photos in my show windows—my office was located on the ground floor at that time just the way yours is—and I pasted typed captions telling all about the homes, together with price, under each photo. These window displays never failed to make folks stop and look and helped me considerably in getting more business. Also whenever I knew a merchant friend or a store owner who had a vacant window I'd get him to let me make a similar display in that vacant window and this also brought me a splendid amount of publicity and helped greatly in getting more business.

And I also want to tell you about another very effective way in which I used photos in the building business.

My plan in putting up houses was then, as now, to not try to sell the houses myself unless people came to me and asked me to build houses for them, but to place the sale of the houses in the hands of alert real estate men and give them a commission on the average of about \$500 for each house they sold for me. By doing this I

really had a sales force of eight or ten energetic, enthusiastic men without having the trouble of building up such a force, and in this way I was relieved of the worry and trouble of making sales myself and could devote all my time to the actual building of the homes.

But it was my policy to help the real estate men in making sales in every way that lay within my power. And one of the ways I devised for doing this was that of having duplicate prints made of all the photos I had taken of the houses I put up and of collecting these prints into handsome folders, with appropriate typed captions attached to each photo, and of giving these folders to the real estate men to help them in clinching sales. There's nothing so effective as visualizing attractive homes to prospects and this use of photos helped the real estate men tremendously in making sales and also was a big aid in making them more enthusiastic in their work for me.

Perhaps you could use this same stunt in your work with equally good results.

Every now and then I find that it is good publicity for me to write articles for the real estate sections of the local papers in which I comment on the great amount of building being done in the city and in which I emphasize the fact that this means a bigger and a better city. Material of this type always makes people feel that I am doing a great amount of building myself and so makes them feel that I must turn out good work as, otherwise, so many people wouldn't want me to build homes for them. Which is a mighty good reputation for a builder to have.

Also I every now and then write articles for the real estate sections of the local papers commenting on the fact that the homes going up in the city are modern in every particular and are a great credit to the city and in which I call attention to some of the very newest features of the homes. This type of publicity makes folks feel that I am a builder who is right abreast of the times and who knows what's what in modern bullding and this, too, helps business considerably.

And, of course, I watch my business carefully and while I don't handle any details which I can get out of, still I know every day just where I'm at on the whole proposition. There's never a moment when I'm at sea as to how I stand or what work is under way and just what the condition of the work is. This, to my mind, is an extremely important phase of the building game, for it is so easy, when numerous homes are being erected, for the business to get away with you and create a lot of trouble for everybody concerned.

Here's another point: I never go into a new building proposition unless I can see where it is going to land me. I like to get everything down in black and white on paper before I start, as in that way I can visualize the whole thing and see what the proposition offers and see just where it is going to lead me.

All of which I am passing along to you in the hope that it will be of real help in your new undertaking. And as a final suggestion I might say that keeping everlastingly at it on the job is about the best way of all of making a success in the building game.

Best wishes for a Happy and Prosperous New Year, from

Your old friend,

Dick.

T is a curious I fact that parking space for cars is most desirable in localities where property is valuable. It does not pay to leave it stand idle or even rent it for the small fee exacted from car owners. An enterprising owner in Seattle, Washington, conceived the idea of erecting a onestory structure on his corner lot and

Parking Cars on a Roof

Novel Income Producing Idea



utilizing the roof for parking space, as shown in our picture. A long ramp affords an easy means of getting the cars up on the roof and the different stores bring in a handsome rental. This idea can be carried out in many other localities with profit to the builder and owner, besides affording a big convenience to the car owners.



Better Bank Buildings Due to Careful Planning

Two Designs that Show
East and Mid-West
Architecture

VERY bank desires good looking and convenient working quarters. New locations require new banks and many old banks have outgrown their present quarters, therefore bank construction is a profitable field of work for the builder.

The building shown above was built for a dual purpose, as will be noted by referring to the floor plan below. Space has been provided here for doing a regular banking, besides loan and trust business. Also a law, and abstract office. By careful planning, all of this has been conveniently placed in a space 34×76 feet. As shown, the building is one story high, the ceiling being 18 feet. The basement contains additional filing and storage space, besides heating plant, lavatories, etc.

Builders are interested in banks in two ways. First as a means of securing the work of erecting their buildings. Secondly and most important is to use the advantages the bank affords in the promotion of one's business.

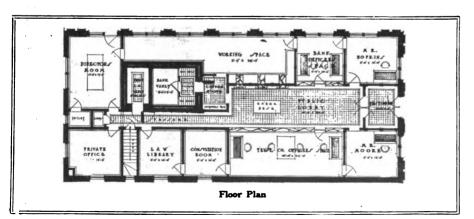
The basis of progressive financing in the conduct of a contracting business is twofold—tangible security and personal credit. From the standpoint of the contractor, whether engaged in contract operations for others or in speculative building for his own account, the element of personal or business credit must be deemed the first and foremost consideration and, therefore, it becomes necessary to consider certain fundamental principles of general business upon which credit is established and maintained.

Credit is extended by banks only as the result of an establishing of confidence. A bank which stands financially back of a building contractor must know the individual or corporation it is backing so thoroughly that it can satisfactorily determine

the safe limitations of credit to be extended and must be satisfied that such credit as is extended will be utilized legitimately in accordance with the character of the business and the representations that have been made by the borrower.

In other words, the contracting business which is to enjoy this sort of financial support must keep in very close touch with its banking connection and must keep its banker acquainted with all of the essential facts which bear upon the credits granted.

Offhand, such close relationship between any business man and his banker seems a comparatively simple matter unless the would-be borrower finds his affairs in such shape that he is unable to divulge the truth without impairing his credit standing. The experience of bankers, however, demonstrates that the large and sometimes almost insuperable obstacle to the es-



Peoples State Bank Guthrie Center Iowa

The LYTLE COMPANY
Sioux City, Iowa
Architects

JANUARY 1923

tablishing of satisfactory relations between the banker and any class of business men is ordinary carelessness —the variety of carelessness which leads business men to do unbusinesslike things and to neglect details of business which are seemingly inconsequential, but which assume large





View of Interior Towards Entrance.

proportions in the eyes of the financial backer.

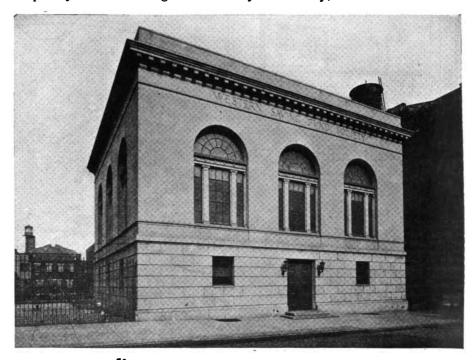
It is a splendid fling for any business man to be able to carry in his head the exact condition of his business affairs, but facts carried in one's head are seldom usable in financial negotiations. It is imperative, therefore, that exact and accurate records covering every financial phase of the business be kept. This does not mean that an intricate bookkeeping system is essential. It does mean, however, that there shall be available at all times a complete written record of accounts and hills receivable and payable, of contracts and other obligations, in fact of every financial detail of the business. Such business records, in whatever form they may

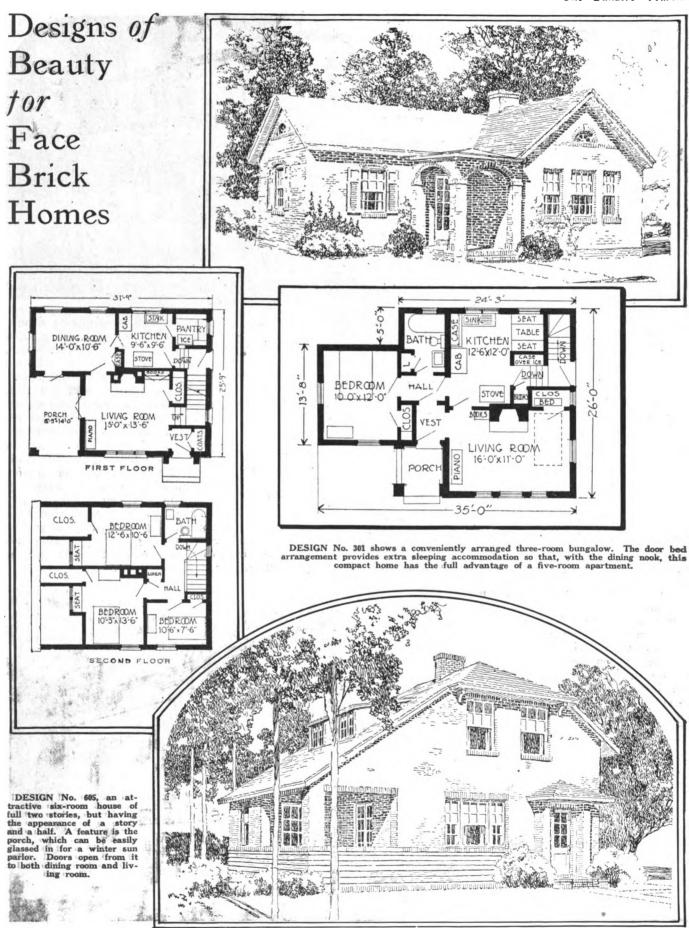
> Mutual Savings Fund Society Philadelphia

WILLING, LEWIS and TALBUTT, Architects Philadelphia be kept, must be sufficiently clear so as to convey not only to the owner of the business, but to those of whom he seeks financial help, the actual and essential facts which determine the solvency of the business and its prospective earning power.

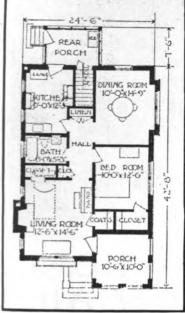
In the majority of cases successful contractors have found it advisable to keep away from the entanglements in-

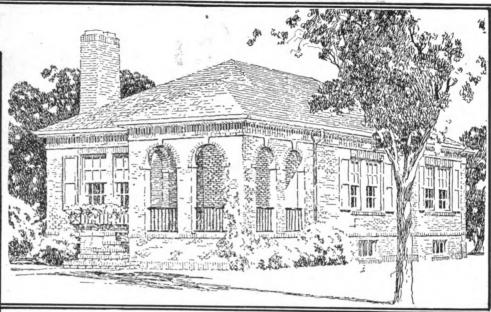
volved in helping clients to finance their building schemes. Too often the contractor who intervenes and permits himself to become obligated in connection with a building operation carried on for account of a client finds himself ultimately involved beyond the possibility of profitable escape. But the enterprising contractor always manages to keep posted on sources of financial aid that are available to clients and thus is able to offer practical suggestions and advice in connection with their problems. For . example, where engaged chiefly in homebuilding operations, it is well to keep posted as to the building and loan associations that are operating in your vicinity, etc.





DESIGN No. 406, a bungalow with an exterior design that will attract attention by its beauty.

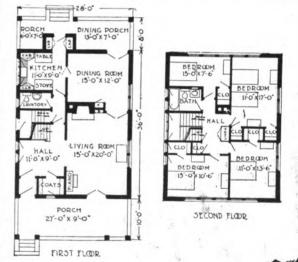




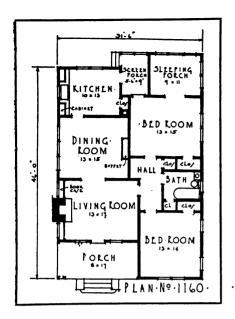
DESIGN No. 712, seven goodsized rooms conveniently arranged in this well proportioned bungalow of face brick.

RACE brick lends itself very readily in producing good-looking homes. It is obtainable in different textures and colors, and many harmonious effects are easily produced by a variation of the bonds relieved by some inserts of stone or tile and by having the mortar colored to harmonize with the brick.

The designs shown on these two pages were prepared for the American Face Brick Association, and by special arrangement, complete working plans and specifications of any of these designs can be furnished at a nominal price by Building Age and the Builders' Journal.







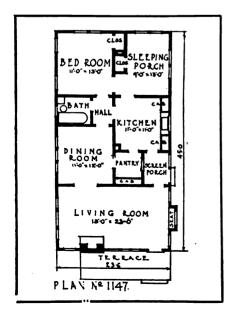


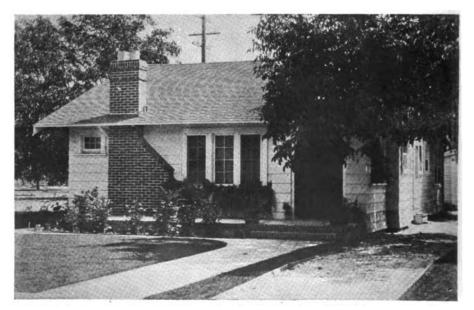


Four Charmi

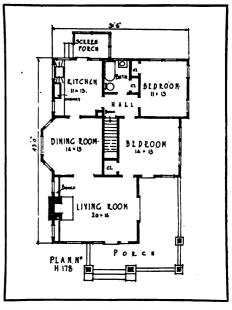
HINGLES and clapboard exteriors for bungalows have a charm of their own. They lend themselves so readily to many attractive treatments, both as regards to design and color, that they seem to fit right into the land-scape.

Four very attractive designs are given on these two pages. They were prepared for the Southern Pine Association and by special arrangement, copies of complete plans and specifications in blue print form can be obtained at a







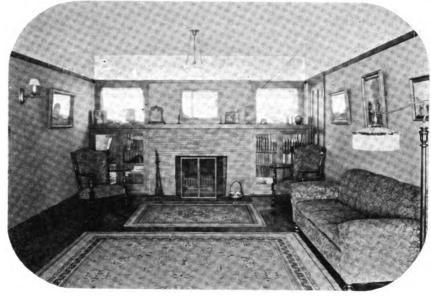


ingalow Homes instruction

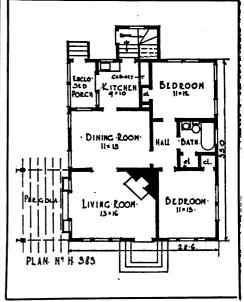
nominal price from Building Age and The Builders' Journal.

The two interior views show a living room and a dining room and indicate what comforts a bungalow home may have. Bungalows have many advantages that make them very popular in almost every locality.

Frame houses can be made very comfortable and cozy. Proper attention should be paid to the framing. It is possible to obtain a well built frame house for a modest sum of money.



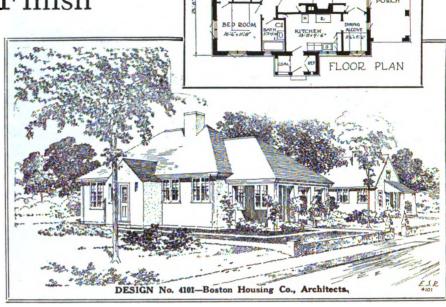


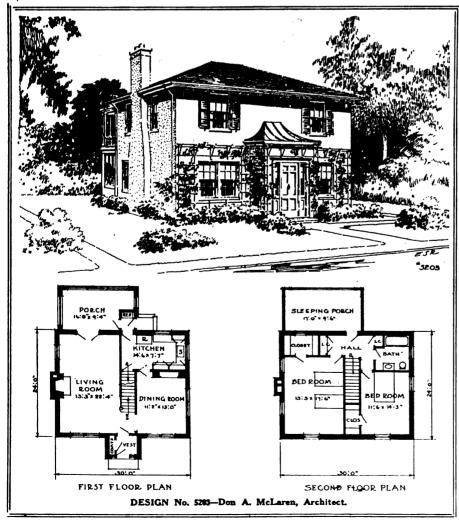


Four Artistic Houses of Stucco Finish

TUCCO finished houses are deservedly very popular and the builder should know how to get the various effects so that he can please his clients by having their house with just the exact artistic finish desired.

As is well known, stucco may be applied on different surfaces as a base. For the frame house, the studs are covered with sheathing in the regular way, then a water-proof paper covering is applied and over this a suitable metal lath. Some with strips attached, other kinds will need strips of furring to hold the metal lath the required distance away from sheathing and papered surface.



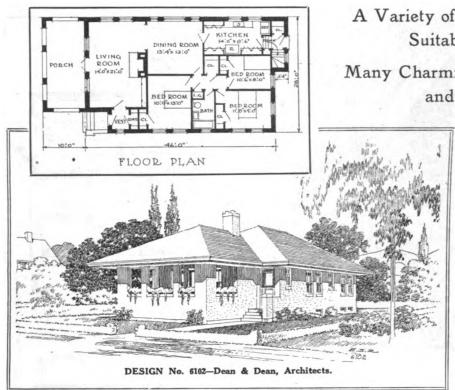


Wood lath may also be used and a very popular form is of special shaped wood lath embedded in a coat of mastic on a heavy waterproof sheathing paper and, in this form, it serves both as sheathing and as a base for stucco or plastering.

H AVE on hand samples of wood lath, and the different forms of metal lath so that you can show and explain to your client the advantages of each and let him make his own selection. Metal lath comes in different forms and manufacturers will be glad to send samples.

The builder who wishes to turn out a good stucco job should thoroughly understand every detail of its mixing and application. It is not a simple matter to describe exactly to your client how the different finishes and colors will appear, and therefore we would advise that you have on hand in your office, small finished samples showing the different finishes and colors.

Samples about six inches square will be large enough to give a good idea of how the finish will appear. You will not only please your clients by being able to show them this and saying you will be glad



A Variety of Different Materials Form Suitable Bases for Stucco

Many Charming Effects in Both Texture and Color Obtainable

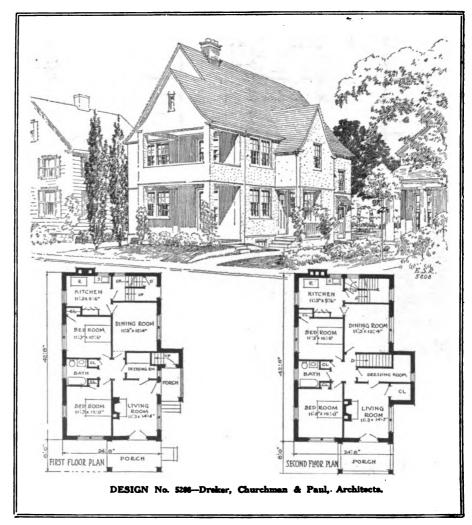
The subject of stucco finishes is a very large one, but it is deserving of a good deal of study and practice. It offers many opportunities to the contractor for doing artistic jobs, and these are the kind that pay the best.

We show on these two pages, four interesting designs of houses with stucco exteriors. These were prepared for The Portland Cement Association and by special arrangement, complete working plans and specifications in blue print form for any of these designs may be obtained at a nominal price from Building Age and The Builder's Journal.

to give them the finish they select, but will make the work so much easier for yourself.

Of late years, many artistic and unusual finishes for stucco have been invented or evolved, and in the majority of cases they are simply done if one goes about it in the right way. Much information regarding the exact method of application can be obtained from the different cement manufacturers or the Portland Cement Asso-When one realized the ciation. full possibilities of stucco on the exterior of a building, it will open the way for some highly lucrative work for a builder who will undertake this work and develop it as a specialty.

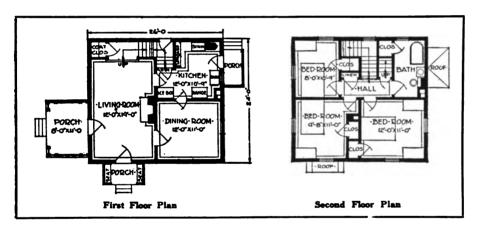
DIFFERENT methods are used in the application of stucco. In some cases different materials such as stone chips, crystals, marble dust, cinders, cork, etc., are embodied in the finished stucco coat and then these are exposed by brushing, acid washing, etc. In other cases, the stucco coat is rubbed with burlap, while it is still in a plastic condition, brushed, trowled, thrown on, dashed, scratched, worked with the bare hands, etc., etc. In each case some particular effect is obtained.

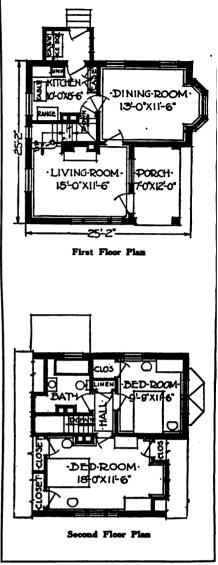






DESIGN No. A511







DESIGN No. A601

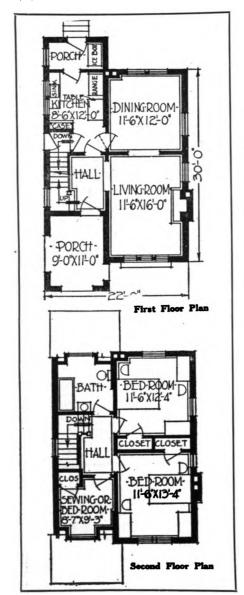
Ideal Low

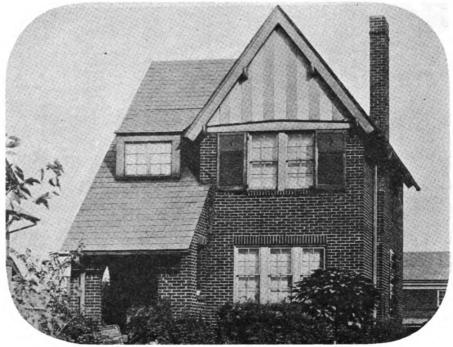
Four Desig

BRICK homes are very attractive, as the four designs on these two pages will emphasize.

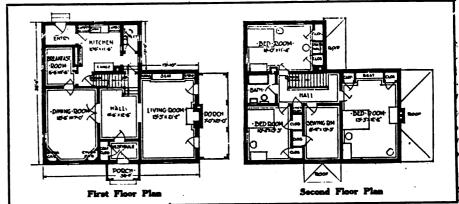
There are several advantages to a brick structure which in many cases will outweigh the small increase in cost. By the use of the method known as Ideal Brick Wall Construction, a hollow wall is built that is thoroughly bonded and which uses less brick than a solid wall of equal strength.

The four designs shown on these two pages were prepared for the Common Brick Manufacturers'





DESIGN No. A631



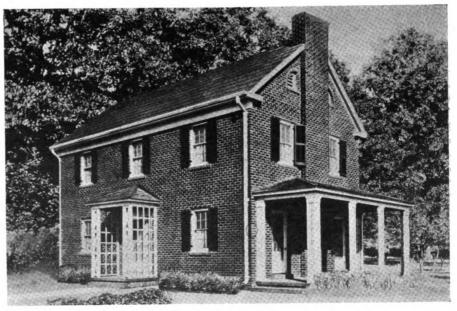
omes of Brick

venient Rooms

Association and by special arrangement complete working plans and specifications in blue print form for any of these designs may be obtained at a nominal price from Building Age and the Builders' Journal.

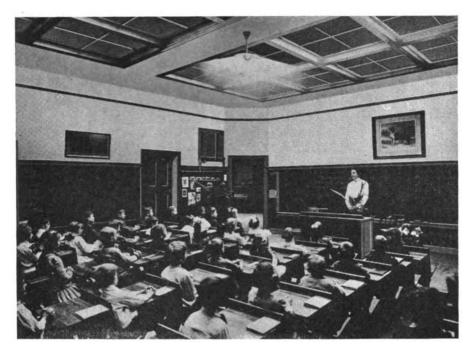
Brick lends itself harmoniously

Brick lends itself harmoniously in carrying out various architectural styles such as the New England Colonial; English, with half timber and stucco effects; Dutch Colonial; Spanish, etc. Proper attention should be paid to the selection of a roof covering that will harmonize with the style of architecture.



DESIGN No. A711





Proper lighting, natural and artificial, is important for the comfort of pupils and teacher.

The ideal class room has slate blackboards nearly all around.

School days, School days,
Dear old golden rule days,
Reading and 'riting and 'rithmetic,
Taught by the tune of a hickory stick.

Planning Our Schools

Vital Points About Convenience and Safety

ITH the exception of construction devoted to housing, it is estimated that a greater amount of money will be spent for schools in 1923 than for any other form of construction. Schools are needed in practically every neighborhood. As our population increases so does our need for schools, It is on the education of our youth that we must depend for future greatness of our country; let us build well.

The planning of our schools deserves very serious thought. There are many necessary things to be looked out for—safety is of paramount importance, convenience and comfort next.

In our smaller towns where there are but few pupils and money limited, frame buildings answer the purpose. They can be made very comfortable and safe by using five resistant methods of construction. In this way the danger of a fire spreading before the pupils have time to get out is minimized. Wide halls and plenty of exits insure safety. The use of metal lath as a plastering base and as baskets between the studs for holding a fire stop of non-combustible material, etc., all add greatly to the safety of the structure. Of course, where a heating plant is installed in the basement, a plastered ceiling on metal lath should be used.

Hollow tile is largely coming into use for the construction of school



For the small two class room school wood construction answers.

buildings and many interesting examples of such structures already exist.
These invariably have their outside surfaces covered with stucco and many ornamental designs result.

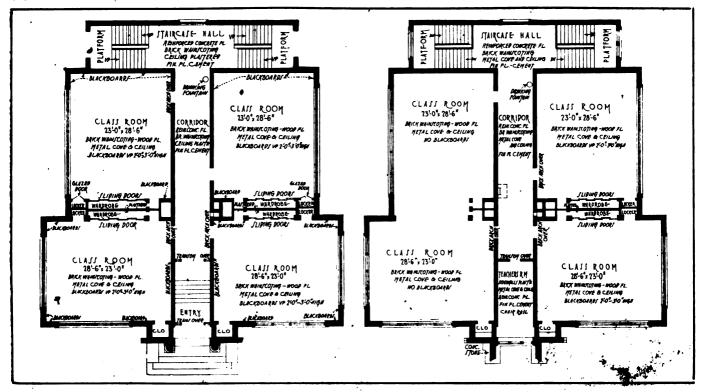
In some cases, solid reinforced concrete construction has been used in the larger schools; this, of course, making an absolutely fireproof building, the exterior surfaces being finished in stucco or a veneer of face brick.

Brick is quite a favorite for school construction. It lends itself readily in carrying out different styles of architecture, and then the color plays so important a part. We have the dark reds which look so well when relieved with limestone or marble trimming, while terra cotta trimming seems to

have one of the most desirable backgrounds to bring out its excellent appearance. For the walls of corridors, stair halls, etc., brick is used without any plastering.

In localities where stone abounds, this forms one of the most desirable of building materials for school walls and many interesting examples have been built of local stone with terra cotta for the ornaments, window frames, etc., while half timbered effects with stucco panels, etc., add just the touch necessary to bring out the greater beauty of the entire design.

One very important feature of school construction is to have fire-proof floors and stairways. Steel shapes for floor joists can now be had



that are light in weight and moderate in cost that form the support of an easily constructed and adequate fireproof floor.

The use of slate for the treads of stairs is largely increasing in use. Besides, this material is also used for wainscoting, divisions of toilet compartments, floors, outside steps, etc.

Many schools are now being equipped with shower baths and swimming pools, and for the divisions

in shower bath stalls, slate seems to be a very favorite material. For swimming pools the best effects are obtained by having it tile lined; special shapes of tile are made for angles, steps, gutters, etc.

Special attention should, of course, be given to the heating and ventilating equipment of schools and it is well for builders to be posted on the different systems so that when they are asked for an opinion, they are

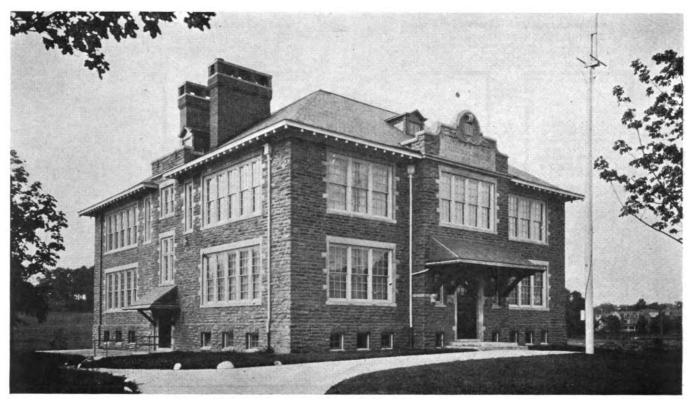
able to give some good first hand information and advice on this very important subject.

Plumbing installations of the school requires considerable thought. Nothing but the best quality should be used as it must stand hard usage, stop valves, etc., should all be of the key variety to prevent tampering with them.

It is well that every school building be wired for electricity even in localities where current is not now obtainable. Switches of various types that cannot be operated except by the use of a key kept by the proper custodian can be had and the builder should be posted on just what sort of electrical equipment may be obtained so that he will know just exactly what to order for each particular case.

SAINT LAWRENCE SCHOOL West Haven, Conn.

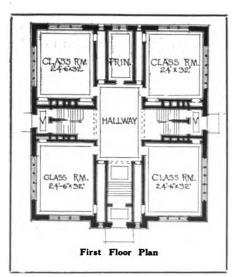
BROWN & VON BEREN
Architects

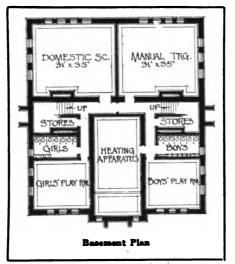


When you are consulted about a new school building, be sure to advise to have sufficient outlets. The use of electricity is spreading constantly and many devices can be used to advantage in schools. Therefore, see that there are enough outlets at different points to accommodate such apparatus, etc., as may be required.

In both of the schools, of which we show the floor plans in this issue, the architects have designed entrances on three sides. This provides for the maximum amount of safety.

In the St. Lawrence School, two separate class rooms on the second





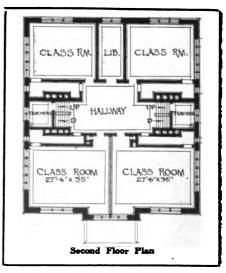
floor are provided with sliding doors so that these two rooms can be thrown together as an auditorium. In

GRAMMAR SCHOOL
BUILDING
at Glenside, Pa.

HEACOCK & HOKANSON
Architects

the grammar school building at Glenside, Pa., the two front class rooms on the upper floor are likewise arranged with sliding doors for the same purpose.

It is very necessary that builders should be acquainted with the different kinds of equipment necessary for these sliding doors so they will know how to advise as well as how to handle such a job. The builder must also install many other appliances that find a special field in school building, such as ash receivers, ash hoists, stand pipe and fire hose, alarm bells, vacuum cleaners, flag poles, etc.



OFFICE and JOB MANAGEMENT

Things the other man has found out that save money



Fitting Up the Office and Shop

HE impression made on a client who calls on you has a considerable bearing on whether you get the contract or not. First impressions will always be remembered, therefore your office should be attractive in a businesslike way. Have it really as good as is possible. One very essential detail is a good size table on which to lay out the plans, etc., and then it is easy to discuss the details.

Of course, desks, files for documents, typewriter, adding machine and check protector, etc., are all necessary adjuncts of a good businesslike office. In addition you should have a good size drawing table with a cabinet to contain the drawing instruments, pencils, pens, ink, etc. Either in the office or store closet adjacent to it you should have suitable racks made for keeping the blue prints and records for each job. The same room or closet should contain space for your supply of drawing paper, tracing cloth, etc.

You should also have on hand samples of different woods, trim, flooring, mouldings, wall board, stucco, brick, etc., so you can actually show your clients the things you are talking about. You can explain your head off about the difference between flat grain and edge grain flooring and not make it clear, but lay down a small sample of each and all is plain.

Do the same with paints, stains and varnishes. Manufacturers are glad to send samples and you can use these to decided advantage.

ONE of the most important things is to have a shop, even it it is a small one, so that your work can be turned out in first class shape in the least possible time. Of course, one of the most essential things is a good work bench, more than one where necessary. Of course, one needs all the necessary hand tools, measuring tools, etc. Now, these all should have space provided for same so that they can be easily found. It is now possible to obtain wire clips which make the erection of a handy tool rack a very easy matter. Bins should be made for nails, screws, bolts, etc.

Be careful that you do not cramp your space too much and allow plenty of room for veneer press, glue heater, grind stone, etc.—besides the different woodworking machinery with which the shop is equipped.

Where electricity is available, of course, the best method is to have electric motors attached to each machine. Where one must depend on independent power a gasoline engine serves the purpose admirably. Of course, where this is used, it is necessary to employ proper shafting, pulleys and belts. A little care in arranging the shop so as to use only one line of shafting is economical. Particular attention should be paid to light, both daylight and artificial. Men work best when they can see what they are doing.

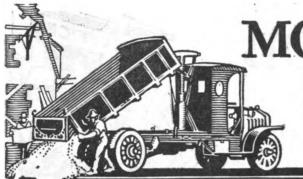
Several hand trucks will be found very useful in moving material around. For the storage of

different pieces of lumber, moulding, etc., proper bins can be readily built, then it is an easy matter to keep an inventory of just exactly what one has on hand.

There is no necessity of having shavings and small pieces of wood left on the floor day after day. It is a good rule to insist that everything be swept broom clean every night. A bin should be kept for short lengths as frequently they come in very handy and save cutting a large piece. A bin of this sort will prove a money saver.

Now, in the shop, of course, proper attention should be given to the workmen employed. See that they have proper lavatories, etc., and also lockers for their clothes. Some steel lockers are now on the market which are sanitary and moderate in cost, but where these are not used it is a simple matter to build some out of lumber, and it is far better than to have a few nails stuck around here and there trimmed with the workmen's clothes.

Now, give a little attention to safety. Have guards about every piece of machinery and at hoistways, etc. Accidents cost money to everyone. If a man is habitually careless, fire him; he is too expensive to keep about. Every shop should be provided with an adequate size first-aid kit, with a direction card or book on first aid treatment. Also mark the telephone numbers of several doctors so a call can be made in an emergency. It is well to have several fire extinguishers at convenient points.



MOTOR TRUCKS

Efficient Methods in their Use and Upkeep

Truck Operation in Winter

By P. L. SNIFFIN

HERE are a good many conditions which tend to produce excessive wear and premature depreciation of motor car equipment in the service of the building contractor.

Such items as overloading and strenuous service involving long trips and poor roads, especially during rush periods, will cause premature wear of the vehicles. Neglect of the essential items of regular inspection and care, including proper driving and lubrication, will seriously affect the normal life of every truck so treated. Yet motor truck manufacturers have always looked upon one particular phase of truck operation as being largely responsible for much unsatisfactory experience on the part of those users who do not take steps to prevent it. This phase is the operation of the trucks during the winter months in climates where the vehicles are forced to contend with extreme cold and with snow and icy pavements. It has often been said, and very aptly, that one single week of regular truck operation under adverse winter conditions without proper precautions is the equivalent of a year or more of service as far as the life of the vehicle is concerned.

Unquestionably, then, it is appropriate at this time to discuss the features of winter truck operation which the builder must take into consideration during this season of the year. Careful attention as to the details given here will not only assure dependable operation of the trucks, but will do much to

avoid expensive breakdowns on the road. This, of course, is in addition to the fact that proper care in this respect will substantially prolong the serviceable life of the equipment.

Driving the Truck

Along with the slippery pavements of winter comes the need for the builder to instruct his truck drivers as to the methods of getting the traction required to keep the truck moving. Here are some valuable points in this connection:

T is very difficult to prevent spin-I ning without traction devices. Often by throwing a little sand, straw, excelsior or an old sack under the wheels it will assist in getting started. Do not spin the wheels to get traction, as this reduces the grip of the tires on the roadbed. Do not speed the truck in either gear nor apply the power suddenly. This strains the engine and transmission, and burns and wears the rubber in tires. Better results are obtained when on slippery pavements or ice if the truck is started slowly.

The minimum use of skid chains when not needed for traction means the maximum service and wear in the tires. The average driver dislikes to get out in the mud or snow and put his chains on the wheels. This may be due to the difficulty in installing non-skid chains. For this reason chains should be used that can be applied and taken off quickly, and should only be used when necessary to obtain traction. Chains should not be left off until the truck is buried to the hubs, but should be installed

for the purpose of carrying it through these places, and it is hardly necessary to use them except when the truck is obliged to use low speeds in pulling. Never use chains on hard roadbeds unless necessary to obtain traction. Chains are so constructed as to grip the ground and are necessary only where they imbed themselves in the roadbed. On hard surfaces where they do not imbed themselves in the roadbed this pressure is taken up by the tire and eventually cuts into the rubber, and in a short time will ruin the tires. It is much better to take the chains off when not in use, thus saving the wear on the tires, and to reduce the vibration of the me-chanical parts of the truck. Time in taking them off can be quickly made up in actual running without chains.

THE momentum of the truck will often carry it through a short bad stretch. Before starting through such roads the shifting lever should be put in low gear. To step in a mud hole to change gears means only to stay there indefinitely. There is only one surety of pulling through bad stretches of road. Install chains beforehand and avoid getting stuck and laboring under hard circumstances to get out. This preparedness saves a great amount of lost time and hard work and it only requires a few minutes to install proper traction devices while it may require a matter of hours to get out if they are not put

Poor traction in snow banks and drifts is caused by the resistance

against the front wheels. It is necessary for the front wheels to form the opening track, and instead of climbing the drifts and cutting the path, the wheels push the snow ahead.

Most trouble from accidents in winter comes from driving fast down hill. A truck is almost unmanageable when brakes are suddenly applied going down a slippery grade. Even though your truck may have non-skid chains, it is necessary to look out for the other fellow as well.

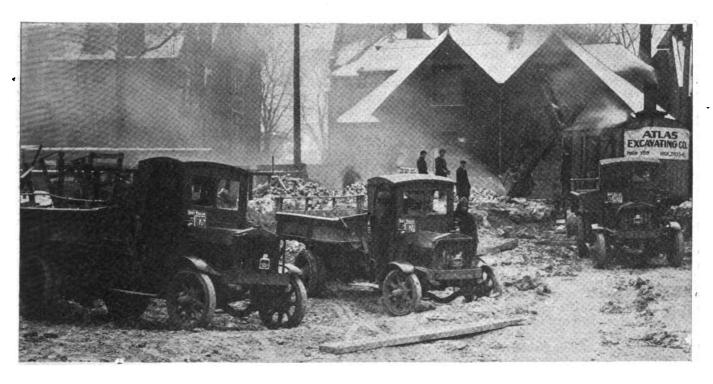
The driver who brings his truck to a sudden stop and then leaves it standing for some time will infashioned alcohol and glycerine mixture which is carried in a small bottle and rubbed on glass as needed is best. If the bottle containing the solution is wrapped in a cloth and stowed in the side pocket it will always be ready for use and a cloth to apply it with will be at hand.

There is one particular precaution that the contractor should take in operating a truck over slippery pavements, and that is to avoid overloading, or, if this is impossible, to see that the trucks are driven accordingly. When this is done, it not only adds to the rolling motion of the truck downhill but it reduces the effectiveness of the

the drivers. It is an almost irresistible temptation—and a most natural one—for the truck driver who is forced to drive with an open cab in bitter cold weather, to stop off now and then on the road to get "warmed up." The wise truck owner will look after the comfort of his drivers and remove this temptation.

Easy Starting

The secret of easy starting in winter is that all spark plugs points should be set to the same gap,—that is, about .025 of an inch. This is necessary in order to ignite present fuels at low temperatures. Before attempting to turn



variably find that it is hard to get traction in starting. This is because ice has formed under the wheels and it can be avoided by releasing the brakes just before coming to a stop and allowing the truck to coast the last few inches.

In a snowy period, and when pavements are slippery, always carry a shovel, pick, box of sand and chains.

To secure a clear view ahead through the glass of the windshield in rainy weather is vitally important to the safety of the motor truck and its occupants. Many schemes are used to keep the glass clear in wet weather, but perhaps the old-

brakes in stopping the truck at any time. Therefore, the driver should take into consideration the effect of an overload and exercise commensurate judgment in this respect.

The building contractor whose trucks are in more or less regular service during winter would do well to consider the advisability of providing closed cabs on the vehicles in conjunction with an arrangement for heating the cab from the exhaust of the motor. In very cold climates this is a real necessity and the extra cost involved will be made up for by increased efficiency on the part of

a balky engine over it is a good idea to remove one of the spark plugs, heat and replace while hot. The engine will then start easily and without trouble.

Where the truck is equipped with an electric starter, the starter apparatus is forced to operate under very adverse conditions, caused by a stiff engine due to chilled oil and the longer storage time required to start with cold carburetor, cold manifold, and incompletely vaporized gasoline. It is well to examine and clean the starting motor brushes and to polish the commutator with No. .00 sand paper.

(To be continued next month)



CARPENTRY

Good Practice in Frame Construction and Finish

Easement for Stair Rail

By CHARLES A. KING

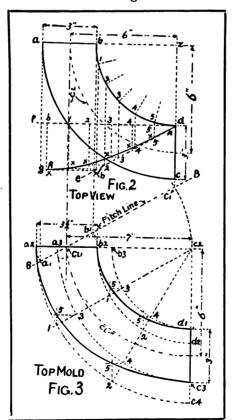
HE making of an easement is a puzzling proposition to one who has never worked one out, for often the articles discussing the project are either so abstract or require so much study to master, that the average workman has not time to study them when the need of an easement is imperative. The method described here has been tried many times, and because of its simplicity may be mastered at the first attempt.

The only sketches necessary in working out the problem are the section of the stair rail to be fitted with the eastment, Fig. 1, the top view of the easement, Fig. 2, the development of the top mold, Fig. 3, and the inside corner of the square from which the eastment is to be worked, shown at Fig. 1 A A; the other drawings simply illustrate the method of doing the work and will not be required in drafting the easement.

The same method may be applied in working out an easement of any design of stair rail, of any arc of a circle or other curve and of any pitch for any plan or top view may be drawn instead of Fig. 2, and the inner pitch of any circling stair may be drawn instead of the pitch line of Fig. 3. A double quarter turn to take the place of a landing post and of a starting post of the flight above may be made by adapting the same method to the work in hand.

In this case we will work out a quarter turn easement for a flight of stairs in which the treads are 12" wide and the riser is 7" high with the center line of the rail 6' from the inside face of the newer post against which the lower end of the easement is to be fitted. The principles applied here in working out this simple, every-day, practical problem can be applied, with equal accuracy, to obtain the cuts for more complicated easements.

First draw the top view, Fig. 2, a, b, c, d, with z as center; the basis of the drawing is the rectan-



gle which will contain the rail as shown in Fig. 1. Next draw the pitch line, B, B, and drop the projection lines from a, b, and CL, (center line) to intersect it at a1, b1, and CL1, and from the corner c to the pitch line at c1; through point CL¹ draw face line of the post, a², c². With CL¹ as center draw crcs a¹ to a², b¹ to b², and c¹ to c². Transfer the distances zd and zc of Fig. 2 to c², d¹ and c², c³ of Fig. 3, and draw dotted arcs d¹, b³ and c³, a⁸. with c² as center in each case. With the same center draw arcs as c4, and b2 d2. Trisect all four arcs by lines c², 1, and c², 2, with vertical lines from points 1 and 2, and horizontal lines from points 3 and 4, locate points 5, through which draw curves a², 3³, and b², d¹; draw lines a², b², and c³, d¹; cut the paper closely to these lines and we have the top mold of the easement.

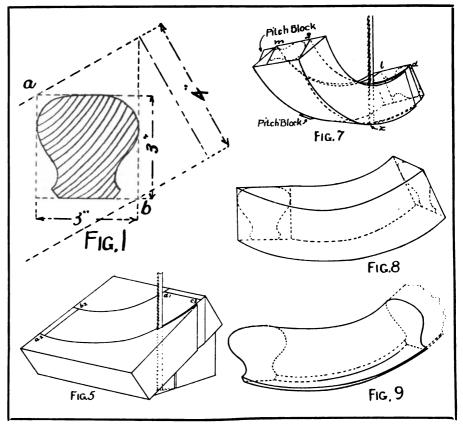
We will lay this aside for the present and construct the inside top corner A A. Draw a dotted pitch line from d to e of Fig. 2, and the horizontal or floor line, d f; divide the curve d b into equal parts, say six as indicated, number them 1, 2, 3, etc.; from each point, including point b, drop perpendiculars to pitch line d e, and mark them to correspond; upon the floor line d f lay off spaces equal to b, 1, 2, 3, 4, 5, on curve b d, and mark with the same witnesses. Draw horizontal lines from the points b, 1, 2, 3, 4, 5 on the pitch line d e, and drop vertical lines from the corresponding points on the floor line d'f; through the intersection of these lines at x, draw the curve

d g which is the curve of the top of the inside corner of the easement, and will be used later.

To find the thickness of the piece of plank from which the easement is to be made, draw pitch lines touching the corners of the restangle at a, b, as shown in Fig. 1. The distance between them is the least thickness of the plank. The piece to make this ease off should be 8" \times 12", and 4" thick; the grain should run diagonally as indicated in Fig. 4. The plank is shown by the dotted lines, the angles of which are witnessed by a, b, c, d, e, f, g; note that the top mold, a2, b², c³, d¹ of Fig. 3, is laid upon the surface and its shape marked as shown; also note that a space is left at A to allow for the fitting of the easement to the post, and at B to permit of the fitting of its upper end to the rail.

Prepare and glue in place with a rub joint the triangular pitch blocks C, which must be the same pitch as the stairs directly under the center line of the easement; these hold the plank at the correct pitch while the band-saw is doing its work. At this stage the plank will appear as in Fig. 5, without the saw cut.

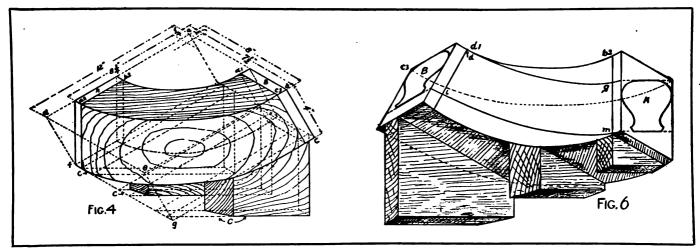
After the glue has hardened the plank should be taken to the bandsaw and the cuts made carefully beside the lines of the top mold, as indicated, when the easement will appear about as shown by the full lines and the grained surfaces of Fig. 4, which shows the outside view of the easement square, or it may be better understood by studying Fig. 6, in which the inside view of the easement square is shown,



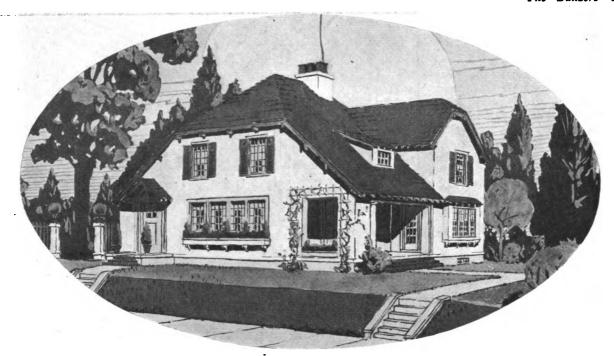
with the pitch blocks cut off by the band-saw.

Mark the design of the rail upon each end of the easement square as shown at A and B of Fig. 6, including the dotted rectangle; cut the inside corner line of Fig. 2, cutting exactly to length at d and g. Place g and d at points as indicated in Fig. 6, and draw line d g upon the inside surface of the easement as shown; measure the height of the rail, in this case 3" from the line d g downward at several places and draw line 1 m; if the work has been done accurately, g should be 3" from the bottom corner at m.

Lay the outside curve upon the band-saw table, as shown in Fig. 7, and saw closely outside of the line d g, keeping the saw cutting at right angles with the inside face. the outside face resting firmly upon the table at the point z where the band-saw is cutting through the plank. Then saw line 1 m the same way, and if the work has been done accurately the easement square will appear like Fig. 8. With spoke shave and gouges finish the easement as in Fig. 9, after which the upper end may be fitted to the rail and fastened with rail screw. but the post end or lower end had better be fitted on the job.



69



The Value of Complete and Correct Plans

Do the Thinking Before Construction and Save Cutting and Trying

When planning a building, it will mean a large saving in money that is wasted on cutting and trying if a little more attention is paid in the first place in having the plans as correct as possible. A plan cannot be rushed out and have it good. It takes time to figure things out, but it is far easier to do it on a drawing board than to do it on the job.

Unfortunately, too often the practice is to rush out a plan so as to have something to show the prospective owner and then when the building starts, the troubles begin. A girder will be found to run across the space for headroom in the cellar stairs. Some other parts of the overhang around the stairway on the second floor will be found to be suspended in the air, or not enough room has been left for headroom on stairways, in other cases awkward arrangements are necessary to get around some structural part, etc., etc.

These things can just as well be thought of at the beginning and they will be, provided enough time is left for a fellow to think. It is a wise plan when a plan is finished to leave it rest for a day or two, then go all over it and try to improve it. Of

KITCHEN PANTRY.

B'6'XU'6'

RANGE P

LIVING DOOM* PORCH

CONT VESTING

CONT VESTING

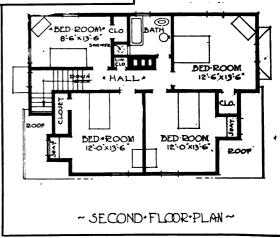
FLOWER BOX

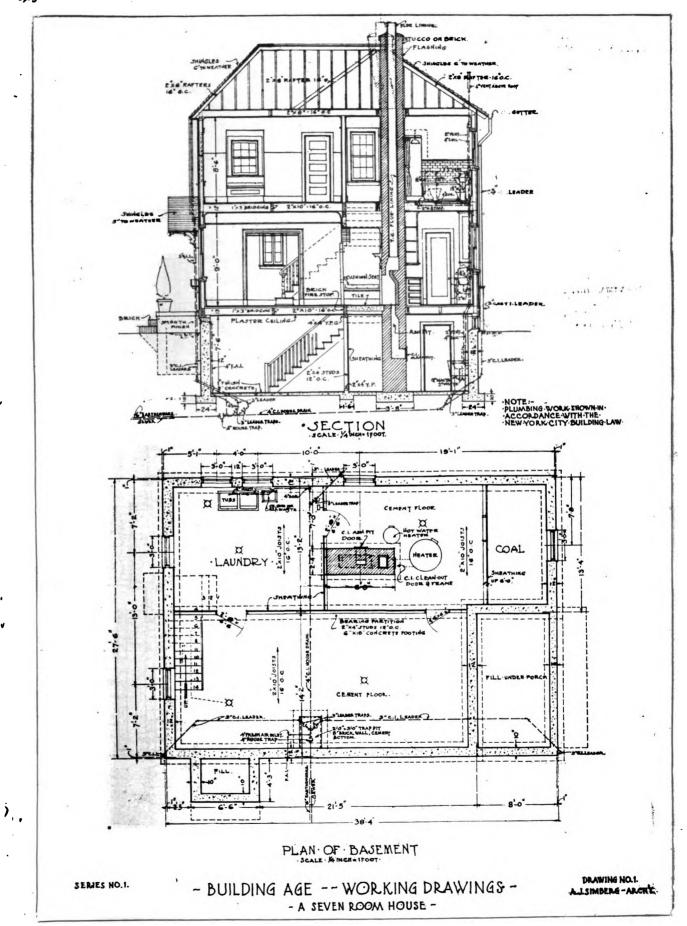
FIRST'FLOOR*PLAN~

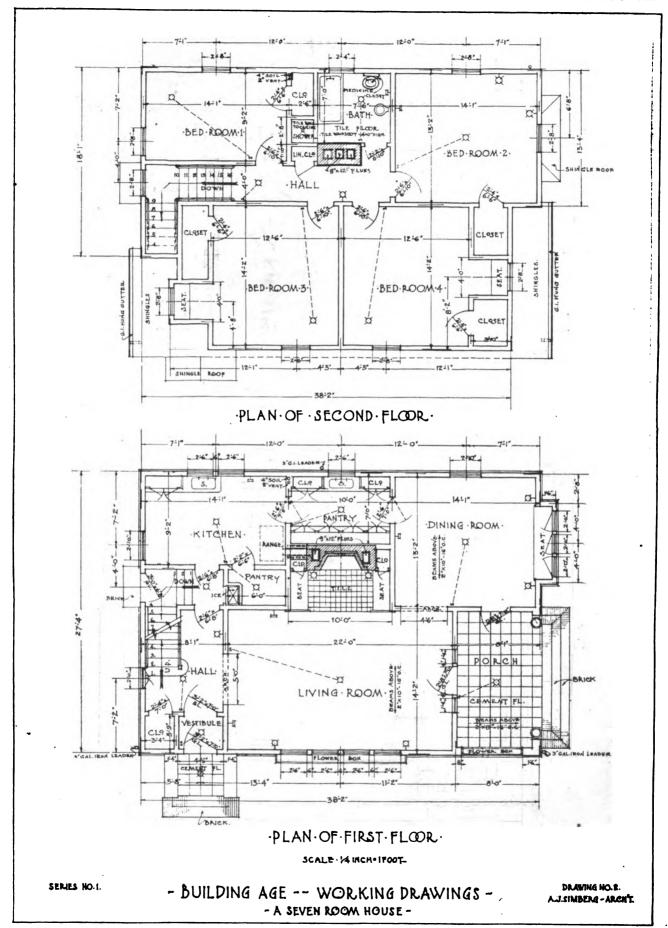
course, a perfect plan, like a perfect house, is hardly attainable by human beings who have to hustle for a living in these days of high prices.

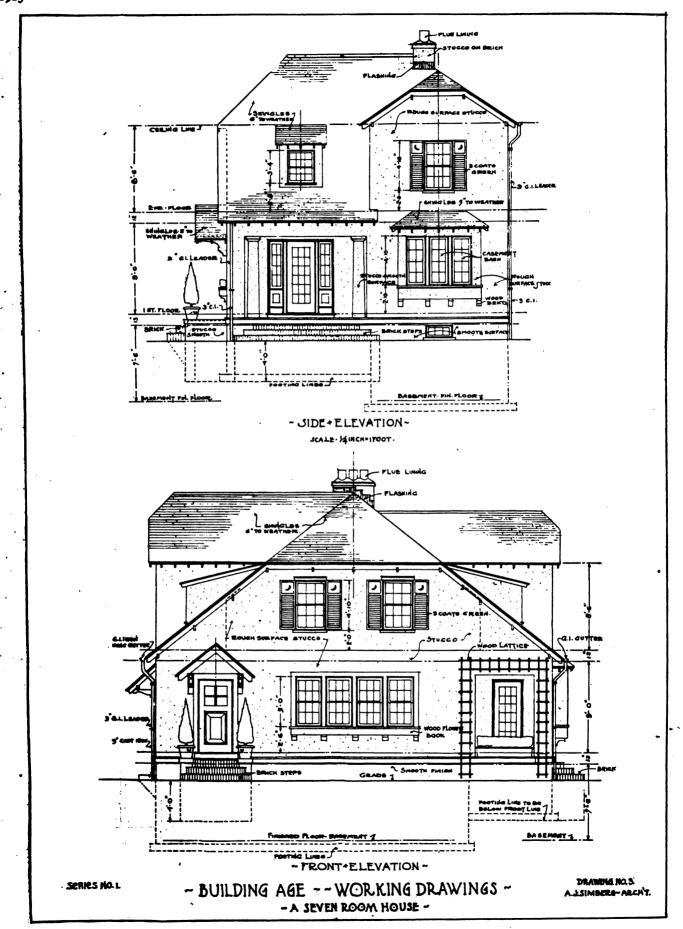
To prepare a good practical plan takes time and real thought and is well worth paying for, whether produced by an architect or by the builder himself. As an aid to builders of what a good plan should consist

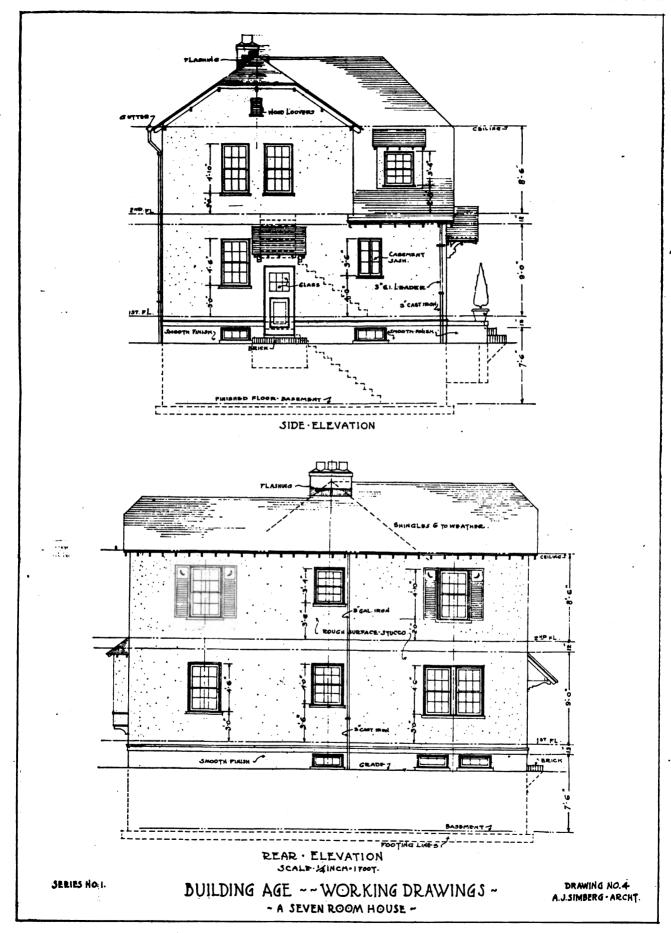
of, we publish on the next six pages a complete set of working drawings. A small picture and block plan of this house was published in our October, 1921, issue, and since then many houses have been built after these plans. These were specially drawn for us by A.J. Simberg, Architect, and regular working size blue prints and specifications may be had at a nominal price.

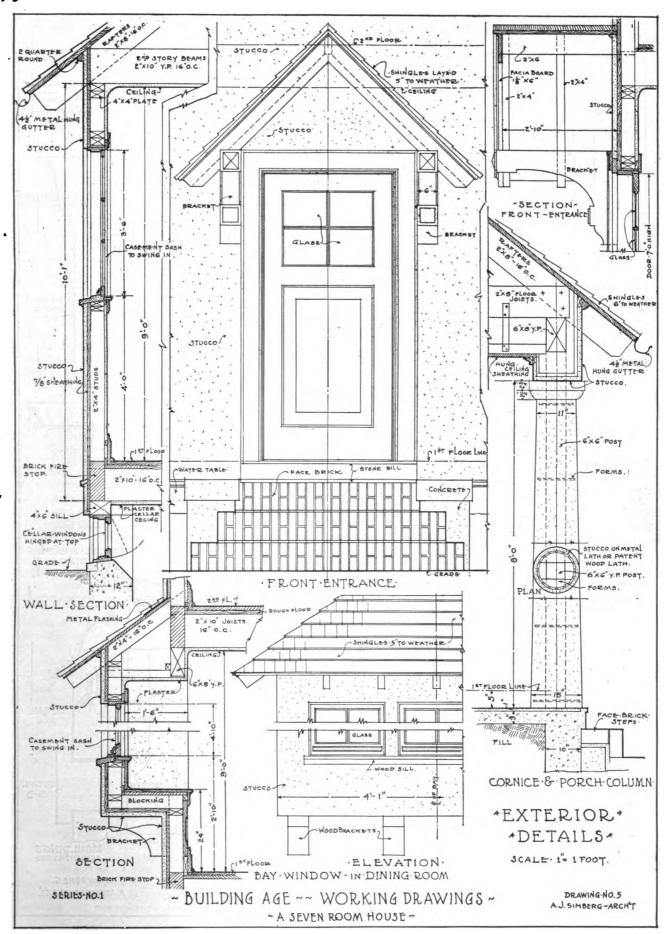


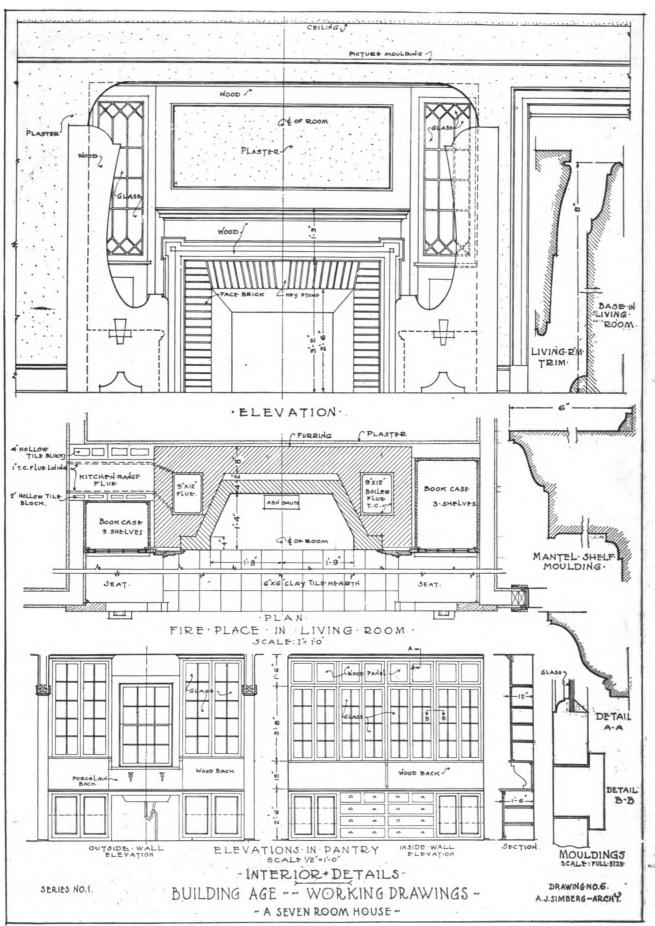












USEFUL CATALOGS



NE of the handiest sources of information that a building contractor can have on hand is a file of catalogs. Manufacturers are perfectly willing to send these out to interested parties and the great advantage to a building contractor in having a catalog on hand is that he is able to show and explain to his client just what can be obtained.

In other words, he is able to please his client by giving him just exactly what he wants. Were it not for the catalogs, he would not even know that such a thing were made, but to have catalogs is one thing and to find where they are is another, therefore, catalogs should be kept in rather a systematic manner.

The writer has found a very practical way of keeping catalogs by giving each one a number as they are received, numbering them consecutively and keeping them in a file or box in that order, then on 3 x 5 index cards write the name of the manufacturers on one card and

Concrete Mixing for the Small Job is usually done by hand labor, but much better results can be obtained by machine mixing. A rather interesting folder has just been issued by the Little Whirlwind Mixer Company, La Crosse, Wis., illustrating their concrete mixer. It can be operated either by hand or power. This mixer can be moved directly to the spot where the concrete is to be used, and in this way it does away with the use of a wheel barrow, etc.

Novel Bath Tub comprising a combination seat, foot, shower and child's bath, all in one, is described in the illustrated folder issued by the Wheeling Sanitary Mfg. Co., Wheeling, W. Va. By its use all these advantages may be held in a small size space. It will be of special interest to builders of apartments and small sized bungalows, etc., or in fact, wherever space saving is necessary and convenience desired.

Keeping a Catalog File

Valuable Information Arranged for Ready Reference

Jaezer Machine bo	
14- 33- 54	
Conorda Mixers	目
Mothring les - 8-15 Little Thirlumd Miner les - 21	
Jalger Machine Got 14 - 33 - 54 Uttandard Joele + Jahhla le 27	\exists
amening bement Hachine les 39	P
Is H & G. Ing. br. 85 I deal borotte Machiner les 97 —ner —]
-na-	J

Using 3 x 5 inch Cards for Index of Catalogs

Expanded Metal Construction is the title of an interesting booklet issued by the Northwestern Expanded Metal Company, 47 West Van Buren St., Chicago, Ill. It gives some excellent points regarding the use of metal lath, sizes, weights, etc. There are also hints regarding stucco work.

Using Gypsum Plaster is concisely described in a useful 32 page booklet just issued by the United States Gypsum Company, Department H, 205 West Monroe Street, Chicago, Ill. The book tells how to get the best results from Gypsum plaster. It also provides a quick means of finding the cause of any plaster trouble and what remedy should be applied. A most useful chart appears in this interesting booklet and every one having to do with plaster—and that's practically every builder—would do well to have a copy of this useful book and to study its interesting contents.

the subject matter of the catalog on another, these are kept alphabetically one by name of the manufacturer and the second list by the different articles.

On the card of the manufacturers put the number of his catalog. Then, if in the future they should issue another catalog or circular, that also would have a new number, but this number would be entered on the original card. On the other card besides the article and the name of manufacturer place the number of the catalog as that will save referring to the alphabetical list of manufacturers for the number.

The illustrations of two cards will show how the system is worked. It is simple and something on this order should be used by every contractor. It is so easily handled—things can be found readily and the information is valuable, especially so when it is wanted badly as is so often the case.

Mixing Concrete on the job is very easy when one has a good cement mixer. The American Cement Machine Co., Inc., Keokuk, Iowa, have issued an attractive 28 page catalog describing their Boss building mixer. They have a small one bag mixer for small jobs as well as large mixers for good sized engineering projects.

Decorative Lighting is coming more and more into use and it is up to the builder to suggest proper ways of accomplishing these effects,—not only in providing proper outlets, but also in providing the proper fixtures. The appearance of many rooms is spoiled on account of not having the proper lighting fixture. A very interesting catalogue of lighting fixtures is issued by the Edward N. Riddle Company, of Toledo, Ohio. It contains illustrations of many different patterns made by this firm and all are handsomely illustrated in

Plastering is Made Easy by the proper selection of the finishing plaster. Some interesting booklets are issued by the Kelly Island Lime and Transport Company, Cleveland, Ohio, describing their Tiger White Rock lime finish. It contains some very interesting data, specifications.

Screening and Weatherstripping of Houses is work that should be performed by every builder. The best time to secure an order to do this is when the house is being built. Call the attention of your client to the comfort this would be to them. A help to your securing this profitable kind of work is the artistic catalog of the Higgin Mfg. Co., Newport, Ky.

Asbestos Roofs find great favor with many people. Some very interesting literature on this subject may be obtained from the Johns-Manville Company, Madison Avenue and 41st Street, New York. They have a very interesting illustrated booklet called "Reroofing for the Last Time."

Electrical Equipment of the proper sort is necessary in practically every building and it is up to the building contractor to see that a wise selection is made. The new catalog of Harvey Hubbell, Inc., Bridgeport, Conn., contains illustrations and descriptions of different wiring devices, sockets, etc., that it will be well for the building contractor to be acquainted with.

The Use of Slate in building construction is rapidly increasing. There are so many places in which it may be used to a decided advantage over other materials. Just where slate may be applied is interestingly described in the circulars issued by the National Slate Association, Drexel Building, Philadelphia, Pa.

Scraping Floors needs to be done on practically every job and hand scraping is too expensive a process. An interesting folder describing a floor scraper has just been issued by E. C. Stearns & Co., 400 Oneida Street, Syracuse, N. Y.

Plumbing Installations in public buildings require urinals, and any builder erecting this type of building will be interested in the descriptive literature regarding a new duplex stall that saves installation cost. It is made by the Wheeling Sanitary Manufacturing Company, Wheeling, W. Va.

Large Doors such as are used as fire doors in factories, theatres, etc., also garage and barn doors, need a special type of hanger to make operation easy. An illustrated catalogue describing such appliances has just been issued by the Allith-Prouty Company, Danville, Ill.

Narrow Partition Switches for electric wiring are quite desirable in these days, when space saving is so necessary. An interesting circular by The Connecticut Electric Manufacturing Company, Bridgeport, Conn., describes their shallow switch, the box of which is only 1½ in. deep.

Metal Work for Builders is interestingly described in the new catalog of the Danzer Metal Works, 122 Lee Street, Hagerstown, Md. It describes the different products of this firm such as plain and pressed galvanized iron sheets, copper, metal lath, metal shingles, leaders, gutters, metal ceilings, also their special storm proof ventilators, cornices, etc.

Artistic Asbestos Roofs are interestingly described in a circular of the Mohawk Asbestos Slate Company, 101 Park Avenue, New York.

Rigid Metal Lath is now being made so that wider spacing of supports is possible. Interesting literature regarding this may be obtained from the Consolidated Expanded Metal Company, Braddock, Pa.

Rapid Brick Laying is made easy by the use of the right kind of mortar. A most interesting book on the subject of a good cement to be used may be had from the Carney Co., Mankato, Minn.

O N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Door Hardware plays a very important part in the decorative treatment of a room. The proper selection of a design that will harmonize is of vital importance in every well built home. The builder can secure some very helpful hints regarding the selection of the right style of ornamental hardware to use from the interesting booklet issued by Sargent & Co., 53 Water Street, New Haven, Conn. By carefully considering the subject, one will not be apt to use the Colonial design hardware on a mission door, etc.

Many Artistic Roofs can be had by the use of ruberoid roofing. This material can be used either in the roll form or cut into shingles and may also be used as flashing. A sample with a descriptive catalog will be sent to any of our readers who are interesting in obtaining a good roof at a minimum price. This is made by the Ruberoid Company, 95 Madison Ave., New York,

Zinc Shingles have certain advantages that make them a favorite with quite a number of builders. Rather interesting is the folder describing the M. & H. Zinc shingles manufactured by the Matthiessen & Hegler Zinc Company of La Salle, Ill.

Weatherstripping is required on practically all buildings and the contractor is the logical man to secure the order for this extra work. Some interesting literature on this subject describing the Ceco Metal Weatherstrips may be obtained from the Concrete Engineering Company, Department A, 140 South Dearborn Street, Chicago, Ill.

Steel Work for Buildings, such as trusses for garages and factories, steel sash, skylights, etc., is interestingly described in the booklet issued by the International Steel & Iron Co., Dept. 19, Evansville, Ind.

Good Hatchets are necessary hand tools in the building line and are of considerable importance. How to select a good one is described in the circular of L. & I. J. White Company, 100 Columbia Street, Buffalo, N. Y.

Taking Care of Ashes in a cleanly way is possible when the Sharp Rotary Ash Receiver is installed. A most interesting catalogue describing this handy appliance may be obtained from the Sharp Rotary Ash Receiver Company, 219 Bridge Street, Springfield, Mass.

Steel Partitions for toilets, showers, dressing rooms, etc., are easily installed by builders and at a considerable saving in cost. Working drawings and specifications describing these partitions can be obtained from the Hart & Hutchinson Company, New Britain, Conn.

For the Shop of the building contractor a most useful woodworking machine is described in the catalogue of the Woodworker Manufacturing Company, 614 Brush Street, Detroit, Mich. This useful machine comprises rip and cross cut saws, dowels, joints, mitres, dadoes, rabbets, planes, moulds, rips and joints on the bevel, mortises, etc. It is operated by electric motor.

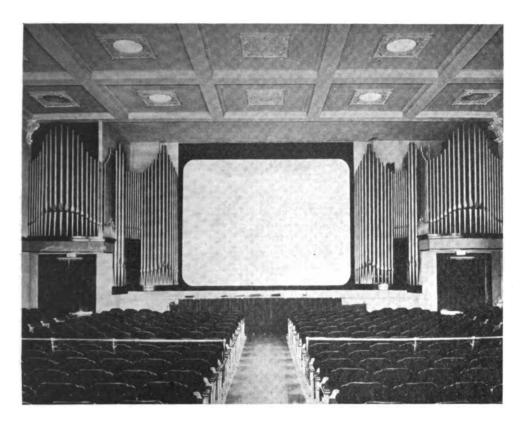
Sidewalk Vault Lights must be able to withstand severe usage. A most interesting circular on this subject is issued by the American 3 Way-Luxfer Prism Company, 139 Spring Street, New York.

Hoisting on the Job is a money saving operation for the building contractor when he has the right sort of a hoist. An interesting booklet describing their hoist has just been issued by the Brown Clutch Company, Sandusky, Ohio.

Elevators and Dumbwaiters are used in many buildings and the builder should be familiar with their installation. Much useful information can be gleaned from the catalogue of the Sidney Elevator Manufacturing Company, 500 Miami Street, Sidney, Ohio.

Asbestos Roofing has many advantages. A most interesting booklet on this subject has been issued by the National Asbestos Manufacturing Company, 169 Henderson Street, Jersey City, N. J. It describes their new assestos and asphalt shingle which is so easily laid to produce a good looking as well as lasting roof.

For Moving Pictures and Vaudeville Modern Theatres are Planned



cial attention as it is quite important from the business standpoint of the proprietor to have a comfortable house. Toilet rooms must be well appointed, the best of fixtures and fittings being used. For safety, special doors that readily open from the inside must be provided.

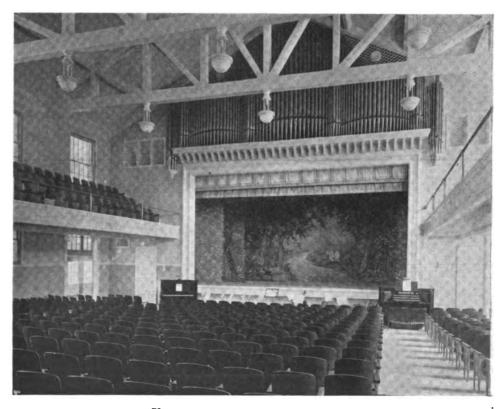
Wiring is a very important subject, as different lighting effects are demanded; in some cases, indirect lighting concealed in cornices are used; in others, highly ornamental chandeliers are employed. The switchboard of the theatre is a most important item.

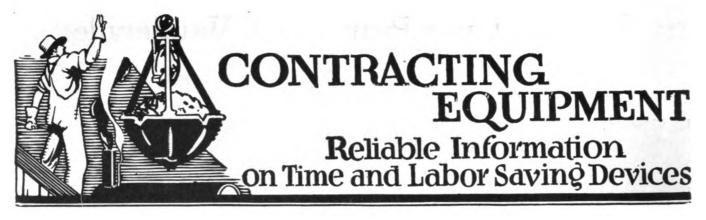
No movie or vaudeville theatre is today considered complete without a pipe organ, and to properly install this requires some constructional details about which the contractor must be familiar.

VERY town, even to our smaller on es, boasts of its favorite movie theatre and in our larger towns and cities, good sized theatres are the rule. Here the stages are usually made large enough so that vaudeville, entertainments, etc., can be given, besides moving pictures.

The demand for this type of amusement building is daily on the increase. The small affair, remodelled from the old store building, will no longer do. Patrons will not attend a theatre unless it has a well warmed and ventilated auditorium, and to induce continued patronage, it must be artistically and comfortably furnished. Theatre building offers contractors a well-paying opportunity for business.

The heating and ventilating systems deserves spe-





Plan Now to Add Field Equipment

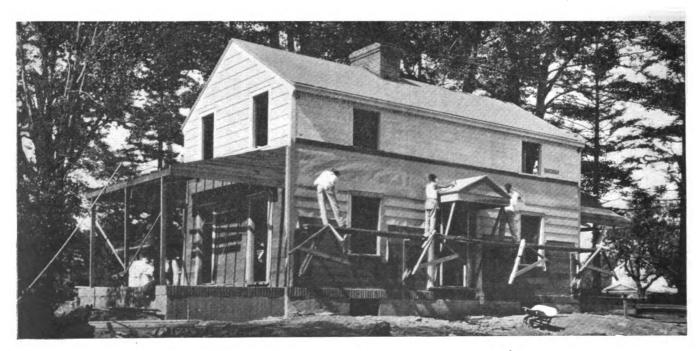
ORECASTS of the business for the building industry in 1923 indicate that the volume will come very close to, if not exceeding, that of the year 1922.

It need scarcely be emphasized that with a continuance of the remarkable business activity, it behooves the contractor to carefully look over his present field equipment at this time, and make arrangements for the delivery of such new equipment as it is reasonable to suppose he will have actual need of within the next few months. If one waits too long there will be a delay in getting a much needed piece of equipment, with the resulting loss.

Now is the time to consider the different things that one should have on hand to carry on his business most effectively. Remember that there was a serious shortage of building labor in 1922 and this same condition will again likely exist in 1923, perhaps more so, as other industries are picking up and they will absorb some of the common labor which found temporary employment in the building line. Labor will be scarce and probably higher in price, therefore every machine, appliance or method that will tend to save labor will be found a money saver. Anticipate this trouble and prepare to meet it. Adequate equipment is more than half the battle.

We are coming to a stage where handwork will be eliminated wherever possible, machines being used instead. Gasoline, compressed air and electricity are superseding hand power in many instances. The simple operation of digging a hole in the ground can be done more rapidly by the employment of the proper machine equipment. For the transportation of men and materials, the auto truck finds a big use in the building field. Even for the small passenger car, trailers are a big help.

It would be well for the contractor to carefully check over his equipment so as to make sure he will have everything on hand for



Proper field equipment will enable your men to work safely and efficiently.

the Spring rush. To aid the reader, we give below a list of many different items of field equipment which will serve as a checking list or reminder of what items one is likely to need.

Adzes, axes and hatchets, air compressors, anvils, auto for passenger, auto truck, auto trailers, tractors.

Bar benders and cutters, barrels, brick-cleaning machines, brick clamps, brackets for scaffold and in rock and including the necessary drills.

Elevating machinery, excavators, first aid kit for safety first, flood lights for night work, floor scrapers, polishers and sanders.

Gasoline engine or steam boiler and engine for hoists and power for mixers, saws, etc.

Hammers, sledge and carpenter; hand carts and dump carts, hand tools for masons, plumbers, carpenters, electricians, painters, etc., rakes, rollers for house moving, rope—hemp, manilla and wire and the necessary tackle.

Saws—power and band; surveying instruments, transits and levels, shovels and spades, steam engine and boiler, stone crusher, stone drills, scoops and drags, stump pullers, steel tapes, surfacing machines for wood and stone floors, stucco machines, screens for sand and gravel, scales for weighing, sand blast machinery, sala-



Compressed air picks can now be had that greatly reduce the labor of excavating in clayer soils. The laborers only need to move the materials to the automatic portable loaders which fill the carts rapidly. Machinery will cut your excavation costs.

shingling, buckets for water (don't forget pail and cup for drinking water), buckets for concrete hoisting.

Capstans for house moving, canvas covers, cement bag cleaners, chains, chain blocks, chalk, chutes for concrete, clamps for form and scaffold work, clips for forms, concrete trucks, concrete mixers, conveyors for hods, etc., cord for chalk lines, crowbars.

Derricks of all sorts, ditch digging machine, door mortiser, dynamite outfit for blasting excavations hand trucks, hods, hoes, hose, hoists—chain and rope, iron sheets for mixing mortar, jacks of different sizes.

Kerosene engines, ladders, lanterns for night warnings, levels and plumbs, lumber crayons, pencils, mattocks, mitre boxes, mortar mixing boxes—wood or metal.

Portable tool shanties or field offices, picks—hand and power, pile drivers, power shovels, planks for scaffolding, etc., portable woodworkers, pulley blocks, pumps—drain, rams, centrifugal, force, etc.,

manders, shovels, spades, stone drills, sawhorses or trestles.

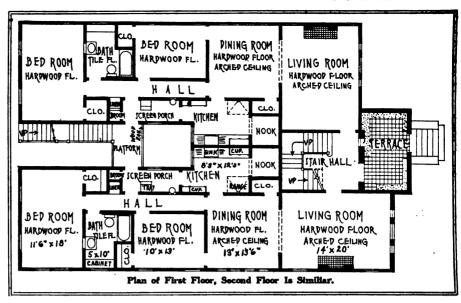
Tampers, tanks, trowels, tractor, tool chests, tool bags, tents, trenching machines, time clocks, tarpaulins.

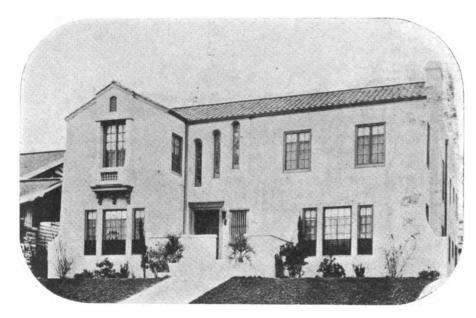
Well drilling tools when water is not to be had on the job, wheelbarrows, windlass, etc.

The use of modern labor-saving equipment in field operation means added profits to the building contractor. Gasoline furnishes cheap power and saves the time of expensive labor.



Spanish
Architecture
Adapted to
Modern
Apartments



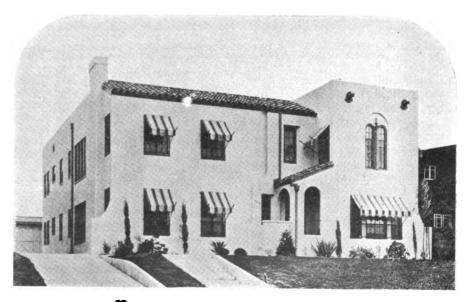


From the front elevations, both designs appear as large private residences. It is by giving thought to design that results like this are achieved and it is a good object lesson in careful planning. There is really no excuse for that awful sameness the majority of our apartment houses have. Builders and architects get into a rut the same as other individuals, but when they are put to the test they can produce novel and artistic effects both as regards to floor arrangements and exterior design.

The house shown here was built of hollowtile and stuccoed. When the two designs are built on adjoining plots it is well to vary the color and texture of the stucco so that the difference will be quite marked, but we would hardly care to recommend the vivid yellow and pale blue effects that some of the Spaniards use.

MALL apartment houses are in demand and curiously enough this type of home is finding considerable favor in our smaller cities. A rather interesting example of a modern apartment house is shown on this page. There are four separate apartments, each containing five rooms of fairly good size. This building was designed and built for Mr. C. G. Kinsley, Los Angeles, Cal. The architect was J. Ernest Randall of Hollywood, Cal.

Too often we find apartment houses with dreary exteriors, but here the designer has worked out two different exteriors for the same floor plan; both in Spanish architecture and by reversing one, a novel effect was obtained and sameness avoided.



What the Editor Thinks

The Dawn of a Prosperous Year

THE year 1923 opens for the building industry a vista of good and profitable business throughout the year. Present indications point to as prosperous year as 1922, if not better. Buildings of all kinds are needed. The housing situation has not been caught up with and will not be for several years to come. The demand for small apartments continues quite active, even in the smaller towns this type of house is very popular. On the other hand, a great many people in our large cities who have always lived in apartments are going out into the suburbs as home owners.

Based upon a survey it has just completed, the Copper and Brass Research Association estimated the total building construction required for 1923 as follows:

Schools	\$1.540,000,000
Apartment Houses	
Dwellings	940,000,000
Hotels	851,000,000
Industrial Buildings	827,000,000
Office Buildings	804,000,000
Hospitals	595,000,000
Churches	530,000,000
Public Buildings	328,000,000
Public Garages	162,000,000

\$7,830,000,000

To complete such a vast amount of building construction during the year 1923, presupposes that the entire shortage, plus the normal increment be carried out in 1923 and that we shall enter 1924 with a clean building slate.

It will be beyond the material and labor resources of our country to carry out such an extensive building program to a conclusion in 1923, even should the financial resources be available. Two-thirds, or about \$5,000,000,000 seems to be a conservative estimate of the building that will be possible in our country for this year.

Conservative forecasts reveal an enormous prospective volume of building construction in nearly every section of the country. There is no builder in the good old U. S. A. who should not be busy every day of 1923.

An Example of Successful Cooperation

I N an interesting article in this issue we give the facts relating to the Akron Builders' Exchange enterprise in building a model home. It is cooperation of this sort that leads to the best results in the building industry. It is an example worthy of emulation by other groups of builders throughout the country. In no other way can the thought of better construction be brought home to the public so forcibly as in such an interesting manner.

Our New Office

UR steadily increasing business, both subscription and advertising, has made it necessary for us to nearly triple our working space. In our new quarters at 239 West 39th Street, in addition to an increased working capacity which will facilitate our handling of the various services we offer to subscribers and advertisers, we are setting apart space for visitors where they will be welcome to make use of full office facilities, telephone, stenographic service, etc. It will be a pleasure to us if you make our office your headquarters when you are in New York.

Look Out for the Passerby

B UILDERS who are anxious to make a good name for themselves should give a little consideration to the public at large. There is no reason why material and dirt should be left over a sidewalk. This place can be kept clean by shovels and brooms so that when it rains, pedestrians will not have to go through a big pile of mud. Should it be in a location where there are no sidewalks, a few planks should be put down so that people can walk by without sinking into mud. Just imagine what a woman thinks of you when she has her dainty suede shoes covered with mud through your carelessness. Do you think she would be happy to recommend you?

Radio and the Builder

NE of the marvels of our time is the wireless telephone popularly known as radio. What influence this will have on the building industry is hard to conjecture, but it will certainly play quite an important part in the not very distant future.

Radio concerts are now broadcasted and can be heard in any home, etc., that is equipped with a receiving set, and by the attachment of proper sounding horns, this concert, etc., can be heard in the entire room. This gives rise to the question of where the builder fits in.

In the future, rooms that will amplify the sound by proper sounding boards, will be in demand. In other words, rooms will be built so that they will carry sound transmitted by radio in the most effective manner. Then builders even of the smallest houses will have to pay some attention to acoustics. How to produce a room in which one can hear perfectly will be something that builders will have to study.

Perhaps one of the biggest features of radio in the future will be the broadcasting of music to different restaurants, etc., at certain times. Very few restaurants can afford to have a famous orchestra, but by radio broadcasting, thousands of restaurants can give the same excellent music provided their dining rooms are properly built acoustically so that the sound will be properly reproduced. It is well for builders to think of this matter quite seriously.

Now, we have spoken about hearing the sound perfectly, the opposite side is of just as much importance. Just imagine an apartment house, each apartment of which is equipped with a radio outfit. One party likes jazz, some other wants operatic music, while the third wants some comic story—another a serious talk, etc., etc. There will certainly be some jumble. The remedy will be to make sound proof rooms. The builder that is able to handle this matter scientifically and practically will find here an opening for more and better work of a special kind.

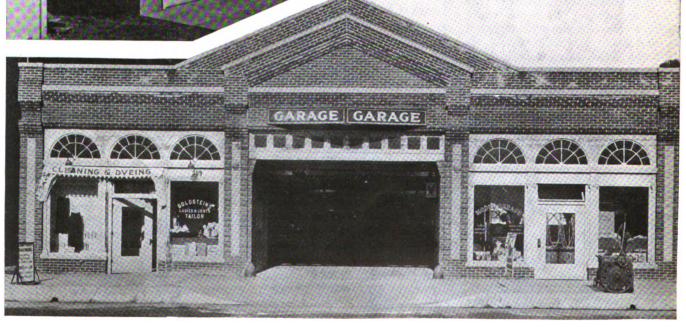
Digitized by Google

Big Demand for Garages

To right—A private two car garage designed by Heacock and Hokanson, Architects, Below—A private one car garage; also a good type of public garage.



ARAGE construction will form a very important item of builders' work during 1923. According to statistics the estimated production of cars in 1923 will be about two million and of these it is pretty safe to assume that over 300,000 will go to people who have never owned a car before. Therefore, this number of cars will need some form of a garage. Statistics also show that 10 per cent of the passenger cars are kept in public garages. This means that there will have to be accommodations for 30,000 cars in new public garages, while about 270,000 are to be accommodated in private garages. It will be well for the builder to be thoroughly posted on the different door hangers, appliances, etc., with which a garage is to be equipped as he can handle the matter and give more satisfaction.





Every National Door-Set you install is an asset for you. Once you install it, you are through with it, the profit you make is all clear. It makes a satisfied customer for you. It stays sold.

A Door-Set which fails to give satisfaction is a liability. It is likely to cost you much in the long run.

When you put in a National you don't have to say "I think it will make good." You just say "I know it Will make good."

Write for our catalogue to-day



NATIONAL

NATIONAL MANUFACTURING COMPANY

Digitized by Google STERLING, ILL.



PAINTING

Practical Points of Interest to the Builder

Painting Equipment for the Contractor

By A. ASHMUN KELLY

I would be a mistake if I should advise the contractor to furnish his paint shop with everything that would be found in a regular contracting painter's shop. On the contrary, my advice would be to have only such equipment as will suffice to meet his actual needs, because all beyond this would be useless expense in cost and keeping. And even this means quite an array of tools, etc.

First of all I advise having a proper place for the paint shop, a part of a building where one can have room to work and room for the proper storage of tools, etc. Excepting for ladders and scaffolding, it will not require a very large room space. Ladders, ropes, etc., may be kept in a dry cellar or basement.

The paint shop calls for a work table, say two feet wide by about ten feet long. Above this there should be a shelf or two, to hold cans, etc. A closet with shelves, and hooks for holding work clothes, is nice. Everything in order and a place for everything, and everything in its place when done with.

As for tools, etc. Many men do not know what kind of brushes to get. First of all, get the best, for they will be the cheapest. A set of paint brushes includes a round, or oval, or flat paint brush. All these kinds are good and useful. Some painters prefer one rather than another shape. The flat paint brush, which comes in various widths, is best for exterior use, and

for some interior work, the idea being that broad surfaces take the wide brush most economically. You get over more surface with it in the least time.

For interior work in general the round or oval, no matter which, is the most convenient. The next brush is called the sash tool. It comes in various sizes, but the most used is either the No. 8 or No. 10. It is a brush that is used. as its name indicates, for window sash, though it is used in many other places also. But never use it where a larger brush will answer the purpose as well. I knew of an old-time master painter in Philadelphia who, when he found one of his men using the sash tool where the work might be done with the 'pound" or paint brush, would take the offending tool and throw it as far as he could. And remarks accompanied the action. I omit them

The next brush, to complete the set, is the so-called fitch. It is not a fitch hair brush, as its name erroneously leads one to think, but is made from hog bristles. It also comes in various sizes, and is intended for getting into small recesses where even the sash tool will not go. It is, however, very seldom used, yet it should become a part of your set.

You need also a painter's duster, an oval, round or flat brush, as you prefer, for removing dust from the work before beginning to paint. Stick it in the top of your overalls at the band, at your back, and it

is always at hand when wanted. Now a putty knife will be needed, as it is a very useful tool, always to be with you, usually in a narrow right-hand side specially made pocket. It is often needed, for scraping off some scale, puttying a nail hole, etc.

Now I have given you a complete outfit of tools for beginning a day's work at house painting. A paint pot with "color" or paint in it, a ladder or step ladder, or window jack, and you are furnished further with means for doing the job. As for these latter things, it is well to have them in kind and number conducing to the easy and ready doing of your work.

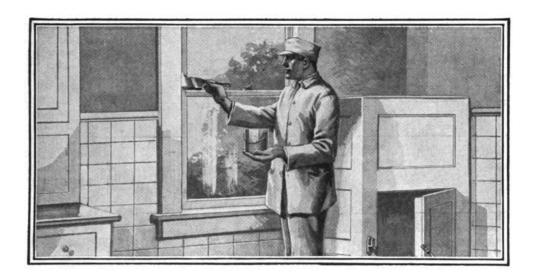
Just any sort of a ladder is poor economy. The best are not so very expensive.

Coming back to brushes; there is a brush made for staining shingles, after they are on the roof. It is well to have these, to save the regular paint brushes, and save working or washing out the paint brush. There is also a kalsomine brush, and it will do for all sorts of water paint work, including whitewashing, also for sizing walls.

A paste brush is useful if you are to do much papering; if not, then the kalsomine brush will do very well. And a pair of paper hangers' shears will be handy; about teninch length.

In another article I shall have further to say about your paint shop and the work.

For Light, Cheerful Rooms



JOHNSON'S ENAMEL

You can't do your best work with inferior materials—and your reputation and success depend upon always turning out good work. Build up a reputation as the best contractor in your locality—then you can get the price and will never experience a poor season.

Contractors who use Johnson's Artistic Interior Finishes soon find themselves getting more of the profitable, better class work. Johnson's Artistic Interior Finishes are right when they go into the can and they stay right. They do not change or deteriorate in any way.

You can give your customers the finest kind of a job by finishing both walls and trim with Johnson's Perfectone Undercoat and Johnson's Perfectone Enamel. These products will give equally good satisfaction on wood, plaster and metal. With them you can turn out perfect work—satisfy your trade and complete more jobs each season.

FREE-Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of famous experts—illustrated in color. This book is written for the practical man—it gives covering capacity, includes color charts, etc. We will gladly send it free and postpaid.

USB COUPON AT RIGHT

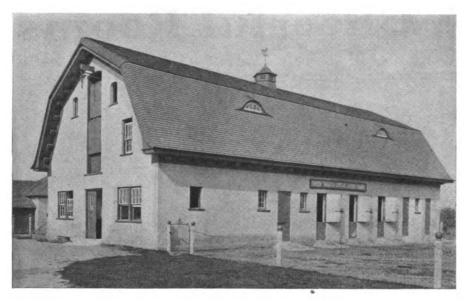


S. C. JOHNSON & SON
Dept. B. A. 1 Racine, Wis.
"The Wood Finishing Authorities"

Please send me free and postpaid your Book on Wood Finishing. I usually buy Varnish from.....

•••••	•
My Name	
My Address	
City and State	





Farm buildings of the future will be well proportioned and pleasing in appearance. The above example of a sheep barn building of hollow tile and stucco shows what can be accomplished.

Meeting The Demand for Farm Buildings

BUILDING on our farms, in a measure, is constantly going on. We must remember that after a farm building has existed for a period of thirty to fifty years, it has outlived its usefullness and must be replaced with a more modern structure if the farm is to be kept up to date.

It is rather interesting to figure about how much building is required annually by the farmers of the United States. According to the 1920 census figures, there were 6,448,343 farms in the United States and there was an average of seven and one-half buildings for each farm in the United States, divided as follows on each 100 farms:

Houses	100
Granaries	67.4
Hog Houses	67.7
Chicken Houses	90
Cattle Sheds	45
Corn Cribs	66.8
Silos	23.3
Barns	134
Wood Sheds	54.7
Garages	48.7
Total	755.6

Let us be conservative in our figures and take fifty years as the average life of a farm building. If such were the case, there would be 128,966 farms needing entire rebuilding an-

nually in the United States or a total of 965,000 separate buildings of some sort are annually needed on our farms. This vast building program must go on if farms are to be kept up to date and many builders would do well to specialize in this construction

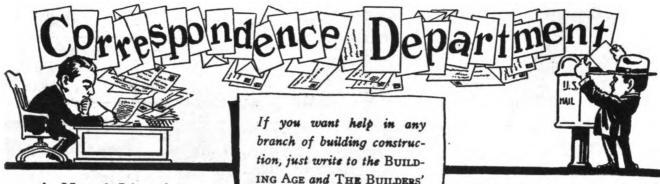
Just at present farmers are not enjoying top notch prices for their products so farm building will be a little slow, but a boom period will come so as to catch up with delayed construction. The Land Bank loans will be a big aid in financing many farm building programmes.

A farm is a business factory, no less than any industrial plant and the same efficiency is necessary to make it a profitable enterprise. To be able to do this, labor saving equipment is necessary and for the safe keeping of this equipment, the animals being raised, the grain being stored, etc., different sorts of building are required. These buildings in the future will be of better design as there is no reason why they cannot be good to look at, as well as being practical.



A silo is a big aid to farmers, as it enables the stock to feed on green fodder during the winter. Only 23 per cent. of the farms in the United States are equipped with silos. There are still over four million farms to be equipped with this improvement. Show the farmer where a silo will save him money by improving the condition of his stock and get your orders for building these much needed improvements.





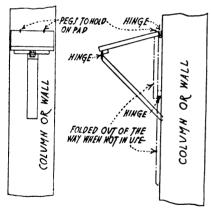
A Novel Idea for Folding Desk

IN a certain contracting plant near here there was much trouble experienced in the writing out of requisition blanks.

These blanks had to be written by men who came in from an outside job about ten minutes before quitting time. The blanks were then handed into the stock room men who filled out the orders so the men could call for the material the following morning.

In the old method of writing out requisitions for material the men would ask for blanks. Then the stock room workers would start a hunt for the pads the men had left laying the night before. After they were found most of them were either torn or damaged.

When the men received the pads they started to look for a place to write. This was usually on crates or boxes. When



they were through writing the men would leave the pads lay. This meant the same hunting for the requisition blanks.

All this continued until the idea shown in the sketch was put into use. There were four of these put on each column in the stock room. Pencils were later attached to wires near them. This idea always kept the pads in good condition and saved the price of new ones. It also saved the time of the stock room workers in looking for the old ones and getting new ones from the stationery closet. This would not be half as good an idea if it did not fold down out of the way. This novel writing table can be made by most anyone who is handy with tools.—Henry M. Bosland.

branch of building construction, just write to the BUILD-ING AGE and THE BUILDERS' JOURNAL Correspondence Department. We will be glad to answer all your questions without charge.

All readers are invited to discuss the questions and answers published.

Concrete Makes Anti-Tip Lantern

THE highway department of a small western town was being continually perturbed by the actions of small boys who seemed to delight in overturning lanterns set at night to guard excavations. Yet, when the culprits were brought to task they always declared that they had nothing to do with it. An ordinary lantern being rather top-heavy, anyway, there was some question as to just when to enforce the law and when to declare the culprits innocent.

The adoption of the concrete base about all lanterns used has done away with any question. So bottom-heavy now that they will right themselves unless tipped completely over, these lanterns will set securely on loose earth, even when piled unevenly.

The concrete is cast about the base of the lanterns, this block being about seven inches square and one and onehalf inches thick. A tin collar is set about the base of the lantern and wired bent at one end and run through this



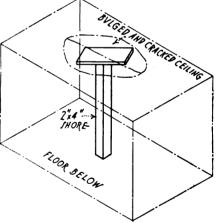
and imbedded in the mortar when it is still soft. The photo shows one of the lanterns.

This improvement will often render the lantern secure setting on the ground when otherwise it would be necessary to erect a small support by which to hang it.—Dale R. Van Horn.

How to Treat Defective Plaster Ceilings

WHEN from any cause either poor workmanship or materials, leaky roofs or vibration, ceiling becomes cracked, sagged down, bulged and liable to fall, immediately means and precautions should be taken to prevent their collapse until arrangements are completed to make them safe.

If a case be very urgent, say a section of plaster so soft or lost its keying on the laths as to be likely to come down at any movement without warn-



ing, then light 2x4 shores or uprigats should be at once placed under the defective portion or portions after the manner seen in the sketch with a broad board or bolster nailed on the top ends to effectively prevent sagged sections from dropping. By this means the defective parts may be pushed back and kept in place, thus obviating further injury to any ceiling's surface; also it may be retained by strips of sheet iron nailed up into the ceiling beans or floor joists and painted.

For repairing, plaster boards, beaver boards, etc., are the most useful for this as they can be readily cut to any shape with a hand saw and finished with putty and plaster of Paris.—Owen B. Maginnis.

AITINIS SILVERSAWS



Why Atkins Silver Saws Excel

(1) Because the degree of heat and length of heat "bath" each blade shall receive is prescribed by the chemist on the "heat sheet." There is no guess work.

(2) After heating, the plates are plunged in an oil bath, the oil in the bath being held at an

even temperature throughout.

(3) Tempering of Atkins Saws is done in patented gas furnaces where the heat is regulated by automatically controlled devices which assure an even temper without hard and soft spots.

We make our oven gas for our tempering and annealing furnaces and this gas is put through a series of washing and rinsing operations to make it free from sulphur and

other harmful gases.

(5) These extra-particular precautions make Atkins Silver Steel Saws, uniformly tough, just hard enough without being brittle, and exactly the same toughness and hardness in every square inch of their surface—so that they wear evenly throughout the entire blade and cut clean a longer time without sharpening than any other saws made.

(6) Atkins Saws are made in Regular and Ship Point Patterns, Skew and Straight Back, with a choice of handles, the Old Straight-

Across or Perfection Pattern, hence

Atkins Saws are Preferred by Master Carpenters

Send 30 cents for nail apron, Saw Sense and a useful souvenir.

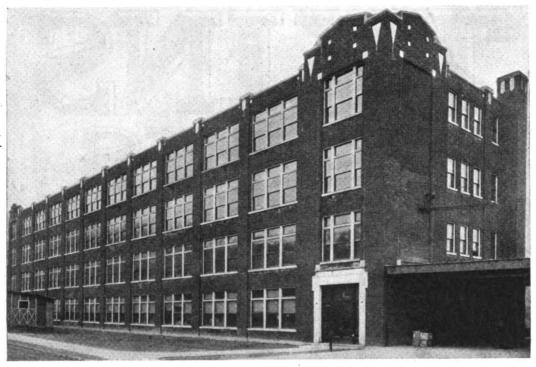
E.C.ATKINS & CO.

ESTABLISHED 1857 THE SILVER STEEL SAW PEOPLE
Home Office and Factory, INDIANAPOLIS, INDIANA
Canadian Factory, Hamilton Ontario

Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks in The Following Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore. San Francisco Seattle Paris, France Sydney, N. S.W. Vancouver, B.C.



Home of Dalton Adding Machine Co., Norwood, Cincinnati, Ohio.

Comfortable and Efficient Factories in Demand

Modern Fireproof Structures, Safe and Sanitary,
Provide Better Manufacturing Facilities
and Keep Help Contented

O keep up with the progress of our country, more and better factories are constantly required. The day of the old unsanitary "sweat shop" is pass-ing and in its place are modern, well lighted, heated and ventilated structures where ample means are provided for safety. Over \$825,-000,000 is estimated to be spent for new industrial buildings in 1923.

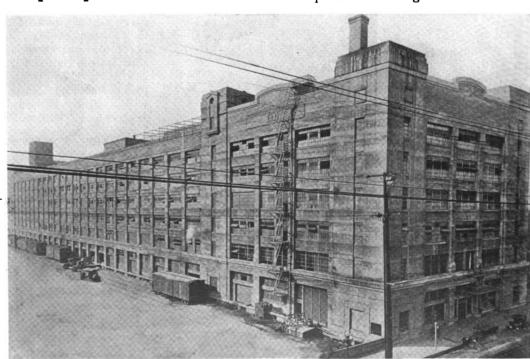
The builder of a factory today, must know all about the different appliances, etc., that go to make a factory complete and safe, besides methods of construc-

tion to make a success in this line of

When planning factory buildings, see that they will be supplied with a sprinkler system, gas pipes run through and provided with plenty of electrical outlets for different lights and appliances. Conduits should be laid in the floor, the ceiling, around the walls and in columns and have plenty of junction boxes, as this foresight will provide conveniences and save an immense amount of money later on when certain electrical installations are needed.

Plenty of daylight is quite essential in practically every manufacturing establishment, and large windows and skylights are the rule. These are most satisfactorily provided by steel sash which can be obtained in different forms.

Proper attention should be given to the selection of the right kind of glass. In some cases, a clear plate or sheet glass will be best.



New Million Dollar Warehouse of Union Terminal Co., Los Angeles, Cal.

"Consumer Acceptance"

ONSUMER ACCEPTANCE" is a term invented to describe the buyer's side of what the dealer calls a "sale." It means the buyer's willingness to buy.

Everybody knows that the buyer buys primarily because he wants the thing bought. Yet, in spite of this many people think they can sell something easily just because it is cheap—when actually it is easier to sell something that the buyer feels he must have, even at a slightly higher price.

Home owners feel they must have the greater fire-safety, weather resistance, and permanence that are assured by the asbestos rock fibre body of Flexstone Asbestos Slate Surfaced Shingles. This feeling is so strong that they are more than willing to pay Flexstone's slightly higher price. That's why Flexstone Shingles have a greater consumer acceptance and hence sell easier than ordinary slate surfaced shingles.

The thoroughness with which Flexstone Shingles are advertised insures that the buyer will know their advantages and adds to their consumer acceptance by the prestige which national advertising gives.

Thus the dealer or builder who handles Flexstone Shingles has a large part of his consumer acceptance ready-made—and his sales come with much less effort.

JOHNS-MANVILLE Inc., Madison Ave. at 41st St., New York City

Branches in 56 Large Cities

Branches Canada, CANDIAN IONNE MANVILLE CO. Let. Toward

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto



Digitized by GOGIC

The Contractor's Book Shelf

B OOKS of a technical character are one of the most valuable helps in the builder's office. Many good books are published on the different subjects connected with the building industry. These are by various authors and publishers and can be secured from most book sellers although there are several concerns making a specialty of supplying technical books in certain particular lines.

A good book is a valuable asset as not only has it helped out many a man in figuring on a bid, but in a great many cases has aided him in some serious construction difficulty, and in planning new work.

Reading, whether it is a magazine or book, always results in good. Time spent in study is never wasted. The knowledge gained will come in handy some day. Several new books along the construction line have been recently published and we give below reviews of several of these.

Sketching and Rendering in Pencil by Arthur L. Guptill; 186 pages. Published by Pencil Points Press. New York. Price, \$5.00.

Ability to make a sketch is of the utmost value to the builder as it visualizes the proposed house or detail. so that one's customer is enabled to form a right conception of how it will look when it is completed. This book, therefore, will be of practical aid to anyone wishing to take up this subject. The book is illustrated by excellent pencil sketches showing different details of building, etc. It also shows just exactly how the different effects are obtained and many sketches are given that show that the pencil, in skilled hands, is able to produce excellent pictures that have a commercial value to builders. The text matter is well written and clearly describes the different operations. An exceptional chapter is given on perspective drawings. One interesting illustration shows a type of sketch to be submitted by architect or builder to a client to show proposed alterations; it is in cases of this sort that the practical value of the book will be realized.

Construction Cost Keeping and Management, by H. P. Gillette and Richard T. Dana; 572 pages, illustrated; cloth bound; price, \$5.00. Published by McGraw-Hill Book Company, New York.

One of the greatest factors in estimating is to know cost, as upon that experience we can base figures for future work. To get these costs it is necessary to understand the laws and rules of management, so as to receive daily reports showing the efficiency of the men and methods employed besides keeping accurate record of the material used. This book gives some very good first hand information regarding these various subjects and is well illustrated by forms so as to make the work systematic and easy. Every contractor will be able to obtain a good deal of very practical cost information by a perusal of this very useful book.

Cement, Lime and Plaster, by Edwin C. Eckel; 655 pages; 158 illustrations; price, \$6.50. Published by John Wiley & Sons, 432 Fourth Avenue, New York.

The earnest student of building construction will welcome the wealth of information given in this treatise. It describes the different materials from which cements, limes and plasters are manufactured, also details of manufacture, etc., while to the manufacturer of such products it offers a field of practical information on different phases of the subjects. The different subjects are thoroughly gone into and explained clearly in simple language.

Hendrick's Commercial Register of the United States, 2322 pages; cloth bound; price, \$15.00. Published by S. E. Hendricks Company, New York.

This is the thirty-first annual edition of this exceptional reference book for buyers and sellers. It is a complete register of manufacturers, dealers and producers of various products and it lists many industries of vital importance to builders. Therefore, it is of value to the buyer of contractors' equipment, etc. It is a complete guide to the manufacturers of over 17,000 fabricated products.

Hand Book of Construction Cost, by H. P. Gillette; 1,734 pages; flexible binding; price, \$6.00. Published by McGraw-Hill Book Company, New York.

This book gives a carefully itemized list of costs on every phase of construction work, particular attention being paid to building costs. Many pages are devoted to prices and wages. The author devotes a good deal of study to obtaining a price level formula and also a wage level formula. These important points will enable any contractor to adequately compute costs at the minimum amount of effort. The different chapters of the book treat on hauling, excavation, concrete construction, roads, bridges, tunnels, building construction and general engineering, surveying, etc. On all these different subjects different cost data are given so that it will be found a most valuable aid for any contractor. The mechanical execution of the book is very good. The type is small but clear and a vast amount of valuable information is crowded into its 1.700 pages. This book forms a companion volume to the author's "Construction Cost Keeping and Management."

Structural Drafting and the Design of Details, by Carlton Thomas Fisher, C. E.; 351 pages, illustrated; price, \$5.00. Published by John Wiley & Sons, Inc., New York.

Every contractor has at some time some heavy structural iron work in charge and to have everything correct it is necessary to submit an accurate drawing. The object of this book is to serve as text-book in structural drafting and elementary structural design. In addition to excellent instruction on drawings, etc., many useful chapters are given on designs, supplemented by a series of very useful tables. The book contains mostly all the practical data necessary by a building contractor to enable him to design and make a proper working drawing of any steel work such as is ordinarily met with in building construction. It is a most useful and excellent work, very clearly illustrated by over three hundred drawings, etc., and is well printed and



What You Should Know About Architectural Drawing.

What You Should Know About Carpentry and Building.

What You Should Know About Heating and Ventilating.

How to Care for Tools.

VOL.I

CARPENTRY

STAIR BUILDING

STEEL SOUARE PLASTERING

PAINTING

How to Use the Square Suc-Steel cessfully.

BLUE PRINT READING

How to estimate the Cost of a BuildHow to Build a Brick or a Frame Structure.

A Thousand Things You Ought to Know

VERY day in your work you get up against new problems—sometimes it is only some old "sticker" coming in a new way. Just the same though it takes a lot of time to figure them out. DON'T DO IT. Here's everything worked out for you. Every problem, big or little, that you will meet in a day's work. Hundreds of new ideas and better ways of doing things. Hundreds of ways the other fellows are making money. Hundreds of ways you can make more out of the same work you are doing now.

Cyclopedia of

Carpentry and Contracting

Five great big volumes bound in genuine American Morocco with 2,138 pages and more than 1,000 blueprints, plans, pictures and diagrams. It is the newest, most complete, most practical work of its kind ever published. Twenty-five well-known experts prepared these great books, gathering the material from hundreds of different sources. Every man in the shop and on the job should have them.

The old days of hit-or-miss experience are passed. You have got TO KNOW if you want to keep in the running now. A little of your spare time and the Cyclopedia of Carpentry and Contracting will put you 'way ahead of the rest. See our FREE trial offer and easy payment plan below.

FREE Examination 8 Months to Pay

Send the coupon for these great Carpentry and Contracting books TODAY. You can't afford to be without them, and you don't take any risk at all. The coupon brings the whole set by express collect for a week's free examination. Use the books a week and notify us to get them back if they don't please you. If you like them send us only \$2.80 in 7 days and \$3.00 each month until \$19.80 is paid. If you prefer to pay cash with order send only \$17.80.

The return privilege holds good just the same. Send the coupon NOW. Remember—sending for the books does not obligate you to buy.

American Technical Society

Dept. G-401. Chicago

1000 Better Ways of Doing Things.

What You Should Know About Water Supply and Drainage.

What You Should Know About Plastering and Painting.

What You Should Know About Sheet Metal Work.

How to Be a Successful Building Superintendent.

What You Should Know About Contracts and Legal Relations.

How to Know Material and Select the Best.

How to Write and Read Building Specifications.

How to Read Blueprints and Plans.

FREE EXAMINATION COUPON

AMERICAN TECHNICAL SOCIETY, Dept. G-401, Chicago. Please send me the 5 Volume Cyclopedia of Carpentry and Contracting, shipping charges collect. I will send you \$2.80 in seven days, and \$3.00 each month until \$19.80 is paid or notify you to send for the books at your expense.

Name .	
Address	

Please fill out all these lines.



Review of the Building Situation

B UILDING statistics for November, 1922, just published by F. W. Dodge Company show that the volume of contracts awarded during November in the twenty-seven Northeastern states is 28 per cent over that of November, 1921.

The volume of residential construction reported is remarkably high for this late season. It alone represents 50 per cent of the month's total and is the largest figure reported for residential construction since last June. The total for the first eleven months of 1922 was 45 per cent greater than the total for the corresponding period of 1921 and it is for the eleven months 33 per cent greater than the total for the entire year of 1921.

The December figures have not as yet been compiled, but they will disclose that 1922 was the greatest year

in the history of the building industry of the United States. Different reports and estimates from all parts of the country lead us to expect that the total amount spent for building in the United States during 1922, will total practically \$4,000,000,000 or \$1,000,000 more than in any other previous year. Nearly one-half of this vast amount of money was spent on residential construction alone!

On other pages of this issue of BUILDING AGE AND THE BUILDER'S JOURNAL, different forecasts of the amount of building in different lines are given and it is interesting to note in connection with this that the contemplated amount of work disclosed by the November figures is thirty per cent over the amount reported in October. This is rather significant for the time of the year as indicating a

very active and early season for the building industry in 1923.

At the present time, there is no indication of any decrease in building costs; conditions in general point to a continuance at present prices. There is not likely to be any drop in wages as living conditions (that must be met by the workmen) stand today at about 58 per cent higher than 1913 prices.

On account of the shortage of skilled men, there is likely to be some rises in wages, due to the fact that some concerns wanting to get ahead with their building program will pay a premium for men.

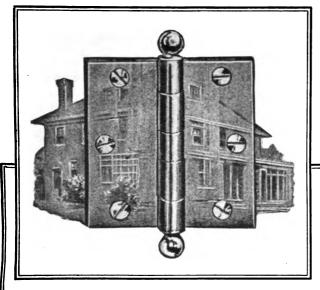
Manufacturers have sensed the demand that there will be for their materials and are making arrangements to properly supply the demand, therefore, the indications are that we shall not suffer for any lack of material.

Record of November, 1922, Building Contracts Awarded

Classifications of Buildings	New England District	SECTION New York District	OF COUNTRY Mid Atlantic District	Pittsburgh District	District Middle West	District North West	
Business	\$3,285,800	\$8,057,100	\$2,338,500	\$5,232,600	\$10,557,500	\$466,700	\$29,938,200
Educational	1,442,900	1.869,900	1,859,600	1,742,100	6,083,300	60,000	13.057.800
Hospitals and Institutions	663,500	6,305,000	1,803,500	310,000	658,000	237,000	9,977,000
Industrial	2,951,500	2,715,500	4,776,100	11,295,500	7.121,000	382,000	29,241,600
Military and Naval	14,000	72,000	3,000		70,000		159,000
Public Buildings	<i>77</i> ,500	248,000	180,100	670,600	553,700	20,000	1,749,900
Public Works and Utilities	1,943,700	2,802,800	6,374,600	8,138,000	7,866,600	390,300	27,516,000
Religious and Memorial	979,100	1,135,000	1,040,800	854,500	1,930,000	40,000	5,979,400
Residential	14.618,300	47,567,700	14,424,900	13,008,400	30,507,500	2,341,700	122,468,500
Social and Recreational	801,200	1,798,500	182,300	439,000	1,407,500	10,000	4,278,500
Total			•••••	•••••	•••••	•••••	••••••
10tm	\$26,777,500	\$72,571,500	\$32,983,400	\$41,690,700	\$66,395,100	\$3,947,700	\$244,365,900

Building Projects Contemplated, November, 1922

Classifications of Buildings	New England District	SECTION New York District	OF COUNTRY Mid Atlantic District	Pittsburgh District	Middle West District	North West District	Totals
Business	\$4,488,100	\$12,700,100	\$7,080,500	\$6,727,500	\$21,944,800	\$1,321,700	\$54,262,700
Educational	3,325,500	2,984,200	4,928,000	5,211,400	15,775,000	1,717,600	33,941,700
Hospitals and Institutions	2,398,500	6,885,000	1,920,500	543,000	12,942,500	582,000	25,271,500
Industrial	3,722,500	6,067,900	4,228,100	12,884,200	12,020,000	504,500	39,427,200
Military and Naval	504,000	15,200	3,000	3,015,000	50,000		3,587,200
Public Buildings	1,965,000	345,000	89,100	1,042,800	600,200	451,100	4,493,100
Public Works and Utilities	4,428,900	5,305,500	<i>37,976,700</i>	16,596,200	29,837,400		98,836,500
Religious and Memorial	1,441,500	1,573,000	1,515,800	1,405,800	3,734,000	622,500	10,292,600
Residential	17,928,100	98,368,100	30,109,600	20,331,900	76,832,400	3,295,200	246,865,300
Social and Recreational	2,600,500	2,546,700	2,592,000	4,272,000	10,374,500	508,500	22,894,200
Total				• • • • • • • • • • • • • • • • • • • •	•••••	• • • • • • • • • • • • • • • • • • • •	
2000	\$42,802,600	\$136,790,700	\$90,443,300	\$72,029,800	\$184,100,800	\$13,704,800	\$539,872,000



Your

ATTENTION!!

is called to the hinges on the door. To some people door hinges may seem rather small and unimportant—nevertheless, their mission in helping to make or mar the appearance of the rooms in a modern home is worthy of serious thought. The

GRIFFIN

"The Door Butt of America"

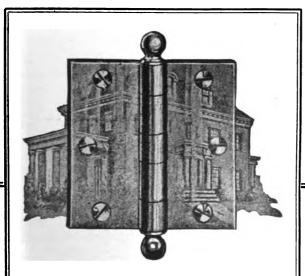
is designed along lines that insure both beauty to the home and service whenever the doors are opened and closed.

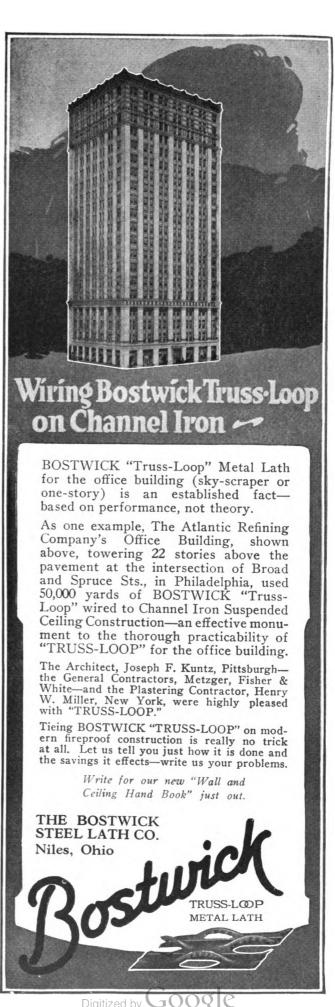
The Griffin operates freely and easily, it is amply strong for heavy doors and it is such a pleasing fixture that architects and home builders are glad to specify and use it.

Being finished in the various Griffin hardware finishes, it is in wide demand for the better class of houses and office buildings.

The Griffin Manufacturing Company ERIE, PENNA.

45 Warren Street New York ·74 West Lake Street Chicago





Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor

can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

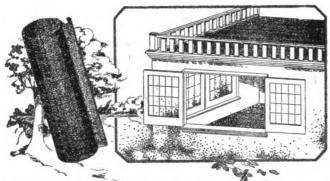
COMMON BRICK Per Music March M				
LONG LEAF YELLOW PINE_ Nov. 25 Dec. 29 PLASTER BOARD.ch. 10.00 10.	NEW YORK DRICES		No., 25	D 20
LONG LEAF VELLOW PINE- Dimensions, SISSE, No. 1 Common. 24r: 10 40.0 Jumensions, SISSE, No. 1 Common. 40.0 Jumensions, SISSE, No. 1 Common. 45.0 Jumensions, SISSE, SISSE, No.		Dec. 20	PLASTER BOARD—	Dec. 29
Dimensions, SISIE, No. 1 Commod. 24** 07** 10** 44.00 Timbers, Mechanishic, Vol. 121** 0 to 25** 53.50 Timbers, Mechanishic, Vol. 121** 0 to 25** 53.50 S. 10 and Better Fluttines, M.*28** 53.50 B. and Better Fluttines, M.*28** 53.50 B. and Better Fluttines, M.*28** 53.50 B. and Better Fluttines, M.*28** 53.50 S. 2 and State of Paulis, 13** 6.00 S. 2 and Better V. G. Phoering, 12** 7.50 No. 2 Clear and Better V. G. Phoering, 12** 7.50 No. 3 Clear and Better V. G. Steeping. 9.100 No. 4 Clear V. G. Phoering, 12** 7.50 No. 5 Clear and Better V. G. Steeping. 9.100 No. 5 Clear and Better V. G. Steeping. 9.100 No. 5 Clear and Better V. G. Steeping. 9.100 No. 5 Clear and Better V. G. Steeping. 9.100 No. 6 Clear V. G. Steeping. 9.100 No. 7 Clear and Better V. G. Steeping. 9.100 No. 8 Clear and Better V. G. Steeping. 9.100 No. 9 Clear and Better V. G. Steeping. 9.100 No. 1 Clear V. G. Steeping. 9.100 No. 1 Clear V. G. Steeping. 9.100 No. 2 Clear and Better V. G. Steeping. 9.100 No. 2 Cl	LONG LEAF YELLOW PINE—			\$0.22
B. and Better Partition, 18, 234"	Dimensions, SISIE, No. 1 Common, 2x4", 10', 44.00		Per Ton\$65.00	\$70.00
B. and Better Partition, 167-2467 (20.00 c) 3 x 6 in. White Wall. (60 c) 3 x 6 in. White Wall. (61 c) 45 c) 5 x 65 in. And Potent Fluids, 157 c) 6.00	1 imbers, Merchantable, '05, 12x12', 10 to 20' 58.50	58.50		* 0.25
Mo. Common Seards, 155" 45.20 45.20 1.00	B. and Better Partition, 34"x334"		3 x 6 in. White Wall	.60
NO. 2 Clear and Better V. G. Flooring, 1st" 73.00 73.0	B. and Better Finish, 1x4"	67.00	8 x 8 in. Red Floor	.45
Mo. 2 clear and Better V. G. Floroning, 13" 72.00 73.00		49.23	CHICAGO PRICES	
Colling, 198-7, Section 198-7, Colling, 198-7, Section 198-8, Section 19	No. 2 and Better Flooring, 13/16x21/2"\$66.00	\$66.00		
No. 2 Clear and Better V. G. Flooring, 124". 75.00	Kooters, 13/16x5//2" 35.50	35.50		
No. Clear and Better N. G. Stepping 91.00		\$75.00	Dimension No. 1, 2x4, 12 to 14 ft	38.00
No. 2 Clear and Better Novelty Siding, Law" 33.50 No. 2 Clear and Better Novelty Siding, Law" 33.50 No. 2 Clear and Better Novelty Siding, Law" 33.50 No. 2 Clear and Better Novelty Siding, Novel 10 10 10 10 10 10 10 10 10 10 10 10 10	No. 1 Clear V. G. Flooring, 1x4"	75.00	Finish, 1x4, B. and Btr	
Machington Perfection Shingles, per M.	No. 2 Clear and Better Ceiling, 34x4"		Flooring, B. and Btr. E. G., 1x3	90.00
MARDWOODS Mark 1975 1976 19	No. 2 Clear and Better V. G. Stepping 91.00		Timbers, Long Leaf No. 1, 10-20 ft., S4S, 6x12 to 12x12 47.00	7.90 48.00
Washington Perfection Shingles, per M. 7.55 7		45.50	HARDWOODS	
Dimension, 28th 10 to 16	Washington Perfection Shingles, per M		Maple Flooring, 13/16x236, clear	
Dimension, 28th 10 to 16	Clear Bevel Siding, ½x6" 52.50		Oak Flooring, 13/16x21/4, Cl. Pl., White 108.50	
### PARD WOOD FLOURING ### ARD WOOD FLOURING ### White Oak, 13/1628/4", 113.50 Clear Plain White Oak, 13/1628/4", 13/100 Clear Plain Oak, 13/1628/4", 13/100 Clear Plain White Oak, 13/1628/4", 13/100		\$ 0.68	REDWOOD—	\$44:5
MARDWOOD FLOORING—	Dimension, 2x4", 10 to 16'		Finish, S2S or S4S, 1x6 to 8 in. clear	
Clear Plain White Oak, 13/16/24" 113.50 11	HARDWOOD FLOORING—	4150 50	WESTERN RED CEDAR— Revel Siding 14x4 in Clear	\$49 00
Clear Majo, M.J. 16324" 11.5.50 111.50 1	Clear Plain White Oak, 13/16x2x2/4"		Shingles, Extra Clears, 16 in 5.16	
COMMON BRICK— Per M. f. o. b. job. \$18.40 \$21.00 \$18.01 \$22.00 \$2.20 \$2.00 \$2	Clear Plain Red Oak, 13/16x2/4"	113.50	COMMON BRICK—	\$12.00
Ship		104.00	PORTLAND CEMENT—	4.2.00
## STRUCTURAL STEEL— \$2.80	COMMON BRICK—		Bbls. in car lots to contractors, not including con-	\$2.20
Bolls in car lots to contractors, delivered \$2.80 \$2.80 \$2.80 \$7.00	Per M. f. o. b. job\$18.40	\$21.00	STRUCTURAL STEEL—	-
The color of the	Bbls. in car lots to contractors, delivered \$2.80	\$2.80	Per 100 lbs. at warehouse\$2.90	\$2.90
## 1.00 ## 1.0		¢ 3 14	% in \$3.37	
WALL BOARD	CRUSHED STONE (cu. vd.)—	•	1½ in 3.37	3 .37
Per 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft. 450.00 45.00 25.00 27.0	14 in. \$2.90		Per 1.000 sq. ft. in lots under M	
METAL LATH-	WALL BOARD—			45.00
## NETAL LATH— 23 h.—26 gauge price per 100 sq. yd. delivered. \$24.00 \$28.00 \$3.1 b.—24 gauge leght price per 100 sq. yd. delivered. \$26.00 \$26.00 \$3.4 b.—24 gauge leght price per 100 sq. yd. delivered. \$26.00 \$26.00 \$3.4 b.—24 gauge leght price per 100 sq. yd. delivered. \$26.00 \$26.00 \$3.4 b.—24 gauge leght price per 100 sq. yd. delivered. \$26.00 \$26.00 \$3.4 b.—24 gauge leght price per 100 sq. yd. delivered. \$26.00 \$26.00 \$3.4 b.—24 gauge leght price per 100 sq. yd. delivered. \$40.60 \$40.6			Sand (per cubic yard)\$3.37	
28 18 - 24 gauge light price per 100 sq. yd. delivered 28.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 28.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 28.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 28.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 28.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 28.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 28.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 28.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 39.00 3.4 1b - 24 gauge heavy price per 100 sq. yd. delivered 39.00 3.00	METAL LATH—		3.37	
3.4 b.—24 gauge heavy price per 100 sq. yd. delivered 28.00 Add 5 cents per sq. yd. for galvanized.	2.3 lb.—26 gauge price per lW sq. yd. delivered \$24.00 2.8 lb.—24 gauge light price per 100 sq. yd. delivered. 26.00		1/2 In. Glaves (per cubic yard)	•
Limbe (Hydrats)	3.4 lb.—24 gauge heavy price per 100 sq. yd. delivered 28.00			
Finishing, per 50 lb. bag				\$40.00
SAND AND GRAVEL— Sand (per cubic yard) \$1.55 \$1.65 \$3.00 \$3.00 \$3 in. Gravel (per cubic yard) \$2.90 3.00 \$4 in. Gravel (per cubic yard) \$2.90 3.00 \$4.6	Finishing, per 50 lb. bag		Partition, 1/4x31/4, B. and Btr	58.50
Sand (per cubic yard)	SAND AND GRAVEL—	.49	T:-:- COC TO J TO 1-4 & 9-9 &	
Tapestry (delivered)	Sand (per cubic yard) \$1.55		Flooring, B. and Btr., E. G., 1x3	8 7.00
Tapestry (delivered)			Flooring, B. and Btr., F. G. 1x3	
Caledonian (delivered)	FACE BRICK—		I IMDETS. NO. I. TOURII, SHOTE ICKI, OXIS TO IAXIS III.	•
Smith Grey (delivered)	Caledonian (delivered)		10 to 20 it 39.30	40.00
Shingle Shin	Smooth Grey (delivered)	47.00	Finish, S2S, Cl., 1x6 in\$91.50	
Asphalt, Strip (per square)	SHINGLES—	30.00	Siding, 4 in. Bevel, 10 to 20 ft	43.25
STAINED WOOD SHINGLES— 16 in Extra Clear (per square, delivered) \$11.00 \$11.00 \$10.50 \$10			8 inch Bungalow 69.25	
16 in. Extra Clear (per square, delivered)	STAINED WOOD SHINGIES		HARDWOODS— Oak Flooring My1M and 2 in Clear Otr White 1106 50	eine en
18 in Perfection (per square, delivered) 12.00 12.00 24 in. Royal (per square, delivered) 12.25 12.25 24 in. Imperial (per square, delivered) 12.50 12.50 25.50	16 in. Extra Clear (per square, delivered)\$11.00		Maple Flooring, 13/16x23/4 in., Clear	
VIRIFIED SEWER FIPE-	18 in. Perfection (per square, delivered) 12.00	12.00	RED CEDAR— Siding 1476 Clear	449 00
VIRIFIED SEWER FIPE-			Shingles, Clears, Per M 5.41	
4 in. (cents per foot) \$0.12 \$0.23 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00		12.30	COMMON BRICK— Per M., f. o. b. job	\$17.00
SLATE ROOFING—	4 in. (cents per foot)\$0,12		PORTLAND CEMENT—	7-7.00
Bangor or Slatington, 8x16 in. (per sq. at quarry) \$8.40 CORNER BEADS (Galvanized)— Per Foot	SLATE ROOFING—	.18	BDIs. in car lots to contractors, not including containers \$2.35	\$2.35
Per Foot \$0.05 \$	Bangor or Slatington, 8x16 in. (per sq. at quarry) \$8.40	\$8.40	STRUCTURAL STEEL—	
WALL TIES (Galvanized)— \$5.00 \$5.00 \$5.00 \$1/4 in. \$2.18 \$2.18 Per Thousand \$5.00 \$5.00 \$1/4 in. \$2.18 \$2.18 FLUE LINING— \$0.33 \$0.30 WALL BOARD— \$50.00 \$50.00 8/4 x 13 in., Per Foot. 50 .45 Per 1,000 sq. ft. in lots under M. \$50.00 \$50.00 HOLLOW TILE— \$ x 12 x 12 in., heavy. Each, delivered. \$0.22½ \$0.22½ \$0.22½ \$0.22½ \$0.22½ \$1.25 HAIR— \$ in. \$ 1.45 \$1.45 \$1.45 \$1.45 \$1.45		\$0.05	CRUSHED STONE (cu. vd.)	\$3.00
### WALL BOARD— ### 85% in. Per Foot	WALL TIES (Galvanized)—		34 in. \$2.18	
8½ x 8½ in. Per Foot \$0.33 \$0.30 Per 1,000 sq. ft. in lots under M \$50.00 \$50.00 8½ x 13 in. Per Foot .50 .45 Per 1,000 sq. ft. in lots 1 M to 2½ M 45.00 45.00 HOLLOW TILE— 8 x 12 x 12 in., heavy. Each, delivered \$0.22½ \$0.22½ Sand (per cubic yard) \$1.25 \$1.25 HAIR— ½ in. Gravel (per cubic yard) 1.45 1.45	FLUE LINING—	\$5.00	WALL BOARD—	2.18
HOLLOW TILE— 8 x 12 x 12 in., heavy. Each, delivered	8½ x 8½ in. Per Foot		Per 1.000 sq. ft. in lots under M\$50.00	
8 x 12 x 12 in., heavy. Each, delivered	HOLLOW TILE—		SAND AND GRAVEL-	
Per Bushel	8 x 12 x 12 in., heavy. Each, delivered \$0.221/8	\$0.221/2	Sand (per cubic vard)\$1.25	
		\$0.60	1½ in. Gravel (per cubic yard)	

Building Age and THE BUILDERS' JOURNAL



Rebruary

35 Cents



CON-JER-TEX

CANVAS ROOFING THE IDEAL ROOFING

POR Porch Floors, Sun Parlors, Sleeping Balconies, and all flat surfaces.

Wherever a durable flashing or a lining for a wood box gutter is required—

Wherever an economical, durable, attractive covering is needed—

Con-ser-tex Canvas Roofing will give satisfaction. It's a chemically treated heavy cotton fabric which will not crack, stretch, shrink, curl or peel. It's easy to lay and profitable.

Our Free Booklet, "Roofing Facts and Figures", illustrates and explains the many uses and advantages of Con-ser-tex.

WILLIAM L. BARRELL CO. of N. Y., Inc.

50 Leonard Street

New York City

Chicago Distributors: Geo. B. Carpenter & Co. 480-440 North Wells St. California Distributors: Waterhouse-Wilcox Co. San Francisco & Los Angeles

FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana

Home Builders!

Home Buyers!

A daily shower for health!



The Kenney Shower!! No

No Curtain

It means increased energy, efficiency.

Congress Concealed model

The daily bath, now the habit universally, has emphasized the importance of and the demand for showers.

The Kenney Shower, curtainless, in portable or stationary models, is the last word in shower bathing.

CONVERGING NEEDLE STREAMS

envelop the body from the shoulders down—no splashing, no deluge from overhead.

HOME BUILDERS and HOME BUYERS recognize the completeness of the bathroom equipped with Kenney Showers.

Send for the booklet "Your Bathroom with the Kenney Shower."

The Kenney Cutting Products Corporation
507 Fifth Avenue New York

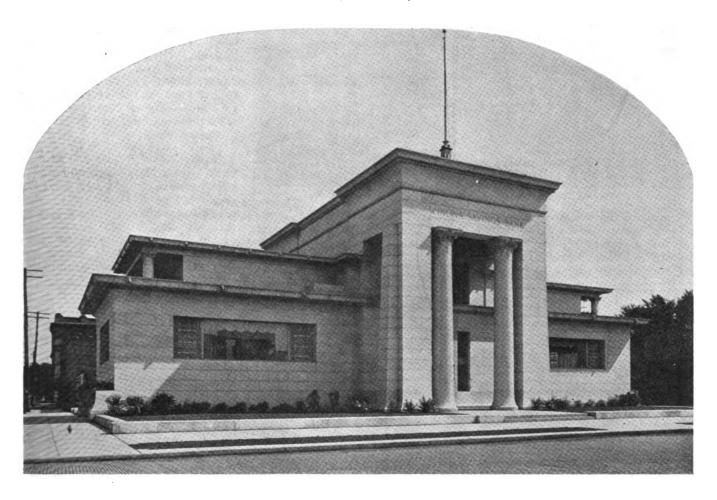
Digitized by Google

Building Age

AND

THE BUILDERS' JOURNAL

NEW YORK, FEBRUARY, 1923

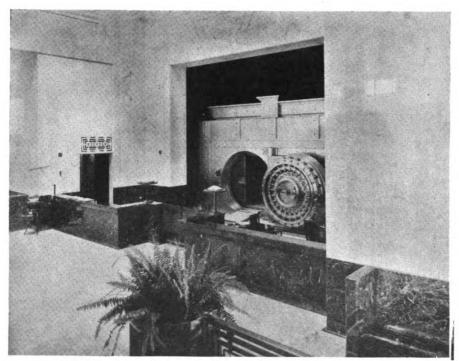


Creating an American Style of Architecture

Interesting Development of the Prairie Type of Design

E read about the various types of architecture: Egyptian, Greek, Roman, Norman, etc., and realize we have no distinctive American design. The Colonial types of our early settlers were modeled after old world styles. New Englanders developed one, the Dutch in Pennsylvania another, while the settlers of the South adopted a style that suited their conditions.

Illustrated By Photos and Floor Plans of the Winona Savings Bank Winona, Minn. George W. Maher Architect Thus by making different combinations and adaptations new styles were developed. It is interesting to note that some of the German and Austrian architects were striving for something new, but their work deteriorated rather into grotesque forms of over-ornamentation. It is forms of architecture of this sort that do not find a permanent place, as they are mere passing fads or fashions.



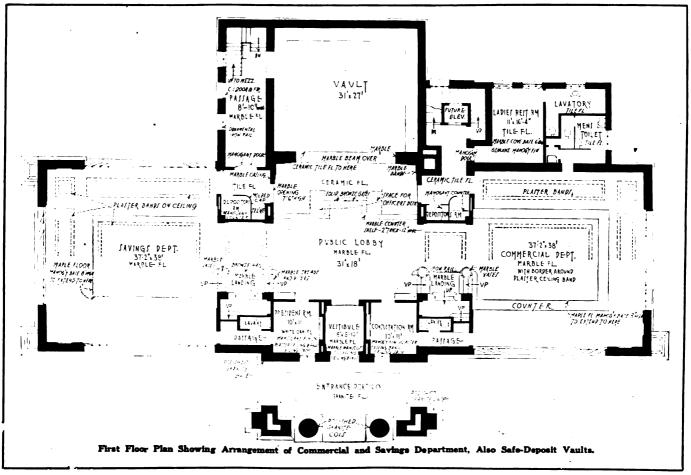
Entrance to Safe-Deposit Vaults.

Several of our architects in the midwest have developed a new type of architecture, which has come to be known as the "Prairie" type, or "Chicagoesque." It may

be that here we have the beginning of a real American style. Many important structures in the middle west have followed the architecture of the "Chicago" school of design. A very interesting example of this style of architecture is the bank building illustrated herewith. This is the work of Mr. George W. Maher, architect of Chicago, who is one of the foremost developers of this particular style of architecture.

The bank building itself is unique; as it is more than a mere home of a financial institution, it houses the Winona Savings Bank, at Winona, Minnesota. This is a city of about 20,000 population, located in a fertile section inhabited by thrifty farmers. The city is situated on the Mississippi River, about 110 miles southeast of St. Paul, and is served by five railroads. The city itself does considerable manufacturing in various industries.

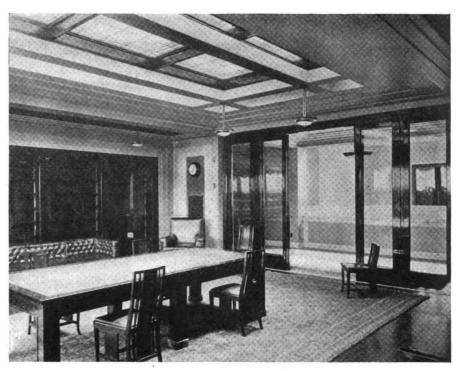
It is rather surprising to see such a well equipped and handsomely built structure in a city of this size; as it is a new type of a bank building. In every respect it is an institutional bank, as it serves its community in so many different ways, and it enters into the activities of the community in



many more directions than the ordinary run of bank. The officers of this institution have branched out in developing their community as they are far-sighted enough to realize that their business will grow bigger as the community prospers.

As the floor plans will indicate, the first floor consists of the ordinary banking space, one side being devoted to a commercial department, and the other a savings department with a large safe-deposit vault between, the central space forming an imposing lobby for both separate branches of the institution.

The second floor is devoted to institutional rooms where the public are encouraged to congregate and listen to lectures and subjects that are of value to them in a business way. On one side is the women's institutional rooms with balcony, dressing room, etc. On the other side are rooms for high-grade grange meetings or business meetings for the men. Between the men and women's institutional rooms and in the rear is an exhibit room where farmers and

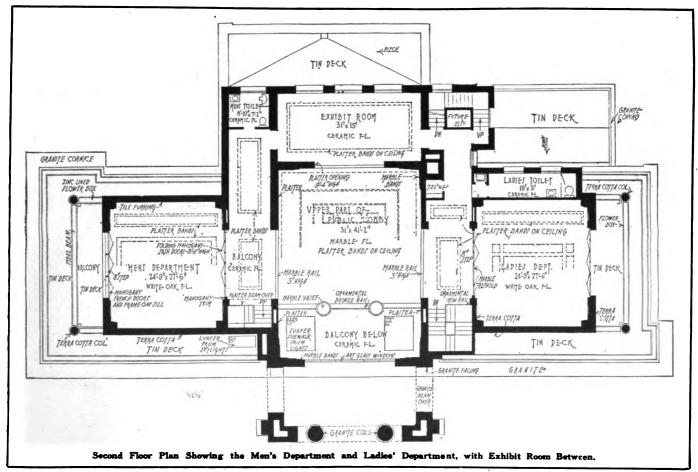


View of Men's Department, Looking Towards Inner Balcony.

others are awarded prizes, blue ribbons, etc., for the best produce of farms, etc.

Both the exterior and interior design has been carried out on

dignified and original lines. This type of architecture is not taught in any architectural school. It is original and can rightly be called an American expression of archi-



tecture. We quote the following by a writer in the "Christian Science Monitor":

The first notable example of the type was the Transportation Building of the World's Columbian Exposition in 1893. It was conspicuous for its combination of original design and modeling and the use the architect made of strong horizontal lines and broad wall surfaces treated in polychromatic colors. Louis Sullivan was the architect pioneer who first interpreted the character of Chicago, which as a distinctively American center pretty well weaned from continental and eastern influences was and is a fruitful field for a new expression. In recognition of his original use of ornament Mr. Sullivan received a special distinction from the French Government.

Since 1893 a small group of architects has continued to carry on the Chicago idea of design and architecture. Although their structures are not similar in general conception, detail, or ornament, they have a distinction of their own that amounts to resemblance, making them easily recognizable as belonging to the same school, whether found in Chicago, California, or Japan.

Their precepts of work and their approach constitute these architects as a school. They stand for freedom from the letter of precedent, from that minute imitation of the past and of period styles practiced in America. Its architects desire to prove today to be as fruitful as the past times whose interpretation has resulted in great art. The Chicago school believe the impulses inspiring great works of the past to be the inspirational impulses of all time and progress.

They arrive at such expression by fitting the actual needs of a building to the design. In creating a residence the architect does not turn immediately to the period style. He does not incongruously house an American captain of industry in an Italian villa. What he realizes is that American business executives to accomplish what they have must have some force in their personalities, some qualities of greatness that interpreted by an artist will result in a strong, arresting, beautiful, and purely American structure. What is more important these Americans have a

dwelling suited to their own needs and personalities, where they are in natural surroundings. As one of the architects has said: "If the work is done in a style that was evolved during the Italian Renaissance, then only the archaeologist can thoroughly enjoy such a product since the ordinary man is not living the life of an Italian gentleman during the sixteenth century."

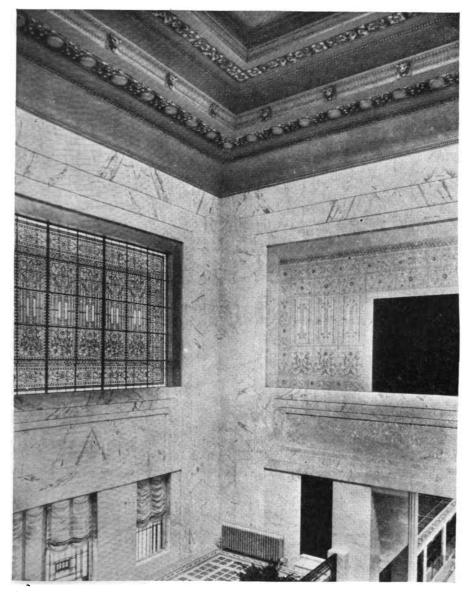
Another characteristic of the school is the fact that they seek inspiration in their environment, in local color. The exponents of the school are sincere in creating from present inspiration for they never copy the old forms, the details of the classic school such as the egg and dart molding, and the acanthus leaf; nor are Gothic forms used. Realizing that few

people respond intelligently to the classic style or understand it they bring to them the flower and leafage of their own fields which as architects they consider just as worthy of art expression as the flora of Greece.

For this reason, too, these architects do not design buildings that are out of touch with the practical situation or with the requirements of national design. They do not build medieval churches in which enlightened people must worship in the gloom of the past and in the shadow of superstition and Their belief is that mysticism. American churches should express greater toleration. American educational buildings often do not express progress in understanding; they hark back to medieval castles



Detail of the Two Marble Staircases.



Detail of Wall and Ceiling Over Public Lobby.

or are copies of degenerate Gothic. One of the Chicago architects has designed a school building unique in type. Light floods the school-rooms from the roof which is made of heavy glass. The windows thus remain artistic and in proportion.

A more definite example is American office buildings. Those that follow precedent are confronted with difficulty in combining the practical and the artistic. Everyone has seen tall structures covered with inartistic pilasters that are out of proportion and columns that do not scale to their facade, and detail and ornamental tropical garlands that are unsuited to their use. It is futile to so adapt tall buildings to the past where they never belonged. In all these

cases the letter has been interpreted and not the spirit. It should be remembered that each period type was the expression of progress in its time.

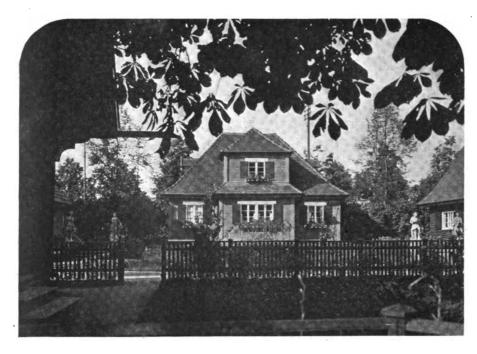
The outstanding representatives of this Chicago school are Louis Sullivan, George W. Maher and Frank Lloyd Wright. Their work is characterized by the use of strong horizontal lines. Mr. Sullivan excels in original ornament known as Sullivanesque ornamentation. He is prolific in his use of ornament and skillfully chooses many natural forms to combine into a single design. He selects his flowers from the locality where he is working.

Mr. Maher conceives with simplicity and directness, in broad masses and strength of surface spaces. The Doric spirit of design permeates his art but nowhere does he use any of its forms. In lieu of ornamentation he employs a refinement of moldings and broad simple wall spaces to accentuate the stone or texture effects. Sometimes he uses statuary for decorative relief. When he does ornament his buildings, he makes a realistic use of the flowers in the locality so that they are easily recognizable.

Mr. Wright deals in strong horizontal lines with a strong accentuation of the cornice overhang. That is to say he accentuates his cornice by projecting it considerably. His is a very unusual method of surface decoration with a treatment of art glass in his windows. He achieves ornamentation by a grouping of his windows. His design work is geometric; as his treatment of nature is conventionalized and he does not employ localized flowers.

Although they create new things the architects of the Chicago school are versed in the work of the past, for no one can hope to design on original lines without having a wide knowledge.

An architect must design something that the public will respond to with a spontaneous liking. Because these architects express the life around them, say their interpreters, a person reacts to their work and says, "I like it" without knowing why. When the same person sees something done in a period style he remembers the other things he has seen in that style and bases his judgment on comparison. His appreciation comparison. His appreciation comes from the head, not the heart and it is admiration, nót love. We have been brought up to admire these things not our own. If we could switch around and think the things we do and do with love are the things we should like, we could produce architecture in a decade that would be acclaimed the world over as the American style, expressive of American love of beauty and idealism. Yet the Chicago school has made a beginning. It is the only type of architecture evolved in the United States that has reached a point where it can be successfully compared with other styles and still retain a distinction of its own.

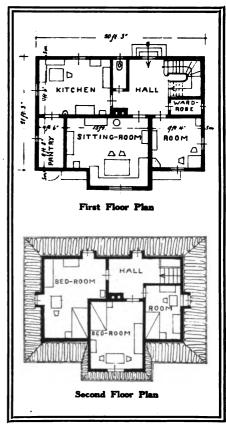


Building Model Homes in Germany

THE center of the world's stage is again being held by Germany, owing to a slight misunderstanding with France. Happily we are over here 3,000 miles away. The troubles they are having lead us to curiosity in regards to the building situation over

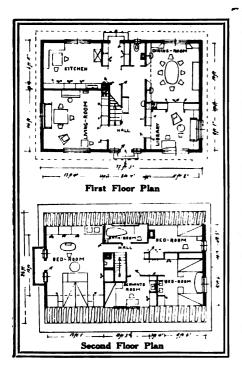
there. This will be of particular interest to the builders of America.

The housing shortage is as serious in Germany as it was in the United States, and fabulous prices, in marks, are being paid for accommodations. The entire situa-



tion is in rather bad shape. The building trade as a whole has been paralyzed by high wages and high cost of materials.

Different municipalities have tried various means to remedy this state of affairs by encouraging





Type of Model German House of 1922, Built at a Cost of About \$150 in United States Money—Amount ng to a Fortune in Marks

building. All sorts of inducements are made and in some cases substantial help in cash is given to enterprising contractors.

In spite of this, however, the number of dwellings erected since the end of the war is hardly worth mentioning. The prices at which these houses can be erected in Germany seems ridiculously low to us, but they have as much trouble getting the thousands of marks as we have in getting the dollars.

Believing that it would be of in-

terest to our readers, we are publishing three designs and what are termed model houses in Germany. These embody all the latest modern improvements that a first class house is expected to have in that country.

The different floor plans appearing with these pictures were specially drawn for us in Germany from the architect's plans. Their methods of illustrating houses are a trifle different from what we use in this country; we present them just as we received them. In order that our readers could compare sizes we asked that the dimensions be given in feet and inches instead of in the metric system.

The exterior of these houses are somewhat different from our Amer-

ican designs and we certainly have been using styles enough as models. The idea of painting designs on the shutters as shown on the double house will strike most of our readers as new—it certainly adds a bit of color to the plain stucco wall surface.

The floor arrangements do not differ very much from our or English customs, except that they seem to have a fondness for winders on their stairs. The lumber room is for storage and fuel; modern heating systems, such as we

enjoy, have not yet invaded the small German house.

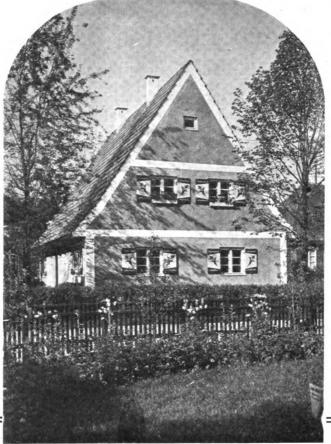
It will be noticed that in two of the houses shown no bathroom appears. The explanation we received on this was that in the locality where these houses were built there is a public bath where the people can take their Saturday night wash! This is an arrangement that would hardly meet with the approval of the American home owner.

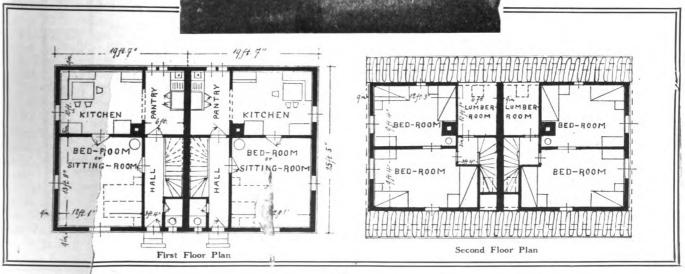
The different houses shown here were designed by Stengler and Hoffer, architects of

and Hoffer, architects of Munich, and they were erected by the Wuerttemberg, Fermsteinbau Achtung Gesselschaft of Stuttgart. They are pleasing in appearance, being erected in true German style so as to last for many generations.

The cost of building houses like the designs illustrated amounts to from 200,000 to 300,000 marks. In this case they can more or less be afforded only by the fairly prosperous. It might be of interest to state that this amounts to about \$100 to \$150 in United States money.

Could we build houses for that price here, there certainly would be a big rush for, them. Thank your stars, good reader, that you are in the good old U. S. A. and don't have to face such conditions.







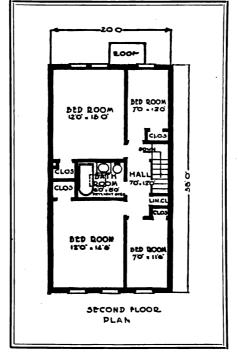
Modern Homes in a Row

Brick, Stucco, and Different Window Arrangements Lend Variety

O problem that the builder meets with is as difficult to solve as to avoid sameness in houses built in a row. In the design shown here, variety has been obtained by varying slight features. For instance, the first house towards the left has a front of all face brick. The next has brick for sills, lintels, and cornices, while the balance of the front is stuccoed over a brick base. In cases of this sort, the brick that is to be exposed is laid so as to project beyond the common brick wall, so as to allow proper depth for the stucco.

DINING ROOM HALL
INE T FLOOR
PLAN

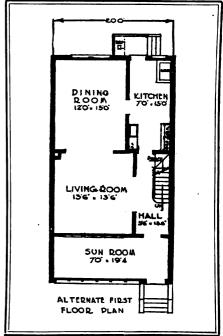
The third variation of design is another all-brick front, but there is a difference in carrying out the top, two round stone medallions add a touch of ornament. In this particular house, a living room is set back



so as to allow for a sun room in front, and its triple double casement window forms the feature. The upper wall is carried over this wide window opening by a steel beam with a bottom plate, so as to support the soldier course of brick. There is also a slight variation in the stoop designs; in the central house, the

high bulkheads have been omitted. It is little variations like this that stamp each house with its own individuality and relieves the row of that sameness which is, unfortunately, too common.

The row of houses shown here is one section of a development of 100 or more houses to be built by the Potter Avenue Realty Corporation, Potter avenue, Astoria, New York City. By building this type of speculative house in large numbers, as they will do, certain economies will result, enabling them to offer the houses at a more moderate price than usual when a single house is built.





The Contractors' Overhead Problem

It Must Be Carefully Figured to Make a Success in the Contracting Building Business

By GERHARDT F. MEYNE

N an interesting address delivered before the recent convention of the Associated Building Contractors of Illinois at Chicago, the author spoke as follows:

Estimating

Aside from the actual construction of the building, the preparation of estimates is, of course, one of the most important functions in the contractors' business, although sometimes it is merely looked upon as a necessary evil. Builders who make the mistake that estimating is a necessary evil, overlook the fact that it is a most important factor toward making the business a success or a failure.

Listing Materials

It is needless to say that proper listing of materials is essential. The methods used by so many builders in lump estimates is a very serious mistake, and usually ends up with a contractor going to the "great beyond" without any visible means of support for his family, after a life of slavery.

Surety Bonds

Managers of bonding companies are very careful to scrutinize business methods of a contractor or building corporation before they are willing to furnish a surety bond. It isn't often that the very responsible builder with a long and good reputation as to fair dealings, is requested to furnish a bond. Architects, engineers, material dealers, and owners usually know something about the business methods of a contractor, and therefore the Bonding Companies are usually asked to bond the low bidder or irresponsible bidder.

The first question the companies must know is something about the builder requesting the bond; whether or not he understands his business thoroughly, whether or not he is capable of preparing a correct estimate himself, and they also ask about the figures of his estimator or other help, and if the builder is competent to check them and have good judgment.

Second. The Bonding Company is most anxious to know about the general reputation of the builder, his honesty in meeting his financial obligations and his reputation among those with whom he does business, such as sub-contractors, material men, and how he stands with colleagues in the business.

Third. One of the prime requisites of the builder is of course his financial ability when he desires a bond. Not only is his capital scrutinized, but his business efficiency and general executive ability. Needless to say, it creates a bad impression when builders appear in the office of the bonding company with their figures on the back of an envelope. Probably they have cubed a job, or, worse yet, have taken the job at a figure that it was previously done for. Needless to say, the man with a well appearing sheet, his items all properly itemized, showing that the plans and specifications have been carefully surveyed, that this systematic builder will have considerably less trouble to be bonded than the sloth. Bonding Companies admit that they seldom get an opportunity of bonding the best ones.

Overhead

The subject assigned to me does not permit me to go into the correct method of preparing a correct estimate; that subject is so huge that it will require several days of lecturing and debating in open forum. Some day I hope we will have the time to go into this, but the subject assigned to me is so closely related, and men who are known as careful operators, very often pay little heed to it. The item of overhead expense is one that has long been neglected by the smaller builders, but is an item of considerable consequence, and one that should have the most careful consideration of every builder.

Complete Cost

I would like to caution and admonish, as well as counsel, advise, and command, that out of every building operation that you under-

take, you get back in money, as least the actual cost of its complete production plus the overhead.

Profit

The item of profit is one which your own avariciousness demands, or the competition of colleagues permits, or your conscience will allow you to take, but you are at least entitled to all the money you put into an operation. This money, as said before, is the cost of labor and materials, permits, liability insurance, bonds, owners' contingency insurance, fire insurance, miscellaneous contingency such as cutting for other trades, removing of debris, field overhead, and general overhead.

Explanation of Overhead

I will directly come to the explanation of what I mean by field overhead and general overhead or administrative overhead. When you have made up your estimate after you have totaled in the cost of the building, you should allow a certain percentage for overhead, which is sometimes called the cost of doing business. This percentage is calculated in various ways. It is usually determined by each contractor according to the size of his operations and personal efforts.

Administrative Overhead

Administrative overhead or expense, is that charge which cannot be directly charged to a project or job, and should be again divided into two classes; fixed office expense and miscellaneous expense. Fixed office expense are salaries to executives, (I mean by salaries to executives that the builder should put himself on the payroll), estimators, clerks, rents, plant depreciation, furniture and fixture depreciation, interest on equipment, cost keeping and its involved helpers, bookkeeping and its involved cost, yard men, and tool men. Miscellaneous expense is of course invisible and is usually composed of stationery, bill-heads, advertising. interest on borrowed money, office supplies, telephone,



telegraph, postage, business travel, automobile upkeep, taxi fares, charity, business insurance, legal expense, tool and equipment maintenance and team account, etc.

Field Overhead

Field, overhead, according to my notion, should again be divided into two classes: non-productive labor and its kindred expenses, and such invisible overhead as accrues on the job, whether or no, sometimes cannot be avoided no matter how much endeavor or effort the builder may put forth to stop it.

First Kind of Field Overhead

Coming back to field overhead of the first class, which we shall call the non-productive field labor overhead, which is made up of superintendents' time, timekeepers, material clerk, equipment, rentals, etc., setting up equipment, removing and putting equipment in good order and hauling it back to the yards, temporary offices, tool shed, cement shed, temporary power and light, temporary enclosures and fences, sidewalk protection, water connections, tarpaulins, machinery protection, equipment hauling, etc. (Offices, sheds, etc., should be and are by me considered cost.)

Invisible Overhead and Lost Time

Invisible overhead arises on a job or project, and is very often incurred by negligence, sometimes sabotage. More often the best efforts cannot prevent it and should be taken into consideration when making up an estimate.

Lost time is the bottomless pit into which more money has been dumped by contractors, than can be estimated. A day free from delays will produce twice as much as an average day. To attain the ideal production means cost keeping and system; hence overhead. Invisible overhead is usually composed of about the following items: Interference of inclement weater, time lost by break downs, time lost by shifting plants, time lost waiting for other parts of the project to be made ready. Time lost waiting for material. Time lost by shifting men to other jobs. Efficiency lost by putting on new men. Crews too small to be effective in relation to superintendents, foremen, etc., as was the case with a bricklaying and plastering situation last summer.

builder often had his foremen working with two or three bricklayers and as many laborers. Could he have obtained 20 bricklayers, his overhead would have been the same per diem.

Making Up of Overhead

The making up of overhead is of course not alike in every office, but if your gross expense for the year, including your own salary, is \$15,000.00 and you do a business of \$300,000.00 per year, naturally your overhead would be five per cent. There are a number of books written on the subject of "Cost Keeping Systems" on construction work, of more or less value, but nevertheless the builder does neglect the effort of familiarizing himself, and studying the system offered for very reasonable money.

System

Taking the first step in system is to map out the object desired and also to map out the results to be obtained and always preferably on paper. It is astonishing what cold figures on paper will analyze after a job has been completed. System includes the keeping of records and costs, such as bookkeeping, filing system, and estimating. The contractor sometimes objects to a system and calls it red tape, but somehow or other the operators who have surrounded themselves with some red tape, do not seem to make assignments in bankruptcy as often as the man who will have none of it. The small contractor objects to it because it takes up so much of his time. If the small contractor's business has grown to such an extent that he must work more than ten hours to keep abreast with his work, then it is for him absolutely necessary to acquire some help, so that he might keep his business records correct as to the income and the outgo of money, the record of his banking accounts, the condition of his equipment and tools, and he at once then acquires overhead in addition to his own salary. As to what a builder's salary should be, his competitor, his conscience and his avariciousness will have to be his guide.

Sub-Contractors' Overhead

We have been discussing the overhead of the general contractor, usually known as the carpenter or mason contractor. His overhead is, of course, considerably less than the

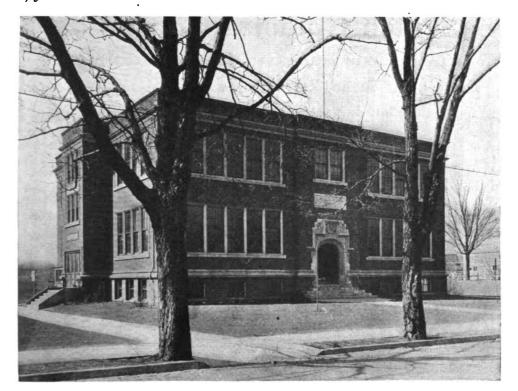
overhead of, let us say, the plumbing contractor or the painting contractor. The average overhead of the painting contractor is approximately 20%, consiting of the usual fixed expenses and miscellaneous expenses, use and depreciation of brushes, paint pots, step ladders, drop cloths, jack ladders, small cloths, auto truck, etc. It has been found that 221/2% is an average overhead for the plumber and ranges from 18 to 20%, in small establishments where the proprietor puts in his time in the evening, making out calculations, bills, use of tools, etc.

Cost Keeping

I want to say just one word about the cost keeping and bookkeeping. The psychology of having a cost keeping system tends to bring out efficiency in your crews, and if employed for no other reason, would pay for itself on each job, whether cost plus or straight contract. An owner who objects to paying for a cost keeping system, having a cost plus job, is cheating himself, and is very apt to have surprises before the job is done, and quite often an existing friendship is broken up by some ugly charges.

Uncle Sam in his desire for money has foisted upon us the income tax, and has taught us all how to keep books or go to jail. But I would like to caution contractors to constantly keep after their bookkeepers to have their bills ready and get their accounts rendered, and insist upon payments. It is red tape and overhead to keep things checked up, but it so often happens that the contractor who is negligent about getting in his bills is the one who is making the mistake when paying up time turns up and Mr. Owner cannot get all the money he needs to carry on his business or to complete his project. The man who has his accounts up to the minute, is up on his collections, seldom has to go to court, or employ the mechanics' lien law. A little red tape has saved him a loss on cost plus work; where it is known that you have an honest-to-God system or an overhead which shows up every item of cost on the project, you will have no trouble with your statemnts, and 90% of the time Mr. Owner will never send in an auditor. Again I caution you that the cost of the building is made up of its labor, material, its various contingencies, and OVERHEAD.





Artistic Design *for* School

The Beecher School, Westville, Conn.

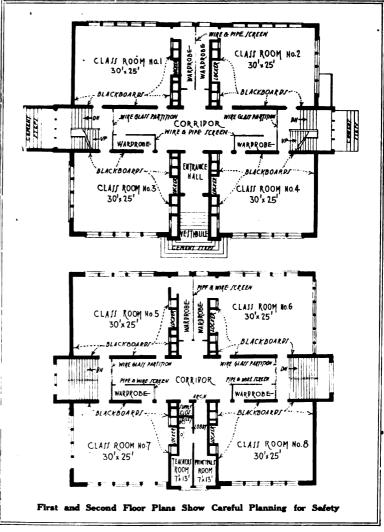
BROWN& VON BEREN*
Architects

THE progressiveness of any community is reflected by the type of school buildings that they erect. Being the training ground for our future citizens, it is well that their introduction to the discipline of an outside world should begin in an environment where everything has been arranged for convenience and health.

Proper lighting, heating, and ventilation are essential requirements of every school. Then the next subject of equal importance is the question of safety; adequate stairways and entrances must be provided. Fireproof construction whenever possible, or at least a fire-safe first floor.

In the interesting school design shown herewith, three separate entrances have been provided: four classrooms being located on each of the two floors opening into wide corridors. Each stairway is cut off from the corridor by a wire glass partition; two exits being provided from each classroom; one direct to the stair hall, the other to the corridor. Slate blackboards are placed on two walls in all of the classrooms. The basement contains heating plant, toilets, and playground.

The exterior of this school is of a simple dignified design. The main entrance has just a suggestion of Gothic in its terra cotta detail. This contrasts pleasingly with red face brick walls, which are further relieved by the use of white terra cotta for the base course, window sills, and cornice, as well as the inscription panel over the main entrance. The steps and basement window sills are of toncrete finished in light gray.



Livable Dutch Colonial House

Stucco and Shingle Finish Form Attractive Combination of this Convenient Seven-Room Home

HIS house reflects the good living of old Colonial times. A large living room with an open fireplace where the family congregates, a charming alcove with comfortable seats beneath a group of windows—this is a living room that is true to its name.

A small entrance vestibule gives the desired privacy, a good size dming room with ample windows, and a kitchen and pantry that are both completely equipped; these, with a large living porch, complete an ideal arrangement for the first floor.

Easy stairs lead from the living room, while the cellar stairs go down from the kitchen. The steps from Specially Designed for

BUILDING AGE
and
THE BUILDERS' JOURNAL

Together with Construction Details

by R. C. HUNTER & BRO.
Architects New York

the main stairs have a door at the kitchen, thus giving privacy and, at the same time, allowing the housewife to reach the second story from the kitchen, a great convenience.

On the second floor we have a most compact arrangement with four good bed rooms and a bath. Every foot of space is utilized.

Each bed room has a generous closet and a linen closet opens from the hall. Plenty of closets make the housework easy by providing a place for everything, and everything in its place—order being a prime requisite to good housekeeping.

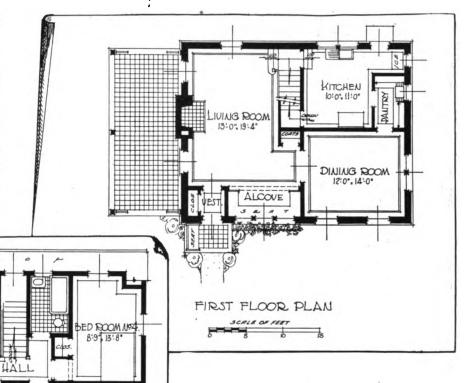
The first story walls of the house are stucco finish on hollow tile, the



gable and dormer walls are white shingles on frame.

Numerous large windows give light, cheerful interiors while the small panes carry out the old Colonial spirit of the design and give the house a distinctive character.

The interiors should be finished throughout in white or ivory enameled woodwork and mahogany doors, while the walls could be either tinted or papered, to suit one's taste. The bath room has a tiled floor and wainscot. Estimated cost \$9,800.



Quantity Survey
of Livable Dutch
Colonial House

HE quantities given are for estimating. All measurements are NET unless otherwise noted; areas given for such items as sheathing, flooring, etc., are net areas to be covered, with no allowance for matching, waste, etc. Minor outs have been disregarded.

BED 1000M NO3.

BED ROOM NOZ.

SECOND FLOOR PLAN

10:0".13:4

BED ROOM NO!

10:0" . 14:8

Excavation

Excavation	
(Excavation for pipe trenches not incl	luded)
Excavation for cellar	234 cu. yds.
Excavation for footings	14 cu. yds.
Excavation for areas	8 cu. vds.
Excavation for trench walls	12 cu. yds.
Excavation for leader drains and dry	•
wells	10 cu. yds
Backfilling around walls, etc	38 cu. yds.
Leader drains and dry wells	•
Field stone for dry wells	10 cu. yds.
4 in. salt glazed tile drain pipe	30 lin. ft.
4 in. elbows	5
Masonry	
Concrete work	
Concrete for cellar walls	805 cu. ft.
Concrete for footings	177 cu. ft.
Concrete for trench walls	163 cu. ft.
Concrete for area walls	105 cm ft

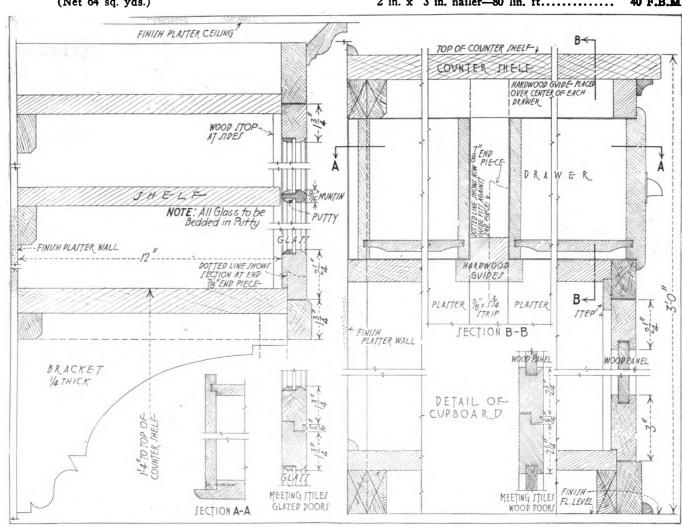
Such items as clearing site, temporary work and protections, scaffolding and general equipment and supplies have not been included.

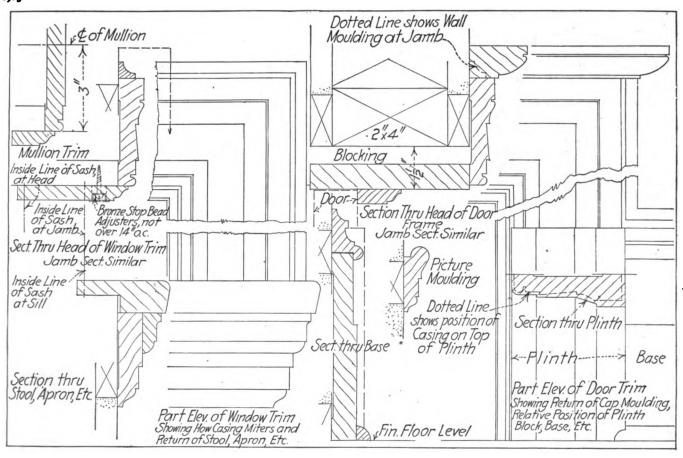
Such items as are marked "Unit" are to be estimated in a lump sum, following requirements of plans and specifications.

Cellar floor (3 in. concrete and 1 in. cement finish)	33 sq. ft.
Outside cellar steps (conc. cement	
	10 sq. ft.
Area bottoms (brick and sand) 4	Ю sq. ft.
Porch floors (12 in. cinders, 3 in. conc.	
and 1 in. cement finish colored and	4.
blocked off)	′3 sq. ft.
Concrete forms	
Pointing cellar window sills	18 lin. ft.

B LUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by BUILDING AGE and the BUILDERS' JOURNAL, 239 West 39th Street, New York.

Hollow Tile 8 in. x 12 in. x 12 in. block (or 560 blocks)	560 sq. ft. 36 blocks 90 80 112 slabs	Dampproofing under stucco, net	850 sq. yds. 86 sq. yds. 43 sq. yds. 3 Units 140 lin. ft.
Brick Work Common brickwork for chimney (or 2.3 M.)	114 cu. ft. 1 Unit 280 brick	Tile work for Bath Room Floor (1 in. hex. white) Wainscot (3in. x 6 in. white glazed wall tile 6 in. base Cap	28 sq. ft. 92 sq. ft. 18 lin. ft. 23 lin. ft.
Face brick for fireplace hearth and jambs (or 112 brick)	16 sq. ft. 20 sq. ft. 62 lin. ft.	Sheet Metal Work Tin flashing for roofs, etc Tin flashing and counter flashing for chimney, etc Tin valley lining	112 lin. ft. 10 lin. ft. 16 lin. ft.
throat, etc.). C. I. ash dump C. I. cleanout door for ash pit (16 in. x 12 in.) C. I. cleanout door for boiler flue (8	1 Unit 1 Unit 1 Unit 1 Unit	Flashing for column caps and brackets 4 in. half round copper hanging gutter 3 in. x 4 in. copper leaders 3 in. dia. leaders Bends for same	6 144 lin. ft. 54 lin. ft. 24 lin. ft. 18
Thimble for boiler flue (9 in. dia.)	1 Unit 620 sq. yds.	Gutter thimbles	22 lin. ft.
(Net 515 sq. yds.) Three coat Patent plaster on hollow tile, gross	92 sq. yds.	(All No. 1 common stock, hemlock, rough un Cellar girders: 6 in. x 10 in. L. L. Y. P. 5/12	300 F.B.M.

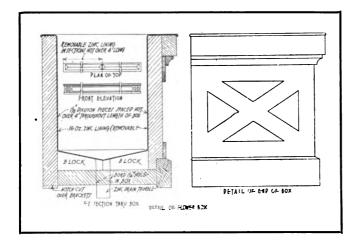




Carpentry—Continued	
Wall plates—	
3 in. x 8 in.—4/16, 2/14, 1/12, 1/10	228 F. B. M.
Posts—4 in. x 6 in.—6/10	180 ·F. B. M.
Studs, girts and plates, 1st floor—	
2 in. x 4 in.—80/8	427 F. B. M.
2 in. x 4 in.—80/8	1387 F. B. M.
lst floor joists—	
2 in. x 10 in.—11/16, 21/14, 11/12	1004 F. B. M.
2nd floor joists—	
2 in. x 10 in.—32/16, 11/14	1109 F. B. M.
2nd floor ceiling joists—	
2nd floor ceiling joists— 2 in. x 6 in.—25/14, 25/10	600 F. B. M.
Rafters—2 in. x 6 in.—30/16, 24/12	768 F. B. M.
Cut to rad.—2 in. x 6 in.—34/7	238 F. B. M.
Ridge—2 in. x 8 in.—2/16	43 F. B. M.
Floor bridging—2 in. x 3 in.—350 lin. ft	175 F. B. M.
Cellar partitions—2 in. x 4 in.—7/14, 8/10	129 F. B. M.
Living porch rafters—2 in, x 4 in.—19/12	152 F. B. M.
Living porch ceiling beams—	
2 in. x 4 in.—19/10	127 F. B. M.
Plates—2 in. x 6 in.—4/10, 9/8	112 F. B. M.
Cornice outlookers—2 in. x 4 in.—17/12	136 F. B. M.
Sheathing (7/8 in. x 8 in. shiplap) walls—to	
cover	1165 sq. ft.
Sheathing paper (waterproof)	1200 sq. ft.
Shingle lath—7/8 in. x 3 in	3600 lin. ft.
Grounds (3/4 in. x 2 in. surfaced 1 side)	2200 lin. ft.
Sheathing for cellar partitions—	
(7/8 in. x 8 in. shiplap)—to cover	290 sq. ft.
Rough flooring (7/8 in. x 8 in. shiplap)—	-
1st and 2nd floors, to cover	1400 sq.ft.
Furring (7/8 x 2 in.)	400 lin. ft.
Shingle roofs (18 in. stained shingles) 17.2	
squares1	1.800 shingles
Shingle sides (24 in. stained shingles) 7.34	,
squares	2500 shingles
Exterior Finish	3
Main cornice—7/8 in. x 6 in. fascia	64 lin. ft.
Raking cornice—2 in cove	144 lin. ft.

Dormer cornice—	
7/8 in. x 8 in. soffit	54 lin. ft.
7/8 in. x 4 in. fascia	54 lin. ft.
2 in mould	54 lin. ft.
Porch finish—	
Living porch—6 in. x 6 in. box cols. 7 ft. 8 in.	
long, with caps and bases	4
5/8 in. x 7/8 in. cove	4
7/8 in. x 6 in. soffit	68 lin. ft.
	112 lin. ft.
7/8 in. x 4 in. frieze	
5/8 in. x 7/7 in. cove	44 lin. ft.
Entrance porch—	
Portable seat with back, etc., (4 ft. 0 in.	
long)	1
Sawed brackets (12 in. face, 15 in. deep, 42	
in. proj.)	2
7/8 in. x 8 in. soffit	16 lin. ft.
7/8 in. x 4 in. frieze	18 lin. ft.
2 in. cove	14 lin. ft.
Front facia with key block, etc	1
Flower box—See detail.	-
(1 1/8 in. wood boxes lined with zinc) 12	
in. x 12 in. x 9 ft. 8 in. long	1 Unit
Cellar Bulkhead—	1 Omt
7/8 in. x 6 in. M. & B. ceiling—to cover	74 sq. ft.
Windows—	/ + sq. 1t.
Frames complete with sash, outside trim,	
etc. Sash 1½ in. thick, glazed D. T. Cellar windows—	
Single top hung sash, casem. 3 ft. 0 in. x	•
2 ft. 0 in., 4 light	3
Mull. sash, ea. 3 ft. 0 in. x 2 ft. 0 in., 4 light	1
First floor windows—	
Triplet D. H. sash, ea. 2 ft. 6 in. x 5 ft. 0 in.,	_
12 light (masonry)	1
Single D. H. sash, 3 ft. 0 in. x 5 ft. 0 in., 16	
light (masonry)	4
Single D. H. sash, 2 ft. 6 in. x 3 ft. 2 in., 12	
light (masonry)	2
Mull D. H, sash, ea. 2 ft. 6 in. x 3 ft. 2 in., 12	
light (masonry)	2

Exterior Finish-Continued Second floor windows-Single D. H. sash, ea. 2 ft. 6 in. x 3 ft. 2 in., 1 light (frame)..... 11 Attic windows-Single casem. sash, 1 ft. 6 in. x 2 ft. 4 in. 2 1 light Shutters—(11/8 in. thick, solid paneled) 3 ft. 0 in. x 5 ft. 1 in..... 4 pr 2 ft. 6 in. x 3 ft. 3 in. pr..... Blinds—(11/8 in. thick, movable Louvres) 2 ft. 8 in. x 4 ft. 1 in..... 11 pr. 2 ft. 6 in. x 3 ft. 3 in..... 1 pr. Exterior door frames—(134 in. thick, rabbeted) complete with outside trim. Rear ent. door, 2 ft. 8 in. x 7 ft. 0 in. x 134 in., glazed.....



F (() 4 2 (4 10 in - 7 (4	
Frame for front ent. door 2 ft. 10 in. x 7 ft.	1
Frame for rear ent. door 2 ft. 8 in. x 7 ft.	•
0 in	1
Frame for door to living porch, 2 ft. 10 in.	
x 6 ft. 8 in	1 .
Exterior doors—(All to detail).	
Front ent. door, 2 ft. 10 in. x 7 ft. 0 in. x	
134 in., glazed	1
Door to living porch, 2 ft. 10 in. x 6 ft. 8 in. x 13/4 in., glazed	1
74 , 5	•
Finished flooring—	
Living room, dining room, alcove and vest.	
plain sawed, white oak, 13/16 in. x 2¼ in. —to cover	466 sq. ft.
Kitchen, pantry, etc., No. 1 maple, 13/16 in.	100 sq. 1t.
x 2½ in.—to cover	149 sq. ft.
Second story, No. 1 comb grain Y. P., 7/8	T00 f:
in. x 2¼ in.—to cover	590 sq.ft.
cover	180 sa ft
Lining paper under floors	1100 sq. ft.
Slat floor under laundry tubs, 3 ft. 0 in. x	_
4 ft. 0 in	1 Unit
Joist hangers (¼ in. x 2 in. W. I.) For 2 in. x 10 in. beams	0
For 4 in. x 10 in. beams	8 8
Beam anchors, $\frac{3}{6}$ in. x $\frac{1}{2}$ in. x $\frac{18}{2}$ in.	25
Wall plate anchors, 34 in. x 24 in. bolt with	
washer	30
Cement filled pipe cols. in cellar, 4 in. dia. x	
7 ft. 6 in. long, with cap and base	· 5

I ne Du	uaers	JOWAN
Interior Finish		
(Whitewood, unless noted)		
Door Trim— % in. jambs, ½ in. stops, % in. x 4½ in. moulded and mitered trim with wall moulding. Trim both sides.		
For doors 2 ft. 6 in. x 6 ft. 8 in	6 se 8 se 1 se 1 se 1 se 1 se 1 se	ets et et et et
Trim for inside of exterior doors—		
Front ent. 2 ft. 10 in. x 7 ft. 0 in	1 se 1 se	t
Trimmed openings finished same as for doors- Opg. 5 ft. 0 in. x 6 ft. 8 in	1 se 1 se	
Trim for windows— 7/8 in. x 4½ in. moulded and mitered trim with wall moulding, ½ in. stops, 1½ in. moulded stool, ½ in. moulded apron, 5/8 in. x ½ in. cove under stool. For windows, triplet ea. 2 ft. 6 in. x 5 ft.	1 04	
O in For windows, single 3 ft. 0 in. x 5 ft. 0 in For windows, single 2 ft. 6 in. x 3 ft. 2 in For windows, mull ea. 2 ft. 6 in. x 3 ft. 2 in. For windows, single 2 ft. 8 in. x 4 ft. 0 in For windows, single 1 ft. 6 in. x 2 ft. 4 in Base (% in. x 6 in. moulded) % in. x 4 in. plain (closets) 2 in. base mould ½ in. quarter round at floor Picture moulding % in x 2½ in		ets ets ets ets ets n. ft. n. ft. n. ft.
Mantel for living room	1 U 1 U	nit
Interior doors— (2 cross panel birch Veneer) Door 2 ft. 6 in. x 6 ft. 8 in. x 1½ in Door 2 ft. 4 in. x 6 ft. 8 in. x 1½ in Door 2 ft. 4 in. x 7 ft. 0 in. x 1½ in Door 2 ft. 10 in. x 6 ft. 8 in. x 1¾ in. (glzd. D. T.)	6 8 1	
Solid pine cellar door— 2 ft. 6 in. x 6 ft. 8 in. x 1½ in 2 ft. 8 in. x 6 ft. 6 in. x 1½ in	1	
Whitewood door to plumbing pipes— 1 ft. 6 in. x 3 ft. 0 in	30 li 24 li 15 li	n. ft. n. ft. n. ft. n. ft.
Main stairs 1st to 2nd story— 14 risers, 3 ft. 2 in. wide, box pattern Cellar stairs, 12 risers, box pattern Attic stairs, 13 risers, 2 ft. 10 in. wide, box	1 F	light light
pattern	1 F)	light
General Conditions Add for permits, fees for water and sewer etc., insurance and general overhead charges.	conne	ctions,

Allow for general work not listed, such as grading, planting, etc.

Include sub-bids: Hardware and applying same, painting and decorating, plumbing and gas fitting, heating and electric work.



OFFICE and JOB MANAGEMENT

Things the other man has found out that save money



Planning Building Work in the Office

By M. J. FARRELL

ULLY as important as the disposition of materials and plant on the building site is the planning of the work in the office.

The field superintendent may be an able man but unless the office does its share in co-operating with him he is hampered in pushing the job along

in the least possible time and with on just the same.

minimum expense. It must never be forgotten that during every day the job is shut down for lack of material, weather conditions, failure of sub-contractors to finish their work on time, and so on, the overhead goes

	COST PROGR	ESS BOOK	3	iob No. 18.	
Items	Estimated Quantities	Estimated Cost		Wey 5	May 12
Survey		\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00
Permits		150.00	150.00	150.00	150.00
Excevation	500 o. y. dirt	400.00	400.00	420.00	420.00
Foundations	3500 s. f. forms	1050.00	İ	960.00	960.00
	4100 c. f. conc.	2050.00		1740.00	1740.00
Frazing	15,500 в. и.	1550.00		1620.00	1620.00
France	46	960.00		920.00	920.00
Sheathing	10,600 В. И.	864.00		510.00	\$20.00
Clapboards	5,750 sq. ft.	690.00		622.00	622.00
Partitions, Bucks, Grounds, etc.	9,270 sq. ft.	927.00		(232.00) 665.00	(127.00) 792.00
Underflooring	5,000 B. E.	640.00		660.00	660.00
Sheet Metal		375.00		375.00	375.∞
Chimneys, etc.	36 M. Com. Brick	1440.00		1130.00	1130.00
Fire Places	6.5 M. Face "	1275.00		954.00	954.00
)	2 M. Fire "	300.00		220.00	220.00
	320 ft. Flue Lin.	192.00		181.00	151.00
Glazing		424.00		(125.00) 210.00	(125.00) 335.00
Plumbing		1442.00			527.00
Heating		1150.00			380.00
etc.					
etc.					

Figure 2

Producing buildings is no different from manufacturing goods, except that it is a more complicated and hazardous process. Office expense must be met, telephone service, light, stenographers, time-clerks, superintendents and principals must all be And the per-diem overhead charge of the building business, even for a relatively small concern, is a sufficiently large item to offset a great amount of profit.

Therefore, the guiding principle of the successful contractor is the avoidance of delay. And this is a function of the office.

There must be planned the ordering of materials, so that it will reach the job when it is needed, the instruction of sub-contractors so they will have their material on the site and begin work when the job is ready for them, keeping the superintendent posted on the progress of actual costs as compared to estimated amounts, securing detail drawings from architects or approving subcontractors' details, following up shop work, to be sure it is progressing rapidly enough, and last, but by no means least, checking up field work for accuracy and time.

Now, the busy contractor cannot attend to all these details and to his financial and correspondence worries, as well as to securing new work, unless he has it all systematized and, as far as possible, automatic.

The limits of one brief article will not permit a discussion of the details of estimating, ordering, correspondence, bookkeeping and follow-up. It will be sufficient for present purposes to indicate the methods used in contractors' offices for planning the



work to avoid delay and for keeping progressive costs so as to furnish a comparative record of actual and estimated cost for the guidance of both office and field.

First in order comes the planning of the work. When the contract has been signed a bill of material is needed, a list of sub-contracts awarded and a tabulation of architectural and structural details required is prepared, together with the dates upon which each part of the work must be finished. For a country house, for example, such a schedule will be about as shown in Figure 1. The material schedule, notices to subcontractors and so on are then prepared based on this time-table. A follow-up board is used by many contractors, to insure that the schedule is maintained. It will serve for any number of jobs. It consists of a board like those used in connection with Standard time clock systems, with pockets (of a convenient size to accommodate order sheets, usually about 6 x 9 ins. Each pocket is marked with the numerals of the days of the month, and at the bottom are somewhat larger pockets marked with the names of the months. It is used in this fashion:

When purchase orders for material are issued, they should indicate the date upon which delivery of the different classes and quantities of material are to be made. Let us say the current month is March and that an order is placed for 100 barrels of cement, 50 to be delivered March 15 and 25 each April 1 and May 1. The follow-up copy is placed in the pocket corresponding to the 15th of the current month.

The clerk, whose duty it is to follow up deliveries, ascertains, each day, if there are any slips in the pocket corresponding to that day, so than on the 15th he would find the cement order. He would then call up the job and find out if delivery had been made. If not, he would notify the material yard to deliver at once, advancing the slip a few pockets so that he would come to it again in a few days. When delivery of the first 50 barrels has been made he places the slip in the April pocket, when the next delivery is due.

At the end of March the March daily pockets should be empty, and all slips are then removed from the April pocket and distributed in the daily pockets, which now correspond to each day of the current month, April.

The same procedure is followed with memorandum slips stating when each sub-contractor is to have his roughing and finishing material on the job and when he is to begin work. Also with memoranda stating that the architect or sub-contractors have promised detail drawings on certain dates.

Just as important as a construction schedule is the keeping of a cost record. Figure 2 shows a page of a cost progress book; a record like this will give the contractor valuable figures on which to base future estimates. Here but three columns are shown, but this can be extended to as many places as are necessary for the completion of a job.

These figures will show costs at certain periods of time for the work in progress and comparison

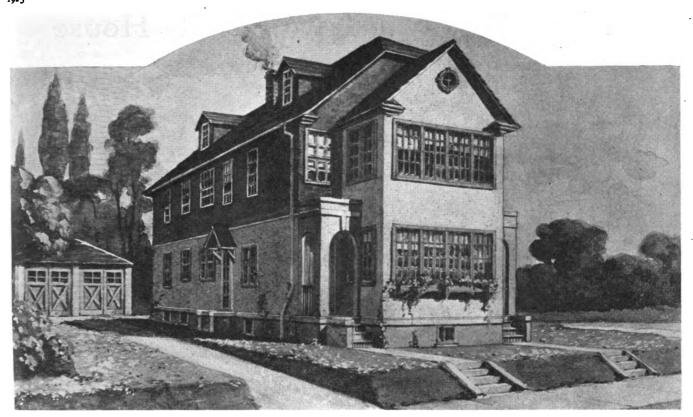
can be made at once with the estimate originally made. As one goes along it will be found that on some items one has been too high and on others too low, while some others will come to exactly the amount estimated.

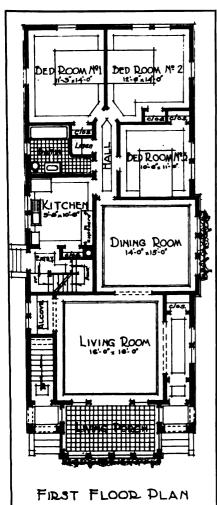
It is by watching figures very carefully that the contractor will learn the most. Whenever there is considerable variance in the cost it is time to start an investigation. Find out just what makes the job cost more or less. It may be that some circumstances peculiar to the job has caused the difference; therefore a note should be made of this.

It is always by overcoming unusual conditions, that the success of the contractor depends. Quite often on some large work there may be some very favorable conditions that will make a low bid in order and land the job.

CONSTRUCTION SCHEDULE Begin March 15; Finish Aug. 15. Job No. 16.				
Class of Work	By Whom	Beginning Date	Finishing Date	Remarks
Survey	Self	Mar. 10	Mer. 10	
Permits	Self	Mar. 8	Mar. 15	
Excavation	Self	Mer. 15	Mar. 22	
Foundations	Self	Mer. 22	Apr. 3	See B. M's 1, 2 & 3
Framing and Frames	Self	Apr. 1	Apr. 16	See B. M's 4 & 5
Sheathing, Clapboards	Self	Apr. 12	Apr. 30	See B. M. 5
Partitions, etc.	Self	Apr. 20	Мау 15	See B. M. 4
Underflooring	Self	Apr. 12	Apr. 20	See B. M. 5
Sheet Metal	Cox & Co.	Apr. 12	Apr. 30	See P. 0. 13
Chimneys	Self	Apr. 12	Apr. 30	See B. M's 6 & 7
Glazing	Self	Apr. 30	Мау. 15	Sec P. 0. 15
Plumbing, Roughing	Cox & Co.	Apr. 20	May 15	See P. 0. 14
Plumbing, Finishing	Cox & Co.	June 30	July 30	See P. O. 14
Heating, Roughing	B.F.Jones	May 1	Мау 25	See P. 0. 15
Heating, Finishing	B.F.Jones	June 30	July 30	See P. O. 15
Wiring	A.B.Lee	May 1	Мау 25	See P. O. 16
Cement Floors	Self	Мау 1	Нау 5	See B. M's 5, 9 & 10
Lathing	C.Connolly	Мау 25	June 4	See P. O. 17
Plastering	C. Connolly	June 4	June 30	See P. O. 17
Trim and Stairs	Smith Lumber	June 30	July 30	See P. 0. 15
Finished Floors	Co. & Self Self	June 30	July 20	See B. M. 11
Painting	O.B.Schwartz	July 10	July 31	See P. 0. 19
Finishing Hardware	Self	July 31	Aug. 15	See B. M. 12
Lighting Fixtures	A.B.Lee	July 31	Aug. 15	Sea P. O. 20
Grading	Self	July 15	Aug. 15	

Figure 1.





Two Family House

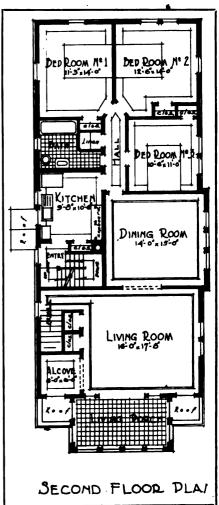
A. J. SIMBERG, Architect

N many cases a two-family house is the type selected because the rental of one floor cuts down the carrying charges so that the owner's expense is quite nominal.

The interesting house shown here was recently built for Mr. Maxmilliam Fox at Pelham Parkway and Fenton Avenue, New York City. Mr. Arvid Johnson, also of New York was the builder. The cost of building was \$13,000.

Some interesting views of this house in the course of construction are given on the next two pages together with complete quantity survey of the materials needed for it's erection.

COMPLETE working plans and specifications in blue print form of Beautiful One- and Two - Family Homes may be obtained at a nominal price from Building Age and The Builders' Journal, 239 West 39th Street, New York.



Quantity Survey of Two Family House

Excavation		
(Excavation for pipe trenches not included) Excavation for cellar	s. s.	
Masonry		
Concrete Work: Concrete for cellar walls		
Brick Work		
Common brickwork for chinney (or 4 M.) Face brick for front and side entrances 10 in. round T. C. flue lining		
Mason's Iron Work		
C. 1 cleanout door for boiler flue 8 in. x 8 in.) Thimble for boiler flue		
Plastering		
Three coat patent plaster on metal lath, gross. 1777 sq. yds. (Net 1677 sq. yds.) G. 1 corner beads	3.	
Tile for bathroom: 80 sq. ft. Floor (1 in. hex. white) 80 sq. ft. Wainscot (3 in. x 6 in. white wall tile(270 sq. ft. 6 in. sanitary base 60 lin. ft. Moulded cap 60 lin. ft.		
Sheet Metal Work Tin flashing for roofs etc. 225 lim ft.		
Tin flashing for roofs, etc	t	
Framing	_	
Sills: A in v 6 in A/16 7/14 2/10 264 E.D.M		



Studs, girts and plates, 1st floor:		
2 in. x 4 in.—225/10	1688	F.B.M.
Studs, etc., 2nd floor:		
2 in. x 4 in.—230/10	1725	F.B.M.
First floor joists:		
2 in. x 9 in. Y.P.—90/12, 20/8	1260	F.B.M.
2 in. x 8 in. Y.P.—10/14	19	F.B.M.
Second floor joists:		
2 in. x 10 in. Y.P.—28/14, 35/12, 14/16, 17/22	1880	F.B.M.
2 in. x 8 in. Y.P.—10/14	19	F.B.M.
Attic floor joists:	1000	5536
2 in. x 10 in. Y.P.—28/14, 35/12, 14/16, 17/22 Entrance rafters:	1880	F.B.M.
2 in. x 6 in.—18/6	100	EDM
Floor bridging:	100	r.b.m.
2 in. x 2 in.—672 lin. ft	224	EDM
Cellar partitions:	224	r.b.m.
2 in. x 4 in. studs—25/7	90	F.B.M.
Sheathing (7/8 in. x 8 in. shiplap):	70	r.D.M.
Walls—to cover	3692	sa. ft.
Flat roofs—to cover	36	sq. ft.
Sheathing paper (waterproof)	3800	sa. ft.
Shingle lath—7/8 in. x 2 in	5100	lin. ft.
Grounds (3/4 in. x 2 in., surfaced one side)	2770	lin. ft.
Sheathing for cellar partitions:		
(7/8 in. x 8 in. shiplap—to cover)	200	sq. ft.
Rough flooring (7/8 in. x 8 in. shiplap):		_
1st and 2nd floors—to cover	1500	sq. ft.
Furring (7/8 in. x 2 in.)	1000	lin. ft.
Shingle roofs (18 in.), 29 squares	20000	sningles
Shingle sides (24 in. stained), 17.6 squares	5800	sningles
Exterior Finish		



Watertable, 7/8 in. x 2 in. strip...... 160 lin. ft.

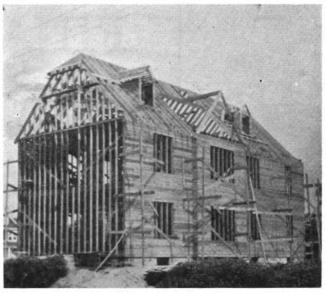
Main cornice:	
5 in. crown mould	200 lin. ft.
7/8 in. x 4 in. fascia	200 lin. ft.
2 in. bed mould	200 lin. ft.
5/8 in. x 4 in. M. & B. ceiling—to cover	300 sq. ft.
Belt course water table:	
3 in. crown mould	150 1: 64
	150 lin. ft.
Dormer cornice:	
7/8 in. x 6 in. fascia	24 lin. ft.
7/8 in. x 6 in. soffit	24 lin. ft.
1½ in. bed mould	24 lin. ft.
2 in. fascia mould	18 lin. ft.
Flower boxes—(1½ in. stock zinc lining, etc.):	-0 10
9 in a 9 in a 10 ft A in	•
8 in. x 8 in. x 10 ft. 4 in	1
8 in. x 8 in. x 14 ft. 6 in	1
Sawed wood brackets	9
Hood over side entrance, including brackets,	
etc	1
Windows:	-

Frames complete with sash, outside trim, etc.	
Sash, 1½ in. thick, glazed D. T.	
Cellar windows—Trim both sides, single top	
hung. casem. sash, 1 ft. 6 in. x 4 ft. 0 in.	
3 lights	10

First floor windows:	
Single D. H. sash 2 ft. 9 in. x 5 ft.	,
6 in	3
6 in 7 lights	3
Triplicate D. H. sash, ea. 2 ft. 9 in. x	1
5 ft. 6 in	1.
6 in / lights	1
Mull D. H. sash, ea. 2 ft. 9 in. x 4 ft. 3 in	1
2 ft. 6 in. x 5 ft. 6 in. casement	•
double sash	8
4 ft. 0 in. x 4 ft. 3 in. casement double sash	1
Second floor windows:	
Single D. H. sash 2 ft. 9 in. x 5 ft.	. 5
6 in	. 3
5 ft. 6 in	3
Triplet D. H. sash, ea. 2 ft. 9 in. x 5 ft. 6 in	1
Single D. H. sash, 2 ft. 3 in. x 5 ft.	1
6 in 7 lights	1



Single D. H. sash, 3 ft. 0 in. x 5 ft.	1
Mull D H sash ea 2 ft 9 in x	-
0 in	1
2 ft. 6 in. x 5 ft. 6 in. casements,	
double sash10 lights	8
Attic windows:	
Single D. H. sash, 2 ft. 9 in. x 4 ft.	4
0 in	4 2
Single ninged circular, 1 it. 9 in. dia.4 lights	2
Exterior door frames—134 in. thick, rabbeted,	
complete with outside trim:	2
Front ent. door frame, 3 ft. 0 in. x 7 ft. 0 in. Side ent. door frame, 2 ft. 10 in. x 7 ft. 10 in.	2 1
Exterior doors (all to detail):	1
Front ent. door, 3 ft. 0 in. x 7 ft. 0 in. x	
134 in. glazed D. T	2
Side ent. door, 2 ft. 10 in. x 7 ft. 10 in. x	2
134 in. glazed D. T,	. 1
Finished flooring:	
First and second stories 8/8 in x 21/4 in :	
First and second stories, 8/8 in. x 2½ in.: Comb. grain Y. P.—to cover	2424 sq. ft
Lining paper under floors	922 sq. ft.
Slat floor under wash tubs:	700 Sq. 1t.
2 ft. 0 in. x 5 ft. 0 in	1
Cement filled pipe cols. in cellar:	-
4 in. dia. x 7 ft. 6 in. long, with cap and base	4
Joist hangers (¼ in. x 2 in. W. 1):	·
For 2 in. x 9 in. beams	10
For 2 in. x 10 in. beams	10
Interior Finish	
Door trim (Whitewood):—1/8 in. jambs, ½ in. stops, ½ in. x 4 in. x ¼ in., moulded and mitered trim. Trim both sides:	
For doors, 2 ft. 6 in. x 6 ft. 10 in	10 sets
For doors, 2 ft. 0 in. x 6 ft. 10 in	11 sets
For doors, 1 ft. 8 in. x 6 ft. 10 in	3 sets



For doors, 2 ft. 8 in. x 7 ft. 0 in	2 sate
For doors, 3 ft. 0 in. x 6 ft. 10 in	2 sets 1 set
French casements, 7 ft. 0 in. x 7 ft. 0 in	2 sets
Stationary casements, 2 ft. 4 in. x 7 ft. 0 in	
Colleg doors (plain)	4 sets
Cellar doors (plain)	2 sets
Trim for inside of exterior doors:	2
Front entrance, 3 ft. 0 in. x 7 ft. 0 in Side entrance, 2 ft. 10 in. x 7 ft. 10 in	2 sets
Side entrance, 2 it. 10 in. x / it. 10 in	1 set
Trimmed openings finished same as for doors:	•
Opening 6 ft. 0 in. x 7 ft. 0 in	2 sets
Window trim-78 in. x 414 in., moulded and	
mitered trim, 1/2 in. stops, 1/8 in. moulded	
stool, 1/8 in. moulded apron, 5/8 in. x 1/8 in.	•
For windows, single, 2 ft. 9 in. x 5 ft. 6 in	8 sets
For windows, mull., ea. 2 ft. 9 in. x 5 ft. 6 in.	6 sets
For windows, triplet, ea. ft. 9 in. x 5 ft. 6 in.	2 sets
For windows, single, 2 ft. 3 in. x 4 ft. 3 in.	1 set
For windows, single, 2 ft. 3 in. x 4 ft. 3 in. For windows, single, 2 ft. 3 in. x 5 ft. 6 in.	1 set
For windows, single, 3 ft. 0 in. x 5 ft. 0 in. For windows, mull., ea. 2 ft. 9 in. x 4 ft. 0 in.	1 set
For windows, mull., ea. 2 ft. 9 in. x 4 ft. 0 in.	1 set
For windows, circular, 1 ft. 9 in. dia	2 sets
For windows, circular, 1 ft. 9 in. dia For windows, single, 2 ft. 9 in. x 4 ft. 0 in.	4 sets
Base:	
7/8 in. x 61/2 in., moulded	700 lin. ft.
$\frac{7}{8}$ in. x $\frac{4}{2}$ in. plain (closets)	100 lin. ft.
2 in base moulded	700 lin. ft.
2 in. base, moulded	730 lin. ft.
Picture moulding (7% in x 2½ in.)	858 lin. ft.
Chair rail—76 in x 31/2 in	72 lin. ft.
Seat in alcove—1 ft 6 in x 5 ft 8 in fixed ton	1 unit
Chair rail—76 in. x 3½ in	1 4411
Door 2 ft 6 in x 6 ft 10 in x 11/6 in	13
Door 2 ft. 6 in. x 6 ft. 10 in. x 1½ in Door 2 ft. 0 in. x 6 ft. 10 in. x 1½ in	8
Door 1 ft. 8 in. x 6 ft. 10 in. x 1½ in	3
Door 2 ft. 8 in. x 7 ft. 0 in. x 1½ in	2
Door 3 ft. 0 in. x 7 ft. 0 in. x 1½ in	ĩ
Solid pine cellar doors:	•
Door 2 ft. 8 in. x 7 ft. 0 in	1
Door 2 ft. 6 in. x 6 ft. 6 in	i
Glazed D. T.:	•
Pr. ea. 3 ft. 0 in. x 7 ft. 0 in	2 prs.
Pr. ea. 2 ft. 4 in. x 7 ft. 0 in	2 prs.
	2 prs.
Closet finish:	50 lin. ft.
Closet shelving (7/8 in. x 12 in. pine)	60 lin. ft.
Hook strip (7% in. x 4 in.)	20 1in fa
Rabbet shelf cleat	20 lin. ft. 25 lin. ft.
1 in. dia. pipe clothes rod	25 nn. 1t. 1 unit
Linen closet includes flat doors and shelving.	
Medicine closets in bathrooms	2 units
Dressers in kitchen (3 ft. 0 in. x 8 ft. 0 in. fron	1):
Countershelf, drawers, doors, etc	2 units
Hanging closets in kitchen	2 units
Panel moulding for living and dining rooms	600 lin ft.
Main stairs, first to second story	1 flight
Cellar stairs	1 flight
Rear stairs	2 flights



FINANCE and REAL ESTATE

Helpful Data for the Builder Who Builds to Sell

Urge Men to Get in Debt to Own Real Estate

T is a trite saying to remark that there is no royal road to riches, and that, in the main, this road lies open not to those who can only earn money but to those who can save a part of their earnings as well. It is really unfortunate that so many recognized truths have been used and misused so often and expressed in the same manner so frequently, that they no longer make an impression on the person hearing them.

It was a great good fortune of Theodore Roosevelt to have the happy faculty of expressing himself on most matters in a new and original way; but, even at that, there were times when he did not escape ridicule for stating so many obvious facts.

So it is with the subject of thrift. Almost everybody realizes down in his heart that he can never achieve any substantial success without the practice of systematic saving, and yet everybody apparently feels that it is a good thing for the other fellow and not for himself.

Roosevelt often remarked that thrift was common sense, applied to saving, but unfortunately common sense is a quality very rarely found. Our standards of living and methods of doing business contribute largely to the spending habit.

If the reader will pause a moment he will realize that for every temptation held out to him to save there are a thousand active forces urging him to spend; it is the best salesman who gets the highest pay and it is the purpose of every good salesman to make By CARL B. EIMER
Former Secretary,
Long Island Real Estate Board

the greatest number of people spend their money in buying his merchandise.

In spite of the good work of the savings banks which have undertaken an educational campaign for the purpose of getting more people to save, the statistics of insurance companies still present to the thinking man tremendously pessimistic thoughts; the fact remains that spending is a national habit and the thrifty man is often the object of ridicule and scorn.

The average man does his utmost to pay his obligations, but the one obligation that he owes to himself and to his family above all, he frequently neglects. How many people are there that set aside a portion of their salary every week regularly and put it away in the savings banks, in good bonds, or in well selected real estate? The answer is that among native born Americans, at least, the percentage is pitifully low.

We all seem to feel that the earning capacity which we now have will last indefinitely, or even become greater, regardless of what statistics have definitely proven. We tell ourselves that some day when we are making a little more money we will set aside a certain fixed sum at regular intervals, but I am sure that half of us realize that we are merely de-

luding ourselves with a pleasant idea in order to crowd any foreboding of the future out of our mind.

The savings banks if properly used cannot be excelled as a medium for accumulating wealth since they combine the element of safety to the highest degree with a good rate of interest; but there is one psychological factor that is frequently overlooked. The average man could set aside a sum for his savings account regularly if he tried, but the answer unfortunately remains that he doesn't. He pays his bills when due, but it is because there is a constant urge on the part of his creditors, and on the part of his con-All of this is perfectly natural; one of the primary laws of nature being that of inertia; nothing moves unless some force is applied to move the object. Another objection that applies to savings banks applies also to well selected bonds. temptation in both cases, owing to the liquidity of the asset is to sell the bonds or withdraw the money from the bank at any temporary emergency, thus tearing down at one stroke a principal which it has taken months to accumulate.

It is at this point that I wish to emphasize the value of investing in real estate. One of our great captains of industry one remarked: "Young man, go into debt to buy a home," and he meant exactly what he said. He realized that the individual buying a home would be compelled to save and that no temporary privations could cause him to change his plans. This is especially true of

buying real estate on the intsallment plan. One of the strongest urges to save is presented in the statement which the company renders every month, and which must be paid no matter what happens; no other urge can be so strong.

The ordinary desire to save is, nine times out of ten, purely academic and fades into the background at the thought of any inconvenience to be avoided or of any present pleasure to be seized. Real estate thus purchased, however, must be intrinsically good. There is no magic in a piece of land which is bought at a high price, and lies idle for years,

that makes it enhance in value. As I said in a previous article, there must be the primary elements of transportation and a growing population. An impression still remains in a great many minds that because land in the suburbs is sold on the installment plan that it is not worth the price paid for it; far from it!

The fortunes that have recently been made in Nassau County by people who originally purchased on the installment plan ought to be a sufficient answer. These deals frequently are not reported in the papers when they lack news value, but the press is sure to relate when-

ever a swindle is perpetrated. Figuratively, a happy marriage is not advertised; it is the divorce that gets the headlines.

In conclusion I would say that if I were selling the idea of the purchase of a home, or of a plot where ultimately a home would stand, I would emphasize far more strongly the idea of saving than the thought of large future profits. I know of dozens of cases today where a substantial equity is the property of a man who ten years ago literally had nothing but his salary, and, I am sure that my brother relators in the suburban development field can point proudly to hundreds of like cases.

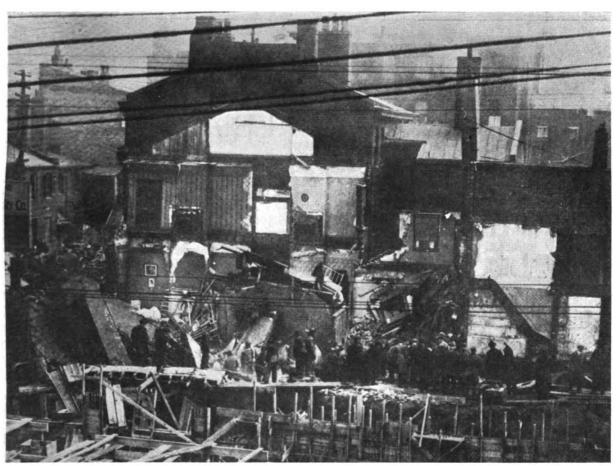


Photo by Pacific and Atlantic.

Lack of Proper Shoring Caused This

ROM time to time, in our columns, we have called the attention of our readers to the need of caution when carrying on a building operation between two existing buildings. A rather unfortunate accident happened in Pittsburgh on January 22nd when the side of a building collapsed and

fell into the excavation for a new structure, killing four men and badly injuring five others. Our photograph shows a general view of the disaster taken a few minutes after the accident occurred, and shows the firemen and volunteer rescuers digging in the debris for the bodies of victims. There is a lesson in this picture for all contractors. Never take a chance with the building next door. You don't know how good or bad it is constructed, and it is safest to assume that it's construction is weak, and therefore you should take every precaution for safety-sake, it will be time and money well spent.



Figure 3 shows the Remodeled House on Its New Site, Besides Moving All That Was Moderize It
Was the Addition of New
Front and Side
Porches, New
Front Doors and
Painting

Creating More Business by Moving and Remodeling Old Buildings

By E. W, LA PLANT

T is a conservative estimate that four out of every ten building contractors wait for business. They are not creators of business. What I mean by that is that they have worked along on the same old principle that their forefathers used years before, building a good dwelling, working on it until this house was finished, then waiting for another job, instead of building up desires on the part of many others to have similar houses built, and have new jobs lined up, so that as soon as one job was done, they could put their men on a second.

The same is true in regard to the house moving work. The minute a contractor learns that a garage is to be erected, or a new school building or dwelling, and that it will necessitate the removal of the old building to a new location or wrecking this building the contractor can get right in on the ground floor and either buy the building for himself, or talk up the proposition with the owner, showing him conclusively how he can select a medium-priced lot somewhere near the old site, and remove this house to a new location,

It is up to the contractor to encourage this desire to the homeowner, for unless some one implants the idea into his head, that it is possible to remodel and build this building up into shape again, he will consider wrecking the building in order to dispose of it, so that the new building can be promptly erected.

Right here is the big factor. A building can be raised, loaded and moved away on a set of trucks, clearing the old site inside of a day to two days' time, whereas if you



Fig. 1-Bought for \$50, and Loaded on Trucks.



Fig. 2-Here It Is on Its Way to New Site.

started in to wreck the building it would take a week or longer. Besides, you would have a whole lot of materials and debris to remove that would take a lot of time and extra labor.

A great many house movers also talk the prospective owner into rebuilding and reconstructing his old house into a new modern home. This is a very hard job, for it is practically impossible to rebuild an old-fashioned house and make it modern in every way, at anywhere near the right price. In other words, it costs altogether too much to reconstruct old property unless you get it cheap.

Now here is where the housemoving building contractor comes in again, creating more business. Go to this prospect the minute you hear about him, and show him conclusively that he would be far bet-

town with my car, and I go by a certain lot, I try to find out who owns that lot, etc. In this way I have information on the different lots around the city that look like good sites for moving some old house, remodeling it, and putting it to further usefulness. In addition to keeping track of these lots, I also keep track of prospective houses that can be purchased either by myself or by a prospective customer, who would like to buy a house and move it to a new location, and in that way I can swing the deal and create more business.

My suggestion is to put an ad in the paper, stating that you desire five, six and eight-room houses to be moved to new locations, and in this way get in touch with many of the agencies that perhaps you would overlook otherwise. tractive house that can be rented or sold.

Figure No. 1 shows a house that I bought for \$50.00 and moved it to a lot costing me \$900. Figuring up the amount that I invested, it cost me, all told, \$2,578.85. I recently sold this house for \$5,000 cash, showing a net profit to me of \$2,421.15. The price that I sold the property for was very reasonable for a house of this character.

Figure No. 4 shows another house that I have purchased, and this one I got for \$100, which was certainly worth many times more than what I paid for it, but no one seemed to want it, and I made the offer of \$100 and was promptly taken up.

The house, the cost of moving, the new doors, plus the lot and all, made a total of \$2,374.25. I re-





Fig. 4-Bought for \$100 and Moved.

Fig. 5-How It Looke \$3,500 Worth.

ter off to put up a brand-new modern home the way he wants it, instead of going to work and patching up the old house.

Show him that he can take this old home and move it to some new location, and erect a new porch or new kitchen annex, and the house is better than it was at the old location, and in fact ten times better, for out of every eight or nine cases the old house was located on a small cellar foundation and there is no room to put in a new modern furnace and bathroom fixtures economically. On the new location he has an opportunity of putting in a full basement under the entire building, and thereby install a new modern furnace and other modern equipment throughout the house in every way.

Whenever I drive around the

In going around to your different jobs, you perhaps see here or there houses that are located on low lots, and new modern houses have been put up on either side, leaving this house way down in the hollow. Make it your business to stop and see that fellow, and say that you saw his house, and that he has a very nice little place, but it seems to be a little low, and tell him how easily it could be moved to a new location. I have procured many jobs by following this method.

Now I hate to keep referring to what I have done, but in this particular case I am compelled to, in order to show you concrete cases of what any contractor can do in picking up old houses and moving them to new locations, remodeling them and turning out a very at-

cently made a quick sale of the property at \$3,500, making a net profit of \$1,125.75, which is not bad for work done at odd times, when I couldn't keep my men busy at something else.

When I have moving and remodeling jobs of this sort, I always have some odd time. For instance, where I get a job finished by Friday noon, and there is practically a day and a half left to put in, I take the men over to an old house I bought and have them go at it and work as long as possible at the remodeling. This house then takes up the extra time that my men have, so I generally have a job of this sort, that I can put them on. It certainly pays well. Next month I will give some practical, helpful hints on house-moving and remodeling.

CONCRETE

Form Work-Reinforcing Methods Monolithic and Block Construction



Making an Early Start

Concreting Safely Done in Cold Weather by Observing Simple Precautions

By H. COLIN CAMPBELL, C. E.

EBRUARY seems to be the month in which the building industry as a whole starts to figure on getting ready for a Spring rush after a Winter's rest. This has been more of a habit than anything else. The danger from frost is so easily overcome by modern methods that it no longer should cut any figure in building operations.

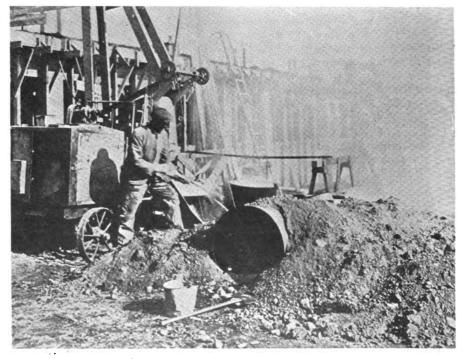
There are many advantages in making an early start. In the case of a residence, the owner can occupy his home at an earlier date, while in the case of a manufacturing plant, the accommodation to the owners will probably be worth a good sum of money.

There is no reason why the construction business should be confined to eight months of the year since methods of concreting successfully in cold weather have long been known and applied. Even some of the largest construction jobs under way in this country today are planned for continuous development during the coldest weather. But it is the large number of small jobs that offer an especially attractive field for profits during the late Winter and early Spring. It is largely a matter of the contractor's initiative. The work involves some change from concrete work done in warm weather. Both warmth and moisture are required for the proper hardening of concrete, so work done under freezing temperatures necessitates heating both mixing water and aggregates. Since the

cement itself forms such a small portion of the concrete, it need not be heated. It is well, however, to keep it in a warm place for a few hours before it is used. When it is remembered that the hardening of concrete is not a process of drying out, but is a chemical reaction between the cement and the water used for mixing, the reason for keeping all materials involved in concrete work warm is more fully appreciated. Low temperatures will retard the hardening of concrete and freezing will prevent its hardening altogether. For this reason concrete should be protected

by canvas, burlap, sawdust, straw or hay. One freezing will not damage concrete, if it is protected from repeated freezing and thawing during hardening. Freezing here merely suspends the hardening. But alternate freezing and thawing of concrete may so seriously damage it that it will have to be replaced.

The heating of the aggregates and water is a simple matter. Many practical methods are being used from the piling of the aggregates over a circular iron pipe or old boiler in which a fire is built, to the heating by steam, utilizing an

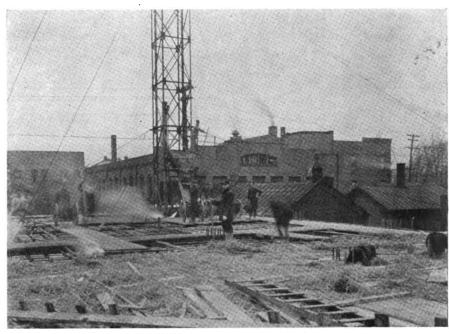


Aggregates Being Heated Over Old Smoke Pipe Containing Fire.

improvised steam plant. The latter is used for larger jobs. Salamanders, oil stoves, coke-burning heaters, old radiators, and coils such as are found around junk yards, suggest ways and means for heating water and aggregates.

The methods mentioned above are only suggestions for the more severe Winter weather. Our Winter months vary in all sections to the extent that any definite plan for work cannot be given. The open Winter may eliminate much of the extra work of heating materials or interiors where work is to be done. The wise contractor will play safe and be ready for any emergency.

The idea of continuing concrete construction during the four or five winter months is one prompted by good business judgment. Own-



Steam Aids Cold Weather Concreting. Note the Use of Straw for Protecting Work



Heater in Operation Alongside of Mixer.

ers are open to the arguments in advantage of building at a time when materials and labor are at less of a premium. The convenience of having homes ready to move into in the late Spring should be welcomed by the owner as well as the contractor. Drives, walks, basement floors, garages, swimming pools, and tennis courts are to be enjoyed rather than constructed during the warm months. The many farm uses of concrete suggest the building of tanks, feed troughs, manure pits, barn floors, stalls, granaries and corncribs at a season when the farmer has money

and is in a mood for farm improvements with plenty of spare time on his hands.

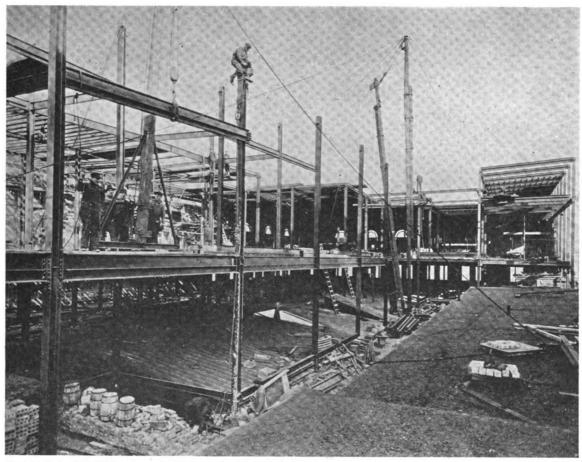
Contractors have found that the cost of producing concrete in Winter may be from 3 to 10 per cent. greater than the same work would cost in Summer. They have also found that certain advantages offset a part or all of the additional cost of Winter construction so that the net results prove an actual saving. Maximum returns are to be had from buildings and equipment by all-year operation. Overhead costs, such as taxes and in-

terest on investment, which are paid out of twelve months' operation instead of eight, reduce the cost of the actual job. The labor "turnover" is cut down and labor organizations are kept together, more contented and efficient. Also the cost for labor is generally less in Winter than in Summer. Better workers are available and work can be produced more quickly and at a saving in time.

It is as logical that contractors take advantage of the versatility of concrete for Winter construction as it is for laundry business to cash in on the cleaning and pressing idea, for the raisin grower to realize on the possibilities of selling a handful of raisins in the individual package, or the yeast manufacturer to sell the public the idea of eating yeast as a food. There is a service to the consumer in year-round building of which the contractor and property owner can well take advantage.

The greatest difficulty faced by the building industry in America has been the problem of the short season. Twelve months of proper activity were forced into seven months or less.

Advertisements of contractors in current periodicals specify that contracts will be taken for 60 and 90 day delivery of homes, a hitherto unheard of thing thus early in the year. This means that materials and labor are promptly available.

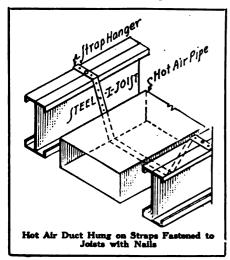


Building Addition to Department Store, Omaha, Nebraska, Showing Use of Light Steel Joists for Floors

Steel Construction for Small Buildings

TEEL for the erection of buildings was hardly thought of 50 years ago, but wonderful strides have been made in building construction through its use. The modern skyscraper of today would not be possible were it not for its skeleton of steel.

The use of steel shapes in the

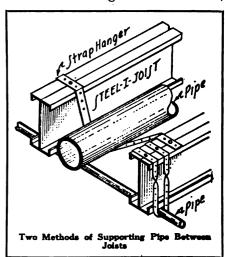


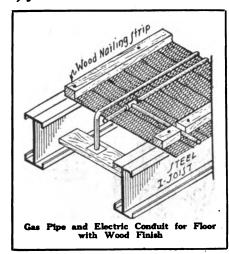
construction of large buildings is now an every-day occurrence, but a most important development is the use of this material for smaller buildings, such as garages, schools, churches and even residences.

The ordinary shapes, while excellent for large structures, were often too heavy and expensive for use in smaller construction. Therefore several manufacturers made the innovation of supplying light structural shapes that had the requisite amount of strength for moderate loads with the minimum amount of weight. These light steel shapes are easily handled and used in conjunction with metal lath and concrete and it is now possible to erect fireproof walls, floors and ceilings at a cost but little more than the ordinary type of non-fireproof construction used for small buildings.

It is interesting to note the vari-

ous illustrations in this article as they show the use of these light structural steel shapes. First, we have an illustration of an addition to a department store; here heavy shapes have been used for the columns, but the light weight shapes for the floors. This decreases the weight of the floors,

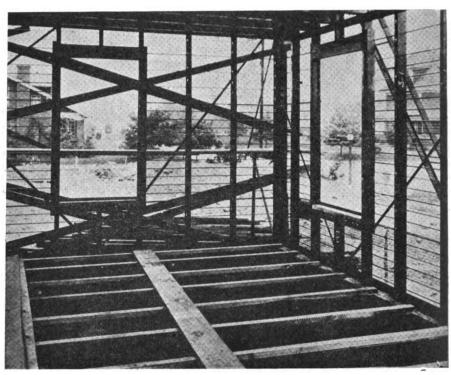




also reducing the size of the columns, both tending to reduce the cost of construction.

Another picture shows the use of the light weight steel shapes for both floors and studs of a small residence. The outside of these studs are then covered with metal lath on which stucco is applied; sheathing being entirely eliminated. Metal lath is also placed on the interior and when plastered produces an enclosed air space giving all the advantages of a wood frame building at but little added cost, besides being fire resistant.

The method of making a floor is



Dwelling With Steel Frame-Studs Support Metal Lath for Stucco Walls

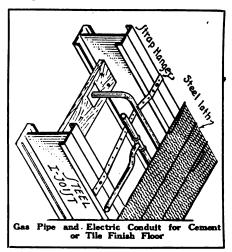
shown in another picture; here metal lath is fastened by clips to the steel joists. This in turn is covered with a layer of cinder concrete. When building such a structure the different pipes, wires, etc., should be put in place during construction. The different details clearly show how this is accomplished. One great advantage in using these fasteners, etc., is that ordinary mechanics can handle the steelwork.

All that is necessary for fastening the different straps, etc., in place is the use of nails which are firmly held between the separate plates making up a section of these modern steel shapes. As these shapes are as easily handled as wood joists, it is no wonder that they are called "steel lumber" or "metal lumber."

Where the building is to be heated by hot air the ducts are placed between the joists, being supported in place by steel strap hangers.



Method of Floor Construction-Metal Lath Being Attached to Steel Joists





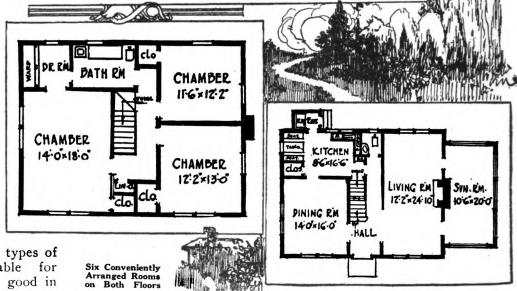
Different Materials Combined To Make Attractive

Brick Veneer Building

PHILIP RESNYK,
Architect

HERE are various types of construction suitable for homes and all are good in their respective places. Sometimes very desirable effects are secured by a combination of different materials in the one house. Such a design is shown here, in which a combination of stone, brick and wide clapboards forms a very pleasing design.

The foundation of this house is of native stone laid in random rubble style, with the joints pointed up in white cement, making an attractive appearance, as we have here a pleasing color combination—the grey of the stone, the red of



brick, white wood work and green roof.

The first story of this house is built of pressed brick, veneered over a wood frame. The gables and dormers are clapboarded and the corners mitred, so as to avoid the use of corner boards, making a more attractive dormer finish.

There is a medium overhang to the main roof and the entry porch breaks into this very artistically. Owing to the arrangement of the dormers the rooms are of full height throughout the second floor. The plan of this house is worthy of special study, as particular pains were taken to get a very convenient layout.

Upstairs we have one large chamber and two smaller ones; the large one with a dressing room and a separate entrance to bathroom.

Plans and specifications in blueprint form of this house can be obtained at a nominal price through Building Age and The Builders' Journal.

What the Editor Thinks

Impressing Your Customers

B ESIDES having an attractive looking office in which to meet your prospective customers, there are various other things that you should take care of. Have a few small models of houses, they are always attractive to anyone coming to see you. A few of them put in a glass case (like a sectional bookcase) would be a good attraction to one's office. A very good way is to have three or four of them in a row representing a street. Have a little background in back of them so as to give a proper setting for the model house. Quite often you can get a strip of wallpaper border with the desired background of trees, etc., or take a few colored prints and group them together artistically as a background.

Another good plan is to have a bookcase in which to put your reference library of technical books and magazines. Books will impress your clients with your knowledge of the business, just as books in a doctor's or lawyer's office impress one. They create a favorable atmosphere. You will find it far easier to do business when you have your stage set right to impress your visitors—to do it costs but little.

Building Expositions

THAT the interest in home building is not waning is evidenced by the fact that in many cities building expositions are to be held this spring. These will serve to educate the public in home building and building supplies in general. It is all helpful for the best interests of the building industry.

Expositions are scheduled to take place in Buffalo, Duluth, Boston, Kansas City, Minneapolis, Chicago, Pittsburgh, St. Paul, Cleveland, Omaha. two in New York City (one in Manhattan Borough and another in Brooklyn Borough), etc. Many other cities are also contemplating shows.

The vast amount of public interest being stimulated in home building will certainly be reflected in a good deal of business for building contractors. People will see different types of construction and appliances and they will want these incorporated in their new homes.

Shows of this kind cannot help but be to the best interest of the building industry. They create interest in details which otherwise seem to pass unnoticed by the majority of people. It is a surprising fact that although every one of us lives in a house, so very few are able to intelligently describe or explain any part of it.

Preparing Estimates

REBRUARY seems to be the month when the contractor is getting busy in making the different estimates for contemplated jobs. For this reason we have published a number of articles in this issue that will be of particular interest. Nothing is of so much importance as the taking of a quantity survey.

Our Cover Design

THE artistic house shown on the cover this month is built near Philadelphia from plans by John Graham, Jr., and in an early issue we will publish an article showing some interior views and the floor plans.

A New Building Code

NE of the tasks scheduled by the Department of Commerce to help the building industry was the preparation of a building code that would serve as a model to be adopted in every portion of the United States. Under the direction of Mr. Herbert Hoover, the Division of Housing and Building was formed and many improved methods in handling building matters have been suggested by various committees.

One committee was engaged on a new building code recommending minimum requirements for small Some dwelling construction. months ago a preliminary report was made and this was submitted to a number of interested parties and their suggestions and criticisms invited. In this way the committee obtained the co-operation of nearly one hundred architectural and engineering societies, builders' exchanges, and industrial organizations producing building materials. Special questions also were referred to large groups of individual engineers, architects, building officials, the Bureau of Standards, and others whose experience qualified them to discuss such subjects.

The report comprises 100 pages, including 30 illustrations. Copies may be obtained by application to the Superintendent of Documents, Government Printing Office, Washington, D. C., enclosing 15 cents, money order or cash.

Lack of Proper Shoring

ON another page we publish a picture of an unfortunate accident in Pittsburgh where a building collapsed into an excavation adjoining it. Builders cannot be too cautious in cases of this sort when they are not certain about the construction of the adjoining buildings on each side of their job.

One of our correspondents from Corning, N. Y., recently wrote us about the building of a two-story structure in his town the bearing walls of which were only a single row of bricks! Of course such a structure should have been prohibited, but there is no building inspector in that town.

The owner of that structure depended on the adjacent buildings to do the supporting, but should either building be demolished to make way for a new structure there will be a collapse unless precaution is taken.



THE decision of the Virginia Supreme Court of Appeals in the case of Warren vs. Goodrich, 112 South-

Modification of Building Contracts eastern Reporter, 687, deals with several important legal propositions concerning the alteration of work pending performance

of a construction contract.

Distinguishing between modification and abrogation of contracts, the court observes:

"To abrogate the contract, the building must be so materially changed by . . . deviation from the contract that it cannot be reasonably recognized as the same building, or work, as that provided for in the original contract; that is to say, to abrogate the special contract, the plans covered by it must have been so entirely abandoned by the additions or omissions as to make it impossible to trace the work provided for in the contract, and to say to what part of the work the contract applied and to what it did not. . . .

"No express provision in a building contract that changes may be made without abrogating the special contract is necessary in order to authorize changes by mutual agreement of all parties being made without that effect. Such a provision is necessary to avoid such effect only where the changes are made by one of the parties without the consent of the other."

Laying down a rule applicable where deviations are made with the owner's consent, the court holds that there is to be deducted from the maximum original contract price the reasonable saving of expense to the contractor through omissions of work required by the original contract, and by adding thereto the reasonable expense incurred by the contractor in doing work in addition to that required by such contract.

Another point adjudicated by the court is that one of several joint owners has no implied authority by reason of his part ownership to bind his as-

sociate owners by agreeing to alterations in a building in course of construction.

Concerning an owner's mere occupation of a building after completion, as an acceptance of the work as conforming to the contract, the opinion adds:

"That is a circumstance to be considered; but it is not, in itself, either conclusive or presumptive evidence of acceptance, in the true meaning of that word in such cases. The use and enjoyment of one of a building erected on his land rests upon a different footing from the acceptance of a chattel in-so-far as concerns the implied promise which the law will supply in the respective cases. . . .

"This does not mean, however, that the taking possession of a structure, without objection to its construction, may not, under some circumstances, amount to such an acceptance of the work and materials that the law will imply a promise to pay therefor.

". . . Silence, under such circumstances as reasonably misleads another to his prejudice, is conduct from which the law will supply a promise, which will be as binding as if it had been put into words by the person affected."

OWNERS who employ unskilled carpenters to make repairs with defective materials have no valid claim against the latter on a poor job result-

Unskilled Carpentry Plus Poor
Materials Cannot Equal a Good Job

ing, holds the Iowa Supreme Court in the case of Condit vs. Feldman, 186 Northwestern Reporter, 680.

Defendant, a Russian fruit peddler in Sioux City, employed plaintiff to make some much needed repairs on his home. The court finds that plaintiff was "a very unskilled carpenter" and he worked at fifty cents an hour when the going rate was \$1. The work consisted in putting on a new roof, building a porch and chimney, plastering, enlarging rooms, inserting windows, etc.

When plaintiff sued for his compen-

sation defendant counter-claimed for damages. Affirming judgment in favor of plaintiff, the Supreme Court says:

"The material furnished him, except perhaps the shingles, was second hand lumber of a very rough sort obtained by the defendant either by gift or by trade. The combination of plaintiff's lack of skill and the quality of the material furnished him to work with did not result in a first-class job. No warranty or representation of skill by the plaintiff was charged by the defendant."

PENNSYLVANIA subscriber inquires whether a contract to install a heating plant in a house requires the contractor to enamel the radiators or cover

Requirements in Heating Equipment Installation

the hot-water pipes with asbestos covering, where such requirements are not specified. The contract merely calls for plac-

ing of the plant complete.

The contract being silent on these two points, any obligation on the part of the contractor to enamel the radiators or cover the pipes must rest on a local custom requiring it, a custom so general and well known that it fairly may be inferred that the parties intended to make it a part of the contract.

So far as we are able to ascertain, it is not generally customary for a contractor to either enamel radiators or cover pipes unless specified in the contract. A plant is "complete" without either. As to enamelling, the contractor cannot know what kind or color the owner desires unless that be specified. And while a basement may be overheated at the expense of the remainder of a building unless the pipes be covered, the plant cannot, in our judgment, be held to be incomplete.

The more specific a contract is in its terms as to the character of plant to be installed the greater is the reason for excluding items not specified, because it is the law that where a contract purports to be complete on its face the

expression of certain requirements is presumed to exclude things not speci-

But, as already intimated, where there is a custom requiring pipes to be covered or radiators to be enamelled in installing plants in a particular locality the custom will govern, unless excluded by special agreement to the contrary.

B UILDERS and architects are not only bound to know the character of materials necessary to the construction of a safe and durable building of

Architects Must Know **Building Law** the design required. but are bound to know also the building restrictions imposed by the law of the place where they are in-

formed the building is to be erected.

So holding in the case of Bebb vs. Jordan, 189 Pacific Reporter, 553, the Washington Supreme Court declares that plaintiffs were not entitled to recover compensation for preparing plans and specifications which were valueless because the building to be constructed under them would violate building regulations in force in Seattle.

It is found by the court that, under the local building ordinances, an apartment house of the height planned a court area of 1,680 square feet for light and air was required, while the plans provided for an area of 1,288 square feet only. The ordinances also required yard room on the alley 13 feet in depth, while the plans contemplated covering the entire lot.

Plaintiffs attacked the validity of the building regulations, but the court upheld them, and then made these observations covering cases where architects prepare plans which violate valid building regulations:

"Unquestionably an architect, when employed generally to draw plans and specifications for a building of a given style and dimensions, may recover for the reasonable value of his services on a compliance with the terms of the employment, even though the building planned be one which the employer cannot erect at the place it is his purpose to erect it. But the rule is otherwise where the lot or the location of the lot on which the building is intended to be erected is made known to him. In such a case he is bound to know the building restrictions of the particular place, and draw the plans and specifications accordingly, else forfeit his right of recovery for his services. This on the familiar principle that in all such contracts of employment there is an implied condition that the work when completed shall be suitable and proper for

the purposes intended. An architect is an expert in his particular line of work. He so holds himself out, and is employed because he is such. He is not only bound to know the character of materials necessary to the construction of a safe and durable building of the design required, but is bound to know also the building restrictions imposed by the law of the place where he is informed the building is to be erected."

As supporting its conclusions, the court refers to two similar decisions reached in New York and Idaho cases.

In the New York case—Straus vs. Buchman, 89 Appellate Division Reports 270, 89 New York Supplement, 226-it appeared that the plaintiff purchased a partially completed building, and employed the defendants as architects to supervise the remainder of the work to

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the correct procedure. Questions and answers of general interest to the trade will be published in these columns. All inquiries must be accompanied by the name and address of the correspondent so that he may be answered direct or that he may be requested for further information if necessary to the intelligent answering of his question. No names will be published, only initials or a nome de plume. Remember that this service is free to subscribers. Address Legal Department, Building Age and The Builders' Journal, 239 West 39th street, New York City.

be performed on it. At the time of the purchase, a change in the plans of the building, as to which the defendants were fully advised, was agreed upon between the plaintiff and the person from whom he bought, the change requiring a new support for certain tail beams. These the architects permitted to be rested on studding partitions, contrary to the requirements of a statute applicable to buildings at that place. The building when completed proved to be defective, and the plaintiff sued the architects in damages. Holding the defendants liable, the court said:

"The placing of these timbers, and the manner in which they were secured, was not only a serious defect, but a direct violation of the statute in force at that time relating to the construction of buildings in the city of New York * * *. It was the duty of the defendants, under their contract with plaintiff, not only to see that the beams were properly placed, but especially to

see that the placing of them conformed to the requirments of the statute.

In the Idaho case-Nave vs. McGrane, 19 Idaho Reports, 113 Pacific Reporter, 82—the plaintiff, an architect, sued to recover for his services in drawing plans for a building which the defendant contemplated constructing. At the trial is was shown that the building as designed by the architect violated the building ordinances of the city where the building was intended to be erected. It was held that the architect could not recover, the court saying:

"So far as an architect is concerned, there is always an implied contract that the work shall be suitable and capable of being used for the purpose for which it is prepared. Apart from questions of public policy, this principle would prevent him from recovering upon plans and specifications prepared in violation of law, unless he was directed to so prepare them by the owner."

In the Seattle case, the Washington Supreme Court made the further observations:

"The trial court in its finding, while recognizing that the plans and specifications as drawn violated the building ordinances of the city of Seattle, held the architect excused because the defendant desired a building in conformity with the Sheridan Apartments, and that this building violated the ordinances in the same manner that the plans submitted violated them. But we think it plain that this fact would not excuse the architects. The rule might be otherwise had the defendant known the fact and directed plans to be drawn in accordance therewith in spite of such knowledge. But the evidence makes it clear that he had no such knowledge, and that a mere inspection of the building and the ordinances would not disclose the fact to a person not skilled in building construction. On the other hand, the plaintiffs did know of it, or ought to have known of it, and it was negligence on their part not to so inform the defendant before entering upon the work of drawing the plans. It follows there can be no recovery for the plans of the eight-story building."

IN the recent case of Lynch vs. Culhane, 135 Northeastern Reporter, 119, it appeared that a building contract contained a clause declaring that "the contractor will

Validity of of Building Contract

hold strictly to the design on the drawings Oral Modification and no deviation can be made without written order from the architect."

"Notwithstanding this specification," declares the Massachusetts Supreme Judicial Court, "it was competent for the parties by subsequent oral agreement to modify, change or annul the written contract.'



CARPENTRY

Good Practice in Frame Construction and Finish

Simple Barn Framing

By J. L. STRAHAN

Assistant Professor of Rural Engineering, Mass. Agricultural College

R two very good reasons, the framing of farm barns has been decidedly simplified in recent years. No longer is it possible to pay the necessary wages to have mortise and tenon joints cut in heavy timbers to frame such a building as shown in Figure 1. Furthermore, the present-day cost of lumber makes such construction prohibitive in competition with lighter framing.

The modern barns are being framed in a manner quite similar to the so-called balloon house frame, except that in most cases 2x6 studs and rafters are used in

place of 2x4 and are set 24 inches apart instead of 16. A fine example of such framing applied to a barn basement is shown in Figure 2.

The old-style heavy sill that used to be required when the barns were set on dry stone walls is replaced here with a member made up of two pieces of 2x6 inch bolted to a 12-inch thick concrete foundation wall, which extends far enough above ground to prevent rapid decay. The stud wall is braced against lateral distortion by 4x6 inch built-up braces which are continuous from sill to plate. Where they pass a stud, the stud is the

member cut, not the brace. The lintels over the doors are 2x6 inches, set on edge and effectively prevent the plate above from sagging.

The superstructure is framed also of 2x6 inch stud set 24 inches on centers. They are 16 feet high and are covered by a 6x6 inch built-up plate. The plate is prevented from spreading by a combination strutt and tie member extending from the plate to a point on the floor approximately 4 feet from the wall. This member consists of a 4x6 inch strutt framed under the plate and against a triple floor

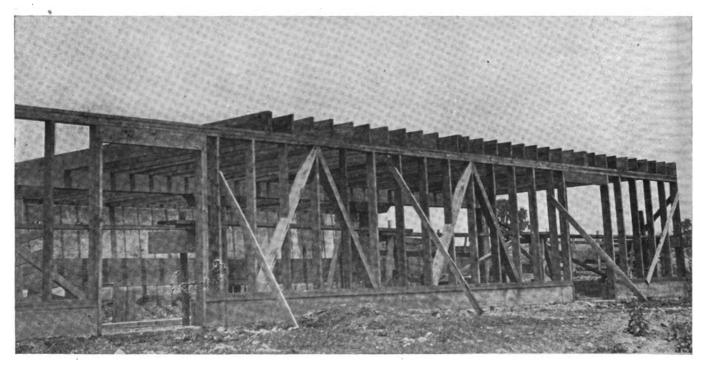
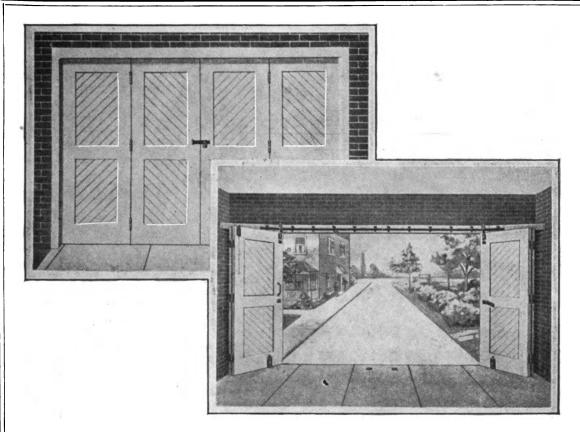


Fig. 2-Simplified Barn Framing Applied to Basement Construction.



804-Weatherproof!

A Garage Set that works as freely, responds as readily, as any house door—

No sagging—
A minimum of space, open—
Absolutely weather-tight—
That's the 804 "National."

With this Hanger, the doors are

hung on the inside, fold against the inner wall and take up minimum space in opening.

The four doors are securely hung with 4x4-inch butts, with strong, adjustable roller bearing hanger on the outer end, preventing the possibility of sagging.

804 builds sound reputations.

Complete catalog for the asking

NATIONAL MANUFACTURING COMPANY



joist and a 34-inch iron rod passing through both plate and joists and taken up with a turn buckle. Such a combination member is placed every 10 or 12 feet throughout the entire length of the barn and also at the center of the end walls.

The wide 14-foot hay doors are spanned by trussed wall sections as shown in Figure 3, which distribute the roof load over the opening equally to both door posts. Such trussing is very essential to prevent sagging of the door lintels because the roof loads at this point are greater than at any other. The hay is started off the wagons here and the force due to tearing a forkful out of a loaded wagon

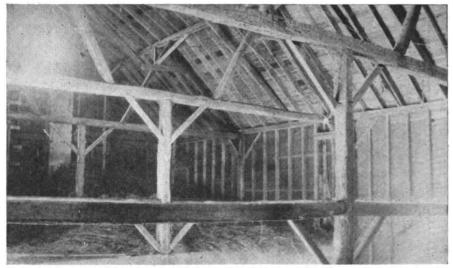


Fig. 1-This Old Style Framing Is Rapidly Becoming a Curiosity.

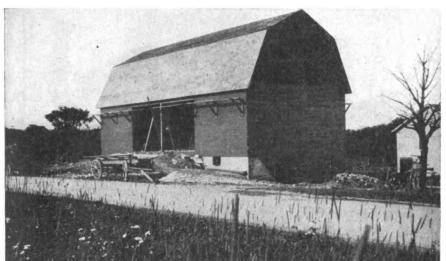


Fig. 5-The Completed Structure Gives an Air of Sturdiness and Efficiency.

must be taken by the ridge in addition to the usual loads.

There are no supports to the rafters other than the plate. Figure 4 shows a section of the "self-supporting" roof from the plate to the ridge. The rafters are spliced at the hip of the roof with 1-inch pieces placed on each side of the joint. It is essential that all joists at plate, hip, and ridge be thoroughly spiked because this is the principal source of strength.

The tendency to settle in such construction as this is quite marked. If a building is completed true and square, the chances are

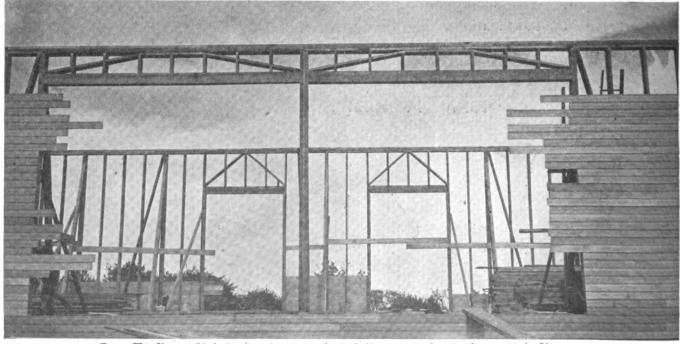
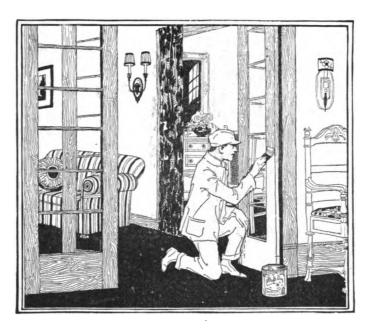


Fig. 3-This Shows a Method of Trussing Across the Wide Hay Doors to Prevent Sagging of the Plate.



How to Make Soft Woods Beautiful as Hardwood

It is generally admitted that wood finished in its natural shade cannot be worked as successfully into color schemes of decoration as stained wood. It is also true that color brings out the grain and enhances the natural beauty of most woods. For these reasons we manufacture a line of wood color known as Johnson's Wood Dye.

Johnson's Wood Dye is for the artistic coloring of wood. With it inexpensive soft woods such as pine, cypress, fir, etc., may be finished so they are as beautiful as hardwood. Johnson's Wood Dye is very easy to apply—it goes on easily and quickly without a lap or a streak.

Johnson's Wood Dye is a dye in every sense of the word. It penetrates so deeply that the natural color is not disclosed if the wood becomes scratched or marred—it brings out the beauty of the grain without raising it in the slightest—it dries in four hours and does not rub off or smudge.

Johnson's Wood Dye is made in 15 shades, all of which may be easily lightened, darkened or intermixed—full directions on every label.

JOHNSON'S WOOD DYE

FREE—Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of famous experts—illustrated in color. This book is written for the practical man—it gives covering capacities, includes color charts, etc. We will gladly send it free and postpaid.

Use Coupon at Right



S. C. JOHNSON & SON
Dept. B.A. 2, Racine, Wis.
"The Wood Finishing Authorities."
Please send me free and post- paid your Book on Wood Finish- ing.
I usually buy varnishes from
My Name
My Address
City and State

Digitized by Google

that in the course of three or four years it will have bulged at the plate and sagged at the ridge an appreciable amount. However, once the limit of settling is reached there is apparently no danger of failure.

Experience has demonstrated that the unsightly effect of such sagging can be eliminated by constricting the plates in the center an amount equal to 1 inch for every 25 feet of length of the barn.

This is done by the turnbuckle on the tie rod and raises the ridge in the center giving it an arch effect. This amount of constriction is sufficient so that when the settling has reached its limit the building will be true along its ridge line

Figure 5 shows this barn nearing completion with the siding and roofing all on. It is sturdy in appearance, and as a type has proven itself quite efficient and suitable for the requirements of the modern farmer.

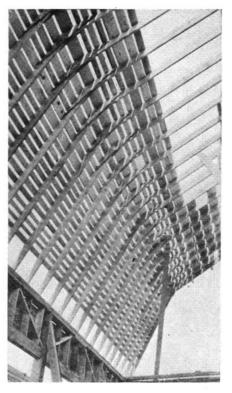


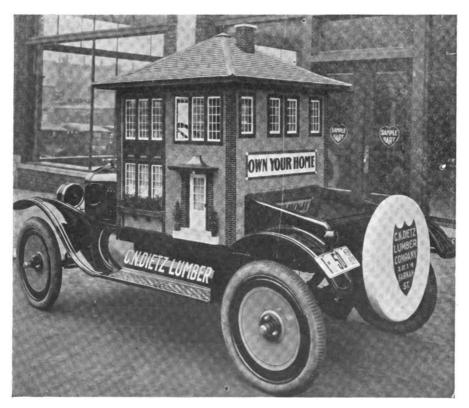
Fig. 4-Light Construction for a Large Roof.

Particular attention should be given to the making of barn doors. They should only be made of seasoned timbers, well put together, and thoroughly braced so that they will not buckle. The most important point is to see that they are hung properly; here the modern barn builder is indeed fortunate in being able to secure the special hardware that takes care of barn door problems in an efficient manner and at comparatively small cost. There are several manufacturers that make a specialty of barn hardware; hence the builder and farmer can make a choice.

Another point to be considered in the framing of a barn is to have it placed properly so that the equipment will fit in without needing any cutting or altering. Care must also be taken to have it sufficiently strong to carry the required load; we are speaking particularly of hay and manure carriers, etc., as these operate on overhead tracks that need adequate support.

Novel Auto Body Advertises Home Building

By JAMES W. HANBERY



I N Omaha, Neb., an enterprising lumber company has employed a novel advertising method in furthering the "Own Your Own Home" program now in progress here. The scheme is that represented in the photograph, a model of a modern residence on wheels.

The miniature residence is placed on the chassis of a Ford automobile and is driven about the streets of Omaha during the afternoons and evenings. The driver, with a companion, sits in the residence. The companion has supplies of building information which he hands out of the windows of the residence as the car passes a crossing or is parked for inspection.

The little residence was constructed at moderate cost. The lower windows are hung with curtains. The fourth window on the sides, upstairs, opens, so the driver of the "house" can wig-wag to the drivers of common cars as to which way he intends to direct his "home."

A member of C. N. Dietz Lumber Co., said: "We have found this form of advertisement very profitable. We have received hundreds of inquiries as a result, and have made more than a dozen sales."



What's in a Name?

The trade name "Natco" is a familiar one among architects the country over. What does it mean?—these things:

EXPERIENCE—Back of Natco there is the accumulated experience of over thirty years spent in manufacturing a standard grade of hollow tile—a complete line of hollow tile—containing all the units necessary to assure ease, speed and strength in building.

SERVICE—There are twenty-one large plants backing up the Natco trade mark—plants with a capacity of approximately 25,000 carloads a year.

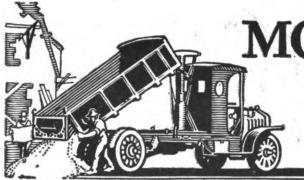
PRESTIGE—The greater number of America's skyscrapers—from the Woolworth to the Wrigley Buildings—are fireproofed with Natco Hollow Tile. An almost countless number of permanent, attractive and comfortable American homes—large and small—are built of Natco.

CO-OPERATION—Last—but certainly not least—Natco means an efficient force of hollow tile experts—a force that is ready at all times to give counsel on hollow tile problems. One of this force is within easy telephoning distance of your office. A phone call or a post card will bring him to you for a short business chat.

Natco literature on request

NATIONAL FIRE PROOFING COMPANY

432 Fulton Building · Pittsburgh, Pa. Gogle



MOTOR TRUCKS

Efficient Methods in their Use and Upkeep

Truck Operation in Winter

By P. L. SNIFFIN

ONTINUING our remarks from the January issue, we would say that perhaps the one part of a truck that causes the most trouble in winter is the radiator. A very common mistake is that of providing a radiator cover, or throwing a blanket over the hood of the truck with the belief that this will keep the cold out and retain the heat of the engine. While it is true that this does help some, it should not be depended upon to any great extent since the biggest source of cold air is from underneath the truck where protection is not available. For this reason, if the truck is to remain idle out of doors when the temperature is below freezing, and when there is no anti-freezing solution in the radiator, the engine should be started and run for a few minutes at frequent intervals.

Most authorities agree that results from the various prepared anti-freeze solutions that are on the market are, for the most part, unsatisfactory. While most of these will serve the purpose for which they are intended, a good many have an injurious effect upon the cooling system. It has been said that the requirements for an efficient anti-freezing compound are as follows: (1) It should have no injurious effect upon any part of the system with which it comes in contact. (2) It should be easily dissolved or combined with water. (3) It should be reasonably cheap. (4) It should not waste away by evaporation that is, its boiling point should be as high as that of water. In selecting the ingredients for a solution, these facts should be kept in mind, and the properties of each should be carefully determined. A recognized authority on this subject gives the following specific recommendations:

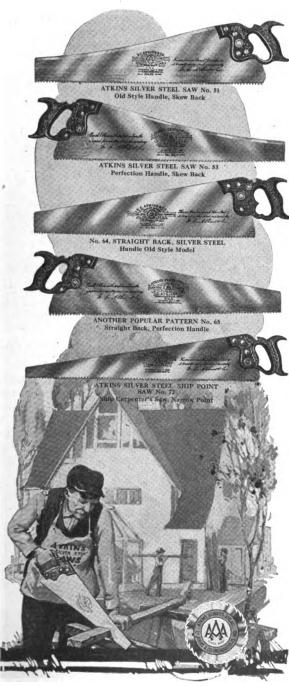
"Denatured alcohol is the best substance to use as a non-freezing solution, as it has no destructive action whatever on either metal or rubber, makes no deposits, and never causes electrolytic action. A solution of 50 per cent. water and 50 per cent. alcohol will stand about 32 degrees below zero. The only disadvantage is that it evaporates more readily than the water, so that when adding new solution more alcohol than water must be added in order to keep the solution of the same strength. The combination of alcohol, glycerine, and water seems to give very good results. In this combination, equal parts of alcohol and glycerine are used. The alcohol has a tendency to overcome the destructive action of the glycerine on the rubber connection, and the glycerine keeps the alcohol from evaporating too rapidly. The freezing point depends on the strength of the solution. A solution of 60 per cent. water and 20 per cent. each of alcohol and glycerine freezes at 24 degrees below zero. The proportions must be governed by the locality in which they are used."

When denatured alcohol is added to the cooling water of a motor truck to prevent freezing, it is necessary to test the mixture at frequent intervals for its alcoholic content, because even denatured alcohol will gradually disappear

very rapidly if the motor becomes overheated from any cause. The practical way to test the alcoholic content in the cooling system is by testing its specific gravity. This test is conveniently made with a special hydrometer used for this This hydrometer also purpose. carries a thermometer because no reliance can be placed upon the specific gravity test of a liquid unless the test is made at the correct testing temperature, or a correction made for the variation from the correct testing temperature. To make this test with the hydrometer, it is necessary to transfer some water from the cooling system to the glass test receptacle, which is usually furnished with the hydrometer. It is a good idea to keep a few gallons of denatured alcohol on hand at the garage and add a proportionate amount whenever it is necessary to replenish the supply of water in the radiator. In this way, or better still, by adding a specific amount of alcohol at certain intervals, it is safe to assume that freezing is impossible.

WHILE glycerine is somewhat expensive, it is generally agreed that its use in the anti-freeze mixture is advisable, since it not only helps to keep the alcohol from evaporating but it acts as a scale preventative and to some extent keeps down rust in the tubes of the radiator. Above all, it is important not to forget the radiator—to give it a thorough cleansing at intervals when the truck is in constant service. Even at the ex-

SILVER SIZE



ATKINS—The Saw Master **Carpenters Prefer**

SILVER STEEL SAW cuts straight and true to the line because it is smithed and blocked carefully by a skilled sawsmith. Ordinary cheap saws do not receive this extra added workmanship. A blade of steel with a piece of wood fastened on with screws may look like a saw, but will never act like one or take the place of a real saw, without the tension and alignment imparted to the blade by the skill of a sawsmith.

In the Atkins factories, smithing and blocking are done by experts, the envied "elite" of our workers, many of whom have been with us for a quarter of a century and upwards. Smithing and blocking consist of imparting to the saw a series of blows with a hammer to remove unequal strains, and to make the blade flat, smooth and even in tension throughout. As a result.

"The Finest on Earth."

Send us thirty cents for nail apron, Saw Sense-the book of facts, and a useful souvenir. Mention your dealer's name when writing.

E.C.ATKINS & CO.

ESTABLISHED 1857 THE SILVER STEEL SAW PEOPLE Home Office and Factory, INDIANAPOLIS, INDIANA Canadian Factory, Hamilton Ontario Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks In The Following Cities:

Atlanta Memphis Chicago

New Orleans **New York City** Portland, Ore. Minneapolis Digistan Francisco

Seattle Paris, France Sydney, N. S.W. ancouver, B.C. pense of wasting the anti-freeze mixture occasionally, this is to be emphatically recommended. One of the simplest and most efficient methods of cleansing the radiator of the scale which forms in it is to fill the water system with a strong solution of washing soda and hot water, running the engine for about fifteen minutes. The soda solution is then drained out of the system and scale will come with it. Do not race the engine while carrying out this process.

Brief Points on Winter Care

Certain other parts of the motor vehicle should receive special attention during winter. For the sake of brevity, these suggestions may be listed as follows: for most vehicles, since it will flow more readily when cold. It is always wise to drain and clean the crankcase at the beginning of a winter season.

- 4. The steering gear housing and steering connections should be cleaned and packed with light grease, and covered on the outside with heavy grease to prevent the entrance of water while the truck is exposed to melting snow and sleet.
- 5. Springs should be slushed with oil so that no water can work in between the leaves to cause rust and freezing.
- 6. Fill all grease cups with soft grease. Heavy grease will harden and pack in cold weather and will

will help eliminate frozen radiators. Anti-freeze compounds are apt to evaporate, especially if the engine overheats and the extreme cost involved in a frozen radiator warrants every precaution against it. (2) Starting a cold engine not only requires considerable time, but means that the choke must be used to give a rich mixture which increases carbon deposits. Gasoline cannot readily vaporize when the cylinders and carburetor are cold, causing the engine to kick and sputter when being The result is a great started. strain upon the motor. (4) A cold garage will cause no end of storage battery trouble when the truck is equipped with a selfstarter since the extra load put





Fourfold Inside Opening Doors to This Brick Garage.

Two Large Doors to This Frame and Clapboarded Garage.

- 1. Ordinarily it is necessary to change carburetor adjustment giving a slightly richer mixture for hest results in cold weather. Great care should be taken to see that adjustment, when made, is correct and then left alone. It is impossible to maintain proper carburetor adjustment if the driver tinkers with it every time the engine shows the least irregularity of running.
- 2. Drain gasoline tank and carburetor of sediment accumulated at traps so that no water may be present in any of the connections to freeze and cut off the fuel supply. If a considerable quantity of water is present, it may crack feed pipe or connections when freezing.
- 3. The use of a lighter grade of motor oil is to be recommended

- not reach all the bearing surfaces.
- 7. Cover exposed, unpainted parts with oil to prevent rust.
- 8. In the case of chain driven trucks, take off driving chains, clean with kerosene, then with gasoline, dry, immerse in hot heavy lubricant and wipe off outside. This will prevent snow and water from getting in between the roller and pin.

Advantages of Heated Garage

No matter whether the delivery system comprises one truck or a large fleet, it is strongly advised that provision be made for heating the garage. Some of the more important advantages of a heated garage may be briefly summarized as follows: (1) A heated garage onto the battery in starting will soon discharge the battery causing what is known as "overcharging which is responsible for most all battery troubles. (5) In a cold garage oil becomes thick and ineffective, resulting in excess wear on the bearings before the truck is warmed up. (6) A heated garage will save the truck's finish since when cold, moisture slowly accumulates under the varnish and freezing and cracking result. (7) Moisture also enters the fabric of the tires through cuts which freeze in a cold garage and eventually rui nthe tires. (8) A warm garage affords convenience in oiling, repairing, adjusting, etc., which, if neglected, will materially shorten the life of the truck, besides causing more or less trouble.

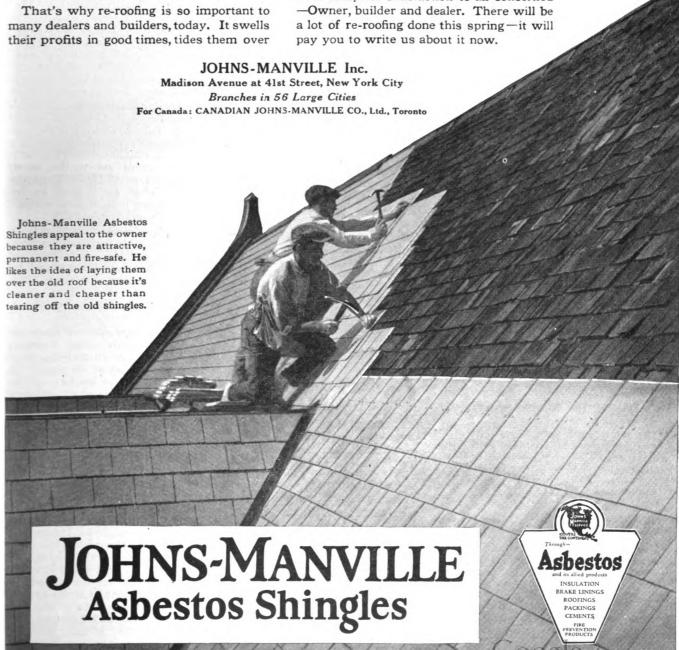
You don't have to wait for re-roofing business

RE-ROOFING with Johns-Manville Asbestos Shingles right over the old roof is the kind of business that you don't have to wait for.

There are always re-roofing prospects, even when new construction is scarce. Re-roofing sales effort directed at these prospects will always bring a good return in sales and profits.

the slack and helps free them from business conditions beyond their control.

Re-roofing with asbestos shingles is more popular than ever before—because it is an easier, cleaner, better looking and more satisfactory way to re-roof. Every month, hundreds of squares of Johns-Manville Asbestos Shingles are going over old roofs with complete satisfaction to all concerned —Owner, builder and dealer. There will be a lot of re-roofing done this spring—it will pay you to write us about it now.



USEFUL CATALOGS



Roof framing problems are easily solved by the use of a steel square. An interesting booklet on this subject has just been issued by Sargent & Company, 53 Water Street, New Haven, Connecticut. It shows how the square is used in solving many problems; and also describes their different squares.

Door checks prove their worth in actual service. A rather interesting folder on the Worcester Blount Door Check has just been issued by the Park Manufacturing Company, 48 La Grange Street, Worcester, Mass., and this will be sent to any of our readers who will write for same.

Clamps for builder's use need be well made as they must stand a good deal of hard usage. A very interesting catalog describing different styles has just been issued by the James L. Taylor Manufacturing Company, Poughkeepsie, N. Y.

Chains are used for many purposes about a building. Many sash, especially in our larger buildings, are hung on chains. Apparatus for opening and closing skylights, etc., are most often worked by chains. Therefore a builder needs to know something regarding different varieties and how they can be used. An interesting catalog of chain fixtures and attachments has just been issued by the Bridgeport Chain Company, 1200 Bunnell Street, Bridgeport, Conn.

Changing Plans is often necessary and for this reason the contractor should be supplied with a good set of drawing instruments, etc., therefore he will be interested in the new and detailed catalog recently issued by the A. S. Aloe Company, St. Louis, Mo. It is a handy book to have at hand for reference and besides drawing instruments they also handle leveling and surveying instruments.

Novel Roofing Effects can be had by the use of Asphalt Shingles such as are made by Servicised Products Company, First National Bank Building, Chicago Ill., and described in their folder which is illustrated in colors, showing how the different effects can be produced both from shingles and roll roofing. Information for Home Builders is the title of an interesting sixteen page booklet showing the use of cement in home construction. It is issued by the Atlas Portland Cement Company, 25 Broadway, New York. It contains some excellent illustrations of artistic cement houses, also some useful information on stucco and stucco textures. For the builder, it will be veery useful as it will enable him to present his clients with some very good information.

Handling of Materials is more easily accomplished when one has the right sort of a dump cart on the job. An interesting catalog of metal automatic dump bodies for use on different truck chassis has just been issued by the Manda Company, Keokuk, Iowa.

Good Stucco will always result if proper knowledge is applied to the job. A most interesting book on how to do this has just been issued by the Atlas Portland Cement Company, 25 Broadway, New York. Besides full directions and proportioning, mixing and applying, the book is excellently illustrated by reproductions of artistic stucco surfaces. The instructions given will be of considerable value to every builder.

Staining Shingles for artistic effects is easily accomplished when one has the right sort of shingle stain. An interesting book of 100 houses that have been preserved and beautified by Cabot's Creosote shingle stains has just been issued by Samuel Cabot, Inc., Boston, Mass. It contains some very useful information regarding shingle staining.

ON this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

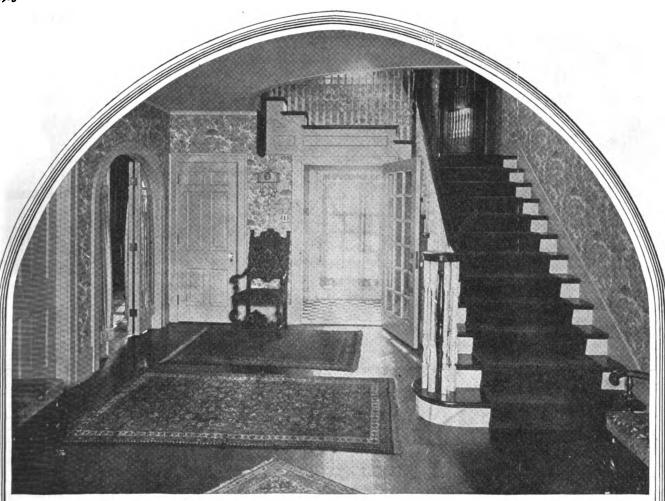
Rust Resisting Tin Roofing is attractively described in an interesting catalog just issued by the American Sheet & Tin Plate Company, Frick Building, Pittsburgh, Pa. It is entitled "The Testimony of a Decade" and tells about their Keystone copper steel and how it is used for roofing, etc. It contains some very good information and data regarding the lasting qualities and rust resisting features of their product. It is well worth serious consideration

Surveying Instruments as made by the L. Beckman Company, 300 Adams Street, Toledo, Ohio, are described in a handsomely illustrated catalog of 76 pages. It contains description of many instruments of use to the contractor and builder, on all kinds of construction and building work such as leveling walls, laying out angles, giving lines and levels, grading, etc.

Floor Surfacing is made easy by the use of a suitable surfacing machine. An interesting folder describing such a machine has just been issued by the American Floor Surfacing Machine Company of Toledo, Ohio. It shows how a contractor can make extra money by owning such a machine.

Builders Hardware as made by the National Manufacturing Company of Sterling, Ill., is attractively shown in their new catalog of 120 pages. Of particular interest to builders will be the sections describing their garage door sets. Many a troublesome problem of how to swing the garage doors will be solved by a study of the diagrams shown in this useful and attractive catalog. Of course, hardware for the builders' use is also described.

Walls and Coilings, their decoration and preservation is concisely described in the "Wall and Ceiling Hand Book" published by the Bostwick Steel Lath Company, Niles, Ohio. It contains some very useful information on producing of ceilings and walls by the use of metal lath. A very useful chapter is on the decorative treatments adapted to specific architectural styles and its useful information will be an aid in selecting the proper wall finish according to the architecture of one's house.



HITE ENAMEL on Arkansas Soft Pine is invariably successful. Unlike "Georgia Pine," so called, it contains no pitch nor resinous oils. The hazard of discoloration is, therefore, dispensed with. In physical makeup, Arkansas Soft Pine is of fine fibre, close grain and uniform texture. The priming coat of white lead or zinc is evenly absorbed, and becomes an integral part of the wood itself. Thus the enamel coats are built up upon the actual wood and not upon a superficial base of shellac or other varnish primers. Moreover the hazard of raised grain is also dispensed with.

Arkansas Soft Pine

costs slightly more than other pine finish. On the other hand its cost is notably less than that of rarer woods. Thus in the thousands of fine homes in which it is now serving, this Satin-like Interior Trim is giving the greatest value in good woodwork at the lowest cost commensurate with permanent satisfaction.



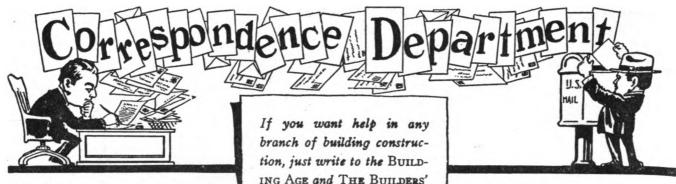
HAND BOOK, FINISHING INSTRUCTIONS, NATURAL AND FINISHED SAMPLES ON REQUEST

Arkansas Soft Pine is trade marked and sold by dealers East of the Rockies

ARKANSAS SOFT PINE BUREAU

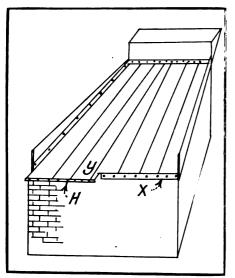
Boyle Building . Little Rock, Arkansas





A 'Bob Tail" Eave Finish

WE have every reason to be fully conversant with the fact that the contractor or carpenter "who knows how" is the one looked up to in his neighborhood, and the one that gets the cream of the trade. This is especially true in a rural community where news is quickly distributed when the carpenter is found to be a source for reliable information in all the details connected with the erection of a building, the surrounding freeholders are certain to ap-



proach him for all sorts of advice. When this time rolls around he is a made man, he is quoted from one end of a country-side to the other, and has the choice work of that district in his pocket—so to say.

For this reason, with the Editor's consent, we are going into the working of other material than just wood. They a!l belong, and a great many new ideas may possibly "pop up" that will be found interesting, and which probably will prove valuable in the course of time to a great number of readers.

The Bob Tail eave finish to the right as illustrated would be considered a freak in most localities; however, we know a number where the woodwork was finished and the metal roof nailed at the eave as shown. Of course, it is all wrong. It gives no chance whatever to properly hang an eave trough that will catch all the rain water. If one

branch of building construction, just write to the BUILD-ING AGE and THE BUILDERS' JOURNAL Correspondence Department. We will be glad to answer all your questions without charge.

All readers are invited to discuss the questions and answers published.

was hung the connection for nailing, extending to the center of the crossbar would have no support to resist the weight of snow or ice.

When such a construction is giving annoyance by water running down between the trough and the roof eave finish, we would suggest taking the trough down. If metal eave trough brackets cannot be had to fasten into the roof joist ends, into which the trough can be laid, saw out wooden brackets and nail to the siding, giving the proper pitch for flow of water.

Cut a strip of metal wide enough to press up under the old eave tin finish and extend out into the trough 2 in., nail both old and new edges through the old tin holes, when you will have an arrangement that will stop further trouble.

HAVE you ever used any machinery or device which has saved you time and money?

Have you ever invented any way of doing a piece of work quicker?

If you have BUILDING AGE and BUILDERS' JOURNAL wants your experience, and will pay regular space rate for it.

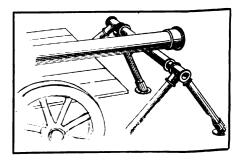
Your description should tell just how you saved time and money, either by a special way of using machinery or by short cuts in construction. Point out what methods you were using before adopting your "Time Saver" and show how your new method turns the trick. You can submit as many articles as you want.

Address The Editor, BUILDING AGE and BUILDERS' JOURNAL 239 West 39th street, New York City.

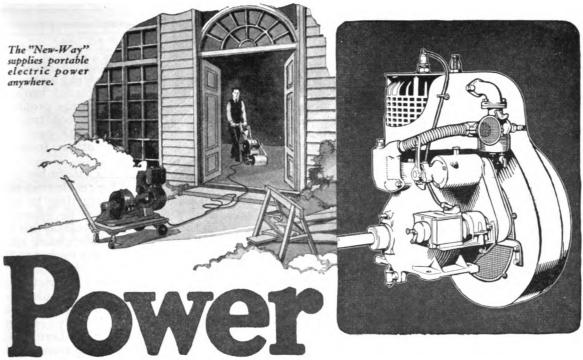
A practical finish and the one generally used by builders is shown to the left (see H) with the sheeting extending beyond the outer wall, providing an extension over the eave trough. However, right here is where many carpenterms again fail by not giving the small details proper attention by guessing at the width of this extension. There is no ordinary commercial eave trough hanger on the market that will stay in alignment when the roof bar stands at an angle from the center of the trough to the top corner of the eave. The heavy weight which it has to carry at times during the winter will displace it at some point. The roof bar should stand or hang straight from the center of the trough to the top corner of the sheeting, and the bend given the bar to fit the pitch of the roof for nailing, should engage the eave corner, hence, if 6 in. trough is to be used the extension should be slightly more than 3 in., or if an 8 in. trough 4 in. or more is given, etc.—
L. S. Bonbrake.

Loading and Unloading Trucks

THE drawing below illustrates a simple device for easily transferring unweildly cargoes of iron pipe, etc. to and from trucks. It is in effect, a roller that is elevated to the level of the truck end, the end of the loading platform or both, and so arranged as to turn without rolling away from where it is placed. It is of course of particular value where no high loading platform exists; in such common instances it afforts a convenient intermediate step between the truck level and the ground. It may be constructed in more than one way, of pipe lengths and pipe fittings. It may be used singly or in a series; of one level or graduated levels.-C. Nye.

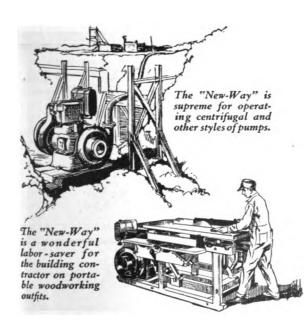


Digitized by Google



to do the unusual





THE revolutionary accomplishment of this super-power unit is due to its unusual adaptability, which puts it in an entirely different class from the ordinary stationary engine.

The shape and size of the "New-Way" Engine, its portability, its air-cooling feature, make it available where the use of other engines is impossible. It is standard equipment on leading makes of portable and semi-portable equipment because of these exclusive advantages.

Used in connection with a generator, the "New-Way" gives continuous current for power and light. It makes possible the use in remote places of electric operated drills, riveters, welders; field telephone systems; lighting for temporary buildings or for spot lights at night; and an infinite number of other purposes.

The "New-Way" Engine has been perfected by concentration on one size of engine only. It delivers two to five horse power and requires little attention and no service save in exceptional emergencies.



Our traveling engineer will be glad to help you work out your power problems. Write for full information.

THE NEW-Way MOTOR COMPANY
LANSING, MICHIGAN, U.S.A.

Eastern and Export Office : Woolworth Bldg., New York Che

Digitized by Google

Review of Building Situation

BUILDING statistics for December, 1922, just published by F. W. Dodge Company show that the value of contracts awarded during the year 1922 amounted to an increase of 42 per cent over that of 1921. Residential construction alone increased 53 per cent, while all other classes of construction as a whole increased 36 per cent.

The increase in the volume of construction, however, was a good deal more than indicated by the money value as given in the above figures. In considering a comparison of the two years, it is necessary to keep in mind the fact that the average of construction cost for 1922 was slightly less than 1921.

The year's total for actual construction, figuring on the volume of the entire country, was approximately \$4,500,000,000. Nearly one-

eighth of the country's total construction expenditure was in the City of New York.

The building revival proceeded more rapidly in the Eastern states than in the Midwest, while the Pacific Coast states were also exceedingly active, especially in the southern part of California. The year 1923 should show a

The year 1923 should show a continued large volume in all districts. The construction of business buildings and industrial buildings is likely to increase, likewise there will be considerable demand for educational buildings.

It would seem, from the nature of things, that residential construction on the whole ought to decline, but the next few months will give us some actual light on this interesting subject. From all sources of information available there seems to be just as active a

demand for residential construction as there was a year ago. The figures for contemplated projects bear out this optimistic prophecy is as the residential construction figure is at least 100 per cent higher than any other form of construction.

In the figures for December contracts awarded for residential construction it is interesting to note that \$76,000,000 is to be expended in the Northeastern states, this being 64 per cent of the entire total.

It was thought that owing to the enormous amount of money already spent in those districts that the housing shortage would have been caught up with, but the residential projects already contemplated for the Northeastern states total to the immense sum of \$1,418,550,000. The outlook for 1923 is bright indeed.

Record of December, 1922, Building Contracts Awarded

Classifications of Buildings	New England District	SECTION New York District	OF COUNTRY Mid Atlantic District	Pittsburgh District	Middle West District	North West District	Totals
Business	\$2,207,800	\$7,588,200	\$3,737,800	\$2,774,500	\$9,395,800	\$164,000	\$25,868,100
Educational	424,600	2,505,700	4,827,200	871,000	5,215,800	407,100	14,251,400
Hospitals and Institutions	135,000	477,000	166,200	166,500	2,471,800		3,416,500
Industrial	1,473,500	2,230,500	2,628,500	2,593,500	8,834,000	1.537.500	19,297,500
Military and Naval		4,900	301,800	15,000	75,000		396,700
Public Buildings	547,000	162,900	106,900	217,400	860,000	21.000	1.915.200
Public Works and Utilities	765,300	1,321,600	4,638,800	4,831,100	12,723,800	594,300	24,874,900
Religious and Memorial	176,100	365,500	605,000	617,000	686,500	173,600	2.623.700
Residential	14,747,100	41,378,100	20,365,500	16.394,100	25,831,800	1,422,800	120,139,400
Social and Recreational	404,000	229,000	258,300	1,170,500	364,400		2,429,200
Total	\$20,880,400	\$56,263,400	\$37,636,000	\$29,650,600	\$66,461,900	\$4,320,300	\$215,212,600

Building Projects Contemplated, December, 1922

Classifications of Buildings	New England District	SECTION New York District	OF COUNTRY Mid Atlantic District	Pittsburgh District	Middle West District	North West District	Totala
Business	\$5,373,300	\$14,601,500	\$8,286,600	\$7,544,200	\$21,347,800	\$2,032,000	\$59,185,400
Educational	4,104,500	2,786,700	7,552,000	6,693,500	14,292,000	11,693,800	47,122,500
Hospitals and Institutions	515,000	2,092,000	656,000	3,551,500	13,447,800	70,000	20,332,300
Industrial	1,781,500	5,002,400	3,282,000	12,871,000	40,367,000	48,704,500	112,008,400
Military and Naval	115,000	124,500	20,000				259,500
Public Buildings	884,000	507,400	1,550,000	115,500	3.174.000	504,000	6,734,900
Public Works and Utilities	5,375,500	6,225,000	11,534,400	11.381.100	159,739,100	3,213,300	197,468,400
Religious and Memorial	1.784.100	1,708,500	1.419.500	974,000	4.134.500	677,000	10.697.600
Residential	17.601.400	87,173,400	40,947,900	20.026,900	66.972.400	8,473,500	241,195,500
Social and Recreational	2,772,000	4,547,000	3,138,000	2.315,500	13,858,500	1,758,500	28,389,500
Total	\$40,306,300	\$124,768,400	\$78,386,400	\$65,473,200	\$337,333,100	\$77,126,600	\$723,394,000

Will You Trade \$20 for \$100?



It may cost you an average per roof of only \$20.00 more to use

36 inches

NATIONAL AANA (Asbestos and Asphalt) SHINGLES

ON THE HOUSES YOU BUILD FOR RESALE

But the house can be sold for \$100.00 more, because you can furnish the Buyer, along with the deed, our

20 Year Guarantee

that

1—Water cannot leak through the material.

2—Fire cannot burn through the Asbestos layers.

3—The shingles will not curl.

If the house was roofed with any other asphalt shingles (no matter whose make) the buyer could only secure from the maker a 10-year guarantee (most makers give no guarantee), and the chances are that before 20 years a new roof would be required, and this would cost 2 or 3 times \$100.00.

Look At These Differences!

National AanA Shingles

Rag Felt Type

Two layer base of sheet Asbestos; origin mineral, consequently non-perishable and fire proof, plus double layer or 50% more of solid asphalt (the real weather resister).

Wear Resistance

One layer of Rag Felt origin animal and vegetable. Perishable and not fireproof, plus only one layer of solid asphalt.

Class "B" Fire Underwriters' Rating (the highest awarded asphalt shingles).

Fire Resistance

Class "C" (or lower) Fire Underwriters' Rating.

Guarantee against curling.

Non-Curling

Known fact that Rag Felt base shingles do sometimes curl.

National AanA Shingles Cost Less to Apply

because of their full 36" width in the strip or 4 in 1 form against 32" width in other makes. This difference in width means a saving of 12½% in labor and nails, or approximately 40 cents per square, equivalent to a 40-cent less price.

Price \$7.00 per square f. o. b. cars—Jersey City, N. J. BUY FROM YOUR BUILDING MATERIALS DEALER OR DIRECT FROM

NATIONAL ASBESTOS MFG. COMPANY

163-193 HENDERSON STREET, JERSEY CITY, N. J.

Digitized by GOOGIC

Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

these prices are presented to show the trend of the wholesate market, which forecasts prices in the retail market. They are not prices which the average contractor

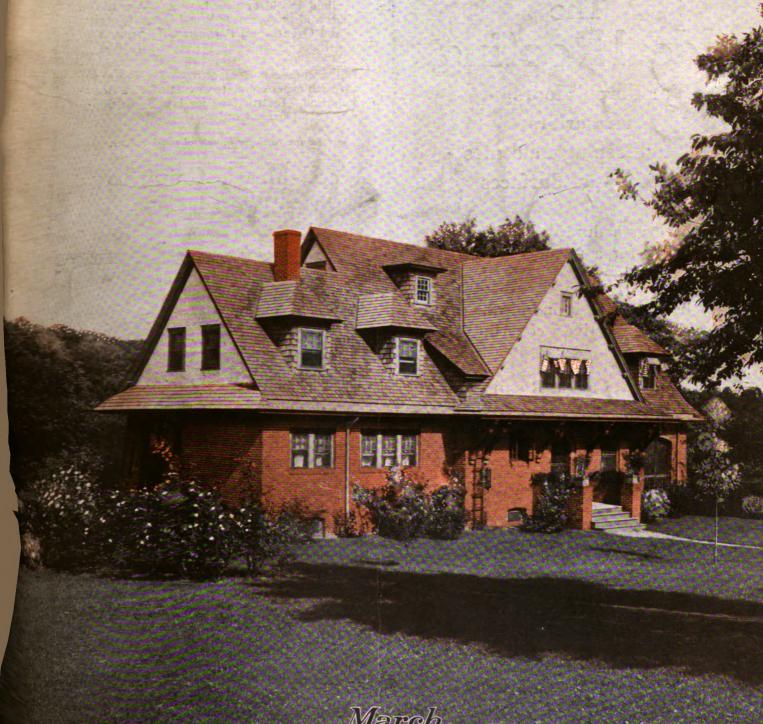
can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

NEW YORK PRICES		Dec. 29	Jan. 30
Dec. 29	Jan. 30	PLASTER BOARD— 32 x 36 x 1/4 in., Each	•
B, and Better Edge Grain Flooring, 13-16x21/2" Face \$92.00	\$ 92.00	MAGNESITE STUCCO—	\$0.23
Dimensions, SISIE, No. 1 Common, 2x4", 10	44.00	Per Ton	\$70.00
Timbers, Merchantable, '05, 12x12", 10 to 20" 58,50	58.50 47.00	TILE— 1 in. Square or Hexagon, White, per sq. ft \$0.25	\$0.25
B. and Better Ceiling, 1/x31/4	65.00	3 x 6 in. White Wall	.60
B. and Better Finish, 1x4"	67.00 49.25	8 x 8 in. Red Floor	.45
No. 1 Common Boards, 1x8"	15.25	CHICAGO PRICES	
No. 2 and Better Flooring, 13/16x21/2" \$66.00	\$69.00	YELLOW PINE—	
Roofers, 13/16x5½" 35.50	32.50	Boards, 1x8, No. 1 Com	\$46.00 48.00
DOUGLAS FIR— No. 2 Clear and Better V. G. Flooring, 1x3'	\$78.00	Dimension No. 1, 2x4, 12 to 14 ft	38.00
No. 1 Clear V. G. Flooring, 1x4"	77.00	Drop Siding, 1x6, B. and Btr	56.00 67.00
No. 2 Clear and Better Ceiling, 1/4x4"	52.50 54.50	Flooring, B. and Btr. E. G., 1x3	90.00
No. 2 Clear and Better V. G. Stepping	93.00	Lath, 4 ft., No. 1	7.90 49.00
WESTERN RED CEDAR-	47.60	HARDWOODS—	
B. C. Perfection Shingles, per M	\$7.60 7.45	Maple Flooring, 13/16x214, clear \$99.50 Oak Flooring, 14x2, Cl. Pl., White 77.00	\$99.50
Clear Bevel Siding, ½x6"	52.00	Oak Flooring, 13/16x21/4, Cl. Pl., White	77.00 108.50
CANADIAN SPRUCE—	\$9.38	REDWOOD—	
No. 1 Lath, 1½"	34.00	Bevel Siding, S1S1E, 10 ft., 20 ft., 1/1x4, clear	\$44.25 92.50
HARDWOOD FLOORING—		WESTERN RED CEDAR—	
Clear Quartered White Oak, 13/16x2x234"	\$158.50 113. 50	Bevel Siding, ½x4 in., Clear	\$49.00 5.50
Clear Plain Red Oak, 13/16x23/4"	113.50	COMMON BRICK—	
Clear Maple, 13/16x234"	106.50	Per M. f. o. b. job	\$12.00
COMMON BRICK-		Bbls. in car lots to contractors, not including con-	
Per M. f. o. b. job	\$23.75	tainers \$2.20 STRUCTURAL STEEL—	\$2.05
PORTLAND CEMENT— Bbls. in car lots to contractors, delivered \$2.80	\$2.75	Per 100 lbs. at warehouse	\$2.95
STRUCTURAL STEEL—	\$3.19	CRUSHED STONE (cu. yd.)— % in. \$3.37	\$3.37
Per 100 lb. at warehouse	φυ.17	1½ in 3.37	3.37
34 in \$3.00	\$2.85	WALL BOARD— Per 1,000 sq. ft. in lots under M	\$50.00
1½ in 3.00 WALL BOARD—	2.85	Per 1,000 sq. ft. in lots 1 M to 2½ M	45.00
Per 1,000 sq. ft. in lots under 1,000 sq. ft \$50.00	\$50.00	Sand (per cubic yard)	\$3.00
Per 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft 45.00 METAL LATH—	45.00	Sand (per cubic yard)	3.00
2.3 lb.—26 gauge price per 100 sq. yd. delivered \$24.00	\$24.00	1½ in. Gravel (per cubic yard)	3.00
2.8 lb.—24 gauge light price per 100 sq. yd. delivered. 26.00 3.4 lb.—24 gauge heavy price per 100 sq. yd. delivered 28.00	26.00 28.00	ST. LOUIS PRICES	
Add 5 cents per sq. yd. for galvanized.		YELLOW PINE—	
LIME (Hydrate)— Finishing, per 50 lb. bag	\$0.60	Boards, No. 1 Com., 1x4	\$45.00
Masons, per 50 lb. bag	.49	Partition, 1/4x31/4, B. and Btr	59.50 34.00
SAND AND GRAVEL— Sand (per cubic yard)\$1.65	\$1.75	Finish, S2S, B. and Btr., 1x4, 6 & 8 ft	64.50 90.00
% in. Gravel (per cubic yard)	3.00	Finish, S2S, B. and Btr., 1x4, 6 & 8 ft	68.50
1½ in. Gravel (per cubic yard) 3.00 FACE BRICK—	3.00	Lath, 4 ft., No. 1	9.95
Tapestry (delivered) \$46.00	\$46.00	10 to 20 ft	39.50
Caledonian (delivered) 43.00 Smooth Grey (delivered) 47.00	43.00 47.00	CALIFORNIA REDWOOD-	
Fisk Lock f. o. b. factory	36.00	Finish, S2S, Cl., 1x6 in	\$92.50 46.25
SHINGLES— Asphalt, Single (per square)	\$8.25	8 inch Colonial	76.75
Asphalt, Strip (per square) 7.00	7.00	8 inch Bungalow	78.75
STAINED WOOD SHINGLES— 16 in, Extra Clear (per square, delivered)	411.00	Oak Flooring, 1/1x11/2 and 2 in., Clear Qtr. White \$106.50	\$106.50
18 in. Eureka (per square, delivered) 12.00	\$11.00 12.00	Maple Flooring, 13/16x21/4 in., Clear	100.50
18 in. Perfection (per square, delivered)	12. 60 12.25	Siding 4x6 Clear	\$48.00
24 in. Imperial (per square, delivered)	12.50	Shingles, Clears, Per M	5.01 ·
VITRIPIED SEWER PIPE-	** **	Per M., f. o. b. job \$17.00	\$17.90
4 in. (cents per foot)	\$0.12 .18	PORTLAND CEMENT— Rbls. in car lots to contractors, not including con-	
SLATE ROOFING—		tainers \$2.35	\$2.35
Bangor or Slatington, 8x16 in. (per sq. at quarry) \$8.40 CORNER BEADS (Galvanized)—	\$8.40	STRUCTURAL STEEL— Per 100 lbs. at warehouse	\$3.00
Per Foot \$0.05	\$0.05	CRUSHED STONE (cu. yd.)	40.00
WALL TIES (Galvanized)— Per Thousand	\$5.00	1/4 in. \$2.18 1/4 in. \$2.18	\$2.18 2.18
PILE INING.		WALL BOARD—	
894 x 894 in. Per Foot	\$0.30 .45	Per 1,000 sq. ft. in lots under M	\$50.00 45.00
HOLLOW TILE—		SAND AND GRAVEL-	
8 x 12 x 12 in., heavy. Each, delivered\$0.22½ HAIR—	\$0.221/8	Sand (per cubic yard)	\$1.20 1:45
Per Bushel \$0.60	\$0.60	11/2 in. Gravel (per cubic yard)	1.45

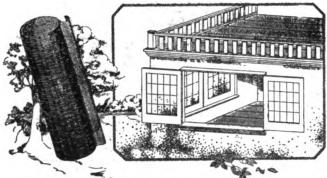
Building Age THE BUILDERS' JOURNAL



54 Year

March 1923

35 Cents



CON-JER-TEX

The Ideal Roofing

For Porch Floors
Sun Parlors
Sleeping Balconies
All Flat Surfaces

Wherever a durable flashing or a lining for a wood box gutter is required—

Wherever an economical, durable, attractive covering is needed—

Con-ser-tex Canvas Roofing will give satisfaction. It's a chemically treated heavy cotton fabric which will not crack, stretch, shrink, curl or peel. It's easy to lay and profitable.

Our Free Booklet, "Roofing Facts and Figures", illustrates and explains the many uses and advantages of Con-ser-tex.

WILLIAM L. BARRELL CO. of N. Y., Inc.

NATIONALIA MARKANIA M

50 Leonard Street

New York City

Chicago Distributors: Geo. B. Carpenter & Co.

California Distributors: Waterhouse-Wilcox Co. San Francisco & Los Angeles

FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana

· HOPE'S · CASEMENTS



HENRY HOPE & SONS LID 103 PARK AVENUE · NEW YORK 205 YONGE STREET · TORONTO

Digitized by Google

Building Age

THE BUILDERS' JOURNAL

New York, March, 1923

UNDER SOUTHERN SKIES

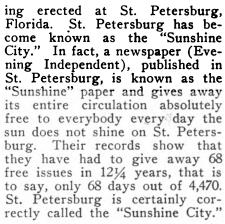
Interesting Home Building Development in St. Petersburg, Florida

LORIDA, the land of flowers and sunshine, beckons to Northern people to come, enjoy her climate and escape Winter's icy blasts. Many of those who can afford it are forming the habit of going southward for the winter seasons and this means that adequate buildings must be erected for their accommodation, whether it be for a few months' winter occupation or for all year round.

In different towns and cities along our southern coast many winter resorts have sprung up to attract visitors. apartment houses are in demand, also many single houses are being erected, both for rent for the winter season, and also for the occupancy throughout the year of those who are making a livelihood in the South.

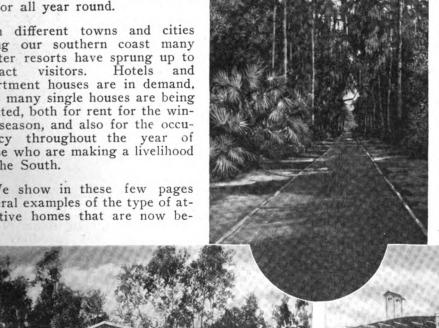
We show in these few pages several examples of the type of attractive homes that are now be-

Homes Illustrated Designed by HENRY H. DUPONT. Architect



Artistic bungalows and twostory houses constructed of various materials find equal favor. On account of the ease in cultivating shrubs and flowers, it is only a short while after a house is completed that it is surrounded by a garden of rare beauty.

Stone, brick, stucco, clapboards, shingles, are used for the walls of the houses, either singly or in art-



sides Hundreds of Beautiful Homes of Moderate Cost, St. Petersburg,

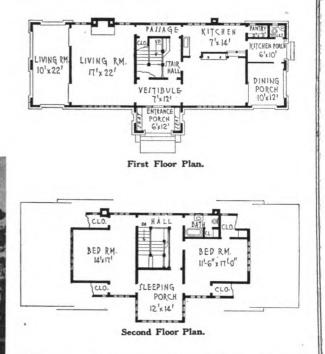
Florida, Boasts of Many Miles of Good Roads Shaded by Tropical Foliage.

istic combinations, while all sorts of different roof coverings add color and variety to the homes.

Long Sloping Roof Lines and an Abundance of Windows Are the Dominant Features of this

Carrying out old-time traditions, Spanish architecture finds a good deal of favor and many of the bungalows and semi-bungalows follow this style of architecture. Of course, most of these are stucco finished. Some original

Home.





and novel designs have been Cobble Sto Artistic Co evolved and the houses show that there is no lack of variety.

For some the floor plans are somewhat rectangular and in others, they are more or less ir-Ordinary square box regular. type of architecture finds no favor. The work of Mr. Dupont, as reflected in these pages, show originality in the handling of the different materials and construction as well as in the layout of the diftion with Brick and Stucco Give

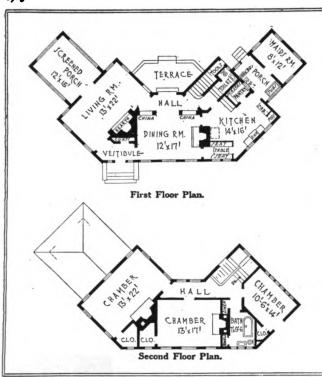


CREENED SLEEPING PORCH BREAKFA PORCH 10'x10 HAMBER 12'-6"x 13" DINING RM. CLO. CHAMBER CHAMBER 13'x 15 LIVING RM 13'x 26' ROOF SCREENED PORCH 13'x 15' First Floor Plan. TILE FL. Second Floor

ferent rooms. In some of his houses different portions placed at angles, but due to careful planning, the rooms in all cases are practically square.

In one of the illustrations, the glass roof over what is known as the "sun ray water heater" is shown quite plainly. This device is used in practically all of the houses in this locality. Here old Sol himself supplies the heat for making the hot water supply.

Owing to the fact that there is no cold weather to contend with, many economies in construction of houses in Florida are possible. Heating plants are, of course, eliminated, but open fire-



The Glass Roof Over the Porch Is for the Sun Ray Water Heater—a Feature of These Southern Homes

the kitchen. This is a convenience much appreciated by the wash ladies—no dark Northern cellars or cluttered up stuffy kitchens for them.

Practically every house has one or more sleeping porches, and while these are of course screened in, they are also glassed. Heat is





Here the Chimney of Brick and Stone in Artistic Combination Features this Chalet Design.

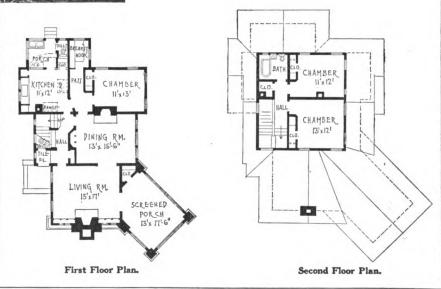
not necessary, still a little protection against cool winds is necessary. In looking at these few pictures, one notes the large amount of windows—glass is an important item in the construction of a Southern home.

The use of wood shingles for roofs is prohibited by city ordinance. Large quantities of asphalt shingle are used for roofing, but on many houses, asbestos, slate metal and tile are used.

places are used in practically every residence. They form the feature of living-rooms in every case, and in other rooms; even some bedrooms also have their open fire-places. This heat is sufficient to take off any chill that may occur at some seasons of the year, but their use is mostly for appearance.

Except where needed for strength, sheathing need not be employed, and likewise, cellars are in a majority of cases not used. Excavations for foundations need not be deep, as the frost line is unknown. Cellars are used mainly for cold storage.

The laundry tubs, in most cases, are placed upon a porch built off





ITIES ranging in population from 20,000 to 50,000 are, as a general rule, lacking in adequate hotel accommodations. Such was the case with Middletown, Ohio. But, unlike some less progressive centers, several of their prominent citizens realized the necessity of a first-class hostelry for their city. A number of representative citizens got together and formed a corporation, known as the Middletown Hotel Company for the purpose of erecting a building that would serve a civic need and make a good impression with visitors.

This new hotel, known as the "Manchester," which has just been completed, is located on the corner of 2nd and Broad Streets, in Middletown, and is one of the

Modern Inn

HOTEL MANCHESTER
Middletown, Ohio

F. L. PACKARD
Architect

DWIGHT P. ROBINSON &
CO., Builders



units in a proposed community center which will eventually include a community memorial building, a new high school, and a Y. M. C. A. building.

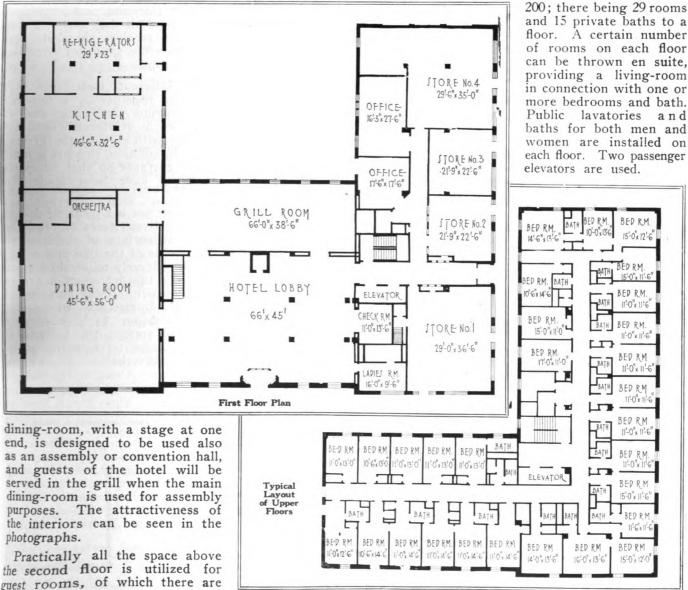
The Hotel Manchester was built by Dwight P. Robinson & Co., New York, from plans prepared by Mr. F. L. Packard, architect, of Columbus, Ohio. Economy in both design and construction was necessary, and this, to the credit of the builders, was obtained without the sacrifice of quality and good workmanship.

The exterior is a simple Italian Renaissance style of architecture. The building is L-shaped with entrances on both Broad and 2nd Streets. It is five stories high, approximately 163 feet long by 130 feet wide, of fire-proof steel and concrete construction, with exterior walls of red brick and tile roof. The provision of a one-story wing to house the dining-room and kitchen makes future extension above easily possible.

Servants' dining-room, janitors' room, boiler room, storage room and public lavatory facilities are provided in the basement.

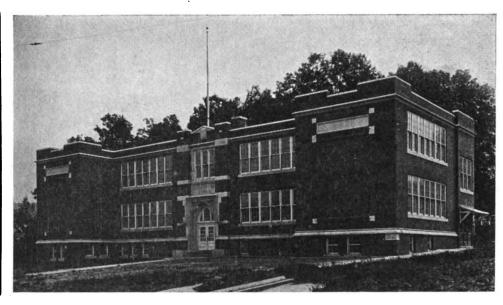
The first floor is devoted to the lobby and main dining-room, grill room, kitchen, hotel offices, cashier's vault, check room, ladies' parlor and retiring-room. The main





43

A SCH OOL



OF BRICK

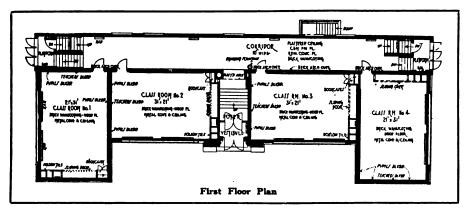
SCHOOL building, from all reports, is going to be very active during 1923. In our review of the building situation given on another page, it is stated that contracts amounting to the sum of \$16,861,000 were let for new school buildings in January, and furthermore, over \$48,000,000 is placed as the value of school buildings contemplated for early erection.

Of course, during the next few months, many more school building projects will be started, so that at the end of the year the total will be a large sum. Too much money, however, cannot be spent on our schools. There is nothing that gives so much prestige to a builder than to be the builder of a school in his community.

The interesting school design shown here is a little different from the general type of school buildings. Four classrooms are located on each floor of the twostory structure; these rooms are of good size and well equipped with blackboards, etc. Every classroom receives abundant daylight from the group of windows in each room.

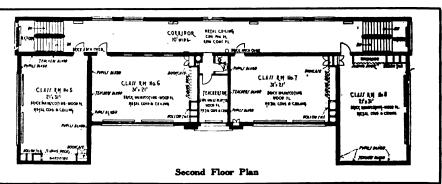
The different classrooms are connected together by a ten-foot wide corridor, at each end of which is a reinforced concrete staircase with exits at the ground level. In addition, there is a main central entrance so that adequate provisions have been made for exits.

The exterior is a pleasing design of all brick and terra cotta. The large flat surface of brick work in the front of the two end wings has been cleverly relieved of monotony by the introduction of a diaper panel effect surrounded with a framework of raised brick, and on each corner a square of terra cotta. Above is another large terra cotta panel which gives a balance to the entire design. The general outline follows along English lines.



Davis Street School Westville, Conn.

BROWN & VON BEREN, Architects



Progress in the Construction Industry

Interesting Discussions at the Annual Convention of the Associated General Contractors of America

THE Fourth annual convention of the Associated General Contractors of America opened Monday, January 29, at Los Angeles with the registration of members and guests at the general headquarters.

Many interesting speeches were made, valuable papers read, and interesting discussions held, both public and private, so it is certain that no contractor who was fortunate enough to attend came away without some sound information and experience pertinent to his business.

Building Activity in Los Angeles

The annual address of the president, Arthur S. Bent, was the first piece of business on the program. Calling attention to the fact that Los Angeles building permits last year ran to more than 120 millions of dollars, President Bent declared that when he was a boy he herded cows on the spot where he then was speaking. Development of Southern California from "El Pueblo de Nuestra, la Reina de Los Angeles" (the sonorous Span-ish title with which the city was christened) to a modern industrial community manufacturing more than a billion dollars' worth of goods a year, President Bent as-cribed to "our industrial freedom." He said "for 25 years we have maintained it without a break. Every workman in the land, union or non-union, knows that here he is assured of his opportunity to work where and when he will, without interference. Every employer and investor is assured of his opportunity to conduct his own business in his own way, without interference. We are not against unions. We are for industrial freedom and that individual 'fair chance' which Secretary Hoover declares is today the sole chance of further human progress."

The Contractor's Silent Partners

Every contractor has two unwitting partners, Guy Leroy Ste-

vick, vice-president of the Fidelity & Deposit Co., told the convention —his surety and his banker. The actual average net profit of the contractor is but little more than 5 per cent, though usually figured as twice that, Mr. Stevick said. "And I believe you will agree that the surety who gets one and a half per cent of the contract price has a sufficiently substantial interest in the profits to be called at least a limited partner," he said. "Then I think that experience would show that the average contract is financed outside of the actual capital of the contractor to about the amount of the reserve percentage -say an average of 15 per cent. That means at 7 per cent interest a charge of something more than one per cent of the contract price. So that we have as the possible interest of the three a matter of between 5 and 10 per cent for the contractor and two and a half per cent divided between the banker and the surety. Thus three interests are vitally interested in the venture."

The Contractor's Skill

Mr. E. J. Mehren, editor of Engineering News-Record, spoke regarding "The Skill Element in the A. G. C. Slogan," and following are a few extracts from his speech:

"The element which distinguishes the contractor from other business men of integrity and responsibility is his skill in construction. Thus far in the life of the Associated General Contractors it has been advisable to stress chiefly the elements of integrity and responsibility. The Association now needs to place equal stress on mobilizing the technique of construction. It must build up a volume of data on cost and methods of doing work that will help to eliminate the guess in estimating construction work.

"Such a collection of data, made available not merely to the members of the A. G. C., but to all contractors, would tend to lessen the

number of bidders who proceed on their ignorance, and not only lose money themselves and cause loss and dissatisfaction to owners, but force many reputable contractors to low bidding and disaster.

"The Association has already done excellent work in helping solve the contractors' internal problems. The Committee on methods, through its standard estimating sheet, its model financial statement, its rates of depreciation, etc., has been of invaluable aid in forcing contractors to learn their true costs. What I am urging is a very broad extension of the work of your Committee on Methods, of a thorough introspection, so that the skill of the contracting profession may be developed to the utmost, and that the A. G. C. may pride itself as much on the skill of its members as it now does on their integrity and responsibility."

All Around Men Instead of Specialists

Samuel Hotchkiss, of the Hotchkiss Co., Louisville, Ky., spoke on "Consolidation of Crafts in the Building Trades." Advocating the performance by one man of all masonry work—bricklaying, plastering, tile setting, etc.—he declared that thus workmen would be more steadily employed and greater efficiency gained by the contractor. Mr. Hotchkiss condemned the wage-bonus system, by which contractors threatened with a labor shortage employ workmen in other cities at an advance of a third or a half in wages, declaring that it tended to destroy the stability of the labor market and to make workman dissatisfied.

He also urged a campaign of education on the advantages of the mason trades as a life occupation. "Mothers don't want their sons to soil their hands," he said. "They want them all to be preachers, lawyers, salesmen. We must teach them that the man who wears overalls is sure of a good living and steady employment; that there

is no disgrace in working with your hands."

What We Can Do for the Good of the Construction Industry

Many important points were taken up in the address by John W. Cowper, president of the John W. Cowper Co. of Buffalo, N. Y., incoming President. Following are extracts from his talk:

"I wish that I possessed, even in a lesser degree, the ability as an orator, so highly developed in our retiring President, that I might tell you in an interesting, clear and forceful manner the many things that come to my mind that we might do, individually and collectively, for the good of the construction industry.

High Principles of A. G. C.

"The high principles on which this Association is based find their best expression in our adopted motto, 'Skill, Integrity and Responsibility,' and the splendid record this Association has made in the few short years of its existence proves that adherence to these principles has been of the greatest benefit, not alone to its members but, in a very big and broad way, to contractors in general, and most of all to the construction industry as a whole. It is my belief that if we continue to carry on in the broad-minded, unselfish way that we have started out, there is no doubt as to the ultimate complete success of our purpose and recognition of the construction industry, and particularly that part of it represented by the Associated General Contractors of America, as an important factor in the economic affairs of our country. We must not, however, in any way permit our activities to deviate from these high principles or to become in the least narrow or selfish, and thus discredit ourselves before the country.

Construction the Second Industry of Our Country

"The construction industry, rated as the second of importance in the nation, has gone forward in the past year with a tremendous stride, the grand total in volume of work done being the largest of any year in our history. I have not the complete figures, but in building construction alone the total approximates \$4,000,000,000, of which

over 40% was for housing or residential purposes, in part making up the very great deficiency in this type of buildings brought about by the war.

Construction Costs Rise

"With this great activity in the building industry, we have seen costs of construction rise sharply. Assuming 1913 as 100%, building costs rose to over 270% at the peak in 1920, and, at the end of 1921, they have declined to approximately 160%, which, I believe, considering the post-war conditions, was very near what we might have expected as normal. But with the increased construction in 1922, prices have again risen, until in December the record shows that they have reached 190%.

High Wages of Labor

"While labor, both skilled and common, is now receiving as high, if not the highest wages, of any time in our national history, and with the indications pointing to demands for further increases, you will agree, considering the fact that wages are approximately 45% of the direct cost of building, that we are probably facing a period of higher costs of construction which, if continued, will prove to be a serious check to the healthy progress of the construction industry. We must find a way to stop this trend towards higher prices, and while we believe in sane ideals and ambitions for the so-called laboring class of this country, a continuance of this present spree of short hours and high wages is bound ultimately to result to their detriment.

Shortage of Labor

"We are suffering from a shortage of labor in all industries, and particularly in construction. The supply of workmen is not keeping pace with the demand, which in itself is an unsound condition. We need, and should have, a revision of our immigration laws so as to permit of a sufficient number of immigrants, those to be of a superior quality.

Establish Trade Schools

"We are dependent in this country, to a large extent, upon foreign countries for our supply of labor and from them it is our duty

to make, as well as from the younger generation of our citizens, the artisans and skilled mechanics that we require. It is, therefore, necessary that we should advocate the establishment trade or vocation schools, and, by all means, we must develop to its highest possible degree the apprenticeship system in all lines, not only for the purpose of supplying ourselves, from a selfish standpoint, with the mechanics we require, but to build up our citizenhip and help every man to a higher plane in life.

Work for the American Construction

"I should like to refer to the American Construction Council, organized about a year ago, of which Mr. Franklin D. Roosevelt, former Assistant Secretary of the Navy, is the head. This Council, composed of all elements of the construction industry, consists of engineers, architects, contractors, manufacturers of construction materials and labor, and will be what its name implies, the great headquarters of the construction industry where, periodically, every element can get together to discuss and iron out differences between the public and themselves, as well as any differences that may exist or arise between the different elements of the industry. In other words, this Council will be the clearing house, as well as the mentor, of the construction industry.

Efforts to Eliminate the General Contractor

"We recommend, for the consideration of the American Construction Council, the combatting of the erroneous propaganda which has been fed to the public in a wholesale manner, without facts to warrant it, that public work should be done without the aid of those skilled, experienced and regularly engaged in that line of work, who are the only ones able and competent to render such services efficiently and at the smallest costs; and we might extend these same principles to other lines of commercial industry. Due to timidity or political disadvantage, the construction industry as a rule has not stood solidly against this menace to taxpayers, as well as their own industry, and it is high time that the public should be informed of the true facts.

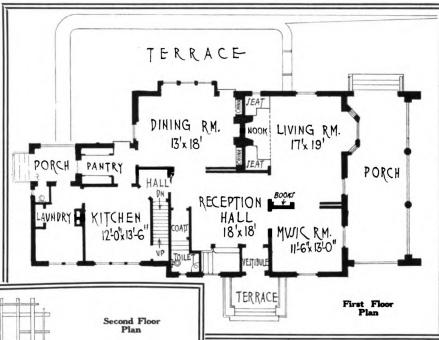


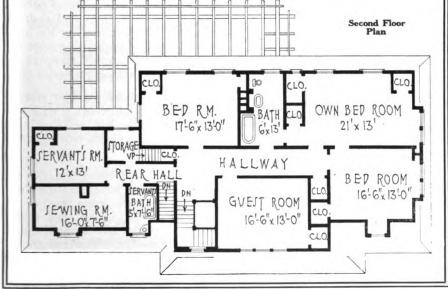


The House on Our Cover

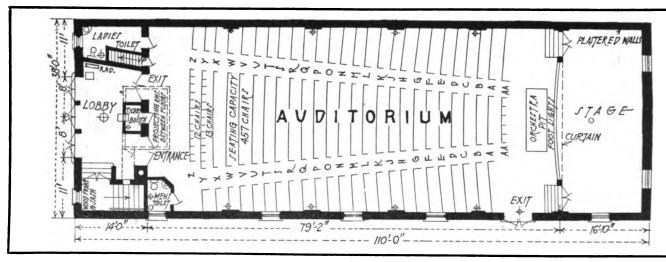
Brick, Stucco, and Shingles Combine to Make an Artistic Home

HEACOCK & HOKANSON,
Architects





RATHER clever in handling is the combination of brick, stucco, and wood, in the design of this attractive residence. It is interesting to note that this is an architect's own home, it being built for Mr. O. M. Hokanson at Landsdowne, Pa. It was erected some years ago by F. B. Davis & Son, Inc., builders, of Philadelphia. The floor plan is somewhat unusual and very conveniently laid out. The dining room has been made a particular feature; the large bay window faces a pergola-covered terrace, beyond which is the garden.



Movie Theatre and Assembly Hall Form Community Center for Small Town

HE public demands amusement of some sort, and for moving pictures, many excellently planned structures have been erected, even in our smaller towns. A most desirable combination is to have a moving picture theatre with an assembly room above where meetings, dances, etc. may be held. In this way such a theatre building performs a dual service and becomes a civic center for the town. Many other communities would do well to follow this worth while example.

THE COLONIAL THEATRE Monroe, N. Y.

W. I. HALL, Architect

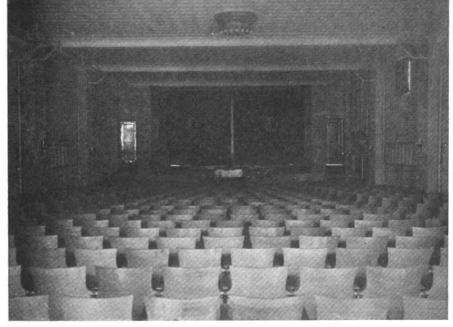
A most interesting theatre building is illustrated in this article. It was built after plans prepared by W. I. Hall, architect. It is located at Monroe, New York; a town having a population of less than 2,000 but in a well populated farming district.

The building, as the floor plans show, is 110 feet in length by 39 feet 9 inches in width. The footings and foundation walls are of concrete up to the first floor. The second floor wood joists are carried on steel I beams which in turn are supported by pilasters of hard brick. The curtain walls between these pilasters are of Natco hollow tile set vertically and bonded in piers every fifth course.

The design of the front, while not elaborate, is very pleasing in appearance. The front wall is of red tapestry brick with black mortar in the joints which were raked out. It is topped in front with a metal cornice. All the window frames and sash are of metal. The windows in the auditorium are all glazed with amber colored wired glass, while those in the assembly room are all clear wire glass.

The rear wall of the first story is of eight inch common brick with four inch hollow title laid on the inside and bonded in the brick work at every fifth course.

The sectional view gives the size of the different structural members. The second floor joists are of fir, three by twelve inches, set twenty inches on center and bridged double between bearings. The rafters are bridged the same as the joists. A hanging ceiling of two by four's support the metal ceiling of the assembly



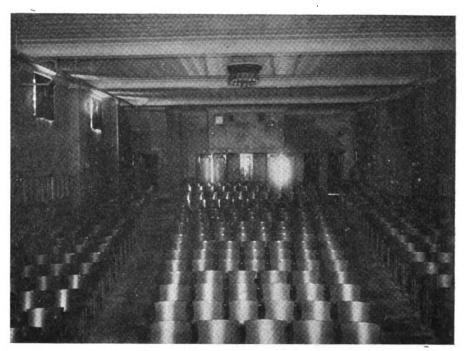
room. There is also a metal ceiling in the auditorium. The roof was covered with five ply tar paper and slag and sloped to rear.

The lobby floor is of cement blocked off in small squares, and this is inclined towards the street. It is carried by ten inch steel I beams spaced twenty inches to the foot. The auditorium floor itself is also of concrete. This space was not excavated but the concrete was laid on a six inch bed of well settled cinders. The concrete is four inches thick and inclined as shown in sectional view.

The stairs conform to the best modern practice and were built of pressed steel strings and risers. The treads were filled with one and one-half inch thickness of concrete. All doors are Kalamein excepting those at the front entrance which were glass doors. Needless to say the projection booth and all partitions were constructed either of tile or brick so as to make them fire resistant.

No attempt was made at ornamenting the exterior except as stated above, but the interior has been made as comfortable and artistic as possible. It is a cozy and restful interior. The chairs, of which there are 457, were furnished by the American Seating Company. The stage curtains are of heavy fireproof velour with asbestos screens.

At the present time only motion pictures and light entertainments are contemplated, but should plays be given requiring dressing rooms, etc., these are to be added at the rear of the stage. Ample toilet rooms have been provided on both the first and second floors.

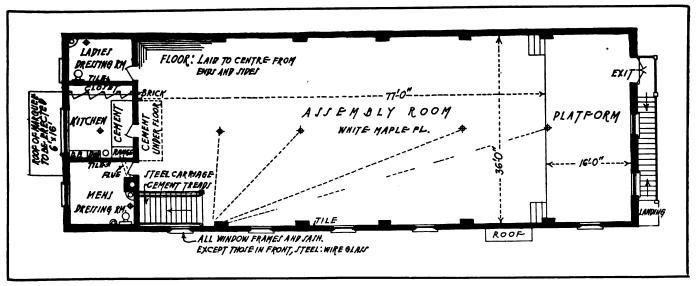


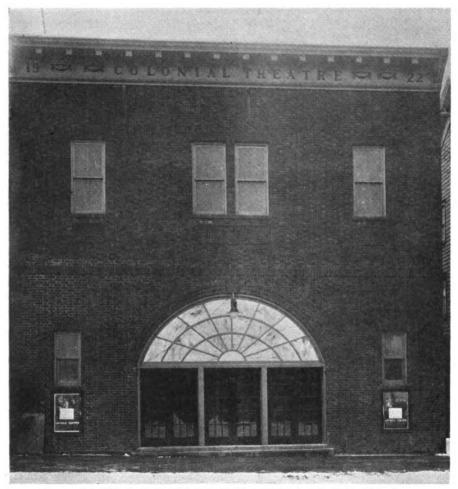
Particular attention was paid to the heating and ventilation and a reversible fan was installed. This is driven by a three horse power electric motor. This ventilating outfit is capable of exhausting the air in the room or replacing it in one minute. The building is heated by a low pressure steam system.

Considerable pains were taken to have the electrical equipment A No. 1 and only the most modern devices were employed. In this respect the building was passed as 100% perfect by an inspector from the New York Board of Fire Underwriters.

This theatre building is a credit to the building mechanics in the vicinity as all the work was done by local men. The excavating, laying of footings and the carpenter work was done by the James B. Carpenter Company of Chester, N. Y. The heating plant was installed by the C. S. Knight Company of Monroe, who also did the plumbing. The painting was done by Vandermask & Cook of Monroe, N. Y. All electrical work was done by the Orange and Rockland Electric Company of Monroe. Fred Kistler of Brooklyn, was the superintendent. Mr. Kistler is a contractor; also one of the firm of the Kistler and Bolton Theatre Co., Inc., the owners. The cost of the building was \$42,000.00.

There are several points that must be carefully considered when building an auditorium of this sort. Where metal ceilings are not used, either





half inch plaster boards should be used or a first class plastering job on metal lath should be employed. Where there is a basement containing a heating plant, particular pains should be taken with the ceiling to have it fire resistant and this can easily be done by having the joists cov-

ered, the same as the auditorium, or have a light steel and concrete fire safe floor.

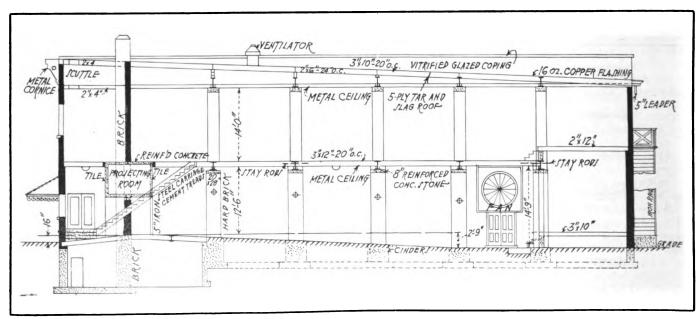
It is a good plan to have the floor of such a building of sufficient strength to bear a live load of 90 pounds per square foot. Steps should be avoided wherever possible in the aisles, etc., and if a slope is used, it should not be over one foot in ten. In cases where steps cannot be avoided, they should not have a rise of more than eight inches and the tread should be at least ten inches in width.

No aisle should be less than three feet in the clear. All chairs should be set not less than thirty-two inches from back to back and should be firmly secured to the floor and no seat should have more than seven seats intervening between it and the aisle. Separate chairs with arms should be provided; pews or benches should be avoided.

Special attention should be given to the exits; besides the front, there should be an exit towards the rear and this should not be less than five feet in width, closed with fireproof doors, made to open outwardly and arranged so as not to obstruct the required width of exit.

In some cases galleries are called for. The best practice is to have their capacity not more than one-third that of the lower floor. Emergency exits from the gallery should not in any case lead to the main floor of the theatre, to avoid the confusion of two crowds of people mingling.

Stairways should always be as wide as possible, in no case less than four feet in width. The rise should be not higher than seven and three-quarter inches with a ten-inch tread, provided. Circular or winding stairways should not be used.





HAT the popularity of steel basement windows will increase among home builders, as did the use of steel sash among industrial builders, is unquestioned. Ten years ago, steel sash was practically unknown among the building trade. Today it is used in factory buildings, stores, office buildings, schools, This inbanks and even hotels. creased use of steel sash has been brought about by educating building owners, architects and contractors to its many advantages. In like manner, the home owner, contractor and architect will come to look upon steel basement windows with favor and satisfaction.

Steel basement windows have several important advantages over wood windows that are sure to appeal to the thoughtful home owner and builder.

They admit from 40% to 80% more daylight for the same sized masonry opening. The sash and frame are made from solid, narrow, rolled steel bars, eliminating the wide wooden members, and permit the use of larger glass lights.

Steel windows cannot stick or warp. The difficulty experienced by every home owner in trying to open or close his windows, when the sash has swollen and stuck, is entirely eliminated. Steel is not affected by moisture.

Screens may be attached easily to the outside of the frames. Holes are punched through the frame so that special screen frames are unnecessary.

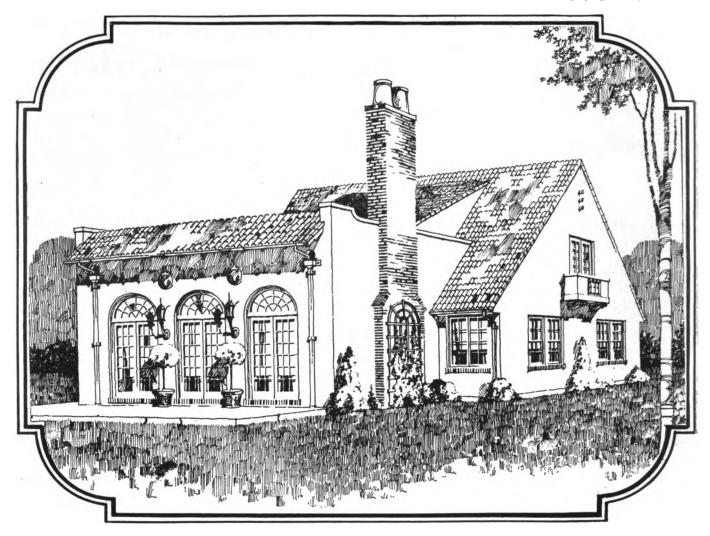
Because of their construction, steel windows resist fire and stand up under hard usage. They always have a better appearance than

wooden windows, and add to the attractiveness of a house.

Here is one fact of interest to contractors and builders. Steel windows with channel frame construction save labor and expense in installing. This type of window will set upright on the sill without bracing and it has the important additional advantage of serving as a guide to the mason. The channel frame makes it impossible to build the wall so close that it will bind the ventilator. The outside leg of the channel frame is somewhat longer than the inside leg. The mason builds the wall snugly against the front leg, filling the channel with mortar as he goes up. Anchorage is secured by means of four straight, flat pieces of steel about 1 inch by 4 inches long. These are laid in the mortar joints in such a way that the ends extend about half inch into the channels at the jambs.

One advantage of steel basement windows which appeals to architects, contractors and dealers alike, is the fact that they are standardized and made in only a few popular sizes. This assures the architect or contractor that he will not have the delay, the extra cost and trouble which invariably accompany special wood windows.





A Semi-Bungalow Along Spanish Lines

HE first floor plan of this house presents a good bungalow arrangement with a large living-room, a dining-room, kitchen, pantry, two bedrooms and a bath. This floor thus provides complete accommodations for the average family.

However, the architects have, by well handled roof lines, provided a comfortable second floor for guests. Here are two good bedrooms and a bath; a maid's room is also provided.

This arrangement allows the second floor for the exclusive use of guests if desired, while the family have their bedrooms on the first floor.

All of the convenience of bungalow housekeeping is here found, with the added feature of a second floor that provides fine accommodation for guests. As these rooms are not used continuously, their isolation from the Specially Designed for

BUILDING AGE
and
THE BUILDERS' JOURNAL

By R. C. HUNTER & BRO.

Architects New York

family rooms is an advantage; it provides the desired privacy for both.

Or, the second floor could be given over to the children if one wished. For small children, the playthings and such that clutter up the house would here be out of the way, and the maid would be close at hand. Or, if the children are grown-ups, the privacy of these rooms from the main rooms of the house make them ideal for study and retirement.

The living-room opens on a terrace on two sides and the dining-room also connects with this terrace. The living-room has a high curved ceiling, giving it unusual character.

The exterior design follows a modification of the Spanish style.

The walls are white stucco, the roof is a Spanish tile in a deep shade of red and the chimney is a red tapestry brick.

A cellar is provided under the full area of the house except under the living-room. Estimated cost about \$13,600.

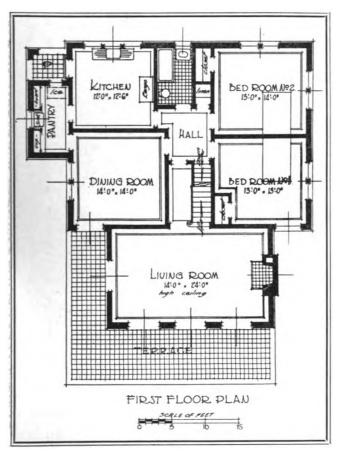
Quantity Survey of Semi-Bungalow

THE quantities given are for estimating. All measurements are NET unless otherwise noted; areas given for such items as sheathing, flooring, etc., are not areas to be covered, with no allowance for matching, waste, etc. Minor outs have been disregarded.

Such items as clearing site, temporary work and protections, scaffolding and general equipment and supplies

have not been included.

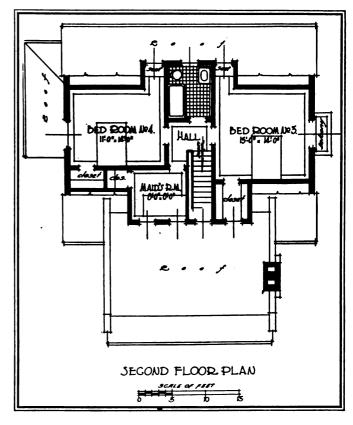
Such items as are marked "Unit" are to be estimated in a lump sum, following requirements of plans and specifications.



r-	 4	~

Excavation	
(Excavation for pipe trenches not inc	luded)
Excavation for cellar	323 cu. yds.
Excavation for footings	26 cu. yds.
Excavation for areas	8 cu. yds.
Excavation for trench walls	32 cu. yds.
Excavation for leader drains and dry wells	14 cu. yds.
Backfilling around walls, etc	52 cu. yds.
Leader drains and dry wells:	-
Field stone for dry wells	11 cu. yds.
4 in. salt glazed tile drain pipe	42 lin. ft.
4 in. elbows	7
Masonry	
Concrete work.	
Concrete for cellar walls	915 cu. ft.
Concrete for footings	302 cu. ft.
Concrete for trench walls	430 cu. ft.
Concrete for area walls	230 cu. ft.
Cellar floor (3 in. concrete and 1 in. cement	
finish)	910 sq. ft.
Area bottoms (brick and sand)	48 sq. ft.
Outside cellar steps (concrete cement faced)	40 sq. ft.
Porch floors (12 in. cinders, 3 in. conc. and	
cement finish)	355 sq. ft.

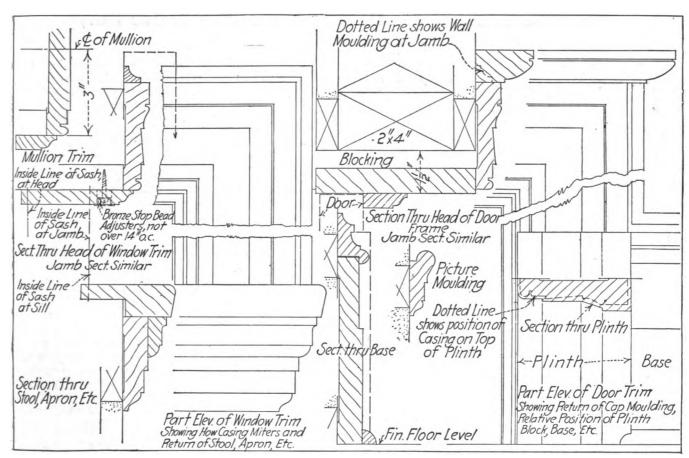
Concrete forms	3,500 sq. ft.
Reinf. conc. window lintels, concrete	90 cu. ft.
3/2 in. dia. steel reinf. rods	42 lin. ft.
5% in. dia. steel reinf. rods	90 lin. ft.
3/8 in. dia. steel reinf. rods	130 lin. ft.
Country cellar window sills	18 lin. ft.
Hollow Tile	
	1 600 4
	1,680 sq. ft.
4 in. x 12 in. x 12 in. block for corners	80 blocks
8 in. jamb blocks	90
1 in. levelling slab	100
6 in. x 12 in. x 1 in. slab for watertable	180
Brick Work	
Common brickwork for chimney, etc. (or	
2.8 M.)	142 cu. ft.
Common brick arches (or 1 M.)	44 cu. ft.
Face brick for sills, etc	465 brick
Face brick for fireplace (or 280 brick)	40 sq. ft.
Face brick for chimney (or 2,240 brick)	320 sq. ft.
Fire brick for fireplace (or 100 brick)	20 sq. ft.
8 in. x 12 in. T. C. flue lining	56 lin. ft.
16 in. x 24 in. chimney pots	2
Cement chimney cap (2 ft. 4 in. x 4 ft. 2 in.)	ī
Cement coping, 4 in. x 12 in	46 lin. ft.
Cast cement (ornamental brackets), 12 in. x	
12 in. x 24 in	2
Cast cement ornamental inserts, 18 in. dia	2 2
4 in. tile pipe ventilators with wire screen on	-
back	6



B LUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by BUILDING AGE and the BUILDERS' JOURNAL, 239 West 39th Street, New York.

Mason's Iron Work		Exterior Finish—Continued	
Fireplace damper (3 ft. opg. with throat, etc.)		Balcony balusters, 3 in. dia. x 2 ft. 4 in. long	
C. I. ash dump	l unit l unit	(turned)	3
C. I. cleanout dor for boiler flue (8 in. x 8 in.)		3/8 in. x 6 in. matched on beaded N. C. pine	60 sq. ft.
Thimble for boiler flue	1 unit	Windows— Frames complete with sash, outside trim,	
Plastering Three-coat patent plaster on metal lath, gross	710 sq. yds.	etc. Sash 1½ in. thick, glazed D. T.	
(Net 615 sq. yds.)		(Masonry walls unless noted.) Cellar windows—	
Three-coat patent plaster on hollow tile, gross (Net 360 sq. yds.)	408 sq. yds	Single top hung sash, casem. 3 ft. x 2 ft.,	
Stucco on hollow tile, etc., gross	295 sq. yds.	4-light	3 1
(Net 228 sq. yds.) Damp-proofing under stucco, net	2 300 sa ft	Single, 1 ft. 6 in. x 2 ft., 2-light	i
Stucco on metal lath, net		First floor windows— Mull. D H. sash, ea. 2 ft. 6 in. x 5 ft., 12-	
G. I. corner beads	80 lin. ft.	light	4
Tile Work		Single D. H. sash, ea. 2 ft. 6 in. x 3 ft. 2 in., 12-light	2
Tile work for bath-rooms: Floor (1 in. hex. white ceramic)	72 sq. ft.	Triplet D. H. sash, ea. 2 ft. 6 in. x 3 ft. 2 in.,	2
Wainscot, 3 in. x 6 in. white wall tile	188 sq. ft.	12-light	1
6 in. base	36 lin. ft. 46 lin. ft.	Second floor windows—	l pr.
Sheet Metal Work		Casem. sash, pr. 4 ft. x 4 ft. 8 in., 8-light Single D. H. sash, 2 ft. 6 in. x 3 ft. 2 in.,	l pr.
Copper flashings for roofs, etc	220 lin. ft.	12-light (frame)	7
4 in. half round hanging gutter	108 lin. ft. 87 lin. ft.	Exterior door frames— (13/4 in. thick rabbeted) complete with out-	
Bends for same	18	side trim.	
Ornamental heads		Frames for doors to living room— Doors 4 ft. 8 in. x 7 ft. 2 in., with curved	
3 in. x 4 in. G. I. gas range vent	14 lin. ft.	transom sash, glazed D. T	4
Cap and thimble for same	1	Frames for doors to dining room— Door, 4 ft. x 7 ft. 2 in	1
Roofing	260 61	Frame for rear ent. door, 2 ft. 8 in. 6 ft. 10 in.	i
Tin roofing over living room	360 sq. ft. 10 sq. ft.	Frame for icing door, 1 ft. 6 in. x 2 ft. 6 in Frame for doors to balcony, 4 ft. x 6 ft. 10 in.	1
Metal Spanish tile roof underlaid with water-	=	Exterior doors (all to detail)—	1
proof felt	7 lin. ft.	Doors to living room, pr. 4 ft. 8 in. x 7 ft. 2 in. x 134 in., glazed.	4
Ridge roll	38 lin. ft.	Doors to dining room, pr. 4 ft. x 7 ft. 2 in.	4
Eaves closure	154 lin. ft. 150 lin. ft.	x 134 in. glazed	1
Carpentry		in., glazed	1
Timber— All No. 1 common stock, hemlock, rough ur	iless noted	Icing door, 1 ft. 6 in. x 2 ft. 6 in. x 1½ in Doors to balcony, pr. 4 ft. x 6 ft. 10 in. x	1
Cellar girders—		134 in., glazed	1
2 in. x 3 in. nailer—112 lin. ft	56 F.B.M. 280 F.B.M.	Finished flooring— Living room, dining room, hall, bed rooms	
Wall plates—3 in. x 6 in.—1/14, 7/12		No. 1, No. 2, No. 3, No. 4 and adjoining	
Studs, girts and plates, first floor— 2 in. x 4 in.—153/10	969 F.B.M.	closets plain sawed white oak, 13/16 in. x 21/4 in., to cover	1 464 00 64
Studs, etc., second floor—		Kitchen, pantry, etc., No. 1 maple, 13/16 in.	1,404 8q. 1t.
2 in. x 4 in.—170/10, 12/8 First floor joists—	119 F.B.M.	x 2½ in., to cover	200 sa. ft
2 in. x 10 in.—2/16, 53/14, 10/10	1,963 F.B.M.	Joist hangers (1½ in. x 2 in. W. I.)—	1,700 sq. 1t.
Second floor joists— 2 in. x 10 in.—61/16, 12/14, 10/10	2.074 F.B.M.	For 2 in. x 10 in. beams	6 6
Second floor ceiling joists—		Beam anchors, $\frac{3}{6}$ in. x $\frac{1}{2}$ in. x $\frac{18}{6}$ in	5ŏ
2 in. x 4 in.—27/14, 12/12	348 F.B.M. 1,080 F.B.M.	Wall plate and anchor bolts, 3/4 in. dia. x 2 ft. long, with nut and 4 in. x 4 in. washer	50
Extension and porch ceiling beams—		Cement filled pipe cols. in cellar, 4 in. dia. x	_
2 in. x 4 in.—7/10	47 F.B.M. 134 F.B.M.	7 ft. 6 in. long, with caps and bases	6
Cellar partitions—2 in. x 4 in.—18/14	168 F.B.M.	Interior Finish	
Sheathing (% in. x 8 in. shiplap)— Walls—to cover	2,100 sq. ft.	(Whitewood unless noted.) Door trim—	
Flat roofs—to cover	400 sg. ft.	⅓ in. jambs, ⅓ in. stops, ⅙ in. x 4⅓ in.	
Sheathing paper (waterproof)	. 2,200 sq. rt.	molded and mitered trim with wall mould-	
Sheathing for cellar partitions— (% in. x 8 in. shiplap)—to cover		For doors, 2 ft. 8 in. x 6 ft. 10 in	2 sets
Rough flooring (% in. x 8 in. shiplap)—		For doors, 2 tt. 6 in. x 6 ft. 10 in	6 sets
First and second floors—to cover Furring (% in. x 2 in.)	2,000 sq. ft.	For doors, 2 ft. 4 in. x 6 ft. 10 in	3 sets 1 set
Exterior Finish	500 lin. ft.	For doors, 2 ft. 6 in. x 6 ft. 8 in	3 sets
Main cornice—		For doors, 2 ft. 4 in. x 6 ft. 8 in. For doors, 1 ft. 6 in. x 3 ft	4 sets 1 set
Show rafters, 3 in. x 6 in.—3 ft. long 1/4 in. x 6 in. M. & B. pine—to cover	13 150 sq. ft.	I rim for cellar doors (plain)—	
Lattice panel—5 ft. x 9 ft. 6 in	1	For door, 2 ft. 8 in. x 6 ft. 6 in	l set l set
Balcony coping, 3 in. x 8 in	11 lin. ft.	Arch opening, 6 ft. x 9 ft	1 set

Interior Finish—Continued Trim for inside of exterior doors— For doors, 4 ft. 8 in. x 7 ft. 2 in., with curved transom (plain white oak) For doors, 4 ft. x 7 ft. 2 in., with curved transom For doors, 2 ft. 8 in. x 6 ft. 10 in For doors, 1 ft. 6 in. x 2 ft. 6 in For doors, 4 ft. x 6 ft. 10 in Trim for windows— 76 in. x 4½ in. moulded and mitered trim with wall moulding, 1/22 stops, 1½ in. moulded stool, ½ in. moulded stool, ½ in. cove under stool.	4 sets 1 set 1 set 1 set 1 set 1 set	Interior doors— (Glazed D. T.) 2 ft. 8 in. x 6 ft. 10 in. x 1½ in. 2 ft. 6 in. x 6 ft. 10 in. x 1½ in. (Two cross panel birch veneer). 2 ft. 8 in. x 6 ft. 10 in. x 1½ in. 2 ft. 6 in. x 6 ft. 10 in. x 1½ in. 2 ft. 4 in. x 6 ft. 10 in. x 1½ in. 2 ft. 2 in. x 6 ft. 10 in. x 1½ in. 2 ft. 2 in. x 6 ft. 10 in. x 1½ in. 2 ft. 4 in. x 6 ft. 8 in. x 1½ in. 2 ft. 4 in. x 6 ft. 8 in. x 1½ in. 2 ft. 4 in. x 6 ft. 8 in. x 1½ in. Cellar doors (solid pine or fir)— 2 ft. 8 in. x 6 ft. 6 in. x 1½ in. 2 ft. 2 in. x 6 ft. 6 in. x 1½ in.	1 1 5 3 1 3 4 1
For windows, mull. ea. 2 ft. 6 in. 5 ft For windows, single 2 ft. 6 in. x 3 ft. 2 in	4 sets 2 sets	Closet shelving, 1/2 in. x 12 in. pine Hook strip (1/2 in. x 4 in.) Rabbeted shelf cleat	50 lin. ft. 50 lin. ft.
For windows, triplet, ea. 2 ft. 6 in. x 3 ft. 2 in	1 set	1 in. dia. pipe clothes rod	28 lin. ft.



Details of Interior Trim for Semi-Bungalow

For windows, casem. pr. 4 ft. x 5 ft For windows, casem. pr. 4 ft. x 4 ft. 8 in For windows, single, 2 ft. 6 in. x 3 ft. 2 in	1 set 1 set 7 sets	Pantry cupboard with countershelf, drawers, doors, etc. Front 3 ft. 6 in. x 9 ft	2 units
Base— % in. x 6½ in. moulded (plain white oak). (Whitewood)	54 lin. ft. 374 lin. ft.	Main stairs, first to second floor— Sixteen risers 3 ft. wide, exposed string, semi-caged starting newel, balustrade, etc	1 flight
1/4 in. x 4 in. plain (closets)	70 lin. ft. 54 lin. ft. 374 lin. ft.	Cellar stairs, 12 risers, box pattern General Conditions	1 flight
½ in. quarter round floor moulding— (Plain white oak)(Whitewood)	54 lin. ft. 438 lin. ft.	Add for permits, fees for water and sewer coetc., insurance and general overhead charges. Allow for general work not listed, such as grad	
Picture moulding—		ing, etc.	
% in. x 2½ in (plain white oak)	80 lin. ft. 400 lin. ft. 2 units	Include sub-bids: Hardware and applying sa ing and decorating, plumbing and gas fitting, he electric work.	



BUSINESS GETTING METHODS

Ideas that have worked for others

How I Make Sales

The Experience of a Top Notch Builder as Told in His Diary

By FRANK H. WILLIAMS

Monday

OT to get busy—I've got five houses nearly done and I've got to find buyers for them.

Why turn them over to a real estate man on a commission basis and give the real estate man a commission of \$500 or so when I can make the sales myself? But if I don't hustle up and sell these houses I'll have to turn them over to a real estate man. I can't afford to have my money tied up in them very long.

So up and at 'em tomorrow—that's my motto, up and at 'em.

I can sell houses just as well as any real estate man and I'm going to proceed to show that I can do so.

Tuesday

Made a sale today and to a mighty hard prospect, too—old Sam Higgins, retired banker, whose children are all married and out of his home and who is now finding that the old home is too big for himself and his wife.

Higgins is a hard-boiled customer, if there ever was one. He always wants to be sure that he's getting his full money's worth in everything he buys and just a little more.

I sure hated to tackle Higgins—he's got such a reputation for giving the razz to salesmen of all kinds. Also, I don't carry my account at his bank, which is another reason why I hesitated to tackle him.

However, nothing ventured nothing won and the worst he could do would be to eat me alive, so I got my courage up and busted into his bank when he was standing near the

present president's desk. I know Higgins all right and I bowed to him when I came into the bank and hung around and let him see that I wanted to see him.

He noticed me all right and saw that I wanted to see him—that's why he tried to slip out the side door when I was looking the other way.

I'd expected something like that, though, so I dodged out on the side-walk after him and busted right up to him.

"If you'll step into my car here, Mr. Higgins," I said, pointing to my car where I had it parked at the curbing near the bank, "I'll take you out and let you look at it."

I thought this sort of a novel opening would get his attention and his interest and it did.

"Take me out to see what?" he asked, rather caustically.

"The house that I want to sell you," I said.

"Huh," said Higgins, "I'm not going to buy a house from you."

"Wait until you see the house," I said. "Then I'll take your word for it all right."

Higgins looked at me curiously as I said this.

"How can you expect me to buy a house from you?" he questioned. "You don't carry your account at our bank, you've had no dealings with our bank and I don't know that you've ever put up a house of just the sort that my wife and I would want."

"I must have something pretty good—something that will be pretty sure to interest you when I tackle you to buy a house, then," I came back at him.

This made him sit up and take notice.

"By Jove, that's right," he answered. "I'll go out and look the place over."

He did go out and look it over and then when we got out there I sprang my real sales argument onhim.

"This is the place where your wife will enjoy living," I said, "because it is near to the church you attend, because a lot of the women who are members of the same clubs that shebelongs to live out here and because this is just the right size of house for two people and because, if your wife wants me to do so, I'll superintend all your job of moving out here."

Higgins was much impressed with the house—I could see that right away. And the upshot of the wholematter was that he had me bring his wife out to look the place over and he finally put his name on the dotted line.

Quick work, I'll say, and I wouldn't have put it over if I hadn't realized that the biggest sales argument was the appeal the house would make to his wife and the fact that I offered to render them extra service by superintending the job of moving.

Wednesday

I got busy with an old prospect today who had been hanging fire for, lo, these many moons.



This prospect was H. K. Daugherty, a young man who has been married about three years and who has been living with his wife in a boarding house. Previous to today I hadn't been able to make any progress with him at all, but today I determined to put the deal over and I sat down and studied out a full campaign of action.

I said to myself, "What is the biggest sales argument about this house, so far as Daugherty is concerned?"

I finally came to the conclusion that I'd have to know more about the man's wife and about themselves before I could determine just what the best sales argument with them would be. So I went to their boarding house, where I knew the landlady, and I found that the big reason why the Daughertys were hesitating about buying a house and moving out of the boarding house was that Mrs. Daugherty is rather delicate and that they were afraid that the strain of running a house might be too much for her.

This information gave me a corking good idea. Right away I went to

a friend of mine who is in the housefurnishing business. I took along with me the plans of the house I wanted to sell to Daugherty. And I got my housefurnishing friend to indicate on the plans where all the modern labor saving devices which he handles should be located in order to cut down the housework to the lowest point possible and in order to make the whole house just as efficient as possible.

Then, armed with the plans in this shape, I went to Daugherty and I said:

"Here's something that will interest you. Here are plans of the house I want to sell you and on these plans I've had a housefurnishing expert indicate just where you should have the various modern labor saving devices located in order to cut down housework as much as possible, save steps and save time and labor. Here's where the electric ironer should be and so on through the entire house room by room.

"Now if you buy this house and install these appliances in accordance with this plan your wife will find that it isn't any more work to run this house than it is to take care of your two rooms at the boarding house."

This made a big hit with Daugherty and—the deal is practically closed!

Thursday

I've always found that a splendid help in making sales is to talk about the increased joy and pep that buyers of the houses I have for sale will get out of life by reason of moving into a new home.

This theme was splendidly effective today with another man with whom I'd been dickering for a long time.

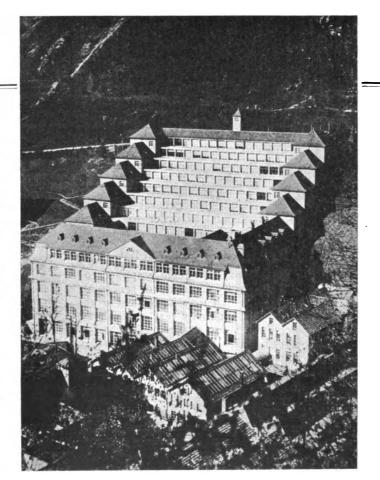
I told this man and his wife about the good times that the folks in the vicinity of the home I wanted to sell them always have and I pointed out how they knew a lot of the people in the neighborhood of the new home and then I urged them to buy the home and get in on the neighborhood's good times. And—this deal is nearly made!

Up and at 'em intelligently—that's the way to sell houses!

Let There Be Light

NE of the most important things for a factory is to have an adequate amount of daylight, and especially is this essential in so fine an operation as watchmaking.

illustration Our shows a most interesting watch factory. It is located in the town of Schramberg, in the Bavarian Alps. It is built on the side of a mountain and advantage was taken of the slope of the land to have the factory built literally in steps. It is really a series of buildings of shallow depth, each one having unobstructed light. Besides being an adequate and efficient factory, forms a most interest-



Model Watch Factory Built on a Hillside

ing feature of the land-scape.

There are many towns in the United States where hillside sites can be taken advantage of in a like manner, adding a picturesque effect as well as obtaining a well-lighted factory.

Of course, for some processes of manufacturing, a building that is practically all on one level is necessary for efficient working, but in many cases a hill-side building would facilitate manufacturing, as the successive steps in manufacturing could go on in each separate unit of the building and, in natural order, descend to the bottom, in regular order.

Combination Heating Systems for Mild Weather

An Improvement for Homes that Will be a Good Sales Talking Point as it Means Added Comfort and Convenience

By CHARLES L. HUBBARD, M. E.

THE satisfactory warming of a building in mild weather is usually a difficult matter, unless equipped with a system of automatic control, and even then waste of fuel is likely to occur through allowing the fire to gain excessive headway in order to force heat into distant or especially exposed rooms.

The purpose of the present article is to suggest combination systems whereby the amount of heat generated may be more nearly proportioned to actual requirements and also better distributed.

Among the possible combinations of this kind may be mentioned hot water with hot air, hot water with steam, and hot air with either steam or hot water.

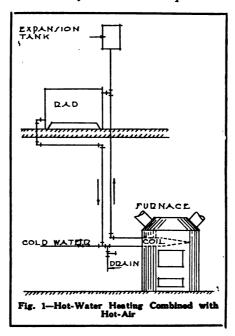
While such combinations may often be used to advantage from time to time throughout the heating season, their greatest benefit is usually derived through temporary operation during the milder weather of spring and fall when the full capacity of the main heating system is not required, and in the case of special rooms during extremely cold or windy days in mid-winter.

For example, a direct system of steam heating may work satisfactorily during the winter, but overheat the rooms in mild weather, thus causing both discomfort and waste of fuel. An arrangement for operating the boiler temporarily as a hot-air furnace of moderate capacity will often greatly improve results in a case of this kind.

Other instances where auxiliary heating may prove an advantage occur in buildings where the main portion is satisfactorily cared for by the hot-air furnace, but where it is difficult, if not impossible, to warm one or more rooms remotely and badly located. If served at all, such rooms usually make it necessary to force

the furnace beyond its economical capacity, thus overheating other rooms and wasting fuel.

Having noted some of the needs for combinations of this kind, let us consider them briefly in such detail as may enable the builder to place accurately before the heating subcontractor just what is required as



to results and the general methods to be employed in order to secure them.

Hot Water Combined With Hot Air

This is most frequently applied to third-floor rooms and to servants' quarters which may be located over an ell and not easily reached by hotair pipes from a furnace centrally placed under the main part of the house. Such conditions do not usually call for the warming of more than two or three small rooms at the most, and these are best cared for by installing hot-water radiators and connecting them with either a coil or other form of heating surface placed in the furnace.

This may consist either of a coil suspended in the combustion chamber above the fire, or it may extend around the fire-pot in contact with the fuel. Some makes of furnaces are provided with cast-iron heater sections which may be substituted for a small portion of the regular fire-brick lining.

Ready-made heaters are also upon the market which may be suspended above the fire and connected with the outside piping through openings tapped in the furnace plates.

The general arrangement for a system of this kind is shown in Fig. 1, and so far as the radiators and piping are concerned, does not differ from the ordinary methods of hot-water heating.

Care, however, is required in work of this kind to obtain the right proportion between the heating surface in the furnace and the radiation, in order to get sufficient heat and still not cause boiling in the system when the furnace is forced in cold weather.

The following proportions, as recommended by William G. Snow, are probably as satisfactory as any for average operating conditions:

Type and Location of Heating Surface Square Foot of Direct Radiation per Square Foot of Heating Surface

For heating surface buried in the fire it should be remembered that its effectiveness decreases with the depth to which it is buried. The size of the furnace for a combination system of this kind should be computed the same as though the entire work were to be done by hot air, including the rooms to be warmed by radiators.

Hot Water Combined With Steam Heating

The principal use of combinations of this kind is in connection with industrial buildings where the main work rooms are satisfactorily heated by direct steam coils but where the advantages of hot-water heating are desired in offices, drafting rooms, etc., or other special cases where better temperature regulation is required.

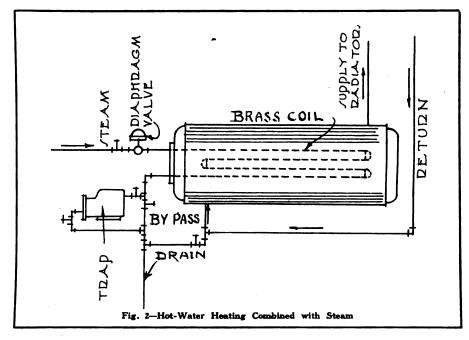
In cases of this kind the special rooms are piped for hot-water heating in the usual manner, and the main supply and return pipes connected with a steam coil heater instead of a boiler, as shown in Fig. 2.

Temperature control for one or two rooms closely connected may be obtained by means of an electric room thermostat connected with a special diaphragm valve in the steam supply to the coil.

Another arrangement is to connect an ordinary hot-water tank thermostat with the flow pipe to the radiators at some accessible point, and vary the water temperature, as may be necessary, by adjusting the indicator of the thermostat.

For the conditions shown, each square foot of brass coil surface in the tank should supply from 40 to 50 square feet of direct cast-fron radiation. The lower figure being for steam at 5 pounds pressure and the higher for 10 pounds.

In many cases a standard feedwater heater will be found more convenient, in which case it will usually be necessary to reverse the connec-



tions. That is, connect the supply and return heating mains with the outlets designed for steam, in order to get the necessary area. If this is done the heater must be so erected that the condensation will drain properly to the trap.

Hot Air Heating Combined With Steam or Hot Water

This arrangement is brought about by enclosing the boiler and an extended smoke pipe within a brick chamber, as shown in Fig. 3, thus making of it a warm-air furnace with a limited amount of heating surface. An air supply is brought into the bottom of the chamber, either by means of a return register from the hall above, or from out of doors, as may be desired, and a hot-air connection carried to the first floor as indicated.

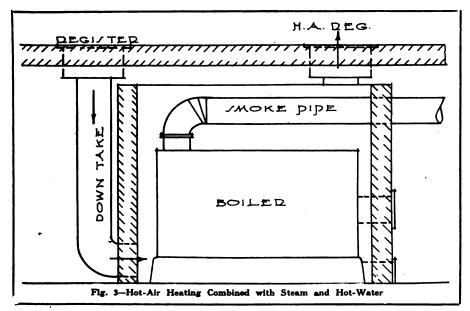
The object of this scheme is to utilize a portion of the heat generated by a low fire during the night, or in mild weather, when the full capacity of the heater is not desired.

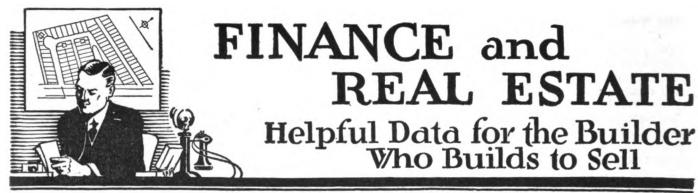
As a matter of fact, considerable fire may be carried without producing sufficient steam pressure to fill the supply pipes, so that as far as warming the rooms above is concerned, the fuel burned under this condition is practically wasted.

While it is true that a certain amount of heat is radiated into the basement, it does very little good as regards the rooms above. With the arrangement shown in the cut, sufficient heat may often be supplied to warm the main hall or living room and take off the chill from the rest of the house without getting up pressure at all, a desirable feature in mild weather.

Sometimes an indirect heating stack is placed directly above the boiler, in the brick chamber, which will be kept warm by vapor generated below atmospheric pressure and thus add to the heating capacity.

While this combination may be made either with steam or water, its fullest advantage is obtained with the former because there is greater opportunity for improvement under these particular conditions.





Making Home Building Easier

time is homes. Even the good roads development has emphasized it. The improvement in transportation has brought the large and small cities closer together and has caused a demand on the part of the young and smaller communities for improved housing accommodations. Unfortunately the trend of finance has not kept pace with the times. Capital resources have been measured by the capacity of local banks, and a few private investors and merchants who had faith in their community, to supply the necessary funds for building.

The Lumbermen's Finance Corporation of Minneapolis, Minn., has been organized to overcome this difficulty. In this organization, a group of prominent Minneapolis men have made possible an improved merchandising method which should materially increase the cash sales of the retail lumberman and builder.

Eastern capitalists have agreed to take mortgages secured on homes in small as well as large communities (throughout all the states of the United States) to an amount of several million dollars per year. The Minneapolis company will have the distribution of these loans, see to the drawing of the necessary papers and the examination of the securities and titles.

To secure these services and accommodations the retail lumbermen are required to become financially interested in the corporation in a small way, and personally guarantee the small monthly payments on the mortgages they negotiate and dispose of to the corporation.

Ernest F. Smith, president of the

Lumbermen's Finance Corporation, when seen recently at the temporary offices of the company in the Walker Building in Minneapolis, stated that the corporation would work through the retail lumbermen in order to obtain these mortgages. He also stated that nearly every community was suffering from lack of housing accommodation and that he and his associates believed that the time was opportune for a widening of the investment field to include the smaller towns and villages as well as the larger cities.

In every village, town or city, there are more people anxious and willing and in need of homes, but without sufficient funds to erect them, than there are people who have sufficient money to build them.

The retail lumberman is acquainted with this fact and is anxious and willing to sell lumber, but is not disposed to carry the account for the time necessary to allow the building to pay for it in small amounts spread over a considerable period. He also is aware of the fact that any increase of building activities is immediately reflected in additional sales for him. This corporation will help him, as it will allow him to sell his product on long payments but to immediately convert the mortgage into cash, thus releasing funds to replenish his stock for another buyer. In other words, he will be able to turn over his stock several times oftener per year on the same capital that he now employs for his present turnover.

Loans will be made in amounts as selected by the retailer up to 65 per cent of the total cost of the completed house, including the lot. The loan will be repaid in small monthly in-

stallments about equal to the rental for a house of equal cost, completely paying off the entire mortgage in a few years.

The sponsors of this improved merchandising method are all men of responsibility and of wide and long experience in the lumber and mortgage business. Ernest E. Smith has been president of the Hennepin Lumber Company for the past twenty years. The Hennepin Lumber Company has been one of the pioneers in selling lumber and millwork to the home owner, taking a mortgage in payment therefor, payable in small monthly installments. Mr. Smith stated that in his experience he had found that a man who was given an opportunity to build a home and pay off the mortgage in small installments never failed to do so.

Messrs. T. A. Jamieson and George E. Towle, vice-president and director, respectively, are well known to Minneapolis business men. For many years they have been widely known as the Towle-Jamieson Investment Company, and have placed millions of dollars in Minnesota mortgages during that time.

THE time is here for the retail lumberman to increase his business as the automobile dealer did when he adopted the "Pay as you ride" plan, making it possible for a man to pay for his car as he used it. Sales increased by leaps and bounds. Applied in similar fashion to homes, if a man is aided to build a home and allowed to pay off his mortgage in installments, which will approximate his rent, the home building idea of the American citizen will receive considerable impetus. Likewise, increase in home building means an increase

in the sale of lumber and millwork by the lumberman.

It takes more than a few hundred dollars to erect even a modest home. Homes have never been nor will they ever be in the "flivver" class. And no one has made it possible for the retail lumberman to obtain sufficient capital so that he could sell every family who should have a home, and allow the family to repay him over a term of years. To attempt to do so would mean that in a short time the retailer would have his entire capital, the funds in the local banks and in the hands of local investors, tied up.

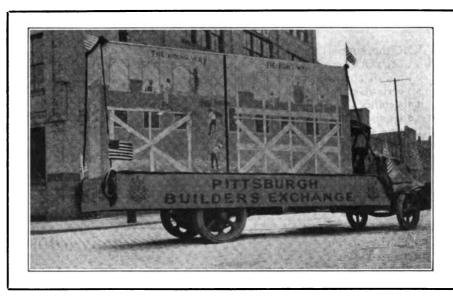
Still, the trend of the present day is towards the "partial payment" idea. And the problem for the lumberman is how to satisfy the demand for homes, keep his own business flourishing and keep his stock turning over on a limited amount of capital. Some method must be found, and the answer to all methods is the same, "Money to build homes." The plan of these Minneapolis men is to supply this need. Since sufficient funds cannot be obtained locally, they have obtained them elsewhere. Since they must be employed and, in order to make their plan a success, volume must be obtained, they have en-

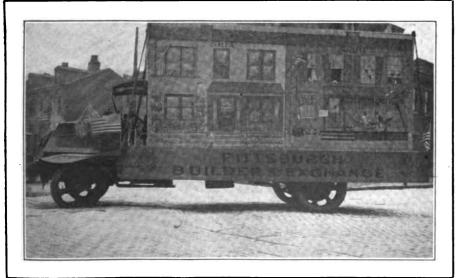
deavored to attain it in two ways. One by reducing expense to the borrower by doing a tremendously large business and the other to obtain the co-operation of the army of lumbermen by offering him increased sales and profits at no cost to himself. It is said that Ford added one million potential users of his car by his last reduction in price. This corporation believes that by making it possible for many people to own their own home, they have offered the lumberman a golden oportunity, by his joining in with this plan, to increase his business and his turnover, at a lower amount of invested capital.

Floats Advertise Home Building

HE more the general public knows about building the better it will be for the industry at large. Acquainting the public with the right and wrong way of doing things will educate them to ask and demand the better way. All risks of construction can be reduced by care, but care in a great many cases means the employment of additional safety measures.

In a recent parade in Pittsburgh, Pa., the enterprising members of the Pittsburgh Builders' Exchange entered a float that was rather instructive. A large automobile truck carried a representation of a house under construction, showing the right and





careful way of doing it and also the wrong and careless way of doing work.

It was not only an object lesson for the public but for everyone in the building trade. Proper scaffolding securely braced tends to secure safety. The other side of the float represented a house which was carefully being taken care of and repaired. Next to it was one in which carelessness ran riot.

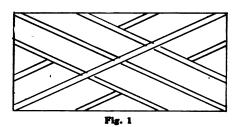
Both representations, side by side, were certainly an object lesson and an education to those who saw it. The spirit behind going in this parade is a proper one and reflects great credit on the members of the builders' exchange.

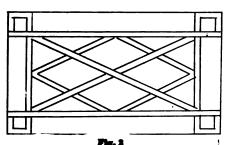
OR the support of vines, lattice work comes under the head of applied ornament. Set against certain portions of a building it becomes, as the season and years advance, an ornament of use

Many a plain box-like home is completely transformed by the use of properly located trellis and lattice for vines or screen purposes.

asset to property.

The prevalence of the Colonial and the popularity of the stucco dwelling has been accountable for the return of the lattice and vine supports in connection with more outdoor interests in lawns, flowers, shrubs and vines.



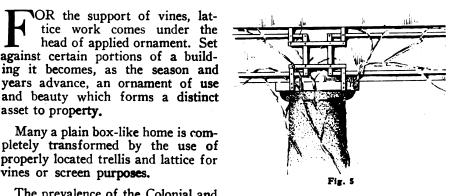


Lattice and Trellis

How to Design and Construct Them for the Ornamentation of House and Garden

By PAUL D. OTTER

Chippendale, the master cabinet maker in the latter part of the 18th century, repeatedly used the Chinese lattice; examples of his work no doubt were the inspiration for its use in fence and vine support, reproductions of which are again coming into favor. Figures 1, 2 and 3 are adaptations of the Chippendale chair backs. These, it will be found, can be worked in as interval or alternate panels encased in proper framings. No specification is attempted; the patterns shown are a few of the many which could be devised by a little thought when planning for such features.



The monotony of the usual vertical and horizontal slats may be varied by upper and lower lattice frames such as shown in Figures 1, 2 and 3, or a heading as in Figure 4, and the running band of lattice in Figure 5. This latter is also derived from a Chippendale motif, and will in many cases fit in admirably, starting from the abacus of a porch column, and held one or more inches from the face of the architrave.

The decorative effect of Figure 5 is satisfying long before the vine reaches it, takes possession, and further beautifies it in the growing months. This thought should be in mind, for it becomes interesting in its more intricate tracery of the added vine when bare in winter. For this reason and the welfare of the plant the trellis should be set some inches out from the wall.

The play of lights and shadows and the opportunity for nesting birds, is another consideration.

The modern chicken wire, or vine support, has no such charms, neither has it been found durable.

Well selected stock should be used in making lattice, and the laths and stripping prime coated, or dipped in oil, before being nailed in place, for the rusting of nails and splitting at the ends cause quick dissolution. Two final coats of lead paint should be given.

The lattice should be contained within a robust framing which permits of one or more cleats to be nailed in as rabbets to receive the one, two, or three sets of inter-lacings, as in Figures 4-6-7-8. Figure 9 could have one rabbet strip for the verticals. and one for the horizontals set a little back.

In this day of machine drills the nail holes might be bored previous to assembling.

Figures 4 and 5 and others might be held together with more permanent security by using clinch-nails; or in accomplishing certain effects, copperwire or galvanized wire had better be used instead of nails.

Referring again to the panels Figures 1, 2 and 3. They are strictly form work when made in quantity and the intersections have lap joints, mitred, and the ends nailed.

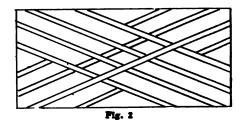


Fig. 4

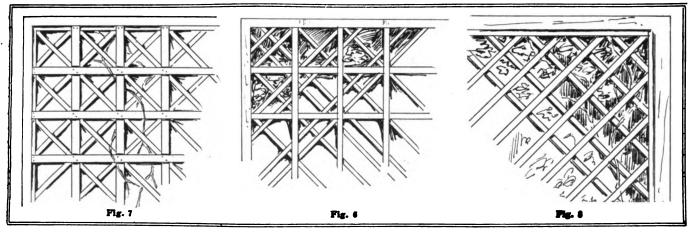


Figure 11 is a pilaster running into a string course heading along under porch troughing. This and all other applied trellis and lattice should be made to disengage from top and swing to ground on hinges or mov-

able joint fastened to well secured posts at ground; in this way periodical house painting can be more readily accomplished, likewise the lattice may be painted more readily from the back: the flexibility of the vine will permit of this without injury.

Figure 12, and its many varia-tions, will permit of still further

character to the surrounding grounds. This may be a short angle to a long continued stretch of high lattice, screening the kitchen or rear of the house from a side lawn. It is one of several suggestions which could be

worked out for use and attractiveness.

Lattice can accomplish wonders in transforming a plain roof top into a roof garden of beauty.

The illustration shows quite an attractive roof garden atop of a roof of one of New York's buildings. The interesting stucco wall has a lattice treatment above its coping. A parapet wall along the street front has been carried up and arched over so as to form a covered seat.

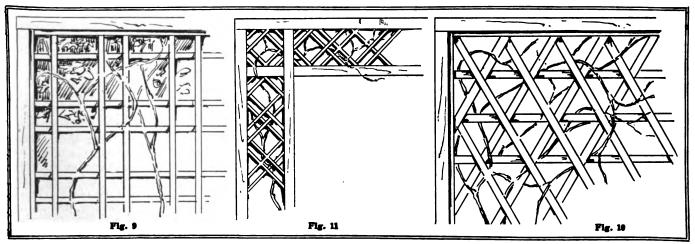
Flower boxes placed as shown form a floral ornamentation that gives just the touch of nature to this

interesting garden that is necessary.

The floor of the roof garden, or, rather the roof of the building, is covered with red quarry

Lattice also finds a use on the walls of buildings, serving as an ornament as well as a pleasing break in a flat surface. It is especially desirable for stucco walls where a wide

space would look rather monotonous. Lattice work when painted white is quite effective against red brick work, and when painted black or green sets off well against a light buff colored brick wall.



Some Helpful Hints on House Moving

Being the Second Article of a Valuable Series on How to Profitably Engage in this Line of Work

By E. W. LA PLANT

THE building contractor is now and then called upon to either move, or hire some one else to move, a house from one location to another, in order that new buildings can be erected on the old site.

The modern method of moving houses against the old fashioned method has been greatly improved. We formerly used wooden rollers for moving buildings, either small or large, and it would take sometimes two or three days to move a city block. But today, with a set of modern house moving trucks, with the building loaded on three points, it can safely be transferred long distances.

A building that is wrecked brings the house owner only a few loads of dimension lumber, as the lath, plaster,

shingles and the majority of the door and window casings are ruined in their removal. as well as the flooring. The result is that in moving the building to new location there is more value in the old building than is gained by wrecking it.

There is unquestionably a good profit in house moving, particularly as the work can be done by the contractor right along with his other building work. If he is to erect a new home in the city, or a new farm building to replace the old one on the farm, he can get the job of removing the old building and the job of erecting the new one, thereby holding his customer instead of subletting the work to someone poorly fitted out to do the work and thus gaining the illwill of the owner, who of course is his customer.

Any contractor-builder who is keen and a live wire on planning the work can go out and close up contracts and then turn these contracts over to a foreman who handles his house moving work, and in this way it requires but little

of his own personal supervision. The following estimate is of the average time required and the profits to be made in moving a seven or eightroom house:

I am giving an illustration of a particular job that I handled myself, also the actual time and the price that I secured for the job, and you will also note the way this job was loaded. The illustration that I am giving in Figure 1 shows a diagram of the three-point method of loading buildings for removal. Study this carefully and you will note that the building is carried on a pivot of three points, so that if the front or rear truck should drop into a chuck hole or a rut in the ground the building would not sag or be racked.

Then the rear trucks are rolled in and placed one-third the distance of length of building, in order to carry their portion of the load. The distance that the trucks are placed from the rear of the building depends solely upon distribution of weight.

This feature is brought out from the fact that the house that I have in question has a small kitchen attached to one end. You will note that I have carried the trucks pretty well underneath the front end and brought the rear trucks in the proportionate distance to carry the house.

Now this building was moved 1 1-2 miles, turning four different corners. The wage scale paid was fifty cents an hour for the common laborers and seventy cents an hour for the fore-

man. Working nine hours a day would make the scale for the crew \$19.80 per day.

Cost in Detail

\$132.00

The average contract price for a job like this will range all the way from \$450.00 to \$500.00. This of course depends upon the competition that the contractor must go up against., but the price of \$450.00 could certainly be easily secured for the moving job.

You will note that I have allowed an extra charge for going back to the building and releasing the jacks and timbers. When we place a building on a new site, we let the contractor excavate the cellar

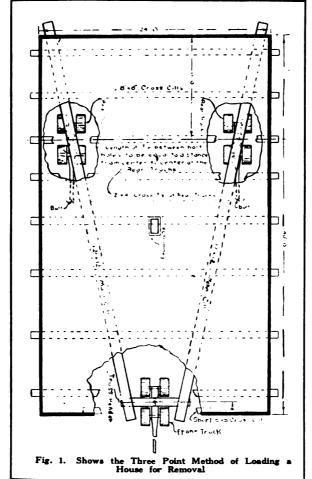




Fig. 2. Shows House Just Coming Out of Cellar for Removal

to the size of the building, and put the foundation in up to the ground line. We then put cribbing in the cellar, and run the building onto the foundation, spotting it in the right location, and set the jacks in cellar, underneath the running-sills to support the building, and lastly remove our trucks and cribbing.

You will note that we carry the running sills in from the rear corner, so as to permit the masons to set in corner-blocks, and he can also set the blocks or foundation in between the timbers and on the sides, leaving an opening in the front to take the timbers out, or in the rear, whichever would be the most convenient to take the timbers out from underneath the building.

In this way in running the building onto the foundation on the trucks, you save considerable expense and labor in excavating, for it is a hard proposition to try to excavate a cellar under a building that has been spotted on a piece of ground, and then excavate and build the foundation underneath the building.

The trucks are very easily guided and after a short test in moving the building down the street, your foreman can quickly see how best to turn or steer his trucks for handling in awkward places.

The Equipment Required

Now the equipment required for a moving job. We will presume that the contractor has a few standing jacks and some cribbing, team and wagon. The additional equipment that he would require would be:

15 crib jacks.

15 collar blocks.

2 running sills, 12x12x40 ft., long Oregon fir.

10 cross sills, 6x8-26 or 30 ft. long.

3 steel trucks.

1 steel capstan.

600 feet of 5-8 inch cable.

Total outfit of this sort would cost approximately \$950.00.

This is certainly a very small investment, considering the profit that can be made with the outfit, taking into consideration that the equipment is good for from seven to fifteen

years of hard usage. In fact, I know of outfits that are over twenty-five years old and still as good as when they were first built. You will readily see that the house moving business can be made a very good line for any contractor when you compare the cost of moving the building and the price that you can procure for a wrecked building.

Let's take an illustration of the particular house that I am showing views of: This building is about the average of the buildings that you have to move, and I presume that this building is not less than fifteen or eighteen years old, but it is in good condition. and was on a very good foundation and up from the ground sufficient so that the sills underneath the building were all in good shape.

Now Figure 2 shows the trucks placed under the building, and building raised and ready to be backed out into the street. You will note that the cribbing is placed in the cellar, on which the front truck is to roll out on, and that we have held the trucks down into the cellar as much as possible, in order to save raising the building an additional height, which would be the case if the trucks were placed upon top of the ground. I take advantage of this in every particular case and save all the way from two to four hours' time which would be required to raise the building the additional height.

Figure No. 3: This figure shows the cribbing in the bottom of the cellar on which the trucks run, and also



Fig. 3. Cribbing in Cellar for Trucks to Run On

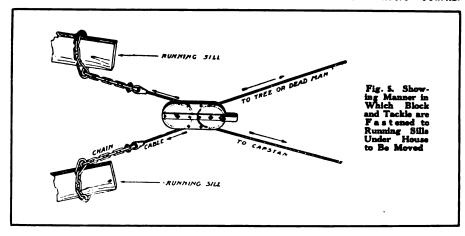
shows that we are pulling the building out backwards to the street, by having the hitch attached to the rear timber and this to a dead-man, and having a side pull to remove the building.

I would like to call attention to the fact that it is not necessary to remove porches. Simply brace them, as indicated in this illustration in this photo.

I would like to call attention to the fact of the method of placing the cross-sills and house sills underneath the building, so that when the building is placed on top of this foundation of timbers. the timbers sag down instead of the building sagging, and in this way carries the building to destination without rack or twist.

On this particular job, I used my eight-wheel truck for the job, which was carried over a country road, and I figured it would be best to use the eight-wheel trucks, to get the increased bearing surface over soft ground. The four-wheel trucks would carry this building nicely on any city street or hard-surfaced road, or on a dirt road if the soft places were planked.

Figure No. 4 shows the building moved out into the street and my method of hitching, a sort of a back hitch to the timbers, placing the capstan to one side and getting a reverse draft in backing the building out into the street. You will also note that my capstan is placed in the right position, so that when the building is turned out into the street, by attaching the cable to the front end of the building, I can move it up



towards the capstan and save resetting on the start, on the capstan.

The photograph shows several trees that have been cut down. It is not necessary. however, to cut the trees down in order to move the building. In this particular instance I was moving an entire town, and wherever easy, quick right-of-way could be made I had the privilege of cutting down the trees.

The dotted lines in Figure No. 1 shows the method of loading. When the house is lifted off the foundation to the desired loading height, the sills are inserted, which pass to the rear corner of the house diagonally to the truss header of the front truck. When these are in place and supported at each end by jack screws, you are ready to run in the cross sills at a different point. as shown in Figure 1. Then run the trucks to their proper position under the building, and take out the supporting jacks or running sills. Then release the weight of the house onto the

trucks and timbers. The next step is to fasten the block and tackle in place as shown in Figure 5.

It is always advisable to pull from the running timbers and never the truck, because the building is resting on the running sills, which in turn rests on the three trucks. If the pull was placed on the front truck, there would be a tendency in some cases to pull the truck out from under the building.

It is not necessary to bolt the trucks to the running sills, for the weight of the building on the trucks is sufficient to resist the pulling.

Figure No. 4 gives you an idea of the portable capstan used, which can be quickly staked to any tree, telephone pole or anchor stake. In my next article I will give some additional information regarding this interesting and profitable line of building work.

Every contractor who makes a specialty of moving buildings is sometimes called upon to move extra wide buildings; in some cases they are wider than the street itself, involving cutting the building in two, and moving it in sections.

In some cases, buildings are simply raised and another story built underneath them. In others, the roof only is raised for the purpose of adding another story on top of an existing building. Then there is the case of pivoting a building, that is, turning it almost completely around.

These are all very interesting problems and these different phases of building mover's work will be taken up step by step in our future articles.



Fig. 4. House Out in Middle of Street Ready for Removal to New Site

MASONRY

Practical Information on Materials and Latest Construction Methods



Using Common Stone

By JOHN UPTON

BUILDING a house foundation of common field stone is economical in localities where they can be had without much trouble. Now that the most of those who build are looking for the most economical material, the common field stone will be used more than they have been recently. This is well and is true economy which should be practiced whenever possible.

The first cost of field and cobble stone is small as they can be had for the hauling and there is no freight to pay or no car shortage caused by their use.

Even thus cheap in the first cost they are not to be classed as inferior material, for a competent mason can build a good wall with them if he goes at it right.

If one could have a hand in selecting the material he might do better, but one must generally use those close at hand, and it may be necessary to do some sorting to find just the right stones to use at certain times. Larger stones do not need as much mortar as small ones, and a course will count more, but for most of the wall such stones as one man can readily handle will be the most economical to use for they can be laid more rapidly than the larger ones, and yet will bring the wall up faster than smaller ones.

It is well to look out for the mortar first, as this is quite important for this class of work, perhaps more so than with regular square and dressed stone. It is better to use a mortar composed of lime and cement with sand. The lime should be mixed with some eight times its bulk of sand.

The mason is not generally so particular as to the quality of the sand for use with lime, as with cement, taking finer sand with perhaps a little loam in it. While this is allowable to some extent, it should not be too fine not contain too much dirt, as there is to be cement mixed with it, and it is not economy to have the strength of the work impaired to save a little on the sand.

The lime mortar may well be made two or three days before it is wanted, but the cement must be mixed as needed. Use one part cement to three parts of good, clear, sharp sand, not too fine; anything which will pass through

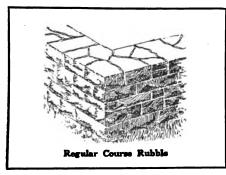


Cobble Stone Work Is Effective for Porch

a one-fourth inch seive is not too large. Just before using mix some lime mortar with about half as much cement mortar. This will work more easily than either alone; will not set too quickly and will be hard enough when it does set. If the stone lime cannot be easily obtained, one can use hydrated lime with the cement. About 10% is the usual rule.

As to the excavation: after it is about ready there should be some dirt removed at the bottom so as to make it a little below the middle, and also a little wider than it is at the top. This is to provide room for a footing; this, of course, of large stones. If the site is wet and not well drained you may want to put up a line of tile under the wall to take care of the surface water. If so, dig deeper, and after the tiles are in, cover them with small cobble or with broken stone.

The proper stone for the lower course are the larger ones and these may well be the largest you can get. Two men can place any stone which they can get to the job. By putting them in this lower course they can be handled readily, for there is nothing to prevent their being rolled or slid down into the cellar and shoved about where wanted. They can be broad flat stone, as much as three feet across and twice as long, or they can be boulders, measuring some two feet across and making 18 or 20 inches in the height of the wall. Whatever shape they are, the place for the larger stone is at the bottom

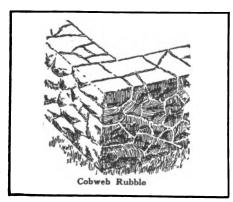


or next to the bottom course. It may be that you will wish to save out some good flat ones to be used later for binding the wall or for the corners, and you may have some of even thickness, called coursing stone, for the outside, above the ground, and, of course, these are not to go in the bottom, but as this bottom course must support the entire weight of the wall and structure above it, it should be well built. If there are no stones large enough for a single row, put in two rows.

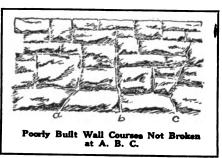
Suppose you have placed one row of large stone entirely around the wall and have them even on the inside face, letting the outside come where it may. The next step will be to place smaller stone on the lowest of these so as to bring the wall up fairly even all around and here is where you begin to use or waste mortar. The more stone you can get in the wall the better,

You may start the wall wide at the bottom, letting it go outside the line and perhaps some inside, for you can easily draw it in as it goes up. No matter how irregular the stone are it is well to bring the work to a level at intervals of some two feet or less, say at grade line and twice below.

There will be some chance that you will place many of the large



stones on the inside of the wall because they will have smooth faces and make the wall look well. This is all right if not overdone, but as every stone which does not reach through the wall must have a smaller one to fill the space you might get most of the smaller ones on the outside, and this would not be well, for the weight of the



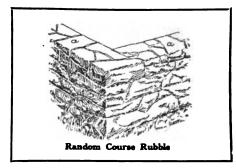
house comes largely on the outside of the wall, so after laying one course with the large ones on the inside, change and lay the next with the larger ones on the outside. Besides getting these where the weight will come they will bind the wall across for it will not measure more than 24 or 26 inches across and perhaps only 20. You will have stone 14 to 18 inches across. They will lap onto each other several inches and make a good cross bond.

It may be well to have a few good stones reach entirely through the wall, say one every four feet in each fifteen inches of height up to the grade line, but do not have any above the grade or the frost will go through the wall.

Do not slight the lateral bonding, that is, do not lay one stone on another, making the vertical joints come the same, but lay one on two.

I have seen and relaid walls where this cross bonding had been neglected and the inside of the wall had split away from the outside. One of these was composed, not built, entirely of round cobbles about the size of a man's head, laid up in three rows, making practically three separate walls. The outside one stood because the building and the earth held it, but the two inner ones tumbled into the cellar.

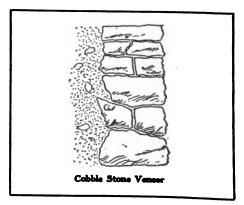
In rebuilding this I made the first few feet of concrete by setting up a form on the inside and filling the space with round



stone and mortar. In this I did not follow the rule of putting the large stone in the bottom, for this bottom "stone" is a concrete block, some 30 inches square and fourteen feet long, so I think it will stay. Had I been building the entire wall with these round cobble heads, I should have used a few on the outside all the way up, simply setting up studs or posts and fastening them securely and putting in the boards as the work went up. The outside can be laid in mortar as used and this allows for the larger stone being placed there while the smaller ones go in the concrete. This gives a good, smooth face for the inside.

On the outside, when nearly up to the grade, set up stakes, put in form boards and make the outer face of concrete, but remember to leave a space in the middle almost clear of mortar if the wall is thin. This acts as an air space and prevents the penetration of frost.

If you cannot get suitable stone for the face above ground in any other way, split some of the large boulders and use the broken face. You may not always be able to place these on the natural bed as the old rule requires, but a good wall will result if one does not overdo things. One can face the wall up with concrete, backing it up with the same common stone of which the main wall is built.



OFFICE and JOB MANAGEMENT

Things the other man has found out that save money



Cost Figures of Bungalow Home

How Each Item Figures in the Cost of an Ideal House

By I. P. HICKS

ESTIMATING the cost of a house is about the most important work a builder has to do as on it depends whether he gets the job and next, whether he loses or profits by the transaction.

It is always interesting to go over figures of some completed job and thinking that it will be of considerable interest I give below the different items, entering into the cost of erecting what I call a

modern bungalow. This was built for my own use. From the plans it will be observed that a number of little innovations have been employed and these may offer some helpful suggestions to builders who like to erect a good job with all modern conveniences.

In the items of cost the actual money is given and this has also been worked out into percentage so that comparative figures may easily be obtained for any size house of like character.

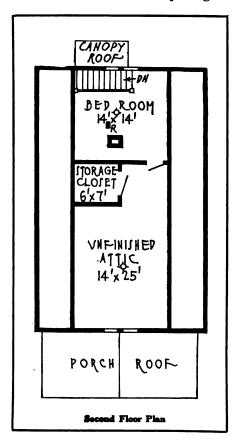
The size of this house is 26 feet wide by 40 feet, 6 inches long. Height of ceiling 9 feet in the clear. It has five rooms, bath room and hall way on the first floor. Two large closets, linen closet and a clothes chute. The bath room being located between the two bedrooms with an entrance from the hall way is a very desirable feature as well as the clothes chute located in the corner of the rear bedroom with door opening into the hall way. The linen closet is also desirably located. Notice also that the rooms are all fairly large with good dimensions and shape, there are no ugly projecting corners.

The house is wired complete for electric service with switches and attachment plugs in every room on the first floor. On the plans the switches are marked with the letter "S" and the plugs with the letter "P."

Heat is supplied by a warm air furnace. The registers are marked

"R" and the cold air intakes are marked with the letter "C." It will be noticed that cold air is taken from five different points, thus insuring a perfect circulation of and the perfect working of the furnace.

The linen closet is fitted up with four drawers and shelves above. The seat in the dining room has three drawers underneath. The colonnade opening is





View of Completed Bungalow

of the bookcase design. Mirror door between living room and front bedroom. Entire first floor is of oak. Living room and dining room oak finish, balance of house finished in yellow pine and the finish so closely resembles the oak that it takes a real close look to distinguish the difference.

The second story has one finished room in yellow pine. One large storage closet and a large unfinished attic. The attic has the side walls ceiled up with boards to the roof thus making a good and serviceable room.

China Closet

The china closet is built in between the kitchen and dining room and opens into both rooms. The dining room side has one large drawer for table linen, etc. The kitchen side has three drawers and a flour bin, shelves and doors above, available for either side. See floor plan of the house for the location of the china closet and the detail section and china closet elevations for the general arrangement.

Over the kitchen sink is another built in closet extending all the way to the ceiling. It has two doors of the 2 panel style of cupboard doors.

The corner at the left of the china closet is just the ideal place for the gas range and the space is sufficient to take in a large size range. With the gas range, china closet, sink, cupboard over sink, refrigerator and closet over the same, all built in as indicated on the floor plan, there is still left a nice, large square kitchen with no ugly corners projecting out in the way.

Package Receiver

At the rear of the house there is a package receiver, marked P. R. on the floor plans. The grocery man or the milk man can place a package in it from the outside, close the door which automatically locks and can then only be

opened from the inside of the house. This is for special use if the lady of the house happens to be away when a delivery is made.

The Basement

The basement has an 8 foot ceiling, cement floor, a large fruit closet, coal bin, toilet room and a sink with hot and cold water. The basement having an 8 foot ceiling makes it possible to keep all the furnace pipes above a man's head, which makes the basement an ideal one for many kinds of work, such as washing, ironing and canning fruit. There are six windows in the basement, giving plenty of light.

In our haste to get a picture of the house we had the photo made before we had a chance to put the lattice in around the front porch, which makes the porch look a little bit in an unfinished state.

The Complete Estimate

rue Complete Estimate	
Excavating \$ 48.00	1.0%
Foundation and chimney 410.00	8.6
Lumber 1,274.14	26 .7
Millwork 594.37	12.4
Carpenter labor 750.00	15. 7
Nails and hardware 143.00	3.0
Tinwork 45.00	1.0
Lath and plastering 244.49	5.1
·Stucco 320.00	6.7
Plumbing 461.00	9.7
Gas fitting 50.00	1.0
Electric wiring 75.00	1.5
Painting 180.00	3.8
Heating (furnace) 180.00	3.8
Total\$4,775.00	100.0%



View of Living Room and Dining Room

Model Refrigerator

We now come to the kitchen which is a model of convenience. It has a built-in refrigerator that is unsurpassed for its convenience and other good qualities. Detail shows the floor plan of the re-frigerator. The studding were stripped in the center with a strip about 1 inch thick then lathed and plastered both sides with cement mortar. Outside of this is the regular wall plaster and on the inside of the refrigerator it was plastered with white cement mortar. This made four thicknesses of plastered wall and three dead air spaces. The top of the box was finished in the same manner. The ice tray sets on a framework supported by four posts in the corners. On two sides of the ice tray, the sides where there are no doors, there is an air space of 1½ inches full length and width of the box to permit of a circulation of air from the ice chamber to the lower part of the refrigerator.

The size of the refrigerator is 24x30 inches in the clear after allowing for the plastered walls. There are two circular shelves 24 inches in diameter with a one inch iron pipe passing through the center. This allows the shelves to turn so that one does not have to reach over for anything. Anything wanted can be brought right to the front by simply turning the shelf. The shelves are made of galvanized iron set on a framework as shown by detail. The two shelves are coupled together with four standards as shown at A A (plan). A wood rack made of slats %x1½ inches is placed in the bottom of the ice tray set on rubber washers such as are used in water faucets.

The top door of the refrigerator is hinged to open down. This door opens into the ice chamber and is very convenient if you want to chip off a piece of ice or want to set something directly on the ice, such as meat, cream or milk. There is a similar door on the right hand side, see floor plan of the house, indicated also in detail. This is the icing door to the ice chamber, the door opens out and down. The lower jamb of this door frame is covered with galvanized iron to keep it from being marred by the icing of the box. In



The Kitchen Closet and Model Refrigerator

addition to this there is another heavy galvanized iron pivotted with a rod and staples on the bottom jamb which drops down over the bottom jamb and the edge of the door when opened. This part opens and closes automatically when the ice door is opened and closed. Thus it protects all the woodwork and causes no inconvenience of any description. This icing door allows the icing to be done from the rear entry. It is also very convenient to set things in on the ice from this side sometimes as well as the front side.

The doors are made with splayed jambs, see sectional view. This is for the purpose of getting tight fitting doors that will not bind and stick fast when they are closed. The jamb frame of the doors is mitered. The outside stiles and rails of the doors are halved together and the outside rabbetted to fit over the casings of the door, thus making a door that closes absolutely airtight if the work is properly and correctly fitted.

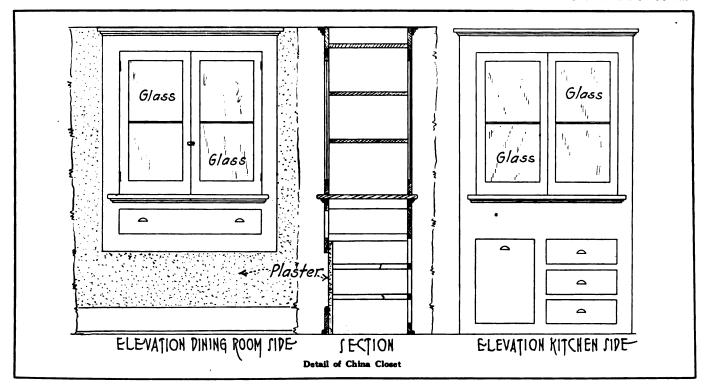
The ice door has a clear opening of 12x23 inches in the clear and will easily admit 100 pound pieces

of ice. The ice chamber of this refrigerator has a capacity of 200 pounds. Two 100 pound pieces can be put in side by side. Of course, it is not necessary to ice it in this manner, but you do want to ice it before the first 100 pounds is all gone, then all you have to do is to slide the remnant of the first 100 over and slide in the second 100. There is no economy in waiting till the first piece is nearly all gone before you replenish the ice.

Over the refrigerator is a large closet. See floor plan of the house, front elevation of the refrigerator and the sectional drawings. The closet over the refrigerator is not a part of the refrigerator and is not cooled in any way. The overhead construction prevents any of the cold air getting into the closet.

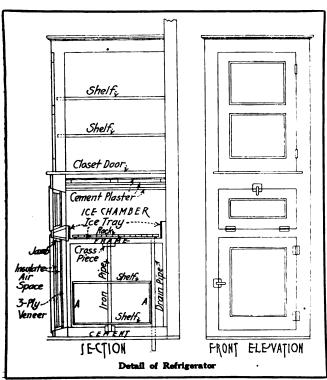
The Estimate

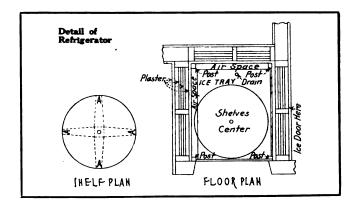
Following are the lumber and millwork bills of material required to build this house according to the plans as herein shown. Also the entire cost of the house in all its parts. The figures represent the actual cost, according to the 1922 scale of prices for material and labor in Omaha.



The Lumbe	er Bill	Feet	8,357 ft. framing lumber, \$43.00	\$359.35 70.00
Girder	6 2x10x14 ft 6 2x10x12 "		1,100 32-inch white pine lath, \$6.00	6.60
Posts	1 6x 6x14 "	. 42	ft., \$43.00	94.00
Sills	10 2x 8x16 "	. 213	\$43.00	53.75
	10 2x10x16 " 10 2x 4x16 "	. 107	Cellar partitions No. 2 lap, 500 ft. 1x8x12 to 16 ft., \$43.00	21.50
Basement partitions	24 2x 4x16 " 33 2x10x12 "		Ceiling for sides of attic No. 2 lap, 660 ft. 1x8x12 to 16 ft., \$43.00	28.38
Attic joists	33 2x10x14 "		Finish floor, first story, clear P. R. O., 1,380 ft. 13/16x21/4 face, \$135.00	186.30
	33 2x 6x16 "	. 528	Attic floor, B. Y. P., 725 ft. 13/16x31/4 face, 12 to 16	54.38
Collar beams	2 2x 8x12 "	. 32	ft., \$75.00	90.30
	1 2x 8x16 " 2 2x 6x14 "	. 28	Shingles, 5 to 2 clear cedar, 18,000, \$7.00	126.00
Porch joists	14 2x 8x10 " 3 2x 8x16 "		16 ft., \$90.00	18.54 12.35
Porch beams		. 53	Cornice ceiling, clear fir, 700 ft. 5/8x3/4x12 to 16 ft.,	45.50
Porch ceiling	1 2x 6x16 "	. 16	Building paper outside walls, 12 rolls No. 2 tar felt, \$2.00	
Porch rafters	12 2x 4x10 " 10 2x 4x14 "	. 93	XXX red rosin for floors, 3 rolls, \$1.00	24.00 3.00
Porch rail studding	2 2x 8x16 " 3 2x 8x12 "		Outside Finish, Clear Fir. Feet Brackets10 4x 4x12 ft 134	
Porch column studding	2 2x 8x16 " 4 2x 4x16 "		Panel strips	
Outside studding	132 2x 4x10 "	. 880	6 1x 8 x16 " 64 Porch cornice	
Gable studding Plates	12 2x 4x14 "	. 112	2 1x10 x16 " 27	
Partition studding	22 2x 4x16 " 5 2x 6x18 "		4 1x 8 x16 " 43 Verge boards 4 2x 8 x22 " 118	
Attic partitions	66 2x 4x18 "		2 2x 6 x14 " 28	
	30 2x 4x12 "	. 240	Total feet outside finish	50.49
Rafters	16 1x 6x12 "	~ -	Inside Yellow Pine Finish Feet 2 1x12x16 ft	00.12
Bridging			8 1x 8x12 " 64	
	6 1x 4x10 " 4 1x 6x16 "	. 15	8 1x12x12 " 96 7 1½x12x12 ft 105	
Caller stans	4 1x 4x16 "	. 21	Total inside finish	
Cellar steps			297 feet yellow pine finish, \$100.00	29.70
Total feet framing lumber.	•••••••	. 8,357	Total lumber bill\$,274.14

Millwork	
Watertable	2.50
Bed mold	5.20
6 cellar sash frames, 12x16, 2 lts., \$2.40	14.40
6 cellar sash frames, 12x16, 2 lts., \$2.40 6 cellar sash, 12x16, 2 lts., \$1.60	9.60
1 outside door frame, 3-0x7-0, rabbetted for 134" door	4.50
1 outside door frame, 2-8x6-8, rabbetted for 134" door	4.25
2 window frames 30x28 2 lts \$4.50	9.00
2 window frames, 30x28, 2 lts., \$4.50	13.50
1 twin frame, 24x28, 2 lts	9.00
2 window frames, 20x20, 2 lts., \$4.00	8.00
2 window frames, 24x24, 2 lts., \$4.25	8.50
2 twin frames, 20x20, 2 lts., \$8.00	16.00
1 triple frame, 20x24, 2 lts	12.00
2 windows, 30x28, D. S., \$3.20	6.40
5 windows, 24x28, D. S., \$2.60	13.00
6 mindows 20x20 S S \$2.00	12.00
2 mindows 24x24 S S \$2.25	4.50
6 windows, 20x20, S. S., \$2.00. 2 windows, 24x24, S. S., \$2.25. 3 windows, 20x24, S. S., \$2.50.	7.50
1 front door, 3-0x7-0x134, plain red oak veneered	30.00
1 pine door, 2-8x6-8x134, Klondyke, glazed D. S	8.00
1 pine door, 2-8x6-8x136, Klondyke, glazed D. S	6.00
1 pine door, 2-6x6-6x136, Klondyke, glazed D. S	6.00
1 pine door, 2-0x0-0x198, Klondyke, glazed D. S	4.00
1 pine door, 2-0x6-0x136, for basement toilet 1 pine door, 2-6x6-6x136, 5 cross panel for coal bin	4.50
2 doors, 2-8x6-8x13/4 red oak, glazed, \$20.00	40.00
	40.00
1 mirror door, beveled plate, plain red oak veneered,	40.00
2-8x6-8x134	14.00
2 doors, 0x0-0x198, Lammated 1. F., 2 panel, \$7.00.	14.00
2 doors, 2-6x6-8x138, Y. P., 2 panel, same, \$7.00 2 doors, 2-4x6-8x138, Y. P., 2 panel, same, \$6.50	13.00
2 doors, 2-4x0-6x148, 1. F., 2 panel, same, \$0.50	6.50
1 door, 2-0x6-8x138, Y. P., 2 panel, same,	4.20
3 sets K. U. door jambs, 2-oxu-o, \$1.40	2.70
3 sets Y. P. door jambs, 2-8x6-8, 90c	1.80
2 sets Y. P. door jambs, 2-0x0-6, 90c	1.80
2 sets 1. P. door jambs, 2-4x0-6, 90c	.90
1 set Y. P. door jambs, 2-0x6-8, 90c	.90
	2.00
	75.15
1 colonade book case, complete, plain R. O	
2 cupboard doors, R. O., 1-0x4-0x1/8, glazed, 2 lts	5.00
2 cupboard doors, pine, 1-0x4-0x1/8, glazed 2 its	4.00 4.00
2 cupboard doors, R. O., 1-6x4-0x1½, glazed, 2 lts 2 cupboard doors, pine, 1-6x4-0x1½, glazed 2 lts 2 cupboard doors, pine, 1-8x3-6x1½, 2 panel, \$2.00 1 cupboard door, pine, 2-0x3-0x1½, 2 panel	
1 cupboard door, pine, 2-ux3-ux1/8, 2 panel	2.50
1 tilting flour bin	2.00
1 drawer, 3-0x1-6x6" deep, oak front	3.00
3 drawers, 1-6x16x6" deep, pine, \$2.00	6.00
o pilitin blocks, R. U., 4/4x10x1/8, 10c	.80





34 plinth blocks, Y. P., 4½x10x1½", 6c. 2 oak casings, 6' 6", No. 8309. 6 oak casings, 5' 6", No. 8309. 8 oak casings, 5' 6", No. 8309. 6 oak casings, 5' 0", No. 8309. 2 oak casings, 5' 0", 6" mullions. 9 head casings, R. O., 4 ft., No. 8394. 2 head casings, R. O. 11 ft. No. 8394.	2.04 1.04
6 oak casings, 6' 0", No. 8309	2.88
8 oak casings, 5 0", No. 8309	3.52 2.40
2 oak casings, 5' 0", 6" mullions	1.00
9 head casings, R. O., 4 ft., No. 8394	2.88
2 head casings, R. O., 11 ft., No. 8394	1.76 .64
6 pcs. R. O. cap mold, 4 ft., G-43	1.20
6 pcs. R. O. cap mold, 4 ft., G-43	.70
2 pcs. R. O. cap mold, 12 ft	1.20 .40
9 pcs. R. O. head mold, 4 ft. 6 in., No. 8059	.60
9 pcs. R. O. head mold, 4 ft. 6 in., No. 8059	.33
1 pc. R. O. head mold, 8 ft., No. 8059 9 pcs. R. O. fillet, 4 ft., G-37	.12 .36
2 pcs. R. O. fillet, 11 ft., G-37	.30 22
1 pc. R. O. fillet, 8 ft., G-37	.08
4 pcs. R. O. stool, 4 ft. 6 in., No. 8267	1.80 .80
1 pc. R. O. stool, 8 ft., No. 8267	1.44
1 pc. R. O. apron, 8 ft., No. 8641	.64
1 pc. R. O. apron, 8 ft., No. 8641	10.80
120 ft. R. O. picture mold, 3c	1.35 3.60
2 pcs. R. O. door stop, 7 ft., No. 8541	.28
1 pc. R. O. door stop, 3 ft., No. 8541	.06
6 nes R O window stop, 5 ft. 3 in., No. 8541	.94 .27
6 pcs. R. O. window stop, 3 ft., No. 8541	.30
l oak threshold, No. 8700, 3 ft	.30
36 pcs. Y. P. casing, No. 8309, 6 ft	10.80 1.65
1 pc. Y. P. 6" mullion, 5 ft. 6 in	.33
10 pcs. Y. P. casing. No. 8309, 5 ft	2.50
1 pc. Y. P. 6" mullion, 5 ft	.30 6.00
I no. V. P head casing No 8394 8 ft	.40
30 pcs. cap mold, Y. P., G-43, 4 ft	3.00
1 pc. cap mold, Y. P., G-43, 8 tt	.20 1.20
1 pc. head mold, Y. P., No. 8059, 8 ft.	.08
30 pcs. fillet, Y. P., G-37, 4 ft. 1 pc. fillet, Y. P., G-37, 8 ft. 6 pcs. stool, Y. P., No. 8267, 4 ft.	1.20
1 pc. fillet, Y. P., G-37, 8 ft	.08 1.44
1 pc. stool, Y. P., No. 8267, 8 ft.	.48
1 pc. stool, Y. P., No. 8267, 8 ft. 1 pc. stool, Y. P., No. 8267, 6 ft.	.36
6 pcs. apron, Y. P., No. 8641, 4 ft	.96
1 pc. apron, Y. P., No. 8641, 6 ft	.32 .24
250 ft. Y. P. base, No. 8828, 8c	20.00
250 ft. Y. P. floor mold, No. 8422, 1c	2.50
24 pcs. Y. P. door stop. No. 8543. 7 ft.	2.00 2.52
24 pcs. Y. P. door stop, No. 8543, 7 ft. 12 pcs. Y. P. door stop, No. 8543, 2 ft. 9 in.	.50
8 DCS. Y. P. Window stop. No. 8541 5 ft 4 in	.43
16 pcs. Y. P. window stop, No. 8541, 5 ft. 12 pcs. Y. P. window stop, No. 8541, 3 ft.	.80 .36
I DC. Y. P. stair rail. Eureka 85/4 ft	2.15
24 balusters, Y. P., 136x136x2'-4". 100 ft. W. P. mold, No. 8084	1.92
Red oak seat in dining room with 3 drawers	1.25 20.00
-	
Total millwork	594.37



CARPENTRY

Good Practice in Frame Construction and Finish

Some Home Building Hints That Boost Profits

By Dale R. Van Horn

BELIEVE there is one thing more. We talked over that water-cooled storage last night—the one, you know, that you suggested—and we have decided to have it put in."

The speaker, proud mistress of the home just built, paused in the cellar door and directed this pleasant little order to Tom Humphrey the builder. But Tom was not surprised; it was as he had expected.

Tom, by the way, was a very successful builder. His competitors marvelled at the business he got, wondered still more at the host of built-in features every house of his possessed. To them, these added expenses were all bosh. They cost so much more that the required price at which a

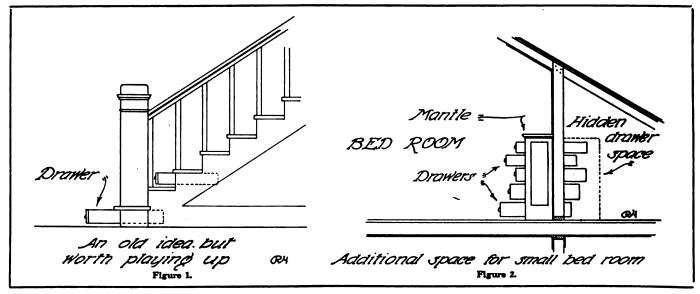
house would have to sell, to allow the proper margin of profit, usually scared prosepctive buyers away. And yet they marveled.

But this was Tom Humphrey's secret. He knew just about what home buyers wanted. in a general way. Where a home was to be built first and then sold afterward, he made it a strict rule to endeavor to dispose of the house during the building. Should the deal be made before completion, then it would be easy to add all the features that he could "sell" to the buyer. Of course a house that was ordered was still better.

His pleasant way about going at it, his attentive ear that soaked up all the little traits of man and especially wife, his convincing talk as he pointed out the advantages of this and that—all these things helped to do the trick. Perhaps it was their combination. The moment he first beheld the wife of the owner, he knew whether she was used to keeping a neat house or a dirty one; whether she did her own work or hired it done; whether she was strong for economy but not at the expense of herself. And then he went ahead.

But back to the beginning for a moment. Tom has just received orders to build the storage. Yet the night before when he had suggested the idea it had met with no approval, either from the husband or his wife. His suggestion was this:

Provide a spacious storage in the basement for all perishables. Build



this in the usual manner, in the form of the large-type of refrigerator, with an ice compartment.

But, pipe the water from the main to the meter, and from this through the storage itself. With a little expense (very little, he said) the pipes could be laid in alternate rows, and all connected, so that they, themselves, would form the shelves upon which to set the articles to be stored.

Then, from here, the water would be piped over the house in the usual way. Since the water circulating through the storage was fresh from the mail, it would be very cold. This cold, radiating through the pipes would save enough ice in two seasons to pay for the storage. (Here Tom cited two other instances in town where the same arrange-

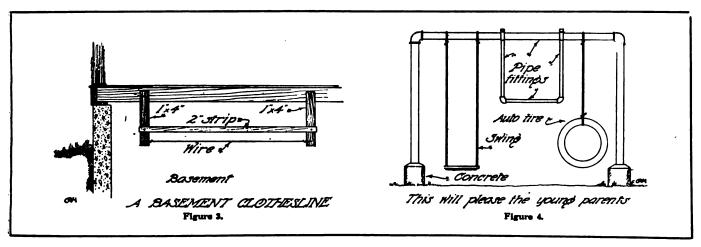
TRAS are expensive or cheap according to how they aid the house owner. Built-in features usually appear expensive on paper. The moment one is completed, it takes on the asset of undecided economy. . . .

A little well-worded sales talk should be the salve that will make the square plug fit the round hole.

they can afford, is quite another. Aye, there's the sweet bee in most builders' bonnets.

"Oh, that's much too much," the young bride exclaims when she sees the figures. But bless her heart, she no bluff at all and that only a certain amount is available, then pitch in and work out some stunts that will save or, better still, utilize space. A linen closet built into the bathroom, while not taking half the space a closet would, will make you more money, and serve a much greater purpose. Only fifteen or eighteen inches deep, each inch counts, and with wide, ample shelves and sliding doors, finished in white—you know.

Then there is the idle space beneath steps and stairs. Each step can be provided with a drawer, from the top floor to the landing. These will take care of lots of things. Objections to handles or knobs will naturally arise. Suggest the pull loop that hangs flush. If the brass handles are not barred, then these will serve. Note Fig. 1.

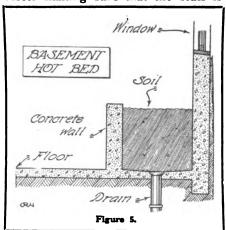


ments had been made.) And for (an approximate figure) he would be glad to put the storage in. No doubt the two other owners were called on the phone and the results verified. Anyway we leave Tom busy on the job which netted about twenty dollars clear profit additional.

This article can only skim the subject. It might be treated, in a limited way, in ten bound volumes. But the ideas which follow, a few of which are illustrated, will, we hope, be the lash that will spur your mind to the horizon of your imagination, where new things and new ways of making more money will stand out against the dark background of the purple distance.

To build a home with plenty of room is one thing. To build this home with all the room they want and at a figure which, to the buyer and his wife seems adequate or all has specified four bedrooms with 'large, well-lighted closets' for each, a breakfast room, and all the rest that goes with the fond hopes of the happy young married woman.

Right here, Mr. Builder. is your chance to make friends for life. After making sure that the bluff is



Or, take that small bedroom on the second floor of the bungalow. It must necessarily set in far from the eaves to give head room. Plenty of space on the outside, to be sure, but rafters at that height, also make good nut crackers.

So a chiffoneer might be built within the room taking up but little space, but with big, roomy drawers. Figure 2 suggests how such an arrangement can be made, with a skeleton outside the wall for the back half of the drawers. This is a little stunt that the repair man can use to good advantage, for it can be worked into the house of long standing. No owner should fail to be pleased with such a job if it is done carefully and in good taste. And every housewife "loves big, spacious drawers."

Basement clothes lines? A little item but a builder of good will if

nothing more. The simplest and perhaps the best all-around arrangement of its kind that the writer has seen consists of short one-by-four-inch pieces eighteen inches in length, suspended from the floor joists and connected by a tie piece above a wire tied to each of the hanging ends. This is shown in Fig. 3.

These sticks should not be more than ten or twelve feet apart to give the best results. The tie rod is bolted in place and the wire kept taut. Several can be built.

When they are to be used, they are dropped down; when no longer needed as much as the headroom they occupy, they are swung up against the joists out of the way.

The upper end of the clothes chute, where it emerges into the bathroom, can be run out from the wall at a forty-five degree angle, the top provided with a heavy wood seat and this hinged to the wall. This will

provide, at little additional expense, a much needed addition to any bathroom of small dimensions.

What builder has not watched in dismay, the frequent trips the broom takes over the kitchen floor. And then, sweep, swish, sweep, as the red-faced housewife tries to corner the dirt—a dust box in the floor is a suggestion.

For the home with much lawn space there is always the possibility of adding something for the out-of-doors. The concrete-bordered flower bed, the pool or fountain or bird bath all offer something with which the concrete worker can widen the crack, insert his wedge of sound ideas and drive home with graphic suggestions.

Here, too, is room for the outdoor gymnasium for the kiddies. In Fig. 4 is shown a simple type of apparatus which was made from pipe fittings. Its rigidity and permanence, coupled with neat appearance, will delight the old folks as well as the youngsters. This gym would naturally be in much better taste if made of frame and the limit to the possibilities to be evolved, once you are well started, will probably be governed by the amount of space available or the condition of the owner's pocketbook. In any event, good sound lumber should be used.

The home of the flower lover or the man who is nuts about gardening, should have a basement hotbed. Ordinarily, this should be built on the outside of the house, with spaces cut in the wall through which the artificial heat from within will reach the tender shoots under glass.

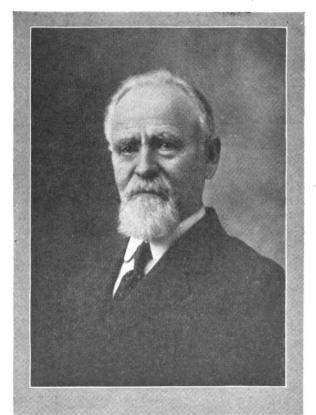
When the basement has a good southern exposure with two or three large windows, then a better way would be to build a wall across the south end or a portion thereon, and provide the floor with a drain.

Thirty-five Years a Subscriber

Atchison, Kansas, February 16th, 1923. Building Age, New York. Dear Sirs:—

I received your letter about my subscription being due. I have nothing but praise to say of your paper, THE BUILDING AGE. I have been receiving it for 35 years and I read it all through because it always contains something interesting to us builders. I may mention that I draw all my own plans and write specifications. own my Therefore, Building Age has been my faithful friend for ideas and reference.

But did you ever think that Father Time controls us all and an end comes to all our hopes and ideas. I am now 75 years old. I began the carpenter business at home in Scotland, in 1865. Went to Liverpool, England, 1872 and began to build houses there. I came out to Kansas in 1879 and began building houses here 43 years ago, and I must say your Building Age has been a great help to me.



MR. JAMES S. HOUSTON

1 HE people are all right if you treat them right," was the motto that Mr. Houston lived up to and explains his successful career of forty years in the building business without having to sue a single customer.

I have three sons who are now all in the building business, the oldest is 40, second 35, youngest is 32 years, and they are all working and drawing from \$8 to \$12 a day holding good positions and largely because they studied BUILDING AGE and learned to draw plans, etc.

But they are gone from the old home and I retired from active building business over a year ago with enough to keep me in my old age. I will say this for the people of Kansas: In all my experience of over 40 years I never had to sue for a dollar, but I have been presented at various times with sums ranging from \$10 to \$50 extra because I did a good job of work for them. The people of Kansas are all right, if you treat them right.

So send me your paper. I enclose \$2 and when you read of my funeral procession you will know that there is one subscriber less.

Very truly yours, James S. Houston CONCRETE

Form Work-Reinforcing Methods Monolithic and Block Construction



New Method of Manufacturing Bricks

PROCESS of casting concrete bricks in multiple molds, 400 at a time, and making possible the handling of the cast bricks in units of 10 at a time—a process so simple that one man can make four thousand bricks a day—has been perfected by Mr. Frank Zagelmeyer.

The saving of time and labor is the principal reason why it is possible to make concrete bricks under this system cheaper than by any older method. Naturally, the cost of the materials in the manufacture of concrete brick is high but this method offsets this by a reflection of labor costs, thereby placing concrete bricks in an advantageous position so far as trade competition is concerned.

The molds consist of forty open end units, each holding ten bricks, or 400 molds in all, mounted on a roller bearing truck. The molds can be quickly set up on the truck, and the truck run under a concrete mixing machine

where the slush concrete is poured directly into the molds.

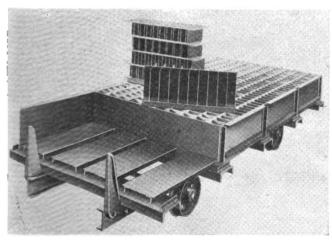
The truck is then run into heating tunnels or kilns, heated with steam pipes, and allowed to remain in a temperature of 120 degrees for eight or ten hours before removal. This allows the concrete to take its initial set before removing the bricks from the molds.

The length of time required for the set to take place and the blocks to harden sufficiently to permit removal, depends upon the temperature of the air. At ordinary summer temperature, without the heated tunnels, and with fairly quick setting Portland cement, the bricks can be removed in from 20 to 24 hours, so that the molds can be used once each day in any event.

After the concrete has taken its initial set, the bricks are ready for removal and final curing. The only handling the bricks receive during the entire process of manufacture is when they are taken from the molds and this is simplified by handling ten bricks at a time in the unit of ten molds.

Owing to the fact that the bricks are made from slush concrete, a mixture is obtained which becomes perfectly dense and free from pores, thereby insuring great crushing strength.

The Workman Lifts Out the Units and Deposits the Ten Bricks on a Pile in One Operation, Without Handling Each Individual Brick.



Roller Bearing Truck Fitted with Brick Molds, Partly Set Up. The Molds Are Arranged in Units of Ten and Each Unit Used as a Tray for Handling Ten Bricks at a Time.

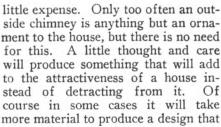


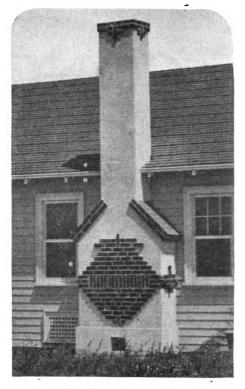
Four Ornamental Chimneys

Different Arrangement of Brick and Stucco Produce Artistic Designs

HE outside appearance of a house may be made more attractive by having a neat and artistic design for the outside chimney. There are many advantages in having an outside chimney, as there is less room used inside of the house. On this page we present four different designs of outside chimneys. Some are of brick, others are combination of brick and stucco. Any of these designs may be carried out at but







will have the appearance of stability, and be in good proportions. For some chimney designs, stone—limestone or blue—are used at the offsets and also for the chimney caps. Terra cotta caps are also used to a large extent. One other important point to look out for in the building of an outside chimney is to have it properly flashed. A cricket should be formed in back of the chimney so that the rainwater will have proper drainage. Care should be taken to slightly pitch shingles, etc., away from the chimney, so that its surface will not be discolored by the drip.



An Artistic Blending of Stucco, Brick and Clapboards Distinguish This Bungalow. Its Ornamental Chimney Being the Feature

What the Editor Thinks

The Shortage of Building Mechanics

NE of the speakers at the recent convention of the Associated General Contractors spoke about the shortage of skilled mechancis and advised a change in our immigration laws as a remedy for the condition. In this we do not entirely agree. The remedy, as well as the fault for this condition lies on nobody's shoulders so much as on the builders themselves.

Let us look the situation square in the face and ask ourselves what we have done to produce and train young men—even our own sons and nephews—to become interested in the building trades?

Outside of the few well-directed trade school attempts that are only reaching a few thousand young men, you will find the building trades have done practically nothing for the necessary replacement of mechanics. Every year a certain number of men die; also a certain other number go into other callings. This is true of every business. In a way, the building unions are in a measure to blame, but still they were trying to protect their own interests.

To-day there are quite a number of semi-skilled men in the various building trades who are drawing the same pay as their more efficient brethren. This is economically wrong, and we believe that the day is not long distant, when the unions themselves will grade their men, in say first, second, and third grade or helpers; holding examinations on workmanship, etc., for entering into the higher grades; of course, the higher grade men getting the better pay.

To think that the whole difficulty in the building trades can be remedied by a mere revision of our immigration laws is, we think, decidedly wrong. We have here in America the very best material obtainable in the human line.

When trained you will find that our young men will make better and more thorough mechancis than the European plodder. There is something about the atmosphere of America which produces a desire to excel.

At a recent meeting of the Associated Building Contractors of Illinois, Mr. Henry Ericcson, a Chicago builder, said:

"If every contractor would see that his own sons are indentured in some building trade it would set an example to other American boys and would rescue the building career from disfavor from which it seems to suffer at the hands of many present day youths. The obstacles placed in the way of advancement by labor unions deter many boys from entering building trades but the advantages, nevertheless, are sufficient to attract many more if a good example were set."

Let builders everywhere get together and set a good example. Make use of the American youth; they were good enough to protect us in time of war and good enough for the American building industry.

A Builder Who Made Good

BUT few trade papers can boast of having a subscriber on their list for more than 25 years and it was with a good deal of pleasure that we noted Mr. Houston's recent letter renewing his subscription.

We are wondering if there are any others among our readers who can beat his record? We recall only one other, and that is our genial contributor, Mr. I. P. Hicks of Omaha, Nebraska, who has been reading Building Age for almost 40 years.

It is with pleasure that we publish Mr. Houston's letter and his picture, which he kindly sent us at our request. There is something in his letter to inspire young men in the building industry—a long lifetime spent in providing good housing is a record to be proud of. Here's wishing Mr. Houston, and other grand old men like him, many more years of contented life.

The Use of Plan Books

NE of the greatest aids to the contractor who makes residence construction a specialty is a good collection of house designs suitable to the needs of the people in his community.

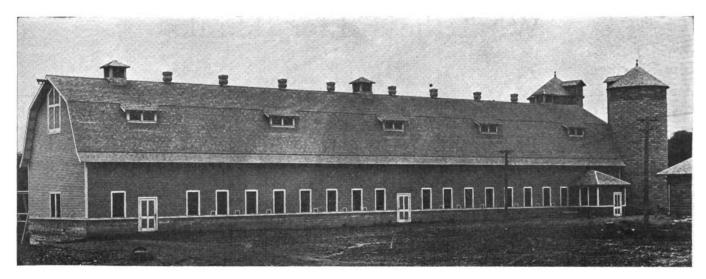
It is all right to have such a library on hand is very well in itself, but you must use it as an aid when the prospective customer comes to you. Now then, the thing to do it to get them interested in some way, so that they will call on you.

There are many plan books to be had and all of them are good and serve the purpose of showing what the builder can accomplish. Many associations of manufacturers have published plan books showing the special application of their products.

Pictures For Builders

YOU are in the building business, therefore have some pictures on the walls of your office to give an atmosphere of building to it, particularly some good photographs of jobs you have erected. A very interesting feature is to have a series of pictures from the time the excavation was made until the building is completed and in the case of a residence perhaps a year or so afterward when the shrubbery has had time to grow around it, making a good looking picture.

This is a most interesting thing and will impress clients, and to do this in a proper manner it is advisable for one to have a good camera so that a snapshot can be taken every few days as the work progresses. There is also another side of this. When you have photographs it shows the exact state of the work at a certain time and cameras can now be had where you can mark the date and other data on the film. These photographs are quite often very valuable in case any legal trouble arises, as then they are mute but effective witnesses of conditions as they existed.



HE proper housing of cows is a point of considerable importance for every farmer as well as a large institution depending on its own supply for milk. It is up to the builder to talk intelligently and advise on every point, not only for dairy barns, but every variety of farm building.

The large dairy barn illustrated here was erected for the Minnesota State Prison at Stillwater, Minn. This is a model structure to be proud of. In its construction there has been incorporated many modern appliances for sanitation and ease of working.

Plenty of sunlight is admitted through numerous windows, and adequate ventilation is also provided from ducts at the sides; these connecting with the ventilators at the ridge, as will be observed by an examination of the top picture and the interior views

Design *for*Large Dairy Barn

shown below. The ventilation at any point is simply controlled by opening or closing the duct at that point by means of sliding doors. These are easily operated; the lower ones by hand and the top ones by means of a pole. The doors are substantially made.

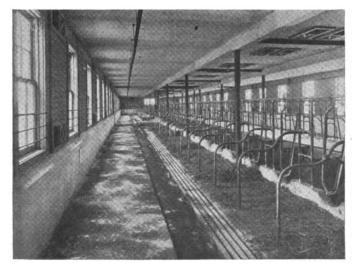
The foundation of this barn is made of concrete which extends up to the height of window sills; convenient openings being made for doorways; the floor, gutter, stalls, manger, and feed alley are all cast in concrete.

The different stanchions are im-

bedded in the concrete of the manger. The cows have been arranged so that they face in, which enables the feeding to be done from the central alley. Hay is secured through the ceiling openings directly above this feed alley, which makes the whole arrangement very convenient and efficient.

Wood racks in the gutter provide good stepping and allow for proper drainage. The racks are in sections and easily removable. The gutter is of good width, so that the entire section can be easily cleaned out, and washed down.

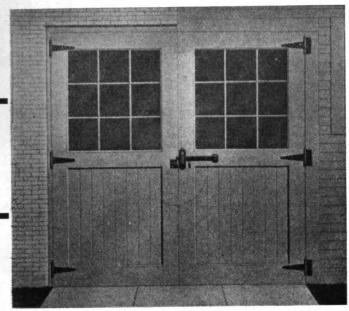
A wide aisle on the outside affords plenty room for the attendants to work efficiently when milking. Overhead on each side is a track for the manure conveyor, providing an easy way of working at this job. At one end large twin silos are located.





CUTTING COSTS

WHERE every item must be kept low, and still a workmanlike job must be delivered, jot down at once on the garage specifications



VIEW OUTSIDE GARAGE

No. 800 Garage Door Set*

economical
easy of operation
weather-proof
has a loose-pin,
reversible "T" hinge.

Note that the right half of the upper picture shows No. 800 Hinge used as a full surface hinge in hanging door on a frame garage—and that the left hand side of the same picture shows No. 800 Hinge reversed and mortised in jamb as used on a brick garage.

In figuring jobs for economy, it is doubly important to protect yourself in regard to the material.

Ensure "satisfaction with economy" by specifying "National No. 800"—

Each set consists of the following:

3 pairs reversible "T" hinges either 8-inch or 10-inch

1 No. 820 Chain Bolt

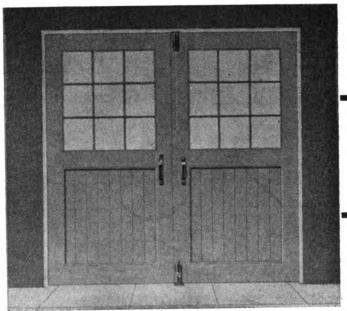
1 No. 830 Foot Bolt

1 No. 5 Door Pull

1 No. 29 All-Steel Latch

packed in a neat, strong carton, with screws. Specify finish—Japan, Dead Black Japan, Sherardized (rust proofed), Sherardized and Dead Black Japan—weight per set 12½ pounds.

*We suggest that you order a full season's supply of these sets from your dealer at once.



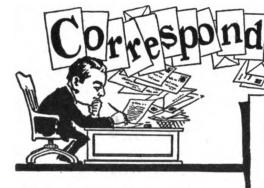
VIEW INSIDE GARAGE

Write for Catalog of Garage Hardware

NATIONAL

NATIONAL MANUFACTURING COMPANY

STERLING, ILL.



Unique Improvement in Sign-Boards

THE first essential of a sign-board is that it attract attention, and to accomplish this effectively it must stand apart from the val number of its competitors through some individuality, some feature of shape, color, or design. Particularly is this demand true of real estate boards, in which the deadening sameness characterizes ninety-nine out of the hundred. An illustration of the hundredth sign-board is that shown, which has taken the conventional hand for indicating the object described, lifted it bodily from the board and cut it out in a bold silhouette to stand out against the distant skyline and compel the attention of the passerby.

Incidentally, in addition to the feature of impelling that valuable first focussing of attention, the outlined hand may be so pivoted on its support as to point directly toward the object described, as in the instance pictured, where the board faces the main thoroughfare for ready legibility and the hand bears away through an angle of thirty degrees or so toward the property in question.

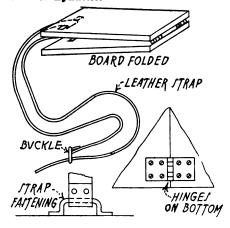
As a test of the effectiveness of this board for attracting attention and permanently identifying itself in the subconscious mind of the passerby, a photograph was taken of an ordinary real estate sign the same general size and layout as the one shown, but without any distinctive feature. This and a view of the one illustrated were then taken by the writer and exhibited to a number of passengers on the street car line which passes both boards; care in the test being taken to select riders whose dress and general appearance would seem to indicate the ability to be interested by and invest in a home. Out of the number approached thirty-two



If you want help in any branch of building construction, just write to the Building Age and The Builders' Journal Correspondence Department. We will be glad to answer all your questions without charge.

All readers are invited to discuss the questions and answers published.

per cent. was able to identify and locate the sign-board with the silhouette while a bare eight and one-half per cent. could do more than guess at the location of the other—though the two boards were within three blocks of each other, on the same side of the street, and with surrounding conditions slightly in favor of the humdrum board. Distinctiveness pays, and a variation from the usual, even though slight, increases the pulling power of an advertisement far beyond the added cost of such variation.—Chester Lyndelle.



Portable Sketching Board

THE attached illustration is of an advantageous fixture used by the technical force in a large manufacturing plant, to make notes and sketches on production and equipment, while standing upright and in the absence of suitable table or bench for holding the paper while marking.

This consists of two hinged boards, and a leather shoulder strap, for adjusting to the body of the worker. The writing and sketching board is made into two sections, about ten



inches square each, with the hingesunderneath, when opened. The strapsare attached at opposite ends in the manner illustrated below. The strapis slung over the left shoulder, with the board under the right arm. When carrying, this is folded and the strapwrapped over, forming a compact unit that can be carried in the brief or letter case usually carried by the employee.—G. A. Luers.

AVE you ever used any machinery or device which has saved you time and money?

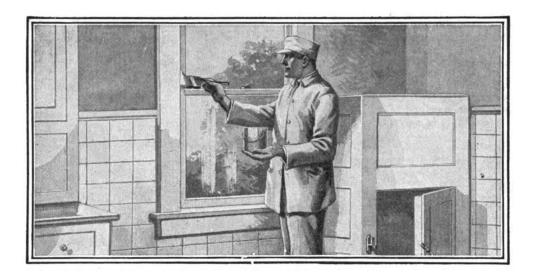
Have you ever invented any way of doing a piece of work quicker?

If you have BUILDING AGE and BUILDERS' JOURNAL wants your experience, and will pay regular space rate for it.

Your description should tell just how you saved time and money, either by a special way of using machinery or by short cuts in construction. Point out what methods you were using before adopting your "Time Saver" and show how your new method turns the trick. You can submit as many articles as you want.

Address The Editor, BUILDING AGE and BUILDERS' JOURNAL 239 West 39th street, New York City.

For Light, Cheerful Rooms



JOHNSON'S ENAMEL

You can't do your best work with inferior materials—and your reputation and success depend upon always turning out good work. Build up a reputation as the best contractor in your locality—then you can get the price and will never experience a poor season.

Contractors who use Johnson's Artistic Interior Finishes soon find themselves getting more of the profitable, better class work. Johnson's Artistic Interior Finishes are right when they go into the can and they stay right. They do not change or deteriorate in any way.

You can give your customers the finest kind of a job by finishing both walls and trim with Johnson's Perfectone Undercoat and Johnson's Perfectone Enamel. These products will give equally good satisfaction on wood, plaster and metal. With them you can turn out perfect work—satisfy your trade and complete more jobs each season.

FREE-Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of famous experts—illustrated in color. This book is written for the practical man—it gives covering capacity, includes color charts, etc. We will gladly send it free and postpaid.

USB COUPON AT RIGHT



s. c. J	OHNS	ON &	SON	
Dep	t. B. A.	8 Ra	cine, W	ie.
**	The Woo	d Fini	shing A	uthorities"

Please send me free and postpaid your Book on Wood Finishing. I usually buy Varnish from.....

• • • • • • • • • • •	•	•	٠	•	•	٠	•	•	٠	٠	•	•	•	٠	۰	•	۰	٠	•	•	•
My Name																					
My Address	١.																				•

City and State.....

Digitized by Google

How to Use a Common Level to Obtain Grades

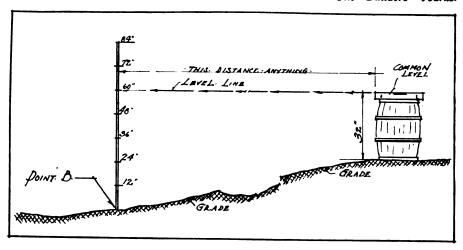
ROM the time a building operation is started until its completion it is necessary to take levels for one purpose or another. The usual procedure being to use a Y level-water level or common level and straight edge.

To level with a straight edge and common level takes considerable time and at times a Y level or water level is not at hand to do the work with.

In a pinch the common level can be used successfully by placing it on top of a barrel and resting it on the upper edges as shown in Fig. 1. It should be pointed out and then brought to a level by slipping chips or cardboard under one side or the other until the bubble shows it level.

Now suppose we want to level from a point of where the level is set to some other point which we will call B. Have some one hold a rail in a vertical position at point B. Face the level in that direction so that it points directly at the rule and after being sure it shows level, sight the top edge to the rule and call out the numerical you read. A pencil card or stick held in a horizontal direction and moved up or down across the face of the rule can also be used as an indicator which makes it easier to read the correct position when levels are taken at a distance.

Now let us assume that in sighting the top of the level the figure on the rule, were to show 60 inches. The next step would be to measure the distance from the ground at the barrel to the top of the level—



32 inches, we then subtract 32 inches which we will assume in this case to be from 60 inches—this gives us 28 inches which is the difference in level between the two points—point B being 28 inches lower than the ground where we assumed the level was taken from.

Using this method of leveling, a stick can be used instead of a long ruler, a carpenter's horse instead of a barrel to set the level on, and any number of levels can be taken quickly and with sufficient accuracy to make it a convenient method to use when other and better means are not available and where a little variation is of no consequence.—W. A. Giesen.

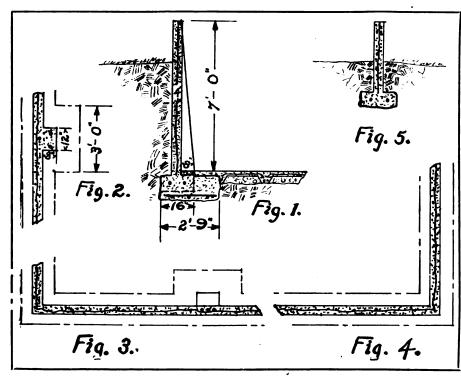
Curtain Walls and Pilasters

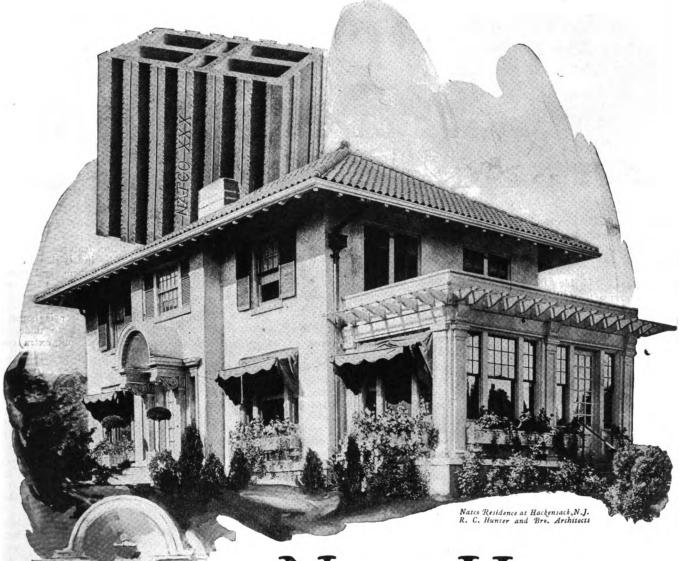
EVERYBODY, sooner or later in his life, finds it necessary to build a home. Ordinarily speaking, the layman knows

very little about building. He picks on a house that he likes and decides to build one similar to it; not considering whether it is not possible to get the same, or even better, results with an expenditure of less money. Half, and often more than half, of the cost of basement or foundation walls can be saved in most cases by using reinforced concrete curtain walls and pilasters, and yet obtain better results than are obtained by the ordinary practice.

Fig. 1 shows a cross section of a wall so constructed four inches thick. The irregular line indicates the wire fencing used for reinforcing. The heavy dots in the footing show the location of the reinforcing rods. The footing of the curtain wall is indicated by the dotted lines. The pilaster footing is twelve inches thick with six rods-three each way near the bottom, as indicated by the heavy dots and line. 36 inch rods will answer the purpose. The basement floor shown is a reinforced concrete beam-construction of cement floors and walks, with cinders between the beams. The top slab is 11/2 inches thick. The principle is similar to that of the curtain walls and pilasters. Fig. 2 is a plan of the pilaster, and curtain walls in part. The heavy dots show the location of the rods at the bottom. Fig. 3 shows the corner and the location of the rods at the top of the pilaster. Fig. 4 is a plan, in part, of a curtain-wall foundation-the cross section of which is shown in fig. 5.

A little study of the foregoing illustrations will make it possible for the homebuilder to see how he can save more than half of the cost of his foundation, and yet obtain better results than could be obtained by a much thicker wall without reinforcement. Foundation walls for cottages range all the way from eight to twelve inches in thickness. A 4-inch wall will take twothirds less material than a 12-inch wallit will take two-thirds less labor to put the material in place, and it will take less bracing for the forms, since the pressure will be decreased by twothirds. The cost of the reinforcing is a small item compared with the saving in labor and material.-H. H. Siegel.





Natco Homes

The greater number of American architects have been long familiar with the superior merits of Natco Hollow Tile. They know it to be an ideal building unit possessing exclusive home comfort values as well as great possibilities for attractiveness.

We want every architect to become acquainted with Natco and for this purpose maintain in the larger cities hollow tile experts who will be glad to explain Natco's merits when and where you desire. A post card will bring a representative to your office.

Natco Book of Homes Free on Request.

NATIONAL: FIRE: PRØFING: COMPANY
433 FULTON BUILDING > PITTSBURGH, PA.





IN the case of Abercrombie vs. Union Portland Cement Co., 205 Pac. 1118, the Idaho Supreme Court decided that defendant, as a manufacturer of

cement, was not liable to plaintiff for failure of cement to Building Material prove to be of the to Ultimate Buyers quality represented by defendant in its

advertisements, where plaintiff did not buy direct from defendant, but through a dealer. The court applies the general rule that one cannot be responsible to another with whom he has had no contractual relations, excepting in certain cases of negligence, and quotes the following from a legal authority (29 Cyc. 478):

"The liability of a vendor or manufacturer for negligence, except as regulated by contract, must arise from breach of a duty which he owes to the public. Although it has been said that the duty which he owes to the public, for breach of which one injured may recover, is limited to instruments and articles in their nature calculated to do injury, such as are essentially elements of danger, and to acts that are ordinarily dangerous to life and property, and if the wrongful act be not imminently dangerous to life and property, the negligent vendor is liable only to the party with whom he contracted, it will appear, on the contrary, that the vendor or manufacturer may be held liable to persons with whom he has no contractual relation, for injury caused by mere negligence in the manufacture of an article harmless in kind, but made dangerous by defect, and knowingly putting such article upon the market in the ordinary course of business without notice of such defect. A more explicit statement of the law exonerates the vendor or manufacturer from liability for negligence to persons with whom he has no contractual relation, as a general rule, with three exceptions, as follows: (1) Where the negligent act is imminently dangerous and is committed in the preparation or sale of an article intended to preserve, destroy, or affect human life; (2) where the act is that of an owner, combined with an invitation to the party thereby injured, to use the defective appliance on such owner's premises; (3) where the act consists in the sale and delivery of an article, with knowledge of undisclosed danger and without notice of its qualities whereby any person is injured in a way that might reasonably have been expected."

FROM Maryland comes an interesting inquiry concerning the obligation of a building contractor to install gutters and down spouts and a built-in buffet shown

by the plans but not covered by the specifications.

It appears that the

particular contract was

Variances Between Plans and Specification

made with reference to stock plans, and that the builder confirmed a verbal agreement to build a house according to a specified design number, with no other change noted than a change in the dimensions of the house. It was specifically agreed that the structure should be built "under the same floor plan as originally laid out." The written agreement then set forth certain specifications, and this general provision: "We agree to build your house for you as per the above set forth specifications and the plans above referred to." The plans and blue prints show gutters

and down spouts, also a built-in buffet,

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the correct procedure. Questions and answers of general interest to the trade will be published in these columns. All inquiries must be accompanied by the name and address of the correspondent so that he may be answered direct or that he may be requested for further information if necessary to the intelligent answering of his question. No names will be published, only initials or a nome de plume. Remember that this service is free to subscribers. Address Legal Department, Building Age and The Builders' Journal, 239 West 39th street, New York City.

but these are not mentioned in the specifications. The owner insists that the builder include these features under his contract. The builder insists that his contract does not require them, and that if he installs them he is entitled to extra pay.

In our opinion, the builder is bound to furnish the items referred to under his original contract and without extra compensation.

But if specifications are to control over plans, etc., we believe that it must be in a case where there is positive repugnance between the plans and specifications. For example, if the plans showed a wooden gutter and the specifications called for metal guttering, the rule might be applied to solve the conflict. But a mere omission of a feature from the specifications does not necessarily exempt the builder from furnishing it, if the contract as a whole shows an undertaking to furnish it. To illustrate, the fact that specifications might omit to refer to a door or window sash plainly indicated on the plans would scarcely be claimed to obviate the contractors obligation to furnish the door or sash.

The case presented to us appears to fall within the decision of the West Virginia Supreme Court of Appeals in the case of Smith vs. Board of Education of Parkersburg, 85 Southeastern Reporter, 513. In that case a building contract referred to plans and specifications as a part of the agreement. The drawings required vitrolite wainscotting, but the specifications made no reference to it. It was decided that the contractor was not entitled to extra pay for installing vitrolite wainscoting. The court said:

"The written contract expressly makes both the drawings and specifications a part of it; hence they must be looked to in order to determine what was comprehended in the contract. Neither the signed agreement nor the specifications expressly mention vitrolite, but the drawings or plans show that it was to be used, and they are as much a part of the contract as the specifications. * * There is no inconsistency between the drawings and the specifications; the omission of the latter to mention vitrolite is supplied by

ATTINIS SILVERSAWS



IN ATKINS SAWS

You Get Real Taper Grinding— Not an Imitation

HEN a saw "binds" it's the fault of the saw, not the sawyer; except, of course, the sawyer was to blame for buying the wrong saw.

ATKINS

Silver Steel **SAWS**

are ground to a taper, from the teeth to the back, then tapering on the radius of a circle; the thickest part is at the handle and tapering to the point, the thinnest part. In other words, the taper is from teeth to back and from heel to point. That's what makes Atkins Saws cut free and easy.

We furnish them in regular or ship point widths, straight or skew back, equipped with old style block handle or the latest and most scientific handle—the handle that eliminates wrist strain—the Improved Perfection.

Free—Write for "Saw Sense," the book of facts, also educational literature, "How to Care for and Use Cross Cut and Hand Saws." Enclose 30 cents for nail apron and useful souvenir.

E.C.ATKINS & CO.

ESTABLISHED 1857 THE SILVER STEEL SAW PEOPLE Home Office and Factory, INDIANAPOLIS, INDIANA

Canadian Factory, Hamilton Ontario
Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks In The Following Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore. San Francisco

Seattle Paris, France Sydney, N. S.W. Vancouver, B.C. the drawings, which show it was to be used. They are a part of the contract, and do not conflict with the specifications, which are simply incomplete in that respect."

In the West Virginia case the court went so far as to state that not even the architect could waive the requirement for vitrolite, without the owner's knowledge or consent. On this point it was said:

"The architect is not, by virtue of his employment as such, the owner's general agent for all purposes, in the erection of the building. His powers and duties are limited by the terms of his contract of employment, or by the terms of the contract between the owner and the builder."

The opinion also shows that the fact that, in the absence of specifications, there may not be such detailed understanding as to how work is to be done does not avoid necessity for building features called for by the contract by reference to the plans and drawings. The court says on this point:

"The fact that vitrolite is manufactured in different thicknesses and weights, and is attached to the walls by different methods, coupled with the fact that neither the drawings nor the specifications gave any information concerning the thickness desired or the method of putting it on, in consequence of which it is argued that the bidder could not bid intelligently on that part of the work, does not alter the terms of the contract, nor relieve plaintiff from performing it. Those objections relate to mere matters of detail, concerning which the bidder, if he considered them material, should have informed himself before putting in his bid; or else he should have expressly excluded vitrolite from his bid, so that the board of education could not have been misled by the manner of the bid."

In the case presented to us, we are of the opinion that the contractor was at fault in failing to insist on exclusion of the buffet, gutter, etc., if he did not intend to install them for the agreed price. It might well be foreseen that the owner would be apt to pay more attention to the plans than to the specifications.

Of course, if it could be shown that through mutual mistake, or fraud on the part of the owner, the plans did not express the true understanding of the parties, the contractor would be relieved from responsibility, on a theory that there never was a mutual agreement that the features referred to should be included. But the opinion of the West Virginia Supreme Court of Appeals shows that a one-sided mistake does not avoid contract obligations in a case of this kind. If the owner, innocently and reasonably relied on the contract for construction of the house according to the plans as requiring installation of the buffet, etc., the fact that the builder may have supposed that the features were not legally included because not covered by the specifications, although plainly covered by the plans, etc., would not release his obligation to install the features.

In passing, it is interesting to note the decision of the Massachusetts Supreme Judicial Court in the case of Smith vs. Flanders, 129 Mass. 322. In that case a contract to build an armory required performance according to plans and specifications. The plans required "all walls to be vaulted." The plans showed 16-inch walls but did not indicate any vault space. Disposing of litigation over this contract, the court remarked:

"The defendant asked the judge to rule that the contract, plan and specifications called for a wall containing sixteen inches of masonry, exclusive of the vault. This was properly refused, because such a construction would require a wall of greater width than the contract by its reference to the plan required. * * * There is no conflict between the plan and specifications, and no room for uncertainty of construction on that point. The discrepancy, if any, is between the clause in the specifications, which distinctly and positively requires the walls to be vaulted, and the plan, which shows no marks for spaces to be left. But as between the positive requitement of a written clause in the contract and a plan referred to, which, though perfect in other respects, shows an omission to indicate this single matter of detail, there can be no doubt that the written contract must control the mere implication derived from the omission in the plan."

Applying similar reasoning in this case, it seems to us that it is fairer to construe this contract as requiring construction of a building embodying the features shown on the plan, etc., and to treat the specifications as having inadvertently omitted reference to those features, in so far as any reference would have been proper, than it is to say that silence in the specifications about a built-in buffet, gutter, etc., speaks louder than the plans which are expressly made a part of the contract and which expressly provide for those features.

SEVERAL years ago," writes a Kansas architect, "I prepared plans for a good residence, under a verbal agreement. The house was completed

Architect's Right to Pay For Use of Plans and the plans and specifications paid for. It was understood between the owner and me and stated in the specifications that the

plans and specifications were the 'property of the architect, and for use on this building only.' About a year ago the owner asked for a set of the plans only, stating that they were wanted for his use only. I furnished a set to him. Later I saw an announcement in a construction newspaper that a residence was being constructed in a neighboring

city, giving my name as architect. On investigation I found that the building was copied from my plans, and that the blue prints used, bearing my name, were evidently the same as those furnished the owner of the first building on his request. I wrote the second owner asking by what authority he had used my plans. His reply was discourteous, practically telling me to go to the lower regions as he had a right to use the plans as he pleased. Can I recover for the use of my plans? The second building will cost about \$30,000."

We are of the opinion that you can maintain suit to recover against the first and second owners, jointly or severally, the reasonable value of the plans used on the second building. It seems that there will be no difficulty in proving that the second owner was chargeable with notice of your rights in the plans used by him, particularly since your name was on them. And the first owner appears to have been an active party in permitting an unauthorized use of the plans, in violation of his agreement.

There are several court decisions to the effect that, in the absence of special agreement to the contrary, plans belong to the owner for which they have been prepared. And it has been decided that mere custom among architects under which plans, etc., are deemed to belong to the architect preparing them is not binding upon an owner not shown to have known of such custom. The law has been authoritatively summarized as follows:

"An architect ordinarily has no right to the ownership of a plan furnished to, accepted by, and paid for by another, and plans forming an essential part of the building contract, unless proved to be the property of the architect, are deemed to be the property of the employer.

"A custom entitling the architect to plans after payment and completion of the building has been held to be unreasonable, and unless both parties know of such custom, and contract in contemplation of it, it does not affect the employer's right to the plans." 5 Corpus Juris, 259.

It will be noted that these expressions are specifically consistent with the idea that where an owner understands, either by agreement with his architect, or through knowledge of a custom among architects and owners, that the architect reserves the exclusive right to furnish the plans, etc., for use on buildings other than those for which they have been specially prepared, the property right in the plans remains with the architect.



When you sell roofing— what do you talk about?

A BUILDING supply man once said that he couldn't sell anything he couldn't talk about.

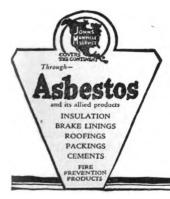
He calls ordinary roofings "sugar and nails" because they are all just about alike—You can say they're roofings and that's about all. They sell if your customer doesn't happen to run into a competitor with a better product—that he can talk about.

The man who sells Johns-Manville Asbestos Roofings and Shingles finds something to talk about. He builds his sales on the fire-safety, weather resistance and permanence that their indestructible asbestos rock fibre body gives to these roofings.

That is why you can go out and sell Johns-Manville Asbestos Roofings against competition.

And remember that Johns-Manville advertising is keeping Asbestos Roofings and their advantages constantly before the public—another reason why they are easier to sell.

JOHNS-MANVILLE, Incorporated
Madison Avenue at 41st St., New York City
Branches in 56 Large Cities
For Canada: Canadian johns-Manville Co., Ltd., Toronto



JOHNS-MANVILLE Asbestos Roofings



Motor Truck Maintenance

By P. L. SNIFFIN

F primary importance to every builder or contractor is the proper attention to the upkeep of motor vehicles used by him. Regardless of whether only one such unit of equipment or several are employed, this subject of maintenance deserves careful consideration.

Motor vehicle maintenance implies the care which the car receives in operation, the manner in which it is driven, and the attention that is devoted to such subjects as upkeep, inspection, repair, overhauling, etc. It is significant that motor truck use in the building field frequently calls for extremely strenuous service in hauling building materials, earth, crushed stone, etc., often meaning overloads and running over poor roads to reach the construction site.

Basis of Maintenance

"Take care of small troubles before large ones develop," is the
keynote of any successful maintenance plan. Systematic inspection, adjustment and lubrication,
are to be emphatically recommended in the interests of saving expensive replacements during overhaul as well as large repair
charges. Unless the driver is a
skilled mechanic, forbid him to
touch the motor truck's engine.
Owners of several vehicles should
employ a mechanic either on part
time or full time to assume responsibility for running conditions
of trucks. Nightly inspections, involving minor repairs and adjustments, such as tightening brakes

and adjusting spring clips, chains and radius rods, are extremely advisable. The truck should be kept clean. Dirt, if allowed to accumulate, may find its way into many of the bearing surfaces, and in some cases may make lubrication difficult or impossible. The result will be increased wear and reduced life of parts. Form the excellent habit of examining water, oil and gas supply before starting a day's work.

OOKING for and preventing troubles in a motor truck, and knowing what to do when they are found, requires nothing more or less than the same principles of common sense that we apply to our own daily lives. Of course, the very first fundamental is to give the truck a square deal. We are careful to eat regularly and to eat only the right kind of food. Likewise we should exercise the same care in selecting the right kind of lubricating oil and grease for a motor truck and to make sure that lubrication is not neglected. Just as we take extra precautions against the cold in winter and heat in summer, so it is extremely important that we give our motor truck the same fair chance.

Just so, we are always careful not to overwork ourselves or to attempt to carry more work than nature has provided us with facilities for. At least, should we find it necessary to assume such extra work, we take pains to offset the burden by regularity of our living habits. And with a motor vehicle it is possible to do the same, by a

recognition of certain rules of maintenance and by giving the proper amount of attention to them.

Lubrication Is Important

The subject of motor truck lubrication deserves special emphasis. It is most surprising to many operators that the proportionate cost of the item of lubrication when considered along with all other costs, is especially small. To illustrate this point, it is well to quote from an analysis recently made which shows the average percentages of operating costs covering several hundred trucks. When the figures are not to be taken as applicable to any case, they represent fairly well the division of expense incurred in operating a motor vehicle under the most general conditions. The percentages are as follows: Gasoline. 23.21%; depreciation, 21.76%; repairs, 17.06%; tires, 15.16%; garage, 14.31%; interest, taxes, insurance, 6.49%, and lubrication,

It is apparent from these figures that attempting to save on lubrication, the builder is picking the very lowest item of cost. Even if he could save it all, he would be better off by only \$2 out of every \$100 he spends to run his truck. The proper use of lubricants will help to minimize the expense of depreciation and repairs which share a large proportion of the total. The crank case should be drained, cleaned and refilled at regular intervals. Oil must be added as required to maintain the proper level.

We Announce a Half Million Dollar Advertising Campaign

in the Interests of Busy Beaver Dealers

MORE new homes, factories, stores, garages, etc., will be built and more repairing and remodeling will be done in 1923 than for many years. In fact, eminent authorities forecast one of the biggest and most profitable years in the history of the country. Recognizing this fact, The Beaver Products Co., Inc., has invested a Half Million Dollars in a great "year-'round" national advertising campaign for dealers, featuring

BEAVER PRODUCTS

Wall Board Vulcanite Roofing

Gypsum Wall

This campaign—the largest and most imposing ever used by this company or, we believe, by any other manufacturer of such products —is built around the carpenter, the lumber and building supply dealer.

It means a wonderful opportunity for every carpenter, contractor and dealer to do a greatly increased business.

Early in March this campaign will start with a big, double-page spread in color. From then on, practically every week, a double-page ad in color will tell the Beaver story to the millions of possible buyers who read The Saturday Evening Post, The Literary Digest, The American Magazine and The Country Gentleman.

We will be glad to send you complete details of the Beaver Proposition. We build

> "quality" products. We build them right. We welcome dealers who are "Busy as Beavers."

Line up with "Beaver" before the Half Million Dollar campaign starts in March. Write for information desired.

THE BEAVER PRODUCTS COMPANY, Inc.

Administration Offices, BUFFALO, N. Y.

THOROLD, CANADA LONDON, ENGLAND



To the left is a miniature of the first big, doublepage smash that will appear early in March, 1923.

ELECTRICAL WORK

Wiring-Fixtures-Devices for Lighting and Power



Placing Convenience Outlets Conveniently

Builders Can Produce More Convenient Homes by Seeing that
Outlets are Properly Located

T is well to have a house equipped with outlets for attaching various electrical appliances so as to make a complete home electrical, but there is another important point that should be considered by builders, and that is to put yourself in the place of the people who are going to use these appliances. Then see to it that the electrical outlets are placed in the proper positions so that they will afford a maximum amount of convenience to the occupants of the house as they are the people who are to use it.

We have all read about the desirability of having enough outlets, but sufficient thought has not been given to where and how they should be placed. In the majority of cases the outlets are placed in the baseboard, and while this is all right as far as it goes, in a great many cases it would be more convenient to have them higher.

Nearly all the electrical appliances that are purchased in the stores have a flexible cord with an attachment plug. These cords are usually not more than six feet in length and if half of their length is used to reach the table top, etc., they are too often unhandy. Outlets for the use of attachments that are to be used on a table should be set at a height above the table level. The same is true of the outlet for the electric iron, while the vacuum cleaner, floor lamps, etc., are best served by base plugs.

A woman likes to have as much freedom as possible to move her iron

board around, and when the outlet is located in the baseboard a few feet of the available part of the cord is lost. Of course it may be argued that longer attachment cords may be secured, but the fact remains that about 99 people out of 100 will only use the length of cord that comes with the appliance when it is bought at the store.

I T is a curious fact that the workmen employed by the electric light company to install the service have too often no idea of the fitness of things. All they want to do is to get the wires run and install the meter; we have known cases where wires have been run into the front of the house and the meter placed in the living room, and in some commercial structures the meters have been placed in the store windows—the most valuable part of a merchant's advertising space!

In the case of a residence, the builder should see to it that the meter is placed in a convenient yet inconspicuous place. Where it is placed in a cellar, as is most often done, it should be placed near a window wherever that is possible. There are several manufacturers today making meter boxes which can be opened from the outside of the house to take a reading.

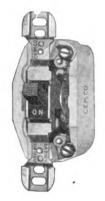
One thing that ought to be done wherever possible is to have an underground service from pole to house so as to avoid unsightly overhead wires. Another great convenience is to have plenty of switches.

If the matter of the conveniences of the different outlets and devices were thoroughly explained and dwelt on by the builder to the owner instead of merely telling him that it will cost so much more we would have more houses convenient in their electrical equipment. Say that the convenience and time saved will more than pay for the slight cost of the additional switches, outlets, etc., the first few months of their use.

Switches can be had so as to control lights at two or more points. There are a variety of three or four way switches that can be had so that almost any sort of combination of turning out and lighting different circuits can be had either from the room where the fixtures are located or in some other room.

HALL and cellar lights should be controlled from downstairs and upstairs, both for lighting and turning off. It will be found that such switches will save the occupants many steps and will be a convenience that will be appreciated in years to come.

The builder can explain these different points to the owner at the time the house is being built, as then these different convenience outlets can be so easily installed. Give some thought to the placing of each outlet and switch so as to have them in the proper location and height for the individual use for which they are intended. In this way you will really have your convenience outlets convenient.





Let the Contractor and Builder Install Comfort and Happiness

in the new home, and even a certain amount of faultiness in architectural design of the house will be excused.

In the kitchen, the dining room, the laundry, the bathroom—if you provide enough convenience outlets—and 36 outlets for a six-room house is not too many—you are giving your client the one greatest service possible for you to render.

This being decided, namely, a

large number of convenience outlets—then either buy or specify a Quality line of electrical devices for that home.

For instance, the Shallow Switch pictured above. It is easy to install in narrow partitions; will give unlimited service; a record of 200,000 operations being nothing unusual; and tested electrically to withstand three times the rated load. The whole line is that Quality.

Samples at request, for inspection and test gladly furnished

Connecticut Electric Mfg. Co.

Office and Factory: Bridgeport, Conn.

Branch Offices:

New York Aeolian Building Chicago Manhattan Building

San Francisco
74 New Montgomery Street

"Connecticut" Means Quality!

USEFUL CATALOGS



Hollow Tile on The Farm is attractively shown in use by the many pictures illustrating the attractive book of thirty-six pages, just issued by the National Fireproofing Co., 430 Fulton Building, Pittsburg, Pa. Interesting description is given together with plans and details of how different farm buildings can be constructed of hollow tile. To any builder handling farm work this book will prove a valuable aid.

Color Harmony in Brick Work is the title of a very attractive folder issued by the Clinton Metallic Paint Company. Clinton, N. Y. It shows in actual colors what beautiful effects on walls, chimneys, fireplaces, etc., may be obtained by the proper selection of brick and colored mortar. The cost of mortar colors is so small and the effect so good that there is no excuse in not having proper color harmony between brick and mortar.

Casement Windows when they are used, add to the attractiveness of the home. There are many ways of hanging them, either swinging in or out or when a wide window is desired the entire opening can be had by using special hardware such as made by the Andrew Hoffman Mfg. Co., 26 E. Jackson Boulevard, Chicago, Ill., and described in their new catalog which is complete with detailed drawings covering almost every type of casement window arrangement.

Gas Ranges are part of the kitchen equipment usefully provided by the building contractor, therefore the new catalog issued by the Tappen Stove Company, Mansfield, Ohio, will be a very useful book to have on hand to show his customers. It contains description, sizes, etc., so that the proper size and style of range to suit one's client is easily picked out.

Real Home Fires is the title of a folder describing a new fireplace basket that is convertible for the use of either coal or wood. Builders can here supply to their clients something very useful and practical for the open fireplace as the same article serves as andirons and as a basket for a coal fire. It is made by The Donley Bros. Company, Cleveland, Ohio.

Asbestos Roofs can be laid so as to produce artistic effects as well as having a substantial roofing. Particulars are given in the booklet just issued by the Mohawk Asbestos Slate Co., Utica, New York.

Heating the House is a subject of prime importance to every builder and when he is asked about a pipeless furnace he should be able to explain the system fully and advise his clients. He will find much useful information in the catalog issued by the Cooperative Foundry Co., Rochester, New York, describing their Red Cross Empire Pipeless Furnace.

Portland Cement finds many uses in modern building construction. Some very interesting items are described in the booklet called "Alpha Aids 33" published by the Alpha Portland Cement Co., Easton, Pa.

Beaver Board serves many purposes for the builder. It is mostly used for walls and ceilings and in these days of high plastering costs it will find more favor even among those wedded to the old-fashioned plastering idea for walls of our dwellings, etc. A sample and interesting booklet will be sent to any reader interested. It is issued by the Beaver Products Co., Inc., Buffalo, New

Registers for hot air systems and for ventilation can be had in attractive designs and in such forms as to give the maximum opening with as small size register as is practical. This is interestingly described in the folder issued by the Hart & Cooley Co., Inc., New Britain, Conn.

O N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Garage Doors always offer an interesting problem to the builder so as to have them swing in a proper manner and always in good working condition. An interesting catalog that will help the builder solve many complicated problems of garage door hanging by the use of suitable hardware has been issued by Allith-Prouty Co., Danville, Ill.

Slate in Building Construction finds many uses. Useful information regarding its use, etc., may be obtained from the bulletin of the National Slate Association, Drexel Building, Philadelphia. Pa.

Concrete for Building Use is economically mixed when one has the proper equipment. A most interesting catalog describing some up-to-date machines has just been issued by the Ohio Concrete Machine Co., Columbus, Ohio.

Heating Comfort by hot air is easily obtained by selecting the right kind of a furnace. Builders wishing to advise the home owner would do well to obtain the interesting catalog on furnaces just issued by the Rybolt Heater Co., Ashland, Ohio.

Leaders and Gutters of copper have many advantages and their good taste and sound investment is graphically told in a novel instructive wall chart printed in full colors, size 22x30 inches. It will be sent to any of our readers by the Copper & Brass Research Association, 25 Broadway, New York City.

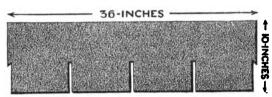
Concrete Machinery is a necessary part of the equipment of every progressive builder and he will be interested in seeing the catalog just issued on this subject by the Ransome Concrete Machinery Co., Dunnellen, New Jersey.

Sugar for Building Use seems rather a far fetched idea excepting in the fairy stories of our youth. But this has now actually come to pass by a new product known as Celotex Insulating Lumber, which is used as sheathing and for insulation purposes. It is made of sugar cane and has extraordinary strength. A most interesting circular describing its use and strength, also a sample, may be had from the manufacturers, Celotex Co., 111 West Washington Street, Chicago, Ill.

Will You Trade \$20 for \$100?

It may cost you an average per roof of only \$20.00 more

NATIONAL AANA (Asbestos and Aspbalt) SHINGLES



ON THE HOUSES YOU BUILD FOR RESALE

But the house can be sold for \$100.00 more, because you can furnish the Buyer, along with the deed, our

20 Year Guarantee

1-WATER CANNOT LEAK THROUGH THE MATERIAL

2—FIRE CANNOT BURN THROUGH THE ASBESTOS LAYERS

3—THE SHINGLES WILL NOT CURL

If the house was roofed with any other asphalt shingles (no matter whose make) the buyer could only secure from the maker a 10-year guarantee (most makers give no guarantee), and the chances are that before 20 years a new roof would be required, and this would cost 2 or 3 times \$100.00.

LOOK AT THESE DIFFERENCES!

National AanA Shingles

Rag Felt Type

Two layer base of sheet Asbestos; origin mineral, consequently non-perishable and fire proof, plus double layer or 50% more of solid asphalt (the real weather resister)

Class "B" Fire Underwriters' Rating (the highest awarded asphalt shingles).

Guarantee against curling.

Wear Resistance

Fire Resistance

Non-Curling

One layer of Rag Felt origin animal and vegetable. Perishable and not fireproof, plus only one layer of solid asphalt.

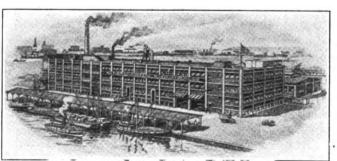
Class "C" (or lower) Fire Underwriters' Rating.

Known fact that Rag Felt base shingles do sometimes curl.

NATIONAL Aana SHINGLES COST LESS TO APPLY

because of their full 36-inch width in the strip or 4 in 1 form against 32-inch width in other makes. This difference in width means a saving of 12½ per cent in labor and nails, or approximately 40 cents per square, equivalent to a 40-cent less price.

Price \$7.25 per Square F. O. B. Cars Jersey City, N. J.



Buy from Your **Building Material** Dealer or Direct from the Factory

THE FACTORY BACK OF THE GUARANTEE

ASBESTOS MANUFACTURING NATIONAL COMPANY JERSEY CITY, N. J.

163-193 HENDERSON STREET

Digitized by **GO**

Review of Building Situation

BUILDING construction in 1923 just published by F. W. Dodge & Company show some remarkable figures. A few months ago when we were prophesying about 1923, we had high hopes in thinking that it would be almost as good as 1922. Figures just published are somewhat astonishing, as they are over 30 per cent. in excess of that of January 1922! The figures for January show a 1 per cent. increase for that of December. This seems to indicate that 1923 will be the banner year in the building industry.

In our list this month, our re-

port also includes a South Atlantic District; this will be a feature of future statistics. This district comprises North and South Carolina, Georgia, Florida, Alabama, Mississippi, Tennessee, Arkansas and Louisiana. Thus the figures will comprise the larger section of the United States, as the figures for the Chicago District are also including Oklahoma, Nebraska, and the western half of Kansas.

Residential construction is still in the lead, comprising over 50 per cent. of the total volume of construction contracted for. We had thought that the east was nearly catching up with residential construction but the figures this month disclose that in the three districts centering around New York, the immense sum of \$75,000,000 is already contracted for in that section on residential construction alone. This is over 60 per cent. of the total for all districts reported.

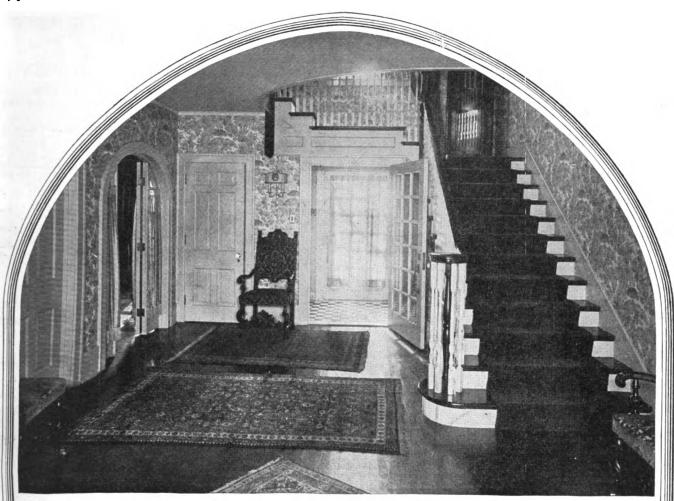
The same proportion practically extends to the building projects contemplated. Here residential construction in these three eastern districts amount to over 50 per cent. of the total residential projects.

Record of January, 1923, Building Contracts Awarded

N	lew England	New York	SECTION OF	COUNTRY Pittsburgh	Middle West	North West	South Atlan	tic
Classifications of Buildings	District	District	District	District	District	District	District	Totals
Business Buildings	\$3,151,100	\$6,081,800	\$9,954,000	\$2,514,000	\$9,124,800	\$149,000	\$5,357,000	\$36,331,70
Educational Buildings	1,283,400	2,028,800	2,292,700	2,570,700	5,725,500	4,600	2,955,900	16,861,60
Hospitals and Institutions.	325,000	540,700	19,000	1,148,000	822,500	020 000	575,000	3,430,20
Industrial Buildings Military and Naval Build-	1,950,100	2,500,400	3,725,700	2,680,900	10,148,100	939,000	1,207,700	23,151,90
ings		19,900	100,000					119,90
Public Buildings	32,800	130,400	329,300	5,800	844,000	215,000	590.400	2,147,70
Public Works and Pub-	02,000	200,100	020,000	0,000	C,CCC		0,70,700	_,, ,, .
lic Utilities	790,200	1,318,300	2,459,400	4,246,400	16,804,700	30 9,800	2,713,200	28,642,00
Religious and Memorial								
Buildings	226,000	433,999	527,000	702,000	793,000	15,000	947,000	3,643,00
Residential Buildings	14,839,800	48,458,700	12,265,800	12,492,800	22,316,300	1,356,500	10,948,000	122,677,90
Social and Recreational	172 000	2,730,500	833,500	409,000	1,471,700	5,000	110,000	5 721 70
Buildings	172,000	24/30,300		ŕ		•	110,000	5,731, 7 0
Miscellaneous								
Total	22,770,400	\$64,242,500	\$32,506,400	\$26,769,600	\$68,050,600	\$2,993,900	\$25,404,200	\$242,737,60

Building Projects Contemplated, January, 1923

Classifications of Buildings	Vew England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	M iddle West District	North West District	South Atlan District	
Business Buildings Educational Buildings Hospitals and Institutions Industrial Buildings	\$7,199,600 8,255,500 3,227,000 5,993,600	\$17,804,700 6,624,600 959,000 4,994,900	\$8,839,000 4,646,000 755,000 4,738,100	\$6,183,600 4,257,200 400,000 4,064,000	\$41,858,300 16,423,100 7,317,000 38,857,000	\$983,400 1,411,500 70,000 6,889,000	\$6,736,500 7,324,000 2,210,000 71,888,500	48,941,90 14,938,00
Military and Naval Buildings Public Buildings	669,000	4,912,000	2,780,700	45,000 2,649,000	75,000 1,339,500	50,000 2,055, 000	460,000 4,237,600	
Public Works and Public Utilities	16,530,200	36,463,700	3,193,600	23,418,900	90,786,000	8,717,200	7,986,000	187,095,60
Buildings	2,164,000 20,854,100	1,474,000 78,540,800	2,326,000 35,990,800	1,874,000 24,955,200	5,223,000 87,869,200	339,000 2,132,200	2,529,000 17,847,000	
Social and Recreational Buildings Miscellaneous	1,679,000	5,431,000	2,303,000	1,859,000	16,626,100	243,000	3,742,000	31,883,10
Total	66,572,000	\$15 7,204,700	\$65,572,200	\$69,705,900	\$306,374,200	\$22,890,300	\$124,960,600	\$813,279,90



HITE ENAMEL on Arkansas Soft Pine is invariably successful. Unlike "Georgia Pine," so-called, it contains no pitch nor resinous oils. The hazard of discoloration is, therefore, dispensed with. In physical makeup, Arkansas Soft Pine is of fine fibre, close grain and uniform texture. The priming coat of white lead or zinc is evenly absorbed, and becomes an integral part of the wood itself. Thus the enamel coats are built up upon the actual wood and not upon a superficial base of shellac or other varnish primers. Moreover the hazard of raised grain is also dispensed with.

Arkansas Soft Pine

costs slightly more than other pine finish. On the other hand its cost is notably less than that of rarer woods. Thus in the thousands of fine homes in which it is now serving, this Satin-like Interior Trim is giving the greatest value in good woodwork at the lowest cost commensurate with permanent satisfaction.



HAND BOOK, FINISHING INSTRUCTIONS, NATURAL AND FINISHED SAMPLES ON REQUEST

Arkansas Soft Pine is trade marked and sold by dealers East of the Rockies

ARKANSAS SOFT PINE BUREAU

Boyle Building , Little Rock, Arkansas



Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor

can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

NEW YORK PRICES			Jan. 3	0 Feb. 28
	Jan. 30	Feb. 28	PLASTER BOARD— 32 x 36 x 34 in., Each	3 \$0.22
LONG LEAF YELLOW PINE— B. and Better Edge Grain Flooring, 13/Ma29/" Face	e02 00	296.50	MAGNESITE STUCCO—	·
Dimensions, SISIK, No. 1 Common, 224", 10"	44.00	49.00	Per Ton	0 \$70.08
Dimensions, SISIK, No. 1 Common, 224", 10' Timbers, Merchantable, '05, 12x12", 10 to 20'	58.50	63.00	THE— 1 in. Square or Hexagon, White, per eq. ft \$0.2	5 30.25
B. and Better Ceiling, 1/231/4	47.00	47.00 20.00	3 x 6 in. White Wall	
B. and Better Partition, 14"x314"	67.00	67.00	8 x 8 in. Red Floor	16 .45
No. 1 Common Boards, 1x8"	49.25	51.0 0	CHICAGO PRIGRO	
NORTH CAROLINA PINE—		e75 00	CHICAGO PRICES YELLOW PINE—	
No. 2 and Better Flooring, 13/16x2/4"	32.50	\$75.00 34.50	Boards, 1x8, No. 1 Com \$46.0	0 \$46,00
DOUGLAS FIR—	02.00		Ceiling, 14x4, B. and Btr	0 52.00
No. 2 Clear and Better V. G. Flooring, 1x3"		\$76.50	Dimension No. 1, 2x4, 12 to 14 ft	
No. 1 Clear V. G. Flooring, 1x4"	77.00	78.00 55.50	Drop Siding, 1x6, B. and Btr	
No. 2 Clear and Better Ceiling, 1/4x4"	52.50 54.50	55.50	Flooring, B. and Btr. E. G., 1x3	90.00
No. 2 Clear and Better V. G. Stepping	93.00	96.00	Lath, 4 ft., No. 1	
WESTERN RED CEDAR—			HARDWOODS—	
B. C. Perfection Shingles, per M. Washington Perfection Shingles, per M.	\$7.60 7.45	\$7.60 7.45		0 \$99.50
Clear Bevel Siding, 1/2x6"	52.00	52.00	Maple Flooring, 13/16x294, clear	0 77.00
CANADIAN SPRUCE-			Oak Flooring, 13/16x21/2, Cl. Pl., White 108.5	50 108.90
No. 1 Lath, 1½". Dimension, 2x4", 10 to 16'	\$9.38	\$8.70	REDWOOD— Bevel Siding, S1S1E, 10 ft., 20 ft., 1/2x4, clear	25 \$47.25
	34.00	45.00	Finish. S2S or S4S, 1x6 to 8 in. clear	
MARDWOOD FLOORING— Clear Quartered White Oak 13/16x2x24#	21 SR 00	\$158.50	WESTERN RED CEDAR—	0 \$49.00
Clear Quartered White Oak, 13/16x2x254"	113.50	118.50	Bevel Siding, 1/2x4 in., Clear	io 5.50
Clear Plain Red Oak, 13/16x2/4"	113.50	113.50	COMMON RRICK—	
Clear Maple, 13/16x234"	106.50	109.0 0	Per M. f. o. b. job	0 \$12.00
COMMON BRICK-	,		Bbls. in car lots to contractors, not including con-	
	\$23.75	\$24.50	tainers \$2.0	5 \$2.20
PORTLAND CEMENT—	~~ ~~	40.75	STRUCTURAL STEEL—Per 100 lbs. at warehouse\$2.9	95 \$3.05
Bbls. in car lots to contractors, delivered	\$2.75	\$2.75	CRUSHED STONE (cm. vd.)-	
Per 100 lb. at warehouse	\$3.19	\$3.2 9	% in \$3.3	
CRUSHED STONE (cu. yd.)—	** 05	** **	1½ in	7 3.00
14 in	\$2.85 2.85	\$3.00 2.90	Per 1,000 sq. ft. in lots under M	00.002
WALL BOARD—			Per 1,000 sq. ft. in lots 1 M to 25/2 M 45.0	
Per 1,000 sq. ft. in lots under 1,000 sq. ft	\$50.00	\$50.00	Sand (per cubic yard)\$3.0	00 \$3.00
Per 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft	45.00	45.00	in. Gravel (per cubic yard)	
2.3 lb26 gauge price per 100 sq. yd. delivered	\$24.00	\$26.00	11/2 in. Gravel (per cubic yard)	0 3.00
2.8 lb.—24 gauge light price per 100 sq. yd. delivered.		28.00	AM LAIMA BRIADA	
3.4 lb.—24 gauge heavy price per 100 sq. yd. delivered Add 5 cents per sq. yd. for galvanized.	28.00	30.00	ST. LOUIS PRICES	
LIME (Hydrate)—			YELLOW PINE— Boards, No. 1 Com., 1x4	0 \$44.00
Finishing, per 50 lb. bag	0.60 .49	\$0.60	Partition. 26x316. B. and Btr	io 59.50
SAND AND GRAVEL—	.47	.49	Dimension, No. 1, SISIE, Short Leaf, 2x4 in., 12 & 14 ft. 34.0	
Sand (per cubic yard)		\$1.75	Dimension, No. 1, SISIE, Short Leaf, 2x4 in., 12 & 14 ft. 34.0 Finish, S2S, B. and Btr., 1x4, 6 & 8 ft. 64.5 Flooring, B. and Btr., E. G., 1x3. 90.0	
% in. Gravel (per cubic yard)	3.00 3.00	3.00 3.0€	Flooring, B. and Btr., F. G., 1x3	0 71.50
FACE BRICK-	3.00	3.00	Lath, 4 ft., No. 1	5 7.00
Tapestry (delivered)	\$46.00	\$46.00	10 to 20 ft	0 39.50
Caledonian (delivered) Smooth Grey (delivered)	43.00 47.00	43.0∩ 47.0∩	CALIFORNIA REDWOOD—	
Fisk Lock f. o. b. factory	36.00	36.00	Finish, S2S, Cl., 1x6 in	
SHINGLES—		** **	Siding, 4 in. Bevel, 10 to 20 ft	
Asphalt, Single (per square)	7.00	\$8.2 5 7.0€	8 inch Bungalow 78.7	
STAINED WOOD SHINGLES—		7100	HARDWOODS—	
16 in. Extra Clear (per square, delivered)	\$11.00	\$11.00	Oak Flooring, 3/x13/2 and 2 in., Clear Qtr. White	
18 in. Eureka (per square, delivered)		12.0° 12.0°	RED CEDAR-	
18 in. Perfection (per square, delivered)	12.25	12.2	Siding, 1/2x6, Clear	
24 in. Imperial (per square, delivered)	12.50	12.50	Shingles, Clears, Per M	1 5.11
VITRIFIED SEWER PIPE-			Per M., f. o. b. job \$17.00	0 \$17.00
4 in. (cents per foot)	\$0.12 .18	\$0.12½ .18½	PORTLAND CEMENT—	
6 in. (cents per foot)		· ·	Bbls. in car lots to contractors, not including containers	5 \$2,35
Bangor or Slatington, 8x16 in. (per sq. at quarry)	\$8.40	\$8.4 0	STRUCTURAL STEEL—	
CORNER BEADS (Galvanized)— Per Foot	\$0.05	\$0.05	Per 100 lbs. at warehouse	\$3.15
WALL TIES (Galvanized)		40.00	% in \$2.18	\$2.25
Per Thousand	\$5.00	\$5.00	1½ in 211 WALL BOARD—	2.25
PLUE LINING— % x % in. Per Foot	\$0.30	\$0.30	Per 1,000 sq. ft. in lots under M	250.00
Mid w 11 in Per Post	.45	.45	Per 1,000 sq. ft. in lots 1 M to 23/2 M	
BOLLOW TILE— 8 H 12 x 12 in., heavy. Each, delivered	\$0.2234	.221/8	SAND AND GRAVEL— Sand (per cubic yard)	\$1.20
MAIR-			34 in. Gravel (per cubic yard)	1.45
Per Bushel	\$0.60	\$0.6 0	1½ in. Gravel (per cubic yard)	1.45

Building Age and Sand THE BUILDERS' JOURNAL



April

25 Cante

ARTHY COM



CON-JER-TEX

CANVAS ROOFING

FOR ROOFS AND PORCH FLOORS

POR sun parlors, sleeping balconies, and all flat surfaces, it is ideal. Chemically treated so that it will not crack, stretch, shrink, curl or peel. The sun and rain will not affect it—easy to keep clean.

Con-ser-tex is a business-getter, used where more expensive materials are not wanted. It stands up well under severe use, and looks attractive. Recommended by responsible builders and contractors in all parts of the United States.

It is well worth your while to write for our illustrated booklet, "Roofing Facts and Figures," and for samples.

WILLIAM L. BARRELL CO. of N. Y., Inc.

50 Leonard Street

New York City

Chicago Distributors: Geo. B. Carpenter & Co. 430-440 North Wells St. California Distributors: Waterhouse-Wilcox Co. San Francisco & Los Angeles

FLOORS

The Wood-Mosaic Kind



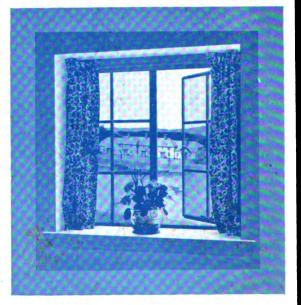
For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses: Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana

· HOPE'S · CASEMENTS



HENRY HOPE & SONS LTD 103 PARK AVENUE NEW YORK 205 YONGE STREET TORONTO

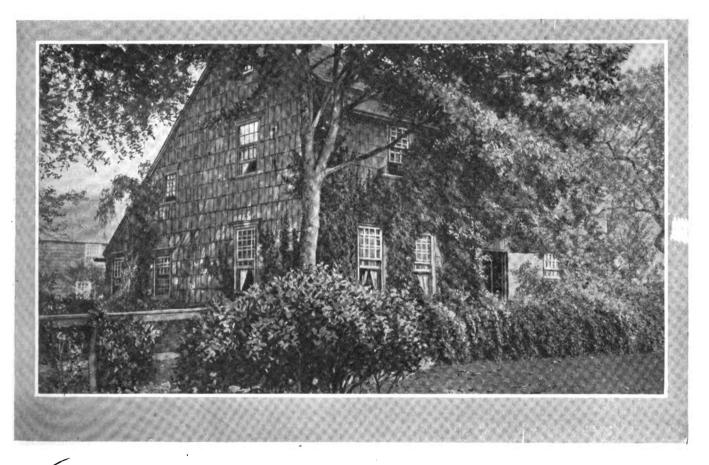
Digitized by Google

BUILDING AGE

ANI

THE BUILDERS' JOURNAL

NEW YORK, APRIL, 1923



The Best Known Home in the World

PERHAPS there is no home in all this wide world more heard of than that mentioned so affectionately in the

fectionately in the illustrious song, "Home Sweet Home." Many millions of people hum the song without knowing just how the "home" of Home, Sweet Home looked. Here Payne was born June 9, 1791.

One hundred years ago, "Home Sweet Home" was sung for the first time. The melody occurs in the second act of an opera called

The Home Immortalized in the Song
, 'HOME SWEET HOME"

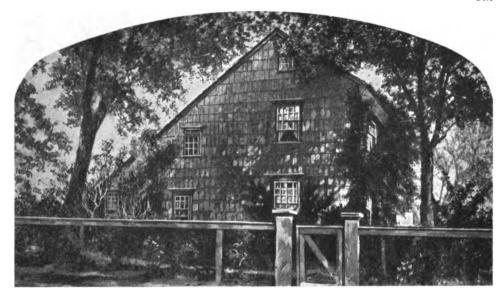
By JOHN HOWARD PAYNE

"Clari, or the Maid of Milan," first produced at Covent Garden, London, on May 8, 1823. The libretto was written by a wandering American playwright and actor, John Howard Payne, the music composed by his friend Sir Henry Bishop, and is an adaptation of an old Sicilian air. The song was first sung by Marie Tree, who en-

acted the role of a homesick maid.

The opera died and was soon forgotten, but the centenary of the song it bequeathed

is to be fittingly observed in London, England, with a commemorative ceremony. Similar exercises will be held in this country as well as in other parts of the English-speaking World. The song was adopted as the most fitting motto of this year's Own Your Home Shows in Chicago and New York. What could be more appropriate?



Winds a Long Sloping Roof on the North Side Was Provided. The Attic Space Keeping the Cold Away from Living

Payne eventually found his way back to the home of which he sang so sweetly, but he resumed his wandering and died April 8, 1852, on African soil, at Tunis, Algeria, where he had gone as American consul. Some twenty-five years later his body was removed and buried at Washington, D. C.

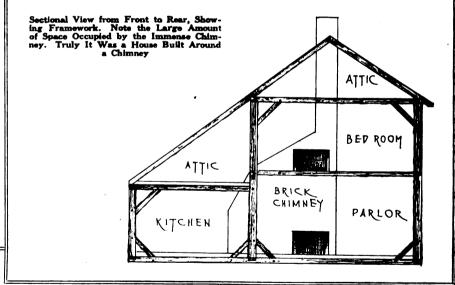
This leads us all to wonder what sort of a "home" it was that inspired a genius like Payne to produce a literary gem which has become better known than any other song.

Many a builder has used the expression of "Home Sweet Home" to further interest in home building and therefore will be interested in this little description of the "home" of the song.

Accepting the kind invitation of Mr. Gustave H. Buek, present owner of the famous home, the

Editor of Building Age, recently visited this interesting home. It is situated at Main Street, Easthampton, Long Island, 105 miles east of New York, which is now a fashionable summer resort. One side of the house faces the road, which runs north and south while

the front of the house faces south. This was done purposely by old builders and the north end of their buildings was principally roof which afforded protection against the cold north winds. The main rooms all face south to have the benefit of warmer winds. The sec-



View of the Framing from the Front, the Uprights Slope Inward

4"6" ATTIC JOICTI

8'8" POSTI

4"6" JACES.

4"6" JACES.

4"6" JACES.

ond floor rooms are protected by an attic on their north side. This old house is almost square in shape being 31 x 38 feet in size, the lines are pleasing and certain details of window and door trim, also front cornice show architectural merit.

This historic house was built in 1660 by a well-to-do whaler in a community founded by English settlers who called their village "Maidstone" after the English town from which they emigrated. Just by whom it was erected is un-

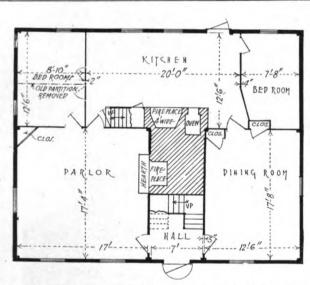
Home Sweet Home

By JOHN HOWARD PAYNE

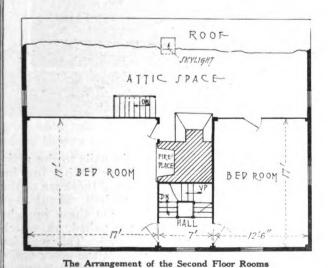
Mid pleasures and palaces though we may roam, Be it ever so humble, there's no place like home. A charm from the skies seems to hallow us there

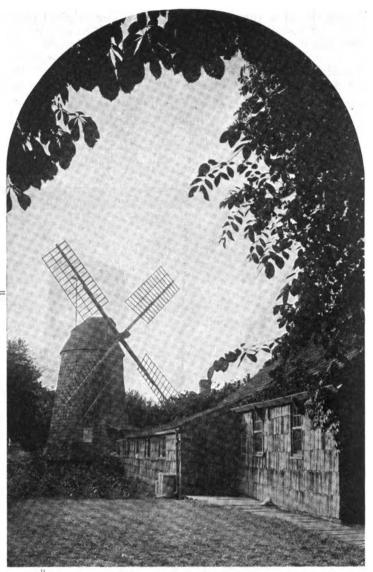
Which seek through the world, is ne'er met with elsewhere.

Home, Home, Home Sweet Home! There's no place like home! Oh! there's no place like home!



Plan Showing Arrangement of First Floor. Originally Two Small Bedrooms Were in the Rear of Parlor. Later the Partition Was Removed, Making One Large Room.





Rear View of Old Payne House, Showing Old Windmill Built in 1770 and Still in Good Working Condition. The Rear Addition Was Built 15 Years Ago—Old Details and Old Materials Cunningly Handled Preserve All the Charm of the Old Building.

I gaze on the moon as I tread the drear wild And feel that my mother now thinks of her child As she looks on that moon from our own cottage door

Thro the woodbine whose fragrance shall cheer me no more

Home, Home, Home Sweet Home! There's no place like home! Oh! there's no place like home!

An exile from home splendor dazzles in vain
Oh! give me my lowly thatched cottage again.
The birds singing gaily, that came at my call
Give me them and that peace of mind dearer
than all

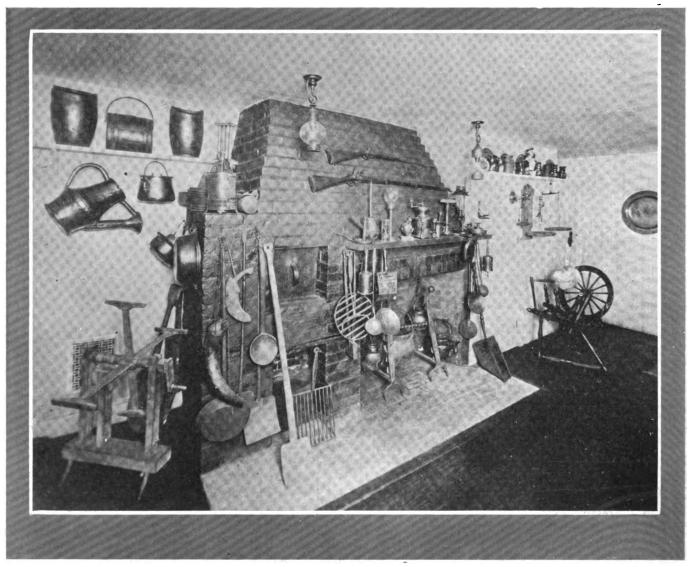
Home, Home, Home Sweet Home! There's no place like home! Oh! there's no place like home! known, but the suppostion is that it was constructed by some ship carpenters as the paneling of the parlor or sitting room somewhat resembles the panelwork used in cabins of old sailing vessels.

At the time this house was built it was considered quite a mansion, and even when Payne's father bought the property, it was one of the showplaces of Easthampton.

The original front entrance door is still in use, it is simply made of two thicknesses of 1½-inch thick boards fastened together with hand wrought nails. The front step is half of a granite mill stone.

The construction of the house is most interesting. It's frame is of heavy oak arranged as our illustration shows, and fastened together with oak pins; no nails whatever As the house was built in a location where cedar trees and small pines grew in profusion, but no tall oaks, therefore the oak timbers used for framing were evidently transported by water to this location. The timbers are rough hewn but shaped square.

The interior wall construction is quite curious; big wide boards were run vertically and fastened



View of the Kitchen, Showing the Interesting Brick Open Fireplace and Oven.

The parents of John Howard Payne, were quite well-to-do and no doubt many visitors called at this house. John was one of seven children, so it is certain he had a very happy boyhood playing around the old homestead with the Atlantic Ocean only a few minutes walk away. The old windmill of which we show a picture must also have been a "hang out" for boys.

were used in the framework. The sills were laid on top of a stone foundation.

The corner posts, etc., unlike our modern construction, are not perpendicular, but slope slightly inward in pyramid fashion. The idea of the old builders being to have it strong enough to resist high winds.

by hand-wrought nails to the main framework. There are but few intervening studs and these are of the rough hewn variety, about 4x4 inches in size. On these upright boards, laths are nailed, on which plaster was applied. This was for the construction of the outer walls and some interior partitions, most of these, however, are of wood. The outside frame was sheathed with

boards about 1-1/4 inches thick, over which are split cedar shingles.

Two inner walls of the sitting room are of panelled woodwork which was evidently removed from some old sailing vessel or built by some ship carpenters. It is about 134 inches thick with molded panels and forms a rather impressive wall surface for the "setten" room. The two outside walls of this room were plastered. Floors are of wide 18 to 22 inch boards.

The rafters are about $4\frac{1}{2}x6$ inches roughly hewn cedar and oak and have been framed without a ridge. Two adjoining rafters are halved at the upper end and an oak pin about an inch in diameter holds them together. Rough boards about an inch thick and varying in width form the roof sheathing, over which shingles were laid.

THE first view of this old home of Payne is deceiving, as one thinks of it as a small house, while it is of considerable size, and its entire arrangement of rooms is very convenient. An examination of the plans and of sectional views disclose a large amount of space taken by the massive chimney. It is a house built around a chimney rather than a house with a chimney as is our fashion today. We must remember that this house was built before stoves were used.

The sitting room has a large fireplace with quite an artistic panelled mantel. The open fireplace of the second floor bedroom has a hearth raised about six inches above the floor and projecting about four inches from the face of the wall. This hearth is surrounded by a hearth strip, cut out and molded from one solid piece of timber, and it is an interesting example of how an old time carpenter and builder did his work.

The exterior of the house is covered with split cedar shingles and while those on the house are very old, it is probable that at some time new shingles have been applied. Some of the shingles the writer examined were so weathered that only half of their original thickness remained.

As already pointed out, the framing is somewhat peculiar to our modern way of thinking, 4x6-inch joists have been used for the floors and spaced about three feet or more on centers with a span 17 feet.

Unfortunately, in our country, we have lost many of the homes of our great men and women and a like fate almost overtook the Payne home as well. Some 15 years ago the property was owned by a church at Easthampton, and as the old building looked decrepit and neglected, it was thought best to demolish it. It was at this stage that a New York business man, Mr. Gustave H. Buek, an admirer of Payne, bought the property and transformed it into a summer home for his own occupancy.

It was with loving care and artistic discretion that he started the work of restoring, and this work was carried out in a manner that will interest every builder. The idea was not to "remodel the house," but restore it to its original state at the time Payne dwelt there. Modern improvements were added to make the home perfectly inhabitable according to modern standards of living. In carrying out this work, all of the old woodwork was carefully gone over and such parts of the panelwork, window framework, etc., that were broken or rotted were carefully pieced out and repaired. The first floor was in such a bad condition it needed replacing, but the original floor remains on the second floor.

A HOT air heating system was added, as registers would give the least disfigurement to the rooms. Old Colonial and Puritan candle holders and chandeliers were carefully wired for electricity. A modern bathroom was installed on the second floor in the attic space, etc.

To make it suitable as a modern home, Mr. Buek built on an addition and extended it towards the rear and side of the old house and this addition contains a good sized modern kitchen, pantry, servant's dining room, two servants' bedrooms and servant's bathroom.

Being the work of a true artist with a love of the fitness of things, this annex to the house has been built so that it looks exactly as if erected with the original home.

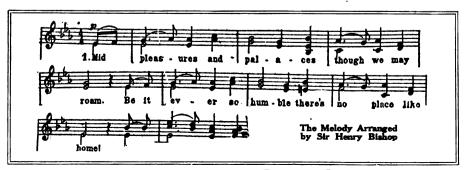
Even the garden is laid out and planted as was the custom in Payne's time. The house itself is partly covered with purple wisteria. Honeysuckle forms a sweet smelling hedge in front of the house while towards the road there is an oval bed of pink phlox.

No one would be more surprised than Payne if he was to walk back into his old home and see the modern comforts of today that have been added without even in one bit detracting from the old charm. The restoration work has been very carefully and faithfully carried out, preserving the quaintness of the old original home and is a credit to the owner, as well as the mechanics employed to carry out the work.

The house as it now stands is the private summer home of Mr. and Mrs. Gustave H. Buek, and it houses the most complete collection of Payne relics to be found, consisting of paintings, engravings, copies of play bills, and letters written by Payne, different letters and notes regarding Payne, etc.

The owners of the nome have been interested collectors of early American furniture, old china, pewter and glassware, and this home forms a fitting setting for such a valuable collection.

BUILDING a home is the biggest job of mankind. What influence a house will have on the occupants is hard to tell in advance. There is always considerable interest in looking over the homes of men and women who have become famous, so as to get an idea of the environment they lived in. Here then is the "home" that inspired Payne to compose "Home, Sweet Home."



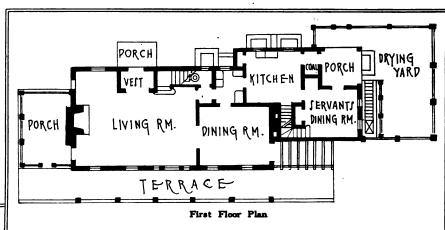


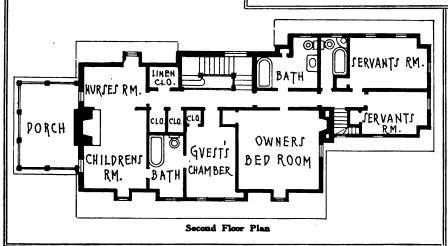
The Well Bal anced Lines of This Dutch Co lonial Home Mass Well Against a Wooded Slope is the Rear of the

Dutch Colonial Home

JOHN GRAHAM, Jr.

Architect





HE Dutch Colonial is a most favorite style in Pennsylvania for home building; and the house pictured is a most interesting example of that type of our domestic architecture. This house was built for Mr. Robert L. Wood at Chestnut Hill, Pa., and is situated in a plot containing five acres, located in the picturesque Whitemarsh Valley on the north side of Chestnut Hill. It was shown on the cover of our February issue.

The room arrangement is worthy of special note, as con-

siderable attention was given by the architect to their careful planning so as to suit the owner's particular needs. The main entrance is situated towards what is in reality the rear. Here one enters directly from a vestibule into the large living room, there being no separate hallway. The stairway itself has been properly made use of to form an impressive and decorative part of the living room.

The exterior of this house is covered with wide shingles painted white. The stone chimney has been whitewashed and this has been allowed to weather, which produces a charming effect that is characteristic to so many Dutch Colonial designs.

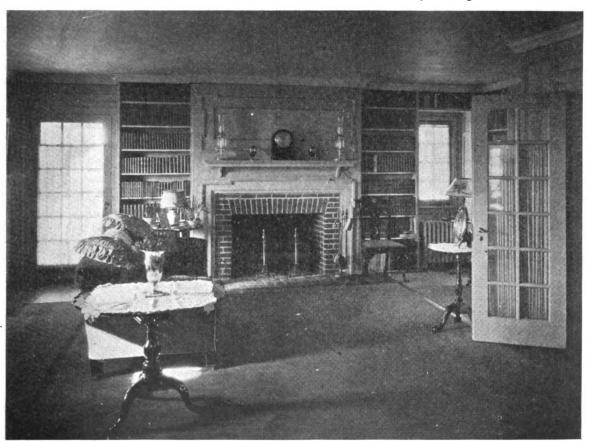
The dormer treatment is somewhat unusual: here two single dormers with gable ends have been placed separately alongside of a triple dormer with plain sloping roof.

Shutters are used on many of the windows with artistic effect as these are painted green and give a touch of color here and there to the white wall surface. The roof is of shingles, left unstained to weather naturally.

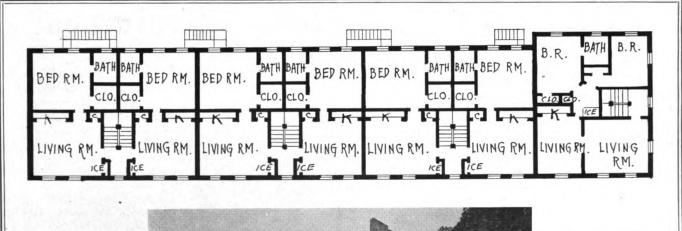
There is but little waste space in the house, considerable cleverness having been shown in utilizing every corner and angle. One feature that is much appreciated is the closed in sun porch, the glass extending right down to porch floor, and this is removable for summer use.



View of the Stairway in Living Room



A View of the Living Room Showing Fireplace and Built-in Beakcase. Observé How Panelwork Cernera, Etc., Have Been Carried Out.



THIS is the era for compactness, and in every house there is developing a need for space saving devices, especially so in modern apartment houses.

In the interesting apartment house design illustrated herewith, the majority of apartments consist of only two rooms, but they have the conveniences of four rooms. This apartment house was recently erected for Mr. H. C. Buck at Hartford, Conn.

The feature that has made this arrangement possible is the tabloid kitchen tucked away in

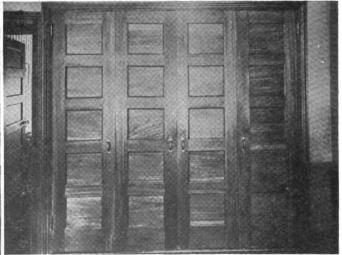


Kitchen in a Closet for Small Apartments

a closet marked "K" on the plans. As will be noticed by the illustration, this is a complete kitchen outfit placed in a living room. When it is desired to preserve the living room appearance, all that is necessary to do is to close the double two fold door. This living room also serves as the dining room.

The exterior design of this apartment house is worthy of special commendation. It follows the New England Colonial brick type which was so popular about 100 years ago in Southern New England.





How to Sell Good Home Construction to the Prospective Owner

'N this issue we describe different methods of construction L used in building modern homes with the idea that the pages of this issue can be used a sort of text book or catalog, as it were, for the builder to show to prospective home owners. The builder will have some useful diagrams on hand and he can explain the different points to Mr. and Mrs. Home Owner.

The contractor can go through this issue and explain that here is a house built of frame covered with clapboards or shingles—also how, at but slight extra cost, this exterior can be covered with stucco or brick veneer, then he may take up the interior of the house and tell that at but slight extra expense metal lath can be used to great advantage, if not in every place, in several vital spots, etc., etc.

Now, if the intending home owner desires a brick or hollow tile house, this can be fully gone into and the illustrations in this issue will show how this is accomplished. Mr. Prospect may have the money to spend to make the house practically fire safe, in which case strong fireproof floors may be had at a really reasonable figure by using light steel joists which receive a light reinforced concrete The different illustrations show how this can be done and the contractor is in a position to explain each point and give the home owners just exactly the sort of house that they want, both as regards to construction and price.

Unfortunately, most people buy houses in the manner of the man who ordered a blue automobile. They purchase almost wholly on outward appearances, so far as the physical condition of the property is comcerned. Paint, varnish and newn ess sell many houses. Very few purchasers concern themselves with the invisible construction of a house or with external evidences of the nature of the internal work. Yet what is not seen largely determines the future value of the property, the cost of upkeen and the satisfaction of the owner. The

true nature of the construction.

Yet it is not difficult for a homebuyer to find out whether the house is of proper and suitable materials and correct methods of construction, says the technical department of the National Lumber Manufacturers' Association in answer to inquiries. The best way, of course, is to have the house inspected by some competent person, but there are certain fundamentals which anyone may apply for himself with the probability of being guided to a correct determination of the intrinsic value of a house. Nobody wants to buy a house that will soon develop cracked plaster, sagging doors, jamming windows, floors that spring and creak, unsightly open joints in woodwork and spaces between casings, baseboard and floors; leaky roofs, unsightly sagging porches, and leaky or spilling gutters, swayback gables, etc.

A Good Foundation

To insure against these annoying developments the foundation first should be carefully examined, for any settling or cracking there is certain to be reflected in the superstructure no matter how good. The footing of the foundation should be wider than the foundation itself and should be placed below the frost line. If the foundation is not a single unit, such as poured concrete, it should be carefully inspected to insure that it is of good materials well put together.

Posts Are Important

About half the weight of a building is carried on the posts, which should rest on piers. The posts support a girder on which the inner ends of floor joists rest, as well as the partitions which carry the upper floors of the house. The piers should be higher than the basement floor in order to prevent rot if the basement should be damp. Often the concrete of the floor is run up around the bases of the posts, thus sealing up the end and creating a favorable condition for

passing years inevitably reveal the dry-rot. In either case the post will eventually settle with un-pleasant results. The piers should be carefully made, flat on the bottom and of adequate bearing surface on the soil underneath.

Floor Construction

Most houses are safe enough so far as the floor supports are concerned, but the floor should be rigid and stiff to prevent cracking plaster, sagging or spring and creaking floors. Joists are commonly strong enough for this purpose, so the stiffness is the main factor to be considered. The determination of this will probably require some expert advice, though walking or stamping on the floor will often reveal a weakness.

The joists should have uniform bearings where they enter masonry walls, otherwise uneven settling will follow with humpy floors and loosened nails. Where joists are not of a single timber the two pieces making them up should be well and strongly spiked together. Joists should be anchored to masonry walls about every fourth or fifth joist with T-shaped metal straps nailed to the side of the joist near the bottom, with the top of the T built into the wall. This ties the building together. Placing the metal strap near the bottom of the joist is a precaution in case of fire, so that a burned through joist will fall against the wall instead of pulling the wall down with it.

When joists enter stud walls and are supported by a ribbon, that is, a board notched in the edges of the stud, they should be well spiked to the studs also. A feature of floor construction that is hidden in upper floors but is usually in evidence underneath the ground floor is the cross-bridging or diagonal the joists. bracing between This bracing keeps the joists in alignment. If a joist is not thus supported by its fellows it may tilt or bend, and cause cracked plaster below and a sagging and squeaking floor above. If floors do not sag spaces will not be opened up between baseboards, casings and floors.

Cut-offs and Holes in Joists

Floor joists are often weakened through cutting or boring holes in them to make room for plumbing or some other mechanical equipment. Such cuts should not be deeper than one-fifth the depth of the joist below the top, and the center of a hole should not be more than the same distance from the top. These openings should be near the end of the beam and never further from the end than three times its depth.

Where joists are cut off to make openings for stairways, etc., the joists along the side of the openings should be doubled and the loose ends of the cut joists spiked to a "header" which runs across the opening to the two double joists. The headers should be of the same depth as the joists and of at least double thickness. Headers that are more than eight feet long should be supported at their ends by metal stirrups from the trimmer or doubled joists.

Bearing Partitions

On account of the arrangement of rooms above it is often necessary to have the joists support what are called bearing partitions, which support part of the weight of the upper floors and other construction above them, as well as acting as room walls. Such partitions, if possible, should always be in the same vertical plane with like partitions above or below. lowest one should always be directly over the girder in the basement. If partitions must rest on joists, the one immediately below such a partition should be doubled, if the partition is parallel. In case such a partition is to enclose pipes the double joists are placed two or three inches apart and connected with well nailed blocking except where the pipe is to pass.

When bearing partitions run across the joists, which is not often solid bridging of the same size as the joists should unite them directly beneath, and the joists should be larger, doubled or placed closer together. In this connection it should be noted that it is better to increase the depths of the joists rather than to double them.

All bearing partitions that support partitions above should have

double plates across the top of the studs and also at the bottom unless the studs run down between the joists and rest on the top plate of a bearing partition below. They should have horizontal braces or bridging placed between the studs midway between the floor and ceiling. If more than the weight of the two floors is carried by such a stud partition the members of the partition should be increased in size.

Equalizing Shrinkage

The shrinkage of wood cannot be entirely eliminated, but it can be equalized so that little harm will result. It shrinks more across the grain than with it, so the amount of lumber with the grain horizontal should be as nearly equal as possible in different parts of the building. A better way to put it would be to say that the horizontal grain pieces in a cross-section of the outside walls and of the bearing partitions should be the same—so that their shrinkage will be equal, thus maintaining their original relations.

Walls and Superstructures

Though a good foundation is fundamental it can be negatived by a poor frame, especially in the portions that support weight or resist the pressure of wind. Plenty of windows are needed, but each window necessitates a hole in the wall that weakens it unless compensated for. This is done by proper framing of the openings. Their side studs should be doubled and a double piece should be placed across the top and bottom of the opening. If the opening is more than three feet wide it should be trussed across the top.

The carpenter knows how to do it, and will do it if you insist. Narrow openings can be taken care of by headers, similar to those mentioned above. If these openings as well as those for interior doors are not substantially framed, binding or warped window and door frames will result, necessitating replastering and redecorating in correcting. If a wall with a poorly framed opening supports joists the floors will sag.

Watch the Roof

It is sometimes said that the main purpose of a building is to

support a roof. Anyway, a house without a roof is not much, and one with a poor roof is little better. It is highly important that the pitch or slope be ample for drainage. If the gutters are placed too high on a roof without sufficient pitch they will become clogged up with snow and ice in the winter and water will back up under the roof covering, rotting the roof boards and ruining the ceilings.

It is exceedingly important that the rafters be strong enough to make a good job of holding up the roof. The writer recently examined a house for a prospective buyer that was so deficient in this respect as to be pathetic and perhaps tragic. It is typical of jerry-built houses everywhere, whose sad appearance after a few years is charged to careless if not fraudulent work.

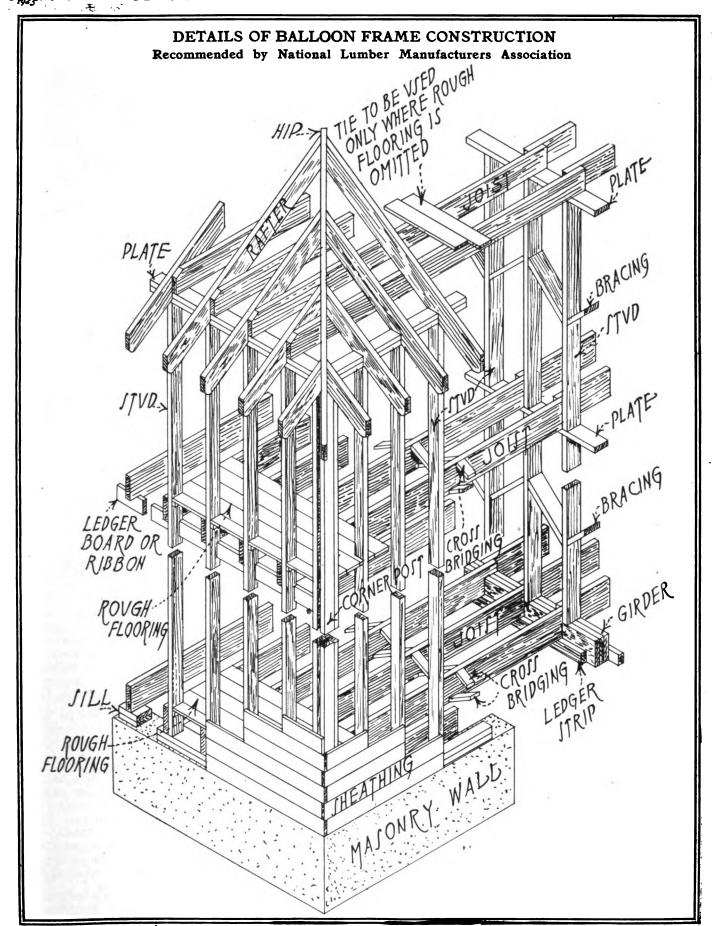
In this particular house the individual rafters were not stiff enough and were sway-backed and sagging and there were not enough of them, that is, they were too far apart. In the ordinary frame house rafters should be not more than twenty inches apart.

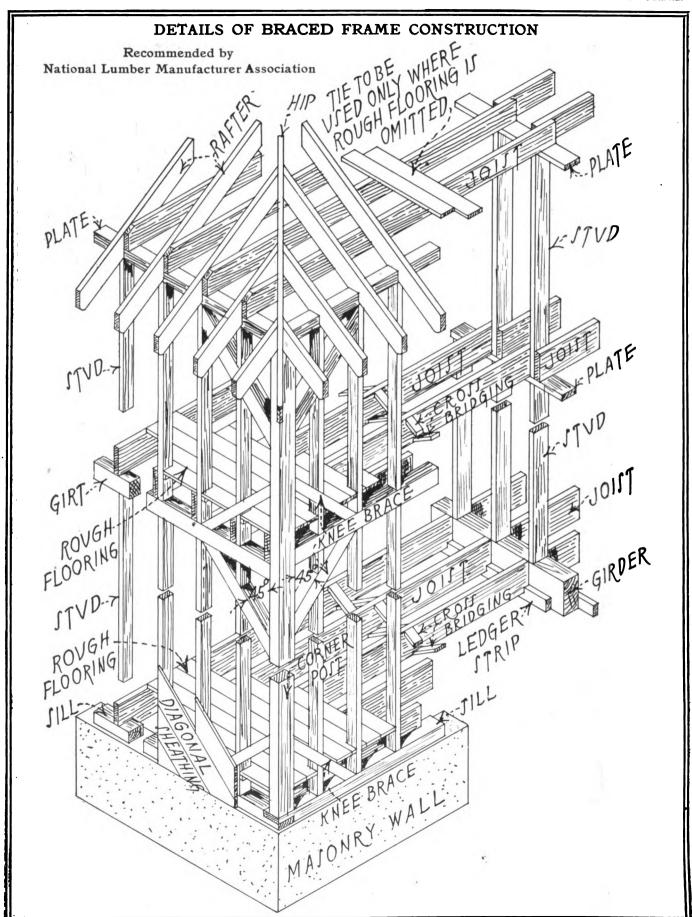
It is generally best practice to space rafters the same as studding and joists so each rafter end will have a solid support.

Instead of resting on the outside walls, as they should, the rafters in this case were supported by thin boards laid across the tops of the ceiling joists, and only about one rafter in four rested on anything solid underneath, the rest of them being spaced between joists. The roof covering was of slate and was heavy enough to bend the thin boards with the result that the eaves were as wavy as the edge of a bread knife, the ridge humped and the slate cracked and falling off. And this house had been completed within a month! It was brand new, but already falling Good construction pays. down. Builders impress this fact on your prospects. Don't do a "cheap" job because the owner will not pay for a good one. It will pay you to lose the profit on such a job, for as surely as you do such a job and it shows up poorly after a short time You will be blamed—not the owner.



APRIL





How to Make More Sales by Putting on a "New Homes Week"

By FRANK H. WILLIAMS

VERY new home erected in a city is a booster for every builder in the city for there is nothing that acts so powerfully in stimulating people toward erecting homes as the sight of new structures put up by other residents of their home town.

Consequently the wise builders of a city will use every new home in the city as a sales argument in getting prospects to put up new houses.

And one of the very best ways to use the new homes of a city for this purpose would be by getting all the new home owners to co-operate with the city's builders in staging a "New Homes Week," during which many of the homes could be open for inspection at certain times and during which there would be a down-town display of photos and building plans, building materials and so on. During the week, of course, there would be a great amount of publicity in the newspapers for the event and every builder in the city would make a special effort to interest people in a new house and to sign up contracts for the construction of new homes.

Or, if all the builders in the city didn't care to combine in putting over an affair of this sort, an individual builder might put on a "Smith New Homes Week," or whatever his name might be and he could make this week as successful for himself in getting prospects and business as the bigger week would be in which all of the builders would combine.

Let us see just how the individual builder could go about doing this highly desirable thing.

It should be stated at the very outset that a highly important phase of putting over this proposition is that the builder have some new houses which he has recently constructed. If he hasn't any new houses to display, then he is out of luck and this stunt is not for him until he has some such homes.

Granted, then, that the builder has a number of new homes about the

city he could announce his special week, after making the necessary arrangements with the home owners, with a newspaper advertisement reading about as follows:

"ANNOUNCING "SMITH NEW HOMES WEEK"

URING all of next week a number of the very handsome new homes recently erected by A. J. Smith, of this city, will be open at certain hours for the inspection of friends and interested people. These homes are among the best in the city and have aroused a great amount of interest among all classes of people and it is certain that many people will gladly avail themselves of this exceptional opportunity for inspecting these All that is needed in structures. order to inspect the homes is to call up Mr. Smith and inform him that you wish to inspect the homes and he will then come and get you and take you out.

"Also during the week there will be a display in the vacant store room at 918 Calhoun Street, of the original plans used in the construction of these homes, photos of the interiors of the homes showing the sort of interior decoration used with very good effect, estimates of the cost of putting up similar homes, resumes of the time consumed in the construction of the houses and so on.

"Notice on the map appearing with this advertisement just where the new homes recently constructed by Mr. Smith are located. Notice that the locations of these Smith homes are indicated by numbered dots and notice that under the map the names of the home owners are given together with the street addresses of the homes, and the type and size of the houses.

"Refer to this map. Pick out the homes you want to visit and then call up Mr. Smith and find out when you can make the inspection.

"Remember that all of next week will be observed as 'Smith New

Homes Week' and remember, too, that a special inducement of a credit slip of \$100 will be given by Mr. Smith to every person who buys a new home from him during the week."

Of course this sort of thing would attract a very considerable amount of attention and while there might not be an overwhelmingly large number of people who called up the builder and asked to inspect the interiors of some of the homes he had constructed, there would be a sufficient number of them do so to make this phase of the proposition very worth while.

THEN the staging of a display of plans and photos in a vacant downtown store room would be a very excellent booster for the builder, because people are always interested in plans of houses and in pictures of houses. This exhibition would be certain to draw a large number of people and would also be certain to be a big help to the dealer in lining up prospects and in closing sales.

In addition to the things which have been suggested above as being appropriate for the builder to include in his vacant store room display it might be a good idea for the builder to secure the co-operation of a furniture merchant, electrical appliance merchant, and landscape gardener in also making displays in the store at the same time.

The furniture dealer could have a display showing how he co-operates with the builder in getting the right sort of furniture for the type of houses the builder is erecting. And the furniture dealer might show samples of the same sort of furniture as is shown in some of the photos on exhibition.

The electrical appliance dealer might show some of the appliances which he has sold in the largest quantities to the people who have bought the builder's homes and might also show how he studies the builder's plans in order to see just where his appliances can be located in the homes to the very hest advantage.

The landscape gardener might point out in the photos some of the things he has done toward beautifying the homes put up by the builder and might show sketches and samples of shrubbery and so on which would be suitable for use around other homes as well.

Of course, all of these merchants who combined with the builder in making a big success of the "Smith New Homes Week," would do some advertising for the event in which they would tell people about the exhibition and in which they would urge folks to attend the affair and all this would give the builder some very desirable publicity and would help the thing along. The landscape gar-

dener, in particular, might call attention in his advertising to the Smith homes for which he has furnished shrubberry, seeds, etc., and might comment on the very attractive appearance of all of the Smith homes and this would be a decided boost for the builder.

In connection with all this it would be up to the dealer to stage a very intensive sales campaign during the time of his exhibition. It would be up to him to get in touch with all of his prospects who were hanging fire and to get them around to various homes for inspection purposes and to get them to visit the down-town exhibition. Also it would be up to him to have a competent and attractive girl on hand at the down-town store exhibition, for the purpose of getting the names of all the people who came to the display. Then, of course, it

would be up to him to follow up the names of the individuals coming to the display for the purpose of seeing whether or not they were real prospects.

It would be a good plan for the builder to run newspaper advertising all during the week of the event and to also send out direct mail advertising to people who should be interested in the affair and so on. Undoubtedly, too, the newspapers would give him some free news write-ups on the event. And all this would combine in giving him a tremendous amount of highly desirable publicity which would be splendidly effective in helping him get more prospects and in making more sales.

Put on a new homes week in the manner indicated in this article and boost business accordingly. And—Do It Now.

The Government's Aid to Building

Recommend Building Code and Standardization of Sizes
Will Result in More Economical Construction

▶ HE shortage of some 1,000,000 dwellings as a result of suspended construction during the war led to widespread demand for Federal legislation and assistance. Under an appropriation from Congress an investigation of the situation and possible remedies was made by the U.S. Department of Commerce. During the process of the inquiry numerous conferences were held with the various branches of the building industry and with representatives of municipal and civic bodies. It appeared that the retardation was due to (a) the acute credit situation; (b) high prices of material and labor; (c) unsavory business ethics in certain localities; (d) wasteful practices in their contribution to costs.

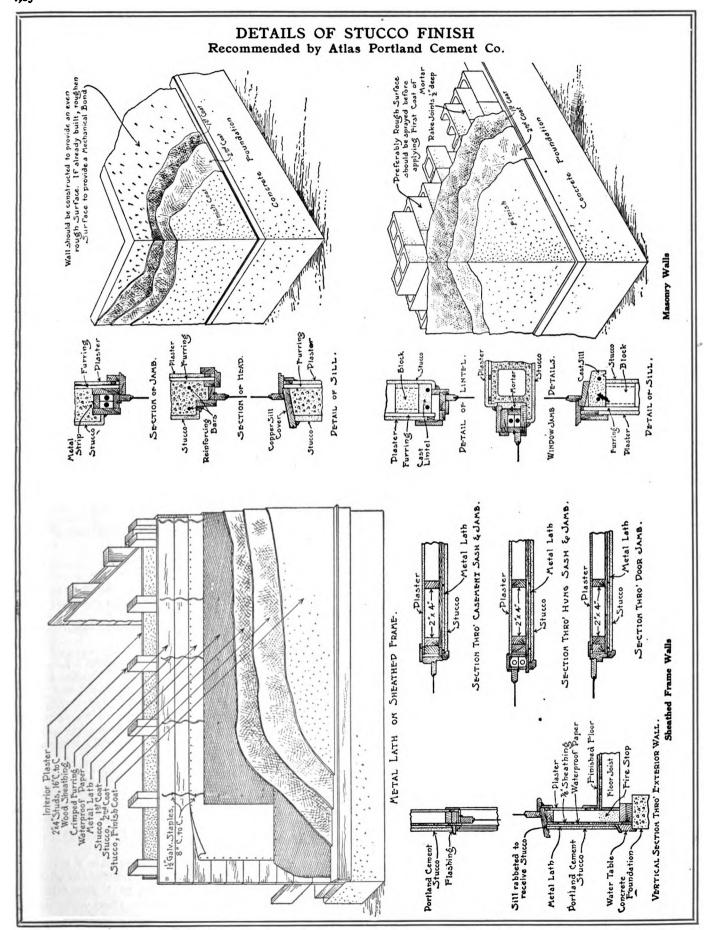
It was concluded that the first two causes would in the main cure themselves by the general fall in prices then in progress. The third could only be cured by vigorous action of the Federal and State authorities, a large measure of which has been accomplished. It was concluded that emergency legislation or Government finance was not desirable and that, except for a vigorous support of the

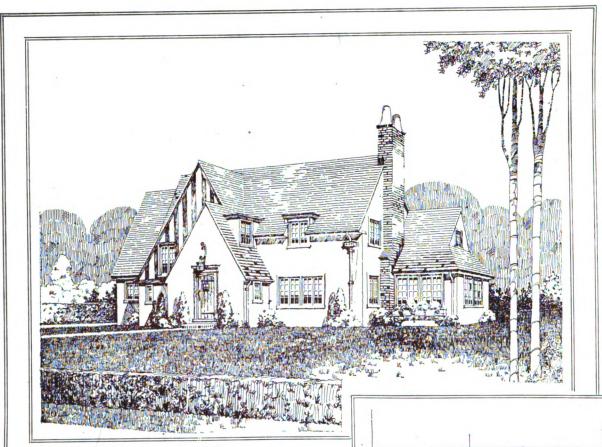
purely co-operative service indicated below, the Government should keep out of the housing business.

It was considered on all sides that real service could be accomplished in a general aid by the department to the creation of, and assistance to, the already existing voluntary bodies permanently engaged in developing home ownership. A small division was created in the department the purpose of which was to stimulate such local activity by acting as a clearing house of ideas and information. One result has been the creation of voluntary bureaus in many municipalities for advancement of home ownership and where advice on finance and aid by furnishing designs and specifications of small houses could be obtained at a nominal

Systematic measures of co-operation were set in motion in trade and civic bodies for the eliminating of waste in various directions, and thus a reduction of construction costs. Typical among the latter activities was the appointment of a committee from representatives of the important professional and civic associations to

formulate a standard building code, as it was the general consensus of opinion that the varying regulations in force in hundreds of different municipalities, founded as they were without scientific study, had imposed an unnecessary cost upon building of from 10 to 20 per cent. Before the drafting of the recommended code for small houses, a large amount of experimental work was carried on in the Bureau of Standards, and suggestions obtained from over 100 different municipalities. A tentative draft was then submitted to some 975 engineers, architects, municipal officials. and representatives of the building industry, whose useful criticisms were incorporated in the final draft. The code is already being adopted in some municipalities. Work in elimination of waste, in advancing voluntary standardization and inspection of qualities and grades, in elimination of unnecessary variation of dimensions of building material, and in the simplification of specifications have been undertaken by experts from the department at the request of and acting in co-operation with building material, contractors', and consumers' associations, with gratifying results.





Specially
Designed for
BUILDING
AGE
and The
BUILDERS*
JOURNAL

Together with Construction Details

A Livable Home of English Design

R. C. HUNTER & BRO.

Architects

HIS house avoids the commonplace in design; in every detail it shows unusual character; it is a house that would stand out in distinction from its neighbors.

Yet there is nothing freakish about the design. It is, throughout, in the best of taste and, at the same time, it is unusual. It follows along the Old English cottage type of architecture.

The roof is handled so that a very pleasing variety in form and outline is obtained. The entrance gable has the roof brought down to the tops of the first story windows, and the plain stucco walls of this gable form a fitting setting for the heavy doorway. The half-timbered gable gives an attractive variety.

The walls of the house are finished in stucco, preferably cream colored; the roof is of slate in various colors and sizes in regular Old English style. The chimney is hard burned red brick, and the timber work, window frames, etc., should be stained a weathered gray, preferably quite dark. This would give a pleasing color combination that would be quite in keeping with the design.

The plans of this house present a livable arrangement of good sized rooms, the result of thorough study on the part of the architects. All windows are of the casement type.

The necessary coat closet and the very desirable toilet room are provided near the entrance door, where they are most convenient. A small stair hall gives entrance to the living room and the dining room and provides the stairway. Steps from the main stair platform to the kitchen (with a door) eliminates the necessity for a separate service stairway.

On the second floor, three good sized bedrooms are well laid out. A large bathroom is provided and there are plenty of closets. A stairway leads from the second floor to a generous attic. A cellar is provided under the entire house.

This house should have a lot with seventy-five feet frontage, to give it a proper setting, as is interestingly shown on another page. The estimated cost is about \$12,800.

Quantity Survey of English Home

Featured in this Issue

HE quantities given are for estimating. All measurements are NET unless otherwise noted; areas given for such items as sheathing, floorings, etc., are net areas to be covered, with no allowance for matching, waste, etc. Minor outs have been disregarded.

Such items as clearing site, temporary work and protection, scaffolding and general equipment and supplies, have not been included.

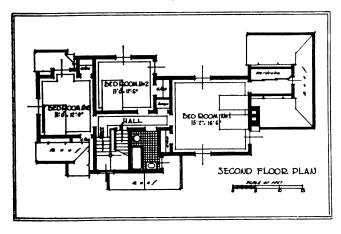
Such items as are marked "Unit," are to be estimated in a lump sum, following requirements of plans and specifications.

EXCAVATION

(Excavating for pipe trenches not included)

Excavation for cellar	300 cu. yds.
Excavation for footings	18 cu. yds.
Excavation for areas	7 cu. yds.
Excavation for trench walls	16 cu. yds.
Excavation for leader drains and dry wells	24 cu. yds.
Backfilling around walls, etc	50 cu. yds.
Leader drains and dry wells.	
Field stone for dry wells	18 cu. yds.
4 in. salt glazed tile drain pipe	72 lin. ft.
4 in. elbows	10

MASONRY			
Concrete for cellar walls	1035	cu.	ft.
Concrete for footings	235	cu.	it.
Concrete for trench walls	213	cu.	ft.
Cellar floor (3 in. concrete and 1 in. cement finish)	770	sq.	ft.
Outside cellar steps (conc. cement faced)	40	sq.	ft.
Area bottoms (brick and sand)	44	sq.	ft.
Porch floors (12 in. cinders, 3 in. concrete and			
1 in. cement finish, colored and blocked off)		sq.	
Concrete forms	3300	sq.	ft.
Pointing cellar window sills		lin.	ft.



PLASTERING

Three coat patent plaster on metal lath.	
Gross	830 sq. yds.
Net	650 sq. yds.
G. I. corner beads	130 lin. ft.
Stucco on metal or special wood lath.	000 1
Gross	
Net	218 sq. yds.
TILE WORK	
Tile work for bath rooms and toilet.	
Floor (1 in. hex. white)	74 sq. ft.
Wainscot (3 in. x 6 in. white wall tile)	168 sq. ft.
6 in. sanitary base	37 lin. ft.
Moulded cap	46 lin. ft.
Built-in tile accessories	7

BRICK WORK

Common brick work for chimney (or 3 M).. 146 cu. ft.

common brick work for channely (or o bij)	I TO CU. IL
Common brick work for areas (or 1.5 M)	72 cu. ft.
Face brick for hearth and jambs (or 105 brk.)	15 sq. ft.
Fire brick for fireplace (or 100 bricks)	20 sq. ft.
Face brick for porch borders, etc. (or 200 bk.)	40 lin. ft.
8 in. x 12 in. T. C. flue lining	64 lin. ft.
2 in bluestone chimner and	07 1111. 11.
3 in. bluestone chimney cap.	4 77 %
2 ft. 8 in. x 4 ft. 4 in.)	1 Unit
T. C. Chimney pots.	_
T. C. Chimney pots. 16 in. dia. x 2 ft. 6 in. high	1
14 in. dia. x 2 tt. 0 in. high	1
Coal chute, 18 in. dia. tile pipe	2 lin. ft.
Elbow	1
MASON'S IRON WORK	
Fireplace damper.	
(3 ft. 0 in. opg. with throat, etc.)	1 Unit.
C. I. ash dump	1 Unit.
C. I. cleanout door for ash pit (16 in. x 12 in.)	1 Unit.
C. I. cleanout door for boiler flue.	
(8 in. x 8 in.)	1 Unit.
Thimble for boiler flue	1 Unit.
3 in. bell traps and drains for areas	4
18 in. dia. cast iron coal hole cover and frame.	ĭ
	1
SHEET METAL WORK	
Metal roofs	160 sq. ft.
Flashing for roofs, etc	90 lin. ft
Copper flashing & counterflashing for chimney	18 lin. ft.
Valley lining & counternashing for chilling	100 lin. ft.
Valley lining	100 lin. It.
Flashing for cornice returns	10 lin. ft
3 in. zinc leaders	110 lin. ft.
Ornamental zinc heads	1
Bends for leaders	19
Gutter thimbles	18
4 in. moulded zinc hanging gutter	112 lin. ft.
3 in. x 4 in. G. I. gas range vent	22 lin. ft.
Cap and thimble for same	1

CARPENTRY

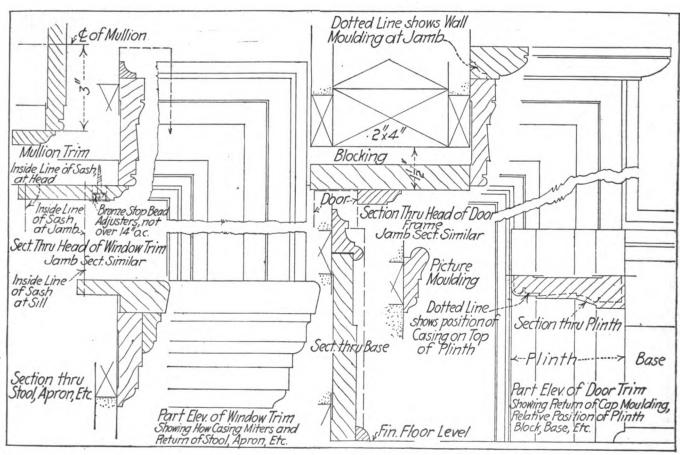
19.4 squares

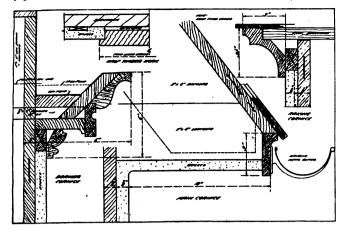
Slate roofing with felt.....

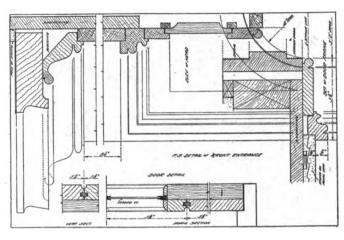
(All timber No. 1 common stock, hemloc unless noted.)	k, rough
Cellar girders, 6 in. x 10 in. spruce—1/14, 1/12	130 F. B. M.
2 in. x 3 in. nailer—52 lin. ft	26 F. B. M.
Cilla A in 6 in 12/16	
Sills, 4 in. x 6 in.—13/16	416 F. B. M.
Posts, 4 in. x 6 in.—6/16, 10/10	392 F.B.M.
Studs, girts and plates, 1st floor.	
2 in. x 4 in.—156/10, 60/8	1360 F. B. M.
Studs, etc., 2nd floor.	
2 in. x 4 in.—30/14, 26/10, 140/8	1201 F. B. M.
1st floor joists.	
2 in. x 10 in —18/16, 11/14, 19/12, 7/8	1210 F B M
2nd floor joists.	1210 P. D. M.
2: 10: 20/16 12/14 10/12 10/10	1711 E D 34
2 in. x 10 in.—39/16, 13/14, 10/12, 10/10	1/11 F.B.M.
3d floor joists.	
2 in. x 8 in.—18/14, 24/12	720 F.B.M.
2 in. x 6 in.—15/14	210 F. B. M.
Rafters.	
2 in. x 6 in.—20/18, 48/14, 46/12	1585 F. R. M.
Ridge and hips.	1000 1 . 21 22.
2 in. x 8 in.—10/12	160 E D M
7/a 11 ava	100 L. D. M.
Valleys. 3 in. x 8 in.—5/16	460
_ 3 in. x 8 in.—5/10	160 F. B. M.
Porch ceiling beams.	
2 in. x 4 in.—10/8	54 F. B. M

B^{LUE} Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by Building Age and the Builders' Journal, 239 West 39th Street, New York.

CARPENTRY—Continued		Windows-Frames complete with sash, outside	
Floor bridging.	•	trim, etc. Sash 13/4 in. thick, glazed D. T.	
2 in. x 3 in.—400 lin. ft,	200 F.B.M.	Cellar windows (trim both sides).	
Cornice outlookers		Single top hung casem. sash, 3 ft. 0 in. x	
2 in. x 4 in.—80 lin. ft	54 F. B. M.	2 ft. 0 in., 4 light	1
Cellar partitions (studs)		Mull. top hung casem. sash, ea. 2 ft. 6 in. x	
2 in. x 4 in.—18/14	168 F. B. M.	2 ft. 0 in., 4 light	3
Sheathing (% in. x 8 in. shiplap, no outs).		First floor windows.	
Walls, to cover	2500 sq. ft.	2 pr. casem. sash, ea. pr. 3 ft. 4 in. x 4 ft. 6 in.	
Roofs, to cover	2100 sg. ft.	16 light	6
Sheathing paper (waterproof)	2500 sq. ft.	2 pr. casem. sash, ea. pr. 3 ft. 4 in. x 3 ft. 0 in.,	
Grounds, 34 in. x 2 in., surfaced one side	2200 lin. ft.	12 light	1
Sheathing for cellar partitions.		1 pr. casem. sash, 3 ft. 4 in. x 3 ft. 0 in.,	
3/8 in. x 8 in. shiplap, to cover	450 sq. ft.	12 light	1
Rough flooring (1/8 in. x 8 in. shiplap).		1 pr. casem. sash, 2 ft. 6 in. x 3 ft. 0 in.,	
1st and 2nd floors, to cover	1700 sq. ft.	12 light	1
Furring (% in. x 2 in.)	400 lin. ft.	1 pr. casem. sash, 3 ft. 4 in. x 4 ft. 6 in.,	
EXTERIOR FINISH		16 light	1
	•	Single casem. sash, 1 ft. 8 in. x 3 ft. 0 in.,	_
Half timber work.	00.41 (6 light	1
1½ in. x 7 in.	90 lin. ft.	Single casem. sash, 1 ft. 0 in. x 3 ft. 0 in.,	
1 1 in. x 10 in.		3 light	1
13/4 in. x 4 in.		Second floor windows.	
2 ft. 0 in. x 2 ft. 6 in. end pieces, 13% in. thick		1 pr. casem. sash, 2 ft. 6 in. x 3 ft. 0 in.,	
Watertable (% in. x 2 in. strip)		12 light	2
Main cornice—136 in. x 3 in. moulding		Single casem. sash, 1 ft. 8 in. x 3 ft. 0 in.,	
Raking cornice—3½ in. cove moulding	206 lin. ft.	6 light	1
Dormer cornice. 4 in. crown mould	40 1: 64	1 pr. casem. sash, 3 ft. 4 in. x 4 ft. 0 in.,	_
4 in. fascia	48 lin. ft. 48 lin. ft.	10 119111	6
6 in. soffit	48 lin. ft.	1 pr. casem. sash, 3 ft. 4 in. x 5 ft. 0 in.,	_
2 in. bed mould	48 lin. ft.	20 light	1
Rear porch.	40 IIII. IL.	Attic windows—Single casem. sash 1 ft. 8 in. x	
4 in. fascia	22 lin. ft.	3 ft. 0 in., 6 light	1
1½ in. neck mould	22 lin. ft.	Shutters (11/4 in. thick, batten type).	
8 in. soffit		1 ft. 0 in. x 3 ft. 1 in	1
8 in. x 8 in. box col. 7 ft. 10 in. long with cap	10 1111. 11.	1 ft. 8 in. x 3 ft. 1 in	1
and base	1	1 ft. 8 in. x 4 ft. 7 in	4
Flower boxes—12 in. x 12 in. x 7 ft. 10 in. long		Exterior door frames (13/4 in. thick, rabbeted,	
Wood brackets		complete with outside trim).	
Louvres, with trim, screen on back, etc.		Frame for front ent. door, 3 ft. 0 in. x 7 ft.	
10 in. x 2 ft. 6 in.	2	0 in., with ornamental trim, etc	1
		,	







EXTERIOR FINISH—Continued	
Frame for cellar ent. door, 2 ft. 8 in. x	•
6 ft. 8 in	1
10 in. Frame for icing door, 1 ft. 8 in. x 2 ft. 6 in.	1
Frame for doors to terrace, 2 ft. 8 in. x 6 ft. 8 in. Exterior doors (all to detail).	2
Exterior doors (all to detail). Front ent. door, 3 ft. 0 in. x 7 ft. 0 in. x 2 in.,	
glazed	1
	1
Rear ent. door, 2 ft. 8 in. x 6 ft. 10 in. x 134 in., glazed Leing door, 1 ft. 8 in. x 2 ft. 6 in. x 136 in Doors to terrace, 2 ft. 8 in. x 6 ft. 8 in. x	1
Doors to terrace, 2 ft. 8 in. x 6 ft. 8 in. x 134 in., glazed	2
Finished flooring	
Living room, dining room, ent. hall, plain sawed white oak, 13/16 in. x 21/4 in., to	574 sq. ft.
cover etc., No. 1 maple, 13/16 in. x 21/4 in.,	208 sq. ft.
Second story, plain sawed red oak, 13/16 in.	-
x 2½ in., to cover	740 sq. ft. 500 sq. ft.
Slat floor under laundry tubs, 3 ft. 0 in. x	1500 sq. ft.
Cement filled pipe cols in cellar (4 in. dia. x	1
7 ft. 6 in. long, with caps and bases)	5
7 ft. 6 in. long, with caps and bases) Joist hangers (¼ in. x 2 in. W. I.). For 2 in. x 10 in. beams For 4 in. x 10 in. beams	8 8
INTERIOR FINISH	
Door trim (whitewood)—7% in. jambs, 1/2 in. stops, 7% in. x 41/4 in. moulded and mitered trim. Trim both sides.	
For doors 2 ft. 6 in. x 6 ft. 8 in	7 sets. 9 sets.
For doors 2 ft. 4 in. x 6 ft. 8 in	1 set.
For doors 2 ft. 4 in. x 7 ft. 0 in	l set. l set.
For doors 2 ft. 2 in. x 6 ft. 0 in	1 set. 1 set. 3 sets.
For doors pr. 4 ft. 0 in. x 6 ft. 8 in	3 sets. 2 sets.
Trim for inside of exterior doors.	1 set.
Rear ent., 2 ft. 8 in. x 6 ft. 10 in	1 set.
Trim for inside of exterior doors. Front ent., 3 ft. 0 in. x 7 ft. 0 in. Rear ent., 2 ft. 8 in. x 6 ft. 10 in. Cellar ent., 2 ft. 8 in. x 6 ft. 8 in. Icing door, 1 ft. 8 in. x 2 ft. 6 in.	1 set. 1 set.
Trim for cellar door (plain).	1 500
2 ft. 6 in. x 6 ft. 6 in	
Opg. 4 ft. 4 in. x 6 ft. 8 in	1 set. 1 set.
Windows (whitewood)—% in. x 4¼ in., mould-	,

ed and mitered trim, ½ in. stops, 1½ in. moulded stool, ½ in. moulded apron, ½ in. x ½ in. cove under stool.	
For windows—	6 0010
2 pr., ea. pr. 3 ft. 4 in. x 4 ft. 6 in	6 sets.
2 pr., ea. pr. 3 ft. 4 in. x 3 ft. 0 in pr. 3 ft. 4 in. x 3 ft. 0 in	l set.
pr. 3 it. 4 in. x 3 it. 0 in	1 set.
pr. 2 ft. 6 in. x 3 ft. 0 in	3 sets.
pr. 3 ft. 4 in. x 4 ft. 6 insingle, 1 ft. 8 in. x 3 ft. 0 in	l set.
single, 1 ft. 8 in. x 3 ft. 0 in. a	2 sets.
single, 1 ft. 0 in. x 3 ft. 0 in	1 set.
pr. 3 ft. 4 in. x 4 ft. 0 in	6 sets.
pr. 3 ft. 4 ft. x 5 ft. 0 in	1 set.
Base.	
% in. x 6⅓ in., moulded	470 lin. ft.
% in. x 4 in., plain (closets)	106 lin. ft.
2 in. base mould	470 lin. ft.
in. quarter round floor moulding	580 lin. ft.
Picture moulding (% in. x 2½ in.)	540 lin. ft.
Montal for living room with pilotters atc	1 Unit.
Mantel for living room with pilasters, etc	1 Onit.
Wardrobe for bed room No. 1 (doors pre-	1 Unit.
viously listed)	1 Onit.
Interior doors. (Glazed) 4 to 0 in x 6 to 8 in x 1% in or glazed	3 pr.
4 ft. 0 in. x 6 ft. 8 in. x 134 in., pr. glazed 2 ft. 2 in. x 6 ft. 0 in. x 134 in., glazed (2 cross panel birch veneer)	1
Door 2 ft. 8 in. x 6 ft. 8 in. x 1½ in Door 2 ft. 4 in. x 6 ft. 8 in. x 1½ in Door 2 ft. 4 in. x 6 ft. 8 in. x 1½ in. with	7 8
mirror	1
Door 2 ft. 0 in. x 6 ft. 8 in. x 1½ in	1
Door 1 ft. 8 in. x 6 ft. 8 in. x 1½ in	1
Door 2 ft. 4 in. \times 7 ft. 0 in. \times 1½ in	1
Door 3 ft. 8 in. \times 6 ft. 8 in. \times 1½ in. pr	2 pr.
Door 1 ft. 6 in. x 3 ft. 0 in. x 1½ in	l pr.
Solid pine cellar doors. Door 2 ft. 6 in. x 6 ft. 6 in. x 1½ in	1
Closet shelving (1/8 in. x 12 in. pine)	90 lin. ft.
Hook strip (% in. x 4 in.)	80 lin. ft.
Rabbeted shelf cleat	70 lin. ft.
1 in. dia. pipe clothes rod	24 lin. ft.
Pantry cupboard (front 7 ft. 8 in. x 8 ft. 0 in),	27 IIII. 1t.
counterchalf deamers doors ato	1 Unit.
countershelf, drawers, doors, etc	ı Onn.
3 in. wide, newels, balustrade, etc	1 4:
Colleg stoing 12 giorg box pattern 2 ft A :-	1 flight.
Cellar stairs, 12 risers, box pattern, 3 ft. 0 in.	1 4:_1.
wide, yellow pine, wall handrail, etc Stairs, 2d to 3rd floor, 12 risers, box type, yel-	1 flight
Stairs, 24 to 3rd noor, 12 risers, box type, yel-	
low pine, 2 ft. 8 in. wide, balustrade at 3rd	1 0:
floor, etc	1 flight
GENERAL CONDITIONS	

Add for permits, fees for water and sewer connections, etc., insurance and general overhead charges.

Allow for general work not listed, such as grading, planting, etc.

Include Sub-bids: Hardware and applying same; painting and decorating; plumbing and gas fitting; heating, and electric work.



ELCOME is the motto on our doormat," is an old expression, but today the modern builder and home owner go this one better by making the entrance itself inviting.

There is a certain charm about having an entrance that is cheerful. In many of our old-fashioned houses the high, forbidding-looking doors were enough to chill any chance visitor. Today, however, the tendency is to reflect welcome in our doorways.

Manufacturers of doors are now turning out some very handsome designs at moderate prices and our new homes greatly benefit in their appearance by this. But one must consider that many of the old houses with the gloomy-looking entrances can be easily remodelled at but slight expense so as to make them more cheerful. Here, then, is an active line of work for the progressive builder.

The five charming designs shown on these two pages are really nothing elaborate, but they are all simple designs that reflect good taste, and, better yet, they may be easily carried out at a moderate cost.

In practically every case the entrance should be illuminated. This is certainly a most important point, as nothing is so disappointing and aggravating as to try to call on a party at night

Here Is the Entrance to the House of Pickfair, the California Home of Doug and Mary. Cement Steps and Stucco Walls Frame and Stuces Walls Frame an Interesting But Sim-ple Doorway. The Cedars on Each Side Give It Just the Color Touch That Is Necessary.



Let the Entrance Bespeak a Welcome

Five Interesting Examples of Inviting Doorways





Dainty Indeed Is This Charming Entrance to a New England Colonial Design. The Cement Steps With Wrought Iron Rail and Brass Knobs Contrast Finely With the Wood Porch Columns. The Planting Here Adds Much to the Charm of This Delightful Entrance

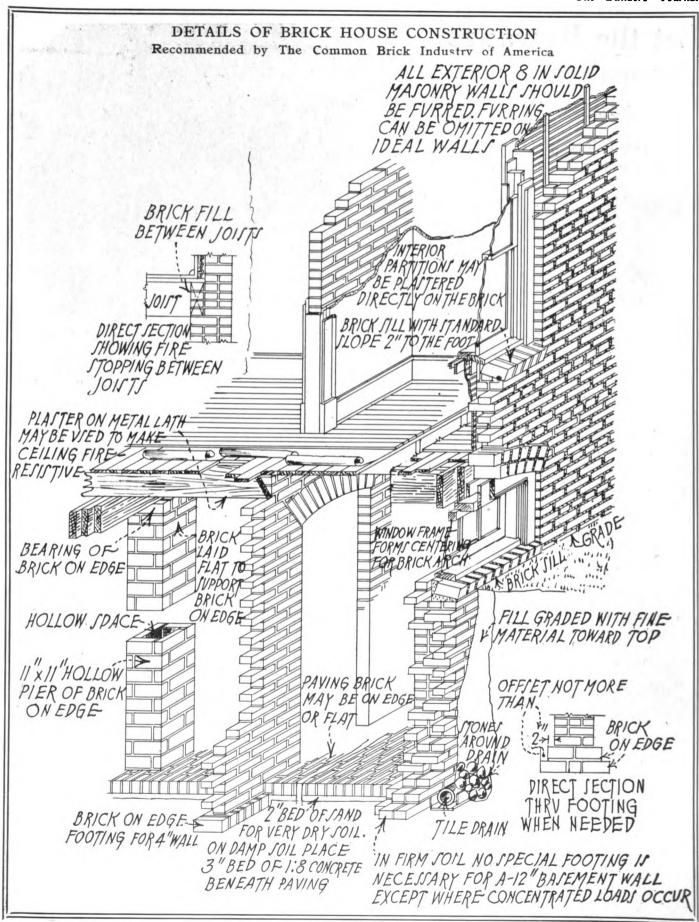
Reflecting the Spanish, This Entrance Would be Cold and Cheerlees But for the Fact that Color Is So Deftiy Used in Its Design. The Ornamental Work Around the Arch in Different Colors Contrast Finely with the Cream Color Stucco and There Is Warmth in the Red Tile Floor. A Torchere and Urns with Boxwood Give the Finishing Touches.

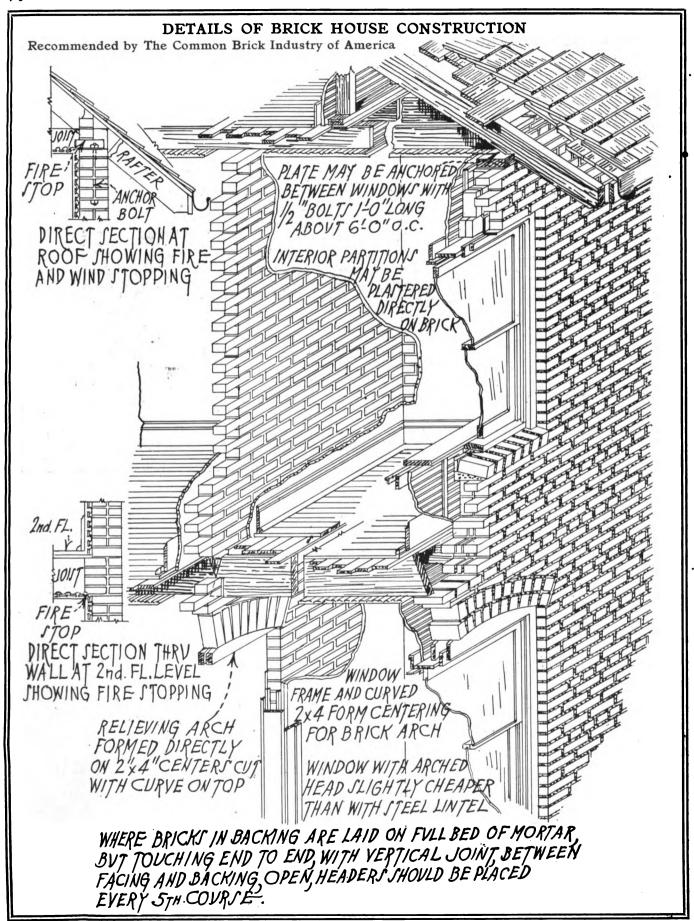
and risk stumbling over steps, etc. Of course in all residences these lights are controlled by a switch conveniently located in the hall.

Particular attention should be paid to the selection of a proper lamp, one that will harmonize with the architecture of the house and entrance. The different examples shown on these two pages are each appropriate for their particular design.

It is wise to be just a little bit extravagant in buying the outside lamp fixtures so as to get good ones that will stand the weather. Wrought iron, copper, brass, and bronze admirably stand the ravages of time. Avoid thin stamped metal and plated affairs—they are all right inside, but will quickly deteriorate outside.



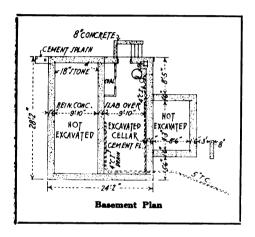




Garage and Greenhouse

Desirable Combination Cleverly Planned

C. E. SCHERMERHORN Architect

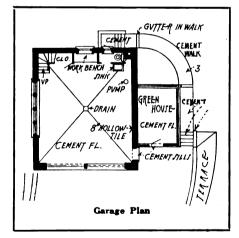




OMETIMES the most desirable combination for a small plot of ground is a combined garage and greenhouse; the pictures shown here are of such a building.

The garage proper is 22 feet by 26 feet in size which easily accommodates two cars. The floor is of six inch reinforced concrete slabs resting on 18 inch stone walls. All upper walls are of hollow tile with a brick veneer exterior. The interior surface of hollow tile wall is plastered, making a handsomely finished as well as a convenient garage.

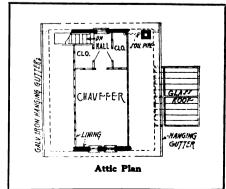
The work bench is placed under a window at the rear of the garage, and here is also a toilet and sink. The stairs lead up to a good sized chauffeur's room and in the upper hall are two large storage closets. The roof is of shingles. Lintel of windows and gable are of cut lime stone. This interesting garage was designed and erected so that it would match the house of Mr. Charles J. Cole at Elkins Park, Pa.

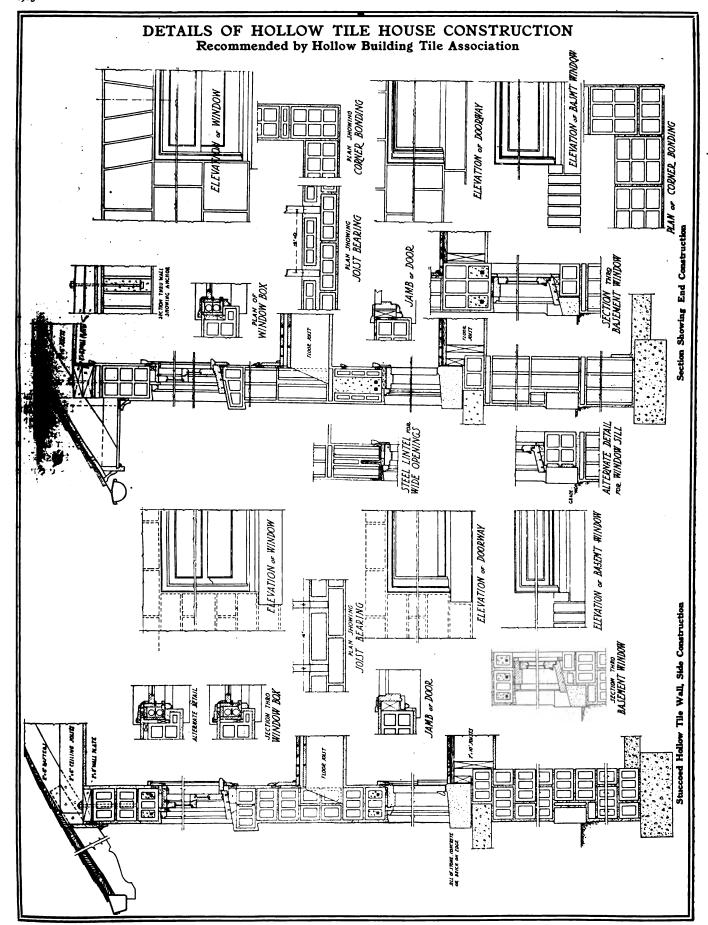


A cellar has been excavated under one-half of the garage, and this contains a hot water heating plant, which besides heating the garage and chauffeur's room, provides sufficient heat for the green house; which is equipped with a coil under the plant tables.

A most interesting feature in constructing this garage was its grading problem. The high part of the ground was on the left side of the garage, necessitating a fill up to the garage floor, and this was extended so as to include the front to the green house; also the width of steps leading down to the old grade line; the path continuing to the rear of the garage and down four extra steps to cellar level.

To prevent a surplus amount of rain-water entering the cellar, provision was made by having a gutter in the path; also a drain in the areaway at cellar entrance. This adequately takes care of possible trouble from this source.





Laying Out the Garden

Suggestions for a Proper Setting of the Livable House of English Design on a 75x100 Foot Plot

By GRACE V. PEKER

BUILDERS, of course, are not expected to do landscaping and planting around the house that they have erected, but they should do the grading, etc.

The layout of grounds, terracing, making the garden paths, also walls, fences, steps, pergolas, etc., is all work that can be best handled by the building contractor and he should go after and obtain this extra work.

In the plan shown herewith, particular attention was paid to the rear garden, as it will be the show place of this small English "estate." From the terrace one goes along a random laid stone

path through a formal rose garden in the center of which is a small circular pool. An arched trellis for climbing roses covers each entrance to the rose garden.

Toward the rear, five stone steps lead down to a depressed path dug in the earth and this branches to right and left. Five steps in each branch brings the path up to the regular ground level again. The dirt excavated for this trench is thrown up in the form of a hill on either side of the path, which gives a pleasing change from the flat surface of the plot. Both sides are then lined with rock and a first class rock garden at small expense results.

The left path, which curves around among trees and shrubbery, ends at the garage wall in a quaint little wall fountain flanked on each side with tall evergreens forming a picture. The right path also curves around, then through a vine covered pergola with a seat on each side, and continues back to the rose garden which is enclosed by a low privet hedge.

From the left side of the rose garden the stone path continues to the driveway. A gate in a low brick wall, with lattice above, forms a barrier between the garden and driveway, and this wall connects house to garage. Stepping stones placed in lawn lead

from the kitchen porch to the stone

path.

Note that the object of this layout is to secure good views from all rooms. From the dining room one looks across the lawn into a mass of flowers. Another picture is to look from the living room over the rose garden. From the sun porch the vista includes an interesting grouping, the feature of which is a pergola. In back of all of this are tall trees, giving an effect of distance. The whole object has been to have small plants in front, higher shrubbery next and finally the trees, which lend distance to the plot. Another point to be observed is that wherever one walks, a charming picture is obtained, with something different at every turn.

Against the house a more or less formal planting of evergreens is to be recommended.

Schedule of Planting for Continued Bloom and Color from April to November

A-Annuals and perennials

-Maple

-Barberry

D—Tall arbor vitae

E—Holly

F-Spreading ju-

niper -Globular arbor

vitae

H-Hemlock

-Yew

-Rhododendrons

-Hydrangeagrandiflora

L-Hydrangea paniculata

M - Flowering almond

N-Rose of Sharon

-Weigelia

P-Lilac

-Rosa Rogusa

-Forsythia

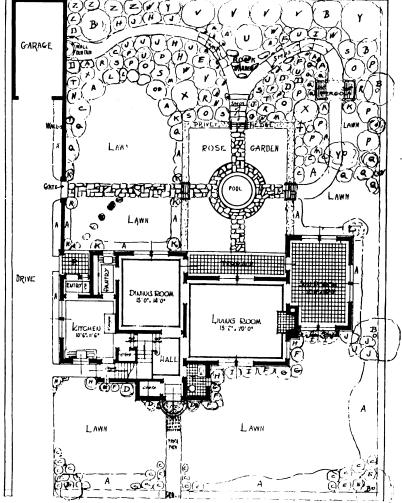
-Spirea

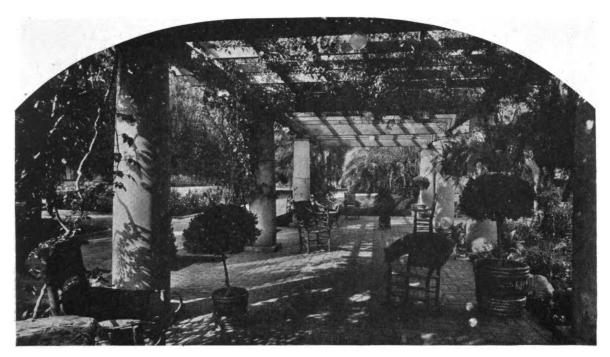
T-Mock orange

U—Birch V—Scotch pine W—Dogwood X—Magnolia

-Oak

Z-Lombardy poplar





do will put the finishing touches around a house so much as artistic entrance gates, pergolas, etc. In most cases they are simply made and at small cost.

Above we show quite an artistic vine-covered pergola. Large cement columns support the overhead rafters, while the floor is laid

Pergolas and Gates Add Charm

in brick. Some potted trees add additional charm to the scene. A job such as this is a most desirable "extra" for the builder.

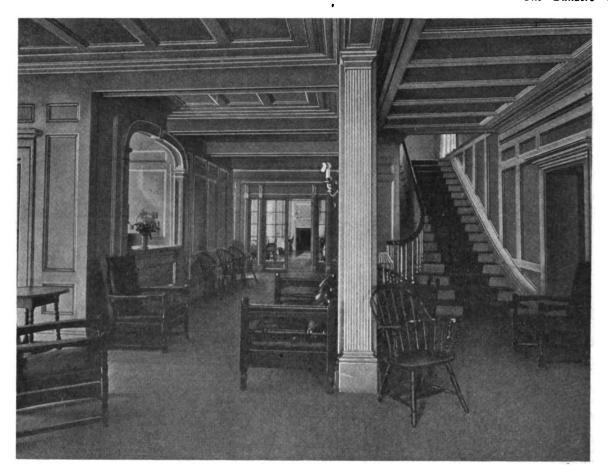
Below are two very attractive garden gates, one rather formal and painted white, the other rustic, being made of small tree trunks. Both are extremely artistic in their respective settings.



Simply Made Artistic Looking Fence with Colonial Matif



The Charm of This Rustic Entrance is Enhanced by the



Artistic Possibilities of Wall Board

EARS ago the walls of our buildings were either plastered or covered with wood. In more recent years wall board has come to the fore, and its use and popularity is increasing every year. A number of excellent makes are now on the market.

The uses of wall board are many, but it finds its biggest use for the covering of walls and ceilings, especially in homes. It lends itself very readily to many artistic effects, as it is so easily used in panel work.

Wall board should only be used after a carefully prearranged design has been decided upon. Lay out your panels and ceilings so that they will be uniform and then cut your wall board to fit the design rather than use full widths of wall board and having a lop-sided effect, thereby spoiling the entire appearance of a room.

The best way to do is to make a scale drawing of the different sides

and ceiling of a room and then lay out your panel work so as to get an even, balanced effect. The panels on the ceiling should also conform with those on the wall; then one is sure of having an artistic job at a minimum of expense.

PROPER backing should be given to every joint of the wall board. If the joints do not come directly over a stud, nailing strips should be inserted between them so as to properly support the edges of the wall board.

Wall board needs to be well nailed, and when properly done there will be no bulging. When this occurs it is due entirely to the ignorance of the mechanics erecting it and not to any fault of the material.

Where the wall board joints are not to be covered with panel strips it is necessary to fill the cracks. Most manufacturers make a special crack filler, suitable for their particular make of wall board, and this should be used. The best effects, however, are secured where wall board is used for paneled surfaces, as here it lends itself to the best advantage.

In the above picture we show a most interesting and artistic example of the use of wall board. The particular make of wall board used on this job was Upson Board.

THIS picture shows the entrance lobby of the Linckalen House at Cazenovia, New York. This was an old inn that was recently remodeled, and the architect of the alteration is Mr. I. V. Van Duzer, and the contractor was Mr. C. H. Barrett, both of Cazenovia. In the remodeling 7,500 square feet of wall board was used most effectively for covering walls and ceilings. This lobby is certainly a very effective piece of work, and shows what can be done by an artistic handling of wall board.

A Million Dollar Memorial Building Now Being Erected by One of Our Oldest Subscribers

Nour March issue we published a most interesting letter from Mr. James S. Houston—one of our oldest subscribers—and this has stirred some of our other old readers to write us. We feel deeply honored to hear from these grand old men of the building industry.

Here is a letter from a successful contractor who has taken Building Age since its first issue, over 44 years ago. This letter of Mr. Thalman is so interesting that we cannot refrain from publishing it, as it will be an incentive to the younger men in the business to strive their utmost to make as great a success as Mr. Thalman.

It takes quite a good deal of organizing and business ability to conduct a large building operation and when this operation runs into such a large amount as a million dollars, we certainly must appreciate the man handling it.

Building up a reputation by good honest work is a most important contract for the young builder. Just think back, of those smart chaps whose brain power worked overtime to find ways of skinning a job, and see where they are to-day. You will find very few of them in business.

When one gets old, there is a great deal of satisfaction in looking back upon an honored business career and it pays in more ways than one, as is so aptly brought out by the reminiscent letter of Mr. Thalman.

John H. Thalman General Contractor Little Rock, Arkansas

March 17th, 1923.

To Editor, Building Age, New York City.

My Dear Sir:

In your March, 1923 number, you have a nice letter from your old subscriber Mr. Jas. S. Houston, of Atchison, Kansas, and in your comment upon it you were "wondering if there are any others." I have been taking it since 1879. It was then "Carpentry & Building."

I have been out of the building game for some time and then back into it again and I have never subscribed for any periodical that was as helpful as your publication. It has helped me out of many a tangle.

I think I have boxed and stored away most all the issues. The new isues I keep constantly on file and find them useful at many times.

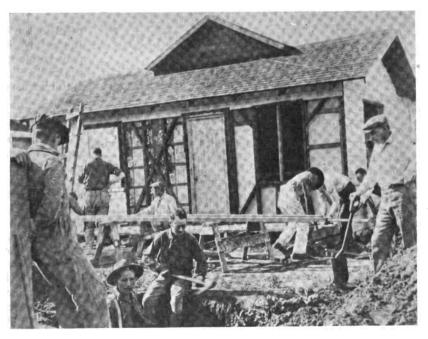
I am now erecting The Albert Pike Memorial Temple, which will cost near one million dollars, and would be a credit to any city or state. It was designed by Man & Stern, Architects.

I enclose my check for another year. Yours very truly,

JOHN H. THALMAN.
P. S. I am in my 70th year, but too young to retire.

Let's

OTHING could be m or e thoughtful and kind as the recent action of certain building mechanics of Los Angeles, Calif. Mr. R. A. White, a partly disabled veteran World the War, started to build a bungalow home for his family, but, his health failing, he was forced to stop.



Helping a Buddy Build His Home

Certain members of the American Legion Post No. 8 heard of White's plight and about fifty of them engaged in different branches of the building trade volunteered to help their 'buddy." Our picture shows some of the "gang" hard at work. The result of "Let's go" was a completed house in two days.

CONCRETE

Form Work-Reinforcing Methods Monolithic and Block Construction



Concrete Blocks Gain in Popularity

ORE progress was made in the concrete block industry during 1922 than in any previous year. The production of block in the United States reached a new high level mark of 350,000,000 exclusive of concrete building tile. Detroit and Cleveland each used over 4,000,000 block and several cities are in the 3,000,000 class. More than 6,000 plants are in operation at present.

This tremendous production would never have been possible a few years ago when the quality of block was so poor. But in spite of a bad start and a handicap of a nearly overwhelming prejudice concrete block now hold their heads high and rank well with the

leaders of permanent masonry building materials. No material has made greater proportionate gains than concrete block in the last three years.

Increased demand for building materials cannot explain the rapid development block has made. The generally and greatly improved quality is the real reason. Architects and builders who would not consider block previously are using them now because the block are on a proved quality basis. Laboratory test data are frequently supplied with block showing that they meet the specifications of the American Concrete Institute which requires a gross area compression strength of 1,000

pounds per square inch and an absorption not to exceed 10 per cent. of the dry weight. This strength generally gives a factor of safety of 20 or more.

The efforts of the Portland Cement Association and the Concrete Products Association have been untiring in requiring strict tests on block. With the passage and strict enforcement of new building codes, similar to Pittsburgh's, new and larger fields were opened in block. At first there was some opposition from block manufacturers but their active support of movements to improve quality now is ample proof that they are enjoying better business through a better product.

HE reliability of concrete construction is likely to be increased, and the cost in some cases reduced, by the application of a newly developed method of measuring sand, which is now being tested at the Bureau of Standards of the Department of Commerce. The method has been termed the "inundation method" and consists of measuring sand in a container which has been partly filled with water before the sand is put in, so that when the sand is in, the water is up to the top and the sand completely soaked.

The volume occupied by a given amount of sand when shoveled into a measuring device varies with the moisture content of the sand; the difference in measured volume between dry and moist sand being usually

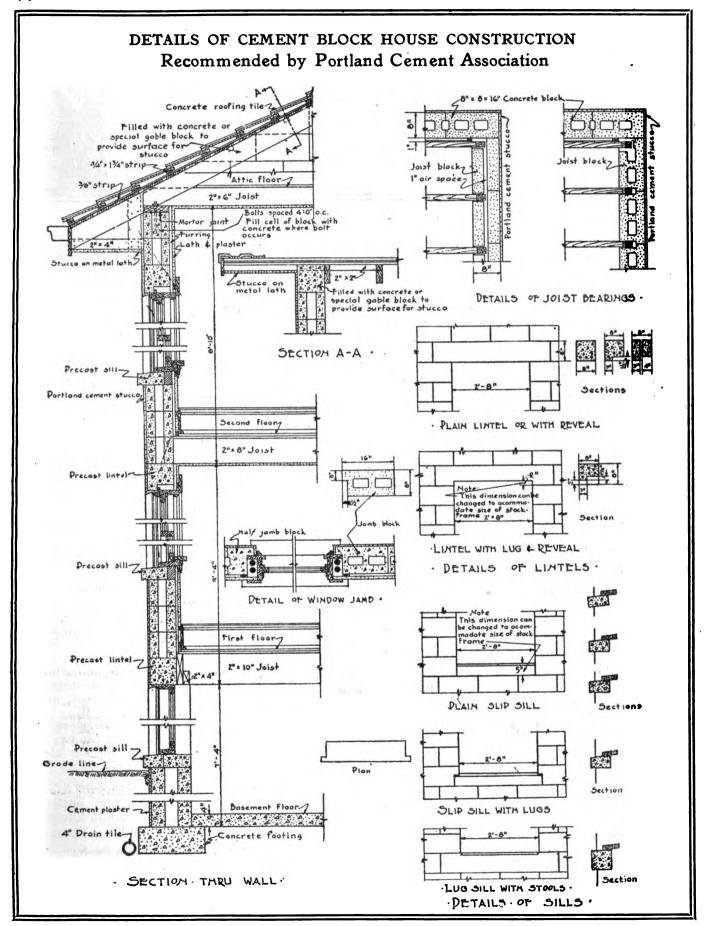
New Method of Measuring Sand

from 10 to 15 per cent, and occasionally running as high as 50 per cent. But it is found that if the sand is completely soaked or "inundated" uniform measuring results can be obtained no matter how much the original moisture content may have varied.

In making concrete the proportions of cement, sand, stone, and water are so chosen as to get the required strength and workability with a minimum of cement, since the ce-

ment is the chief factor in the cost. Inaccurate measurement of the sandmay result in too large a proportion of sand, in which case the concrete is too weak; or in too small a proportion of sand and hence a concrete too-rich in cement.

But this rich concrete is not necessarily stronger than the concrete the contractor intended to make, for the sand has brought in some water in addition to that which is added on purpose; and if this extra water is not allowed for and the amount of water added correspondingly decreased, the concrete will contain too much water. It will be sloppy and when set will not be dense enough to give the necessary strength. The contractor therefore is merely wasting cement and doing good to no one.



ELECTRICAL WORK

Wiring-Fixtures-Devices for Lighting and Power



Electrical Provisions of the Modern Home

How the Livable Home of English Design is Wired for Convenience

Suggested by REGINALD TRAUTSCHOLD

Engineer, The Society for Electrical Development, Inc.

HE dwelling of today demands provisions for the use of electrical appliances to almost the same extent as the modern home commands an adequate and flexible electric lighting system, and in order that the comforts of light and the conveniences of electrical appliances may be enjoyed, the careful location of the essential outlets is necessary. The suggested layout and following specifications indicate to some extent how important a part electricity has come to play in the home life of the nation.

The appended list of appliances suggests further what electrical conveniences are now procurable and, though there are as yet few dwellings in which all the appliances in even this abbreviated list are to be found, the use of the more familiar ones is rapidly becoming general and even those which today are still regarded somewhat in the light of unnecessary luxuries are rapidly coming into popular favor. The modern dwelling should make ample provisions for their use.

DINING ROOM 15:0°. 14'0° LIVING ROOM 15:27, 70'0° Outlets on First Floor

LOCATION OF OUTLETS, ETC. Cellar

Ceiling light outlet at foot of cellar stairs controlled by switch at head of stairs.

Ceiling light outlet near heater.
Wall light outlet at service panel.
Suitable light outlet near coal bin.
Special service outlet for cellar work shop.

Ceiling light outlet in cellar work shop.

Bell transformer or batteries for bell circuits.

Entrance Vestibule

Ceiling light outlet controlled by switch inside front door.

Outside door bell to kitchen.

Hall

Central ceiling light outlet controlled by 3-way switches near front door and at head of stairs on second floor.

Light outlet on newel post.
Convenience outlet (duplex).
Wall light outlet opposite closet in passage to kitchen.

Kitchen Entry

Central ceiling light outlet controlled by switch in kitchen.

Convenience outlet.

Kitchen Porch

Ceiling light outlet controlled by switch in kitchen entry.

Convenience outlet for summer ironing.

Wash Room

Central ceiling light controlled by switch at door.

Convenience outlet.

Kitchen

Central ceiling light outlet controlled by 3-way switches in kitchen and in hall passage to kitchen.

Light outlet over sink (wall or ceiling).

Special service outlet for electric range and water heater if cooking rate pertains.

2 convenience wall outlets (duplex).

Annunciator outlet (4 or 6 call).

Pantry

Ceiling light outlet controlled by switch in kitchen.

Convenience outlet (duplex).

Dining Room

Central ceiling light outlet controlled by 3-way switches at door from pantry and at entrance to living room.

4 Wall light outlets.

2 Convenience outlets (duplex)
Special service floor outlet for
table appliances.

Floor bell connection to kitchen annunciator.

Living Room

Central ceiling light outlet controlled by 3-way switches at entrances to dining room and hall.

4 Wall light outlets.

2 Light outlets spanning fireplace. 3 Convenience outlets (2 duplex). Special service floor outlet for tea table appliances.

Bell connections to kitchen annunciator.

Sun Porch

Ceiling light outlet controlled by switch in living room.
Convenience outlet (duplex).
Special service outlet for tea table appliances.

Second Floor Hall

Ceiling light outlet controlled by 3-way switches at head of stairs and near linen closet.

Ceiling light in linen closet controlled by switch in door frame. Convenience outlet (baseboard).

Master Bed Room

Central ceiling light controlled by switch at door.

2 Wall light outlets.

3 Convenience outlets (duplex)

Closet ceiling light outlet controlled by switch in door frame. Wardrobe ceiling light outlet controlled by switch in bedroom.

Bed Rooms Nos 2 and 3

Central ceiling light outlet controlled by switch at door.
Wall light outlet.
Convenience outlet (duplex)
Closet ceiling light controlled by switch in door frame.

SOME SUITABLE APPLIANCES

General House Use

Lighting (portable lamps) Vacuum cleaner Fan motors Bell ringing transformer.

Kitchen

Range (requires special circuit)
Water heater (on range circuit
with double throw switch)
Tea kettle (4 to 5 amperes)
Disc stove (2 to 6 amperes)
Radiant grill (5 to 6 amperes)
Toaster (4 to 6 amperes)
Waffle iron (5 to 7 amperes)
Meat chopper
Egg beater
Coffee mill
Bread mixer
Silver polisher
Knife grinder
Immersion heater

Cellar Work Shop

Grinder
Glue pot (2 to 5 amperes)
Soldering iron (1 to 2 amperes)
Bench drill
Utility motor

Laundry

Washing machine (2 to 3 amperes)
Irons (4 to 6 amperes)
Ironers (3 to 30 amperes)
Wringer

Garage—(Special Wiring)

Fire pumps Grinder Lathe Portable drill Buffing machine Rectifier

Dining Room

Chafing dish (4 to 6 amperes)
Percolator (4 to 5 amperes)
Cigar lighter (0.25 ampere)
Water heater (1.5 to 10 amperes)
Radiator (2.5 to 5 amperes)
Samovar (4 to 5 amperes)

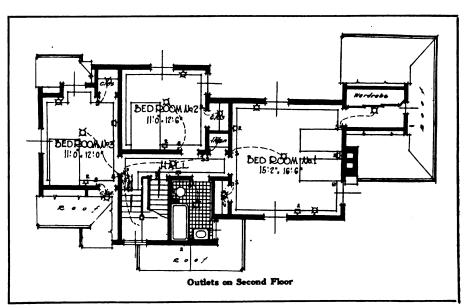
Bedroom or Boudoir

Curling iron
Massage vibrator
Heating pad (0.5 to 1 ampere)
Immersion heater (0.5 to 1 ampere)
Hair dryer (0.5 to 0.75 ampere)
Reading lamp

Miscellaneous

Sewing machine
Milk warmer (3 to 5 amperes)
Shaving mug (1.5 to 5 amperes)
Phonograph

Moving picture machine
Note: Ampere capacities within
brackets are guides for planning
suitable branch circuits. Where
amperes are not given, the service
demands are no higher than those
for ordinary lamps.





CARPENTRY

Good Practice in Frame Construction and Finish

Making the Home Convenient

How One Carpenter Gained Satisfied Customers by Suggesting Little Improvements that Save Housework

By DALE R. VAN HORN

ONTINUING the story of how Tom Humphrey made such an enviable reputation, we describe a few more of his little kinks that made him so popular with the ladies.

Another way to eliminate excessive profits of the dust-pan corporation is to build a small chute between the mop-board and the back plaster and extend this, either to the floor of the basement, or just below the kitchen floor where it can empty into a bag or drawer. The mop-board is cut on the margins, the top hinged and so made to fall into place and inconspicuousness.

There is the ash-removal problem. The average home on the small plot is handicapped because of the lack of space. Let's refer back to Tom Humphrey again.

On one occasion he built a four thousand dollar bunglalow on a nar-low lot. The basement was in the northwest corner of the basement and a grade window looked out on the drive to the garage. The owner set a large dry-goods box against the wall, let it fill with ashes and called a man who did hauling in the neighborhood to come and get them.

Old Tony took one look and shook his head. Too much trouble to get them out, unless, ah, and his eyes twinkled, "charga de bigger price." Said price was too much and in desperation the owner called Tom on the phone.

Tom came over and put in a dingus that was the prune's pit. He built a trough of one-inch material, the width of the window and long enough to reach from the sill to the floor beside the furnace. The one end was hinged to the sill.

The other was built up to an extreme depth of thirty inches. additional boards being cut and fitted. This provided a storage for the furnace ashes that would cover on an average of two or three weeks.

Now, directly over the inner end of this hopper Tom hung a pulley to one of the joists, placed a rope over it and tied one end to the movable end of the hopper. The other end hung free, but a small weight was tied to it to hold it in place. Then he collected his price and left.

And that thing has worked like a charm. It is filled with ashes. Then Tony comes down, hoists the hopper up to a level with the sill, ties the rope and goes outside and pulls the ashes out with a hoe, into his basket. During the months when the furnace is not used, the hopper is tied out of the way.

Good steps are an asset to any home. We like the broad, generous steps, whether they be of concrete or frame. And we dislike the dinky ones, whether we are home builders or home owners. One handy man, finding himself out of work one fall. but skilled in concrete work, built up a lot of trade by specializing in con-

crete steps and porches. In going over town he was quick to note the home with sagging or dingy-looking steps. Usually he got a hearing when he went to broach the subject, and very often secured the order for new ones.

One of his hobbies or specialties, was to provide, on each rear step, a good foot scraper. He scoured the scrap piles for old and broken shovels of the square type, and the blades of these were used. All surplus parts of the shovel were broken away. The blades were turned upside down and set into the concrete near the edge, and at a slight angle so that the refuse would fall clear of the step. A small item that built more good will and later resulted in several big jobs.

Wherever possible. big, built-in cabinets should grace the modern kitchen or pantry. The person who objects on the ground of expense, can usually be quieted by casually referring him to the cabinets for sale in any hardware or furniture store. When he is shown, by rough sketches, the relative sizes of the two, and the almost unlimited uses to which the big built-in cabinet can be put, to say nothing of the enhanced value of the room, he finds but little room left for objections.

Of course the built-in ironing board, the dumb waiter, the china closets in the colonnade, the window seats, and many other items, can be classed in the well-known list and need not be mentioned here.

For the woman who insists on a large rear porch, it should behoove the builder to broach the subject of enclosure. She should naturally want it screened. Perhaps, with a little urging, she would decide to have storm windows provided, too, so that it could be used throughout the year. And there is the possibility that she should welcome a set of porch furniture, light table and chairs to match. Then many of the evening meals could be eaten here, with a riot of hollyhocks and perchance a birdbath (another idea for the concrete worker) in the rear.

Basement shelves are often overlooked. One type that allows variable

spacing of the individual shelves, is made by setting pipes in the floor and fastening the upper ends to the joists, one on each corner of the proposed shelf space. The long pipes are of small diameter. Shorter ones, each six inches in length, are then placed over the solid pipes. to within eighteen inches of the top.

The shelves are of suitable length and width, with each corner cut out to rather accurate dimensions. These are placed between the small units of pipe and may be put in or taken out as desired. Or the space between two shelves can be increased from six to twelve inches by placing two of the pipe units between them. This idea

should be applied only to relatively small shelves. Of too great a span the boards forming the shelves will sag enough to allow the ends to slip out of place.

As plates are frequently placed on edge at the back of cupboards, the wise builder will make these shelves adjustable.

The aspiring home builder who seeks a reputation for his type of homes can ill afford to ignore the importance of built-in features, in short, anything which will lessen labor and heighten the pleasure of the owners. Only small items, perhaps, but they pay big dividends.

What Is Meant by "Hardwoods" and "Softwoods"?

woods." In fact, the only absolute distinction which can be made between the two classes of wood has nothing to do with their hardness or softness. The terms are simply one of several pairs of popular descriptive names in use for referring to trees of the two great groups, botanically known as the Angiosperms and the Gymnosperms.

The botanical distinction between these groups, which is that the seeds of the Angiosperms are enclosed in pericarps and the seeds of the Gymnosperms are exposed, is in itself of no commercial importance. But there are numerous general differences which make it necessary for wood users constantly to refer to Angiosperms and Gymnosperms by some name or other. Differences in structure, appearance, properties, size, and quality of the timber and in regions of growth keep the woods of the two groups more or less separated, from the logging operation down through manufacturing process to the ultimate use.

The terms "hardwoods" and "softwoods" are the most generally accepted popular names for the two classes of trees, although

O definite degree of they are perhaps the most mis-hardness divides the "hard- leading. It is true that many woods" from the "soft- Angiosperms, such as oak, hickory, sugar maple, and black locust, are notably hard woods, and that many Gymnosperms, such as most pines and spruces, are rather soft woods. But there are a number of outstanding exceptions. Basswood, poplar, aspen, and cotton-wood, which are all classified as hardwoods, are in reality among the softest of woods. Longleaf pine, on the other hand, is about as hard as the average hardwood, although it is classified as a softwood. Yew, another so-called softwood, is about three times as hard as basswood and considerably harder than most oaks.

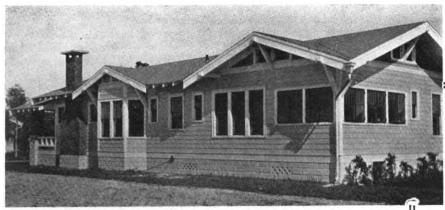
> Another common name for the Gymnosperms is "conifers." This is more accurate than "softwoods," as all native Gymnosperms except the yew are conebearing trees.

> Gymnosperms are sometimes spoken of as "the evergreens" and Angiosperms as "the deciduous trees," from the fact that most trees in the former group keep their foliage the year round and most of those in the latter group lose their leaves during the fall or winter months. The exceptions among the softwoods are bald cypress and tamarack, which have no leaves in winter. With hardwoods it is more or less a matter

of climate. Many tropical hardwoods are green the year round.

most accurate popular descriptions of the two groups are "trees with broad leaves" for the Angiosperms and "trees with needles or with scale-like leaves" for the Gymnosperms. These are the definitions generally given by dictionaries for hardwoods and softwoods, or hardwoods and conifers. They divide woods almost exactly in accordance with the botanical grouping. The few Gymnosperms, such as the ginkgo, which have broad leaves, are not native to this country.

A difference in cellular structure which has been found to exist between the commercial Angiosperms and Gymnosperms is a very reliable means of distinguishing between the two groups, the hardwoods being called the porous and the softwoods the nonporous woods. The term "porous" refers to the presence of certain comparatively large open-end cells or pores in the wood, in addition to the small closed-end cells, or These large specialized cells are found in practically all Angiosperms, their function being to conduct sap from the roots to the leaves. The Gymnosperms have developed no pores for this purpose, but use their fibers to elevate sap.



The Side and Rear are not Lacking in

Southern Bungalow

Different Materials in Artistic Combination

THE bungalow home meets with much favor in many localities, and the design shown here is of a good size bungalow 26 feet in width by 49 feet in depth with an 8 foot porch across the front and continuing on one side where it has a width of ten feet.

As the plan shows, this bungalow contains quite a large size living room. An open fireplace with book case on either side occupies one end. A wide cased opening, the full width of the dining room connects these two rooms. A feature of the dining room is the large bay window with seat. A direct door leads into the kitchen. Here the sink is placed

directly under a large double window and the breakfast nook is conveniently arranged.

Next comes a large screened porch which contains the laundry tubs, icebox and other closet rooms. In the rear is a servant's bedroom which is provided with a large closet.

Two good sized bedrooms have been provided; the rear bedroom is connected with a large sleeping porch; this has five casement windows hung in pairs so that they can be easily closed in stormy weather. It will be noted that each bedroom has a very large closet with a window in it.



Designed by

A A. STEBBENS, Builder

St. Petersburg,

Flor a



What the Editor Thinks

Selling the Home Idea

In this issue we devote considerable space to the subject of home building and it is about this season of the year that the demand for homes will materialize. People seem to get the home owning desire fever stronger than in other months and for this reason we have prepared a rather special issue on home building; something that the contractor can use and that will serve as sort of a text book for the intending home builder, showing a wide range of desirable construction methods for home building.

Several building shows will be held during April and May where "Model Homes" will be built—all this will help to create the desire for a home.

Building Congestion

THERE is a vast amount of building necessary to catch up with what our nation requires; therefore 1923 appears to become a banner year for all sorts of construction. On account of the congestion due to such an extensive program, large building projects which are not urgently needed, such as monumental buildings, etc., are in many cases being held up.

Secretary of Commerce Hoover has made the recommendation that all new government buildings contemplated shall be postponed until there is a lull in building activity, and when this occurs the government can have its building done, so as to help out the building industry over a period of time when it will be appreciated.

In line with this, the Federal Reserve Board recently voted as follows:

"It is the sense of the Federal Reserve Board that until the present congestion in the building activities of the country is materially relieved and costs of building are lowered, Federal Reserve Banks should not add to the ex-

isting difficulties of the situation by carrying on any branch building operations other than those now in progress or for which contracts have already been entered into."

The action on the part of the government is to be highly commended, as the entire building industry can give its time to private enterprises which our country needs for its future prosperity.

The Troubles of Good Business

P ROSPERITY in the building industry this year will of course bring its own troubles, and one of the largest single factors will be a shortage of labor, principally common labor. Every building contractor should avail himself of the machinery that is now obtainable for cutting down labor handling.

For instance, any man who has used a concrete mixer would never go back to the old method of mixing it by hand. Likewise, the hod carrier's job should disappear. Machinery can take the place of many hands in the building line and can be had at less cost than the pay for labor.

Tax Exemption at an End

QUITE an impetus to the building of homes was given by the tax exemption ordinance enacted in various localities.

The Court of Errors and Appeals of New Jersey recently declared such legislation in New Jersey as unconstitutional, and on March 20th the Supreme Court of New York also declared such legislation unconstitutional in New York.

Ordinances allowing tax exemption were passed in good faith and many thousands of home builders went into building projects on the belief and assurance that their total investment would be reduced materially by the tax exemption for a number of years.

During the year 1922 in the City of New York alone, 13,357 dwellings were constructed.

Many thousands of home seekers in different localities were encouraged to build homes in the suburbs and investors were solicited to build apartment houses to overcome a very serious housing shortage which existed at that time. Under the stimulus of tax exemption, these thousands of buildings have been erected and their owners are now placed in rather a peculiar situation.

What effect these decisions may have on the future of home building is not yet apparent, but of course it will discourage some, but the fact remains that houses are wanted, and where a want exists the demand will be filled at some time.

Advising Home Owners

THE great trouble with most people desiring to build a home is that they have no conception of what things cost or their quality.

It should be part of the builder's service to explain these points to the intending home owner, showing how, by the expenditure of a few extra dollars, greater economy is really obtained and what may appear as extra expense at first is really a sound investment that will save money in the long run.

Home Sweet Home

In this issue we publish an interesting description of the birth place of John Howard Payne, author of "Home, Sweet Home." This song has been of more help to builders than perhaps any other single literary effort. It is one of the best selections a building contractor can use as a motto in his business, as the words of the song appeal directly to what is innermost in the heart of every man and woman.



PLUMBING

Modern Methods and Equipment

Arranging Plumbing for Modern Homes

THE plumbing of a home is most important, as on its proper installation depends the continued good health of its occupants. On nearly every job this part of the work is let out as a separate contract to a plumbing sub-contractor, but there are many little things the general contractor should look after to make it a better job.

One important thing to do when you are favored with a contract to build a new home is to carefully look over the plans and see how the plumbing fixtures are laid out. You must remember that soil pipe and waste pipe branches occupy a good deal of space and that they cannot go through partitions or floors unless provision is made for them.

Too frequently this matter is overlooked and then when the plumber comes on the job he has to rip into the framing or run his stack in a corner, or as we sometimes see, the soil pipe comes through the center of a kitchen ceiling and then branches over to the side wall—hardly a nice ornament to look at. Careful consideration given in the first place will avoid such eye sores.

It may be that just rearranging the bathroom fixtures will allow a shorter length of soil pipe to be used. One must remember that the soil pipe and other waste lines need a certain pitch for proper drainage and it is this slant that takes up room. When the pitch is such that the pipe needs to come below the proposed ceiling height

the sensible thing to do is to furr down the ceiling so that it will be a little lower. It will then be straight and have no break on its surface.

A FOUR inch soil pipe will not fit in a six inch wall of the ordinary stud, lath and plaster construction, because the hubs are six inches in diameter. One side or the other of the studs should be furred out to prevent a break in the wall surface of any of principal room. It is better to lose a couple of inches of floor space than have the permanent disfigurement of the wall stamping the whole job as one of lack of foresight on the builder's part.

Sometimes a little advance thought on the subject will prevent cutting joists after the plumber comes on the job. Proper space should be left for the soil pipe, and your floor framed to suit this. A few minutes thinking ahead and carefully drawing out a framing plan will save many hours of needless work. Sometimes it will be found simpler to frame the bathroom joists in an opposite way to those of the other rooms so as to properly enclose the pipes.

In brick or other masonry structures, proper channels or chases should be allowed for the piping—these should be made when the wall is being built and not cut out after the wall is already up. The latter way seems to be a favorite method—Why?

One should carefully look at the specification to see what kind of

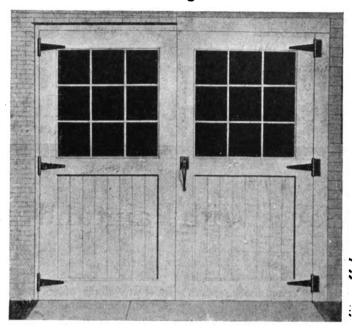
bath tub and other fixtures are specified. One must remember that a big porcelain tub filled with water is quite a heavy load, and in most cases where a tub of this sort is to be used it is well to double the joists and their supporting studs so as to carry this extra load, otherwise there will be an excessive amount of deflection to the joist which will be apt to badly crack the plastered ceiling below.

OME folks want extra big bath tubs, ranges, etc. Be sure your doorways and hall turns are large enough to accommodate them or get them in before the partition studs are in place. It makes you look pretty foolish to stand gaping at a big tub and a narrow doorway, and then it makes you mad when you realize how much it will cost you to rectify your lack of looking ahead.

If, as is sometimes unfortunately the case, it is necessary to run a soil pipe stack down in the corner of a room it can be blocked out square, and when this is done the opposite corner of the room should be likewise blocked out for the sake of symmetry. These are little points that should be considered.

Another little point is to use more tees instead of couplings on the water pipes. The reason for this is that any future connection can be then easily made without ripping the whole pipe line apart. It is surprising how often an extra water outlet is desired.

No. 801 Garage Door Set



Good Looks Economy Practicality

Set No. 801 includes:

Thumb Latch No. 27

- 3 Pairs No. 840 Reversible "T" Hinges (8 or 10-inch)
- 1 No. 820 Chain Bolt
- 1 No. 830 Foot Bolt
- 1 No. 5 Door Pull
- 1 Pair No. 40 Padlock Eyes

Write for catalog.

OORS swung on hinges are preferred by many for garage use. Especially when figuring is "close" you will find that

No. 801 Garage Door Set

meets the requirements even of the particular type of owner—and of course at far less cost than hanger-and-rail.

The features of this set are—its exceptionally attractive appearance, with the striking No. 27 swinging door latch, with its long aristocratic lines, then the graceful, clean-cut hinges—and best of all, this set can be used as a full surface hinge or can be reversed and mortised in jamb when used on a brick building, as shown in the illustration.

Supply houses should have a full dozen of this number and Builders will find 3 sets not too many for the season; obtainable, neatly packed, complete with screws, from any building supply or hardware dealer.

NATIONAL MANUFACTURING COMPANY

STERLING

ILLINOIS





PAINTING

Practical Points of Interest to the Builder

Treating Cement Surfaces With Paint and Stain

By A. ASHMUN KELLY

THE difficulty met with when applying an oily paint to a plaster containing free alkali. such as cement and lime plaster, is the action of the alkali on the oil, forming a soapy compound that easily goes to pieces in course of time, either in sheltered or exposed places.

At first this trouble was met by coating the surface with an acid wash, using muriatic acid, and making an 8 per cent solution, with water. Unfortunately, when cement contains much alkali the acid tends to neutralize the lime and convert it into calcium chloride. This of course is injurious to the cement surface, causing it to disintegrate.

If paint is applied to such a surface it has but a very poor and uncertain foundation. This in spite of the fact that after the acid wash has been freely applied it is washed off with clear water.

There are several commercial liquids on the market designed to overcome the alkalinity of cement surfaces and form a perfect water-proof and stable coating. Some years ago zinc sulphate dissolved in water was much in vogue as a cement coating, and it had the added merit of being cheap and easily applied.

Equal parts of the sulphate and water were used, it being then applied with a stiff brush. It forms a hard coating at the end of two or three days. The caustic lime is changed to calcium or gypsum, while

zinc oxide is deposited in the pores of the cement.

Another method consisted in the application of 10 lbs. of carbonate of ammonia with 45 gallons of water. This is said to leave a perfect surface for paint, through the formation of insoluble calcium carbonate.

In neither of the above processes is injury done to the surface of the cement. Where mortar used in stucco work contains much lime it is better to apply two coats of these liquids, two coats made weak being better than one strong coating.

SOME years ago the National Association of Cement Users examined into the merits of quite a number of commercial waterproof cement and concrete paints, and came to the conclusion that they were better than the colorless solutions examined.

They divided these paints into two classes, those which gave white or light tints, or other pleasing colors, and those which were composed of tar or asphalt, the dark color of which forbid their use where decorative effects were desired.

The advantage of a very finely divided pigment consists in its capacity for filling the very small pores of the cement or concreted surface. In most cases the proportion of pigment used was small, and by using a cement color very little change in the appearance of the original surface is made. But if a change be desired, al-

most any shade of color may be employed, the coating being serviceable as well as decorative.

In using pigments it is well to observe that some are safe to use with cement, and others not safe. Those of the former class are yellow ochre, zinc yellow, red oxide of iron, ultramarine blue, ultramarine green, zinc oxide, mineral black, and for a gray tone, graphite and lithopone.

If a cement or concrete surface has stood exposed to the weather for say one year it will have parted with most of its surface alkali, and may be painted with oil paints. But it is not always certain that there is still some lime remaining. Even when treated with chemicals free lime may work out from the interior to the surface.

In this connection some formulas for mixing paints for use on cemented surfaces will be found useful. There should be at least three coats, the priming coat, the body coat and the finish coat.

POR priming take 100 lbs. of best white lead in oil, 4 gals. of real boiled oil (or in place thereof 9 galls. of raw linseed oil and 3 half-pints of turpentine japan) and 1 gall. of turpentine. The second or body coat. 100 lbs. of white lead, as before, 4 galls. of raw linseed oil (1-3 boiled oil and 2-3 raw) or 4 galls. raw oil and 1 pint of turpentine japan drier. The finishing coat, 100 lbs. of white lead, as before, 3½ galls. of linseed oil (1-3 boiled and 2-3 raw), or 3½ galls. raw oil and one pint of turpentine driers.

FREE Offer to Contractors

Fill out and mail the attached coupon for a pint of Johnson's Floor Varnish free and all charges prepaid. There is no obligation whatever connected with this offer. All we ask you to do is test it out in comparison with the brand you are at present using.

Please send me free, all charges prepaid, one pint of Johnson's Floor Varnish. I will test it and report results to you.									
	Name				 	 	 		,
	Address				 	 	 	 .	•
	City and St	ate			 	 · · · · ·	 		
	I Buy Varni	sh from.	. 		 	 	 		

from......(Enclose Your Business Card)

JOHNSON'S FLOOR VARNISH

You know Johnson's Floor Wax—it's used all over the civilized world for polishing hard and soft wood floors. We want you to know Johnson's Floor Varnish, too. Our Varnish is just as good as our Wax. Johnson's Floor Varnish is easy to apply and has good body. It dries free from dust in two hours, and hard over night—gives a beautiful, high gloss which will not chip, check, mar, blister or scratch white—has great elasticity—is very pale in color—and waterproof. Johnson's Floor Varnish is a splendid all-purpose varnish. Use it not only for floors, but for trim and furniture. May be rubbed if desired.

"Made to Walk On"

Johnson's Floor Varnish is tough, elastic and durable. It gives a beautiful, high gloss which will not chip, check, mar, blister or scratch white. It is very pale in color so can be used on the lightest floors and linoleums.



Dries Hard Over Night

Johnson's Floor Varnish dries free from dust in two hours and hard over night. It imparts a beautiful, high lustre—has good body—will give long wear—is absolutely water proof—and will stand all reasonable tests.

Digitized by Google



FINANCE and REAL ESTATE

Helpful Data for the Builder Who Builds to Sell

Financing a Home As a Cure Against Communism

N Pawpaw, Kansas, there was a communist, who yet managed to hold the job of schoolhouse janitor, and was wont to argue about the institution of property wit ha member of the school board.

"Now, how can I ever get to own a home under this damned capitalistic system?" said the janitor to the member one day.

"I'll take you up to the Building and Loan Association and show you how to get a home," answered the school board member. He was as good as his word, and the janitor started making his payments on a home.

The other day the former school board member met the janitor for the first time since he had left the board and asked how the house was getting along.

"Oh, I've got it nearly paid for," was the answer.

"And, I suppose you are ready to divide it with any good communist who might come along?"

"Hell! Forget that stuff!" exclaimed the janitor. "I forgot it a long time ago."

"This incident reveals the double interest of the National Lumber Manufacturers' Association in deciding to get behind the building and loan movement," said an officer of that Association recently. "It builds homes and builds solid citizenship. The difference between a communist and a capitalist is usually the difference between their present econo-

A Title Deed to a Home Is a Self-Evident Argument Against Socialization

mic positions. Give the communist some property, he is no longer a communist.

"So rapidly growing is the building and loan extension movement inaugurated by the Southwestern Retail Lumber Dealers' Associationd—covering the states of Missouri, Kansas, Arkansas and Oklahoma—that it has got beyond the capacity and territory of that Association, and the National Lumber Manufacturers Association was appealed to for help in the work of educating building and loan association organizers.

"There is such a demand for men who know how to organize and run such associations—both fieldmen and local executives—that existing associations can no longer supply them. About sixty building and loan associations have been organized in the four states named in the last two years.

"To meet the demand for knowledge of building and loan association organization and to train managers, the American Savings and Loan Institute has been started in Kansas City.

"Thirty men are now taking a course of instruction conducted in co-operation with the Kansas City School of Commerce, and applica-

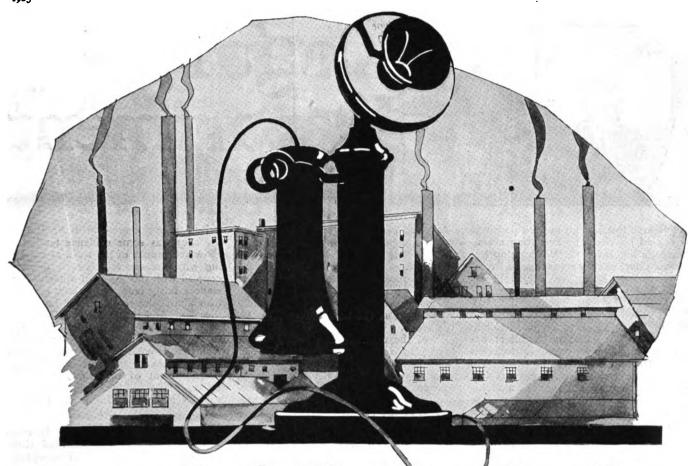
tions have been received from several hundred persons residing in all parts of the country for enrollment in the correspondence school now being started.

"Chapters of the Institute are about to be established in Ohio, Washington, Michigan and California. The universities of Michigan, Oregon and Washington are considering the advisability of teaching the subject, and so are other state universities."

As an illustration of what cooperative home building can accomplish W. S. Dickason, a prominent lumber merchant of Kansas City, who was largely instrumental in initiating the building and loan revival in the Southwest, informs the National Association that in the little town of Hiawatha, Kansas, forty-nine homes were built in the first year of the local Building and Loan Association.

Frank A. Chase, the active field organizer of the new movement, has all the fervor of an evangelist and has addressed over 200 meetings within a year in the interests of the extension of the home-owning movement, not only as a sound business extension movement, but as the best kind of applied sociology.

Reports from all sides indicate that the next phase of the present era of building activity will be characterized by a strong tendency toward the building of individually owned suburban homes, which gives the Building and Loan Associations a favorable environment in which to work.



At Your Call

NATIO

Natco service is no farther away than the width of your desk—if you live within the New York, Philadelphia, Chicago, Boston or Pittsburgh areas. There is a Natco branch office in each one of these cities maintaining a hollow tile expert for your convenience. If you are outside these areas a post card will bring one of our representatives to you speedily. Whether your problem is a bungalow or a skyscraper Natco building experience may save you time and effort. Take advantage of it. Call or write.

NATIONAL FIRE PROOFING COMPANY

434 FULTON BUILDING A PITTSBURGH, PA.



A N architect has no implied power to bind his client by accepting a contractor's bid, holds the Washington Supreme Court in the recent case of Brom-

Architect's Power to Bind Owner by Acc pting Bids ley vs. McHugh, 210 Pacific Reporter, 809. In reaching this conclusion, the court cites its previous holdings that an architect has

no implied power to purchase materials or contract in behalf of the owner. In one of the cited cases, the court had said that there is nothing in an architect's engagement that is calculated to mislead third persons in assuming that he has such power to act for the owner. In another of the cited cases it was declared that, except as specially authorized, an architect is not entitled to modify the contract existing between contractor and owner.

A, HAVING a set of blue prints, ento prepare specifications, etc.," writes an Eastern subscriber. "There was a

Architect's Right as to Compensa-

verbal agreement that B was to receive \$50, the total of items fixed for various services to be rendered by him. Five dollars was paid

down to B. Before any of the work was done, A telephoned B to omit reproduction of the blue prints, but to do the rest of the work. B replied that unless one-half of the price to be paid be deposited he would not start work at all. He claims right to retain the \$5 deposit and the original blue prints. What are the rights of the parties?"

There was a single contract to do certain work, including reproduction of the blue prints, for a lump sum of \$50. Therefore, B was not bound to do any work on A ordering elimination of that item. He could treat the contract as broken and retain the \$5 to apply on damages sustained through A's breach of the original agreement. But he could not refuse to go ahead with the work and retain A's plans. B has no legal lien on them under the circumstances, because he has done no work in connection with them. Since A has thus broken the original contract B is not bound to do the remainder of the work,

excepting as he and A may be able to reach a new agreement. B may insist on A paying down any sum that B may fix, because A is asking to have the contract modified, by having part of the original work omitted, and B is entitled to insist on other modifications being made, such as the time for payment for the work. But had A lived up to his part of the contract. B would not have been justified in demanding payment of half of his compensation in advance. Because only \$5 was demanded in the first instance no more became due under the original contract until full completion of the work.

A N Illinois contracting firm asks concerning the legal effect on its right to recover the contract price for a house, despite a settling of the structure

Owner's Taking Possession of Building as Acceptance of Job due to structural weakness, of the owner having moved into the building without protest or notice of reserved claim on ac-

count of the defect. Does the owner's moving in constitute a waiver of any claim on account of the defect?

It has been frequently declared by the courts that the mere fact that an owner goes into possession of a building does not constitute a waiver of defective performance on the part of the contractor. This is particularly true where the defects were not known to the owner when he occupied the building, but it is also true that acceptance is not conclusively established by taking possession with knowledge of defects and without express protest. The reason for the rule has been thus stated by the Utah Supreme Court:

"Before it can be held that an owner waives his rights by going into possession of his own house, he must have a clear choice between accepting and rejecting the work as done. The owners of buildings have no such choice where the building is erected on their own ground. Hence the mere act of going into possession cannot be made conclusive evidence of waiver." 129 Pacific Reporter, 417.

Illinois decisions to the same effect are cited at page 798, 9 Corpus Juris.

But taking possession is treated by he courts as some evidence tending to show acceptance of the work as complying with the contract, and if there be coupled with this proof of other circumstances fairly tending to show a waiver of claims, the owner will be bound thereby. And there is a decision of the Massachusetts Supreme Judicial Court to the effect that where defective performance is not the fault of the builder, the owner's acceptance of the building as in fulfillment of the contract may be inferred from his taking possession, despite a protest on his part. (Gray v. James, 128 Mass., 110.)

The law reports show that in many cases owners have safeguarded themselves against inferences of acceptance in taking possession, by expressly protesting that their assumption of possession was not to be regarded as a waiver of claims. And failure to make such protest or give notice is undoubtedly of some evidentiary weight on the question of acceptance.

On the whole, the law editor of this journal is of the opinion that in the ordinary case the owner's taking possession is not a strong reliance. On the owner proving that the builder has failed to comply with the terms of the contract any judge or jury would be apt to resolve in favor of the owner all doubts as to whether he intended to waive his claim, by taking possession.

NUMEROUS court decisions in the law reports attest the proposition that expensive controversies frequently arise over a supposition on the part of

Near Contracts in the Building Trades an owner or a builder that negotiations have culminated in a binding contract, whereas the proceedings are actually abortive.

Sometimes it is found that a supposed contract is not a contract at all because there is no mutually binding obligations. One of the fundamental elements of a binding contract is mutuality of obligation. In one or two of the states agreements have proved to be unenforceable because not reduced to writing, as required by statute. In

ATTINIS SILVERSAWS

IT'S ALL IN THE GRIND

Life is a huge grindstone. Some people are ground down—others are polished up—it all depends upon the kind of stuff that's in them. A saw is a lot like a man—what it is when it comes from the grindstone depends upon the kind of stuff it's made of.

No amount of grinding or polishing will make up for "poor stuff." And on the other hand, as we said in our last month's advertisement, much of the service of Atkins Silver Steel Saws comes from the grind.

You know a good hand saw is ground tapering from heel to point. But if that were the only thing that good workmen demanded, this would never have been written. It's the double taper of Atkins Saws that makes them fast, easy cutters. They are ground not only to taper from heel to point, but they are as carefully tapered from teeth to back. That two way taper is what makes them

"The Finest on Earth."

Send for Educational literature, free—
"Saw Sense"

"Saw Fitting For Best Results"

"How To Care For and Use Cross Cut and Hand Saws"

E.C.ATKINS & CO.

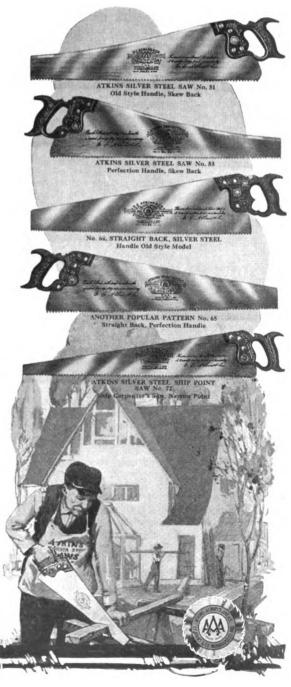
ESTABLISHED 1857 THE SILVER STEEL SAW PEOPLE Home Office and Factory, INDIANAPOLIS, INDIANA

Canadian Factory, Hamilton Ontario
Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks in The Pollowing Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore. San Francisco

Seattle Paris, France Sydney, N. S.W. Vancouver, B.C.





other cases, contracts have been held to be too indefinite in their terms to be legally enforceable. In still other cases -although they have been rare-contracts have been declared to be void as providing for the erection of a structure to be used for an unlawful or immoral purpose. And in other casessomewhat numerous—building contracts have been declared to be invalid because violative of building laws and ordinances.

The decision of the Alabama Supreme Court in the case of Bissinger vs. Prince, 117 Alabama Reports, 480, 23 Southern Reporter, 7, aptly illustrates the point as to the importance of a definite understanding that an agreement has been effective. In that case it appeared that contractors submitted plans and estimates for a building. The owner by letter expressed intention to accept the bid on condition that certain alterations be made. He also stated that on arriving at the place where the building was to be constructed he would enter into a written contract. He did write that the contractors might consider that they had the contract, but added that they had better not commence work until his arrival, because he expected to change the plans. Under these circumstances it was decided that no binding contract was consummated.

A standard legal authority makes the following summary of numerous decisions of courts of last resort, showing that making of a binding offer and its unqualified acceptance are essential elements of an enforceable contract:

"A mere request by the owner for bids or tenders for the erection or construction of particular work is not an offer on his part to accept any particular bid or tender, or to accept the lowest bid or tender, and without an express or implied acceptance of any bid or tender there is no binding contract. Of course, if the owner accepts a particular tender or bid, the contract is consummated, and is binding on both the builder and the owner. The acceptance of the bid must, however, be unconditional and without change in the terms of the offer; and if the acceptance varies from the terms of the bid or tender the builder is entitled only to consider such acceptance as a new offer to be accepted by him on the terms thereof; and where a tender is not responsive to the proposal, it is an offer by the contractor to do the work according to the terms of the bid, and its acceptance by the owner creates a contract according to the terms of the bid. Where in pursuance of a request for bids, a bid is made and accepted by the owner, the contractor is justified in refusing to sign a formal contract drawn up by the owner which contains stipulations not contemplated in the proposal for bids, the bid, and its acceptance; but if a hid in answer to a request

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the coranswers of general interest to the trade will be published in these columns. All inquiries must be accompanied by the name and address of the correspondent so that he may be answered direct or that he may be requested for further information if necessary to the intelligent answering of his question. No names will be published, only initials or a nome de plume. Remember that this service is free to subscribers, Address Legal Department, Building Age and The Builders' Journal, 239 West 39th street, New York City.

therefor is accepted and subsequently a written contract is entered into by the parties, varying from the terms of the request for bids, the bid, and the acceptance, the original contract evidenced by the request, bid, and acceptance is merged in the written contract. A proposal for the construction of a particular work may be made as an offer, although made to no particular person, and if accepted by another before its withdrawal it will create a binding contract. No particular form of words is necessary to constitute an acceptance of a bid or tender, provided the intention of the owner to accept is evidenced. But there must exist such circumstances as will show an intention to accept the bid. A provision in the proposal for tenders stating that the bidders will be required to give security for the performance of the work may be waived by the owner, and a valid contract created on the acceptance of a bid, although no security is given by the bidder. A tender and acceptance may constitute a binding contract if so intended by the parties, although the acceptance may refer to a formal contract to be drawn up afterward."

T HE mere fact that a contract to deliver building materials to a contractor on the site of a particular job does not impliedly indicate that the

Material Sales Imply Exclusive Use on One Job

contractor is to use the materials on that Contract Did Not work alone, holds the Wisconsin Supreme Court in the case of

Stark vs. Burnham Brothers Brick Co., 186 Northwestern Reporter, 151.

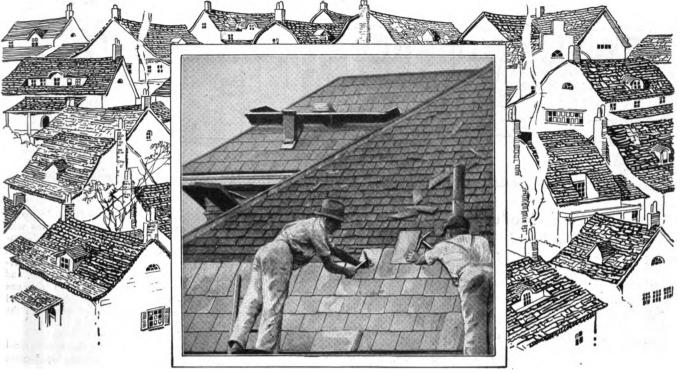
Plaintiffs had a contract to erect a building for a packing company in Milwaukee and contracted with defendant to deliver 500,000 brick at the site at a specified price. Subsequently defendant refused to deliver brick under the contract, excepting such as were to be used on the particular building. Plaintiffs sued for damages and the Supreme Court upholds their right to recover the excess of the market value of the undelivered material above the contract price. In part the opinion of the court said:

"Neither from the face of the contract nor from the testimony in the record can we construe this contract as containing an implied obligation on the part of the plaintiff that the brick therein specified are not only to be delivered to the Plankinton Packing Company's yard but are to be used solely in work to be done by the plaintiff for that company.

"It is urged by defendant that inasmuch as section 3315 (5), Stats., provides for a penalty for any person furnishing materials under a contract who shall purchase such materials on credit representing at the time of making the purchase that the same are to be used in a designated building or other improvement, and thereafter use said materials in the construction of any other building or improvement than that so designated without the written consent of the seller of the materials. that such statute should be by implication considered a part of the contract, and that therefore the use by plaintiffs or claim by them of right to use these brick for other work than that done for the Plankinton Packing Company must be considered a breach of their contract obligation.

"This contract was not a purchase upon credit, nor does the contract contain, even when read in the light of the surrounding circumstances, any representation that the same are to be used for any particular work or improvement for the Plankinton Packing Company by plaintiffs. Evidently it was not so considered at the time by the parties because by subsection 1 of the same section 3315 a materialman situated as was the defendant here is required within 30 days after furnishing the material for any specific building or improvement to give written notice of such undertaking to furnish materials to the owner of the building or improvement. The record is silent as to any such notice having been given by the defendant to the Plankinton Packing Company in accordance with such provisions, and we cannot indulge in any presumption that such notice was given.

"We are constrained to hold therefore that the plaintiffs were acting strictly within their legal rights under this contract at the time they made the tender for the balance of the undelivered brick on the contract price, and the defendant was not justified in then refusing delivery thereof as it did."



Laying Johns-Manville Rigid Asbestos Shingles right over the old roof

New Business!

-from every old roof in town

EVERY dilapidated roof in your neighborhood is a prospect for a new, fire-safe roof. Lay Johns-Manville Rigid Asbestos Shingles right over the old roof. It's easy to sell new roofs on this basis because the speed, economy and cleanliness of the job appeals to every house owner.

It's easier for you too. There's no tearing off the old shingles—an unpleasant job, you know. And then Johns-Manville Asbestos Shingles are surprisingly easy to

lay. The nails come with them; the nailholes are in them. Just line'em up, hammer'em into place and you're up the roof in no time.

If you get after the old roofs in your town on this basis you'll be surprised at the great amount of interest and profitable business you can create.

Write our nearest branch or to the address below for full particulars.

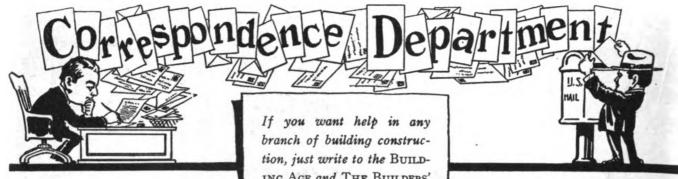
JOHNS-MANVILLE Inc.
Madison Ave. at 41st St., New York City

Branches in 56 Large Cities
For Canada:
CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto



JOHNS-MANVILLE Asbestos Shingles

Digitized by GOOGIC



Who is Who in Modern Home Building

T HE article "Building Model Homes in Germany," appearing in the Feb-ruary issue of Building Age, was very interesting to us and just what we have long wanted to see.

Every now and then we happen to hear people from foreign lands brag about the grandeur and beauty of buildings in foreign countries, stating that America has nothing that can compare with them.

We were glad to see a few plans of model houses of the German type, for down in our heart we feel that no country on the face of the earth can put anything over on the United States of America in the way of building improvements, or, in fact, anything else that they may see fit to undertake to

Personally the writer does not believe there is a thing made anywhere in the world that the brains and skill of the best American mechanics cannot equal, and it is more than likely they could make it better adapted to the wants of the American people.

The German houses shown in the BUILDING AGE do not show any superiority in style, convenience or general arrangement over the average American home. Their stairways are enough alone to condemn the houses. Right here we want to say that no winding stairs are permitted in the City of Omaha, not even to a cellar or an attic, and they should be prohibited everywhere.

They are a source of danger when it comes to moving anything up or down as well as being dangerous to all who have to use them. The stairs shown in the double house on page 35 are not very much of an improvement over an ordinary step ladder.

A few months ago we were informed by a friend right from London, England, that not over 25 per cent. of the houses there were modern, and those that were, many of them had the old zinc-lined bath tubs. That does not sound to us that they are way ahead of the U. S. A. in improved and up-todate building methods.

ING AGE and THE BUILDERS' JOURNAL Correspondence Department. We will be glad to answer all your questions without charge.

All readers are invited to discuss the questions and answers published.

Then again, take notice that all foreign mechanics who come to this country all use American made tools. If they happen to have a few foreign made tools with them, take a look at them and you will see they are of a clumsy, awkward design that cannot compare with the tool made by the best American manufacturers. There are cheap tools made in America, it is true, but the tools made by our best tool makers. we believe, are the equal of any foreign production for quality and service, and most of them are far better in design and convenience because of their being constantly improved and kept up to date in every essential detail.

We would like to see more illustrations of foreign constructed buildings.

TAVE you ever used any machinery or device which has saved you time and money?

Have you ever invented any way of doing a piece of work quicker?

If you have BUILDING AGE and BUILDERS' JOURNAL wants your experience, and will pay regular space rate for it.

Your description should tell just how you saved time and money, either by a special way of using machinery or by short cuts in construction. Point out what methods you were using before adopting your "Time Saver" and show how your new method turns the trick. You can submit as many articles as you want.

Address The Editor, BUILDING AGE and BUILDERS' JOURNAL 239 West 39th street, New York City.

placed side by side in our trade magazines, so we can see for ourselves who is who in this age of the world's improvements. Select buildings of the same class for both sides; we are perfectly willing to be on the square, and we will take off our hat to the one showing the best display of brains and skill in the art of improvements in the building crafts.

If American building does not stand first, then we want to urge our native born true American mechanics on to greater skill, greater ability and greater proficiency so that they can say to the world we can do anything and everything better than anybody else in the world can do it. No back seats for first class American mechanics. Come on, boys, "Let's go."—I. P. Hicks.

Loose Chisel Handles and Sawing Kinks

I N case firmer chisels get loose in their handles, which often times happens in shops when the steam heat is turned on, they can readily be fastened in again by wrapping a piece of old fine sandpaper around the tang or shoving the sandpaper in the hole. A little cold glue or mucilage will help to a better job and tighter.

For cutting timbers diagonally or obliquely across the grain and fibres rip saws do quicker and cleaner work than cross cuts, if not filed with too much rake to the teeth. This especially applies to saw cuts exceeding the usual 45 degree mitres such as on high pitched rafters, trusses, principal rafters, and such like. The nature of the wood makes no difference, although for wet and very fibrous timbers such as Hemlock, Spruce and Yellow Pine a good wide set of teeth will be necessary to keep the saw running free without sticking.

Working saws should be oiled more frequently than they generally are, for in every wood there exists a gum or resinous matter which adheres to the surfaces of the saw blades and makes them clog, stick and hard to push .-Owen B. Maginnis.

Expanded Wood Lath The Unexcelled Plaster Key ATHERS and Plasterers have long known that some day there would be a perfected wood lath. A lath with all the desirable qualities found only in wood, yet with none of the disadvantages of the old style straight lath. Exhaustive study and careful design brought out EX-WO. IT COSTS LESS IN THE LONG RUN EX-WO is so designed that it is a perfect base for all plastic coverings for either inside or outside work; for walls, ceilings, outside coverings and wherever lath is required. It may be applied on a covered with single plaster—the old way. exterior work direct to the studding without the use of sheathing; it practically forms a concreteor stucco slab. AUTOMATICALLY BACK-PLASTERS If used on sheathing or covering of old houses, it removes the necessity of papering or furring. The furring is part of the lath itself. It is so constructed that it adds the greatest strength to the building. The wood of the lath is so cut and distributed that it cannot buckle. . It can be applied easily, quickly and cheaply, being 16 inches wide and from 4 to 8 feet long. SAVES 35% OF FIRST COAT It saves plaster. There is a full clinching or plastic covering back of the lath. A careless workman cannot waste plaster. CONTRACTORS-ARCHITECTS Specify Expanded Wood Lath as backing for your Plaster and Stucco Work. rea covered with single trowel of plaster—the EX-WO way Large area EX-WO Lath offers unlimited possibilities to the contractors and builders who want to cut their materials cost without sacrificing their quality. Ask us more about EX-WO. EXPANDED WOOD LATH CORPORATION Plant and General Offices: TUSCALOOSA, ALABAMA Sales Office: 155 North Clark Street, Chicago

Heating the Livable Home of English Design

HE following article gives suggestions for selecting a heating system for a small house, and discusses briefly the advantages and disadvantages of hot air, steam, and hot water.

The more important computations are included, and the general arrangements for the different systems shown on the plans.

It is assumed that the owner has a preference for hot air, and the furnace and ducts are shown in Figure 1 and the location of the registers in Figures 3 and 4. A basement layout for a steam heating system is shown in Figure 2, and approximate arrangement of the radiators is also indicated in Figures 3 and 4, to avoid duplication of plans.

Hot Air System

A hot air furnace system is lower in first cost than either steam or hot water, although the difference is not so great when an apparatus of ample size is employed.

In the older systems of this type, it was common to find that the low cost of installation was due, to a considerable extent, to a furnace of inadequate size for economical operation, and pipes and flues so small that it was necessary to deliver air at a high temperature to secure the necessary air velocity and heat supply.

Facts and Figures tor
Hot Air, Steam,
and Hot Water Systems
By CHARLES L. HUBBARD

For the best results in furnace heating, all parts of the equipment should be such that an ample volume of air is admitted to the rooms at a moderate temperature, instead of a smaller quantity at a higher temperature. Sufficient air to bring in the heat at a temperature not exceeding 110 to 120 degrees is better than 150 degrees, which formerly was employed in many cases.

Hot air furnaces lend themselves well to humidifying devices, and should always be provided with an evaporating pan, located above the dome, and connected for an automatic supply of water.

One of the principal advantages of a furnace system is the ease with which the temperature may be regulated to meet varying outside weather conditions.

Steam Heating

One of the chief advantages of steam heating is the fact that heat may be carried to all rooms of a building with equal certainty, which is not always the case with a furnace system, and constitutes one of its chief disadvantages.

While the gravity system is confined principally to the cheaper grade of houses due to the difficulty of temperature regulation, improvements in "vapor" and "vacuum" systems have overcome this defect to a large extent, which has placed it practically in the same class with hot water, when properly installed.

Heat can be gotten up quickly with steam, owing to the small volume of water in the boiler. The pipes to upper floors may be concealed in partitions, when first-class workmanship and material are employed, and the work carefully tested before being closed in. Steam radiators may be about one-third smaller than those employed for hot water, owing to the higher temperature carried.

The objection to the presence of direct radiators in rooms may be largely eliminated by properly locating them with reference to the furniture, by using units of good proportion with relation to height and length, and by leaving the decoration to the care of the building superintendent or architect instead of the steamfitter's helper.

Hot Water

A system of hot water heating costs more to install than either hot air or steam, but has long been a favorite for dwelling house work.

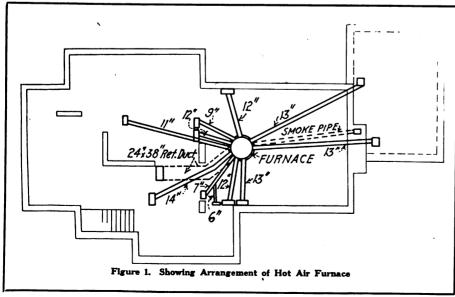
The temperature of the building is easily regulated, and owing to the large body of heated water in circulation, conditions are more nearly uniform than with steam.

The principal difficulty is the greater length of time it takes to warm up the rooms in the morning.

Neither steam nor hot water systems are particularly well adapted to the application of humidifying devices, which is considered an important detail of heating systems.

Heating Computations

The preliminary computations are practically the same for any system of heating. In the present case the net wall surface of each room has been multiplied by a transmission factor of 20, and the glass by 84, and the results added.



There are Furnaces and Furnaces and then-there are



A Health Furnace, Every Seam Welded, Never Leaks

HESS FURNACES

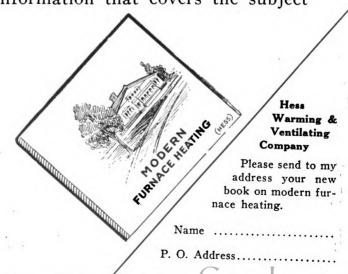
THE superior advantages of the WELDED STEEL HESS FURNACES are so unusual and so desirable that their investigation will be a revelation to you.

You will find the HESS admirably adapted to heating all homes from the modest bungalow up. Don't decide on a heating plant until you know the whole story of the HESS—the furnace that gives universal satisfaction with surprisingly economical maintenance. We have prepared an interesting booklet with facts and proofs written in a clear understandable manner, that you should have. It will be sent to you on request. Fill out and mail coupon below.

A hand book of heating information that covers the subject completely.

Hess
Warming &
Ventilating
Company

1201 C Tacoma Building Chicago



This gives the heat loss by transmission per hour. Leakage is provided for by multiplying the transmission loss by 1.25. Another correction that for exposure, has been made by use of the following multipliers or factors, for rooms exposed to different points of the compass.

Exposure	MULTIPLIER
N	1.32
ΝE	1.22
E	1.12
SE	1.06
S	1.00
S W	1.10
W	1.20
N W	1.26

The sizes of the warm air pipes and flues are determined as follows: Assuming the air is returned to the furnace at 60 degrees, and delivered to the rooms at 115 degrees, each cubic foot will

$$\frac{115-60}{55} = 1 \text{ B.T.U. Hence}$$

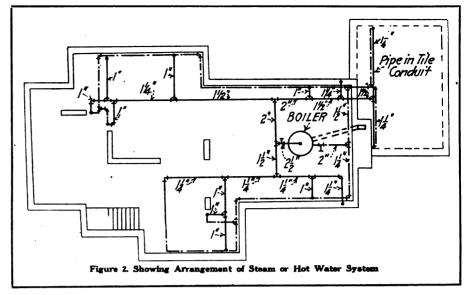
the B.T.U. lost by transmission and leakage per hour (corrected for exposure), divided by 1, will give the cubic feet of air to be supplied per hour.

In other words, the B.T.U. to be supplied per hour for a given room, divided by 60, will give the cubic feet of air to be supplied per minute, when the return temperature is 60 degrees and the supply is 115 degrees.

For dwelling house work, we may assume air velocities to first floor rooms of 200 feet per minute, and to second floor rooms, 250 feet per minute. Hence, the cubic feet to be supplied per minute, divided by the above velocities, will give the required areas of the hot air pipes, in square feet, for first and second floor rooms respectively.

A table for changing areas in square feet, to round pipes, with the diameter expressed in inches, is given below.

DIV. OF PIPES IN INCHES	AREA IN SQUARE FEET
6	0.196
7	0.267
8	0.349
. 9	0.442
10	0.545
11	0.660
12	0. 7 85
13	0.922
14	1.07
15	1.23



All horizontal basement pipes between the furnace and the uptakes to registers should be of circular section, and given as much upward pitch as space will allow. The same form is preferable for the vertical flues, but as these are usually carried in the partitions it is generally necessary to flatten them.

Vertical flues should never be less than $4\frac{1}{2}$ inches in depth and it is better to limit them to 5 or 6 inches when the required length exceeds 12 inches. The flattened round pipe exerts less resistance to the flow of air than a rectangular flue of equal area with square corners.

Whenever possible registers should be placed in the wall close to baseboards, in preference to the floor as in this location they do not catch dirt or interfere with rugs.

Common sizes of registers for round pipes or flattened pipes of equivalent area, are given below.

DIV. OF PIPE	Size of Register
IN INCHES.	in Inches.
6	6×10
7	7×10
8	8×12
9	9 x 14
10	10×14
11	11 x 16
12	12×16
13	14 x 20
14	14×22
15	15×22

The cold air or return duct should have air area equal to at least threefourths the combined areas of all the hot air pipes, and when space allows, it is well to make it full size. The return air register is best located in the front hall, as by opening all doors slightly, the hall and stairway may serve as a return duct without special construction.

Sometimes a return system will cause cool drafts along the floor. If these prove troublesome, they may usually be avoided by placing one or two registers at the floor in the coldest part of the room, and connecting them with the cold-air box of the furnace by means of ducts carried at the basement ceiling.

Below is given the sizes of uptake flues to the different rooms and the corresponding register dimensions.

The sizes of the horizorital pipes are marked on the basement plan.

NO. ROOM	FLUE	REGISTER
1 Living Room	2 6"x18"	2 9"x18"
2 Dining Room	6"x18"	9″x18″
3 Hall	14" dia.	14"x22"
4 Toilet	5"x 6"	6"×10"
5 Sun Porch	2 13" dia.	2 14"x20"
6 Bedroom No. 1.	6"x22"	14"x20"
7 Bedroom No. 2.	5"x13"	9"x14"
8 Bedroom No. 3.	5"x18"	11"x16"
9 Bathroom	416" x10"	8" - 10"

Both hot air registers and direct radiators are shown on the first and second floor plans, but of course, only one would be used.

The size of furnace is best determined from the total number of B.T.U. to be supplied per hour in the coldest weather, the efficiency of the furnace, and the rate of combustion or pounds of fuel burned per square foot of grate per hour.

In the present case the total B.T.U. to be suppied per hour in zero weather was found to be 103,000. One pound of anthracite coal contains about 13,000 B.T.U., and

88888



Order Beaver Wall Board with the RED BEAVER BORDER

NOW

The ad shown above comes out April 14 in the Saturday Evening Post. It will also appear in the Literary Digest, the American Magazine and the Country Gentleman.

This ad and every big ad that follows during our Half Million Dollar National Advertising campaign will feature the new RED BEAVER BORDER. The public will quickly learn to know this border as the mark of genuine Beaver Wall Board and demand to see it. This important move will mean the immediate addition of thousands of dollars to the profits of Busy Beaver Dealers. It will practically eliminate substitution.

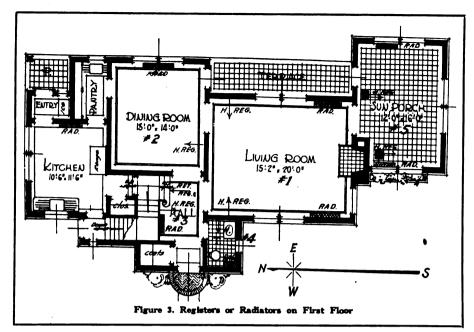
Order Beaver Wall Board with the new Red Beaver Border NOW. Be all set to supply the calls that our National Advertising will develop. We can ship stock with the new marking at once.

THE BEAVER PRODUCTS CO., Inc.

Thorold, Adminstration Offices: Buffalo, New York

London, England





with a furnace efficiency of 58 per cent, $13,000 \times 0.58 = 7,540$ B.T.U. will be utilized.

On this basis it will be necessary to burn a maximum of 103,000 ÷ 7,540 = 14 pounds of coal per hour. The most efficient rate of combustion will depend upon the size of grate and may be taken about as follows:

DIA. OF GRATE, IN INCHES	AVER. COMBUST'N, POUNDS PER
	SQ. FT. PER HOUR
18 to 20	3.5
<i>2</i> 2 " 24	4.0
26 " 28	4.5

Assuming for trial, a combustion of 4 pounds of coal per square foot of grate per hour, it calls for $14 \div 4 = 3.5$ square feet of surface, which corresponds closely to a 26-inch fire pot. It will be seen from the above table that a grate of this size will give a combustion of 4.5 pounds per square foot, but a 24-inch grate is slightly smaller than called for and the larger size would be more satisfactory in locations where the temperature frequently falls to a low point.

If zero to 10 degrees above is reached only occasionally, the smaller grate would be ample, and the furnace could be forced slightly at such times. In general, it is more satisfactory to use a furnace or boiler of ample size and run it moderately, although too low a rate of combustion is often wasteful in the use of coal.

In computing the size of radiators for steam heating the B.T.U. to be

supplied per hour in each room may be divided by 250, which is the average efficiency of cast-iron radiation in low pressure steam heating, and gives the required surface, in sq. ft.

For hot water heating the computed size for steam radiators should be multiplied by 1.5, on account of the lower temperature of the water, as compared with steam.

The grate area of the boiler or heater may be determined the same as for a hot air furnace.

In general, radiators should be located in the coldest part of the room, as along outer walls, beneath windows, etc. In the small size rooms, found in the average dwelling house, they are usually placed with reference to furniture, location

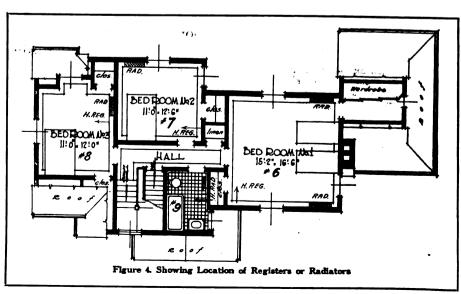
of risers, etc., and air diffusion depended upon to distribute the heat.

Hot air registers are commonly so arranged as to give as short a run as possible between the furnace and uptake flues, and also in such an manner as to carry the flues to upper floors in inside walls. The furnace should be centrally located so as to give a fairly uniform length to the horizontal hot air pipes. In case of a steam boiler, this is not necessary, and it may be placed wherever most convenient, provided it is not too far from the chimney. Hot water comes between steam and hot air, in this respect, and the heater should be centrally located, or as nearly so as convenient, other factors being taken into consideration.

Radiator sizes for both steam and hot-water heating, computed by the method previously mentioned, are given below.

NO.	ROOM	STEAM RADIA- TION. SQ. FT.	WATER RADIA TION. SQ. FT.
1	Living Room	84	126
2	Dining Room	42	63
3	Hall	60	90
4	Toilet	12	18
5	Sun Porch '	100	150
6	Bedroom No. 1	60	90
7	Bedroom No. 2	30	45
8	Bedroom No. 3	40	60
9	Bathroom	18	27

It is assumed in case of furnace heating that the kitchen will be warmed by a coal range. If gas only is provided, a leader may be run from the furnace, or the room may be warmed when necessary by means of the oven burners. In case of steam or water heating a radiator is provided as shown in Figure 3.





"The Pershing Apartments, St. Paul, Minn."



This shows how the Sharp Rotary Ash Receiver is installed and used. It consists of a set of five, eight or twelve cans, mounted on a revolving steel frame beneath the heater. There is always a can under the ash pit. When this is full simply turn another into place. Easy to operate. Nothing to get out of order.

For Apartment Houses

The owners of the Pershing Apartments, St. Paul, Minnesota, extensive users of the Sharp Rotary Ash Receiver, have written us as follows:

"The Sharp Rotary Ash Receiver has been installed in all our apartments in this city, and is very satisfactory. . . . In our opinion, the system is well worth the investment."

SHARP ROTARY ASH RECEIVER

provides dust-tight, out of sight storage for ashes, and solves the problem of keeping tenants' basement store-rooms free from ash dust. It also overcomes the unhandy conditions of handling ashes of which apartment house firemen complain.

At this time we are offering especially attractive prices and terms to contractors and builders.

Write today for illustrated booklet, prices and specifications.

SHARP ROTARY ASH RECEIVER CORPORATION
223 Bridge Street Springfield, Mass.

SHARP ROTARY
ASH RECEIVER



Digitized by Google

Review of the Building Situation

BUILDING statistics for February, just published by F. W. Dodge Corporation, show that the volume of contracts awarded this February was greater than that of the corresponding month of 1922. The total construction contracts awarded in February in the 36 eastern states for which we give the figures, amount to \$281,139,800. The increase over the January total was 16%.

The February record for the 27 Northeastern states (omitting the South Atlantic district), shows an increase of 33% over February of 1922, and for the first two months of 1923 combined, the increase Janu-

ary and February, 1923, is 32% over the total for January and February of 1922. Those comparative figures are exceedingly interesting as they indicate that building activity will be stronger this year than the record which we thought was the banner year of 1922.

It should be noted that while the activity is large in volume in all districts, there has been a surprising increase in the Western and especially so the Southern districts.

The February figures show that 40% of the entire total of \$281,139,800 was for residential construction. This amounts to \$113,901,600 of the sum of contracts awarded. Of this

total, the sum of \$54,952,100 was for residence construction contracts awarded in the Northeastern states centering around New York. In other words, 48% of the total amount of residence construction contracts awarded was in these Northeastern states

February building contracts in New York State and Northern New Jersey, amounted to \$57,702,000, a decrease of 10% from January, but an increase of 5% over last February. The total of construction started during the first two months of the year, \$121,945,000, is 12% greater than the amount for the corresponding period of last year.

Record of February, 1923, Building Contracts Awarded

Classifications of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$3,569,400	\$7,193,500	\$3,789,800	\$7,937,700	\$5,989,500	\$2,519,200	\$3,698,700	\$34,697,800
Educational Buildings	2.369.900	5,390,200	4,328,200	3,800,500	4.879.700	1,339,000	5,560,600	27,668,10
Hospitals and Institutions	162,000	405,000	732,800	349,000	3,300,500		4,651,500	9,600,80
Industrial Buildings	1,385,000	5,778,000	826,200	5,706,900	13,537,500	284,000	12,757,000	40,274,60
Military and Naval Build-	, ,	, ,	•	, ,	,,	,,	, ,	,
ings	65.000	110,000		90.000	43,000		5 50.000	858.000
Public Buildings	80,000	130,700	35,800	194,000	328,000	. 25,000	350,000	1,143,50
Public Works and Public	•			•		•		-,,-
Utilities	1,253,700	1,688,800	1,413,400	11,292,500	13,731,300	805,000	8,708,300	38,893,00
Religious and Memorial	• •	, ,				•	., -,	,,
Buildings	50,000	503,000	289,500	560,000	1,775,000	167,500	998,900	4,343,900
Residential Buildings	4,860,500	33,929,200	16,182,400	13,325,900	27,620,900	5,121,100	12,861,600	113,901,600
Social and Recreational	, ,				•	• •	, ,	,
Buildings	831,400	2,574,000	1,508,800	829,700	2,791,000	158,000	1,065,600	9,758,500
Total	\$14.626.900	\$57,702,400	\$29,106,900	\$44,086,200	\$73,996,400	\$10,418,800	\$51,202,200	\$281,139,80

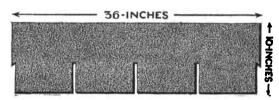
Building Projects Contemplated, February, 1923

. Classifications of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$6,065,900	\$18,365,800	\$11,150,700	\$10,271,200	\$32,751,000	\$1,267,200	\$16,503,000	\$96,374,800
Educational Buildings	4,411,300	3,475,800	7,577,300	2,790,000	15,426,000	811,800	21,113,400	55,605,600
Hospitals and Institutions		1,580,000	1,656,000	455,000	8,743,000	373,000	4,208,000	18,071,000
Industrial Buildings	2,567,000	5.374.200	2.289,100	6,316,500	15,323,900	907,500	25,537,000	58,315,200
Military and Naval Build-		-,	-,,	-,,	,,-	,		,,
ings	100,000	100,000	60,000	50,000	45,000			355,000
Public Buildings	727,500	603,400	785,000	2.815,000	6.293,500	133,000	1,393,000	12,750,400
Public Works and Public		,	, , , , , , , , , , , , , , , , , , , ,	_,,_	-,,		_,,	,,
Utilities	4,258,800	5,523,900	10,342,900	14.383.600	99,299,300	2,810,200	28,902,600	165,521,300
Religious and Memorial		0,020,000	,,	2.,000,000	,,_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-,0-1,-00	20,702,000	100,022,000
Buildings	1,133,500	1,290,000	2.007.500	1,285,000	3,598,500	407.000	5,071,500	14,793,000
Residential Buildings	11.173.500	72,250,300	27,742,100	23,924,400	71,597,100	2,775,800	20,625,600	230,088,800
Social and Recreational		, =,=00,000	20 , 12, 100	20,72 1,100	, 1,0,,,100	2,770,000	20,020,000	200,000,000
Buildings	1,573,000	4,968,500	4,188,800	1.678.500	18,713,500	264,000	3,551,600	34,937,900
Duituings	1,070,000	4,200,000	4,200,000		10,7 10,000	201,000	0,001,000	UT,9U7,9U
Total	\$33,066,500	\$113,531,900	\$67,799,400	\$63,969,200	\$271,790,800	\$9,749,500	\$126,905,700	\$686,745,600

Will You Trade \$20 for \$100?

It may cost you an average per roof of only \$20.00 more to use

NATIONAL AANA (Asbestos and Asphalt) SHINGLES



ON THE HOUSES YOU BUILD FOR RESALE

But the house can be sold for \$100.00 more, because you can furnish the Buyer, along with the deed, our

20 Year Guarantee

THAT

1-WATER CANNOT LEAK THROUGH THE MATERIAL

2—FIRE CANNOT BURN THROUGH THE ASBESTOS LAYERS

3—THE SHINGLES WILL NOT CURL

If the house was roofed with any other asphalt shingles (no matter whose make) the buyer could only secure from the maker a 10-year guarantee (most makers give no guarantee), and the chances are that before 20 years a new roof would be required, and this would cost 2 or 3 times \$100.00.

LOOK AT THESE DIFFERENCES!

National AanA Shingles

Rag Felt Type

Two layer base of sheet Asbestoe; origin mineral, consequently non-perishable and fire proof, plus double layer or 50% more of solid asphalt (the real weather resist-

Class "B" Fire Underwriters' Rating (the highest awarded asphalt shingles).

Guarantee against curling.

Wear Resistance

Fire Resistance

Non-Curling

One layer of Rag Felt origin animal and vegetable. Perishable and not fireproof, plus only one layer of solid asphalt.

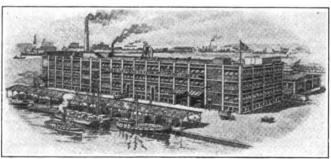
Class "C" (or lower) Fire Underwriters' Rating.

Known fact that Rag Felt base shingles do sometimes curl.

NATIONAL AanA SHINGLES COST LESS TO APPLY

because of their full 36-inch width in the strip or 4 in 1 form against 32-inch width in other makes. This difference in width means a saving of 12½ per cent in labor and nails, or approximately 40 cents per square, equivalent to a 40-cent less price.

Price \$7.25 per Square F. O. B. Cars Jersey City, N. J.



Buy from Your Building Material Dealer or Direct from the Factory

THE FACTORY BACK OF THE GUARANTEE

NATIONAL ASBESTOS MANUFACTURING COMPANY
162-192 HENDERSON STREET
JERSEY CITY, N. J.

Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building

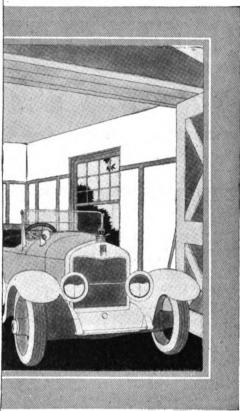
Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

	—		
NEW YORK PRICES		Feb. 28	Mar. 28
Feb. 28	Mar. 28	PLASTER BOARD— 32 x 36 x 1/4 in., Each	\$0.22
LONG LEAF YELLOW PINE— B. and Better Edge Grain Flooring, 13/16x244" Face \$96.50	\$96.25	MAGNESITE STUCCO— Per Ton \$70.00	•20 oc
Dimensions, SISIE, No. 1 Common, 2x4", 10"	45.25 62.00	TILE—	\$70.00
B. and Better Ceiling, 1/x334	47.00 70.00	1 in. Square or Hexagon, White, per sq. ft	\$0.25 .60
Dimensions, SiSiR, No. 1 Common, 2x4", 10' 49.00 Timbers, Merchantable, '05, 12x12", 10 to 20' 63.00 B. and Better Ceiling, 'x334' 47.00 B. and Better Fartition, 4"x334" 70.00 B. and Better Finish, 1x4" 57.00	67.00	8 x 8 in. Red Floor	.43
NG. 1 Common Dourds, 126	55.25	CHICAGO PRICES	
NORTH CAROLINA PINE— No. 2 and Better Flooring, 13/16x24/*	\$75.00	YELLOW PINE—	
Roofers, 13/16x51/2" 34.50	34.50	Boards, 1x8, No. 1 Com	\$48.00 52.00
DOUGLAS FIR— No. 2 Clear and Better V. G. Flooring, 1x3"	\$76.50	Dimension No. 1, 2x4, 12 to 14 ft	38.0 0
No. 1 Clear V. G. Flooring, 1x4"	78.00	Drop Siding, 1x6, B. and Btr	60. 00 70. 00
No. 2 Clear and Better Ceiling, 14x4"	55.50 55.50	Finish, 1x4, B. and Btr. 68.00 Flooring, B. and Btr. E. G., 1x3	93.0C
No. 2 Clear and Better V. G. Stepping 96.00	96.00	Lath, 4 ft., No. 1	8.10 52.0 0
WESTERN RED CEDAR— B. C. Perfection Shingles, per M	\$7.60	HARDWOODS-	*** ***
Washington Perfection Shingles, per M	7.55	Maple Flooring, 13/16x24, clear	\$99.5£ 77.00
CANADIAN SPRUCE—	52.0C	Oak Flooring, 13/16x214, Cl. Pl., White 108.50	108.50
No. 1 Lath, 1½"	\$8.63	REDWOOD— Bevel Siding, S1S1E, 10 ft., 20 ft., 1/2x4, clear	\$47.25
HARDWOOD FLOORING—	45.00	Finish, S2S or S4S, 1x6 to 8 in. clear	94.5 0
Clear Quartered White Oak, 13/16x2x234" \$158.50	\$162.75	Bevel Siding, 1/x4 in, Clear	\$49.00
Clear Plain White Oak, 13/16x234"	122.75 122.75	Shingles, Extra Clears, 16 in	5.50
Clear Plain Red Oak, 13/16x254"	113.50	Per M. f. o. b. iob	\$12.00
(All lumber prices furnished by Lumber) COMMON BRICK—		PORTLAND CEMENT— Bbls. in car lots to contractors, not including con-	
Per M. f. o. b. job	\$24.50	tainers \$2.20	\$2.20
PORTLAND CEMENT— Bbls. in car lots to contractors, delivered	\$2.75	Per 100 lbs. at warehouse\$3.05	\$3.20
STRUCTURAL STEEL—		CRUSHED STONE (cu. yd.)-	
Per 100 lb. at warehouse	\$ 3.44	% in. \$3.00 1½ in. \$3.00	\$3.00 3.0(
34 in. \$3.00 1½ in. 2.90	\$2.60	WALL BOARD— Per 1,000 sq. ft, in lots under M	\$50.00
WALL BOARD— 2.90	2.50	Per 1,000 sq. ft. in lots 1 M to 2/4 M	45.00
Per 1,000 sq. ft. in lots under 1,000 sq. ft \$50.00	\$50.00	Sand (per cubic yard)\$3.00	\$3.00
Per 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft	45.00	14 in. Gravel (per cubic yard) 3.00	3.00
2.3 lb.—26 gauge price per 100 sq. yd. delivered \$26.00 2.8 lb.—24 gauge light price per 100 sq. yd. delivered. 28.00	\$26.00	1½ in. Gravel (per cubic yard)	3.00
3.4 lb.—24 gauge heavy price per 100 sq. yd. delivered 30.00	28.00 30.00	ST. LOUIS PRICES	
Add 5 cents per sq. yd. for galvanized. LIME (Hydrate)—		YELLOW PINE-	***
Finishing, per 50 lb. bag	\$0.60	Boards, No. 1 Com., 1x4	\$44.00 60.50
Masons, per 50 lb bag	.45	Dimension, No. 1, SISIE, Short Leaf, 2x4 in., 12 & 14 ft. 38.00 Finish, S2S, B. and Btr., 1x4, 6 & 8 ft. 66.00 Flooring, B. and Btr., E. G., 1x3. 90.00 Flooring, B. and Btr., F. G., 1x3. 71.50 Lath, 4 ft., No. 1. 7.00	39.00
Sand (per cubic yard)\$1.75	\$1.50	Flooring, B. and Btr., E. G., 1x3	68.00 9 9. 00
% in. Gravel (per cubic yard)	2.75 2.75	Flooring, B. and Btr., F. G., 1x3	71.00 7.00
FACE BRICK— Tapeatry (delivered) \$46.00	\$48,50	limbers, No. 1, rough, short lest, exiz to laxis m.	
Caledonian (delivered) 43.00 Smooth Grey (delivered) 47.00	43.50	10 to 20 ft	41.50
Smooth Grey (delivered)	51.00 44.00	Finish, S2S, Cl., 1x6 in	\$94.50
SHINGLES		Siding, 4 in. Bevel, 10 to 20 ft	4.5 71.5
Asphalt, Single (per square) \$2.25 Asphalt, Strip (per square) 7.00	\$8.25 7.00	8 inch Colonial	78.75
STAINED WOOD SHINGLES—		HARDWOODS—Oak Flooring, 1/11/2 and 2 in., Clear Qtr. White\$106.50	\$109.50
16 in. Extra Clear (per square, delivered)	\$11.50 11.50	Maple Flooring, 13/16x21/4 in., Clear	110.50
18 in. Perfection (per square, delivered) 12.00	12.50	RED CEDAR— Siding, ½x6, Clear	\$46.00
24 in. Royal (per square, delivered)	12.25 12.50	Shingles, Clears, Per M	5.11
VITRIFIED SEWER PIPE—		Per M., f. o. b. job	\$18.00
4 in. (cents per foot)	\$0,12 ¹ / .18 ¹ / ₂	PORTLAND CEMENT— Bbls. in car lots to contractors, not including con-	+
SLATE ROOFING-		tainers \$2.35	\$2.3
Bangor or Slatington, 8x16 in. (per sq. at quarry) \$8.40 CORNER BEADS (Galvanized)—	\$8.40	STRUCTURAL STEEL— Per 100 lbs. at warehouse	\$3.35
Per Foot \$0.05	\$0.0 5	CRUSHED STONE (eu. yd.)	•
WALL TIES (Galvanized)— Per Thousand	\$5.00	1½ in	\$2.1F 2.1F
FLUE LINING— 814 v 814 in Per Foot \$0.30	\$0.30	WALL BOARD— Per 1,000 sq. ft. in lots under M	
834 x 834 in. Per Foot. \$0.30 834 x 13 in., Per Foot	.45	Per 1,000 sq. ft. in lots 1 M to 23/4 M 45.00	\$5 0.00 45.00
HOLLOW TILE— 8 x 12 x 12 in., heavy. Each, delivered	\$0.221/8	SAND AND GRAVEL— Sand (per cubic yard)	\$1.20
HAIR-		34 in. Gravel (per cubic yard) 1.45	1.45
Per Bushel \$0.60	\$0.60	1½ in. Gravel (per cubic yard)	1.45



The actual thickness of a sheet of Sheetrock is 3/8-inch of pure gypsum plaster



It makes tight-jointed, windproof, fireproof walls

It Nails and Saws Perfectly

Sheetrock is made from gypsum, and gypsum is a rock—yet Sheetrock can be nailed, like lumber. It can be sawed like lumber. It is toughly flexible, light, and easy to handle.

Sheetrock is fire proof—it will not burn, ignite or transmit heat; non-warping—it will not buckle or shrink; and permanent—it will last as long as the building.

Sheetrock is cast in broad, ceiling-high, smooth-surfaced sheets. It is the ideal wall and ceiling material for use in much new construction and in all alterations and repairs. It comes all ready for use; you simply nail the Sheetrock to the joists or studding. Takes any decoration; paper, paint or panels. Sheetrock Finisher easily and quickly conceals nailheads and joints.

Your dealer in lumber or in builders' supplies sells Sheetrock. Mail the coupon today for a sample of Sheetrock.

Sheetrock is inspected and approved by The Underwriters' Laboratories, Inc.

Reg. U. S. Pat. Off.

The FIREPROOF WALLBOARD

UNITED STATES GYPSUM COMPANY, General Offices: Dept.H. 205 W. Monroe St., Chicago, Ill.

World's Largest Producers of Gypsum Products:

SALES OFFICES: New York, N. Y., Buffalo, N. Y., Boston, Mass., Washington, D. C., Philadelphia, Pa., Pittsburgh, Pa., Cleveland, Ohio, Cincinnati, Ohio, Detroit, Michigan, Milwaukee, Wisconsin, Minneapolis, Minnea

Sheetrock comes in standard sizes: 1/2 inch thick, 32 or 48 inches wide and 6 to 10 feet long

Pand mail this

coupon today! GYPSU Department H 205 W. Monroe St., CHICAGO, ILL.

Please send me the Sheetrock sample and your attractive Time-



USEFUL CATALOGS



Pebble Dash Stucco makes an artistic finish for many types of buildings, homes, churches, garages, etc. An interesting booklet of how to succeed in the pebble dash finish business is published by the E. H. Holmes Pebble Dash Company, Princeton, Illinois.

Casement and Double Hung Windows is the title of a most interesting catalog published by David Lupton's Sons Company, Philadelphia, Pa., describing different types for the use of residences and business buildings; giving detailed illustrations of both inward and outward swinging casements and their application.

Screening for Windows and porches will soon be in order, and contractors would do well to be ready for this business. A most interesting folder, giving actual samples of wire screening cloth, has just been issued by Gilbert & Bennett Manufacturing Company, 38 South Dearborn Street, Chicago, Illinois.

Glue for Building Purposes is best when it is damp-resisting. An interesting circular comes from the Monite Waterproof Glue Company, Minneapolis, Minnesota, and describes the application and use of their special glue for builder's use.

Plastering needs a good base, and something new is expanded wood lath; and its varied use is explained in an interesting circular just issued by the Expanded Wood Lath Company, 155 North Clark Street, Chicago, Illinois. This lath has been designed as a perfect base for both inside and outside use.

Concrete Mixing on the job is a very important item of builder's work. It is made easier by having the right sort of mixer. An interesting circular has just been issued by the Ohio Concrete Machine Company, 129 East Columbus Street, Ohio, describing their line of mixers.

Maple Floors find great favor, and some interesting facts on their use and care is given in the new booklet issued by the Maple Floor Manufacturers' Association, 1055 Stock Exchange Building, Chicago, Illlinois.

Safe Scaffolding is possible by the use of suitable scaffolding brackets. A handy and safe bracket is described in the folder just issued by the Steel Scaffolding Co., 1605 North Governor Street, Evansville, Ind.

Mahogany can be used very effectively in many buildings, and any builder desiring information regarding its use can obtain same from the circulars issued by the Mahogany Association, Inc., 1133 Broadway, New York. Genuine mahogany costs but little more than other woods which are used to imitate it.

Magnesite Stucco is deservedly very popular, and some interesting literature, with samples and specifications, can be had from the Magnestone Corporation, Springfield, Illinois.

Gas Ranges are a necessity in every modern kitchen, and builders will be interested in the booklet just issued by the William Crane Company, 1620 West 32d Street, New York, describing their line of Vulcan Ranges, which have several striking features that will commend themselves to housewives, and the wise builder will cater to their wishes.

Bathroom Fittings attract and please the owner and the progressive builder wishing to include these will be interested in some built-in features such as holders for glass, toothbrushes, soap, etc., are described in the interesting catalog of Fairfacts Co., Dept. J., 234 West 14th Street, New York City.

Stoves for Schools teaching domestic science need to be specially made and builders who are erecting schools would be well to be posted on what can be had in this particular line. The catalog on this subject issued by the National Stove Co., Lorain, Ohio., contains some very interesting data and illustrations that will be helpful to the school builder.

On this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Roofing Slate of red, green, purple and black can be used for producing artistic and substantial roofs without the necessity of using stronger rafters. An interesting booklet and sample may be obtained from the Sheldon Slate Co., Granville, New York.

Doors in Public Buildings can be made to help ventilation by being equipped with a Ventilouvre. This device, which is easily attached to doors or in transoms, provides adequate ventilation and still retains absolute privacy as it excludes vision. An interesting circular showing how it is used and installed has just been issued by the Ventilouvre Co., First National Bank Building, Bridgeport, Conn.

Ornamental Brick is being used in modern dwellings more extensively than ever before. Different colors and textures may be had and these are interestingly described in the new catalog issued by Fiske & Co., Boston.

Chains are used for many purposes in building construction to enable the builder to select the right kind for each particular place. The information contained in the useful catalog issued by the Bridgeport Chain Co. of Bridgeport, Conn., will be found of considerable use.

Light in Dark Places such as cellars and vaults may be obtained from daylight by building Luxfer Prisms in the sidewalks covering such vaults. Detailed drawings and specifications are given in an interesting circular just issued by the American 3-Way Luxfer Prism Co., 1309 S. 55th Avenue, Cicero, 111.

Mail Boxes are a necessary adjunct to every home. The portable kind stuck on the outside of the majority of our houses are not very ornamental. Builders who want to give their customers the latest improvements will include a built-in mail box in every house they build. The postman deposits the letters in the box and they are removed from the inside of the house,—no going out in bad weather. An interesting booklet describing this useful built in feature may be had from the Penn-Greg Mfg. Co., 811 University Avenue, St. Paul, Minnesota

Building Age THE BUILDERS JOURNAL



May

TRANK!

\$5 Cante



CANVAS ROOFING

For Flat Roofs and Porch Floors

—an attractive, water-proof, rot-proof, mildew-proof covering that will not crack, stretch, shrink, curl or peel. The chemical treatment applied during manufacture makes it the most advantageous material for use in covering floors, flat roofs, sun parlors, sleeping balconies and the like. Easy to keep clean. All these features explain why it has become such a favorite with owners.

Carpenters and builders should push "Conser-tex" Canvas Roofing, because it enables them to secure many contracts for work on which more expensive material would be out of consideration. If you show your clients how to save money on roofing, they will let you show what service you can render them in other directions too. Conser-tex is easy to lay, and brings a good margin of profit.

Write for illustrated booklet, "Roofing Facts and Figures," and for samples.

WILLIAM L. BARRELL CO. of N. Y., Inc. 50 Leonard Street New York City

Chicago Distributors: Geo. B. Carpenter & Co. 430-440 North Wells St.

SULPPM INDEXENDED INVESTIGATION OF THE PROPERTY CONTRACTOR OF THE SECTION OF THE

California Distributors: Waterhouse-Wilcox Co. San Francisco & Los Angeles

FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana

· HOPE'S · CASEMENTS



HENRY HOPE & SONS LTD 103 PARK AVENUE · NEW YORK 205 YONGE STREET · TORONTO

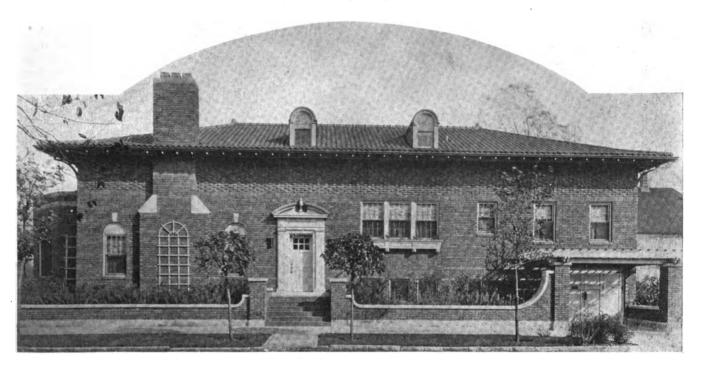
Digitized by Google

Building Age

ANI

THE BUILDERS' JOURNAL

New York, May, 1923



Beautifying the Home Setting By Artistic Terracing

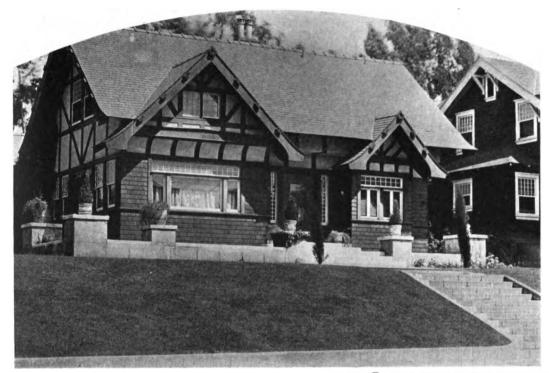
or problem concerns the progressive builder more than that of having a proper and artistic setting for every house he builds, and this is particularly true where houses are situated on ground above the street level.

A builder's reputation depends largely on the public. When they see a house and its surroundings that forms a pretty picture they mentally form an opinion that the man who built the house was a good builder, and then, when anyone is talking of building a home of their own, it is this builder's name which comes first to mind. It pays and pays well to strive to have every job as good looking as possible.



The problem of how to obtain a pleasing effect on a terrace, without being too stilted, deserves considerable thought. Where the land itself is hilly, a good way is to somewhat follow the natural contour of the land itself.

Many different ways have been evolved for overcoming the terrace problem. In some cases as above stated the natural slope of the land seems to be the most appropriate way. In other cases a rather steep terrace slope is used near the sidewalk line. We sometimes see two or three of these terraces, one in back of the other. This is somewhat of an artificial way of handling the problem, and the result is not altogether pleas-



An abrupt slope careully handled; the success of this arrangement is largely due to the open porch or terrace in front of the house, made an ornamental feature by posts serving as supposts for flower tube

ing. A far better way would have been to have sloped the land gently as we have outlined above.

Retaining walls are frequently built, and when these are very high it is a hard problem to have them artistic. A low retaining wall, however, can be made a most pleasing architectural feature that will enhance the beauty of the house.

When building terrace walls, wherever there is a corner, particular care should be taken in the construction at this point. The easiest way to make a good job

Here a privet hedge cleverly hides the two feet difference in grade.







here so as to prevent any cracks appearing is to reinforce this section with some steel rods. Few realize the immense pressure put on a wall during cold weather: the ground just inside the wall thaws out but drainage does not take place; then at night freezing takes place, which is liable to throw the wall out of line.

Where the ground is but a foot or so above grade, one or two steps near the sidewalk line is the best solution of the problem. These steps lead to the path which should gently slope up towards the main entrance. The ground in this case is sloped gently from the path on either side down to sidewalk level.

Where a hedge is desired and the ground inside is on a higher

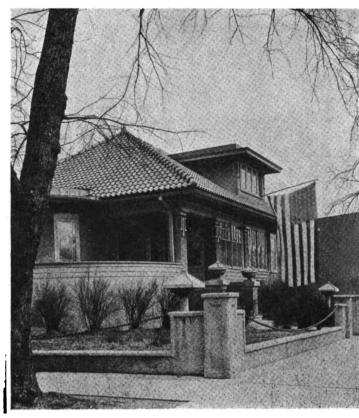
level than the sidewalk grade, it would look rather awkward to have a hedge above the terrace wall, although it is frequently done, but seldom indeed with a happy result.

A simple plan that seems to give the best results is to plant the hedge at the sidewalk level and then build a retaining wall inside of the hedge, which in time will hide the wall entirely from the street level.

Particular care should also be taken in building the steps to see that they are solidly made with a good bed of proper drainage material underneath to eliminate all possibility of their being damaged by frost.

Where concrete is used as a foundation for these steps, it is a very easy matter to insert some reinforcing rods in same as this will prevent any movement except as a whole. Where a terrace wall is of considerable length, as sometimes occurs, it should be made

Harmonizing with
the stuccoed
house, this stuccoed retaining
wall admirably
serves its practical purpose.



Concrete terrace wall for both front and drive neatly handled.



with proper joints to take up expansion.

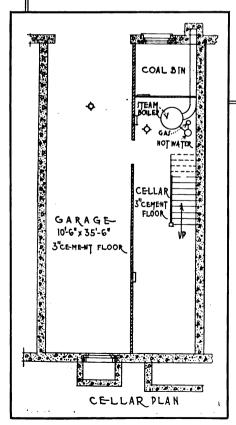
In the various illustrations shown in this article different ways of handling the problem are given. Notice how in every case where there is a retaining wall in brick, concrete, stone, etc., they are in conformity, harmonize with, and actually beautify the house itself by giving it a good setting. It is far better arrangement than just leaving the ground plain, and, besides, it means a little extra job for the contractor.

Even where no retaining wall is built, in such cases where the finished grade is but a foot or so above sidewalk level, a little note of individuality is struck by building low posts at each side of the entrance steps. It is little touches like these that may be added around the house that set it off to the best advantage.

Even though this is a small subject, builders should study it so as to be better able to please their customers by giving them something that is not only appropriate but will add materially to the value of the property. When you do this you are also adding to your own reputation as a successful builder.



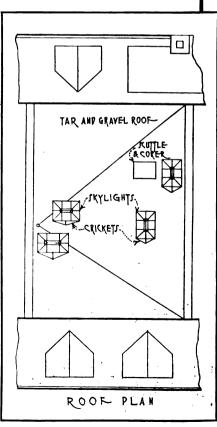
Row of Modern Two Family Houses With Novel Floor Plans



and Electric Features

HOUSES built in a row too frequently have a sameness that is not pleasing even though they individually may look good. Even a small variation in the exterior appearance is sufficient to relieve the monotonous appearance.

In the above picture a most interesting group of houses in a row are shown. Brick and stucco are used with good effect in securing a pleasing variety in appearance. The third floor of this group have a mansard roof; the end house has a gable which gives a sort of finish to the entire row. Note the little difference of detail. On some the entrance doors are slightly different. There is also slight variation in the dormer design, all tending

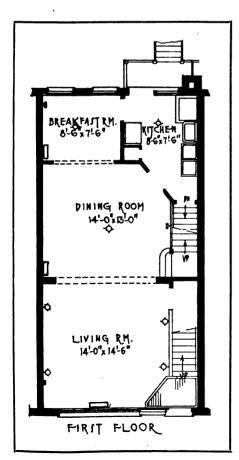


to create a different appearance in each particular house. Diversity of effect has also been secured on these mansard roof fronts, as they are laid in varied asbestos shingles, copper shingles and slate on alternate houses.

The floor plans, however, are all the same, which, of course, admits of the greatest economy in construction. One of the most novel features of this arrangement of a two-family house is that one family has a seven-room private house with its upstairs and downstairs rooms, while the third floor is laid out as a five-room apartment.

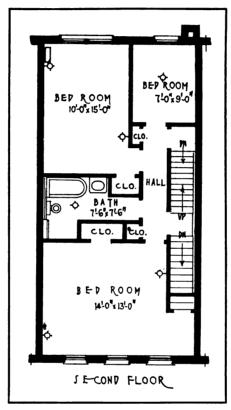
If the owner's family is small, they can live in the single apartment, while a larger family would prefer the downstairs house as we may term it. By the arrangement of separate stairways each family is entirely independent of the other, therefore each enjoys the privacy of a separate house.

This is a new idea in speculative building and it fills the proverbial "long felt want." The rooms are all very conveniently laid out and are of good size. The feature of the basement is a garage which is



entered from a rear driveway, and it is deep enough to hold two cars conveniently. These houses are now being erected by the Arleigh Realty Corporation in the Astoria section of New York City.

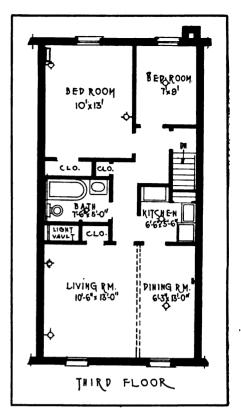
Quite a number of these houses are to be built at once, as nearly \$200,000,000 is to be spent on the entire development. The Metropolitan Life Insurance Company has placed a mortgage loan of approximately \$1,000,000 on these



various houses to be repaid by prospective buyers on a fifteenyear term payment plan.

In building these houses particular attention has been paid to include a number of convenient electric outlets, as the architects and owner have sensed the desire of the present day house hunter in their requirements for the use of different electric appliances.

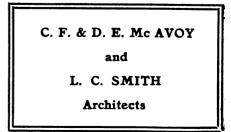
The different outlets should be placed in as convenient a location as possible for the use to which they are to be used. Besides having outlets in the baseboard several outlets can be placed most coneniently about three feet from the floor in kitchen and dining room and also bedrooms. These can be used for grill, toaster, iron,



candelabra or boudoir lamps, etc. When the outlets for these are placed at a height above the floor it allows of the full use of the extension cord.

Another most important thing to be considered is switches. They should be placed where they can be reached most conveniently. They are of different types so that any control of the lights are possible.

The selection of the fixtures should also receive very careful attention, especially in a speculative house here more so than in other cases; people are looking at the finish and if they see handsome and appropriate electric fixtures they are apt to think more of it as a good buy. It is money well spent to invest in the best that can be had where it will show off to the best advantage, but nothing inappropriate should be selected.





Well Planned Small Church

Specially Designed for Narrow City Lot

THE small church building shown above was quite especially planned for a narrow building lot. Despite its width of but 60 feet, it, however, is very commodious and delightfully arranged. Suggesting Greek architecture in its details and possessing so many art-glass windows, it also presents a very pleasing outside appearance.

The walls are of light cream cement-stucco over metal lath and frame construction, and the roof covering consists of red tile for the front portion and of composition roofing for the rear or main part of the building. The slight wood trim is in brown, and foundation of concrete.

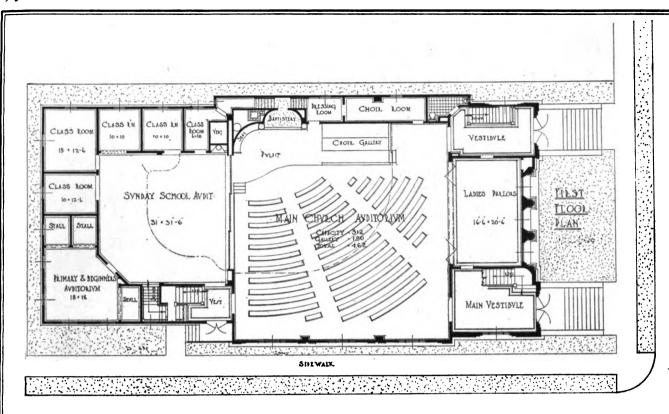
The main auditorium has a seating capacity of 312, but the gallery accommodates an additional 150. Folding doors, however, enable the ladies' parlor to be thrown directly open to the main auditorium, and the Sunday School auditorium and gallery permit a still greater over-

ROBERT H. ORR, Architect flow of attendance to be accommodated at regular church and special day services.

The pastor's study is on the second floor, and both floors have several class rooms, while the basement contains the kitchen, furnace room and various other divisions.

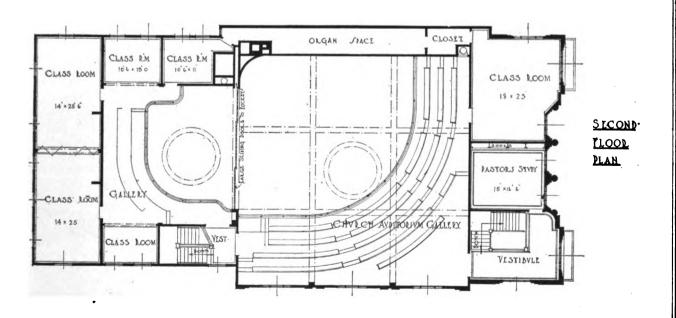
The interior finish consists of Douglas fir woodwork in brown oak stain throughout, except in the kitchen. The pews and pulpit furniture are of oak. All walls are plastered and painted, and the floors of the main and second floors are of Douglas fir, while the basement is floored with cement.

The equipment includes furnace, ventilating system, pipe organ, and all other church requirements. The building is the home of the Boyle Heights Christian Church of Los Angeles, California. It was designed by Robert H. Orr, architect, of that city. The cost of building today is estimated to average about \$30,000.



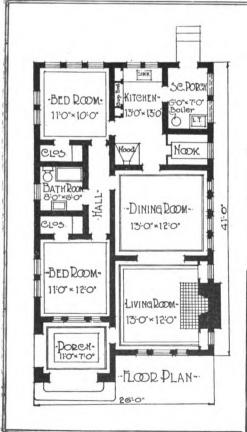
Particular notice should be taken of the way the pews are arranged. These are so placed that every one can see the platform perfectly and the same arrangement is followed upstairs in the gallery. There has been considerable thought put to such an arrangement. It seems that most folks prefer seats in the rear of the church rather than up front and here, by this arrangement, the great majority of the worshippers are conveniently located in the rear.

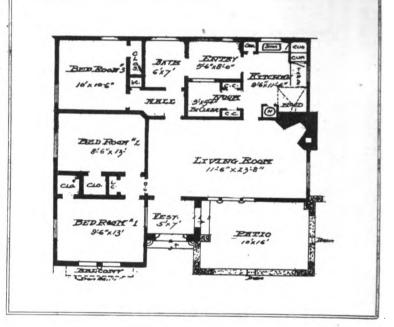
Note also how Sunday School auditorium can be thrown open so the platform will serve that room as well as the main auditorium. The gallery over the Sunday School room also has a direct view of the platform. By this arrangement every portion of the church is within sight and hearing of the platform. The Sunday School class rooms have also been arranged so that the scholars can hear the speakers and choir even while in their class rooms.





Four Designs of Attractive Bungalow Homes







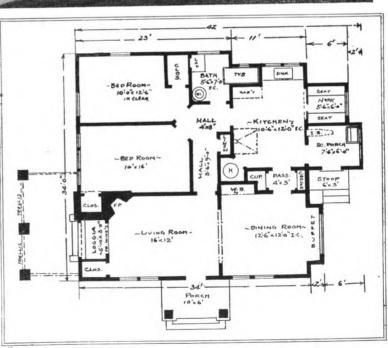


BUNGALOW homes are deservedly very popular now-a-days, and many a builder has made a big success by making their erection a specialty.

Four very interesting designs of bungalow homes are given on these two pages, together with their floor plans. In all of them the arrangement of the rooms is worthy of considerable study. Note particularly how the breakfast nocks have been worked in on each design. Particular care has been taken in each case to have the sinks located underneath the window.

In the majority of cases these homes were designed where gas supply was available, hence the absence of a chimney for the kitchen range, but in localities where gas is not obtainable, a chimney can easily be inserted in an adjoining closet, etc.

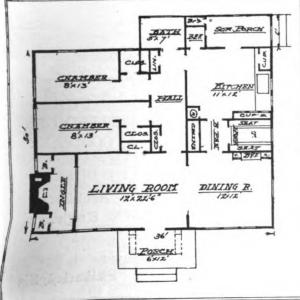
The exterior of these four bungalows are worthy of special note. Here stucco, clapboards and shingle vie with each other in creating artistic and homey looking bungalows. In these designs note particularly the interesting grouping of windows, the different roof treatments, lattice, the artistic

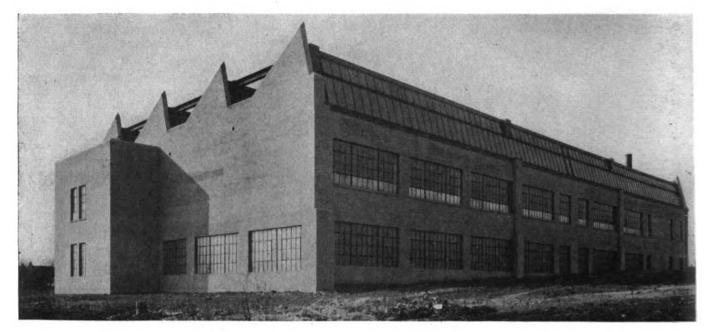


Floor plan of the shingled bungalow shown above.

To the left is shown floor plan of the clapboarded bungalow shown above. stucco finish, the arrangement of the porches on some, etc.

In each case a very charming effect is produced by the proper handling of the material. Stucco lends itself easily to the production of Spanish and Italian types, while clapboard and shingle create the styles typical of America.





Super-Span Roof Trusses for This Modern Factory Building

How the Difficult Problem of Providing Clear Floor Space Over a Large Area Was Cleverly Handled

By WILLIAM R. FOGG

HE first unit of the new plant for the Ardross Worsted Company, Philadelphia, Pa., has now been completed and is being occupied. It consists of a weave shed with a ground story and embodies some new and interesting improvements in construction. This unit will be followed by an administration building, and by an extension to the present weave shed on the east, and later by an additional weave shed on

the north, as indicated on the accompanying ground plan of the plant.

The new weave shed has a clear width of 88 feet and length of 168 feet, 9 inches. As will be noted from the accompanying photograph of the interior, the unusual feature is the large floor area which is without obstruction by any columns whatever. With the usual type of saw-tooth construc-

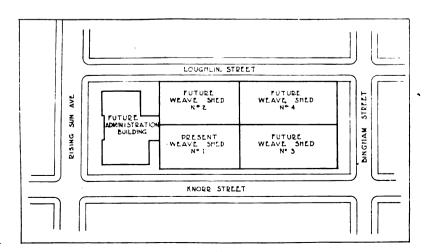
tion, a weave shed of the same size would have two or three rows of columns with corresponding interference with the arrangement of the machinery and passageways. It permits in this instance of the installation of six rows of looms where five would have been installed under ordinary conditions.

This large free area permitting unhampered arrangement of machinery with absolute freedom

Weave Shed For

ARDROSS WORSTED COMPANY

Philadelphia



THE
BALLINGER
COMPANY

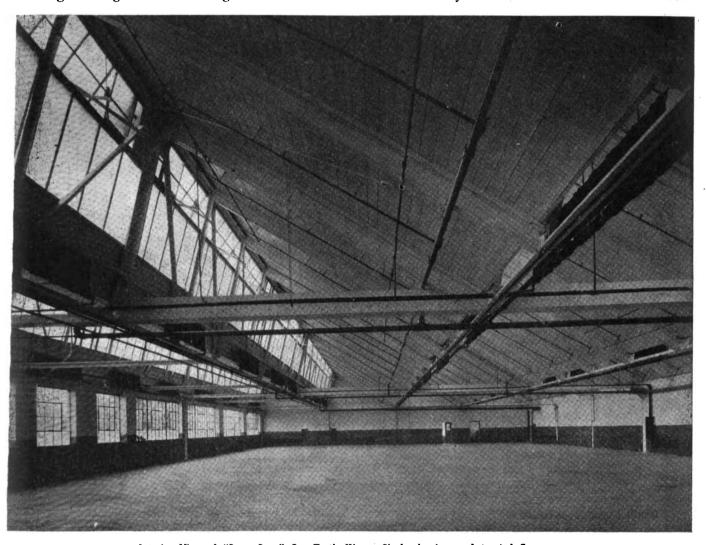
Architects
& Engineers

Philadelphia

from shadows is made possible by a unique form or roof evolved and patented by The Ballinger Company and known as "Super-Span" saw-tooth construction. By this method of construction four rows of saw-tooth skylights are carried on transverse and longitudinal trusses which form part of the skylight construction without increasing the height of the building

structed floor area, utilizes the well-known engineering principle of the truss. There are two sets of trusses, one set occuring at right angles to the direction of the sawteeth with top chord on the same level as the peak of the roof, while the other set of lighter trusses is located back of the glass of the skylight and extends in the same direction as the sawteeth. By

floor. Windows in the side walls are provided with steel frames glazed with ribbed glass. The exterior walls are of gray tapestry brick, with cream colored terra cotta trimmings, making a very pleasing effect. A vitrified brick dado of light color is provided on the inside walls of the weave shed, providing a sanitary and durable surface. The brick walls above



Interior View of "Super-Span" Saw-Tooth Weave Shed, showing unobstructed floor space.

or its cubic contents. Due to econ omies obtained by standardization of the details of construction, it is possible to erect a building of this type at about ten per cent increase in cost over ordinary construction. This additional cost is in most instances more than compensated for by the added facilities obtained with the unobstructed floor space and perfect daylight illumination.

This form of construction, which is especially adapted for buildings of the shed type requiring unob-

means of an effective but simple detail, provision for expansion and contraction is made at the point of connection of the exposed top members of the trusses with the skylight, making it waterproof.

Yellow pine plank sheathing resting directly upon the steel truss construction is used with tarred felt and slag roofing. The skylights are glazed with ribbed glass and provided with ventilators conveniently operated in large sections by means of chains, from the

the dado, also the trusses and underside of roof, are painted with a durable, light-reflecting white paint.

In order to provide a firm and durable foundation free from vibration, the floor of the weave shed is constructed of a 6-inch reinforced concrete slab, and upon the slab are placed 2-inch by 4-inch yellow pine sleepers with cinder concrete fill between. Two-inch yellow pine plank are placed upon the sleepers, with 1-inch maple wearing surface on top.

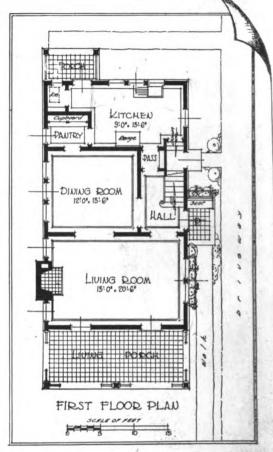
Cottage Design for Narrow Lot

Specially Designed for
BUILDING AGE and THE BUILDERS' JOURNAL
by R. C. HUNTER & BRO., Architects

ITH unlimited ground space, or with a wide lot, the type of plan adopted for a house may assume one of a variety of forms, but, for the restricted frontage of the narrow lot, the problem of the plan arrangement becomes more serious; the fixed width requires a plan that is deep from front to back and results in ill-proportioned rooms unless due allowance of study has been given the layout.

The architects have planned the accompanying house to give generous accommodations for the average family, and at the same time,



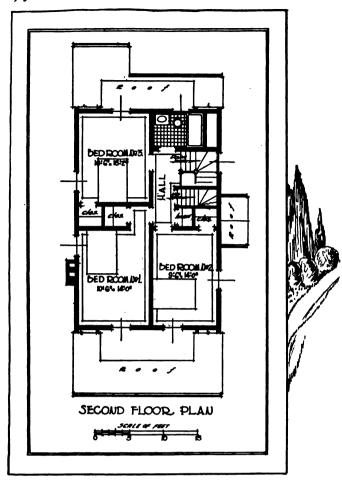




a house that is really suitable for a narrow lot. The house proper measures but twenty-one feet six inches across the front, with the entrance porch projecting three feet six inches on one side, making a total over all width of twentyfive feet.

Allowing nine feet for a driveway on one side and six feet for a yard on the other side, gives a lot width of forty feet. This width of lot would give a proper setting for the house with ample free yard space. The plan layout which the architects have arranged allows the entrance porch, the cellarway, the service entrance, access to the coal bin, all from the drive, a very desirable feature.

The living-room extends across the entire front of the house; it is of good proportions, has three sides exposed and is provided with a generous fireplace in one end; it is a cheerful, livable room. The estimated cost of construction is about \$7,800.



THE quantities given are for estimating. All measurements are Ner unless otherwise noted; areas given for such items as sheathing, flooring, etc., are net areas to be covered with no allowance for matching, waste,

etc. Minor outs have been disregarded.
Such items as clearing site, temporary work and protections, scaffolding and general equipment and supplies have not been included.
Such items as are marked "Unit" are to be estimated in a lump sum, following requirements of plans and specifications. cations.

EXCAVATION

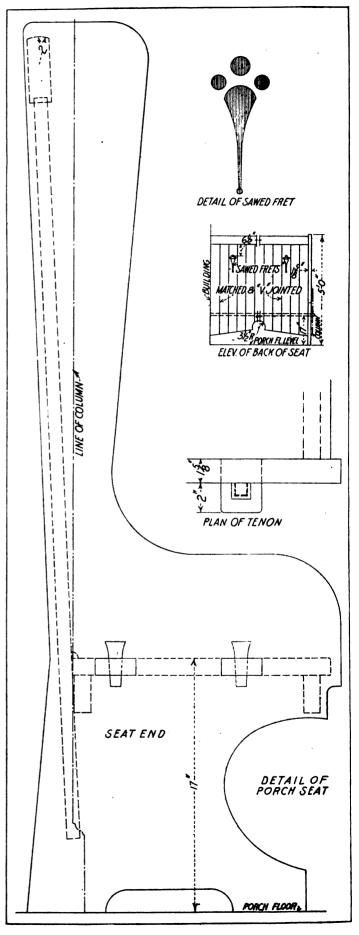
(Excavation for pipe trenches not inc	:luded)
Excavation for cellar	230 cu. yds.
Excavation for footings	14 cu. yds.
Excavation for areas	5 cu. yds.
Excavation for trench walls	15 cu. yds.
Excavation for leader drains and dry wells	10 cu. yds.
Backfilling around walls, etc	39 cu. yds.
Leader drains and dry wells.	
Field stone for dry wells	8 cu. yds.
4 in. slat glazed tile drain pipe	30 lin. ft.
4 in. elbows	
	•
MASONRY	
Concrete work.	
Concrete for cellar walls	800 cu. ft.
Concrete for footings	162 cu. ft.
Concrete for trench walls	189 cu. ft.
Concrete for area walls	100 cu. ft.
Cellar floor (3 in. concrete and 1 in. cement	
finish)	660 sq. ft.
Area bottoms (brick and sand)	40 sq. ft.
Porch floors (12 in. cinders, 3 in. conc. and	
1 in. cem, finish, colored and blocked off)	256 sq. ft.
Concrete forms	2500 sq. ft.
Pointing cellar window sills	
FUILLING CENTAL WINDOW SHIS	16 lin. ft.

Quantity Survey for Cottage Design

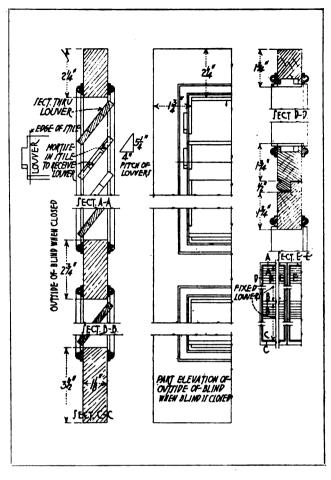
BRICK WORK Common brick work for chimney (or 3 M.).. 146 cu. ft.

3 in. bluestone chimney caps, 1 ft. 10 in. x	146 cu. ft.
3 ft. 6 in	1 Unit.
140 brick)	20 sq. ft. 20 sq. ft. 62 lin. ft.
	02 III. IL
MASON'S IRON WORK	
Fireplace damper (3 ft 4 in. opg. with throat, etc.)	1 Unit.
C. I. ash dump	1 Unit. 1 Unit.
C. I. cleanout door for boiler flue, 8 in. x 8 in. Thimble for boiler flue	1 Unit. 1 Unit. 1 Unit.
PLASTERING	
Three-coat Patent plaster on metal lath (gross (Net, 556 sq. yds.)) 664 sq. yds.
G. I. corner beads	90 lin. ft.
TILE WORK	
Tile for bath room	
Floor (1 in. hex. white)	26 sq. ft.
Wainscot (3 in. x 6 in. white wall tile)	80 sq. ft. 12 lin. ft.
Cap	22 lin. ft.
SHEET METAL WORK	
Metal deck	192 sq. ft.
Metal roof on dormers	255 sq. ft. 36 lin. ft.
Metal flashing and counter-flashing for chim-	
ney, etc	8 lin. ft.
4 in. half round hanging gutter	7 Caps.44 lin. ft.
3 in. half round hanging gutter	9 lin. ft.
3 in. dia. leaders	44 lin. ft. 20 lin. ft.
Bends for leaders	14
Gutter thimbles	7 . 20 lin. ft.
Cap and thimble for same	1
CARPENTRY	
Timber—All No. 1 common stock, hemlock, rough unless noted. Cellar girders.	
6 in. x 10 in. spruce—1/16, 1/14, 1/12	210 F. B. M.
2 in. x 3 in. nailer—84 lin. ft	42 F. B. M.
2 in. x 3 in. nailer—84 lin. ft	88 F. B. M.
Studs, girts and plates—1st floor. 2 in. x 4 in.—155/10, 41/8	
Studs, etc.—2nd floor. 2 in. x 4 in.—163/10, 95/8.	
1st floor joists.	
2 in. x 10 in.—18/14, 18/12, 18/10	
2 in. x 10 in.—36/14, 18/10	
2 in. x 6 in.—53/12	
2 in. x 6 in.—16/18, 18/14, 38/12	
2 in. x 8 in.—1/12, 1/10	
2 in. x 4 in.—26/10	
2 in. x 10 in.—4/12, 6/10, 2/8	207 F.B.M.
4 in. x 4 in.—5/8	54 FB M.
2 in. x 2 in.—360 lin. ft	120 F.B.M.

CARPENTRY—Continued	
Cellar partitions. 2 in. x 4 in.—6/14, 10/10	139 F. B. M.
Sheathing (% in. x 8 in. shiplap). Walls, to cover	2190 sq. ft.
Flat roofs, to cover	2200 sq. ft.
Shingle lath (% in. x 2 in.)	2200 lin. ft.
Sheathing for cellar partitions. (% in. x 8 in. shiplap), to cover	280 sq. ft.
Rough flooring (% in. x 8 in. shiplap). 1st and 2nd floors, to cover	1420 sq. ft.
Furring (% in. x 2 in.)	200 lin. ft.
Shingle sides (24 in. stained shingles). 15.9 squares	
EXTERIOR FINISH	
Water table, 1/8 in. x 2 in. strip	114 lin. ft.
3/8 in. x 12 in. soffit	14 lin. ft.
% in. x 8 in. soffit	32 lin. ft. 56 lin. ft.
1¼ in. bed moulding	56 lin. ft.
1½ in. cove	124 lin. ft.
3% in. x 4 in. soffit	52 lin. ft.
½ in. x 4 in. fascia 2 in. mould	52 Hn. ft. 52 lin. ft.
% in. x 2 in. cap	52 lin. ft. 52 lin. ft.
· 4 in. bed mould	52 IIII. II.
12 in. x 12 in. x 7 ft, 6 in. long	1 Unit.
12 in. x 12 in. x 3 ft. 6 in. long—portable Brackets for boxes	1 Unit. 2
Porch finish—Living porch. 7 in. x 7 in. box cols., 7 ft. 10 in. long, with cap and base	
with cap and base	5
with cap and base	2
I it 6 in. x / it. 10 in. lattice panels	8
% in. x 6 in. soffit	40 lin. ft. 80 lin. ft.
⅓ in. x 3 in. frieze	80 lin. ft. 40 lin. ft.
2 in. bed mould	40 lin. ft.
5% in. x 4 in. M. & B. ceiling, to cover Entrance porch.	165 sq. ft.
Portable seat with back, etc., 4 ft. 0 in. long,	•
5 ft. 0 in. highLattice panel, 4 ft. 0 in. x 8 ft. 0 in	1 1
Brackets, 10 in. \times 15 in. \times 44 in	2 18 lin. ft.
2 in. cove	10 lin. ft.
5% in. x 4 in. M. & B. ceiling, to cover Front fascia with key, etc	40 sq. ft. 1
Rear porch.	
7 in. x 7 in. box col., 7 ft. 10 in. long, with cap and base	2
Lattice panel 3 ft. 6 in. x 7 ft. 10 in	2 16 lin. ft.
7/8 in. x 6 in. frieze	32 lin. ft.
% in. x 3 in. frieze	32 lin. ft. 16 lin. ft.
5% in. by 7% in. cove	16 lin. ft.
5% in. x 4 in. M. & B. ceiling, to cover Windows—Frames complete with sash, out-	26 sq. ft.
side trim, etc. Sash 1½ in. thick, glazed D. T.	
Cellar windows. Single top hung sash, casem. 3 ft. 0 in. x	
2 ft. 0 in., 4 light	3
Mull., ea. 3 ft. 0 in. x 2 ft. 0 in., 4 light First floor windows.	1
Single D. H. sash, 2 ft. 0 in. x 5 ft. 0 in	1
16 light Single D. H. sash, 2 ft. 6 in. x 3 ft. 2 in.,	
12 light Mull. D. H. sash, ea. 2 ft. 10 in. x 5 ft. 0 in.,	3
16 light	1
12 light	1



1923			
	EXTERIOR FINISH—Continued		
	H. sash, ea. 2 ft. 10 in. x 5 ft. 0 in.,		
16 light	H. sash, 3 ft. 0 in. x 3 ft. 2 in.,	1	••••
16 light		1	
Casem. sas	sh, 2 ft. 0 in. x 3 ft. 0 in., 9 light		
Second floor	windows.		
Single D.	H. sash, 2 ft. 10 in. x 4 ft. 6 in.,	6	
Single D.	H. sash, 3 ft. 0 in. x 7 ft. 0 in.,	٧	
curved h	nead	1	
Attic window			
Single D.	H. sash, 3 ft. 0 in. x 3 ft. 2 in.,	2	
Shutters (13	% in. thick, solid).		
2 ft. 10 in.	x 5 it. 1 in., pr	3	pr.
2 ft. 6 in.	x 3 ft. 3 in., pr	2	pr. pr.
Rlinds (11/6	x 3 ft. 3 in., prin. thick, movable louvres).	J	ρ
2 ft. 10 in.	x 4 ft. 7 in., pr	6	pr.
3 ft. 0 in.	x 7 ft. 0 in., pr., curved head	1	pr.
	or frames (1¾ in. thick, rabbeted), with outside trim.		
Frame for	front ent. door, 2 ft. 10 in. x		
7 ft. 0 is	rear ent. door, 2 ft. 8 in. x 7 ft.	1	
Frame for	rear ent. door, 2 ft. 8 in. x 7 ft.		
0 in	door to living porch, 2 ft. 10 in.	1	• • • • •
x 7 ft. 0	in	1	
Frame for	inr cellar ent. door, 2 ft. 6 in. x		
6 ft. 8 is	n	1	• • • • •
Exterior do	ors (all to detail). door, 2 ft. 10 in. x 7 ft. 0 in. x		
13/4 in. 4	glazed	1	
Rear ent.	door, 2 ft. 8 in. x 7 ft. 0 in. x		
13/4 in.,	glazedving porch, 2 ft. 10 in. x 7 ft. 0 in.	1	• • • • •
Door to liv	ving porch, 2 it. 10 in. x / it. 0 in.	1	pr.
Cellar enti	n., glazedrance door, 2 ft. 6 in. x 6 ft. 8 in.	•	μ
by 13/4 is	n., glazed	1	
	INTEDIOD FINICH		
	INTERIOR FINISH		
Finished floo	oring.		
Living roo	oring. om, dining room, ent. hall and		
Living roo pass., 13/	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white	476	sq. ft
Living roo pass., 13, oak, to Kitchen, p	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover		sq. ft
Living roo pass., 13, oak, to Kitchen, p	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover		-
Living roo pass., 13/ oak, to Kitchen, p in. map! Second sto	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176	sq. ft
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover	176 520	sq. ft
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover	176 520 300	sq. ft sq. ft sq. ft
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining paper Slat floor u	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover	176 520 300 180	sq. ft sq. ft sq. ft sq. ft
Living roo pass., 13, oak, to Kitchen, p in. map Second sto cover Attic floor, Lining paper Slat floor u 4 ft. 0 ir	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover nantry and closet, 13/16 in. x 2½ le, to cover. ory, ½ in. x 2½ in. N. C. Pine, to , ½ in. x 4 in. N. C. Pine, to cover r under floors. 1 nder laundry tubs, 3 ft. 0 in. x	176 520 300 180	sq. ft sq. ft sq. ft sq. ft
Living roo pass., 13, oak, to Kitchen, p in. map Second sto cover Attic floor, Lining paper Slat floor u: 4 ft. 0 in Joist hanger For 2 in.	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180	sq. ft sq. ft sq. ft sq. ft
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining pape: Slat floor u: 4 ft. 0 in Joist hanger For 2 in. :	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1	sq. ft sq. ft sq. ft sq. ft Unit
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining paper Slat floor u 4 ft. 0 in Joist hanger For 2 in For 4 in	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover le, to cover ory, 7% in. x 2¼ in. N. C. Pine, to cover r under floors of under laundry tubs, 3 ft. 0 in. x 10 in beams x 10 in beams d pipe cols. in cellar, 4 in. dia. x	176 520 300 180 1 6	sq. ft sq. ft sq. ft sq. ft Unit
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining pape: Slat floor u 4 ft. 0 in Joist hanger For 2 in. 5 Cement filler 7 ft. 6 in Interior finis	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover nantry and closet, 13/16 in. x 2½ le, to cover ory, ½ in. x 2½ in. N. C. Pine, to cover r under floors s (1½ in. x 2 in. W. I.). x 10 in. beams d pipe cols. in cellar, 4 in. dia. x in. long, with cap and base sh (whitewood unless noted).	176 520 300 180 1 6	sq. ft sq. ft sq. ft sq. ft Unit
Living roc pass., 13, oak, to Kitchen, p in. map; Second sto cover Attic floor, Lining pape; Slat floor u 4 ft. 0 ir Joist hanger For 2 in. : For 4 in. : Cement filled 7 ft. 6 in Interior finis	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6	sq. ft sq. ft sq. ft sq. ft Unit
Living roc pass., 13, oak, to Kitchen, p in. map; Second sto cover Attic floor, Lining pape; Slat floor u 4 ft. 0 ir Joist hanger For 2 in. : For 4 in. : Cement filled 7 ft. 6 in Interior finis	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6	sq. ft. sq. ft sq. ft to the control of the control
Living roc pass., 13, oak, to Kitchen, p in. mapi Second sto cover Attic floor, Lining pape; Slat floor u 4 ft. 0 ir Joist hanger For 2 in.: For 4 in.: Cement filled 7 ft. 6 in Interior finis	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 3300 1180 1 6 6	sq. ft sq. ft sq. ft sq. ft to the control of the c
Living roo pass., 13, oak, to Kitchen, pin. mapp Second sto cover Attic floor, Lining paper Slat floor u 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filled 7 ft. 6 in Interior finis Door trim—4¼ in. wall mo For doors,	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6 6 4	sq. ft sq. ft sq. ft sq. ft to the control of the c
Living roc pass., 13, oak, to Kitchen, p in. mapi Second sto cover Attic floor, Lining paper Slat floor u 4 ft. 0 ir Joist hanger For 2 in Cement filled 7 ft. 6 in Interior finis Door trim— 4½ in. wall mo For doors, For doors, For doors, For doors,	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6 6 4	sq. ft. sq. ft. sq. ft. sq. ft. value of the transfer of transfer
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining pape! Slat floor u: 4 ft. 0 in Joist hanger For 2 in. Cement filled 7 ft. 6 in Interior finis Door trim—4½ in. wall mo For doors, For doors, For doors, For doors, For doors	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover country and closet, 13/16 in. x 2½ le, to cover. ory, ½ in. x 2½ in. N. C. Pine, to cover r under floors. nder laundry tubs, 3 ft. 0 in. x 10 in. beams. to 10 in. beams. d pipe cols. in cellar, 4 in. dia. x 10 in. beams. d pipe cols. in cellar, 4 in. dia. x 10 in. jambs, ½ in. stops, ½ in. x moulded and mitered trim with ulding. Trim both sides. 2 ft. 6 in. x 6 ft. 8 in. 2 ft. 4 in. x 7 ft. 0 in. (cellar), plain, 2 ft. 6 in. x 6 ft. 6 in.	176 520 300 180 1 6 6 4	sq. ft sq. ft sq. ft sq. ft Unit sets.
Living roo pass., 13, oak, to Kitchen, pin. mapp Second sto cover Attic floor, Lining paper Slat floor ur 4 ft. 0 in Joist hanger For 2 in. For 4 in. Cement filled 7 ft. 6 in Interior finis Door trim— 4½ in. wall mo For doors, For doors, For doors, For doors Trim for ins	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6 6 6 4	sq. ft sq. ft sq. ft sq. ft Unit sets. sets. set set
Living roo pass., 13, oak, to Kitchen, p in. mapp Second sto cover Attic floor, Lining paper Slat floor u 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filled 7 ft. 6 in Interior finis Door trim— 4¼ in. wall mo For doors, For doors, For doors Trim for ins Front ent.	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6 6 4	sq. ft. sq. ft. sq. ft sq. ft Unit sets. sets. set set set
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining pape: Slat floor u 4 ft. 0 ir Joist hanger For 2 in. Cement filler 7 ft. 6 in Interior finis Door trim—4½ in. wall mo For doors, For doors, For doors, For doors Trim for ins Front ent. Rear ent., To living	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6 6 4	sq. ft sq. ft sq. ft sq. ft to the sq. ft sq. ft Unit sets. sets. set set set. set. se
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining pape! Slat floor w 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filled 7 ft. 6 in Interior finis Door trim—4½ in. wall mo For doors, For doors, For doors, For doors Trim for ins Front ent. Rear ent., To living Cellar ent.	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover country and closet, 13/16 in. x 2½ le, to cover. ory, ½ in. x 2½ in. N. C. Pine, to cover runder floors. nder laundry tubs, 3 ft. 0 in. x 10 in. beams. to 10 in. beams. to 10 in. beams. d pipe cols. in cellar, 4 in. dia. x 10 in. beams. k 10 in. jambs, ½ in. stops, ½ in. x moulded and mitered trim with ulding. Trim both sides. 2 ft. 6 in. x 6 ft. 8 in. 2 ft. 4 in. x 7 ft. 0 in. (cellar), plain, 2 ft. 0 in. 2 ft. 8 in. x 7 ft. 0 in. 2 ft. 8 in. x 7 ft. 0 in. porch, 2 ft. 10 in. x 7 ft. 0 in. 2 ft. 6 in. x 6 ft. 8 in. 2 ft. 6 in. x 7 ft. 0 in. 2 ft. 8 in. x 7 ft. 0 in. 2 ft. 8 in. x 7 ft. 0 in. porch, 2 ft. 10 in. x 7 ft. 0 in. 2 ft. 6 in. x 6 ft. 8 in. 2 ft. 6 in. x 7 ft. 0 in.	176 520 300 180 1 6 6 4	sq. ft sq. ft sq. ft sq. ft continuous sq. ft Unit sets. sets. set set set. set. se
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor Lining paper Slat floor u: 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filler 7 ft. 6 in Interior finis Door trim— 4¼ in. wall mo For doors, For doors, For doors Trim for ins Front ent. Rear ent., To living Cellar ent. Trimmed op	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover le, to cover	176 520 300 180 1 6 6 6 4	sq. ft. sq. ft. sq. ft. sq. ft. Unit sets. sets. set. set. set. set.
Living roc pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining pape: Slat floor u 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filler 7 ft. 6 in Interior finis Door trim—4½ in. wall mo For doors, For doors, For doors, For doors, For doors, Trim for ins Front ent. Rear ent., To living Cellar ent. Trimmed op Opg. 5 ft.	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6 6 6 4	sq. ft sq. ft sq. ft sq. ft continuous sq. ft Unit sets. set
Living roc pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining pape: Slat floor u 4 ft. 0 ir Joist hanger For 2 in Cement filler 7 ft. 6 in Interior finis Door trim—4½ in. wall mo For doors, For doors, For doors, For doors, For doors Trim for ins Front ent. Rear ent., To living Cellar ent. Trimmed op Opg. 5 ft. Opg. 4 ft.	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6 6 4 10 3 1 1 1 1 1 1 2 1	sq. ft sq. ft sq. ft sq. ft Unit sets. sets. set set set. set. se
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining paper Slat floor w 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filler 7 ft. 6 in Interior finis Door trim— 4¼ in. wall mo For doors, For doors, For doors, For doors, For doors, Trim for ins Front ent. Rear ent., To living Cellar ent. Trimmed op Opg. 5 ft. Opg. 4 ft. Trim for arc Trim for mis for well are to the control of the	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover le, to cover	176 520 300 180 1 6 6 4 10 3 1 1 1 1 1 1 2 1	sq. ft sq. ft sq. ft sq. ft to the sq. ft to
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining paper Slat floor w 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filler 7 ft. 6 in Interior finis Door trim— 4¼ in. wall mo For doors, For doors, For doors, For doors, For doors, Trim for ins Front ent. Rear ent., To living Cellar ent. Trimmed op Opg. 5 ft. Opg. 4 ft. Trim for arc Trim for mis for well are to the control of the	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover le, to cover	176 520 300 180 1 6 6 4 10 3 1 1 1 1 1 1 2 1	sq. ft sq. ft sq. ft sq. ft to the sq. ft to
Living roo pass., 13, oak, to Kitchen, p in. map! Second sto cover Attic floor, Lining paper Slat floor w 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filler 7 ft. 6 in Interior finis Door trim— 4¼ in. wall mo For doors, For doors, For doors, For doors, For doors, Trim for ins Front ent. Rear ent., To living Cellar ent. Trimmed op Opg. 5 ft. Opg. 4 ft. Trim for arc Trim for mis for well are to the control of the	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover le, to cover	176 520 300 180 1 6 6 4 10 3 1 1 1 1 1 1 2 1	sq. ft sq. ft sq. ft sq. ft to the sq. ft to
Living roc pass., 13, oak, to Kitchen, p in. map) Second sto cover Attic floor, Lining paper Slat floor u: 4 ft. 0 ir Joist hanger For 2 in. For 4 in. Cement filled 7 ft. 6 in Interior finis Door trim— 4½ in. wall mo For doors, For doors, For doors, For doors, For doors, For doors Trim for ins Front ent. Rear ent., To living Cellar ent. Trimmed op Opg. 5 ft. Opg. 4 ft. Trim for arc Trim for wi and mit in. stop moulded stool.	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover cover	176 520 300 180 1 6 6 4 10 3 1 1 1 1 1 1 1 1 1	sq. ft sq. ft sq. ft sq. ft to the sq. ft to
Living roo pass., 13, oak, to Kitchen, pin. map! Second sto cover Attic floor ut 4 ft. 0 in Joist hanger For 2 in. For 4 in. Cement filler 7 ft. 6 in Interior finis Door trim—4½ in. wall mo For doors, For doors, For doors, For doors For doors Frondoors Trim for ins Front ent. Rear ent., To living Cellar ent. Trimmed op Opg. 5 ft. Opg. 4 ft. Trim for arc Trim for will and mit in. stop moulded stool. Single, 2	oring. om, dining room, ent. hall and /16 in. x 2½ in., plain sawed white cover le, to cover	176 520 300 180 1 6 6 4 10 3 1 1 1 1 1 1	sq. ft sq. ft sq. ft sq. ft to the sq. ft to



Single, 2 ft. 6 in. x 3 ft. 2 in	4 sets. 1 set
Triplet, ea. 2 ft. 10 in. x 5 ft. 0 in	1 set.
Single, 3 ft. 0 in. x 3 ft. 2 in	3 sets.
Single, 2 ft. 0 in. x 3 ft. 0 in	l set.
Single, 2 ft. 10 in. x 4 ft. 6 in	6 sets.
Single, 3 ft. 0 in. x 7 ft. 0 in., curved head	1
Base.	
7/8 in. x 6 in., moulded	326 lin. ft.
7/8 in. x 4 in., plain (closets)	40 lin. ft.
2 in. base mould	326 lin. ft.
in. quarter round at floor	366 lin. ft.
Picture moulding, 7/8 in. x 21/4 in	370 lin. ft.
Mantel for living room	1 Unit.
Interior doors (2 cross panel birch veneer).	1 01111.
Door, 2 ft. 6 in. x 6 ft. 8 in. x 1½ in	10
Door, 2 It. 0 III. X 0 It. 6 III. X 1/2 III	_
Door, 2 ft. 4 in. x 6 ft. 8 in. x 1½ in	3
Solid pine cellar door, 2 ft. 6 in. x 6 ft. 6 in	1
Closet shelving (7/8 in. x 12 in. pine)	50 lin. ft.
Hook strip (% in. x 4 in.)	60 lin. ft.
Rabbeted shelf cleat	40 lin. ft.
1 in. dia. pipe clothes rod	10 lin. ft.
Pantry cupboard with countershelf, drawers, doors, etc.	
Front, 6 ft. 0 in. x 8 ft. 0 in	1 Unit.
Main stairs, 1st to 2nd story, 14 risers, 3 ft.	
2 in. wide, balustrade, etc	1 Flight.
Cellar stairs, 12 risers, box pattern	1 Flight.
Attic stairs, 13 risers, 2 ft. 6 in. wide, box	
pattern	1 Flight
pattern	Trught
CENERAL CONDITIONS	

GENERAL CONDITIONS

Add for permits, fees for water and sewer connections, etc., insurance and general overhead charges.

Allow for general work not listed, such as grading, plant-

ing, etc.
Include Sub-bids—Hardware and applying same, painting and decorating, plumbing and gas fitting, heating, and electric work.

Why They Selected the Builder for Their New Home

Some Things Home Buyers Inquire and Talk About
Before They Give Out the Contract

By FRANK H. WILLIAMS

HAT do the people who buy homes think of the sales methods of the home builders?

What do home owners say about the home builders when they get together and discuss them?

Wouldn't it be of interest and of real helpfulness to builders if they could learn about the things that are said concerning them by the purchasers of homes? Wouldn't information of this sort be of help to the home builders in showing them what sort of sales arguments make the greatest impression upon the home owners and in thus pointing out the way to them by which more homes can be sold?

It was with the idea in mind that this sort of information would be of interest and of value to home builders that the writer recently made it a point to bring up the question of home builders when finding himself in gatherings of people who had just recently purchased new homes. The more interesting and worth while of the things said by the home owners are, therefore, presented in this article.

Here, then, is a resume of some of the more interesting and important things said at a typical gathering of home owners:

Mrs. A.—"Mrs. B., that's a mighty good looking house of your's, but how in the world did you happen to buy it from Jones? You know some of the homes he's put up haven't stood up at all."

Mrs. B.—"Yes, we heard about Jones when we were thinking about buying and some of the people who had purchased homes from him warned us against him and even showed us places in their homes where joints hadn't been

well made and where the buildings were out of line and all that sort of thing. But my husband and I liked Jones' appearance and we liked the way he talked and so, when we had about decided to buy from him, we told him about the things that other folks had said about his work. Jones admitted that he'd had trouble but he said this was largely due to an incompetent foreman who wasn't with him any longer and he was so straightforward about it that he made a very good impression on us, indeed, and we felt that he would go the limit, under the circumstances, in giving us the best possible house. So we signed up with him and we are very well satisfied. You see, Jones has to get his reputation back again to what it formerly was and so we figured that he would do the best possible work and that's just exactly what he did do."

Mrs. C.—"Before we built we had some negotiations with Jones and he impressed us very favorably, too. But we didn't buy from him because we liked the plans that Brown submitted much better than we did Jones' plans. When Brown talked to us about putting up a home he made a big point of saying that he put up homes which looked different and which didn't all look alike. He even took us around in his automobile and showed us the various kinds of houses he has put up. This was a point which we were worried about, as we didn't want a home which looked like it had been cut out of the same piece as a lot of other homes in the city. Consequently when Brown showed us all the different kinds of homes he'd put up and showed, too, that he took a real pride in getting up different homes, we decided to buy from him. And we're mighty glad we did."

Mrs. D.—"That thing of putting up different looking homes is a mighty strong sales argument, to my mind, and I can't understand why more builders don't use it. Do you know, when we were talking about putting up our new house and were conferring with a lot of builders, there wasn't a single one of the bunch who had anything at all to say about that point! The great majority of the builders seemed to think that price was the main consideration. But while price is highly important, of course, I don't believe that it is as important with many people as the matter of comfort and pleasing appearance and all that sort of thing."

Mrs. B .- "That was another thing when we were putting up our home. There are just three of us-my husband and I and our nineteen-year-old son. Well, when we were talking about building Mr. Jones, whom I've been talking to you about, took us around to the homes of other people who had just three people in the family and showed us how these folks had comfortable things in their homes and this gave us ideas for our own home. Those visits were mighty interesting and instructive. Why don't other builders take prospects around and show them about the sizes of homes erected by other people who have families of the same size as their own? In this way the prospective home owners would get a lot of mighty good ideas which would help them greatly in determining just what they wanted."

Mrs. E.—"The sales argument that made us give our work to Greene was a simple one. Greene is a man of about the same age as us and he kept hammering away on this fact when talking to us. He said that he was particularly well qualified to put up the sort of

a house we wanted because being of the same age as my husband and I he knew just what sort of things we wanted. He also said that he'd been making a specialty of putting up homes for people of the same age as himself. And he showed, unmistakably, that he did know pretty well just what sort of a home we'd like. So we just naturally signed up with him."

Mrs. F.—"That was interesting and I don't see why more builders don't use the same argument."

Mrs. G.—"The man we had put up our house is a young fellow who has only been in the home building business since the war, but who has been making a big success at it. His argument when trying to sell us was that we wanted to keep young, of course, and that one of the best ways to do so was by letting him put up a modern house for us which would have young ideas in it. Of course, that argument didn't make such a big impression on us as the builder thought but it did show us that he was a live wire, alert to every opportunity and we figured

that a builder of that sort would be more apt to get the work done quickly and in good order than a man who didn't have such a keenness of perception. Which is one big reason why we signed up with him."

Mrs. A.—"It seems to me that if I was building houses I'd make a point of staging a reception in every new home that I put up, just as soon as the home was completed and before the owners moved in. I'd get some furniture store to send out furniture to be shown in the house and I'd extend an invitation to every one of my prospects to come out and inspect it. There's nothing like an actual demonstration to make people buy, to my mind, and home building demonstrations of this sort would prove exceedingly interesting to a great many women and would get a great amount of word-of-mouth advertising for the builder which would be of great help to him in selling more homes. And it wouldn't be such a terrifically hard job to put on such a stunt.

Mrs. H.—"About the most inter-

esting sales argument that has ever been put up to my husband and myself by a home builder was that of a veteran builder who came to us, when he heard we were going to build, and offered to take the contract not only for building the house but for landscaping the yard and furnishing the home from top to bottom with everything we'd want. He offered to do all this without bothering us at all and at a price which would be less than if we bought the house and the furniture and the landscaping separately. We didn't accept his offer but this made such a very deep impression on us and brought us into contact with the builder so frequently while we were discussing the proposition that we eventually signed up with him. I haven't heard of any people who contracted with this builder for the whole thing in the way he suggested, but it certainly was an interesting sales argument, wasn't it?"

Aren't there some worth while ideas in all this for builders? Here's hoping so, at any rate.

Diagonal Reinforcement Sometimes Desirable in Concrete Slabs

Reports of the Government Tests Cover Practical Points

I would be natural to suppose that the most effective way of using steel for reinforcing concrete floors and other slabs would be to place it in the direction in which the stress was applied, and at right angles to the direction of probable cracks. Mathematical analysis of the problem confirms this assumption.

In the design of concrete ships, however, there were other considerations which made it seem desirable to place the steel diagonally with respect to the direction in which the cracks were expected. Accordingly tests were made at the Bureau of Standards on slabs in which different types of reinforcement were used. These tests confirm, in a general way, the correctness of the mathematical analysis and show that the re-

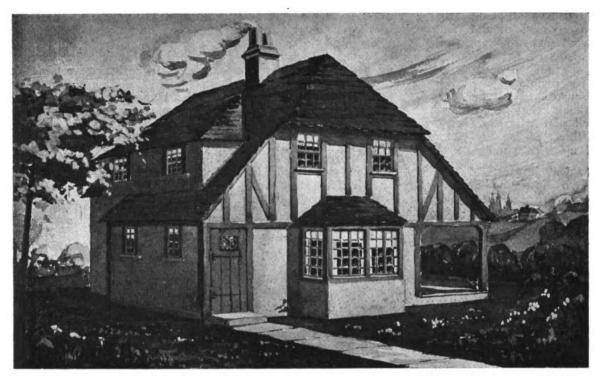
inforcement should be laid parallel with the span and not at an angle with it; unless there are other factors, such as shrinkage in setting or expansion and contraction with change in temperature, which tend to produce cracks at right angles to those due to load stress.

But shrinkage and expansion occur in all concrete structures and frequently transverse reinforcement is required. Cracks from such causes may be prevented by the use of bars laid at an angle with the span, or by mat reinforcement.

In these tests it was found that the use of reinforcement having diamond shaped meshes distributed the cracks effectively and kept them smaller than was the case with the other types of reinforcement tested. About a 12-inch lap where the ends of these sheets of expanded metal joined was found necessary to prevent slipping of these splices.

The early close of the war rendered it unnecessary to apply the results of these tests to concrete ships; but the information acquired is likely to be of value in the design of buildings.

The results of these tests are published in Technologic Paper No. 233 of the Bureau of Standards, entitled "Tests of Heavily Reinforced Concrete Slab Beams: Effect of Direction of Reinforcement on Strength and Deformation." Copies of this paper can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price is 15c.



Half timber war and stucco, artis tically arranged forms a charming

Convenient Six Room Cottage of English Design

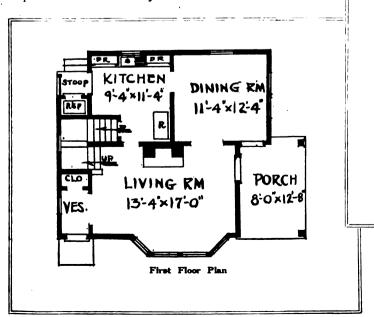
PHILLIP RESNYK, Architect, New York

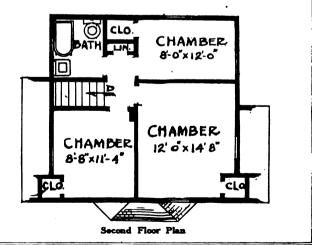
B UT 23 x 24 ft. in dimensions is the main part of this beautiful little house, which shows the English influence in its best and most homelike aspect. Yet the design is handled so that the house appears to be more pretentious and expensive than it really is.

Examine the beautiful little house illustrated and see how inexpensively each effect is gained. Yet the house has plenty of character, given by the handling of the front

part of the main roof and the inexpensive bay window, half timbered work, etc.

Inside, the house is planned with a minimum of waste space. it being as roomy as it is possible to make a house of these dimensions and low cost. Note how cleverly the living room is carried across the front of the house and combined with the small hall, thus giving a room as spacious as is only found in larger houses.





This house contains six rooms conveniently arranged The living room is separated from the dining room by a cased opening, and may be made practically one for entertaining. A desirable feature is that the porch

may be reached from both living room and dining room.

The kitchen is well laid out with china closets right handy to the sink, so that it is very easy for the housewife to place dishes in them after washing and drying. convenient entrance to the living room gives easy access to the stairs.

The open fireplace with stairway on one side forms an interesting arrangement in the living room. The resourceful builder can make this side of the room a most attractive feature as here one has the stairway, the kitchen door and dining room cased opening all on one wall. It is in fixing up such details that makes the home.

The second story has three bedrooms, all provided with a good large closet. The bathroom is located directly over the kitchen, thus making a very economical run of plumbing.

The cost of this house would be about \$5,500, built of good construction but nothing fancy.

Quantity Survey of Enlish Cottage Design

Shown on Preceding Page

HE amounts listed here are for purpose of estimating. All measurements are gross. Amounts for such as sheathing, roofing, etc., are given by area, with percentage allowed for waste and matching of lumber. Small items have not been listed. These depend on local conditions, such as clearing plot, drainer supplies, etc. Minor outs are disregarded. Where the word item appears in amount column it indicates that expense for material in question should be figured in lump sum. Sub-contracts for electrical work, plumbing and heating and painting.

Excavation

Excavation for trenches—footings and piers.... 11 cu. yds.

Masonry	
Concrete for walls 815 sq. ft.	
Concrete for footings and piers 300 sq. ft.	
Fireplace and chimney front brick 200 Item	
Concrete for basement floor 250 sq. ft.	
Firebrick for fireplace and chimney 110 Item	
Chimney-piers, etc., common brick5000 Item	
Flue lining, 9" x 13" 53 lin. ft	t.
Flue lining, 9" x 9"	
Damper, 32" 1 Item	
Ash pit door 1 Item	
Ash trap door 1 Item	

Carpentry

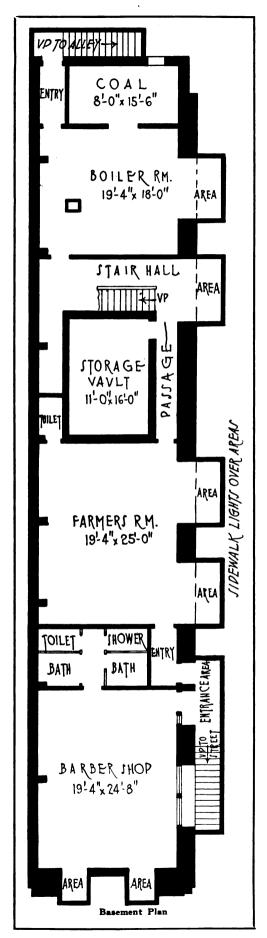
Plastering—three coat work (gross)........... 570 sq. yds.

Thimble for heater flue..... Cleanout door.....

Sills, 4" x 6"	210	B.M.
Girder, 6" x 8"		
Joists—first and second tier, 2" x 8", longest		
timber 12' 3"	320	B.M.
Attic and hanging ceiling for porch, 2" x 4"	290	B.M.
Roof rafters, 2" x 6"	650	B. M .
Ridge—hip and valley rafters, 2" x 8"	250	B.M .
Studding and plates, 2" x 4"	2300	B.M.
Corner posts, 4" x 6"		
Shingle strips, 1" x 2"		
Furring strips, ½" x 1"	200	lin. ft.
Bridging, 1¼" x 3"		
Rough flooring, $\frac{7}{8}$ " x 6"		
Sheathing, %" x 6"	2000	sa. ft.
Finished floors—living room, dining room and		•
vestibule—oak	500	sq. ft.
Balance of house	850	sa. ft.
Porch—girders, 4" x 8" with 2" x 4"	44	B.M.
Porch floor beams, 2" x6"	80	B.M.
Doors—exterior, 2" thick, 3'2" x 7'	ĩ	
Doors—rear, 13/4" thick, 2' 6" x 7'	ī	Item
, ,, , = •	_	

Doors-cellar 136" thick 2'8" x 6'8"	I Item
Doors—cellar, 136" thick, 2'8" x 6'8"	2 T4
Doors exterior 2 sends 134" thick 2' 6" - 7'	4 Item
Doors outerior 2 panels, 198 thick, 20 x7	4 Hem
Doors—exterior, 2 panels, 138 thick, 2 x7	l Item
Doors—exterior, 2 panels, 138" thick, 2 0" x 6 8"	4 Item
Doors—exterior, 2 panels, 136" thick, 2' 6" x 7' Doors—exterior, 2 panels, 136" thick, 2' 6" x 7' Doors—exterior, 2 panels, 136" thick, 2' x 7' Doors—exterior, 2 panels, 136" thick, 2' x 6'8" Doors—exterior, 2 panels, 136", thick, 2' x 6'8" Hanging rods	3 Item
Hanging rods	18 lin. ft.
Medicine chest	1 Item
Linen closet	1 Item
Cellar windows, $1\frac{1}{2}$ " thick, 2^{\prime} 8" x 1^{\prime} 4"	3 Item
Cellar windows, 1½" thick, 2' x 1' 4"	1 Item
Mullion window, 2'8" x 1'4"	1 Item
Bay window	1 Item
Bay window	1 Item
Window, 2' 8" x 4' 6"	2 Item
Window, 2' 8" x 4' 6"	1 Item
Window, 2' 4" x 3' 6"	1 Item
Window, 2' 4" x 3' 6"	6 Item
Window, 2' 6" x 3' 6"	1 Item
Shingles for roof	14 squares
Half timber meals 1" 0"	210 lin. ft.
Mouldings 11/"	
Cornice moulds 21/"	44 lin. ft.
Ponch columns	160 lin. ft.
Parch celling 2/ . (# 1 . 11 1 1 1 1	2 Item
Mouldings, 1½" Cornice moulds, 3½" Porch columns Porch deiling, ½ x 6" double beaded Porch double mould 1" Interior trim base 7/" = 8"	140 sq. ft.
Porch double mould I"	27 lin. ft.
interior trini—base, % x o	250 lin. ft.
Base for closets	60 lin. ft.
Quarter round mould	250 lin. ft.
Picture mould	265 lin. ft.
Stairs, first and second floor	
Treads-starter	1 Item
Treads—plain	11 Item
Platform—oak flooring	
Stringer	24 lin. ft.
Risers—starter	1 Item
Risers—plain	13 Item
Cellar stairs—stringers	30 lin. ft.
Treads	11 Item
Dresser-kitchen	2 Item
Dresser—kitchen Shelving, 1" x12" in closets.	17 Item
Tile work—bathroom floor.	48 sq. ft.
Walls, 3" x 6"	
Sanitary cove	120 sq. ft. 28 lin. ft.
Sanitary cap at top	28 lin. ft.
Interior door and window casings	
Door jambs—exterior	775 lin. ft.
Door jambs interior	90 lin. ft.
Door jambs—interior	200 lin. ft.
Stops, ½"	200 lin. ft.

BLUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by BUILDING Age and the Builders' Journal, 239 West 39th Street, New York.



Bank Building Forms a Community Center

THE bank in a farming community to serve its clients in the best possible way provides a little more than just mere banking accommodations. Here is a small but very attractive and upto-date bank building that serves its community in a most approved manner.

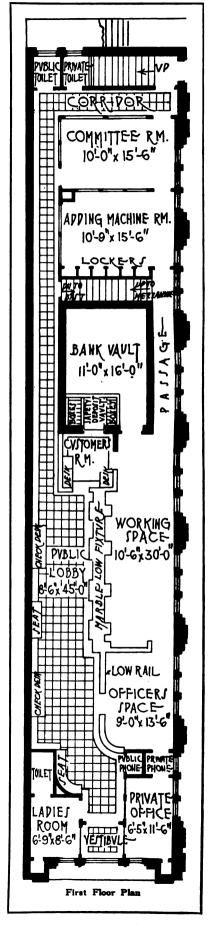
The exterior of the building is dignified in design, being built of brick, terra cotta and stone trimmings. The first floor is given over to the banking space. The working space has the advantage of being placed on the window side of the structure, so that the employees have the best accommodation as regards light and air. A marble counter separates the working space from the public lobby.

There has been considerable study in designing this structure, which is only 22 feet in width. The bank vault is conveniently located in the center of the building. The safe deposit vault occupies one section of the main vault and this is entered direct from an inclosed customer's room, while the bank vault is reached from the working space.

A low railed off space at the front is used for officers of the

Farmers & Merchants
State Savings Bank
Manchester, Iowa.

The Lytle Company
Architects
Sioux City, Iowa



bank and a private office for the president is located in the corner. Just to the left of the vestibule is located the ladies' room, which is provided with private toilet.

Upstairs, which is reached from the side, various office space has been divided off, this space being rented and provides an income for the bank.

The basement contains heating plant and necessary coal storage space. Stairs in the main banking room leads down to the storage vault located underneath the main banking vault. Adjoining this is a large lounging room termed farmer's room. This has been especially provided so



when the farmers drive into town they have some place to meet, and the barber shop adjoining gives them a chance to get dolled up while in town. The ladies' comfort has also been provided for.

Builders would do well to carefully consider the service end of every building operation that they enter upon. Bankers are keen busi-Thev ness men. understand fully the advantages of having the best of everything for the accommodation of their customers, and the builder that can suggest different litimprovements tle will provide that accommodations, will secure the confidence and orders of the bankers in his community.

Stimulating Home Construction Despite High Prices

By HUGH S. BUTLER

BUILDING and loan companies early gained a strong standing in Columbus, Ohio. In 1920 there were twenty-two such companies, with resources slightly in excess of \$40,000,000, and these companies assisted in financing about 90 per cent of the erection and purchase of homes in the city.

The plan under which they worked was simplicity itself. A building and loan company in Ohio is simply a joint stock company authorized under certain restrictions to receive deposits, pay interest upon them and loan the money on first mortgages on real estate. It cannot sell the mortgages it obtains.

The custom is to lend about half the value of the real estate, permitting its repayment at the rate of one per cent per month. so that a loan of \$5,000 would require

monthly payments by the mortgagor of \$50. This pays the mortgage in full in less than twelve years.

All the companies in Columbus paid five per cent on time deposits and four per cent on savings accounts, prior to July of 1920, and loaned the money at six per cent, operating the company on the margin. Under this system several had grown to great proportions, one being the then largest in the United States, with deposits of approximately \$18,000,000.

But the high interest rates of war time played havoc with deposits. So much more could be gained by other investments that deposits almost ceased, and there were heavy withdrawals. Thus, at the beginning of 1920, the situation was that with a greater need than ever before for new homes, the

building and loan companies had little to lend, and could and did get seven per cent for their money, although they did not pay the depositor any more than he had been receiving—five per cent.

At that time, The Columbian Building and Loan Company stood fourth in size in the city, with assets of \$2,692,000. It was fortunate in having as its executive head a man of an inquiring turn of mind, Mr. W. L. Van Sickle, then secretary and counsel of the company.

In that inquiring mind ran a question as to why the building and loan companies were not in position to discharge their function of assisting the post-war residence building. The need was greater than ever before, and there never was a time in the history of the country when it had more capital, yet the deposits in building and

loan companies were not increasing and there was little money to lend for home building.

Thinking this over, Mr. Van Sickle came to a conclusion that was destined to effect a wonderful change in his own company, and, as events proved, to furnish the building and loan companies of the United States with the opportunity to function in fullest measure at all times.

To think it out logically was only the preliminary step toward changing the methods that had proved the obstacle to the maintenance of activity. It was evident to Mr. Van Sickle that as the financial conditions were not always the same, it was necessary that his company's methods should be so flexible as to meet these changing conditions. If money could be loaned as fast as available at seven per cent, it followed that the company could pay depositors more than five per cent for their money, for the company had already demonstrated its ability to operate successfully on a one per cent margin.

But the matter of increasing the rate paid on deposits could not be entered upon lightly. No one could well foresee how long these interest rates would continue, and to pay depositors an increased rate when the rate on mortgages fell would mean ruin. It was evident that a plan must be adopted that would enable the lowering of interest rates on both deposits and loan simultaneously.

And right here is where Mr. Van Sickle showed unusual foresight. He did not wait until the crisis arose to plan this. Actually, he had planned it all out three years before the necessity for its use came, and when the emergency of 1920 came, it found him and the company he served prepared thoroughly.

Early in 1918, the Columbian began to insert in all its mortgage notes a clause authorizing the directors to vary the rate of interest thereon as financial conditions and the current rate of interest might justify.

This action marked the adoption of the so-called Flexible Plan, but

it couldn't begin to operate upon this plan until this filexible clause was incorporated in a sufficiently large number of its mortgage notes to warrant a raise in the rate of interest on deposits.

A company operating on this plan must be in position to raise the rate of interest on both new and existing mortgages at the same time they raise the rate on deposits because the old depositors as well as the new must be given the advantage of the higher rate.

W^E all remember the very serious housing shortage when the greatest drawback in the building of homes was in securing proper financial backing. Money was being used in other enterprises that promised a higher rate of interest, making it hard to obtain funds. In this article is told the interesting story of how a progressive building loan association overcame the difficulty, during a period when the other loan associations were hampered in keeping up their deposits. This is a must interesting story for builders on how the funds were provided for the erection of many thousands of homes.

In July of 1920, when interest rates were high and depositors could get more than the customary five per cent, and therefore withdrawals were threatened, the Columbian found itself in position to place its Flexible Plan into operation. The interest rate on mortgages was fixed at seven per cent, which was then the prevailing rate. Depositors were offered six per cent for the use of their money, and a vigorous advertising campaign was entered upon.

The results, when the financial stringency of 1921 and 1922 are taken into consideration, have been astounding, for the company's resources have grown from \$2,692,000 July 1, 1920, to over fourteen and one-half million dollars. This growth has not been destructive of the other building and loan companies, either, for none of them

has decreased in assets, while the combined assets have grown from \$40,000,000 to over \$55,000,000.

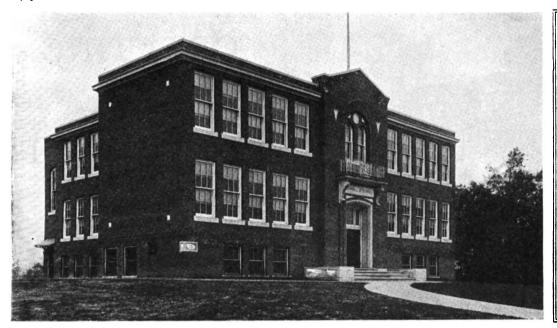
Of course the growth in assets has given the company greater opportunity for service. In 1922 its loans helped finance more than half the new residences built in Columbus. It is a remarkable fact that applications for loans have kept pace with the remarkable increase in deposits, and at no time has the company been embarrassed by idle funds.

But perhaps the greatest service this Flexible Plan has rendered the community, has been in the discouragement of wild financial schemes. So long as the individual investor, with perfect safety, is able to obtain the net market worth of his money by the simple deposit of it, he is not likely to endeavor to increase his income by putting his money into doubtful stocks. More especially is this the case with those who, with money to invest, have neither the facilities nor the opportunity to investigate stock offerings. To them the certainty of six per cent has meant far more than the roseate appeal of the glittering stock prospectus.

Yet another service has been done the building and loan companies themselves, for the Flexible Plan has pointed the way to meet all emergencies in the future, making it possible for these companies to function in any time of financial stringency by paying what the money is actually worth. Many of the other companies are now incorporating a similar clause in all their mortgage bonds. The advertising done by the Columbian has renewed interest in building and loan companies also.

Finally, the great advantage to the community of having a vast reservoir of money for the purpose of home building and home ownership has been inestimable. Without it probably half the building undertaken in 1921 and 1922 in the city of Columbus could not have been done.

It is interesting to note that as the result of operations in 1922 the Columbian paid its usual dividend to its stockholders, added over \$56.000 to its reserve fund, and did not have a single foreclosure nor suffer a loss of any kind.



School of Brick

BROWN & VAN BEREN Architects

ONVENIENT in layout and pleasing in appearance is this design of an interesting grammar school building of brick located at Hamden, Connecticut.

The exterior is of face brick and trimmed with stone. The main outside steps and buttresses are of concrete, the ornamental entrance being of cast concrete stone.

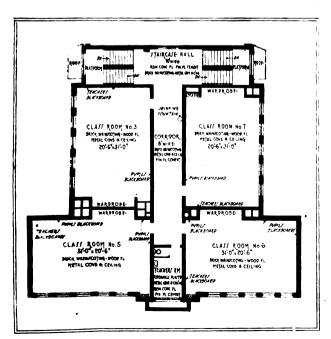
As the plans show, a very convenient layout has been given the eight class rooms. On the second floor a teachers' room is located over the front entrance. Note particularly that the stairs are located in the rear, this provision allows for a future extension with a min-

imum of expense as the main corridor will simply be continued where the two rear windows are now located.

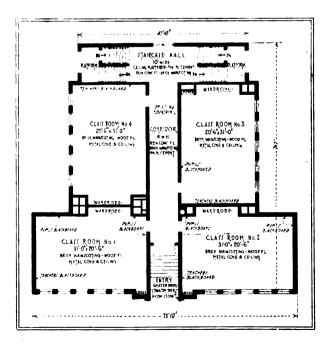
The corridors and stairways are built of reinforced concrete. The walls of these corridors as well as that of the class rooms are wainscotted with brick; above this plaster is used on the walls. The corridor and staircase hall ceilings are plastered, while in the various class rooms metal coves and ceilings are used.

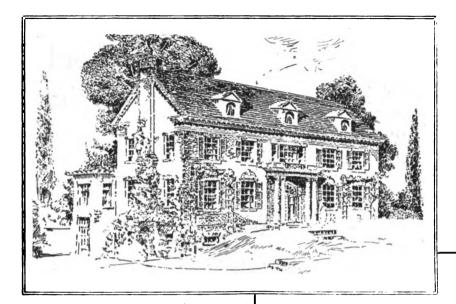
The class room floors are all of wood laid on wood joists. Each room being provided with a large wardrobe, the floor of which is cemented and closed with sliding doors. Two sides of the wall space of each class room in every case are provided with slate black boards. Each of the class rooms are of the same size, 20 ft. 6 inches by 31 ft. 0 inches.

Particular attention has been paid to the proper illumination, both daylight and artificial. The switch to control the electric ceiling lights in each case is located at the door. Considerable thought has been given to the heating and ventilation. Fresh air ducts have been built in the walls and the proper ventilation is easily controlled.



First and second floor plans show a very convenient layout.





CREATING HOME OWNERSHIP INTEREST

N various parts of our country model homes have been constructed with the idea in mind of stimulating an interest in home building along the most advanced ideas. The newest appliances and quality building materials being used in their erection, with the idea of familiarizing prospective home owners with the best construction the market affords.

Model houses of this sort attract quite a good deal of attention in their locality, and people have travelled many miles to see them, but still this does not cover the entire country. To do so a novel educational project using moving pictures is now to be tried out.

Through the co-operation of various enterprising manufacturers of building materials, and in conjunction with the Atlas Educational Film Company of Oak Park, Illinois, a five-reel feature film is being produced and it is nearly ready to release. This picture will show the planning, erection, equipping and furnishing of a modern home. The idea is to have this film shown all over the country under the auspices of and in cooperation with real estate boards, builders' exchanges, rotary clubs, advertising and commercial organizations, schools, churches. community centres, etc.; in fact, everywhere that it is possible to secure an audience so as to carry its message of better home building.

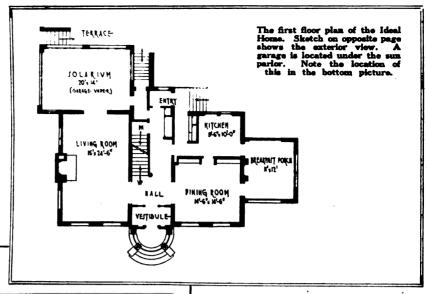
The story of the film will be a little more than just a plain, dry building problem; it will have a



Two good arguments for owning your own home are shown in these pictures. Mother trying to curb the playfulness of her boys to prevent disturbing the old lady in flat below. She also is wishing for a home of her own.

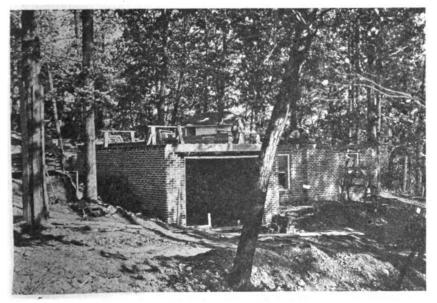


BY STORY TOLD IN MOVING PICTURES





Above: Snapping the scene showing the breaking of ground for the new home. Below: Considerable progress has been made in the building of the Ideal Home. The basement walls are now complete. Observe the wide opening for the garage.



heart throb story in it, of course, and the romantic element will not be lacking. A lot in Glen Ellyn, Illinois, was chosen as the site of the home for the purpose of the film, and on this the model brick house is almost completed. The house will be a modern affair in every respect, electrical and otherwise—everything that builders can do to make it as nearly perfect as possible has been done.

The scenario is founded on real facts of numan life, things that are happening around us constantly, and put into motion pictures with real actors, it forms one of those heart-ripping dramatic stories—the kind that make you laugh one minute and cry the next.

Woven skillfully through the story runs the thread of romance and the appeal to home interest that finds a response in everyone. The problem of investment, the selection of the lot, talking with the contractor, the choice of material and the furnishing of the home are all prominently featured. It is intended that the film story will hold the excited interest of the audience from beginning to end. It is a real romance of home building. The idea of the manufacturers and the film company is to distribute the film at a very moderate rental to any association or community wishing same.

The story of the scenario is along the following lines: It is typical of life in a big city apartment compared with that of home life in a less crowded suburb, therefore the first part of the



"Git out wit dat mutt. What do you think dis is, a house in the country?" This boy is going to make a strong plea for a real home.

scenario deals with the apartment home life of a husband, wife and two children, showing very vividly the hardships and personal friction that frequently arises in every flat dweller's life.

The husband serves the purpose, in the story, of typifying the more or less unresponsive attitude of city people who don't believe in owning property. He holds out absolutely against the general idea of owning his own home, but his wife, regardless of his objection, has bought a lot in the suburbs from her own savings.

A prolonged business sojourn by the husband in the West gives the wife the opportunity to visit the lot from time to time with the two children. Upon the occasion of one of these visits she accidentally meets the real estate man who sold her the plot, and is told that the property has greatly increased in value since she bought it.

Sensing her desire to build, he suggests that she sell a portion of the lot and use the balance as collateral, thereby being able to build the ideal home she desires. This she does, and the film from there on shows the different experiences that she goes through in the building of the home.

The most powerful dramatic appeals are made through the whole picture to hold the attention of the audience centered upon each and every one of the various complex problems by the intending home owner. As already noted, her experiences cover the securing of a loan, the selection of an architect, the builder, materials, the designing of the house, and ends up with furnishing the house and the selection of its equipment, of electrical and other labor-saving devices.

The Climax comes with the husband returning and his conversion to his wife's way of thinking. This involves some very strong dramatic situations and leaves the audience all in thorough sympathy with the wife.

The different pictures shown in this article are taken from various parts of the interesting picture.

One of the pictures shows the beginning of the building opera-



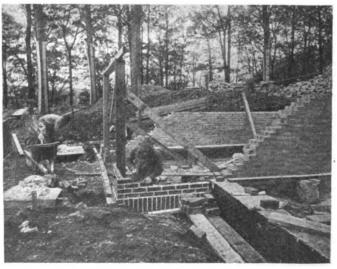
Looking over plans of the proposed home. Each little item is being explained by the builder, the home being attractively visualized.

tion here the wife is ready to turn the first spade of earth for her new home. There are many good business appeals in the situations of this moving picture that builders can take advantage of by talking about them to prospects.

This movie will be a most interesting experiment in popularizing building construction and the proper way of going about it, and builders in every community should see that this picture is shown at their local theatres, so as to enthuse their community to the "Own your home" idea.



Snapping a scene in the studio.



Actual work on the model home.

Raising and Moving Frame Buildings

Being the Third Article of a Valuable Series on How to Profitably Engage in this Line of Work

By E. W. LA PLANT

N this article I will try to show you the best and most satisfactory way to raise buildings most economically and safely.

There is a poor way of raising buildings, which is to place small jacks around different points under the main house sill, and start winding them up intermittently. In this way the building is raised, but is raised unequally, so that by the time it is raised to the desired height to put a foundation under, or to be loaded to be removed to new location, the building is all racked out of shape.

I have raised hundreds of buildings during my house moving contracting business, and I have tried to study out the best means of raising a building safely, and the following is the method that I have used, and found to be the most satisfactory.

The first thing that a contractor should have is a set of jack screws that all have the same thread or raise per turn, so that when the jacks are placed under the building, each one will raise the same number of inches, and in this way when they are all wound the same number of revolutions, the building will be raised evenly.

The best men in the house moving contracting business to-day, use what is known as "the standard Seamless Crib Jack," for raising buildings. They consider this style of jack safer than the old-fashioned bell bottom standing jack, which has been used in the past, and in fact which is still

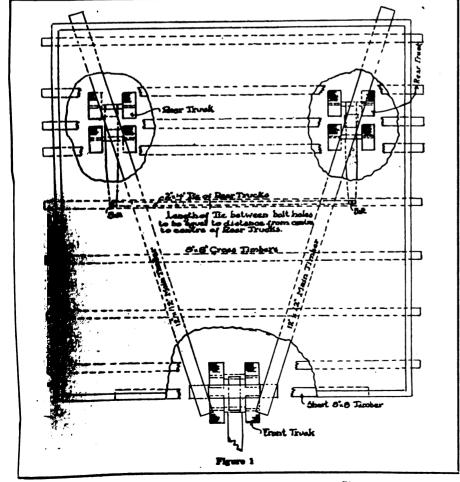
used by many small house movers in different parts of the country.

The use of the Crib Jack gives a broad foundation secured by widening out the spindle block for the jack and the jack uses a collar-block made of two pieces of hard wood 4 x 6 in. x 2 ft. long, which gives a good broad base, and the jack has very small tendency to tip.

The first step in starting to raise a building is to knock holes in the foundation at various points around the building in order to assist the crib jacks. If the sills under the house are in bad shape, use a 2 x 8 in. or 3 x 12 in., or a short piece for a header block between the top of your jack and the house sill. The customary practice in raising a house, is to place a jack every 12 feet for a one-story building and every 8 feet for a two-story building. This will properly distribute the load and raise it satisfactorily.

It is important to have the jacks rest on a good solid base. The jacks must be set so that they are absolutely perpendicular or vertical. If they are not set straight up and down, they will have a tendency to swing the house the way the jacks lean, and there is a possibility of the house being damaged or the workmen injured. Don't overlook this point, for it is very important and will save you time and work.

Underneath the house, the jacks should be placed every ten or twelve feet along the sills. Where a building has a chimney or flue running from the cellar to the roof, it is necessary to cut the chimney off at the level with the under joists of the first floor, then run a timber or cross-sill through the full width of the house that is to be removed. If it is only to be raised, a short sill will do, as shown in figure. The object is to save the chimney and prevent damage to the building. Where the house is to be moved, be sure to run the timber under the chimney the full width of the house, but if you simply are raising the house, than a timber 10 or 12 ft. long, will be sufficient.



If you are going to move the house to new location, it is always well to remove the chimney top, so that the jar in moving will not cause any bricks to fall down and injure the workmen or passing public.

To prevent the walls from cracking, do your raising carefully, and see that every jack is of the same size thread, giving each jack a quarter turn, repeating this operation until the house is raised to the desired height. While one or more men are raising on the outside jacks, another man should be stationed in the cellar to keep the jacks under the house raised to the same height. should be taken to have them start at the same jack where they left off, if they should stop turning the jacks. If this rule is followed, there will be no danger of cracking the plaster. It takes but very little time to raise a house in this manner, and following this system, your work will be done more safely and faster.

When it is necessary to remove a jack or re-set it in the same or another place, it is best to have a 2 x 12 in., bell bottom jack, close to the jack you wish to re-set, instead of holding the building up with wedges in order to release the jack. Wedges are hard on the plaster, and make hard work

Fir. Keep the rear end of the timbers about 2 ft. in from the corner of the building if possible, which will give the men a better chance to lay the foundation, after the building has reached its new location.

Loading an L-shaped House

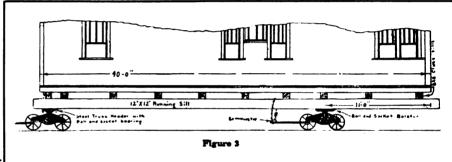
If you have a building built on an L-shape, the proper way to load is shown in Figure 2, and if the building is a full two-story on the L-shape, and only one-story on the front, it is not well to bring the trucks in too far from the rear, and you will notice in this particular case, I have placed the trucks in about one-fourth the distance.

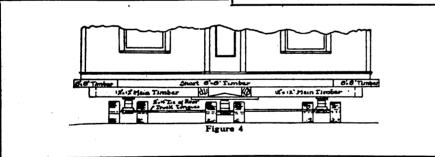
In Figure 2, I have also shown the proper method that can be used to carry up the rear corners, where the running sills are not quite long enough, by using a cross header tim-

Figure 3 shows a side-view of a house placed on the truck, showing rear truck brought in about one-third the distance or length of house, so as to carry its proper working load. This also shows the tongue lashed to the running sill, to hold it up from the ground and maintain its course.

Figure 4 shows a front view of the placing of the trucks, and the steel front bolster that is placed on the front truck, in order to reduce the loading height of the front truck, making it the same height as the rear trucks.

This steel bolster is 6 ft. 6 in. long. After the building has been raised to the desired height for loading, place the running timbers under the building, and block them up temporarily. The cross-sills must be lanced through between the house





for the men. Using a standing jack, it is a safe and easy way, and is a saving of time and labor.

Putting in Running-Timbers

If the building is to be moved to a new location, the next step after it is raised to the desired height, is to put in the running timbers, which extend from the two rear corners, to the point on the center at the front, in a V-shaped arrangement, as shown in Figure 1. These running timbers should be 10 x 10 in. or 10 x 12 in. and 36 to 40 ft. long, depending on the length of the house. The standard size running sill for the majority of jobs, is 12 x 12 in., 40 ft., Oregon

ber, to carry the weight of the rear corners.

After the building has been loaded, we measure the distance from center of king-bolt of each rear truck, and if this distance is 18 ft. 6 in., we take a cross-tie and bolt it on the tongue. having the distance from center of tongue to center of tongue, 18 ft. 6 in. In this way the rear trucks run absolutely parallel to each other, without resistance or increased draft. The steering is accomplished by the front truck, and by cutting the rear trucks, unloosening the 2 x 4 crosstie from one truck, so that the inside truck can be turned a little more than the outside, in negotiating corners.

and running sills, placed every five feet.

Be sure they are heavy enough to carry the weight of the building. It is best to use either 6 x 6 or 8 x 8 cross-sills, depending of course on the weight of the building.

The first four or five cross-sills, should be sprung from one end $2\frac{1}{2}$ in. The rear end of the running sills, should be sprung about 2 in. so as to carry the house properly, and keep it level, and in this way the strain is put on the timbers, instead of on the house, and prevents the cracking of plaster or racking of the building.

Notice how the timbers are sprung in Figure 3. The cross-sills have a 2-in. block on the front sill, the next one, about 1½-in., the next one 1-in. and tapering down to the thickness of a shingle.

You will also note in Figure 3, that the main running sill is sprung, and in order to carry the extra load, the timber is placed parallel to the running sill on each side of the timber, and a reinforced cross-header is placed on top of the truck to carry the extra width of running sill. It is in this way that the rear portion of the building is carried safely.

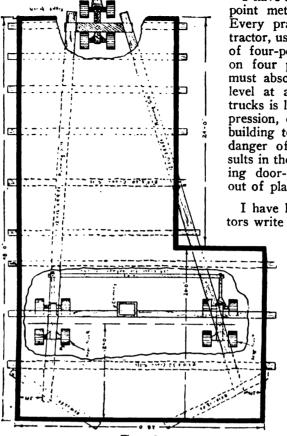
After the cross-sills have been placed under the building, the next step is to set the jacks beneath the running timber, and run them up until they carry the load of the building. By doing this, you will know whether you have sprung the sills enough, without springing the building. It is always well to make this test before making the final load of the building, and a house properly loaded like this, can be moved a long distance without damage, no matter how rough the roads, as the building will ride along without twist or rack.

Placing the Trucks Under the Building

The modern method is to use three four-wheel trucks, or three eight-wheel trucks, placing them under the building, as shown by the diagrams.

The rear trucks should be brought in one-third the length of the house so as to carry their portion of the load. You of course must gauge this by the weight of the house, for in some cases, about one-fourth the distance will do. See Figure 3.

In moving a square or rectangular shaped house, the rear trucks should be placed equal distance from the outside wall of the building, say 3 or 4 feet, but in moving an L-shaped house, which we have already considered in this article, the trucks should be moved forward a little bit, as shown in Figure 2.



In moving the L-shaped house, the rear trucks are usually placed in one-fourth or one-third the width of the rear, so as to carry the proper proportion of the weight in connection with the front truck.

Study these diagrams again, and you will understand thoroughly just what I am explaining.

I have always advocated the three-point method of moving buildings. Every practical house moving contractor, uses this system now, instead of four-point loading. If you load on four points, it means that you must absolutely keep the road-track level at all times, for one of the trucks is liable to go down into a depression, causing that corner of the building to sag down, which means danger of tipping, and usually results in the cracking of plaster, pushing door-jambs and window-jambs out of place, etc.

I have had a great many contractors write in and ask me, why it was

that a building loaded on three points, would not tip over. The answer to that question is this: The weight or the center part of the building is the center of gravity, and if you will take any of these three point illustrations, you will find that the center formed by an Ashaped formation, is far heavier than either of the outside triangles made by the front corners of the building, and it is therefore impossible to tip the

building over one way or the other, for you have the greatest weight in the center point of the building, which is the center of gravity.

In my next article, I will take up the problem of trussing extra-wide or odd-shaped buildings, which will fully explain how this interesting work is successfully accomplished.

Large Railroad Terminal Building Project

CLEVELAND
will soon be
able to boast of a
railroad terminal
building worthy of
such a large city.

The entire project, including the one-thousand-room Hotel Cleveland, which is already completed, will average thirteen stories in height and will cover ten city blocks. The station proper will house the various trunk line railroads entering the



city; the interurban electric lines and all city street lines under the one roof. An idea of this immense building. operation can be had from the estimated quantity of structural materials needed for its erection. Excavation, 125,000 yards; structural steel, 27,750 tons; common brick. 10,000,000; face brick, 4,625,000: cement, 150,000 bar-

Beautiful Finish on Concrete

Highest Re-inforced Concrete Building Has Very Striking Exterior

By GILBERT I. STODOLA

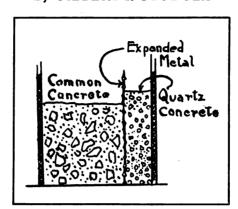
N some situations it is desirable to produce a finish on concrete other than the smooth gray surface commonly characteristic. Many builders who work only occasionally in concrete are not aware that a considerable variety of surface is possible and that very beautiful effects are attainable by means which are remarkably simple and inexpensive.

An interesting example of the possibilities in this direction is to be found in the handsome Hide and Leather Building recently erected in New York City, of which Thompson & Binger, Inc., were the engineers and contractors. This building is likewise remarkable for the fact that it is the tallest reinforced concrete structure in the United States and probably in the world. Other interesting features connected with its construction—which, however, cannot be discussed here-are, for instance, the methods employed in putting down the foundation—the structure stands on a swamp; also the ingenious plan worked out by which most of the pouring was enabled to be done during the cold winter months without the annoyance of having a single instance of frozen concrete.

The lower two-and-a-half floors of this unusual building, instead of being faced with limestone, as is frequently done with concrete buildings, have what appears to be a facing of beautifully finished pink granite. Yet this novel effect is produced by nothing more elaborate than a concrete composed of one part of Atlas white Portland cement and two parts of colored aggregate consisting of quartz, feldspar and green stone chips, running in size from 1/16 in. to ½ in.

How this method may advantageously be applied to small jobs was explained to the writer by Mr. Walter D. Binger, one of the associates of the firm.

"If the section is thin, say up to 4 in., the expense of casting the



entire section of the material desired for facing would not be great. In that case a concrete consisting of one part of white Portland cement and two parts of the small quartz particles could be used for the entire job.



"If, however, the job is something like an 8 in. wall, in which case it would be too expensive to employ the quartz concrete throughout, the following simple device will be found efficient.

"Place a piece of expanded metal of the required size and of the smallest available mesh-not over 1½ in.—so that it will be about 1½ in. from the outside form. The facing concrete, prepared as previously described, is now poured down into small outside space, as shown in the diagram, until it has reached about a foot in height. Next it is vigorously rammed down with a rod. As soon as this facing concrete begins to run through the expanded metal, the common concrete, made up of cheaper and larger aggregates, is poured into the space between the expanded metal and the rear form, until it is piled up to a point several inches below the concrete in the forward space. It is always necessay to keep the facing concrete at a greater height than the common structural aggregate, so as to prevent any of the latter from getting over into the forward space. Also, the facing aggregate should be mixed dry so that it will not flow too easily.

"The finish may then be applied in a variety of ways. The form may be stripped while the concrete is still green and the surface wire-brushed so as to get out the cement and expose the aggregate in a rough manner. Or, after hardening, the surface may be ground down until it is absolutely smooth, having the appearance of a piece of polished granite, or it may be bush-hammered in linesnarrow or wide. Any rock of beautiful quality may be used, preferably of the harder sort, except that it should not contain too great a proportion of minerals which will "rust" or break down under the action of the elements. Too much mica, for example, would be detrimental."

SHOPWORK <u>and</u> FURNITURE

Designs for the Finish Man



Disappearing or Built-in Sewing Cabinet

By CHARLES ALMA BYERS

HOWN below in the illustration is a very convenient sewing cabinet of the disappearing or built-in kind. It is comprised of a shelf compartment above and three large drawers in the bottom part. The broad door which conceals the shelves also is so designed as to provide a large and very serviceable sewing table. The feature, it will be seen, is recessed into the wall in such manner as to take nothing whatever from the room's floor space when closed. Both shelves and drawers are exceptionally commodious, and hence enable the sewing articles and goods to be quickly and

easily stored out of sight when they are not being used. drawer section includes one full length drawer at the bottom and a pair of smaller drawers above. The combination door and table of the upper part is fastened in position with three hinges across the bottom edge, and is further equipped with a pair of hinge-fastened legs, these legs folding against the exposed side of the closed door in such manner as to produce a paneling effect. A strap-fastened ring on the top edge of the door is provided for opening the cabinet when





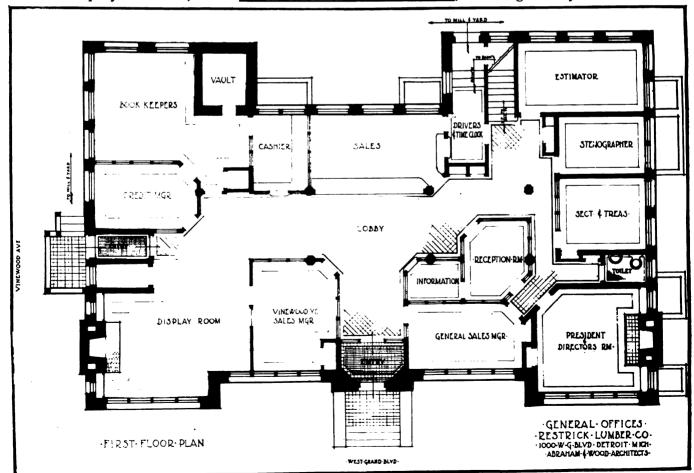
It is by adding novel built-in features of this sort in the homes he builds that the progressive builder not only pleases his customers but adds to his reputation. It is the unusual features in homes that the housewife delights in showing to her visitors and of course the question asked is, "Who was your builder?" Recommendations of this sort cannot be obtained in any other way but they mean much to the reputation of the builder. Study the little things that appeal to the buyer of the home. Closets of all sorts delight the housewife. They really do not cost much to include when the house is being built and it is well for the builder to suggest them.



ANY concerns forget that the most forceful advertisement of their product is right in their own hands if they would only use it. Lumber yards are usually blots on the landscape, but that they need not be is shown in this attractive building. It is the new home of The Restrick Lumber Company of Detroit, who

Novel Office for the Sale of Building Material

have cleverly capitalized their own business in a most attractive manner. A permanent building show has been incorporated in the construction, as different materials which the firm sells have been used and the intending home owner can be shown by the builder just how the different materials look in a building already erected.



OFFICE and JOB MANAGEMENT

Things the other man has found out that save money



Correct Cost Keeping for Building Contractors

By MORGAN G. FARRELL Vice President, Frank Hill Smith Inc., Engineers

N March 8th the leading constructors of the country, through General R. C. Marshall, memorialized the Federated Engineering Societies and the Government to assist in stabilizing the building industry. They requested the Builders' Engineers to co-operate with them to:

- 1. Prevent the practice of competing for labor by adhering to union wage-scales.
- 2. Plan construction to distribute it through the year, avoiding the usual August peak demand for material.

3. Arrange future building programs to modify the present cyclical periods of feverish activity followed by complete depression.

In accordance with these recommendations, the Secretary of Commerce, Mr. Herbert Hoover, prepared a report at the request of the President in which he recommended that the Government suspend all but essential building construction; stating that the Government should withdraw from building competition, at this time, withholding its program until private demand had been satisfied.

This is a long stride in the direction of taking one of the first industries of the country out of the hit-ormiss class, into which it has been put by ignorant and irresponsible persons, and establishing it, where it belongs, as a force of production—a complicated and difficult kind of manufacture.

A still longer step forward, in this great industry, is the education of all builders, large and small, in estimating properly. And that means, keeping costs properly.

It is an old story to most of the readers of this publication to hear

COST TABLE A								
SCHEDULE OF OPERATIONS								
1. Wrecking 2. Survey 3. Permits 4. Underpinning 5. Fence 6. Kroevetion (a) General (b) Hand (c) Backfilling (d) Grading (e) Disposal 7. Pumping 5. Sheet Piling 9. Waterproofing 10. Piling 11. Footings 12. Foundations (Also see Concrete) 13. Brickwork (a) Plain (b) Face (c) Fire (d) Chimneys (e) Floors (f) Walls (g) Painting (h) Cleaning (i) Scaffolding	14. Concrete (Plain) (a) Foundation (b) Walls (c) Floors (d) Walks (e) Sub. Base. (f) Ornamental 15. Comorete (Reinforced) (a) Forms (b) Footings (c) Foundations (d) Columns (e) Beams (f) Floor Slabs (g) Stairs (h) Walls (i) Fartitions (j) Fireproofing 16. Concrete Finishing 17. Terra Cotta (a) Partitions (b) Walls (c) Floors (d) Fireproofing (e) Coping (f) Flue-lining (g) Backing (h) Furring (i) Ornamental	15. Tilework (a) Wood lath (b) Wetal lath 19. Flastering (a) On wood lath (b) On metal lath (c) On metal lath (d) Finish 20. Stucco (a) Walls (b) Cast cement 21. Cut Stone 22. Rubble Stone 23. Roofing 24. Sheet Metal (a) Flashing (b) Roofing (c) Leaders (d) Skylights (e) Ventilators (f) Ornamental (g) Kalamein (h) Store Fronts 25. Steel & Iron (a) Structural (b) Windows (c) Doors (d) Lintels (e) Gratings (f) Fire Escapes (g) Stairs (h) Railings (i) Coal-chutes (j) Reinforcing	26. Hardware (a) Rough (b) Finishing 27. Lumber (a) Posts (b) Joists (c) Partitions (d) Framing (e) Grounds etc (f) Furring (g) Sheathing (h) Under- flooring 25. Millwork (a) Exterior (b) Doors (c) Frames & Sash (d) Casings (e) Base (f) Moldings 29. Flooring (a) Wood (b) Composition 30. Floor Covering 31. Elevators (a) Power (b) Hand 32. Painting (a) Sheet Metal (b) Trim (c) Floors (d) Walls (e) Steel	33. Plumbing 34. Heating 35. Waring (a) Light (b) Power 36. Light Fixtures 37. Ventilating	Expenses 36. Office Shack 39. Insurance (a) Limbility (b) Firs (c) Bond 40. Drafting 41. Plant Erection 42. " Reptal 43. Tools 44. Power, Water, Light, Tele- phone, etc. 45. Superintendence 46. Time-Keeper 47. Incidental Expense 48. Contingency Reserve.			

the unsuccessful bidders, at a contract award, complain: "How did he do it? His figure is less than our cost."

And it is an old story to engineers and architects to receive bids varying fifty to one hundred per cent. between highest and lowest.

Why? The answer is plain. There are builders who do not know how to estimate. Either they allow too much in each item for contingencies, or they take a chance and allow nothing. Or their unit costs are wrong.

The contingency allowance is easily taken care of—the soundest plan is to allow a fixed percentage of the total cost for unexpected and incalculable delays, price advances and so on, and add it to the overhead charges, as a totally distinct item. Under no circumstances should it be buried in the individual costs.

Cost-Keeping

The greatest errors in estimating are those arising from incorrect unit costs. And it is the purpose of this paper to indicate a method of arriving at such costs, without undue complication. System is indispensable, but common sense requires that it be kept to the minimum which will produce correct results.

Cost-keeping for the builder of small houses, scattered through different localities is quite a different matter *in detail*, from cost-keeping for the firm specializing, say in reinforced concrete factories and warehouses.

In the one case the keeping and classifying of records falls on the builder himself, aided by his foremen; in the other, a sufficiently large organization on the job and in the office permits the assignment of one or more clerks or time-keepers to the assembling and follow up of the necessary data.

The same principles apply to both, and proper record of cost includes these essential steps:

- 1. The analysis of the job into items, whose individual cost is to be kept.
- 2. The determination of the sources of information of the ex-

												1
WEEKLY PROGRESS REPORT												
Construction -Co.												
New York City												
Date												
Job. No.	•			.	44	_				192		
Time Distribution Non. Tues. Wed. Thur. Fri.												
Workman No.		Acct No.		Acct No.		Acot No.		Acot No.		Acot No.	Overtime (Describe in :	Mll)
						1						
Total Payroll for the week \$												
			Surv	ey of	Work	Оожр	leted	Duri	ng th	• T ••	k	
Account	No.						De	sorip	tion			
Signed								_				
Importa	nt:	This	repor	t mus	t be	at th	e Gen	eral	Offic	e by	noon Tuesday	•

Fig. 1

penses making up each of those items; and of the easiest means of recording and reporting such expenses.

- 3. Setting up a medium for collecting expenses under each cost head, as listed in (1).
- 4. Creating a means for analyzing costs, and arriving at unit costs for permanent record.
- 5. Reconciliation of all figures so assembled with the total cost of the job as given by the books.

These five headings sum up the whole requirements of any good construction cost system. Let us consider them in detail, one at a time; and then pass on to the necessary forms and methods. To permit short-cuts, we shall assume that we are working out a cost system for a non-fireproof apartment house.

Analyzing the Job for Cest

This means to make a list of the operations for the work such as: Preliminaries, excavation, footings, foundations, exterior brick walls, etc., each one of which is to have its cost determined.

The size of the job and the organization avalaible will decide how far each part is to be subdivided; for instance, exterior brick walls might be subdivided into (a) Common brick in common bond; (b) Ditto, special bond; (c) Ditto, backing for face brick; (d) Face brick, and so on. These may be further subdivided into piers, straight wall, soldier courses, window heads, arches, etc.

The Estimate Sheet

It is well not to subdivide too finely. In the first place, it takes too much time, and in the second, it may not be worth while, since the same kind of detail may not be met with frequently enough. Get the big items right and let them absorb the small ones. The best guide for preparing our list of operations is the estimate sheet. What unit costs would you want to know if you were figuring on a similar structure?

Table A shows a list which has been found satisfactory. Note that job expense items are segregated at the end of the list, where too there is an item "Contingency Reserve." This list may also bear the unit to be used in each case. These usually are obvious; but some items may be expressed in one of several units: piling for instance may be "per pile," or "per lineal foot"; partitions may be in board feet of lumber, square or lineal feet of partition.

Elements of Cost and Sources of Information

The principal elements of cost of any operation are:

- (a) Labor.
- (b) Material.
- (c) Work of Sub-Contractors.
- (d) Direct Expense (Supervision, etc.).
- (e) Indirect Expense (Company overhead).

The sources of information from which these are obtained are as follows:

- (a) Labor—from weekly time slips and weekly timekeepers' reports.
- (b) Material—from delivery slips, invoices, purchase memos and time-keepers' weekly surveys of work done.
- (c) Work of Sub-Contractors—from information obtained at the source, sub-contractors' monthly statements and timekeepers' surveys.
- (d) Direct Expense—from invoices, salary ledger and expense ledger.
- (e) Indirect Expense—Pro-rated from the general books each month.

Labor Costs

The method of entering cost information at the sources enumerated is most important and calls for more extended notice.

Time slips are fairly well standardized and give only the total time and amount for each workman and the total for the week. It is the function of the timekeepers or superintendents' weekly report to classify the time and wages according to the schedule of operations, Table A, of which a copy is posted in the time-office. This report is also the means by which the general office is kept informed of the amount of work completed under each heading, during the week, whether executed by the builder's force, or by sub-contractors.

Hence it is an extremely important medium both in cost-determination and in the location of leaks and delays. It can be of the utmost value in intelligently keeping track of the field work or it can be absolutely useless. One firm devised a three-page weekly report for this purpose, which took the timekeeper half of Friday night and all day Saturday to compile.

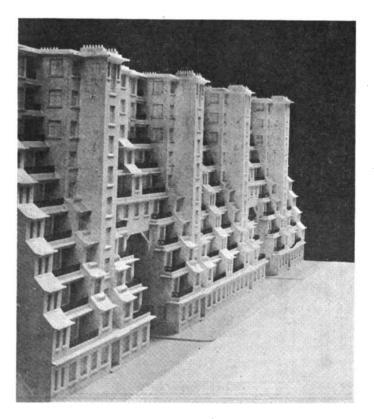
The Report shown in Fig. 1, can be posted in a few minutes each day and mailed in at noon Saturday. It gives all necessary information to permit posting labor charges to the proper account number in the job ledger to be described hereinafter.

(To be continued)

New Style for French Apartments

NHE housing situation in all parts of the civilized world seems to bring out all sorts of suggestions and new ideas, so perhaps it has been for the best that such a crisis did take place, as many new have evolved ideas from the necessity of providing a dequate housing.

A new form and rather a novel one has been devised by a Parisian architect. As our illustration of a model of this type of house shows, the new apartment houses are to consist of a structure ten stories high, built in gradual receding terraces or setbacks, so as to afford plenty of light



and sun to each apartment.

The terraces of open air porches (whichever one desires to call them) can be fitted up to suit individual taste as a garden or playground for children, etc.

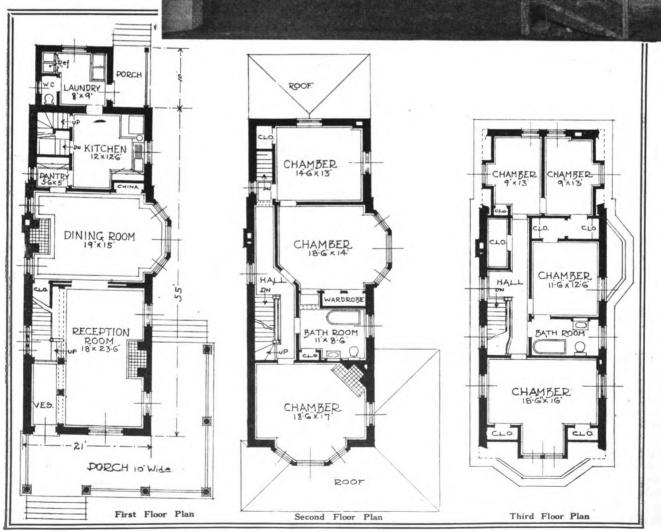
Each apartment house will contain a gymnasium and swimming pool, which will occupy central space of the first three floors.

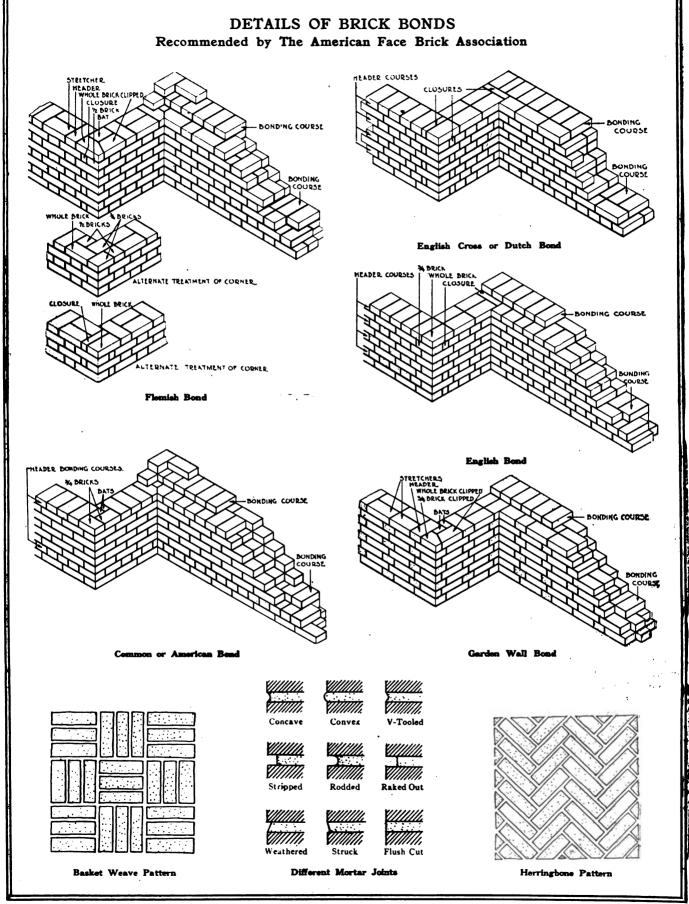
Each block of buildings will be served by its own elevators and it is estimated that, being built in large units, the cost of construction would be lowered, therefore bringing the rentals down to a moderate basis.

Brick Home of Colonial Design



C. E. SCHERMERHORN Architect







Watch Truck Appearance

By P. L. SNIFFIN

I T is to the good interest of the builder to keep his vehicles not only in good running order, but good in appearance as well.

Take, for example, the builder who presumes that his truck will operate just as well without a coat of paint as with one, and consequently lets the painting go until the truck actually serves to reflect upon his business methods. Certainly, it is true that a dirty looking vehicle cannot inspire confidence in the owner's business.

Re-painting Regularly

On the other hand, many builders have been known to specify repainting with relettering at regular intervals according to the severity of service, and to charge the cost to advertising. The efficiency of such a practice is borne out by experience, and it is noticeable that those who have carefully studied the factors that create public opinion have made provision for keeping up the appearance of the vehicles if only for the sake of the impression made upon customers, business men, and those who may be interested financially in the business. Incidentally, it is a matter of fact that bankers will customarily loan more money to clients who care for their property than to those who allow such property to show signs of neglect.

But in addition to these advantages incidental to proper painting of the vehicles, it is true that it is ordinarily cheaper to paint than not to paint. A protecting coat of paint conserves the body,

cab and exposed portions of the truck. Most of us have noted the nation-wide campaign for better painting, headed by the slogan, "Save the Surface and You Save All." This is being directed particularly with buildings, houses and other structures in mind, but it applies even more definitely to trucks than it does to business or residential structures.

Motor Trucks Are Subject to Wear

VEHICLES are subject to wear like all running objects; they are exposed to all kinds of weather. They become heated and are cooled by chilling rains or snow; the nature of the service they render necessitates contact with mud and dust; they come in contact with platforms, conveyances, fences and the like. Consequently, they deteriorate more rapidly than buildings on a fixed location, unless they are kept in condition by some rust and decay preventative, such as paint and varnish.

When a truck comes from the factory it is well protected with paint and varnish. This coating soon begins to show signs of wear. Not because the materials used are of inferior quality, but as a direct result of severe service and indifferent care.

Invest in a Wash Rack

One of the best investments a truck owner can make is a wash rack. Every builder who maintains his own garage should install one and then see that provision is made so that drivers will use it regularly. It will be worth while

to put aside a definite amount of each driver's time so that the trucks will receive a thorough cleaning at regular intervals. By a thorough cleaning is not meant merely going over the truck body, but getting under the truck and washing the parts where dirt, if accumulated, is liable to enter places where it will cause damage.

There is a double purpose in washing a truck—first, to keep it neat-appearing for the sake of the impression it will make on the street, and second, to prevent rust and damage through dirt and grit entering vital parts. Therefore, washing to be thorough must include the whole truck, taking in the engine and parts underneath the truck, as well as the body.

Keep the Engine Clean

MOTOR truck owners should also impress upon their drivers that it pays well to keep a truck engine clean. It is a matter of experience that clean engines work better than dirty It is difficult to explain convincingly why this is so. It is partly a matter of morals, but there are small practical reasons, too, which make a clean engine worth while. In the first place, a clean engine is likely to receive better care, since a clean engine demands better care. This is a matter of psychology. In the second place, a clean engine will get more attention because it is more pleasant to work around it. Thirdly, defects show up much more quickly on a clean engine. The stitch in time is discovered and



made much sooner on a clean engine than on a dirty one. Grease and dust cover things up. On dirty engines serious breakages often occur simply because oil and grime hide the trouble during its incipient stage. Finally, dirt is likely to work itself into wearing parts, and obviously the less of it there is present, the less there will be to cause trouble. It is a good plan, therefore, to wipe or wash the engine off with a rag moistened in kerosene or gasoline. It is advisable to do this work in the open, and the car should not be run

shock. Slip the clutch only when necessary to make a smooth start, as this often causes burned out or glazed clutch discs.

Lowering Speed

2. Shift gears to lower speed when driving slowly in traffic. When traveling through sand, use the highest gear possible and keep the truck rolling, but do not permit the engine to knock.

Climbing Grades

3. Do not wait until the engine knocks before shifting to a lower

Obtaining Traction

6. Remember that spinning wheels does not give traction. In attempting to drive in mud or slippery spots, wheels should revolve slowly, as this increases traction. Apply stones or planks around rear wheels to obtain traction in getting out of holes.

Easy Starting Hint

7. Immediately after turning off ignition switch in stopping it is helpful to open the throttle wide so that the momentum of the engine, as it slows down, will



A Well Painted Auto Truck is Worth Considerable to Every Building Contractor. The Psychological Effect of Having Your Attractive Auto Truck Pass Through the Various Streets of Your Town Cannot be Meas ured. You Will Find That There Will be Hundreds of People, When Asked to Recommend Some Builder, Will Instantly Refer to You.—"Use Griffith's. They Are Big Builders. I Always See Their Big Trucks Go By." This Kind of Good Advertising Can Be Had Comparatively Cheap. All It Costs is to Keep Your Truck Well Painted and Cared For.

again until all fumes have been dissipated.

Driving the Truck

It has been said that overloading, overspeeding and bad driving are the three principal controllable causes of truck breakdown. Check the first two and learn to avoid the third and you will be giving your truck a square deal on the road. Here are a few brief suggestions on proper driving:

Starting

1. Use all gears in starting. If a trailer is attached, take up the slack very slowly to prevent

speed. When climbing a grade, shift to a lower gear as soon as the engines gives the slightest indication of laboring.

Going Down Hill

4. When descending steep hills use the engine as a brake. Avoid heating of brakes on long descents by applying hand and foot brakes alternately.

Preventing Stalling

5. If the accelerator is used, set the throttle lever to give just enough opening to prevent stalling motor if the foot is moved from the pedal for braking. draw full shares of gas into the cylinders to enable easy starting.

Overheated Engine

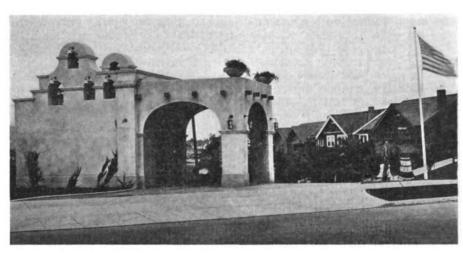
8. If engine becomes overheated, turn it off immediately or serious damage may result. Allow it to cool and add warm (not cold) water before proceeding. Never pour cold water directly into a hot motor, as this often causes the cylinder walls to crack or warp.

Emergency Stops

9. Avoid emergency stops, as far as possible. Anticipate situations far enough in advance to permit slow, gradual stopping.

For the Automobile

Fuel and Shelter
Are Now Provided in
Artistically Designed
Buildings





ARAGES and oil stations need not spoil the land-scape as, unfortunately, they often do. It costs but a trifle more to have a well designed structure that will harmonize with surrounding buildings. Builders can do their part by calling the owner's attention to any design that they feel will not be a credit to the neighborhood. The designs shown here are excellent examples of what can be accomplished at modest cost. The mission effect oil station is certainly a novelty, and a credit to its neighborhood.



What the Editor Thinks

Financing Home Construction

IN a very interesting article in this issue is told the story of how a building loan association in Columbus, Ohio, was able to handle the situation when money was hard to secure.

There should be more co-operation between bankers, lumber dealers, building contractors, real estate men and merchants generally for the purpose of establishing a building loan association in every city and town in the United States.

There is nothing that builds up a community so much as having the inhabitants own their own homes and every effort should be made to make it easy for the man who wants to become a permanent resident of the town.

When a man desires to build a home, if the local building loan association does not have the necessary money, an active canvass should be made amongst merchants and others to have them deposit funds in the building loan association so that the new home project can be financed. The very prosperity and life of the town depends upon this and it is the duty of every inhabitant to co-operate in this.

Better Homes in America

JUNE 4th to 10th will be known as "Better Homes in America Week," and in a large number of towns and cities model homes will be opened to the public. These will serve to interest prospective home builders in the newest devices used in modern homes.

The tremendous value of the demonstration houses in educating the average housewife to the various means at hand to lighten her work and make a better home cannot help but be of considerable advantage to every builder. Should there be such a demonstration in your town do all you can to help.

Everything done along this line will result to the ultimate benefit

of builders in general. The success of the various building shows held in our largest cities has been phenomenal this year, showing that the home building interest is still as active as ever. An interesting development along the exposition line is the creation of a moving picture on the subject which is intrestingly descibed on another page.

Shoddy Building

Many a building has been erected in such a hurry to get it within the tax exemption period that the little item of good construction was simply overlooked.

The writer recently examined a dwelling, situated in New York City, the foundation of which was of supposed solid concrete. It was erected last year, and this Spring it is badly cracked and in some places large pieces had actually fallen out.

The mixture could be easily crumpled in the hand and evidently the mix was about one part cement, two parts gravel and ten parts just plain dirt. The footings under the porch piers were just a shovelful of the same "concrete" flopped down on the earth—on the plan these footings were shown to go three feet below grade.

What good can come of "skin" building of this sort and where, oh, where, were the building inspectors' eyes?

Tax Exemption in Force Again

THE old railroad story of "Off again, on again Finnigan" is almost duplicated in the tax exemption situation in New York. In our last issue we reported that the Supreme Court had declared it unconstitutional. Led by the Mayor the matter was immediately carried to the Court of Appeals and the Supreme Court decision reversed. So tax exemption stands.

Should Wages Be Lowered?

In the public press from time to time we see articles about the high cost of building materials and wages. It is a good thing for this country that we do have high wages—the present prosperity is largely due to this very fact. If people did not have the money to spend they could not have the better homes with all improvements.

We hardly care to go back to the cave style of living quarters. Let us keep to high wages but have the men earn these high wages by being thoroughly efficient. Our progressive manufacturers are putting out different appliances for the saving of time; use them and cut costs that way.

Establishing a Reputation

WHY they selected the builder for their new home is the title of a rather interesting article in this issue. It points out clearly the business advantage of establishing a reputation for doing good work. In boom times it is easy enough to secure a contract, but when work gets a little slack—as it is bound to in future years—it is the man with the reputation who is asked to bid on the best job. A recommendation by people who have lived in houses that one has built carries the most weight.

Foreign Materials for Buildings

THERE is quite a determined effort on the part of some foreign manufacturers working through American representatives to introduce foreign made products in American buildings. A campaign of advertising is being directed urging architects to specify certain grades of foreign brick, etc. This is all very good for foreign manufacturers and in certain types of building their use is really to be approved, but for the great mass of American structures let us stick to the good old American products.

Wind, Sea and Neglect



O matter how strong we may build, some terrific disturbance of nature levels down the work of man. The three pictures shown on this page tell their own story and each has a lesson for builders.

The home shown in the top picture was demolished by a terrific tornado which destroyed many homes in Sligo and Silver Springs, suburbs of Washington, early in April. The terrific tornado struck without warning, demolishing a number of homes and causing damage estimated at over \$100,000. No better tribute could be paid to the builders of this house than a view of the wreck. The hollow tile foundation wall firmly held together under a tremendous strain, while good brick work is in evidence in the chimney, which, despite being turned over, was only broken in several places.

The sea is very treacherous to its abutting land. No one who has not witnessed the terrific effects of a heavy sea can realize the amount of damage which it can inflict. Our picture shows all that remains of the staunch keeper's house at Barnegat Light, one of the most famous lighthouses on the Jersey coast. Here the inrush

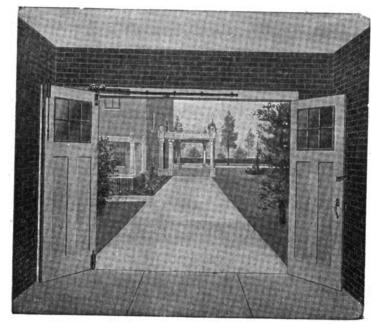
of the sea actually washed away the ground on which the foundation of the house was placed, and the lighthouse itself was in danger of meeting a like fate.

Our other picture shows the effect of a case of careless shoring while demolishing an old tenement house in New York. Proper supports of the adjoining structures were omitted, when, without warning, on March 30 the entire side wall of the adjoining building tumbled down on top of the partly demolished structure. Note particularly how the roof of this adjoining structure collapsed in almost one section. This unfortunate disaster resulted in the death of one workman, besides seriously injuring twelve others.

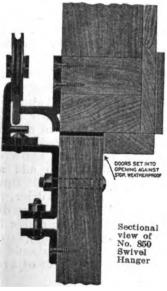


Don't Overlook the Garage Business

One Job brings another



—if the Hardware is right



Set No. 805 includes:
No. 29 Latch
1 Swivel Hanger
6-foot Braced Rail
4½ pair No. 505 T. P. Butts
(4 x 4 inch, japanned)
1 No. 820 Chain Bolt
1 No. 830 Foot Bolt
1 pair No. 40 Padlock Byes
1 No. 5 Pull

All necessary bolts and scrows

Equip one garage with No. 805 National Garage Door Set—and you have taken a big step toward a chain of garage-building jobs!

Motorists call it the handiest, easiest-working set they have ever operated. The doors melt away at a touch; just the smooth, yielding action that fits the mood of the automobilist.

Then it satisfies the desire for neat appearance by eliminating structural iron work from the outside of the garage. Doors are hung on the inside and fold and slide against the inner wall—requiring a minimum of space.

The doors move on overhead rollers; there's no friction—nothing to "stick"—nothing to get out of order. The hanger operates on a swivel and turns on the track with absolute freedom.

Moreover, the hangers are adjustable in case of swelling or raising of cement floor; the adjustable feature also prevents sagging doors.

And for convenient access, one door is hung so it will open without disturbing the other two. All weather tight. And moderately priced!

Send for Catalog today.

NATIONAL

Garage Door Set No. 805

A low-cost quality set



NATIONAL

NATIONAL MANUFACTURING COMPANY

STERLING, ILL.



PAINTING

Practical Points of Interest to the Builder

Painting Structural Steel Work

By A. ASHMUN KELLY

TRUCTURAL steel may come to the job with or without the priming coat of paint. The practice at one time was uniformly to coat it, but this was found in most cases to be wrong, as the scale would loosen and remove the paint, besides which the paint was usually applied by careless, unskilled workmen, and had to be removed.

By allowing the unpainted metal to remain uncoated for some time before erection the weather caused much of the scale and dirt to fall off, and when it was time to coat it the metal was cleaned with steel brushes and then it received the paint properly.

This priming coat is usually applied just before assembling the parts. The best coating is red lead thinned out with linseed oil, the paint to be mixed fresh each day, as it will stiffen or harden if left too long after mixing, say over night. It is possible to mix as much as 33 lbs. of dry red lead with a gallon of oil, this making a good workable paint, for the coating should not be a mere film. A proper mix of red lead gives a hard and yet elastic coating, one that is thick and yet will not crack. It fills the pores of the metal and adheres well to it.

Red lead prevents rusting, and water cannot penetrate it. This is why marine underwriters favor it, and why the hulls of vessels are primed with it, as also the locks on the Panama Canal. In short,

practically all structural work is protected with red lead paint.

Steel structural work should have at least two coats of red lead paint, and each coat, no matter how many, should be slightly colored, in varying degrees, so that the inspector may readily detect faulty work. A little lampblack with the red lead will do for the purpose, and this black is itself a useful addition in securing a uniformity of the thickness of the film.

TO secure the best results the structural steel should be made perfectly clean of all matter that can be removed, such as moisture, grease, scale, etc. The time given to this work is time profitably spent. Then, all small pinholes, cracks, fissures between plates, poles, etc., should be filled before applying the paint. In no case should two parts of bare metal meet, as that sets up local galvanic action, which leads to corrosion. Paint therefore every part of the whole surface. White lead, a carbonate of the metal lead, and at one stage of its manufacture an oxide, should not be used for priming iron or steel, nor should oxide of zinc paint, as it also is capable of eating into the metal. All the iron ore paints contain phosphorous and sulphur, and these substances are injurious to iron or steel. Burning, however, removes these inimical properties of the ore.

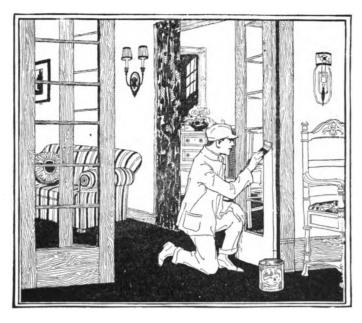
Asphaltum does not make a good coating, though it is some-

times employed on bridge steel construction. It is usually thinned out with benzine, which evaporates and leaves the painted surface rough and in a condition to catch the soot and dirt, which rain and other forms of moisture act upon to form acid that acts upon the metal and brings rusting.

Old painted iron work should be cleaned by scraping and burning off, and then be given a coat of turpentine or benzine, after which it may be painted.

The usual formula for making a red lead paint for iron or steel work is as follows: Take 25 lbs. of dry red lead and stir it gradually into one gallon of boiled linseed oil, or raw linseed oil. Then strain the paint. If extra quick drying is desired, then add about a gill of drying japan. But red lead is itself a strong drier, hence it is unusual to add any drying help to assist it. The above formula will give something over a gallon of paint, and it should cover about 1,000 square feet of average surface.

RAPHITE and lampblack are sometimes added to red lead paint, the purpose being to cause the red lead paint to work easier under the brush than the red lead paint alone will do, for it is a very stubborn liquid to spread out. Red lead paint should be frequently stirred, for it settles badly in the pot, though there are substances, such as pulverized asbestos, that will keep the heavy pigment in suspension, without injuring its wearing qualities.



How to Make Soft Woods Beautiful as Hardwood

IT is generally admitted that wood finished in its natural shade cannot be worked as successfully into color schemes of decoration as stained wood. It is also true that color brings out the grain and enhances the natural beauty of most woods. For these reasons we manufacture a line of wood color known as Johnson's Wood Dye.

Johnson's Wood Dye is for the artistic coloring of wood. With it inexpensive soft woods such as pine, cypress, fir, etc., may be finished so they are as beautiful as hardwood. Johnson's Wood Dye is very easy to apply—it goes on easily and quickly without a lap or a streak.

Johnson's Wood Dye is a dye in every sense of the word. It penetrates so deeply that the natural color is not disclosed if the wood becomes scratched or marred—it brings out the beauty of the grain without raising it in the slightest—it dries in four hours and does not rub off or smudge.

Johnson's Wood Dye is made in 15 shades, all of which may be easily lightened, darkened or intermixed—full directions on every label.

JOHNSON'S WOOD DYE

FREE—Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of famous experts—illustrated in color. This book is written for the practical man—it gives covering capacities, includes color charts, etc. We will gladly send it free and postpaid.

Use Coupon at Right



S. C. JOHNSON & SON Dept. B.A. 5, Racine, Wis. "The Wood Finishing Authorities." Please send me free and postpaid your Book on Wood Finishing.
l usually buy varnishes from
My Name
My Address
City and State



USEFUL CATALOGS



Concrete Bricks are easily made by the use of the Helm Brick Press. An interesting, illustrated catalog describing it may be had from the Helm Brick Machine Co., 990 Mitchell St., Cadillac, Michigan.

Kitchens for modern dwellings are now being made in sectional steel cabinet form and are sanitary and attractive in appearance. A most interesting catalog describing these useful cabinets has just been issued by the Wasmuth-Endicott Co., 502 Snowden Street, Andrews Indiana.

Slate for Roofing affords a variety of colors, thicknesses and graduations so that the Old World roof designs can be reproduced on our modern buildings. An interesting folder on this subject may be had from the Knickerbocker Slate Corporation, 153 East 38th St., New York City.

Steel reinforcement for concrete is clearly depicted in a catalogue published by the Midwest Steel & Supply Co., 28 West 44th St., New York City. These reinforcing bars have a great adhesive area and rigidly attached stirrups efficiently take up the shearing stresses. Complete details and drawings are illustrated, showing a fine selection of L. Rails, Steel Stringers, Building Clamps, etc. This catalogue is highly useful to any builder erecting concrete and steel structures.

Soft Water is most desirable in the home, etc., and in localities where hard water is only obtainable. A water softener is a great convenience. Builders should include them in every house they build as they can be easily installed with the original plumbing. Soft water will keep the heating system and all piping in good condition from the start. An interesting booklet on this subject, full of facts for builders has just been issued.

Cement Block Machines of a new type by which a stronger block can be made with less cement and in less time will certainly interest builders. The molds are made in artistic designs which lend beauty to the finished block. A full line of the Hercules Block Machines is described in the catalogues of the Willsea Works, 58 Brown Race, Rochester, N. Y.

Locked Doors have been the cause of many a tragedy in fires in public buildings where passages have been blocked by locked doors. This is impossible by the use of the Panic-Lock, manufactured by the Frank F. Smith Harware Company, 81 Clay Street, Newark, N. J. A catalogue containing full description, illustrations and specifications will be sent on request.

Concrete mixers built strong to last long are the product of sixteen years experience in designing and manutacturing different sizes for small and large jobs. These machines are of approved design and modern in every detail. They are an absolute necessity to the builder and he should not delay in sending to the Ohio Concrete Machine Co., 129 E. Columbus Street, Columbus, Ohio, for their illustrated pamphlet.

Protection against weather is an essential factor in buildings of any type or pattern. Windows and doors made of wood are liable to shrink, warp, swell and crack with time and weather conditions. Metal weatherstrips such as are manufactured by the Concrete Engineering Co. of Chicago easily remedy these defects by forming a close contact with door and window frames, keeping out drafts and dampness. Their use is fully outlined in a sixteen page booklet which can be procured by all builders.

Weatherproofing of Concrete is effectively accomplished by using an integral waterproofing compound in the mix, such as made by the Truscon Laboratories of Detroit, Mich. This waterproofing is desirable in all cement construction because of its weather protective benefits and the advantage derived from a denser and more compact mass. A catalogue describing this mixture and its use will be sent to any builder on request.

Beautiful Windows is the title of a handsomely illustrated book of sixty-eight pages showing exteriors and interiors of homes. These windows lend beauty and dignity to the home but their charms in a large measure are due to their having the proper shade such as made by the Talbert, Whitmore Company, 2620 Lacy Street, Los Angeles, Calif.

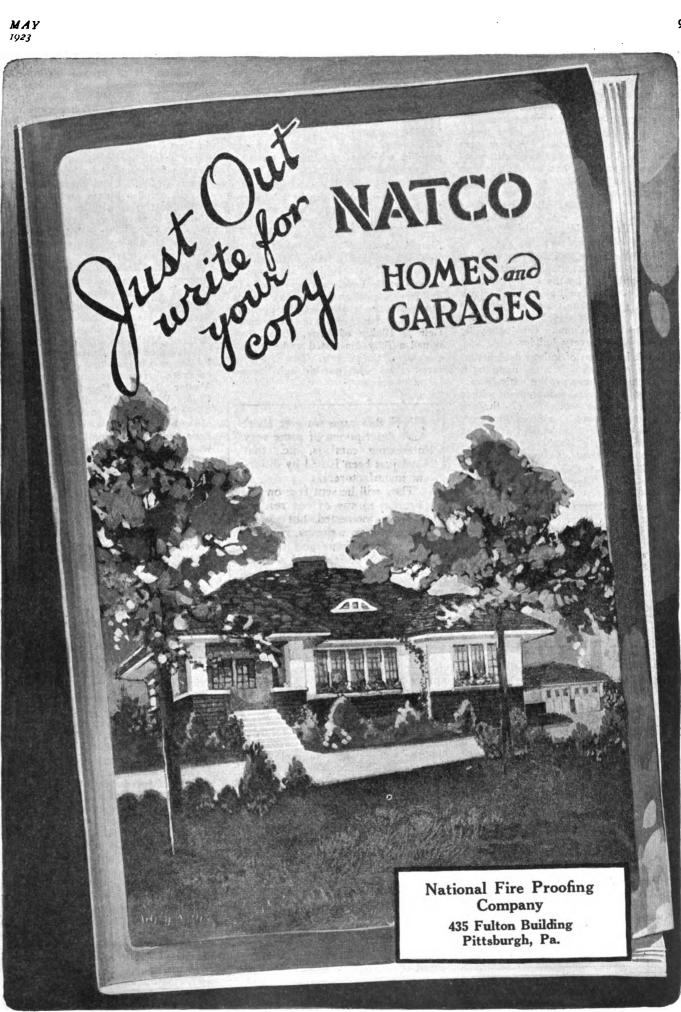
Flint Rock Stuceo is a compound which will interest builders. It is composed of some of the hardest substances known, and is absolutely fireproof. It is a distinctive feature for permanence and strength. A catalogue containing illustrations, descriptive matter and instructions in mixing, can be had upon request from the Flint Rock Corporation, 220 West 42d Street, New York City.

Disappearing stairways brings to mind the story of a great mystery, but a stairway that can be raised and lowered at will is described by the Bessler Movable Stairway Co. of Akron, Ohio, in their catalogues. Waste attic space can easily be utilized by the aid of this invention which when out of use folds up into the ceiling and is lowered by a slight pull on a chain.

Builders levels and transit are graphically portrayed in a book of Builders Surveying Supplies issued by Keuffel & Esser Co., 127 Fulton Street, New York City. An enclosed dust-proof vernier on a transit eliminates the danger of miscalculation, as the instruments are so mechanically perfect that even so minute a particle as a bit of grit may throw it out of adjustment. Description of convertable transit levels, plane tables, plumb tools and other constructional and drawing instruments and supplies make the book of unusual interest.

Wire Screens are essential to every home and should be of a quality that eliminates any chance of mosquitoes, flies or moths gaining entrance to the home. Builders should fully equip every home they build with proper screens. A no-chip, metallic coated, rust-proof wire mesh is fully described in a catalogue published by the Gilbert & Bennett Mfg. Co., 38 S. Dearborn Street, Chicago, Ill.

Lattice Trusses are economically erected and an illustrated catalogue showing their use for garages, dance halls, etc., has just been issued by the McKeon Bros. Co., Inc., 21 East 40th Street, New York. Builders of structures requiring large unobstructed floor areas will be interested in this form of construction.



Digitized by Google

Weather Strips are rather welcome during the winter months when every cranny and crack forms a vent to the cold winds. Every new house should be equipped with them when it is built and the summer is a good time to install them in old houses. A new strip that is self adjusting and prevents window sash rattling, has been placed on the market. Builders will find this a necessary adjunct to the heating of homes. A handsome illustrated catalogue is furnished on request by the Sager Metal Weatherstrip Co., 162 Austin Avenue, Chicago, Ill.

Iron Work for Buildings of all descriptions is illustrated in catalogue No. 67 published by the Fred J. Meyers Mfg. Co. of Hamilton, Ohio. Bank fixtures, grills, panels and elevator enclosures are only a few of the items listed and which make this catalogue a necessity to every builder.

Brick Machines of unique design that can be operated either by hand or a power tamper have proven entirely satisfactory in the manufacture of either face or common cement brick, the use of which is steadily gaining in favor. Full information can be had from the Anchor Concrete Machinery Company, 532 Dublin Avenue, Columbus, Ohio.

Hardening of Concrete is hastened by the use of Liquid Integral which is a great aid in the solidifying, hardening and waterproofing of concrete, mortar and cement. Mixed with cement it permits the early removal of forms and rapid finishing of floors, etc. It is the product of the Adensite Co., Inc., 116 West 39th Street, New York City, who will furnish catalogues on request.

Bench Machines of every description will speed up work by eliminating all hand planing and sawing. Carpenters, builders and general mechanics will find much of interest and assistance in a descriptive catalogue issued by J. D. Wallace and Company, 1407 W. Jackson Blvd., Chicago, Ill.

Wire Products are in greater demand in building construction work of all kinds than ever before. A full description of wire screens, wire lathing, teller's cages, railings, window grilles and wire cloth is contained in a catalogue published by the Buffalo Wire Works of Buffalo, N. Y. This booklet will be of interest to constructional workers of every description.

Waterproofing is occuying a large field in the protection of concrete, stucco and steel work that is exposed to dampness. A 16-page book of illustrations and directions can be procured upon request from Wadsworth Howland & Co., Inc., of Boston, Mass. This waterproofing should prove a great factor in the elimination of repair work rendered necessary by tr., wear and tear on buildings due to the exposure to the elements.

Water Pumps for all purposes are fully described and illustrated in a forty-page catalogue issued by the Duro Pump & Mfg. Co., Dayton, Ohio. Pumps for country dwellings and city buildings, pumps for shallow wells and deep wells, and in fact for every purpose in which water pumps are used, are explained with instructions for selecting the proper type.

Water Installation can best be served by the use of brass pipe inasmuch as it is non-corrosive. An interesting catalogue entitled "When and How It Should Be Used" is published by the Bridgeport Brass Co., Bridgeport, Conn. Builders should obtain same.

Convertible Levels are very handy for builders' use when laying out foundation work, as it obviates the necessity of using two separate instruments. Geir & Bluhm of Troy, N. Y., have issued a fully illustrated and described circular of their levels. This is a four-screw level with outside hair-line adjustment screw.

ON this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Brass Pipe makes any plumbing system repair proof at its vulnerable points and information regarding its use is given in a booklet just issued by the Copper and Brass Research Association, 25 Broadway, New York, entitled "Brass Pipe Plumbing." Among other useful information it contains a large chart showing the plumbing in a modern residence.

Mothproof Closets are the pride of the housewife, and the progressive builder will be sure to build one in every new house. They are easily made of aromatic red cedar wood fabricated in panels for quick installation over lath and plaster. Detailed information is contained in catalogue of the Kilmoth Products Corporation, 50 Union Square, New York City.

Natural Rock Cement for making brick, tile and terra cotta mortar is manufactured by the Carney Company of Mankato, Minn. Carney, which is the name of the cement, is beautiful when used with the dark colored brick of today, because when hardened it turns to a creamy white of fine texture. A fully descriptive catalogue can be secured upon request.

Builders' Hardware of quality is illustrated in a handsome, complete catalogue issued by the Stanley Works of New Britain, Conn. Different varieties of butts, furnished in all sizes and finishes, are fully described and illustrated in Part I of the catalogue. Part 2 contains a full line of door, transom and shutter bolts and door knobs. Part 3 consists of blind and shutter hardware which includes hinges and hooks. All fully illustrated with cross cut views showing how different types of hardware should be applied, and every builder should have this useful catalogue in his files.

Concrete Building Tile is a great money saver in the erection of buildings of all descriptions. An illustrated pamphlet describing the Duntile Concrete Tile Machine can be secured from the W. E. Dunn Manufacturing Co., Holland, Mich., by any builder.

Colored concrete floors are made easy by the use of colormix, a new colored concrete hardner, manufactured by the Master Builders Company, Cleveland, Ohio. When dissolved in the gauging water it dyes every particle of sand and cement producing a colored concrete floor and at the same time rendering it waterproof. Builders are recommended to send for the interesting catalogue.

Pebble Dash for stuccoed houses is being used to a large extent in the present day building. It is simple of application and gives a beautiful finish to any home. A catalogue explaining methods of application and different colors of pebbles is supplied on request by the E. W. Holmes Pebble Dash Co., Princeton, Ill.

Hot Air Heating is accomplished with greater efficiency when the registers have a free air capacity. The floor and baseboard registers manufactured by the Hart & Cooley Co., Inc., New Britain, Conn., allow for the maximum of free air capacity. Builders should write for the catalogue which is entitled "The Price You Pay."

Two family house construction has taken a jump in the past two years and are now in great demand. Menry Grieme, architect, 110 Engigers' Building, Cleveland, Ohio, has just issued a most interesting portfolio size 12x15 inches), containing ninetyfive designs of two family houses with loor plans. These houses are of the latest pattern and improvements in architectural design. The floor plans are illustrated in detail. The interesting book sells at \$2.50 per copy.

Casements and Windows should have three outstanding points, namely correct mechanical design, artistic, substantial hardware, and sound workmanship. Casements manufactured by David Lupton's Sons Co., Philadelphia, Pa., have all three of these qualities and builders will be much interested in the forty-two-page book which will be furnished on request.

ATTINIS SILVERSAWS

SAW SATISFACTION

Satisfaction is the sensation that follows the gratification of desire. It is the fulfillment of expectation and promise. While satisfaction comes last, it is the first in performance. It is worth the price. Carpenters and builders seek it constantly in their Saws and Saw Tools and always find it when using those made by ATKINS.

There is no substitute for the satisfaction one finds in using Atkins Saws and other products exclusively. They always make good.

Send thirty cents for nail apron, Saw Sense and useful souvenir.

A Better Saw for Every Use

E.C.ATKINS & CO.

ESTABLISHED 1857 THE SILVER STEEL SAW PEOPLE Home Office and Factory, INDIANAPOLIS, INDIANA

Canadian Factory, Hamilton Ontario Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks In The Following Cities:

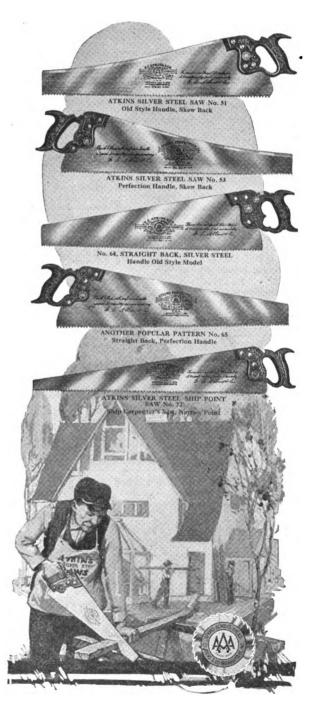
Atlanta Memphis Chicago Minneapolis

o ety th

rc1

New Orleans New York City Portland, Ore. San Francisco

Seattle Paris, France Sydney, N. S.W. Vancouver, B.C.



Review of the Building Situation

BUILDING statistics for March just published by the F. W. Dodge Corporation, show that the volume of contracts awarded during March amounted to \$371,447,300. This was an increase over February of 32 per cent. in the thirty-six Eastern States which our report covers and nearly 14 per cent. greater than March, 1922.

Residential construction in March represented 47 per cent. of the total amount of construction contracted for during the month; this amounting to a total of \$175,705,400. This figure is greater than any previous month on record.

Residential construction has proceeded thus far at an increase of 44 per cent. over the early months of 1922. Therefore, 1923, is evidently destined to hold the record for home construction of any period of building history.

With the phenomenal record of 1922 in mind, it would have been a bold man indeed who would have predicted that any other year would equal it, to say nothing of attempting to exceed it. We all thought the 1922 record was something unusual; but now it is evident that it would be relegated to second place.

Building construction is quite active in practically every locality.

A very good sign is that in practically all sections a vast amount of money is being spent for business buildings. Nearly 25 per cent. of the entire amount of contracts awarded were for this type of building. Quite a considerable amount of money is also being expended for school buildings.

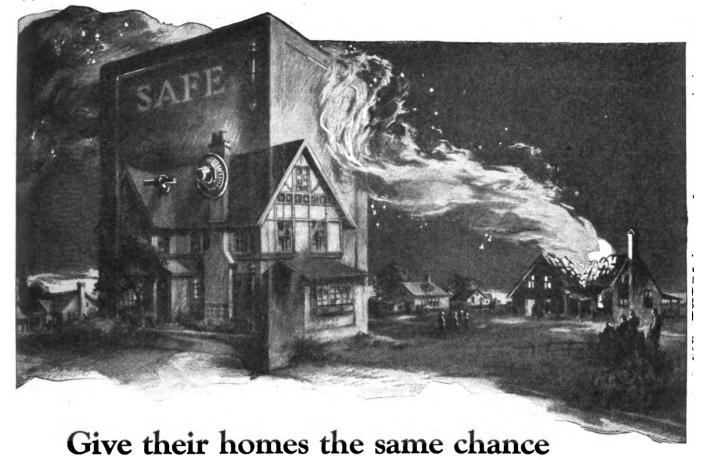
Of the total sum of \$175,705,400 of contracts awarded, for residential construction, the sum of \$97,478,900 was for work to be done in the Eastern States around New York. This amounted to 55 per cent. of the entire total, thus showing that the bulk of home construction is still in the East.

Record of March, 1923, Building Contracts Awarded

Classifications of Buildings	New England District	New York District	SECTION OF Mid Altantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlanti District	c Totals
Business Buildings	\$5,392,200	\$11.856,400	\$8,151,800	\$6,710,800	\$10,485,000	\$1,480,100	\$7,156,500	\$51,232,800
Educational Buildings		4,610,100	4,286,300	4,964,900	5,708,300	1,562,300	4,415,900	26,965,800
Hospitals and Institutions.	640,000	2,801,600	543,500	571,000	1,073,000	240,000	2,284,000	8,153,100
Industrial Buildings Military and Naval Build-	4,653,000	6,361,800	5,438,200	10,875,800	7,505,800	2,199,000	4,769,000	41,802,600
ings			178,700	9,900	20,000			208,600
Public Buildings Public Works and Public		121,700	221,300	48,600	583,900	495,000	163,500	1,649,000
Utilities	1,890,600	2,737,300	6,806,000	11,768,400	16,550,100	2,834,000	5,605,900	48,192,300
Buildings	652,000	1.112.000	923,000	1.010.000	2.029.500	443.000	1,835,000	8,004,500
Residential Buildings Social and Recreational	11,556,100	64,577,500	21,345,300	24,734,500	38,540,300	3,513,600	11,438,100	175,705,400
Buildings	390,000	1,064,000	2,643,400	801,000	4,213,500	160,300	261,000	9,533,200
Total	\$26,606,900	\$95,242,400	\$50,537,500	\$61,494,900	\$86,709,400	\$12,927,300	\$37,928,900	\$371,447,300

Building Projects Contemplated, March, 1923

Classifications of Buildings	New England District	New York District	SECTION OF Mid Altantic District		Middle West District	North West District	South Atlanti District	c Totals
Business Buildings	\$6,427,700	\$19,976,300	\$11,629,800	\$8,934,200	\$30,408,700	\$3,151,600	\$6,580,700	\$87,109,000
Educational Buildings	2 206 000	11,922,500	5,449,000	4,248,500	14,096,500	1.513.000	7.104.100	47,729,600
Hospitals and Institutions.		3,000,000	2,647,000	1,385,000	2,299,000	359,600	1,948,500	12,039,100
Industrial Buildings		9,209,000	23,365,800	36,304,300		787,000	9.142.000	114,415,400
Military and Naval Build-		,,	,,	,,	,,	,	.,,	,,
ings	2,050,000	20,000	151,000	50,000	245,000	7.500	29,500	2,553,000
Public Buildings		488,000	766,400	108,600		109,000	528,500	17,127,500
Public Works and Public		,		,	,,	,	,	,,
Utilities	6,988,000	6.012.100	20,635,400	15,774,000	45,113,900	5,029,000	21,831,300	121,383,700
Religious and Memorial		-,,	,,	,,	,,-	-,,	,,,	,,-
Buildings	1,211,000	3.215.500	2,776,000	1.646,000	4.098.500	716,000	2,613,000	16,276,000
Residential Buildings	14,123,100	109,537,300	48,648,700	31,116,200	101,338,100	4,448,200	20,368,600	329,580,200
Social and Recreational		,	,,.	,,	,,	., ,		0_0,000,=0
Buildings	2,501,000	3,928,500	3,270,000	2,737,000	26,347,500	1,266,400	2,747,000	42,797,400
Total	\$56,240,800	\$167,309,200	\$119,339,100	\$102,303,800	\$255,537,500	\$17,387,300	\$72,893,200	\$791,010,900



WHEN a customer wants slatesurfaced shingles on his house, you know that you can sell or apply any particular brand that you care to.

you give your business

The customer leaves it to your judgment. He feels sure that you will give him the best slate-surfaced shingle that the market affords.

There is one slate-surfaced shingle that is vastly different from the average flexible shingle. It is the Johns-Manville Flexstone Asbestos Shingle.

The foundation of this shingle is a dense layer of asbestos rock fibre —in addition to the slate-surfacing and asphaltic filler common to other flexible shingles. The layer of everlasting asbestos in the Flexstone Shingle is a permanent protection to the roof on which it lies.

Where the average composition shingle is fire-resistant for a few moments only, a Flexstone Asbestos Shingle will withstand an intense flame for a very long time.

True, Johns-Manville Flexstone Asbestos Shingles cost a bit more than some others—but it is so little —only a fraction of a cent per shingle. You will find your prospect only too glad to give this little in exchange for genuine fire safety.

JOHNS-MANVILLE Incorporated
Madison Avenue at 41st St., New York City
Branches in 56 Large Cities
For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto



INSULATION BRAKE LININGS ROOFINGS PACKINGS CEMENTS

JOHNS-MANVILLE Asbestos Shingles

Digitized by GOOGLE

Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor

can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

			[ar. 28	Apr
Mar. 2	28 Apr. 28	PLASTER BOARD— 32 x 36 x 1/4 in., Each	\$0.22	\$
NG LEAF YELLOW PINE— and Better Edge Grain Flooring, 13/16#294" Face \$96.25	\$96.00	MAGNESITE STUCCO-	-	
mensions, S1S1E, No. 1 Common, 2x4", 10' 45.25	5 45.25	Per Ton	70.00	\$71
mbers, Merchantable, '05, 12x12", 19 to 20" 62.00		I in Square or Hevagon White per en ft	\$0.25	\$
and Better Ceiling, ½x3¼	67.00	3 x 6 in. White Wall	.60	•
and Better Partition, 14"x334"	72.75	8 x 8 in. Red Floor	.45	
2. 1 Common Boards, 1x8" 55.25	5 55. 25	CUICACO DDICES		
RTH CAROLINA PINE—	****	CHICAGO PRICES YELLOW PINE—		
p. 2 and Better Flooring, 13/16x23/4") \$75.50) 35.50	Boards, 1x8, No. 1 Com	\$48.00	\$4
JGLAS FIR—	, 00.00	Ceiling, 54x4, B. and Btr	52.00	
a. 2 Clear and Better V. G. Flooring, 1x3" \$76.50	\$76.50		38.00	
n. 1 Clear V. G. Flooring, 1x4"	78.00		60.00 70.00	
o. 2 Clear and Better Ceiling, 1/2x4"			93.00	
b. 2 Clear and Better V. G. Stepping		Lath, 4 ft., No. 1	8.10	
STERN RED CEDAR—	, , , , , ,	, , , , , , , , , , , , , , , , , , , ,	52.00	
C. Perfection Shingles, per M \$7.60		HARDWOODS— Maple Pleoring 13/16-264 clear	NOO 5/1	\$
ashington Perfection Shingles, per M	7.57	Maple Flooring, 13/16x274, clear	77.00	•
car Bevel Siding, ½x6"	53.00	Oak Flooring, 13/16x2¼, Cl. Pl., White	108.50	1
IADIAN SPRUCE— > 1 Lath, 1½" \$8.63	3 \$9.63	REDWOOD— Revel Siding SISIF 10 to 20 to 1/24 place	047 OF	_
3. 1 Lath, 1½"		Bevel Siding, S1S1E, 10 ft., 20 ft., 1/4x4, clear	94.25 94.50	\$
RDWOOD FLOORING—		WESTERN RED CEDAR—		
ear Quartered White Oak, 13/16x2x234"\$162.75 ear Plain White Oak, 13/16x24"	\$ \$162.75	Bevel Siding, 1/2x4 in., Clear		\$
par Plain White Oak, 13/16x254"	122.75	Shingles, Extra Clears, 16 in	5.50	
ear Plain Red Oak, 13/16x234"	5 122.75 0 117.00	Per M. f. o. b. job	\$12.00	•
(All lumber prices furnished by Lumber)		PORTLAND CEMENT—	*	•
IMON BRICK—		Bbls. in car lots to contractors, not including con-	**	
r M. f. o. b. job\$24.50	\$24.00	tainersSTRUCTURAL STEEL—	\$2,20	
TLAND CEMENT— ls. in car lots to contractors, delivered \$2.75	\$2,75		\$3.20	
UCTURAL STEEL-	φ2.73	CRUSHED STONE (cu. yd.)-		
r 100 lb. at warehouse \$3.44	\$ \$3.54	% in. 1½ in.	\$3.00	
SHED STONE (cu. yd.)—		WALL BOARD—	3.00	
in. \$2.60 in. \$2.50		Per 1,000 sq. ft. in lots under M	\$50.09	1
LL BOARD—	-	Per 1,000 sq. ft. in lots 1 M to 2½ M	45.00	
r 1,000 sq. ft. in lots under 1,000 sq. ft \$50.00	\$50.00	Sand (per cubic yard)	\$3.00	
r 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft 45.00	45.00	16 in. Gravel (per cubic yard)	3.00	
lb26 gauge price per 100 sq. vd. delivered ex m	\$0.18	1/2 in. Gravel (per cubic yard)	3.00	
ID.—IF Eauge light price per 100 sq. vd. delivered. 28.00	0.20	am come proces		
10.—24 gauge heavy price per 100 sq. yd. delivered 30.00	0.223/5	ST. LOUIS PRICES		
Add 5 cents per sq. yd. for galvanized. E. (Hydrate)—		YELLOW PINE— Boards, No. 1 Com., 1x4	e44 00	
nishing, per 50 lb. bag	\$0.60		60.50	
sons, per 50 lb bag49		Dimension, No. 1, SISIE, Short Leaf, 2x4 in., 12 & 14 ft.	39.00	
D AND GRAVEL— ad (per cubic yard)			68.00	
in. Gravel (per cubic yard)		Flooring, B. and Btr., E. G., 1x3	90.00 71.00	
in. Gravel (per cubic yard)		Lath, 4 It., No. 1	7.00	
E BRICK—		Timbers, No. 1, rough, short leaf, 6x12 to 12x12 in.		
pestry (delivered)\$48.50			41.50	
rveale (Delivered)	40.00	CALIFORNIA REDWOOD—		
arveale (Delivered)	1 43.00			•
rveale (Delivered)	52.00	Finish, S2S, Cl., 1x6 in		•
A	52.00	Siding, 4 in. Bevel, 10 to 20 ft	47.25 78.25	•
reveale (Delivered) 43.50 ledonian (delivered) 51.00 ledonian (delivered) 51.00 lk Lock f. o. b. factory 44.00 NGLES 44.00	52.00 42.00	Siding, 4 in. Bevel, 10 to 20 ft	47.25 78.25	
	52.00 42.00 5 \$8.25	Siding, 4 in. Bevel, 10 to 20 ft	47.25 78.25 78.75	
	52.00 42.00 5 \$8.25 7.00	Siding, 4 in. Bevel, 10 to 20 ft	47.25 78.25 78.75	\$1
	52.00 42.00 5 \$8.25 7.00 \$11.50	Siding, 4 in. Bevel, 10 to 20 ft	47.25 78.25 78.75 78.75	\$1
	52.00 42.00 5 \$8.25 7.00 5 \$11.50 11.50	Siding, 4 in. Bevel, 10 to 20 ft 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 1x11/2 and 2 in., Clear Otr. White\$1 Maple Flooring, 13/16x2/4 in., Clear	47.25 78.25 78.75 78.75	\$1
	52.00 42.00 5 \$8.25 7.00 5 \$11.50 11.50	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 14x11/2 and 2 in., Clear Qtr. White \$1 Maple Flooring, 13/16x2/4 in., Clear RED CEDAR— Siding, 1/x6, Clear Shingles, Cleara, Per M.	47.25 78.25 78.75 78.75 109.50	\$1
	52.00 42.00 5 \$8.25 7.00 111.50 12.50 13.00	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 1x/15/2 and 2 in., Clear Otr. White\$1 Maple Flooring, 13/16x2% in., Clear RED CEDAR— Siding, 1x6, Clear Shingles, Clears, Per M. COMMON BRICK— Per M., f. o. b. job	47.25 78.25 78.75 109.50 110.50 48.00 5.11	\$1 1
	\$2.00 42.00 \$8.25 7.00 \$11.50 11.50 12.50 13.00 \$0.12½	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 15/16x2½ in., Clear Qtr. White	47.25 78.25 78.75 109.50 110.50 48.00 5.11	\$1 1
	\$2.00 42.00 \$8.25 7.00 \$11.50 11.50 12.50 13.00	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 1/2/1/2 and 2 in., Clear Qtr. White	47.25 78.25 78.75 109.50 110.50 48.00 5.11	\$1 1 \$
	\$2.00 42.00 \$8.25 7.00 \$11.50 11.50 12.50 13.00 \$0.1234 .1834	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 1/2/1/2 and 2 in., Clear Qtr. White	47.25 78.25 78.75 109.50 110.50 48.00 5.11	\$1 1 \$
	52.00 42.00 42.00 5 \$8.25 7.00 11.50 11.50 12.50 13.00 4 \$0.12½ 1834	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 13/16x24 in., Clear Otr. White\$1 Maple Flooring, 13/16x24 in., Clear Otr. White\$1 RED CEDAR— Siding, 1/x6, Clear Shingles, Clears, Per M. COMMON BRICK— Per M., f. o. b. job	47.25 78.25 78.75 109.50 110.50 48.00 5.11 \$18.00	\$1 1
	\$2.00 42.00 42.00 5 \$8.25 7.00 11.50 11.50 12.50 13.00 5 \$0.12½ .18½ \$8.40	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 13/16x2½ in., Clear Qtr. White	47.25 78.25 78.75 109.50 110.50 448.00 5.11 \$18.00 \$2.35 \$3.35	\$1 1
	\$2.00 42.00 \$8.25 7.00 \$11.50 11.50 12.50 13.00 \$0.12½ .18½ \$8.40 \$0.05	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 13/16x2½ in., Clear Qtr. White	47.25 78.25 78.75 109.50 110.50 \$48.00 5.11 \$18.00 \$2.35 \$3.35 \$2.18	\$1 1
Accepted Delivered Accepted Accepted	\$2.00 42.00 42.00 \$8.25 7.00 \$11.50 12.50 13.00 \$0.12½ .18½ \$8.40 \$0.05 \$5.00	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 15/16x2½ and 2 in., Clear Qtr. White	47.25 78.25 78.25 78.75 109.50 110.50 548.00 5.11 \$18.00 \$2.35 \$3.35 \$2.18	\$1 1 3
	\$2.00 42.00 \$8.25 7.00 \$11.50 12.50 13.00 \$0.12½ 18½ \$8.40 \$0.05 \$5.00 \$0.33	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 13/16x24 in., Clear Qtr. White	47.25 78.25 78.75 109.50 110.50 48.00 5.11 \$18.00 \$2.35 \$3.35 \$2.18	\$1 1 \$
	\$2.00 42.00 42.00 \$8.25 7.00 \$11.50 11.50 12.50 13.00 \$0.12½ .18½ \$0.42½ .18½ \$0.05 \$0.05 \$0.33 .48	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 13/16x2½ in., Clear Otr. White	47.25 78.25 78.75 109.50 110.50 48.00 5.11 \$18.00 \$2.35 \$3.35 \$2.18	\$1 4
Accepted Delivered Accepted Accepted	\$2.00 42.00 42.00 \$8.25 7.00 \$11.50 11.50 12.50 13.00 \$0.12½ .18½ \$0.42½ .18½ \$0.05 \$0.05 \$0.33 .48	Siding, 4 in. Bevel, 10 to 20 ft. 8 inch Colonial 8 inch Bungalow HARDWOODS— Oak Flooring, 13/16x2½ in., Clear Otr. White	47.25 78.25 78.75 109.50 110.50 48.00 5.11 \$18.00 \$2.35 \$3.35 \$2.18	\$1 1 \$



This "ideal house" is being built at Newark, N. J., for exhibition purposes by the L. Bamberger & Co., department store. It is to have a Copper shingle roof, leaders and gutters of Copper and Brass Pipe plumbing

The Ideal House Is Rust-Proof

In line with the general demand for better building, home-owners today are looking carefully into the comparative values of materials used in building construction.

The burden of rust's annual carrying charge of more than \$626,500,000 has grown too heavy to bear.

The rust protection given, and the savings effected through the use of their products is being convincingly presented by the manufacturers of Copper roofings, Brass plumbing pipe and Brass or Bronze hardware and fixtures.

The public has heard and is putting into practice the advice given them.

The use of Copper and Bronze in building is growing by leaps and bounds.

In addition to consumer advertising in newspapers and magazines, the Copper and Brass Research Association has prepared for your use, free, a generous variety of printed material for distribution to your prospective customers.

Fill out the attached coupon and take advantage of this demand for rust protection.

COPPER & BRASS RESEARCH ASSOCIATION

25 Broadway - New York

COPPER & BRASS RESEARCH ASSOCIATION 25 Broadway, New York	BA				
Please send me without charge:	Name				
copies of "How to Build a Better Home."					
copies of "Once Upon a Time," a booklet showing in good-humored illustrations the error of using materials that rust.	Street No				
copies of "Copper, the Ideal Roof."					
copies of "Brass Pipe Plumbing, — Repair-Proof" which treats of the advantages of Brass and the relative costs of Brass and Iron.	City and State				



WHEN either of two adjoining lot owners "builds upon his own property up to the division line, he does so with the knowledge that, in case of

Rights as to Party Walls the erection of a party wall, that part of his building which encroaches upon the land subject to the easement will have to

come down, if not suitable for in-corporation into the new wall." This decision announced by the Pennsylvania Supreme Court has been affirmed by the United States Supreme Court in the case of Jackman vs. Rosenbaum Company, 43 Supreme Court Reporter, 9.

The highest court of the land intimates very strongly that a state legislature may constitutionally provide for party wall rights, without infringing the rights of either owner in the strip on his side of the line necessary for maintenance of such wall. But it was not found necessary to expressly so decide, because it appeared that ever since the days of William Penn it has been customary in Pennsylvania to burden adjoining lots with mutual party wall rights. The custom itself is held to have been so firmly established as to become the law of such cases.

A FIRM of New York contractors asks our views upon this situation: Specifications provide that "all interior walls through [throughout?], except at-Necessity for Work tic, cellar and garage, will be lathed," but Not Specifically that there is to be no Called for by lathing or plastering in Building unfinished portions. Documents The plans do not designate finished walls in the cellar nor unfinished attic stairs. The specifications also provide for rough pine flooring throughout, excepting "piazza, left level and smooth for finished floors." Another clause calls for finished floors of stated grade and dimensions, "where shown to be laid as called for, building paper between under and upper floors, . left for painter to finish, omit attic." Finished floors are not designated on plans.

The questions raised are whether the

contractors are bound to lath or plaster walls in the cellar along the attic stairs, and whether a rough floor must be laid in the attic.

The contractors, in the judgment of the law editor of this journal, are not bound to finish the cellar walls beyond what is generally customary among builders in the locality in performing similar contracts. There appears to be nothing in the plans or specifications making specific requirements.

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the correct procedure. Questions and answers of general interest to the trade will be published in these columns. All inquiries must be accompanied by the name and address of the correspondent so that he may be answered direct or that he may be requested for further information if necessary to the intelligent answericy of his question. No names will be published, only in-itials or a nome de plume. Remem-ber that this service is free to subscribers. Address Legal Department, Building Age and The Builders' Journal, 239 West 39th street, New York City.

HEN a construction corporation goes beyond the borders of the state in which it was organized to do business it will ordinarily find that it must

Construction Business in Other States

obtain permission from the nonresident state Companies Doing and appoint a resident agent on whom legal process may be served. In this respect, the

corporate contractor is at a disadvantage not applying to the individual contractor.

But that submission to the jurisdiction of the foreign state in which business is to be conducted does not necessarily submit the company to jurisdiction for all purposes is shown by the recent decision of the United States Supreme Court in the case of Robert Mitchell Furniture

Co. vs. Selden Breck Construction Co. 42 Supreme Court Reporter, 84.

Plaintiff, an Ohio company, sued defendant, a Missouri corporation, in Ohio, on a contract performable in Michigan. To obtain jurisdiction over defendant reliance was placed by plaintiff on the service of summons on one Nash who had been designated by the defendant in 1910, several years previously, as the person upon whom legal process against defendant company might be served This designation had been made by defendant before constructing buildings in Ohio, as required by state law. But in October, 1918, it had performed its last contract in Ohio and then withdraw its property and employees. Since then it had bid on no Ohio work. Plaintiff's suit was brought in April, 1919.

Under these circumstances the highest court of the land holds that no jurisdiction was acquired over the Missouri construction company, and, accordingly, a judgment dismissing the suit was affirmed. In part the opinion says:

"An annual report is required * * * for foreign corporations for profit doing business in the State. The defendant filed such a report in July, 1919, after the service [of summons in this suit], and no doubt would have been ready to bid upon Ohio contracts that seemed to it tempting. as it had done in the past. The plaintiff contends that these facts show that it was doing business in Ohio when the writ was served. The defendant says that the report was necessary for the ascertainment of taxes due from it for the last financial year, but it may be assumed that the wish to keep open the possibility of further employment was a contributing motive. It did nothing, however, and it contends that merely watching from the outside for a chance was not enough to bring it into the trap. If it had withdrawn from the state the agency of Nash did not extend to receiving service in a suit made and to be performed as this was [in another state].

"The purpose of requiring the appointment of such an agent is primarily to secure local jurisdiction in respect of business transacted within the State. Of course when a foreign corporation ap-

National A-an-A Shingles

cost less to apply because

they are 36" wide (4 in 1)

makes. This means a saving

of 121/2% in nail and labor

costs, or about 40 cents per

square.

against 32" in other



National A-an-A costs about \$20 more per roof over ordinary asphalt shingles, but any house you build can be sold for \$100 more because with the deed you hand the purchaser our

20-YEAR GUARANTEE—THAT

- 1. Water will not leak through the material.
- 2. Fire will not burn through the asbestos.

3. The shingles will not curl.

If the house was roofed with any other asphalt shingles (no matter whose make) the buyer could only secure from the maker a 10-year guarantee (most makers give no guarantee), and the chances are that before twenty years a new roof would be required, and this would cost two or three times \$100.

NOTE THE DIFFERENCE

National A-an-A Shingles

Two-layer base of sheet Asbestos, origin material, consequently non-perishable and fireproof, plus double layer or 50% more of solid asphalt (the real weather resister).

Class "B" Fire Underwriters' Rating (the highest awarded asphalt shingles).

Guarantee against curling.

Ordinary Asphalt Shingles

One layer of Rag Felt, origin animal and vegetable. Perishable and not fireproof, plus only one layer of solid asphalt.

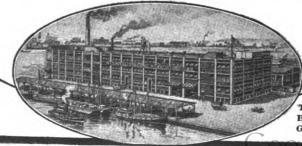
Class "C" (or lower) Fire Underwriters' Rating.

Known fact that Rag Felt base shingles do sometimes curl.

From your Building Materials Dealer or direct

NATIONAL ASBESTOS MANUFACTURING CO.

163-193 Henderson Street Jersey City, New Jersey



The Factory Behind the Guarantee points one as required by statute it takes the risk of the construction that will be put upon the statute and the scope of the agency by the State Court. * * * But the reasons for a limited interpretation of a compulsory assent are hardly less strong when the assent is expressed by the appointment of an agent than when it is implied from going into business in the State without appointing one. In the [latter?] case the implication is limited strictly to business transacted within the state.

* * * Unless the state law either expressly or by local construction gives to the appointment a larger scope, we should not construe it to extend to suits in respect of business transacted by the foreign corporation elsewhere, at least if begun as this was, when the long previous appointment of the agent is the only ground for imputing to the defendant an even technical presence. * * * As we know of no decision to the contrary by the Supreme Court of Ohio, we are of opinion that the service upon Nash was bad."

FROM Ontario an architect writes us for suggestions. He apparently has a valid claim for services rendered a client who abandoned use of his draw-

Architectural Services

Right to Compen- ings, etc. The client, a doctor, induced the sation for Unused architect to prepare plans for remodeling a residence. The doctor and his wife expressed

satisfaction with the drawings furnished. There were various interviews and revisions of the plans before the doctor dropped the building project temporarily. However, the architect was assured that he would be given the work on the project being revived. Now, the client is proceeding with remodeling of his building, with other assistance. He has neither accepted nor paid for the drawings prepared by the original architect.

It is clearly to be inferred that the original building project was dropped on account of the estimated cost exceeding the owner's expectations of what same would cost.

On the facts presented we believe that the architect is entitled to recover reasonable compensation for the services rendered, in accordance with prevailing rates for similar architectural services in the same city. This assumes, however, that there was no understanding under which conditions were attached to the architect's right to compensation, such as a condition that the owner reserved the right to reject any drawings.

If it was understood that the proposed alterations were to be made at a certain maximum cost, the architect would not be entitled to pay for services in preparing plans for work that would cost materially more than that

On our judgment the architect's case is materialy strengthened by the fact that the owner has at last gone ahead with the building project. There appears to be but little room for doubting that he caused the architect to prepare drawings along certain lines without imposing any cost limit, and that it was the unexpected cost element that frustrated the original plans.

Manifestly, the owner cannot thus trifle with the architect without compensating him for his services. owner should have guarded against the contingency by imposing a cost limit on the architect. Not having done this, he should pay the reasonable value of the architect's services, the same as a lawyer's client would have to pay for services rendered toward the institution of a suit, although the client might afterwards determine not to sue, or the same as a doctor's patient would have to pay for services rendered toward the performance of an operation, although the patient might afterwards balk at the operating table. Architects should not permit clients to regard them in the same light as a retail dealer in ladies' shoes, in whose store a customer may consume the time of a salesman without compensation other than that derived through a consummated sale.

There should be clear understanding at the outset concerning the architect's compensation and the conditions on which it is payable.

We suggest that the gentleman from Ontario consult a local barrister with a view to suit in the event that the client refuses to pay the bill.

But we believe that unfinished attic stairs should be constructed if space for them is indicated on the plans, although the plans may not specifically designate them. Here, again, it is proper to consider what is customary in the locality, under similar contracts. It would seem. however, that in the absence of a showing on the plans of a space for attic stairs there would be no obligation to furnish them.

In our judgment, it is a fair interpretation of the contract that a rough floor must be laid in the attic. The clause as to rough floors says that they must be laid "throughout." The clause as to finished floors says, "omit attic."

If the attic was to be excepted in laying of rough floors a similar phrase should have been inserted in the clause covering rough floors.

The case appears to fall within the general rule, recognized by the courts of New York and other states, that "where there is a variance between the plans or drawings and the written specifications, the latter will prevail." (9 Corpus Juris, 711.) This is something that should be carefully considered.

Legal Notice

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912.

Of Building Age and The Builders' Journal, published monthly at New York, N. Y., for April 1, 1923.

State of New York } County of New York } ss.:

Before me, a Commissioner of Deeds, in and for the State and County aforesaid, personally appeared Charles G. Peker, who, having been duly sworn according to law, deposes and says that he is the editor of the BUILDING AGE AND THE BUILDERS' JOURNAL, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

That the names and addresses of the publisher, editor, managing editor, and busi-ness managers are:

Publisher—Building Age Publishing Corpora-tion, 239 West 39th Street, New York City. Editor—Charles G. Peker, 239 West 39th Street, New York City.

Managing Editor—Charles G. Peker, 239 West 39th Street, New York City. Business Manager—David Meyers, 239 West 39th Street, New York City.

2. That the owners are: Building Age Publishing Corporation, 239 West 39th Street, New York City.

That the stockholders owning or holding one per cent or more of the total stock of Building Age Publishing Corporation are as follows: B. A. & C. P. Holding Corporation, Times Building, New York City.

That the stockholders owning or holding one per cent or more of the total stock of B. A. & C. P. Holding Corporation are as follows:

& C. P. Holding Corporation are as follows:

Frank Meyers, 239 West 39th Street, New York City; David Meyers, 239 West 39th Street, New York City; W. H. Parsons, 239 West 39th Street, New York City; W. A. Bardgett, 239 West 39th Street, New York City; W. & S. Meyers, Times Building, New York City; George Meyers, 1196 First Avenue, New York City; Michael Miller, 794 St. Nicholas Avenue, New York City; David L. Short, Columbia Avenue and Hancock Street, Philadelphia. Pa.; G. Friedman, 627 Broadway, New York City; A. Cowen & Son, 34 West 25th Street, New York City; John J. Robbins, 317 West 93rd Street, New York City; City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are:

Architectural and Building Press, 243 West 39th Street, New York City.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him. That the two paragraphs next above, giv

CHARLES G. PEKER, Editor.

Sworn to and subscribed before me this 31st day of March, 1923.

[Seal] SADYE BLUMENFELD, Commissioner of Deeds, New York City.

My commission expires February 28, 1925.

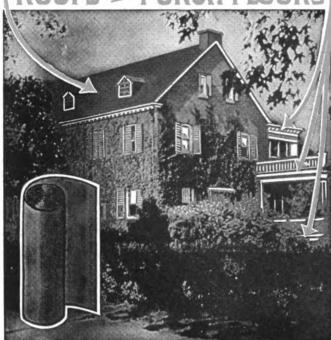
Building Age and THE BUILDERS' JOURNAL



June 1923

335 Cents

GON-SER-TEX-ROOFS PORCH FLOORS



The Canvas Covering of Real Economy

When you are figuring on building or repairing a house, specify Consertex for the flat roofs and porch floors.

Consertex is the ideal covering—it is inexpensive to buy and easy to lay—enables the men to cover a roof or floor in jig-time. It is made of chemically treated, specially woven fabric, that will not crack, stretch, peel or shrink, so that years of hardest use find it still waterproof, windproof and attractive. Using Consertex enables architects and builders to quote a reasonable price to prospective clients, that will go a long way towards getting business.

Consertex combines all the elements that go to make up a quality roofing or flooring—strong, attractive and long wearing, with true economy in cost.

Your cost problems for flat roofs and porch floors are discussed and solved in the copy of "Roofing Facts and Figures," that we will gladly send at your request.

WILLIAM L. BARRELL CO. of N. Y., Inc. 50 Leonard Street New York City

Chicago Distributors: Geo. B. Carpenter & Co. 430-440 North Wells St. California Distributors: Waterhouse-Wilcox Co. San Francisco & Los Angeles

FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana

· HOPE'S · CASEMENTS



HENRY HOPE & SONS LD 103 PARK AVENUE · NEW YORK 205 YONGE STREET · TORONTO

Digitized by GOOGIC

BUILDING AGE

ANI

THE BUILDERS' JOURNAL

New York, June, 1923



Let Us Build the Backs of Our Homes As Attractive As the Fronts

OO little attention is usually given to the design of the sides of most dwellings and practically no thought at all to the back; unfortunately in the great majority of cases, anything seems to go.

In many houses the kitchen and dining room is located in the rear and it is here that a housewife spends most of her time and what does she see? The rear of all other houses in the next street are equally as unattractive as her own.

And there we have it. A dreary back yard view which is bad for one and all.

Now this whole thing is wrong. It could and should be changed, and builders can help a great deal by suggesting to intending home builders to have the backs of their houses made artistic as well as the fronts. A few examples will, in time, induce others to do likewise, and the result will be a more attractive neighborhood.

A very interesting example of this sort is illustrated herewith in the residence of Mr. G. Nelson Edwards, architect, of Philadelphia, who designed and built this house for his own use at Paoli, Pa.

Mr. Nelson has produced something that is "off the beaten track," and has succeeded in having an artistic rear to his residence, which is further enhanced by its facing a pleasant garden. The front is also most cleverly handled and full advantage has

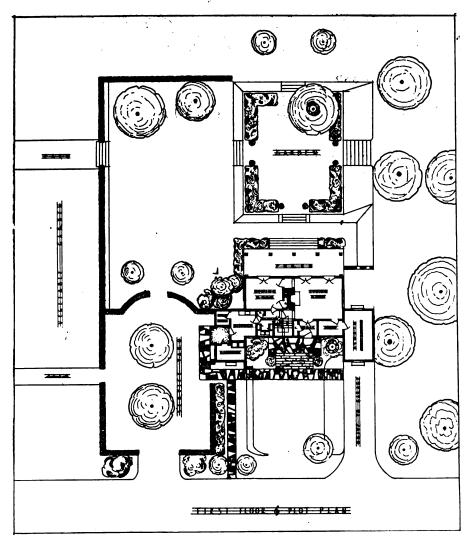
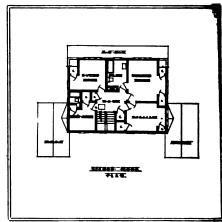


Diagram of plot showing location of house, garden and terraces, also arrangement of rooms. It will be noticed that the principal rooms face toward rear, overlooking the gardens, while the kitchen and laundry face street. The second floor contains four bedrooms and bath



Passage between dining room and living room. On living room side there is plaster arch, door being placed on dining room side. This arrangement makes a most pleasing vista looking from the living room. The circular head of door is an interesting detail.

been taken of the site which was rather hilly. The natural contour was in a measure preserved, which allowed for an interesting approach to the house through the drive as well as the foot path.

Several different views of the house are given which, together with floor plans, show how interesting details have been carried out to make a finished design that is somewhat unusual. But the most unique feature is the treatment of the back.

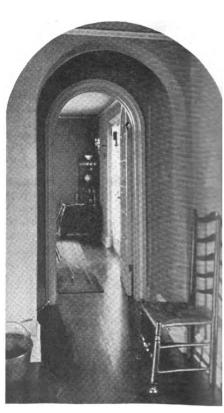
The attractive fixing up of back yards offers a big field of work for progressive builders in every town. There is no reason why the backs of our houses should not be as attractive as the fronts. Builders can secure some of this work by interesting the owners of a square or even certain portions of a square; giving them an idea how to transform their back yards into a small private park for the benefit

of all. This park can be laid out with paths either in cement, broken stone, brick, or in a combination of these materials. Lily ponds, pergolas, steps, terrace balustrades are all features that can be included and properly belong to builders' work. The planting of trees and shrubs by the nursery man will complete the job.

This is a far better way than our present arrangement of each one having a private back yard with the backs of our houses vying with each other in their ugliness.

There have been some very interesting examples of back yards that have been transformed into something that is worth while. But in every case the first thing done was to beautify the backs of the houses themselves.

This work offers builders an exceptional chance to produce artistic effects. Brick, stucco, iron grilles, new windows, etc., will all aid in the transformation.



View in entrance hall showing entrance doorway and side lights. Walls in this room are rough finished plaster and the arrangement of consol forms an interesting study.

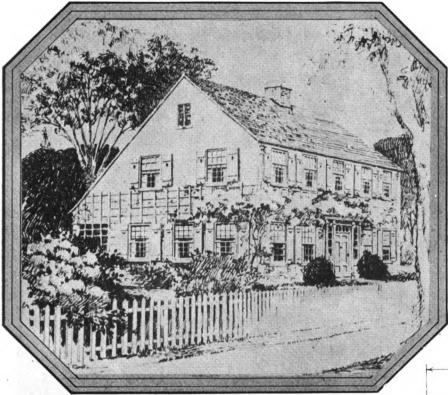




The front is not lacking in architectural merit. The terraces have been cleverly handled, with steps forming an artistic part in the composition. The garage is placed on a lower level and above it is a studio which is reached from the study adjoining the living room.

View of living room showing interesting arrangement of stairway, fireplace, and entrance to dining room, which is shown in further detail on opposite page. French doors here lead out onto the large living porch in rear. Photographs by Philip B. Wallace.





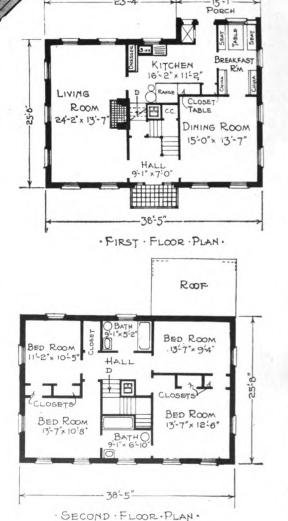
BETTER HOMES IN AMERICA WEEK

Sketch of completed home prepared by Mr. Donn Barber, Architect.

BETTER Homes Week, June 4th to 9th, will be characterized by an innovation which will be of interest to all home builders. This year marks the hundredth anniversary of John Howard Payne's song, "Home Sweet Home." It was, therefore, thought eminently proper to use the home which inspired Payne's immortal song as a model for a "modernized" Home Sweet Home. Such a home is being built on government property near the White House in Washington and will be opened for inspection during Better Homes Week. It was designed to stimulate the idea of better homes and more general home ownership.

A most interesting article on the real home of "Home Sweet Home" was published in our April issue with views of floor plans, sections, etc., secured by the editor on his pleasant visit to this most famous of homes. This article of ours has been copied by many newspapers as it was the one article that described the actual sturdy construction of the interesting old house that has stood since 1660 at East Hampton, Long Island, N. Y.

President Harding will officially open the model home on June 4th, this action starting the "Better Homes" Week throughout the country. After Better Homes Week the house is to be moved to a permanent site in Washington, as the property of the General Federation of Women's Clubs, a gift from the Home Owners' Service Institute through L. Porter Moore, its president. Thus, this "model" demonstration house made possible by subscription of materials and labor from all over the country, will remain at the national capitol as a typical example of better home



Demonstration Home Erected on White House Lawn, Washington, D. C.

AnAdaptation of the Home of "Home Sweet Home"

planning and construction for the average American home.

In different parts of the country during that week, demonstrations of model homes will be open to the public. Probably no better method could be devised for builders to get prospective home owners interested in good construction and modern home equipment. Large building shows can be profitably exploited only in our large cities, but every town can have a demonstration house by the co-operation of the builder, real estate man, building supply dealer, electrician, plumber, painter, decorator, furniture men, etc.

Secretary Hoover, of the Department of Commerce, is very much interested in the new home, as it has been built to conform with the suggestions of the Department of Commerce Dwelling House Code, which he was instrumental in formulating. An essential part of this code is the specifications for types of house construction which will reduce excessive costs and eliminate wastefulness, and at the same time insure permanence and safety of construction. All of these points have been carefully noted and used as a guide by Mr. Donn Barber, the noted New York architect, who was commissioned to design the modernized Home Sweet Home.

This demonstration house is not to be considered as a replica of the John Howard Payne home, for in that case it should have been built of wood and covered with wood shingles and when well done such a house will last for many generations, as the old house will attest.

However, the house, although modernized in construction, retains the spirit and the intimate touches which endear a home to its owner. Only in its physical aspects has it been changed to conform with our present knowledge of the science of building.

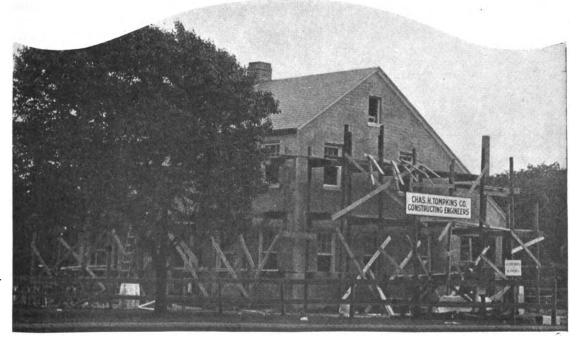
Mr. Barber has incorporated the efficiency of the modern home with the wholesome simplicity and

distinctive grandeur of the home of Colonial days. The general dimensions have been observed with the utilization of the space made available by the use of up-to-date plumbing, wiring, heating, etc. A fair instance of this is found in the enlarged living room, as shown in our April issue, the original house had a brick fireplace occupying nearly one-fifth of the total first floor space. By redrawing the floor plans a trifle, the living room now extends the entire length of the house.

Concrete blocks unknown to the old Colonist, but now obtainable in every city and village in the country, have been used to lay up the wall of this model home. They are inexpensive and authorities now recognize them as a permanent and economical form of construction unit. Tests have shown the extreme durability of cement stucco applied on concrete block, and it is reasonable to expect that this modern version of the Home Sweet Home with its low upkeep cost and its durable exterior finish will retain its new appearance for a much longer time than did the old Payne Home. People in 2250 A. D. will probably look at it with a good deal of interest.

The interior is of wood construction carefully framed and the lumber well braced and proportioned. For permanence and to

Photo showing the house nearly completed. The outside is receiving the finished coat of atucco.



achieve minimum upkeep cost, the plaster for the walls and ceilings throughout the building has been applied on expanded metal·lath. Not only does the metal lath function as an admirable plastering base which eliminates cracked and streaked plastered walls and ceilings with the attendant excessive decorator's expense, but it also has been approved as a very satisfactory fire retardant.

Considerable rearranging of the rooms was necessitated by the needs of the average American home of the present day. Even the relatively modern coal stove was unknown to the Colonist and each room had to be heated by its own fireplace. The great changes which modern domestic science has made in the design of a home are no more plainly in evidence than in the kitchen. In it we find a modern gas range, a one-piece porcelain enamelled kitchen sink, hot and cold running water, and a refrigerator, all compactly arranged within reach. Here, too. will be found built-in pantry cases. a handy broom closet and other conveniences which make housekeeping a pleasure.

Laying the cornerstone of the demonstration bome. Mrs. Frederick D. Winters of Minneapolis, President of the General Federation of Women's Clubs, is shown handling the trowel. Next to her on the right is Mrs. Medill McCornick, wife of the Senator from Illinois and the owner of the Chicago Tribune. The lady holding the pocket took is Miss Lida Hafford, executive secretary of the General Federation of Women's



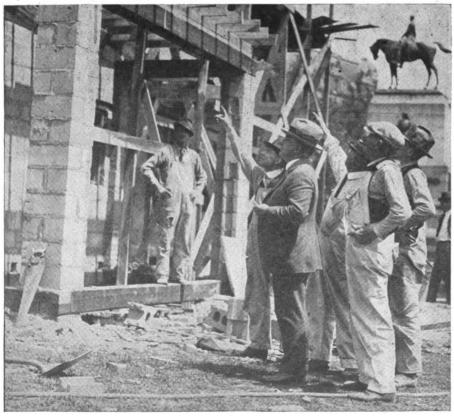
The two baths are a convenience which the whalers of 1660 who built the Old Payne Home would view

with keen curiosity. The modern bathroom would be a luxury to them especially the type of bathroom installed in the model house with its up-to-date efficiency, brass piping, built in fittings, tiled walls, floors, etc.

The list of materials people donating their product reads like a blue book of the American Building Material Industry.

These co-operating trade associations should receive the thanks of everybody interested in Better Homes Week and of everybody interested in the practical construction of better homes in America. There has been no attempt made by any of the contributing firms to commercialize their activities in any way, which is very much in accord with the views expressed by Secretary Hoover at the time the project was suggested.

The entire country may gaze
with pride at this new addition to
the national capitol and applaud
the thought and educational value
represented by this modernization
of the real "Home, Sweet Home,"
mentioned in song and story for
the last hundred years.



This picture shows Secretary of Labor Davis inspecting the construction of the home. Note how the concrete block walls have been laid on wood sills. This is to facilitate moving the home after "Better Homes Week."

HOW CAN WE BEST HANDLE THE BUILDING BOOM?

Unprecedented Demand Taxes the Resources of Entire Building Industry.

THE American Construction Council, fully alive to the problems of the contractors in the present building situation, has taken a firm stand to hold the various branches together and point out the way to a reasonable, sane and safe solution of our difficult problem, not only for the benefit of the industry as a whole but also the public which we aim to serve.

Perhaps never in the history of the world has there been such a titanic demand on any industry as is now heaped upon the shoulders of the building industry. Not even in the late war days has any industry been crowded for their product so much as the building industry is at present.

At a meeting of the Board of Governors of the American Construction Council, held May 16th, it was unanimously agreed that to relieve the present serious situation that they recommend that all new construction be deferred for several months, that banking in-terests curtail the financing of speculative building until after the close of the summer, that wide publicity be given to the increased trend of construction costs of labor and material, and that governmental, municipal and State construction departments be urged to delay their work as much as possible until September or October. The co-operation of newspapers and trade publications was sought so that the public might be kept informed of monthly fluctuations in construction costs.

Nowhere on the horizon is there the slightest sign of any let-up in building sufficient to menace ruling costs. If enough big building contracts are postponed to give the community a chance to catch up with the need for homes and to check extravagant practices of which just complaint is made, it may be better in the long run for

Can't We Stand Prosperity?

W ILL labor, contractors and material men fall down on their jobs or will they get together and by sound intelligent cooperation eliminate the friction that may cause trouble?

No machine ever made can stand constant running at an overload without excessive friction and no one knows just how soon a breakdown will occur.

A wise engineer will remove the overload and finish the job—not wreck the machine and kill the job.

To save the building industry from a buyer's strike, now is the time for you to postpone taking contracts that are impossible to complete unless you pay excessive bonuses for labor and material.

The bonus, like some deadly drug, may be used in exceptional cases with beneficial results—but wrongly used it will kill many.

The remedy is plain—don't take more jobs than you can handle with your own force, then you won't be stuck and find yourself bidding frantically for men and materials to complete a job that must be done.

Next get more young men interested in the building game, we need them. Ours is a big industry—not for to-day only but for many future years.

all concerned. A few postponed buildings might be very welcome in case of a slump later.

Construction Cost Records

To prevent future crises in the construction industry it was decided that the establishment of an authoritative index of construction costs was necessary. The Department of Commerce will be asked to organize a statistical commission to prepare an index of construction, labor and material costs in order that the public may have the general facts affecting the nation. If the Federal agency finds it impracticable to create the suggested organization, the American Construction Council will undertake the work.

The program was prepared by M. C. Rorty, president International Telephone Securities Corporation; Nobel Foster Hoggson of Hoggson Brothers, New York, the editorial advisor of Building Age, and John Donlin, president Building Trades Department, American Federation of Labor. It was pointed out that there was no disagreement with the fact that the construction industry was facing a crisis.

The report emphasized that particularly for the small investor was it unwise to carry on construction during peak times. The move for a voluntary stabilization of an industry by all the factors in the industry was said to be unique in the annals of American business.

Outline of the Situation

The following outline of the present situation was adopted by the board:

"The fear voiced some months ago by representatives of the construction industry that the country's building activity was progressing at an over-rapid pace, and that soon this condition must precipitate a depression, is being

borne out by developments within the industry today. Not only
contractors, manufacturers and
producers of the basic materials,
but also leaders of labor have apparently come to realize that if
the demand for new structures
continues throughout the year at
its present rate production facilities, both in the basic industries
and in the field operations of construction, will be inadequate, and
that as a result of this condition
the cost of construction will
shortly mount to a prohibitive
level.

"The opinion here expressed is based upon a number of factors, each pointing to the same conclusion, which may be outlined as follows:

Volume of Construction

"First.-The volume of construction projected so far this year exceeds the volume of the same priod of last year by more than 40 per cent., and the experience of 1922 demonstrated that during that year the facilities for producing materials and conducting field operations were taxed about to the limit. Production in the basic materials is not only limited by the available supply of labor, but like other industries by inadequate transportation. Construction likewise is limited by these factors, and in addition the re-

THE present upswing in business is based on the building boom. It is from the demand for residences, business and industrial plants, and railways and public utility construction, that the general upswing in prices is chiefly derived. This covers steel, lumber, linseed oil, brick, copper and zinc, and many others. It follows that if this boom is not to be carried to excess with a crash to follow, the building industry must be stabilized. Unless the pyramiding of prices and expenses is checked the whole structure will collapse soon and violently. Such a collapse will affect all other industries.— Prof. Haney.



Will women enter the bricklaying trades? Here is Mrs. Johnson at work. Her husband is instructor of bricklaying in a New York school.

stricted supply of manufactured products and materials from the basic industries.

Material Stocks

"Second—Stocks of materials on hand in practically all of the materials entering construction are lower than last year, while the unfilled orders are greater. Recent figures showed that orders on hand for common and face brick were about 60 per cent. higher and the stock on hand about 16 per cent. lower than in 1922. Orders on hand for bathtubs, lavatories and other sanitary ware ran 78 per cent. higher and stocks on hand 40 per cent. lower than last year. From the construction field reports indicate that material salesmen are slackening their solicitation for orders to a great extent and that manufacturers are, in many instances, unwilling to accept additional orders for any reasonable period of delivery.

Material Prices

"Third—Material prices are rapidly rising. Contractors in different parts of the country report that jobbers and manufacturers are unable to maintain their quotations for more than a day or two at a time on certain manufactured products; and it appears that the current demand has reached that stage where competition has passed from the seller to the buyer. The latter is bidding for materials and sending prices upward. Furthermore, to aggra-

vate the situation, deliveries are becoming uncertain, and recourse is being taken to the practice of overordering for the job.

Labor

"Fourth-Labor rates, like the prices of materials, are rapidly increasing. In the building trades especially, employers are placed in the position of bidding for services and paying bonuses to an extent in many instances even greater than in 1920. Regardless of what the different opinions may be as to the reasonableness of a wage of \$15 or \$18 per day for skilled mechanics, we know that under present conditions these scales will soon stop building operations and leave the laborer in a more unfavorable position than he would occupy under steady employment at a lower wage.

Production Capacities

"Fifth—The production capacity of various industries is limited and appears unable to meet a continuation of the present demand. Even where plant facilities are adequate, the output may be limited by labor and transportation, and in most of the basic industries sufficient expansion cannot possibly be made to care for the demand. Under these circumstances the manufacturer's influence on prices is very limited and a wide variation or spread takes

THE manufacturer of materials like the laborer, is human and will find a way to make deliveries to the last man who pays him best so that your costs are skying not only from the more dramatic demands of labor, but also from the higher prices of materials and deliveries. Where you think you are protected by a lump sum contract against these rising costs, you will find your contractors, however strong financially, compelled to make the safer choice of shutting down their work and arbitrating with you as to responsibilities for delays, rather than assuming the ever mounting costs.—Prof. Haney.

IMITING the demand for labor by cessation of building will not permanently solve the problem. We must seek to increase the supply of adequately trained labor. Apprentice Schools should be established. The law of supply and demand is inexorable. I do not feel that this problem will be solved until the open shop principle has been established.—C. J. Kelsey, Vice President, Title Guarantee and Trust Co.

place between his prices and the ultimate price to the consumer. This spread is already under way.

Holding Prices Down

"It should be noted that to the credit of many manufacturers they have not only shown a desire to hold their prices within bounds, but have actually succeeded in doing it to a great extent. Cement and steel are notable examples of materials in which factory price has been relatively stable. But after materials leave the hands of the manufacturer, and by the time they have reached the hands of the final consumer in a boom period, a spread of price occurs

that bears little relation to the cost of production and distribu-Whether tion. this is the result of speculation, local material corners, or merely the unbridled bidding of buyers, is a matter that should be ascertained and made known to the public.

"No prolonged discussion of economics is necessary to point out the inevitable results of such a condition. A continuation of the present demand with its effect in

raising prices will inevitably result in a curtailment of orders, decreased production, higher unit production costs and the entire gamut of the reactions of a depression. Downward price reaction, liquidation and financial loss are consequences that must follow the lack of conscious action to stabilize the industry. In construction stabilization is probably more feasible than in any other industry, as its demand is not transient but is cumulative; and in general what is not built this season will serve as an outlet to production a year from now.

The Labor Condition

"On the side of labor a similar condition exists. The unduly high wages of the present period must inevitably be followed by a reaction downward and a period of unemployment, which will leave the laborer an annual useful wage considerably less than that which he could obtain if adequate efforts were made to moderate the demand for construction.

"Considerable discussion has been devoted to the question of whether it is either possible or advisable to exert an effort to curb this demand and restrain inflation. The conclusion reached depends considerably upon special interests of the individual. It resolves itself finally into whether a large

THERE is another way to face conditions like these, by co-operation, by intelligent planning of all concerned, and more especially, in the bonds of mutual confidence, of mutual consideration so that what is the interest of one is the interest of all, and in this way, really less is suffered and more saved.—Prof. Lewis H. Haney, Director. Bureau of Business Research, New York University.

certain profit this season with its following depression is less to be desired than steady production with a continuing profit of moderate amount. At any rate there are several ways in which it is possible to exert an influence upon the situation.

How to Influence Situation

"The various influences that can be set in motion may be segregated into two classes: First those that intend to increase production and expedite materials to their source of consumption, and, second, those that influence the demand for building projects. The first group may be outlined as fol-

lows:

"By speeding up the production of materials and expediting field operations it is possible to a certain degree to offset the effect of excessive consumption. In some industries the possibilities from this source are limited, but in others requiring a plant outlay of moderate cost some relief can doubtless be afforded. Construction companies can to some extent increase the efficiency of their management, but



Get the boys of our country interested in some building trade while they are at school and we will have the best workers in the future.

it is possible that this will be necessitated anyway to offset the decreasing output of labor, which is again noticeable.

Transportation Difficulties

HE speeding up of transporta-I tion is another factor that may furnish a certain amount of relief. Delays in transit, underloading and holding of cars have practically the same effect as the curtailment of production. Experience of the past has demonstrated that both the mileage per car per day and the average loading of cars can be greatly increased by the exercise of care on the part of shippers. Therefore, co-operation of ship-pers with the railroads will undoubtedly prove of benefit in relieving local shortages of materials.

Restricting Labor Output

"There is also the question of restrictions to output on the part of local labor unions which has commonly been regarded as a useless practice so far as the welfare of labor is concerned and a serious factor in the increase of construction cost. Elimination of these restrictions would exert a significant influence in holding cost below that point where building becomes uneconomical.

Publicity on Costs

"The second group of actions may be outlined as follows:

"Through publicity of construction costs the public will be enabled to follow the trend of prices and restrict its demand at the point where investments at existing costs become economically unsound, thus avoiding the injurious effect of taking precipitous action when costs have risen to the limit. The investment in new structures at an index number approximating 200 will unquestionably prove unsound in many instances when the general level of prices has declined. By informing the public of the index number from month to month it can govern its actions accordingly. It may be possible also to delay governmental, municipal and State construction until the peak of private building has subsided or until some curbing influence has been exercised on speculative building.

Restriction of Loans Urged

"An influence on speculative building can be exerted by the banking interests of the country, and they may find it decidedly to their interest to take such action. At the present time daily newspapers are carrying advertisements of the banks which tend to encourage speculative building and aggravate the inflation of the construction industry.

They are probably safe in lending for this sort of building at present, and until industry at large reaches that point of expansion where they consider it advisable to curtail loans. However, for the welfare of the construction industry itself, a restriction of loans for speculative building at the present time or in the very near future will produce a beneficial effect.

Tax Exemption Adds to Burden

In some States the tax exemption on new homes is in force, and this might be repealed until the rate of building slows down. It is very questionable whether the construction of a home at present prices is a sound investment for the average citizen. Moreover, in some cities the urgent needs are believed to have been filled, and a great part of the present activity is what might be designated as luxury construction.

"There are also certain other remedies of a miscellaneous character among which are the following:

"Speculation and over-ordering of materials on the part of dealers and construction companies can be curtailed to a certain extent by the establishment of bona fide material sale contracts obligating the buyer and seller to mutually advantageous provisions. At present the buyer purchases with great apprehension that his shipments will be delayed by transportation or that they may be diverted to fill orders at higher price and, as a result, he orders more than his work actually requires. The effect of this practice is to build up a false demand that has an inflating influence on prices.

Steadying Prices

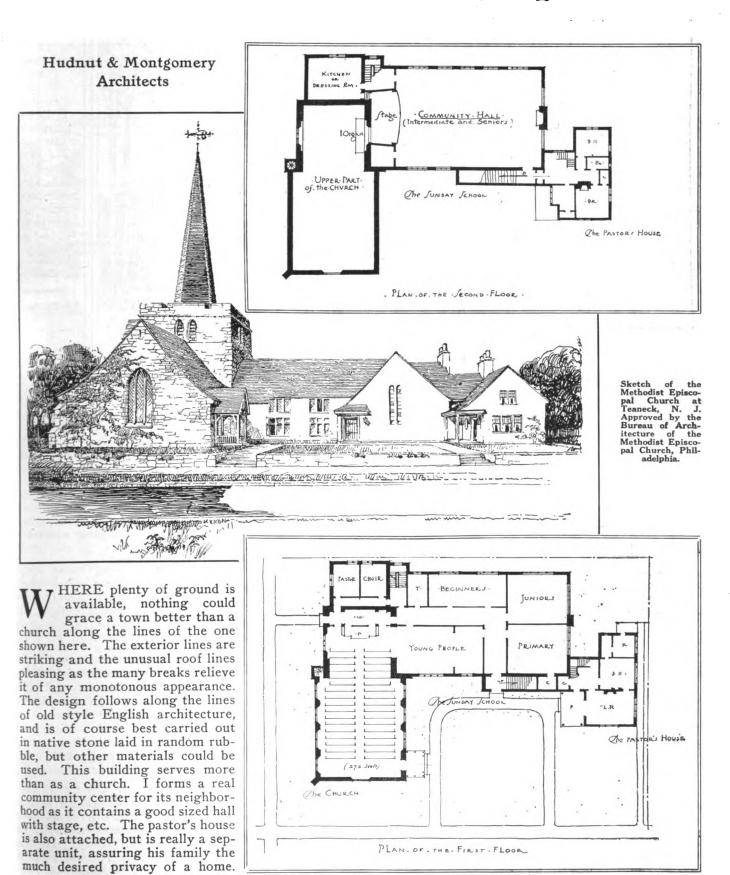
"There is, of course, a vague possibility of controlling the situation to some extent through the steadying of prices by dealers and the steadying of wages by labor. If any relief is to be derived from this source it will probably have to come as the result of mutual agreements between contractors, the building trades and those concerned with the handling of materials. Just as it has been the custom and the right of vendors to accept as much for their products as the buyer is willing to pay, so we may expect mechanics and laborers to be guided by the same policy. It is possible, however, that in local communities agreements may be made between these elements to lend their efforts in preventing runaway costs in construction.

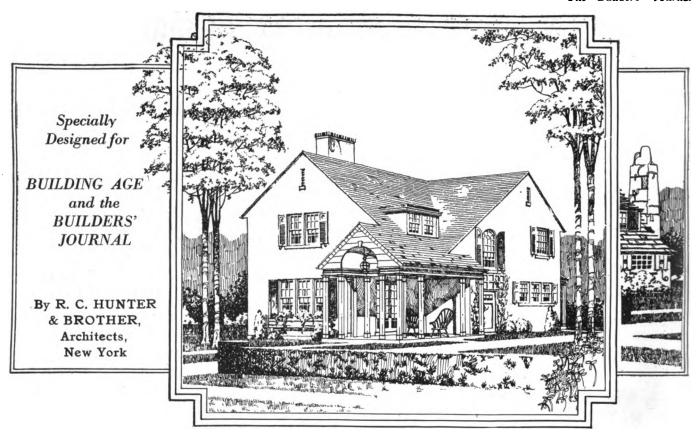
Question of Co-operation

"Some of the actions here mentioned are sound enough in economic theory and if they were attempted in earnest by all the parties involved in construction would doubtless produce the desired result, but it is questionable how far the necessary co-operation can be made to extend. There is, however, one influence that can be brought to bear effectively upon the situation—namely, the co-operation of the country's editors. If these men will publish the index number of construction for the country or for any particular locality and call the attention of their readers to the rising trend of construction costs, it is highly probable that they can effectively influence the demand. They may in this manner bring about a conscious steadying of the market that will avoid too much inflation.

In other words, the choice lies open as to whether through some such action as is here mentioned the public chooses to control its demand while the price is at its present level or whether it prefers to exercise no influence on the course of events, and thus allow the industry to culminate in another period of stagnation, deflation and unemployment."

Church of Attractive Design





Unique House in Both Design and Plan

Six Rooms Conveniently Arranged

HAT is more grafifying than a possession of distinction? Something that stands out among its neighbors. Of course, one does not want a freakish house; but one whose lines and character are artistic and unusual, is sure to please. And when the house is so planned that it can be built on a fifty foot lot, with ample space around it to provide a proper setting, it is more than desirable.

The house shown herewith combines the unique, the artistic and the compact. When finished with cream colored stucco, on hollow tile construction, it forms with its warm green trimmings, a delightful harmony with the foliage and the grass.

The roof lines breaking so artistically afford a wonderful chance for color. Green in different shades would go well with the above com-

bination. The little touch of red in the brick chimney cap adds to the appearance.

The individual and attractive entrance porch strikes a note of character, and is worthy of study. Through this one enters directly into the large living room; a fire-place with its cheerful fire bids one a really warm welcome in the chilly days, and a long window box under the row of windows in the front, makes the room cool and dainty in the summer, when

BLUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by Building Age and the Builders' Journal, 239 West 39th Street, New York.

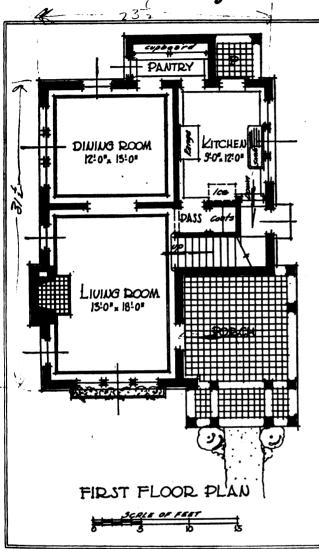
geraniums and hanging vines add a touch of color.

A generous dining room opens from the living room. A kitchen, fully equipped and a pantry with cupboards that would delight the heart of any housewife, complete the first floor.

One finds on the second floor, three good bed rooms, with plenty of closets; and small paned windows that admit the wholesome air and sunshine, make these rooms cheerful and healthy. A tiled bath with its built-in tub, a large linen closet and a hall, complete the second floor.

Truly, this is a home that anyone would find delightful to live in, a place where one could have all the comforts and conveniences that the word "Home" implies. the cost of construction is estimated at about \$8,800.

A Complete Quantity Survey of Unique House



THE quantities given are for estimating. All measurements are NET unless otherwise noted; areas given for such items as sheathing, flooring, etc., are NET areas to be covered with no allowance for matching, waste, etc. Minor outs have been disregarded.

Such items as clearing site, temporary work and protection, etc., scalffolding and general equipment and supplies have not been included.

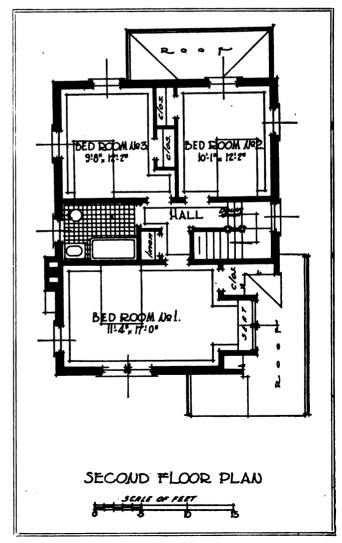
plies, have not been included.

Such items as are marked "Unit" are to be estimated in a lump sum, following requirements of plans and specifications.

EXCAVATION

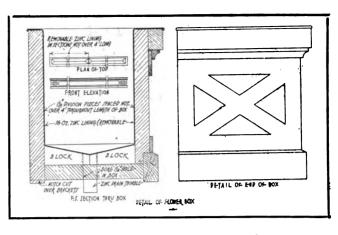
(Excavation for pipe trenches not incl	leed and \
Excavation for cellar	
Excavation for footings	13 cu. yds.
Excavation for areas	5 cu. yds.
Excavation for trench walls	12 cu. yds.
Excavation for leader drains and dry wells	10 cu. yds.
Backfilling around walls, etc	38 cu. yds.
Leader drains and dry wells.	•
Field stone for dry wells	8 cu. yds.
4 in. salt glazed tile drain pipe	30 lin. ft.
4 in. elbows	

MASONRY	_
Concrete work.	
Concrete for cellar walls	827 cu. ft.
Concrete for footings	161 cu. ft.
Concrete for trench walls	168 cu. ft.
Concrete for area walls	105 cu. ft.
Cellar floor (3 in. concrete and 1 in. cement	
finish)	557 sq. ft.
Area bottoms (brick and sand)	40 sq. ft.
Outside cellar steps (concrete, cement faced)	45 sq. ft.
Porch floors (12 in. cinders, 3 in. conc. and	
brick finish)	210 sq. ft.
Concrete forms	2500 sq. ft.
Reinforced window lintels,	
Concrete	100 cu. ft.
½ in. sq. steel rods	230 lin. ft.
Concrete brackets for flower boxes	2
Pointing cellar window sills	19 lin. ft.
1 omening commit will come of the committee of the commit	
HOLLOW TILE	
8 in. x 12 in. x 12 in. block (or 1642 blocks)	1642 sq. ft.
4 in. x 12 in. x 12 in, block for corners	90 blocks
8 in. jamb blocks	140 blocks
1 in. levelling slab	80
1 in. x 6 in. slab for water table	130



BRICK WORK		CARPENTRY—Continued	andero young
Common brick for chimney (or 3 M)	150 cu. ft.	Studs, girts and plates, 1st floor.	
Face brick for fireplace hearth and jambs	16 64	2 in. x 4 in.—50/8	267 F.B.M.
(or 112 brick)	16 sq. ft. 20 sq. ft.	2 in. x 6in.—14/8	· 112 F. D. M.
8 in. x 12 in. T. C. flue lining	56 lin. ft.	2 in. x 4 in.—95/8	527 F.B.M.
MASON'S IRON WORK		2 in. x 10 in.—27/14, 17/10	913 F.B.M.
Fireplace damper (3 ft 0 in. opg. with throat,	1 Unit.	2nd floor joists. 2 in. x 10 in.—27/14, 17/10	913 F.B.M.
etc.)	1 Unit.	2nd floor ceiling joists. 2 in. x 6 in.—8/14, 26/12	424 E D W
C. I. cleanout door for ash pit (16 in. x 12 in.)	1 Unit.	Rafters.	424 F. B. M.
C. I. cleanout door for boiler flue (8 in. x 8 in.)	1 Unit.	2 in. x 8 in.—6/12, 76/10, 10/8	912 F.B.M.
Thimble for boiler flue	1 Unit.	Hips and ridge. 2 in. x 8 in.—2/16, 1/14, 1/12, 2/10	104 F.B.M.
PLASTERING		Valleys, 3 in. x 8 in.—2/16	64 F.B.M. 175 F.B.M.
Three-coat patent plaster on metal lath,		Porch and extension ceiling beams.	
gross(Net, 419 sq. yds.)	473 sq. yds.	2 in. x 4 in.—15/12, 4/8	141 F. B. M.
Three-coat patent plaster on hollow tile,		Col. cores, 3 in x 4 in.—10/8	139 F.B.M. 80 F.B.M.
gross	185 sq. yds.	Cornice outlookers, 2 in. x 4 in.—120 lin. ft	80 F.B.M.
(Net, 140 sq. yds.) Damp-proofing under stucco, net	1800 sq. ft.	Cellar partitions, 2 in. x 4 in.—10/10 Sheathing (% in. x 8 in. shiplap).	93 F.B.M.
Stucco on hollow tile, etc., net	189 sq. yds.	Walls and flat roofs—to cover	180 sq. ft.
Stucco on metal lath	32 sq. yds.	Sheathing paper (waterproof)	100 sq. ft.
G. I. corner beads	120 lin. ft.	Shingle lath (% in. x 2 in.)	3300 lin. ft.
TILE WORK		Grounds (34 in. x 2 in., surfaced one side) Sheathing for cellar partitions.	2200 lin. ft.
Tile work for bath room.		(% in. x 8 in. shiplap)—to cover	210 sq. ft.
Floor (1 in. hex. white)	36 sq. ft.	Rough flooring (% in. x 8 in. shiplap).	1104 6
Wainscot (3 in. x 6 in. white wall tile)	92 sq. ft.	1st and 2nd floors—to cover	1194 sq. ft. 300 lin. ft.
6 in. base	17 lin. ft. 25 lin. ft.	Shingle roofs (18 in. stained shingles), 13.2	
-		squares	
SHEET METAL WORK		Shingle sides (24 in. stained), 0.9 squares Furring (7/6 in. x 2 in.)	300 shingles 400 lin. ft.
Tin roof on dormer Tin flashings for roofs, etc	81 sq. ft. 44 lin. ft.		
Copper flashing and counterflashing for chim-	44 IIII. It.	EXTERIOR FINISH	
ney, etc	10 lin. ft.	Raking cornice.	(2.1)
Chimney cricket	6 sq. ft. 31 lin. ft.	7/8 in. x 3 in. fascia 1/8 in. x 11/2 in. strip	62 lin. ft. 62 lin. ft.
Flashing for column caps	9 caps.	Rear extension and porch cornice.	
4 in copper half round hanging gutter	106 lin. ft.	7/8 in. x 8 in. soffit	37 lin. ft.
3 in. dia. copper leaders Bends for same	70 lin. ft. 12	7/8 in. x 4 in. fascia	27 lin. ft.
Gutter thimbles	6	2 in. bed mould	20 lin. ft. 34 lin. ft.
3 in. x 4 in. copper gas range vent	20 lin. ft.	1½ in. neck mould	10 lin. ft.
Cap and thimble for same	1	Rear porch column. 6 in. x 6 in. box col. 7'8" long with cap	
CARPENTRY		and base	1
Timber: All No. 1 common stock, hemlock, rough unless noted.		Living porch cornice, etc.	
Cellar girders.		3/8 in. x 8 in. suffit	80 lin. ft.
6 in. x 10 in. spruce—1/12, 1/8	100 F.B.M.	½ in. x 4 in. fascia ½ in. x 8 in. frieze	25 lin. ft.
2 in. 3 in. nailer—40 lin. ft	20 F. B. M.	2 in, bed mould	110 lin. ft. 110 lin. ft.
3 in. x 8 in.—1/16, 1/14, 2/12, 6/10	228 F.B.M.	1½ in. neck mould	110 lin, ft.
		Curved fascia and soffit, with key block,	•
		(5 ft. 0 in. dia.)	1
		6 in. x 6 in. box col. 7'8" long with cap	
		and hase	9
		6 in. x 4 in. pilaster 7'8" long with cap and base	1
		Windows.	1
	العرائد	Flower and box (with zinc lining, etc.),	
		12 in. x 12 in. x 9 ft. in. lattice	1
	County County	Louvres, 11/8 in. fixed slats, wire screens	40 4
T		on back	40 sq. ft.
	A	etc. Sash, 1½ in. thick, glazed D. T	2
		Box frames for masonry unless noted.	
		Cellar windows.	
Commerce Commerce	·	Single top hung sash, casem. 3 ft. 0 in. x 2 ft. 0 in., 4 light	3
	1	Mull. sash, ea. 3 ft. 0 in. x 2 ft. 0 in.,	
T TAY Y		4 light	1

JUNE 1022	•
I923 CARPENTRY—Continued	
First floor windows. Single D. H. sash, 2 ft. 10 in. x 4 ft. 10 in.,	2
16 light	3
in., 12 light	2
12 light	1
12 light	1
Second floor windows. Single D. H. sash, ea. 2 ft. 6 in. x 3 ft. 2 in., 12 light	1
Mull. D. H. sash, ea. 2 ft. 6 in. x 3 ft. 2 in., 12 light—frame	1
Mull. D. H. sash, ea. 2 it. 4 in. x 4 it. 6 in., 12 light	1
Single D. H. sash, 3 ft 0 in. x 5 ft. 6 in., curved head	1
Shutters (11/6 in. thick, solid paneled). 2 ft. 10 in. x 4 ft. 11 in., pr	3 pr.
2 ft. 4 in. x 4 ft. 11 in., pr	2 pr. 1 pr.
Blinds (1½ in. thick, movable louvres—solid	ı pı.
upper panel). 2 ft. 8 in. x 4 ft. 7 in	5 pr.
2 ft. 6 in. x 3 ft. 3 in	1 pr. 4 pr.
3 ft. 0 in. x 5 ft. 6 in., pr.—curved head.	1 pr.
Exterior door frames (134 in. thick, rab- beted), complete with outside trim.	
Frame for front ent. door, 2 ft. 10 in. x 7 ft. 0 in	1
Frame for rear ent. door, 2 ft. 8 in. x 7 ft. 0 in	1
Frame for cellar ent. door, 2 ft. 8 in. x 6 ft. 8 in	1
Exterior doors (all to detail). Front ent. door, 2 ft. 10 in. x 7 ft. 0 in. x	1
13/4 in., glazed	1
Cellar ent. door, 2 ft. 8 in. x 6 ft. 8 in. x 13/4 in., glazed	1
Finished flooring. Living room, dining room, pass to kitchen, plain sawed white oak, 13/14 in. x 2 1/4 in.	408 sq. ft.
Kitchen, pantry, etc., No. 1 maple, 13/16 in.	
x 2½ in.—to cover	123 sq. ft.
¼ in. x 2¼ in.—to cover	527 sq. ft. 1200 sq. ft.
Lining paper under floors	18 sq. ft.
Slat floor under laundry tubs, 3 ft. 0 in. x 4 ft. 0 in.	1 Unit.
For 2 in. \times 10 in. beams	6
For 4 in. x 10 in. beams	6 40
Cement filled pipe cols. in cellar, 4 in. dia. by 7 ft. 6 in. long, with caps and bases	2
Anchor bolts for wall plates, ¾ in. dia. x 24 in. long, with washer and nut	40
INTERIOR FINISH	
(Whitewood unless noted)	
Door trim—1/4 in. jambs, 1/2 in. stops, 7/8 in. x 4/4 in. moulded and mitered trim with wall moulding. Trim both sides	
moulding. Trim both sides. For doors 2 ft. 6 in. x 6 ft. 8 in	7 sets
For doors 2 ft. 4 in. x 6 ft. 8 in	6 sets. 1 set.
For cellar doors, etc. (plain), 2 ft. 6 in. x 6 ft. 6 in	1 set.



INTERIOR	FINISH-	—Continued
----------	---------	------------

INTERIOR FINISH—Continued	
Trim for inside of exterior doors. Front ent., 2 ft. 10 in. x 7 ft. 0 in Rear ent., 2 ft. 8 in. x 7 ft. 0 in Cellar ent, 2 ft. 8 in. x 6 ft. 8 in	1 set. 1 set 1 set.
Trimmed openings, finished same as for doors. Opg. 5 ft. 0 in. x 6 ft. 8 in Arch opening, 2 ft. 6 in. x 7 ft. 6 in	1 set. 1 set.
Trim for windows—1/4 in. x 41/4 in., moulded and mitered, trim with wall moulding, 1/2 in. stops, 11/4 in. moulded stool, 1/4 in. moulded apron, 5/8 x 1/8 in. cove under stool. For windows:	
Single, 2 ft. 10 in. x 4 ft. 10 in	3 sets. 2 sets. 2 sets. 1 set. 1 set. 5 sets. 1 set. 1 set.
Base, ½ in. x 6 in., moulded	280 lin. ft. 50 lin. ft. 280 lin. ft. 330 lin. ft. 330 lin. ft. 1 Unit. 1 Unit.
Interior doors—(2 cross panel birch veneer). Door 2 ft. 6 in. x 6 ft. 8 in. x 1½ in Door 2 ft. 4 in. x 6 ft. 8 in. x 1½ in Door 1 ft. 6 in. x 3 ft. 0 in. x 1⅓ in. (whitewood)	7 6
Solid pine cellar door, 2 ft. 6 in. x 6 ft. 6 in. x 1½ in. Closet shelving, ¾ in. x 12 in. pine Hook strip (¾ in. x 4 in.) Rabbeted shelf cleat 1 in. dia. pipe clothes rod	1 44 lin. ft. 38 lin. ft. 30 lin. ft. 12 lin. ft.
Scuttle to attic with trim, 2 ft. 0 in. x 3 ft. 0 in., with trim	1
Pantry cupboard with countershelf, drawers, doors, etc.—Front, 8 ft. 0 in. x 8 ft. 0 in	1 Unit.
Main stairs, 1st to 2nd story, 14 risers, 3 ft. 2 in. wide, box pattern, balustrade at 2nd floor, etc.	1 Flight.
Cellar stairs, 12 risers, box pattern	1 Flight.
GENERAL CONDITIONS	

Add for permits, fees for heater and sewer connections, etc., insurance and general overhead charges.

Allow for general work not listed, such as grading, planting, etc.

Include sub-bids: Plumbing and gas fitting, hardware and applying same, painting and decorating, heating and electric work.

Present Prosperity of Our Country Assures Continued Activity in Building

Extract of Speech Before U. S Chamber of Commerce New York, May Eighth, 1923

By HERBERT HOOVER, Secretary of Commerce

N this occasion I wish to review some of the more profound changes in our economic life during the past few years which I believe bear directly upon our present business situa-Many of the violent displacements of the war and post war period have now been liquidated or absorbed into the economic fabric and no longer trouble us. We have spent 40 billions upon war; we have mobilized and demobilized 7,000,000 men; we have passed the great post war crisis; we have recovered from an unemployment of 5,000,000 to a surplus of 500,000 jobs. We have become economically stronger than before the war and this strength has radiated stability to the entire world. There are still some great shifts in the stream of our economic life to which we must accommodate ourselves if we would hold to full employment and prosperity.

Immediate Situation

During the past few weeks there has been a distinct note of caution at our rapid industrial recovery. I have shared in this but some have gone so far as to fear that we are entering a period of inflation or danger of collapse. Caution is the greatest safeguard to our continued prosperity, but caution need not be timidity nor exclusive of confidence and courage.

There are some parts of the building trades where there is strong pressure on prices and wages due to our large accumulated deficit in construction. There are parts of the agricultural industry that have not recovered to the extent of industry as a whole. But outside of a very few commodities there has been a steady and rapid movement of all goods from raw material to the hands of

the consumer and consumption is in pace with production. There have been no apparent large accumulations of goods. Moreover real inflation begins with large expectations and these expectations are not present.

THERE are very definite differences in our present economic position in the business cycle as compared with the situation prior to the collapse in 1920. The government index shows wholesale prices are today about 30% below the crest at that time. This index shows an increase in wholesale prices of 6% in the last nine months contrasted with a rise of 20% in the nine months prior to the collapse in the 1920 boom. Increases in price are a necessary accompaniment of business recovery. They are the vital stimulant to production. They do not mean inflation unless they continue to rise after full production is attained or unless they are the result of speculation. We have been steadily increasing our production for the last eighteen months. Yet in the two years prior to the 1920 collapse there was comparatively little increase in production. Beyond this again we have had a very stable cost of living for over a year.

We have no need to go into a period of inflation. We are undoubtedly in a plane of prosperity and we wish to hang on to prosperity. I am not one of those who believes that hard times have any special advantage in disciplining our souls. We ought to be able to discipline ourselves in prosperity when we have time to do it and having achieved prosperity, we ought to be able to hold on to it.

Safeguards of Prosperity

The primary safety to continued prosperity will be continued will-

ingness of our people to save their enlarged earnings, to resist extravagance and waste, to give full individual exertion. Our second safeguard rests upon the individual business man in today's well developed sense of caution and resistance to the will-o-wisp of higher prices and over expansion and speculation. Our third line of defense is our credit men and our bankers who can check the dangers of speculative credits. speak of the credit men because the bankers are not the first to come in contact with the speculative buying. The danger point arises when there is an over ordering of goods and the actual impact of these orders upon the credit machinery of the country does not arise for some time after such a movement has been initiated. Our bankers in daily contact with the commercial fabric of the country are fully alive to their responsibilities.

THE fourth line of defense and if possible a complete defense of prosperity, is in a general comprehension and unity of action in broad phases of commercial There is a steadily strategy. growing sense of co-operation in American business—not in restriction of trade-but in a sense of collective thought and action in the broad'strategy of employment production distribution and credits and of the interdependence of the whole fabric. There is a better understanding of the fundamentals which control the ebb and flow of commerce. The growth of chambers of commerce, of trade associations, of trades unions and other public bodies in their enenlarging sense of responsibility their great development of economic understanding and their enlarged co-operation with governmental agencies in dealing with the larger phases of commerce and credit, is one of the most profound changes in the last decade. It is a few of these broader problems that I particularly wish to discuss.

Our Increased Production Efficiency

WE must get our minds away from the notion that pre-war standards of living and volume of business would be normal now. Normalcy is a vastly higher and more comfortable standard than 1913. We must not judge the state of business activity by prewar figures, but by a hugely increased base. We must not be frightened when our output of steel or textiles or automobiles, lumber, corn or hogs, or our car loadings amount to figures far in excess of those that would be implied alone in a normal growth of population.

There has been in the past decade an unparalleled growth of our industrial and commercial efficiency and our consequent ability to consume. I do not refer to that growth of productivity which should naturally be expected to accompany the increment of 14 millions in our population during the last decade, nor do I refer to the increase in dollar figures due to higher prices. Entirely over and above these contributions to increased figures, we are producing a larger amount of commodities per capita than ever before in our history. Precise comparisons are difficult to adduce. But exhaustive study from many angles production average over оf periods ten years apart, before and since the war, would indicate that while our productivity should have increased about 15 per cent. due to the increase in population, yet the actual increase has been from 25 to 30 per cent. indicating an increase in efficiency of somewhere from 10 to 15 per cent.

For example, there has been no increase in the number of our farmers during the last decade, yet the agricultural community not only feeds an increase of 14 millions of population but has increased its average exports from about 7½ million tons to 17½ million tons annually. This would show that the individual farmer has increased his efficiency in production by from 15 to 20 per cent.

in this period. Increase in production and distribution per person engaged in many other industries can be similarly adduced. There are many commodities where we have years since reached a point of saturation per capita and whose industries grow approximately with the growth of population or is increasing exports. There are other commodities where saturation has not been reached. Increasing efficiency not only re-leases labor and direction for greater production of these things but enables their wider diffusion over the population. A selection of such industries shows a growth of 60 per cent. in the last decade.

E have been able to add to our standards of living by the more general distribution of many articles which were either altogether luxuries ten years ago, or which were luxuries to a large portion of the population. Thus an increase proportion of the population are using electric lights, telephones, automobiles and better housingand have added movies and what not to their daily routine. A rough estimate would show that we could today supply each person the same amount of commodities that he consumed ten years ago, and lay off about 2,000,000 people from work.

Some people have looked upon these additions of new commodities and services in the daily expenditure of our people as representing extravagances, but as a matter of fact they are no entrenchment upon savings. They are the product of better organized effort.

I wish to impress again that I am not confusing the natural increment that would arise from increased population, or not confusing the increased dollar figures due to higher prices but that this is an actual increase of commodities and services per capita in the population. It is due to the increased skill, the advancement of science, to temperance, to the improvement of processes, more labor saving devices-but most of all it is due to the tremendous strides made in industrial administration and commercial organization in the elimination of waste in effort and materials.

Nor has it been accomplished in imposing increased physical effort upon our workers. On the contrary actual physical effort to-day is less than ten years ago. There has been in this period a definite decrease in the number of hours' work weekly with a definite decrease in physical effort due to improved methods. Nor has it been accomplished by any revolutionary discovery in science. It is the result of steady improvement in management and method all along the line. It is an accumulation of better practice in the elimination of waste. It is a monument to the directing brains of commerce and industry and the development in intelligence and skill of the American workingman. The result has been a lift in the standard of living to the whole of our people, manual worker and brain worker alike. This is the real index of economic progress.

Building and Construction Industries

HAVE already referred to our building and construction industries. The construction of our buildings, our railways, our plant and equipment generally, naturally tends to expand parallel with the increased demand for consumable goods because people are both more courageous and easier financed in good times. We have not only the normal growth of the country to meet, but the long overdue and accumulated deficit. The delays of war and of post-war slump, and our increasing effi-ciency in production all demand more buildings and transportation facilities.

In addition there is a considerable expansion of Federal, state, and municipal construction. Tax free securities lie at the base of a good deal of this latter. Under these impulses great pressure is being placed upon our material manufacturers and our labor with a consequent tendency to rising costs. I recently made a recommendation that we defer all but the essential Government works and public buildings as much as possible so as to give full swing to private construction.

A representative and able commission of business men and labor which I requested to examine this question goes farther and recommends that we should do all our public works in times of depression and thereby provide greater continuity of employment and contribute to plane out the valleys of depression and level the peaks of booms. This deferment of public construction is more important now than ever for we need the full use of labor and material for long overdue private construction. We wish no cessation in this prime necessity.

This recommendation received commendation from hundreds of manufacturers, from labor organizations and contractors and the press. The inevitable criticism came from such a minority as to be negligible. Its reception is evidence of the enlightened and constructive thought of our manufacturers who look to the long run of prosperity rather than to the joys of short lived booms. It would be very helpful if such a policy of construction reserve

could be well established by states and municipalities as well as the Federal Government.

The strategy of business in the method of handling our vast gold reserves so as to make for safety against inflation, the tremendous need for increased private construction throughout the country, the need of a policy in agricultural exports which will accommodate our farmers to the European situation, the need for further growth in efficiency in production, etc., were all discussed.

Examples were given of the work by the Department of Commerce in simplification of practices and elimination of waste in industries through co-operation with the industries themselves. "I have recently received a statement from one single group," Secretary Hoover said "estimating that the savings in production cost in that trade already exceed \$25,000,000 per annum." Requests to the Department of Commerce for

business assistance, advice, and information have risen in 18 months from a few hundred daily to more than 3,000 daily.

Government has a definite relationship to the advance and maintenance of prosperity, "not as an agency for production and distribution of commodities, not as an economic dictator, but as the greatest contributor in the determination of fact and of co-operation with industry and commerce in the solution of its problems."

The preservation of initiative and the safeguarding of the rewards of individual effort, character and ability are keystones, the Secretary said, which must be preserved, "for when all is said and done the finer flowers of civilization do not grow from the cellars of poverty any more than they grow from the palaces of extravagance. They grow from the bettering comfort and well-being of the whole of great peoples."

"Fire-Stopping" Construction

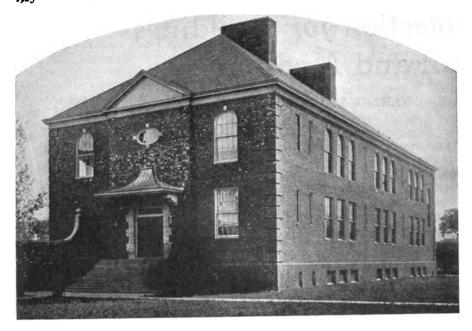
How to Build Dwellings so that Internal Fires Will Not Spread or Menace the Whole Structure

EXT to fire prevention, according to the building engineers of the National Lumber Manufacturers' Associa-tion, Washington, D. C., is firestopping—not in the sense of ex-tinguishing the fire but by construction devices which tend to confine a fire to the immediate locality of its origin. In "Fire Stopping in Dwelling Construction," which is the second chapter of the fire prevention series in the work on "Lumber and its Utilization," and is now ready for distribution, the Association gives full instructions, with working drawings, on how to build dwellings so that fire will not spread. It is estimated that compliance with these instructions will reduce the fire loss in dwellings by at least 50 per cent., as approximately 96 per cent. of all fires originate inside of houses and usually would not be very destructive if customary hollow walls and partitions and open-floor construction did

not encourage the spreading of the fire.

The usual methods employed in building small houses give but slight consideration to construction which will retard the progress of fire. Most such houses contain many concealed spaces which will allow fire to gain headway without discovery, to eat its way from floor to floor, and then suddenly to leap into open flame. There exists a real need for easily understood drawings of fire-stopping details, which when employed in actual construction will confine fire to its place of origin and thus reduce to a minimum the excessive preventable annual fire-loss in this country. Consequently the chapter under review fully covers the subject of the materials to be used in making "stops" across all air passages as well as at certain other places, and the methods and places of applying them. These stops are simply inserted when the house is being built.

The methods are essentially the same, whether the house be lumber-built, masonry-veneered or masonry-walled, and details of variation for each type are explained and illustrated. It is recommended that all building codes should require complete fire-stopping construction. "Those who build without securing this protection for their homes subject themselves and their neighbors to unnecessary hazards." Incidental advantages of fire-stopping construction are that the stops are a barrier to rats and mice and conserve fuel by decreasing the heat losses through breaking up deadair spaces into small units. The fire-stopping chapter, like the others in this series, is published in separate booklet form, and is distributed without charge by the National Lumber Manufacturers' Association as a part of its contribution to the national campaign for the prevention of fires and the reduction of fire loss.

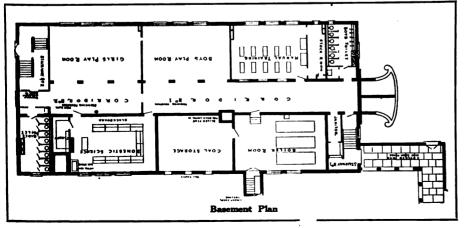


A Pleasing Exterior to This School

Kensington School Great Neck, L. I., N. Y. WESLEY SHERWOOD BESSELL, Architect

CHOOL exteriors in some cases are rather unfortunate in their design, especially so in some of the smaller structures. In too many cases they resemble factory buildings rather than seats of learning, still they have every constructional feature to make them safe and comfortable.

The selection of a pleasing design for the exterior of a school requires a good deal of judgment and it should depend largely upon the type of buildings in the vicin-



ity, so that it will harmonize with them and add to the attractiveness of the neighborhood.

Here is a school building with an exterior that is simple but very pleasing in appearance because it follows correct architectural lines.

The two lower illustrations show the basement and first floor plans. The second floor is practically a duplicate of the first floor with the exception of the kindergarten.

Perhaps the outstanding feature of this first floor plan is the arrangement of the kindergarten which is provided with its own separate entrance besides the regular doorways from the main corridor. This will tend to prevent accidents due to the smaller children being thrown down in a rush with older ones.

Another very desirable feature of the room arrangement is that the principal's office is at the front entrance and directly opposite the front stairway, while in the rear the teachers' room is likewise opposite the rear stairway. This little point has its effect on the

pupils, as they know that the teachers have their eyes on that staircase, therefore the mischievousness of our future citizens is held in check while on the stairs.

The basement contains separate playrooms for the boys and girls, together with necessary toilet facilities. Connecting with the girls' playroom is a domestic science classroom, while connecting with the boys' playroom is a manual training room. The boiler room has its separate exit to the outside and also ample coal storage room.



Fire Protection for Buildings of Small and Medium Size

By CHARLES L. HUBBARD

ITH an annual fire loss in the United States of over \$200,000,000, in addition to an average of 1000 to 1500 human lives, the matter of fire protection is one of great importance, especially when the reports of insurance experts show that 90% of this is preventable.

While the general equipment required is much the same in all

building construction, such as supports for elevated tanks, special houses for pumps, water supply and the running of pipe lines, boiler power for operating pumps, etc.

Complete protection for a private plant consists essentially of (1) automatic sprinklers, (2) alarm service, (3) additional inside protection, (4) outside protection and (5) protection against exposure and

freezing. In the present case, however, we will consider only the first and third items.



Two standard sprinkler systems are employed, known as the wet and dry systems. In the first of these, (see Fig. 1), the piping stands full of water under pressure at all times ready for immediate service as soon as a sprinkler head opens, and is practically always used except where there is danger of freezing.

In unheated spaces, like lumber mills, storehouses, etc., it is necessary to employ the dry system, in which all exposed piping up to the sprinkler heads is filled with compressed air, which holds back the water until the air has first been expelled. The water and air in this case are separated by a "dry-pipe" valve, a device which opens to its full capacity upon the drop in air pressure produced by the opening of a sprinkler head and so admits full water pressure to the dry system which soon forces out the air and reaches the open sprinkler.

The objection to this system is the added complication of a drypipe valve, the short delay neces-

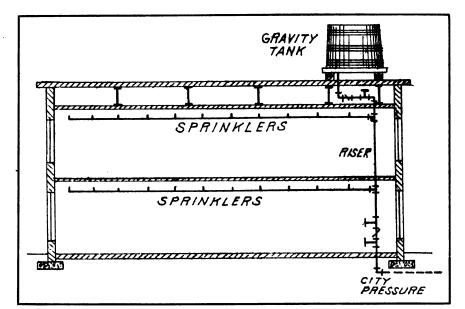
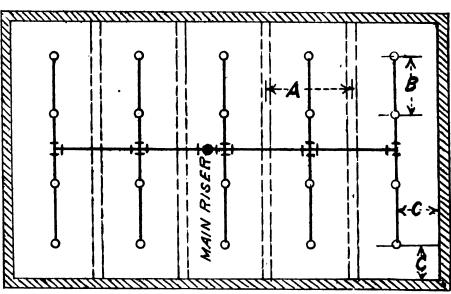


Figure 1

types of buildings, the shop or factory of small to medium size will be used for purposes of illustration in the present case. The design and construction of a system of fire protection in all its details is necessarily a problem for the expert in this branch of engineering, and is governed to a considerable extent by the rules and regulations of local insurance boards.

There are, however, certain general considerations which apply to practically all buildings and which are of special interest to the building contractor in blocking out the preliminary work before the details are taken in hand by the Underwriters or their engineers. This applies particularly to arrangements which may affect the



Floure 2.

sary for driving out the air, and the fanning effect of the air as it is discharged from the sprinkler head before the water reaches it.

Except in cases like a lumber mill or similar plant, where the greater part of the system is exposed to freezing temperatures, the dry system, is generally used in combination with the wet system for protecting such rooms or spaces, as cannot be safely cared for by the latter. It may be further stated that if for any reason a sprinkler head in the wet system, fails to open in case of fire, neighboring heads will soon act, so but little delay will occur. If on the other hand, the dry-pipe valve does not operate properly, every sprinkler in the system is useless.

The ordinary sprinkler head is designed to open automatically at a temperature of about 165 degrees, although special high-test heads are provided for unusual locations, where the air temperature exceeds this, as in boiler rooms, dry houses, etc.

Piping Arrangement for Sprinklers

There are four general systems in common use for supplying the sprinkler heads, known as the "center - central," "side - central," "across-center," and "end-central" feed.

The first two, shown in Figs. 2 and 4, are preferable, but either are acceptable to the Underwriters, and a selection must depend largely

upon the building construction and the general arrangement of the equipment.

The spacing of the heads is an important detail and depends in turn upon the construction, the character of the work carried on in the room, and the water pressure. Fig. 2 shows the standard arrangement for mill construction consisting of smooth plank on wooden girders, as shown in section in Fig. 3. In this case, the line of sprinkler heads should occupy a central position, between the girders and the distance from the deflector to the ceiling, (F), should not be less than three inches nor more than ten inches, six to eight inches being the most satisfactory for average conditions. Other dimensions for this type of construction are shown in Fig. 2

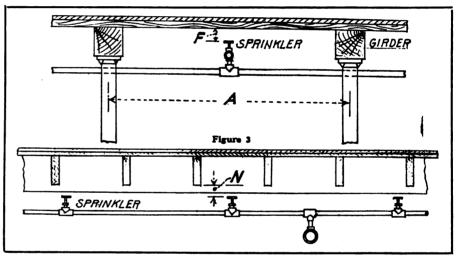
with numerical values in the following table:

For water prover per sq. in Width of M	Table I ressures of 2 nch.	20 pounds and
Bay "A"	Between	Between Sprinklers "B"
12 ft.	8 ft.	7 ft. '
11 ft.	9 ft.	8 ft.
10 ft.	10 ft.	9 ft.
9 ft.	11 ft.	10 ft.
8 to 6 ft.	12 ft.	11 ft.

wall distance from "B"

should not exceed When

the water pressure is less than 20 pounds, the values of "B" should be one foot less than given in Table I. "Special Hazard" in the above table means such places as picker rooms, planing or sawing de-



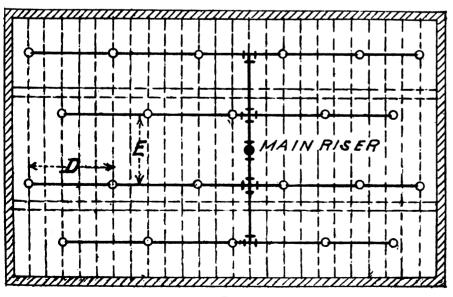
Flaure 5

partments of woodworking establishments, painting and varnishing rooms, etc.

In the case of open joisted ceilings, the branch supply pipes should run at right angles to the joist and the sprinklers "staggered" of "D" II, for zards.

and "E" are give	g. 4. Values of "I ven in Table II, for id special hazards
	able II
For water pre-	ssures of 20 lbs. a
over per sq. inch.	
Medium Hazard	Special Hazard
"D" "E"	Special Hazard "D" "E"
8 ft. 10 ft.	71/3 ft. 9 ft.
	ourse of less than
	sures of less than
pounds per sq. in	
71/3 ft. 9 ft.	6⅓ ft. 8 ft.

A sectional elevation of this arrangement is shown in Fig. 5, in



which the distance "N" between the deflecting plate of the sprinkler and the lower side of the joists should be between 3 and 10 inches, preferably 6 to 8 inches.

A typical arrangement for fireproof construction is shown in Fig. 6 in which "K" should not be less than 3 inches nor "M" more than 10 inches.

These drawings illustrate some of the more common forms of floor construction with approved sprinkler arrangements, and will be found useful in planning for machinery and other mechanical equipment in buildings of this kind.

There are so many types of construction in use at the present time that special instructions should be obtained from the insurance companies for any unusual condition.

Water Supply

Every system of fire protection should have two sources of water supply, that shown in Fig. 1 having a connection with the city pressure and an elevated tank. Other allowable combinations are public

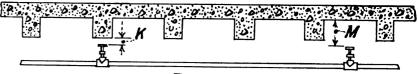


Figure 6.

water works and fire pump; and fire pump with either an elevated or pneumatic tank.

One of the sources, at least, should be automatic and furnish water instantly upon the opening of a sprinkler and have sufficient capacity to furnish the necessary streams until the other source can be put in service. If this source of supply is a tank, the supplementary supply should be from a connection with a public water system or a fire pump, either of which should be capable of furnishing water continuously under a heavy pressure.

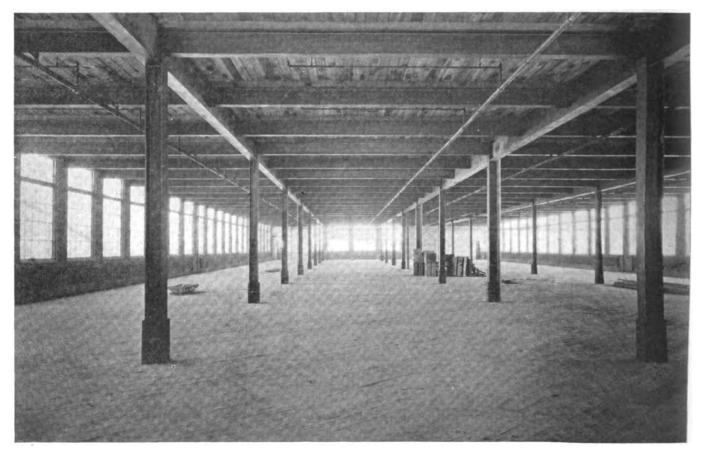
For sprinkler service alone, the pressure should not be less than 20 pounds at the highest level to be protected, while for hydrants, 75 pounds is needed under average conditions.

When there is an abundant water supply under the necessary pressure, public water works form one of the best sources, as this furnishes all of the essential requirements.

Additional Inside Protection

This varies in different cases, but in general, includes pails, small hose, chemical extinguishers, and certain details of building construction, such as fire doors, enclosed stairways, etc.

Automatic trap doors for stairways and elevator shafts are important details in preventing the rapid spread of fires in shops and factories. A typical arrangement has the trap door held open by a weight, the cord of which is provided with a fusible link which melts and this closes the trap automatically in case of a sufficient rise in temperature of the air.



Interior view of one floor Worsted Spinning Mill of Maine Spinning Co. described on opposite page. This view was taken before finished maps floor was laid and painting done. It, however, clearly shows the brick, steel and timber construction, the heating arrangement and the overheat sprinkler system.

Some Unusual Construction Features Used in this Modern Factory





How Very
Severe Climate
Conditions Were
Provided for

By S. B. LINCOLN

LOCKWOOD, GREENE & CO., Engineers. Boston

HE accompanying pictures show the new plant which is just completed for the Maine Spinning Company at Skowhegan, Maine.

This company is engaged in the manufacture of Bradford spun weaving yarns and was started in 1904 with three spinning frames. Since that time the concern has grown steadily, but has been occupying rented space when it was decided to provide a permanent home for the plant in Skowhegan.

The building is 84x220 feet in size, three stories and basement in height at the present time, and designed so that two additional stories may be added at some future date. This provision for

expansion was made because of the fact that the site does not readily admit of expansion in other directions, and also because this seemed the simplest and best method of making this provision.

The new building contains 8,000 worsted spinning spindles located in the top story. The second story is devoted to drawing and roving. The first floor is occupied by offices, receiving and shipping departments, spooling, twisting, winding and general finishing operations on the yarn. The basement is used for the storage of tops and also contains machine shop, repair shop and boiler room.

Owing to the severe winter climate of Skowhegan the building has unusual provisions to insure the warmth and also to lessen the probability of condensation. All windows are double glazed with an air space between the glass, and the roof is insulated with a layer of cork.

Large machinery doors are provided at each floor for convenient installation of new machinery. All machinery is motor driven throughout and power is purchased from the local company.

The whole plant represents a thoroughly modern, compact and economical arrangement for a plant of this kind. The plans for the work were prepared by Lockwood, Greene & Co., engineers, and the building was constructed under their supervision. The building contractor was Otto Nelson, of Bangor, Maine.

Simple Directions Explaining How to Read a Survey

Avoiding Some Errors Commonly Made in Staking Out

By J. LAWRENCE MICHAELS

ANY builders unfamiliar with surveys measure the distances to the property and later find to their discomfort, that they have infringed on the property of adjoining neighbors. Just a little care in determining the exact marking of the city lines, would prevent the danger of any unpleasantness, due to faulty measurements. Every builder should have as part of his equipment, a surveyor's convertible transit and level, standard one hundred foot steel measuring tapes, and level rods. A little study will familiarize him in the use of these instruments and much money, time and annoyance can be saved.

Understand a Survey

One of the most important things which a builder should know is how to read a survey. A good example of a blunder was published in a newspaper recently. The contractor erred in his measurements and built on the lot next to the one he should have built on. The error was not discovered until the house was almost completed. The owner of the lot upon which the house had been built in erro: volunteered to exchange lots with the owner building the house, which was done. This is one of many cases, but sad to relate, few such differences are settled in so simple a manner.

Look for the Monument

When the builder receives a survey, he should look for the monument or marker which marks the city line. This monument might be a square block of stone imbedded in the ground and in the center of which is a cross, a copper plug or a hole, called a drill center, or the monument might just be a cross cut into the pavement, etc. This mark shows the exact point

of the city line. The level and transit should be set on this monument, sighting the center of hairlines in telescope on center of monument at the next corner, nearest plot on which the building is to be erected.

To work from a survey the builder sets his instrument on the nearest monument to his plot (A), and in line with the next monument, this is the city or datum line the survey showing him that the beginning of the lot line is a specified distance, (one hundred fifty feet) from the monument (A).

Measuring From Monument

WE will assume for the sake of clearness, that these monuments are on the lot lines. Using the steel measuring tape, the builder measures this distance and makes a mark on any convenient fixed article (B). If the ground happens to be sloping the man at the highest point in the grade holds his end of the tape right down on the point he is measuring from. The one at the lowest point of the grade, plumbs up over the point, getting the tape level with the higher end. In measuring along grades, the builder should never measure on the surface, as he will find at the end of his measurements that his tally will be overmeasured, due to the slope of the ground.

After reaching the required distance, he gets the center of his measured mark by a sight from the transit. He makes a cross line here (at B), and now has one corner of the lot. The survey shows the distance to other side of the lot, which is in the illustration fifty feet; this being the width of the lot, the center of this mark (C) is measured as before. The next step should be to cut a cross mark at this point, which was

made by the measured line and the transit line, into the paving, etc., with a chisel. Should there be no paving or other fixed article, a stake should be driven, with a nail placed in the center to show the transit or lot lines.

The transit is then set up on one of the crosses marking the lot lines (either B or C). Let us use C, then taking a sight on the marker or monument (A) just left. Turn the angle from the street line to the lot line which, in this case, is ninety degrees. A scale, laid out in degrees, minutes and seconds, on the transit enables one to turn the angle accurately. How this is done will be explained in a future article. From this mark (C) the length of the lot should be measured which, in the diagram, is one hundred feet, and here another stake (D) is placed, with nail driven as before, getting stake in line with the transit at C. These marks (nails or crosses on the sidewalk, etc.) should, if accurate, be exactly in line without the fraction of a hair's variation. The foregoing procedure is again followed in staking out the other lot lines from B. measure distance from E to D, which should check up the same distance (fifty feet) as the front of the lot; which is now ready to build upon with the assurance that it is the right one.

Don't Rely on Old Stakes

In using stakes, already in the ground, a builder should use extreme care. Often boys playing in the lot will either pull a stake out or hammer on it, throwing it out of line. Or a truck might be backed up into the lot and run over the stake, putting it out of line. The best plan would be to check carefully any stake located on the lot before using it as a marker.

Be Sure of Figures

One of the foremost points on which contractors make mistakes is in reading the survey. A blue print of a survey is simple to read with just a little care in distinguishing the figures, which sometimes may be a little indistinct or blurred, and which at a hasty glance can be read wrong. An example of one such mistake is cited in the following:

A contractor in an endeavor to cut expenses, decided to do his own measuring and dispense with employing surveyors to do the work. According to the survey, the lot line lay 125 ft. from the corner monument. Using a yellow cloth tape, the builder measured the distance and staked out the en-Satisfied with these tire lot. measurements he proceeded to build, and after his sidewalls were erected became uneasy as to the accuracy of his staking out. He then placed an order for a survey to be made.

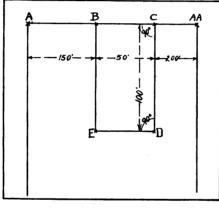
Built Over Lot Line

The completed survey showed that he had erected one wall, one foot over on the adjoining lot. The builder would not admit his fault and asked for another survey. He could not be convinced until the surveyors specifically proved the infringement to him and advised him to have his lawyer settle the matter for him by making suitable arrangements with the owner of the adjoining property, which would mean either buying the one foot of ground on which his wall stood, or tearing down the wall, either of which would be an expensive undertaking.

Had to Teer Down Wall

The builder's lawyer interviewed the owner of the adjoining lot and was informed that a building was soon to be erected on the property and as planned, it would require the entire width of the lot with very little room to spare. After the interview the lawyer called the builder to see him and advised that if he would rather buy the extra foot of ground than tear down the wall, he would spend a great deal more by the operation,

inasmuch as the owner of the adjoining property could place a high value on the land. It would, in the lawyer's opinion, be cheaper to tear down the wall and thus avoid a long drawnout period of litigation. At last the builder was convinced and the wall came down, and was re-erected in its proper place. The cause of this trouble could have been counteracted in the beginning of the measuring, if the builder had used a steel tape instead of the cloth tape, which had the figures worn off and was over-stretched. This was just the reason for this mistake, as this builder misread the figures, and even had he read them aright, they would have still thrown his measurements out, due to the tape being over-stretched. In such a



A Simple Survey

case precaution is far better than correction.

Don't Rely on Adjoining Buildings

Another point that the wise contractor will avoid is the use of adjoining buildings to get the front of a lot. The adjoining building might be out of line, or it might infringe on some other lot, and taking measurements from it will result, perhaps, in the contractor erecting the building with overlapping walls. To be positive of position and using a little more time in staking out rather than make a mistake, the contractor should start his measurements from the monument marking the city line, using a standard one hundred foot steel measuring tape.

One builder who took his measurements from another building

and found after completion that his walls stood on a diagonal with the building next door and soon learned that the adjoining building was out of line and he had blundered in using it as a guide. This matter was amicably settled, but it might have resulted in great expense and discomfort. Why take such a chance?

Examine the City Maps

The builder should, when bebeginning preparations for building, make a visit to the department in charge of building in his vicinity and learn just what improvements are contemplated in the neighborhood in the future. In one case, a builder neglected to do this, while his neighbor made inquiry and found that the street was to be widened sometime within the next five years. As a result, when the street widening was done, the builder who had investigated was on "easy street" with nothing to worry about, while the builder who had rushed his building up with no idea of contemplated improvements, had to rebuild the front of his house to conform with the widening process.

A Simple Survey

The diagram of a survey illustrated in this article is a simple example of a survey, and a little study of its form and marks will greatly aid in avoiding mistakes. The builder should familiarize himself with the marks and the measurements and what each means.

Use Good Instruments

False economy is a bad feature, as it invariably results in greater expense in the end. It is far more profitable for the contractor to make an outlay for the purchase of a transit and level combined, steel measuring tapes and level rods, than have to tear down a wall because of its having been built on some one else's property. The money spent in tearing down the wall will exceed greatly, the expense of the instruments, and it will alleviate the danger of such an occurrence repeating itself.

(To be continued)

Some Things the Farmer Likes

Profitable Lines of Work for Builders on Every Farm
This ArticleTells How to Make a Few

By DALE R. VAN HORN

IM JONES had found, to use his own expression, "darned little business" for the past six months. Tim was a war veteran, who, handicapped somewhat, was seeking to earn a livelihood with tools. He had enlisted as a buck private, green as a patch of rye, but his handiness and natural ability quickly put him where he belonged, once he was on the other side. The training he received during those fourteen strenuous months, with modern wood-working equipment had fitted him, he thought, for a life of comparative ease and comfort in civilian life.

By the end of the first year he took stock and found that something had to be done. With keen competition on all sides in his little home city, and this from veterans in the business; with little or no experience in drumming up trade of his own, the work he could find to do gradually grew less and less. The situation called for an idea that could be capitalized. Would he sink or swim? Swim awhile, anyway. He was down, but he wasn't out.

A night of sleepless tossing brought this problem with the dawn of morning: Why not turn to the rural territory for work? Every road leading from that little city was lined with fertile fields, prosperous-looking homes. His competitors, so busy scooping up all local business, were letting this virgin field go to pot. Sure? Not at all; but the proposition was worth investigating, anyway.

On his way to the garage where he parked his little car at night Tim stopped in at a drug store and bought a ten-cent notebook and pencil. Back at the shop again, he loaded in his tool chest, spent his last cent for gasoline, hid a horseshoe under the seat, for luck, and was away.

G ye along the highways and country roads and ye shall find food for thought and jobs for the asking if ye know where to look for them. . . .

Tim was not a born mixer; he found it difficult to strike up conversation, more difficult to turn its trend into the right channel. But nevertheless, this is what he did that first day of the venture.

Fitted storm doors to each of the ten openings in a large hog house.

Built a woodbox for a pleased housewife from some lumber found overhead in the barn.

Repaired and hung right a heavy yard gate that had been causing the owner periodical trouble for two years.

In each case he was paid for his work on the spot and it was a



rigure z

happy moment when he drove home and reviewed his experiences. Though only fourteen miles had been covered the little notebook showed four more odd jobs that awaited him on the morrow.

That was two years ago. Today Jim Jones is still doing the same thing. But let us look at his equipment.

Upon a nearly new truck chassis has been built a veritable shop with drawers, compartments and equipment to do almost any kind of work. Attractive lettering on each side of the truck proclaims that Tim Jones, Carpenter, is making good. All of his work comes from farmers within a radius of fifty miles. His slogan shows his method of attack. It is: "Let Me Tell You What You Want." As he pulls into a farmyard, he gets out and introduces himself. While talking with the farmer, he manages to scout around. At the end of fifteen minutes he has made a list of things lacking, which have caught his eye. By being tactful, he usually lands at least one order and sometimes the owner, growing enthusiastic, O. K.'s the whole works.

Though our Tim now handles many larger jobs, and has two others helping him, he still is on the lookout for the little odds and ends that will make living easier for the farmer. In figure one is shown but three examples of the kind of work this field offers. On the left is shown how a gaspipe, mounted vertically at the corner of the barn, saves the carrier rope and the barn, too. The center photo is of a small self-feeder with a length of woven netting stretched taut across the top, to prevent fowls from roosting thereon. He makes many of these, to order The right shows a grain chute, made from scrap lumber, that facilitates moving grain from bin to wagon, at least until the bin is half

empty. A joint midway allows the outer end to be raised for high wagons.

And, so, while little in themselves, these things were the stepping stones that Tim Jones trod to things bigger.

Though the case just cited may appear to many to be the exception rather than the rule, no aspiring builder can afford to overlook the rural community, providing his location is such as to make such a venture not inadvisable. The Yankee Farmer resents superiority, but welcomes fellowship and brotherhood preaching equal footing. Many pages could be written about the subject, but space does not permit a lengthy discussion.

It is fitting, however, to describe here some of the things a farmer likes. In a broad sense, he likes to have his place a little bit nicer than that of his neighbors. Lacking money to realize this, he welcomes the labor-saving, time-saving method, whether it be in the house, in the barn or stock shed, or in the fields. The likeable builder, with a ready wit and a good word, can often present sugges-



Figure 3

tions for improvements, that though expensive-looking at the outset, turn to another hue as the economy of the proposition is driven home.

The suggestions which follow are taken from a number of sources, but each bearing upon the same general theme. Names and places are omitted for obvious reasons.

Progressive rural people are waking up to the fact that advertising pays. The household of

well-kept appearance along any much-travelled highway is a likely prospect. Figures two and three show two definitely different ideas that brought results, though along the same thought. The one, announcing that here is to be found a modern dairy, is pleasing to the eye, and does not detract, but actually adds, to the view from the road. While more elaborate than the average farm owner would care for, it does harmonize completely with the dairy it represents. The other, though of simpler design, is a type that will earn as much as the former. The listless tourist will get a laugh out of it as he bowls along, even though he doesn't stop. And the chances are the little ad has been sunk deep in his memory. Perchance, at some later date, he will go miles out of his way to patronize this farm's products, when he is in the mar-

The concrete worker, too, will find here a field that can be played up to large proportions, by working out a variety of designs from which sign boards and bulletin boards can be chosen and erected.

(To be continued)

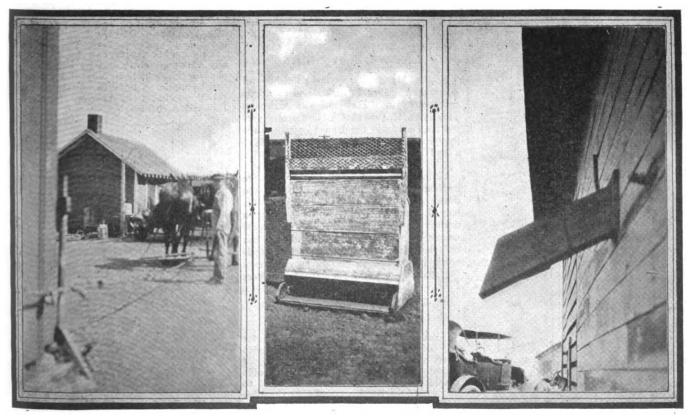
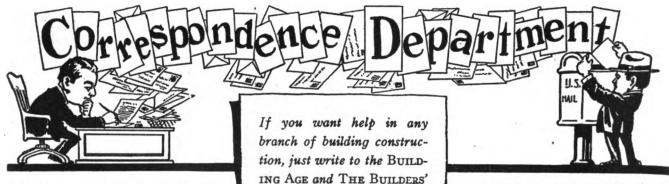


Figure 1



Construction Hint That Saves Time

IN the last number of BUILDING AGE I noticed that you are glad to accept new ways of doing work and you publish letters giving practical hints. Here is another one:

Every one of us is familiar with the bricklayer's helper going up and down the ladders with his hod of bricks or mortar. I am talking, of course, for rather small constructions—derricks and regular elevators being used on big jobs.

Here is a money and time saver that has been tried out and which saves at least two men on the job. The sketch herewith illustrates the system. On your scaffolding just place a hook or a bolt of some kind, place one say on every fourth upright, or to be more practical one to each bricklayer's gang.

Have a set of tackle blocks and 3/8" or 1/2" rope with plain blocks to fit. Hook up a bucket of mortar or an or-

branch of building construction, just write to the Building Age and The Builders' Journal Correspondence Department. We will be glad to answer all your questions without charge.

All readers are invited to discuss the questions and answers published.

dinary brick carrier and you turn the trick.

Two men can then take care of your distribution of mortar and bricks where four men would have to be employed with hods. No ladder climbing, no chances of the men getting injured and quicker service.

This system is invaluable for slate roofing or even simple shingle roofing and I hope that the hint will be of service to someone.—Raymond J. Labeyrie.

Drawers in Stairs

In the March issue you published an article showing an illustration of drawers located in the risers of a staircase. This is O. K. provided some careless person does not leave the drawer open. When that happens, someone is liable to have a bad tumble down stairs.

Perhaps a much better way is the method I follow, and this is to put the drawers just below the string. In this way I manage to give my customers a drawer almost the width of the stairs. Of course, to make this look properly it can only be used in a stairway that is panelwork below the string, as in such case the panels are drawer fronts.—Albert Fair.

Door Repair Hint

HAVING been called on to use a lot of good old second hand doors over again on a remodelling job, I found that the key and knob bar holds would not cover and that some had to be turned to the Hinge side of the new positions of the door to have the best side of the door show. Therefore, it was necessary to patch the doors and as the

owner would not have end grain wood show in patching, I did not use the old method of cutting a square hole with a chisel and putting in a square patch over both holes, which would require much time and labor to make the pieces for both sides of the door by hand.

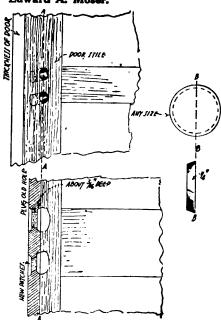
I am sending you a sketch of a much quicker and better way to patch doors or any other job that requires patching of this kind and I will explain how I did it.

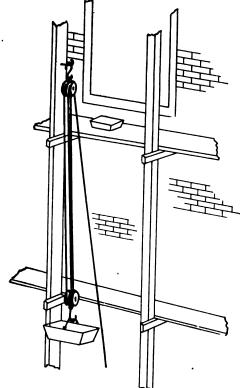
First, I plugged the old holes, cut off plugs even on both sides of the door. This I did to give my bit a center.

Next, I bored a hole about 3/16" deep on two sides of door or whatever size it required to close old holes. If possible, try to keep 1" size bit so that you can have your washer cutter always set.

Then I use a washer or gasket cutter and cut out the size circle of wood required to fill holes. Put on the amount of glue required and take a flat block and drive patch in hole solid and when dry enough, sand off and the job is complete

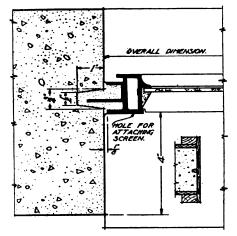
This gasket cutter can be bought at any hardware store and by using an expansive bit, a hole of any size up to 3" can be made. I hope this little hint will prove of value to brother builders.—Edward A. Moser.





Installing Steel Sash

T HE following details of steel basement window installation in poured concrete may prove of interest to contractors and builders who are called upon to erect this type of construction jobs.



Basement windows with channel frame construction and an extending fin at the jambs are easily adapted for use in poured concrete. A glance at the accompanying details will quickly explain the many advantages of this particular type of window design. The channel legs furnish two points of contact with the jamb and assure a weather-tight union while the extending fin sets into the wall and gives the window firm anchorage.

Build the frame in the same manner employed for other poured jobs. On the inside of the jambs nail a cleat or diagonally sawed piece of 2x4 to form a rebate in the jamb when the concrete has been poured. It is necessary to make the opening of the rebate somewhat narrower than the width of the two outside channel legs so that by straddling the rebate they will form an opening down which grout may be poured.

After removing the moulds, place grout along the sill from the rebate of one jamb to the rebate in the other. Then slip the window in place with the ventilator opening in, and press the sill of the channel frame into the grout. In this way, a weather-tight contact is formed. Plumb the window and then pour grout down around the fins between the channel legs.

Care must be taken to have the inside horizontal dimensions of the concrete opening exactly equal to the horizontal dimensions of the window, otherwise the sash will not fit properly in the prepared opening. The horizontal dimensions of the sash is measured from the edge of the channel leg at one jamb to the edge of the corresponding channel leg at the other jamb.—N. A. Harris.

Repairing Steel Tapes

THE steel tape is far superior to anything found on the market in measuring distances up to 75 or 100 feet. With good care it will give service for a long time. But, as a matter of course, constant use will sooner or later cause it to break, usually between the 5 ft. mark and the end. Such breaks can be fixed with a piece of steel tape riveted under the break in such a manner that it will hold the broken pieces together. After the first five feet has been mended several times it will have a patched-up appearance, and can hardly give good service. This condition can be remedied, and here is the way it is

For example, take a 75-foot tape. All but the first five feet is as good as when it came out of the store—it is impossible to get new tape to match the old, and the broken part has been mended so much that it is almost beyond repair. It would be a shame to throw it away, because it is not necessary—take the

HAVE you ever used any machinery or device which has saved you time and money?

Have you ever invented any way of doing a piece of work quicker?

If you have BUILDING AGE and BUILDERS' JOURNAL wants your experience, and will pay regular space rate for it.

Your description should tell just how you saved time and money, either by a special way of using machinery or by short cuts in construction. Point out what methods you were using before adopting your "Time Saver" and show how your new method turns the trick. You can submit as many articles as you want.

Address The Editor, BUILDING AGE and BUILDERS' JOURNAL 239 West 39th street, New York City.

tape off of the reel and cut it at the 70 ft. mark. Fasten it back to the reel at 70 ft. and use the five feet to replace the worn-out part. Attach the ring so that the figure "71 ft." will be just 12 inches from the end of the ring. Then cut the patched-up five feet off and rivet the piece to it so the figure "75 ft." will come just at the 5 ft. mark. Now your tape will read, "71 ft., 72 ft., 73 ft., 74 ft., 75 ft., 6 ft., 7 ft., etc. With a file or some nitric acid obliterate the five 7s, and the result is, a 70-foot tape that is just as good as new.

Moreover, in course of time it will be necessary to replace the first ten feet. The procedure is the same as before, excepting that the tape is cut at the 60 ft. mark. Again fasten the tape at 60 ft. to the reel, and cut off the bad end at, say, 9 ft., and rivet the piece to it at 69 ft. Replace the ring as above described, and obliterate the 6s in this case.

Later the tape can be cut at 50 ft. and riveted at 59 ft. 2 inches to correspond with 9 ft. 2 inches, obliterating the 5s.

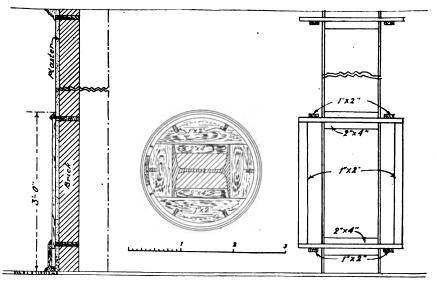
By repeating this whenever necessary it will be possible to repair a tape quite often and yet have but a limited number of splices on it at any time.—H. H. Siegele.

Grounds for Round Surfaces

E VERY carpenter knows how difficult and slow it is to put grounds for wainscoting on a round column even if you get the circular pieces ripped from the mill or as it is often done saw a curve a 1 inch by 2 inch you never get a good nailing.

Having a number of round columns to do I thought of a new way to do the troublesome work. The attached sketches show the construction and the usefulness namely as a ground and a guide for the bricklayer and plasterer.

—Henry M. Nelson.



Simple Methods of Trussing and Bracing Extra Wide Buildings for Moving

Being the Fourth Article of a Valuable Series on How to Profitably Engage in This Line of Work

By E. W La PLANT

Livery house moving contractor sooner or later, meets up with the proposition of handling extra wide buildings. They may be either extra wide bungalows or extra wide square buildings—and in order to carry these buildings on three-point method of loading, so that the buildings can be carried to destination without rack or twist, it is necessary to brace the buildings in order to carry up the load.

Figure 1 shows the easiest method of trussing an extra wide house. Place an 8x8 cross-sill out towards the front end of the house, and then an 8x12 cross header on top of the running sills for the jacks to rest on, and use what we call a hollow tube for the crib jack, and set it vertical as shown in the illustration, then attach a wire rope around each end of the cross sill, placing it up over the vertical jack bar and down to the opposite corner and clip same in place.

Place wood shims between the cable and the side of the building, to prevent marring the siding, and lean the jack tube in towards the building. If there is a window handy, tie a rope around the jack tube and brace it to the inside of the building, so that it cannot kick out.

Place a jack at each front corner, and take the tension up so that the building is perfectly level. You are then ready to tighten up on the crib jacks and take off the strain from the other jacks. This can be quickly done and you will find that you will carry the strain of these two corners very nicely, and take it off of the front cross-sills.

Figure 2 shows this method very plainly, and gives you an idea of how best to truss a building of this sort. This photograph also gives a very good plan for

handling the shoring up of bridges to enable a house mover to pass over same with safety. You will note that in this particular case, the contractor has placed a solid bed of timbers in the creek bottom, and then shored up the bridge solidly by means of jack screws, and in this way carried the entire strain of the bridge.

You will also note that he has carried his truck in close at the rear, making a narrow loading plan, so that building may clear the rails of the bridge. This loading plan is nicely handled and is the reverse method of loading. In this particular case the Ashaped running sills are to the front end of the building, and taper back to the rear, and on the rear, you have a cross header timber, 8x12, or 16, connecting the two rear trucks. This center has a sill as indicated to carry up the rear corner.

On the front end, a cross timber is placed from one end to the other, of the building, and a cen-

ter timber or two, are lanced through to carry the center part of the building. These rest on the cross steel truss bolster of the front truck, and on the main cross timber on the two rear trucks. On top of these two running sills you will note, is mounted the 12x12 cross sills, which are 30 or 36 ft. wide, depending on the width of the house. On this is mounted the cable guides and jack tubes as indicated. Figure shows the regular way we would truss a building where the Ashaped timbers narrow down to a point at the front end of the building. But in Figure 2 the first method is shown, so you have two methods of handling this bracing, as well as the method of narrowing up the trucks to cross a series of bridges with railings.

In many instances the contractor is called upon to move store buildings in which the front post and entrance post and plateglass are removed, as in the photograph Figure 3. In this case the



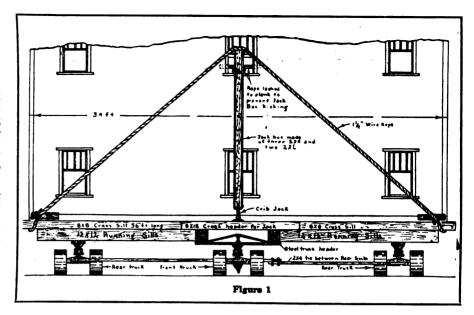
Figure 2.

rear end of the building can be supported by means of a jack tube placed between the cross-sill and the cross header on the first floor of the building.

If the weight is very great, it perhaps would be best to use supporting jack screws. Figure 3 shows a very clean-cut method of loading a store building of this character on three-point loading, using three 8-wheel trucks.

Once in awhile, the problem of handling extremely long buildings is put up to the house mover, and in this particular case Figure 4 will illustrate the method of handling this difficult proposition.

In this case we have a building 40 feet wide by 80 feet long, four



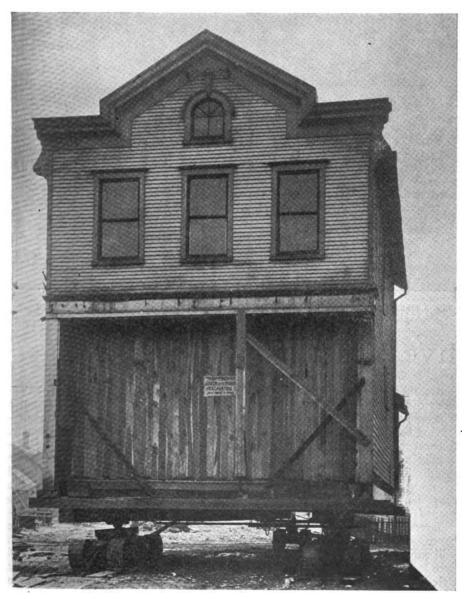


Figure 1

stories high. This building is so long that it is impossible to procure running sills from front to rear of building. In order to carry up the job, it was necessary to use two sets of running sills.

In order to hold the front sills in place, the next plan is to place a header on top of the building, and run a cable attached to a cross sill at the rear of the building to connect up onto the header on top of building and down to front end of building and attach to running sills. The frame method was used in this case, as in the case of trussing a building shown in Figure 1. The rear of building was raised up until the building was perfectly straight, and the cable attached to the cross sill to take up as much slack as possible, and then a turn buckle was used to tighten the cable at front end of the building.

The downward pressure of this truss is very apparent, and in order to prevent the building from spreading, it was deemed advisable to put on some cross tie plates on each side of the building, as shown in the timbers placed on the top header of the first story, and corresponding plates were placed on the other side of the building and connected together by means of truss rods, fitted with turn buckles, in order to take up the slack.

My method of making truss rods, is very simple. I use an I-bolt 1" by 14 or 15" long, and have one on each side for my turn

buckle, and then use a piece of 5/8" steel cable, which I clip to the eyelet of the I-bolt at each end, getting the cable adjusted to

the proper width of the building, then by winding up the nut on the I-bolt, I take up the slack the same as with a turn buckle, and have a much easier truss rod to handle, than if I used heavy long steel rods with the regular style of turn buckle.

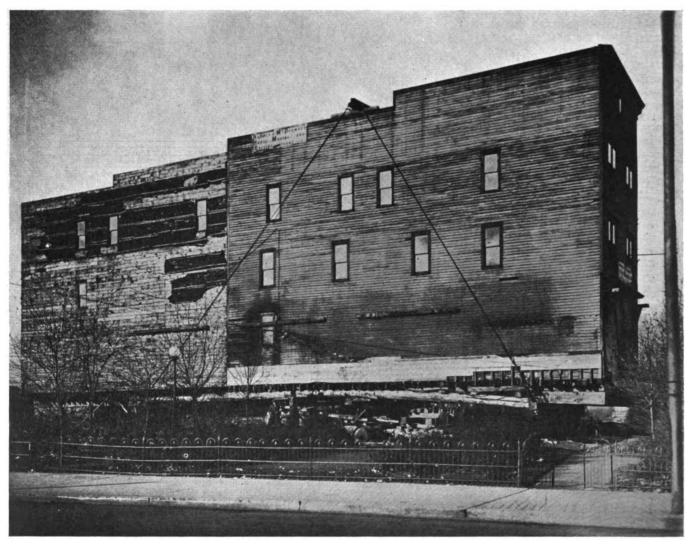


Fig. 4 Method of Moving a Long Building.

Comparative Strength of Wood

S OME wood users claim that kilndried wood is brash and not equal in strength to wood that is airdried. Others advance figures purporting to show that kiln-dried wood is much stronger than air-dried. But some 150,000 comparative strength tests, made by the Forest Products Laboratory, of the U. S. Forest Service, on kiln-dried and air-dried specimens of 28 common species of wood show that good kiln drying and good air drying have the same effect upon the strength of wood.

The belief that kiln drying produces stronger wood than air drying

is usually the result of failure to consider differences in moisture content. The moisture content of wood on leaving the kiln is generally from 2 to 6 per cent lower than that of thoroughly air-dried stock. Since wood rapidly increases in strength with loss of moisture, higher strength values may be obtained from kiln-dried than from air-dried wood. Such a difference in strength has no significance, since in use a piece of wood will come to practically the same moisture condition whether it is kiln-dried or just left to dry in the open air.

It must be emphasized that the appearance of the dried wood is not a reliable criterion of the effect the drying process has had upon its strength. The strength properties may be seriously injured without visible damage to the wood. Also, it has been found that the same kiln-drying process can not be applied with equal success to all species. To insure uninjured kilndried material, a knowledge of the correct kiln conditions to use with stock of a given species, grade, and thickness, and a record showing that no more severe treatment has been employed, are necessary.

Why Not Become the Wall Board Expert in Your Locality?

A Profitable Line of Work Offering a Real Big Opportunity for the Builder Who Becomes a Specialist

By S. I. GRIFFITH

Is there a new craft developing in the building industry—a trade that's really a part of carpenter's trade and yet requires specialized experience that many good carpenters and builders have never acquired?

The idea is not as improbable as you think.

If you go into many towns of the United States—towns widely separated as to size and conditions, towns scattered everywhere throughout the length and breadth of this whole country, you will find unmistakable evidences of the work of this new craft.

In the quaint old town of Pittsfield, Massachusetts, for example, stands the Maplewood Inn, an historical old place recently modernized through the vision of one of these alert building specialists.

And in Cazenovia, New York, is the snug little Lincklaen House, renovated and modernized in the same outstanding fashion.

These two hotels are re-finished with wallboard—being applied by wallboard experts.

The wallboard Expert!

That's the new craftsman who is emerging from the ranks of carpenters and making his presence felt in many places throughout the country.

His development is often due to accident.

"Wallboard? Fine for attics. For living rooms and the rest of the home? Not a chance."

So said D. C. Nelson, of Loraine, Illinois.

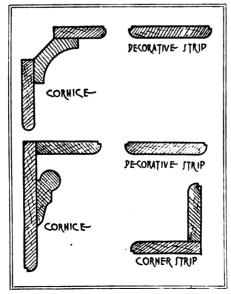
Then a wallboard salesman got hold of him and with the aid of plans and illustrations, made him see the possibilities of a good wallboard, used in the right way. And now not only has Mr. Nelson finished his own new home with wallboard throughout, but homes and buildings for miles around are beginning to feel the imprint of his new handiwork.

Wallboard, as every builder knows, can be applied winter or summer, good weather or bad, and is profitable indoor work that fills in time that would otherwise be consistently wasted.

Then why isn't more wallboard being used?

Why aren't more contractors and builders wallboard experts—wallboard enthusiasts? Why are builders passing up thousands and thousands of dollars worth of profits that might be theirs if they knew how to use wallboard in the same way it is used by G. H. Barrett of Cazenovia, New York, or D. C. Nelson of Loraine, Illinois?

Is it because builders aren't fully awake to the possibilities or does the cause go deeper even than that?



Sections of Cornices and Strips

It was with the hope of answering these questions and perhaps of presenting some new and practical information to readers of BUILDING AGE, that the writer presented himself at the offices of The Upson Company, Lockport, New York, and asked for an interview.

"I want some real practical information on using wallboard," was my opening remark. "To my way of thinking there's been too much bunk written about wallboard and its possibilities, too little real information. The good wallboard jobs I've seen and the enthusiasts I've talked to convince me there is a wonderful field for this material, but what I want to know is—

"What can I say to contractors and builders that will not only convince them the field is there but be of some help in preparing them to take advantage of it?"

Mr. Charles A. Upson, an intensely practical and conservative man, considered for several minutes before making any reply.

"You've analyzed the situation rightly, anyhow," he said, "In any discussion of wallboard to builders, there are two factors to be considered—(1) the builders who believe in it, who are already using it and realizing something of its possibilities and (2) the builders who don't believe in its use except for very temporary construction.

"To the man who is ready and willing to do wallboard work and who wants to take advantage of the wallboard business in his town, I'd say this:

"— to become a wallboard expert, have in mind first of all that there are two big cautions to be observed in using wallboard. Be careful of the trim and be careful of the quality of the wallboard you use. Too many builders are apt to

forget that in any wallboard job the biggest item of all is in the labor. As a result, in their efforts to economize on the final cost they are apt to save a very few dollars by skimping on the wood trim and a few more by buying a board of uncertain quality.

"In the first place, there is so little difference in price between a good trade marked wallboard and cheap imitations that even the first saving is negligible—while the result is as different as day from night.

"As to trim—well, the wood trim practically makes or breaks a wallboard job. Narrow lattice strips make the room look like a railroad yard. Tasteful paneling on the other hand, graceful friezes and the proper mouldings, make the interior dignified and inviting.

"Right there's a point I can't over-emphasize.

"There has never been any objection to a well-panelled room. The finest interiors everywhere are panelled and beamed.

"The trouble is, paneling is too often improperly done. We have been trying here, for example, to offer builders a few practical hints on buying stock trim and altering the whole appearance of a wall-board job by the mere addition of rounded mouldings, etc."

Mr. Upson sketched a few examples on a rough pad.

"For instance," he said, "these stock patterns of cornice strips, wall stops and ceiling and wall moulding, if used in a living room or hall, will give character to the room that would ordinarily be lost.

"In fact, by simply varying the panel designs and moulding strips it is possible to finish a room in the finest style of Colonial or period architecture or to produce a simple result that is perfectly adapted to the modest cottage."

"But isn't it the manufacturer's job," I asked, "to educate the contractors and builders to these possibilities of wallboard?

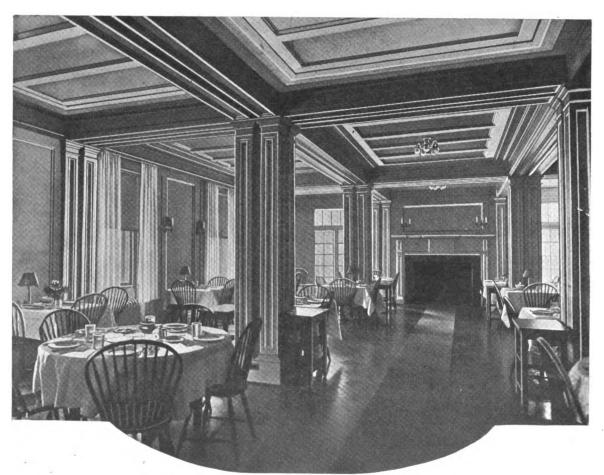
"I know, from the good jobs that I've seen, that all these possi-

bilities are there, and furthermore, I know that there are builders in the United States who fully realize upon them. But after all, not many builders have been called upon to do enough wallboard work to fully grasp all the possibilities. Now isn't it your job to make them realize them?"

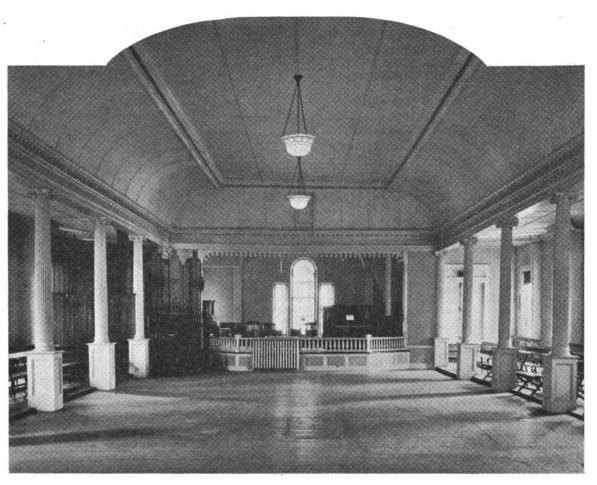
"You're absolutely right," said Mr. Upson, "It is our job to educate the contractor and builder and to prove to him that wallboard is capable of splendid results.

"But," he continued, "After all. only a portion of the responsibility rests with us. Any carpenter can apply lath, for example, and yet few carpenters can apply lath as well as an expert lather. Probably, too, most carpenters could lay brick after a fashion, yet you wouldn't expect the ordinary carpenter to compete with a brick-layer at his own trade.

"The same thing applies to wall-board. The actual application of wallboard is so simple that any carpenter can do it. But a carpenter or builder who is a wallboard expert—who devotes a little time



Dining room of Lincklaen House, at Cazenovia, New York, an example of the artistic use of wallboard. Work like this is the product of regular wallboard experts. Ballroom in the Maplewood Hotel, Pittsfield, Mass., shows how wall-board can be used for curved surfaces as well as flat. Here it is used on both walls and ceilings.



and thought to the subject—does more than merely apply wallboard. He builds a beautiful finished result. And, naturally, he's the man who gets the desirable wallboard jobs and the man who makes the most money at wallboard work.

"Such a man naturally reaches the fine home jobs, the store ceilings, the church and school work and the hundred-and-one places where a really good type of wallboard installation will be acceptable. And it's not hard for a good carpenter to become expert, either.

"The average carpenter or builder has a mighty good head on him. Give him just a few hints about paneling and he'll produce jobs that will become better and better as he goes along.

"Now, the builder who sees the possibilities—who realizes that wallboard is actually a built-to-order material for the building trade, is rapidly learning how to make fine installations, so that I predict that within five years, there'll be a wallboard expert in nearly every town."

"Some builders do not believe in wallboard because the jobs they have seen are poor ones. Too often, shingle nails are used instead of finishing brads or the new selfclinching fasteners, and the directions of the manufacturer are not followed.

"But what about the builders who don't believe in it?" I queried.

"The worst of it is that the builder who doesn't believe in wallboard naturally loses a lot of profits he might otherwise have, because the type of wallboard work he does is such that owners of fine homes are dissatisfied.

"This man reminds me of the days years ago when they first began vulcanizing automobile tires. For every repair man who believed tires could be successfully vulcanized, there must have been ten who thought they couldn't be. As a result, the men who believed in the business, who had the vision of its future possibilities, studied and developed until today many of them have prosperous shops.

"We musn't forget the newness of the wallboard proposition. But, isn't it reasonable, that if wallboard has come so far in ten years, that the next ten, or twenty, or the next thirty years will see a corresponding advance, not only in further perfections in the product itself, but in a vastly better knowledge of how to use it.

"There is an opportunity waiting for the contractor and builder who grasps the idea first—an opportunity to make himself the wallboard expert of his community, to lift himself above competition and get dozens of profitable jobs to supplement or even take the place entirely, of the work he is doing now.

"And the best of it is, the man who has the initiative and fore-sight to develop himself into a wallboard expert now, is far in the forefront of competition, because there are few builders who actually know enough about the material to compete with him for the really fine and profitable jobs.

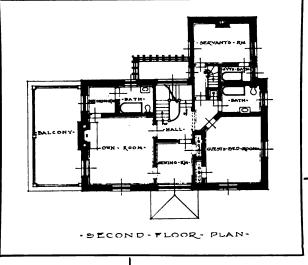


EW ENGLAND Colonial architecture served as the model of the interesting home design shown here. This house was erected at Morristown, N. J., for Mr. John D. McMullen, and was erected by Mr. Steward L. Mayner, builder, of the same place.

It is built of red brick and the white trim of porch windows, etc., together with the green painted shutters, give it a very attractive appearance. The three dormers and front porch are hipped, which is a little unusual in this style of architecture. The house is so shaped that it gives the advantage of the kitchen receiving light from three sides. The living room also has this advantage.

One enters a hall 8'6" wide. The living room is $14'6" \times 23'$. The dining room is $14'6" \times 15'6"$. Next to it and connecting it with the kitchen is a pantry $9' \times 7'$ in size. The kitchen is $13' \times 12'$ in size. In back of the kitchen a laundry is located, the size of which is $8' \times 10'$. This laundry serves as a sort of vestibule or entry into the kitchen. The large living porch is $11' \times 23'$ in size.

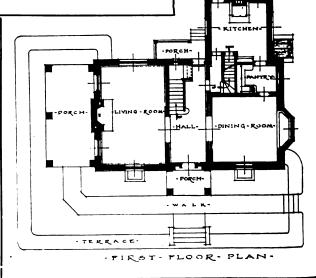
On the second floor the layout has been arranged for comfort rather than for number of rooms.



The
House
on Our
Cover

Brick Home of New England Colonial Style

HEACOCK and HOKANSEN, Architects,





Facts Builders Should Know About Truck Operation

By P. L. SNIFFEN

THE building contractor who is anxious to obtain from his motor trucks the greatest productivity and longest mileage life with the least upkeep expense, knows that he must continually watch the items of cost and the maintenance records they reflect. He knows, too, that he must have a general knowledge of the features of operation upon which his successful experience with motor trucks depends. And, further than this, he knows he must have some knowledge of the mechanical side of truck operation and maintenance — perhaps not that of an experienced mechanic or engineer, but at least a certain familiarity with the fundamentals so that he may intelligently supervise the drivers.

It would be neither possible nor desirable to attempt to explain here the mechanical design and parts of a motor truck from an engineering viewpoint. It will serve better to outline points of information on the mechanics of proper truck operation in a way that they may be easily understood and applied.

Care of Brakes

The failure of brakes to respond in an emergency has caused more accidents than any other factor that enters into the operation of a motor truck. The most important precaution is to have the brakes tightened at the first sign of looseness. The second is to replace the brake linings when they are found to be badly worn. It is very simple

to test the brakes on a truck by speeding up on an open stretch of road and then applying first one brake and then another. If the brakes do not hold effectively or if the truck has a tendency to swing to one side, this indicates that a careful inspection is required at once. Brakes may slip because of worn linings, improper adjustment of grease on the brake bands. In tightening brakes, do not overdo it. A tight brake drags on the engine and wastes power. If the brake band is very hot after driving, you will know that it is too tight.

Care of Storage Battery

If the motor truck's starting, lighting, and ignition system is to operate satisfactorily, it is extremely important to give proper attention to the storage battery. The first point to observe is cleanliness of the battery and interior of the battery compartment, which must always be clean and dry. All small articles, especially of metal, must be kept away from the battery. All terminals and connections should be kept coated with vaseline. It is essential that distilled water be added to all cells regularly and at sufficiently frequent intervals to maintain the solution at the proper height above the plates. The solution should never get below the top of the plates. In warm weather the battery cells should receive distilled water every week, and once every two weeks in cold weather. Never add acid to the solution and do not use any water known to

contain even small quantities of salts or mineral water of any kind. If distilled water is not available, melted artificial ice or fresh, clean rain water may be used. The water should be added at regular intervals, as recommended, even though the battery may apparently function correctly without it.

Care of Springs

Broken springs are common and expensive occurrences in motor truck operation. The springs need very little attention - relatively less than most other parts of the machine. Loose spring clips cause the most spring breakdowns and for this reason it is advisable to inspect them occasionally and to tighten when necessary. A squeak from the springs usually indicates a lack of lubrication between the spring leaves. If rust has accumulated, jack up the machine by placing the jack under the frame above the springs, force the spring leaves apart and flush between them with a mixture of kerosene and motor oil. Or they can be coated with a grade of grease made especially for this purpose. In addition to this, it is also necessary to keep the bearings of the spring and shackle bolts properly lubricated.

A great many broken springs may be traced to the practice of overloading. Every part of the machine, including the springs, is designed for certain maximum loading. Exceeding this is bad business, which can be only partly alleviated by slow speed, which

also is bad business, because it wastes time. It is advised that if overloading, or its equivalent in the form of speed or bad roads, seems necessary, extra springs be used.

Care of Ignition System

It has been said that fully eighty per cent. of the trouble experienced with a motor truck engine can be traced to the ignition system. Ordinarily such difficulty requires the attention of an expert. For efficient performance, the distributor head should be removed and cleaned at least once every month—just unfasten the clip and rotate the head until it can be lifted off. Inspect the distributor head for cracks and replace it with a new one if any are found. The only repairs that can be made on a distributor are to tighten loose connections and clean the inside.

As the rotar is in direct contact with the distributor points in some systems, it is a good plan to wipe these points with a thin film of vaseline after they have been The best method of cleaned. cleaning is to briskly rub the points with brass polish or the rubber on the end of a pencil. Emery cloth should never be used. Most distributors are equipped with oil holes or fittings, and as the distributor shaft revolves at a high rate of speed, it is essential that you apply oil to these recesses at definite intervals.

In the event of wet ignition, it is not safe to operate a truck until the coil and distributor are thoroughly dried. A wet ignition system will cause many short circuits and electrical disorders. The surest and best way to dry out the ignition system is to blow compressed air on the parts affected.

Bearing Adjustments

It is a matter of common knowledge that the life of an engine depends largely upon its bearings. One ruined bearing will soon cause the wreck of the entire engine and still some drivers, knowing this fact, will continue to drive an engine with a loose bearing until it finally burns or hammers out, or a connecting rod crashes through the side of the crank case, forcibly reminding the driver that extensive repairs are necessary.

A loose engine bearing will produce a distinct knock. Sometimes it is necessary only to tighten the bolts which retain the bearing caps in place, and again, in case of a badly worn bearing, it may be necessary to remove one or more of the liners or shims placed between the upper and lower halves of the bearing, allowing the cap to tightened snugly, making proper contact with the bearing surface. Unless the driver is experienced in adjusting bearings, it is best for him not to attempt this work. It is a simple procedure to the initiated, but difficult for the novice.

The Spark Plugs

Imperfect or leaky spark plugs may cause a lot of motor truck trouble that is very difficult to trace. They will make an engine miss at high speed or on heavy pulls, but will permit it to run quite properly to all intents and purposes under ordinary conditions. The principal trouble is cracked or porous porcelains, which allow the high tension current to ground without jumping the spark gaps. The only remedy is to fit new plugs that are known to be in good condition and to be careful not to crack the porcelain tightening them in the cylinders.



THE most important precaution is to have the brakes tightened at the first sign of looseness and replace worn brake linings.

The failure of brakes to respond in an emergency has caused more accidents than any other factor that enters in the operation of motor trucks.

Very few people know how to adjust the spark plug points. Nine times out of ten the points are separated too far. The driver would do well to carry with him an ordinary visiting card. The spark gap should equal the thickness of such a card.

The porcelain of the spark plug will sometimes crack and permit a short circuit within the plug. This is often hard to detect unless the porcelain is removed and carefully cleaned. The slightest indication of a fracture is sufficient to condemn the porcelain. Spark plugs should not be forced into position by severe wrench action. They should set firmly against a copper asbestos gasket, with but little more force than can be applied with a light wrench.

Care of Motor Fan

A most essential feature of a motor truck is the fan, since its proper functioning is necessary to prevent overheating. The fact that the fan has bearings which require lubrication is frequently overlooked. If the hub is provided with an oil hole, oil should be injected regularly. If it has a grease cup, the same should be screwed down at least twice a week. Finally, if there is no provision for oiling it, the fan should be taken apart every six months or so and the bearings repacked with grease.

A fan belt that slips may ofttimes be made to give service without any change in the pulley adjustments simply by turning it inside out. The new clean surface will grip the pulleys with just the proper tension. It is not always such an easy matter to adjust the fan to take up slack in the belt, for the reason that most fans have two adjustments: one vertical for tension, the other horizontal for alignment. Unless care is exercised in making the adjustments, the belt is quite likely to get into the habit of slipping off the pulley, thus causing the operator a lot of annoyance. It is best to try reversing the belt first

In another article on truck operating facts to appear in the next issue will give points on compression, causes of misfiring. causes of lost power and causes of smoke from the motor, etc.

MASONRY

Practical Information on Materials and Latest Construction Methods~



And They Thought They Saved Money

HY is it that some people still persist in saving a little money by substituting cheaper material and spoiling the looks of their property? A mistaken notion that they are saving some money—yes, but the value is decreased.

Here are two interesting photographs of adjoining buildings. The one is of a bungalow type which has a front and only part of its side of face brick. It would have looked better built of all common brick rather than this patchwork. Now it would not have cost very much more to have extended the face brick all around. The cost of laying is almost the same.

Now the next door neighbor also wanted to save a little money, so





on the one side and rear he used common brick for the exterior, but on the other side and front (it being a corner lot) he used face brick for his two-family house.

Here we have both parties looking at each other's building and both viewing a wall that really must be an eyesore to them.

Builders should call the attention of their clients to this matter and explain to them why and how they should have their buildings look right. This is "missionary work" and the builder is the man in a key position to do the talking to the most advantage. These two pictures will serve to show the folly of trying to save money in this way.

OFFICE and JOB MANAGEMENT

Things the other man has found out that save money



Correct Cost Keeping for Building Contractors

By MORGAN G. FARRELL Vice President, Frank Hill Smith Inc., Engineers

ONTINUING the subject of cost keeping from last month, I would say that charging material used to the proper account presents a somewhat greater problem. If it were used as fast as delivered, the result would be easy; since it would only be necessary for the timekeeper to mark on the delivery slip the number of the account to which to charge it. And

in some stages of the work this is quite possible.

While foundations are going in, for instance, it is obvious that all sand gravel and cement is for account No. 14a. (Table A); or later when the building is being floored, the flooring delivered, is for No. 29a.

But when brick, stucco and terracotta work, and cement floors are being placed at the same time, how are cement and sand to be charged? Also, when the job is isolated and material is delivered in carload lots to be drawn on as needed, what is the best procedure? Or if several buildings whose cost is to be kept independently, draw stock from the same material dump?

Evidently the only accurate way of charging out material under such conditions, is to issue it on requisition, marking the latter with the account number. But this would be too cumbersome except for large work, highly organized.

The simplest procedure, when material is being delivered for several accounts at once is to mark the slip with all their numbers. The cost clerk in the office will then pro-rate the delivery among the accounts on the basis of the amount of each, completed per timekeeper's weekly survey. This may lead to temporary inaccuracies but will be righted in the last survey which reports the completion of each account involved.

The pricing of delivery slips is done at the office, figures being obtained from purchase orders or invoices, preferably the latter, since they include delivery charges and verbal orders.

Sub-Contractors

Although the builder is not ditectly interested in the sub-contractors' costs knowledge of them is valuable to him in three ways.

SAMPLE PA	CE OF	008T	BOOK
-----------	-------	-------------	------

		Wood Flooring		No. 29a.
Date Item		Item	Reference	Amount
Dec.	17	Dixon Lumber Co. (SM. C.G.Y.P.)	Inv. No. 27	\$ 628.40
•	•	Johnson Trucking Corp.	Vouch. No. 425	30.00
	15	French Hardware Co. (Nails)	Cash	17.25
	•	60 Rolls Bldg. Paper	Credit Job. 16	90.00
•	23	Floor laying	Payroll	125•75
	30		•	77.10
192	3			
Jan.	6	Moss Floor Finishing Co. (Scraping)	Inv. No. 550	85.00
	•	J. C. Frank (Varnishing)	Inv. No. 77	91.50
	13	Labor (Cleaning up)	Payroll	12.20
		Total		\$1,157.23
		Share of expense Dec. 15, 1922 to Jan. 15, 1923		127,20
		Total Cost		\$1,234.43
		1	l	l

Figure 2

It gives him data for comparing future sub-estimates; it enables him to estimate when time is too short to await bids; it keeps him informed of the money status of the job. through his timekeeper's progress survey.

The last is most important since he bases his payment to sub-contractors as well as his own requisitions for payment, thereon.

There are several ways of securing cost data for sub-contracted work. Probably the most reliable is to require the sub-contractor to submit a detailed estimate at the time the contract is signed.

Any reliable firm will be willing to furnish such a schedule which need only include unit prices and total quantities for the various subdivisions of their work. The plumber, for instance, would give costs for street connections, underground pipe of the several sizes, soil and vent stacks, leaders, water-pipe, and for each type of fixture set in place.

Then the progress survey should report each week the number of lineal feet of pipe sizes set, and the fixtures placed, so that they can be priced from the sub-contractor's schedule at the office.

Direct Expense

This is obtained directly from the expense ledger, weekly or monthly, as may be required. An ordinary ledger is used, the accounts being classified by jobs. For instance, under Job No. 135, enter the superintendent's and time-keeper's salaries, watchman, telephone service, stationery, tools (sometimes kept in a separate Plant and Equipment Account), and any other expenses chargeable to the job as a whole.

Indirect Expense

This includes all expense not chargeable to any one job, such as rent, executive salaries, travel, advertising and general administration. It should be totaled monthly and prorated over the various jobs according to the value of the work done on each.

For small concerns an average monthly figure will be sufficient, any discrepancy at the end of the year being absorbed in Profit and Loss account.

			•	INIT COST	SHEET			No. 115.
<u>a</u>	Cost Account No. 13a. Common Brick in Common Bond 1 to 3 Cement Mortar.							
E	Estimated Quantity: 330,000 Cost: Brick \$6,600, Mortar \$1,320, Labor \$7,400							
			Expe	aso \$1,560	To	al \$16,88	0	
		Cos	t per M.	laid: \$51.	15			.
Week Endi		Quantity in Place	Material	Labor	Expense	Total	Unit Cost	Not es
192	2							
Oot.	21	15,500	365.12	512.20	225.50	1,106,12	71.35	Laying out
	28	55,000	1,233,55	1,156.55	228.80	2,618.90	47.61	
Nov.	4	48,000	1,060.60	980.80	225.50	2,270.20	47.25	
	11	45,500	988.12	500.00	165.40	1,953.52	45.94	
	18	47,000	1,035.50	951.10	135.60	2,125.50	47•35	
	25	50,000	1,150.03	1,050.50	139.90	2,370.43	47.40	
Dec.	2	22,000	455,10	410.01	121.10	1,019.21	46.33	
•	9	25,500	575.40	675.50	98.86	1,349.76	52.93	Corbelling etc.

1947B 000B 007B

Figure 1

6,929.72 6,536.66 1,347.26 14,813.64 45.02

How these figures are tied in with unit costs will be explained in the following sections.

Total 308,500

Collecting Costs and Expense

The simplest and most direct way of accomplishing this, is the Cost Book, a sample page of which is shown in Figure 2. It may take the form of an ordinary bound journal, a loose-leaf book, or cards. In many cases it is indexed according to the items in Cost Table A, which are numbered and assigned one or more pages in the Cost Book.

Its use may be best illustrated by the sample page shown. It covers the cost of labor and material for laying seven thousand square feet of comb-grained flooring. Items are posted as delivered except payroll which is posted from the weekly payroll as analyzed in the time-keeper's report. A brief explanation is entered opposite each item to save reference to other records. The building paper, for instance, was diverted from another job.

At fixed periods, usually once a month, the Job Expense page in the Expense Ledger is totaled and prorated over the other accounts affected. This is necessary only where a progressive cost record is kept. For most builders, it will be suffi-

cient to pro-rate direct and indirect expense when the job is completed.

The Permanent Unit Cost Records

This is the final record upon which all the information collected is entered for analysis, comparison and as a basis for future estimates. Figure 3 illustrates one good form of Unit Cost Sheet, as used by a large engineering firm, who use it also for a weekly progress check. In this case, material, labor and expense have been kept separately.

If the cost book is kept as in Figure 2, these components may or may not be separated, as desired. Also the posting from the cost book can be done weekly or monthly or when the work in question is completed. A good compromise is to use a cost sheet detailed as in Figure 3 for the heavy items as foundations, concrete, brickwork and framing, and a short-cut form for less important items. This enables a close watch to be kept on large departures from the estimated quantities or unit costs.

For estimating purposes a card record is best. Upon it is summarized the totals as given in the last line of the Cost Sheet, for all jobs, with notes calling attention to any unusual feaures of the job which may have affected the cost.

Reconciliation of Cost Records with the General Books

The methods outlined permit a ready reconciliation of the total cost of the job with the general ledger, since the postings to the Cost Book are merely sub-divisions of the postings to the individual firms accounts in the ledger.

An invoice for lumber from the J. Doe Co. presented Dec. 1, for say \$3,000, is posted to J. Doe's account in the ledger, and is also posted to cost accounts 27b "Joists" and 27c "Partitions," say \$2,000 to the former and \$1,000 to the latter. Thus the

sum total of all Cost Book accounts for the job must equal the sum total of all ledger accounts for the job, including labor, material and expense.

It is a very simple operation for a bookkeeper to extract the ledger accounts for the job and total them for comparison, since the desired reconciliation has nothing to do with payments made on account. The payments only affect the taking of a trial balance for the job which will be described in another paper.

The above is, in outline, a simple and accurate cost-keeping system

which has been in practical operation for a number of years. It can be varied or elaborated to suit the size of the builder's organization, without losing its essential simplicity. And it may be pointed out here, that it is easy to instruct the field force in their duties in connection with it. One of the building firms using it conducts occasional classes for superintendents, foremen and time-keepers, in which they are shown how the entire system works, both in the office and field, so that they may understand the importance of the records they are required to keep.

Building Houses and Selling Clients Some Equipment

An Interesting Story of the Success of John Albrow in Selling Equipment for Buildings He Erected

By F. H. SWEET

ANVASSING thoroughly; selling prospects closely, and real, hard, honest-to-goodness work. These are the fundamental points which have helped me to whatever success I have achieved as a building contractor and selling implements," said John Albrow, of Waynesboro, Va., recently, when the writer was discussing with him some of the reasons for his success.

"There are a great many other reasons, of course, he continued, "but these are the main ones."

It is always interesting to learn of a man branching out into new lines of endeavor, but when that man is forty-seven years of age, and has been an undoubted success in a particular line, we naturally "sit up and take notice" when he suddenly switches around and adopts a new trade or profession. Courage is required for such a trick and courage of a high order.

Mr. Albrow is such a man, and he possesses both courage and common sense. When he started out in life he chose the trade of carpentry, and at the age of twenty-two was working as a fully qualified artisan. A few years later he branched out for himself as a contractor—a builder of houses—and pursued this line until something over two years ago, when he broke into the implement field. At first, it must be admitted, he tackled the new line in a rather half-hearted manner—more in the nature of an experiment than a serious attempt to establish a real business.

Up to the commencement of the great war and for two or three years afterwards the building business had been good, but when the cry went out for men and more men, and labor and material became difficult to procure, Mr. Albrow was persuaded to enter the new field.

It happened this way:

Something over two years ago, while putting up machinery in a canning factory for one of the large power machinery concerns,

I N the building contracting business the most favorable thing to acquire is a reputation for honest dealing and taking pains to please. Nothing but real hard, honest-to-goodness work will get these for you.

he was approached by a representative of the company and invited to become its agent in his district for farm engines. He pooh-poohed the proposal at first, but the representative was persistent and kept at him until he finally consented to take the agency—as a side line. But let Mr. Albrow tell his own story.

"When I took the agency for farm engines I had no intention of giving up my contracting business. It struck me that selling engines would make a good side line when I was canvassing the farmers for additional building work.

"After three months I was surprised at the number of sales I had made, and encouraged by my success I decided to give more time to the new business. took the agency for a well-known line of implements and menced in real earnest to do business with the farmers. In my first year I made a clear profit of \$800. I now decided to go into the implement business seriously, and commenced to add to my line. I took on a separator and numerous other lines until today I handle practically everything required in power-farming.

"In the building contracting business I was fortunate in earn-

ing a reputation for honest dealing and for taking pains to please. This has stood me in good stead in my new work.

Sell Something of Real Use

"I am a firm believer in honest dealing, and have tried to build my business strictly on that principle. I study my customers and their needs; study the conditions in which they are working, and try to sell them something for which they have a real use.

"With my policy of canvassing I have a fine opportunity to see the farmer and to talk with him right on his own door step. I take an interest in his problems and talk them over with him. In this way I got first-hand information about my prospects and knew pretty well just where a separator, milking machine, spreader, plow, tractor or gasoline engine is required.

"Last year I succeeded in doing a \$17,000 business and hope to do better this year. Most of this business was done for cash. The farmers in my territory almost invariably prefer to do business on a cash basis, and I do all I can to encourage them in it. This eliminates the trouble of extensive bookkeeping, and besides both parties are benefited by a cash sale.

"Of course, where I am convinced a man is financially sound I will accept his note, but I always point out to him the advantage of paying cash. I don't like dickering over a sale, especially if my prospect is stubborn over a few dollars. While I never cut prices, in the strict sense of the term, I will come and go a little to suit the peculiarities of the case. Each customer has to be studied and suited.

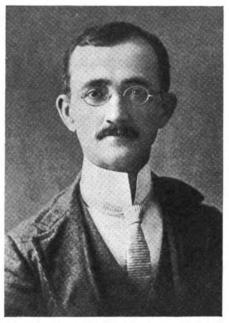
Customers Must Be Satisfied

"No two men are found alike except in this that we all have our peculiar point of view, and if we happen to be a purchaser we claim the right to be satisfied in our purchases. It is well to keep that in mind when making a deal. It may mean the difference between a satisfied and dissatisfied cus-

tomer. Every builder knows a disgruntled customer is a dangerous man to have in his territory. The saying, "the customer is always right," is a pretty good one for us builders to use as a motto. Not that the customer is really always right, but some such motto or principle of doing business will put the builder on the right side of the fence.

Using a Car for Service

"My territory is largely a fruit growing district and covers an area of about twenty-five square miles. It is rather a large territory for one man to cover and



MR. JOHN ALBROW

give the proper kind of service. However, I keep my car pretty busy, and so far have been able to handle the work alone. I expect, though, to hire some help, as I have a feeling, especially since I built my new warehouse and work-room, that the business is growing too large for one man to handle. I could keep a man busy on service work alone.

"Prompt attention to service calls I consider very essential and ability in the dealer to do repairs practically compulsory.

"I don't like dealing in secondhand goods. This is not a junk shop nor am I running an old iron business. The only condition under which I will accept a second-hand machine is if I know for certain where I can dispose of it. I never want junk to accumulate in my store."

Mr. Albrow's business grew so rapidly that last summer he decided to build a store and workroom. The new building, now practically complete, is up-to-date in every way, and is declared to be somewhate unique in the implement field. It was designed and built by Mr. Albrow himself. The material used in the construction is wood and concrete. The building is 25x55, and two stories high. The front is completely occupied by two large plate-glass windows. The finishings inside are especially good, and with a little streak of imagination would make a suitable book store.

Shelves are built in all around the store, where repair parts and accessories will be kept. The office—oh, yes, there is a real office—with desk, telephone, stove and everything that a good office should have, and it presents a fine business appearance.

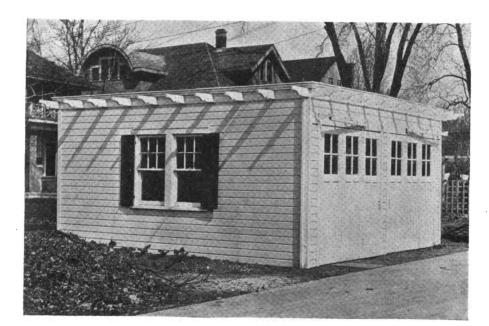
Good Appearance an Asset

When asked if he didn't think the store was too "high-falutin'" for an implement business, Mr. Albrow said:

"I consider a good appearance is a great asset to any business and I am going to do my best to make my store the cleanest and most striking in town:"

The second story is connected with the ground floor by an elevator and is being fitted up as a repair department. Work benches with all necessary repair requisites are conveniently arranged around the walls. A special feature of the equipment is a small power plant to provide power for the machinery in the work shop and for demonstrating lighting systems. Mr. Albrow has the agency for a 9 k.w. automotive generator, and in order to sell this property he has arranged a scheme of demonstration, to illustrate the value of a lighting and small electric power system on the farm.

By distributing great quantities of literature around his territory, advertising in the press and by thorough and persistent canvass Mr. Albrow expects to do a record business another year.

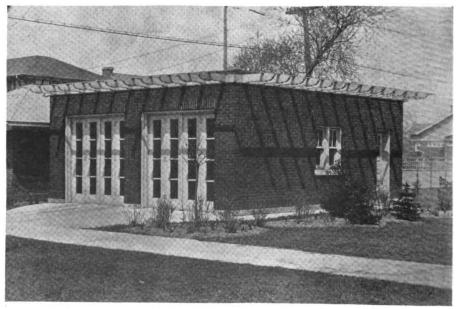


Flat Roof Garages Made Artistic

Three Designs Showing How It Was Done



HERE is no reason why a flat roof garage cannot be made artistic in appearance. It takes but little thought to add on the proper amount of ornament that will make it good looking, but not overdressed. We show interesting examples of twocar garages which have pergola tops extending around all sides. These, in time, could be covered with wisteria or other vine, but the most interesting part on both these designs are the shadows cast by the projecting rafters. Our other picture shows an interesting example of a six-car community garage built at the rear of an apartment dwelling for use of the tenants. A little terra cotta judiciously placed has made this garage an asset to the street.



What the Editor Thinks

The Situation

THE building situation is today one of the biggest subjects before the American people. Never, perhaps in our history, has an industry been crowded with orders that are so beyond its capacity to fill. Last year was a boom one, a record maker, and it was thought that it would stand as such for all time, but 1923 for the same period exceeds the stupendous figures for 1922 by 15%!

No man, no machine and no industry can stand such an overload without a breakdown and this would be bound to happen in the building industry at no very distant date. If builders and owners will follow the advice given out by the directors of the American Construction Council, they will best serve the public as well as themselves, and stabilize the industry.

Perhaps never in commercial history, has an industry gone on record to voluntarily slow down or rather take off part of the overload at a time when its product was in such demand!

When the American Construction Council was formed, the idea of the founders was to advise the industry in just such a crisis as the one which now confronts the building industry. The thanks of both public and men engaged in building are due the Board of Governors for their far-seeing advice. In New York and other centers reports are coming in of projects being postponed temporarily. The seed is beginning to bear fruit.

There is nothing wrong with the building industry. It is on a sound basis. Its product is in great demand, but the demand at the present time is too great. We do not have the men or the materials to keep up a program that owners want. We need more men in the industry. We need more supplies. But the question is, do we need them all at once and then have a

period of depression? Or shall we follow the more sane method of cutting out some of the overload?

A shortage of labor together with rising costs of materials, builders bidding against one another for early deliveries, the offering of bonuses, etc., all indicate a too rapid growth and these signs are frankly forerunners of serious danger.

On another page, we present rather a complete report of recommendations made by the American Construction Council. The building industry can proudly go on record as having taken hold of a problem that was, day by day, growing more serious.

THE building industry was never in such a favorable condition as it is at the present time. Buildings are needed in every part of the country. But we must all realize that our people cannot and will not pay top notch prices for construction work of the ordinary types of building. This kind of building is the bread and butter business of the industry. Buildings that are to be erected with the utmost speed, irrespective almost of what the cost will be, is the occasional dessert—too much of that kind of building should be discouraged.

It is no wonder that workmen are demanding and receiving higher wages—out of all proportion to the work they do, because they know that the contractor is receiving a bonus if the building is erected ahead of time. Let us get back to the good bread and butter business that will keep the industry in a healthy, prosperous state for many years to come. We are firm believers in good wages for workmen, but let them earn this by efficiency. Good profits for builders should be the reward for the men that take full responsibilities of an intricate business.

Practically every building that has been contemplated will be erected in due time. There will be no shortage of jobs. This country is a prosperous country and its people want better housing for its business as well as for homes.

Because we are prosperous, there is an excessive demand for better buildings and our industry will successfully handle this demand, but cannot do so all at once. Therefore, it is advisable for contractors everywhere to heed the advice of the American Construction Council and postpone taking contracts that are impossible to complete, without the payment of excessive bonuses.

There is nothing for builders to be afraid of. The industry is in a healthy state. The demand for construction will continue for many years at a rate that will insure every man in the industry a period of full working time. There will likely be no rapid decline in the regular trend of prices, but there must and will be a dropping off of abnormal prices.

Builders must remember that the great demand as sensed by various experts and brought out so clearly in the Building Age's recent "Survey of the Building Situation," is that there will be a big, steady business in suburban residential construction. That kind of building will continue in active demand, because the country as a whole is prosperous and our people want to live better.

In 1921 we were short over 1,000,000 homes and about that number were built in the past two years of boom construction, but as the normal demand is about 385,000 homes yearly we are still short over 770,000 homes. This then, will be the backbone of the building industry for many years to come. When we have good homes, we also must have better commercial buildings, schools, churches, amusement places, and civic buildings.

At our banquet of building prosperity, we cannot all sit at the first table, but there is plenty for the second table and even the third. So let's be patient—all will be served and served well.



BUSINESS GETTING METHODS

Ideas that have worked for others

Advertising for Customers

HE local paper in one's own town seems to serve the best for securing live prospects. Every builder should from time to time carry his advertisement in his local paper.

The advertisement should be attractive enough to compel attention and end up with some sort of an invitation to call. If one has some sort of a trade mark, it is well to introduce this in all advertisements, so that it will become identified with one's business.

In nearly every ad where one advertises home construction, it is well to insert a small picture of a home, as this will be sure to attract attention. Where one has built a very nice residence, it is a good plan to have a photograph taken of it and have a cut made from it and use this in the ad with a caption underneath something like, "Home of John Jones; built on Smith Street by Tom Green,



the Home Builder." This will attract attention to the kind of work

The three advertisements shown herewith are typical of what some home building construction companies are doing in the way of publicity and something along the

same line can be followed by progressive builders in practically every locality.

In most cases it will be found desirable for best results to have the local advertising agent prepare the "copy" for the advertisementthat is, the reading matter, the illustrations, the size and styles of type, etc.

The three advertisements shown here have each a different appeal. but the object of all is to get the reader to inquire. Note that one firm states they will give a completed home with the key to move in. We knew of one builder who always made a hit with his customers by giving a silver plated key to the front door.

It is by doing some little original thing of this sort that makes one known. It is not only doing a good job, but getting it broadcasted that builds up your reputa-

EVER DEVISED



ALLYOU

We will build your home complete in every detail under our co-operative

We have completed a building system whereby it is possible for all to own their own homes at an approximate saving of at least 20% on your construction.

All you need is your lot and 10% and we will build your home complete, and finance up to 90%.

This includes the drawing up of your plans, surveying, legal work, in fact everything necessary in the building of your home. We give you a completed

home with a key to move in.

Write your full name, address and where lot is located

PUBLIC SERVICE HOME BUILDERS PLAN, Inc.

Rooms 1119-1120-1121 Knickerbocker Building
Telephone Bryant 8190.
Broadway and 424 Street, New York

SAFEGUARD YOUR LIFE SAVINGS

We Offer You-

a beautiful home of six rooms and bath, glass enclosed sun porch, all comulete with modern white plumbing, up-to-date electric lighting fistures, heat, full, con-crete cellar, built on your let for

Specially Reduced Price of

\$5,544

We Offer You SPECIALLY REDUCED PRICES for a Limited Time Because:

We Build All Your House on Your Own Lot in the Good Old-fashioned Built-to-Endure

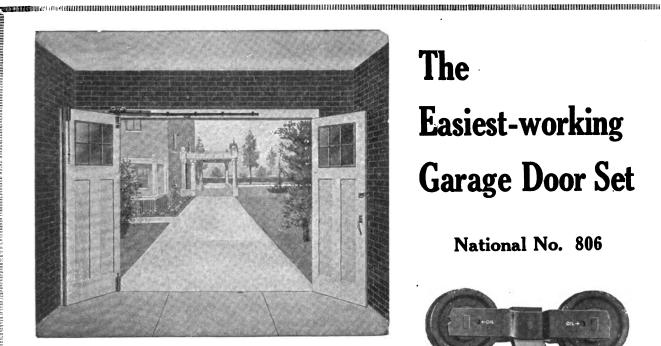
WEENEY - OSTER CONSTRUCTION COMPANY

Open Sundays 1 P. M. to 6 P. M.

19th Floor, Times Building Broadway and 42d St., N. Y. C.

Open Dally Until 6 P. M.



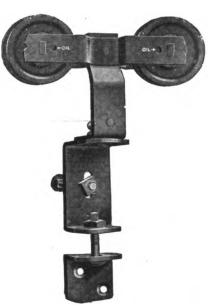


1. Garage doors equipped with National No. 806 work as freely and easily as any house door open with a simple push-close with a slight pull-

- 2. There is convenient access to the garage because the end door opens independently of the other two.
- 3. A minimum of space is required in opening, as the doors are hung on the inside and fold and slide against the wall-
- 4. These doors are not only weather-tight but are adjustable in case of swelling or raising of cement floor-
- 5. The price of the No. 806 set is so moderate that it is called by builders the cheapest combination possible to efficiently equip garage doors-
- 6. Obtainable through supply dealers everywhere.

The **Easiest-working Garage Door Set**

National No. 806



The Hanger operates on a swivel and turns on the track without sticking or binding in any way.

National Garage Sets Build Reputations Through Satisfaction

NATIONAL MANUFACTURING COMPANY

ILLINOIS STERLING



Digitized by Google

Review of the Building Situation

BUILDING statistics for April, just published by the F. W. Dodge Corporation, show that the volume of contracts awarded during April amounted to \$399,200,800. This was an increase over March figures of nearly 8%. April normally shows an increase of 15 to 20% over March figures. In view of the enormous volume of operations started since the first of this year, this slowing down of the seasonal rate of increase is a most wholesome sign.

Construction for the first four months of this year for contracts

awarded in the sections which our report covers, show an increase of 15% for the corresponding period of 1922.

Residential building is still actively in the lead, 44% of the entire amount being for this type of construction, 17% is for public works, 13% for business buildings, 10% for educational buildings, and 8% for industrial buildings.

In the New York district, residential building was at a higher rate than the general average for all districts amounting to 59% of the district total, or

in money value, \$55,968,000. The Central West and Northwest districts show considerable activity.

Residential construction amounts to \$46,000,000, which shows quite an active demand for residences in that territory. Of course, the volume and money spent for new homes is still greatest in the East, despite the slight falling off in percentage from the March figures, as in this section, residential construction contracts were awarded in April amounting to \$94,000,000 for the three Eastern districts.

Record of April, 1923, Building Contracts Awarded

Classifications of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
						*		
Business Buildings	\$4,037,600	\$11,871,800	\$6,574,400	\$5,886,100	\$15,263,800	\$1,688,600	\$8,503,800	\$53,826,100
Educational Buildings		11,040,800	3,976,900	4,351,500	12,181,800	996,500	3,981,500	39.803.000
Hospitals and Institutions.		1,506,200	207,200	700,500	1.386,000	980,000	671,000	5,685,900
Industrial Buildings	4,035,000	3,039,900	4,799,300	3,568,200	9,047,500	423,000	8,421,900	33,334,800
Military and Naval Build-		0,005,500	1,77,000	0,000,200	>,o	120,000	0, 121,500	00,000 1,000
ings				30,000				30,000
Public Buildings		517.600	175,300	19,500	309,000	59.600	125.000	1.556,000
Public Works and Public		017,000	27 0,000	17,000	007,000	0>,000	120,000	1,000,000
Utilities	3,435,300	5,738,500	7,419,700	15,570,200	23,903,500	4,858,800	6.301,700	67,227,700
Religious and Memorial		0,100,000	,,,,,	10,07 0,200	20,500,500	1,000,000	0,001,700	٠٠٠, تککر ت
Buildings	1,473,000	1,867,500	1,448,000	1.483.800	1,539,500	1,119,000	1,699,300	10,630,100
Residential Buildings(c)		55,967,800	21,997,700	23,044,700	41,765,400	4,293,400	11,611,500	175.087.400
Social and Recreational		00,501,000	,,,,,,,,		12,000,100	.,_,,,,,,,	,,	1,0,000,100
Buildings	847,900	2,832,600	3,639,600	846,800	3,382,000	60,500	410,400	12,019,800
Total	\$34.094.700	\$94,382,700	\$50,238,100	\$55,501,300	\$108,778,500	\$14,479,400	\$41,726,100	\$399,200,800

Building Projects Contemplated, April, 1923

Classifications of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
		***		***				
Business Buildings	\$7,849,500	\$21,521,800	\$6,238,800	\$15,611,400	\$24,045,300	\$1,323,700	\$5,453,800	\$82,044,30
Educational Buildings	3.015.700	10,871,600	6,586,000	5,608,000	22,740,100	1.094.000	4,557,700	54,473,10
Hospitals and Institutions.		5,118,500	1,419,000	1,658,500	3,764,000	62,000	446,000	12,815,00
ndustrial Buildings	9,307,000	5,462,200	14,660,000	8,419,200	17,589,500	806,000	6,887,600	63,131,50
Military and Naval Build-	2,007,000	0, .00,200	2 1,000,000	0,127,000	21,005,000	000,000	0,000,000	w,101,30
		23,000	110,000	105.000	53,000		5,000	200.00
ings	161.000					06 500		296,00
Public Buildings	161,800	551,300	161,800	136,500	1,522,500	86,500	1,366,000	3,986,40
Public Works and Public								
Utilities	4,969,800	6,486,900	8,932,400	12,438,700	46,102,800	2,863,500	29,851,100	111,645,20
Religious and Memorial								•
Buildings	826,000	1,654,700	1.933.000	3.127.000	4.554.000	229,000	2,883,500	15,207,200
Residential Buildings(a)	18,142,000	73,615,000	46,123,000	30,161,800	90,172,300	6.545.900	25,451,200	280,211,20
Social and Recreational	10,142,000	70,010,000	10,120,000	00,101,000	707172,000	0,515,500	20,101,200	200,211,20
	1 407 000	2 524 000	1,184,000	1 414 000	10.011.100	530 000	1 021 100	20 001 00
Buildings	1,407,000	3,526,000	1,104,000	1,414,000	10,011,100	528,000	1,931,100	20,0 01,200
Total	\$46,025,800	\$128,831,000	\$87,348,000	\$78,680,100	\$220,554,600	\$13,538,600	\$78,833,000	\$653,811,10



Made to Walk on

Johnson's Floor Varnish dries dust-free in two hours and hard over night. It imparts a beautiful, high lustre—has good body—will give long wear—is absolutely water-proof—and will stand all reasonable tests.

JOHNSON'S FLOOR VARNISH

Johnson's Floor Varnish is tough, elastic and durable. It gives a beautiful, high gloss which will not chip, check, mar, blister or scratch white. Is very pale in color so can be used on the lightest floors and linoleum. Splendid for furniture, woodwork and trim of all kinds. May be rubbed if desired.

FREE TRIAL OFFER

Fill out and mail the attached coupon for a pint of Johnson's Floor Varnish free and all charges prepaid. There is no obligation whatever connected with this offer. All we ask you to do is to test it out in comparison with the brand you are at present using.

D	. JOHNSON & SON, ppt. B.A6, Racine, Wis. send me free, all charges prepaid, one pint of John Floor Varnish. I will test it and report results to you	۱۰ L
NAM	E	
ADDI	ESS	•
CITY	and STATE	
[buy	Varnish from	•
	Digitized by GOOGLE	_

Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor

can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

Direct Lard Yellow wilds Section					-
Apr. as Apr.			PLASTER BOARD—	Apr. 28	May 28
B. and Better Civilag. Apply 40.00 40.00 11.1. 10.5 1		May 28	32 x 36 x 1/4 in., Each	\$0.22	\$0.22
Timbers, Merchantshie, NJ, LELLT, 10 to 27 d. 6.00 and Better Culing, 394, 194 d. 40.00 b. and Better Culing, 194, 194 d. 40.00 b. and Better Floring, 104 d. 50.52 NR. I Cames Boards, 185* (75.50) DOUGLAS FIRE- NR. I Care V. G. Phoring, 184 d. 70.00 NR. I Care V. G. Phoring, 184 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Fhoring, 194 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Fhoring, 194 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Phoring, 185 d. 70.00 NR. I Care V. G. Phoring, 195 d. 70.00 NR. I C	B, and Better Edge Grain Flooring, 13/16x21/2" Face \$96.00			450.00	***
## A search of the property of	Dimensions, SISIL, No. 1 Common, 2x4", 10"			\$70.00	\$70.00
## a m. Well. well. ## 250 200 2	R. and Better Ceiling, 15x34		I in. Square or Hexagon, White, per aq. ft	\$0.25	\$0.25
No. 1 Common Bearth, 187" 55.55 No. 2 And Aletter Flooring, 1/1625/4" 55.50 No. 2 Clear and Better Colling, 1987" 55.50 No. 2 Clear and Better Colling, 1987" 55.50 No. 2 Clear and Better Colling, 1987" 55.50 No. 3 Clear and Better Colling, 1987" 55.50 No. 4 Clear and Better Colling, 1987" 55.50 No. 5 Clear and Better Colling, 1987" 55.50 No. 6 Clear and Better Colling, 1987" 55.50 No. 6 Clear and Better Colling, 1987" 55.50 No. 7 Clear and Better Colling, 1987" 55.50 No. 8 Clear and Better Colling, 1987" 55.50 No. 1 Clear and Better Colling, 1987" 55.50 No. 2 Clear and Secter Colling, 1987"	B. and Better Partition, 34"x334"		3 x 6 in. White Wall	0.60	0.60
NORTH CAROLINA PINE	B. and Better Finish, 1x4"		O A D III. ACU E ROA	V.73	0.43
No. 2 Clear and Better V. G. Phooring, Iz' 75.50		33.20	CHICAGO PRICES		
Second 1978	No. 2 and Better Flooring, 13/16x23/4"				-
No. 2 Clear and Better V. G. Flooring, 1st 75.00	Econers , 13/10x3/2"	36.00			\$49.00
No. 1 Clear val Better Chilling Mark* 5.50 75.00	No. 2 (News and Restor V. G. Flooring, 1-2" #76.50	27 6 50			38.00
No. 2 Clear and Better Ceiling, 444" 55.0 5	No. 1 Clear V. G. Flooring, 1x4"		Drop Siding, 1x6, B. and Btr	60.00	61.00
Section Sect	No. 2 Clear and Better Ceiling, 54x4" 55.50		Flooring, R. and Str. E. G. 1x3		95.00 95.00
WASTERN RED CEDAR	No. 2 Clear and Better Novelty Siding, 126"		Lath, 4 ft., No. 1	8.20	8.20
B. C. Perfection Shaugles, per M. 97.73 97.27 washington Perfection Shaugles, per M. 95.05 10.00 1 washington Perfect Shaugles, per M. 95.05 10.00 1 washington, per M. 95.05 10.00 1 washington, per M. 95.05 10.00 1 washington, per 100 set of washington, per 100		30.00		58.00	58.00
AMADIAN SPRUCE Section		\$7.72	HARDWOODS—	e00 F0	#104 F0
AMADIAN SPRUCE	Washington Perfection Shingles, per M		Oak Flooring, 14x2 Cl. Pl. White	77.00	
No. 1 Lath, 15° 150	·	52.50	Oak Flooring, 13/16x21/4, Cl. Pl., White	108.50	118.00
ABADWOOD FLOORING—		\$9.63		047.35	A47.05
ABADWOOD FLOORING—	Dimension, 2x4", 10 to 16'				\$47.25 94.50
Clear Plans White Oak, 13/16x2548" \$12.75 12.75	IARDWOOD FLOORING—	-		71.50	J7.J0
Clear Hain Red Oak 13/16/24/* 122/5	Clear Quartered White Oak, 13/16x2x234"\$162.75		Bevel Siding, 14x4 in., Clear	\$49.00	\$53.7 5
OMMON BRICK	Clear Plain White Oak, 13/16x234"		Shingles, Extra Clears, 16 in	5.20	5.01
OMMON BRICK	Clear Maple, 13/16x214"			\$12.00	\$12.00
Per M. f. o. b. b. b. contractors, delivered	(All lumber prices furnished by Lumber)		PORTLAND CEMENT—	•	•
## STRUCTURAL STEEL— ## SINGE (can ya)— ## STRUCTURAL STEEL— ## SINGE (can ya)— ##		624 5 0	Bbis. in car lots to contractors, not including con-	\$2.20	e 2 20
Bibls in car lots to contractors, delivered. \$2.75 \$2.87 Fer 100 lb. at warehouse. \$3.20 \$	PORTLAND CEMENT	\$24.50		4 2.20	42.20
Ref 100 B. at warehouse \$3.54 \$3.66 \$4. in. \$3.00 \$3.00 \$3.00 \$4.00 \$4. in. \$2.45 \$2.50 \$4.00 \$4. in. \$3.00 \$3.00 \$4.00 \$4. in. \$3.00 \$4.00 \$4. in. \$4. in. \$2.45 \$2.50 \$4.00 \$4. in. \$4. in. \$4.00 \$4. in. \$4.00 \$4. in. \$4.00 \$4. in. \$4. in. \$4.00 \$4. in.		\$2.87	Per 100 lbs. at warehouse	\$3.20	\$3.30
No. Subsection	STRUCTURAL STEEL—	02.64	CRUSHED STONE (cu. yd.)—	\$ 3.00	e3 m
MALL BOARD	Per lw id. at warehouse	\$3.04	1½ in.	3.00	3.00
WALL BOARD— For 1,000 eq. ft. in lots under 1,000 eq. ft. \$50.00 45.00 4	14 in \$2.45	\$2.50	WALL BOARD-		
Fer 1,000 sq. ft. in lots under 1,000 sq. ft. \$50,00 \$50,00 \$1.00	1½ in. 2.35	2.40	Per 1,000 sq. ft. in lots under M	\$50.00 45.00	
EPT 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft. 45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00 45.00 46.00 45.00 45.00 46.00 45.00 46.00 45.00 45.00 46.00 45.00 45.00 46.00		eso 00		43.00	70.00
### ABTAL LATH— ### AB Jamps light price per 100 sq, yd. delivered. \$0.18 \$0.18 \$0.18 \$0.24 \$1.6 — 29 gauge plant price per 100 sq, yd. delivered \$0.22 \$2.5 \$2.			Sand (per cubic yard)	\$3.00	\$3.00
2.8 lb.—24 gauge heavy price per 100 sq. yd. delivered 0.229/ Add 5 cents per sq. yd. for galvanised. IME (Hydrate)— Finishing, per 50 lb. bag. 90.69 AND AND GRAVEL— Sand (per cubic yard). \$1.45 Sin. Gravel (per cubic yard). 2.50 Sin. Gravel (per cubic yard). 2.50 ACE BRICK— Tapestry (delivered). \$46.50 Harveale (Delivered). \$46.50 Harveale (Delivered). \$5.00 Harveale (Delivered). \$5.00 Harveale (Delivered). \$5.00 Harveale (Delivered). \$6.50 Har	AETAL LATH—		14 in Gravel (per cubic yard)	3.00	
3.4 lb.—24 gauge heavy price per 100 sq., yd. delivered 0.22½ Add 5 cents per sq. yd. for galvanized. 1ME (Hydrata)— Sand (Hydrata)— Finishing, per 50 lb. bag	2.3 lb.—26 gauge price per 100 sq. yd. delivered \$0.18		177 In. Graver (per cubic yard)	5.00	0.00
Add 5 cents per 40. yd. for galvanized, IME (Hydrats)— Max Ma	3.4 lb.—24 gauge heavy price per 100 sq. yd. delivered 0.221/2		ST. LOUIS PRICES		
Finishing, per 50 b. bag. \$0.60 \$0.00	Add 5 cents per sq. yd. for galvanized.	• -			
Masons, per 50 b bag		\$0.60	Boards, No. 1 Com., 1x4	\$45.00	\$46.50
Sand (per cubic yard)	Masons, per 50 lb bag 0.49		Dimension No. 1. S1S1E Short Leaf 2v4 in 12 & 14 ft	30 M	
Tapestry (delivered)		e1 70	Finish, S2S, B. and Btr., 1x4, 6 & 8 ft	68.00	68.00
Tapestry (delivered)	% in. Gravel (per cubic yard)		Flooring, B. and Btr., E. G., 1x3	92.50 71.50	
Tapestry (delivered)	11/4 in. Gravel (per cubic yard) 2.50		Lath. 4 ft No. 1	7.50	7.50
Harvesie (Delivered)		410 50	limbers, No. 1, rough, short lear, oxiz to izxiz m.		
Caledonian (delivered) 43.00 42.00 42.00 42.50 Smooth Grey (delivered) 52.00 48.50 Fisk Lock £ o. b. factory 42.00 42.50 Fish SLock £ o. b. factory 42.00 42.50 Fish SLock £ o. b. factory 42.00 42.50 Fish Lock £ o. b. factory 42.00 fish Lock £ o. b. factory 62.00 fish Lock £ o. b. factory 42.00 fish Lock £ o. b. factory 62.00 fish £ o. b. factory	Harveale (Delivered)			41.50	41.50
Fisk Lock f. o. b. factory	Caledonian (delivered)			404 E0	e04 50
Samplange Common Samplange Samplan	Smooth Grey (delivered)		Siding, 4 in. Bevel, 10 to 20 ft	47.25	47.25
Asphalt, Single (per square) \$8.25 Asphalt, Strip (per square) 7.00 Asphalt, Strip (per square) 2.14.50 Asphalt, Strip (per square) 2.114.50 Asphalt, Strip (per square) 7.00 Asphalt, Strip (per square) 7.00 Asphalt, Strip (per square) 2.114.50 Asphalt		42.30	8 inch Colonial	78.25	78.25
Strained	Asphalt, Single (per square)\$8.25			76.75	76.75
16 in, Extra Clear (per square, delivered) \$11.50 \$	Asphalt, Strip (per square)	7.00		114 50	e114 SO
18 in. Eureka (per square, delivered). 11.50 18 in. Perfection (per square, delivered). 12.50 18 in. Perfection (per square, delivered). 13.00 19 in. Cents per foot. 18.00 18 in. Shingles, Clears, Per M. 4.91 4.76 COMMON BRICK— Per M., f. o. b. job		\$11.50			
4 in. Royal (per square, delivered) 13.00	18 in. Eureka (per square, delivered)		RED CEDAR—		
COMMON BRICK Select Sele	18 in. Perfection (per square, delivered) 12.50		Shingles Clears Per M	\$48.00	
4 in. (cents per foot)	ITRIFIED SEWER PIPE	13.00	COMMON BRICK—		4.70
Bangor or Sixtington, 8x16 in. (per sq. at quarry) \$8.40 \$8.40 \$8.40 \$1.00	4 in. (cents per foot)	\$0.123/2	Per M., f. o. b. job	\$18.00	\$18.00
Bangor or Slatington, 8x16 in. (per sq. at quarry) \$8.40 \$8.40		0.181/2			
ORNER BEADS (Galvanized)— STRUCTURAL STEEL— \$3.45 Per Foot \$0.05 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$0.00 \$		\$8.40	tainers	\$2.35	\$2.35
VALL TIES (Galvanized)— \$0.00 <	ORNER BEADS (Galvanized)—	40,10	STRUCTURAL STEEL—		·
Per Thousand	YALL TIES (Galvanived)	\$0.05		\$3.37	\$3.43
8½ x 8½ in. Per Foot. \$0.33 \$0.36 WALL BOARD— \$0.00 \$50.00		\$5.00	3/4 in	2.18	
874 x 13 in., Per Foot 0.48 0.48 Per 1,000 sq. ft. in lots under M \$50.00 \$50.00 For 1,000 sq. ft. in	LUE LINING—	45.00	WALL BOARD	2.18	2.18
No.221/8 Sand (per cubic vard) Sand (per cubic v				\$50.00	\$50.00
8 x 12 x 12 in., heavy. Each, delivered		0.48	Per 1,000 sq. ft. in lots 1 M to 2½ M		
Page Rushal 4 in. Gravel (per cubic vard). 1.45 1.45	8 x 12 x 12 in., heavy. Each, delivered\$0.221/4	\$0.221/8		e1 20	e1 20
\$0.60 \$\frac{1}{2} \text{ in. Gravel (per cubic yard)} \tag{1.45}			1/4 in. Gravel (per cubic vard)		
	\$0.60	\$0.60	11/2 in. Gravel (per cubic yard)		

TOWERING TESTIMONY

> Two of America's finest skyscrapers erected within the last few years bear testimony to the fact that Natco Hollow Tile holds a high place in the estimation of distinguished architects and engineers. The Gotham National Bank, New York, and the Wrigley Building, Chicago, are fireproofed with Natco.

One big advantage of Natco Hollow Tile is its adaptability to all types of buildings. Skyscraper or smaller building, mansion or bungalow—Natco fills all needs, sturdily, charmingly.

There is probably a Natco expert close to your office. A post card to us will bring him to you quickly to give any possible counsel or assistance on hollow tile problems. We will gladly mail a copy of "Natco Homes" on request.

NATIONAL: FIRE : PRØDFING : COMPANY

1435 FULTON BUILDING - PITTSBURGH, PA.

VATCO

HOLLOW TILE

Digitized by Google



I F a builder agrees to provide a sevenfoot cellar in a bungalow, and aftercompletion the cellar is uneven, being only five feet in the rear and not more

Damages for Defective Basement Construction than six feet in any portion, making it extremely inconvenient after the heating pipes are installed, could the builder be held for a New Iersey sub-

damages?" asks a New Jersey subscriber.

"The shallow cellar depreciates the intrinsic value of the house much more than the cost of digging and extra concrete necessary. The foundation was dug in winter and excavating was not completed until after frost. Hence the error of judgment, and loss of chance for correction after completion.

"Would it be necessary for the builder to have signed agreement or not? He agreed to all other contracts, such as carpentry, plastering, painting, etc., for stipulated amounts and none of these agreements were signed either."

Your right to recover damages is not affected by the fact that there is no written contract for the performance of the work, provided that you are able to show that there was an agreement for the construction of a better cellar than was constructed.

If the cellar can be made to conform to the requirements of your agreement with the builder, at reasonable expense, that expense is the measure of your damages recoverable against him. However, if it is impossible or impracticable to make the cellar so conform, the measure of your recovery is the difference in the value of the cellar as it was agreed to be constructed and as it was a tually constructed.

In general the measure of damages occasioned by failure strictly to perform a building contract is, in the case of substantial performance, the difference between the value of the work done or building erected and the value of that which was contracted for. By some authorities the difference is arrived at by taking the reasonable value of the extra

work occasion by the owner in making the building conform to the contract's stipulations, or the necessary cost of. remedying defects or omissions in performance, particularly where the defects may be remedied at reasonable expense, or where the work is not done in general conformity with the specifications, but deviates from them either in plan or materials used. In other cases it is said that, in order to render the cost or expense of making the alterations or repairs necessary to conform to the contract the proper measure of damages, the general rule based on the difference between the actual value of the work and its value if performed according to contract must be shown to be impracticable and unfair. Where the defect is such as to diminish the value of the building but little, while to make the work conform literally to the contract would involve reconstruction and unreasonable and disproportionate expense, the cost of conforming the work to the specifications is not a proper measure of damages." 9 Corpus Juris, 810-811.

But your right to recover anything is subject to an assumption that you have done nothing to waive a just claim. As a general rule, an owner's acceptance of a building as in compliance with the

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the correct procedure. Questions and answers of general interest to the trade will be published in these columns. All inquiries must be accompanied by the name and address of the correspondent so that he may be answered direct or that he may be requested for further information if necessary to the intelligent answering of his question. No names will be published, only initials or a nom de plume. Remember that this service is free to subscribers. Address Legal Department, Building Age and The Builders' Journal, 239 West 39th street, New York City.

contract waives any claim for defects in performance. If your conduct caused the builder to believe that you were satisfied with the manner in which the cellar was being constructed it is too late to complain now. This latter statement applies with particular force if you, or your representative, inspected the work while it was in progress and it was then obvious that the work was not being done according to agreement.

If you have not settled with the builder we suggest that you withhold payments pending an attempt to secure an adjustment. If an amicable adjustment can not be reached it will be best for you to have some local attorney assist you.

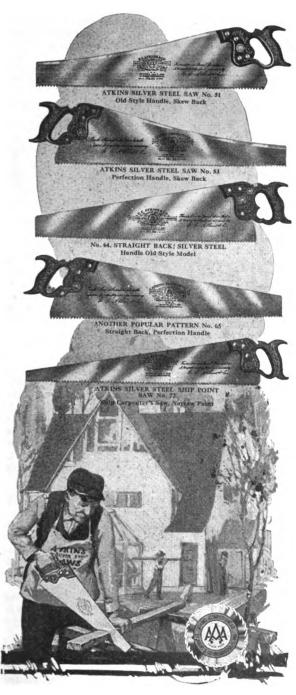
In the case of Jullien vs. Dick, 279
Federal Reporter, 993, the Court of Appeals of the District of Columbia considered plaintiff's right to recover for services as an archi-Duties of an Architect, rendered in retect to His Employ-modeling the Franklin er.—Evidence as to Square Hotel in Wash-Terms of Contract ington.

The court first holds that the fact that defendant admitted that he had agreed to pay plaintiff 10 per cent. on the cost for his services, and that he had paid more than \$4,500 did not preclude defendant from relying on a claim that the contract of employment limited the cost of the work to \$45,000. That he had overpaid the architect on the latter basis was merely some evidence tending to refute the claim that there was such cost limitation as was relied on by him.

It is also held by the court that an architect's employment implies that he will render competent service. The court refers to a decision of an Illinois court, holding that fraud is not an essential to an architect's liability on account of imperfections in work supervised by him. Following this holding, the opinion of the Court of Appeals says:

"It is well established, we think, as a principle of law, that when the architect is not the contractor, if he contracts to prepare plans and specifications, super-

AITINIS SILVERSAWS STEEL SAWS



IN ATKINS SAWS

You Get Real Taper Grinding— Not an Imitation

HEN a saw "binds" it's the fault of the saw, not the sawyer; except, of course, the sawyer was to blame for buying the wrong saw.

ATKINS Silver SAWS

are ground to a taper, from the teeth to the back, then tapering on the radius of a circle; the thickest part is at the handle and tapering to the point, the thinnest part. In other words, the taper is from teeth to back and from heel to point. That's what makes Atkins Saws cut free and easy.

We furnish them in regular or ship point widths, straight or skew back, equipped with old style block handle or the latest and most scientific handle—the handle that eliminates wrist strain—the Improved Perfection.

Free—Write for "Saw Sense," the book of facts, also educational literature, "How to Care for and Use Cross Cut and Hand Saws." Enclose 39 cents for nail apron and useful souvenir.

E.C.ATKINS & CO.

ESTABLISHED 1887 THE SILVER STEEL SAW PEOPLE
Home Office and Factory, INDIANAPOLIS, INDIANA
Canadian Factory, Hamilton Ontario

Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks in The Following Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore. San Francisco

Seattle Paris, France Sydney, N. S.W. Vancouver, B.C. intends the work by the contractors, and issues the usual architect's certificates. certifying that the work has been properly performed, any failure to see that the work has been so performed by the various contractors, in accordance with the plans and specifications upon which the contract is based, may be availed of as a defense in an action by the architect for services rendered. The builder contracts with the architect for competent service, and if incompetent or negligent service is rendered, as the result of which the builder is damaged, the architect may not recover, or his claim may be subject to offset, in whole or in part, by damages shown to have been sustained through his incompetence or neglect. In such a case the consideration fails, since the thing which the architect contracted to furnish was not delivered."

TWO interesting decisions lately handed down by the Appellate Division of the New York Supreme Court deal with the status of carpenters as

When Carpenters are "Independent Contractors"

"independent contractors," a class not brought within the benefits of the workmen's compensation act.

In the first case-Ball vs. Bertelle's Estate, 195 New York Supplement, 150it appeared that claimant was employed by defendants to repair certain roofs and a veranda. He was to do the work at odd times, furnishing his own tools and nails. Defendants furnished the shingles, and reserved no control over claimant beyond indicating where repairs were to be made. In the course of the work, claimant was injured and sought an award under the compensation act, on a theory that he was an "employee" of the defendants. Defendants successfully resisted the claim; the court holding that claimant was an "independent contractor."

In the other case-Bache vs. Salvation Army, 195 New York Supplement, 151it appeared that one Wing, a carpenter, was employed by defendant to make certain alterations in its building. He employed claimant and other workmen to assist him, charging defendant per diem wages for each man's work, and purchasing necessary material and charging defendant enough to give him a margin of profit. Claimant was injured in the course of this work, and sought compensation from defendant on the theory that he was an indirect employee of the defendant. Holding that there was no valid claim under the compensation act, the court said:

"We have here the very common transaction of a mechanic or contractor furnishing labor and material in repairing a building for another, and for which repairs he is paid either a reasonable compensation or a price fixed by the terms of the contract. The men employed by him are not ordinarily employees of the owner of the building. In the present instance there was no contractual relation between the claimant and the Salvation Army. It is a matter of indifference that on particular occasions, in the absence of Mr. Wing, directions may have been given by the representative of the Salvation Army as to the particular places where he desired the work to progress and the particular kind of work to be done. He did not assume to give directions as to the method of performance or the means or procedure in the accomplishment of the work. . Whatever directions were given by this representative were such as would have been given to Mr. Wing, if he had been present, indicating the nature of the work desired, and did not affect the relationship of the parties. . . .

"There is no evidence that the claimant owed any allegiance to the Salvation Army nor any responsibility to it as its employee. It seems very clear that he was not an employee of the Salvation Army, but of Mr. Wing, an independent contractor."

I N the case of Dalk vs. Rowntree, 206 Pacific Reporter, 22, the Washington Supreme Court had before it a suit to enforce a mechanic's lien on account of

Rights Under Millwork Contract Determined millwork furnished for a building under agreement with a general contractor. Among other defenses interposed defendant own-

er and contractor relied on plaintiffs' failure to apply a priming coat to window frames and delay in furnishing the millwork.

The agreement bound plaintiffs to furnish specified doors, window sash frames, etc. Disposing of the case on appeal, the Supreme Court said:

"The specifications do not state that the priming coat shall be a part of the millwork, but only require that the window frame be so prepared before they are placed. The respondents did not contract to furnish the millwork as set out in the specifications, but gave a list of items which they would furnish. In this list and acceptance thereof there is no mention of the painting of the frames before they are set. The rights of the parties as to this point must be determined by the proposal of the respondents and the acceptance by the appellants, and under this contract they were not required to do the priming. As to the matter of custom, one witness testified on direct examination that it was the custom for the priming coat to be put on by the millwork manufacturer, but on cross-examination stated that he did not know this to be a general custom, but that it was only the particular custom of the plant with which he was familiar. This testimony would not sustain the finding that there was a general custom which would require the respondents to put on the priming coat when the contract between the parties was silent upon the matter.

"The last contention is that the offset for damages claimed to have been caused by the delay of respondents in furnishing the millwork should have been allowed. The contract contained no time as to when the material should be delivered, and consequently under the law it was necessary that it be delivered within a reasonable time."

PLAINTIFF accepted a subcontract to do "all masonwork on cellars according to plans and specifications not including any plastering of cellars." The specifications re-Term "Masonwork" Interpreted ferred to required cement floors of certain in Relation to a thickness. Plaintiff C ment Floor claimed extra com-Subcontract pensation on account of the floors. But the Massachusetts Supreme Judicial Court holds in the case of Meegan vs. Hall, 135 Northeastern Reporter, 555:

"The [trial] judge left to the jury the question whether the parties intended that the agreement of the plaintiff to 'do all masonwork on cellars according to plans and specifications' was to include cementing cellar floors. The specifications are free from ambiguity; and it should have been ruled as matter of law that the plaintiff could not recover this charge, notwithstanding the testimony of the plaintiff's husband that all masonwork in the cellars 'meant everything in the shape of holding up the building. That would mean the walls around and under the building that hold it up.' This evidence cannot control or annul the plain and unambiguous terms of the specifications."

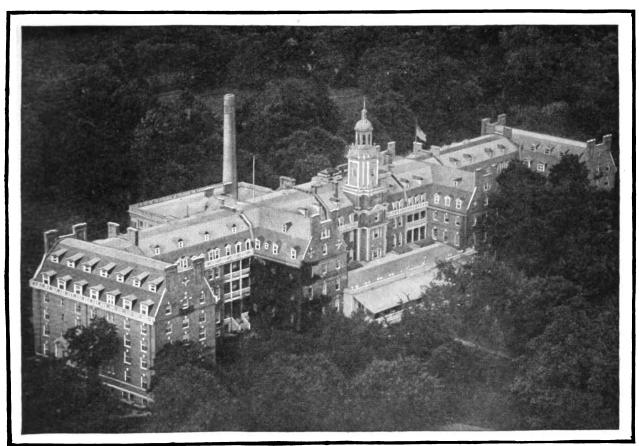
A CONTRACT to install basins, with provision that "all those fixtures [are] to be fixed proper with hot and cold water," bound the contractor to

Sufficiency of Performance Under Contracts make hot-water connections, held the Appellate Division of the New York Supreme Court in the case of Coopersmith vs.

Wang, 197 New York Supplement, 419.

It was also decided that failure to make such connections constituted a

make such connections constituted a substantial breach of the contract, preventing recovery on the contract by the contractor.



Garden City Hotel, Garden City, L. I., Reroofed with Johns-Manvillo Asbestos Shingles.

Get the big jobs too—

Re-roof with Johns-Manville Asbestos Shingles right over the old roof

You can land big orders for re-roofing with Johns-Manville Asbestos Shingles right over the old shingles—along with the steady, consistent business that you get from dwellings day in and day out.

A job like the Garden City Hotel, shown above, would make a pretty good showing on your books, and there are a lot of such jobs all over the country just waiting for some one to go in and get them.

Suburban and Summer Hotels, Churches, and other large shingled buildings are all good prospects.

The beauty, permanence and fire safety of Johns-Manville Asbestos Shingles are powerful arguments in getting this business. Hotels, Churches and other buildings of this type must have attractive roofs. Naturally, it is extremely important that they be as fire-safe as possible.

And as the owners are always anxious to have the job finished once and for all, quickly and without unnecessary annoyance you have a proposition that will immediately appeal to them.

You can "re-roof all such buildings for the last time" with Johns-Manville Asbestos Shingles—right over the old roof —a quick, clean and easy job; no trouble from rainstorms in the middle of the job —no dirt, dust or delay.

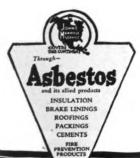
JOHNS-MANVILLE Inc.

Madison Avenue at 41st Street, New York City

Branches in 56 Large Cities

Por Canada:

CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto



JOHNS-MANVILLE Asbestos Shingles

ELECTRICAL WORK

Wiring-Fixtures-Devices for Lighting and Power



Some Conveniences Houses Should Have

By A K. BAYLOR

Chairman of Wiring Department, Joint Committee for Business Development

O have a house as efficient from an electrical standpoint as possible, it is, of course, necessary to have many convenience outlets to take care of every possible need for electrical appliances. There are two little items, however, that have not received as much attention as they deserve and these are illustrated in the pictures herewith.

A convenience floor outlet should be placed under the dining room table as then a chafing dish, percolator, toaster, etc., may be used directly on the table. The electric current can be turned on or off by a simple push button switch attached to the flexible When building a house do not fail to suggest this to the owner if it has not been specified. Its slight extra cost will be more than



offset by the convenience it will give the occupants and you will find that they will be sure to have a good word to say about you for your thoughtfulness.

Another convenience is to have a light in each closet. Anyone who has had to grope for someting in a dark closet will appreciate this improvement and it will certainly be appreciated in the home. A switch that will turn on the light when the door is opened is very handy and it closes off the current when the door is closed. There has been some objection to this arrangement, however, because some would leave the closet door open, in which case the lamp would be constantly burning, while the door was open.



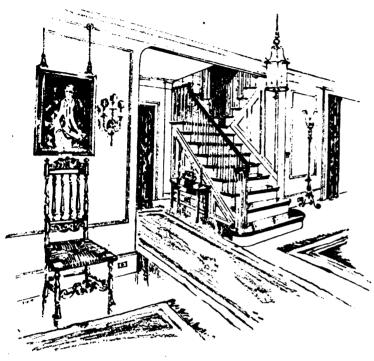
Above, candelabra fixture with switch placed back where it is practically out of sight. To show it clearly the candle tubing has been

To the right, the light in the closet is shown. In large closets hang from center of ceiling. In shallow ones place above the door on the inside of closet.

To the left, picture shows switch controlling toaster. A wonderful convenience when attached to floor outlet



HUBBELL





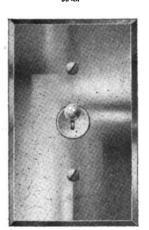
Single Convenience Outlet with Round Plate, assembled; 6282-234"; 6283-334".



Duplex Convenience Outlet No. 6257 porcelain, No. 5890 composition, with Plate No. 6258.



Single Convenience Outlet No. 5547 porcelain, No. 5850 composition, with Plate No. 5548.



Service Type Toggle Switch No. 8141 with Plate No. 8401.

Hubbell Convenience Outlets live up to your Reputation

Hubbell Electrical Wiring Devices indicate the quality of the material and workmanship which have been put into a house.

Hubbell Convenience Outlets stand every inspection. Their bevelled double Te Slots take all standard plug caps, and concealed double contact springs insure firm electrical connection. Shallow bodies one-inch deep for thin wall sections; large, easily wired terminals,—they present a complete line that will live up to your reputation.

Let us furnish you with circulars, illustrating and describing our electrical wiring devices.



ELECTRICAL SPECIALTIES

The Value of Finished Floors

Profitable Line of Work for Builders

By ALBERT FAIR

PARTICULAR attention should be paid to the floors of every residence that one builds, as it is a part of the house that is always visible. If a good job is done, the owners will take pride in telling about the fine floors they have and, of course, this reflects directly on the builder.

Good floors may be had by using white pine or yellow pine as they both make excellent finished floors, especially if care is taken to select edge grain pieces. Even where the strictest economy is necessary, the appearance of the floors can be improved by selecting the best pieces for the places that will show the most.

At but slightly extra cost, hard-wood floors may be used and when properly finished, they become the pride and joy of the owners. Where a sub-floor is laid, the 3/8" thick hardwood flooring answers the purpose and is quite economical as it gives the desired effect at moderate cost.

The hardwoods mostly used for floors are maple and oak, either the red or yellow varieties, and both can be had in either plain or quartered sawed. Birch and beech are also used to quite an extent and all finish up handsomely.

Particular attention must be paid to the proper laying of a hardwood floor if a good job is to result. In a hurry to get a job finished within a limited time, the tendency has been to put down finished floors before the plastering has had time to dry. It must be remembered that dampness will cause a swelling of the hardwood strips, which it will be quite difficult to overcome. The only way you can do it properly is by cutting in a new strip. The beauty of a hardwood floor will be spoiled if it is not properly laid and fin-

The extra cost of a hardwood floor is almost negligible in the total cost of a house, but it adds to its value in far greater proportion to its extra cost. A good floor not only improves the appearance of the room in which it is placed, but makes a good talking point when selling the house. Speculative builders have found this out as no matter what other omitted details they save on, they are always sure to put in a good hardwood floor for the simple rea-

son that they know it is one of the items that always please home bayers.

Builders should impress this little fact upon parties who are having their own home built; show them the value of better floor material and urge them, for their own sake, to put in a good floor. Tell them that besides having the beauty of a handsome floor that there is also an economical side to the subject and that it will actually save them some money in the not very distant future. A cheap floor necessarily means that it must be entirely covered by a carpet, linoleum, etc., while a hardwood floor is so beautiful in itself that it needs only a few rugs to set both off.

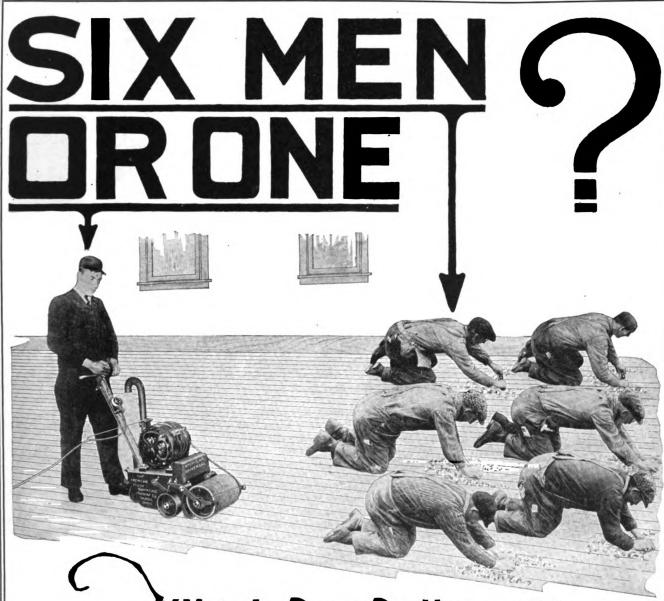
Before a floor can be finished by the painter it should be scraped. This, of course, can be done in the old way, by planing off the higher spots and then finishing with a hand scraper, but this is rather an expensive way to do on any but the smallest surfaces. Wages of carpenters are too high today to resort to much hand work, when machines can be had that will do the work much better in practically every case and in far less time.

Different machines can now be had at moderate price compared with the work they do. There are on the market several very efficient types of floor finishing machines and one of these should be included in the equipment of every builder.

It is not only on new work but on old work as well that they can be used to advantage. But laying and finishing hardwood floors is not only good business on new buildings, but is also a profitable line of work to follow when the weather is bad and if the progressive builder canvasses for a number of such orders in his vicinity he certainly can keep his machine and men busy on all bad days when outside work is impossible.



Here is the advertisement of a builder who became a floor laying expert. This is a specialty that will be a profitable line of work for any contractor.



Which Pay Roll would You rather Pay?

The "American Universal" floor surfacing machine does the work of six men scraping floors by hand. In other words, where it costs you \$48.00 for hand scraping, the "American Universal" will do the same amount of work for you at a cost of only \$8.00—an actual saving of just exactly \$40.00.

Are you paying the \$48.00 or the \$8.00? There is a whole lot of difference. Why not add the \$40.00 to your profits?

The "American Universal" is simplicity itself, both in mechanical construction and actual operation. No experience is required in order to turn out an A-1 job at a rapid rate of speed.

FREE FIVE DAY TRIAL OFFER

We will welcome the opportunity to ship you an "American Universal" to try it out for yourself five days FREE OF CHARGE.

Clip the coupon today and mail it to us. We'll gladly send you full particulars and free catalogue by return mail.

American Floor Surfacing Machine Co. 521 South St. Clair Street, Toledo, Ohio

HERE'S THE COUPON

lars ar offer.	d free	catalogu	e. Als	o expl	ain you	ır five-day	, trial
Name							
Street	Address		:				
City .				State			

Digitized by GOOGLE

USEFUL CATALOGS



Weather proof paint that reduces fading tendencies, does not darken on exposure and that does not wash off, is offered to builders by the Master Painters Supply Company, 160 Front Street, New York City. This paint is made of zinc ground in refined linseed oil and mixes readily with other painters' pastes. An interesting folder describing in detail its varied use can be had from the manufacturer.

Transportation of Materials has made rapid strides within the past few years. The modern motor truck must have endurance along with power. A truck of quality equipped with the latest in mechanical attachments is manufactured by the Federal Motor Truck Company, Detroit, Michigan. A forty-eight -page catalogue gives a full description of parts used in this truck and a chart of the truck chassis. Builders and contractors using motor trucks should investigate by sending for this catalogue.

Built-in kitchen equipment of new and compact design is made by the Wasmuth Endicott Co. of Andrews, Ind. A fully illustrated catalogue of cupboards, tables, chairs and other kitchen fixtures can be had upon request by builders who desire to produce smart appearing kitchens.

Refrigerators that can be adapted to outside icing and that are also suited for use with any domestic refrigerating machine are illustrated in a booklet containing sizes, weights and prices. It is published by the Jewett Refrigerator Co., Buffalo, N. Y.

Metal weatherstrips of a unique and highly efficient pattern are manufactured by the Allmetal Weatherstrip Co., 126 W. Kinzie St., Chicago, Ill. These weatherstrips are suitable for use on double hung and casement windows and thresholds. A self-adjusting automomatic door bottom which keeps out dust, dirt and rain is also featured and is a delight to every housewife. A pamphlet giving illustrations and description will be furnished upon request by the manufacturers.

Kitchen ranges with half gas and half electric arrangements are offered to the builder. These ranges give beauty to the modern housewife's kitchen. The ovens are equipped with thermometers and have four burners. Electric ranges, gas ranges and furnaces are also placed on the market by the Magee Furnace Co., 38 Union St., Boston, Mass. Builders, should get their customers interested in the most modern devices.

Roof and dock cloth is a utility that will meet many building needs. It is a material adapted to many conditions which require weatherproof, durable, flexible covering and is especially adapted for roofs and floors of sun parlors and piazzas as it will not crack or peel. Builders can secure a handy book of samples and directions for laying from John Boyle & Co., Inc., 112 Duane St., New York City.

Construction machinery of every description, including concrete block machines, concrete mixers, diaphragm pumps, hoists, backfillers and tampers of the latest design are illustrated in numerous catalogues issued by the Construction Machinery Co. of Waterloo, Iowa. Every contractor will be interested in these time and labor saving devices.

Structural slate has many building uses, and for this reason the Structural Slate Co., of Pen Argyl, Pa., has published a series of books in fifteen parts, explaining its manufacture, its uses, cost and specifications. These books are of great interest and will make excellent reading for the builder contemplating the use of slate in his constructional enterprises.

Store fronts of an improved type are described in a catalogue published by J. W. Coulson & Co., Columbus, Ohio. This book gives illustrations that show how these store fronts are put together and builders of structures containing stores should send for it so as to be thoroughly posted.

Stained shingle thatched roofs lend an atmosphere of dignity and coziness in any home. A large book containing beautiful plates of homes with thatched roofs is published by the Creo-Dipt Co., Inc., North Tonawanda, N. Y., and builders will find it of great interest.

Art stone manufacturing is described in a series of pamphlets published by the Art Stone Co. of Waynesboro, Pa. The manufacture of this material is a business in itself, and every builder will do well to acquaint himself with the recipe that will enable him to make his own.

Saws and saw tools of quality are fully illustrated and described in a two hundred and sixty-four-page catalogue issued by E. C. Atkins & Co., Indianapolis, Ind. Saws for every purpose are offered the builder and this valuable book should be in his file. In sending for it, mention catalogue No. 18.

Roofing canvas particularly adapted for porch roofs and piazza floors is manufactured by the William L. Barrell Co. of New York, Inc., 50 Leonard St., New York City, who will furnish builders with a book of samples and catalogue entitled "Roofing Facts and Figures." This booklet explains the many uses of roofing canvas.

Stuceo that can be applied in any climate regardless of temperature is described in a catalogue published by The Bishopric Mfg. Co., Cincinnati, Ohio. This booklet fully describes and illustrates the many uses of magnesite stucco, plaster base and sheathing for interior and exterior work. Every builder should send for this catalogue.

Compo-board, its construction and uses, are described and pictured in a catalogue published by the Compo-Board Co., Minneapolis, Minn. Compo-board saves time in erecting walls and ceilings, is durable and is extra fine for use in partitions, lining summer homes, garages, etc.

Digitized by Google

National A - an - A Shingles

cost less to apply because

they are 36" wide (4 in 1)

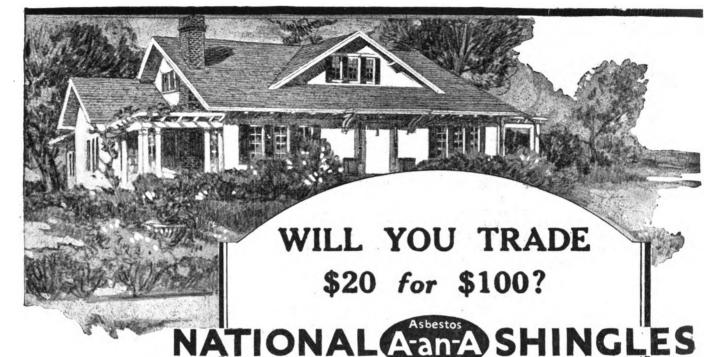
as against 32" in other

makes. This means a saving

of 121/2% in nail and labor

costs, or about 40 cents per

square.



National A-an-A costs about \$20 more per roof over ordinary asphalt shingles, but any house you build can be sold for \$100 more because with the deed you hand the purchaser our

20-YEAR GUARANTEE—THAT

- 1. Water will not leak through the material.
- 2. Fire will not burn through the asbestos.
- 3. The shingles will not curl.

If the house was roofed with any other asphalt shingles (no matter whose make) the buyer could only secure from the maker a 10-year guarantee (most makers give no guarantee), and the chances are that before twenty years a new roof would be required, and this would cost two or three times \$100.

NOTE THE DIFFERENCE

National A-an-A Shingles

Two-layer base of sheet Asbestos, *origin* mineral, consequently non-perishable and fireproof, plus double layer or 50% more of solid asphalt (the real weather resister).

Class "B" Fire Underwriters' Rating (the highest awarded asphalt shingles).

Guarantee against curling.

Ordinary Asphalt Shingles

One layer of Rag Felt, origin animal and vegetable. Perishable and not fireproof, plus only one layer of solid asphalt.

Class "C" (or lower) Fire Underwriters' Rating.

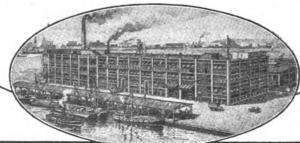
Known fact that Rag Felt base shingles do sometimes curl.

If not obtainable at your building materials dealer write us direct.

NATIONAL ASBESTOS MANUFACTURING CO.

163-193 Henderson Street

Jersey City, New Jersey



The Factory Back of the Guarantee

Wire cloth is in big demand at all times and even more so now when screens are needed in the home. All new homes should be equipped with a full set of screens for doors, windows and porches. A book of samples can be secured by any builder by writing to the American Wire Fabrics Co., 208 South La Salle St., Chicago, Ill.

Window glass is an essential factor in the appearance of a home. Glass of surprising strength for its thickness and of flawless quality is manufactured by the American Window Glass Co., Pittsburgn, Pa., who will send full information to any builder upon request.

Concrete mixers of a new labor and time saving design are a great convenience to builders on the large or small job. They are light of build, simple of operation and speedy in mixing a batch of concrete. Illustrated catalogues can be procured from The Jaeger Machine Co., 216 Dublin Ave., Columbus, Ohio.

Brick is not as commonplace as most people believe. It has a surprisingly interesting history to it, dating back to the days of Babylon and its hanging gardens. This history is outlined in a book entitled "The Story of Brick" and published by the American Face Brick Association, 110 South Dearborn St., Chicago, Ill. Builders should send for this book before ordering brick, as some fine illustrated pictures of the many uses of face brick are given in it.

Open fireplaces give any home an atmosphere of coziness and comfort. What is more attractive than a blazing log fire in an open fireplace with a big easy chair in front of it? Builders will be interested in a catalogue of designs of fireplaces published by the Donley Brothers Co., Cleveland, Ohio.

Concrete mixing and brick machines are offered the progressive builder in a catalogue containing prices and illustrations, published by the Concrete Equipment Co., Holland, Mich. A oneman brick machine of latest pattern is illustrated and will be found to be a big saver of time and labor to the builder.

Hardwood flooring is an important adjunct to any home. Not only does it impart beauty to the rooms in which it is laid, but it is a good selling point in disposing of a home, when a builder can state that the house has hardwood flooring throughout. In price, it is within the reach of everyone. Maple, beech and birch hardwood flooring are the subjects described in a forty-six-page boo's published by the Maple Flooring Manufacturers Association, Stock Exchange Building, Chicago, Ill.

Woodworking machinery that is a time and labor saver to every builder is fully illustrated and described in a catalogue published by the W. F. & John Barnes Co., Rockford, Ill. Builders contemplating the installation of this type of equipment should send for this book-

N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested; but, should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Floor bridging made of sheet steel that has for its main points strength, economy, durability, efficiency and rigidity is described in a pamphlet containing full specifications, illustrations and directions for use. The Graf-Worch Mfg. Co. of Columbus, Ohio, will forward this catalogue to any interested builder.

Window frames can lend much of beauty to a home and this fact is proven in a little booklet issued by the Andersen Lumber Co. of South Stillwater, Minn. Illustrations showing construction of these frames and describing how to install them make interesting reading for the builder.

Wood for all purposes in the interior of the home is described in numerous pamphlets entitled "Architectural Uses for Wood," published in eight parts by the Southern Pine Association of New Orleans, La. Builders may procure the series of booklets by writing to the above-mentioned association.

Flintkote roofings, simple of application, weatherproof and fire-resisting, are manufactured by The Flintkote Co., Inc., 342 Madison Ave., New York City. Black waterproof paper, asphalt felt and sheathing paper are also featured in this catalogue that will interest the builder.

Soft water is most desirable in the home, etc., and in localities where hard water only is obtainable. A water softener is a great convenience. Builders should include them in every house they build as they can be easily installed with the original plumbing. Soft water will keep the heating system and all piping in good condition from the start. An interesting booklet on this subject, full of facts for builders, has just been published by the Permutit Co., 440 Fourth Ave., New York City.

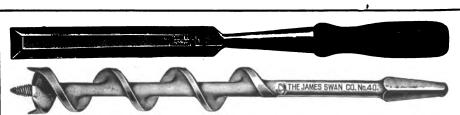
Copper and brass materials used in building are graphically described in a book entitled "How to Build a Better Home," published by the Copper and Brass Research Association, 25 Broadway, New York City. Builders requiring long lasting fixtures should send for this book.

Casement windows that swing open li'e doors are thoroughly explained in a twenty-one-page catalogue published by the Casement Hardware Co., 230 E. Ohio St., Chicago, Ill. The feature of these windows is not alone in the increased ventilation, but in the charm and beauty they lend to a home. Builders desiring to give the utmost in the physical charm of a home should send for this book.

Floor surfacing machines are an essential factor in the laying of hardwood flooring. Machines of latest type. equipped with electric motor, silent high-speed chains and edge sanding drum, are manufactured by the American Floor Surfacing Machine Co., 518 South St. Clair St., Toledo, Ohio, and builders should send for their catalogue.

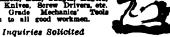
Hoists that are built not just "good enough," but to be more durable than necessary, are manufactured by the Brown Clutch Co. of Sandusky, Ohio. These hoists are a necessity in construction where material has to be lifted above the first floor level. A fully illustrated catalogue, containing prices. can be secured by the interested builder.

Registers of a design that increase air capacity and give the home owner the last word in heating efficiency are manufactured by the Hart & Cooley Co., Inc., New Brintain, Conn. An illustrated catalog gives full specifications.



LOOK FOR THE "SWAN" TRADE

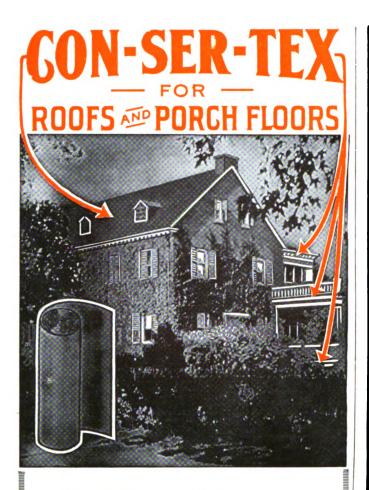
On Chisels, Bits, Gauges, Auge Draw Knives, Screw Drivers, e High Grade Mechanics' Te known to all good workmen.



THE JAMES SWAN COMPANY, Seyn Awarded the Medal of Honor on Mechanies' at the Panama-Pacific Exposition

Building Age THE BUILDERS' JOURNAL





Building Economy

OO often necessary building or repairing jobs are delayed or neglected because of the continually increasing price of roofing materials and labor.

Consertex Canvas Roofing and Flooring will solve the problem for you. Consertex is the ideal covering, inexpensive and easy to lay. It is made of chemically treated, specially woven fabric that will not crack, stretch, peel or shrink in years of hardest service. Its superior construction makes it waterproof, windproof and soundproof. It makes for an attractive finished job.

Consertex Canvas Roofing and Flooring saves costs in two ways: The price of the material and decreased labor cost through speed in laying.

Our booklet "Roofing Facts and Figures," discusses and illustrates Consertex and its various uses. Write for a copy.

WILLIAM L. BARRELL CO. of N. Y., Inc.

50 Leonard Street

New York City

Chicago Distributors: Geo. B. Carpenter & Co. 430-440 North Wells St. California Distributors: Waterhouse-Wilcox Co. San Francisco and Los Angeles

FLOORS

The Wood-Mosaic Kind

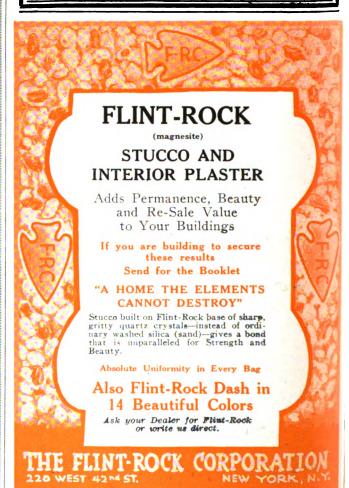


For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana



Digitized by GOOGIC

BUILDING AGE

AND

THE BUILDERS' JOURNAL

New York, July, 1923

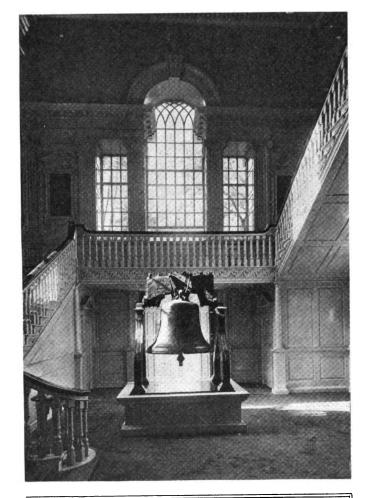
The Restoration of Independence Hall Our Country's Shrine

JULY 4th brings to all Americans a feeling of reverence for the wisdom and bravery of the signers of the Declaration of Independence. Many of us have made the pilgrimage to the State House in Philadelphia where they met, and this famous building is now known the country over as Independence Hall.

Unfortunately, too many of our historic buildings have been allowed to deteriorate and many were torn down. Independence Hall, however, was saved from a like fate. It shatters one's ideals rudely to make a pilgrimage to a historic building and find it in decay.

Such was the case before the actual work of rehabilitation started on the old Independence Hall at Fifth at Chestnut streets, Philadelphia, Pa.

A bit of the history of this shrine will not be amiss, as it is dear to the hearts of all Americans, and its re-



Proclaim Liberty Throughout All the Land Unto All the Inhabitants Thereof.—

Leviticus XXV, 10

habilitation will place it in first class shape and in its original condition as far as historical correctness is concerned.

Heating, painting, woodwork and fire protection were gone into thoroughly, so that the building now presents a spic and span appearance and is the pride of Philadelphians and others.

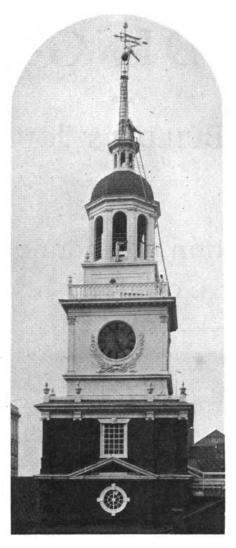
Independence Hall was built during the years 1729 and 1734, and in October, 1735, was first used as a State House. It was designed and built under the supervision of Andrew Hamilton. From 1775 to 1800 it was used by the Colonial Congress, and by the State Legislature until 1804. The Declaration of Independence was issued from the Hall on July 4, 1776, and the Constitution of the United States was, in 1787, adopted there.

The old Liberty Bell, the Nation's most priceless relic, so closely identified with the birth of the Government, and which "Proclaimed Liberty throughout the Land," occupies a prominent position in the Hall. In 1778, when the American forces were about to leave Philadelphia, the bell was taken to Allentown, to prevent its falling into the hands of the British, who were then about to occupy the city. In 1782 it was brought back, and for fifty years, as nearly as can be ascertained, it celebrated every National Anniversary, and then—it cracked.

In 1790, Congress decided to return to Philadelphia, and for the next ten years the State House served as the Capitol of the Nation. In the building at the corner of Sixth and Chestnut streets, then known as Congress Hall, Washington and Adams were inaugurated for the second term of their Presidency and Vice-Presidency; and Jefferson in 1797.

The building has also been used for United States Courts and District Courts, and almost all kinds of legal tribunals have at different times been accommodated within its sacred walls. In 1854, when the city proper was consolidated with all the outlying towns and districts in Philadelphia County, the Municipal Government determined upon using the State House itself, and gave notice to the United States courts to remove from the second story.

From that time until March, 1895, City Councils occupied the second floor; the east chamber over Independence Hall being fitted up for the Select Council, and the west one for the Common Council. In April, 1895,



Repairing the steeple of Independence Hall. Some idea of its size can be had by a comparison with the height of the workmen. It is much larger than it seems, due to its well proportioned design. Below is a view of the Chestnut Street side of the building.

the present Council chamber at City Hall were first occupied, since which time the old "State House" has been restored to its original condition. Portraits, furniture and other matters of Revolutionary days are exhibited on the lower floors.

Comprised in the group are the State House (Independence Hall), the wings, originally the Province Halls, Congress Hall and the old City Hall. These represented, as Wilfred Jordan, Curator of the Square, has well said, in one symmetrical, balanced group, five structures representing in historic association and significance the Municipal, State and Federal Governments, identified with the founding of the Republic.

Recent restoration attempts, prior to the latest, had resulted in producing closer architectural fidelity of outline and appearance, but little had been done by way of modernizing the heating and ventilating systems, which were also placed in first class condition in connection with the other work. Old records were searched out, historians got their heads together and every effort has been made to bring the final effort up to the scheme of the original building designs, and modernize them at the same time.

In its original design Independence Hall proper was intended to be a simple rectangle without a tower, a fact little known. The principal front on Chestnut street was to be ornamented with stone quoins at the angles, stone band courses and keystones and between the upper and lower windows a row of plain stone



panels, all presumably as it now stands.

On the opposite or south side, economy compelled the omission of the decorative stonework and brick was used throughout.

As to the interior arrangements, a central hall, wide enough to include the door with a window on either side was to run through the building. In this hall, one early plan shows the proposed stairway with large rooms opening to right and left on each floor.

After the outside walls were under way the scheme was quite revised. It was decided to put the stairway in a separate tower extension at the back. These facts have but recently been established. This change permitted a more monumental treatment of the stairs and gave more room in the

such as was used by the Judges, with flights of steps at either end. The doors on each side of the original fireplace were discovered during the restoration of 1896-7; that on the northeast led to the east wing in a similar manner as in the Supreme Court room.

scheme and in the execution of the detail. The pitch of the upper portion of these stairs has been changed in recent years to meet the level of new floors laid in the rooms of the second story. This, however, will be changed back to its original angle.

The details throughout the second floor are all modern. This floor has been altered many times since it was first built, and while the general arrangement is much as it was originally planned, the present architectural treatment in detail is inaccurate and not as it originally existed. It is now proposed to alter this and have it restored to the original plan.

The City of Philadelphia has taken every precaution to guard against fire by placing a first class sprinkler system throughout the building. There is nothing in America, or in fact in the world, that compares with the



The rear facing Independence Square is the most picturesque side of this noble structure.

building itself. The central hall was no longer needed to be as wide as at first intended, hence to enlarge the east and west rooms, the cross division walls were moved close together (just as they stand today), until they came directly opposite the north and south windows on either side of the main doorways.

In both the Declaration chamber and Supreme Court room, pilasters take the place of the engaged columns of hall. Against the west wall of Supreme Court chamber there has been restored the raised platform, The fact that an exten ion existed on the east gable of the hall was only recently discovered upon close examination of early maps of the city, which plotted the buildings within each city block, which shows distinctly in the ground plan of the State House, the offset projecting from the east gable wall to the south, clearly indicating the outline of such a building.

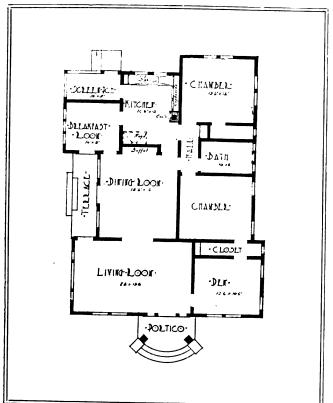
The beautiful stairway in the tower is a remarkable example of Colonial or Georgian architecture, both in dignity and richness of the general

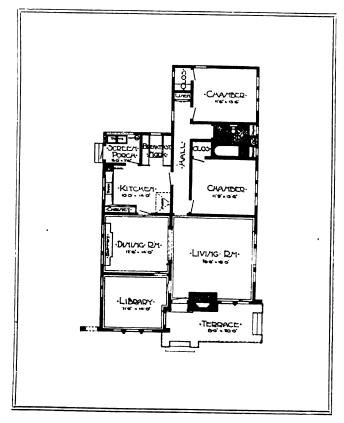
fire prevention measures taken to safeguard and preserve a historic shrine such as this.

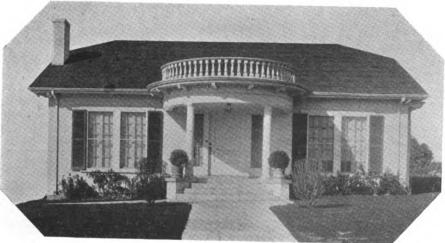
The Philadelphia Chapter of the American Institute of Architects were very much instrumental in getting this work attended to and brought to a head, as they spent considerable time and money to obtain original drawings that would help in the work. This restoration work has been practically finished after much expense and careful supervision, and is a model of expert workmanship and attention to detail. C. H. Thomas.

Attractive Bungalow Homes





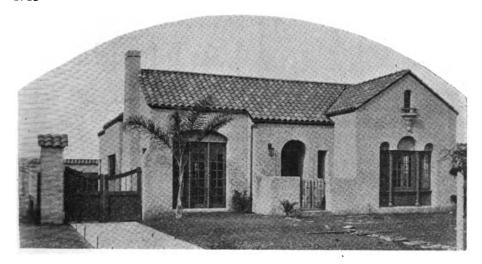




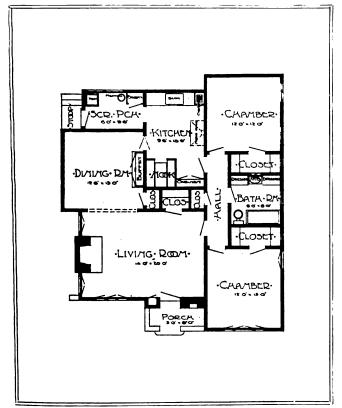
OWHERE, perhaps, has the bungalow home developed so much as in California and her native architects and builders have evolved many features for convenience and economy.

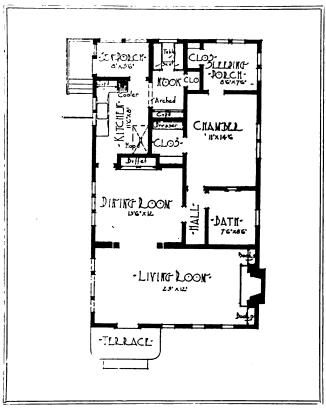
In the four bungalows shown here a convenient room arrangement has been provided with beautiful exteriors. Two designs are stucco finished and the other two clap-boarded.

On both stucco designs Spanish clay tile roofs are used over the gable parts; the balance of the roofs to the rear are flat and covered with tin.



Four California Designs

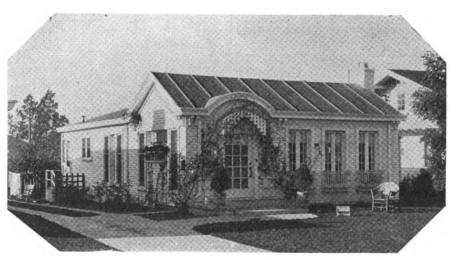


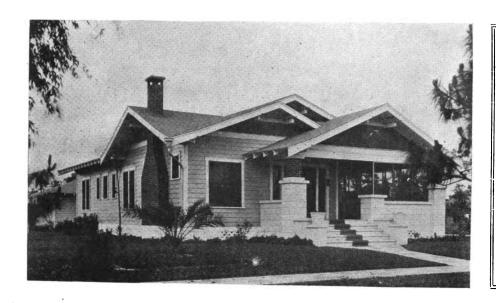


The roof of bungalow with the circular porch is covered with wood shingles in horizontal striped effect produced by doubling the shingles at every sixth course.

The other clapboard covered bungalow also has a novel roof covering effect. Battens are nailed vertically at regular distances apart, then roof and battens are covered with sheet zinc or copper roofing and allowed to weather, producing a handsome effect.

These four bungalows were recently erected in a suburb of Los Angeles, Cal., by the De Luxe Building Co. of that city.





A Florida Bungalow Home

A. A. STEBBINS,
Architect,
St. Petersburg, Fla.

ROM Maine to California and from Washington to Florida, bungalow homes are growing in popularity. They meet the want of home owners who prefer all their rooms on one floor. The different pictures giver on these two pages, show exterior and interior views of a very convenient and moderate cost bungalow built at St. Petersburg.

These different pictures were expressly taken for us by Mr. William G. Bennett, who was formerly manager of Building Age, and who has now retired; he take great delight in spending his winters at the "Sunshine City," as St. Petersburg is called. A little snapshot of Mr. Bennett is given on the next page, showing him under the palm trees—some life!





This bungalow is a most conveniently arranged home. The rooms being large and airy. A tenfoot wide porch is placed at the front corner and French doors open to it both from living room and dining room.

The living room is of good size with an open fireplace at the end opposite entrance. Mr. Bennett informs us that during the winter months a little open fire is cheerful but regular heat is not required.

This particular bungalow is built on a concrete block foundation. There is no cellar but the space underneath is ventilated as will be noted from the pictures, concrete perforated blocks being built into the foundation wall at regular intervals.

Porch piers and rail are built up of concrete blocks. Above the concrete block pedestals, short columns on brick are used, making an interesting combination.

The roof is covered with asphalt shingles and the same material is used as a siding for the different gables. Note at the gable top the latticed ventilators that allow for circulation of air in the attic.

Besides living room, dining room and kitchen, there are three good sized bed rooms most conveniently arranged; a short half connecting all rooms so that it is possible for one to reach either the bath room or kitchen without appearing before any guests in living room or dining room, which is a decided advantage.

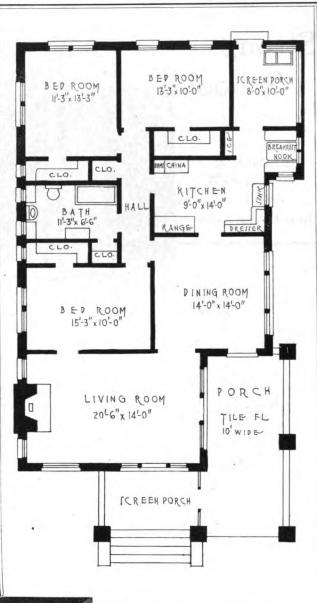
The kitchen is provided with the necessary equipment; also a breakfast nook. A screen porch is located in the rear and on this washtubs are placed, thus serving as an outside laundry. The kitchen range is for either gas or electricity, hence no chimney was provided.

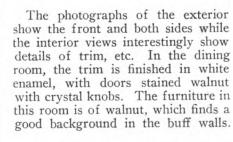
The floor plan is worthy of special attention as all details have been carefully considered. Note how the kitchen (the workshop of every home) is centrally located so that the house work can be done with the least number of steps.

Floor Plan Shows Six Good Sized Rooms Conveniently Arranged



Even in Florida the Evenings Are Sometimes Chilly Enough to Make an Open Fire a Pleasant Treat





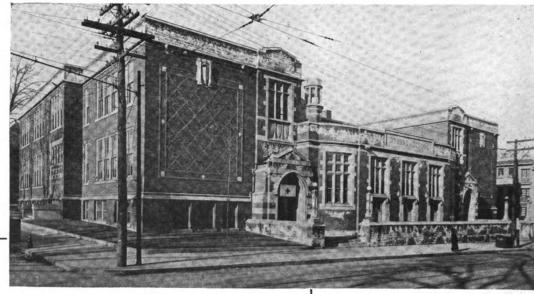
The picture of living room shows the open fireplace, which is simply made of brick laid up in regular bond with a dentil course on top, beneath the mantel shelf. Bookcases are on each side, with small windows above; making an interesting group for this end of the room. Note particularly that the wall surface is flat at this end due to the fact that the chimney is built on the outside of bungalow.

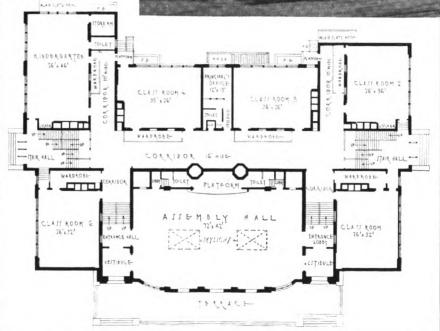


Strong School

BROWN & VON BEREN Architects

New Haven, Conn.





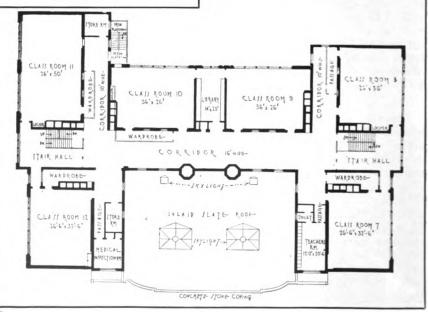
Ample stairways are provided and so arranged that the first and second floor pupils may leave by their own separate exits. On the second floor, three classrooms each are served by a side entrance, while the front entrances serve the first floor. This is a most desirable arrangement, and in addition there are two rear emergency exits which provide ample safety.

Class rooms are of good size, two of them being extra large. There is also a large sized assembly hall with rather high ceiling and provided with three doors in the front opening on the terrace. The two octagon towers are vents and provide ventilation at the rear where the stage is located.

S CHOOLS reflect the spirit of their neighborhood and the attractive building shown here is surely a credit to the thriving city of New Haven, Conn.

The exterior is of pressed brick with ornaments of cast concrete which material has lent itself very appropriately, especially so in the moldings and other ornaments. Even the light standards are of cast concrete as well as the copings on the terrace wall. The floor of this terrace is cemented.

The steps, both front and side, are of granite. The main entrance and corridor floors terrazo, while the stair halls have cement floors. The stairs are entirely of iron with concrete treads.



Apprentices and Craftsmanship

By D. KNICKERBACKER BOYD

ANY meetings of the Philadelphia Building Congress have been held and at these we have always come down to the one subject, that of the lack of apprentices, and the need of apprenticeship training in the building crafts. These conditions seem more accentuated today than ever before, because of the recent great increase in the amount of building construction Notwithstanding this, the facts are that during the last ten years the number of workers in the building trades has constantly decreased, while, with the exception of the period following the war, building itself has greatly increased, so that you see the situation we are confronted with today is quite a natural one. But it should have been recognized by the building industry long ago.

Now, when we consider the problem of the apprentice in the building trades—or crafts, as I prefer to call them, and debate whether the fault lies with those who, it is often claimed, are endeavoring to restrict the number of apprentices or with the employers who, it is also claimed, are not willing to assume the responsibility of training young men, we have before us quite a large subject. And what we need, as architects, I firmly believe, is to devote more attention to craftsmen and not give all our thoughts to draftsmen, although we do need still do much for the latter to better conditions.

The difficulty seems to be, not-withstanding the two claims made, that the boys do not exist in sufficient numbers who want to learn the crafts and trades. The young men of today do not seem to want to enter what they consider the "laboring" field. So why go into protracted academic discussions as to who is responsible for the lack of numbers? We need to discover the cause of the lack of interest on the part of the boys.

We must inculcate the idea in the young men of America that the crafts do offer a future for them, and we must stimulate in their minds a desire to achieve something dignified and definite with their hands. The craving of every human being to create and accomplish can be satisfied through craftsmanship properly appreciated.

THE present difficulty does not rest so much mich and rest so much with the boys, it seems to me, as it does with many of their parents, and with most of the educational systems of the country. Traced back into the homes of the children, I really believe that the fault lies more with the mothers, sisters and sweethearts of the young men and boys, than it does with almost anyone else. These dear ladies, most of them, do not want to see their boys, brothers or "boy friends' dressed in overalls or the clothes of workingmen, and littered with mortar, plaster, sawdust, metal filings or paint. They do not seem to like that and they therefore use their persuasion on their relatives and friends to keep them from engaging in this sort of work.

We, therefore, feel as we see it in Philadelphia and as I have observed it throughout our movement elsewhere, that we can, as a group, accomplish definite results, and as individual architects, achieve something by directing our energies with equal force to the present journeymen problem, as well as to the apprentice.

After all, the greatest discourager of the boy who might want to become an apprentice in the building trade can be, and most frequently has been in recent years, the father who is now working in the trades. Fathers, uncles or relatives who are employed in the so-called building trades at this time will generally not urge or encourage their sons, nephews or other young men to enter the same calling.

The journeyman of the present generation now working on the buildings we design realizes that he has lost much time in the Eastern and other sections of the country subject to cold climates, through seasonal losses of occupation, as Mrs. Parker said. He has, in normal times, been subject to intermittency of employment and he has been working at what is almost always rated a hazardous He is frequently occupation. working out doors, subject to attendant disadvantages as well as advantages. His task is often a very heavy one and involves a difficult piece of work, and in spite . of the skill required and art he many times displays, he tells his boy not to learn that trade. These men can be the greatest enemies of the building crafts today. I think the fault lies partly with the construction groups, the public, and with us as individual architects.

OCALLY and nationally, studies of all the difficulties involved can be made and conditions alleviated through cooperation of all, including the public by a sensible distribution of its new construction and maintenance requirements.

As for our part as individuals, if we architects recognize the fact that we are, as our very name implies, master craftsmen, it seems to me that we ought to be able each to accomplish our part in improving the status of other craftsmen by encouraging and giving recognition to the "workers on the job." It is these men who, as a matter of actual fact assume their part with us in securing the results which we are striving for when we design our buildings and write our sometimes hazy specifications.

Many of us, if we look back through the years of our superintending, will perhaps realize all too suddenly that we have usually passed the worker by-that he has not been given sufficient recognition for services well performed. We all have to condemn work sometimes - but how much oftener, when it should be commended, do we do so? That, it seems to me, is one of the faults to which we can address ourselves, and we can very readily correct it if we will give heed to the human side of our own industrial relations. If our contact with the workers on our buildings is such that they know that real interest and good work will cause favorable comment, we will encourage them and help them to believe that which they may often be justified in doubting—namely, that what each is doing is, if well done, an accomplishment worthy, often to be called an art.

The consciousness on the part of each that what he does is something vitally important to the success of the whole design and fabrication will cause each to feel that he must qualify as a craftsman, and not be content to consider himself merely one of a "gang" working on a "job."

I would like to give you one typical illustration of an actual experience in this direction.

JUST before I left Philadelphia I attended the opening of an exposition there called the Palace of Progress. For this exposition there has been built under my direction one of the numerous buildings called the "model home." The management consented to issue a book descriptive of the materials used, with which we should all be more familiar than we are. It was also decided to list the name of every man who worked efficiently night or day to make that building a success.

In keeping the records to give this recognition to the craftsmen and workers, I asked some of the bricklayers what the names of the men were who worked with them in their particular craft. I said to them, "How about the mortar mixers and the hod carriers?" One of the bricklayers said, "My God! you don't want their names, do you?" (Laughter.) I said, "Why

certainly! You men must admit that you can't successfully perform your work, nor can the architect get the best results for the owner if you don't get good mortar and if you haven't got good, strong shoulders to carry the mortar and bricks to you and place them efficiently for you. I consider those men very important to the rest of us."

The bricklayer said, "We only know them by their numbers, as 1, 2 and 3. That man over there is No. 2" (indicating). I had to go to the man and get his name personally, which I was glad to do, though it caused much astonishment on his part as to my purpose.

As a result of that talk and others, and of the fact that these men were going to be given recognition in the book, many of them who had been working day and night during two weeks said, "We will not accept any excess pay for the overtime or the night work, because our efforts to please the public are being recognized."

I have often talked to workers collectively and individually and asked them if, they should be requested to express one wish that they would like to have gratified more than any other, what that wish would be. They have all said, strange as that may sound to some, that what they wanted most was some fair recognition for their work—or as they have put it—a few words of appreciation for work well done when they try to do their best.

In that direction we, as architects, can take advantage of many of the opportunities that our calling presents. We can surely appreciate the human factor and stop and talk with the men. They can work with us and not for us, and we can both learn and teach if we say, "Well done, old man," or Tom or Dick or Harry, or whoever he may be—if his methods and results appeal to us.

We may not always be in a position to say that they are doing their job well, for they may know it a great deal better than we do, but we certainly can let them

know at least that they are giving us the results that we have tried to provide for in our designs and that they are correctly interpreting what are sometimes, perhaps. vague specifications which could be much improved as Mr. Jones so well told us yesterday.

It seems to me, therefore, that the problem can be rightly solved and in part almost immediately solved if we can begin at once to improve our specifications, our methods and ourselves, and by real human contact restore interest and pride of craft.

If we make the workers feel that we recognize their part as real factors in the success of any enterprise, that their efforts and the results of their work form a large part of the success of our work, and the satisfaction of our client—if we do that, the apprenticeship problem will largely solve itself.

I would like to suggest, however, in view of the points raised during this convention on the apparent lack of apprentices, that some step might be agreed upon whereby the Industrial Relationship Committee could appoint a sub-committee on apprenticeship. In its title I would, however, include Vocational Guidance, because the fault, it seems to me, lies largely with the lack of guidance toward manual labor in the schools.

I believe that the institute could do nothing of much greater value than to create such a committee if through it a new document might be prepared which could well be entitled "The Romance of Building," and be made available to the schools everywhere. In this booklet could be portrayed intelligently and enthusiastically. the advantages of being a worker on a building and of having an opportunity to co-operate with architects and all other craftsmen in being of ever increasing service to the people of this country

[Remarks made at the Fifty-Sixth Annual Convention of the American Institute of Architects in Washington, D. C., June 20, 1923.]

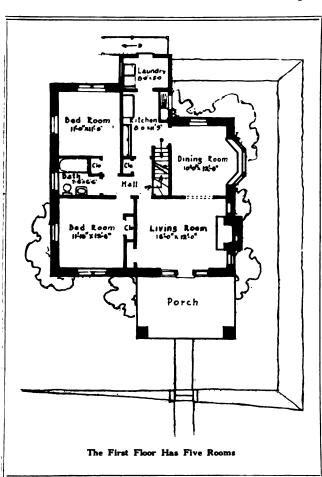


Two Bungalows with the Same Floor Plan

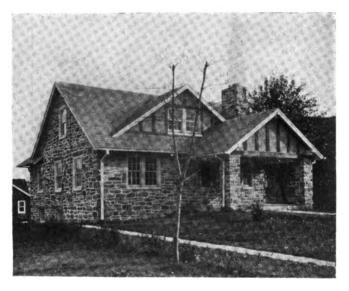
BOYD, ABEL & GUGERT

Architects

Philadelphia



Different Materials for Outside Walls and a Slight Change in Roof Lines Produce These Different Appearing Bungalows, the Floor Plans Being the Same for Both Houses



SAMENESS in the exterior of the design of houses is fatal to their good appearance if a number are built on the same street. Unfortunately, this is only too true in a large number of instances.

That there is no need for this is clearly shown in the bungalow design shown on this page. Here we have a plan of a well laid out five-room bungalow with an attic large enough for two additional bedrooms should they be desired.

One design has been carried out in hollow tile with exterior walls stuccoed. The other house has been built entirely of local stone laid in random rubble bond, joints being pointed up in white Portland cement, which presents an artistic appearance.

On this design a touch of the English is added by having the gables in half timbered effect with the panels in stucco—a delightful contrast to the stone walls. This particular roof has been covered with slate, but other material could be used as well. These houses were built at Narbeth, Pa., by Wm. D. & H. T. Smedley, builders.

The layout of the rooms themselves is very convenient. One enters the living room and the central hall connects bedrooms, kitchen and upstairs, which is a most convenient arrangement.

Builders often are called upon to build a number of houses from the same plan and they should suggest to their clients that a much better appearing effect can be had by a change of the exterior, each house having its own individuality.



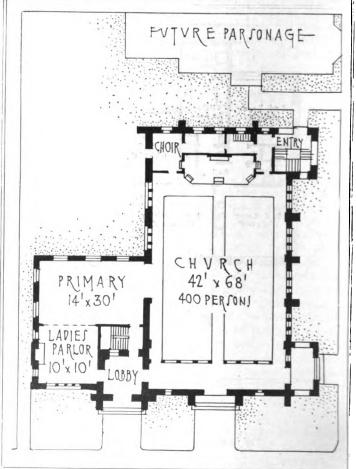
The Building of a Community Church

FREDERICK PUTNAM PLATT & BRO,
Architects

RATHER interesting is the church pictured on these pages, not only from the structural standpoint but also its use. This church was erected at Jackson Heights, in the Queens section of New York City. It is the first church in the United States to unite under one minister and one roof, twenty-one different denominations.

The church was dedicated June 10 and our pictures were taken that day. The one showing the exterior of the church shows the worshippers just coming out after the first services. It is built in a locality that has received intelligent development in the apartment house line, as many of the apartment houses in the vicinity are tenant owned.

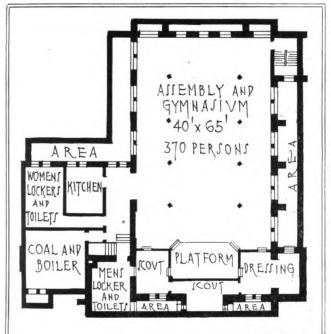
Of course, there were many denominations amongst the people dwelling in the neighborhood, but a church was lacking so what could be better than a combination of different Protestants cooperating to erect a community church.



JULY 1923

The structure, as will be seen in the photograph, is built of stone laid up in rubble random bond. Trimmings are of limestone and the roof is of heavy slate shingles laid in old English style—the distance exposed diminishing towards ridge.

The architecture follows Gothic in its details. The square tower makes a rather imposing appear-

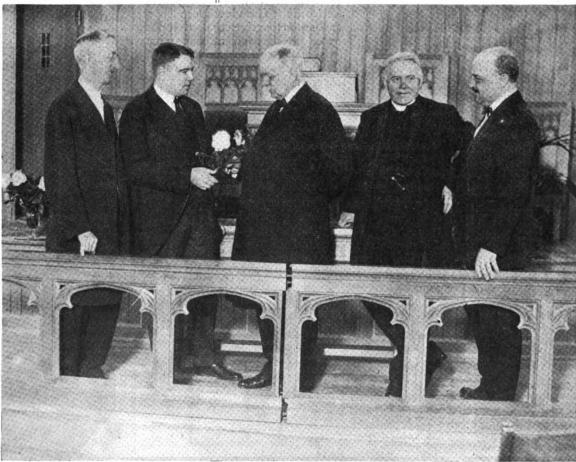


ance and is certainly a credit to its neighborhood. As the floor plan show, the church will seat four hundred persons, but when necessary the Sunday school room can be opened for additional seats.

Another of our pictures shows the details of the altar rail, etc., which is of carved oak, in Gothic style. This interesting picture shows some of the ministers who were prominent in establishing the church. They are, reading from left to right, the Reverend Dr. Layton, Methodist; Reverend F. R. Carson, Presbyterian; Reverend W. L. Davidson, Methodist; and Bishop Luther B. Wilson, who dedicated this church.

The various denominations included in this church number twenty-one and are as follows: Presbyterian Church of U. S., Presbyterian Church of Canada, Presbyterian Church of the South, United Presbyterians, Independent Presbyterians, The Baptist Church of the North, The Baptist Church of the South, Methodist Episcopal Church and The Methodist Episcopal Church of the South, The Unitarians, The Universalists, The Congregational Church, The Dutch Reform Church, The Disciples, The Episcopalions, Church of England, The Moravian, and four independent church organizations.

The interesting church structure was built by Eugene C. Woodcock, general contractor, of Elmhurst, Long Island, New York.



The Chancel Walls Are Paneled in Oak, the Altar Rail Is Also of Carved Oak, Following the Gothic in Its Simple But Interesting Design.

Digitized by Google

Bungalow on a Slope

Clever Handling of Difficult Site
By E. ROORBACH



HE charm of this bungalow is the way it was fitted to the ground. The property boasted of numerous huge gray boulders that were far too beautiful to destroy and they were left as nature placed them and the walls of the bungalow were literally cemented to them wherever they touched.

To further enhance the beauty, vines and creepers were planted

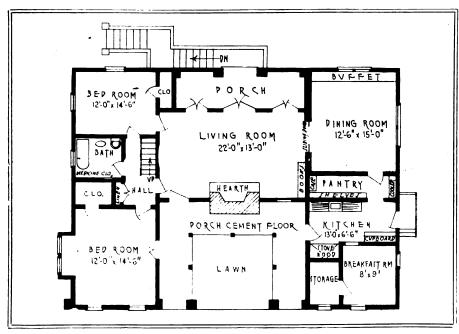


and these combined to further unite the ground and building so as to make a picture of the whole.

This unique bungalow is built of stucco on a side hill at beautiful Grossmont, San Diego County, California. The view from the site was so attractive that a lookout tower was added at one corner. This serves also as a sleeping porch. A stairway leads up to this tower from the small hall connecting the different bedrooms. This tower room is cleverly fitted with a disappearing bed which slides

beneath the adjoining roof so that in the daytime the tower room forms a most delightful sun parlor.

The rear porch opening from the living room is also a distinctive feature, as from this a wonderful view down the El Cajon Valley can be had. Cement steps lead from this porch to the garden below.





HOW TO BUILD OUR HOMES SO THEY WON'T BURN

THE problem of building firesafe homes is of even greater importance than the problem of building firesafe commercial buildings. The fire underwriting profession has for years been rendering a great service to industry in America by teaching manufacturers how to build fire-safe factories and insisting on fire-safe theatres, stores and churches, and in doing so it has reduced to a very large extent the fire risks and fire losses, thus reducing the huge tax that fires impose on American industry.

The fire underwriter can still further increase the service he is rendering to the community by joining in a movement for encouraging fire resisting construction in homes, for in them the annual fire loss is even greater than it is in factories and the risk to life is greater and facilities for fire fighting often absent.

Our huge annual fire losses (63 million dollars in residences alone) are causing increasing concern, and the conviction is rapidly growing that in the public interest and for public safety, the use of permanent, fire-resistant materials ought to be encouraged—especially as their relative cost today is so little in excess of less permanent materials. Present legislative restrictions on their full and free use ought to be examined and modified wherever present day experience shows this to be possible.

In this particular, the work of the Building Code Committee of the Department of Commerce is worthy of special mention and it is to be hoped that the adoption of the code prepared by this committee with its reasonable regulations for the reduction of the thickness of masonry walls of brick, concrete or tile, and its provision for fire stopping and chimney construction, will soon become universal and lead the way to a greater use of fire-resistant construction.

· By LESLIE H. ALLEN of House Division,

Portland Cement Association

The old idea that any incombustible material was necessarily fire-resistive has been the cause of many disastrous fire losses. It is recognized today that many materials that will not burn are failures as fire retardents. Materials vary so much in thermal conductivity, in rate of expansion when heated and in strength after heating—factors that are of paramount importance in fire resistance. The fire-resistive qualities of a building material bear no relation to their strength or conductivity.

In building materials like gypsum, steel, clay tile, concrete block, lumber, cast iron and stone are found some that are high in fire resistance and low in strength and vice versa and even those that are high in both vary a great deal in thermal conductivity, rate of expansion and contraction and other factors that affect their stability. Therefore each building material must be examined, tested and rated on its merits from the structural and fire-resistive point of view.

It ought not to be necessary to force people to build fire-safe homes — common sense alone ought to impel them. But the

Some Notes on Reducing the Fire Hazard in Home Construction

From an Address Before the Fire Underwriters' Club, Lansing, Michigan trouble is that the public does not know the simple methods and economical materials that will ensure safety for him, and it may be difficult to arouse a public interest in fireproof building because fire insurance rates are such a very small tax on his annual outgoings.

From the standpoint of economy there is very little encouragement to the home builder to spend more money in making his house firesafe. But inasmuch as fire-resistive construction is also permanent construction, it makes a house rigid, free from maintenance, warm and dry.

The economy on this head makes the proposition more attractive than from the standpoint of premiums alone and now with the aid of concrete construction the cost of a fire resisting house has been reduced to a point where it costs very little more than the ordinary type. The advantages of a fireproof home, which used to be considered a luxury only available to the rich, has now been placed within the reach of the man of moderate means.

THE rapid development of concrete units of light weight and low cost is making this possible. Concrete block and concrete building tile are now being used in many cities instead of frame construction, and as they make a perfect rigid non-yielding base for Portland cement stucco, a very beautiful house at low cost can be considered with their aid.

There are many builders who use this material continually and report that the different in cost between that and frame construction is negligible. The Minneapolis Journal, which is now building three demonstration homes in Minneapolis to show the advantage of good construction and to explain methods of sound financing, found that on a \$5,200 house the bids for concrete were only \$135 more than frame (about $2\frac{1}{2}\%$).

To build the walls alone of concrete is not sufficient. The whole of the interior of the house should be protected against fire. The most vulnerable points in any home are the cellar, the chimney and the roof. If wood floors are used in a house the underside of the first floor may be fireproofed by a ceiling of metal lath and cement plaster.

TESTS have shown that this construction will resist the passage of flame for one hour; thus giving the occupants a chance to fight the flames before they have gained headway. Then the interior partitions in the cellar should always be of fire resisting construction. Four-inch concrete block or tile are much better than the flimsy one-inch rough boarded partitions so commonly used.

Not only do they replace a lot of inflammable material but they afford rigid non-yielding support to the floors and upper partition construction of the house and obviate the need for the girders and slender steel columns, like toothpicks, that are generally used to support the floors.

Unprotected steel columns quickly buckle or give way when attacked by flame, and the whole of the interior collapses, and wood posts, of course, burn. A rigid fire resisting support of 4-inch concrete block prevents this and further prevents the slight settlements caused by the use of lumber that causes plastering to crack, doors to jam and floor joints to open.

The cellar steps should also be of concrete; thus sealing up the space beneath which is otherwise liable to fill up with rubbish and become a fire hazard or shelter mice and rats.

Chimneys are one of the most prolific sources of fire, and should be rendered fire-safe either by the use of tile flue linings or by the use of specially made concrete block like the Multiplex. This block consists of a rectangular block containing within a circular concrete flue. Both outer and inner walls have tongued and grooved joints, sealed with Portland cement; thus making a per-

fect tight joint, and providing also an insulating air chamber which causes better draft. Above the ceiling in the attic if the flue is brick the face of the brick work should be plastered where passing through floors.

The roof is another fire hazard that we cannot afford to neglect. The only safe protection against flying brands in conflagrations or chimney fires is the use of a fire resisting roof. Most satisfactory is the concrete roofing tile which is now being produced at a price very little in excess of the wood shingles and asphalted roofing. The weight is not sufficient to require excess material in the roof construction. Their appearance is pleasing and very permanent. Slates, tiles and asbestos cement shingles are widely used where their extra cost is not a prohibitive factor.

THE eaves of a roof should also be protected with metal lath and cement plaster. Flames on adjoining building usually attack the eaves first as the hot gases drive the flames upwards until they reach projecting surfaces like the eaves. Metal lath and cement plaster may be carried from the wall stuccoed surface across to the edge of the eaves, thus affording complete protection.

The use of concrete floors in living rooms and bedrooms has not yet become common, and it may be sometime before the home buying public is convinced of their comfort and economy. It is common practice in first-class hotel construction to lay a concrete floor covered with linoleum in all the rooms. This has been adopted with success by some architects and builders. It is found that concrete floors over a heated basement are actually warmer than wood floors; they hold the heat as the stones of a fireless cooker would.

When concrete is used for wall construction, it is advisable also to insulate the walls either by building an air space into the walls or by providing such an air space by lath and plaster, or by using one of the sheet insulating materials such as vegetable fiber or seaweed

quilt before plastering. This is a positive insurance against possible condensation of moisture from the humid air and also considerably reduces coal consumption.

The fire resistance of concrete has been strongly brought out in a series of tests which are still under way at Underwriters' Laboratories of Chicago with the co-operation of the American Concrete Institute, the Portland Cement Association and the Concrete Products Association.

These interesting tests are valuable demonstrations of concrete in service. "Prevention is better than cure" and therefore the fire insurance broker is in a splendid position to render maximum service to his community by advising construction that will prevent fire losses.

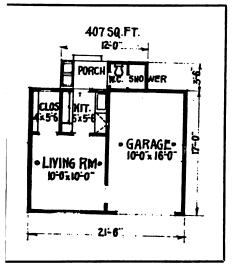
The "Fable for Builders," by Franklin H. Wentworth, Secretary of the National Fire Protection Association, is well worth repeating here:

Last Summer a Good Citizen of a certain town not over a hundred miles from Everywhere, built a Wooden house for a Woman and her Children. He built the Chimney of Brick because he had to. The Chimney was able to Stand Alone, so he did not have to prop it with Wood. But the Floors of the house would not Stay Up without props. The Good Citizen saved a dollar by using the Chimney as a support to the floors. He nestled the ends of the Floor Joists nicely in the brick of the Chimney. He covered up the job and got his money.

THE Rains fell and the Winds blew in the most Biblical manner, and the Winter came after its fashion. The Chimney Settled a little; and there was a tiny Crack.

One morning the Woman woke up with Fire all About her. She tried to get to her children. If she got to them no one Ever Knew it. The Good Citizen who built the house was Not Arrested for Manslaughter. He is building Other houses of the Same Kind for Other women and children.

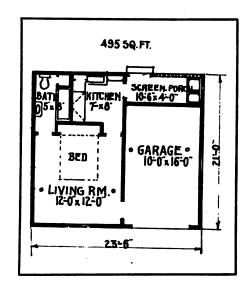
He is making his Living by it.



The Garage Bungalow

Interesting Type of
Building Now Becoming
Very Popular

By CHARLES ALMA BEYERS



HE growing use of the automobile has taken people out of doors as it is so easy to travel and the whole family can enjoy the outing. What could be better than to go to a little spot beside the lake or at the seashore for the week end? To stay there, no elaborate house is needed but as dear "Lizzie" or some grown up sister is a part of the family it needs garage protection, so now it is the garage-bungalow that is coming into style.

In some other case a garage-bungalow is built at the back of a lot and serves as a temporary home. Eventually, of course, when the building of a real home can be afforded, the present improvement will be relegated to just ordinary garage service. In the meantime, however, it very satisfactorily eliminates the paying of high rent, and without any very great nor wasted expenditure.

This idea of building a garage so planned that it may be atilized for a temporary hon: is not, of course, actually new. It has, in fact, been leveloped by the exigencies of the postwar housing problem, o considerable popuarity. Nevertheless persons contemplating such an underersons aking will doubtless ind at least the floor plans that accompany his combined garage ind home interesting ind practically helpful.

Two somewhat different interior arrangements are suggested, both designed to produce the same front appearance. The garage portion of each is ten by sixteen feet in dimensions, and each of the plans further provide living room, kitchen, bath room and the usual kitchen-entry porch, while one of them also possesses a large closet.

The rooms are naturally small, but they will be found to be convenient and attractively planned. The living room of the larger garage is equipped with a built-in wall bed, and the bath room of this plan is provided with the usual equipment and further contains a small linen closet. The bath room eccommodations of the other arrangement substitute shower facilities for the customary tub. The kitchen in each instance possesses built-in cupboards and the usual sink, and the

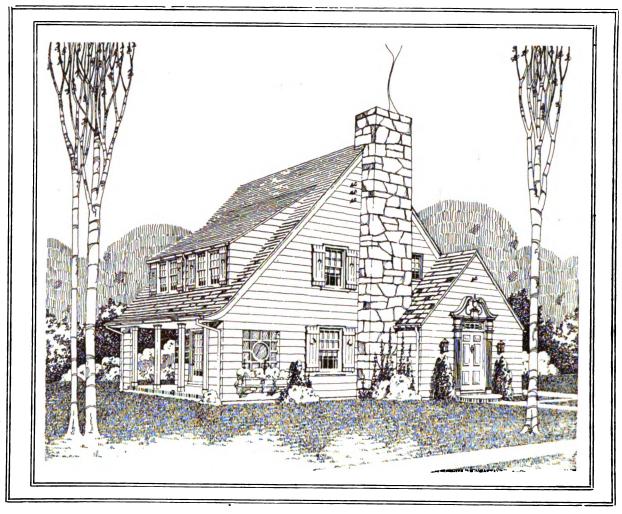
kitchen-entry porches have a pair of stationary laundry tubs.

The building is of inexpensive frame construction, with the outside walls finished with ordinary siding or it may be stuccoed. Neat trellises for climbing vines help to enhance the front, and there is also a little flower box beneath the front window. The foundation is of concrete, and the roof covering consists of roofing composition.

The interior of the living portion is finished in wall board—neat, attractive and inexpensive. The woodwork is painted white. Pine flooring is used for this part of the building, but the garage part is naturally floored with cement. Running water and other modern conveniences may be provided, including built-in gas radiators for heating, if gas can be had in the neighborhood.

Neat and Attractive Exteriors Are Not Expensive

In considering the plans with reference to future possibilities, it will be seen that, with very little work and additional pense, the building may be converted into garage room for two cars, should there be the desire to do so. A second pair of garage doors, in that case, would naturally be provided. Or, course, the arrangement may be left as it is now, with the living portion allotted to the use of the chauffeur, gardener, etc.



Six Room House with Unusual Exterior

MES should be designed with attractive exteriors. That is, they should be well proportioned and pleasing to the eye. No longer will the public tolerate the ugly misfits that passed muster a few years back. Today a house must have architectural merit or it meets a just public condemnation.

A small simple house, even when built of the most simple materials, can, if properly designed, be a thing of beauty, and this at no increased cost.

White shingle walls give a pleasing effect in both color and texture for the rural house; they are so refreshing in the contrast they afford with the green lawns and planting.

The large stone chimney, laid up in various color stones, often

Specially Designed for BUILDING AGE and

THE BUILDERS' JOURNAL

Together with Constructive Details

by R. C. HUNTER & BRO.
Architects New York

gives the desired color and texture, as is the case with the house shown herewith. Here the chimney is the main feature of the front.

A low-roofed extension of the main entrance is unusual in treat-

ment and strong in character; it forms a most appropriate setting for the flat but rather ornate doorway.

A coat closet either side of the entrance vestibule gives abundant space for coats and wraps, both for the owner and guests. The service portion of the house is compactly arranged. One grade entrance serves the kitchen, ice-box and cellar.

Three bed rooms, plenty of large closets and a bath complete the second floor. The cellar provides for the heater, coal bin, laundry, storage space and such.

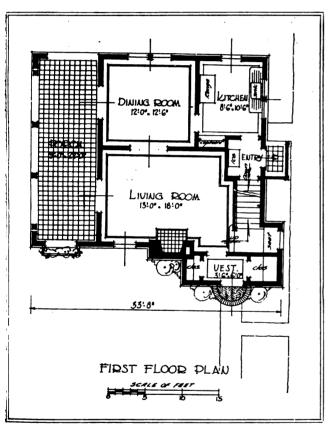
This house measures thirtythree feet, eight inches across the front, so a fifty foot lot allows generous space on both sides. The estimated cost is about \$8,000.

Quantity Survey of Six Room House With Unusual Exterior

THE quantities given are for estimating. All measurements are NET unless otherwise noted, areas given for such items as sheathing, flooring, etc., are net areas to be covered with no allowance for matching, waste, etc. Minor outs have been disregarded.

Such items as clearing site, temporary work and protection, scaffolding and general equipment and supplies have not been included.

Such items as are marked "Unit" are to be estimated in a lump sum, following requirements of plans and specifications



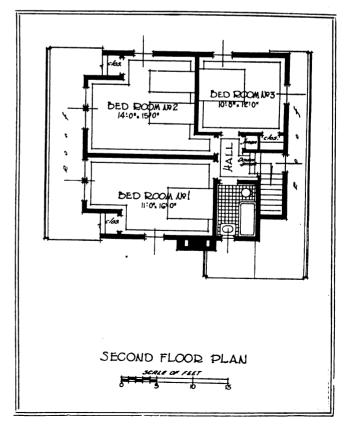
EXCAVATION

(Excavation for pipe trenches not inclu	ded)
Excavation for cellar	
Excavation for footings	
Excavation for trench walls	13 cu. yds.
Excavation for leader drains and dry wells	
Backfilling around walls, etc	34 cu yds.
Leader drains and dry wells.	
Field stone for dry wells	
4 in. salt glazed tile drain pipe	
4 in elbows	5

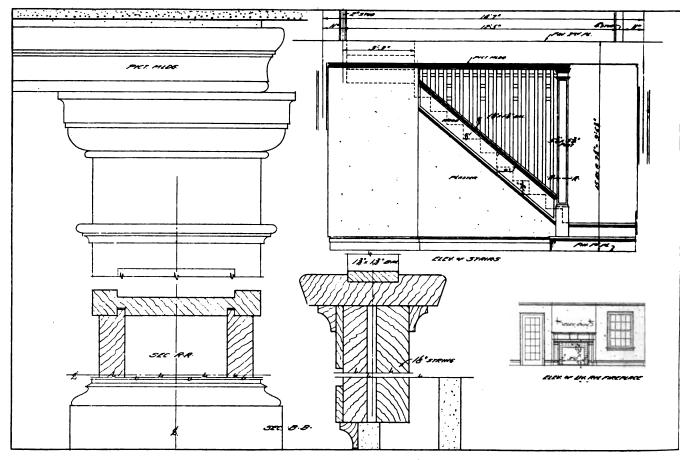
DLUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by BUILDING AGE and the BUILDERS' JOURNAL, 239 West 39th Street, New York.

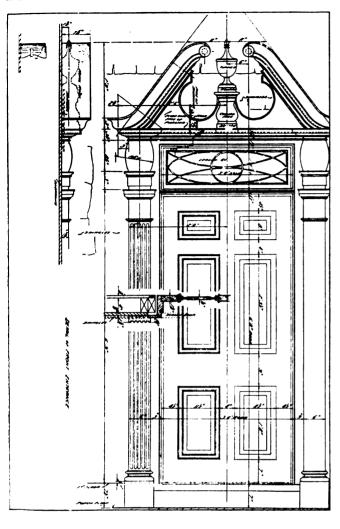
MASONRY

MASONRY			
Concrete work.			
Stone foundations	1450	C11.	ft.
Stone chimney	320		
Concrete for area walls		cu.	
Cellar floor (3 in. conc. and 1 in. cement			
finish)	515	sq.	f+
Area bottoms (brick and sand)		sq.	
Porch floors (12 in. cinders, 3 in. concrete	20	aų.	11.
and brick finish)	1.4	sq.	£L
(Concrete with cement finish)		sq.	
Brick edging for porch		sq. lin.	
(or 115 brick)	చు	ıın.	It.
Brick foundation for entrance platform	40		٠.
Concrete forms		cu.	
Concrete forms		sq.	
	18	lin.	It.
MASON'S IRON WORK			
Fireplace damper (3 ft. 0 in. opening with			
throat, etc.)	1		
C. I. ash dump	1		
C. I. cleanout door for ash pit (16 in. x 12 in.) C. I. cleanout door for boiler flue (8 in. x 8 in.)	î	•••	• • •
C. I. cleanout door for hoiler flue (8 in x 8 in)	i	• • •	• • •
Thimble for boiler flue	1	• • •	• • •
	. 1	• • •	• • •
PLASTERING			
Three-coat patent plaster on metal lath.			
Gross	625	sa.	vds
Net	525 e	ຕົນ	de
G. I. corner beads	80	lin.	ft.
TILE WORK			
Tile work for bath room.			
Floor (1 in. hex. white)	31	sq.	ft.
Wainscot (3 in. x 6 in. white wall tile)	84	sq.	ft.
6 in. sanitary base	17	lin.	ft.
Moulded cap	24	lin.	ft.
			•



BRICK WORK		1st floor joists.	
Face brick for fireplace hearth and jambs	15 sq. ft.	2 in. x 10 in.—11/14, 25/12, 5/10	841 F.B.M.
(or 105 brick)		2nd floor joists.	1202 EDV
Fire brick for fireplace	20 sq. ft.	2 in. x 10 in.—39/14, 16/10, 8/8	1263 F.B.M.
8 in. x 12 in. T. C. flue lining	68 lin. ft.	2 in. x 6 in,—22/14, 22/12	572 F.B.M.
4 in. tile pipe ventilators with wire screens on	00 mm. 1t.	Porch ceiling beams, etc.	
backs	4	2 in. x 4 in.—26/8	139 F.B.M.
		Porch plates. 2 in. x 8 in.—6/8	64 F.B.M.
SHEET METAL WORK			04 F.D.M.
Copper flashing for roofs, etc	180 lin. ft.	Col. cores. 3 in. x 4 in.—2/8	16 F.B.M.
Copper flashing and counterflashing for chim-	16 11 6	Rafters.	
ney	16 lin. ft.	2 in. x 6 in.—23/14, 37/12, 20/10	966 F.B.M.
Chimney cricket	3 sq. ft.	Cut to radius, 11/8 in. x 10 in.—16/8	160 F.B.M.
4 in. half round hanging gutters	107 lin. ft.	Ridge.	
3 in. leaders	73 lin. ft.	2 in. x 8 in.—2/14	37 F.B.M.
Bends for leaders	16	Floor bridging. 2 in. x 2 in.—300 lin. ft	100 F.B.M.
Gutter thimbles	8	Cornice outlookers.	100 F.B.M.
4 in. G. I. gas range vent	24 lin, ft.	2 in. x 4 in.—4/12, 4/10	59 F.B.M.
Cap and thimble for same	1	Cellar partition studs.	0, 1,5,11.
CARPENTRY		2 in. x 4 in.—3/14, 6/12	76 F.B.M.
		Sheathing (% in. x 8 in. shiplap), no outs.	0100 (.
Timber—All No. 1 common stock, hemlock, r noted.	ougn uniess	Walls—to cover	2100 sq. ft.
Cellar girders.		Shingle lath—1/2 in. x 2 in	2100 sq. it. 4050 lin ft
6 in. x 10 in. spc.—1/14, 1/12, 1/8	170 F.B.M.	Grounds—3/4 in. x 2 in., surfaced one side	
2 in. x 3 in. nailer—66 lin. ft		Sheathing for cellar partitions.	
Sills.	000 E D M	% in. x 8 in. shiplap—to cover	200 sq. i t.
4 in. x 6 in.—3/14, 6/12	228 F.B.M.	Rough flooring.	600 00 6
4 in. x 6 in.—1/16, 9/10	212 F.B.M.	1/2 in. x 8 in. shiplap (1st floor)—to cover Furring—1/2 in. x 2 in	300 lin. it
Studs, girts and plates, 1st floor.		Shingle roofs (18 in. stained shingles).	
2 in. x 4 in.—195/8	1039 F.B.M.	18.6 squares	2800 shingles
Studs, etc., 2nd floor.	006 E D M	Shingles, sides (24 in. stained shingles).	6000 -1 :1 :
2 in. x 4 in.—185/8	900 F.B.M.	18 squares	DUUU Shingles

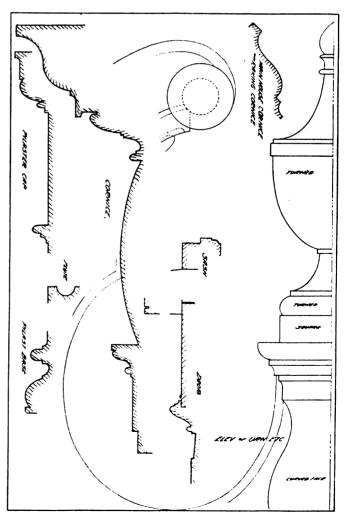




EXTERIOR FINISH

EXIERIOR FINISH	
Watertable (36 in. x 2 in. strip)	102 lin. ft.
Main cornice—5 in. crown mould	109 lin. ft.
Raking cornice—5 in. crown mould	170 lin. ft.
Porch ceiling and cornice soffit.	
% in. x 4 in. M. & B.—to cover	336 sq. ft.
Porch columns—6 in. x 6 in. box cols, 7 ft. 8 in.	
long, with cap and base	4
Posts—5 in. x 5 in., 7 ft. 6 in. long, with cap	2
Porch sill.	_
134 in. x 8 in.—4 ft. 6 in. long	1
⅓ in. x ⅓ in. cove	10 lin. ft.
Flower box—(11/8 in. stock, zinc lining, etc.)	_
12 in. x 12 in. x 5 ft. 0 in	1
Sawed wood brackets	2
Lattice panels.	_
4 ft. 6 in. x 6 ft. 0 in	1
3 ft. 0 in. x 6 ft. 0 in	1
4 ft. 0 in. x 4 ft. 0 in	1
Louvres—11/8 in. fixed slats, frames, outside	
trim, etc., wire screens on back.	_
1 ft. 0 in. wide x 2 ft. 8 in. high	1
Windows—Frames complete with sash, outside	
trim, etc. Sash 1½ in. thick, glazed D. T.	
Cellar windows—Trim both sides. Single top	
hung casem. sash, 3 ft. 0 in. x 1 ft. 4 in.	_
4 light	5
First floor windows.	
Single D. H. sash, 3 ft. 0 in. x 4 ft. 6 in.	_
l6 light	1
Single D. H. sash,, 2 ft. 8 in. x 4 ft. 6 in.	_
12 light	1
Mull. D. H. sash, ea. 2 ft. 8 in. x 4 ft. 6 in.	
12 light	1

Single D. H. sash, 2 ft. 6 in. x 3 ft. 2 in.	1
12 light	
16 light	1
Second floor windows.	
Single D. H. sash, 2 ft. 8 in. x 4 ft. 0 in.	
12 light	4
Mull. D. H. sash, ea. 2 ft. 8 in. x 4 ft. 0 in.	_
16 light	2
Single D. H. sash, ea. 2 ft. 8 in. x 5 ft. 4 in.,	
curved head	1
Single D. H. sash, 2 ft. 0 in. x 3 ft. 0 in.	
12 light	1
Shutters—11/8 in. thick, batten.	
3 ft. 0 in. x 4 ft. 7 in., pr	1 pr.
2 ft. 8 in. x 4 ft. 7 in., pr	2 pr.
2 ft. 6 in. x 3 ft. 3 in., pr	2 pr.
2 ft. 8 in. x 4 ft. 1 in., pr	6 pr.
2 ft. 8 in. x 5 ft. 5 in., pr.—curved head	l pr.
Exterior door frames.—134 in. thick, rabbeted	- p
complete with outside trim.	
Front ent. door frame, 3 ft. 0 in. x 6 ft. 8 in.,	
leaded glass transom, ornamental head	
trim, etc	1
Frame for doors to living porch, pr., 4 ft. 8	1
in. x 6 ft. 10 in	2
Frame for rear ent. door, 2 ft. 6 in. x 6 ft.	2
o:	•
8 in	1
Exterior doors—(All to detail).	
Front entrance door, 2 ft. 0 in. x 6 ft. 8 in.	
x 134 in., paneled	1
Doors to living porch, pr. 4 ft. 8 in. x 6 ft.	2
10 in. x 134 in., glazed D. T	2 pr.
Kear ent. door, 2 it. o in. x o it. 8 in. x	
13/4 in., glazed D. T. and paneled	1



		The Builders	Journa
EXTERIOR FINISH—Continued		Single, 2 ft. 8 in. x 4 ft. 0 in	4 sets.
Finished flooring—1st and 2nd stories.		Mull., ea., 2 ft. 8 in. x 4 ft. 0 in	2 sets.
1/8 in. x 21/4 in., comb grain Y. P.—to cover		Single, 2 ft. 8 in. x 5 ft. 4 in., with curved head	1 set.
Lining paper under floors	040 sq. 1t.	Single, 2 ft. 0 in. x 3 ft. 0 in	1 set.
x 7 ft. 6 in. long, with caps and bases	6	Base.	
loist hangers—(1/4 in. x 2 in. W. I.)			0 lin. ft.
For 2 in. x 10 in. beams	6		8 lin. ft. O lin. ft.
For 4 in. x 10 in. beams	6		0 lin. ft.
INTERIOR FINISH			0 lin. ft.
(Whitewood unless noted).		Mantel for living room with paneled breast	1 Unit.
Door trim—7/8 in. jambs, 1/2 in. stops, 7/8 in. x	:	Seat for main stairway Interior doors—2 cross panel, birch veneer.	1 Unit.
41/4 in., moulded and mitered trim. Trim		Door 2 ft. 6 in. x 6 ft. 10 in. x 1½ in	2
both sides. For doors 2 ft. 6 in. x 6 ft. 10 in	2 sets.	Door 2 ft. 4 in, x 6 ft. 10 in. x 1½ in	2
For doors 2 ft. 4 in. x 6 ft. 10 in	2 sets.	Door 2 ft. 8 in. x 6 ft. 10 in. x 134 in., glazed.	1
For doors 2 ft. 8 in. x 6 ft. 10 in	1 set.	Door 2 ft. 6 in. x 6 ft. 8 in. x 1½ in Door 2 ft. 4 in. x 6 ft. 8 in. x 1½ in	4
For doors 2 ft. 6 in. x 6 ft. 8 in	4 sets.	Door 1 ft. 10 in. x 6 ft. 8 in. x 1½ in	1
For doors 2 ft. 4 in. x 6 ft. 8 in	4 sets. 1 set.	Cellar door (solid fir), 2 ft. 6 in. x 6 ft. 6 in.	• • • • • • • • • • • • • • • • • • • •
Frim for inside of exterior doors.	1 301.	x 1½ in.	1
Front entrance, 3 ft. 0 in. x 6 ft. 8 in. with		Scuttle to attic—2 it. 6 in. x 3 it. 0 in., with	1
trans.	1 set.	trim, etc. Closet shelving (% in. & 12 in. pine)	1 2 lin. it.
Rear entrance, 2 ft. 6 in. x 6 ft. 8 in Doors to living porch, pr., 4 ft. 8 in. x	1 set.	Hook strip (% in. x 4 in.)	66 lin. ft.
6 ft. 10 in	2 sets.		6 lin. ft.
rimmed openings finished same as for doors.		1 in. dia. pipe clothes rod	0 lin. ft.
Opg. 5 ft. 0 in. x 6 ft. 10 in	1 set.	in., countershelf, drawers, doors, etc	1 Unit.
Trim for cellar door (plain), 2 ft. 6 in. x 6 ft. 6 in.	1 set.	Main stairs, 1st to 2nd story, 15 risers, 3 ft.	
Vindow trim-7/8 in. x 41/4 in. moulded and		5 in. wide, balustrade at 2nd floor, etc Cellar stairs, 12 risers, 3 ft. 0 in. wide, box	1 Flight
mitered trim; 1/2 in. stops; 11/8 in. moulded		pattern, wall handrail, etc	1 Flight
stool; 1/8 in. moulded apron; 5/8 in. x 1/8 in. cove under stool.		GENERAL CONDITIONS	- Langin
For windows—		Add for permits, fees for water and sewer con	nections
Single, 3 ft. 0 in. x 4 ft. 6 in	1 set.	etc., insurance and general overhead charges.	
Single, 2 ft. 8 in. x 4 ft. 6 in	1 set. 1 set.	Allow for general work not listed, such as grading	ig, plant-
Single, 2 ft. 6 in. x 3 ft. 2 in	1 set.	ing, etc. Include sub-bids :Hardware and apply painting and decorating, plumbing and gas fitting	ng same
Mull., ea. 2 ft. 6 in. x 3 ft. 2 in	1 set.	and electric work.	, meaning,
		Dotted Line shows Wall	
* £ of Mullion	1		
		Moulding at Jamb	
		1/8///3	-
			1
" T	1		
I X IS H			
13 1		\times	
		2",4"	
Mullion Trim			
		Blocking 1	
Inside Line of Sash, at Head		The state of the s	
	1112	and the same of th	-
Inside Line Branze Stop Bead	# 11 1	Door-XIII	
Inside Line Branze Stop Bead of Sash, Adjusters, not at Jambs, over 14"a.c.		Section Thru Head of Door	
of Sash, Adjusters, not at Jambs over 14 ac.		Jamb Sect. Similar	
Sect. Thru Head of Window Trim			
Jamb Sect. Similar	1 11 1	Picture	
*	,	Picture Moulding	40
Inside Line of Sash		Moulding Juli	
at Sill	/	Dotted Line	
		Shows position of Section thru Plinth -	
V/N	1,5	ect thru Base of Plinth	
/ / >		K-Plinth-	Base
Section they			
Section thru		Part Elev of Door Tru	777
Stool, Apron, Etc.)	Shawing Potentia SC-14	ulding
Part Elev. of Windo	w Trim	Relative Position of Plin	the wilding,
Showing How Casina Mi.	ters and	Showing Return of Cap Mo Relative Position of Plini Block, Base, Etc.	"
Showing How Casing Mi Return of Stool, Apro	n, Etc.	WILLIAM LEVEL	



CARPENTRY

Good Practice in Frame Construction and Finish

Some Things the Farmer Likes

Profitable Lines of Work for Builders on Every Farm
This Article Tells How to Make a Few

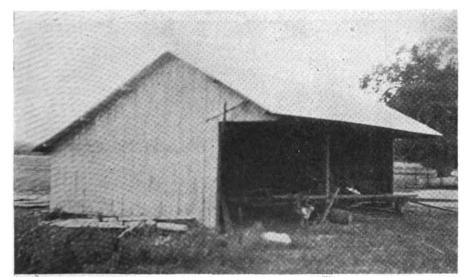
By DALE R. VAN HORN

TIM JONES, as was told in our last issue, was an ingenious carpenter who went about suggesting to the farmers some needed repairs, thereby creating jobs for himself. Here are some more.

No builder, working rural territory, should overlook the possibilities to be found in the machinery shed. Every farmer who reads at all, is well aware that farm machinery depreciation exceeds any other farm loss which can be so readily and cheaply checked. Of course, it will be only natural that the large, more expensive type of shed, be first suggested. Failing here, one can usually land an order for a shed of cheap design.



Fig. 6



Me. 4

Figure four shows a shed that is nothing more than just that, yet with its protruding roof (it has no doors) it wards off much foul weather, and will save any one money. By facing it to the south, repair work can be done here during the winter months. And, by the way, more profit can usually be made on this type of building, for the actual time put in, than on the more imposing type of machinery shed.

This type of shed should pay for itself to the owner in one year.

Owners of concrete walled and floored barns almost universally complain because of the formation of ice along the edges of the floor. This is the natural place for water to seep through, and in winter, is

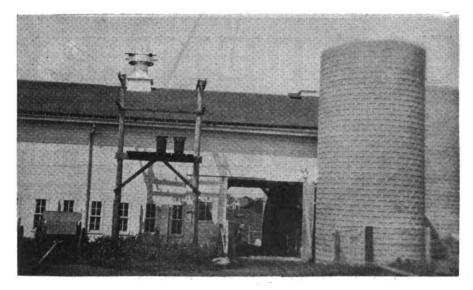


Fig. 7

usually the coldest, basement barns excluded. A method which effectively overcomes this is to be found in the laying of a row of hollow building tile as shown in the cross-sectional drawing on figure five.

Opinions of course vary, but in a number of cases the plan has proven successful. Precaution should be taken to allow a layer of concrete at least one and one-half inches thick, over the tile, to prevent chipping off. By running the tile to an outlet with southern exposure, the dead-air space is not only provided, but a drainage as well, for any water which would collect.

One carpenter-builder, who, because of age and failing eye sight, finds profits and plenty of work in the country, makes it a point to seek for, out of the corner of his eye, an old set of wagon running gear on every farm he visits.

Sighting one, he smears his face with that winsome smile of his, takes a deep breath, and the following conversation invariably follows:

"Ever haul any stock to speak of?"

"Oh, now and then."

"Use that old running gear down there under the willows much any more?"

"No."

"What's the matter with it?"

"Oh, nothing. We don't have any use for it. I think the hound is bent."

"Say, that would work in pretty handy, wouldn't it, if you just had a crate body built on there, with a stanchion in the front."

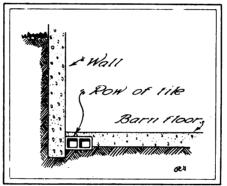


Fig. 5

"By gum, now you're talking. What d'you think it would cost." And, having gone thus far, there is, of course, but only one result. The truck is made. Result, both parties well pleased. Such a truck is shown in figure six.

A little stunt that is bound to please the average farmer is a grain meter. Where bins are built overhead in the barn or granary, with chutes leading below, this will be easy. Determine the cubical contents of the chute, per running inch, then provide two gates, with cleats to ride on, such a distance apart, that the contents between them will just equal one-half or one bushel. By closing the lower gate and opening the upper, then closing the upper and opening the lower, one can easily measure out grain in units that are practically exact, and little labor. This device will enable the farmer to know, day by day, how much grain he is feeding, for the totals can be marked on paper tacked on the

Figure seven is a photo taken of a large dairy barn with some unusual features. At the right, between the silos are to be found overhead grain bins which are loaded with a power elevator and which empty into feed carriers mounted upon a continuous track. A portion of this which extends through the driveway, is hinged so that it can be swung out of the way when loads of hay are to be weighed on the scale also found there. Beneath the bins are to be found grinders and mixing boxes.

This feature, which will mean considerable more profit to the builder, can be used as a good

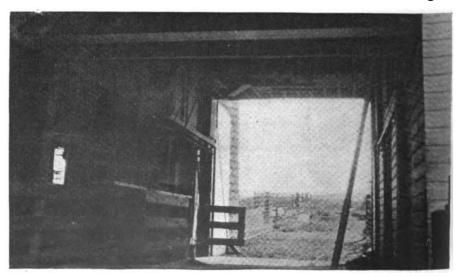


Fig. 8

talking point to the man who is erecting a large barn.

Figure eight shows a close-up of the swinging track in place, while in figure nine the two portions are swung aside, giving clearance for high loads. The construction is very simple.

* * * * *

For the farmer who complains of lack of shed room suggest that two lean-tos be built, one on each side of the open hay shed, as illustrated in figure ten. Here young stock can be taken care of in early spring and late fall, and they will require very little attention because feed is within reach without pitching. If the room is to be used throughout the year, it will be well to enclose the whole shed, too.

* * * * *

The little things (and big ones, too) that actually raise up and beckon the concrete worker, are to be found on any farm. There is the story of the silo builder who killed not only two but six birds with one stone, that is still going the rounds.

It seems that this enterprising builder possessed a set of steel circular forms which are used in constructing silos of the monolithic type. They were adjustable to a certain extent, circular objects being possible varying from 6 to 13 feet in diameter.

Just as the finishing touches were being put on the silo, a chance remark made known the

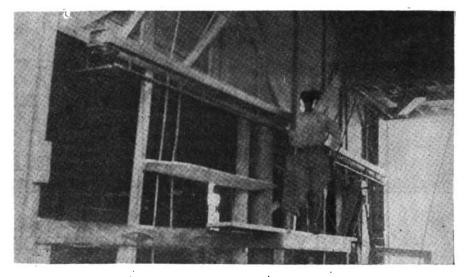


Fig. !

fact that the owner of the silo was in need of a cistern. A little conversation over the dinner table that noon resulted in a start upon said cisten at 1 o'clock. Bird number two.

Before the cistern had been finished, two stock tanks had been decided upon, one 10 feet in diameter and the other twelve. Birds three and four.

By this time the silo builder was hankering for a unique record, He thought more upon the subject. Result: a concrete feeding floor with a circular hog wallow at one end. Fowl number five.

When this had been finished, he went at once to the neighboring farm and there put down a huge gravity storage tank on the crest

of a hill overlooking the farm buildings. There is no need to say that hereafter this builder kept his eyes open.

With all reverence due the hired man, let me put a mark against him. He is, as a rule, an unclean fellow. But through no fault of his own. If the farm home is tub equipped, he rarely uses it, but when he does, the ring denoting the high-water mark is bristling with wheat beards, axle grease and good honest sweat. But a nasty mess for the good housewife to clean up.

What farm woman would not welcome a shower bath for the men in the basement? A simple partition of metal lath can be erected about one corner, this coated with a thin layer of concrete, a drain cut in the floor, and water piped to a joist overhead.

And show me the farm hand who would shun this enticing spot after nine weary hours in the field. With a plank door with a lock on the inside and a bench out of reach of spray to lay his clothes on,—why he would fairly jump at the idea. And it would keep him out of the bathroom.

And thus we have some ideas that the farmers like. Ofttimes, they, themselves, do not know just what they want until the very thing is mentioned. Sometimes, even when the idea is suggested, they are opposed at first, only to grow enthusiastically favorable at the end.

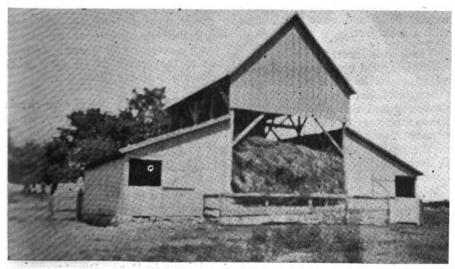
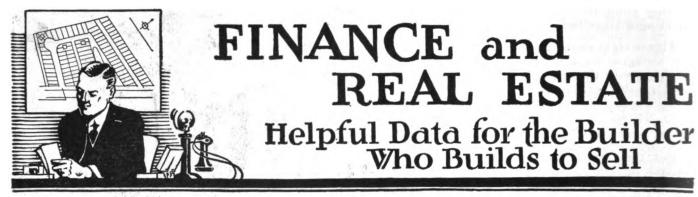


Fig. 10



Paying for Home Improvements by the Installment Plan

N our issue of July, 1922, we published an editorial on the advantage of paying for home improvements in installments. This, if it could be worked out by some feasible method, would greatly increase business done by builders.

The editor on a recent trip to Lancaster, Pa., discovered what its founders call the "Community Discount Company," the operation of which creates many possibilities for builders desiring to increase their business. The advantage of having such a system of loaning is apparent to everyone. There is a wonderful opportunity in this method, if it is carried out along proper lines, as it will educate people to make worthwhile expenditures, instead of having one's income frittered away on nonessential matters.

The Community Discount Company of Lancaster, Pa., is an institution that has only been in operation for about six months and in the writer's conversation with the genial official in charge, he stated that they were doing considerable business as their method of making loans seemed to meet a popular demand. The stockholders of their company consist of different local merchants, in every line of trade, together with some real estate men, bankers, attorneys, etc.

Builders in almost every locality could do no better than to invest liberally in a similar company in their own town as here their money would be loaned out to finance work that they could create for themselves. It is in fact, on a smaller scale, the same method of finance used by prominent financial institutions in making loans to large manufacturing firms.

Financing a building operation is the hardest problem that confronts the prospective home owner and it is equally true with a family after they have their own home and want some improvement made. It is probably too large and costly to be paid for in spot cash, and too small an amount to warrant the expense of obtaining another mortgage.

T HIS condition of affairs results in the postponement in most cases or an abandonment of the contemplated improvement. In other words, a real good job was lost for some builder because the owner could not properly finance it at the time; but could it have been paid in installments, he would have gone ahead with the project.

The loan is secured by a joint note which is signed by the owner and his wife together with the builder or any other party known to the Discount Company and this of course makes the contractor or other merchant equally responsible for the payment of the amount due to the company. A form of this note is reproduced herewith.

The funds to loan are secured from the stockholders who receive six per cent or more on their investment. The company charges at the rate of ten per cent per annum for the loan which is payable, both principal and interest, at the rate of two per cent per month which clears up the loan in a little less than one year.

The builder of course receives his pay spot cash when the job is finished and all of us know that this is a mighty pleasant thing to have happen to us.

An installment made to an individual is not as good as when made to a bank as there is a moral obligation on the part of the borrower to meet his payments promptly at regular intervals for he knows that all the stockholders will know of his default and there are some merchants from whom he may desire credit at some future time. This is a part of the detail work that is better handled by a banking institution rather then by the contractor himself even if he is financially able to carry the accounts.

Would it not be a good thing for contractors to combine with other merchants in their town to establish such a company? It would certainly be to the benefit of all as it would prove a business stimulator.

ROM a little descriptive circular issued by the company, we reprint the following which will give some additional information:

The Community Discount System

What It Is—The Community System is a newly organized financial institution, performing the same service for the average individual that the bank gives to the big business man.

WHAT IT DOES—Provides an easy method for persons of moderate

means to secure loans of money in any amount up to \$300, at reasonable rates of interest, payable by small weekly savings. Its scope is so broad that if you have a financial problem of any sort, a visit to this institution will show you an easy solution.

Saves Worry

This system helps you eliminate the worry of unpaid accounts, if you have any. You do not have the emYou call at this institution weekly, or semi-monthly, as the case may be, and by small savings, you have accumulated a sufficient sum in a short time to pay your indebtednes. You have had the use and pleasure of the article all this while, and have not missed the small deposits that have been made—which are as little as 2 per cent of the principal and 2 per cent of the total interest each week. This is a community institution of service for mutual advantage.

Have Home Repairs Made and Pay Contractors With Note

Suppose you need repairs in your home. You can have the work done by the plasterer, plumber, contractor, painter, electrician—then sign a note which they endorse and have it discounted at the Community Discount Company, paying it off in regular weekly installments. The doctor, lawyer, undertaker and other professional men may be paid in similar manner.

OMMUNITY SYSTEM 'A Community Service"

Community Discount Company

	Lancaster, Pa.,	192
		jointly and
severally promise to pay to the order of the Oc	ommunity Discount Company	equal
installments of \$each, the first	t installment falling due one week from	this date, being the
principal sum of \$with interest t	hereon at the rate ofper week	, equalized during the
term under the provisions of the Act of 1915, P. I at the office of the said Company in the City of L received; and I hereby authorize any attorney of therein and confess judgment against me for the attorneys' commission, if collected by process, here and waiving all benefit from any stay, extension, And the further condition of this obligation installment of principal or interest as aforesaid for due, then the whole principal sum shall become defined the conference of the co	ancaster, Pennsylvania, without defalcat any Court of Record in Pennsylvania, of e whole of said installments as aforesaid reby waiving all inquisition, exemption a exemption, or relief laws. on is such that if at any time default of the space of one week after any payn	ion or set off for value r elsewhere, to appear d, and costs and 10% and stay of execution, shall be made in any
(Witness)	_	
(Witness)		
(Witness)	•	

barrassment of collectors and the annoyance of monthly statements. All you have to do is to make regular payments to the bank.

Suppose you feel that you need, and should have, some useful article—you hesitate—it is a question of an outlay of a considerable amount of money. Come to the Community Discount Company, where you can obtain that money. You pay cash for the article you need, and are under obligation to no one.

Easy to Pay Debts

Suppose, for example, that you have three bills that you want to pay, but due to sickness or temporary unemployment, have no available funds to meet them. The doctor's bill is \$50; and two merchants' bills are \$50 each or a total indebtedness of \$150. Come to the Community Discount Company, get an application blank and note. Then make arrangements with each of these parties you owe to endorse your note for the amount due them, individually.

Mobilize Bills at One Point

An honest man is frequently embarrassed by bills he cannot pay and often he resorts to the necessity of small payments on each. Through the Community System he can mobilize his bills at one point and then liquidate his indebtednes by regular weekly payments without hardship.

We trust that the many advantages offered by this institution to encourage thrift, honesty, industry and progress throughout this community will be utilized by our good citizens.

Using the Steel Tape

Being a Part of the Instructions on How to Read a Survey

By J. LAWRENCE MICHAELS

HE first lesson of a builder's education in measuring and staking out his own lots, is in the use of steel measuring tapes. Most people are of the opinion that just reading the graduations on the face of the tape is simple and believe that that is all there is to it. How mistaken they are in this belief they have yet to learn and many pay dearly for this knowledge.

Steel tapes can be had in fifty and one hundred foot lengths and the faces are graduated in either eighths of an inch or hundredths.

As builders know, most lots measure twenty or twenty-five by one hundred feet. For this reason, they should use the one hundred foot tape, with which it is possible to measure (or chain) from the front of the lot to the rear in one measurement, whereas, in the use of the fifty foot tape, the measuring would have to be done in two lengths, with the possibility of making a mistake.

A mistake of this sort was made by one contractor who used the fifty foot tape. Measuring from the mark on the pavement in

How to hold pencil and tape to mark off a certain distance. This permits tape and pencil to be swung together for an accurate mark.

front of his lot, he ran the tape out the entire fifty feet, placing a nail in the ground showing where the measured distance came. Advancing the balance of the distance to the rear of the lot, he measured his second fifty feet. This was perfectly correct, but the man holding the other end of the tape did not hold on the nail placed in the ground to mark the first fifty feet, but mistook some other small mark on the ground for the nail and held his end on this. As a result, the measurements were six inches out. Luckily the error was discovered in the checking up, which should always be done.

F this builder had used a tape I one hundred feet long, the chances of making a mistake would have been negligible, and there would be no question in his mind as to the accuracy of the point his assistant held the other end of the tape on. There would have been just one chain from the lot line in the front to the lot line in the rear. In using either of the two different graduations on steel tapes, it is purely a matter of choice as to which the builder should use. Some might prefer the straight foot rule graduation, marked off eight divisions to the inch, while others would rather use the tape marked off in ten divisions to the foot and each tenth marked off again in ten divisions.

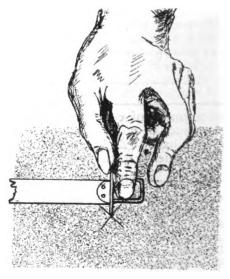
Many mistakes are made when the person measuring on pavement, marks his points at the required distance. He holds the tape flat on the ground as one would hold a ruler in measuring a piece of paper, and then makes a tiny pencil mark that will be difficult to find when the time comes to do so. In the illustration the proper way to hold the pencil and the tape is shown. The pencil should be held on the blank side of the tape, with the graduations facing up so the holder can read them at ease. The pencil can then easily

be slid along the tape to the proper measurement, keeping a moderate tension on the tape, to prevent slack, which would naturally make the distance measured tally short. Holding the pencil tightly on the tape, draw a line on pavement. The tape will act as a guide and it will be found that this line is absolutely correct, providing, of course, that the pencil was held on the proper figures.

A pencil crayon of blue or red will be found preferable, as it is easier to find the mark again, and it will not wear off the pavement as quickly as common black lead. For a permanent mark a small chisel cut may be made.

A great deal of responsibility for the accuracy of the measurements depends upon the man holding the other end of the tape. He should pass a pencil through the ring which is on the zero end of the tape. This enables him to maintain a strong, steady grip on the tape when the man at the other end places any pull on it.

In some cases where the ring is connected to the tape, there is a small peg projecting about an



Above shows method of holding steel tape on crosscut in pavement. Note position of peg. It should be held in exact center of crosscut.

eighth of an inch beyond the edge of the tape. This peg is the beginning of the actual measuring face of the tape, and should be held on the marked point from which the measurements are being made. At no time should the extreme end of the ring be held on this point, for by doing so, measurements will be incorrect by at least an inch to the tape length.

This detail in the use of steel tapes is of great importance. A party of surveyors had recently employed a young man who was new to the surveying business. In chaining through a street from corner to corner, before staking out a certain lot, the young man was detailed to hold the zero end of the tape. The total length of the street was eight hundred feet according to a previous map.

The surveyor at the hundred foot end of the tape was too far away to notice how the new man was holding his end of it on the measuring points, which happened to be crosses cut into the pavement. When the whole street had been measured, the tally showed a total distance of seven hundred ninety-nine feet two inches whereas the total should have been eight hundred feet exactly. The

surveyor then inquired of the new man how he held the end of the tape. The young fellow illustrated it to him by holding the end of the ring on the mark. The surveyor did everything but discharge the man on the spot. Had he taken a few moments to show him how to hold the end of the tape, instead of trusting to chance, this mistake with its involved waste of time and loss of temper would have been avoided.

THE builder should always have at least two good tapes in his kit. Kinks occur frequently in the steel tape and when a kink does form, the slightest pull on it will snap the tape in two. Great care as to accuracy must be taken in repairing a break of this sort.

Repair lengths can be purchased at nominal cost from any dealer. The repair kit should consist of repair lengths, a combined punch and riveter, steel scissors and box of brass rivets. In making the repair, the first thing to do, is to cut off about two inches of the broken tape, one inch from each part of the break. Then cut a correspondingly marked piece from a repair length, making sure that the figures are the same as those cut from the broken tape. Fitting the

graduation lines exactly over each other on the tape being repaired, a hole is made with the punch into which a rivet is placed and flattened out tight. The same is done with the other end of the broken tape. When the mend is finally made, the tape should be tested with another tape known to be in good condition.

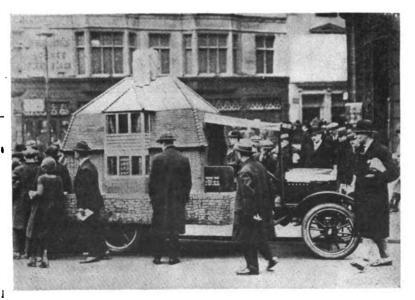
Builders should under no circumstances use a cloth tape for measuring long distances on streets. A cloth tape is all right for carpentry work, but is a rather risky proposition to take a chance with, in measuring distances where so much is at stake in the event of an error. Cloth tapes will stretch when used a while and the figures wear off, making it doubly dangerous to trust to them.

Steel tapes must be kept in Al condition to insure the best results. When wet or damp they should be strenuously rubbed with a good dry cloth, and a little oil may be used to prevent rust but be sure to rub all the oil off after cleaning, as the oil will collect grit and dust, scratching the tape.

The use of the tape in connection with the transit and level is a rather lengthy subject and will be explained in our next article.

A Cottage on Wheels

YOME time ago we published a picture of a very clever advertising stunt of a Western lumber company showing a body of a house built on a Ford. This idea has spread and the picture that we present herewith shows another "Lizzie" with a house body. This car is being used by an English company, The Halden Estates Co., Ltd., who are in the real estate business at Hillingdon,



near Uxbridge, Eng-They have found that the use of this car is a piece of well-paying advertising as it always attracts attention and shows up to advantage the sixroom cottage which the firm is making a specialty of building. The driver's seat is outside the house so he is not hampered in any way. Many builders could have something like this built for their auto to attract attention.

Pivoting Buildings During Moving

Being the Final Article of Valuable Series on How to Successfully Move Buildings

By E. W. La PLANT

N many instances, a contractor is obliged to turn a building almost completely around, in many cases a one-half to three-quarter turn.

The method of placing either truck or roller is quite a poignant proposition to many contractors, and for that reason, I have decided to write this article, and illustrate same to the best of my ability. The subject is one that I am sure can be best illustrated with diagram drawings, which I have prepared and indicated with letters to indicate the points which I desire to make.

After you have studied the illustrations, I am sure you will agree with me that pivoting buildings, no matter whether it is a small woodshed or a four-story brick building, is very simple if the following directions are followed out carefully.

Figure 1 shows a building mounted on rollers, but the rollers are all set and pointed to what I call the pivot point A, which is the turning point designated by a flag or pole painted red, so that it can be clearly seen. I use for my work a bright red stake, placed in the ground. This point A is located by taking a tape-line and measuring the distance from the point A to the corner of the building, and then describe an arc between points A and B, for one side of the track, and then to op-posite side of building to the other track, which forms a guiding basis for laying the track, and also the run-way.

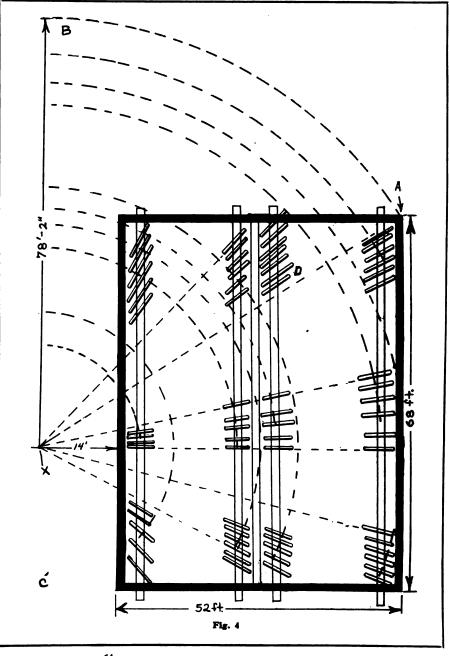
This gives the workman an exact idea of where the track is to be placed. Always drive a small stake every three or four feet in the center of the tracking, so that they will know how to place their track.

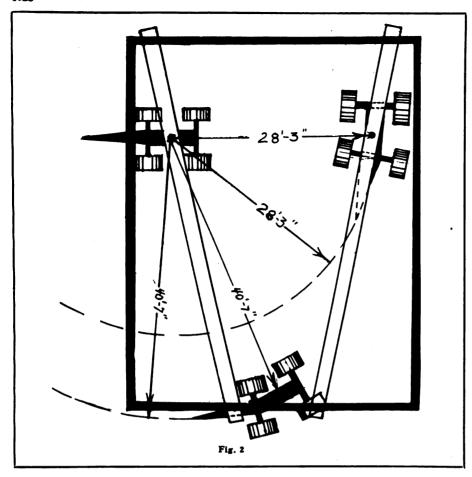
If there is not room enough to make the turn as shown, then I

move my point A back the necessary distance. Say for instance, we lack 5'3" in clearing the other side of the lot and it is a store-building placed right on the line. I desire to run the building in, and in order to do so and clear the building, must move this point

back 5'4", then take the measurement and describe the arc to see if I have the correct clearance.

Pull the point A back toward C until you have proved that your circle described will clear in every way, without any trouble. If it





describes an arc at intervals of 2 or 3 feet as I have stated before, the stakes will be an easy guide for the center of your tracking, provided you build the tracking to make the turn.

In cases using steel trucks, where planking is necessary, simply lay your planking down in the same manner. Where planking is unnecessary, you can regulate your building by guiding the center of the truck directly over the stakes.

Take the different points of your rollers and describe the different points of arcs. Each point will take a different circle, whether of a larger or smaller diameter, and describe these arcs and then make your run or tracking just the same as shown in Figure 1.

After you have all the tracking and everything arranged, you will have an exact place to set your rollers. Place the rollers under the shoes and point them to the point A, and in this way each one will describe a proper circle without unnecessary friction or resist-

ance. It is necessary to sight this point from the front face of your roller to the point, in setting your rollers this way. Every one will run free and will not slip and not injure your rollers.

On very heavy or short turns, it is necessary to line your rollers up

every seven feet, to keep them in correct line with your pivot point. On very heavy work, I generally use a shoe 5 or 6 ft. long. The reason for this is that you will always try to run in, when you are turning on one end of the roller.

The roller travels the length of the shoe and if the roller breaks, you can easily extract same, when the roller is operating under a very long shoe. Besides, you will get a better bearing, having more shoes and having them shorter. It will afford a better bearing, for it is much handier to operate.

Figure 2 shows a floor-plan view of a house with three trucks mounted under same, on the three-point loading plan. This shows the method of pivoting which is followed along the same line as that just described for moving buildings on loose rollers. In this particular case, the left rear truck is acting as pivot point, and you take the measurement from front truck distance to this pivot point (taking center to center of the bolster or the king-bolt point). Say that the distance is found to be 40'7": then describe an arc, setting out the stakes which indicate where the front truck will travel.

We will next measure the distance between the two rear trucks from king-bolt to king-bolt, and find this distance 28'3". Now describe another arc, and set out the stakes or indicator, to show where rear truck must be placed. The hitch



Fig. 3

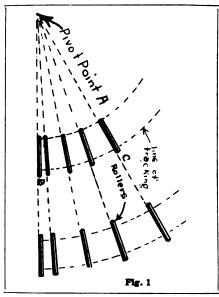
will then be placed at the front end of the building, and all is ready to have power applied and the turn started.

If it is necessary to shift your angle of power or draft, you should keep same in line with the direction of the circle. I am giving in Figure 3 a photographic illustration of this job handled by a contractor at Port Henry, N. Y., and you will note that he has followed out the suggestions and ideas that are shown in Figure 2.

There is another point that I would like to call attention to, in the photograph, and that is the novel arrangement of trussing the front porch, by taking a heavy wire and running up from the front porch up to the attic and attaching to a brace, and then winding this up tight, thereby carrying the front porch, in a substantial practical way.

Figure 4 shows an illustration of a method of pivoting a brick building or a frame building, where the job is handled on rollers. In this particular instance, the pivot point is practically right near

the center of the building, and the building is being turned out onto the street at this point, and it is necessary to turn at the angle indicated. The point X is then established, which is found to be 14' from side wall of building.



With this as the pivot point, the arcs D and A are described to indicate the roller run. As you will note, each one of the roller runs means necessarily a separate in-

dividual arc described, and in this case the stakes are set to indicate the travel for roller.

This is only necessary where three or four runs of rollers are placed under the building, as in the case of a heavy frame or brick building. On smaller frame buildings, the ordinary runs will be two parallel runs. The rollers you will note are set pointing to the pivot point X, as was explained in connection with Figure 1.

The modern steel trucks are fitted with a ball and socket plate, which forms a perfect pivot point, and makes a better bearing than pivoting on a flat surface, or just having some rollers in the corners to pivot on. This reduces the draft. By following instructions laid out, you will never have occasion to twist or turn your running sills whatsoever.

If readers ever experience any trouble in pivoting or moving buildings, and would like further suggestions, I certainly will be very glad to help, by answering the question in a future issue of BUILDING AGE.

Builders that Succeed—and Why

By FRANK H. WILLIAMS

OME builders make tremendous successes of their enterprises—successes that stand out in a field where success is so prevalent.

Why is it that these builders make such big successes? Wouldn't a careful investigation into the reasons for their successes and report on these reasons be of real help to other builders in doing the same thing?

With the thought in mind that this would be the case the writer recently did some interviewing of particularly successful builders and from them secured some interesting and worthwhile material explaining why, in their own opinions, they have put their businesses over so splendidly. And this information is presented herewith in the hope that it will be of real help and inspiration to other builders:

Builder No. 1

"Yes, the company of which I am the founder and president. has put over the building game to a pretty good success and I attribute much of our success to the fact that we have specialized on a certain type of house.

"In all of the years I have been operating as a builder it is very seldom indeed that I have put up a home selling at more than \$10,000. Most of the homes erected have run from \$7,000 to \$10,000 with a few under that price. And we have always tried to give the utmost possible in the way of a home for such prices.

"Now this thing of specializing on a certain type of house has done these things for us:—

"First, it has enabled us to put up homes more quickly than other build-

ers for the reason that our workers are accustomed to the type of houses we put up and know all about them and so can rush them through. This means that we frequently save as much as a week or ten days when putting up a home and this means a big saving when compared with the time taken by other builders in doing the same sort of work. This, in turn, means that we can sell homes more cheaply than other builders and this, naturally, gets us a splendid reputation for being reasonable in our prices. All of which brings us more business.

"Second, it has enabled us to buy with better results all around. It has enabled us to buy in larger quantities because we use the same sort of material in most of our houses and so has made savings for us along that line

"Third, it has saved us many an annoying incident when people have come to us and asked us the price of some particular house because it has let us quote them a price which doesn't knock them off their feet. There is nothing, in my opinion, that will kill a sale quicker than to have the prospect become enamored of some certain house and then find, upon investigation, that the house is far beyond his ability to buy.

"All of these things have helped us greatly in becoming particularly successful in the building and selling of homes and we are thoroughly convinced that it is this thing of having a definite policy with regard to the building and selling of homes which has been as much responsible as any one thing for our success."

Builder No. 2

"I attribute a very large part of the reason for our success to the fact that we have always been advertisers and to the fact that our advertising has always been interesting and different from the ads of competitors and to the further fact that we have never exaggerated in the least bit in our advertising. Also we have always used our name in the form of a trade mark in our ads and this has helped to identify us with the public and make them recognize our signs when placed in front of the homes being erected by us.

"We have pursued a definite policy in our advertising. We have always advertised on Mondays when there are the fewest numbers of ads in the papers and this has meant that we have had to compete with the fewest number of other ads in getting the attention of the papers' readers. And we have always seen to it that our ads appeared on the right hand pages of the papers. In this way we have assured the maximum amount of attention for them and have made them particularly effective. Also we have never crowded our ads, we have always had plenty of white space in them, we have confined each ad to a single topic and we have always made them newsy.

"In our ads we have always given interesting news about our activities, the number of men employed, the number of new homes under construction, the location of the homes being built, the number of nails used by us in the course of a month, the things said about our homes by sat-

isfied new purchasers. And so on.

"All of this has gotten a lot of attention for our advertising and has made the advertising effective and has helped us immensely in selling more homes."

Builder No. 3

"Probably the one thing that has done as much as anything to make a success of my business has been the fact that right from the start of entering the building game I have been strong for organization among the builders and real estate men. Years ago when organization among people in our game wasn't anything like

THE REASONS FOR OUR SUCCESS

We have always advertised—it pays.

We have specialized on building a certain type of house — volume production cuts costs.

We have been strong for organization a mong the builders and real estate men—co-operation helps everyone.

The thing that has done the most for us has been the hooking up at every turn with people who have bought homes from us service means satisfied customers.

what it is now and when it was quite the thing for one builder not to speak to another, I started the ball rolling in this town for greater cooperation among builders. And I kept hammering away at the proposition until this town became one of the first places in the country to have a builder's organization.

"All the time I was doing this I had in mind the idea that it would give all of the builders more advertising and greater prestige and so would be a splendid thing for all of us. But I really had no idea that it would give me as much advertising as it did.

"All the time I was boosting the organization proposition the papers were using my name constantly and

this got me before the public all the time and made folks think, eventually, that I was the leading builder of the city and this brought me in a lot of business that, otherwise, I never would have gotten.

"And while it wouldn't be possible, probably, for another builder to work up business in the same way nowadays with as many builders and real estate organizations as there are, still a builder could get a lot of publicity for himself by going in strongly for home town boosting, or by taking a leading part in his own builders' or real estate organization. Any organization welcomes the man who is willing to do more than his share of the work and the man who does a lot of the work is the man who gets the publicity that helps his business."

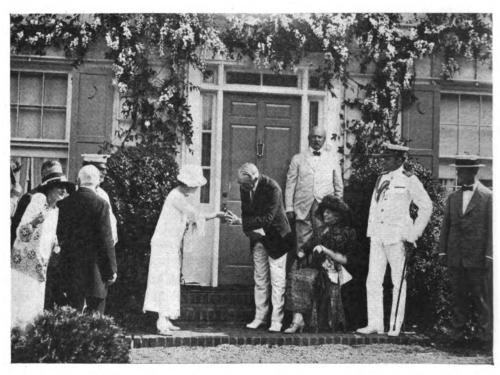
Builder No. 4

"The thing that has done the most for us in putting this business over to a big success has been the thing of hooking up at every possible turn with the people who have bought homes from us. Whenever we get a good chance for doing so we mention in our advertising matter the names of the people who have purchased homes from us and we give their addresses and tell about the types of homes they are occupying. This always makes our advertising specific and personal and helps immensely in making it more effective.

"Also we keep in touch with the people who have bought homes from us and we even make minor repairs for them without charge. This is done for the purpose of retaining their good will because we feel that the people who have purchased homes from us constitute our biggest asset in going out after more business. If we have the good will of the people who have bought homes from us then we can be sure that they will give us the names of prospects and help us in every possible way in getting more business. This has been proven to be the case time and again and we feel that any builder that has the active good will and co-operation of the people who have purchased homes from him is pretty certain to make a big success of his undertak-

All of which is presented in the hope that it will, as has been said, prove to be of real help and value to various builders in different parts of the country.

Formal Opening of Home Sweet Home



Nour June issue, we described the building of the demonstration house for Better Homes Week, which was erected on the White House grounds at Washington, D. C.

The modernized replica of John Howard Payne's Long Island Home was opened and dedicated in Washington June 4th by President Harding. It is now the property of the General Federation of Women's Clubs to whom it was deeded by Mr. L. Porter Moore, President of the Home Owners' Service Institute.

The house will be moved to another government site where it will remain peramently as a monument to the beautiful sentiment of "Home, Sweet Home," as a model of sound and economic house construction and as a theatre for the demonstration, on the part of the General Federation, of modern ideas in home economics.

As the house was built in conformity with the Department of Commerce Dwelling House Code, it is, in a sense a government example of sound, permanent structure and of the reduction

of costs to a minimum consistent with the maintenance of this quality.

In the above picture, President Harding accepts the key to mode! house from Miss Lida Hafford, Director, General Federation of Women's Clubs. The President then unlocked the home, formally dedicating it. Mrs. Harding is shown seated and standing behind her is Secretary Weeks.

Below is picture of the completed house as it appeared during Better Homes Week.



What the Editor Thinks

Bungalow Homes

TYPES of homes today are far different from what our ancestors desired in a great many ways. Bungalow homes are gaining in favor. They are a little more costly to build per square foot than two-story houses, but the advantage of having all the rooms on one floor make them more desirable to a great number of home owners. In this issue, we have devoted quite a good deal of space to bungalow homes, and the designs shown will give builders quite a number of interesting talking points to be used in closing a contract with prospective home owners.

Builders of The Future

THE gift of a substantial sum of money to found a school of building in several of our universities was recently made by Mr. Louis J. Horowitz, President of The Thompson Starrett Construction Company of New York. The purpose of the founder is to have these colleges prepare a practical building course that will produce men of highest order of intelligence to carry on the art of building.

But few realize the immense progress made in the building industry, especially so during the last fifty years. Building has called on many different arts and industries for material.

Different inventive minds are working at our problems and it is safe to predict that the next fifty years will see as much revolutionary progress made as the last. It may be that our fifty-story buildings will be considered small. Better methods of erection will no doubt be involved, cutting down the amount of manual labor necessary in the erection of buildings. Yes, the industry holds out a bright future to young men who will apply themselves to their profession because of a liking for it.

Doors in Public Buildings

M ANY tragedies have occurred when an unfortunate crowd is trapped in a burning structure and jams against a door that swings in. The awful disaster of May 18, at the Cleveland S. C. School House is another terrible lesson. Seventy-six men, women and children were burned to death in that holocaust. Why? Because no one thought it would happen!

Builders can render a public service by calling the attention of school boards, church trustees, etc., to the danger that lies in having doors swing inward in any assembly room. It is a crime to have any such building in one's locality. In these days when antipanic locks, etc., are to be had, there is no excuse whatsoever of tolerating such death traps. Do your bit by having every such door in your locality made safe. If there is no other way do the job yourself as a civic duty.

Why Study?

CURIOUS indeed are the ways of the world, or rather the people that inhabit it. Two items in this issue of BUILDING AGE reflect some of this queerness. In the one we tell of bricklayers getting a base wage of \$1.25 per hour or \$12 per day for eight hours' work, plus a bonus.

Another item calls attention to the examination for structural draftsmen to be paid from \$6.80 to \$8.80 per day. The necessary qualifications are such that only men who have spent a number of years of intense study and have had a good deal of practical experience could qualify.

It seems to us that the building industry would suffer less by the loss of bricklayers rather than by the loss of men capable of designing and superintending. Is it not time that they were paid wages equal to that of a good laborer?

Tax Exemption Again

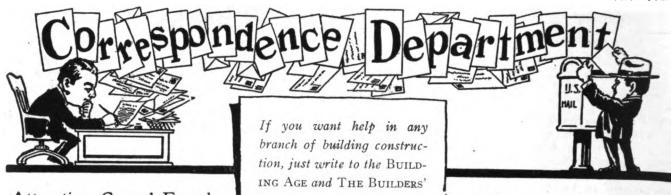
THE shortage of housing in New York City has not been met, despite the great amount of new construction that has been completed in the last few years. To give a further stimulus, the City of New York has extended the tax exempt period for another year, expiring in April, 1924.

Peace for a Time

ARIOUS strikes that occurred V during the past two months have nearly all be settled. The different mechanics in practically all cases have been granted wage increases. Bricklayers around New York are now being paid at the rate of \$1.25 per hour, plus in many cases, a bonus of from one to two dollars. Plasterers and plumbers have also been granted an increase in their rate of pay. While this is all very nice for the mechanics, the contractor who cannot go back on his word and who has to foot a loss, hardly feels elated over the result. Some day, perhaps, we will have a rate of wage and price of material fixed for the job, so that the contractor will know absolutely what he has to figure on.

Have You a Builders' Exchange?

In every community builders should get together to form what is commonly known as a "builders' exchange." Your brother builder has perhaps had the same trouble that is now bothering you. How to overcome the difficulty would be interesting and valuable to you, now. Likewise, you may have some point that would be of value to others. Get together, talk about your problems, be sociable to each other. All will see the folly of the cut-throat competition; there will be less loss and building will be done on a more ethical scale.



Attractive Gravel Faced Walls

DUE to the symmetry in the order of the surface of poured concrete walls they are sometimes not attractive. Everybody knows that concrete is the most durable, and when properly reinforced, the strongest material that can be used in construction work today. By using a little ingenuity or forethought when planning to build, concrete walls can be made very attractive.

The cut accompanying this article shows the front of a store building whose walls are principally made of poured concrete with a layer of large gravel on the outside of the walls, which gives the entire structure a rustic appearance. The corners and pilasters of this building were made of stone, but could have been made of concrete blocks, the smooth surface of the blocks being chiseled off, leaving a rock face.

The gravel walls in this building were made by building a solid set of forms on the inside, and a moveable set on the outside. This set of forms was two feet wide and made to slide up between a row of upright braces. The concrete was made quite stiff, and the gravel laid up in order as the concrete was poured, then the forms were moved up just as soon as the concrete was set

branch of building construction, just write to the Building Age and The Builders' Journal Correspondence Department. We will be glad to answer all your questions without charge.

All readers are invited to discuss the questions and answers published.

stiff enough to hold, and the gravel washed, and the concrete between the stones smoothed down with a small pointing trowel.

The extra cost involved in the labor on a wall of this kind does not amount to as much as it would cost to stucco the surface of the small wall. And it will be readily seen that this has a certain merit of its own.—B. F. Clark.

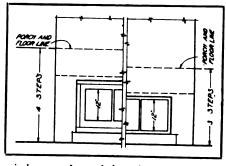
Steel Cellar Sash

THE low floor lines of Dutch Colonial and English types of houses necessitate the use of very small windows. The size generally used for this purpose fills a masonry opening approximately 1' 3\%" high by 2' 9\%" wide. It has three 8"x6" glass lights, a total of 114 square inches of glass area. With such limited daylighting it is not surprising that the basements in these houses are apt to be dark.

Steel basement windows are peculiarly adopted for use in houses of this type for two reasons. Through their use it is possible to secure 150% more daylight area in exactly the same size masonry opening. These figures seem startling, but they are very easily explained.

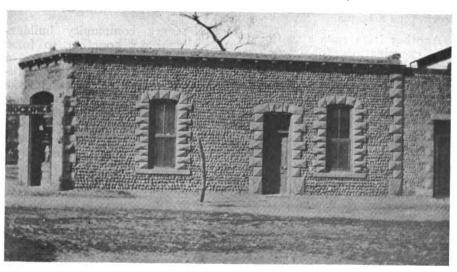
Where contractors formerly used three lights of 8"x6", as mentioned above, they now use a steel window with three lights of 10"x12" glass. This window has a total glass area of 360 square inches, admitting 216 square inches or 150% more daylight than does a wood window filling the same masonry opening. Narrower frames and members permit the use of larger glass lights.

Here is another peculiar advantage that may be derived from steel windows. Through their use it is possible to secure glass areas as large as those used in wood



windows and yet bring the floor line 5" or 6" closer to the grade. The entire absence in steel windows of the wide frames and members common with wood windows accounts for the lower over-all height. Notice the comparison of the wood and steel window containing 12-inch glass lights, as shown in the detail.

The average wood window has a frame and sash member at the sill 2 inches and 3 inches thick respectively. The head member of the sash is slightly less than that at the sill. It is generally $2\frac{1}{2}$ inches, although this may vary a trifle in different localities. The frame at the head is 2 inches, making the total thickness of these members approximately $9\frac{1}{2}$ inches. Now the entire thickness of the sash and frame at the head and sill of a steel window is less than 2 inches, or a total of less than 4 inches as compared to $9\frac{1}{2}$ inches for the wood window, a difference of $5\frac{1}{2}$ inches.—N. A. Harris.



Enterprising Garage Has Quaint Rest Room

Where the Valley Forge Road branches off from the Lincoln Highway at Devon, Pa., is a road side garage. Being twenty miles out of Philadelphia and at a turning point, it is a logical stopping place for automobile parties en route to the shrine of American liberty. Here the enterprising garage owners have made the most out of an opportunity in the form of an old log cabin, an original settler's hut, built about 1732. This little building has been cleverly renovated, a porch added, and attractive plank shutters with wooden hinges hung at the tiny windows.

The interior has been arranged as a rest room and office for the garage, which is a modern structure forming a wing with the cabin. The great fireplace with its built-in cupboard's is a fitting back ground for an interesting collection of colonial and Civil War relics.

Comfortable rustic furniture bids one welcome, while a low and heavy beamed ceiling completes the finish. Like most of the Devon properties in this historic dis-

Church Steeple Repair

WORK of every character, and trouble in all shapes and forms comes to the small town builder. This time it was a steeple of a Baptist Church located in a grove near Manito, Illinois. Woodpeckers "pecked" the half-inch boards covering the steeple until it was filled with holes and leaked like a sieve. We personally didn't think that a sufficient cause to alarm the congregation owing to their denomination, still they wanted it remedied.

The steeple had an octagon "O G" base under it, Fig. 1, so we built a planked scaffold somewhat below and all around the bottom of this base. An extension ladder on the comb of the church roof reached the plank. Then, as we found our platform built close in, we nailed a wood strip on the bottom of the sides of a short ladder making provision fon tacking it slightly onto the plank where used. A leather strap around both the steeple and ladder at the top provided safety from back-tipping.

The first step in re-covering the steeple with tin was to get the meas-

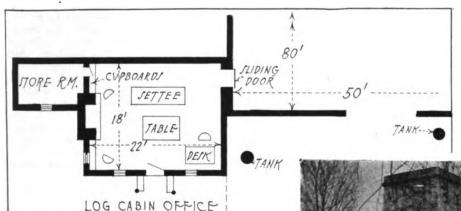
urements, i. e., length, base and top width; then on the ground where a roll of tin, seamed and soldered, had been provided, tapered strips were cut the length of the steeple to cover it, after which they were hoisted to the platform with a rope.

The "O G" base was first covered with separate tin, then the panels were covered, one by one, by taking the tin in a roll to the top of the ladder and let it roll down over the panel.

The tin was cut half an inch wider than the panels to provide stock for the nailing edge, H Fig. 2, which extends over each hip line that distance. In laying the first strip this extension can be tacked at the top, bottom and center temporarily; the opposite side also may be tacked to hold it in position until the next strip is nailed over and through it. When all have been covered except the last panel, the nails are drawn from the side extension H of the first strip of tin, when the side edge of the last strip can be pressed under it up to the hip line; then the first strip can be nailed and the nails will pass through the side edge of the last one. as has been done throughout the job.

A 1/4 or 3/6-inch edge is formed downward all around the top of the "O G" base. The panel strips are formed under at the bottom the same amount and are hooked onto the base. When all are laid this seam is hammered down tight. Nailing rather close under the base edge formed downward is advised.

The tin strips are nailed close and near the hip line, as shown at H Fig. 2, and when fully nailed the outer edge of the extension is formed over the nail



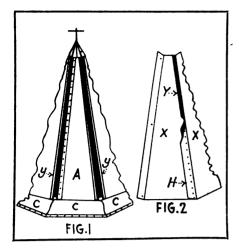
trict, the color scheme is that of green shingles, white trim, and cream colored plaster, rough cast.

AND REST ROOM

The whole group is not spoiled by any large or unsightly signs so common to these stations, and this proved no handicap to a thriving business.

Most of the old post roads which spread out like a spider's web from Philadelphia, were opened previous to the Revolution. Their beauty is that of fine shade trees and many colonial farm houses, bespeaking a prosperous country side. It is along these magnificent highways where our carpenters and builders should exercise their good taste as here exemplified, and so prevent the increasing disfigurements which are only too numerous to mention.—J. R. Ullrich.





heads and hammered down smooth and tight, which is known as "blind nailing." See Y, Fig 2.

If lightly coated with the following mixture, the hips then would withstand any test of weather without further labor or material: "Mix thoroughly 2 lbs. oxide of iron with coal tar until it is comparatively a dry mass, add boiling linseed oil and mix until the consistency of glaziers' puty." This mixture will not get hard; a glazed film will form on the surface impervious to water.

In this case a more elaborate finish was desired and given by placing a small hip roll over each hip, illustrated in Fig. 1 at y, y. When ridge roll is used the edge on each side of the roll can be "blind nailed" and the strips of tin under simply nailed through from the top. When the ridge roll was painted green to harmonize with the building trimmings, and the panels painted white as was the church, the effect was pleasing.

Our work ended in the fall, but our troubles commenced with April showers and thunderstorms. The building committee was told and warned that should lightning strike the tin-covered steepfe with no means provided whatever for leading it to the ground, serious damage was liable to occur to the church. They promised faithfully to have a rod run from the steeple to the ground, but never did.

Shortly after the church was struck and burned to ashes, but we positively know that a tin roof is a protection to a building from damage by lightning if there is a ground connection.—L. S. Bonbrake.

Convenient Clothes Bin

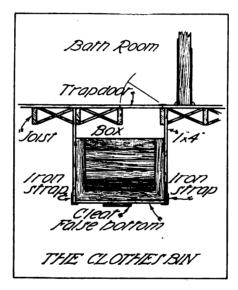
THE usual clothes chute leads directly from some room—preferably the bath—to the basement, where clothes, as they are dropped, fall to the floor of the base-

ment. This means that they must either be picked up from time to time or else lie there to be walked over.

A much better plan is shown in the drawing. In this case the bath is on the lower floor and a small trap door takes the place of the chute. The method, however, may be adapted to any type of dirty clothes conveyance.

The bin is an old dry-goods box, suspended from the floor joists by one by four inch strips, directly beneath the mouth of the chute. A false bottom, made to slide, is next arranged. This is moved back and forth on the two iron cleats, which are nothing but fairly heavy sheet or strap iron bent at right angles and nailed to the sides of the box. A cleat on one end of the box bottom affords a grip for opening the box.

During the week the clothes are dropped into the box. Then on wash-day the bottom is pulled out, allowing the clothes to fall to the floor. By using a shallow



box and building it up next to the joists it will be out of the way.—Dale R. Van Horn.

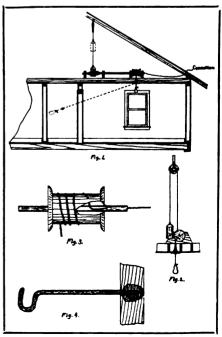
Extension-Cord Roller

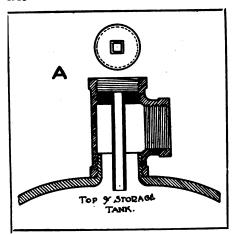
W HILE the electric light is far superior to the kerosene lamp, yet there is a disadvantage that presents itself to every one sooner or later. Perhaps you want to search for something in a dresser drawer. Maybe the bulb in the closet is out of order; possibly it is when you are in your workshop trying to find something in some dark corner of the place. Wherever it is that you discover this disadvantage is when you will first realize the necessity of a something similar to what I shall present in this illustrated article. I am using a bedroom of a one-story house for example (because every one is familiar with a bedroom). However, the extensioncord roller can be used to good advantage in shops, basements, garages, stables, and

many other places where occasionally it becomes necessary to carry the light.

Fig. 1 shows a cross-section of a bedroom with the extension-cord roller installed above. The dotted line in the room shows how this scheme permits the light to be carried into the closet. The position of the weight when the light is extended is shown in the attic with dotted lines. The weight consists of a bucket filled with sand, gravel or other material to give it the necessary weight. The pulley is an ordinary well pulley. A sash-cord or a small rope will do to fasten the weight to. This cord is fastened to the iron pipe used as an axle or spindle, which extends to the center of the attic room, where the drum is attached to it. When the light is extended and the cord is pulled from the roller the roller revolves and the weight rises; when the light is brought back to its place in the ceiling the weight reverses the revolutions of the drum, which in turn wraps the cord onto it, and finally holds the light to its place in the ceiling. The drum can be made of wood or metal, whichever is the most satisfactory and will fill the necessary requirements. The cord extending from the drum to the connection, as indicated in this figure, is a continuation of the extension cord.

Fig. 3 shows how the cord is continued from drum to spindle and on to the connection. This cord should have enough slack so it can twist without injury as the drum revolves. The brackets, which hold the drum in place by means of the gas-pipe spindle, are made of wood. The stop on the extension cord is made of metal to match the finishing plate on the ceiling, which is indicated in Fig. 2. This figure also gives a side view of the layout. Fig. 4 is a detail of a hook used to hang the light on when extended. This hook can be made of number 6 or 9 gauge wire.—H. H. Siegele.



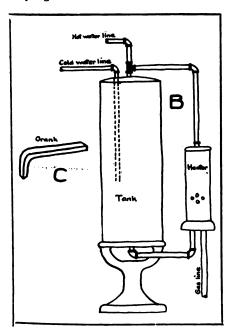


The Hot Water Valve

THE accompanying illustration "A" shows how an instantaneous hot water heater device can easily be made which can be used on any hot water tank, and which will make it possible to draw hot water almost immediately after the water has started to circulate in the system.

Take a brass bushing about 1/3 inch thick and thread the rim so that it will fit the inside thread of a tee coupling. Then make a ¼ inch square hole in the middle of the bushing. Force one end of a square brass pipe 3 inches long into this hole so that the bushing and pipe become rigid. Now, screw the bushing in place by means of the crank marked "C" on the illustration.

The coupling is attached at the top of the storage tank as shown in the illustration marked "B." After a few seconds, the hot water begins to rise to the top of the water tank and it is now possible by means of the brass pipe which has been inserted in the coupling to draw the hot water col-



lected at the top of the tank and at the same time permit the circulation in the entire system to continue without interruption.

Without this device the colder water would be mixed with the hot water after opening the faucet. Where gas is used the device naturally effects a considerable saving in expense as well as in time.—Albert Korte.

Keep the Saws Sharp

When a vise is used it is well to place a thin board on each side of the saw to keep the vise from damaging the saw.

In filing hold the file as nearly horizontal as possible. If it is held horizontally and at right angles to the blade of the tooth which is being filed, and the tooth is filed

AVE you ever used any machinery or device which has saved you time and money?

Have you ever invented any way of doing a piece of work quicker?

If you have BUILDING AGE and BUILDERS' JOURNAL wants your experience, and will pay regular space rate for it.

Your description should tell just how you saved time and money, either by a special way of using machinery or by short cuts in construction. Point out what methods you were using before adopting your "Time Saver" and show how your new method turns the trick. You can submit as many articles as you want.

Address The Editor, BUILDING AGE and BUILDERS' JOURNAL 239 West 39th street, New York City.

straight across, a perfect chisel edge suitable for the rip saw will be produced. In filing teeth to a chisel edge, if the teeth are all filed from one side a wire edge will be produced on the opposite side, which will make the saw run crooked. Hence it is best to file the teeth from alternate sides, filing half from one side first.

It is also necessary to joint a saw before setting or filing it. This is done by putting a flat file in a clamp so that it will be held perfectly level and running this over the points of the saw-teeth. Continue this jointing until all the saw-teeth are dressed down to the same length. Circular saws are jointed by holding a file stationary and turning the saw with its mandrel. A clamp for holding files, or a "jointer," as it is called, may be purchased.

Rip-saw teeth are chisel shaped, as these teeth cut a log or board lengthwise with the fiber. They should be filed across the saw at an angle of 90 degrees with the edge. The front of a rip-saw tooth is

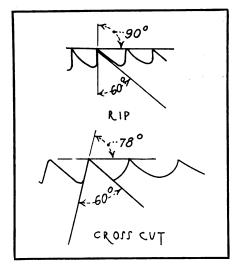
perpendicular, and the back is inclined at an angle of 60 degrees from the perpendicular front of the tooth. Rip-saw teeth should be set slightly to insure easy and smooth work. Soft wood requires larger teeth and more set to prevent binding.

A cross-cut saw that is to cut soft wood, such as basswood, redwood, butternut or pine, should be very sharp; similar to the tooth marked "sharp" in the diagram. The bevel or fleam on both the front and the back of this tooth is very wide, and therefore gives a sharp, weak tooth. This will insure fast cutting in soft wood, but in hard wood will cause the saw to buck or bang up. A tooth filed similar to the one marked "medium" is suitable for moderately hard wood. It has a moderate bevel at front and back.

A tooth similar to the one marked "blunt" is suitable for very hard woods. It has a narrow bevel in front and none at the back. A saw filed in this way will stay sharp even when used in very hard woods.

To set a saw the teeth are turned alternately to the right and left. This causes the saw to cut a slot wider than the blade of the saw, and thus prevents the wood from binding. A considerably greater set is required for saws to be used in soft, green wood than for those to be used in dry, hard wood. Do not try to set the entire tooth, but only the point, as indicated by the two drawings. This setting should be done with one of the many tools made for this purpose, and every tooth should be set at the same angle. Irregularity of set is bad.

When a saw has been filed it should be side dressed by laying it flat upon a bench and rubbing once or twice over the teeth with an oil stone. If you are to saw soft or green wood side dressing is unnecessary, but if you are to saw hard wood considerable side dressing will be of advantage, as it will insure a very smooth cut; in fact, smoother than one can plane the end grain with a block-plane.—F. H. Sweet.





News, Notes and Comment



Cement Making Pictured in New Film

MUCH of the unusual equipment involved in making cement is interestingly illustrated in a two-reel moving picture called "The Story of the Manufacture of Portland Cement," just released for general showing.

Starting with views of one of the large plants in which the country's cement is made, the film pictures in a non-technical way the essential stops in transforming thousands of tons of raw materials into Portland cement. Scenes taken at a number of plants are included.

From the moment that a great blast breaks loose a cliff of limestone in the quarry to the time when the finished cement goes into storage in big concrete bins, the process of manufacture is almost entirely mechanical — otherwise present day outputs would be impossible.

In addition to straight photography, animated drawings have been inserted to make clear what occurs inside the grinding mills, what goes on within the white-hot interior of the huge kilns, and how the cement sacks, suspended upside down, are filled after they have been tied.

This film can now be secured without charge by interested organizations through any office of the Portland Cement Association, or from Association headquarters at 111 W. Washington St., Chicago.

U. S. Civil Service Examination

THE United States Civil Service Commission announces an open competitive examination for Design Draftsman (Structural). Applications will be rated as received until August 31. The examination is to fill two vacancies

at the Naval Operating Base, Pearl Harbor, Hawaii, one at an entrance salary of \$6.80 a day, and the other at an entrance salary of \$8.80 a day, and vacancies in positions requiring similar qualifications.

Applicants must have had experience in the designing and detailing of steel, concrete, reinforced concrete, and timber structures, and in the preparation of drawings for the various types of structures usually encountered at naval establishments, such as buildings, walls, foundations, wharves, piers, etc. They must be capable of assuming responsibility for the development of designs and the making of estimates and computations determining their sufficiency.

Competitors will not be required to report for examination, but will be rated on their education, training, and experience. Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of U. S. civil-service examiners at the post office or custom house in any city.

Bricklaying as a Trade for Young Men

AY some brick? I s'pose I orter, or my life will be much shorter," is what Dr. Coue might say if he reads the U. S. Department of Labor statistics just issued, that masons and bricklayers are among the longest lived men, being only exceeded by blacksmiths, farmers and farm laborers. Fifty-five years is the average span of life for a bricklayer, while the average bookkeeper and office assistant is ready for the undertaker at thirty-six years and six months, according to the report.

"Bricklaying is a healthy, manly vocation for a young chap," said Ralph P. Stoddard, Secretary of the Common Brick Association, recently. "And the Department of Labor report certainly seems to bear out Dr. Coue's theory, at least in part, for building mechanics working out in the open air almost invariably seem cheer ful and happy minded, and a healthier looking lot of men it would be hard to find. The wages offered even an apprentice are very attractive, and many of the largest contractors in the country have come up from the ranks of the bricklayers."

Book Notices

Quantities and Quantity Taking, by W. E. David. Published by Isaac Pitman & Sons, New York; 166 pages. Price \$1.85.

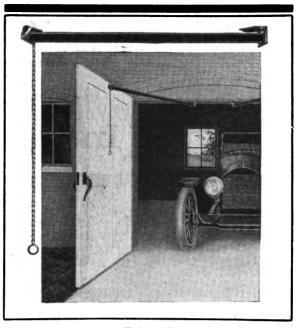
The object of a bill of quantities is to enable builders to arrive at a correct estimate of the work to be done and this book contains some very valuable information along this line.

As a guide to doing this, it is very valuable, as it has been written from an English standpoint. All prices, etc., are given in English money and English terms are used throughout, but for any earnest student wanting to find out the best methods for taking off quantities, this book cannot help but be useful.

Architectural Drawing, by Wooster B. Field. Published by McGraw-Hill Book Company, New York; 161 pages. Price \$4.00.

This is rather a useful reference book as well as a good text book. The illustrations are exceptionally well prepared and reproduced. Different forms of construction are illustrated and described, and directions are given for making the working drawings, and there is a very useful chapter on the orders of architecture in which the rules for proportioning are given and explained in simple language. A useful feature of the book is a dictionary of architectural and building terms.





A Holder that Locks Doors Open

GARAGE Doors on hinges cannot swing against the car when entering or leaving the garage, if equipped with

National No. 810 Garage Door Holder

When the door is opened, the rigid steel arm slides through the embossed steel catch plate and locks firmly.

To close the door, an easy pull on the safety chain operates the trip bar and releases the holder—the swivelled arms folding back along the head jamb.

Easily installed and a source of sure satisfaction to owner and builder.

Send for complete catalog of Garage Hardware.

Made of heavy-gauge steel, amply strong for any doors. Packed 1 pair in a package, complete with screws, in these finishes: Japan, Dead Black Japan, Sherar-dized and Dead Black Japan.

NATIONAL MANUFACTURING COMPANY STERLING ILLINOIS







PAINTING

Practical Points of Interest to the Builder

Enamel Painting on Various Surfaces

By A. ASHMUN KELLY

I T should be pointed out, in the first place, that enamel paint and varnish colors are two distinct preparations. The former is produced by grinding a pigment in an enamel varnish, which may be further reduced with varnish and a small quantity of turpentine.

The enamel may be white, or be tinted with color. A varnish-color consists of varnish, colored with a pigment, or color, but no body is given it as with enamel paint, the purpose being merely to produce a colored varnish.

Enamel painting is usually done on a soft white wood, which gives a better finish than other woods, though with care a good finish may be secured on woods as unpromising as cypress.

To make a first-class job on white wood the foundation has to be made with several well smoothed coats of flat white paint. Sometimes as many as a dozen coats will be applied. But this is exceptional, though for even an ordinary good job there should be several coats given, before applying the enamel paint.

Prime the bare wood with a coat of white lead thinned with 1 part turpentine and 3 parts raw linseed oil. Sandpaper smooth, dust off, and apply three coats of zinc white from which the oil has been drawn, mixing the resultant almost-oilless zinc with damar varnish. The fifth coat is simple damar varnish colored a little with zinc white.

Another coat of the same is then applied, which, when dry, is ready for rubbing with powdered pumicestone of fine grit, and water. This will produce an eggshell gloss. If a polish is preferred, then after the pumice and water rubbing, rub it with powdered rottenstone and sweet oil.

TO enamel-paint cypress wood, first apply hot glue size. Then apply a coat of lead paint, thinned with raw oil 3 parts and turpentine 1 part. Add also a little japan drier.

As cypress is often a little dark in color, it would be better to add a little lampblack to the white lead priming coat, which will make a uniform colored surface, and cause a more solid appearance of the white coating. This method is good in all cases of painting on a dark or unevenly colored surface.

It might perhaps be advisable, in some instances at least, to first prime the wood with the lead paint, and apply the glue size over it. This plan is usually employed when the finish is to be in gloss. And in such a case the glue size must be made with white glue, adding a little dry zinc white. Make it rather heavy and apply hot. Sandpaper it smooth.

White enamel paint must not contain oil, which will color yellow in a brief time. Either pale copal or damar varnish may be used. There is an enamel white made expressly for refrigerators, for interior parts, and this does not turn yellow. It is made from hardened

damar gum and is a very hard, lustrous enamel.

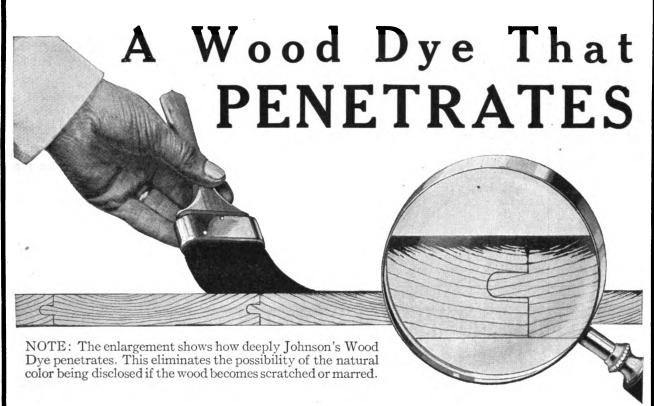
Factory-made enamel paint usually needs to be thinned some before using, to cause it to flow well and level-up smooth. Usc turpentine for this purpose, though this liquid has the undesirable effect of slightly flatting the finish, when a luster is desired, but may be rendered less so by using a little benzine with it. Add benzine very slowly and stir well.

There is an exterior enamel that will withstand the weather, and hence is useful for all kinds of work exposed to it.

M ARINE enamel, as its name indicates, is made to withstand water, and is therefore useful for coating with enamel such articles as bath tubs, sinks, water pails, and everything or place subjest to moisture. Neither hot or cold water affects it, and when it has been baked on it will withstand submersion in salt or fresh water for months without becoming soft or otherwise affected.

There is a "satin finish" enamel that dries to a satin-like surface which resembles polished ivory, and in time becomes as hard as ivory. It may be used on either interior or exterior surfaces. But for general exterior work, such as store fronts, camp furniture, etc., the regular exterior enamel does.

The enameling with paint of any surface, wood, stone, brick, plaster, wall board, etc., demands first of all a solid, smooth surface.



JOHNSON'S WOOD DYE

Johnson's Wood Dye is entirely different from the many wood stains and tints on the market. With it inexpensive soft wood such as pine, cypress, fir, etc., may be finished so they are as beautiful as hardwood. Its brings out the beauty of the grain without raising it in the slightest.

Johnson's Wood Dye is a *dye* in every sense of the word. It contains no finish whatsoever and, like most first class products, it answers one purpose only—it dyes the wood—the finish must be applied over it. We recommended Johnson's Varnishes or Polishing Wax.

Johnson's Wood Dye goes on easily and quickly without lap or streak. It dries in four hours and will not rub off or smudge. You will find Johnson's Wood Dye a big help in working out color schemes in stained woods. Johnson's Wood Dye is made in 15 beautiful shades, all of which may be lightened, darkened or intermixed. Full directions on the label.

FREE—This Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of the famous experts—illustrated in color. This book is written for the practical man—it gives covering capacity, includes color charts, etc. We will gladly send it free and postpaid. Use coupon at right.



S. C. Johnson & Son "The Wood Finishing Authorities" Dept. B. A. 7 RACINE, WIS.

Please send me free and postpaid your Book on Wood Finishing.

My Address.....

Digitized by GOOGIC

After that it matters little what the material is that the coating is applied to, though it should be observed that the character of the material is to be considered.

For example, a material as flexible as wall board, which in many cases is simply thick paper, will demand a paint that is itself flexible, or elastic, fit to yield to any alteration in the texture of the ground, be it contraction or expansion. So likewise with thin metal surfaces, and to a less extent to rigid metal surfaces of all sorts. But enamel paint is an elastic liquid when dry, sufficient for most coatings, and when not so a little camphor gum will help it, or use Venice turpentine.

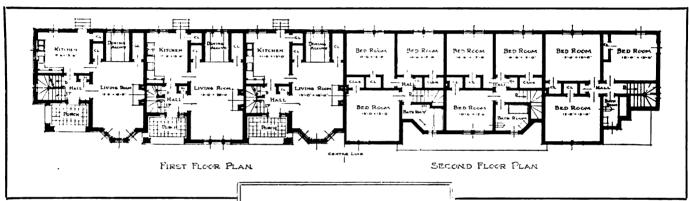
For exterior work the ename: paint should be a quick drier and give a hard surface, yet be elastic enough to contract and expand with the changes of temperature or weather, without cracking. But exterior enamels are made to dry a little slower than interior enamels, because a little oil has to be added to the former in the manufacture, in order to give them the desired elasticity.

Here is where the manufacturer has trouble in making the right enamel, one that will be elastic without being oily, for in this case the finish would be too soft, while if the enamel is not thus made elastic there is danger of its cracking.

In enameling the rule is to have each coat a little harder than the succeeding coat, while the coat upon which the enamel is to go should not be porous, but hard.

If enamel does not flow out easily add a tablespoonful of coal oil to the gallon of paint. Or thin out with benzine. This will not injure the gloss, while it tends to the avoidance of laps. Camphorated turpentine may be made by dissolving two ounces of gum camphor in a gallon of turpentine.

A non-absorbent primer and other coats may be effected by the addition of a little varnish and some driers, this being usually for priming and second coat.



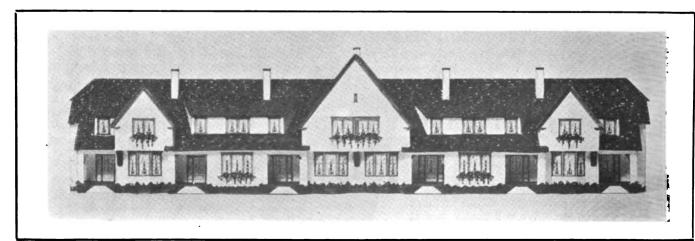
O avoid monotony in a row of houses is not an easy thing to do, but here is a very clever handling of six houses in a block; forming a most picturesque and artistic group.

There is a tendency today to eliminate the dining room, and in these plans a dining alcove forms an interesting part of the living room itself. Upstairs, three bed

Six Houses in a Row

WILLIAM F. SILLIMAN Architect Philadelphia rooms and bath are very conveniently located, all being connected by a short hall.

It may be interesting to state that the photograph below was taken from a cardboard model, made by the architect, who is a specialist in this line of work. He has found it a very satisfactory way to convey to his clients just exactly how the houses will look when completed.





THE new Natco Wall Construction Bulletin 174 was prepared as a text book for the use of the architect and contractor in designing bearing walls of Natco Hollow Tile for all types of buildings. It is the result of many years of building experience and has the approval of fire-proofing engineers and architects. It was designed purposely in standard filing size and contains nothing except practical details and working drawings for the architect's guidance.

This new Natco bulletin should be in every architect's and contractor's file. A coupon is attached for your convenience in requesting a copy. Mail it to us now. It has absolutely no strings attached.

NATIONAL FIRE PROOFING CO.
437 FULTON BUILDING, PITTSBURGH, PENNA.

NATCO HOLLOW TILE

National Fire Proofing Company 437 Fulton Building, Pittsburgh, Pa.

Gentlemen: Kindly send me a free copy of Natco Bulletin 174.

Name ___

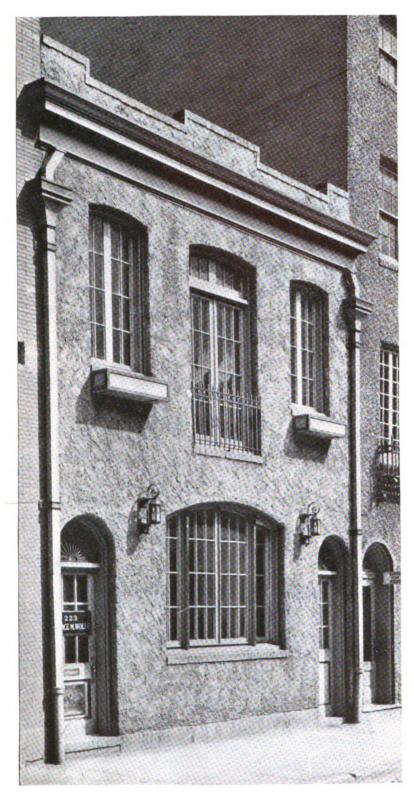
Firm .

Address

Digitized by Google

From Ugliness to Beauty

How An Old Stable Was Remodelled
Into An Artistic Office Building





HAT could be more unattractive than the old stable in the small picture shown above? The advent of the auto has made old Dobbin a back number and his house displayed the "For Rent" sign to no avail.

This old unpromising piece of real estate has been transformed into something not only useful but decidedly ornamental as our other picture shows, by a combination of bricks, wood, stucco, iron copper, and last but most important, brains.

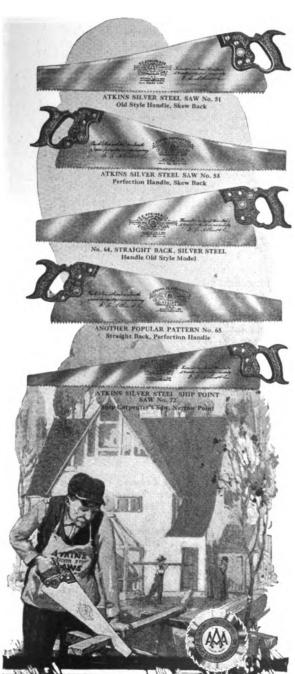
It takes practical ability to think of turning a useless piece of real estate into something valuable and artistic and this alteration job is certainly a worthy piece of work. It is located at No. 223 South Sydenham St., Philadelphia, Pa.

The little opening leading to alley was closed up by a door similar to that used on the other side. The entire old brick exterior was stuccoed; a new copper cornice and leader added and the parapet wall carried up a little bit.

WM. F. B. KOELLE

Architect Philadelphia

SILVER SA



A SAW MESSAGE TO MASTER CARPENTERS AND OTHER SAW USERS

The saws illustrated on this page represent only a small part of our line. In addition to Hand, Rip and Panel Saws, we manufacture the following:

Rock Saws Band Saws Circular Saws Coping Saws Compass Saws Concave Saws Cross Cut Saws Cut-Off Saws Dado Heads Groover Saws Flooring Saws Hack Saws Frames for Hack Saws Higley Saws Mitre Saws **Matcher Cutters**

Machine Knives of all kinds. Metal Cutting Saws for all makes of machines. Metal Cutting Machines, Swages, Shapers and other Saw Tools.

Write today for literature descriptive of our complete line. Specify ATKINS products and get the best.

> Ask for "Saw Sense," "How to Care For and Use Cross Cut and Hand Saws," also "Saw Fitting for Best Results." Enclose thirty cents for nail apron and useful souvenir.

E.C.ATKINS & CO.

THE SILVER STEEL SAW PEOPLE Home Office and Factory, INDIANAPOLIS, INDIANA Canadian Factory, Hamilton Ontario

Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks in The Fallowing Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore. San Francisco Seattle Paris, France Bydney, N. S.W. Vancouver, B.C.

USEFUL CATALOGS



Double walls for fireproofing are described in a booklet entitled "National School of Fireproof Construction." This booklet contains some vivid illustrations of the results of the fire hazard, which is today one of the greatest dangers in building. Builders will do well in sending to the Van Guilder Double Wall Co., Inc., 18 Engineering Building, 17 South Ave., Rochester, N. Y., for this booklet.

Asbestos roofing shingles of a design that lends distinction and beauty to any home are described in a number of catalogues published by the Asbestos, Shingle, Slate and Sheathing Co., Ambler, Pa. These shingles are made in different colors and are fireproof, weatherproof, indestructible, lightweight and economical. Interested builders can procure these catalogues by writing to the manufacturers.

Blue prints of high quality are made by B. L. Makepeace, Inc., 387 Washington St., Boston, Mass. Surveying instrument repairs of all kinds are done at low cost. This firm also carries a full line of print paper, survey instruments, and drawing materials. Buiders and architects should send for catalogue giving full description of all materials.

Sash Cords of strength and durability are manufactured by the Samson Cordage Works, Boston, Mass. Builders can secure an interesting catalog and card of samples upon request from the above manufacturer.

Copper for all building purposes is illustrated in a catalog published by C. G. Hussey & Co., Pittsburgh, Pa. Specifications for its use on roofs, gutters, etc., are contained in this little booklet and builders will do well to investigate.

Plumbing and Heating Supplies can be bought from the Hardin-Lavin Co., 46th St. and Cottage Grove Ave., Chicago, Ill. This firm publishes a wholesale catalog that is a handy book in itself and should be in every builder's library.

Lighting of the proper sort is one of the most important features of the modern home today. When constructing buildings of any description, builders should pay special attention to the location of electric lighting equipment, outlets and fixtures. A useful book, illustrating some methods of proper lighting, is published by the General Electric Co., Schenectady, New York.

Heating and Ventilating is of prime importance in the home. In warm air heating systems, it is necessary that the air be pure after warming and how this is done is described in an interesting book published by the Farquhar Furnace Co., Wilmington, Ohio. Builders should read this book before installing heating systems.

Store Fronts that lend a pleasing and beautiful appearance to the building are a necessity, because they aid in attracting trade. Store fronts of the better type are offered the builder by the Detroit Show Case Co., 1652 West Fort St., Detroit, Mich., and catalogs can be secured upon request.

Tools that have a high standard of quality and finish are manufactured by the James Swan Co., Seymour, Conn. The name of this company on a tool is a guarantee which no builder should overlook. A well illustrated catalog can be had by writing to the above rentioned concern.

Electric Surfacing Machines of efficient pattern are offered to the builder and contractor by Wayvell Chappell & Co., 139 North Jackson St., Waukegan, Ill. Each machine is equipped with trailing wire and may be hooked on drop-light connections.

Flooring that is sanitary, dustless, flexible, durable and comfortable is a commodity that should interest every builder. It can be adapted to every type of building. Everlasbestos floors are described in a sixteen-page booklet published by the Everlasbestos Flooring Co., Rochester, N. Y.

Rigid Metal Lath is the foundation for constructing a solid plaster base. The ribs act as shelves and hold the mortar, saving much waste and time. A handy catalog giving illustrations and specifications can be secured by builders from the General Fireproofing Co., Youngstown, Ohio.

Hinges of plain and fancy design are pictured in a fine cloth bound catalog issued by the Griffin Mfg. Co., Erie, Pa. Wherever it is necessary to use hinges, hasps, etc., a suitable model can be found in this book.

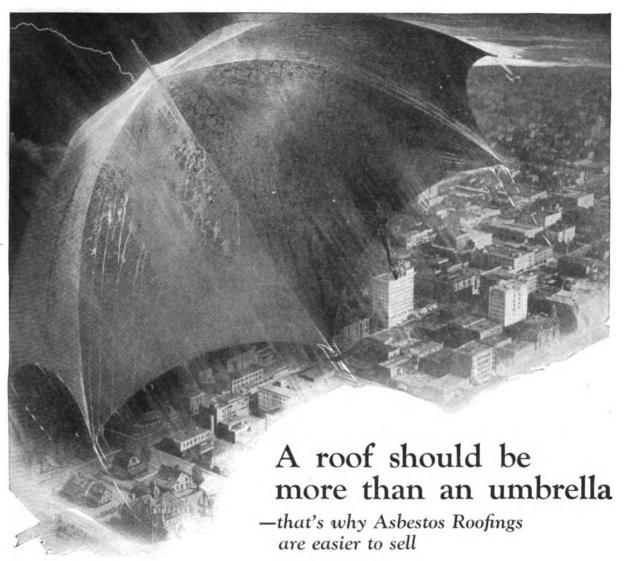
Warm Air Furnaces that heat the home with the least amount of attention and trouble are illustrated in a 20-page catalog published by the Detroit Stove Works, 6900 Jefferson Ave., East, Detroit, Mich.

Ash Receivers should be installed in every home when it is built. These receivers are a big saver of labor. They consist of a set of five, eight or twelve cans mounted on a revolving steel frame beneath the heater, so there is always a can under the ash pit. When one can is full another is immediately turned in place. There is no mechanism to get out of order. Builders should send to the Sharp Rotary Ash Receiver Corporation, 224 Bridge St., Springfield, Mass., for catalog.

Bathroom Fixtures of quality and neatness of design are manufactured by the Kenney Cutting Products Corporation, 507 Fifth Ave., New York City. In installing the Kenney Shower, builders will find a big attraction to home buyers. Every contractor should have this catalog in his file.

Bench Saws that greatly expedite the completion of woodworking on the job are described in a folder containing illustrations and cross-cut sections of the machines. The builder who employs these tools will be able to save time and money, and he should therefore send to the Tannewitz Works, Grand Rapids, Mich., for the folder.





ROOFING is not bought for temporary shelter—permanence and fire-safety are vital considerations with the buyer.

On this basis, Johns-Manville Asbestos Roofings naturally have a preference. The permanence and fire-safety of their indestructible asbestos rock fibre base means economy and protection as well as shelter.

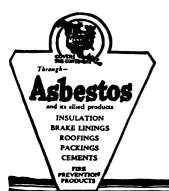
Roofing buyers want this permanence and fire-safety—and they want it so much that they are more than willing to pay slightly more for it than an ordinary cheap roofing would cost.

Asbestos roofings are easier to sell.

JOHNS-MANVILLE Inc., Madison Ave. at 41st St., New York City

Branches in 59 Large Cities

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd. Toronto



JOHNS-MANVILLE Asbestos Roofings

Concrete Mixing is fully illustrated in a booklet entitled "Concrete Data for Engineers and Architects," published by the Portland Cement Association, 111 West Washington St., Chicago, Ill. This booklet will prove of considerable value and interest to builders and contractors.

Glue and its uses are set forth in a 20-page booklet entitled "Glue Problems," and published by the Monite Waterproof Glue Co., 1628 North Second St., Minneapolis, Minn. The story of glue from the time it was first known until the present is explained and illustrated in detail. This booklet should prove of great value to builders. Send for it.

Electric Floor Surfacers with a maximum of operating power and a minimum cost of upkeep are manufactured by the Globe Manufacturing and Distributing Co., 319 W. Chicago Ave., Chicago, Ill. Builders should have one of these machines in their equipment.

Band Saws of highly practical design are clearly depicted in a 144-page book published by the Crescent Machine Co., Leetonia, Ohio. These machines will be a great aid to builders in the shop, and every builder should send for this catalog.

Dumb Waiters are a big convenience in the home when it is necessary to send things from one floor to another. Much time is saved as well as wasted energy. A 52-page catalog, fully illustrated, can be secured by builders from the Sedgewick Machine Works, 150 West 15th St., New York City. When writing ask for Catalog O.

Brick Siding that is made in roll form will be found of great convenience in roofing homes. It is fire-resisting, beautifying and warm in winter. Pamphlets illustrating the use of brick siding can be had by builders by writing to the Amalgamated Roofing Co., 431 South Dearborn St., Chicago, Ill.

Door Closers are necessary in every home and building. There are people who will persist in going in and out, leaving doors open. These door closers place pressure upon the door and automatically close them as soon as anyone passes in or out. Builders should write to Sargent & Co., 51 Water St., New Haven, Conn., for their catalog of hardware.

Incinerators that immediately dispose of garbage and refuse, eliminating fuss, obnoxious odors, reducing everything combustible to ashes and at the same time sterilizing all non-combustibles for easy removal with the ashes, is a piece of equipment that builders should install when building any good residence. One is manufactured by the Kerner Incinerator Co., 1027 Chestnut St., Milwaukee, Wis.

O N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Hardware of every description for high grade windows and doors is manufactured by the H. B. Ives Co., New Haven, Conn. Builders can secure a fully illustrated catalog upon request.

Metal Ceilings with lock joints are offered the builder who has to install a good looking fireproof ceiling. A catalog showing an exclusive line will be sent to the interested builder by the Keighley Metal Ceiling Co., 114 Third Ave., Pittsburgh, Pa.

Roofing Tin may be formed in many beautiful designs and has the advantage of being fireproof, durable and artistic. Catalogs and specification sheets that will prove of great interest to builders can be secured from the N. & G. Taylor Co., Philadelphia, Pa.

Lumber manufacturing is one of the most interesting vocations to be found anywhere. The story of the board from the time it is a tree to the time it is in the home, is illustrated in color in a catalog that holds one's interest. This catalog is published by the Long-Bell Lumber Co., Kansas City, Mo., and is entitled "From Tree to Trade." Many useful items are in it for the builder to tell his customer.

Kitchen Ranges to be practical must be compact and at the same time carry out the work they are made for; builders must install ranges that give satisfaction. Such ranges are made by Wm. M. Crane Co., 16 W. 32nd St., New York City. Builders can secure catalog showing styles and specifications upon request.

Plumbing of the right kind is an important factor in selling the home. The buyers insist upon fixtures that are modern and at the same time of the highest degree of efficiency. Supplies of this type are described in the catalog of the Bowman Supply and Manufacturing Co., Inc., 878-892 Progress St., N. S., Pittsburgh, Pa.

Metal Weatherstrips keep out the discomfort of inclement weather. Dampness, cold, draft, dust; all are kept outside by these strips which form a veritable stronghold and shield against the elements. Builders should equip new homes with them while in the course of erection. Further information can be had from the Diamond Metal Weatherstrip Co., Columbus, Ohio.





ASBESTONE EVERLASTING STUCCO

How Many Pounds of Stucco Plaster Do You Get to a Ton?



Review of the Building Situation

B UILDING statistics for May just published by the F. W. Dodge Corporation, show that the volume of contracts awarded during May amounted to \$433,906,500. This was an increase over April of 8%. Construction statistics for May are the largest on record and is 5% higher than the corresponding period for 1922.

Construction for the first five months of this year for contracts awarded in the sections on which our report covers, show an increase of 13% over the corresponding period of 1922. Residential building still holds the leading place, 39% of the entire amount being for this type of construction, 19% for public buildings, 14% for business buildings, 15% for industrial buildings and 7% for educational buildings.

In the New York District, residential building shows a slight reaction from the over-expanded program of the past few months. The total for May was \$86,566,000, a decrease of 8% from April and of 2% from May, 1922.

The slight slump in contracts awarded is only natural at this time.

The Central West and Northwest still shows considerable activity. Residential construction amounts to \$45,000,000 and shows an active demand for residences in that territory.

The volume and money spent for new homes is still greatest in the East, despite the slight falling off in percentage from the April figures. In this section, residential construction contracts were awarded in May amounting to \$83,000,000 for the three Eastern districts. Projects contemplated show that there will be no falling off in this class of construction.

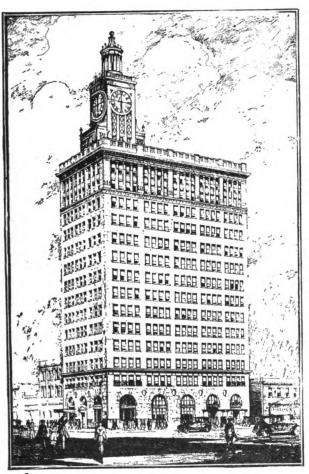
Record of May, 1923, Building Contracts Awarded

			SECTION O	F COUNTRY				
Classification of Buildings	New England District	New York District	Mid Atlantic District	Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$7,351,300	\$11,700,300	\$4,974,900	\$5,485,800	\$22,169,100	\$1,451,700	\$6,376,500	\$59,509,600
Educational Buildings	3,339,000	5,301,700	1,019,500	7,464,800	6,076,200	1,144,600	6,107,000	30.452.800
Hospitals and Institutions.		1,388,900	50,000	330,000	982,000	895,000	343,400	4,339,300
Industrial Buildings	3,552,400	5,834,600	1,538,000	11,098,800	18,586,000	6,947,000	15,422,300	62,979,100
Military & Naval Buildings	235,000		5,400	15,000	3,000	8,000		266,400
Public Buildings	78,800	580,000	84,400	105,100	587,000	25,200	710,400	2,170,900
Public Works and Public								
Utilities	4,563,600	10,595,700	4,177,400	33,177,900	20,708,800	3,060,800	7,532,900	83,817,100
Religious and Memorial				•				
Buildings	948,000	1,993,000	467,000	1,202,500	2,234,700	101,600	1,499,500	8,446,300
Residential Buildings(c)	16,471,600	46,724,800	20,558,100	20,026,100	40,081,800	4,910,700	19,443,400	168,216,500
Social and Recreational								
Buildings	987,300	2,447,000	475,400	1,446,800	5,883,500	397,500	2,071,000	13,708,50
Total	\$37,877,000	\$86,566,000	\$33,350,100	\$80,352,800	\$117,312,100	\$18,942,100	\$59,506,400	\$433,906,500

Building Projects Contemplated, May. 1923

			SECTION O	F COUNTRY				
Classification of Buildings	New England District	New York District	Mid Atlantic District	Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$6,584,600	\$17,601,300	\$6,819,600	\$7,266,500	\$24,201,600	\$2,306,700	\$11,380,500	\$76,160,800
Educational Buildings	3,726,500	11,698,000	2,502,000	3,695,000	19,646,000	1,157,500	12,946,700	55,371,700
Hospitals and Institutions.		4.002.000	2,513,000	1.663.000	3,343,800	787,900	3,419,000	16,028,700
Industrial Buildings		5,857,500	2.141.300	6.146.800	15,787,000	1,468,000	8,250,800	42,807,800
Military & Naval Buildings		24,000	167,400	• • • • • •	244,000	75,000		510,400
Public Buildings Public Works and Public	178,100	525,000	83,000	718,000	1,642,800	156,000	1,079,000	4,381,900
Utilities	6,917,200	16,454,300	14,683,100	31,399,200	45,148,700	8,092,100	24,253,400	146,948,000
Buildings	1,708,500	3,062,500	1.858,000	1.538.500	5.843,500	87.000	3,683,500	17,781,507
Residential Buildings (a) Social and Recreational		59,660,000	35,589,600	24,145,300	92,970,100	5,428,300	23,690,800	260,890,200
Buildings	1,146.800	4,191,000	1,565,400	966,500	11,002,500	384,500	1,548,000	20,804,700
Total	\$43,124,200	\$123,075,600	\$67,922,400	\$77,538,800	\$219,830,000	\$19,943,000	\$90,251,700	\$641,685,700

Connecticut Equipment Selected for this Impressive Building



San Jacinto Life Insurance Building
Beaumont, Texas
Electrical Contractors
Eugene Ashe Electric Co., Fort Worth, Texas

There is no better way of judging an electrical device than to know just what type of building it is being installed in. An architect or contractor will not specify a certain device unless he is quite sure that it will be a credit to the building in which it is going to be used. The more impressive the structure, the more exacting are the requirements.

Connecticut flush devices were installed in the San Jacinto Life Insurance Building, illustrated at the left, because they are giving satisfactory service in a great many other buildings of a similar nature throughout the South.

By constantly striving to keep Connecticut material just a bit ahead in design and mechanical construction, we are able to offer electrical devices that are now being used in many of the larger building developments throughout the country.



Duplex Flush Receptacle No. 1095



Single Flush Receptacle No. 1075

Connecticut Electric Mfg. Co.

Office and Factory:
BRIDGEPORT, CONN.

New York Aeolian Bldg. BRANCH OFFICES: Chicago Manhattan Bldg.

San Francisco 74 New Montgomery St.



Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

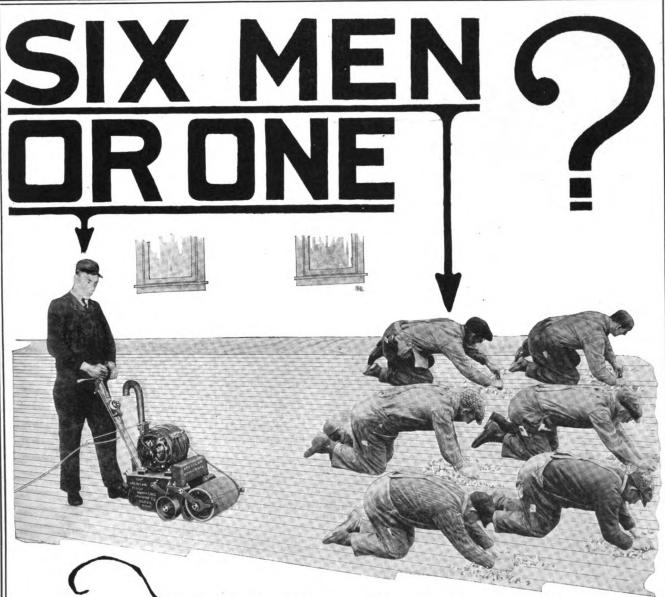
These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor

can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

NEW YORK PRICES			May	N June N
	5 20	T 20	PLASTER BOARD—	28 June 28
LONG LEAF YELLOW PINE—	1ay 28	June 28	32 x 36 x 1/4 in., Each	2 \$0.22
B. and Better Edge Grain Flooring, 13/16x25/2" Face	\$99.50	\$99.50	MAGNESITE STUCCO—	
Dimensions SISIR No. 1 (ommon 2×4" IO	45.25	45.25	Per Ton	0 \$70.00
Timbers, Merchantable, '05, 12x12", 10 to 20'	63.00	60.00	1 in. Square or Hexagon, White, per sq. ft \$0.2	5 \$0.25
R. and Better Partition. 14"x314"	44.00 67.00	44.00 67.00	3 x 6 in. White Wall	
Timbers, Merchantable, '05, 12x12", 10 to 20". B. and Better Ceiling, 'xx34". B. and Better Partition, '4"x34". B. and Better Finish, 1x4". No. 1 Common Boards, 1x8".	72.75	72.75	8 x 8 in. Red Floor	5 0.45
No. 1 Common Boards, 1x8"	55.25	55.2 5	AULA LA C. PRIARA	
NORTH CAROLINA PINE—			CHICAGO PRICES	
No. 2 and Better Flooring, 13/16x23/2"	\$75.00	\$75.00	YELLOW PINE—Boards, 1x8, No. 1 Com	
Recters, 13/16x5½" DOUGLAS FIR—	30.00	36.00	Ceiling, 16x4, B. and Btr	
No. 2 Clear and Better V. G. Flooring, 1x3"	P76 50	\$76.50	Dimension No. 1, 2x4, 12 to 14 ft	0 37.00
No. 1 Clear V. G. Flooring, 1x4"	78.00	78.00	Drop Siding, 1x6, B. and Btr	
No. 2 Clear and Better Ceiling, 54x4"	55.50	52.50	Finish, 1x4, B. and Btr. 68.0 Flooring, B. and Btr. E. G., 1x3. 95.0	
No. 2 Clear and Better Novelty Siding, 1x6" No. 2 Clear and Better V. G. Stepping	55.50	65.00	Flooring, B. and Btr. E. G., 1x3	
	90.00	97.25	Timbers, Long Leaf No. 1, 10-20 ft., S4S, 6x12 to 12x12 58.0	0 58.00
WESTERN RED CEDAR— B. C. Perfection Shingles, per M	\$7.72	\$7.64	HARDWOODS-	
Washington Perfection Shingles, per M	7.32	7.29	Maple Flooring, 13/16x234, clear	0 \$114.50
Clear Bevel Siding, 1/2x6"	52.50	52.50	Oak Flooring, 14x2, Cl. Pl., White	0 82.00 0 116.00
CANADIAN SPRUCE-			REDWOOD—	, 11000
No. 1 Lath, 1½"	\$9.63	\$9.13	Bevel Siding, S1S1E, 10 ft., 20 ft., 1/2x4, clear \$47.2	5 \$47.25
	43.00	43.00	Finish, S2S or S4S, 1x6 to 8 in. clear	0 94.50
HARDWOOD FLOORING— Clear Quartered White Oak, 13/16x2x234"	162.75	\$158.50	WESTERN RED CEDAR— Bevel Siding, 1/24 in., Clear	5 \$5 3.75
Clear Plain White Oak, 13/16x2/4"	122.75	128.50	Shingles, Extra Clears, 16 in	1 5.01
Clear Plain Red Oak, 13/16x23/4"	122.75	128.50	COMMON BRICK—	
Clear Plain Red Oak, 13/16x234"	117.00	117.00	Per M. f. o. b. job	0 \$12.00
(All lumber prices turnished by Lumber	,		Bbls. in car lots to contractors, not including con-	
COMMON BRICK— Per M. f. o. b. job	e24 50	\$24.00	tainers\$2.3	0 \$2.20
PORTLAND CEMENT—	927.JU	φ24.00	STRUCTURAL STEEL—	
Bbls. in car lots to contractors, delivered	\$2.87	\$2.90	Per 100 lbs. at warehouse\$3.3	0 \$3.20
STRUCTURAL STEEL-	*2.64	43.54	CRUSHED STONE (cu. yd.)— % in. \$3.0	0 \$3.00
Per 100 lb. at warehouse	\$3.04	\$3.54	1½ in	
% in.	\$2.50	\$2.50	WALL BOARD—	
in. 1½ in.	2.40	2.40	Per 1,000 sq. ft. in lots under M	0 \$40.00
WALL BOARD—			Per 1,000 sq. ft. in lots 1 M to 2½ M	0 35.00
Per 1,000 sq. ft. in lots under 1,000 sq. ft	\$50.00	\$50.00	Sand (per cubic yard)\$3.0	0 \$3.00
METAL LATH-		45.00	14 in. Gravel (per cubic yard)	
2.3 lb26 gauge price per 100 sq. yd. delivered	\$0.18	\$0.161/2	1½ in. Gravel (per cubic yard)	0 3.00
2.8 lb.—24 gauge light price per 100 sq. yd. delivered.	0.20	0.19	ST. LOUIS PRICES	
3.4 lb.—24 gauge heavy price per 100 sq. yd. delivered (Add 5 cents per sq. yd. for galvanized.	0.22/2	0.22	YELLOW PINE-	
LIME (Hydrate)—			Boards, No. 1 Com., 1x4	0 \$44.00
Finishing, per 50 lb. bag		\$0.60	Partition, 34x34, B. and Btr	
Masons, per 50 lb. bag	0.49	. 0.49	Dimension, No. 1, S1S1E, Short Leaf, 2x4 in., 12 & 14 ft. 39.0 Finish, S2S. B. and Btr., 1x4, 6 & 8 ft 68.0	
Sand (per cubic yard)	\$1.70	\$1.75	Flooring, B. and Btr., E. G., 1x3	
% in. Gravel (per cubic yard)	2.65	2.75	Flooring, B. and Btr., E. G., 1x3. 92.5 Flooring, B. and Btr., F. G., 1x3. 69.0	
1½ in. Gravel (per cubic yard)	2.65	2.75	Lath, 4 ft., No. 1	0 7.25
Tapestry (delivered)	t48 50	\$46.50	10 to 20 ft	0 41.50
Harveale (Delivered)	40.00	39.00	CALIFORNIA REDWOOD-	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Caledonian (delivered) Smooth Grey (delivered)	42.00	42.00	Finish, S2S, Cl., 1x6 in	0 \$94.50
Fisk Lock f. o. b. factory	48.50	50.00	Siding, 4 in. Bevel, 10 to 20 ft	5 47.25
SHINGLES—	42.50	42.50	8 inch Colonial	5 78.25 5 76.75
Asphalt, Single (per square)	\$8.25	\$8.50	HARDWOODS-	, 70.73
Asphalt, Strip (per square)	7.00	7.00	Oak Flooring, 16x11/2 and 2 in., Clear Qtr. White\$114.5	0 \$114.50
STAINED WOOD SHINGLES— 16 in. Extra Clear (per square, delivered)	11 50	#11 FO	Maple Flooring, 13/16x2% in., Clear	0 116.00
18 in. Eureka (per square, delivered)	11.75	\$11.50 11.50	RED CEDAR—	
15 in. Perfection (per square, delivered)	12.50	12.50	Siding, 1/206, Clear	
24 in. Royal (per square, delivered)	13.00	12.25	Shingles, Clears, Per M	, 4.40
4 in. (cents per foot)\$	n 121/	\$0.123/2	Per M., f. o. b. job	0 \$18.00
6 in. (cents per foot)	0.181/2	0.181/2	Bbls. in car lots to contractors, not including con-	
SLATE ROOFING.		,-	tainers \$2.3	5 \$2.35
Bangor or Slatington, 8x16 in. (per sq. at quarry) CORNER BEADS (Galvanized)—	\$8.40	\$8.40	STRUCTURAL STEEL—	
Per Foot	\$0.05	\$0.05	Per 100 lbs. at warehouse	5 3.35
WALL TIES (Galvanized)—	~ 0.00	φυ.υσ	CRUSHED STONE (cu. yd.)	8 \$2.18
Per Thousand	\$5.00	\$5.00	11/4 in 2.1	
8½ x 8½ in. Per Foot	e n 36	\$0.36	WALL BOARD-	
8½ x 13 in., Per Foot	0.48	30.36 0.48	Per 1,000 sq. ft. in lots under M	0 \$55.00 0 \$0.00
HOLLOW TILE—			SAND AND GRAVEL—	, 30.00
8 x 12 x 12 in., heavy. Each, delivered	0.221/8	\$0.225%	Sand (per cubic yard)	0 \$1.30
Per Bushel	\$0.60	\$0.60	34 in. Gravel (per cubic yard)	
	47.00	S47.00	1½ in. Gravel (per cubic yard)	5 1.45



Which Pay Roll would You rather Pay?

The "American Universal" floor surfacing machine does the work of six men scraping floors by hand. In other words, where it costs you \$48.00 for hand scraping, the "American Universal," always dependable, will do the same amount of work for you for only \$8.00—an actual increase in your profits of \$40.00.

Are YOU paying the \$48.00 or the \$8.00? The "American Universal" surfaces floors beautifully—and at one-sixth the cost to you!

Full ball bearing construction, built to last a lifetime. Practical, because its construction is simple and operation automatic. Makes floor surfacing a pleasure—and profitable.

TRY IT FOR FIVE DAYS-FREE!

Let us tell you of our free trial offer. Mail the coupon TODAY-NOW!

American Floor Surfacing Machine Co. 521 South St. Clair Street, Toledo, Ohio

COUPON

American Floor Surfacing Machine Co., 521 South St. Clair St., Toledo, Ohio. Send me at once, without obligation to me, full particulars and free catalogue on your "American Universal" floor sander. Don't fail to explain five day trial offer.
☐ I am a building contractor. ☐ I want to become a floor surfacing contractor.
My present occupation is
Name
Street Address
CityState



A AND B are owners," writes a New York subscriber. "C is the contractor and D, a dealer. C contracts individually with A and B to build for

Aspects of Mechanic's Lien Claims each of them a house for \$7,000 each. April 18th D, on C's order, delivers trim and lumber valued at \$500, which apparently was

used in both houses. May 21st D serves a mechanic's lien notice on A and B to cover the \$500. The notice designates A and B as joint owners of both houses, although each is sole owner of his respective house. It is not known just what portion of the trim was used in each house.

"To what extent are A and B liable, and what action can D take in the premises? If A and B pay this bill jointly to D, to what resource have they against C? After the house is completed and moved into, what means can A and B take to assure themselves the contract with C is completed, and that no further liens will be placed against the houses? Is there no time limit or protection for the owner? If C signs a release and therein states that all bills for labor and materials have been paid, will A and B be protected?"

Apparently D's lien claim, as it now stands, is unenforceable, because it attempts to perfect a lien against distinct properties for distinct improvements under distinct contracts. Had there been a joint contract by A and B with C it seems that the lien statement and notice would be good against them jointly, under decisions of the New York courts (27 Cyc. 131), although the rule is different in other states.

The New York Lien Law allows four months in which the lien may be filed, dating from the last item of materials furnished. Therefore, it seems that D could still enforce a lien by filing proper notices by August 18. But he would have to apportion the \$500 between the two properties, according to the amounts of material furnished for and used in each.

As matters stand, it would not be advisable for A and B to pay D's bill and

look to C for reimbursement by deducting it from what is due C, for C might deny their right to do this on the ground that no legal lien claim was ever filed against their properties. The better way will be to hold back \$300 or \$350 each until C secures a release of D's lien claim, and such additional sum as may be necessary to guard against other possible lien claims.

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the correct procedure. Questions and answers of general interest to the trade will be published in these columns. All inquiries must be accompanied by the name and address of the correspondent so that he may be answered direct or that he may be requested for further information if necessary to the intelligent answering of his question. No names will be published, only initials or a nom de plume. Remember that this service is free to subscribers. Address Legal Department, Building Age and The Builders' Journal, 239 West 39th street, New York City.

We suggest that A, B and C get together and agree on what outstanding claims for labor and material there are, and that A and B undertake to discharge them as part payment of what is due C. If C refuses to agree to this, I advise having an attorney make the adjustment.

When the houses are ready to be turned over, a reference to the terms of the contracts with A and B should disclose whether the construction is complete.

There can be no assurance against enforceable liens until four months pass after the last work or materials are furnished. The owner is protected after that.

C's delivery of a receipt reciting that all labor and material claims have been paid might render him subject to prosecution as for having obtained money on false pretenses should he have failed to pay all such claims. But it would not protect the property against lien claims filed within the four months period.

If there is good reason for believing that C will not pay off all labor and material bills, it might be well to make independent investigation as to just who have furnished labor and materials and to see that these bills are all paid before final settlement is made with C.

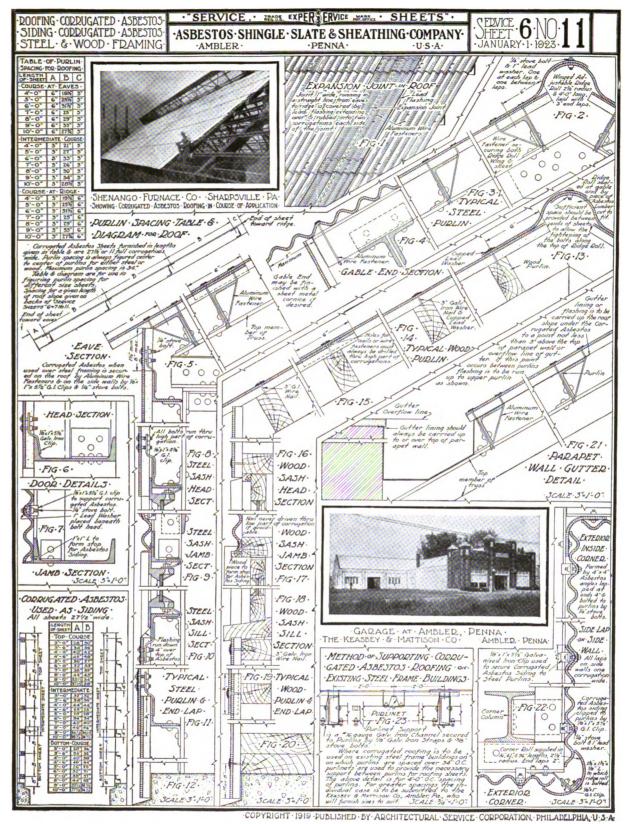
But C's legal right to payments will depend largely on the terms of the contracts with A and B. If A and B have unqualifiedly bound themselves to make payments as soon as the work is completed or while it is in progress, they have no strict right to withhold payment until expiration of the period for filing liens. The usual way for the owner to protect himself is to require the contractor to give suitable bond against liens, or to require him to exhibit receipts for all labor and material bills before payment is made to him. But where a builder shows a disposition to leave bills unpaid the owner should not pay up in full until he is given reasonable assurance that all such bills have been paid.

BUILDING contractors and other employers in Indiana are favorably affected by the decision of the Indiana Supreme Court in the recent case of

Wage Law Void Rose vs. Superior Laundry Co., 137 Northeastern Reporter, 761. It declares to be unconstitutional a law enacted by the

state legislature ten years ago, providing a drastic penalty for delay in paying wages.

The act purported to require employers to make wage payments at least twice a month, fixing a penalty of ten per cent. of wages due for every day they should remain overdue under the statute, and entitling the employee to recover, in addition, a reasonable fee for his attorney in a suit to recover the wages and penalty.



Reduction of Service Sheet (15" by 20" in original size) showing the application of Ambler Asbestos Corrugated Roofing and Sheathing to wooden-frame and steel-frame buildings. The back of this sheet gives specifications and valuable tables—information of the most practical kind for engineers, contractors and property-owners planning new buildings or permanent improvements.

Sent with our compliments, together with specimens of Ambler Asbestos Corrugated Roofing—an easily applied, sturdy covering that can't rust or burn, that isn't affected by fumes, that never has to be painted.

Asbestos Shingle, Slate & Sheathing Company, Dept. C, Ambler, Penna.



The court decided that the requirement for semi-monthly wage settlement was unconstitutional as interfering unreasonably with the right of employer and employee to make their own mutually satisfactory arrangements for payment. It was intimated, however, that if the law had made it optional with employees to demand semi-monthly settlements it would not have been objectionable, so far as concerned the question of compulsory periodical settlements.

A still more serious flaw was found in the statute, in the provision for a ten per cent. per diem penalty for delays in paying wages, without any maximum limit. It was suggested that had the law provided for a flat penalty of \$1 per day, with a maximum of twice the wages due, it probably would have been sustained. But the act was annulled by the court as unreasonably attempting to permit the penalty to accumulate indefinitely, and as tending to practically prevent an employer from questioning the justness of a wage claim.

A CONTRACT was made "to furnish for the sum of \$1.24 per cubic foot all the Bedford stone used in building" a certain projected structure. The

Trade Customs as Factors in Contracts

stone was to be "cut and finished, ready to set." Controversy arose as to whether payment was to be based on the measure-

ment of the finished blocks or on the gross measurement of blocks necessarily used in producing the finished product. Solving the dispute, the Indiana Appellate Court decided in the case of Plato vs. Carson, 137 Northeastern Reporter, 192, that the stone contractor was entitled to rely upon a local custom under which measurement was to be based on the gross blocks, instead of net product remaining after eliminating the waste portions. The court said:

"Parties who contract in respect to particular business are presumed to do so with reference to any uniform practice, which has been so long continued as to have ripened into a usage of such business; and where the contract is silent, or terms of doubtful significance are employed, it is competent to prove such usage, so as to raise a presumption that the transaction involved was intended to conform thereto. Such a usage may always be considered for the purpose of determining the intention of the parties in those particulars in which they have not expressed themselves with clearness and certainty in their contract; and, where words have been used which have acquired a broader or different signification in relation to the business involved than that commonly attributed to them, that fact may be shown. On the other hand, a usage is not available for the purpose of contradicting or varying the plain and unambiguous terms of a contract, or controlling its legal effect. Parties have a right to contract against an existing usage, and, where the language used clearly indicates such an intention, it will be so construed."

I AM supervising an alteration of a building where the builder has been placed in default," writes an Eastern architect. "He could no longer pay for

the labor and material used, and his bondsman was held responsible to the owner.

Default

I have to function as architect and also as builder. Please tell me how to insure the fee for my extra work."

This should be done by explicit contract with the owner, reduced to writ-The amount to be paid by the owner to the architect as compensation for his services as builder is just as much a proper subject for agreement with the owner as the arrangement for compensation for services rendered as architect. But it would seem that in completing the work the architect will not be entitled to compensation for services in supervising his own work, for it will be supervised in the doing of it. And it is the fact that controversy may later arise with the owner over the basis of compensation to be paid our friend that makes specific agreement in advance highly desirable.

Not having before us the terms of the contract between the owner and the builder who has quit, we are not able to express an opinion on just what the latter's responsibility, if any, will be. There is some ground for inference from the facts stated that the full responsibility has been discharged by claim against the building contractor's bondsman.

The general rule is that "where the builder defaults, as in failing to complete the work within the time specified without a sufficient excuse therefor, or in unjustifiably abandoning the work before completion, or otherwise, the owner may . . . take possession of the work and complete it himself or employ another so to do, and charge the builder with the necessary expense thereof; and it has been said that it is the owner's duty as well as his right to complete the work, in order to make the loss as light as possible, except where the builder has not abandoned the work. Building contracts usually provide for such a contingency by giving the owner the right to take charge and to complete the work at the builder's expense. Such a provision is not compulsory; it is optional with the owner whether he will exercise the right or not." (9 Corpus Juris, 812, 813.)

I LET a contract for plastering and stucco work on three houses," writes an Eastern builder. "The price was \$400 for stucco and \$650 for plastering on each

Dispute With a Plaster and Stucco Contractor house, making a total of \$3,150. When the work started I decided to use Bishopric stucco on two of the buildings. The contractor agreed

to keep the cost of material and time on the third house, on which cement was used, and I agreed to pay the excess of the cost of time and material on the two Bishopric stucco houses. The stucco material on each of the two houses cost \$410, and he claimed that the cement stucco material cost only \$60. He also claimed that it took him two days longer on each of the two houses than it did on the third. While I think that the material on the cement stucco job cost more than he said, I told him that I knew I was stuck and would settle at his figure. He said that he would call the time equal on each of the three houses. So I deducted \$120 from the amount of his bid to cover the cost of what he said the cement stucco would cost him had he used it on the two houses, and paid him the balance of his bid of \$3,150, and paid for all of the Bishopric material used. I did not get a receipt, but he signed a release of liens on all three houses.

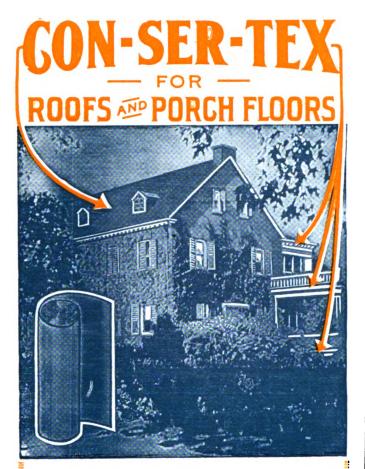
"A few days after this he told my foreman that I had not settled with him in full and that I owed him for the extra time it took him on the Bishopric stucco houses. He has sent me a bill to cover the extra time, and I feel that I should not pay it. Please advise me."

On the facts stated the contractor is not entitled to recover. The builder slipped up when he made the settlement payment without taking a receipt in full. But the circumstances are such that he should not have difficulty in establishing the fact that it was mutually understood that the settlement covered everything due the contractor on account of the three houses, especially since a release of liens was given, and since it is natural to suppose that the parties intended the settlement to be one in full.

Should the contractor bring suit, I advise placing the matter in the hands of a local attorney for defense. I would also recommend that investigation be made as to the justness of the contractor's items of material and labor costs, if he sues. If it can be shown that he induced a settlement under misrepresentations as to the amount expended by him for labor or material, a counter-claim for damages would be enforceable against him.

Building Age and THE BUILDERS' JOURNAL





The Canvas Covering of Real Economy

When you are figuring on building or repairing a house, specify Consertex for the flat roofs and porch floors.

Consertex is the ideal covering—it is inexpensive to buy and easy to lay—enables the men to cover a roof or floor in jig-time. It is made of chemically treated, specially woven fabric, that will not crack, stretch, peel or shrink, so that years of hardest use find it still waterproof, windproof and attractive. Using Consertex enables architects and builders to quote a reasonable price to prospective clients, that will go a long way towards getting business.

Consertex combines all the elements that go to make up a quality roofing or flooring—strong, attractive and long wearing, with true economy in cost.

Your cost problems for flat roofs and porch floors are discussed and solved in the copy of "Roofing Facts and Figures," that we will gladly send at your request.

WILLIAM L. BARRELL CO. of N. Y., Inc. 50 Leonard Street New York City

Chicago Distributors: Geo. B. Carpenter & Co 430-440 North Wells St. California Distributors: Waterhouse-Wilcox Co. San Francisco and Los Angeles

a Namuna (ryprejeji) un minutuju salaja sarana sal**aran**a luman pada salana ang salana la pada pada matana na la

FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana

Keeping Pace With Glue Improvements

Progress in adhesives has been so rapid during the past five years that there is now a real need for some form of up-to-date information on the subject.

To assist you in learning of these late developments we have had reprinted the most complete treatise on casein glue ever issued for complimentary distribution.

The book is called "Glue Problems—How to Meet Them." It discusses every operation of gluing from the choice of an adhesive to the finished product. Its twenty pages are filled with practical hints

This book will be a valuable help to you in your every-day work. Write for a copy which will be sent without charge.



Warehouses:
Buffalo San Francisco
Detroit Seattle
Chicago Toronto

Western Representative: L. H. Butcher Company, San Francisco — Seattle

MONITE WATERPROOF GLUE COMPANY
1628 North Second Street, Dept. A, Minneapolis, Minn., U. S. A.

Cable Address: Monite-Minneapolis



Digitized by Google



Building Age

ANI

THE BUILDERS' JOURNAL

New York, August, 1923

The Most Important Problem Now Confronting the Building Industry Is the Shortage of Men

O problem before the building industry today is of so much importance as the shortage of skilled men. We are now face to face with a difficult situation and the fault is largely due to the neglect or lack of foresight of the builders themselves.



Twenty-five Dollar a Week Office Clerks Going to Lunch.

We read quite a good deal in our newspapers and hear in ordinary conversation that the young men of today want only "a white collar job" and that they do not care for the building trades on this account. Oh, if we could but see ourselves as others see us. Perhaps, if builders will examine themselves and the industry as a whole they will probably find in the majority of cases that the fault is not with the young men, but with the building industry itself, in not taking the proper interest in young men in past years and making working conditions fit 20th century ideals.

No one wanted to bother with the young men—it was too much trouble. The old apprenticeship system happily died out. It was a relic of old Europe. It was un-American and would not live in this country. Nothing, however, was done on an adequate scale to train building workers and things were just allowed to drift. The old mechanics gradually died and no one was there to take their places. Then, the building boom came as an aftermath to the World War, which had shown the mettle of the American young man—our hats off to him.

Even in the first stages of the boom, the young men without experience were not welcome on any building job unless under some favorable circumstances. The boom progressed and the shortage of skilled workers became acute, and we now have the spectacle of contractors frantically bidding for men to finish jobs that should never have been started.

The natural consequences were strikes, snowballing and other



Fifty Dollar a Week Building Mechanics Going to Lunch.

evils, with high prices, buyers' strikes, etc. Bad as the situation is now, the future looked worse and, sensing the seriousness of the situation, some alert minds in the industry started to form committees to investigate this matter thoroughly.

In New York City, where the situation was very acute, the New York Building Congress was formed and a committee was appointed to devise practical means of training young men for the future needs of the building industry.



Iron workers receive a wage of ten dollars a day in the building trade.

The methods employed have met with a good deal of success and now, after a year's experience, the operation of the plan of instruction has been found successful and the desire of the New York Building Congress is to spread the news of its success throughout the entire building industry so that other localities will be encouraged to do something along the same line, with the idea that our industry will be well manned with thoroughly skilled mechanics in the future.

Mr. Grosvenor B. Clarkson, who was Director of the U. S. Council of National Defense during the



Bricklayers receive a base wage of \$12.00 a day, with two or three dollars bonus.

late war, has taken a great personal interest in this work of the New York Building Congress. Wishing to get others interested in this educational work, he invited a number of editors of leading publications to a luncheon at the Hotel Plaza, New York, on July 19, at which addresses were made by different members of the committee and an interesting open discussion followed.

The editor of Building Age was amongst the forty invited



Base wage for plasterers is twelve deliars a day; some of them have been receiving twenty deliars.

guests and takes pleasure in giving, in this issue, extracts from the addresses of Mr. Burt L. Fenner, Mr. Hugh Frayne and Mr. Louis Horowitz. In these addresses the methods used in training young men so successfully by the New York Building Congress are explained. Any builder or builder's exchange wishing further detailed information regarding the methods used can obtain same by writing their office, Grand Central Terminal, New York City.

Here is something that every builder's organization should carefully



Carpenters are also receiving ten dollars a day for their day's labor.

consider. County wide cooperation is needed now to avoid a worse shortage of skilled men in the not distant future.

Building Age on its own account for several weeks past has sent out representatives to question young men not in the building industry to find out why they do not care to enter any one of the well-paying building trades.

Results of this investigation is given on another page, and will prove highly interesting, as it disputes the idea that the American youth wants only the "white collar ich"

A T the present time the greatest obstacle to progress, strange as it may seem, is the indifference of employers. Perhaps indifference is not the word. I have met no employer who did not endorse the general proposition that the only way in which the ranks of skilled labor can be recruited is through apprenticeship training. They applaud the work of the Commission and contribute to its financial support, but when they are appealed to take on one or two apprentices and make themselves responsible for their training, they find some reason for refusing or postponing action. "We have no opening just at present. Call us up in six weeks or two months. We can't afford to lower the efficiency of our gangs by putting beginners on the scaffolding who will take up the time of skilled men." Here lies the only difficulty we have met. And it is obviously a serious one.—Burt L. Fenner.

The Cause of Our Shortage of Men

Extracts from Address before New York Building Congress

By BURT L. FENNER
Member of McKim, Mead and White, Architects

ITH the employers on the one hand, and labor on the other filling the columns of the press, a smoke screen has been created which seems to me to obliterate a few simple facts. I want to state a few facts as I see them.

The normal growth of the country requires a certain normal growth of buildings. From 1914 to 1918 new construction fell far below normal. Since 1918 the new construction has barely met the needs of normal growth, and the demand of war needs has not yet been met. The demand today is much more normal and will so continue.

Furthermore, in nearly all the skilled trades the supply of skilled mechanics has actually decreased, until today there are not more than 60 per cent. as many available in many trades as there were ten years ago. There is also a shortage in many lines of building material, due in part to shortage of labor for erection of buildings, for manufacturers won't operate their plants to capacity unless reasonably assured that their products will meet that demand.

The old law of supply and demand is still in force. On the one hand we have an abnormally great demand. On the other hand an abnormally small supply, both of

mechanics and materials. The result is inevitable. The highest bidder gets the men and the material, and costs continue to mount.

Now, what is the remedy? Decrease the demand or increase the supply? The former will take place automatically when prices become prohibitive, and of course in any case it is not a remedy. The latter will not take place unless a concerted and continuous effort is made. The supply of materials can be increased with little difficulty, as there is practically adequate plant capacity in all lines, but the supply of skilled mechanics cannot be increased so easily.

TERE lies the chief difficulty and it is one which will require years of systematic effort to meet. We shall doubtless continue to receive some few small numbers of skilled mechanics from Europe. Contrary to the general impression, the immigration law has not materially reduced the number of skilled mechanics coming from Europe. For twenty years that has been practically negligible. It follows then that we must depend upon our efforts and educate our own American boys for the skilled trade.

This is the job which the Apprenticeship Commission has undertaken. The Congress began the work by devising a plan of operation and securing its acceptance in principle by the organizations representing the employers and labor.

The necessity of building up the ranks of skilled labor is not controversial. It is admitted by employers and labor alike.

The statement may surprise you. but some of you may be under the impression that organized labor has by arbitrary measures made it impossible to employ apprentices. I want to correct that impression, if it exists, by stating that while it is true that generally the unions set a limit to the number of apprentices who may be employed, in not one of the more than thirty unions employed in the building industry are the employers using anywhere near the number of apprentices allowed by the union rules.

The Commission holds that a thorough and well-rounded course of training requires a period of four years; that the bulk of the training should be given in the shop or on the job; but that, along with learning HOW on the job, the boy should attend school to learn WHY.

From the outset we have met with the most enthusiastic support and co-operation from the Board of Education. Well-equipped classrooms and teachers have been supplied. Courses of study have been prepared by us and been adopted. Ample funds have been provided. In short, the school authorities have met our efforts in the heartiest spirit of cooperation.

These major questions presented themselves in the first year: First, would the industry give to the question the necessary financial support? That question has been definitely and positively answered in the affirmative, both by employers and labor.

Second, could American boys, who seem to have a preference for the so-called white-collar jobs, be induced to join the ranks of skilled artisans? We have no positive evidence, or positive proof at least, on that question, but up to the present time there never has been a moment when we have not had more applications for positions as apprentices than we could fill. I

am satisfied we need look for no serious difficulty in that direction in the future.

Third, would employers of labor who had already endorsed our plan in principle join together to put it into operation? In approximately one-fourth of the trades, that has been actually accomplished, and some six or seven hundred boys have been enrolled and are at work in the shops and at the schools.

It is the employers who will benefit most by an adequate supply of labor, and yet only a small minority are able to see that apprentices, though perhaps a liability for the first few weeks of their training, become a rapidly increasing asset and benefit from that time on.

The Commission would have no difficulty in interesting you if the work concerned itself only with the building trade. It is only because

the industry concerns the whole country that our problem becomes one of public importance which justified us in intruding upon your time.

The building industry is sick. One of the sorest spots is the shortage of skilled labor. A practical cure is available. The patient must be made to take the cure. The public generally should insist upon it, for the business health and prosperity of the country cannot but be adversely affected by the sickness of so important and vital a part of its body.

And there is another aspect of our work. We are bringing up boys to better citizenship. The seeds of radicalism and discontent can find no congenial soil among the ranks of prosperous, self-respecting, highly-skilled craftsmen. On this ground alone, our work deserves the support of yourselves and of the public generally.

The Training of Our Future Workmen

Extracts from Address Before New York Building Congress

By HUGH FRAYNE

Vice-President, American Federation of Labor



Improved Working Conditions on a New York Skyscraper. Safety and Comfort of the Bricklayers Have Been Attended to. Hanging Scaffold with Guard Rail and Overhead Covering Allow Men to Work with Maximum Efficiency—They Watch Their Work, Not Their Step. This Creditable Job is on the New York Times Building, Now Being Erected by the George A. Fuller Co., Builders, New York.

FEEL that the bringing together of this most representative group today means much, not only to the building trades industry, but to industry generally and the country as a whole. There has been so much and yet it seems so little accomplished in the way of training those trades in the building industry that it is not sufficiently known, either to arouse interest in other sections or to allay the fears, the public fear, of those who believe that nothing whatever is being done.

I know that the statements made in reference to the Commission in the training of apprentices are true and that it is doing splendid work; that in many trades it is functioning splendidly. As time goes on it will be a perfect machine. It is not necessary, or rather sufficient, that that work stop here in New York, but it must be extended throughout the entire

country. Not only in the building trades, but in all lines. And it is well that other groups of employers should look into what is being done in this connection and adopt these methods of training apprentices, developing skilled men in their particular industry.

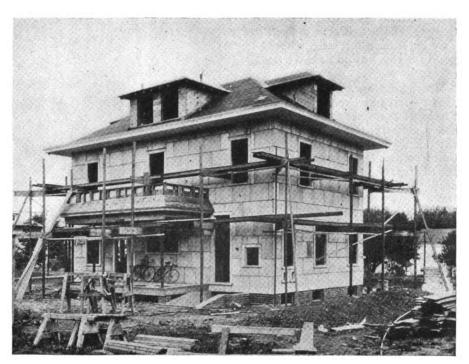
The idea of training generally ought to be kept before the public, and whatever group desires to take a particular training for their industry can be encouraged to do so. But the general idea that we want more trained men and women —better trained men and women in the country—should be kept as much as possible before the public. I know that what Mr. Fenner said about the indifference on the part of the employers is true.

There's a great scarcity right now in some directions, but it is not the fault of the unions entirely. I dare say that little fault may be credited to them, because they are not the ones who do the hiring, and for that reason cannot place these apprentices in positions without the consent of the employer.

Education is necessary among all employers to accept the full quotas required in the various trades, and if later on it is found that that is not sufficient there will be machinery used in order to bring about a readjustment to fill in additional requirements.

We are suffering a great deal as a result of the war. You hear a great deal about "dilution" in training. We got that word from the other side. Some called it "delusion" in training, and I think that probably would fit where men were going to be trained as specialists in some particular work for war purposes in a few weeks and then turned into industry as trained men.

They were not able to perform work properly or to do an efficient day's work. But the unions assumed that the employer had a right to hire them, and if they were good enough to be hired they were good enough to be taken into the union, and in that combination there was a short day's work, and usually a high wage paid to the man who had come under the dilution-in-trade system. We will have to work that off.



Primitive Working Conditions on a Job with Nothing for the Comfort or Safety of the Workmen Can Hardly be Expected to Appeal to the American Young Man.

The man who is not properly trained ought to be given additional training, even though he is a journeyman. The continuation school where a man may go at night can be worked out under the old system that has been established through the Federal Board for Industrial Vocation, where the public school does not restrict its training to the apprentice, but includes the apprentice who still feels that there are many things,

THERE is no danger to a trade or industry from having highly skilled mechanics. The danger comes from the poorly trained, the indifferently trained mechanics, the one who has virtually to pick up the trade himself or steal it because either the employer who hires him or the mechanics working with him are not interested sufficiently to see that he is properly trained and turned out a highly skilled workman.

or some things, in the trade which he can learn and learn effectively by going to these continuation schools. And then there are the part-time schools for the boys who are apprentices. All of these are helpful, all of these are functioning, and will do so most effectively if we all join together.

Now the question of training mechanics for the building trades -and what I say of the building trades will equally affect industry generally—is not after all the job of the building trades employer or the Congress of Building Trades. It is not sufficient that the responsibility be placed upon the unions. It is a National problem. And the Building Trades Congress, the employers of the building trades, every other group of employers, as well as the unions, are entitled to the fullest encouragment and help and co-operation of the public generally. The public schools, the city and state government, the Federal government-all should help to bring about that condition necessary to solve this problem.

It's true, it's a direct interest of the employer. It is also a direct interest of the workmen. But we are not going to take that as the unit. Our work ought to take in everything as its unit, and especially in this problem, the Nation. And what is good for the building trades, whether it's in New York City or somewhere else, should be good for the Nation as a whole

You could be told many things about what has been accomplished. There is one specific thing that I call your attention to, one which I am deeply interested in and know that you are. And that is the matter of the rehabilitation of the veteran of the late war. There are some 90,000 men who are listed for rehabilitation and training. The trades unions in Greater New York during the past two months, at least the representatives of these unions who have men in training or intend to go into those lines, are co-operating with not only the head of the Veterans' Bureau, General Hines, but the representative in this district. These men in training average in age about 26 years. They are above the age when ordinarily they would go in to learn any trade, but on account of their handicap, being injured, those things are being waived.

Whenever these men come, or the representatives of the bureau come and ask that they be placed,



Wireless Operating at Sea, Although Away From All Home Ties, Has Been Made Attractive For Young Men. There Is No Reason Why Building Construction Should Not Appeal, As Well, As It Is Equally As Interesting Work.

we hope that you will look favorably upon it, not as a charity, but as a Nation's duty to rehabilitate these men, and put them back into industry, so that it cannot be said that ten years hence, or twenty years hence, we will have an army of beggars on our streets who have gone to the other side and fought in defense of the freedom of the world.

Speaking or organized labor, we guarantee to lend every possible aid that we can, not only here but everywhere throughout the country, in order to solve this great problem and to establish basis, or rather a system, that may be acceptable throughout the entire country.

You must consider this: If the men who make and prepare the material for building construction are not well trained in the factories of the various plants, the materials coming to you to construct with will not be of proper quality, even though the workmanship in construction may be of the best. So that while we are discussing a particular line of work, the building trades, let us have in mind that trade training, vocational training, all of the necessary elements to develop all that is best and good, the mechanical skill in the boy or the girl, in industry, will not only make them independent as workers, but will make them good citizens of the Nation.



Fire Fighting Is Dangerous Work and Pays a Good Deal Less Than the Building Trades; But They Suffer No Shortage of Men. The Work Appeals. Note the Boy in the Picture Holding on to the "Line"—It Is One of the Happiest Moments in His Life and He Is Not Being Paid for the Work. Building Construction Can Be Made Just as Attractive to Young Men If the Policy of Attracting Them Instead of Repelling Them Is Followed.

The Builders Responsibility for Modern Methods in Construction

Extracts from Address before the New York Building Congress

By LOUIS HOROWITZ
President, The Thompson Starrett Company

something in defense of the employers as regards their short-sighted attitude, but I can't say as much about that as I can about the future. It has been my privilege recently to attend several meetings where at least it was apparent that it has dawned upon employers that the matter of encouraging apprenticeship is not alone profitable from a selfish standpoint, but it is also a public duty.

And, as regards one trade at least, a very comprehensive plan has been worked out whereby employers will take advantage of the full quotas permitted by the unions and will, in cooperation among themselves, use these men, and the unions have been very generous and liberal in the terms of the apprenticeship. They have given permission for these employers to keep moving these men from employer to employer, so that he may not find himself with them upon his hands when he has no need of their services.

If we consider finance, it's perfectly obvious that the financial institutions have kept pace with the requirements. There is no shortage of money as a general rule for legitimate enterprises.

As to the architects, it wouldn't perhaps become me to speak of the wonderful development made by them in design. The building that you are in, the buildings that you see, speak more eloquently of that than anything I could say. I am ashamed, however, to have to admit that the same thing cannot be said about the builders. To a very large extent, as I walk around jobs, referring now to management, I see that the styles which were popular through the times of Tut-ankh-amen still prevail.

We are talking here about providing facilities for increase in population. Of course, there is still another element, and that is the higher standard of living. The higher standard of living as applied to the building industry means that each man requires more feet of space than he did formerly.

For example, no American would want to sleep in a room with four or five others, and he should not be asked to. So that we need to provide not only for proportionate increase of population, but also higher rate of consumption.

Somebody sometime discovered that nature did not sufficiently provide in the matter of raising chickens and eggs, and so he developed an incubator. Thus the American people today are supplied with sufficient eggs only because nature has been assisted.

In Chicago, we are buying brick for \$12 a thousand. In New York we are paying over \$20 a thousand. The reason for this is that Chicago, in the manufacture of its brick, util-



No Wonder They Smile When They Go Home— They are Thinking of the Big Wages They Get As Building Mechanics Compared With Office Workers' Pay.

izes modern machinery, and the plants supplying the New York market utilize obsolete machinery. That is not true of all industries, but there are others furnishing the same example as brick.

I believe that with the splendid attitude that Mr. Frayne here has indicated, and if the Building Congress approaches this problem as unselfishly and as intelligently as it has the matter of apprenticeship to date, ways and means may be discovered to dilutetaking Mr. Frayne's phrase—manual labor, not to the extent of introducing shoddy labor, but to the extent of allowing the skilled mechanic by the aid of machinery to perform more than he is able to perform today.

I cannot see the slightest excuse myself—although I do not pretend to be much of a mechanic—for a man to get down on his hands and knees to lay a cement floor, because I believe a machine could be devised which a man could operate which would perform that work more effectively, more economically than he can do by hand.

Labor in the past, especially intelligent labor leaders, have been not only willing but have encouraged any improvement, any development which meant progress and which meant doing away with arduous and hard labor; and so I believe that the Building Congress, if it finds the time, should consider the problem of helping manual labor, of encouraging manufacturers of materials to utilize modern machinery; of studying perhaps substitutions of materials which can more economically be utilized for the same purpose; and finally, if it engages the laboratories of our colleges, to find out whether or not the materials which we are now using cannot be more intensively utilized.

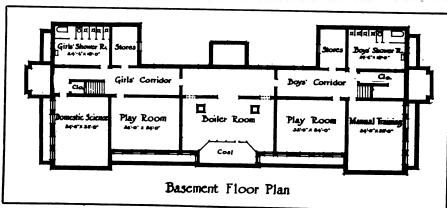
And I believe if all that be done, that more than anything else, will serve to correct the present abnormally high cost of building which is really out of balance and out of line with other commodities required by modern society.





Building for Future School Needs

D. KNICKERBACKER BOYD,
JOHN L. CONEY,
VICTOR ABEL,
Architects,
Philadelphia



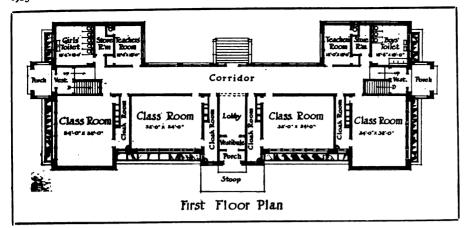
Floor Plan of the Proposed Completed Structure. Note How It Will Join to Existing School Building Shown at Bottom.

School buildings in a growing neighborhood should be planned with the idea of adding future extensions, and this without injuring the symmetrical appearance of the original design. A most interesting school erected with this provision in mind is that of the grammar school built for the school district of the township of Radnor, located at Rosemont, Pa.

The exterior is well carried out in face brick with simple but pleasing details. Blank wall spaces have a simple frame design in brick with stone inserts at the corners. The grouping of windows is especially good, as are also the glass doors. All the exterior trim is in white which contrasts pleasingly with the brick.

As shown here, the first unit of this school building contains four classrooms, two teachers' rooms, toilets for boys and girls, while the basement contains two playrooms, a domestic science classroom and a manual training classroom, together with shower baths for both boys and girls.

The boiler room and coal storage supply are located in the center of the basement, and serves as a barrier between the boys'



The floors in school buildings should be designed to carry a load of seventy-five pounds per square foot in the classrooms, but for the auditorium and corridors one hundred pounds per square foot should be provided for.

Over the concrete surface a finished floor of wood on sleepers or linoleum would be suitable for the classrooms, while for the corridors, etc., a finished concrete, tile, slate or terra-cotta floor would do.

The partitions dividing the different classrooms of school build-

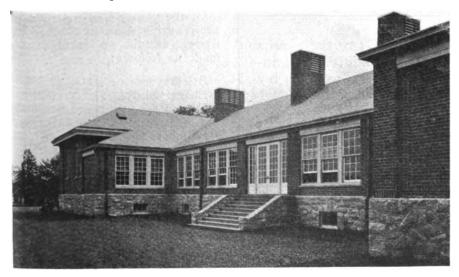
and girls' playrooms. Two chimneys are provided so that two boilers may be used. Ventilating flues are also installed in each classroom.

The completed structure will contain six additional classrooms together with a large auditorium. This new extension is to join the present building and the spaces now devoted to teachers' room is to be used as part of the new corridors leading to the additional classrooms and auditorium. The corridors will be well lighted as they open on one side to the enclosed courtyard, which also provides additional windows to the auditorium. Two other smaller open courts give additional lighting and ventilation for auditorium and corridors.

In building schools, particular attention should be paid to fire safety. Fire safe floors are easily made and at but small expense. Light pressed steel joists can now be had that are as easily placed in position as wood joists and metal lath is fastened to these to form an adequate support for a layer of cinder concrete. The result will be a cheap but effective fireproof floor.



Interior of Classroom Used As a Kindergarten. Note the Extensive Use of Slate Blackboards on Walls.



The Rear of the Present School Building Is Attractively Carried Out in the Same Style as the Front. Face Brick Has Been Used All Around As It Should Be.

ings should also be of incombustible material. Light steel shapes for partitions or studs can be had on which metal lath can be fastened and plastered. Wood studcan also be used, and when covered with metal lath with plaster applied have been found to be highly fire-resistant. Gypsum blocks can also be used to advantage for fireproof partitions.

Against the metal lath plastered wall or the gypsum block wall, it is safe to put cement, tile or slate wainscoting without fear of any cracking taking place. Ceilings should of course be incombustible as well. Stamped metal is very useful for this purpose or plaster on metal lath can be employed.



WHY YOUNG MEN DO NOT ENTER THE BUILDING TRADES

Archaic Working Conditions Do Not
Attract Present Day Men

By THE EDITOR



OUNG men of the right sort are needed in the building industry and are wanted badly. Now, how to attract the right sort of men is a subject of considerable concern to contractors. In another article in this issue, a report is given of a meeting of the New York Building Congress, which presents a plan which they believe will be fruitful of results; it has worked successfully for the past year.

We must look the situation squarely in the face. The present shortage of capable building mechanics can be laid directly to the lack of foresight of builders and the older mechanics themselves We have recently been living in an age where the mechanic was looked down upon—a sort of cog in the industrial wheel. Men were known by numbers instead of by name, working conditions were primitive, comparatively nothing was done to interest young men in the different trades until we were face to face with the present serious condition.

Young men have been educated away from the different building trades, other callings have been made attractive, so they have comparatively little trouble in filling their ranks.

As Mr. Horowitz, the head of one of our biggest construction companies, said—the methods in use today in building construction are still primitive—most contractors expect men to work under

conditions that do not exist in the worst of so-called sweat-shop factories.

Why do not more young men take to some building trades? The work is healthful outdoor labor, where skill and nerve are often required; it is the sort of work that should appeal to red-blooded American young men of good physique. One can have thrills enough and to see a structure grow under you is interesting work—one is creating something."

The pay is good. There are many callings that pay less and that are in many ways less attractive; some are more dangerous, yet they do not have the trouble the building trades have in getting

HERE are the results of an interesting investigation made by Building Age.

The "white collar job" is not preferred by American young men, but decent working conditions are.

The lack of continuity of employment in the building trades is a big drawback in the industry.

men. What is the answer? Let some of the young men speak.

By personal interview and questionnaire, Building Age obtained the first-hand, frank expressions of several hundred American young men, not now employed in a building trade. These were men whose ages were principally between twenty and twenty-six years old, the most desirable ages for Building Recruits. Note that word—it sounds better than "apprentice," or just indefinite "No. 142," etc. Their average pay was \$28.74 per week.

Now 33% of these young men thought they would like to enter some one of the building trades, 58% had no interest, and 9% were doubtful.

Of the young men that thought about trying some of the building trades, certain preferences were made as follows:

Bricklayers Electricians Carpenters Tile Layers Plumbers Painters Plasterers Ironworkers Stone Cutters.	21% 20% 11% 8% 5% 5% 3%

Perhaps, in another crowd of young men, the percentages would vary, but, here is what was in the minds of a representative "bunch"

100%

The amount of pay is not the only thing that appeals—plastering looks a little unpopular, despite being one of the highest paid trades.

Now comes the subject of preferring a "white collar" job. These questions were asked of men principally in that sort of job and yet only 25% of them said that they objected to going to or from work in dirty clothes!

And there we were thinking that our young men were looking down on any sort of a job where they could not be all dressed up. The reasons must be somewhere else. Here are some of the drawbacks that 143 had for not entering some building trade:

- 29 said no advancement seemed probable.
- 23 did not like the men they would associate with.
- 21 had no interest in building.17 were not mechanically inclined.
- 16 objected because the work was too dirty.
- 14 families objected to their working at a trade.
- 12 would rather do office work. 11 preferred to work inside.

The greatest drawback that these young men see in working at a building trade, however, is that the jobs are not steady enough and that outside of the bigger cities, it is not possible to find steady work the year round.

To our questions of what is the greatest objection to working at a building trade many answers were given. Here are a few terse ones showing just how the young men are thinking:

After you once learn the main points of your trade, it gives no opportunity for developing your mind further.

I would like to be a bricklayer, but as I am married am afraid that I will not be able to learn the trade and make both ends meet.

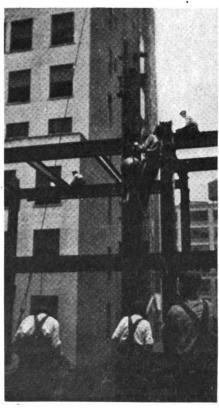
Unions ruled by wrong men and in hands of radical element.

Uncertainty of steady job and insufficient work the year round.

Wages are good, but very few work the year round. Wages for the year are not any more than we are getting, if as much. Am now earning forty dollars a week.

Work is too dangerous.

I would not work at a job where I had to belong to a union so I will not work in the building trades.



If a Young Man Wants a Thrill, He Can Have His Fill Working at Building Construction

What brain power is required to lay brick or spread plaster?

Outside of New York City, you cannot work at the building trades the whole year.

I prefer something better for a life work. I aim to climb, not to stay in one place with a set salary.

Present rate of pay is only that of a period of inflation and shortage and will not continue as a minimum standard.

Laid off when job is finished.

Work only lasts about eight months a year.

The work is at comparatively the same wages from year to year.

I think the scale of wages too small while learning, for my age. I am thirty years old.

Here are some facts and we published them for what they disclose. It seems essential that a 12-months year be established in the building trades. It will take some careful planning of work to bring this about. Builders must also educate the public so they know in just what seasons a certain kind of work is or is not permissible for the best interests of all.

Young men should be encouraged to enter the building trades—no construction job should go up without at least one Recruit at work in each trade; let us call him a "rookie," but not "apprentice." They may be a hindrance the first few months, but we will need them and need them badly five years from now.

Provide safe working conditions for the men—carrying compensation insurance won't stop the pain an injured workman suffers.

Provide a decent work house with lockers where a fellow can keep his good clothes while he is on the job in comfortable work clothes.

Let the locker room be kept clean and provided with drinking water, wash basins, soap, towels and a mirror, also a decent water closet—a chemical closet if nothing else. Don't forget to have a first aid outfit.

Some of the primitive arrangements at certain building operations would disgust an aborigine; then why think that a twentieth century American will submit while in other occupations he works under better conditions.

It seems that builders have—unconsciously, however—driven the young men away from the building trades. Now the big job is to get them back. Sensible cooperation of contractors, workers and public will do wonders. Let's get together. We need the "boys."



The Art of Remodelling Buildings

The Making of Artistic

"Lantern Lane"

SPEEVER ROBERTS
Architect Philadelphia

Here is an old rickety back alley and below is how it appeared after its transformation

RANSFORMING an old building that has outlived its usefulness is an economic undertaking that if well done merits the approbation of the public in general. Architects and builders have made many noteworthy examples of remodelling in the past and many more will take place in the future.

The few "before and after" pictures on these pages show that something worth while can be done with common materials if only the proper practical knowledge and artistic ability is shown.

Anyone who has visited Philadelphia is acquainted with the small houses facing on an alley. In the old days they were thought very good, and they were as far as good construction went, but, of course, as time went on the better people moved away to houses having more conveniences and the district fell into disrepute until finally it could be referred to as slum district.

Philadelphia, as well as other cities, has quite a number of these districts, and it will certainly interest our readers to see the transformation that could be made in such a group of houses.

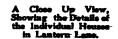




Old Stone House
Remodelled
SAVERY & SHEETZ
Architects Philadelphia

Philadelphia g

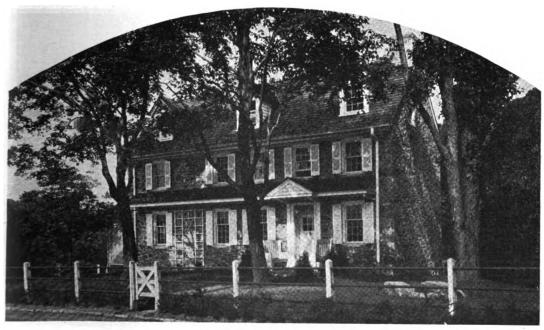
A Picture of An Old Stone House, Solidly Built, But Devoid of Artistic Appearance.



Here we show a picture of one old slum alley and another picture as it stands today, transformed by building magic, and known as Lantern Lane. In the old days, the houses rented for ten or twelve dollars a month. The same houses in Lantern Lane rent for seventy-five to ninety dollars a month.

There has been no change in location to warrant this extra increase in income. It was all in the remodelling. The stucco, brick, iron railings, new windows, doors,





Here Is the Same House Shown Altered Into a Modern Handsome Dwelling. The Old Wood Extension Has Been Removed and a Stone Addition Built in Its Place.



Here Are Two Well Built Old Private Houses That Have Outlived Their Usefulness. What to Do With Them Was the Problem As the Street Had Changed to a Business One

Remodeled Stores and Flats

W.F.B.
KOELLE
Architect

Here Is What Was Done With the Old Buildings Shown Above. They Have Been Transformed Into Modern Stores and Apartments and Now Bring in a Good

Philadelphia

while upstairs was remodelled into small apartments which are readily rented these days, while the large old house proved a white elephant as nobody wanted such an immense affair.

Note how cleverly the front has been handled: the entrance to the apartments remained in the center so that the original staircases, etc., could be used, while the entrances to the stores were placed at either end. The combination of brick, stucco and plate glass forms an artistic design in combination with the four French doors.

On the second floor the windows were cut down to nearly floor level and casement sash with transom above used. An iron rail across the front adds to its picturesqueness. No alteration was made on the third and fourth floors. The entire brick front was stuccoed and a few brick inserts used to give color and ornament to the flat surface.

Rather unusual is the alteration of a theatre. Usually such a structure can serve no other purpose.

shutters, brick paving and a few shrubs have transformed the outward appearance.

The interiors were, of course, entirely renovated, modern plumbing and electricity being installed, etc.

Another interesting transformation is to be seen in the remodelling of the old stone house into a modern Dutch colonial affair of pretentious design. The old stone house is there, but it has the extra touches put on that have changed its entire appearance.

The old porch has been removed as well as the old wood extension, which has been replaced by an addition built of stone, the same as the original house. This has been a transformation that will certainly show the possibilities of the art of remodelling buildings.

As districts change from residential to business, the problem is what to do with the old private residences that graced the old-time streets. Another of our pictures shows an interesting before and after result, the fronts of the first floor of old buildings were removed and altered into stores.



But in New York City, one of the largest opera houses was altered into a Masonic Hall. This work is not yet completed, but we present a picture of how the exterior now appears, also a picture before alteration.

This was the Manhattan Opera House, made famous by the late Oscar Hammerstein, who built the structure to compete with the Metropolitan Opera House. This building was the scene of many bright operatic successes.

At Mr. Hammerstein's death, his estate closed out his different theatre holdings and the Manhattan Opera House passed into the possession of the Ancient Accepted Scottish Rite Masons.

The auditorium will form an immense assembly room, where four thousand or more Masons can witness special ceremonies. The old front of the Manhattan Opera House was removed and refaced

Here Is How Oscar Hammerstein's Famous Old Manhattan Opera House Appeared to the Opera Lovers of New York a Year Ago. Compare This Picture With the One Below, Showing Its Transformation.





with the new one shown here. The lower part is of terra cotta granite faced blocks, while above this the front is of rough texture pressed brick with ornaments of terra cotta.

These interesting examples show what can be done by proper remodeling. Out of date, non-paying structures can be easily turned into something not only more useful but artistic as well. The builder who will make a specialty of this kind of work and who has good ideas will have this kind of work coming his way because of the reputation gained.

Here Is the New Home of the Ancient Accepted Scottish Rits Masons in New York City. It Hard-ly Looks Like the Old Manhattan Opera House Shown Above. It Has Been Entirely Refaced With Brick and Terra Cotta.

From Opera House
to Masonic Hall
HARRISON G. WISEMAN
and
HUGO TAUSSIG
Architects New York



English Type Cottage of Charm

Specially Designed for
BUILDING AGE
and

THE BUILDERS' JOURNAL

Together with Constructive Details

by R. C. HUNTER & BRO.

Architects

New York

HE English cottage type is becoming very popular for the small American home, and when one wants a home that is a little different from the ordinary run—a home of character and dis-

tinction—no mistake will be made in selecting a house of this type.

Of course, one cannot entirely forget the plan in seeking picturesque exteriors. A proper relation must exist between the most economical and the most practical plan, and the ideal, picturesque exterior.

This calls for thorough study on the part of the builder and architect, every detail must be given



SECOND FLOOR PLAN

due consideration, nothing is to be extravagant, yet the house is to be artistic and unusual.

The house shown herewith is a successful attempt to solve this problem. The sketch of the exterior shows a house of unusual charm, while the plans are economical and livable.

The construction is of stucco on frame, the roof is slate or asbes-

tos, the half-timber work is hand adzed to give an antique effect.

The front door opens into a comfortable vestibule, which has a coat closet adjoining. From the vestibule one obtains a fine vista across the living room and into the sun porch beyond.

The living room is large and has a fireplace with built-in seat and beekcase. The dining room cen-

ters on the living room, giving a spacious effect to the interiors.

A generous sun porch, a den or bed room, and a convenient kitchen are also provided. A toilet room connects with the hall. This is a real convenience.

On the second floor are two bed rooms and a bath. A cellar extends under the entire house. The estimated cost is about \$12,000.

Quantity Survey of English Cottage

HE quantities given are for estimating. All measurements are NET unless otherwise noted; areas given for such items as sheathing, flooring, etc., are NET areas to be covered with no allowance for matching, waste, etc. Minor outs have been disregarded.

Such items as clearing site, temporary work and protection, scaffolding and general equipment and supplies, have

not been included.

Such items as are marked "Unit" are to be estimated in a lump sum, following requirements of plans and speci-

EXCAVATION

LACATATION	
(Excavation for pipe trenches not in	.cluded)
Excavation for cellar	283 cu. yds.
Excavation for footings	16 cu. yds.
Excavation for areas	6 cu. yds.
Excavation for trench walls	10 cu. yds.
Excavation for leader drains and dry wells	14 cu. yds.
Backfilling around walls, etc	39 cu. yds.
	or cu. yus.
Leader drains and dry wells.	11 cu. yds.
Field stone for dry wells	42 lin. ft.
∮ in. salt glazed tile drain pipe	
4 in. elbows	7
MASONRY	
Concrete for cellar walls	930 cu. ft.
Concrete for footings	128 cu. ft.
Concrete for trench walls	126 cu. ft.
	120 Cu. 1t.
Cellar Floor (3 in. concrete and 1 in. cement	075 64
finish)	875 sq. ft.
Area bottoms (brick and sand)	35 sq. ft.
Porch floors (12 in. cinders, 3 in. concrete	
and 1 in. cement finish, colored and	
blocked off)	152 sq. ft.
Same with brick finish	12 sq. ft.
Concrete forms	3000 sq. ft.
Pointing cellar window sills	22 lin. ft.
SHEET METAL WORK	
Metal roofs	83 sg. ft.
	52 lin. ft.
Flashing for roofs, etc	14 lin. ft.
Flashing and counterflashing for chimney	98 lin. ft.
Valley lining	
3 in. leaders	72 lin. ft.
Ornamentall heads	1
Bends for leaders	10
Gutter thimbles	8
4 in. half round hanging gutter	97 lin. ft.
3 in. x 4 in. gas range vent	24 lin. ft.
Cap and thimble for same	1
Slate roofing with felt	22.7 square s

B LUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by BUILDING AGE and the BUILDERS' JOURNAL, 239 West 39th Street, New York.

BRICK WORK

Common brickwork for chimney (or 4.5 M) Face brick for hearth and jambs (or 105	224 cu. ft.
brick)	15 sq. ft.
Fire brick for fireplace (or 100 brick)	20 sq. ft.
Face brick for chimney cap, etc	140 brick
8 in. x 12 in. T. C. flue lining	62 lin. ft.
Face brick for chimney cap, etc	
x 8 in	2
MASON'S IRON WORK	
Fireplace damper (3 ft. 0 in. opg. with	1 Unit
throat, etc.)	1 Unit
C. I. ash dump	1 Out
in	1 Unit
in.)	1 Ollit
Z R in)	1 Unit
x 8 in.)	1 Unit
PLASTERING	
Three coat Patent plaster, sand finish, on	
metal lath, gross	330 sq. yds.
(Net 280 sq. yds.)	
Hard finish, gross	485 sq. yds.
(Net 420 sq. yds.)	
G. I. corner beads	106 lin. ft.
Stucco on patent wood base or metal lath, over ¼ in. x 1¼ in. wood furring, gross	210 - 1
over ¼ in. x 1¼ in. wood furring, gross	219 sq. yds
(Net 173 sq. yds.)	25
Stucco on masonry, net	25 sq. yds.
TILE WORK	
Tile work for bath rooms and toilet,	
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	64 s q. ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white) Wainscot (3 in. x 6 in. white wall tile)	164 sq. ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white) Wainscot (3 in. x 6 in. white wall tile)	164 sq. ft.
Tile work for bath rooms and toilet, Floor (1 in. hex. white) Wainscot (3 in. x 6 in. white wall tile) 6 in. sanitary base Moulded cap	164 sq. ft. 36 lin ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 344 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 344 F.B.M. 200 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 344 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 344 F.B.M. 200 F.B.M. 1702 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 200 F.B.M. 1702 F.B.M. 1133 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 344 F.B.M. 200 F.B.M. 1702 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 200 F.B.M. 1702 F.B.M. 1133 F.B.M. 1422 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 200 F.B.M. 1702 F.B.M. 1133 F.B.M.
Tile work for bath rooms and toilet. Floor (1 in. hex. white)	164 sq. ft. 36 lin ft. 46 lin ft. 170 F.B.M. 33 F.B.M. 200 F.B.M. 1702 F.B.M. 1133 F.B.M. 1422 F.B.M.

CARPENTRY—Continued

Half timber work.

Raking cornice.

Dormer cornice.

Windows.

First floor windows.

12 light

6 light

Second floor windows.

8 light

4 in. x 6 in. x 14 ft. 0......

4 in. crown moulding.....

2 in. cap mould......

6 in. fascia 6 in. soffit

Wood brackets Louvres with trim, screen on back, etc. 8 in. x 2 ft. 6 in.....

Frames complete with sash, outside trim, etc. Sash 1 3/4 in. thick, glazed D. T.

Single top hung casem sash, 3 ft. 0 in. x

Mull. top hung casem sash, ea. 2 ft. 6 in. x 2 ft. 0 in., 4 light.

pr. casem sash, pr. 3 ft. 4 in. x 4 ft. 6 in.,

Single casem sash, 1 ft. 8 in. x 4 ft. 6 in.

Single casem sash, 1 ft. 8 in. x 3 ft. 0 in.

Single casem sash, 1 ft. 4 in. x 2 ft. 6 in . 6 light

pr. casement. sash, 3 ft. 4 in. x 4 ft. 0 in. 16 light

Single casem sash, 1 ft. 8 in. x 4 ft. 0 in.

Single casem sash 1 ft. 8 in. x 3 ft. 0 in.

Cellar windows. (Trim both sides)

6 in., 16 light.....

8 light pr. casem sash, 3 ft. 4 in. x 3 ft. 0 in.

EXTERIOR FINISH—Continued

Ridge.		1 ft. 8 in. x 4 ft. 0 in. single	1
2 in. x 8 in.—1/14, 2/12, 3/10	91 F.B.M.	3 ft. 4 in. x 3 ft. 1 in. pr Exterior door frames (1 3/4 in. thick rab-	1 pr.
3 in. x 8 in.—2/20, 3/14, 3/12	236 F.B.M.	beted complete with outside trim).	
Hips. 2 in. x 8 in.—1/18	24 F.B.M.	Frame for rear ent. door, 2 ft. 8 in. x 6 ft. 8 in.	1
Porch ceiling beams. 2 in. x 4 in—10/8	54 F.B.M.	Frame for front ent. door included under half-timber work.	
Floor bridging. 2 in. x 2 in.—400 lin. ft	134 F.B.M.	Exterior doors (all to detail) Front. ent. door, 2 ft. 10 in. x 6 ft. 8 in. x	
Cornice outlookers. 2 in. x 4 in.—96 lin. ft	64 F.B.M.	1 3/4 in. glazed	1
Cellar Partitions (Studs)		_ 1 3/4 in. glazed	1
2 in. x 4 in—6/14, 7/12	112 F.B.M.	Finished flooring. Living room, dining room, bed room No. 1.	
Walls to cover	1800 sq. ft. 2360 sq. ft.	etc., plain sawed white oak, 13/16 in. x 2 1/4 in. to cover	700 sq. ft.
Sheathing paper (waterproof)	1800 sq. it.	Kitchen, etc., No. 1 maple, 13/16 in. x 2 1/4	
Grounds. 3/4 in. surface done side	2500 lin. ft.	Second story, plain sawed red oak, 13/16	154 sq. ft.
Sheathing for cellar partitions. 7/8 in. x 8 in. shiplap—to cover	250 sq. ft.	in. x 2 1/4 in to cover	440 sq. ft. 1300 sq. ft.
Rough flooring, 7/8 in. x 8 in. shiplap). 1st and 2nd floors—to cover	1460 sq. ft.		
Furring, (7/8 in. x 2 in.)	350 lin. ft.	977	
EXTERIOR FINISH		REMONALE ZIAC LINING IN JECTICAL MOT OVER 4 LONG	

2 pieces 2 pieces 3 pieces

14 pieces 1 piece 7 pieces 150 lin. ft.

144 lin. ft.

164 lin. ft.

12 lin. ft.

12 lin. ft.

12 lin. ft.

12 lin. ft. 1

1

1

1

5 3

1

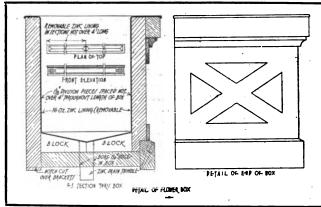
2

2

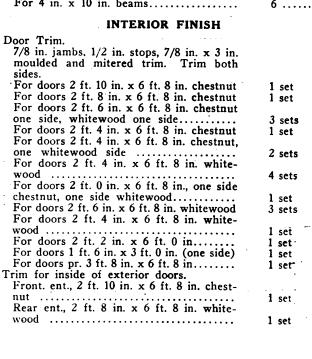
2

3

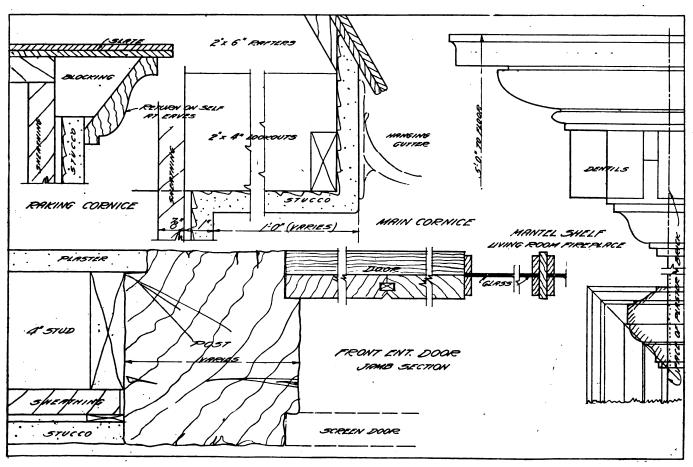
3 3 pr.

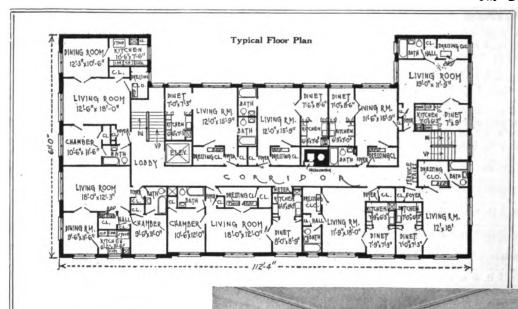


Slat floor under laundry tubs, 3 ft. 0 in. x	
4 ft. 0 in	1
Cement filled pipe cols., in cellar.	
(4 in. dia. x 7 ft. 6 in. long with caps and bases)	4
Joist hangers. (1/4 in. x 2 in. wrought iron)	7
For 2 in. x 10 in beams	6
For 4 in. x 10 in. beams	6
INTERIOR FINISH	
Door Trim.	
7/8 in. jambs, 1/2 in. stops, 7/8 in. x 3 in. moulded and mitered trim. Trim both sides.	
For doors 2 ft. 10 in. x 6 ft. 8 in. chestnut	1 set
For doors 2 ft. 8 in. x 6 ft. 8 in. chestnut	1 set
For doors 2 ft. 6 in. x 6 ft. 8 in. chestnut	
one side, whitewood one side For doors 2 ft. 4 in. x 6 ft. 8 in. chestnut	3 sets
For doors 2 ft. 4 in. x 6 ft. 8 in. chestnut,	1 set
one whitewood side	2 sets
For doors 2 ft. 4 in. x 6 ft. 8 in. white-	2 500
wood	4 sets
For doors 2 ft. 0 in. x 6 ft. 8 in., one side	•
chestnut, one side whitewood For doors 2 ft. 6 in. x 6 ft. 8 in. whitewood	1 set 3 sets
For doors 2 ft. 4 in. x 6 ft. 8 in. white-	3 sets
wood	1 set
For doors 2 ft. 2 in. \times 6 ft. 0 in	1 set
For doors 1 ft. 6 in. x 3 ft. 0 in. (one side)	1 set
For doors pr. 3 ft. 8 in. x 6 ft. 8 in	1 set
Front. ent., 2 ft. 10 in. x 6 ft. 8 in. chest-	
nut	i set
Rear ent., 2 ft. 8 in. x 6 ft. 8 in. white-	
wood	1 set



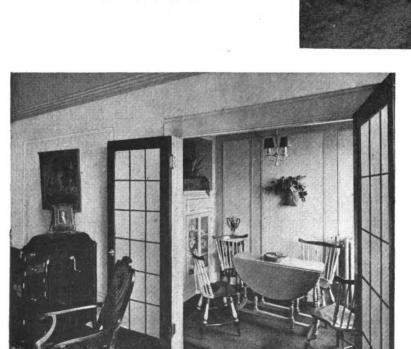
INTERIOR FINISH—Continued	d	Mantel for living room	1 Unit 1 Unit
Trim for cellar door (plain) 2 ft. 6 in. x 6 ft. 6 in	1 set	Seat for living room	1 Unit
Trimmed openings finished same as for	1 301	Interior doors	
doors. Opg. 4 ft. 6 in. x 6 ft. 10 in. chestnut Opg. 6 ft. 0 in. x 6 ft. 10 in. chestnut	1 set 1 set	(Glazed) Oak Veneer 2 ft. 10 in. x 6 ft. 8 in. x 1 3/4 in. glazed	1 1
Windows	2 000	2 ft. 8 in. x 6 ft. 8 in. x 1 3/4 in. glazed (2 cross panel oak veneer)	
7/8 in. x 3 in. moulded and mitered trim, 1 1/8 in. moulded stool; 7/8 in. moulded		Door 2 ft. 8 in. x 6 ft. 8 in. x 1 1/2 in Door 2 ft. 4 in. x 6 ft. 8 in. x 1 1/2 in	4 5
apron; 5/8 in. x 7/8 in. cove under stool. For windows, pr. 3 ft. 4 in. x 4 ft. 6 in. chest-		Door 2 ft. 0 in. x 6 ft. 8 in. x 1 1/2 in	1
nut	3 sets	(2 cross panel birch veneer) Door 2 ft. 6 in. x 6 ft. 8 in. x 1 1/2 in	2
in, chestnut	3 sets :	Door 2 ft. 4 in. x 6 ft. 8 in. x 1 1/2 in Doors, pr. 3 ft. 8 in. x 6 ft. 8 in. x 1 1/2 in	3 1 pr.
For windows, single 1 ft. 8 in. x 4 ft. 6 in. chestnut	1 set	Whitewood door 1 ft. 6 in. x 3 ft. 0 in. x 1 1/8 in	1
For windows pr. 3 ft. 4 in. x 4 ft. 6 in. white- wood	2 sets	Solid pine cellar door. Door 2 ft. 6 in. x 6 ft, 6 in. x 1 1/2 in	1
For windows pr. 3 ft. 4 in. x 3 ft. 0 in. white- wood	4 sets	Closet shelving (7/8 in. x 12 in. pine)	74 lin. ft.
For windows, single 1 ft. 8 in. x 3 ft. 0 in.		Hook strip (7/8 in. x 4 in.)	64 lin. ft. 64 lin. ft.
For windows, pr. 1 ft. 8 in. x 4 ft. 0 in. white-	2-sets	1 in. dlameter pipe clothes rod Kitchen cupboard—(front 5 ft. 0 in. x 8 ft.	20 lin. ft.
For windows, single 1 ft. 8 in. x 4 ft. 0 in.	2 sets	0 in.) countershelf, drawers, doors, etc Main stairs, 1st to 2nd stories, 14 risers,	1 Unit
whitewood	2 sets	box pattern, 3 ft. 0 in. wide, newels balus- trade, etc.	1 Flight
7/8 in. x 6 in. moulded, chestnut Whitewood	204 lin. ft. 240 lin. ft.	Cellar stairs, 12 risers, box pattern, 3 ft. 0 in.	
7/8 in. x 4 in. plain (closets)	76 lin. ft. 204 lin. ft.	wide, yellow pine, wall hand rail, etc	1 Flight
2 in. base mould, chestnut	240 lin. ft.	GENERAL CONDITIONS	
1/2 in. quarter round floor moulding, chestnut	204 lin. ft.	Add for permits, fees for water and sewer etc., insurance and general overhead charge	
Whitewood	320 lin. ft.	general work not listed, such as grading, Include sub-bids; hardware and applying sa	
Chestnut	220 lin. ft. 260 lin. ft.	and decorating; plumbing and gas fitting; electric work.	





"The James" Apartment House

Designed and Built by T. A. McHALE & SON Syracuse, N. Y.



VEN in our smaller cities apartment houses are gaining favor; therefore it will interest our readers to have this description of a modern apartment building recently completed in Syracuse, N. Y. It is located on James St. of that city; while in the residential district, it is convenient to shopping and business sections of the city.

On another page we publish a description on financing a co-operative apartment house which will give builders a suggestion on how a job of this sort may be secured for their neighborhood.

The exterior is a pleasing design carried out in brick and terra-cotta. One enters a large hall and lounge occupying the space of one entire apartment on the upper floors. The various apartments, of which there are sixty-two in number, are reached by an electrically operated elevator. On the



The pergola covered roof garden at top and glass marquise at bottom form distinctive features of the exterior design.

roof, an attractive pergola covered roof garden is located.

It will interest builders to carefully examine the floor plan, as practically every apartment is a little different from the others, but all have the same conveniences, etc. An innovation in a house of this sort is an adequate ice storage compartment located in the cellar, so that ice can be had at any time by the tenants. Each apartment is served by a dumbwaiter, service telephone, etc.

In the hall is located a mail chute and incinerator which is convenient to all apartments and provides a modern method of disposing of garbage, eliminating the calling for garbage by the janitor.

Each apartment plan includes a private foyer opening into a rather large living room, the walls of which are artistically panelled, as will be noted in our illustrations. "Dinets" are included in most apartments, while two of the larger suites have regular sized dining rooms.

The kitchenettes are well ventilated and their equipment includes white enamelled kitchen cabinets, as shown in the one illustration. Included in this equipment is a refrigerator and gas range.

Three of the apartments on each floor have separate bedrooms, but every apartment is provided with an in-a-door-bed; some having twin beds.





FINANCE and REAL ESTATE

Helpful Data for the Builder Who Builds to Sell

Financing a Cooperative Apartment

How Builders Can Secure a Profitable Job by Using Real Salesmanship

HE many advantages offered by an apartment is attracting more tenants to this sort of residence than ever, even in our smaller cities and towns. are, however, many people who prefer owning their own home, and this idea of home ownership has been applied with considerable success to an apartment house, where each tenant owns his own apartment, can fix it up and arrange it to suit himself, and pays his share of the general upkeep of the building, interest on mortinsurance, janitor gage, taxes, services, fuel, etc.

To builders the idea of a cooperative apartment house offers rather a profitable line of work; provided they have the facilities for disposing of the various apartments ahead of time. Now, the way this has been successfully worked in various localities is for an enterprising builder to get an option on a piece of desirable land, and have his plans drawn to fit that particular site, and then prepare a prospectus, setting forth description and terms how apartments in this proposed building can be bought.

In a great majority of cases all of the apartments can be sold in advance of any actual operation by careful salesmanship. Then proceed with the erection and pocket a good profit. To give builders an idea of how such a prospectus should read, we give one suitable for the apartment house shown in

this issue. This has been prepared for us by an experienced real estate man who has made a success of this line of work.

Plan of Organization

John Smith, with offices at No. 53 Doe Avenue, New York City (herein called the "Contractor"), proposes, subject to the conditions as hereinafter more fully stated,

1. To cause a corporation to be incorporated under the laws of the State of New York under the name

"Modern Apartments, Inc." or other suitable name (herein called the "Owner").

2. To erect an apartment building on the premises located at the corner of So and So Streets.

3. To convey to the Owner said premises, with the building to be erected thereon, in fee simple, subject to the mortgage and other indebtedness hereinafter specified:

Description of Building

The building is to be seven stories in height, the front is to be of terra-cotta and selected brick, and the construction of steel and concrete.

Plans and Specifications

Each apartment is to be a complete miniature home, and will comprise a living room, kitchenette and dinet, dressing room and bath, with foyer hall.

The plans and specifications of

the building which have been prepared by the architect, are submitted herewith, and are hereby ratified and approved by the subscriber upon signing the subscription agreement hereto attached.

Subscription prices are based upon the typical floor plans. A subscriber who desires to make any changes or alterations from typical plan of the apartment selected by him shall signify such suggested changes before construction shall have been started within thirty days after signing the subscription agreement but no change or variation from the typical plan shall be made except on written order filed with and accepted by the Contractor.

In addition to the subscription price, the subscriber will agree to pay the Contractor an agreed amount for all such changes and alterations from the typical plan.

Decoration and Furnishing

No furniture for apartments or public halls is included in the specifications other than the wall beds, wardrobe and dressing table, kitchen range, china closets, refrigerator and cabinet.

Subscribers shall decorate and in other respects furnish their own apartments at their own expense, but everything else shall be provided complete, ready to live in, as more specifically set forth in the specifications.



Those subscribers desiring to omit any fixtures, etc., may do so upon written notice sent to the Contractor within thirty days after signing this subscription agreement, in which case the Contractor will allow a credit of the actual cost of said fixtures, etc.

The public halls shall be decorated and finished as more specifically set forth in the detailed specifications.

Management

Management of this building shall be by its own Board of Directors and a resident superintendent appointed by them.

Contract Between Owner and Contractor

A building contract based on the above mentioned plans and specifications will be entered into between the Owner and Contractor which will provide that the price paid to the Contractor by Owner covers all carrying charges during construction, incorporation fees, and organization tax of the Owner, architects' commissions, insurance during construction and all other carrying charges which would become a lien upon the said building up to and including the date the building is turned over to the Owner, the building to be free from any encumbrance of liens, except the mortgage indebtedness hereinafter mentioned; any leases or service contracts for which the owner, or the Contractor on behalf of the Owner, shall have contracted; which, however, will not prevent the occupation or enjoyment of the said apartment building; and neither the Owner nor holder of any proprietary lease shall have the right of prior occupancy.

It will further provide that all taxes, mortgage-interest, insurance (except Workmen's Compensation of any employees of the Contractor) accruing after the date when building is turned over, shall be paid by the Owner.

Such contract shall further provide that at the time of the payment of each and every installment provided to be made by the terms of the subscription agreement hereto annexed, there shall be no uncancelled mechanics' liens of record against said building

The owner will agree to purchase from the Contractor and the Contractor will agree to sell to the Owner subject to the mortgage indebtedness, leases, state of facts and restrictions and other items hereinbefore mentioned, the land, building and equipment upon the following terms and conditions:

n consideration of the entire capital stock of the Owner, full-paid and non-assessable and not liable to any further call	\$125,000
The land and premises shall at the time of completion of the project be subject to aggre- gate mortgage indebtedness not in excess of	125,000

Total cost of land and building \$250,000

Such mortgage indebtedness shall run for a period of not less than five years, subject to annual amortization not exceeding \$10,000 per annum.

All of the capital stock shall be issued in the first instance to the Contractor in consideration of the transfer of the property, and the agreement of the Contractor to carry out the construction work as herein indicated.

It is agreed that the Contractor may sell all or any part of the full paid stock issued to it as aforesaid to the subscribers hereto who have the privilege of subscribing for the apartments hereinafter mentioned at the price given in the attached schedule.

Estimated Cost of Operation

Interest on Mortgage of \$125,000	
at 6%	\$7,500
Taxes	5,500
Insurance	1,000
Water	300
Superintendent Engineer	2.000
Fireman	1,050
Elevator Boys, day and night	2,400
Fuel	3,000
Electricity—Elevators and Hall	0,000
Lighting	1,200
Supplies	600
Repairs	1.000
Repairs	1,000
Total Estimated Annual Oper-	
ating Expense	\$24,500

Sale of Stock and Acquisition of Apartments Thereby

The said \$125,000 of capital stock is now offered for sale at par, being \$100 per share. Through this Plan of Organization, the subscribers to and purchasers of stock of the Owner shall have the right to acquire any of the aforemen-

tioned apartments of said building or part of apartment not already allotted and designated at the time of subscription, under proprietary leases for 95 years to be executed by the owner.

General Features of the Organization of the Owner

The three original incorporators of the Owner will be its first directors, and the number of directors will be increased to such number as the purchasers of stock shall elect after the building is turned over to the Owner. The subscribers shall appoint a committee of three from amongst their number with authority to represent them, pending the turning over of the building to Owner, in all matters affecting their interests under this and similar agreements.

(Here should follow a schedule of rents and the price of apartments, the actual cash money to be put up by the purchaser, etc.)

The total operating cost, plus a maximum of \$10,000 per year to reduce the mortgage and also interest charges, is chargeable as a fixed expense against each share of stock, pro rata,

Estimated Operating Cost	\$24,500 10,000
	\$34 500

which, divided in 1,250 shares of stock, pro rata, equals \$26.80 per share per year. It will thus be seen that on this basis a purchaser reduces his rent and owns an equity in the building, increasing in value as the mortgage is reduced.

Form of Subscription Agreement

The undersigned, having read and approved the foregoing Plan of Organization, in consideration of the mutual agreements herein contained, for himself, his heirs, executors, administrators or assigns, agrees to and with the subscribers hereto and the Contractor to purchase from the Contractorshares of the capital stock of Modern Apartments, Inc., when incorporated, of the par value of \$100 per share (full-paid and nonassessable), and to pay to the Contractor the full par value thereof in cash when called for by Contractor in the following installments:



First Payment: 10% of said subscription upon subscribing to this agreement.

This 10% payable on execution hereof will be deposited by the Contractor in its name with the First National Bank, together with an original of this agreement, upon the following terms and conditions:

If and when prior to September 15, 1923, the Contractor shall file with Bank a certificate showing that subscription agreements for the purchase of \$100,000 par value of the capital stock of the Owner have been signed by persons believed by the Contractor to be good and responsible, the Bank will pay the amount of this deposit and deliver the original of this agreement deposited with it to the order of the Contractor. If such certificate shall not have been so filed prior

to said date, this agreement shall thereupon become null and void, and the Bank will, on demand, pay the amount of this deposit, with any interest allowed thereon, to the order of the subscriber hereto.

Second Payment: 10% when subscriptions aggregating \$100,000 shall have been secured.

Third Payment: 10% at time of beginning the construction of building.

Fourth Payment: 10% when the excavation has been substantially completed.

Fifth Payment: 20% when the first tier of beams is erected.

Sixth Payment: 10% when the fourth tier of beams is erected.

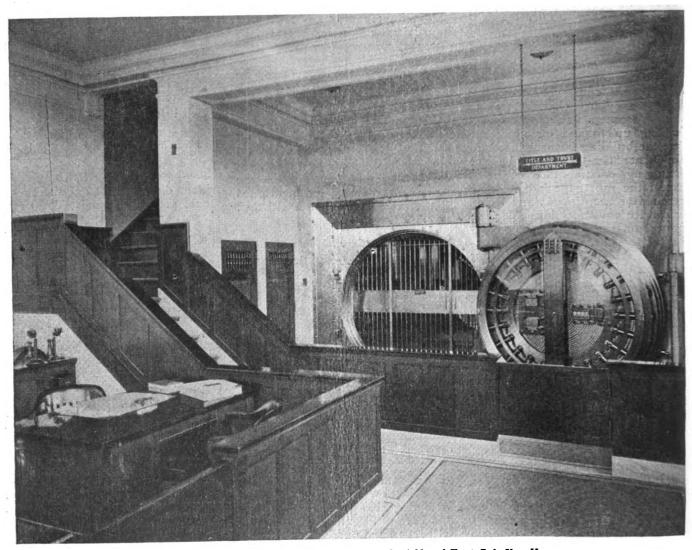
Seventh Payment: 10% when the roof tier of beams is in place.

Eighth Payment: 10% when the partition blocks are in place and the brown plaster is on or an equal amount of other work to balance.

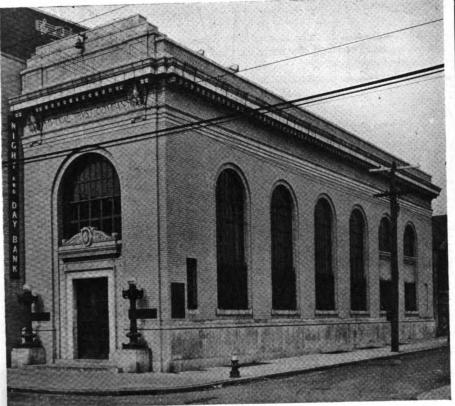
Ninth Payment: 10% on the issuance of occupancy permits either temporary or permanent by the Building Department.

Upon default by any subscriber to make payments in amounts and at times hereinbefore agreed upon, the Contractor may sell the subscription for the account of said subscriber at the best obtainable price.

The aggregate of the principal of the mortgage indebtedness on said premises on completion of the building shall not exceed \$125,000. The said mortgage indebtedness shall constitute the only indebtedness against the Owner at the time the building is delivered to Owner,



View in Rear Showing Entrance to Safe Deposit Vault of Mutual Trust Co.'s New Home



Artistic Bank Home

New Building of MUTUAL TRUST CO. Philadelphia

HEACOCK & HOKANSON
Architects

and the mortgage indebtedness and capital stock of the Owner shall not exceed \$250,000 in the aggregate.

The stock herein agreed to be purchased by the subscriber and the proprietary lease covering apartment....on the....floor of said building shall be executed, sealed and delivered to the Subscriber when he shall have paid for his stock in full, in accordance with the provisions hereof, together with any other indebtedness he may have incurred to the Contractor for changes, or alterations, or otherwise.

Any and all payments made hereunder shall be deposited by the Contractor in a separate account for the purpose of carrying out the plan of this agreement.

This agreement shall not become effective until approved by the Contractor nor until the subscriptions totaling \$100,000 have been obtained and accepted by the Contractor.

Good banking connections will enable the builder to finance such a co-operative apartment project and ought to net the contractor a handsome profit for the labor involved.



Interior View Showing Tellers' Cages



Glass Doors and Artistic Draped Curtains Lend an Air of Refinement to This Sun Parlor Garage



French Doors with Transom Above 1s Keynote of This Artistic Garage

HE garage can be made a very artistic part of the house if it is cleverly handled. On this page are shown two methods in which it is cleverly handled. On the opposite page we show a detached garage appropriately placed on a hill site. This is usually a difficult problem to handle, but it has been cleverly worked out in this instance. The small house with the attached garage is not so happily handled. In this

The House and Garage Problem



Clever Handling of a Sloping Site. Here Ornamental Lattice, with Pergola Top, Connects House and Garage

case it would have been better to have built a retaining wall on one side of the garage driveway so that the lawn in the front of the house would be level. This would have avoided the unsightly terrace leading down to the driveway. The trouble in this case is to take care of the surface water, which would of course run down, but a drain at the bottom of the incline would effectively take care of the difficulty, even in a heavy rain.

Some Illustrations

Showing How It Can Be

Artistically Handled



Here Crowding Too Much in Small Space Does Not Result Happily

How We Hold Our Men

Two Letters That Give Some Interesting Information on This Vital Subject

BUILDERS Syracuse, N. Y.

Building Age, 239 W. 39th St., New York City.

Gentlemen:

- 1. We find out the kind of work our men are best suited to and what they like best and try to keep them on such work.
- 2. We promise good men, those that we want most, steady work the year round.
- 3. We do not have a bonus or monetary consideration other than union wages, but we do try to have the best relations possible and work right with the men as much as possible.
- 4. About 95 per cent. of our skilled mechanics work full time as we will not employ them unless they do, but scarcely 40 per cent. of the unskilled labor work steady. Holidays are frequent with them, as we employ Italians and Indians. Lack of responsibility is probably the chief reason

Very truly yours,

HUEBER BROS., Builders, Inc.

HERE is no problem before builders today so important as the securing of enough skilled mechanics to carry on all the work that may be secured.

Just what are builders doing to hold their men and what inducements are given to secure men? These are interesting questions and the experience and opinions of other builders will be valuable to you and your own experience will interest them.

We print herewith letters giving the experience of two well-known building firms. Your own experiences will also be of interest. Will you not write us briefly just what you are doing to hold your men and attract new ones?

ABERTHAW COMPANY ENGINEERS-CONSTRUCTORS

Boston Phil delphia At.anta 27 School Street, Boston

Building Age, 239 W. 39th St., New York City.

Gentlemen:

Replying to your letter on the subject of what we are doing to hold men and what inducements are given to secure them, we wish to give the following as the policy of our company:

Our carpenters have Record of Service books, one page of which is signed for each job satisfactorily completed. The books are issued only to preferred men who are guaranteed steady work as it is possible for the company to give them. We find this very helpful in holding these men.

The best of our laborers likewise have Record of Service cards on which an entry is made for the jobs worked on. We find these of value in holding the men.

For our superintendents, foremen, chief clerks, etc., we have what is known as a Standing Field Organization of preferred employees. Employees must fulfill several strict requirements in order to get on this list, and once their names are listed they are assured of such permanent and profitable employment as it is possible for us to give them.

We always aim to make our work as attractive as possible and we operate bonus systems where conditions are favorable, but for the rank and file of the laboring class we believe that they are attracted by jobs that can offer them the long periods of employment at proper rates of pay, although they are to some extent attracted by their labor foremen who have their own particular following of valuable men.

Although we find holidays are taken occasionally, the situation is no worse than could be reasonably expected.

Yours very truly,

ABERTHAW COMPANY, By M. A. Styles.



How to Read a Survey

This Chapter Tells About Running the Transit in Laying Out a Plot of Land

By J. LAWRENCE MICHAELS

ANY builders and contractors have a mistaken idea that to operate a transit, level or a combined transit-level, it is necessary to have a college education in engineering. This belief is unfounded. One need not have spent years in schools in order to operate one of these instruments, nor need he believe that it is possible to use it right off without any knowledge whatsoever. A little study and application will enable a builder to thoroughly familiarize himself with the intricacies of the level and transit.

Accuracy is one of the predominating factors in the building line today, and for this very reason, the transit and level has gained prom-

inence in building, from the time the lot is staked out until the roof is placed on the house.

It is exceedingly interesting to know the difference in methods used in bygone years, when staking out a plot of land, and the methods used today. Before surveying instruments were well known, a man desiring to stake out a piece of land started out with a measuring chain, some wood stakes, and a knowledge of a rule known as the "rule of six, eight and ten." This was applied in the following way:

The man staking out a lot knew that the lot line ran parallel to some point, such as a row of trees, a line of rocks, etc. He also knew an exact point at one corner of the lot, which was usually marked by a wooden stake driven into the ground, with a nail in its center. Having found this stake, he measused six feet in one direction and then eight feet at right angles to it, driving a stake at each measurement.

Measuring on a diagonal between the two stakes set at right angles to each other, the distance should be ten feet, which, if correct, proved that the stakes were exactly at right angles. If, however, the distance was more or less than ten feet, it proved that the stakes were out of square and it was then necessary to shift them until the required ten feet was proved. A final check of all the measurements confirmed the accuracy of the laying out.

Having once completed the task as herein described, it was simple to proceed in measuring and staking out the lot, using the "rule of six, eight and ten" at all four corners and driving stakes as permanent marking points.

This was a long-winded job and required much time and labor and was, of course, of no value when the lot lines were not at right angles. When the use of the transit-level became popular, much of this waste energy was saved. Even today, in some outlying districts, farmers and others desiring to erect buildings on their land, or to stake out a piece of property, still utilize the antiquated rule, when they have no way of securing the use of an instrument.

There are a number of good instruments on the market. They are thoroughly tested and if handled with care should at all times be accurate to the thousandth part of an inch. There are many and varied uses to which the builder can put the transit-level. It is indispensable in marking points ou street lines, turning angles, taking

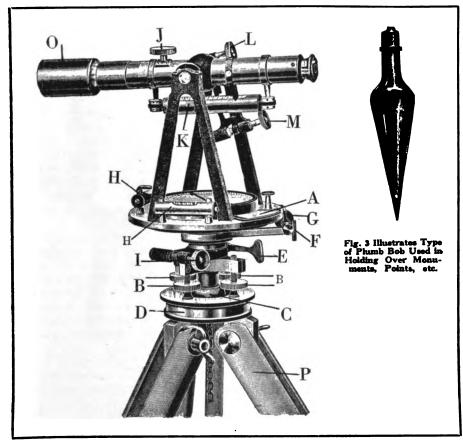


Fig. 1 Shows a Transit-Level. The Different Parts Are as Follows: A—Enclosed Vernier; B—Leveling Screws; C—Head Plate Socket; D—Screw Plate Holding Transit on Tripod; E—Head Plate Tightening Key; F—Vernier Tightening Screw; G—Screw for Slight Movements of Vernier; H—Spirit Bubble Level; I—Screw for Slight Movements of Head Plate; J—Focusing Screw; K—Telescope Level; L—Screws for Tightening Telescope Screw; K—Telescope Level; L—Screws for Tightening Telescope; M—Screw for Slight Movements of Telescope; P—Tripod.

offset measurements and in levelling work, such as determining the rise and fall of the ground before building, and plumbing walls after the construction work has been started.

Figure 1 shows a combined transit-level, which does the work of two instruments. To the inexperienced, the transit, or "gun" as it is called by surveyors, is one mass of screws, and its appearance might well dampen the ambition of any tryo attempting to solve the workings of its mechanism.

To the contrary, it is not as complicated as it might appear. By a little careful study and manipulation, the use of each screw can easily be mastered, and after a short time, the builder can become expert in the use of the instrument.

The transit shown in Fig. 1 is what is known as the enclosed vernier type. A shows the vernier which is enclosed under another brass plate. There are two sight plates opposite each other on the transit head plate. This prevents



Fig. 4 Shows Correct Method of Leveling Transit. Transitman Manipulates the Thumb Screws,
While Watching Plate Levels.



Fig. 2 Shows Portion of Limb and Vernier Marking an Angle. This Angle Reads 14 Degrees.
42 Minutes and 15 Seconds, Reading from Right to Left.

dust and grit from collecting and also provides for easy reading of the figures on the vernier, which, on the open faced type is liable to become grimy, and at times difficult to read. A little rubbing with a cloth will remove this from the vernier of the open faced type.



Fig. 5 Shows Method of Getting the Sight. Note Method of Focusing by Use of Screw on Telescope.

The vernier is the circular plate divided off into divisions of a circle—three hundred sixty degrees, with subdivisions of minutes and seconds. The portion of the vernier shown in Fig. 2 is divided into degrees and minutes, while the limb, as the small scale is called, is divided into seconds. The hardest part of operating the transit consists in reading the vernier correctly, and care should be taken when turning angles. Every angle should be checked twice, before

accepting it as correct. When turning the angle from left to right the vernier should be read from right to left; and when turning from right to left the vernier should be read from left to right. In other words, the vernier is always read in the opposite direction from that in which the angle is turned.

When the builder prepares to stake out his lot, the first thing he does is to find the monument from which he starts his measurements. He then sets his transit on the copper plug, crosscut, or other mark found on the monument and places his instrument over it. A plumb bob, such as shown in Fig. 3, should be tied to the little chain hanging down from under the head of the tripod, marked D in Fig. 1. Loosening the thumb screw B so that the head plate can be moved freely on its ball support C the plumb bob should be moved about until its point is exactly over the center of the mark on the monument. Then tighten up the thumb screws just enough to prevent the head plate from moving, thus throwing the plumb bob off the mark.



Fig. 6 Shows Use of Plumb Bob. Note Pencil on String Just Below Hand of Helper.

Figure 4 shows the method of levelling up the transit. There are two spirit bubble levels set at right angles to each other on the top vernier cover and should Two thumb watched closely. screws level up the bubble that is parallel to them. In turning the thumb screws, the thumbs of the hands of the transitman should never move together in the same direction. That is, both should not move right or left at the same time. The thumbs should always move either away from or towards each other.

Great care must be taken to prevent the screws from binding which will happen if too much pressure is placed on them in tightening. Just enough tension is necessary on them, to keep the head plate from moving after the leveling of the transit has been completed.

When the bubble on one level is in the center of the glass, the same procedure should be followed in leveling the other bubble. This must be continued until both bubbles are in the center of their glasses at the same time. The head of the transit is then exactly level

The builder or transitman should have a small pocket reading or magnifying glass with which to read the markings of the vernier. Using this glass the arrow on the limb and the zero mark on the vernier should be brought into line.

To do this, the key marked E must be tightened to prevent the entire head plate from turning. Then the screw marked F should be loosened, thus permitting the entire top plate with the telescope and limb to turn. When the zero mark on the vernier is brought close together with the arrow on the limb, the screw F should be tightened. Then use the screw G for making a few turns in the direction necessary to bring the limb and vernier marks into line are made. The magnifying glass must be used in performing this operation, in order to insure accuracy. One might think the vernier is plain enough to read without the aid of a glass, but it is better to be sure than to turn an angle wrong and be compelled to repeat the entire procedure again. The key

marked E can now be loosened, permitting the entire head plate to swing freely. It must be remembered, that during the working of the different screws, care must be exercised so that the instrument will not be jarred, as this will throw it out of level.

The transit is now ready for use in making a survey. The object is to locate the city or county line,



Fig. 7. Signaling the Assistant Line Is O. K. Note Position of Plumb Bob Over Cross Under Transit.

often called the datum line, which is an imaginary line marked by a series of markers or monuments.

The transit is placed over the first monument as shown in Fig. 7 and an assistant goes to the next monument and holds a pencil or plumb bob on the center of it as shown in Fig. 6.

Now the object is to place the telescope of the transit in a direct line with the datum line, and then from this, correct measurements for the survey can be made.

The transitman, after focusing the telescope by means of screw J, sights the crossed hairlines in the telescope on the center of the pencil or plumb bob his helper is using, Fig. 6. Figure 5 shows the way to focus the telescope in order that the transitman has a clear view. This is done the same way as a pair of field or opera glasses are focused.

Note the transitman's right hand on the key that tightens the head plate. This operation is called "getting the sight." If the center of the monument is too low to permit a clear sight, a plumb bob should be used by the helper, who should plumb over the monument center, holding the cord as steady as possible. If the distance is too great to see the cord, the transitman should tie a pencil to the plumb bob string in such a way that it can be seen to get sight.

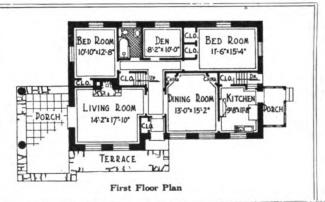
In Fig. 6, the correct way to hold the plumb bob is illustrated. The pencil can be seen tied to the string just below the hand of the man holding the plumb bob. He is holding it over the monument which marks one point of the city or datum line from which a survey is started. When the transitman locates the pencil or plumb bob string near to hairlines in telescope, the key marked E in Fig. 1 is tightened and the screw marked I turned until the vertical hairline is exactly on the pencil or string. The transit is now lined up on the datum line. A straight up and down movement of the arms of the transitman signals to man holding on the monument that line has been received and is O. K. Fig. 7 shows the O. K. signal.

To avoid all the trouble of iocating the line over again it will be found convenient to make another mark on some convenient wall, sidewalk, etc., so that the transitman can locate the line alone, without the necessity of having a helper go back to relocate the monument. We may have such a "sight" chalked on the sidewalk, which in this case was sloping. The sight being on the higher part, is, of course, visible.

The sight is secured by holding the pencil on the sidewalk, curb, stake, etc., the pencil being moved right or left by signals from the transitman indicated by movement of one arm or the other as the case requires until the pencil is exactly on the line with the vertical hairline in the telescope.

(To be continued)

Stone Bungalow Design



WALLACE &
WARNER,
Architects,
Philadelphia



HERE stone abounds, it forms a very good material for the erection of a good appearing house if the design is carefully handled. The cottage shown herewith possess a good deal of charm in its cleverly handled exterior design.

The hooded entry is modeled after Dutch Colonial lines, which of course is quite proper, seeing that this house was built at Narbeth, Pa. The solid wood shutters with the crescent cuts are painted white and look exceedingly well against the background of stone mosaic.

The stone paved terrace leads around the front to the side porch, which is covered over. The roof here is supported by two stone columns; the rafter ends project in pergola fashion, giving an artistic

STORAGE
S-0-19-0CLO
BED ROOM
14-6-x16-0BED ROOM
11-0-x12-6Second Floor Plan

finish even though it is not Dutch Colonial.

The exterior lines of the house are quite pleasing. The one section extending a few feet beyond the other allows for an interesting gable treatment of the roof, which in its elements is only a plain hipped roof.

The main living rooms and two bedrooms are located on the first floor, while upstairs are located two additional bedrooms and a second bathroom, besides the storage room.

The first floor is essentially a bungalow. Rooms are very conveniently laid out in relation to each other, and all the principal ones have the advantage of facing the street, while the bedrooms are toward the rear.

The living room is of generous size and has a large open fireplace, while French doors lead out onto the side porch. The vestibule is provided with a convenient coat closet and there is a short but wide hall between living room and dining room. Doors of the bedrooms and bathrooms are not visible from the front, but one looks directly into the den doorway, which gives the guest a pleasing view in all directions as living room, etc., are all in view at once.

OFFICE and JOB MANAGEMENT

Things the other man has found out that save money



How Builders Can Win Success By Careful Estimating

By I. P. HICKS

PON what depends a builder's success? This is one of the greatest questions of the day that is now confronting everyone in the building industry. While it may not be a hard question to answer it is a difficult one for most people to solve.

Many wonder why some builders soar to fame and fortune with what apparently seems to have been no effort, while others succeed only with the greatest of hard labor and still others fail entirely to reach the ideals of their lives, just making a good mechanic's wage.

There must be a cause for success and a cause for failure. This is a truth that all must admit. There is no way to dodge this fact. To eliminate the causes that lead to failure and cultivate those that lead to success must be the only natural and logical course to follow.

Briefly stated, success in building as well as in other lines, depends upon doing the right thing at the right time and most of the failures are the result of this not being done and can be traced to it either directly or indirectly, but it always stands in the way of success just the same.

We know you will not be satisfied with this solution of success and failure, although it is an absolute truth and there is no getting by the fact. We will go further into the subject and try to make it plain what brings success to builders and what results in failure.

Success comes to those who concentrate their mind and thoughts in proper channels, properly connect their thoughts one with another, and finally in the proper execution of the ways and means that have been properly thought out.

To illustrate, you may have an electric light and power plant, if the wires and switches are not properly connected you can press the buttons and pull the switches till doomsday and you have neither light nor power.

Disjointed and misconnected methods of doing business will result in failures, not perhaps in the same way as the electric current, but just as certain. Again: all the thinking and planning in the world is of no avail unless action is taken. The best of plans will fail if no action is taken or if executed in a careless manner.

Failures in business result from carelessness or mismanagement and failing to do the necessary and essential things that bring success. Success is the mere matter of thinking right, planning right, the proper application of business methods to construction

work. It comes from nothing else.

Success does not come to people because of physical reasons, if it did the most perfect people physically would be the most successful, but fortune does not favor people in that way, it is no respector of persons, it will come to one as readily as another if they do the things that attract it.

Since success is not due to physical causes we must look elsewhere for its source. Before there can be any action of any kind there must be some thought. Thought is a product of the mind, therefore the mind is the creative center from which all activities originate. No matter what is done or ever has been, its origin sprang first in some busy mind.

I T is a matter of mind over matter with mind for the master. In short it is the man with brains and a master mind who wins the battles which lead to success in a business way. In respect to brains and mind the poor man may be born with as great a storehouse of wealth as the millionaire and there is absolutely no reason why he can not cultivate and train his mind to bring success in business.

If others can do it why not you who were born with an equal chance in life? It is just a matter of thinking right, planning right

and having the courage, will and ambition to carry out your plans.

Bear in mind that nothing worth while is attained without an effort. Don't think for a moment that those you may know in the building game who made their fortune without any apparent effort or did nothing to attract it their way. In every instance they have started out with some definite plan which they have persevered in and brought to success.

THE plan may not have been visible to you but it had a sure existence just the same and the man's success was due to the fact that his thoughts were right, that he planned his work right and put enough enthusiasm and energy in carrying out his work to win.

It will do you no good to stand at the bottom and stare up the ladder of success, you must climb it. Did you ever hear of such a thing as the man who never started getting anywhere? The man who stands still is certain to be the one who will get bumped.

Don't stand still and get bumped. Start now, you are neither too young nor too old, even if you have but a short time to live you can improve your conditions and change failure to success if you set about it in the right way.

First of all train your mind to think in the right channels for the saying is true "That whatsoever you sow, that ye shall also reap." There is no need for any dishonest or crooked work.

The building industry is as full of opportunities today as ever whereby the well disposed can rise to fame and fortune and do it honestly. As everything has its origin first in the mind, train the mind to think properly, train yourself to properly connect your thoughts, then tune up your moral courage sufficient to act.

Do the things that attract business and eliminate all the things that are repulsive. There is absolutely no gain that comes from the things that are repulsive, they tend to discredit and culminate in losses.

Create things that the people want and even though you live in the wilderness the world will beat a trodden path to your door. The builder has good chances today for the world is looking for the most efficient workmen and builders. The best is being sought today more than ever and now is the time to improve yourself and your methods of doing work if you would succeed.

To succeed as a building contractor you must adopt modern and up-to-date methods of doing work, methods that are known to be successful. In this and future articles we intend to give a large amount of general practical information that should be of great assistance to those who would make a success of estimating and building.

In this introductory article our chief aim is to show that the right way of thinking and planning the work is one of the essentials that above all leads to success as a contractor. We know that if you will take a moment's time for reflection you will admit this fact.

As every builder is the builder of his own fortune it is up to him to think and plan his business to suit his own needs and to do the things the way the people want them done. As a rule the people want the best in work and ideas. Try your best to give the people the best in everything that they want.

The price they give you for a satisfactory building job is soon forgotten while a cheap price for a cheap and inferior job of work seldom if ever gives satisfaction or brings you another job.

Every builder can improve his condition by improving his methods and we hope we have now created sufficient interest in the minds of our readers that they will be prepared to receive the many helps and aids that we intend to give them through the columns of the BUILDING AGE AND THE BUILDERS' JOURNAL.

No matter what is said or done, we can only help those who are

willing to be helped, that is why we have made such an effort to command your attention and create an interest in the work for our readers.

If we have succeeded in this we have won half the battle and it will be up to those we have interested to carry off the honors by winning the other half and march straight to victory over the road that leads to success.

This is it, think right, plan right, estimate your work right, do your work right and in the most advantageous manner and don't forget to hop to it.

If you cannot succeed in this way you had better consult some other doctor for it is the only successful prescription we know of and there are many who would be benefited by taking it to heart.

In making estimates for the construction and erection of buildings there are many things to be considered. There are kinds of work which come under different headings and the builder must be thoroughly posted in all kinds and branches of work.

To make a reliable and intelligent estimate he must be able to accurately figure the quantities required and must also know the correct prices to figure on all kinds of material in order to enable him to complete the job in a satisfactory manner with a fair margin of profit.

PRICES are always subject to change and it is impossible to arrange any fixed set of prices on material and labor that would be of real service to the building estimator.

In future articles it will be our aim to list all kinds of material and labor required in the construction of buildings in a systematic form leaving a space for the price to be supplied by the building estimator.

In this way the building estimator can always make the prices to suit the existing conditions, which is the only logical and safe course to follow.



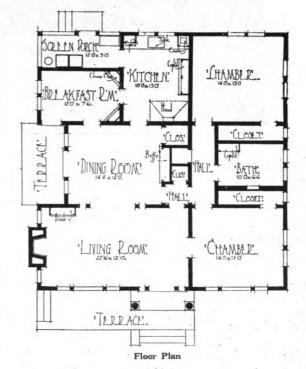
Entry porch is full width of terrace, which extends across entire front of building, and covered with pergola rafters, which extend beyond driveway, forming a porte cochere-

Bungalow With Two Different Exteriors

O avoid sameness where a number of similar houses are to be built in the same locality, it is a simple thing to slightly change the exterior design so as to have a variety.

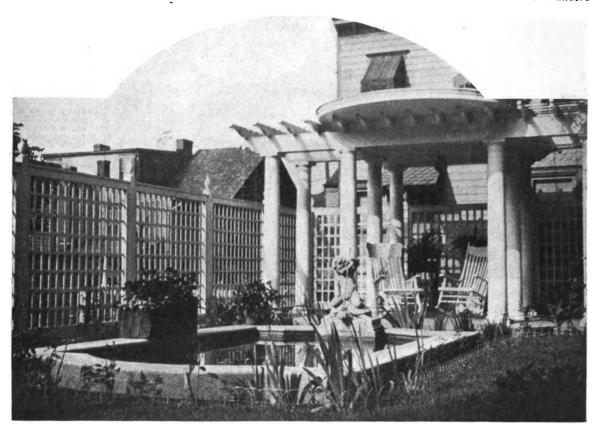
The upper and lower pictures shown herewith look like two totally different designs, but they are the same in their constructional features. The floor plan illustrated is a very convenient arrangement and one that is quite popular with the average family. The bedrooms are off to one side with the bathroom within easy access to all other rooms.

A feature that will appeal is the cheery breakfast room connecting with the dining room, kitchen and terraced porch, which may be covered with a pergola and when grown over with vines, will make a nice shady retreat from the adjoining rooms. The living room is of large size and the open fireplace forms a distinctive feature.





A terrace with small covered entry porch is used for this exterior. Note the change in window arrangement from design shown above.



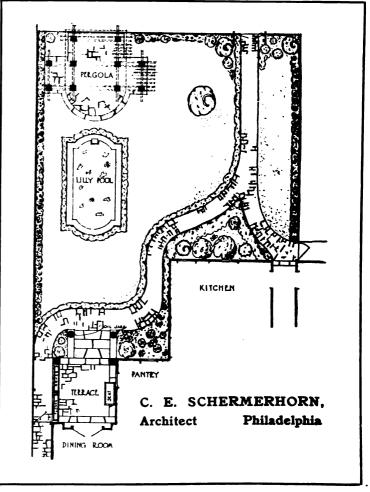
Beautifying the Back Yard

BESIDES the painting, there is some construction work necessary for the successful back yard. Some architectural features are always desirable and a fence in a great many cases, is very necessary, paths are a convenience, and a pool and fountain is a touch of the artistic.

Now, all of these items are part of the builder's work, and the successful contractor of homes can increase his business to quite a considerable extent by obtaining the contract for this extra work, which he can do very easily by making a few suggestions to the owner while the house is under construction.

We show herewith a picture and plan of a most interesting back yard that was carefully designed in the first place, and carried out in a practical and artistic manner. Notice how carefully the design has been made so that the important features are in line with the dining room, so that one can have an attractive vista.

This interesting back yard is that of Dr. Eugene M. Kistler at Allentown, Pa. Our picture was taken shortly after the completion of the job and the plants and vines will enhance its beauty when they have had some growth.



What the Editor Thinks

Keeping Your Men

UILDERS today are up against a rather serious condition of affairs on account of the shortage of men. This particularly affects the small town near big cities as the inducements of bigger pay in the cities has taken away men from the small places.

There are many reasons why builders have trouble in keeping help, but the most important seems to be the lack of continuity of employment. This is the big problem before builders, but with some intelligent thought this ought to be worked out on some practical basis, so that there will be work 12 months in the year for every building mechanic.

High pay for a short time does not appeal to the majority of workers. They want steady work so that their income is stable. Unfortunately, the tendency of the majority of folks is to spend all they make, whether it is five dollars per day or fifteen dollars. Then when it comes to a period of no income they are up against it.

There is no subject that is so important and worthy of discussion at builders' exchange meetings as the problem of all-year-round work in the building industry.

Business Getting Methods

It is a most important part of the contractor's work to secure business. Having satisfied customers is the best form of recommendation, but no progressive builder should sit down and wait for trade to come to him solely on a past performance record. It takes salesmanship of the real sort to secure the most desirable contracts. In several articles that we have recently published we have tried to bring out this matter by describing some methods used by builders in securing additional business.

Financing Building Operations

THE business of building today requires considerable financing and the contractor who is able to do this through good bank connections is in a favorable position to acquire some very desirable contracts. A very interesting story is told in this issue on how to finance a cooperative apartment; this is an example of how some builders really create a job for themselves.

Who Built This?

THE above question comes to the mind of many an inquiring individual, more so in regard to large public buildings. In some cases, a bronze tablet is placed on the wall of the entry, hallway or vestibule giving the facts regarding construction of the building.

There are few very old buildings of which any trace of either the architect or builder can be found. Perhaps the method mentioned above is a good step forward, but why cannot every building be so marked.

Our churches, etc., usually have a cornerstone, but they seldom are inscribed with the name of the architect or builder. Now every public building or semi-public building should be thus marked; it not only gives credit to whom credit is due, but when this custom is followed it tones up everybody on the job to do their best.

Even in small residence construction a small bronze tablet no larger than a brick could be used in the foundation, stating the name of the builder and the architect, and the year when built. It would be a nice custom to follow and it might reform the shoddy builder. It certainly would help the builder who does a good job.

In Memorian
WARREN G. HARDING

The Business of Building

It is not so very long ago that the "carpenter and the builder" was the man who did all the building work. In our present days, many very large corporations are now devoted to engineering and building on an extensive scale.

The business end of building construction requires efficient methods in the office as well as in the field. Records must be kept; collections promptly made, to reap the advantage of discounts, etc.; loans at the bank must be negotiated and honored promptly, etc., etc. All this requires careful detail to office management.

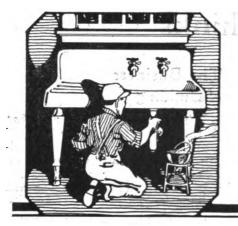
The office end of the building contractor is second only to his field work. This, of course, is the non-productive part of the business, but without its efficient aid, there would be few contracts. The ability to get good jobs and keep simple efficient cost systems are vital factors in the builder's business.

Truly the modern builder, besides a knowledge of construction, must be a many-sided man to be a success.

Why Use the Word "Apprentice"?

Is it not about time that the word "apprentice" should be dropped from the building trades? Most young men associate it with a form of industrial slavery, and this naturally goes against the grain of American youth. They do not want to be bound as apprentices. They want freedom and nothing smacking of semi-slavery is pleasing. There are other words that can be used. Would not the term "junior bricklayer" sound better than "bricklayers' apprentice?" Make the building trades attractive for the young men and troubles that we face today will not occur in future years. Apprentice and master are words that should be forgotten.





PLUMBING

Modern Methods and Equipment

Selecting the Plumbing Fixtures Before the House Is Built

N the majority of cases the actual selection of plumbing fixtures is left until the house is almost ready to receive them. This method has led to many keen disappointments on the part of the owners because proper space was not provided for the fixtures.

Let us take a kitchen, for example, in which the plans call for a sink set in the corner with a door alongside, leading into a dining room, the door being 18 inches from the wall. The owner has selected a sink that is 22 inches in width and of course there is trouble right there with the swinging of door and the projection of sink out in passageway.

Another thing is to look out for the windows to see if they are the right size and set at a proper height. It is now the custom to set many sinks underneath a window. Be sure to ask your customer at just what height she wants the sink set. This, of course, should be set to suit the height of the lady who has to use it.

When you have the height of the sink settled, the next item to be considered is the height of the back; your window sill should be above this, and then you will have a job that looks workmanlike and one that will be sure to please the owner.

The placing of laundry tubs should also be considered. They do not look well crossing a kitchen

window; it will be best to raise the windows so as to be above the tops of tubs; and in cases where the tops of windows must be in line, it is better to have shorter windows. Sufficient depth should also be allowed for the tubs, especially where they are set in a passageway, so that they do not project.

THESE remarks apply principally to where tubs are placed upstairs in a kitchen, passageway or separate laundry, but proper space is as necessary when they are set in a basement laundry. In these days it is wise to leave adequate room for placing an electric washer alongside of the tubs.

A little thought should also be given to the fixtures in the bathroom. They should be settled on really before the plan is finished or at least right before the partitions are set.

Take the bath tub, for instance. If a porcelain tub is selected, the floor will have to be a little stronger to support the extra weight; doubling the joists is the usual method of attending to this matter.

The next and most important part is to consider the size of the tub. There may be difficulty in getting it in if you wait until the plastering and trimming is finished. Sometimes it is advisable to get a heavy tub in place before the partition studs are set.

We have known of cases where door frames had to be taken out and plastering and tile work broken to allow the tub to be put in the bathroom. It is not a pleasant situation for a builder to be put in with an irate owner around making caustic comments on somebody's boneheadedness.

The placing of the water closet should also be carefully considered. Often the space allowed is adequate where a high flush tank is to be used, but where a low down tank style is selected, you will probably find that the space between water closet and bath tub or wall, door, etc., is too cramped for comfort. When the owner is seated on the throne, he has time to think of the improvements in the bathroom that the builder should have seen to.

THE lavatory should also be carefully planned. A-wall basin occupies less space than a pedestal lavatory. Be sure that enough depth is allowed for it; especially at doorways, there should be sufficient room allowed for doors to swing to a full opening.

Where it is found that sufficient room has not been allowed for the actual fixture selected, changes in the location of partitions, doorways, etc., may usually be made so that the fixture may be properly accommodated. What gets us off in most cases is not knowing just the exact sizes to figure on before we advance too far.

Digitized by Google



CARPENTRY

Good Practice in Frame Construction and Finish

Will the Barn Roof Stand?

A Criticism of One Method of Framing We Published and a Reply with Photographic Evidence

In our issue of February, we published an interesting article on "Simple Barn Framing," which presented a simple method of roof framing. This article was by J. L. Strahan, Assistant Professor of Rural Engineering in the Massachusetts Agricultural College. One of our interested readers takes issue with the author and shows by his diagrams some methods he has used successfully.

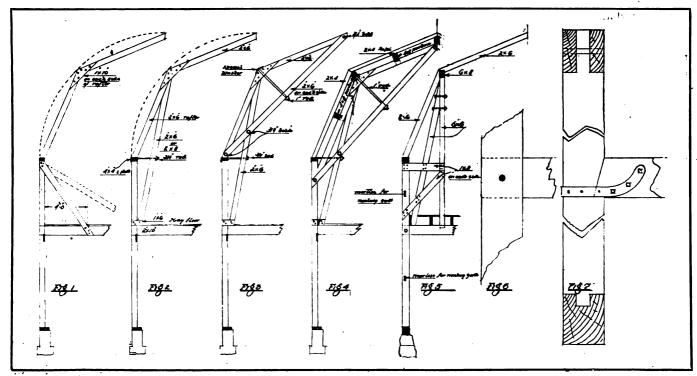
To know both sides at once would be of considerable value, so we asked Professor Strahan for some further evidence of the practical application of the methods he decribed. Pictures of barns actually built years ago are presented.

As Professor Strahan remarks, engineering investigations should be applied to more of our simple everyday building problems and perhaps some more stable forms of construction using less material could be recommended.

Building to a large extent has followed along the lines of what

our ancestors did rather than the adoption of some new methods just invented. If a builder used 3×12 inch timbers for a certain purpose and the building did not fall, everyone that saw it copied it, and 3×12 came to be used as a standard, etc.

No one investigated if a 2 x 8 would hold all the load that it was to carry; but everyone kept right on using the 3 x 12 because they knew it was safe. The 2 x 8 was not used because no one knew if it was safe or unsafe.



We all get into ruts and there are many in building construction, but fortunately, they have all been on the side of safety. Our correspondent, Mr. John Hinsman, is to be commended for bringing forth his criticism and his interesting observations follow.

THE CRITICISM By JOHN HINSMAN

P LEASE allow me as a reader and subscriber of Building Age to make a few remarks about Professor Strahan's description of barn framing in the February issue of Building Age. The professor talks about that selfsupporting roof on page 64. That rafter may be self-supporting but that is all it can support, the roof boards may help to stiffen it a little as every little bit helps, but that rafter is very weak, as there is nothing to prevent it from spreading at the plate as well as at the joints of the upper and lower rafter, a few nails in a 1 inch piece of wood at that point holds nothing, the weight of the rafter alone will push it outward.

The only thing that can be said in favor of it is its cheapness and holding the plate in place by braces from the plate to the floor is also a poor construction, in the first place bringing it in four feet into the building is not far enough to do any good and bringing it farther into the building is a menace to

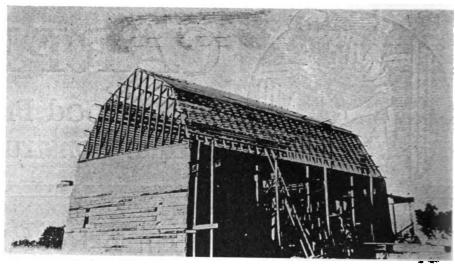


Fig. 3. A Barn Similar to That in Fig. 2, Showing Raftars Before the Roof Boards Are Placed

everyone that is walking on the floor, especially if covered with hay, as it usually will be.

You can have no idea how much pressure there is on both plate and rafter joints from the weight of roof alone and the jerking of the hay track when in use in haying time.

In a very short time the building is sagging at the ridge and bulging at the sides. The only thing that could help to prevent this is to have 1 inch or 1½ inch rods across the building every eight or ten feet, but this is objected to by the farmer who wants a clear space all the way through his barn.

There is, of course, more ways

of killing a cat besides hanging, and also in roof construction, and to show my points I include with this letter a sketch of a few different rafter framings which I would like to see reproduced in Building Age so that your readers may judge and criticise its merits and demerits.

Figure 1 is the rafter in question and every carpenter will admit that it is a weak construction, although it is built that way in some parts of the country. Here the brace is shown 4 feet in, but in order to do any good for strength it ought to run farther into the building as shown by the dotted line.

To improve on this rafter, we could make every other rafter like the one shown in Fig. 2. A brace consisting of a 2 x 6 or better 2 x 8 is placed from floor joist to top of lower rafter and spiked to it, then a 1 x 8 or 1 x 10 is nailed across this brace from lower to upper rafter, and an iron bolt with washer and nut holding both rafters from pressing outwards as shown.

In Fig. 3, I show a still stronger construction. Here, as in Fig. 2, is a brace running from floor joist to top of lower rafter, and another 2×6 on each side from the top of upper rafter to the bottom of the lower rafter; and a 1×8 or 1×10 holding upper and lower together; then a 3/4 or 1 inch rod from this joint to the brace. This brace is bolted to the top of the upper rafter and the heel or foot of the lower rafter and across the lower brace. This rafter is spaced 6 or

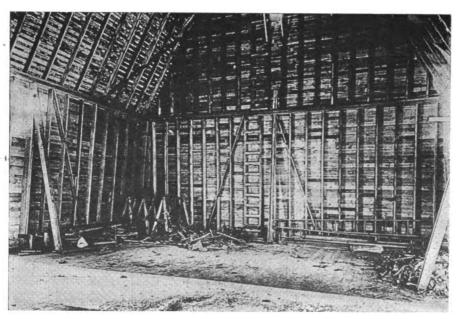


Fig. 1. An Interior View of the Barn Shown in Fig. 2, Illustrating a Simple Type of Framing

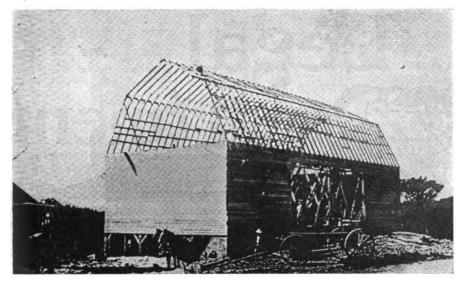


Fig. 4. This Rafter Is Evidently Strong Enough to Hold a Man Before the Roof Boards or Any End Wall Boards Are Placed to Act as Braces

8 feet apart with rafters like Fig. 1 between on 2 feet centers would strengthen the roof considerably. They could be placed closer together if desired if cost is no objection.

Fig. 4 shows pretty near the same construction which can be placed on 8 or 10 feet centers using 4 x 8 for purlins and placing 2 x 4 rafters 16 inch on centers.

Figure 5 is a construction using an 8 x 8 plate and a 6 x 6 purlin post and brace; this makes a strong construction but has also one weak point; that is at the connection of the cross timber into the upright as the 8 x 10 beam is cut down to a mere 2 x 10, and held by a 1 inch oak pin to the upright, as shown in detail, Fig. 6. For this reason I always show in my drawing the way I want it connected, as shown in detail, Fig. 7. Here the beam rests on a two inch bearing instead of depending on the oak pin alone. I have made a strap around the post and bolted it to the beam. The bend in strap prevents all the bolts coming in the same line of grain of wood beam.

Now let our readers decide and tell me what is wrong or could be improved upon.

THE REPLY By J. L. STRAHAN

THE criticism of the type of barn framing described in the February, 1923, issue of BUILDING AGE is good, in that it indi-

cates a desire to check up and prove the reliability of certain structural details which may appear unreliable to the casual observer.

This is a very admirable purpose, as all will admit that there should never be the least doubt of the practicability of details used in the construction of the type of building which is expected to stand up under the work of the average American farm.

Nor should there be any reasonable doubt in the mind of either the builder or the owner of the ability of the completed structure to serve its purpose well. Certainly no barn roof whose rafters will bulge outward due to their own weight alone will ever fulfill these conditions.

The modern barn frame did not come into being as a result of any one man's thought. It has developed gradually from the older types of heavy timber framing in easy stages by what might almost seem an evolutionary process. Certain conditions, largely economic and having to do with changed methods of farm management, and with changes in the lumber markets and building trades, have gradually eliminated the old heavy timber mortise and tenon frame construction and introduced in its place, just as gradually, the lighter plank construction.

If space permitted, a very interesting series of frames could be shown illustrating this development along two quite different lines, but ending in one general type, such as was described in the February issue of Building Age.

In considering this from the practical man's viewpoint, however, this fact must be kept in mind, namely, that each succeeding step in the development process was taken by a so-called practical builder and not by a trained engineer. In fact, the engineering profession is only just beginning to (Continued on page 86)

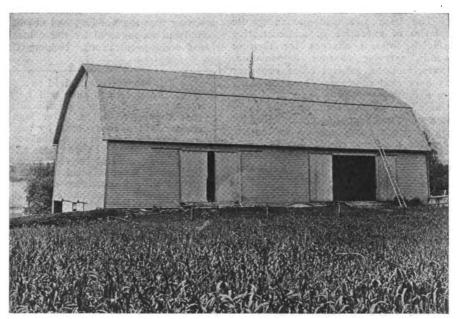


Fig. 2. This Barn Is Now 14 Years Old and Shows No Distortion or Deflection Due to Any Inherent Weskinses of the Frame.



N a contract involved in a case recently before the Pennsylvania Supreme Court (120 Atlantic Reporter, 409) it was provided that certain build-

A "Cost Plus" Contract Does head Expenses

ings should be remodeled "on a time and material basis, Not Include Over- with ten per cent. profit as compensation to the contractor, the

records of the cost to be kept at all times in such a manner as to be checked and audited by the owners." The corporate contractor claimed under this agreement, as part of the cost, overhead expenses, including clerical salaries, rent, telephone expense, heat, and other items involved in the conduct of its general business.

The Supreme Court disallowed the overhead items as not being contemplated by the contract. Stating that These contracts are very dangerous at best, as our government has had reason to learn during the recent war," and that "It is only another example of a contract where the contractor's chief incentive seems to be to make the price as high as possible," the opinion adds:

"The term 'overhead'-including the salaries of executive or administrative officials, interest charges for floating bonds, carrying charges, depreciation. taxes, and the general office expenses as here claimed-cannot be allowed as an operating charge in 'cost plus' contracts. To do so would open the doors to a flood of obligations not intended by the innocent words used in a contract such as the one before us.

"The term 'time and material basis' was intended to include the necessary cost of operation affecting the particular undertaking, the cost of labor and materials that went into and became part of the finished product; each outlay thus expended must be included. To this there was to be added a profit of 10 per cent.

This latter item was intended to take care of that proportionate share of overhead charges included in the company's 'overhead', or general expense, discussed above, as this contract related to plaintiff's general contracts. and, unless expressly written into the contract by defining exactly the overhead intended to be covered.

"The words 'time and material,' and like expressions, will not include overhead charges, but refer solely to the wages and salaries of the men engaged in the particular work contracted for and the actual cost of the materials furnished. The words will not be extended beyond their exact meaning, and indeed they should be given a restricted meaning. At least they should be considered in the sense in which they are popularly understood. One thus contracting engages to furnish and keep in condition the tools and necessary equipment to do the work."

DEFENDANTS contracted to build a house for plaintiff on land belonging to defendants and convey the property to him for \$9,500; plaintiff deposit-

Substantial Performance of Building Contracts

ing \$1,000. On erection of the building, plaintiff refused to go through with the contract and sued for return of the deposit;

insisting that the building had not been completed as required by the contract, plans and specifications. Holding that

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the correct procedure. Ouestions and answers of general interest to the trade will be published in these columns. All inquiries must be accompanied by the name and address of the correspondent so that he may be answered direct or that he may be requested for further information if necessary to the intelligent answering of his question. No names will be published, only initials or a nom de plume. Remember that this service is free to subscribers. Address Legal Department, Building Age and The Builders' Journal, 239 West 39th street, New York City. the contract had been substantially performed, and that plaintiff failed to establish any right to rescind the contract, the Washington Supreme Court said (Wray vs. Young, 210 Pacific Reporter. 794):

"The evidence shows that the buildings were fully completed except for a few minor details to which appellant [plaintiff] took exception. These consisted in the absence of a couple of catches to windows, the absence of a strip of molding in a closet, the absence of one window, and the fact that some of the window panes had been broken, through an error in construction sufficient space had not been allowed for shutters, and black registers were used instead of brass. The contract did not specify the kind of registers, and appellant relied on an oral understanding as to the kind to be used. The only item of consequence is the absence of shutters. This fact was known to appellant a considerable time before he elected to rescind, and he raised no objection, but continued to direct the work about the place. We do not believe that this alone would be sufficient to abrogate a contract for property of this size and cost. The other items are trifling, and, according to the testimony of respondent, could be replaced for a few dollars."

N the recent case of Hibbs vs. Arenberg, 119 Atlantic Reporter, 727, the Pennsylvania Supreme Court remarked, in overruling a contention made by a

Selection of Building Inspectors by Public Boards

taxpayer to the effect that a school board did not lawfully engage the services of a building inspector:

"When the contract was adopted, an inspector was selected to give personal attention to the work Appellants urge this could be done only after advertising. We do not so understand the law. The section above referred to does not require public notice for these engagements. The character of the position, with the work to be done, is of importance. Unless directed by law to the contrary, these authorities should be free to select the

best available services. The inspector's duties are not comprehended in the architect's work; the former must make daily observation, as the work progresses, to see that the contract is fully complied with as to quantity and quality of material and workmanship. He is the owner's special representative, and unless on the ground during all the working time his employment is useless and the district should not be called upon to pay for it. The cost is here on a per diem basis, and no doubt will be properly controlled."

A NEW YORK subscriber asks whether a deed delivered to him, covering two lots and a bungalow almost finished, was sufficient to give title to the

Title to House and Land building where the property was described in the instrument only by bounding the land. Inquiry is made as to whether

the building should not have been mentioned in the deed.

It is neither necessary nor customary to mention buildings as part of the real estate conveyed. The courts of New York and other states have decided that a deed to land carries with it all permanent improvements constructed on the land.

In this case it appears that the deed was signed by one person who owned the land and by two other persons who sold the house to the same grantee. This was plainly sufficient to pass title to the building, as well as to the land proper.

In several interesting and important cases, questions have been raised as to whether a deed or mortgage passed title to building materials previously placed on the premises and intended for use in an unfinished building. The general rule is that title passes "where such is the evident intent of the parties." (18 Corpus Juris, 296.) But there are sev-(18 eral cases holding that where materials are adaptable to use elsewhere they do not pass unless mutually intended to do so. In a New Hampshire case it was decided that shutters intended for a house, but not painted, and not hung permanently, did not become so annexed to the real estate as to prevent their being subject to seizure under execution against the contractor by whom they were furnished, although they had been fitted to the windows, marked with numbers corresponding with their respective windows, and the work of painting them had actually begun. (23 New Hampshire Reports, 271.)

"But," declared the Louisiana Supreme Court in one case, "if the materials have been separated from the house or other edifice only for the purpose of having it repaired or added to, and with the intention of replacing them, they preserve the nature of immovables, and are considered as such." (23 Louisiana Annual, 284.)

Many years ago a New York court was called upon to determine whether millwork, etc., had become a part of the premises for which they had been made, so as to entitle the owner to them, as against a creditor of the builder. It appeared that as construction work proceeded lumber was worked up on the premises into columns for a piazza. For convenience, the columns were temporarily removed to other premises. The contractor also obtained, for use in the work, carved capitals, bases for the columns, and carved window and door caps. Before these things were actually incorporated into the building they were seized under execution against the contractor, in a suit brought by a third party. The owner of the building unsuccessfully claimed title to the material. The court ruled (11 Wend., 135) that the house standing on the owner's lot became his as the parts were incorporated into it: that the house was real property, but that the materials of which it was composed were personal property, and did not pass to the owner until delivery, or until they had become affixed to the real estate.

Even if the building was not completed when the deed was delivered it would be plainly sufficient to pass title to the structure subsequently completed, in accordance with the intention of the parties.

I DESIGNED a small house for a client, under agreement that the drawings should remain my property and be subject to copyright by me,"

Architect's Rights as to Plans writes a North Carolina architect. "The contractor evidently has copied the plans, etc., for use in duplicating the house for a

brother. Can I forbid copying of the house? What rights have I against the contractor? Am I not entitled to some pay, and how should I proceed?"

We know of no rule of law to prevent any person from copying the house, in so far as this is done merely through an inspection of the house itself, whether from the inside or the outside. But we believe that the contractor and his brother are jointly liable for the reasonable value of the drawings copied, if the architect had made no further disclosure of the same than was necessarily involved in their use on the first house, or if they were copyrighted.

In that case, the contractor never acquired any right to use the plans for any other purpose than to construct the

first house. He was the agent of the owner and could have no greater rights in the plans than the owner, who had agreed that title should remain in the architect. But if the plans, etc., were not copyrighted, and were filed with some public official under legal requirement, or if the architect in any way manifested an intention to dedicate the plans, etc., to public use, it seems that he has no recourse.

On the other hand, if the plans were copyrighted, as all plans, specifications, etc., should be when an architect desires to exclusively enjoy them, the right to enjoin their use without his consent appears to be clear. Or, if their unauthorized use has been consummated, an action for reasonable value of the work copied will lie.

If it is desired to enforce the architect's rights, he should place his claim in the hands of a local attorney, who will advise the procedure.

THE Florida Supreme Court distinguished between the lienable character of services rendered as an architect and services rendered as sup-

Aspects of Mechanics' Lien Claims erintendent of construction, in the recent case of Palm Beach Bank & Trust Co. vs. Lainhart, 95 Southern Reporter, 122.

Applying the Florida lien statutes, the court said: "As to the claim of E. A. Fonder, we think that the [lower] court was in error in designating him as an architect so far as his activities were regarded in relation to the buildings. He was employed not only to draw the plan for 'Graham Circle,' but he was employed as supervisor or superintendent of the construction and erection of the improvements. In that capacity he acted, not as architect, but as a kind of foreman in the erection of all the buildings and improvements. In so far as his claim rested upon that service he is entitled to a lien upon the property.

"That kind of work is differentiated from the services of an architect in drawing plans and specifications. Supervising the erection of a building and the selection of materials to be placed therein is often done by a skilled mechanic and is such labor as the statute contemplates shall be provided for in a lien upon the building or lands."

In the same case it was decided that where cement walks, a pergola, driveways, and garages are all appurtenant to the buildings erected and included in one plan or scheme of improvement, liens in favor of laborers or materialmen attach to the buildings and the land on which they stand.



ELECTRICAL WORK

Wiring-Fixtures-Devices for Lighting and Power



Proper Lighting of the Residence

OO much attention cannot be paid to the proper lighting equipment of the home. Lighting is a very effective medium of making the home comfortable and builders should impress this fact on their customers at every possible turn.

A well lighted and wired home is a much easier proposition to sell than one that is inadequately wired. There is a little more to the subject than just mere installing incandescent lamps and chandeliers. The builder should direct house owners' attention to the expressiveness of light and to the effect proper lighting will have upon the mood or expression of the home.

Too much attention has probably been paid to the fixtures themselves rather than to the more important lighting effect that they produce. The decorator does not sell paint and wall paper as articles, but uses them to secure effects, and so the builder should do with his chandeliers and other lighting equipment.

Fixtures are of course primarily important as they are visible, and therefore should be of pleasing appearance and appropriate to the architecture of the house. But it is even more important that the light sources should be properly shaded so that the light will be sufficiently diffused so that the householder will have the full benefit of the charm of perfect light without glare.

The living room can be lighted

with ceiling fixtures, portable lamps, or both. Among the ceiling fixtures suitable for lighting the living room are the shower and the bowl.

The shower should be equipped with shades of good diffusing material and of sufficient depth to afford a good eye protection. It should not be less than seventy-five inches from the floor.

BOWLS should also be of good diffusing glass and of sufficient size to insure low brightness. No bowl should be set less than seventy-five inches above the floor. Wall brackets should be equipped with shades or shields when they are principally for secondary illumination. Of course, when center chandeliers are not used, the lights from side brackets are more intense.

In the dining room, the table should be the more intensely illuminated. Walls, ceiling and the faces of those seated at the table are to be illuminated to a lesser degree. Many fixtures especially suitable for the dining room are the dome, low hung shaded shower, shaded candelabra and the combination shade and shower.

Where a dome is used it should be of such shape so there is at least twenty-four inches clearance between the bottom of the dome and the table top. How much higher is proper will depend upon shape of the dome itself. A little experimenting will determine the right height. It should be so that it will conceal the light source from the eyes of persons seated at the table.

The low hung shower should be set at about the same height as the dome. There is little in favor of wall brackets as ordinarily used in dining rooms. It is better to use torcheres provided with small lamps so as not to detract from the main illumination at the table.

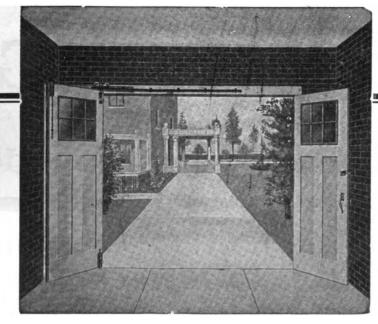
In the kitchen a diffusing glass shade over a ceiling outlet is perhaps one of the best forms for kitchen illumination. Do not overlook the fact of having lights over sink, table, range and wash tubs, wherever they are located, whether in kitchen or separate laundry.

In the bedrooms, center fixtures and side brackets can be used to advantage. Shaded wall brackets should be located about six feet above the floor and it is well to locate these on either side of the dresser spaces. This of course is in addition to the various outlets for portable fixtures.

P OR bathrooms of average size. lighting of the mirror is the chief problem. This, however, is easily solved by placing two wall brackets, one on either side of the mirror. A convenient height is about sixty-five inches from the floor.

Other places to have convenient lights are on the ceilings of the different closets. When fixtures are properly selected and placed, proper illumination is obtainable and nothing helps so much to render satisfaction and sell the house.





The *Practical*Garage Door Set

This view shows how snugly the doors hug the inside walls when open

E ASY OPERATION is a big factor in the mind of the motorist—he will remember with warm gratitude the architect or builder who equips his garage doors with No. 805 National.

Generous room for the passage of the car will be the second feature the owner will find to approve in No. 805 National.

After the doors have folded smoothly away at his touch, he will note that the doors hug the walls so closely that practically the full breadth of the doorway is exposed, so that he drives in with easy confidence.

With the coming of cold weather he will appreciate even more completely how

thoughtfully and well you served him when you equipped his garage doors with No. 805 National; making them absolutely weathertight.

It will satisfy his sense of order by its neat appearance; since doors are hung on the inside and fold and slide against the inner wall, structural iron work on the outside of the garage is eliminated.

Hanger operates on a swivel, turning on track with absolute freedom; doors move without friction on overhead rollers; and the single door opens for convenient access without disturbing the other two! What more?

Gct details from our catalog—write today

STERLING

NATIONAL MANUFACTURING COMPANY

ILLINOIS





PAINTING

Practical Points of Interest to the Builder

Color Harmony in Interior Decorating

By A. ASHMUN KELLY

HILE any scheme of interior decorating must rest upon certain fundamental rules, yet the matter of personal taste must not be ignored. And what is known as "taste" is a very variable matter. Few persons are gifted with a delicate color perception, though the color sense can be trained by use, as we see in those having to do with colored goods. As between man and woman, the latter has by far the keenest and clearest sense of color.

It sometimes occurs that a client will indicate to the builder a line of decorating which he or she desires shall be followed, while not infrequently the matter will be put up to the builder, his advice being sought. It is well in the latter case if he understands color science to some extent at least, and be competent to suggest reasonable and suitable coloring and general decorating.

This may embrace everything from the woodwork to the papering or painting of the walls. He should have a practical knowledge of wood finish, of wall covering, with flat or oil paint, paper, etc., and of floor finishing. Why not? With such information at his command he would add to his usefulness to clients, and at the same time enhance his reputation and increase his trade.

Interior decorating is classed under three heads: floor decoration, wall decoration, and ceiling decoration. The windows and doors go with the walls. The decorating of the floor consists in staining it and coating with varnish or shellac, and sometimes with a wax finish; or it may be finished natural, with oil varnish or shellac. A decorative floor would be such as is furnished by inlay. The floor should be darker than any other part of the room. The ceiling should be the lightest in color and figuring.

THE use of a room is the first consideration. The living room and children's room should be decorated with light, bright colors and small and pleasing figures. Bedrooms should be treated with subdued coloring and forms. Dining rooms should be done in rather sober shades, while boudiors, reception rooms, etc., demand bright and lively colors and decorations. Halls are ever sober and formal, yet must be done in perfect taste.

A room should be treated according to its natural light, a dark room, so to speak, requiring lighter coloring and decorations than the naturally bright room. In all cases color must harmonize with the furniture, hangings, etc. The wall paper may either contrast with the color of the furniture or may harmonize with it.

For instance, the contrast may be in a dull, bluish, and not too dark, olive green, with mahogany color furniture; or harmonize by using a terra cotta brown; or a medium chamois may be substituted for the olive color.

Where a room is not large the walls should be done in plain effects, as that will prevent its appearing smaller, as would be the

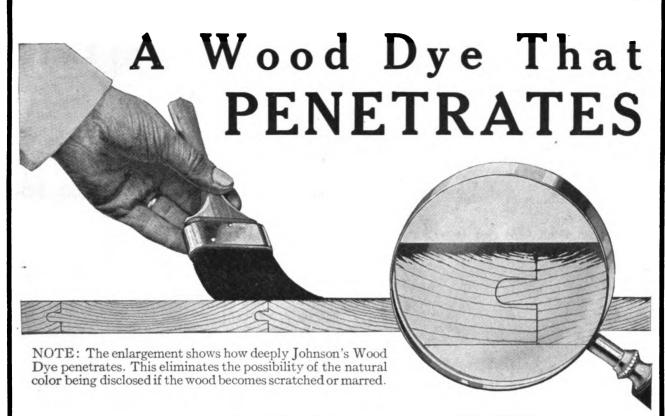
case where the surface is broken up with panels, or the like. Large surfaces, especially large halls, may well be broken up with decorations. Large flat surfaces present a disagreeable monotony, and therefore they should be avoided wherever possible where beauty is desired.

Doors, windows, or other architectural features, must, of course, agree with the rest of the room. Don't paint the door white, as is sometimes done, when the room is treated with dark hangings and colors. But doors may be made to correspond with the wood of the furniture, which may easily be done by graining old work, or staining new. Sometimes it is well to paint the doors to agree with the dominant color of furniture or hangings.

THE materials at his command enable the decorator (and by this name I shall include our builder, inasmuch as in any case his work is decorative as well as purely constructive) to gratify almost any description of interior work demanded.

It is simply a matter of laying out a scheme of decoration, as the architect plans the house, and showing the client just what can be done, and how it will probably look—for that will be for the client to decide, and the client cannot teli until the scheme is completed whether it will be satisfactory or not. It will not, however, be a difficult matter to change the scheme here and there, to effect satisfaction.





JOHNSON'S WOOD DYE

Johnson's Wood Dye is entirely different from the many wood stains and tints on the market. With it inexpensive soft wood such as pine, cypress, fir, etc., may be finished so they are as beautiful as hardwood. Its brings out the beauty of the grain without raising it in the slightest.

Johnson's Wood Dye is a **dye** in every sense of the word. It contains no finish whatsoever and, like most first class products, it answers one purpose only—it dyes the wood—the finish must be applied over it. We recommend Johnson's Varnishes or Johnson's Polishing Wax.

Johnson's Wood Dye goes on easily and quickly without lap or streak. It dries in four hours and will not rub off or smudge. You will find Johnson's Wood Dye a big help in working out color schemes in stained woods. Johnson's Wood Dye is made in 15 beautiful shades, all of which may be lightened, darkened or intermixed. Full directions on the label.

FREE—This Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of the famous experts—illustrated in color. This book is written for the practical man—it gives covering capacity, includes color charts, etc. We will gladly send it free and postpaid. Use coupon at right.



S. C. Johnson & Son "The Wood Finishing Authorities" Dept. B. A. 8 RACINE, WIS.

Please send me free and postpaid your Book on Wood Finishing.

I usually buy varnishes from.....

Like painting a picture, the details must be in harmony, and there must be some rule or plan adhered to, to give a pleasing general effect. We take first the walls and ceiling, as they are the background of the pictures and the furniture, draperies, etc. woodwork, including the floor, is next in order, and the effects selected for it should be governed by the wall and ceiling colors. The woodwork must not be in too great a contrast with the walls. The floor serves as a foundation and foreground.

It might be added here that in advising a client regarding such work as interior decoration, it will be wise to avoid harshly crossing his ideas; seem rather to fall in with them, while at the same time gently leading them away from them, and in line with what you know is the better way. Where

a client is resolutely set upon having the work done in a certain way, that ends the matter.

OF cheap contract work, little can be said that will help out. I have lately seen some rather costly new houses that had their white plaster walls done with a wash of Colonial water paint, and I yellow could not help wishing that the contractor had left the walls as the plasterer made them. streaky yellowish finish all over walls and ceiling. The buyer will have to wash it off and do them right. I was shown an office whose walls had been done in the same manner, and I believe by the same man. I expressed my disgust to the owner, as he did not appear to notice anything wrong, and told him that on such walls one coat of good grade prepared celcimine would have made a perfect job and it would be a delight to the eye.

The point is this: That for the same money as involved in time and material the work might have been done right. It was not a question of cheap work, but of employing men who know not how to do good work. But perhaps that can't be avoided these days. There are few first-class mechanics. The city of Philadelphia last week advertised for a foreman carpenter, at about \$1,600 a year, and only one man could pass the examination.

The more reason, then, that the builder and contractor should know how to do things right. If the man does not know, a word of instruction will usually result in getting him to do right. More sin through ignorance than from pure wilfulness.

Will the Barn Roof Stand?

(Continued from page 79) attack this particular problem with the view of definitely establishing a practice that will stand the test of rigid mathematical analysis. At the present time, however, this is not to be found anywhere and we still must be governed by what has proven itself to be good under actual working conditions.

T has therefore seemed reasonable to the writer to assume that any frame which has stood the test of from ten to fifteen years of actual service conditions without failure or noticeable deflection is a good one to recommend regardless of the personal opinion of those who, though good practical builders, yet lack firsthand convincing experience as to the durability and stability of these particular frames. To intimate that these frames are so weak that they will distort of their own weight is due to lack of observation of such structures and their behavior. The photographic evidence presented herewith is sufficient to prove that these roofs do stand.

Figure 1 shows the interior of a barn framed in this manner. This

picture was taken immediately after the barn was completed in 1908 or 1909. Figure 2 is an outside view of the same building taken in the summer of 1917, eight or nine years later. During this period the building was worked to capacity every year as it has been since. And the writer is unable to note any difference between the 1917 view and the general appearance of the building today, seven years later, except possibly in the condition of the paint.

Figure 3 shows another example of this style of frame under corstruction in 1917, the picture having been taken before the roof boards were nailed to the rafters. In 1922 this building was observed by the writer to be in excellent condition, although subjected to

ENGINEERING investigations applied to our every-day building problems will lead to more economical and stable forms of construction. We follow too often what our ancestors did rather than evolve better ways of building.

the severest tests of the hay unloading equipment.

It might be interesting to our critic to observe, in Fig. 4, the carpenter working on the roof before any roof boards were in place. It would seem to be rather a dangerous point on a rafter that would tend to fail under its own weight, yet he seems happy and unconcerned enough.

THERE is an appearance of distortion or excessive perspective effect to the barns shown in Figs. 1, 2 and 3 which does not appear in Fig. 4. This is due to a patented feature of the frame which consists in tipping or leaning all four walls inward a definite amount according to their heights. The amount of tip is 34 inch for every The foot of length of wall stud. Thus on a 16-foot stud the tip would be one foot. In this case, then, the plate would be 2 feet shorter each way than the sill. It really makes the wall a third section of the roof, which tends to reduce the possibility of bulging at the plate. Some people object to this feature on the score of appearance but it undoubtedly adds a certain amount of rigidity to the frame.





NATCO HEADER-BACKER TILE

Digitized by Google

SHOPWORK <u>and</u> FURNITURE

Designs for the Finish Man



Built-in Bed Forms Day Couch

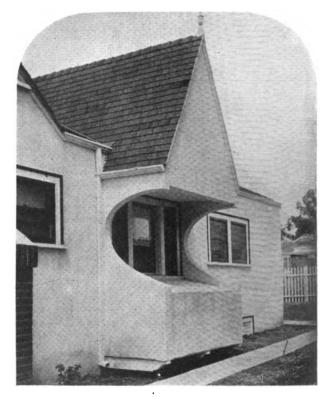
By CHARLES ALMA BYERS

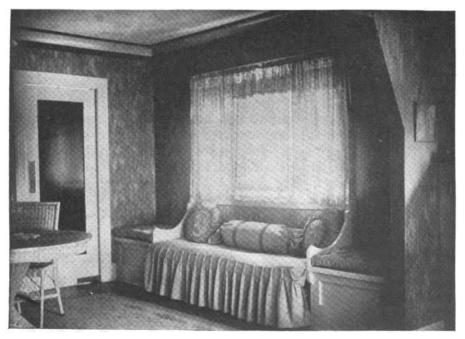
HOWN in the accompanying illustrations is a quite unusually arranged built-in bed. It is a feature of a dining room, and is, of course, for use only in emergencies. It is of full, ordinary size, except that it is several inches lower, and, being equipped with castors, may be rolled to any place desired.

Innovations of this sort will always be of interest to the progressive builder who is looking for new ideas that will please his customers. In these days of trying to obtain the most for your money any device that will save space is looked upon with considerable favor.

The Exterior of a House Is Uniquely Treated to Accommodate the Sliding Day Couch

In the Interior the Bed Forms a Comfortable Window Seat, the Side Seats Could Be Replaced by Closets If Desired.

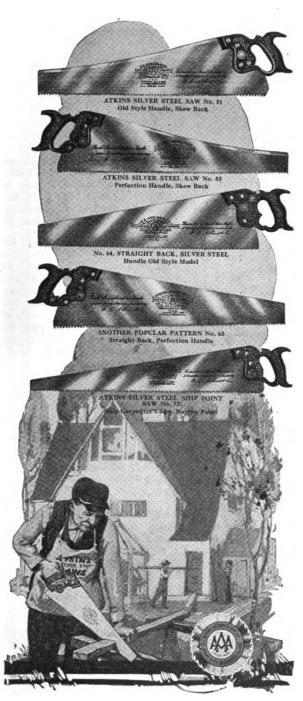




It is provided a special place of concealment underneath a group of three windows, there being a sort of outside extension, which is shown in one of the pictures, that enables the bed to be rolled about half-way through the wall. The other half of the bed width reaches out into the room, forming a very delightful day couch or seat.

There is also a small built-in seat at either end of the bed, these seats being of the box type, equipped with hinged tops. It is, incidentally, worthy of mention in this connection that a bed of this kind can sometimes be located in some inside wall or partition, and thus made to form a seat on each side, or in two different rooms. In some other cases it may slide under the slope of the roof.

ATTIMIS SILVERSAWS



Straight Back, Skew Back, Regular or Ship Point widths, Old Style or New Improved Perfection Handles

On this page we illustrate five patterns of saws which are liked by many carpenters. If you do not see any that YOU like, write for our Saw Sense Book, which illustrates our complete line.

Our trade mark is etched on all Silver Steel Saws and it serves to identify us as progressive saw makers who apply skill, art and science in the production of them.

The methods we employ in the manufacture of Silver Steel Saws is your assurance of obtaining "The Finest on Earth," in saws at a fair price.

If you want service you can get it in Atkins Saws, the Saws that you can count on to do your work well, Saws that cut clean, fast and smooth, Saws that give you the most service with less filing.

Enclose 30 Cents for nail aprons souvenir lead pencil and Saw Sense Book



E.C.ATKINS & CO.

Home Office and Factory, INDIANAPOLIS, INDIANA

Canadian Factory, Hamilton Ontario

Machine Knife Factory, Lancaster N.Y.

Branches Garsying Complete Stecks In The Pallowing Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore-San Francisco Seattle Paris, France Bydney, N. S.W. Vancouver, B.C.

Digitized by Google

USEFUL CATALOGS

House Models that will sell homes for the builder should be kept in stock. A model can be made from the plans of any home that is to be built. The Architectural House Planning Service Co., 20 South 18th St., Philadelphia, Pa., supplies these models and builders can secure further information by writing these people for their catalog.

Wiring Devices of every description are illustrated in a catalog just off the press, and published by the Arrow Electric Co., Hartford, Conn. Builders will find this book of great convenience for quick reference, and should have one on file.

Mortises can be made faster and easier, by using a small machine which make a clean cut, smooth job that looks like carved work, and is made by the Colgan Machinery & Supply Co., 206 Hayden Building, Columbus, Ohio, who will supply interested builders with further information.

Metal Shingles that are hand-dipped in molten zinc after they have been cut and stamped, lend beauty and practicability to any home. The Cortright Metal Roofing Co., Philadelphia, Pa., also manufacture tightcoat and painted tin shingles and will supply builders with all necessary information.

Measuring Tapes that have distinctive qualities of easy working handles, rapid reading at a glance, no binding of ribbon, and that aid in fast work, are described in the catalog of Eugene Dietzgen Co., Chicago, Ill. Builders should have tapes of this description in their equipment.

Wood Columns of correct proportion are beautiful and lend an aristocratic and pleasing detail to any home. A patent lock-joint feature insures a column that is permanent and strong and that will not come apart. Hartmann-Sanders Co., 2155 Elston Ave., Chicago, Ill., will send a catalog to any builder who is interested.

Construction Machinery of the latest design are absolutely necessary in the rapid erection of buildings. Pumps, hoists, elevators, mortar mixers, engines, are only a few of the different devices offered the builder for his convenience, by the C. H. & E. Manufacturing Co., 259 Mineral St., Milwaukee, Wis. A new catalog can be secured upon request.

Casement Windows are becoming more and more in demand. Builders have learned that the home buyer desires this type of window as it not alone lends beauty to the home, but it also provides for more adequate ventilation. Catalog of different styles of metal casements can be secured by builders from Henry Hope & Sons, Ltd., 103 Park Ave., New York City.

Sheet Metal Details of every description are illustrated in a large catalog published by the Edwards Manufacturing Co., Cincinnati, Ohio. Sheet metal tile, cornices, canopies, etc., are shown therein.

Magnesite Stucco is a building commodity that has fine covering power, tensile strength and elasticity. The house whose exterior is covered with this materal is sure to stand out as one of beauty and neatness. A catalog describing its use, with detailed specifications, can be secured by the builder from Franklyn R. Muller, Inc., 608 Madison St., Waukegan, Ill.

O N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Concrete Block Machinery that eliminates waste of time and labor and at the same time trouble in operating, is manufactured by the Ideal Concrete Machinery Co., 5012 Spring Grove Ave., Cincinnati, Ohio. Builders should investigate when needing concrete block machines.

Bench Jointers cut down expense and increase production. Each machine may be equipped with a motor that is silent, swift and steady. Builders should write to the American Saw Mill Machinery Co., 62 Main St., Hackettstown, N. J., for catalog, as machines of this type in the shop save much time.

Woodworking Tools must be of the best material if they are to give the best service. Builers should not practice false economy when buyging tools, for purchasing cheap equipment may cost dearly in the end. The Mack Tool Co., Inc., of Rochester, N. Y., will send the interested builder two books on their tools, entitled "Carpenter's Catalog" and "True Stories."

Garage Door Hangers that work easily and are lasting are one of the biggest attractions to the garage owner. Builders should write to F. E. Myers & Bro. Co., Ashland, O., for their catalog as it will prove of extreme interest.

Built In Equipment is always one of the best selling factors that aids the builders who aims to please the modern housewife. A fully illustrated circular is published by the National Mill and Lumber Co., 2 Rector St., New York City. Built in ironing boards, seats, cabinets, etc., are just a few of the conveniences that the builder will be interested in and he will do well to send for this circular without delay.

Mineral Wool, when used in lining the walls of a house, renders it more comfortable both in summer or winter. A booklet giving full description and instruction for the use of this material is published by United States Mineral Wool Co., 280 Madison Ave., New York, and builders should not fail to send for it.



Johns-Manville Asbestos Shingles L. B. Halleran, Flushing, N. Y.

Permanence, fire-safety, appearance and economy sell Johns-Manville Asbestos Shingles

All these features are combined in Johns-Manville Asbestos Shingles.

They are permanent—and if permanence were not a strong sales appeal, roofs would be covered with paper.

They are fire-safe—and fire safety is too close to the home owner's personal welfare to be slighted.

They are attractive in appearance—Asbestos Shingles have a solid substantial look, and come in several colors which may be used singly or blended to make a beautiful roof.

They are economical—for the permanence and freedom from upkeep expense of Johns-Manville Asbestos Shingles makes their cost per year extremely low.

And remember that even their first cost is not necessarily high. Thousands of squares of Johns-Manville Asbestos Shingles are bought for moderate priced homes.

You can build up a steady, dependable business handling these Shingles. They come in several styles, sizes, and colors suitable for every steep roof building.

JOHNS-MANVILLE Inc., Madison Ave. at 41st St., N. Y. C.

Branches in 59 Large Cities

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto



JOHNS-MANVILLE Asbestos Shingles

Digitized by Google

Steel Windows of improved type are outlined in detail in a complete set of plates with specifications published by the Truscon Steel Co., Youngstown, Ohio. This useful portfolio of plates is called "Drafting Room Standards," and builders will find these details of great help in construction as it shows how steel windows should be installed. By writing to the above company, our readers may secure a copy.

Metal Roofing Shingles are lasting and give an attractive appearance to the home. A large sixty-three-page book showing styles of shingles, homes on which they are used, prices and specifications is furnished interested builders by the National Sheet Metal Roofing Co., 339 Grand St., Jersey City, N. J. This book is very interesting and will prove to be of great aid to builders.

Metal Lath is one of the best fire stopping constructional materials. Incombustible plaster over metal lath forms a fire barrier that resists the hottest flames. Frame buildings, as well as all others, can be made better by using this material. Some good practical information on the use of metal lath can be secured by builders from the catalog published by the North Western Expanded Metal Co., 1204 Old Colony Building, Chicago, Ill.

Cement Molds that are strong, light and simple of use are described in the catalog issued by the Universal Cement Mold Co., North Milwaukee, Wisc. It contains plans and elevations of houses, showing the use of hollow wall cement molds and will be sent to the inquiring builders.

Floor Surfacers are a necessity and every builder should have one as part of his equipment. A machine that surfaces right up to the wall or baseboard without the use of edge roller is described in the booklet of M. L. Schlueter, 223 W. Illinois St., Chicago, Ill., who will send a copy to any interested builder. It contains illustrations and specifications.

Roll Slate Shingles are beautiful, economical and durable. A number of pamphlets with special instruction sheets for laying them are published by the Richardson Co., Dept. 34-G, Lockland, O. Builders will find these practical booklets extremely useful, interesting and instructive.

Ventilators should insure a plentiful supply of clean, wholesome air under all conditions, regardless of weather. The Royal Ventilator Co., 410 Locust St., Philadelphia, Pa., have published a forty-eight-page catalog giving full description, illustrations and specifications of ventilators used for all purposes.

Oak Flooring gives a beautiful finish to any house. It is durable, economical and sanitary, and the builder who can tell his customer that his house is furnished with oak floors has a good selling point. Booklets explaining the uses and advantages of oak flooring, with data on how to lay and finish such floors, will be furnished builders by the Oak Flooring Bureau, 1041 Ashland Block, Chicago, Ill.

Zinc Shingles do much to add to the attractiveness of any home. They are easy to lay and make a beautifully finished roof. An illustrated catalog is published by the Illinois Zinc Co., 280 Broadway, New York City. This contains full detail drawings and information on laying shingles, together with cross-section diagrams. Builders should have this booklet in their files.

House Moving is a profitable line of work that any builder can undertake. Provided with the proper equipment, he can make a success of it. In recent issues of BUILDING AGE articles were published explaining the methods of moving buildings. The La Plante Choate Mfg. Co. will supply interested builders with booklets giving description of the equipment necessary to do this work along with instructions in their use. Builders should send for these now.

Redwood for exterior use is an economical and long lasting material. It can be used for all types of woodworking construction. A sixteen page booklet, entitled "Redwood," has been issued by the Pacific Lumber Co., 932 Pershing Square Building, New York City. This contains illustrations, directions for use and testimonials of users. The builder will be greatly interested in the contents of this little book.

Finishing Lime of good quality will produce a wall that is smooth and white and at the same time is fire resisting and that will not check or blister. The story of this material is well outlined in some most interesting books published by the Ohio Hydrate & Supply Co., of Woodville, O. The titles are "The Tale of the Clam" and "Our Code of Service." Every builder should send for these two books at once.

Drawing Materials are necessary at some time or other during the building operations from the time it is planned until it is finished. A large catalog, beautifully bound and illustrated, is published by the Peerless Blue Print Co., 341 Fifth Ave., New York City, and this firm will gladly send one to any builder who is interested. This book surely is of great interest and should be on the catalog shelf of every contractor.

Steel Partitions for toilets, showers, etc., should be installed when erecting factories, schools, etc. The progressive builder should know about this, a catalog containing illustrations, specifications and drawings will be furnished by Hart & Hutchinson Co., of New Britain, Conn.

Saws for machines that combine the highest workmanship, the greatest utility and longevity of service are manufactured by the Huther Brothers Saw Mfg. Co., of Rochester, N. Y. Circular saws of every description and for every purpose are fully illustrated in a catalog published by this firm and the builder can secure same upon application.

Elevators and Dumbwaiters of every descriptions and for every purpose from hoisting people to hoisting material on building jobs are described and illustrated in a beautiful thirty-two-page book published by the Kimball Brothers Co., 1106 Ninth St., Council Bluffs, Ia. This book will surely prove of interest to builders and the catalog file without it is incomplete. Send for it at once.

Copper Store Fronts add much to the appearance of the mercantile establishment and builders should install them when constructing buildings with stores. They not only enhance the appearance of the building, but their attractiveness draws business for the merchant and builder alike. The Kawneer Co., 1625 Front St., Niles, Mich., will send inquiring builders an interesting book of designs.

Bathroom Cabinets of good appearance do much to add to the attractiveness of the home. The housewife is at once attracted by a bathroom that contains fixtures that beautify and the builder will do well to cater to her desires. The Miami Cycle and Mfg. Co. of Middletown, O., will send an illustrated catalog of their pressed steel cabinets which are attractively finished in white.

Wood Carvings are highly ornamental and can be used in many parts of buildings where fancy work is desired. The Ornamental Products Co. of Detroit, Mich., will send to any builder a large 38-page beautifully illustrated book containing a number of different ornamental designs for every purpose. This book is highly interesting and every builder should secure it for his files.

Wood Dye of good quality can be used on inexpensive soft woods such as pine, cypress, fir, etc., to make them look as beautiful as hardwood. It brings out the grain without raising it in the slightest. S. C. Johnson & Son, Dept. B.A.7, Racine, Wisc., manufacture a wood dye that does just this and builders should send for free book entitled "Book on Wood Finishing."



AUGUST



Without obligation on my part, please send me information on:-

5582



STEEL TOWERS

Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

NEW YORK PRICES		June 28	July 3
June	28 July 30	PLASTER BOARD— 32 x 36 x 1/4 in., Each	\$0.2
NG LEAF YELLOW PINE—	50 60 4.00	MAGNESITE STUCCO—	₩0.2
and Better Edge Grain Flooring, 13/16x21/4" Face \$99. mensions, S1S1E, No. 1 Common, 2x4", 10' 45.	50 \$94.00 25 44.25	Per Ton	\$70.0
whose Masshantable '05 12×12" 10 to 20'	იი გი იი	TILE-	-
and Better Ceiling, 1234	00 42.50	1 in. Square or Hexagon, White, per sq. ft	\$0.2 0.6
and Better Partition, 14"x314"	00 61.00 75 71.50	8 x 8 in. Red Ploor	\$0.4
1 Common Boards, 1x2"	25 53.25		40
TH CAROLINA PINE—		CHICAGO PRICES	
. 2 and Better Flooring, 13/16x23/2"\$75.	00 \$73.00	YELLOW PINE-	
ofers, 13/16x51/6" 36.	00 33.00	Boards, 1x8, No. 1 Com	\$42.0
CLAS FIR—		Ceiling, 1/4x4, B. and Btr	44. 33.
. 2 Clear and Better V. G. Flooring, 1x3"		Drop Siding, 1x6, B. and Btr	54.
2 Clear and Better Ceiling, 1/2x4"	50 48.50	Finish, 1x4, B. and Btr	68.
2 Clear and Better Ceiling, 16x4"	00 65.00	Flooring, B. and Btr. R. G., 1x3	90. 7.
2 Clear and Better V. G. Stepping	.25 95.00	Lath, 4 ft., No. 1	56.
TERN RED CEDAR—	C4 67 21	HARDWOODS—	
C. Perfection Shingles, per M	.64 \$7.31 .29 6.84	Maple Flooring, 13/16x254, clear\$114.50	\$114 .
ar Bevel Siding, 1/2x6"	50 49.50	Maple Flooring, 13/16x24, clear \$114.50 Oak Flooring, 34x2, Cl. Pl., White 82.00 Oak Flooring, 13/16x214, Cl. Pl., White 116.00	82.
ADIAN SPRUCE—		Oak Flooring, 13/16x214, Cl. Pl., White 116.00 REDWOOD	118.
1 Lath 14" \$0	.13 \$7.93		\$47.
neneion, 2x4", 10 to 16'	00 43.00	Bevel Siding, S1S1E, 10 ft., 20 ft., 1/4x4, clear	\$94.
DWOOD FLOORING—		WESTERN RED CEDAR—	
ar Quartered White Oak, 13/16x2x234"	.50 \$152.50 .50 121.50	Bevel Siding, 1/24 in., Clear\$53.75	\$53. 5.
ar Plain Red Oak, 13/16x234"	50 123.50	Shingles, Extra Clears, 16 in	٠.
ar Maple, 13/16x234"	.00 117.00	Per M. f. o. b. job	\$12
(All lumber prices furnished by Lumber)		Per M. f. o. b. job	•
MON BRICK-		Bbls. in car lots to contractors, not including con-	•
· M. f. o. b. job\$24. FLAND CEMENT—	.00 \$25.00	tainers \$2.20 STRUCTURAL STEEL—	\$2
LAND CEMENI— L. in car lots to contractors, delivered \$2.	.90 \$2.90	Per 100 lbs. at warehouse\$3.20	\$3.
CTURAL STEEL	72.50	CRUSHED STONE (cm. vd.)—	•
100 lb. at warehouse\$3.	.54 \$3.54	% in. \$3.00	\$3
HED STONE (cu. yd.)—		1½ in 3.00 WALL BOARD—	3
\$2. in. \$2.	.50 \$2.60 .40 2.50	Per 1,000 sq. ft. in lots under M	\$40.
L BOARD-	.40 2.30	Per 1,000 sq. ft. in lots 1 M to 21/2 M	35.
1,000 sq. ft. in lots under 1,000 sq. ft \$50.	.00 \$50.00	SAND AND GRAVEL—	
1,000 sq. ft. in lots 1,000 to 2,500 sq. ft 45	.00 45.00	Sand (per cubic yard)	\$3. 3.
AL LATH—		34 in. Gravel (per cubic yard)	3.
lb.—26 gauge price per 100 sq. yd. delivered \$0.16 lb.—24 gauge light price per 100 sq. yd. delivered. 0.	5½ \$0.19 .19 0.24		
	.22 0.243/2	ST. LOUIS PRICES	
dd 5 cents per sq. yd. for galvanized.	,-	YELLOW PINE—	
E (Hydrats)— ishing, per 50 lb. bag\$0.	60 60 60	Boards, No. 1 Com., 1x4	\$38 58
	.60 \$ 0.60 .49 0.49	Partition, 14x314, B. and Btr. 60.50 Dimension, No. 1, SISIE, Short Leaf, 2x4 in., 12 & 14 ft. 38.00 Finish, S2S, B. and Btr., 1x4, 6 & 8 ft. 68.00 Flooring, B. and Btr., E. G., 1x3. 90.50 Flooring, B. and Btr., F. G, 1x3. 65.00	32
D AND GRAVEL	0.15	Finish, S2S, B. and Btr., 1x4, 6 & 8 ft 68.00	65
d (per cubic yard)\$1.	75 \$1.90	Flooring, B. and Btr., E. G., 1x3	87
n. Gravel (per cubic yard)	75 2.75	Lath, 4 ft., No. 1	60. 6.
in. Gravel (per cubic yard)	75 2.75	Timbers, No. 1, rough, short leaf, 6x12 to 12x12 in.	
Z BRICK— estry (delivered)\$46.	FO 040 FO	10 to 20 ft	41
rveale (Delivered)	00 40.00	CALIFORNIA REDWOOD-	
edonian (delivered) 42. both Grey (delivered) 50.	00 43.00	Finish, S2S, Cl., 1x6 in	\$94
oth Grey (delivered)		Siding, 4 in. Bevel, 10 to 20 ft	47
Lock f. o. b. factory	.50 42.50	8 inch Bungalow	78 76
halt, Single (per square)\$8.	.50 \$7.31	HARDWOODS—	•
halt, Strip (per square)	00 6.65	Oak Flooring, 1/211/2 and 2 in., Clear Qtr. White \$114.50	\$109
NED WOOD SHINGLES-		Maple Flooring, 13/16x234 in., Clear	100
n. Extra Clear (per square, delivered)\$11. n. Eureka (per square, delivered)		RED CEDAR—	
n. Perfection (per square, delivered)	50 12.50	Siding, 1/2x6, Clear	\$45 4.
a. Royal (per square, delivered)	25 12.25	Shingles, Clears, Per M	•
FIED SEWER PIPE-		Per M., f. o. b. job\$18.00	\$18
, (cents per foot)	\$0.12½ 3½ 0.18½	PORTLAND CEMENT—	
E ROOFING—	0.10/2	Bbls. in car lots to contractors, not including containers	\$2
gor or Slatington, 8x16 in. (per sq. at quarry) \$8.	.40 \$12.60	STRUCTURAL STEEL—	**
IER BEADS (Galvanized)—		Per 100 lbs. at warehouse	3
Foot\$0.	.05 \$0.05	CRUSHED STONE (cu. yd.)	
L TIES (Galvanized)— Thousand	.00 \$5.00	34 in. \$2.18 1½ in. 2.18	\$2 2
LINING—	•	WALL BOARD—	2
x 81/2 in. Per Foot\$0.	.36 \$0.36	Per 1.000 sq. ft. in lots under M	\$55
x 13 in., Per Foot 0.	.48 0.48	Per 1,000 sq. ft. in lots 1 M to 2½ M 50.00	50
LOW TILE— 12 x 12 in., heavy. Each, delivered\$0.22	21/6 0.221/6	SAND AND GRAVEL—	••
as a as m., meaty. Each, ushversel	78 U.22'%	Sand (per cubic yard)	\$1. 1
	.60 \$0.60	1½ in. Gravel (per cubic yard)	i
AB— Per Bushel	.60 \$0.60	14 in. Gravel (per cubic yard)	



Review of the Building Situation

B UILDING statistics for June just published by the F. W. Dodge Corporation show that the volume of contracts awarded during June amounted to \$371,034,200. This was a decrease over May of 14%. In spite of the decline this figure indicates a large volume of work started. These figures are a decline over the corresponding period of 1922 of 6%.

Construction for the first half of the year for contracts awarded in the sections on which our report covers, show an increase over the corresponding period of 1922 of 9%.

Residential buildings continue to lead all other classes, 42% of the entire amount being for this type

of construction. This is one of the three classes that show an increase over the first half of 1922, the increase being 20%. Public buildings increased 3% and industrial building increased 68%, the biggest increase recorded.

In the New York district residential building shows a slight decline over May, due to the over-expanded program of the past few months. The total for June was \$84,513,200, a decrease of 2% from May and an increase of 7% over June, 1922.

The slight slump in contracts awarded is only natural, due to the excessive inflation.

The Central West shows an in-

crease over May of 3% and of June, 1922, of 2%. While Northwest shows a decline of Lunder May figures, the total construction started was greathan any other monthly total that district. Residential construction amounts to \$38,000,000, showing an active demand for ridences in that territory.

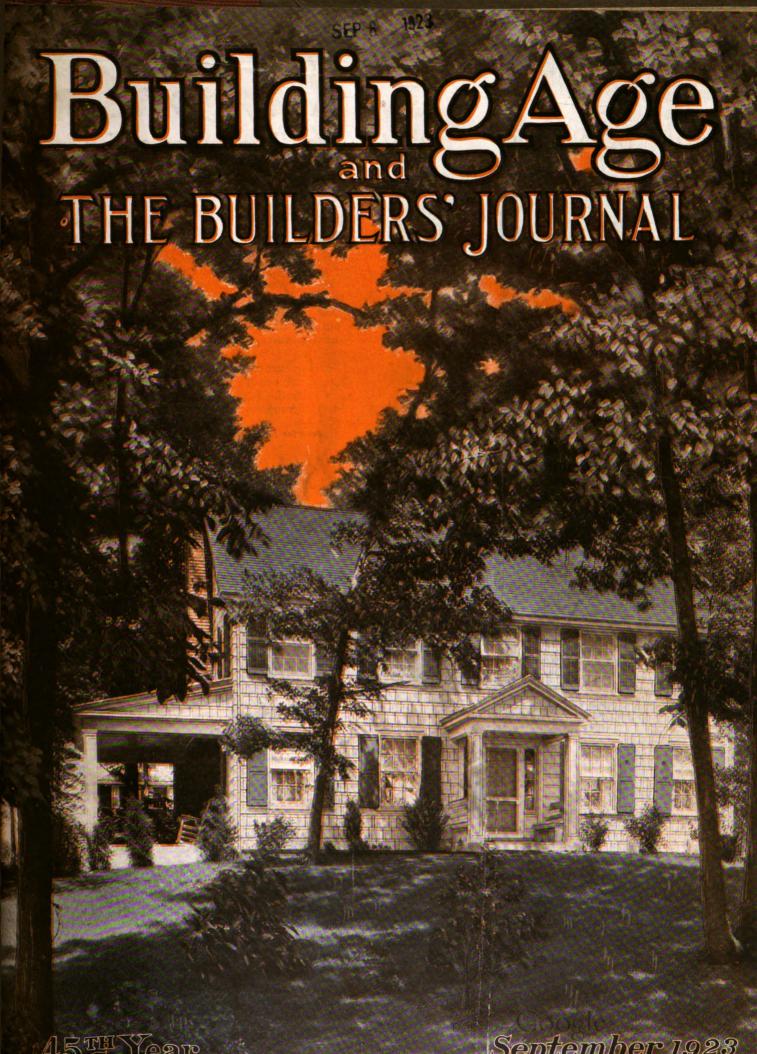
The volume and money spent the new homes is still greatest in the East, despite the slight falling off in percentage from the May figures. In this section residential construction contracts were awarded in June amounting to \$70,000,000 for the three Eastern districts. Projects contemplated show that there will be no falling off in the class of construction.

Record of June, 1923, Building Contracts Awarded

Classification of Buildings New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantie District	Total
Business Buildings	\$15,731,800 5,709,000 3,133,200 3,836,500 10,000 369,800 5,128,200 2,446,000 45,497,500 2,651,200	1,353,200 649,800 1,361,700 133,200 50,900 3,683,200 727,200 12,791,500	\$6,289,900 3,948,400 1,048,300 2,606,200 215,000 25,000 15,232,600 1,374,000 16,132,500 990,800	\$10,486,700 6,985,100 1,165,000 37,333,000 199,400 139,000 22,512,600 4,682,600 33,306,300 3,576,000	\$1,267,900 2,763,500 369,000 971,700 5,000 455,000 5,653,800 148,500 4,630,000 273,000	\$3,897,000 3,733,900 1,098,800 7,361,200 5,000 252,200 16,910,000 1,730,500 11,895,800 591,000	\$44,726 26,410 8,044 55,867 585 1,402 75,596 11,862 136,312 10,227
Total\$30,479,900	\$84,513,200	\$23,779,900	\$47,862,700	\$120,385,700	\$16,537,400	\$47,475,400	\$371,034

Building Projects Contemplated, June, 1923

Classification of Buildings New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantie District	Totale
Business Buildings \$4,847,500	\$14,740,300	\$4,003,700	\$4,191,900	\$27,266,200	\$1,259,400	\$7,040,100	\$63,349,
Educational Buildings 2,140,200	11,253,100	5,067,000	2,170,000	17,016,900	1,302,000	5,173,500	44,122,3
Hospitals and Institutions 3,235,000	16,707,000	199,000	880,000	2,388,000	978,000	2,249,000	26.636.6
Industrial Buildings 2,112,800	6,229,500	4,664,600	4,831,200	26,084,000	449,000	5,782,500	26,63 6,6 50,153,
Military and Naval Bldgs	32,000			135,000	5,000	5,000	177,
Public Buildings 640,000	1,385,500	6,186,400	488,000	3,935,500	138,500	1.553.000	14,326,5
Public Wks. & Pub. Utilities 3,348,600	8,325,100	6,988,900	23,421,800	44,411,600	4,097,000	31,571,700	122,164,7
Religious & Memorial Bldgs. 557,000	2,749,000	2,698,600	2,691,000	6,135,300	79,500	1,487,000	16,397,
Residential Buildings 14,215,400	63,846,100	35,611,800	16,700,700	62,318,300	4,491,300	15,136,800	212,320
Social & Recreational Bldgs. 850,000	6,720,000	1,400,000	1,025,200	6,407,000	131,500	2,827,000	19,360,2
Total\$31,946,500	\$131,987,600	\$66,820,000	\$56,399,800	\$196,097,800	\$12,931,200	\$72,825,600	\$569,008,



CON-SER-TEX OOFS @ PORCH

Building Economy

OO often necessary building or repair-I ing jobs are delayed or neglected because of the continually increasing price of roofing materials and labor.

Consertex Canvas Roofing and Flooring will solve the problem for you. Consertex is the ideal covering, inexpensive and easy to lay. It is made of chemically treated, specially woven fabric that will not crack, stretch, peel or shrink in years of hardest service. Its superior construction makes it waterproof, windproof and soundproof. It makes for an attractive finished job.

Consertex Canvas Roofing and Flooring saves costs in two ways: The price of the material and decreased labor cost through speed in laying.

Our booklet "Roofing Facts and Figures," discusses and illustrates Consertex and its various uses. Write for a copy.

WILLIAM L. BARRELL CO. of N. Y., Inc.

50 Leonard Street

New York City

Chicago Distributors: Sec. B. Carpenter & Co. 430-440 North Wells St.

California Distributors: Waterhouse-Wilcox Co. San Francisco and Los Angeles

FLOORS

The Wood-Mosaic Kind



For every home-Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company

New Albany, Indiana



Easy to Sell 'En

Package Receiver Coal Chute Meter Box Garbage Receiver Fireplace Damper Fire Baskets Ash Dumps Basement Columns says the builder. "I can't build houses fast enough to accommodate people who are looking for real convenience in a new home.'

"Donley Devices are my best little salesmen. I show a couple how adequately the new home provides for daily deliveries, for the meter man's visit, for receiving coal, for clean handling of garbage as well as for warm, clean, economical open fires."

"About this time they are reaching for their check books and I am figuring on where to build another quick seller.'

Send for the new Donley Catalog

— 32 pages of pictures and descriptions of things you want.

The Donley Brothers Co.

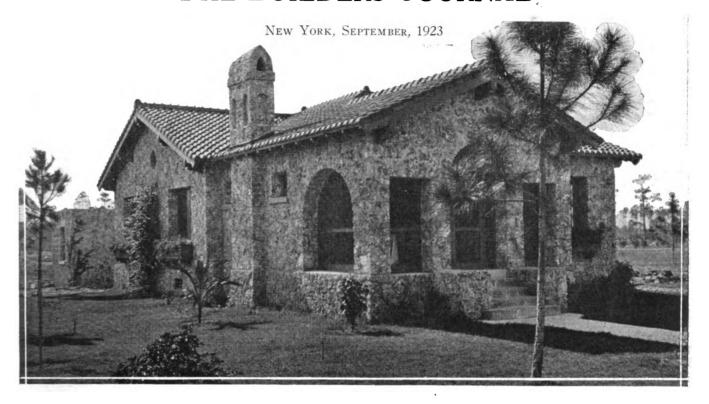
3700 E. 74th St. (I) Cleveland, Ohio



Building Age

ANI

THE BUILDERS' JOURNAL.

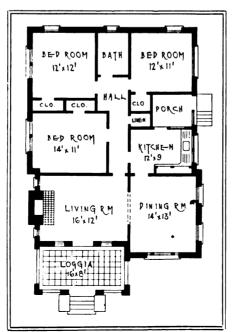


Building Homes of Coral

HE visitor to Miami is profoundly impressed by the fact that almost every other door of its large and extensive business section leads into a real estate development office. The place is alive with them, and the astonishing growth of this wonder city is in no small measure due to the activity of its "boosters."

And if ever "boosting" is justifiable, it is double so here, where nature has showered her gifts upon an appreciative and responsive people. The demand for property in and about Miami has been phenomenal, and Coral Gables is one of the conspicuously successful attempts to satisfy this demand.

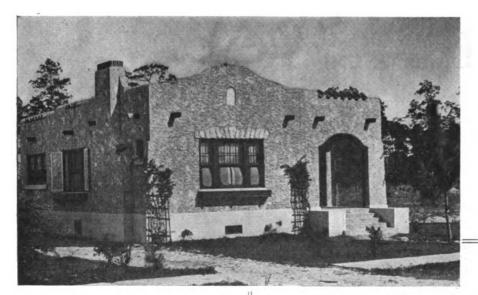
Coral Gables is an all-year residence town, with the highest ele-



vation claimed for South Florida. It is within three miles of Miami, which is the metropolis of the South, and convenient access is had by fine roads. The program planned for this suburb is remarkably far-reaching, and is based on a fine consideration for practicality duly combined with a high sense of artistic propriety.

The ground and tropical climate lend themselves to excellent land-scaping effects which have not been overlooked. Fixed building lines have been established and careful restrictions adopted, so that the simple bungalow and the more expensive residence are properly classified. Hundreds of homes, numbers of which are completed, and many more of which are still under construction, are

Digitized by Google



"Coral Gables"
in Miami, Florida,
Offers Many Suggestions
for Successful Building
in the Suburbs

of the native coral rock, finely designed and effectively landscaped.

This coral rock is a substance peculiar to the region, and comes in shades of soft grey and brown that blends quietly into the setting. When coral rock is first taken from the earth, it is soft enough to cut with a knife, but it hardens quickly and when exposed to air and weather for a few months is as hard as flint. It is remarkably durable and finely adapted to all working purposes. The possibility of settling is entirely eliminated, as the foundations extend to and are laid on solid rock, not piling.

The houses are all designed in adaptations of the Spanish, Venetian and Moorish types of architecture so eminently suited to the climate, and the traditions, too, of Florida. The buildings are broad and low, with cool inviting porches, or with a patio that affords partial seclusion where in the midst of tropical beauty, one may enjoy the out of doors. Many of them have a loggia that provides a cool open-air living room sheltered from the sun. Each house is set back fifty feet from the sidewalk and nestles restfully among flowers and tropical trees.

A typical house has a loggia with beamed ceiling and tiled floor. A spacious living room opens directly from the loggia, and has a massive rock fireplace in the center. There are arched Spanish openings on either side, leading to dining room and solarium on the left, and PORCH 8'x6' D BEP ROOM
12'x12'

HALL

CLO. BATH

PINING ROOM
14'x12'

LIVING ROOM
16'x11'-6"

LOGGIA
11'12'

A good return or non plans of the three lungalows shown herewiti is that the bathrooms are conveniently locate mear the bedrooms, shor halls connecting the different rooms so as to afford the utmost privacy. A large closet is provide in each bedroom; als linen closets in halls

ing picture of Souther scenery. Here the per gola of house faces as orange grove and through the pergola may be see young banana trees

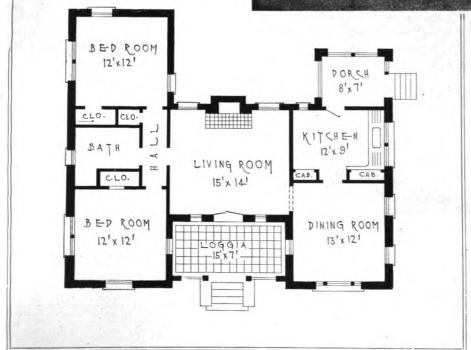
to the comfortable sleeping quarters on the right. Terraces just off the living room in the rear, while not in use during the heat of the day, are delightful in the evening. Being of tile and open, they give full enjoyment of the surroundings. The patio is about twenty feet square, and is planted with flowers and shrubs. Sleeping porches are quite customary, and breakfast rooms not unusual. The two-story houses have additional balconies that lend charm and romance to the structure.

There is no standardization of either exterior or plan. Each residence is an entity of itself, to share in the facilities provided by the community as a whole.



Attractive Bungalow Homes Illustrating the Work of H. George Fink, Architect





rock, usually with Spanish tile roof. Some of them have tile-tipped towers, ornamental hand-wrought bronze grilles, balconies and lanterns. The Spanish type is strictly adhered to, as indicated by such distinctive features as the fine arched entrances, arcade fronts and other detail.

Among the architects to whom credit is due for the dignity of this development may be mentioned W. C. DeGarmo, H. George Fink, H. H. Mundy, and W. K. Townsend.

The landscape work is under direction of Frank M. Button. The entire project had its inspiration in the mind of Mr. George E. Merrick who has gathered a large and important group of professional advisers to carry on the work.

A home building plan was devised whereby one may secure an attractive home at any desired price between five and ten thousand dollars, for a small initial payment and a balance payable monthly like rent. The plans are supplied gratis through the development company by the architects who are associated with the project, and, of course, this whole system stimulates business in the section.

The development, while still in its infancy, has made remarkable strides. Its leaders aim high, and are approaching the goal to create

Miami's Master Suburb.

In this interesting suburb, the matter of the public business buildings has received the same thoughtful consideration that marks the dwellings themselves.

Even public utilities building conforms in dignity to the character of the whole development. All the structures in the Coral Gables business section are marked by careful and skilful architectural treatment, in the same Spanish spirit, and they form a brilliant contrast with the usual uninteresting small town business section with its ordinary design. Here harsh regular lines are abolished and an interesting and harmonious These business result obtains. buildings are also built of coral

ESTELLE H. RIES.

The imposing Cathedral of Notre Dame as it stands in Paris today on the banks of the River Seine—one of the finest architectural gems extant

VERYONE in the building trade who has examined books of architecture or history, is familiar with the famous church located on the banks of the Seine in Paris, known as the Cathedral of Notre Dame, or in English "Our Lady of the Virgin Mary," which was built chiefly in the thirteenth century and many important historical events have occurred within and around its sacred walls.

The great French novelist, Victor Hugo, used this famous church as the principal scene in his well known novel, "The Hunchback of Notre Dame." This celebrated novel is to be shortly shown in a super motion picture production recently filmed at the plant of the Universal Pictures Corporation, in California.

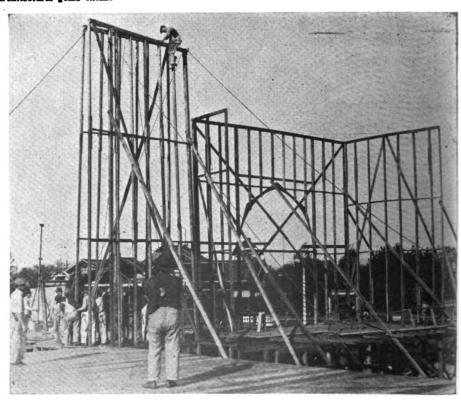
We have, from time to time, shown and described how some of these movie buildings are built, but nothing has been attempted

BUILDING FOR TH

Massive Construction S
"The Hunch
Victor H

on so huge a scale as the reproduction of the Cathedral of Notre Dame. For the sake of comparison, we show an actual photo of Notre Dame as it stands today on the banks of the Seine, and opposite, we show a photograph of the replica cathedral as built for the movies. As this required real building skill of the highest order, this description will most certainly interest our readers.

Perhaps, the reader will ask the question the editor did—inquiring whether it would not have been cheaper to have transported the actors to the real cathedral rather than build a cathedral for the actors. The answer, however, was clear and to the point—the action in the story takes place a few hundred years ago, and the existing surrounding buildings are of modern—not old Paris. It was



Beginning of wood frame for the movie cathedral

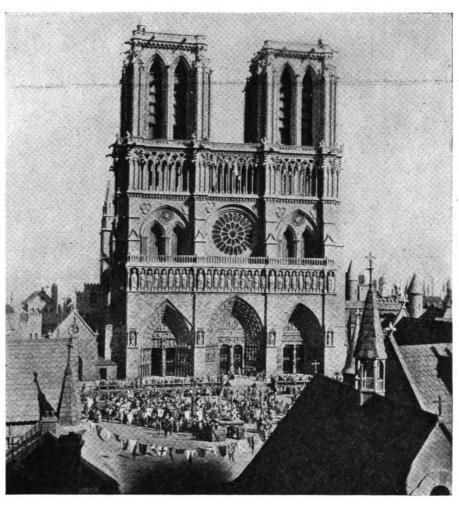
ATHEDRAL OVIES-

cted for Motion Picture Notre Dame" aster Story

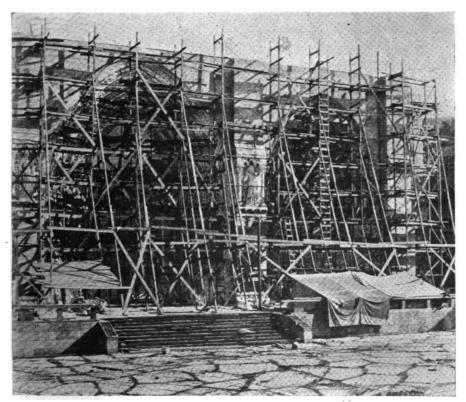
therefore necessary for an entire section of old Paris to be reproduced, including the cathedral so as to have a proper background for the picture story.

To design and erect these "sets'—the largest ever built for a motion picture—was the task set before the artists, architects and engineers engaged for the scenic effects of "The Hunchback of Notre Dame." This massive production of Universal's will star Lon Chaney, supported by a cast of seventy-five principals and several thousand extras.

Outside of the big cast and historical story, the actual technical work of making the settings, reproducing the Cathedral of Notre Dame in detail, with the many blocks of old Paris streets, courts, palaces, etc., formed a task that in itself was an achievement in filmland.



Replica of the Cathedral as built for the movies with surrounding of old style buildings. Compare details with actual cathedral shown on opposite page



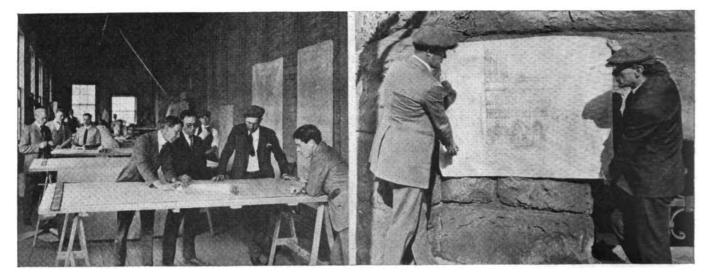
Putting on the exterior imitation stone work

With the decision to film the great play, the art department, headed by Elmer O. Sheeley, and with Syndey M. Ullman assigned as special artist for the Hugo production, began the task with an extensive research into designs, architectural details, and costumes of the period, early in 1482, in which the play was laid.

A special drafting room was erected, where a small army of draftsmen proceeded to perfect working drawings of buildings, streets, details and even properties. Four months were consumed in this work alone.

The sets were built during the winter months to enable ready photography during the spring. Seventy-five separate settings were designed and built for the gigantic picture.

The chief group of sets was around the great Cathedral of Notre Dame. This was reproduced true to detail and scale, with



Like all problems of building, the first necessary step is the laying out of the work on a drawing board

statues, tombs and all other features of the world famous building.

Before the cathedral spread the Place du Parvis, lined with twenty blocks of ancient buildings. The entire lower story of the cathedral, inside and out, duplicated the original in the smallest respect. Thirty-two interior and exterior settings make up this part of the main group.

The Place du Parvis was covered with concrete in the form of flagstones, taking about seven thousand yards of material; the streets were cobbled with stones brought

View of property shop showing modellers at work making the different statues

from the mountains near Universal City, California.

Day and night crews rushed construction on the building groups during the winter months, and all construction was made specially heavy to withstand rains and winter weather.

It is of interest to note how the various departments engaged in the work handled their task. Every department co-ordinated under the personal supervision of Julius Bernheim, general manager of Universal City, while William Koenig, assistant general production manager, assumed direct

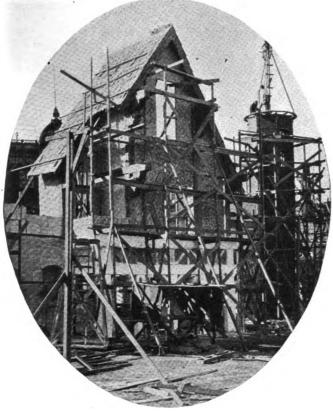
Interior view showing the aisle of movie cathedral. This is as faithful a replica as the exterior. Note the details of columns, carving, etc. This follows that of the actual cathedral. It is a most interesting

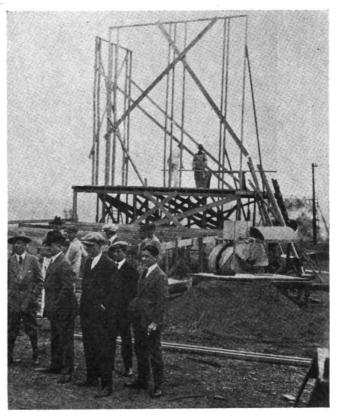


example of builders' work, but of slightly different nature than permanent construction. Vast quantities of various building materials, however, are used in such construction work and it requires builders' skill of a high order for its

charge as business manager of the movie as well as per mammoth play. Under them and their assistants, ten foremen helps to expedite foremen helps handled the different building work. Here crews, including more than 200 carpenters, and a small army of electricians, metal workers, and other artisans.

The property shop carried an extraordinary burden. The great cathedral alone required the services of every modeller and





sculptor available, in the making of statues, carvings and the rich of this architectural details masterpiece of Gothic architecture. They used more than 450 tons of casting plaster and enormous quantities of other material in the work.

The work went on day and night, while department heads, checking every move made, devised short cuts in time of construction ahead of each job.





OTHING looks prettier than houses built in a row that vary in their design a trifle so as to make each one individual. Here is an interesting example of such a row of homes. It is built at the corner of Percy St. and Madison Ave. in the Flushing section of New York City.

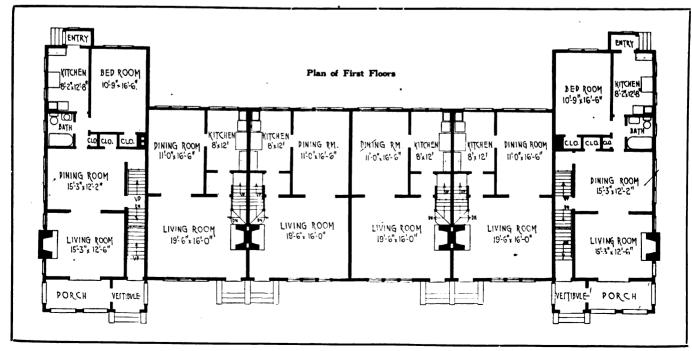
Houses in a Row Form

SIDNEY HARR

The design is practically repeated, as there are two groups of six dwellings as our floor plans show. The end buildings of each group are two-family houses, having four

rooms in the first floor apartment and five rooms on the second floor.

The building on the corner is a twin house, being two separate one-family houses, the one placed





English Home Colony

Architect and Builder

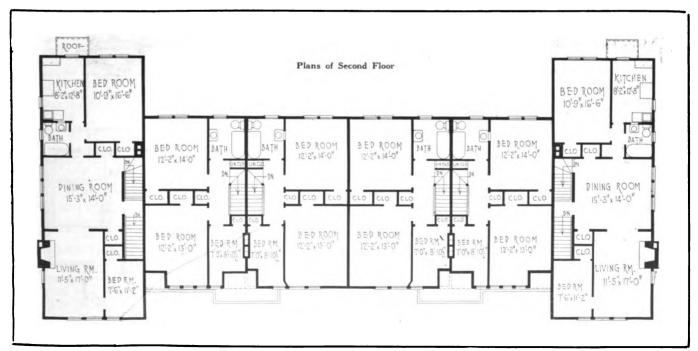
in the front part of the lot and the other entrance on side street.

The depth of the lots are 150 feet, allowing the houses to have generous setback of nearly fifty

feet from the street line and about the same depth for the rear yard.

Each house has its own individual fireproof garage located in the basement. Access to same is through a general drive across entire rear of the yard.

The exterior of the houses are covered with white magnesite stucco. The leaders, gutters, valleys and flashings are of copper. The roof is laid in slate of varying shades of green, giving quite a handsome appearance.





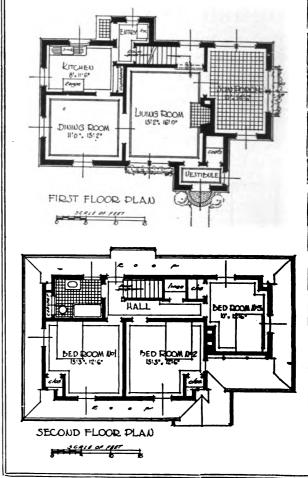
Cottage of English Farm House Design

OR the small house, the English farmhouse style is one of the most popular; there is a character and charm peculiar to this type of house that instantly appeals.

The house herewith illustrated shows how attractive this type can be made when properly designed. Here the roof lines have been so handled as to give the low cottage effect of the old English farmhouse type and still maintain a full second floor.

This is important when considered from the standpoint of economy, as every foot of floor space represents dollars expended and it must be used to full advantage. In other words, the house should have a charming exterior but it must also have an economical plan. In this little house these requirements have been met.

The plans are very compact. From the front door one enters into a small vestibule which opens into the living room, with a generous coat closet provided on one side.



The main stairs start up from the living room, opposite the entrance; while the cellar stairs go down from a rear entry, thus serving the kitchen as well as allowing access to the cellar from the outside. This rear entry provides space for the ice box, so the ice man does not enter the kitchen.

A generous sun porch opens from the living room. This porch has windows on three sides with flower boxes beneath.

On the second floor we find two large bed rooms, a smaller room

Specially Designed for

BUILDING AGE

and

THE BUILDERS' JOURNAL

Together with Constructive Details

by R. C. HUNTER & BRO.

Architects New York

and a good size bath room. There is ample closet space.

Throughout the house there has been reserved sufficient wall space for all of the furnishings, while at the same time the windows are large, to give bright, cheerful interiors.

The house has a cellar under the full area and here is the laundry, heating plant, coal bin and storage space. The front entrance of this little house is distinctive in design. Cost of house is estimated at about \$8,800.

Quantity Survey of Cottage

THE quantities given are for estimating. All measurements are NET unless otherwise noted; areas given for such items as sheathing, flooring, etc., are NET areas to be covered, with no allowance for matching, waste, etc. Minor outs have been disregarded.

Such items as clearing site, temporary work and protection, scaffolding and general equipment and supplies

have not been included.

Such items as are marked "Unit" are to be estimated in a lump sum, following requirements of plans and specifications.

EXCAVATION

(Excavation for pipe trenches not inclu	ıded)
Excavation for cellar	185 cu. yds.
Excavation for footings	16 cu. yds.
Excavation for areas	4 cu. yds.
Excavation for trench walls	
Excavation for leader drains and dry wells	14 cu. yds.
Backfilling around walls, etc	36 cu. yds.
Leader drains and dry wells.	
Field stone for dry wells	
4 in. salt glazed tile drain pipe	
4 in. elbows	7

MASONRY

Concrete work.			
Concrete for cellar walls	740	cu.	ft.
Concrete for footings	253	cu.	ft.
Concrete for trench walls	168	cu.	ft.
Cellar floor (3 in. concrete and 1 in. cement			
finish)	516		
Area bottoms (brick and sand)	24	sq.	ft.
Porch floors (12 in. cinders, 3 in. concrete			
and 1 in. cement finish, colored and			
blocked off)	148		
Same with brick finish			
Concrete forms			
Pointing cellar window sills			
Cart cement brackets for flower boxes	6	• • •	• • •

B LUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by BUILDING Age and The BUILDERS' JOURNAL, 239 West 39th Street, New York.

Common brickwork for chimney	240	cu.	It.
(or 4.8 M.)			
Face brick for hearth and jambs	15	sq.	ft.
(or 105 bricks)		•	
Fire brick for fireplace	20	sq.	ft.
(or 100 bricks)		_	
Face bricks for sills, etc	300	bri	cks
8 in. x 12 in. T. C. flue lining	66	lin.	. ft
Cement chimney cap	1		

BRICKWORK

HOLLOW TILE

3 in. tile pipe ventilators with wire screens on back

8 ft. x 12 in. x 12 ft. block	560 sq. ft.
(or 560 block)	-
4x12x12 in. corner blocks	
8 in. jamb blocks	90 blocks
8x12x1 in. levelling slabs	80 slabs.

MASON'S IRON WORK

Fireplace damper	1 Unit
(3 ft. 0 in. opg. with throat, etc.)	
C. I. Ash dump	1 Unit
C. I. Cleanout door for ash pit (16 in. x 12 in.)	1 Unit
C. I. Cleanout door for boiler flue (8 in. x 8 in.)	1 Unit
Thimble for boiler flue	1 Unit

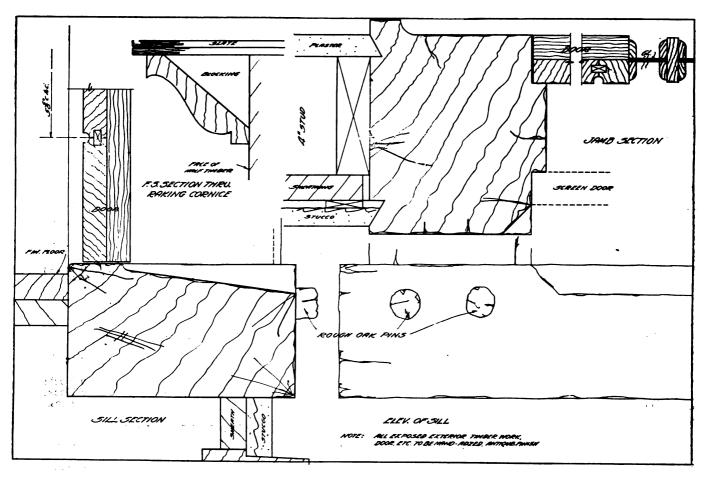
TILE WORK

Tile work for bath rooms and toilet	
Floor (1 in. hex. white)	45 sq. ft.
Wainscot (3 in. x 6 in. white wall tile)	
6 in. sanitary base	
Moulded cap	25 lin. ft.

SHEET METAL WORK

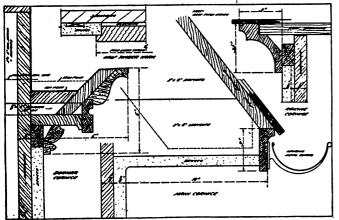
Flashing for roofs, etc	180 lin. ft.
Flashing and counterflashing for chimney	18 lin. ft.
Valley lining	14 lin. ft.
3 in. leaders	22 lin. ft.
3 in. x 4 in. leaders	76 lin. ft.
Ornamental heads	2
Bends for leaders	22
	11
4 in. half round hanging gutter	173 lin. ft.
3 in. x 4 in. gas range vent	28 lin. ft.
Cap and thimble for same	
Slate roofing with felt	1/ squares

PLASTERING		CARPENTRY—Continued
Three coat patent plaster on metal lath Gross	520 sq. yds.	Grounds, 3/4 in. surfaced one side 2500 lin. ft. Sheathing for cellar partitions.
(Net, 420 sq. yds.)		7/8 in. x 8 in. shiplap—to cover
On masonry—gross(Net, 54 sq. yds.)	80 sq. yds.	Rough flooring (7/8 in. x 8 in. shiplap) 1st and 2nd floor—to cover
G. I. corner beads	130 lin. ft.	Furring, (7/8 in. x 2 in.)
Stucco on patent wood or metal lath, over 4-in. x 14-in. wood furring—gross	150 sa. vds.	EXTERIOR FINISH
(Net, 135 sq. yds.)		Half Timber Work.
On masonry—gross(Net, 80 sq. yds.)	104 sq. yds.	8 in. x 8 in. x 7 ft. 0 in
Dampproofing	600 sq. yds.	4 in. x 6 in. x 9 ft. 0 in

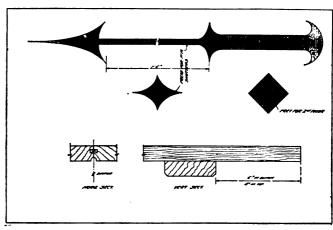


CARPENTRY		4 in. x 6 in. x 7 ft. 0 in	9 pieces
Timber all of No. 1 common stock, hemlock		4 in, x 6 in. x 4 ft. 0 in	1 piece
rough unless noted.		4 in. x 6 in. x 6 ft. 0 in	2 pieces
Cellar girders, 6 in. x 10 in. spruce, 1/14,		4 in. x 10 in. x 8 ft. 0 in	1 piece
Cellar girders, 6 in. x 10 in. spruce, 1/14, 1/8	110 F.B.M.	Bracket pieces	2 pieces
2 in. x 3 in. nailer—42 lin. ft	21 F. B. M.	Curved braces	2 pieces
Sills 4 in. x 6 in—2/8	32 F.B.M.	Raking Cornice.	
Posts 4 in. x 6 in-4/10, 6/8	176 F.B.M.	4 in. crown moulding	
Studs, girts and plates, 1st floor, 2 in. x 4 in.		Flower box, 12 in. x 12 in. x 8 ft. 0 in. long	2
—10/10, 4 8/8	324 F.B.M.	Windows.	
	1088 F. B. M.	Frames complete with sash, outside trim,	
1st floor joists, 2 in. x 10 in.—36/14	840 F.B.M.	etc., sash 1 3/8 in. thick, glazed D. T.	
	1060 F. B. M.	Cellar windows. (Trim both sides)	
2nd floor ceiling beams, 2 in. \times 6 in.—33/14, 9/12	570 F.B.M.	Single casem cash, 1 ft. 0 in. x 3 ft. 0 in.,	
Rafters, 2 in. x 6 in.—15/18, 4/16, 2/14, 24/12,		2 ft. 0 in.	4
	1302 F. B. M.	4 light	4
Ridge, 2 in. x 8 in—1/16, 2/14	59 F. B. M.	First floor windows.	
Valleys, 2 in. x 8 in2/10	27 F. B. M.	1 pr. casem sash, pr. 3 ft. 4 in. x 4 ft. 6 in.	
Floor bridging, 2 in. x 2 in.—400 lin. ft	134 F. B. M.	16 light	5
Cornice Outlookers, 2 in. x 4 in.—300 lin. ft	200 F. B. M.	2 pr. casem sash, ea. pr. 3 ft. 4 in.	•
Cellar partitions (studs), 2 in. x 4 in.—12/14.	112 F. B. M.	16 light	3
Sheathing, (7/8 in. x 8 in. shiplap, no outs)	1200 4	Pr. casem sash, 3 ft. 4 in. x 5 ft. 4 in.	•
Walls—to cover		20 light	1
Roofs—to cover		Single casem sash, 1 ft. 8 in. x 3 ft. 0 in.	2
Sheathing paper (waterproof)	1200 sq. 11.	6 light	٠

EXTERIOR FINISH—Continued	
Second floor windows. Pr. casem sash 3 ft. 0 in. x 4 ft. 0 in	
16 light	6
12 light	1
Single casem sash 1 ft. 6 in. x 3 ft. 4 in 8 light	1
Attic window.	1
Single casem sash, 1 ft. 0 in. x 3 ft. 0. 6 light Shutters (1 1/8-in. thick, batten type)	
3 ft 4 in v 4 ft 7 in nr	4 pr. 5½
3 ft. 0 in. x 4 ft. 1 in. pr	1 pr.
1 ft 6 in x 3 ft. 0 in single	1 pr.
Exterior door frames (1 3/4-in. thick rab-	
beted complete with outside trim) Frame for rear ent. door, 2 ft. 8 in. x 6 ft. 8 in.	1
Frame for front entrance door included	
under half-timber work	
Exterior doors (all to detail) Front ent. door, 3 ft. 0 in. x 6 ft. 9. in x	
1 3/4-in. glazed	1
Rear ent. door, 2 ft. 8 in. x 6 ft. 8 in. x	
1 3/4-in., glazed	1
Finished flooring. Living room, dining room, etc., plain sawed	•
white 0.0 k, $1.3/10$ in, $x \ge 1/4$ in., to cover	400 sq. ft.
Kitchen, etc., No. 1 maple, 13/16 in. x 2 1/4 in., to cover	133 sq. ft.
Second story, plain sawed red oak, 13/16 in.	100 54. 11.
x 2 1/4 in to cover	580 sq. ft.
Lining paper under floors	1170 sq. ft.
(4 in. dia. x 7 ft. 6 in. long with caps and	
bases	4
Joist hangers (1/4 in. x 2 in. wrought iron) For 2 in. x 10 in. beams	6
For 4 in. x 10 in. beams	6
INTERIOR FINISH	
_	
Door trim.	
7/8 in. jambs, 1/2 in. stops, 7/8 in. x 3 in. moulded and mitered trim. Trim both	
sides.	
For doors.	1: cot
2 ft. 8 in. x 6 ft. 8 in	1 set 5 sets
2 ft 4 in x 6 ft. 8 in	7 sets
Pr. each 2 ft. 2 in. x 6 ft. 8 in	1 set 1 set
Pr. each 1 ft. 6 in. x 3 ft. 0 in	1 501
Front entrance, 3 ft. 0 in. x 6 ft. 8 in	1 set
Rear entrance, 2 ft. 8 in. x 6 ft. 8 in	1 set



Detail of Cornice



Detail of Shutters

INTERIOR FINISH—Continued

INTERIOR FINISH—Continued	
Trim for cellar door (plain) 2 ft. 6 in. x 6 ft. 6 in Trimmed openings finished same as for doors. 5 ft. 0 in. x 6 ft. 8 in	1 set 1 set
Windows. 7/8 in. x 3 in. moulded and mitered trim. 1 1/8 in. moulded stool, 7/8 in. moulded apron, 5/8 in. x 7/8 in. cove under stool. For windows, pr. 3 ft. 4 in. x 4 ft. 6 in For windows, 2 pr. ea. pr. 3 ft. 4 in. x 4 ft. 6 in For windows, single 1 ft. 8 in. x 3 ft. 0 in For windows, pr. 3 ft. 4 in. x 5 ft. 4 in For windows, pr. 3 ft. 0 in. x 4 ft. 0 in For windows, pr. 3 ft. 0 in. x 3 ft. 0 in For windows, single 1 ft. 6 in. x 3 ft. 4 in	5 sets 3 sets 2 sets 1 set 6 sets 1 set 1 set
Base. 7/8 in. x 6 in. moulded	420 lin. ft. 70 lin. ft. 420 lin. ft. 500 lin. ft. 500 lin. ft. 1 Unit
Interior doors. 2 ft. 8 in. x 6 ft. 8 in. x 1 3/4 in., glazed Pr. ea. 2 ft. 2 in. x 6 ft 8 in. x 1 3/4 in., glazed 2 ft. 6 in. x 6 ft. 8 in. x 1 1/2 in 2 ft. 4 in. x 6 ft. 8 in. x 1 1/2 in Pr. ea. 1 ft. 6 in. x 3 ft. 0 in. x 1 1/8 in 2 ft. 6 in. x 6 ft. 6 in. x 1 1/2 in cellar door Closet shelving (7/8 in. x 12 in. pine) Hook strip (7/8 in. x 4 in.) Rabbeted shelf cleat	1 5 7 1 56 lin. ft. 40 lin. ft. 50 lin. ft. 12 lin. ft.
0 in.) countershelf, drawers, doors, etc Scuttle to attic, 3 ft. 0 in. x 2 ft. 0 in Main stairs, 1st to 2nd stories, 14 risers, box pattern, 3 ft. 0 in. wide, newels, balustrade, etc	1 Unit 1 Unit 1 Flight 1 Flight
•	

GENERAL CONDITIONS

Add for permits, fees, for water and sewer connections, etc., insurance and general overhead charges. Allow for general work not listed, such as grading, planting, etc. Include sub-bids: Hardware and applying same, painting and decorating, plumbing and gas fitting, heating, electrical work.



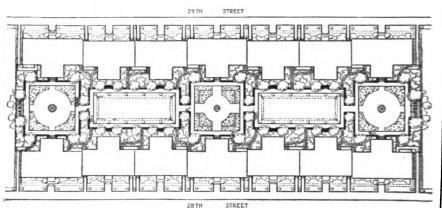
Cambridge Court

An Interesting Apartment House Development

G. H. WELLS, Architect

HE popularity of apartment houses is, of course, constantly increasing. Unfortunately, in some of our large cities, they have become more representative of the cliff dwellers than of real modern living conditions. People today want more breathing space and are willing to pay for extra comfort and convenience.

In Cambridge Court, pictured here, a central court forms perhaps the most attractive feature



Garden plan at rear of fourteen apartments as laid out by the landscape architects

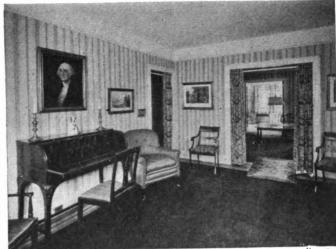


of the entire development, which consists of fourteen separate buildings going through from street to street, seven buildings facing on each frontage.

This most interesting group of buildings is located on 28th and 29th streets, Jackson Heights, Queensboro, New York, and is reached in less than a half hour from Times Square, New York City.

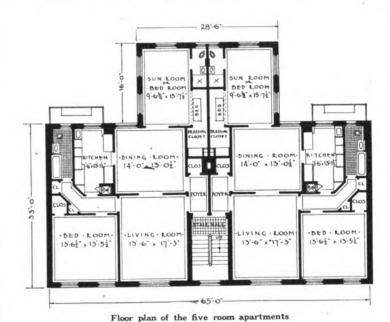
This group of apartment houses consists of five and six room apartments, with two families only on a floor arranged like the typical floor plan we show of one of the five room houses. It will be noticed that all rooms have direct outside light.





The old New England Brick houses which grace many of our New England towns, was the inspiration of the architect in preparing plans for this interesting group of apartments. They are built of red brick with trimming, dormer windows, etc., all in white. These apartments were designed by G. H. Wells, architect, of New York, and were built by Stone & Webster Inc., of New York City, the owners being the Queensboro Corporation.

These apartments were erected to be sold on the co-operative plan, each purchaser becoming the owner of his apartment and a stock holder in the corporation of tenant owners, which holds title to the property, his share in the stock of the corporation being apportioned to the valuation of his apartment.





اخد

The apartments are being sold on the installment plan of monthly payments, which has proved quite popular, as the monthly payments are but little more than what would be paid as rent for a less desirable apartment in the more congested part of the city.

Co-operative apartments should prove as popular in many other localities as it has done in New York and other big cities. There seems to be a field here for this type of apartment house everywhere.

Builders should look into this subject carefully, as in many communities a co-operative company can be readily formed amongst interested prospective owners for the erection of such an up-to-date apartment house.



A History *of*Door Knockers

By C. H. THOMAS



HE origin of Door Knockers is almost lost in obscurity, and their development from mere articles of utility to objects of art has been a long, slow process of evolution covering centuries and antedating Western civilization by many hundreds of years. The first general use of knockers that is positively known was among the ancient Greeks, who probably adopted it from the Egyptians.

We are told that the Greeks considered it a breach of good manners to enter a house without warning the inmates, and that the Spartans gave this notice by shouting their arrival, while the Athenians announced themselves by using the knocker, its introduction doubtless being at the time when doors superseded hangings for the purpose of insuring greater safety or privacy.

In the Greek houses of the better class a porter was in constant attendance at the door to admit visitors. Slaves were usually employed in this capacity and were chained to the door posts to prevent their wandering and shirking the irksome monotony of this task. They often went to sleep on duty, and in order to awaken them, a short iron bar was fastened to the door by a chain, to be used as a rapper by those desiring entrance to the house.

It is said that this strictly utilitarian rapper, as it was first called, was often wrenched from the door and used as a weapon of

offense by visitors not friendly disposed toward the householder, and that one of the earliest developments evolved as a direct consequence of this misuse was the next type, being in the form of a heavy ring fastened by a strong clamp or plate to the door, thus serving the double purpose of knocker and handle.

From Greece this custom was transmitted to the Romans, and with the trend of early civilization, to nearly every country of Europe. The introduction of knockers to England where, together with Italy and Germany, they made the greatest artistic advance, was no doubt due to the Roman conquest of Western Europe and Britain.



Above is a reproduction of the knocker on Capt. Miles Standish's old property at Plymouth, Mass. Such a knocker is truly appropriate for the door of a New England Colonial home design

Knockers have been in constant use from the earliest times, except for short periods in the seventeenth and nineteenth centuries and were most freely elaborated during the Romanesque, Gothic and Renaissance periods. The material first employed in their construction was iron, later bronze, and lastly brass, which has retained preference since it first came into use.

By slow degrees in the early middle ages, the plain heavy rings yielded to the influence of art in being beveled and chased. The plate or support for the ring next began to assume various shapes, and the age of blacksmithing contributed very fine examples of craftsmanship before the handle emerged far from the primitive ring formation. Next the ringshaped handle gave way to a slender bar terminating in a hammer.

Up to and during the fifteenth century the greatest embellishment was lavished upon the back plate and not on the knocker itself. Then the Renaissance swept Europe and the Italian metai workers first saw the sculptural possibilities in the treatment of the hammer. A female figure or a dolphin marked the beginnings, and the Giovanni of Bolgona was responsible in great part for variations in the way of size and treatment.

French, Italian and German sculptors elaborated the designs even to the extent of using four or

five figures, until all simplicity and suggestion of utility disappeared and the knocker became merely a pendant statuette. In the eighteenth century there was a general revision to simplicity, and utility again became the foremost consideration.

Knockers seem to have been favored in England more than in any other country and may be found in great numbers even in the most remote and out of the way places. The great variety of design and sculptural treatment is due to the fact that they had their inception at a time when design as a profession was unknown, and knockers were made by iron workers under the supervision of master smiths, many of them being of odd design to fit doors of unusual shape.

The oldest knockers in England are the Sanctuary Knockers on the doors of several of the cathedrals, that at Durham being one of the finest examples of the early bronze type. Some of these were merely grotesque, while others bore symbolic significance

The Durham Knocker dates from the eleventh century and enjoys the most interesting history. As early as the year 740, in the Episcopate of Cynewulf, criminals and offenders of all kinds were allowed sanctuary at Durham



A rather historical knocker design is shown above. Knockers like this design are used on the doors of George Washington's mansion at Mt. Vernon, Va., the home of Daniel Webster at Marshfield, Mass., and the home of Henry Wadsworth Longfellow, the famous American poet, at Cambridge, Mass.

cathedral and within the church precincts. If in seeking to escape from his pursuers the criminal was able to reach the church door and strike the knocker he was given sanctuary—that is, he was taken in, housed, fed, and kept safe from capture for 37 days, after which he was either pardoned or taken to a place of safety far from the scene of his crime.

The instances of individual knockers are numerous and their stories of great interest. One owned by Isaac Walton, author of the Compleat Angler, is described by a contemporary writer as a lobworm of buxom proportions



John Hancock signed his name large on our Declaration of Independence, so that King George the Third would not need to use his "specs" to see it. It is not strange, then, that a large knocker should be used on his historic home in Boston, as shown above

dangling from a hook. It was hammered out by an admiring smith whose shop stood between Walton's home and his favorite fishing stream.

Knockers upon the houses of Dr. Johnson and Carlyle are of interest chiefly because of their association with men of letters in that period. Charles Dickens was considered an authority on this subject and made mention many times in the course of his writings. The one he used upon his own door is particularly noteworthy because of its intimate description in the opening lines of the Christmas Carol in which Old Scrooge, com-



A rather ornamental design for a knocker, reproduced from that used on an old Dublin Castle

ing home late at night, imagines that he sees Marley's face gazing at him out of the darkness.

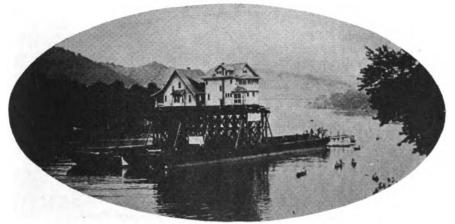
Shakespeare, too, mentions knockers frequently, and not many years ago a rude and ponderous iron knocker was unearthed in Morayshire, Scotland, which, it is claimed, is the very one that wakened Macbeth in his castle.

Like instances are numberless in Great Britain, and many antiquarians, as well as museums—such as the one at South Kensington—have made extensive collections of the massive knockers that were used in centuries past.

The ornamental value of door knockers is recognized at the present time more than at any period in the past, not only for outer doors, but also for bedrooms and apartments. Besides their distinctive appearance, economy favors their use, as there is nothing to get out of order or to be renewed as with the electric bell and its battery.

Door knockers can now be had in a variety of designs so that one appropriate to any architectural style may be selected either for outside or inside doors. They may be in the natural metal or colored to harmonize with any decorative scheme, either in plain color or polychrome.

For use on inside doors knockers are not only useful but ornamental as well. One should be on each den, library and bedroom door.



How Two Houses Were Ferried Across the River at Charlestown, W. Va.

The Modern Moving of Buildings

OVING houses by boat is evidently nothing extraor-LVA dinary to the builders at Charlestown, W. Va. Twelve modern homes were moved in the same fashion as the two shown above. It was necessary to clear a site for West Virginia's new state capitol, so a number of houses were moved across the river instead of tearing them down. Note how cribbing was used on the barges so as to overcome the hill problem.

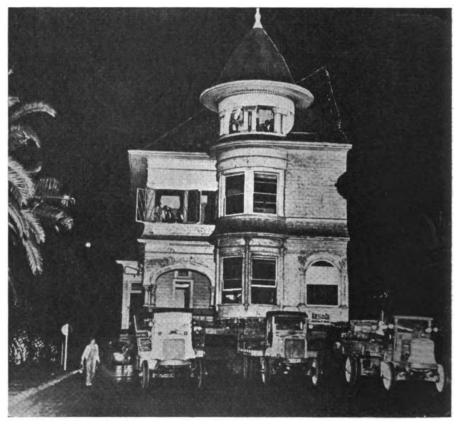
Moving houses by automobile is shown in the next illustration. The twenty-three room residence of Mr. and Mrs. Howard Verbeck, located at Los Angeles, Calif., was cut in two and moved more than a mile, from one boulevard to another, while a party of notables, including the mayor, society leaders, movie stars and others, made merry within.

The photo shows the autos moving the first half of the house at midnight, while the guests inside were enjoying themselves dancing and looking out of the windows to observe the progress of the work.

This interesting moving job was done by the Kress Co. of that city, who displayed a sign, "Watch It Move."

The Parade of the Wooden Soldiers was not half as thrilling as the parade of the wooden house shown in our third picture. This old frame house, after resting for seventy-five years on one foundation in New York City, was moved to a point nearly two thousand feet away.

To do this, it was necessary to take down trolley, electric light and telephone wires. Despite all



A Los Angeles House Being Moved by Auto With Guests Enjoying Ride

this, the owner found it much cheaper to move this old house than to build a new one of like dimensions. One horse turning the capstan pulled the house along.

Moving old frame houses is no novelty, but here is how a sevenstory steel and concrete modern building was recently moved a distance of three hundred feet. This interesting job was done at Montreal, Quebec, Canada. The structure was thirty-three by one hundred feet in size and weighed about five thousand tons.

It was moved at a rate of one foot in three minutes and four horses were used to turn the capstans. At the time our picture was taken the building had already been moved thirty feet.

Naturally, such a feat of building and engineering skill attracted quite a crowd. The few men shown in the foreground of our picture are standing on the roof of the sidewalk shed and heads of many of the crowd can be seen below toward the rear of the pic-

Moving the Front of a Building

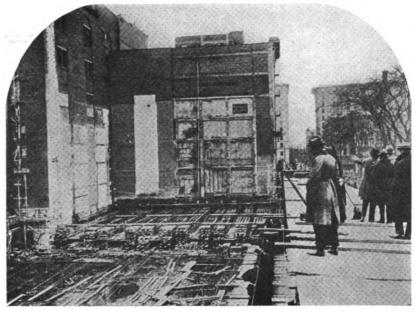
By CARROLL F. BARTLETT

N the next page are shown photographs of an interesting moving operation in which the front of a large apartment building was moved back ten feet without any checks or cracks.

A short time ago the city council of Columbus decided to widen one of its principal streets, and in so doing found that several buildings would have to be moved.

Among these was a "U" shaped four-story apartment house made of concrete and stone which extended ten feet into the widened street. The owners decided to tear out ten feet of the building and thus make it conform to the new line by moving the front back.

The contract was let and the operation performed in this manner: A ten-foot section extending from the top to the bottom of the building was marked preparatory to cutting. The stone walls and concrete floors were then cut through by air hammers.



Moving a Seven-Story Steel and Concrete Building at Montreal

The walls were demolished floor by floor; that is, no more than one story being torn down at a time. As one floor was torn out screw rods were fastened from the isolated front section to the remainder of the building.

When the entire section had been torn out holes were cut in the foundation of the isolated front and steel girders placed lengthwise under the building. The front was then jacked up and a cribbing of girders placed under it.

On the bottom were the lifting jacks. On top of these were the rails on which the building was moved. On these rails were numerous rollers and then followed the cribbing formed by the

steel girders. Cross girders prevented building pulling apart.

The building was moved forward by jacks, these jacks being clamped on the steel rails on which the rollers worked. The weight of the building prevented the rails from slipping and thus kept the jacks always in a fixed position.

The lower girders of the cribbing were 15 in. box girders, 20 ft. long. The tie beams were 12 in. I beams, 46 ft. long; the top beams were 12 in. I beams, 10 ft. long.

One man operated each of the several jacks which moved forward, each giving a quarter turn in unison. As the front of the building moved back the tie rods at the tops were taken in, thus pulling in the top as the bottom was moved backward.

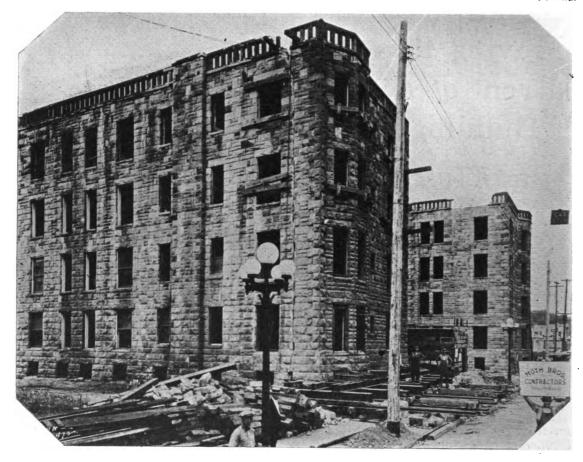
Constant watch was kept to maintain a perfect level at all times. The structure was moved at the rate of three feet an hour.

No cracks or checks appeared in the structure during the entire operation, regardless of the fact that it weighed 450 tons.

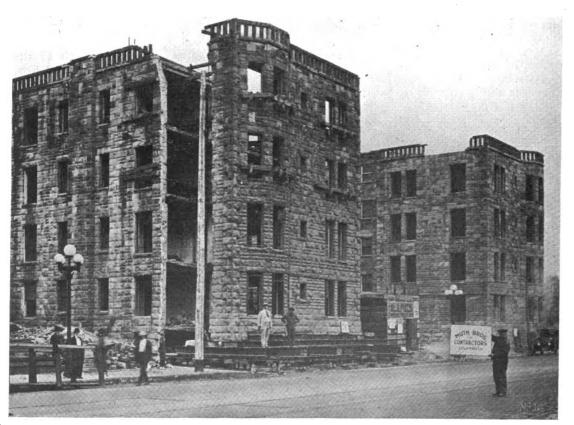
After the front was moved to its new position eight anchor rods were set in the walls and fifteen in each of the floors, thus firmly binding the two sections together. To eliminate the crack, caused by the cut stones, along the face of the wall the old stones were removed and new ones put in.



Frame House Being Moved in the City of New York



At Columbus, Ohio, an Interesting Job Was Recently Done. The Front of the Building Here Shown Was Originally Ten Feet Further Out in the Street. Read Story on Preceding Page.



As Shown in This Illustration, the Front of the Building Is in Its Original Position, Ready to Be Moved Back the Required Ten Feet. Read How It Was Moved on Preceding Page.

Why Some Builders Are a Success

By FRANK H. WILLIAMS

HY is it that some builders are such big successes?
Why is it that some builders have so very little trouble in selling homes and in making a profit on each home they sell?

With the thought in mind that it would be exceedingly interesting and profitable to various builders to see an analysis of the reasons why a particularly successful builder is successful, the writer recently had a long talk with a builder who is an outstanding success and got him to put down on paper the exact things he has done which, in his opinion, have been the most instrumental in making him get the business and clear a profit.

Some of the reasons for success advanced by this builder are decidedly unique. All of them are exceedingly interesting and all of them are given publicity through the courtesy of the builder who said it was all right to publish them provided his name wasn't mentioned as he didn't care to be placed in the position of telling the world how good he was and covering himself with bouquets purchased out of his own pocket.

Here, then, are this builder's reasons for his success as he himself has analyzed the reasons:

REASON NO. 1—He has never built unpopular houses and has never tried to sell unpopular houses.

A number of interesting things are meant by this. In the first place it is meant that the builder has never tried to force his own tastes on the public. He may have thought time and again that the public's taste with regard to the sort of homes it was most greatly favoring, was very bad indeed, but he has always kept this feeling to himself and has never tried to do any missionary work in chang-ing the public taste. He has accepted the public taste for what it is, whether it is good, bad or indifferent and has made his money by putting up the sort of homes the public has wanted. In the second place it is meant that the builder has never allowed himself to get a name for erecting homes which are hard to sell. He has put up homes which make a quick hit with the public and which are quickly sold and which never carry a "For Sale" sign for any great length of time.

All of this has had a very decided effect in building up a splendid reputation for the builder as the erector of homes that everyone wants and that sell quickly. And this is of immense importance in the building game, as every successful builder knows.

REASON NO. 2—The builder has always picked out the best sort of locations from the standpoint of the man who wants a good home as cheap as possible and who wants to live in a good section of the city.

This means that whenever it has been possible to do so the builder has erected his homes on improved lots where the pavements and sidewalks and sewers and so forth are already in so that the purchaser of the home will not be faced by a lot of assessments in addition to the payments he knows about and is prepared to meet.

Also it means that the builder has never tried to make a lot of money by getting a cheap piece of land in a poor section of the town and then building it up and trying to sell out the homes to people who don't really want to live in such a section and who will not be satisfied once they do live in such a section but who are talked into making the purchase.

REASON NO. 3—The builder has done quick work and turned over properties very quickly. He has never gone in for longtime stuff unless there has been a way for him to get his money out of the proposition quickly. He has always striven to put up his homes just a little faster than the other builders and just as fast as he possibly can with due consideration for the required good workmanship.

This quick turnover has enabled him to get his money out of the jobs with exceptional speed and so has enabled him to operate with much less borrowed capital than would otherwise have been the case and so has enabled him to save quite considerable sums of money that, otherwise, would have been paid out for interest.

REASON NO. 4—The builders' employees stay with him and are enthusiastic about their work and take a deep pride in their work.

Of course, this is a very desirable condition for any builder to have with regard to the people in his employ and there will probably be some questions asked as to just how this condition has been achieved by this particular builder.

The manner in which this interesting and desirable condition has been achieved has been simple enough. The builder has never failed to give the men in his employment full credit for everything they have done for him. Also he frequently holds picnics for them or indoor eats and shows that he takes an interest in them outside of the interest he has in getting the best work and the fastest work possible out of them. In other words, this builder treats his employees as though they are human beings and they respond accordingly.

One of his particularly interesting methods of getting his workers to be more enthusiastic about their employment is the plan of advertising the completion of each new home he puts up and of giving the names, in the advertisement, of the workers who were engaged on the job. This is splendid advertising, of course, because it gives real personality to the ad and because it indicates that the job must be a very good one to merit the exploitation of the names of the workers in this way. And, as might be expected, it pleases the workers immensely to see their names in print and flatters them and makes them feel much more kindly toward their employer than otherwise might be the

Surely other builders could use this same plan with equally good results in bettering the morale of their employees.

What One Builder Thinks About Training Our Future Workers

Why Not Go to the Root of the Matter and Eradicate the Cause?

By W. M. NEWTON

HE articles on the shortage of men in the building industry in the August issue of BUILDING AGE prompts me to try to convey to you some facts which have become firmly fixed

in my mind. These ideas are the result of fifteen or twenty years study of the conditions which have led up to the present climax, which I have clearly foreseen during the period, that they would.

diat they would.

Our schools have been failing to fit us to meet the requirements of modern conditions. A brief, crude discussion of the matter is given below.

Apropos of your leading article in your August issue, the various suggestions for some degree of relief are probably the best that can be devised to relieve the severity of the present acute attack. But why not go to the root of the matter and prepare to eradicate the ailment entirely?

To do this, we must grasp a few facts. "Apprenticeship" has gone the way of the "hoss and buggy."

No kid of today is going to spend a few of his best years learning a part of what some mediocre artisan knows.

But the one great big vital fact is that you can teach the young American, but you cannot train him. And when he is well taught the older trained men cannot get close enough to him to tell whether he is burning soft coal or gasoline.

Regarding that future building trade willing worker, where we are going to (and should) teach him is in our public schools. There are some fundamentals regarding schools that we don't all realize and one of them is, that, excepting editing our various

HERE are the frank thoughts of a typical successful building contractor in a small city. The kind of a man that has felt the serious handicap of the shortage of skilled labor more than the bigger construction companies in our larger cities. What he says here is "straight from the shoulder" and his remarks will be of interest to every builder.

valuable periodicals, the most important vocation in the world is developing the latent talents of our children, consequently the school teacher should be the best paid worker in our social organization. Better even than the lawyer, politician or hod carrier.

OUR schools have been failing to fit us to meet the requirements of modern conditions.

The most important vocation in the world is developing the latent talents of our children.

No kid of today is going to spend a few of his best years learning a part of what some mediocre artisan knows.

They are today handling wireless, running automobiles and aeroplanes. Don't expect them to enthuse over a few "secret" tricks of the bricklayers' or carpenters' craft that were ancient a hundred years ago.

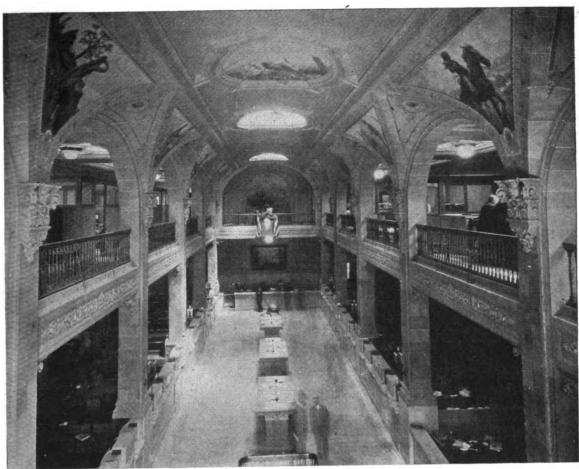
It should be considered the highest honor in the gift of a community to allow an individual to become part of its educational organization, so that thereby we might at-

tract the most brilliant minds of today to the transmission of that brilliancy to posterity.

Young America inherits the "how;" his crying need is the "why" Young on which to use it. To elaborate on the line of thought I am trying to show, I will say that if you will take a boy in school at the age of seven or eight years who shows some mechanical ability and during the following ten years of his schooling, along with his three "R's" teach him the science of the use and care of wood working tools, the nature and methods used in incorporating them into structures, teach him to use blue prints, etc., and with this just enough practice and demonstration to keep him interested, and when that boy steps out of high school I will put him on my pay roll and I shall expect to advance his wages frequently.

Another fundamental that we lose sight of is the fact that this is an age of science, not of skill. What need have I for an expert hand jointer at \$10 per day when the mill down the street has one tuned up to 4,000 revolutions per minute, which can handle close to a carload of stuff in ten hours?

Having a dozen mechanics on my pay roll, I, of course, recognize the value of skill. My highest paid man is not paid for his skill, but for his knowledge, and I realize that the comparative value of skill as compared to knowledge is on the decrease and the man that knows enough can in a very short time acquire sufficient skill to make him valuable in modern construction.



HE abrupt ending of the top of the front of this bank building is sure to attract considerable attention as one almost instinctively looks for the usual cornice that we have, by habit, come to look for on buildings of this type.

The plain surface of the front stone wall is artistically broken and relieved by the handsome imposing entrance, also the unique arrangement of the side windows.

The interior of this striking building of the Citizen's Trust and Savings Bank, situated at Los Angeles. Calif., is imposing and equally as interesting as its unique exterior. Here, truly, we have a veritable cathedral of commerce.

The vaulted ceiling is supported by a series of square columns and arches forming practically the nave and aisles of a cathedral. The

Imposing Interior a Feature of This Bank



curved ceiling is highly decorated in fresco as are also the spandrels between the arches. The color combination is quiet but effective.

Old time methods necessitated masonry arches for a ceiling of this type. Today builders obtain results by the use of structural steel, metal lath and modern cement and plaster.

It is certainly a modern palace of finance. The public space is the full height and skylights provide ample natural illumination.

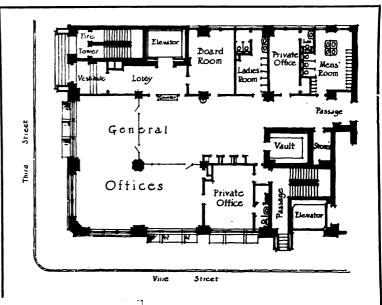
A bank is more or less of a civic institution and a builder is indeed fortunate to secure the contract for the erection of such a structure.

Bank buildings must necessarily be well constructed, and hence they afford the contractor a chance to do extra good work, and one can always refer to such a job with justifiable pride.

Modern Merchandising Demands Modern Buildings

D. KNICKERBACKER BOYD

Architect





PERHAPS no part of building development during the past fifty years has shown so remarkable changes as commercial structures. Could any of our merchant princes and manufacturers of a century ago look at our modern commercial palaces, they no doubt would be astounded. Offices and workshops today are better built in many cases than were the palaces of kings in centuries past.

Tall, fireproof structures of good architectural design are found in every large city and more will be built in the near future. Men are no longer content to work in hovels. They spend most of their time earning their living, therefore, why should they not have pleasant work quarters?

A noteworthy example of such a modern building has recently been completed in Philadelphia for a leather manufacturer.

To those of us who have read Miss Mullock's interesting story of "John Halifax, Gentleman," we unconsciously retain a nauseous feeling regarding hides and leather and therefore would certainly be surprised to walk into such an establishment as pictured here; a sample of modern building skill both in design and erection.

This interesting building was erected at Third and Vine Streets. Philadelphia, for England, Walton & Co., leather merchants, after designs prepared by D. Knickerback-

er Boyd, architect, Philadelphia, and built by William Steele & Sons Company, also of that city.

As will be noticed from the exterior view, this structure has a base of stone. Up above this, brick has been used for the exterior. The floor plan shown is of the first floor, containing the office and our other picture shows an interior view of this, which shows how handsomely it has been fitted up. Bronze railings, tile floor, decorative beam work, distinctive chandeliers, handsome wood panels—all reflect elegance and good taste. It certainly must be a pleasure to work in such surroundings.

All of this, however, must not be subordinated to safety, and it will be noticed that the architect has provided for two entirely separate means of exit. On the one side there is an enclosed fire tower. The old-time outside fire escape is no longer permitted for commercial buildings in many municipalities. Philadelphia was one of the first to develop the fire tower.

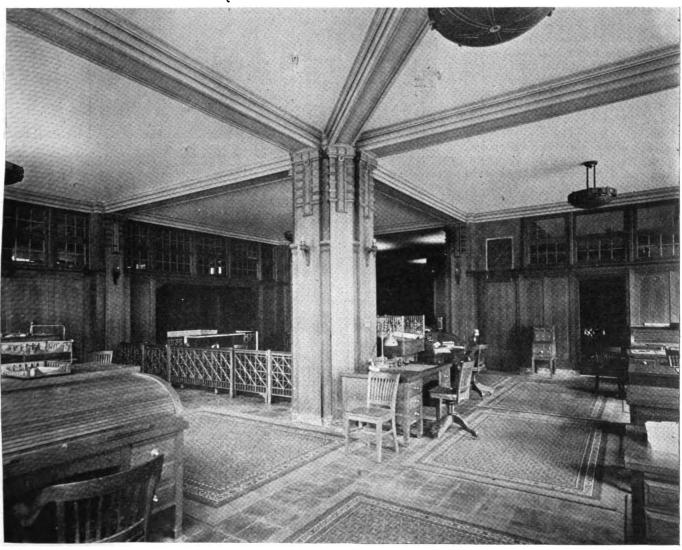
In building these the enclosing walls should be of brick or reinforced concrete, not less than eight inches thick and without openings, except for doors or windows opening on a street, or on a yard or court not less than one hundred square feet in area.

Access to the stairway should be provided at each story served by a fire tower through outside balconies or fireproof vestibules having solid floors of incombustible materials and provided with substantial railings.

Such balconies or vestibules should be level with the floors of the buildings and platforms of the stairs connected by them, and separated therefrom by self-closing fire doors. The clear width of such connecting balconies and vestibules shall be not less than that required for a hallway.

No stairs should have a width of less than forty-four inches throughout its length. The aggregate width of stairs in any story of the building should be such that the stairs may accommodate at one time the total number of persons ordinarily occupying the largest total floor area served by such stairs.

This can be figured on the basis of one person for each full twenty-two inches of stair width and one and one-half treads on the stairs and one person for each three and one-half square feet of floor area on the landings and halls within the stairway.



How Building Age Advertising Pages Helped in the Erection of a Servantless Cottage

ERE is a little house built by a clever advertising man, unique, inasmuch as it contains every little trick of modern household convenience and efficiency.

The architect is Mr. Arthur Rickard of Richey, Browne & Donald, and it belongs to Errett, the Lily cup man. You can see it if you motor to Great Kills, Staten Island, the quaintest little seashore town in New York City, and it is worth the journey.

Its windows look over the sea where it stretches between the low bar of Sandy Hook and the Highlands of New Jersey.

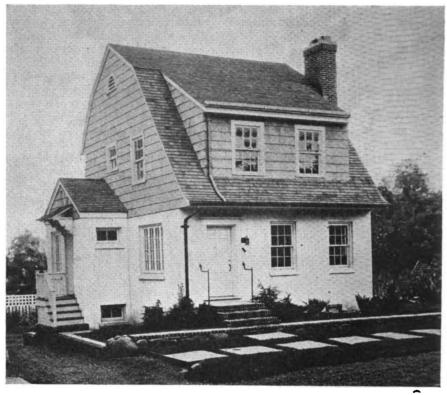
It is built of hollow tile, National Fire Proofing Co. The lower part is covered with a stucco of White Atlas Cement; the upper part with Creo-Dipt Royal Shingles, and it is crowned with the same shingles in green. The comfortable chimney, big, because it represents two fire-places, is made of Fiske Tapestry Brick. The gutters and leaders are copper, presumably Anaconda. Throughout the house Truscon Steel Lath is used exclusively and the walls are further fireproofed with an insulation of U. S. Mineral Wool.

The basement opens on the level of a paved court, as does the garage, itself a part of the house.

In the cellar is a convenience laundry, an ideal heating plant, Sharp Rotary Ash Receiver under the furnace, an Excelso Water Heater, an Arco Wand Vacuum Cleaner, Majestic Coal Chute and Package Receiver.

On the first floor is a big living room, half the size of the house, with Curtis colonial stair and furniture, built in. The fireplace is equipped with Jackson's fittings. Best of all, Cromar Oak Flooring. The walls are decorated with Sanitas from the Standard Textile Products Co.

The feature of the dining room, besides the bow window with its Whitney Casements, is the colonial cupboard Curtis advertises. To the side is the sun room, with sliding win-



Here is front and side views of the "Servantiese Cottage" at Great Kills, Staten Island, New York. The rear and other side view are shown on the opposite pages, which also shows the basement garage. For its size there is probably no other house that can equal it for the number of its conveniences.

dows, copper screens, and Cromar floors, making it equally habitable with the other rooms in winter, but available as an open-air porch in summer.

The kitchen is a model, like those you see in department stores, only more so. One side is filled with a "Kozy-Kitch," a built-in cabinet of marvelous capacity and convenience. Opposite is a Simplex Electric Range, and in a corner, the hopper of the Kernerator garbage incinerator. Under the high casement outward opening windows, copper screened, of course, is a "yard-high" Standard enameled sink with drain board.

The end of the kitchen is occupied by a breakfask nook with a built-in table and seats, Curtis. Whitney windows at the end; soft tile floor below. In the entry adjoining, space for refrigerator. Walls all Sanitased; birch woodwork, white enameled with Ripolin over Harrison's flat white.

Upstairs the three bedrooms have oak floors and Sanitas walls and are provided with convenient closets. From one of them a door leads to the Boyle's canvas covered deck of the porch.

The bathroom is tiled, has Fairfact's "Bilt-in" fixtures, Pembroke Recess Tub with Speakman Shower; Standard Pedestal Basin; Adee's Medicine Cabinet, Porcela Fixtures and Kennedy Tile Floor.

The cottage is an excellent example of the adaptation and use of architectural skill and modern advertised products in the solution of a pressing present day problem of providing servantless homes for folks who enjoy the convenience of apartments but prefer the freedom of country homes.

It provides an object lesson.

Products of 42 Advertisers in the House that Errett Built

Almost like reading the pages of the Advertising section of Building Age and The Builders Journal.

American Radiator Co.
Radiators
Ideal Boiler
Arco Wand Vacuum Cleaner

Anaconda Copper Mining Co.
Roof Gutters

Atlas Portland Cement Co. White Atlas Cement

Avon Tile Co. Bathroom Tile

Barrett Company Everlastic Building Paper

Boyle & Co., John Canvas Roofing

Creo-Dipt Co., Inc. Creo-Dipt Shingles

Crooks Dittmar Co. Finished Flooring

The Curtis Companies, Inc. Interior Woodwork Doors Stairs Closets

Dupont Company Harrison's Oil Paint

Fairfacts Co.
"Bilt-In" Bathroom Fixtures

Fiske & Company Fiske Tapestry Brick Fireplaces and Chimneys

Hanna, Ford B. Knox Wall Safes

Hartmann-Sanders Co. Garden Fence Hicks Nurseries

Integral Waterproofing Co. Cement Waterproofing

Jackson & Bro., Edwin Fireplace Dampers Smoke Chambers

Kennedy Co., Inc., David E.

Kerner Incinerator Co. Kernerator

King & Co., J. B. "King's Windsor"

LeGrange Fixture Corp. Kozy-Kitch Kitchenette

Leonard Construction Co. Kalamein Garage Doors

Long-Bell Lumber Co.

Louisiana Red Cypress Co. Red Cypress

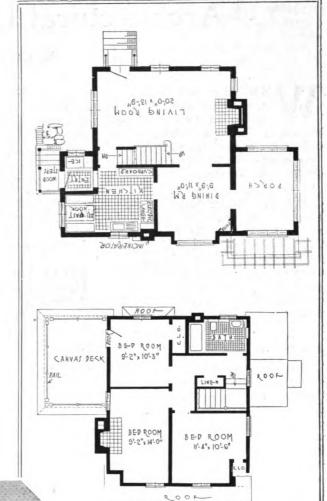
The Majestic Co.
Majestic Coal Chute
Majestic Package Receiver

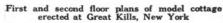
Marsh, James R. Hand-Wrought Lanterns

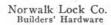
McCormick Lumber Co., C. R. Oregon Fir

National Fire Proofing Co. Natco Hollow Tile

National Lead Co. "Dutch Boy" White Lead







Richards-Wilcox Mfg. Co. Garage Hardware

Ripolin Company

Sharp Rotary Ash Receiver Co. Ash Receiver

Simplex Electric Range Co. Electric Range

Sonneborn Sons, Inc., L. Storm-Tight Cement Lapidolith Cement Hardening

Speakman Company Shower Baths

Standard Textile Prod. Co. Sanitas

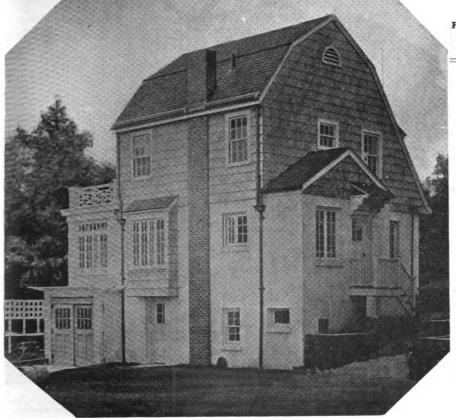
Standard Sanitary Mfg. Co. Recessed Tub Pedestal Basin

The Stanley Works Garage Hardware

Truscon Steel Co. Metal Lath

U. S. Mineral Wool Co. Insulation Material

Whitney Window Corp. Casement Windows



Architectural Uses of Wallpaper

By ESTELLE H. RIES

HETHER the builder is planning the interior finish of a new house or considers the remodelling of an old one, the architectural uses of wallpaper present interesting possibilities for service.

It is no longer believed necessary or even desirable to have the walls throughout the house alike, even where there are communicating rooms. While this gives a certain spaciousness and unity to the effect, it is primarily necessary for the wall treatment to conform to the purpose and exposure of the room for which it is intended.

A simple bedroom requires different wall treatment from a formal dining room in which a certain dignity and weight would be wanted. The north room requires warmer tones than does the sunny room on the south side of the house. Or one room may be finished in oak panels while another has white enamel wood finish. It is evident that a different background is desirable in these various circumstances.

While we find that increased space is apparently afforded if communicating rooms are papered alike, this should only be done if they have a similar degree of formality and are subject to the same conditions of exposure and light. But do not assume that we are recommending a patchy, jumpy effect, for while the colors need not be identical, they must be harmonious. Strong contrasts and clashing things must be studiously avoided.

In papering rooms that adjoin, one may use the same color in different texture. Or one may reverse the emphasis, having, say, one room chiefly blue with accents of tan, while the adjoining room is chiefly tan with accents of blue. Or if one of the colors is not suitable in both rooms, at least the other should be, so that a proper inter-relation is preserved to prevent clashing.

It may be noted here that light colors in the wall paper make a room seem larger and lighter, and give the effect of cheer, daintiness and cleanliness. Used to excess, a sense of barrenness results. Dark colors, on the other hand, decrease the size of the room but produce a certain dignity and richness of effect. If these are used too much without relief, the result is gloomy of dingy, and hard to illuminate.

EVEN in the selection of the socalled neutral tones, there are differences in tone to prevent monotony or identity in all the rooms. North and east rooms need the warming quality of ivory and yellowish creams; sunny south or west rooms may be grayer and cooler. Oak furniture is better against a wall which has an ivory, not a gray element, to supplement the yellow-brown of the oak, while a gray background is somewhat more pleasing for mahogany.

If the ceiling of a small room be low, the use of a wallpaper with simple self-toned stripes will increase its apparent height. If the room be not quite so small, the vertical stripes may have contrasting color which would feel close and oppressive in the very little room.

Small rooms require small patterns, if any, and the simpler the effect, the better. For larger rooms, larger scale, and bolder color is permissible. When the ceiling is low, the cornice or picture molding should be at the top of the wall where the ceiling actually joins on.

Architectural dignity is achieved by using formal papers in formal rooms. Period wallpapers and other formal types are available, but must be exactly adapted to their surroundings. Just because they are expensive does not make them a satisfactory choice. They would, for example, be too serious for bedrooms where floral or two-toned simple designs are preferable and much less costly.



Stripes are here used to increase the apparent height of a low room and contrast pleasingly with the heavy pattern of the upholstery. The paper is carried clear up to the ceiling, and the molding is up as high as it can go

While Adam paper is suitable for a room of Chippendale, Sheraton, Hepplewhite or other Georgian furniture, it will not go with a room that has casement windows, low beamed ceilings, inglenook and other features of simple country cottages, or with the heavy dark oak aspect of Tudor, Flemish or Jacobean styles.

A wall has an architectural mission to perform—to hold up and support the room. It must look strong enough to do this, and the idea of making it vague and uncertain in its decoration is in opposition to its purpose. No wonder that decorators have reacted enthusiastically to the presentation of papers that emphasize texture instead of pattern. Grasscloths. plasters, leathers, damasks and others in remarkable variety are available. The texture of wallpaper has a good deal to do with its architectural value. Whether it be rough or smooth, fine or coarse, or like the numerous stuffs which it simulates, greatly affects the result, and presents both opportunity and responsibility.

It is well to know what kind of furniture is to be used in the room to be papered, and, of course, if it is a new house, this will be largely determined by the wood trim. Oak is an open grained wood, and both in furniture and panelling is generally carved and heavy. It therefore requires a wall with coarse texture, such as rough plaster finishes, tapestry papers and the like, never a satin striped or other delicate effect.

Where the wood is white enamel or gray, and mahogany furniture would logically be used, the opposite is true. We then have a smooth reflecting surface, and delicacy of texture in the wallpaper is suitable.

S MOOTH finish is necessary and coarse textures should be debarred for they would overpower the room. The simple bungalow with perhaps its mission or other similar furniture also requires coarse supporting texture in wall-papers. Its almost crude simplicity would make any delicate satiny finish in wall paper a caricature. The straight lines of mission furniture need sturdy background and this is found in rough plaster, burlap, tapestry and the leather effects in wallpaper textures.

When, on the other hand, the ceiling is too high for the width, as is usually the case in the narrow hall, the cornice line should be brought down on the wall. For narrow rooms and halls, tapestry effects with depth and distance may be successfully employed.

Since the hall is often centrally located in the house, and receives little light, wallpaper in the light tones should be selected. A light-toned tapestry not only increases the apparent size of the hall by virtue of reflecting more light, but also by having perspective in its design that carries the eye into remote depths and subtle shadows. Its colors may also anticipate the color schemes of the rooms opening from the hall, thus making a harmonious and unified whole.

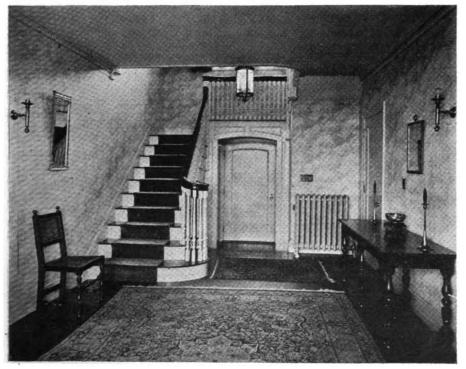
The high ceiling may also be reduced by resorting to devices that emphasize the horizontal lines. Divide the height of the wall into three parts, a deep dado and cornice, in addition to the field, and treat each one differently with proper inter-relation.

The dining room and the hall often have a dado. This is the name for what was formerly called a wainscot, which in turn means wall-protector, a covering of wood laid against stone or brick walls for comfort and warmth.

Originally before plaster was employed, its object was purely useful, although according to the means of the builder, it was carried to greater or less height. Plaster was then introduced as substitute for wainscoting, and as it was cheaper and easier to apply to the wall, and as wood grew scarcer, people ceased to employ it at all for sheathing inside walls, the only vestige being the baseboard to keep the scrub brush from plaster or paper, or to prevent chairs from rubbing up against it.

The dado, then, should have a structural aspect. A rich, dark leather paper in deep colors to hide defects of wear and to afford structural appearance and support like wood is a favorite choice for the dado in a room where there is a certain richness in furnishings.

(Continued on page 68)



Tapestry wallpaper in light tones is extremely effective in poorly lighted and narrow rooms and halls. The shadowy appearance gives the effect of depth, making the place seem wider, and the light tone reflects light and also increases appearent spaciousness. Heavy texture supplements and gives support to the stairway



CARPENTRY

Good Practice in Frame Construction and Finish

How Panel Work is Made and Set Up

By OWEN B. MAGINNIS

N the erection and finishing of the better class of homes, also offices, banks and business structures, etc., builders often are required to do panelling or set up the panel work that has been made in the mill.

The materials for this construction consist in some cases of marble, bronze, sheet copper, kalomine, plastering or tiling. In most cases, however, wood is used for residences, due to the fact that they show up beautiful and clean, besides giving warmth and comfort.

Panel work may be simple or elaborate, according to the taste of owner or the designs of architect, and as there are a vast amount of these designs, we will proceed to illustrate and describe just a few samples from which our readers will derive some ideas of how this work may be done.

Figure 1 shows the first floor plan of the English villa that was

described in the April issue of BUILDING AGE. Here panel work may be properly introduced in several rooms, so as to obtain comfort as well as correct architectural appearance. Let us presumably enter into the first floor of this dwelling just to get an idea of how panelling can be architecturally and properly placed.

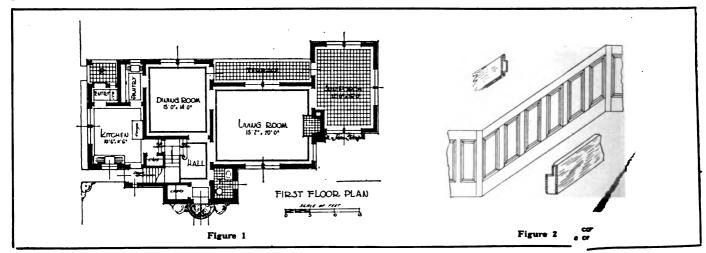
For sanitary reasons, we would not panel or wainscot the coat or toilet rooms at the entrance, but we would panel the small vestibule. Passing from these, we enter into the hall with an ample staircase and immediately we realize just where the decorative and useful effects of panel work may be employed to advantage. We decide to use it here and also in the dining room beyond, of which the walls and ceilings might be entirely panelled.

It is not usual nowadays to panel living rooms, parlors, drawing rooms, or reception rooms; elegance in these cases being obtained by ornamental plaster work.

Kitchens are better equipped with tiled wainscoting about four feet high, although tongued and grooved oak or yellow pine beaded or grooved ceiling %" thick makes a handsome piece of work and finish, but as it frequently harbors vermin, tiling or a painted hard plaster finish is preferable.

Dining rooms, halls and sometimes living rooms have "beam" or panelled ceilings, often trimmed and molded to give it a finish. Quarterrounds, coves or any simple bed-molds are sufficient for panelling. Elaborate moldings of any members accumulate dust and blacken quickly. Simplicity, elegance and comfort should be the keynote of all good design and utility.

Now let us proceed to the practical construction of this work and



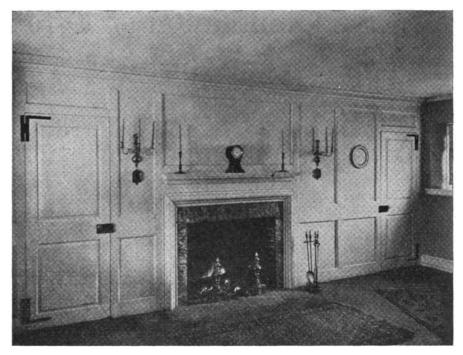
just get a simple idea of how it should be done.

If the partitions be of wood, panelling, or wainscoting they may be screwed directly to the vertical wall studding, but they are better stripped horizontally at different heights so that the panelling may be securely fastened at any point.

The panel work should be very carefully measured and made in sections or sheets to fit exactly, without cutting, into the spaces for which they are intended. The dimensions between corners and doors, corners and windows, over doors or other openings, all angles, widths and heights must be measured with rules, tape lines, or rods and proper diagrams made so that there will be no errors in making the sections.

Each section must either be lettered or numbered and the diagrams and detailed drawings prepared so that they may be accurately worked from and they should be kept for reference until the job is completed and final payment made.

All this should be done either by a competent draftsman or the carpenter or cabinetmaker foreman. This is a job for only a well versed and experienced craftsman, as no unskilled hand can do it. The window and door trim must coincide



Wood Paneling Full Height in Colonial Living Room

and blend in with the panel joints and be perfect in workmanship. The tools and materials must be of the best; careless work here is out of the question.

The framing of panelling is, of course, best made by the tenon and mortise system with stiles, rails and mullions plowed to receive the panels. The framing lumber should be not less than one inch thick.

The wood may be of oak, chestnut, cypress, California redwood, birch, yellow pine, white pine, poplar, or in fact any wood that is well planed, smoothed and sandpapered to take stain, filling, etc.

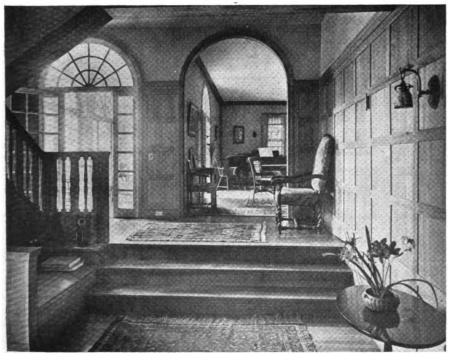
The joints should be put together with glue and wedged. The panels may be flat, raised or carved. Each section before moving out of the shop should be braced and delivered carefully.

Regarding the construction of pitched or angular panelwork, let us suppose a section has to be made for a staircase, similar to that illustrated in Fig. 2, which differs from the ordinary framework with square tenons, mortises and shoulders and is, of course, much more difficult to build.

The exact and proper way to lay out panel work "on pitch" is to set it down on a large platform or clean floor to a full size layout of detail, showing every piece as indicated in Fig. 2, also the angles and shapes of every constructive piece which goes to make up the whole section.

You will notice on this sketch the acute and obtuse angles and how they must be shaped in the shop. All panelling should be made and put together in the shop where the proper tools and facilities are best adapted to build successful work of this kind.

(To be continued)



Artistic Paneling in Hall Three Quarter Height

The Ventilation of Office Buildings

By CHARLES L. HUBBARD

T is probably safe to say that office buildings, as a class, are the most poorly ventilated of any of our public or semi-public buildings, when actual operating conditions are taken into account.

Schools, churches, theatres, hospitals, libraries, etc., are usually provided with efficient systems of ventilation, but in office buildings, with the exception of banking rooms and private quarters, it is not common to find special provision for air change, or other means of bringing about more comfortable and healthful conditions.

Of course, there are exceptions to this, and a growing tendency toward extending the ventilating system to include a longer proportion of the space in buildings of the latest design. However, that portion above the first or second floors, commonly divided into small offices, is seldom provided with more complicated equipment than direct radiation and sliding sashes, with the result that either over heating, or cold drafts from open windows, are the rule throughout the winter months.

Buildings of this type are particularly difficult to ventilate by the usual methods over the second story, owing to their height, the number of rooms on each floor, the value of space, and the thinness of partitions in modern fireproof construction.

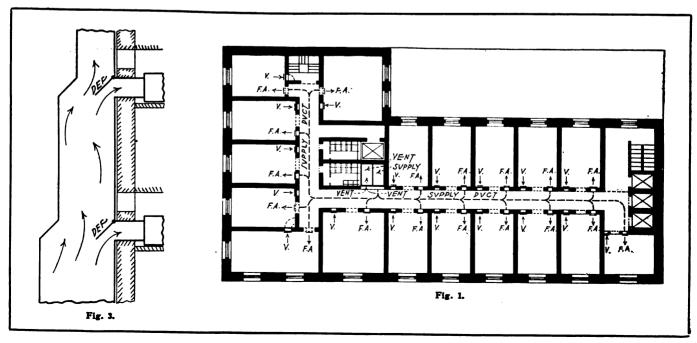
It is proposed in the present article to give suggestions for improving conditions more or less, depending upon whether the plans are in process of preparation or the building is already in use.

We will first consider certain arrangements which apply to new work, and may be made to include either the whole building or substantial parts of it. The great difficulty is to find space for carrying up the flues, and the complications involved in reaching so large a number of rooms. Probably the simplest plan, and the one most easily adapted to the average case. is that shown in Fig. 1, in which a single supply flue is carried up through the building, connecting with a main distributing duct placed at the ceiling of the corridor and concealed by a false ceiling or furring below it.

The supply shaft here is reduced at each story, thus making room for a corresponding vent flue beside it which is carried to the roof. As one flue increases, the other diminishes in proportion, so that the total floor space required remains the same throughout the entire height of the building. A fairly high velocity may be carried in these main uptakes by placing the supply and vent fans close to them without long horizontal connections, as shown in Fig. 2.

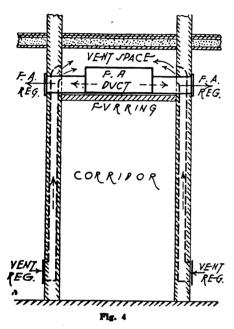
For example, a room 12 ft. x 20 ft. x 12 ft. has a cubic content of about 3,000 feet. If the air is changed four times an hour it will call for 12,000 cubic feet or 200 feet per minute, which is ample for seven or eight people.

For a group of one hundred offices of this size, 20,000 cubic feet of air per minute would be required, and a velocity of 1,200 feet per minute which is moderate, would call for a flue having 17 square feet of sectional area, or approximately 42"x60" in size, which is not large. By increasing the velocity to 1,500 feet, the flue dimensions could be reduced to 42"x48". This same scheme may be carried out in very large buildings by dividing it with sections and providing a pair of fans and vertical flues for each, like the unit illustrated in Figs. 1 and 2.



A double-inlet multi-vane fan, 5 feet in diameter, of standard make, will deliver about 70,000 cubic feet of air per minute, against a static pressure of 5%-inch water column, when running at a normal speed for this class of work. This would provide for 350 rooms of the size used in our previous illustration, or approximately 1,050,000 cubic feet of space, and require a flue area at each floor of 50 square feet on a basis of 1,500 feet velocity per minute, or 63 square feet at 1,200 feet velocity.

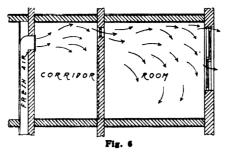
Stated another way, an outfit of this kind would take care of a



building, or section of a building, ten stories high, having 35 rooms of the size stated on each floor. This amount of flue space should easily be spaced, when the importance of ventilation is considered, as it amounts, at the lower velocity to only one-fourth the floor area of a single room.

The space occupied by the horizontal distributing ducts at the corridor ceilings might as well be utilized as not, as the height remaining below the false ceiling will be sufficient to give a good appearance. The total depth of the ducts would probably never exceed 2 feet, which would leave 10 feet in the clear with 12-foot studding.

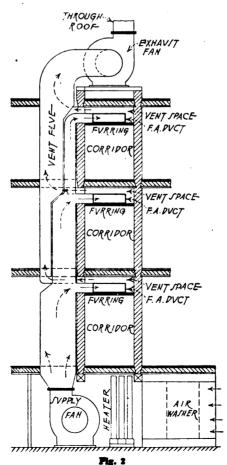
The method of taking off the proper proportion of air at each story, from the main supply flue.



is shown in Fig. 3, and makes use of an adjustable deflector which is locked in position after the final adjustments have been made on all floors to secure an even distribution.

Delivery to the rooms is shown in Fig. 4, which also shows the discharge ventilation. The inlet register should be near the ceiling in order that the entering air may become thoroughly diffused before reaching the level of the occupants, otherwise there will be danger of draft.

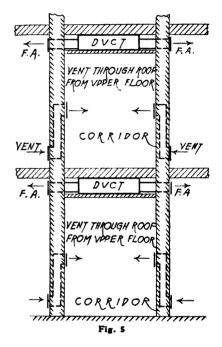
A good plan is to provide lock registers at the inlets, having horizontal vanes set to throw the air upward as it enters. This form of register not only serves as



a deflector, but also as a regulating damper for admitting the proper quantity of air to the room.

Air velocities should be stepped down from 1,200 or 1,500 feet per minute in the main uptake to 600 to 750 in the distributing ducts, and 300 to 350 feet through the inlet registers into the rooms. Discharge or vent registers should be placed near the floor and made about two-thirds the size of the inlets.

A higher velocity here does no harm, as the flow is outward from



the room. Duct and flue velocities may be the same as for the supply; that is, 600 to 750 in the collecting passages and 1,200 to 1,500 in the main vertical shaft leading to the fan on the roof.

The arrangement thus shown gives the maximum amount of ventilation and is positive in action. The supply and vent fans are usually made of the same size, and both outward and inward air leakage to the rooms neglected. This type of system, to be complete, must be arranged to supply moisture by means of an air washer provided with automatic equipment for delivering air to the building at a relative humidity of between 40 and 50 per cent.

The warming of the rooms is best done by indirect radiation under automatic control. This



system is the most costly to install, and also to maintain, although the steam saved by automatic temperature control will assist to some extent in warming the fresh air for ventilation.

When this arrangement proves too costly for the available funds, or seems too elaborate to the owners, various modifications may be made which will reduce the cost and still greatly improve conditions over the usual practice of supplying no ventilation at all. One of these is shown diagramatically in Fig. 5.

This scheme retains the air supply system as before, together with the air washer and automatic temperature control, but eliminate

Architectural Uses of Wallpaper

(Continued from page 63)

Lincrusta papers which come in a wide variety of styles for this purpose are also admirable.

Tapestry paper is well placed above a dado in order to keep the feeling of solidity about the wall itself, reserving the shadowy depths in the tapestry pattern for the upper portion where they are obviously an illusion. Especially since tapestry papers are so often used to emphasize width, the dado which makes a decided horizontal line, increases the desired effect by reducing the height.

Rooms on one floor usually have the same height but are otherwise of different dimensions. means that they cannot all be correctly proportioned, and here is an opportunity for frieze or border to make the necessary modifications. Borders should not be placed at random just for variety or novelty. They must do what the name implies, border upon something, conforming strictly to its lines. A rambling border draped around like a bow knot has nothing to recommend it. It must confine something like a frame, and just as you would not hang an empty frame, neither should you plan borders aimlessly flowing toward some unknown destination.

A border is used to mark panels,

the mechanical removal of air from the building. In this case there are openings from the rooms into the corridors, of the general form shown, so arranged as to prevent sounds from passing through too readily.

The air pressure within the rooms, due to the supply fan, will be sufficient to force a portion into the corridor, from which it passes upward through the elevator wells and stairways to the upper story, due to the flue effect of the building, and is discharged outboard by means of suitably protected vent openings in the roof.

A still simpler method, and likewise less effective, is to discharge

to accent windows or doors and for similar purposes. A frieze goes along at the top of the room horizontally, and does not lapse into any other position. The frieze performs its best function when it is deliberately selected to modify the height of the room.

Do not have friezes with realistic designs that show a hundred wood-choppers on the verge of felling a hundred trees all day and all night, or equally disturbing and startling scenes. Avoid the calamity of half a man or beast at the end of the frieze, especially if it is in a play-room or nursery.

CONVENTIONALIZED patterns are always preferred, as one is spared the unsatisfied suspense of waiting for something to happen, as a flying bird that will never alight on the tree a half inch away.

The use of wallpaper in panels also presents an air of importance as architectural embellishment that is more difficult to achieve when the paper is hung continuously. It enables one to use a stronger and more decided pattern partly because its insistence is relieved by the enclosing moldings, and partly because actually less of the pattern is used, for it is surrounded by wood surface. The effect of framing also makes pictorial wallpaper a pleasing choice, and this panel arrangement is one of the most pleasing ways to use pictorial paper.

the full air supply for the building directly into the corridors, and provide an opening into each room near the ceiling. Natural leakage through a slight dropping of the upper sash is relied upon in this case to remove the air without appreciable drafts.

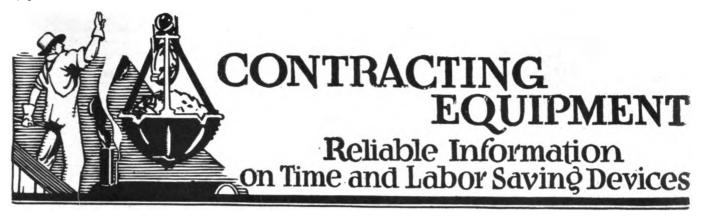
There will be a tendency, with this arrangement for the air supply to pass to the upper part of the building through the elevator shafts and stairways, but if there are no openings from the corridors outboard, this effect will be partly neutralized and the air find its way out through the rooms, although more strongly as the elevation increases. This 'arrangement is shown in diagram in Fig. 6.

Charming Color Effects in Slate

S LATES differ in color, and some colors are much more in demand than others, the preference being based more on tradition than on artistic taste or actual qualities of the slates, states Oliver Bowles, mineral technologist of the Bureau of Miles, who has completed a study of the technology of slate for the Department of the Interior. A wider market for colors not now in demand depends, therefore, on the cultivation of public taste.

Slates are classed as fading or unfading according to their color stability. The fading of green slates is probably due to the presence of iron carbonate which seems to be present not as pure siderite, but as an isomorphous mixture of the carbonates of iron, lime, magnesium, and possibly manganese. The hydrous iron oxide formed by decomposition of the carbonate through action of certain solvents carried in rain water destroys the green color and causes fading. The black and gray slates usually contain small amounts of such constituents and are therefore nearly permanent in color. Bluish slates commonly turn greyish, and red slates may turn brown. The green slates are the most uncertain, some are practically permanent in color, but others fade and discolor





"Give Me a Price On Wheelbarrows"



THERE is a much too prevalent belief that a wheelbarrow is a wheelbarrow—an article comprised of a couple of sticks, a tray, and a wheel hitched on. The truth of the matter is, that there are scrubs and thoroughbred wheelbarrows, and they present an intelligent buying problem just as do road rollers, steam shovels, or any of the high priced equipment used on a building job.

In the olden days when a difference of a few days more or less in the completion of a job was a matter of minor consideration, it may be true that any old wheelbarrow would do; that if only half a load of material reached its destination, while the other half was spilled along the route, little harm was done; that men could be forced to push a squeaker, against the laws of friction, and blistered hands and aching back, were a daily occurrence of little or no concern to anyone, except the poor cuss who was doing the wheeling.

There are still large quantities of these old type of wheelbarrows manufactured; made to sell cheap, but not to last; designed for low price only, and without regard to balance, ease of wheeling, economy of operation, or economy of maintenance; not made to give efficient service on the job, but to satisfy that low price demand, and fill that inquiry which covers a multitude of sins—in plain English, "Give me a price on wheelbarrows."

Figure it out for yourself, and you will agree that it is the wheelbarrow gang which actually regulates the speed of the mixer. The mixer will mix the materials as fast as delivered. If the batch is timed for twelve wheelbarrow loads of material, it is important and necessary that the twelve loads arrive on schedule time.

There is no time to be lost in chasing the oil can and monkey wrench to fix cripples, while the engineers' pay, plus labor pay, is added to the repair bill.

In case of wheeling mortar and brick to the brick gang, good wheelbarrows are one of the most important items, and, furthermore, one of those items which receive the roughest of treatment, and likewise, the least care and attention.

How Important Is a Wheelbarrow?

Wheelbarrows, good or poor, as the case may be, will either add to or



Chassis and Different Size Bodies of the Modern Wheelbarrow



take from the profits of any material handling job, and prove it short-sighted policy to consider your wheel-barrow purchase on a basis of first cost only.

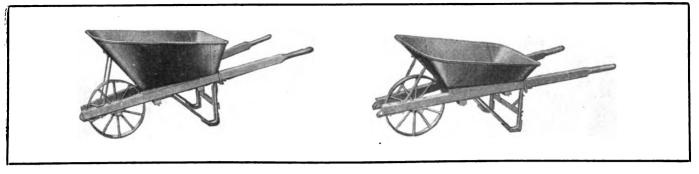
Some Recent Wheelbarrow Improvements

Wheelbarrows can now be obtained which have self-lubricating wheel bushings which require no additional lubrication, and effect a decided saving in man power over the old-time "squeakers," and a lower maintenance cost assured.

General designs have been changed, so as to place the weight of the load over the wheel, and relieve the wheeler. Tray designs, varying in capacity, widths and lengths, are built for special and individual service; the shallow tray for dry materials, the wide deep tray for mortar, and the narrow deep tray for concrete.

It is just as foolish to order wheelbarrows by name only, and without regard to design, capacity, gauge and build, as it would be to 'phone your clothier and ask for a pair of pants, without regard to size or color.

Take the matter of standardization of component parts. Wheelbarrows are now made so that all the parts are interchangeable. Handles all the same size and bore; one design and size of wheel; one size and style of steel leg for all types; all tray holes punched the same. The only differ-



ence forming the various types being the shape and capacity of the trays.

In buying wheelbarrows so standardized it requires very little figuring to count the savings resulting from the ordering and use of repair parts. The advantage of making new barrows from parts of old ones, without so much as boring a hole to complete the job. Quite different from the price made barrow which may be delivered to the fellow who doesn't know the difference.

There are plenty of well-designed and durably constructed wheelbarrows on the market today, and in selecting wheelbarrows we offer these suggestions of "Points to remember":

Points to Remember

The wheelbarrow is a necessary and important part of any contractor's equipment.

There are very poor as well as very efficient wheelbarrows.

Specify correct gauge, capacity and design of tray.

Advise nature of work for which your wheelbarrows are to be used.

Demand wheelbarrows which are not man-killers.

Remember that wheelbarrows are subjected to the roughest kind of treatment.

That efficient service over a period of time is the only true economy.

That if you have use for a wheel-barrow, you can get one built for your particular service.

That the wheelbarrow is not a necessary evil, but instead is an ever present helper.

How to Repair Your Wheelbarrow

Take apart all wheelbarrows which need repairing. Next, scrape off the broken parts, and reassemble all of the good parts. In this manner it is likely most of the good parts will match up, but in any case, by this method, the process of utilizing all good parts is accomplished with the least possible labor and repair part cost.

How to Read a Survey

Some Additional Instruction On the Use of Transit and Level in Staking Out Land for Buildings

By J. LAWRENCE MICHAELS

I N our August issue, the method of operating the transit was explained. The use of this instrument by builders was described from the time one learns to operate it, to the actual marking of a sight on some stationary object, such as sidewalk, curb, stake, etc., to easily locate the "line" without the necessity of working from the monuments.

When sight is marked by assistant, the O. K. signal is again given, and a mark is made on the curb. This is filled out evenly in white chalk and brought into relief by blue or red crayon pencil marks on both sides of the white chalk mark. The transitman checks the sight and signals the assistant to come in. The white chalk sight can be plainly seen in Fig. 8. The white lines radiating from both

sides of the center line, which is the sight itself, are to make it easier for the transitman to pick up his sight again, should he get off it.

The next step is to measure the distance to the lot-lines. This is done by holding the zero end of a steel tape on the mark or monument under the transit and measuring the distance to the nearest line of the lot to be measured, which the builder knows by consulting the map showing the location of his plot.

This map gives the distance of the lot from the monument or corner. After the position of the first lot-line is located, a measurement is made from this line to the next lot-line, as shown in Fig. 9. Should there be more than one lot to stake out, measurement is made from the last lot-line measured to the next lot-line.

The assistant should hold the zero end of the tape, while the transitman lays off the distance. or in a three-man surveying party, the chief should do the measuring. Having completed the measurements, the assistant holds a pencil on each lot-line in succession, being directed by the transitman which way to move the pencil until it is in line with the hairs in telescope. This operation is shown in Fig. 10. The correct method of marking these points was described in the article on "Using the Steel Tapes" in our July issue.

After these points have been secured, the transit is set up on the measured point of lot-line, which should have been permanently cut into pavement by means of a chise!

Should there be no pavement, a wood stake should be driven, with a nail in the center on line of instrument. The transit must be leveled up as before, the transitman taking this line on chalk sight mentioned above.

The survey or lot map will show the angle of lot-line to datum or street-line and this angle is accurately located by the use of transit which is turned so that the hair marks in telescope are at desired angle with datum line originally tound. This operation is technically called "turning the angle." Usually the angle is 90 degrees, and this is simple to turn. Using the reading glass, the screw F is then tightened and screw G turned until the arrow on limb and 90 degree mark on the vernier are in line or conjunction.

The transit is now in place at the correct angle and any point in line with it is easily located by the method already explained and illustrated in Figs. 4, 7 and 10.

The front of the lot is usually a given distance back of the street or datum line. This distance is measured from the point under transit and a stake is driven, plac-



Fig. 8. Helper making sight on pavement. This sight is secured from the transit and permits lining up of transit without using helper again

ing a nail in its center. The first actual corner of the lot is now located.

A stake is then driven on the lotline at the rear of lot by using the following method. The assistant holds the zero end of tape using



Fig. 16 shows helper being directed by transit man in getting points for lots lines

his plumb bob to hold the tape exactly over the nail in stake at the front of lot. The man doing the measuring runs his tape back to the required distance, which we shall say, for example, is 100 feet. Having reached this distance, a stake is lined up with the transit and driven into the ground. A nail is placed, as before, and one lot-line is now staked out. This procedure is followed on the other three lot-lines, a check being made between the rear stakes to make sure they coincide with the measurement of the distance between stakes at front of lot. It is also well to check between the front stakes.

It will not be out of place here to again caution the reader to use extreme care in making and locating any marks, for on the accuracy of these much depends. Even a distance of one inch has been the cause of considerable expensive litigation.

The front line of a lot in many cases is at a slightly greater or less angle than 90 degrees with the side lines, and when this occurs great care should be taken in laying out foundations. Mechanics naturally try to get things square, and in most cases to avoid errors it is wise to work from the side lines rather than front lines of a lot.

Builders should make certain when cutting cross marks on pavement, curb, etc., that such marks are cut deeply and accurately. It should be remembered that these cuts are to be used for future reference, and if not properly made will wear down, especially if the street is one that is used by a great many people. The continual walking on the cuts would naturally eventually wear them away, until at some later date the builder would find it necessary to relocate his marks, and, being unable to do so, would have to remeasure the distances again and cut new marks into the pavement.

Our next article will explain the use of the level and level rods and will show the importance of the use of these instruments to builders.

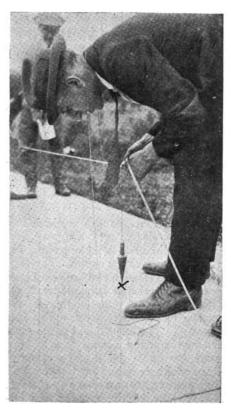


Fig. 9 shows method of measuring between points, using a plumb bob and steel tape. Note cross under plumb bob

SHOPWORK and FURNITURE

Designs for the Finish Man



And Now the Built-In Piano

By C. G. RIEMER

BUILT-IN furniture has so firmly established itself in the goodwill of home builders and owners everywhere that the built-in piano is certain to meet with immediate success. This piano is the idea of Malcolm M. MacDonald of Tacoma, Washington, who has applied for patents thoroughly covering this feature.

"This" Mr. MacDonald remarked in its, course of a conversation, "is assentially an age of built-in features. The demand for small bungalows and small apartments is constantly growing; and, this being the case, built-in features are coming into their own because they do away with cumbersome pieces of furniture which take up floor space."

There is no one investment which the builder or buyer can make which will contribute in larger measure to the pleasure of the home than a piano, but the price of a good piano has, in a large number of cases, been an insurmountable obstacle. Lack of floor space has been another. Expense of upkeep still another.

The built-in piano overcomes all these obstacles. Very little space is occupied because it is built into the wall. The costly casework is done away with because the built-in piano is encased with the same material and finished in the same colors as the woodwork of the room in which it is installed. The mechanism is the same as the ordinary piano, but is high grade both in material and workmanship, which is not always true of all the instruments now on the market. The quality of the tone is wonderfully improved because all surplus vibration is eliminated by making the

piano fast in the wall. Any one who operates a typewriter and has noted the difference in the vibration and the consequent clatter when the machine is placed on a light, cheaply constructed table after having been operated on a solid, substantially built desk, will get some idea of the improvement in tone of a piano fastened into the wall. Another advantage is the music cabinets which are built into the piano on both sides of the pedals.

Mr. MacDonald has been experimenting with the built-in piano for some time and in a desire to see just how much the tone would be improved by making the piano stationary he used the mechanism of a moderate-priced piano which had been in his own home for a number of years and built it into the wall.

The life of the ordinary piano is equal to the life of a house. Making a piano a part of the house does away with the expensive and burdensome moving of pianos.

Many families long to own a piane but do not feel that they can afford the expense, and for this reason millions of children have, in the past, been deprived of the pleasure and the elevating influence of music.

There is no doubt that Mr. Mac-Donald's plan will revolutionize the piano industry. In the future people buying or building will look upon this feature as a real necessity. The field for distribution is unlimited and it has been predicted that the built-in piano will come to fill the same need in the average American home that the kitchen cabinet, refrigerator, etc.





BUSINESS GETTING METHODS

Ideas that have worked for others

If I Were a Contractor

How I Would Go About Creating Jobs Right in My Own Neighborhood

By FRANK T. PHILLIPS

F I were a contractor, or if I were a lumberman, or if I were a doctor or a lawyer, I would or I wouldn't do so and so, to run my business and run it right. How many times we all hear this buzz in our ears from many sources about running our business, sometimes directly but more often indirectly. We would profit, and many times a man has profited by turning a willing ear, and giving a little thought to these I would, or wouldn'ts.

The "I woulds" or "I wouldn'ts," in all probability something good can be sifted from them. That has been my experience at least, in my line, the sash, door and millwork business, and are there men in any business that come in closer touch with the building contractor than the millwork men?

The contractor, lumber and millmen should cultivate and practice the greatest spirit of co-operation. Each can save the other much time, worry and in many cases money. A lack of co-operation may cause each other much worry and expense.

So it has been my experience that a lumber dealer, particularly in the millwork branch, should make the greatest effort in every case to acquire the intimate business acquaintance of the contractor, and then to cultivate the acquaintance along the lines of a perfect understanding of his requirements and to the extent he expects you to fulfill them.

With this end in view the first and maybe the most important thing to be considered is the making up of a complete material list, too much time cannot be spent in checking lists with your dealer, the lumber list with your carpenter list, and the millwork list with plans; this is the first thing to be done. So it will be the first "I would do" which we will discuss.

If I were a contractor I would demand from my lumber and millwork men that he spend the time with me to check from the beginning item for item the material list he is to furnish me that I may come to a positively distinct understanding as to what I am to get and what he is expected to furnish me with.

I, being the contractor, if my lumberman or millwork man hesitated giving me that time and information or was inclined to hurriedly check some item I'd get suspicious and check that item to my satisfaction and take the time I thought necessary or take the bill to his competitor.

Promises made by many salesman to get your name on the dotted line, hurried checking, or talk of blanket bid won't get you very far when you find your self short of a few roof boards or a thousand shingles or a window frame when you are all ready to start siding the house!

Check your lists; be sure you have enough of the different materials to complete the job; have a

perfect understanding as to grades, etc.; better take the time to look over the stock and see what you are getting, then you will have no worry and will have no trouble demanding what you have coming.

If you must have extras you will be the one that will get the best price and service because the relations between you and the dealer are the very best, and he will be too anxious to hold your trade to neglect giving you the best in goods and service.

By taking these precautions at the beginning you are making friends and money, which means more business and, consequently, more profit and satisfaction to you.

WOULD buy my lumber where I could depend on getting what I wanted when I wanted it and delivery made where I wanted it. These are the first and, I think, maybe the most important suggestions I have to make as to what I would do if I were a contractor—there are some others.

I would, if I were a contractor, and many do in the dull season of the year, make a thorough canvass of roofs in my town to find those that needed repair or new roofs. I would then solicit the job of attending to that roof.

If I were a contractor I would make a schedule (get your lumber man to help you, make him work in his idle time, and right here I wish to tell you that there is no fellow will get into mischief quicker if idle, so he should be kept busy).

Also have the total cost per square or square foot of all materials and labor for a finished hardwood floor; have these with you and, maybe, when you go into the house that needs the new roof you can interest them in a new floor.

IF I were a contractor I would make the acquaintance and be prepared to give suggestions and estimates on remodeling jobs, suggestions as to stuccoing old houses, maybe putting on lookouts or cornice brackets, nice stucco mould around windows, a wood belt course around house, across gables, or a sill course panel strips planted on to form stucco panels. Such suggestions don't mean a great outlay of money.

Maybe the now plain windows could have the top sash cut in small lights without great expense and would completely change the appearance of the house. Suggestions of also changing the front

entrance by cutting the light in the front door larger or cutting to match windows.

IF I were a contractor I would keep in touch with parties who make a business of properly financing new building prospects; many prospects fall flat because the prospective builder cannot get the proper financial assistance.

Many a prospective home builder is driven back to the rent receipt coupon by stinging figures from some grafting, unreasonable money lender.

Many a project is killed because the prospect cannot obtain the proper advice on the undertaking, more heads of homes are anxious to become home owners than we know, to get away from that rent tax, and would build homes of their own if they only knew just how easy it was to get that home of their heart's desire, and it is up to the contractors to act as first and leading man in educating our home lovers on this point.

The lumber and material men of the country are fast equipping themselves and educating their forces along the lines of enlightening the prospective home owner in this respect.

If I were a contractor I would hunt up these prospects, get a line on these rent payers in your town, have a talk with the head of the house or better still get the lady of the house, then get the assistance of your home lumber dealer and architect, they will all be glad to work tirelessly with you, get the proper financial backing to work with and you will find yourself with plenty of good business and be doing your part in making the good old U. S. A. a country of home owners.

THERE are many other things we might discuss. We all should exchange ideas more, this is an age of uniting forces, we are all striving for the same end, let us all give a willing ear to suggestions from outsiders, let us get together and really CO-OPERATE.

Heartwood, as a rule, is more durable than sapwood in damp locations and less subject to attack by stain and mold-producing fungi. It usually is colored and therefore considered more ornamental than the white sapwood, except in a few cases; in yellow pine interior finish and maple flooring, for example, the white sapwood is preferred. Heartwood is less permeable to liquid and therefore more suitable for tight cooperage, tanks, and conduits; and it responds more slowly to changes in atmospheric humidity, which often is of advantage when uncoated wood is exposed for a relatively short time to a different The heartwood of humidity. some species contains more valuable extractable materials, such as tannin and dyes, than does the sapwood.

Sapwood, as a rule, takes preservative treatment better than heartwood. It seasons faster, but when green usually contains a larger percentage of moisture, which often makes it heavier. Because sapwood is the outer portion of the tree it contains fewer common defects, such as knots. shakes, and pitch streaks.

Differences Between Heartwood and Sapwood

SAPWOOD is the outer light-colored portion of a tree trunk through which the water passes from the roots to the leaves, and in which excess food is stored temporarily. Heartwood is the central core of the trunk. In most woods the heartwood can be distinguished from the sapwood by its darker color. But in hemlock, aspen, cottonwood, some beeches, all spruces except Sitka spruce, basswood, holly, hackberry, tupelo gum, and the true firs (not Douglas fir), there is very little difference in the color of the heartwood and the sapwood.

As new sap is formed on the outside of the tree trunk, the inner sapwood changes to heartwood. During this change the living cells die; the pores of some woods become plugged up with a froth-like growth, known as "tyloses"; and the cell walls, and in some species the cell cavities, become infiltrated with various

substances, some of which darken the wood. These infiltrations do not add appreciably to the weight of the wood, except in species like ebony and rosewood in which the pores become filled with deposits.

In over 500,000 tests which have been made by the Forest Products Laboratory, Madison, Wisconsin, on the various species of woods grown in the United States, no effect upon the mechanical properties of the wood due to its change from sapwood into heartwood has ever been noticed. The heartwood of oak, pine, and other structural timbers is not intrinsically stronger than the sapwood, as has often been supposed to be the case; nor is the sapwood of hickory and ash intrinsically stronger than the heartwood, as is sometimes claimed in connection with handle stock.

The essential differences between heartwood and softwood are as follows:

OFFICE and JOB MANAGEMENT

Things the other man has found out that save money



Success in Estimating

How to Prepare Unit Cost Data for Your Own Jobs Short Cut Methods That Are Reliable

By J. P. HICKS

ESTIMATING the labor for carpenter work seems to be where many fail and only a few meet with success. Carpenter labor is so varied in different kinds of work and the difference in the speed and ability of the workmen makes the matter so complicated that it cannot be "lumped off" by the square yard and cubic foot like plastering, painting and cement work.

On plastering, painting and cement work all the contractor has to do is to make a price per yard or cubic foot, as the case may be. As to material it is definitely known to a very small margin just how much material will be required per 100 yards or per cubic foot; consequently contractors on such work have no trouble in arriving at reliable estimates.

With carpenter labor it is vastly different and the estimator runs up against all manner of complications in the many different kinds of work upon which he has to figure. There is the floor framing, rough floor, finish floor, side wall framing, sheathing, siding, roof framing, sheathing, roofing, partition framing, ceiling framing, cornices, porches, steps, window and door casings, base, picture mold and an almost endless variety of different kinds of work, each to be figured at a different price.

The very nature of the work makes it next to impossible to

make anything like an accurate estimate by any kind of a lump system. Since there are so many kinds of work in the line of carpentry there seems to be only one logical thing to do, and that is to classify the work under different headings or divisions, find the average day's work for each kind and make a price accordingly.

All kinds of carpenter labor can be classed under one or the other of the following headings: By the square, meaning 100 square feet, by the lineal foot, meaning line measure; and by the piece, such as window frames, door frames, etc.

THESE three headings will readily accommodate all the different kinds of work, but the average day's work must be known beyond a doubt before a safe price can be worked out for the different kinds of work that a carpenter must figure on when he makes an estimate.

It will not do to figure from the record of the high speed workman for the contractor is sure to have men on the job who will fali far below the average of the speedy man. Where you find one man who is speedy and good you will find two or three who can't keep their end up or won't; mostly it is because they can't, as they are lacking in the skill necessary to accomplish a good day's work.

These men may work as hard as the other fellow, but they don't

get there with the goods and it is mostly because they do not know how to do work in a way to acquire some speed about it. It is not always the case that a speedy man does not do his work right.

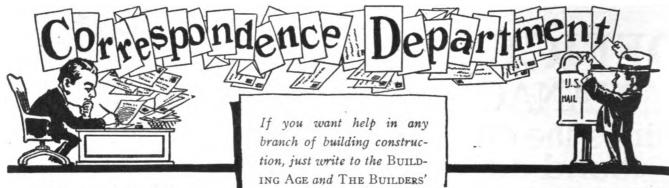
Personally, I know of cases where one man would do a piece of work in one hour and do it better than another man who took one hour and 45 minutes to do exactly the same work.

The only way a contractor can be safe is to figure on a basis of an average day's work and have the men who can make the average. He should also have a reasonable margin to go on, for close figures on a job cannot always be depended upon to work out, and it is the contractor who gets left every time.

What the estimator is up against is this: One man may case up 8 doors a day, while another man, as likely as not, may not case up only four doors in a day. This is a thing that happens every once in awhile.

WE have personally seen one man spend 1 hour and 45 minutes putting on one common inside mortise lock on a door, while another man put the same kind of a lock on the same kind of a door in 45 minutes. At 80 cents an hour it cost \$1.40 to put on one lock, while the other cost only 64 cents, less than half the cost of the former.

(To be continued)



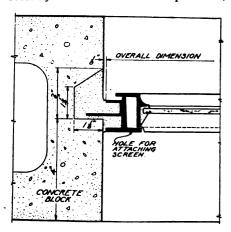
Concrete Block for Steel Sash

CONTRACTORS and builders will welcome a new concrete block recently put on the market because it readily works in with steel basement window installations. These blocks are similar to the more common ones except that one end has a slot instead of the customary concave end. When putting a concrete block basement wall secure enough of these blocks for use at the jambs of the windows.

Either a 2-light, 14"x20" glass or a 3-light, 12"x18" glass window will work in nicely with these blocks. The former, on a 1¼" sill, is 3 blocks high and 2 blocks wide. The other with a 4" sill is 3 blocks high and 2½ blocks wide. In both cases ½" motar joints are used. Windows with channel frame construction all around, and fin at jamb construction, are recommended because of the ease with which they may be installed. This type of window will stand up on the sill without bracing.

In laying up the wall be sure to place the blocks so that the perpendicular side of the slot is towards the outside of the wall. When the wall is up sill high set the window on wood blocks, for the desired sill height, in a bed of mortar. Then lay the blocks up against the frame so that the extending outside channel leg sets against the end of the block with the extending fin resting in the slot, as shown in the detail.

When the blocks are laid up grout in securely from the inside and point off,



branch of building construction, just write to the Builders'
Ing Age and The Builders'
Journal Correspondence
Department. We will be glad
to answer all your questions
without charge.

All readers are invited to discuss the questions and answers published.

using the inside channel leg as a guide. This will prevent grouting so close to the ventilator as to bind it. You will notice that by grouting in on the inside a clean joint between the frame of the window and the wall at the jamb will be secured on the outside of the window. Then lay up the sill and trowel off to form a drip.

By filling the channel frame at the head with mortar before laying the bond timber a complete weather-tight job will be secured.—N. A. Harris.

How to Make Concrete Walls Attractive

T HICK pieces of broken glass may be successfully used for ornamenting poured concrete walls where gravel is not obtainable. Heavy bottles of different colors may be broken in pieces and laid against the outside forms when the concrete is being poured, care being taken to lay the oval side of the glass next to the forms, so the inverted and sharp edges of the glass will be covered with the concrete. If several different colors of glass are used the different colors may be scattered at random, leaving the artistic effect very attractive.

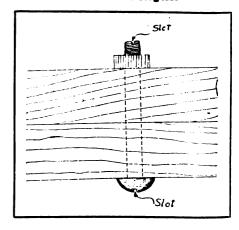
In laying concrete block walls where beauty is desired as well as strength and durability, the thought to keep in mind is: "How can I keep monotony from ruining the architectural effects of these walls?" There may be many ways to overcome this effect in concrete block walls, but here is one way that has proved successful: First, use at least two different patterns of blocks, for example, the smooth face and the rock faced, laying two or three courses of each style in combination.

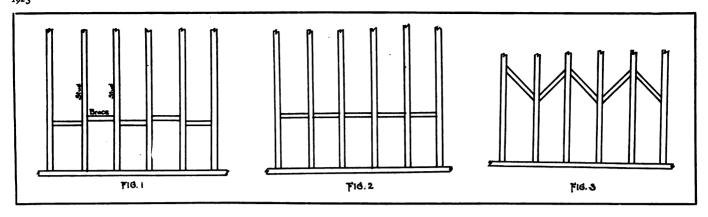
Then there are the corners and the pilasters which play a large part in the artistic features of a concrete block building. If the blocks in these corners are made just twice the size of the blocks in the walls the effects will be pleasing.

Then there are several different ways of coloring concrete blocks which naturally make them more attractive. To obtain a light sandstone effect hydrated lime is used in the concrete during the making of the blocks. There are also several different shades of mortar color which may be successfully used in changing the drab color of common concrete. But where it is desired to obtain a natural stone effect with concrete blocks their exposed surfaces should be chiseled or scarfed before laying. This does away with the symmetry or moulded effect which is so characteristic with concrete blocks.-B. F. Clark.

Removing Nuts From Bolts That Turn

THERE are few people who have not sometime in their lives tried to take nuts off of bolts that turned, with no possible way to hold the bolt. Such a situation is annoying, but is easily overcome. A very simple way is shown by the illustration. With a hack saw cut a slot into the end of the bolt or on the round head, if the head is approachable. Then place the point of a screwdriver into the slot, and with it the bolt can be held, while the nut is being removed with a wrench.—H. H. Siegele.



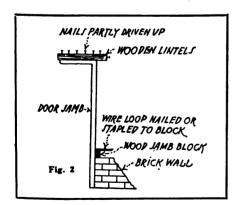


Frame Construction

IN frame wall construction, studs are frequently stiffened by the use of horizontal braces, as shown in figures 2 and 3 respectively. As it is easier to get at the nailing surfaces of the braces by placing them in the position shown in figure 1, considerable time and labor can be saved. Obviously, the result is equally as good.—Albert Korte.

How to Fasten Door and Window Frames

ORDINARY wooden jamb blocks will absorb enough moisture from the mortar to swell it to the extent that when the mortar sets the block will shrink and leave it loose. This is the reason that door and window frames in many brick buildings "get loose." The majority of carpenters also use wooden jamb blocks to nail their partition studding to. And this is the reason that so many corners crack in plastered walls in brick buildings.



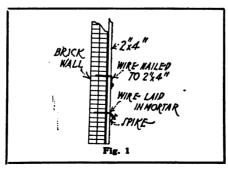
The next time you put up a brick building try the following little scheme in fastening your door and window frames, your partition studs, and base and picture mould to the brick walls, and see how fine and dandy it works:

The first thing after your sub-floor is laid, lay off all of your partitions. Then before the masons start to laying brick make a lot of wire loops, as shown in Figure 5 in the drawings accompanying this article, using No. 9

galvanized wire for the purpose. Then as the masons are laying the walls place the large ends of these wire loops in the mortar joints, as shown in Figure 5. These wires may be put as close together as required, about two feet apart is generally sufficient. Then when you go to set your partitions set a straight studding against the brick wall, where the line of the partition intersects the wall, and make a pencil mark on studding on a line with the wire loops. Then draw a plumb line up and down the wall, and measure the distance from the line to the wire. Measure this distance across the stud on a line with the wire and bore a half inch hole through the stud. Then slip the wire through the loop, and bend wire down on an angle of about forty-five degrees, and then slip a twenty-penny nail through the small loop in the wire, holding the nail in an angle, and drive it into the two-by-four.

In order to have something to nail casings to it is necessary to use jamb blocks around door frames in a brick building. But these wooden blocks can be made to hold very satisfactorily by stapling a wire loop to them, and letting the loop run back into the mortar joint.

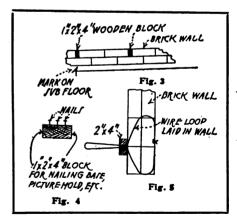
It is not necessary to use jamb blocks around window frames, if the lengths are properly made. In making wooden lintels, drive a lot of nails in them, leaving the heads stick up as shown in Figure 2. When the mortar sets around



these nails, the lintel will never move. By putting blocks between the head jamb of the window casing and the lintel and nailing the jamb through them you can secure a good strong job. In order to have something to nail the aprons to it is necessary to use a two-by-four under the sub-sill of the window, on the inside. Drive nails into this two-by-four, as you do in the lintel, leaving the ends project out under the brickwork, same as linter, and you will have a first class job.

In putting down base, picture mould, and chair rail many carpenters use little thin wedges driven into the mortar joints for bearings to nail to. This is not only a slow job, but as such wedges are bound to be thin, they cannot hold well.

If you want to save time and have a good, substantial job in your finishing work on a brick building, just make a lot of one-by-two-by-four blocks, driving small nails into them, as shown in Figure 4, and as the masons are laying the brick have them put in one of these blocks between every other brick. Then before the plastering is put on make a mark on the sub-floor beneath these



blocks, so they can be easily found after the plastering is on.

You will find these blocks the very thing when nailing picture mould, chair rail and other woodwork to also, using them between every other brick, or as often as you desire. But of course in using these blocks for picture mould bearings it will be necessary for you to make a detail of each room before the plastering is on, showing how far the first block is from the corner of each room.—B. F. Clark.

UITE often one of your customers will see a design of a house that just exactly suits; at least, that is what they say, only

they want certain changes. Perhaps one of the

easiest is having the plan reversed, while another case is to alter the exterior to meet the required

A very interesting example of this is shown

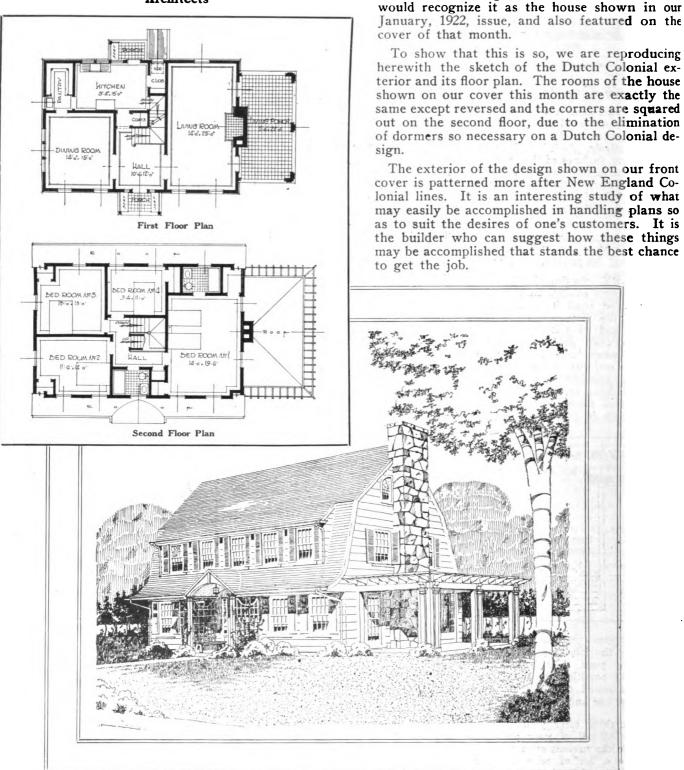
on our cover design this month. Few, indeed,

taste, and sometimes it is both.

Changing Plans

How the House Shown On Our Cover Was Built from Plans Specially Prepared for Building Age

By R. C. HUNTER & BRO.
Architects



What the Editor Thinks

Continuity of Employment

I T is still early, some may think, to be bothered much about work this winter, but now is the time to lay your plans so as to keep work going during the cold weather. There is no problem before builders that is of such importance as to properly lay out their work so that something can be done twelve months of the year.

Workmen like continuous employment. There is nothing kills business so much as having good workmen go away to find a job. When you solve the problem of twelve months' work a year, a large proportion of your labor troubles will be eliminated.

This is a subject that should receive serious attention at every meeting of builders. There is surely some way to solve this problem and get away from the feast and famine arrangement in force at present.

Efficient Labor Management

NE of the most important things for a contractor to look after is proper co-ordination of his work. In other words, proper labor management. Get your materials on the job and have them so laid out that everything will take its proper course without the necessity of having mechanics to wait for material.

One may spend quite an amount on efficient machines and other time saving equipment, but if you do not use these at the right time your expensive labor is idle.

A good deal of real building work can be done right at your own desk—making out a list of work and charting your operations so that there is no time lost either with labor, materials or equipment. All must be kept moving for the greatest economy.

Tombs of Our Presidents

THE death of President Harding has revived the desire for a proper and fitting burial place for our presidents, something along the lines of the famous Westminster Abbey in London, England.

Westminster Abbey, as everyone knows, is the burial place of thirteen kings of England and five queens in their own right, as well as many queens-consort. Nearly all the kings and queens have been crowned there. The Abbey, beside, contains many memorials of distinguished Englishmen.

Why can we not have an imposing building, say, in Washington, around the Washington Monument, or at Arlington Cemetery, across the Potomac? The imposing structure to be so designed that uniform additions can be built, say, every fifty or one hundred years to enshrine the bodies of our presidents and their wives. Each to have a small chapel as their last resting places. Such a shrine would be appreciated by future Americans in centuries to come just as Westminster is cherished today in England.

In cases where it would not be possible to remove the remains of our dead presidents to this new memorial hall, the same space could be dedicated to the housing of different relics relating to them,

—a sort of memorial hall.

There have been many illustrious presidents of the United States and future problems will bring forth many others who will have to guide our "Ship of State" in its proper destiny, and they all should have a fitting resting place so that our citizens in ages to come will gratefully look back on the people of the present generation for their considerate thought for those of the future.

Then, also, consider what a monument such an imposing structure will be to the building crafts of America!

Advertising Building Products

I N the advertising pages of Building Age and other technical magazines manufacturers call attention to their products and appliances for making building construction better and more economical. Today all these are centered on the idea of eliminating labor as much as possible.

We have really made more progress in the last twenty-five years than perhaps in any known period of the building industry, but still we are far behind what we should accomplish.

In a very interesting article in this issue is the story of how the owner of a house selected different things advertised in Building Age to build his "servantless cottage."

Trade journals of today serve their readers in many ways and in none so important as giving space to the advertising of different products and processes. Builders should be acquainted with everything that manufacturers have to offer, so that they can avail themselves at any time of what may be used to the best advantage.

Training

of Foremen

THERE has been lots of discussion pro and con about training of "apprentices" so as to get additional men in the building industries. But let us not forget a really more important thing, and that is the proper training of our foremen.

The foreman is the man who is directly responsible for the good work performed by his gang. Let us tell him, then, the best way to get work from his men.

It must be remembered that the foreman stands between the contractor and men. He knows the troubles of his men and the troubles of his boss. A keen, intelligent foreman is a great asset to the building contractor.

Review of the Building Situation

B UILDING statistics for July just published by the F. W. Dodge Corporation show that the volume of contracts a warded during July amounted to \$315,024,200. This was a decrease over June of 15% and over July, 1922, of 22%. However, the July total was about equal to the average July figures for the past four years.

Construction for the first seven months of this year in the section on which our report covers shows an increase over the corresponding period of 1922 of 4%.

Residential buildings continue to lead all other classes, 39% of the

entire amount being for this type of construction. 21% of the entire amount was for public works and utilities, 13% for business buildings, 10% for educational buildings and 8% for industrial buildings.

In the New York district, residential building shows a slight decrease for June, due to the over-expanded program of the past few months. The total for July was \$83,770,200, a decrease of 2% from June but an increase of 8% over July, 1922.

The Central West shows a decrease over June of 35% and over July of last year 45%. While the Northwest shows a decline of 44%

under June figures, the total of contracts awarded shows an increase of 16% over that of July, 1922.

The volume of money spent for new homes is still greatest in the East, despite the slight falling off in percentage over June figures. In this section, residential construction contracts were awarded in July amounting to \$64,000,000 for the three Eastern districts. Residential projects contemplated amounting to \$98,790,000 show an increase and prove that there will be no falling off in this class of construction in the Northeastern districts.

Record of July, 1923, Building Contracts Awarded

. Classification of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$4,427,900	\$13,794,900	\$4,317,700	\$3,370,200	\$8,651,400	\$705,300	\$5,607,700	\$40,875,100
Educational Buildings	2,814,400	10,743,400	1,741,900	4,339,000	7,237,400	635,700	3,932,800	31,444,600
Hospitals and Institutions	1,201,200	368,700	285,700	582,000	961,000	1,552,000	532,000	5,482,600
Industrial Buildings	1,782,100	5,779,500	2,896,200	5,141,000	5,490,200	108,000	4,822,300	26,019,300
Military & Naval Buildings		10,000			153,900		6,000	169,900
Public Buildings	301,200	146,100	68,000	396,800	306,500	29,500	365,000	1,613,100
Public Works and Public		Ť	•	·	·	•	ŕ	
Utilities	3,275,000	4,794,000	4,706,600	20,709,800	19,608,600	2,613,800	9.451.300	65.159.100
Religious and Memorial		., . ,	• •				, , , , , , , , , , , , , , , , , , , ,	,,
Buildings	619,500	1,617,000	423,700	2,182,500	1,320,000	229,000	964,500	7.356.200
Residential Buildings		45,193,100	8,959,700	14,592,200	27,037,300	3,028,700	13,032,400	124,170,700
Social and Recreational			, ,	, ,	• •	• •	• • • • • • • • • • • • • • • • • • • •	
Buildings	311,000	1,323,500	198,000	673,900 ⁻	7,850,500	291,600	2,085,100	12,733,600
Total	\$27,059,600	\$83,770,200	\$23,597,500	\$51,987,400	\$78.616,800	\$9,193,600	\$40,799,100	\$315,024,200

Building Projects Contemplated, July, 1923

Classification of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$4,663,700	\$53,733,200	\$5,380,100	\$5,658,000	\$18,652,900	\$546,700	\$6,312,200	\$94,946,800
Educational Buildings	1,064,400	6,889,700	2,981,000	6,506,500	12,516,500	<i>7</i> 99,700	4,499,700	35,257,500
Hospitals and Institutions	1,697,600	1,542,000	1,485,000	1,926,000	4,052,000	185,000	3,694,000	14,581,600
Industrial Buildings	2,393,000	54,567,500	9,055,500	9,542,000	15,180,200	146,000	6,728,300	97,612,500
Military & Naval Buildings		43,500	25,000	8,000	145,000			221,500
Public Buildings	181,000	729,000	138,000	423,500	1,284,000	223,000	1.047.000	4,025,500
Public Works and Public		, , , , , , , , , , , , , , , , , , , ,		•		•	, ,	
Utilities	7,162,200	12,823,500	6,849,000	66,992,600	54,037,000	2,570,100	22,844,500	173,278,900
Religious and Memorial		,,	-, ,		. ,,,	_,	,,	
Buildings	678,000	1,270,000	1.384,700	1.312.500	4,489,000	279,500	2,310,500	11,724,200
Residential Buildings	16.198,800	67,668,000	14,924,900	16,677,700	49,986,500	4,534,500	15,802,900	185,793,300
Social and Recreational		0,,000,000	- 1,5 - 1,5 - 0	20,000,00	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,00.,000	,,	2004 20,000
- · · · · ·	2,062,500	2,956,000	1,749,000	1,294,000	6,059,500	78,600	3.028.800	17,228,400
Buildings	2,002,000	2,750,000	1,. 15,000					
Total	\$36,101,200	\$202,222,400	\$43,972,200	\$110,340,800	\$166,402,600	\$9,363,100	\$66,267,900	\$634,670,200

"Big 4"

National

Door Hangers



10 Reasons for Its Choice

- 1.—The "Big 4" Hanger is built on extremely heavy lines, and in the simplest form of construction
- 2.—It is made entirely of steel
- 3.—Anti-friction-steel roller bearings give a perfectly free motion to the door
- 4.—It is both a rigid and a flexible Hanger
- 5.—Easy to attach—fastened to but one side of the door
- 6.-Door is held closer to the track than with other Hangers
- 7.—Axle has a shoulder on the end to prevent wheel-housing from being pressed together and binding on hub of wheel
- 8. Axles and rivets are sherardized to prevent rust
- 9—Wheel and frame are japanned before assembling and wheel reamed out after japanning—no japan in the bearings
- 10.—The two studs, together with the hook turned under the rail, absolutely prevent Hanger from jumping the track

Braced Rail a Fit Mate

- -because brackets are same width and thickness as the Rail itself
- -it is braced below so the screws will hold more than three times as much
- —holes are staggered so screws will not go into the same grain of wood
- -brackets are only 12 inches apart and double-riveted, giving rigidity
- -millions of feet are in use

Every heavy door you hang that slides along the rail as if it were greased—is an advertisement for you.

It is the moving parts of a building by which people judge the entire job.

See full description of "Big 4" and Braced Rail in the catalog.

Sent free.



NATIONAL MANUFACTURING COMPANY
STERLING ILLINOIS



PAINTING

Practical Points of Interest to the Builder

A Few Useful Notes on Finishing Interior Woodwork

By A. ASHMUN KELLY

I F a room is to be finished in white pine, and the wood is to be left in its natural color, which is the best way, care should be taken to prevent any oil or grease getting on it, nor should any of the so-called fillers be used, as they also stain the wood, and, as far as white pine is concerned, do no good.

The original freshness and beauty of this wood can only be preserved by first finishing the woodwork with a plane very fine set, and by avoiding the least plane marks. Then when the wood has been properly prepared and cleaned, the smoothing having been done without using an abrasive material, like sandpaper, it should have a coat of pure white shellac, the alcoholic solution.

After this has dried it should be rubbed down, sandpaper of fine texture being used, and be brushed off clean of dust, when it should have two or more coats of light colored copal varnish. These coats should be rubbed down smooth, finishing with an unrubbed coat of light copal varnish.

The more varnish you apply the greater the apparent depth of effect, but at the same time the color is increasing, hence the fewer coats of varnish the lighter the finish. It is the same when treating maple wood. A cheaper finish would do with just two coats of white shellac, both coats to be sandpapered smooth.

White pine thus finished will afford a very handsome effect, and while it will not preserve its first clear light color, time will not fail to enhance its attractiveness by giving it a mellow glow that no hand-work can ever supply.

To secure a light finish on any light colored wood it is advised to apply a coat of shellac first of all, for this will preserve the natural color of the wood better than anything else, besides making a foundation for the following coats of varnish.

WHITE or bleached shellac should, of course, be used, the dark or orange colored shellac being unsuitable. It does so well in giving a foundation that you do not need to apply any other filler, that known as liquid filler being generally used for wood of this character.

Close-grained woods, like white and yellow pine, holly and maple, do not need filling, save as shellac fills it. Still, it is customary for some finishes to paste-fill such woods, the idea being that there are soft parts in all such woods or certainly in pine, and hence the filler fills the sappy or soft places, and levels them up with the surrounding harder or firmer parts. This is very true, too.

Some object to using shellac on any bare woods, except it be hard pine, they claiming that if oil varnish be used on it the varnish will scale off. Shellac is the hardest gum varnish we have, and oil varnish does not take too kindly to it; yet with care, such as sand-papering to form a tooth for the oil varnish, a good result may be expected.

However, in order to maintain a clear light color in a white wood there is nothing that can take the place of white shellac. There is no oil in it, and, of course, no grease. It dries out leaving simply the original purified shellac. Also, it dries quickly, thus removing it from the danger of injury that is always present with undry finishes. And its surface is so hard that the oil or turpentine from the oil varnish has no chance for penetrating and injuring the finish.

Those country contracting painters who have been used to finishing houses in white pine or like soft woods, have some difficulty in forming a proper estimate of the labor required in finishing hardwoods.

I T is safe to say that the cost of doing a room in cherry, black birch or white ash is easily double what it is for doing a white pine finish. Black ash or elm finish takes about double the time to do that is required for white pine finish, done with paint, or even with varnish finish. Oak, red and white, costs rather more to finish than cherry or black birch.



FREE Offer to Contractors

Fill out and mail the attached coupon for a pint of Johnson's Floor Varnish free and all charges prepaid. There is no obligation whatever connected with this offer. All we ask you to do is test it out in comparison with the brand you are at present using.

P	JOHNSON & SON, Dept. B.A9. RACINE, WIS. ase send me free, all charges prepaid, one pint of Johnson's Varnish. I will test it and report results to you.	
	Name	
	Address	
	City and State	

I Buy Varnish from.....(Enclose Your Business Card)

JOHNSON'S FLOOR VARNISH

You know Johnson's Floor Wax—it's used all over the civilized world for polishing hard and soft wood floors. We want you to know Johnson's Floor Varnish, too. Our Varnish is just as good as our Wax. Johnson's Floor Varnish is easy to apply and has good body. It dries free from dust in two hours, and hard over night—gives a beautiful, high gloss which will not chip, check, mar, blister or scratch white—has great elasticity—is very pale in color—and waterproof. Johnson's Floor Varnish is a splendid all-purpose varnish. Use it not only for floors, but for trim and furniture. May be rubbed if desired.

"Made to Walk On"

Johnson's Floor Varnish is tough, elastic and durable. It gives a beautiful, high gloss which will not chip, check, mar, blister or scratch white. It is very pale in color so can be used on the lightest floors and linoleums.



Dries Hard Over Night

Johnson's Floor Varnish dries free from dust in two hours and hard over night. It imparts a beautiful, high lustre—has good body—will give long wear—is absolutely water proof—and 'will stand all reasonable tests.

Lumber cut from the butt logs of black birch is a very handsome wood; it is strong and durable, and takes a fine polish. Neither cherry nor mahogany takes a better polish. For newels and hand-rails, also for balusters, it is thought by many to be superior to walnut; it is much stronger, works better in the lathe, and is less apt to chip under the carver's tools.

If not quartered when sawn it has the fault of warping, and it will be affected more or less by atmospheric changes; but on fixed work this may easily be prevented by proper fastenings, and in free work, such as doors, sashes, Venetian blinds, etc., quartered stuff should be used, or the doors and sashes should be built up with the grain reversed, which will prevent warping and twisting.

This latter method is rather expensive, but it insures lasting work and satisfactory also in all ways. But when economy is a factor, then quartered stuff worked solid does very well.

The working of hardwood of any kind requires more exact workmanship than the working of pine or other soft woods, and these items alone entail extra cost. Where hardwoods are to be finished in the natural, great care should be taken to avoid stains, consequently it is better to put on no finish until the plasterers are done, for a lime stain on cherry or birch cannot be removed nor overcome by subsequent staining, unless with a darker stain.

In the absence of birch or cherry, red beech makes a very handsome finish; in fact, beech possesses some attractive features that no other wood has, and when quartered and properly finished has a metallic sheen that is charming and unique.

Let Us Have Training Schools for Building Mechanics

By JAMES BAIRD

President, George A. Fuller Co., New York

RAINING schools are needed. I may suggest a way in which the necessary schools could be supplied. A committee of public-spirited citizens could raise the necessary funds (the amount needed certainly not exceeding \$500,-000) to secure quarters and instructors competent to train the necessary number of young men much more easily and expeditiously than it was during the war to train a much smaller number of young men as soldiers. Young men can become fairly good working mechanics, in most of the industries, within a six months' period, after which they can be further instructed in the finer details for a period of perhaps two years, and during this time they can also be working producers at good pay.

The fact is so obvious that there is a shortage of trained mechanics in New York that in all probability the unions would not contend against taking trained men into their organization as fast as they are developed. If the unions should refuse, then, of course, the young men that are trained would, of necessity, have to undertake work on their own account, following which the unions would without doubt take them into their organizations immediately.



There is a right way and a wrong way of doing every operation on the building job. Even in the handling of the aggregates for concrete the right method for hand mixing should be used. Training in the right methods of work should be applied even to the common labor on the building job. Better ways of working will cut down costs and the laborers themselves will be able to do more work with less effort

As there is at present work in New York to the extent of, say, \$100,000,000 held up waiting an adequate supply of mechanics, it can readily be seen that an investment of \$500,000 to establish training schools would be money well invested. I would urgently suggest that the situation be considered by a committee.

As to stability of employment at good wages, it is obvious that if an adequate supply of mechanics were continuously available in the City of New York, wages would remain stable, for there would be no unnecessary bidding among the contractors on a "snowballing" basis. Nor would there be the dissatisfaction and inclination to strike among the workers.

So far is the country behind in its building, so rapidly is the country developing and its population increasing, and so great is the volume of new buildings needed to replace worn-out or obsolete buildings that employment would remain continuous indefinitely. The shortage problem can be solved in try developing and its population the very simply way suggested, but unless it is solved the menace not only in the building industry but to all industries will become perpetual.



Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor

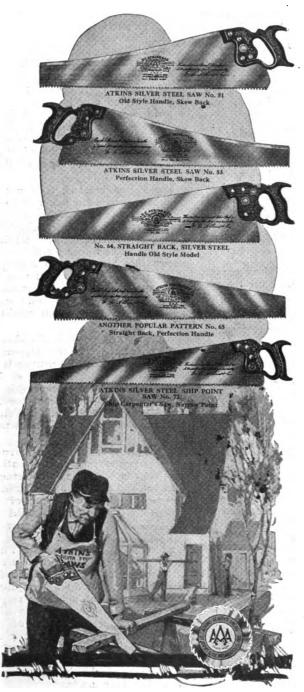
can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

NEW YORK PRICES		PLASTER BOARD— July 30	Aug. 25
LONG LEAF YELLOW PINE—	Aug. 25	32 x 36 x 36 in., Each	\$0.22
B. and Better Edge Grain Flooring, 13/16x21/4" Face 94.00	\$92.00	MAGNESITE STUCCO— Per Ton	***
Dimensions, SISIE, No. 1 Common, 2x4", 10' 44.25	44.25 57.50	TILE—	\$70.00
Timbers, Merchantable, 66, 12x12", 10 to 20	42.50	1 in. Square or Hexagon, White, per sq. ft \$8.25	\$0.25
B. and Better Partition, 14"x314"	61.00	3 x 6 in. White Wall	0.69 0.45
B. and Better Finish, 1x4"	70.50 53.25	V 10 100 1 1	0.40
NORTH CAROLINA PINE-		CHICAGO PRICES	
No. 2 and Better Flooring, 13/16x21/2"\$73.00	\$71.00	YELLOW PINE-	
Roofers, 13/16x5½"	31.50	Boards, 1x8, No. 1 Com	\$40.00
No. 2 Clear and Better V. G. Flooring, 1x3" \$74.50	\$74.50	Dimension No. 1, 2x4, 12 to 14 ft	44.50 34.08
No. 1 Clear V. G. Fleoring, 1x4"	69.50	Drop Siding, 1x6, B. and Btr	54.50
No. 2 Clear and Better Ceiling, 14x4"	48.50	Finish, 1x4, B. and Btr	65.00 88.00
No. 2 Clear and Better Novelty Stding, 1335	65.00 95.25	Lath. 4 ft., No. 1	7.00
WESTERN RED CEDAR-	75.25	Timbers, Long Leaf No. 1, 10-20 ft., S4S, 6x12 to 12x12 56.00	51.00
B. C. Perfection Shingles, per M	\$7.16	HARDWOODS—	
Washington Perfection Shingles, per M	6.48	Maple Flooring, 13/16x234, clear	\$109.00 77.00
Clear Bevel Siding, 1/2x6"	47.50	Oak Flooring, 13/16x2%, Cl. Pl., White 118.50	108.00
No. 1 Lath. 1½"	\$8.38	REDWOOD—	
No. 1 Lath, 1½"	46.00	Bevel Siding, S1S1E, 10 ft., 20 ft., 1/4x4, clear	\$4 7.2 5 94.50
HARDWOOD FLOORING-	****	WESTERN RED CEDAR—	
Clear Quartered White Oak, 13/16x2x234"	\$152.50 121.50	Bevel Siding, 1/2x4 in., Clear	\$53.75 5.01
Clear Plain Red Oak, 13/16x244"	123.50	COMMON BRICK—	3.01
Clear Maple, 13/16x234"	117.60	Per M. f. o. b. job. \$12.00 PORTLAND CEMENT—	\$12.00
(All lumber prices furnished by Lumber)		PORTLAND CEMENT— Bbls. in car lots to contractors, not including con-	
Per M. f. o. b. job	\$25.00	tainers\$2.20	\$2.20
Per M. f. o. b. job	•	STRUCTURAL STEEL—	
Bbls. in car lots to contractors, delivered \$2.90 STRUCTURAL STEEL	\$3.29	Per 100 lbs. at warehouse	\$3,20
Per 100 lb. at warehouse	\$3.54	% in	\$2.75
CRUSHED STONE (cu. yd.)—		1½ in 3.00	2.75
1/2 in	\$2.60 \$2.50	WALL BOARD— Per 1,000 sq. ft. in lots under M	\$40.00
WALL BOARD—	\$ 2.50	Per 1,000 sq. ft. in lots 1 M to 25/2 M	35.00
Per 1,000 sq. ft. in lots under 1,000 sq. ft \$50.00	\$50.00	SAND AND GRAVEL	40.75
Per 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft 45.00	\$45.00	Sand (per cubic yard)	\$2.75 2.75
METAL LATH— 2.3 lb.—26 gauge price per 100 sq. yd. delivered \$0.19	\$0.18	1½ in. Gravel (per cubic yard)	2.75
2.8 lb.—24 gauge light price per 100 sq. yd. delivered. 0.24	\$0.21	er Lotte DDICES	
3.4 lb.—24 gauge heavy price per 100 sq. yd. delivered 0.241/2	0.24	ST. LOUIS PRICES YELLOW PINE—	
Add 5 cents per sq. yd. for galvanized. LIME (Hydrate)—		Roards No 1 Com 1v4	\$38.00
Finishing, per 50 lb. bag	\$0.60	Partition, 34x394, B. and Btr	\$8.00
Masons, per 50 lb, bag	0.49	Partition, 3(x34, B. and Btr	32.50 62.75
Sand (per cubic yard) \$1.90	#1 00	Flooring, B. and Btr., E. G., 1x3	83.50
% in. Gravel (per cubic yard)	\$1.90 2.75	Flooring, B. and Btr., F. G. 1x3	S8.00 6.00
11/2 in. Gravel (per cubic yard) 2.75	2.75	Timbers, No. 1, rough, short leaf, 6x12 to 12x12 in.	0.00
FACE BRICK— Tapestry (delivered)\$48.50	\$48.50	10 to 20 ft	41.50
Harveale (Delivered)	39.00	CALIFORNIA REDWOOD—	
Caledonian (delivered)	40.50	Finish, S2S, Cl., 1x6 in	\$94.50 47.25
Smooth Grey (delivered)	49.00 42.50	8 inch Colonial	78.25
SHINGLES—	72.50	8 inch Bungalow 76.75	76.75
Asphalt, Single (per square) \$7.31	\$7.56	HARDWOODS-	
Aphalt, Strip (per square)	6.65	Oak Flooring, 14x114 and 2 in., Clear Otr. White \$109.50 Maple Flooring, 13/16x234 in., Clear	\$105.00 105.50
16 in. Extra Clear (per square, delivered)	\$11.50	RED CEDAR—	
18 in. Eureka (per square, delivered)	11.50	Siding, ½x6, Clear\$45.90	\$45.90
18 in. Perfection (per square, delivered)	12.50 12.25	Shingles, Clears, Per M	4.21
VITRIFIED SEWER PIPE—		Per M., f. o. b. job\$18.00	\$20.00
4 in. (cents per foot)\$0.12½ 6 in. (cents per foot)	\$0.12½ 0.18½	PORTLAND CEMENT—	
SLATE ROOFING—	0.1072	Bbls. in car lots to contractors, not including containers	\$2.35
Bangor or Slatington, 8x16 in. (per sq. at quarry) \$12.60	\$12.60	STRUCTURAL STEEL—	•
CORNER BEADS (Galvanised)— Per Foot\$0.05	\$0.05	Per 100 lbs. at warehouse\$3.35 CRUSHED STONE (cu. yd.)	\$3.3 5
WALL TIES (Galvanized)—	, 30.05	(ch. ya.)	\$2.18
Per Thousand \$5.00	\$5.00	1½ in 2.18	2.18
FLUE LINING— \$74 m \$16 in. Per Foot	\$0.36	WALL BOARD— Per 1,000 sq. ft. in lots under M	\$55.00
5% x D in Per Foot	0.48	Per 1,000 sq. ft. in lots 1 M to 21/2 M 50.00	50.00
HOLLOW THE	en 221/	SAND AND GRAVEL—	\$1.20
8 m M m M in., heavy. Each, delivered	\$0.223%	Sand (per cubic yard)	1.45
Per Bushel	\$0.60	11/2 in. Gravel (per cubic yard) 1.45	1.45

AITINIS SILVERSAWS



There is no substitute for the tested quality of Atkins Silver Steel Saws. We manufacture a complete line of them and they represent the highest standards of

QUALITY—WORKMANSHIP —and UTILITY

Every master carpenter knows the service, value and reputation back of Atkins Saws. Leading hardware dealers sell them with a guarantee that protects the user.

Our trained and skilled workmen leave nothing undone that should be done to make Atkins products

THE FINEST ON EARTH

SPECIAL: Give us the name of your hardware dealer, enclose thirty cents in stamps, for which we will send you high grade nail apron, Saw Sense Book and useful souvenir.



E.C.ATKINS & CO.

Home Office and Factory, INDIANAPOLIS, INDIANA

Canadian Factory, Hamilton Ontario

Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks in The Following Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore: San Francisco Seattle Paris, France Sydney, N. S.W. Vancouver, B.C.



I MOVED into a house built for me by a local contractor," writes a Californian. "One specification required a shower bath floor, three by four feet,

Contractor's Responsibility As to Floor Drainage to be of woodstone. When we first used the shower bath, we discovered that the water, instead of running out through the

drain, banked up against the edges of the floor. The drain appeared to be about the highest part of the floor. On complaint being made to the woodstone subcontractor, he stated that when his work was finished there was a half inch fall to the drain, and that if conditions were different it was due to an upheaval of the floor. Later the contractor conferred with the subcontractor and the latter refused to replace the work, or repair it, without compensation for doing so. Neither the contractor nor the subcontractor has inspected the work, although requested to do so. Have I any valid claim, considering the fact that the specifications did not call for any drainage in the floor? And, if so, would the cost of enforcing the right be prohibitive, compared with the cost of relaying the woodstone? The defect was discovered three days after we moved into the house."

I am of the opinion that there is a valid claim against the contractor for the cost of reconstructing the floor in such way as to afford proper drainage. In the absence of provisions in the contract, plan or specifications to the contrary, it is to be implied that the floor would be constructed in such condition that there would be proper drainage. Otherwise, the drain would be practically useless. And, plainly, there must have been some defect in the construction which caused the result referred to. If the fault lies in the manner in which the principal contractor did his work, thereby causing the subcontractor's work to be displaced, the contractor is liable. If the fault lies in poor workmanship on the part of the subcontractor, the principal contractor is still liable, because the subcontractor was his agent. In the latter case, it is up to the principal contractor to make the work good and look to the subcontractor for reimbursement.

But, of course, if the contractor could show that there was no fault in his work, or in the subcontractor's, and that the defect developed through some fault of the owner (inconceivable as that is, under the circumstances), then there would be no liability.

Whether the cost of enforcing the owner's rights in this case will be prohibitive can be best ascertained by consulting some local attorney, who, no doubt, will give an estimate of the cost, which can be compared with the cost of relaying the floor. The chances are, however, that it will cost less to relay the floor than to win a lawsuit against the contractor.

A BUILDS a concrete block garage, giving B the contract for the masonry and C the contract for the carpentry," writes an Eastern subscriber.

Whe Should Replace Wall Destroyed After Completion? "B completed his work, C following with the roof-truss construction, which was commenced at the rear. Ten days

after the masonry was completed a high wind blew the front wall down. Who should stand the expense of replacing the wall, A, B or C? B did his work at so much a block, while C's men were worked on a day basis."

Not enough facts are presented to support a definite opinion on this case. But if, as we infer, B had not only completed his work, but it had been accepted by A, we are of the opinion that B is under no obligation to replace the wall, unless it fell because it was not constructed in a workmanlike manner. In fact, the courts have gone so far as to hold that, even where the owner has not accepted the work on its completion, the builder is not liable for destruction of the same afterwards without fault of the builder, if the owner's rejection of the work was wrongful.

Nothing is presented to show that B was in any way bound to brace the work. And we do not believe that he was bound to do so, in the absence of

agreement to that effect. Evidently, the three parties assumed that the waii construction was sufficient to withstand any wind that was apt to arise before the roof should be completed.

All that B undertook to do was to build the walls. If he did that according to the terms of his contract and in a good, workmanlike manner, it is difficult to see why he should be the loser. But if it could be shown that poor workmanship or violation of the contract was the direct cause of the loss, he should bear it.

For similar reasons, C is not to be held liable unless the loss may be traced directly to his fault or breach of contract. If the contract required him to complete the roof within certain time after the walls were up and it could be shown that his failure to comply with this term of the agreement was a natural cause of loss he would probably be liable, especially if the wind were of no greater severity than might have been foreseen.

Assuming, as we do in the absence of a more nearly complete statement of the essential facts, that neither B nor C committed any act by way of breach of contract or poor workmanship which naturally tended to make it possible for a wind to destroy the wall, it seems that the loss must fall on A, the owner.

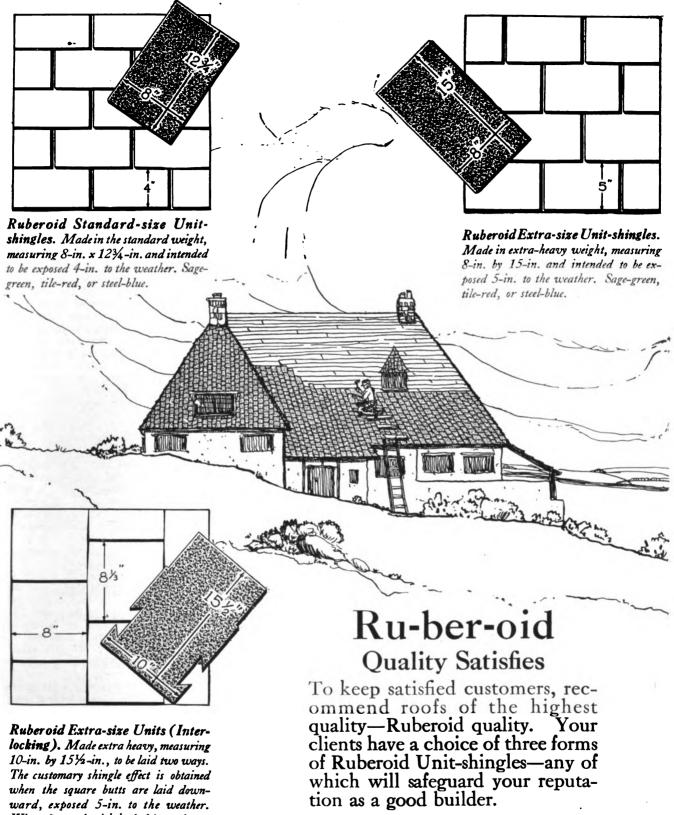
W E are asked wether a journeyman carpenter in Illinois is entitled to anything by way of reimbursement for time lost and doctor's bills, etc., incurred

Illinois
Workmen's
Compensation
Act

on account of an injury sustained to his hand and arm in the course of his usual employment. The gentleman who writes us

was laid up for a short time under the circumstances stated while employed by a contractor. The employer requested, and the employee furnished to him, the doctor's bill, for the purpose of passing on to an insurance company for adjustment. Since then it develops that the contractor carried no insurance, and no adjustment of the injured employee's claim has been made.

We are asked whether the claim is



When fastened with hooked butts downward, the exposed butt of each shingle interlocks with adjacent shingles, producing thatched effect. Sage-green, tile-red. or steel-blue.

The RUBEROID Co. 95 Madison Avenue, New York

enforceable and whether contractors are required to carry compensation insurance in Illinois.

It seems that a valid claim for compensation exists, and the injured employee should write to State Industrial Commission, Springfield, Ill., for detailed information how to proceed.

The Illinois Workmen's Compensation Act requires employers coming under the act, including contractors, to either prove to the satisfaction of the Commission that they are financially able to pay injury claims arising under the act, or to carry insurance or bond, etc., to secure payment of any such claims. Violation of this requirement is made a misdemeanor.

A BUILDER asks concerning the basis on which he can require an owner to settle under the following stated circumstances: The parties are

On What Basis is This Builder Entitled to Compensation?

neighbors and the owner asked the builder to take charge of the building of a dwelling-house. An old house v.as to be

moved back and a new one constructed in front. The owner was mainly interested in having the work promptly and well done. Local labor was scarce and neglectful. Work was commenced without any agreement as to terms. The builder trusted to the owner because they had been neighbors for thirty years, and the builder regarded him as honest, etc. Each had confidence in the other. The builder prepared a pencil drawing, and minor changes were made in floor plans at the request of the owner and his wife. While excavation was in process, elevations were drawn and approved. As the work progressed, the builder had blue prints made and furnished bills for material, which was furnished and paid for by the owner. During the first two weeks, the builder performed but little labor himself on the job, being busy with the plans, material bills, etc. About this time the builder suggested to the owner that they ought to have an understanding as to terms, stating that he would charge 10 per cent. of the entire cost of the house as commission as contractor, and 80c an hour for work performed by him as carpenter. The owner asked what the house would cost and was given an approximate estimate, and he promised to keep account of every item of expense. Later the owner complained that the carpenters' wages were large. The builder explained that this was largely due to use of old material. The owner became dissatisfied and the builder offered to drop out, but insisted that his commission must be paid. The owner said that no commission had been mentioned before. But afterwards he recalled that something had been said along that line. The next day the owner asked concerning the basis on which the commission

would be based, and the builder replied that it would be computed on the entire cost of the building. The owner then requested that the builder proceed, and everything is going smoothly.

But the builder wonders whether the owner will still be in a position to defeat recovery of the commission, especially since he has no witnesses and there was no written contract.

In the first place, this experience should serve as a good lesson to this builder, and to all others who may read these lines, on the point that building agreements should be definitely reduced to writing and signed. In the state from which the inquiry comes there does not appear to be any statute requiring building contracts to be in writing. And this is the rule in most of the states. But like any other important contract, they should be in writing, to avoid later misunderstanding.

On the facts stated, our friend, the builder, will have a valid claim for the commission and for his time as carpenter, for that appears to have been the mutual understanding between the parties. But he may have difficulty in establishing the agreement, if the owner denies that such agreement was made. Unless the builder can prove his version of the understanding, he will have to content himself with a claim for the reasonable value of his services based on just what services he rendered and what is a customary charge in the locality for that kind of work.

The law governing the case is relatively simple: If a mutual agreement can be established, the terms of that agreement will govern. But if the builder fails to sustain the burden of satisfying a judge or jury as to the existence of a contract on the terms claimed by him, he will be bound to take what the law would give him if nothing at all had been said about compensation, and that is the fair value of the services performed by him, as shown by

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the correct procedure. Questions and answers of general in-terest to the trade will be pub-lished in these columns. All inquiries must be accompanied by the name and address of the correspondnt so that he may be answered direct or that he may be requested for further information if ncessary to the intlligent answering of his question. No names will be published, only in-No itials or a nome de plume. Re-member that this service is free to subscribers. Address Legal Department, Building Age and The Builders —ournal, 239 West 39th street, New York City.

what is commonly charged in the locality for that kind of work.

If the builder can show that the owner knew that he was continuing with the work under expectation that he would get a ten per cent. commission, the owner is bound to pay the same, although he did not expressly assent to that understanding. His silence would imply assent.

If on completion of the work the owner refuses to pay a commission without a lawsuit, I would advise a settlement with him, provided that he is willing to pay just what the builder's services were reasonably worth. This advice rests on the uncertainty of the builder being able to prove a clear mutual understanding between the parties as to the basis of compensation.

A N architect requests our opinion as to whether Article 21 of the Standard Documents of the American Institute of Architects relieves a contractor from com-

When Fire Destroys a Nearly Completed Building pleting a building which is destroyed by fire when nearly completed; the owner having collected the insurance as provided in that article.

The gentleman also asks whether the language of the article could be improved in expressing an obligation on the contractor's part to complete the work. The provision referred to is as follows:

"The owner shall effect and maintain fire insurance upon the entire structure on which the work of this contract is to be done and upon all materials, in or adjacent thereto and intended for use thereon, to at least eighty per cent of the insurable value thereof. The loss, if any, is to be made . . . payable to the owner as trustee for whom it may concern.

". . . If the owner . . . fails to effect or maintain insurance as above, the contractor may insure his own interest and charge the cost thereof to the owner. If the contractor is damaged by failure of the owner to maintain such insurance, he may recover under Art. 39" (the clause reserving right to damages for breach by either party).

". . . If after loss no special agreement is made, replacement of injured work shall be ordered under Art. 24. . . ."

The general rule of law, as declared by the courts, is that fire, and particularly one for the cause of which the owner is not at fault, destroying the building before completion, does not relieve the contractor from the duty of completing the building, unless such excuse is specially reserved. The contractor does not appear to be so relieved under the Standard Documents. Article 21, as noted, expressly provides for replacement of the work. And Article 35 specially provides for extension of the time for performance in case of fire. These provisions are quite inconsistent with any possible claim that the contractor is not bound to complete his work.



Percentage of Connecticut Toggle Switch sales for past five months, compared with Push Button Sales, taken from actual records.

1923

April		2%
May		3%
June		6%
July .		28%
Augu	st 1st to 15th	89%

Toggle Switch Stock Takes Big Jump

"When it's up, it's on."



Toggle Switch No. 6276 (Front View).



We are furnishing the Connecticut Toggle Switch in the following combinations:

With Single Flush Receptacle, Cat. No. 7639.(See Illustration) With Duplex Flush Receptacle. Cat. No. 7631.

For other combinations see Catalog No. 6.

Like all other modern ideas, the Toggle Switch has quickly won its way into public favor. It is not only attractive in appearance and design, but also easy to operate, responding as it does to a slight pressure of the arm or finger. One of the exceptional features of the Connecticut Toggle Switch is the manner in which "On" and "Off" are indicated.

Due to quantity production we have been able recently to announce a reduction in the price of the toggle switch, thereby bringing it to the level of the older push-button switch. This means that you can now equip your houses with the modern switch.

If you have not already received your sample, get in touch at once with our factory or nearest office and we will gladly see that you are supplied with a Connecticut Toggle Switch.

THE CONNECTICUT ELECTRIC MFG. CO.

Office and Factory: Bridgeport, Conn.

NEW YORK

CHICAGO

SAN FRANCISCO

CONNECTICUT "A-1" DEVICES

USEFUL, CATALOGS



Gasoline Motors for every purpose where power is required are manufactured by the New-Way Motor Co., Lansing, Mich. The builder has many uses for motors on the construction job and this need is met with as described in a large illustrated catalog published by the above firm. Specifications the blue print diagrams are also contained in this book and builders should send for it immediately.

Boring Machines of the latest type are manufactured by the R. E. Kidder Co., 35 Hermon St., Worcester, Mass. They are power driven and concentrate the utmost in mechanical efficiency. The above firm publishes a fully illustrated catalog giving full specifications and illustrations which are extremely interesting and builders should send at once for this booklet.

Tapes, Rules and Measures must be absolutely accurate so that the builder may place his faith in them. The articles on surveying, etc., that appear monthly in Building Age are specific examples why care should be taken in using the proper measuring tools. The Lufkin Rule Co., of Saginaw, Mich., have issued an illustrated catalog describing their line of reliable tapes, etc., which will be sent to any one interested.

Iron Bases for columns do much to prevent rotting of wood columns. The base of the column is then off the floor and protected against water being soaked up and this eliminates unnecessary wear and tear. Builders using wood columns in construction should write to S. Cheney & Son, Manlius, N. Y., for their interested catalog about iron bases.

Building Instruction can be obtained in simple practical lessons. Plan reading, estimating and building construction are just a few of the topics taught by the Chicago Technical College, 738 Technical Building, Chicago, Ill. Builders should write for literature giving further information on these interesting subjects. Plate Glass is a great convenience in dwellings as well as store windows. It is clear and as transparent as the air itself and yet serves the purpose of perfect protection from the elements. Mr. Builder! you will be interested in the "Story of Plate Glass and Its Uses," a copy of which can be secured if you will apply to the Plate Glass Manufacturers of America, First National Bank Building, Pittsburgh, Pa.

Hot Water Heaters are essential in every home. Qualities that should be contained in every hot water heater are economy and speed in action. Heaters that have these qualities are described in an interesting catalog issued by the Economy Heater Co., 108 La Salle St.. Chicago, Ill., and builders should send for it as it gives full details.

Auger Bits that will bore any arc of a circle and that are guided by the circular rims instead of the center, are manufactured by the Progressive Mfg. Co., or Torrington, Conn. This firm has recently published a very interesting little booklet giving illustrations, description and directions for the use of these tools.

Building Hardware of every description is clearly illustrated and described in a number of large catalogs published by the Richards-Wilcox Mfg. Co., of Aurora, Ili. Mill, elevator, and garage doors, conveying equipment and general house hardware are just a few of the different materials outlined in these books.

O N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Hinges, Butts and Hardware for building must be of the best quality in order to give the most satisfactory service. The McKinney Mfg. Co., of Pittsburgh, Pa., have published a catalog which contains illustrations, description and specifications which are sure to interest the builder. The above firm will be pleased to send this little booklet to the inquiring contractor.

Concrete Mixers that are run by either steam or gasoline engines are fully described and illustrated in a large ninety-six-page book, published by the Koehring Co., of Milwaukee, Wisc. This book contains cross-section diagrams of these mixers, together with key plates showing the different parts along with specifications. Builders should have this book in their files,

Architectural Ideas are better expressed in picture than through any other medium. Photographs of houses that clearly show the exterior, interiors and details, without the expense of innumerable drawings and sketches are furnished by the Graham Photo Co., 121½ South Broadway, 'Los Angeles, Cafit. Every builder should be interested in securing some of these photos as many valuable ideas in new architecture can be gained.

Unit Sash Balances are new features in the manufacturing and installation of windows. They are easy to install and simple of design. A very interesting catalog containing illustrations, crosscut sections and blue prints will be furnished the interested builder by the Pullman Mfg. Co., of Rochester, N. Y.

Refrigerators that are neat in appearance and spacious in size are big attractions in the home. The housewife is attracted by this feature in the kitchen and demands refrigerators that are economical both in price and use. Builders should install such equipment when erecting new houses. A beautifully illustrated fifty-six-page book can be secured by the interested builder from the McCray Refrigerator Co., 2364 Lake St., Kendallville, Ind.



Expanded Wood Lath PROVED STIFFER THAN STANDARD CONSTRUCTION

Comparative tests made by Robert W. Hunt @ Co., Engineers

Results of Test

Actual Movement of Upper Sill

Lead Applied in Pounds	A—Lath and Shoothing	B—Bepanded Wood Lath
200	0.06 inches	0.06 inches
400	0.15	0.13
600	0.26	0.20
800	0.59	0.29
1000	1.07	0.37
1200	1.93	0.51
1400	3.65	0.67
1500	5.13	0.92

I DENTICAL panels with frames four feet high and eight feet long, constructed with sills and stude 176x334 in. and stude placed 16 in. on centers, were prepared.

FRAME A had one side covered with 1/2x6 in. dressed sheathing nailed at each stud with 8D nails, and the other side covered with common lath spaced 2 in. on centers and staggered in the usual way.

FRAME B was covered on both sides with Expanded Wood Lath sheets 8 ft. long and 16 in. wide, fastened at the juncture of each rib and stud with 5D nails.

In testing these panels the bottom sill was clamped to the base of testing machine and the pull applied to the top sill in the direction of its length.

Expanded Wood Lath, by this test, has been proven much stiffer than the old standard construction. But added to this advantage are its high insulating qualities and the much lower construction cost when used for either exterior stucco or interior plaster.

Automatically Backplasters

between the lath and asphalt felt. Not an ounce of material wasted.

You get the intrinsic value and strength of every ounce used.

Complete Report of This Test and Descriptive Literature Will be Sent on Request

Please mark X opposite your profession.	Expanded Wood Lath Corporation, Conway Building, Chicago, Ill. Date
☐ Architect	Gentlemen:
□ Contractor	Please send me free samples and descriptive literature on Ex-Wo-Lath.
□ Builder	Name of Firm
☐ Material Dealer	Individual
☐ Plasterer ☐ nm interested in your special dealers'	Address
proposition.	City State

Digitized by Google

Sash Balances and their use are thoroughly described in a small but very interesting booklet published by the Caldwell Mfg. Co., 5 Jones St., Rochester, N. Y. Builders will be interested in this new window fixture and should send for these pamphlets.

Metal Lath suitable for wider spacing and having greater strength and rigidity is in great demand today. Such material is described and illustrated in a catalog published by the Consolidated Expanded Metal Co. of Braddock, Pa. and builders will do well to send for it.

Electrical Equipment is being used more and more in the modern building. A full line of electrical conveniences is illustrated and described in a catalog published by the Connecticut Electric Mfg. Co., Bridgeport, Conn., and builders will be greatly interested in its contents.

Lumber is of course a necessity in every construction job and yellow pine is useful for interiors as well as construction. The Dimension Lumber Co. of Lockport, Ala. will forward literature and quotations to inquiring builders about their yellow pine lumber.

Chemical Toilets solve the problem where there is no sewerage system, not only for residences, but also in public places. A booklet on the subject comes from Robinson Household Mfg. Co., 625 Huron St., Toledo, O., and it will interest builders as it is up to them to solve the problem for the owners.

Asphalt Roofing can be secured in various colors and styles, is put up in rolls, slabs or in individual shingles, therefore it adapts itself to almost any roofing problem. Besides, it is a building commodity that greatly aids in beautifying the appearance of the home. The Beaver Board Co. of Buffalo, N. Y. will send to the inquiring builder, a booklet illustrating and describing their full line of this roofing material.

Transits and Levels are essential factors in every part of the construction work from the time of staking out the lot until the roof is on the house. Therefore builders will be interested in the thirty four page booklet describing the instruments made by the Warren-Knight Co., 136 N. Twelfth St., Philadelphia, Pa.

Medicine Cabinets made of steel and finished in white, add much to the appearance of the bathroom. A fine descriptive illustrated catalog of such cabinets has just been issued by the Hess Warming and Ventilating Co., 1201 Tacoma Building, Chicago, Ill. Builders will find this booklet of unusual interest to them and should not fail to secure it for their files.

Builders' Handbooks for every purpose are a necessity in the builders' office and he should have a complete library for reference. The U. P. C. Book Co., 239 West 39th St., New York City, will send full information with a list of books to the interested builder.

Plan Books should be in the files of every builder and he will be greatly interested in books, containing a large number of all types of homes, published by the Keith Corporation, 126 No. 7th St., Minneapolis, Minn. A catalog describing these books can be secured upon request.

Furnaces and Heaters for hot air or hot water are fully described in a number of catalogs published by the Kelsey Heating Co., 261 James St., Syracuse, N. Y. These will be found of unusual interest to builders as well as to show clients. They are well illustrated and contain photos of many different types of heaters and furnaces.

Wood Mosaic Floors beautify the home and make a wonderful talking point for the builder when selling his houses. A large thirty four page book giving photos of homes in which this flooring is laid and also description of its many uses can be secured by interested builders from the Wood Mosaic Co., Inc. of New Albany, Ind.

Steel Mesh Reinforcement is a necessity wherever concrete is used. It adds tensile strength and durability. A catalog containing useful information describing its application, with specifications and illustrations will be furnished to interested builders by the Wickwire-Spencer Steel Corporation, 41 E. 42nd St.. New York City.

Sheet and Tin Plate for every purpose in building construction is described and illustrated in a series of seven interesting catalogs issued by the American Sheet and Tin Plate Co., Frick Building, Pittsburgh, Pa. These are of unusual interest as the full story of the use and application of tin is outlined.

Concrete Mixers are in such general use today because they save time and labor. In a sixty four page book, the American Cement Machine Co., Inc. of Keokuk, Ia. presents illustrations of different types of mixers together with specifications and description. This book is well worth adding to the builders' files.

Woodworking Tools and machinery for the shop and on the job are fully describing in an interesting and useful fifty page book issued by the Parks Ball Bearing Machine Co., Knowlton and Langland Sts., Cincinnati, O. Magnesite Stucco is a building material that not only makes home exteriors more attractive but, renders them fire resistant and damp proof. Its uses and method of application are described in a number of interesting illustrated booklets issued by the Rocbond Co. of Van Wert. O.

Woodworking Machines for use in the shop are fully described and illustrated in a well illustrated ninety eight page book just issued by the Sidney Machine Tool Co. of Sidney, O. Full specifications and detailed descriptions make this book valuable to the builder who wishes to add to his shop equipment.

Useful Books, if they are studied, will aid contractors to make greater profits. The American Technical Society, Dept. G-640, Chicago, Ill., will send a descriptive circular containing their list of books on building and engineering.

Kitchen Equipment is now a necessity in every modern home and builders should know what can be purchased ready made, as such features help sell the house. An interesting catalog on this subject can be secured from the Wasmuth Endicott Co., 509 Snowden St., Andrews, Ind.

Oak Flooring is being used wherever an artistic and lasting wood floor is desired. An interesting booklet giving proper methods of laying and finishing Appalachian Wood Flooring has just been issued by the W. M. Ritter Co. of Columbus, O.

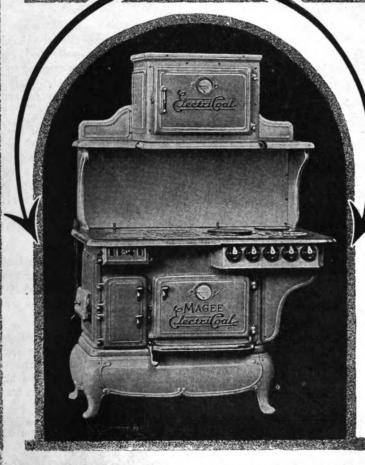
Building Materials of various kinds such as roll roofing, gypsum plaster, sheathing paper, linoleum, paints, varishes, etc. are manufactured by the Certain-teed Products Corp., 1 Pershing Square, New York City. They have illustrated booklets describing each product.

Brick Homes are artistic and lasting. By the means of Fisklock brick an 8" wall is built up as one unit with a handsome tapestry face. A descriptive circular regarding this may be obtained from Fisk & Co., Boston, Mass.

Calculating Lumber is done with ease when a handy set of tables are available. A descriptive circular of the Perry Lumber Calculator may be obtained from the publisher, Benjamin L. Jenks, 1309 Marshall Building, Cleveland, O.

Roof Trusses are a necessity for garages, theatres and other buildings that require an unobstructed floor space. The McKeown Bros. Co., 21 E. 40st St., New York City, will send interested builders a large illustrated pamphlet, giving full description regarding economically built lattice trusses.

A Range With a Double Service



MAGEE (lectrifoal

and it sells!

-and sells another

The Magee ElectriCoal Range offers exclusive conveniences found in no other range. Two complete ranges in one complete form. A coal range—and an Electric Range.

This range has an enormous cooking capacity, as any part or all can be used at the same time. The dealer who sells the Magee ElectriCoal has a non-competitive product that makes good.

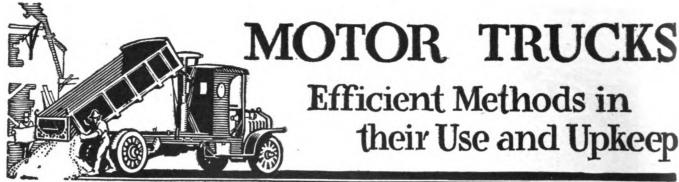
Agencies offered in many territories. For particulars write

MAGEE FURNACE COMPANY BOSTON, MASS.

Robert P. Burton, 30 West Lake St., Chicago, Ill.

E. B. Latham & Co., 550 Pearl St., New York City, N. Y.
The T. G. Arrowsmith Co., 135 New Montgomery St., San Francisco, Cal.

Tabler & Lyons, 315 Baronne St., New Orleans, La.



Efficient Methods in their Use and Upkeep

Some More Facts Worth Knowing About Truck Operation

By P. L. Sniffin

N a previous article the necessity for acquiring at least a general knowledge of the features of operation upon which the builder's experience with motor trucks depends was pointed out. It was emphasized that while the builder who operates trucks does not need to have the mechanical knowledge of an experienced engineer, he should have at least a certain familiarity with the fundamentals-perhaps just enough to intelligently supervise the drivers.

Developing further the thoughts brought out in this article, let us discuss here the remaining topics that come under the head of the important mechanics of truck operation.

Points on Compression

There is perhaps no better example of how truck operators attempt the impossible than the vain efforts to get power out of a motor truck when compression is weak. The question of compression quite frequently is a keen source of worry, if not expense, and proper attention to it is so relatively simple that no operator can afford to neglect giving it a little study and passing the advice along to his drivers.

It may be said that compression is reduced by any of the following causes:

The use of poor oil, or the constant practice of keeping too much oil in the truck motor.

Broken, dirty, or unsuited spark plugs.

Ignition wires worn or otherwise faulty.

Incorrect adjustment of carburetor.

Neglecting to change oil when required.

Keeping spark too low when

Improper engine cooling — fan belt not functioning or not enough water kept in radiator.

By a consideration of these causes it can be seen that the direct result of each is to create carbon in valves and piston rings. Good compression cannot be obtained with leaky valves, or clogged or otherwise ineffective piston rings.

In looking for the remedy, it is essential to determine which of the above items is responsible for the weak compression. Often the remedy will then suggest itself. If the compression cups on top of the cylinder are opened, one at a time, it is possible to find out whether or not the cylinders are firing regularly. When no fire comes from an open cylinder, the spark plug should be taken out and examined. Very likely it will be broken or too dirty to give a spark and should be replaced.

Causes of Misfiring

It is well to know the common causes and remedies for engine misfiring, since this action on the part of a motor truck may very often require only the very simplest attention.

First, examine the spark plugs. They may have collected carbon which will cause the engine to misfire. If this is the case, it is simply necessary to clean or replace the plugs.

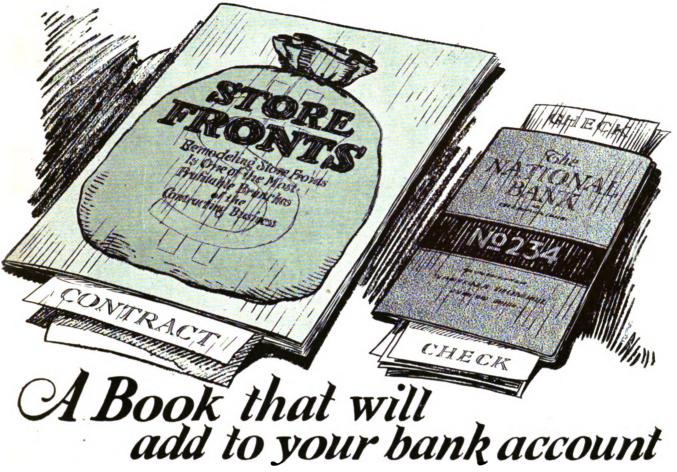
Improper adjustment of the carburetor, either too "lean" or too "rich," will also cause misfiring, and in this case it is only a matter of adding more air or more gasoline, as needed, to the mixture. Or the valve may be stuck, requiring cleaning the valve stem with ker-

Leaks in the intake manifold are another cause of this. Examine this part for air leaks, and if they are found, they should, of course, be immediately repaired.

Misfiring may also be caused by moisture or grease on the surface of the distributor cover. high-tension current jumps across the surface of this foreign matter, instead of going through its regular path. Keep the distributor clean and you will eliminate this source of trouble.

Moisture accumulates on the exposed parts, such as the distributor, and it soon collects grits and oily matter. Such moisture probably is drawn in with the air that enters through the radiator, or it may result from condensation on a damp day. Besides, around any piece of machinery there is bound to be some oil spray. Therefore, cleaning is necessary at intervals, no matter how inherently tidy the engine may be.





All merchants who expect to prosper are being forced by competition into the use of attractive modern Store Fronts. Are you getting your share of these new installations?

This Store Front book tells the contractor how to locate prospects and secure profitable contracts. It tells how to handle such contracts quickly, efficiently and profitably. It tells how to get business regardless of competition by offering the proper style of Front and correct materials.

Desco Store Front installation can be handled by any contractor with his regular employees because of the simplicity of the construction. The construction reaches the job ready for immediate installation. All parts fit accurately. Drainage, ventilation and protection of the glass from vibration are provided for in the construction.

One or two attractive Desco Fronts will establish you as the Store Front specialist in your city. This book tells how to secure the first prospects and how to make them sell others. Write for it.

DETROIT SHOW CASE COMPANY 1651 Fort St. West Detroit, Michigan (132)

In many cities Desco is stocked by distributors who can fill orders immediately. Ask for the name of the distributor nearestyou. See Sweet's catalog for Desco details. Detroit Show Case Co. 1651 Fort St. W., Detroit Mich. Without obligation on my part send me a copy of your book on Desco Store Fronts.

Digitized by **GO**

Causes of Lost Power

In many cases, loss of power is difficult to locate, and the best procedure is a process of elimination. The most serious cause is a loss of compression and it is well to test this often by turning the motor over by hand slowly with the starting crank. If a cylinder has weak compression, it can be detected by the lack of resistance offered at the crank by the advancing piston as compared with the other cylinders. If such a loss of compression is found, it is well to first look for an improperly seated valve and in such a case, grinding the valves is the only remedy. In fact, it is possible that the cause may be excessive carbon on the piston head and combustion chamber walls, which should, of course, be removed. Weak or broken valve springs, or improperly adjusted valves, will also cause a similar effect of loss of compression.

Another cause is worn or improperly fitted piston rings, and this is at times very difficult to detect. If the cup of the breather is removed and if the mechanic holds his ear to the opening, he may sometimes hear the gas blowing by the rings. In such a case, the piston rings should be replaced or adjusted.

Another cause may be described as air leaks which will cause a dilution of the charge in the cylinder and thus cause a loss of power. Leaks in the manifold, carburetor

joints, spark plugs, etc., may be found by squirting a little gasoline around these parts while the motor is running slowly. When the engine picks up or when bubbles are seen, it is safe to assume that there is a leak.

Carburetor Troubles

The simplest cause of loss of power is improper carburetor adjustment. Yet there is very little

reason to suspect the carburetor for loss of power if plenty of heat is furnished to the carburetor and if the setting is as nearly correct as possible.

A mixture, either too rich or too lean, is apt to cause irregular action and give an effect similar to loss of power. As a general rule to follow, however, if the engine has been running properly up to the time a loss of power became evident, and the carburetor adjustment has not been changed, the trouble cannot be attributed to the carburetor.

Ignition Troubles

Loss of power may also be traced to faulty, fate or sluggish ignition. In such a case, the result is an almost entire lack of power, often with sudden overheating, causing the water in the radiator to boil. The remedy, obviously, is to check the timing of the ignition, of course.

Sometimes several strands of wire in the primary circuit break and even though there still might be a contact, the actual number of wires which carry the current have been reduced, thus cutting down the number of volts of electricity entering the coil by increasing the resistance of the wire. This reduction of voltage in the coil reduces the strength of the spark, which in turn does not ignite the gas in the cylinders quite fast enough.

It is frequently possible to trace the cause of loss of power to some condition in the chassis. The most serious of these are slipping clutch and brakes which drag on the brake drums, in which cases careful adjustment should be made. Or the exhaust pipe and muffler may become clogged.

Other chassis troubles responsible for this are poor lubrication, engine overheating or misfiring, lack of traction at rear wheels, and sticky governor connections.

In summary, it may be said that in order to determine the cause of loss of power, the conditions outlined above should be considered in the order of their importance. First test the compression of the engine. If this is found to be satisfactory, the next in order is the fuel system, which should be examined carefully in detail.

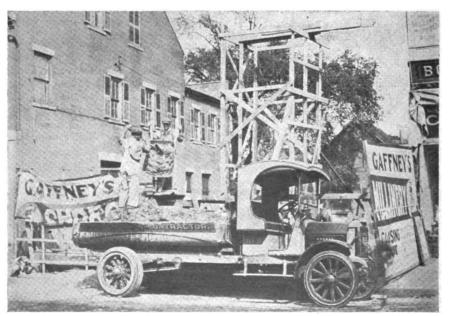
Then follows the ignition system, in which case, by the way, it is usually difficult for the inexperienced operator to locate trouble. Finally, the various parts of the chassis should be inspected.

Smoke From the Motor

The reason for excessive smoking at the exhaust is simple enough if it is remembered that black smoke indicates too rich a mixture in carburetor adjustment heavy blue smoke means too much oil in the motor; and a thin white smoke means that there is water in the gasoline.

Very often considerable smoke will come out of the exhaust for a while, just after oil has been applied, and this is not a cause for worry.

When smoke is seen to come from the crank case or open end of the cylinders, this indicates a leak past the piston. This is a sign to look carefully for worn rings, rings stuck is grooves or scoring on cylinder.



Building Age THE BUILDERS' JOURNAL



45THYear

October 1923

Digitized by GOOSIC



CON-/ER-TEX

CANVAS ROOFING

FOR ROOFS AND PORCH FLOORS

POR sun parlors, sleeping balconies, and all flat surfaces, it is ideal. Chemically treated so that it will not crack, stretch, shrink, curl or peel. The sun and rain will not affect it—easy to keep clean.

Con-ser-tex is a business-getter, used where more expensive materials are not wanted. It stands up well under severe use, and looks attractive. Recommended by responsible builders and contractors in all parts of the United States.

> It is well worth your while to write for our illustrated booklet, "Roofing Facts and Figures," and for samples.

WILLIAM L. BARRELL CO. of N. Y., Inc.

50 Leonard Street

New York City

Chicago Distributors: Geo. B. Carpenter & Co. 430-440 North Wells St.

California Distributors: Waterhouse-Wilcox Co. San Francisco & Los Angeles

FLOORS

The Wood-Mosaic Kind



For every home—Old or New. Can be installed by your mechanics. Our 5/16" flooring can be laid in old or new houses. We make all kinds and thicknesses; Wood Carpet, strips Plain and Ornamental Parquetry, Tongue and Groove Flooring.

Send accurate measurements of rooms for sketch with exact estimate of cost of the flooring required. Instructions for laying and finishing accompany all orders shipped.

Send for free catalogue in natural wood colors.

Wood-Mosaic Company New Albany, Indiana



Large Roof Trusses Built Up with Midwest Bulldogs

Timber Joints That Never Fail at Less Cost with Less Materials



Send for your copy of our Bulletin Used on bridges, piers, sheds, trusses, mine timbering, buildings—on any timber construction job. Midwest Buildogs of special cold rolled steel make a firm lasting joint that will not loosen or fail. Placed between members of a joint, and pulled tight with bolt and nuts, the tough teeth dig into the wood and hold firm, even if the wood shrinks. No skilled labor is needed.

TRADE MARK.

There are dealers near you carrying ample stocks in all sizes (3, 4 and 5 inches). Our engineering department is ready to take up with you without obligation any use you think you can make of BULLDOGS.

Midwest Steel & Supply Company, Inc.
100 E. 45th Street New York City

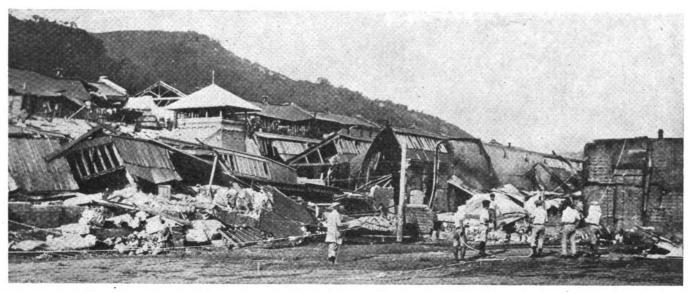


Building Age

ANI

THE BUILDERS' JOURNAL

NEW YORK, OCTOBER, 1923



Wrocked buildings of the Fuji Cotton Spinning Works at Koyama near Hallore. Here light structural work with corrugated iron roofing collapsed.

The massary tower remained intact while massary foundation walls were bloken apart—a freak of the earthquake.

Japan Looks to America for Aid in Reconstruction Work

Japan's recent earthquake and holocaust, which has gone down on record as the greatest catastrophe of its kind known to history, the people of Japan find themselves face to face with the gigantic problem of rebuilding their homes and business buildings of their destroyed cities and towns.

According to a recent cable sent by United States Ambassador Woods, from Tokyo, over 600,000 buildings were totally destroyed. The greatest losses were caused in the two large cities of Tokyo and Yokohama.

The latest reports place the destruction of buildings in Tokyo at 316,000, or about 71% of the total number of buildings that comprised that city. In Yokohama, about 70,000 buildings or about

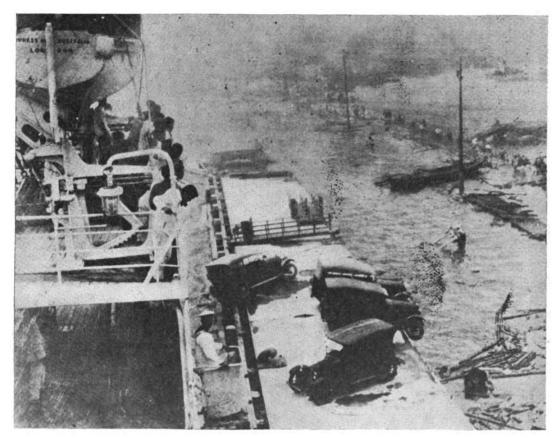


One of the colossal shrines to Buddha, the founder of the religion followed by the majority of Juponese. Many of these shrines were destroyed.

82% were destroyed out of the 85,000 which that great sea port formerly boasted.

The destruction in the outlying districts where many small towns were utterly demolished brings the total of buildings destroyed up to the 600,000 mark mentioned above. This number added to the housing shortage that already existed in Japan before the earthquake will necessitate the construction of dwelling houses on a large scale.

The people of the United States were not slow in realizing Japan's predicament and many measures for relief were instantly put in force to give financial, material, and food relief as soon as possible. Building materials of the different kinds that Japanese builders were accustomed to use are being sent over as fast as ships can be loaded.



Saturday afternoon, Sept. 1st, the steamer Empress of Australia was about to sail from Yokohama when the earthquake occurred. A passenger made these snapshots and Building Age fortunately secured copies. Here the tidal wave has just washed several autos on the quay. These pictures specially copyrighted by Pacific & Atlantic Co.

The action of the West Coast Lumbermen is to be commended as they plan to deal direct so as to eliminate any chance of skyrocketing prices by speculator profiteers.

Among the American concerns already actively engaged in supplying Japan with material for reconstruction purposes is the United States Steel Corporation. This company has placed its mills at the disposal of the Japanese government, giving all orders from that source the preference over others. The company is also co-operating with the Japanese government in preventing the possibilities of profiteering on the part of "middle men."

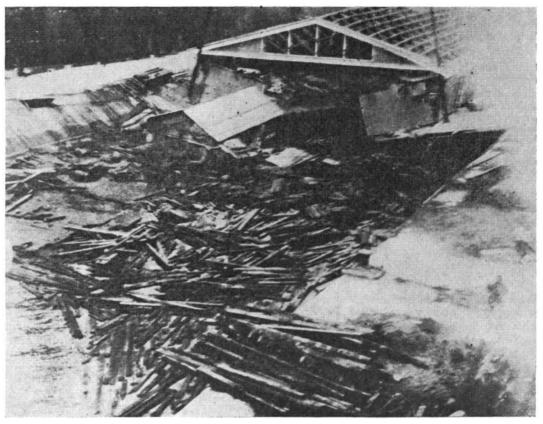
While no definite orders for structural steel have been placed as yet, the company has shipped several thousand gross tons of steel rods, such as are used for concrete reinforcement; several thousand kegs of wire nails and quantities of fence wire. Tentative inquiries have also been received regarding corrugated sheets.

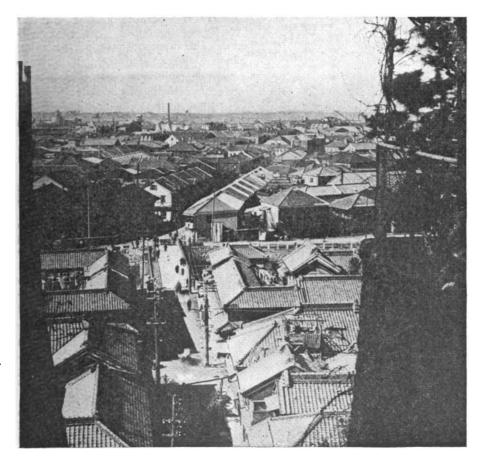
Judging from these and further inquiries, it appears that the tendency of the Japanese authorities will be to replace the more important buildings of Tokyo and



General view of Tokyo, looking northwest from Atago tower near Shiba Park. Note the tile roofs The heavy tiles shook loose and clattered down into the streets, killing thousands of fleeing refugees

Here is perhaps the first picture of an actual earthquake ever taken. It was snapped from the deck of the Empress of Australia, just as the pier shed was collapsing on the unfortunate crowd who had assembled to bid good by e to friends on the departing steamer. Note some people running away from the falling pier roof timbers.





General view of Yokohama showing the types of structures comprising the majority of the buildings destroyed. Practically every building shown here was entirely obliterated by the fire

Yokohama with structures in which steel will be largely used.

As to the probable use of structural steel in erecting these buildings varying estimates place the approximate requirements necessary to tide over the immediate crisis alone at between 15,000 and 30,000 tons.

Japan normally looks to the United States for about 60% of its lumber requirements; therefore, the demand for American lumber during the reconstruction period will be very heavy. Curiously enough, prices of native lumber delivered to Tokyo or Yokohama, have been approximately 20% higher than those of similar qualities of American lumber.

The American market also finds itself in a favorable position in regards to delivery as it often happens that shipments can be secured from the United States in less time than from some places in Japan.

Japan's preference for American lumber, aside from the price consideration, is due perhaps more than anything else to the fact that our lumber is more nearly like that of Japan proper than the



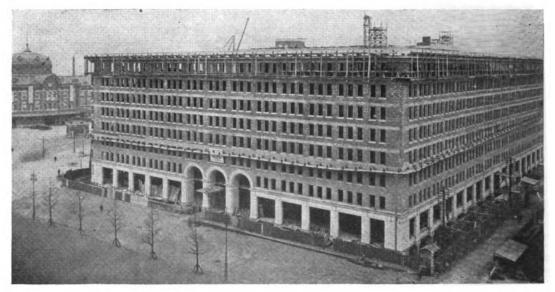


Photo of the Maronnouchi Building while under construction at Tokyo. It was built along American lines by the George A. Fuller Co. This building came through the carthquake with a few chipped bricks. The railway station shown opposite was wrecked.

product of any other country from which it draws wood supplies. This similarity of wood makes it possible for Japanese builders to substitute American lumber for Japanese in all building projects.

The principal lumber imports of Japan consist of fir, hemlock, pine, and cedar, about half of which is imported in large squares of from 12 to 24 inches and a lesser amount in small squares of 4½ by 4½ inches. The large squares are worked up in the local mills and carpenter shops into the different shapes required for general build-

ing, while the smaller squares are used as studs for holding up roofs and for supporting beams. The larger squares are very popular among builders in Japan and can only be obtained from America.

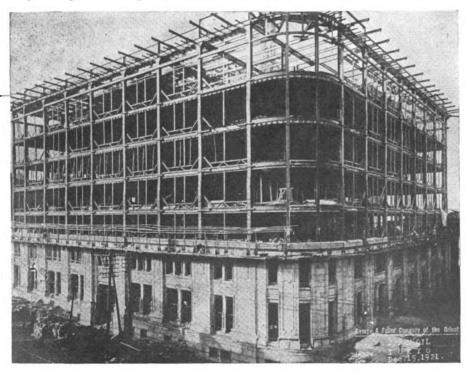
The only competition confronting the United States in trade in this class of lumber will come from other parts of North America, as the Siberian, Manchurian, Hokkaido, and Saghalien or Karufuto pines and cedars are all of inferior quality and accepted only as substitutes for Japanese and American woods.

At the time of the disaster stocks of lumber in Japan were quite large, especially in Kobe, Osaka and Tokyo. Assuming that all the stocks in Yokohama and Tokyo were destroyed, it is seen that there is still a fairly good supply on hand for immediate emergency purposes. The real demand will come when the permanent construction of the devasted areas commences. The requirements for home building will no doubt be satisfied first and will take the largest share of the lumber, roofing, hardware, and various other building materials that will be imported from the United States.

Piling will be required in large numbers for reconstructing the destroyed docks and waterside warehouses and sheds in Yokohaina and Tokyo, as well as for building subfoundations for industrial buildings, bridges, and construction work in general.

Building materials and the necessities of life have been exempted from import duty until March 31, 1924, by virtue of an Imperial Ordinance promulgated in Japan, according to advices received from the Consulate General of Japan, New York City.

Besides lumber, Japan will need many various kinds of building material. Therefore, there should be a good market for many American manufacturers in different lines, including cement, structural steel, nails, spikes, screws, metal sheets, plain and stamped. Leaders, pipe, wire, valves, etc., will also be in great demand.



The Japan Oil Co. building during its construction by the George A. Fuller Co. Note the bracing of stoel columns and beams. This largely accounts for the excellent manner in which the American type of building came through the earthquake.



shocks. Without an exception, the American type steel skeleton and reinforced concrete structures came through the earthquake in good condition.

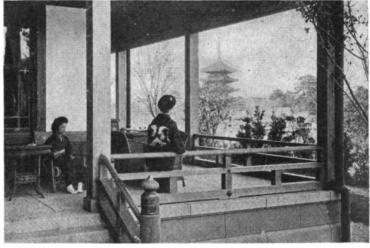
Officials of the U. S. Department of Commerce express gratification over the first practical demonstration of the effectiveness of the new so-called earthquake-proof factories and office buildings which have been constructed within the past three years. There are about six of these buildings in Tokyo. The fact that this construction has proven earthquake-proof is likely to influence favorably the adoption of this type of construction in the future.

We take pleasure in showing pictures of two of the structures that came through the earthquake

THE Japanese had a fondness for tile roofs even on some of their lighter built structures, as may be seen in our various photographs. Where the buildings were not totally destroyed, these tiles were shaken loose on many buildings and numerous fatalities occurred by these falling tiles hitting the panic stricken fleeing crowds.

It would seem therefore, that our composition, rubber, asphalt, asbestos and metal roofings ought to find a big market. Wallboard can be extensively used for interior use, being light of weight and strong. As some of our pictures show, it was the heavier masonry structures that withstood the

A porch on Japanese showing they want building comforts. There is a big market for American lumber, hardware, roofing. gutters, leaders etc.

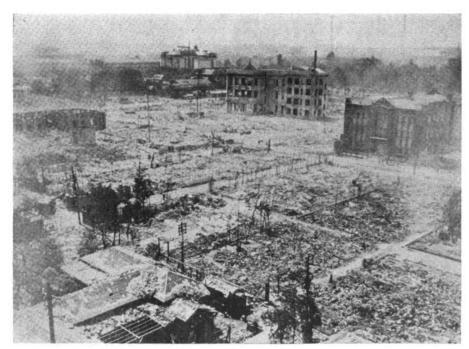




without damage. These were erected by the Japanese branch of George A. Fuller Co., the well-known New York builders.

BUILDING AGE presents a number of very interesting pictures showing the extent of the Japanese disaster and it will interest our readers to know that some of these were taken by a passenger on the steamship Empress of Australia, which was docked at Yokohama at time of the earthquake. As soon as this steamer arrived at Seattle, the pictures were sent by airplane to New York and thence to us.

In a telegram to BUILDING AGE, the American Red Cross stated that they have shipped 625 tons of corrugated iron sheets; also 9,000,000 feet of lumber varying from 1x12 inch planks to 4x4 inch posts.



View of the still smoldering ruins near Hieya Park, Tokyo, showing the extent of damage by quake and fire. Note type of buildings left standing.

Also 5,000,000 wood shingles and one hundred twenty-five tons of different sized nails were shipped.

It is interesting to note that on September 26 details were completed regarding the loan of \$100,000,000 to Japan, this being negotiated by William L. Farnham, Tokyo representative of the National City Bank of New York.

BUILDING AGE was called upon for advice by Mr. W. Ando, New York representative of D. Nagase & Co., Ltd., a large import firm with head office at Osaka, Japan, and branches in many cities. Mr. Ando, like many other Japanese merchants in this country, is cooperating with his government in securing all available information as to the cost and shipping prospects of building materials.

It is the opinion of Mr. Ando and others who are familiar with the present situation in Japan, that many years may pass before the Japanese government's reconstruction program gets into full swing. He believes that while the Japanese engineers will recognize the superiority of American building materials and building standards, the people on the whole will be slow to accept any radical change in the style of their homes.

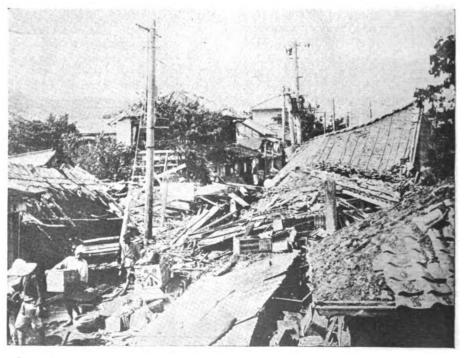
At the present time, a special committee on reconstruction, ap-

pointed by Premier Yamamoto, is considering the project of reconstruction with special reference to earthquake-proof and fireproof building materials.

Professor Charles Beard, formerly of Columbia University, an authority on building conditions in Japan, who in 1921 was commissioned by Viscount Goto, then mayor of Tokio, to prepare a report on earthquake and fireproof construction as applicable to Japanese building, has been retained by Goto, now minister of Interior in the new Japanese cabinet, to serve on this committee.

According to Mr. William J. Starrett, who represented the George A. Fuller Co. in the Orient, Japan will probably never build high buildings. The leading cities have joined in uniform building codes and all of them limit the height to one hundred feet. Many considerations were responsible for this limitation, but the earthquake menace was the determining factor. Curiously enough, however, it was not these modern high American type buildings that collapsed, but the smaller, older forms of Japanese construction.

The destruction of the native type of houses was complete. Many of these, as our photos show, collapsed like houses built of cards, under the strain of the earth tremors. As buildings of the occidental type of construction withstood the same shocks it has brought about the realization that the latter type of building, namely the type in which structural steel and concrete form the framing, and comparatively light materials are used for roofing, must be accepted as the logical standard of big building construction if Japan is to survive another such disaster.



Ruins along street of fishing village near Tokyo showing the extent of wreckage. Note some structure of similar construction remained intact. Many such freaks of the earthquake occurred.

How to Build Earthquake-Proof Houses

By Dr. BAILEY WILLIS

THE mayor of Vallenar, Chile, invited me to meet a group of gentlemen in the Union Club to talk to them about earthquakes. The president of the local workingmen's union desired a more public discussion and the mayor yielded the point. The meeting was held in a temporary theatre with a capacity for about 400 people, and it was crowded. In front sat a group of officials, the priest and the landowners.

The workmen were there in force, few of them wearing anything more than shirt and trousers. There were many women, their dark faces stamped with resignation and half hidden in the black mantillas.

I have spoken to many audiences, but not to any that was more responsive or attentive. This was for them no academic discussion. The earthquake had been a terrible experience and before them was a man who was supposed to know how to guard against a repetition of disaster in Vallenar, or whether they must abandon their city and move to another site, as was proposed.

To construct a house that will withstand an earthquake is not difficult if you can command the right materials and good carpenters, but during three hundred years it has proved to be more than the unskilled artisans of Chile could do.

They used to put together structures that were pinned with wooden pins and tied with rawhide, which were both strong and elastic. Some of them have passed through the earthquakes of the past century without serious damage. The introduction of iron nails, which are so easily driven, appear to hold so well, but in fact pull out with ease, has resulted in much weaker frames, that are quite unequal to the task of upholding the heavy walls and roofs of adobe.

Back to the good old joinery should be the cry. Rawhide should be used if convenience and cheapness require, but galvanized fence-

VALLENAR, a town located in the Copiapo River Valley, State of Atacama, Northern Chile, was virtually destroyed by an earthquake in November, 1922. More than 500 of its population of 5,000 were killed and approximately 1,000 buildings destroved. Bailey Willis of the Carnegie Institute, sent to investigate conditions resultant upon the disaster, gives us this interesting and timely article on building earthquake-proof houses.

wire is better when skillfully stretched or tied.

An American frame house, well mortised and pinned, is as safe as reinforced concrete, provided the lath is replaced by fence wire on both the inside and outside of the frame. The wire can be put on in either one of two ways, parallel with both diagonals or parallel with the beams and uprights, and it should be spaced from 3 to 6 inches apart according to the size of the wall and the quality of the plaster. It must be stretched tightly to form a firm network to which the plaster can adhere and for this reason wire netting or metal lath does not do as well, because it cannot be drawn as tightly as a continuous strand, which is fastened by staples at every turn. Wire, however, in combination with metal lath makes a good base.

The difference between the diagonal arrangement and the horizontal-vertical one is important. The former makes a rigid house, the latter a flexible one, and the distinction is the same as that between a springless cart and a carriage. When the quake strikes the former you will feel like a man lying on the bottom of the cart while the team runs away across a rocky pasture, whereas in the flexible house you might think you were up a tree.

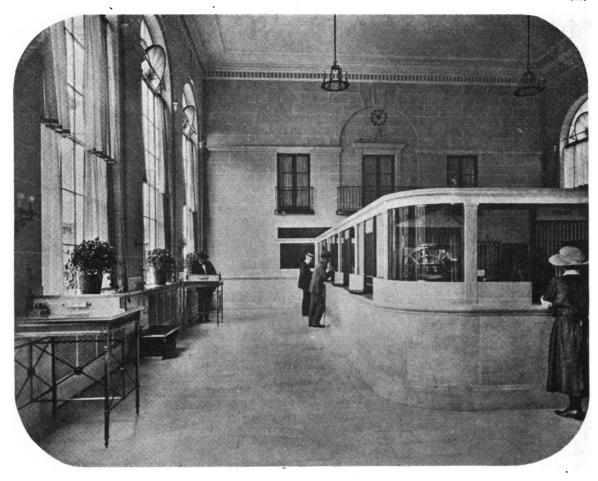
There is one thing about building to resist earthquakes that people seem to forget: an earthquake can exert no more force to wreck a building than is necessary to overcome the inertia of the structure, or of some part of it. A heavy mud roof, such as is heaped on Chilian houses, will wrack and ruin the walls, where one of light shingles would sway with them.

Another point which has not been recognized generally by architects or engineers is that it is the earth which moves, while the house tries to stand still. If you could put a ball-bearing between your house and its foundations, instead of bolting it to them, you would not have to buy your wife a new dinner set.

This idea is embodied in every instrument for recording earth-quakes and was applied many years ago by Sir John Milne to the construction of a lighthouse in Japan. I have recently recommended its consideration by a firm which is contemplating the building of a warehouse on dangerous ground in Valparaiso, Chile, and I believe it can be introduced successfully in some combination of bearings, springs, or shock absorbers.

For the ordinary house a broad ditch packed with cobblestones on which there rests a well braced frame of heavy beams would not be a bad substitute. It would allow the ground to slide round under the house, which could be jacked back into position with reference to such unstable things as trees, garden walks, and roads, at your convenience.

These ideas about building quake-proof houses grew by degrees as I studied not only the ruins, but also the surviving buildings. The evidence was a liberal education in how to build and how not to, and the conclusions will be published by the Carnegie Institute of Washington as a contribution to the safety of the Chilean people or of others who may be similarly circumstanced.



Caen stone plastered walls form a fitting background for the Tavernelle marble counter with its bronze and plate glass quentings.

Dignified Design for Bank

Designed and Built by FRED. T. LEY & CO., Inc.

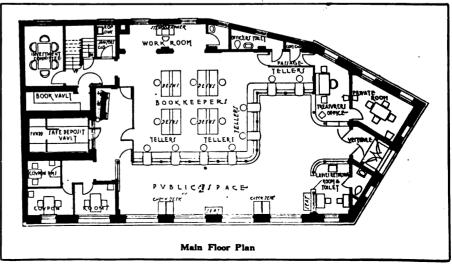
MODERN bank building of meritorious design has recently been completed by a New York firm at Norwalk, Conn., for the Norwalk Savings Society. The structure was designed and built by the bank building department of Fred T. Ley & Co., Inc., the architectural work being done under the direction of Mr. C. B. French, who is now a member of the firm of Morgan, French & Co., Inc., architects and bank engineers.

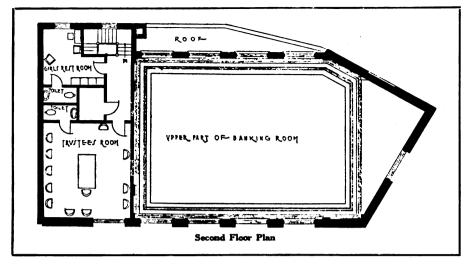
The building stands on an irregular shaped corner plot with a frontage of about 35 feet on one street and 80 feet on the other and a width at the rear of 50 feet.

The exterior is built up of white cut cast stone blocks, arranged in a simple but attractive design, enhanced by ornamental, carved decorations on the front façade, which set off its symmetrical proportions.

The main entrance, under an arched window in the front of the structure, is made attractive by an ornamental architrave supporting two carved stone American eagles

and a tablet inscribed with the date of erection. The doors of this entrance are bronze covered and above them is an ornamental bronze grille.





The interior of the building is well laid out and quite as attractive in appearance as the exterior. The banking room which, as the main section of the interior, measures 37 feet by 56 feet, is exceptionally cheerful and airy as it is finished in white materials throughout and is lighted by four full length, steel sash, arched windows on one side, four half length windows of the same type on the other side.

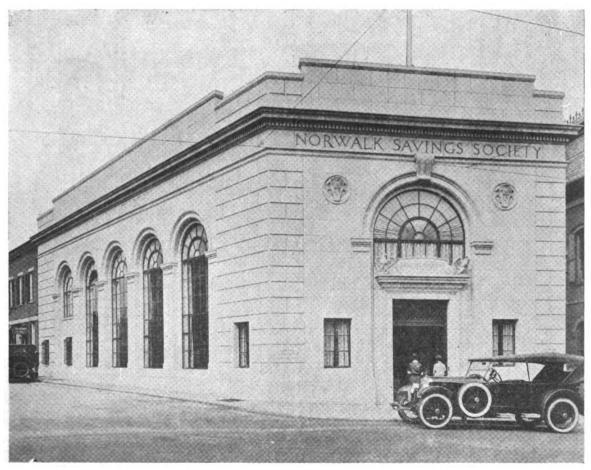
The walls of this room are finished in caenstone plaster and the flooring is of gray Tennessee marble block. The partition which separates the public space from that occupied by the tellers and clerks is constructed of Tavernelle marble, as is also the wainscoting.

The upper half of this partition contains glass windows and the customary bronze wickets in front of the tellers' desks. In addition to the main banking room on the ground floor there is the treasurer's office, a private room, investment committee room, ladies' retiring room, coupon rooms and two heavily built vaults, one a book vault and the other a safe deposit vault. The latter vault is 8 feet by 14 feet and is of the most modern burglar-proof and fireproof type.

A mezzanine floor extends across the width of building at rear and is 22 feet deep. This floor is divided into a trustees' room which measures 22 feet by 23 feet, a rest room for girl employees and two lavatories.

Three windows open from the mezzanine into the upper part of the banking room. The center window is set in an artistic, arched recess and framed with two half square columns and an ornamental cornice. A clock is set in the arch directly above the window.

Beneath each of the three windows is a narrow balcony with an iron railing. The center balcony extends across the arched recess.



The exterior is built of white cast stone blocks. The windows are of steel and plate glass. The front entrance of bronze. All forming a dignified and imposing structure.

A Convenient Colonial House With Garage Attached

HAT about the garage? In building the modern home this question must be answered, and for the best results it should be given thorough consideration before the house is built.

If the garage is left as an after consideration, it is often very difficult to find a satisfactory solution to this important problem.

Of course, a garage can be erected on the rear of the lot after the house is built (providing proper provision has been made for the driveway and space has been reserved for the garage) but what about convenience? Will heat be provided? Electric light, water and sewer service? The

latter two are, of course, necessary but heating and lighting are real conveniences that are generally omitted on account of the expense.

All of these objections can be overcome by attaching the garage to the house, but, here again, due consideration must be given the design, for, if the garage is simply

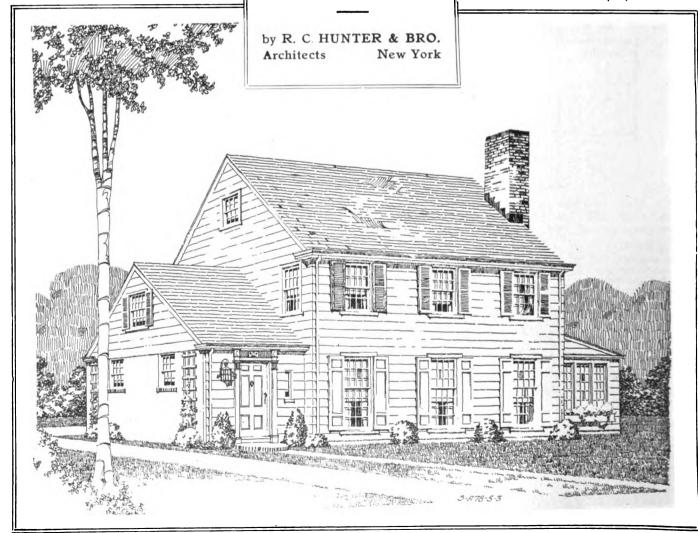
Specially Designed for
BUILDING AGE
and
THE BUILDERS' JOURNAL

Together with Constructive Details

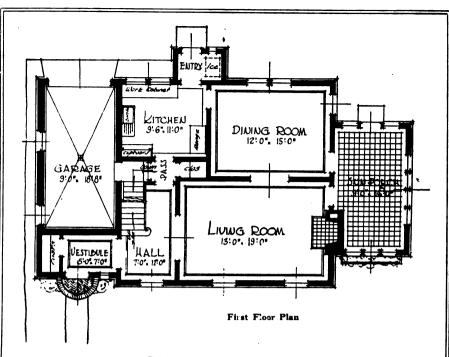
"butted" to the house, it ruins the appearance of the latter. The design shown here embodies beauty, convenience, comfort and economy for both garage and house.

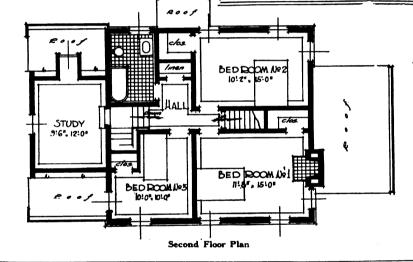
The garage entrance is on the rear. This overcomes the objection of large doors toward the street, which generally show an unsightly interior when open; and permits the main entrance to the house, with vestibule and coat closet, to be provided in the front of the garage extension.

The plan of the house shows an arrangement that is convenient and livable. Three bed rooms, a bath and a study are provided on the second floor. There is no waste space. Estimated cost of construction about \$10,800.



B LUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by Building Age and THE BUILDERS' JOURNAL, 239 West 39th Street, New York.





Quantity Survey of Colonial House

HE quantities given are for estimating. All measurements are NET unless otherwise noted; areas given for such items as sheathing, flooring, etc., are net areas to be covered, with no allowance for matching, waste, etc. Minor outs have been disregarded.

Such items as clearing site, temporary work and protection, scaffolding and general equipment and supplies, have not been included.

Such items as are marked "Unit," are to be estimated in a lump sum, following requirements of plans and specifica-

EXCAVATION

(Excavation for pipe trenches not included) 255 cu. yds. Excavation for cellar..... Excavation for footings..... 15 cu. yds. Excavation for areas.

Excavation for trench walls.... 5 cu. yds. 20 cu. yds. Excavation for leader drains and dry wells...
Backfilling around walls, etc..... 14 cu. yds. 43 cu. yds.

Leader drains and dry wells 48 lin. ft. 4 in. elbows.....

MASONRY		
Concrete Work:		
Concrete for cellar walls	855 cu.	ft.
Concrete for footings	174 cu.	ft.
Concrete for trench walls	308 cu.	ft.
Concrete for area walls	219 cu.	ft.
Cellar and garage floor (3 in. concrete and 1		
in. cement finish)	805 sq.	ft.
Outside cellar steps (conc. cement faced)	40 sq.	ft.
Area bottoms (brick and sand)	35 sq.	ft.
Porch floors (12 in. cinders, 3 in. conc. and 1	_	
in. cement finish, colored and blocked off).	185 sq.	ft.
Same, with brick finish	15 ·sq.	ft.
Concrete forms	2300 sq.	ft.
Pointing cellar window sills	16 lin.	ft.
BRICK WORK		
Common brick work for chimney (or 3.2 M.)	157 си.	ft.
For ent. porch foundation (or .9 M)	22 cu.	ft.
Face brick for hearth and jambs (or 210 brick)	30 sq.	
Fire brick for fireplaces (or 150 brick)	30 sq.	
Face brick for sills (or 35 brick)	7 lin.	
8 in. x 12 in. T. C. flue lining	86 lin.	ft.
6 in. tile pipe ash chute	16 lin.	ft.
3 in. blue stone chimney cap (1 ft. 10 in. x		
3 ft. 8 in.)	1 Uni	t

MASONS IDON WORK	EXTERIOR FINISH	E/3	JOH, Mai
MASON'S IRON WORK 4 in. bell trap and drain for garage 1 Unit	Water table (% in. x 2 in. strip)	150	lin. ft.
Double pipe railing for area	Main cornice.		
Fireplace damper (3 ft. 0 in. opg. with throat 1 Unit	78 in. x 8 in. soffit		
Fireplace damper (2 ft. 4 in. opg.)	% in. x 6 in. fascia 6 in. crown mould		lin. ft. lin. ft.
C. I. clean-out door for ash pit (16 in. x 12 in.) 1 Unit	6 in. bed mould		lin. ft.
C. I. clean-out door for boiler flue (8 in. x 8in.) 1 Unit	2 in. cap mould		lin. ft.
Thimble for boiler flue 1 Unit	Raking cornice, 3 in. mould		lin. ft.
TERRA COTTA BLOCK WORK	Cellar bulkhead.	10	It.
8 in. x 12 in. x 12 in. block	7/8 in. x 31/4 in. M. & B. ceiling		lin. ft.
Levelling slabs	5% in. x 1% in. cove	16	lin. ft.
•	Windows—Frames complete with sash, outside trim, etc. Sash 1½ in. thick, glazed D. T.		
PLASTERING	Cellar windows trim both sides.		
Three-coat plaster on metal or special wood	Single top hung casem. sash, 3 ft. 0 in. x 2 ft.		
lath, gross (Net, 610 sq. yds.)	0 in.—4 light	4	• • • • •
Two-coat plaster on metal lath, net 19 sq. yds.	2 ft. 0 in., 4 light	1	
Two-coat stucco on masonry, net	First floor windows.	•	
G. I. corner beads 100 lin. ft.	Single D. H. sash, 3 ft. 0 in. x 6 ft. 6 in., 28 light Single D. H. sash, 2 ft. 8 in. x 4 ft. 8 in., 16 light		
TILE WORK	Mull. D.H. sash, ea. 2 ft. 8 in. x 4 ft. 8 in., 16 light		
Tile work for bath rooms.	Mull. D.H. sash, ea. 2 ft. 8 in. x 4 ft. 0 in., 16 light		
Floor (1 in. hex. white)	Single D. H. sash, 2 ft. 6 in. x 3 ft. 2 in., 12 light Single casem. sash, 2 ft. 0 in. x 4 ft. 8 in., 15 light		
6 in. sanitary base	Triple casem. sash, 2 ft. 0 in. x 4 ft. 8 in., 15 light	1	
Moulded cap 30 lin. ft.	Group of 4 cas., ea. 2 ft. 0 in. x 4 ft. 8 in., 15 light		• • • • •
SHEET METAL WORK	Single casem. sash, 1 ft. 0 in. x 2 ft. 6 in., 3 light Single casem. sash, 1 ft. 0 in. x 2 ft. 6 in., 3 light		· · · · · · · ·
Copper flashing for roofs, etc 90 lin. ft.	Second floor windows.		
Tin flashing and counter-flashing for chimney 14 lin. ft.	Single D. H. sash, 2 ft. 8 in. x 4 ft. 0 in., 16 light Single D. H. sash, 2 ft. 8 in. x 4 ft. 4 in., 16 light		
Tin gutter lining (20 in. wide)	Single D. H. sash, 2 ft. 6 in. x 3 ft. 2 in., 12 light		
Tin valley lining (20 in. wide)	Attic windows.		
3 in. copper leaders 100 lin. ft.	Single D. H. sash, 2 ft. 8 in. x 4 ft. 4 in., 16 ligh Single D. H. sash, 2 ft. 6 in. x 3 ft. 2 in., 12 light		• • • • •
Bends for leaders	Shutters (11/8 in. thick, solid paneled).	•	•••••
Gutter thimbles	3 ft. 0 in. x 6 ft. 7 in. pr.	3	pr.
Cap and thimble for same 1	Blinds (1½ in. thick, fixed louvres). 2 ft. 8 in. x 4 ft. 1 in. pr	6	pr.
CARPENTRY	2 ft. 8 in. x 4 ft. 5 in	4	pr.
Timber: All No. 1 common stock, hemlock,	Dog hole hop and frame, 12 in. dia Lattice panels, 2 ft. 6 in. x 8 ft. 6 in		
rough, unless noted.	Flower box, 12 in. x 12 in. x 7 ft. 6 in., with	•	•••••
Cellar girders, 6 in. x 10 in. spc.—1/12, 2/8 120 F. B. M. 2 in. x 3 in. nailer, 56 lin. ft 28 F. B. M.	lining, brackets, etc.	1	•••••
2 in. x 3 in. nailer, 56 lin. ft	Extra door frames (134 in. thick, rabbeted, complete with outside trim).		
Posts, 4 in. x 6 in.—4/18, 4/10	Frame for garage doors, 8 ft. 0 in. x 8 ft. 0 in	1	
Studs, girts, and plates, 1st floor. 2 in. x 4 in.—137/10, 71/8	Frame for front ent. door, 3 ft. 0 in. x 6 ft. 8 in., with ornamental exterior trim	1	
Studs, etc., 2nd floor and attic.	Frame for ext. door to liv. porch, 2 ft. 8 in. x	•	• • • • •
2 in. x 4 in.—65/10, 216/8 1584 F. B. M.	7 ft. 0 in		
1st floor joists, 2 in. x 10 in.—23/14, 23/12 996 F. B. M. 2nd floor joists.	Rear ent. door, 2 ft. 8 in. x 6 ft. 8 in Kalamein door, jambs and trim, door stairway	1	• • • • •
2 in. x 10 in.—25/14, 25/12 1083 F. B. M.	to garage, 2 ft. 4 in. x 6 ft. 8 in. x $1\frac{3}{4}$ in	1	
2 in. x 8 in.—12/10	Exterior doors (all to detail). Garage doors, pr., 8 ft. 0 in. x 8 ft. 0 in. x 2½ in.	1	
3rd floor ceiling beams, 2 in. \times 4 in.—16/14 144 F. B. M.	Front ent. door, 3 ft. 0 in. x 6 ft. 8 in. x 134 in.		
Rafters, 2 in. x 6 in.—63/18, 4/12, 15/10 1333 F. B. M.	Ext. door to liv. porch, 2 ft. 8 in. x 7 ft. 0 in.		
Ridge, 2 in. x 8 in.—1/16, 1/14, 1/12 56 F. B. M. Living porch rafters.	x 134 in., glazed	1	• • • • • •
2 in. \times 6 in., $10/10-2$ in. \times 8 in., $2/14$ 121 F. B. M.	Rear ent. door, 2 ft. 8 in. x 6 ft. 8 in. x 134 in., glazed	1	
Porch ceiling beams, 2 in. x 4 in.—23/10 153 F. B. M.	Finished flooring.	•	
Floor bridging, 2 in. x 2 in.—63 lin. ft	Living room, dining room,, ent. hall, plain		_
Cellar partitions (studs), 2 in.x4 in.—8/14, 6/10 85 F. B. M.	sawed white oak, 13/16 in. x 21/4 in., to cover Kitchen, etc., No. 1 maple, 13/16 in. x 21/4 in.,	500	sq. ft.
Sheathing (7/8 shiplap), no outs. Walls, to cover	to cover	150	sq. ft.
Sheathing paper (waterproof) 1750 sq. ft.	Second story, No. 1 comb grain Y. P., 1/8 in.		-
Sningle lath, $\frac{1}{2}$ in. x 2 in 3750 lin. ft.	by 21/4 in., to cover		sq. it.
Grounds, 34 in. x 2 in., surfaced one side 2000 lin. ft. Sheathing for cellar partitions,	Lining paper under floors		sq. ft.
78 in. x 8 in. shiplap, to cover 360 sq. ft.	Cement filled pipe cols. in cellar.		•
Rough flooring (% in. x 8 in. shiplap).	(4 in. dia. x 7 ft. 6 in. long, with caps and	4	
1st floor, to cover	bases) Joist hangers (¼ in. x 2 in. W. I.)	4	• • • • • •
Sningle roots (18 in. stained shingles).	For 2 in. x 10 in. beams	8	
15.6 squares	For 4 in. x 10 in. beams	8	
- Squaresti ocoo sinigits	For 4 in. x 8 in. beams	2	• • • • • •

INTERIOR FINISH		Base, ½ in. x 6½ in. moulded	
Door trim (whitewood)-\(7\) in. jambs, \(\frac{1}{2} \) in.		2 in. base mould	
stops, 1/8 in. x 41/2 in. moulded and mitered		1/2 in. quart. rd. floor mldg	620 lin. ft.
trim with wall moulding; trim both sides. For doors 2 ft. 8 in. x 7 ft. 0 in	2 sets	Picture moulding, 1/8 in. x 21/4 in	540 lin. ft.
For doors 2 ft. 8 in. x 6 ft. 8 in	1 set	Interior doors.	•
For doors 2 ft. 6 in. x 6 ft. 8 in	5 sets	2 ft. 8 in. x 7 ft. 0 in. x 134 in., glazed	2
For doors 2 ft. 4 in. x 6 ft. 8 in	8 sets	2 ft. 8 in. x 6 ft. 8 in. x 1½ in.	1
For doors 2 ft. 4 in. x 7 ft. 0 in	1 set	2 ft. 6 in. x 6 ft. 8 in. x 1½ in.	5
For doors 2 ft. 0 in. x 6 ft. 8 in	1 set	2 ft. 4 in. x 6 ft. 8 in. x 1½ in	8
Trim for inside of exterior doors.	1 301	2 ft. 4 in. x 7 ft. 0 in. x 1½ in	1
Front ent. door, 3 ft. 0 in. x 6 ft. 8 in	1 set	2 ft. 0 in. x 6 ft. 8 in. x 1½ in	1
Ext. door to liv. porch, 2 ft. 8 in. x 7 ft. 0 in.	1 set	Cellar doors.	•
Rear ent. door, 2 ft. 8 in. x 6 ft. 8 in	1 set	2 ft. 10 in. x 6 ft. 6 in. x 1½ in	1
Trim for garage and cellar doors (plain).	1 301	2 ft. 6 in. x 6 ft. 6 in. x 1½ in	1
• • • • • • • • • • • • • • • • • • • •	14	Closet shelving (% in. x 12 in. pine)	44 lin. ft.
8 ft. 0 in. x 8 ft. 0 in., 1 side	l set	Hoo'c strip (7.8 in. x 4 in.)	60 lin. ft.
2 ft. 10 in. x 6 ft. 6 in	1 set	Rabbeted shelf cleat	30 lin. ft.
2 ft. 6 in. x 6 ft. 6 in	1 set	1 in. dia. pipe clothes rod	20 lin. ft.

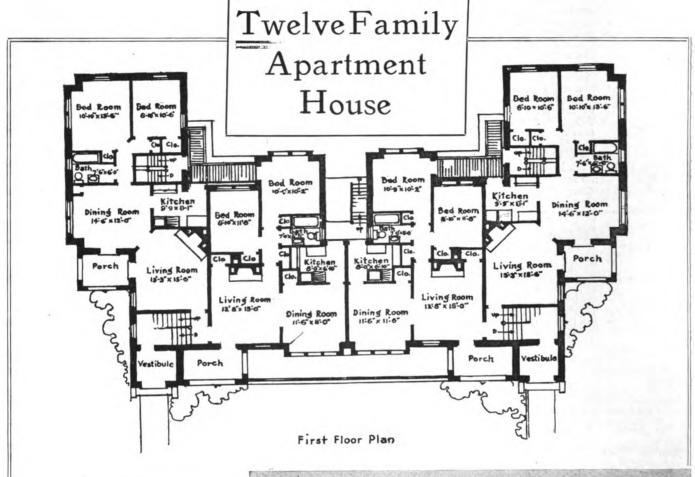
2 ft. 6 in. x 6 ft. 6 in	1 set		s rod
¢of Mullion	Dot Mou	tted Line shows Wall Ilding at Jamb	
Mullion Trim	Blo	ocking 1	
Inside Line of Sash	Door	1	
Inside Line Branze Stop Bead of Sash Adjusters, not at Jamb, over 14 a.c.		Section Thru Head of Frame Jamb Sect. Simil	Door Jar Jar
Sect. Thru Head of Window Trim Jamb Sect. Similar		Picture Mouldin	
Inside Line of Sash at Sill		Dotted L	ine The
	Sect. th	shows pasition Casing on of Plinti	70p
Section thru X	司		Part Elev of Door Trim
Stool, Apron, Etc Part Elev. of Windo	ow Trim		Showing Return of Cap Moulding, Relative Position of Plinth
Showing How Casing Mi Return of Stool, Apro	ters and on, Etc.	Fin. Floor Level	Block, Base, Etc.

Trimmed opgs, finished same as for doors. Opg. 6 ft. 0 in. x 6 ft. 10 in Opg. 5 ft. 0 in. x 6 ft. 10 in Opg. 4 ft. 0 in. x 6 ft. 10 in Trim for windows—1/6 in. x 41/2 in. moulded and mitered trim with wall moulding, 1/2 in. stops, 11/6 in. moulded stool with cove vender,	1 set 1 set 1 set
½ in. moulded apron.	
For windows, single, 3 ft. 0 in. x 6 ft. 6 in.	3 sets
2 ft. 8 in. x 4 ft. 8 in.	1 set
Mull., ea., 2 ft. 8 in. x 4 ft. 8 in.	1 set
Mull., ea., 2 ft. 8 in. x 4 ft. 0 in.	7 sets
Single 2 ft. 6 in. x 3 ft. 2 in	4 sets
Single, 2 ft. 6 in. x 3 ft. 2 in. Single, 2 ft. 0 in. x 4 ft. 8 in.	2 sets
Triplet, ea., 2 ft. 0 in. x 4 ft. 8 in.	1 set
Gr. of 4, ea., 2 ft. 0 in. x 4 ft. 8 in.	1 set
Single, 1 ft. 0 in. x 2 ft. 6 in.	1 set
Single, 1 ft. 0 in. x 2 ft. 6 in.	1 set
Single, 2 ft. 8 in. x 4 ft. 4 in.	5 sets
Mantel for living room	1 Unit
Mantel for B. R. No. 1	1 Unit

Kitchen cupboard (front 4 ft. 0 in. x 8 ft. 0 in.), countershelf, drawers, doors, etc	1 Unit 1 Unit
4 ft. 0 in	1 Unit
trade at 2d floor, etc. (whitewood) Cellar stairs, 12 risers, box pattern, 2 ft. 8 in.	1 flight
wide, yellow pine, wall handrail, etc	1 flight
3rd floor, etc.	1 flight
GENERAL CONDITIONS	

Add for permits, fees for water and sewer connections, etc., insurance and general overhead charges.

Allow for general work not listed, such as grading, planting, etc. Include sub-bids, hardware and applying same, painting and decorating, plumbing and gas fitting, heating and electric work.



HE demand for apartments continues and builders find it profitable to be posted on the numerous room arrangements that seem to be popular. Briefly speaking, there are three distinct types of apartment houses:

One, the large extensive apartment sometimes containing thirty rooms suitable for people of the millionaire class. Then we have the smaller arrangement containing the conveniences of a small house in one apartment, the rooms being all of fair size. Next comes the apartment house with boiled down conveniences, one-room apartments with kitchenette attachment and bedroom of the ina-door type, the one-room thus giving the conveniences of a four-room apartment.

Many people, however, do not care for the tabloid system of house keeping. Therefore, there will be a big demand for apartments with five, six or seven rooms.

We show a rather interesting design of two double apartment houses;



the exterior forming one pleasing design. As the floor plans disclose, there are many novel features that will give builders some valuable suggestions in the way of eliminating waste space and useless corners.

The kitchens are reached by outside rear stairways; the front entrances being direct into living rooms of the adjacent apartments. Each apartment has a sun parlor or porch opening from living room.



Brick, stone and stucco artistically combined make this attractive exterior which is further enhanced by casement windows and slate roofs and overhangs.

Short halls connect bedrooms and bathrooms, insuring the utmost privacy. The kitchens are located next to the dining room in each case, and the rear stairway provides an ideal entrance for tradesmen. The rooms as arranged are well lighted and ventilated by an abundance of windows. A laundry is located in the basement as well as the heating plant, storage rooms, etc.

The exterior is of pleasing design and is entirely different from flat front apartment houses so often in evidence. As our pictures show, it sets back quite a distance from the street and it is fortunately located on a corner which provides a good setting for such a novel and artistic design.

The exterior walls, as the different illustrations show, are laid up in face brick. Foundation is of stone laid in random rubble, pointed up with wide white joints. The first row of brick above the stone work is laid in soldier

course and the same detail is carried out as a belt course over the second story windows.

Stucco and brick panels underneath the windows of the porches, together with stucco and half timbered gables, produce pleasing breaks in the brick work front. The window sills are also of brick laid on end. The entire face brick work is laid up in Flemish bond. The roofs over the entries, front sun porches and overhang are covered with slate and where this roof joins the wall it is well flashed, producing a first-class job in all respects.

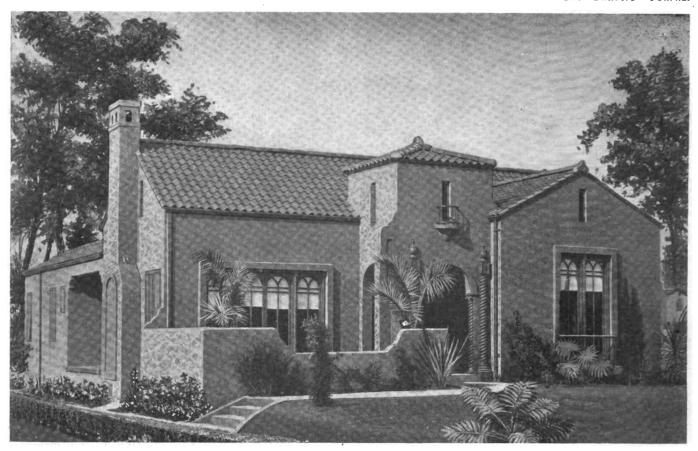
Casement as well as double hung windows are used to obtain good architectural effects. The careful handling of the details has resulted in something different from the ordinary type apartment building. The apartment house shown here was built at Narberth, Pa., by Wm. D. & T. Smedley, builders, for their own investment.

Apartments of attractive design will prove profitable investments. It is up to the builder to show this to prospective owners.

BOYD, ABEL & GUGERT

Philadelphia, Pa.

Architects

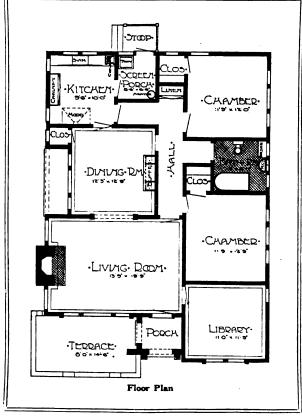


Spanish Architecture for Bungalow

UR cover design this month shows a rather unusual design of a home. It was originally built in California but the type has been duplicated in various parts of the country, especially in Florida where it has become quite popular. The cream color stucco walls, finished in rough plaster effect, harmonize with the red tile roof and blend with the charming color scheme of the surrounding foliage.

There are three principal motifs to the front elevation. Each of these is a gem in itself, but when combined they are even more attractive, forming a classic composition of New and Old World architecture.

The double window of the library faces the street and above this a narrow gable window relieves the blankness of an otherwise too unattractive wall. Another pleasing fea-



ture is the cleverly designed arched porch, ornamented on each side with its spiral fluted pilasters and turned urns above. Above this porch a square tower rises. Narrow windows, one of which opens on a miniature semi-circular balcony, lend an artistic and unique effect to the two visible walls of the tower.

The idea of the iron-railed balcony is also carried out in the design of the two full length library windows. The large casement windows in the living room open directly on the terrace adjacent to the porch on the front of the house.

Another covered terrace is featured on side of building. The windows of dining room, like those of living room and library, extend to the floor, open onto this terrace on which it was the designer's idea to place flower boxes.

Our Government Is Urging Home Ownership

GUIDE book designed for the prospective small home owner was issued by the United States Government, the Department of Commerce announcing the publication of a handbook setting forth details which assert the steps necessary to acquiring such property.

This aid to home builders is a publication entitled, "How to Own Your Home." It carries a foreword by Herbert Hoover, Secretary of Commerce, and was compiled by John M. Gries and James S. Taylor, of the Division of Building and Housing, in answer to the request of a large number of national civic organizations that the subject should be authoritatively covered to encourage home owning in the interest of good citizenship. The booklet, planned to give simple, common-sense information to the person of moderate means who would possess a home, is the result of collaboration and approval by more than fifty civic bodies and experts interested in developing a sound social and economic system through the home.

In declaring that the public recognizes the advantage of owning their own homes and that business groups, especially, are viewing this proposition in a new light, Secretary Hoover said in the foreword:

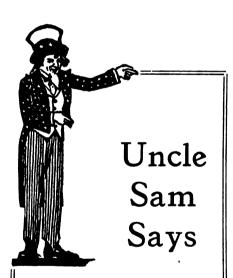
"They see that taking a neighborly interest in developing sound financing and other machinery for the use of home seekers and insisting on the observance of honest, straight-forward business methods by those who deal with home seekers is not paternalism but good business and good citizenship. It is the 'square deal'—and it is not only right but essential that the cards should not be stacked against the home seeker."

"Maintaining a high percentage of individual home owners is one of the searching tests that now challenge the people of the United States," Secretary Hoover asserted in urging "the own-your-home" idea. "The present large proportion of families that own their homes is both the foundation of a sound economic and social system and a guarantee that our society will

continue to develop rationally as changing conditions demand."

"Buying or building a home requires the use of sound judgment in seeing that the personal needs of the family are best met with the funds available," Mr. Hoover pointed out in the foreword. "It involves not only the carrying on of transactions of financing and buying or building but it involves the proper determination of location with respect to school, to work, and to neighborhood."

"A family that owns its own home takes pride in it, maintains it better, gets more pleasure out of it, and has a more wholesome, healthful and happier atmosphere in which to bring up children. The home owner has



HOME ownership is good for our Nation's prosperity.

The building of homes will be the backbone of the Building Industry for many years to come.

Many points are given that can be capitalized by clever builders in creating sales of more houses.

a constructive aim in life. He works harder outside his home, he spends his leisure hours more profitably, and he and his family live a finer life and enjoy more of the comforts and cultivating influences of our modern civilization. A husband and wife who own their own home are more apt to save. They have an interest in the advancement of a social system that permits the individual to store up the fruits of his labor. As direct taxpayers they take a more active part in local government. Above all, the love of home is one of the finest instincts and the greatest of inspirations of our people."

Statistics published in the book show the percentage of home owners in the United States, and the revelation made by them also prompted the Department of Commerce to publish such information for public use. In 1900, 461 of every 1,000 families in America owned their own homes, while in 1920 the percentage had dropped to 456 in each 1,000. Of the 48 States only 20 showed an increase.

One of the outstanding problems confronting the home seeker, the handbook points out, is that of financing the acquisition of property.

"The prospective home owner who uses his common sense in considering the real needs of his family and his ability to pay, and who checks his own judgment by consulting experienced persons, may go ahead with full confidence," it states. "He need not be frightened by the mistakes of heedless persons who have been carried away by some novel feature and coaxed into a bad bargain, or who have tried to buy beyond their means. While some risks are involved, as is usually the case in obtaining anything worth while, the danger of failure is relatively small when weighed against the advantages of an owned home."

What ratio of income may be safely devoted to the process of acquiring a home is explained in this vein: "If a certain family pays one-sixth of its income for rent, it may be able to devote one-fourth or more to buying and maintaining a house, for the

amount thus used may include both rent and savings. Rent, or payments on a home, may require anywhere from one-eighth to one-third of the family income, depending on the special circumstances in each case."

Tables dealing with the ratio of income to home investment are given. The tables do not attempt to set up arbitrary standards, although they are stated to be fairly typical and may be used as a basis from which to start figuring.

Under the heading of "The Range of Safe Expenditure," the handbook does not approve of any effort to buy a home beyond a definite ratio to family resources and income, and carefully elaborates these ratios of expenditure in accordance with income.

Particular stress is placed by the handbook on the agreements which should be definitely entered into with regard to financing, building, and purchasing. The points which should be clearly defined are emphasized.

"Borrowing money to buy a home is no disgrace," it declares. "On the

contrary, it is normal and in many ways desirable. Many families in meeting payments on a loan have learned the habit of saving, and have continued it as a step toward financial independence."

In the selection of a home site, requirements are carefully discussed from the standpoint of family life, neighborhood, education, transportation to work and to shopping centers, low or high land values, protection offered to home by private restrictions, zoning, ordinances and city planning, and by fire departments and police. Character of the neighborhood, location with reference to schools and playgrounds for children, and general improvements of the lot, including planting and drainage, are points that are explained as important factors.

The problem of buying the property for the site too long before building in view of the conditions of public utility improvements, such as paving, sewerage, water supply, gas and electricity, possible assessments, the

proportion of lot value to the total outlay and without making a proper search of the title, are also given attention in the handbook.

It is hoped that prospective home owners may find whether they are on the right track by checking their plans with these suggestions and that the home so acquired will cause them no regrets.

If they insist on good honest standards in the houses they build or buy they not only benefit their families and themselves but perform a broader service. They help raise the quality of homes in the United States and provide a sound basis for wider home ownership.

"How to Own Your Home," may be obtained for 5 cents a copy from the Superintendent of Documents, Government Printing Office, Washington, D. C. Builders can profitably buy a number of copies and distribute them to likely prospects. They will then have Uncle Sam's advice on whether they should have a home of their own.

Evolving An "American Style" of Architecture

CONFLICT "almost revolutionary" is going on between "power" and labor, Prof. William A. Boring, director of the Columbia School of Architecture, says in his annual report to President Nicholas Murray Butler, just made public.

The buildings of today, he adds, are the silent historians of this struggle. Characteristic American architecture, according to Prof. Boring, is being modified with consequent loss of beauty. Evidences of an American style are, however, beginning to appear, he declares.

"While it is recognized that a nation's history is truly reflected in the architecture it produces, we are hardly prepared to see this national expression follow the political and economic changes so promptly as is now so evident throughout the land," the report reads. "The triumph of organized labor is a phenomenon which will be recorded permanently in the building of today.

"No longer do we see heaps of stone quarry blocks surrounding the site of a growing building and hear the pleasant chatter of the stone cutters' chisels giving architectural form to the stones. Today huge motor trucks bring all material ready to set in place, and their burdens are lifted by powerful derricks and deposited on the scaffold. The hissing of hoisting engine and steam excavator, and the aggressive tattoo of the power riveter proclaim that a building is being born into the world.

"This state of things develops naturally in the struggle between power, on the one hand, to push forward, and of labor, on the other, to hold back. It is of great import—almost revolutionary in fact.

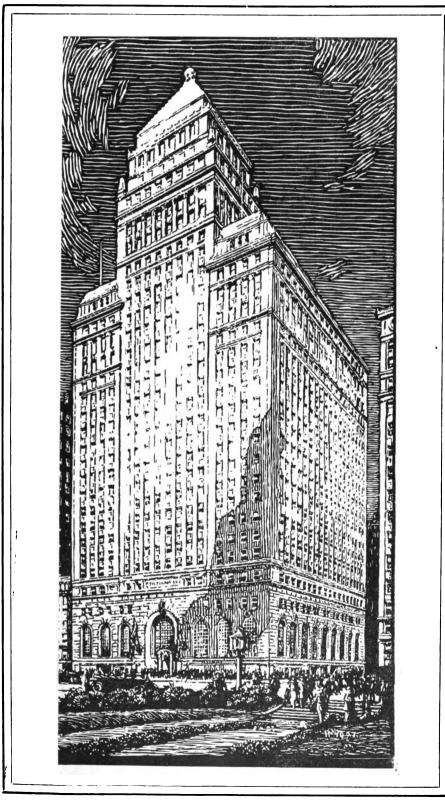
"The architecture of today is making a record of these conditions in the form, style and fabric of the buildings we erect. The practicing architects mold their design primarily to accommodate the needs of occupation, and then try to wrest, from an un-

willing labor system, buildings which have some semblance of beauty.

"The characteristic forms and expressions of architecture, which are acceptable to Americans, are modified to make a plain building look attractive and a cheap building to look at least inoffensive. Strict adherence to the minimum cost has shorn the average building of adornment.

"The School of Architecture is following the trend of the practitioners in design, by adopting a program of problems which embraces the typical buildings demanded by the American public. These buildings are designed by the students under the counsel and constructive criticism of our critics who are able practitioners, and the competitions are judged by a jury of the faculty and eminent practicing architects. We believe an American style will in time appear and that Columbia will participate in its gradual evolution, and, while it will be a slow growth, the evidence of its existence is apparent."

Saving Money on Construction Costs by Having Some Experts Pass on Plans



O save money in the erection of a building is considered mostly as a job for the owner and architect, rather than the building contractor. Many shortsighted builders think, of course, that they should increase the cost—that is all right, provided a better building results.

There are ways of saving that builders can and should suggest; it is a service that builders should render. This need not cut down your profit but rather should increase it.

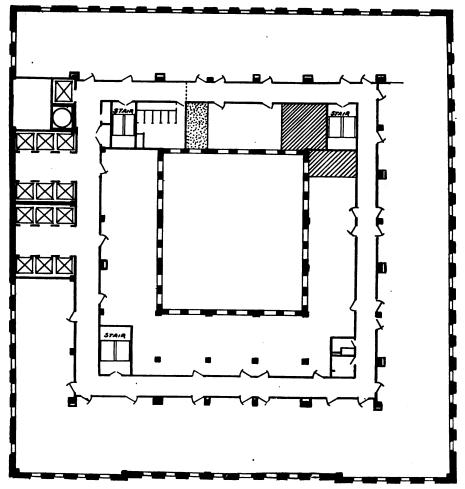
For instance, if on a \$50,000 job your profit is figured at say \$5,000 and you see a way of making a few changes thereby saving the owner \$1,000, tell him so and instead of cutting off 10% of your expected profit, speak up and sell your saving idea. Say to the owner, "Here is how you can save a thousand dollars by doing the job this way and it will not hurt the design or stability of your building—why not save this money? Pay me \$200 for the suggestion and you will net a saving of \$800."

Every owner will jump at such a chance and gladly pay the builder the little extra bonus. But do not make the mistake of trying to cut down cost at the expense of the beauty of the design, its usefulness or safety. Of course, in a small structure, there is not the chance of making so many savings as on a larger one.

An interesting case of effecting quite a large saving was on the new \$15,000,000 thirty-two story Straus building now being erected at the corner of Michigan Avenue and Jackson Boulevard, Chicago.

A building conference was held in which the construction cost was cut approximately \$250,000, while added service features were provided for the future tenants. The rentable area was also increased through the minor changes suggested by the foremost building owners and their technical advisers who made up the personnel of the conference.

Such a conference, perhaps the first of its kind ever held, is of



Shaded portion shows old toolet location. Dotted portion next to new location indicates the number of square feet of floor space saved per floor, by changing tollet location. Also, note only one window used in new location. In addition, the revised arrangement makes it possible to construct a partition across the corridor indicated by dotted line and to include any portion or all of the corridor in the rentable area without affecting the accessibility to the toilet facilities.

greater significance because, notwithstanding the fact that S. W. Straus & Co., in making plans for its future home, had the benefit of its own 41 years' experience in the financing of building construction, and the experience of its architects, engineers and contractors, the Straus organization went one step further and determined to lay before the New Building Planning Service Committee of the National Association of Building Owners and Managers the complete plans so as to benefit from the experience of men engaged in the highly technical profession of managing office building properties. Thus the Straus executives felt that it would bring to bear on the plans during their very inception the point of view of the future tenants.

Even though no changes in the building plans would necessarily be made, the owners felt that bringing together of so many points of view would be highly profitable through the savings made by better and more efficient maintenance and operation.

The purpose of the gathering was the union of all those interested in the building, the owners, the architects, the engineers and the group of building managers, for the common purpose of determining the most artistic appearance, the greatest economy of construction and the most efficient layout of office space.

The idea of the conference was to formulate better building construction and operation. And the precedent set in this first commission of the committee will make possible like savings and better efficiency for not only office buildings but hotels, apartment hotels, apartment hotels, apartment houses, warehouses and industrial plants.

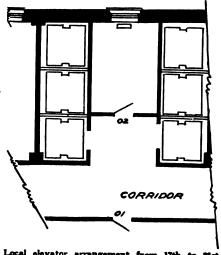
Of equal significance is the fact that a financial house of the standing of S. W. Straus & Co., itself an authority on all types of construction, should have deemed it advisable to lay plans for its new home before a Building Planning Committee.

"This company," said Mr. S. J. T. Straus, senior vice-president of the Straus organization, in discussing this interesting phase of the situation, "is interested in every progressive development that has for its purpose the construction of better buildings.

"In analyzing a financial poposition, we are as much concerned with its ability to pay off interest and principal obligations as they mature through the income which it produces, as we are in the equity of the property. Therefore, in all of our financial operations, we pay special attention to the item of income, confident that if a property has an adequate earning power and the financing is properly handled, the loan is a good one."

"The co-operation of the office building managers," noted Ernest R. Graham, of Graham, Anderson, Probst & White, the architects for the new building, "has been long sought by progressive architects during the early stages in the development of large office building projects. The men engaged in this specialized field, during their years of experience acquire much knowledge about the operating problems arising in the renting and maintenance of their buildings, and can, if given the opportunity, be of much service to the architect."

At this building conference it was voted that the plans as originally submitted to the conference were 100 per cent perfect. The changes suggested by the members of the conference concerned largely those particulars



Local elevator arrangement from 17th to 21st

56

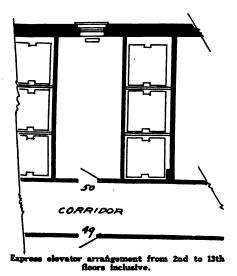
which reflected the accumulated experience of the building managers representing the tenant point of view.

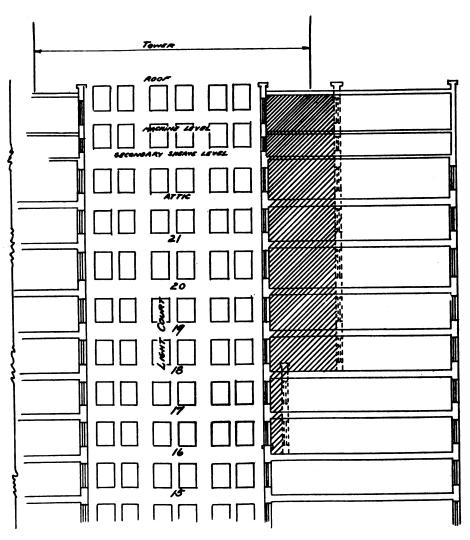
An example of the savings effected is the increase in rentable area through changes in the toilet facilities, elevator and court plans.

Instead of duplicating elevator door and signal equipment throughout the building, the corridor space between the elevator banks on all floors from the first to the thirteenth where express cars will not stop is to be utilized for extra office space. On these floors there will be no elevator entrance doors or other expensive equipment. Above the thirteenth floor the elevator corridor space in front of the local elevators from the sixteenth to the twenty-first floor will be used for office space not previously planned. This arrangement, together with the gains made by making the walls of the interior court perpendicular instead of terraced, will add \$24,000 a year income to the building.

Another big saving was in the elimination of the chair rail, which has always been considered an essential for the protection of the walls from contact with chairs. As a matter of fact the chair rail does not protect the walls, because a chair usually makes a contact with the wall above or below the rail line. At thirty-five cents a linear foot, it can be appreciated the amount of the saving when it is realized that there are thousands of feet of wall in such a structure.

Among other savings effected are: Elimination of sidewalk lights. Elimination of locks on the inside office doors. Elimination of exterior windows in elevator banks. Elimination





Section looking east, showing additional gain in floor area by elimination of setbacks on south wall of light court.

of one complete stack of toilets throughout the building. Elimination of vacuum cleaning plant in favor of small portable machine. Elimination of the setback in the court which, at an expense of \$50,000, enabled us to secure additional rentable area producing an annual income of approximately \$25,000.

The new Straus building, which will be ready for occupancy prior to May 1, 1924, will be the largest structure on the Michigan Avenue skyline and will be one of the finest examples of office building architecture in the United States.

It will be a massive, towering structure of Bedford stone and will contain approximately 400,000 square feet of rentable office space exclusive of the six floors to be occupied by the owners.

The main shaft of the building will rise to a height of 22 stories and will

carry a 10-story tower centered on the Michigan Avenue side. The structure will be in the form of a hollow square, built around the perimeter of the lot, with an inside light court entirely surrounded by offices.

Following the best known examples of Florentine architecture the exterior of the structure will have a rusticated or deep joint treatment up to the sixth floor, above which there will be a plain ashlar finish with perpendicular lines emphasized to accentuate the height of the building, thus giving it imposing stateliness.

On the Michigan Avenue side the center section of the building, about 80 feet across, will be set back two or three feet from the line of the corner sections and will be carried up the entire height of the structure into the great sky-piercing tower. This set-back will break the Michigan Avenue front sufficiently to give it a distinctive appearance.

From Carpenter to Large Scale Speculative Builder

Interesting Story of How Two Apprentices Became Successful Builders
Erecting Many Blocks of Homes in a Few Years

By H. R. HORTON



Gottfried Stenberg

HY not seek a career in the building trades? The high wages paid such artisans to-day together with the nation-wide hue and cry for more skilled building mechanics has raised that question in the minds of many young men engaged in getting an education or in office work and in the minds of parents of boys destined from birth for "white collar" jobs.

Stories have been printed of clergymen leaving their pulpits and professors their desks to take up carpentry, brick-laying or plastering. The change is laid to the universal desire to find more money in the pay envelope at the end of the week, besides congenial work.

But is that all the building trades have to offer? Does taking up a trade necessarily mean abandoning the white collar for life? Many do not think so and can offer proof to the contrary. There is no greater need for an ambitious man engaged in the building trades

continuing to work for others than there is in any other field of endeavor, and the reward for hard work, thrift and advancement to a business of his own as a specula-

The Man in Love with His Trade

A NY man or woman ashamed of his or her calling or business will never succeed in it. The man who said, "I never wanted to be anything but a mechanic," had the right feeling about his respectable and honorable daily work.

Wherever the man is proud of his honest trade and works at it faithfully, he not only succeeds, but gains honor in his calling. On the contrary, the man who is all the time regretting his inherited or chosen work seldom prospers as much as the man in love with his trade.

Brooding with dissatisfaction over our employment, instead of adding to our strength and prosperity, tends to weaken and destroy our homeliest toil.

Seeing something to fret over is spirit-tiring, and steers any boat we are rowing upon the rocks of disaster.—JOHN WANAMAKER.



Sigurd Stenberg

tive or contracting builder is as great as in any other line.

One of the many builders who have risen from mechanics by their own efforts to proprietors of successful businesses has given to BUILDING AGE the story of his business career and the principles which have enabled him to carve the word Success on his record. This man is Mr. Gottfried Stenberg, President of Stenberg Bros., "Builders of Homes that are Complete," of Richmond Hill, Queens Borough, New York City.

Queens Borough is known as "the Borough of Homes" and Richmond Hill stands out conspicuously among communities of the country with a record of 2,610 buildings erected during 1922. For that reason it was picked out as good territory in which to find a successful builder.

An inquiry at the office of the concern for either of the brothers

elicited the response that both Mr. Stenbergs were on the job and the further information that the best time to talk to Mr. G. Stenberg would be before nine o'clock in the morning and after four-thirty in the afternoon. That reply of the girl at the switchboard went a long way toward answering the question as to how these men have made a success of their business. Both Mr. Stenbergs are, and always have been, strictly "on the job" and it is to that largely that they owe their rise from carpenters newly arrived in this country from Sweden in 1901 to successful speculative builders with over 400 houses to their credit to-day.

"We believe in hard work," said Mr. Stenberg. "We have concentrated our efforts in one locality and stayed on the job. Neither my brother nor I have ever taken a vacation. It is in that way that we have built up a reputation here, and the building of a reputation for square dealing and honest workmanship has been the main object in our lives."

The brothers were born in Sweden, but are proud of the fact that their father was a citizen of the United States. When they came to this country, Mr. Gottfiried Stenberg was twenty-one and his brother Sigurd was two years older. Neither had had a technical education. Both were carpenters and they at once went to work at their trade in Brooklyn.

FIVE years was long enough to work for others and in 1906 they took their first contract. It was for the carpenter work on fourteen houses. They had specialized in house building from the first and so careful had been their study of their chosen occupation

that they were able to estimate the time of completion of their first job to within three hours of the actual time of finishing, and the three hours were on the right side of the ledger. The contract showed a satisfactory profit and from that time to date the brothers have never had to take a loss.

One year later they began building houses on speculation, two or three at a time, and continued to build on contract. When the end of the war came, they foresaw a great demand for residences of moderate price to relieve the housing problem in Greater New York and purchased the tract of land on which they are still operating. From 1918 on they devoted themselves exclusively to speculative building.

THIS tract of land was at that time farm land. They selected it because of the transportation facilities. It was situated on an elevated line with a forty-minute ride to downtown Manhattan and within easy walking distance of other transit lines.

In telling of this venture, Mr. Stenberg said, "We really took no chance whatever. The day that I arrived in this country I became a student of conditions. I read all the government reports and articles in the newspapers, periodicals and trade magazines that I could lay my hands on. For a student of the conditions it was no great trick to foresee, that after four years of practically no residence building, there was going to be a building boom. The same knowledge of conditions enabled me to buy materials in quantity on a falling market with the surety that prices would soon shoot skyhigh. I bought seventy-five carloads of lumber in one deal when every one told me I was a fool, but they had not studied conditions as I had."

T all sounded very simple as Mr. I Stenberg told it. To him it represented just good, steady progress towards the goal he had set for himself. He worked hard. He specialized in carpentry, then in carpentry on houses. He concentrated his efforts in a small area so as to make easier the building of a reputation. He studied not only his own business but also the general business conditions throughout the country. He saved, and when he saw opportunity beckon, he was ready to follow. That was all there was to it.

The next step was to specialize in building not mere houses, but homes. They were in fact building a community. Strictly original plans became Mr. Stenberg's hobby and from the depths of his practical experience plans were developed which were compact and economical, yet exceptionally roomy and comfortable. He was his own architect and also ran lines and grades and did his own location work. The houses were of many and varied architectural designs so that each had its individuality and the entire blocks were so laid out as to give an aspect of regularity pleasing to the eye instead of the terrible sameness and monotony of many such developments.

No effort was spared to make the Stenberg development attractive. The tract was very carefully restricted and complete city improvements were installed at the expense of the builders. Sewers were laid according to city specifications as to size and grade. Streets were asphalted and concrete curbs and



Pangramic view of street in Richmond Hill — every house shown was erected by the firm of Stenhors Brothers

Digitized by Google

sidewalks laid. Norwegian maple trees were set out between the sidewalk and curb in front of every house. Ornamental poles for street lights were provided and the builders considered it worth while to go to the added expense of laying the electric and telephone wires underground so as to do away with unsightly poles.

Stenberg Bros. built only detached houses of the cottage type and set them well back from the street, 18 to 20 ft., on lots 25 to 40 ft. wide and 100 to 117 ft. deep. Lawns were sodded; ornamental shrubs were planted at either side of the entrance and everything was done to make the place a source of pride to the new owner. All that he had to do was to move in his furniture, lay his carpets, throw the key under the mat and call it, "Home."

These homes, for the most part six rooms and sun parlor, sell for about \$8,700. All sales are made with an initial payment of \$2,000, the balance on a second mortgage payable in installments of \$100 and up quarterly. First mortgages to approximatly 40 per cent. of the selling price are held by title companies and savings banks as a part of the builders' financing. Many sales are made before the houses are built. The purchaser pays his money down when he has seen only the foundations and Mr. Stenberg is justly proud of the fact that no one has ever demanded his money back on grounds of dissatisfaction after the job was completed. The



Two of the one-family houses. The exteriors vary slightly, but uniform floor plans assure economy in construction.

sale is not made through a broker, but is done through the builder's own salesman, who is always on the job. In thus dealing directly with the purchaser, they have built up a reputation for fair dealing in addition to one for honest construction.

As Mr. Stenberg says, "I live in a Stenberg home in a Stenberg block. So does my brother. We are not afraid to meet the purchasers morning, noon and night. Our business is built on Service; we aim to satisfy the purchaser first of all."

The brothers divide the work. Mr. Sigurd Stenberg superintends

the construction, while Mr. Gottfried Stenberg attends to the business end. They are in themselves an entire organization; superintendent, architect, engineer, sales manager and business executive. They have built well and made money. A block of Stenberg homes would be a credit to any community. At present they are engaged in erecting the fifty odd houses still to be built on the tract.

But let Mr. G. Stenberg tell the rest of the story.

"I look upon building as a manufacturing industry, and one which run right is a community's biggest asset. For what can be more important than honestly built, attractively planned homes? The man who manufactures underwear may not look upon me as a brother manufacturer. I am,-I manufacture homes. My aims are the same as his; to turn out a good product first of all and then to make it known as such to potential buyers. I strive to make my trade-mark, 'A Stenberg Home,' mean as much to the home seeker as the mystic letters, 'B. V. D.,' do to 'the best retail trade.'

"We advertise in the newspapers which are read by the class of people who buy homes at our price, but after all the best advertising is by word of mouth. From 80 to 90 per cent. of the inquiries come from friends and acquaintances of



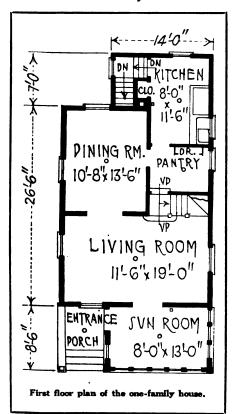
A two-family house is located on each of the corner lots.

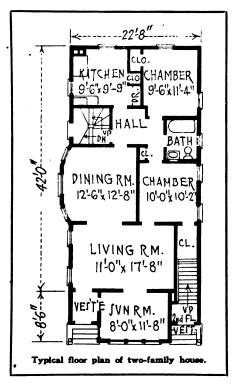
owners of our homes. It has taken years of hard work to build up the reputation we now enjoy, but it has been worth it.

"Some builders figure on using cheap materials and labor for the sake of large profits, but that does not pay in the long run. We give full value, and our business can not fail to grow.

"Problems? Yes, I suppose we have plenty of problems. I cannot name them offhand. The big point is that we settle them as soon as they come up. We are in constant touch with the work and always know just what is going on. Problems never have a chance to grow very big.

"We have not been affected by the shortage of workmen and sometimes I wonder if any such shortage really exists. The trouble is in getting first class men. We pay top-notch wages and in return expect top-notch work. If a man is not up to our standard, he does not finish his first day out. If he is, he has a permanent job. We employ between forty and fifty carpenters all the year round. Some have been with us seventeen years. The same is true of the subcontractors. If they deliver the





goods, we keep them. It has been our experience that frequent changes to take advantage of lower figures lead to greater costs over a period of time.

"I believe in the apprentice system. We employ young men who desire to learn the carpenter's trade and pay them \$6.00 per day, but like our mechanics, they have to be worth it.

"We do not need progress reports because we are always on the job ourselves. Being mechanics, we can always tell at a glance just where we are at. But we do keep very accurate and complete cost records and hire a high-priced accountantant for that purpose. Complete records are of the utmost importance. I know that many builders of wide experience trust to their memories, but it does not pay. Sooner or later will come the slip that means money out of pocket.

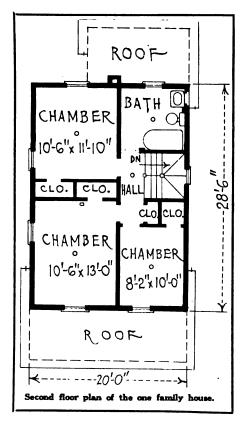
"Since the abnormal conditions of the post-war period we have not purchased materials in wholesale quantities. We do not do our own millwork. We patronize local mills and dealers. Our experience tells us that the overhead costs of handling our own materials eats up any saving which may appear on paper.

"We have one small universal wood-working machine on the job and road machinery for grading.

"We build a garage at cost for any purchaser who may need one, but offer no special inducements to make a sale. I do not believe in any such policy as giving a Ford car with each house, or offering gimcracks like built-in radio sets. We offer a complete home at a fair price. It is a good product and we have no trouble doing a satisfactory business on that basis.

"I draw my own plans. Most of my ideas are my own; some I get from trade papers. What my competitors do, I do not know, because I never enter their buildings. I believe in being just as fair with my competitors as I am with the purchasers."

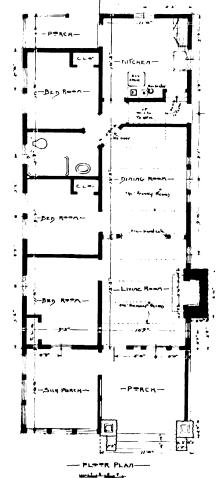
So, after reaching the stage of speculative building, the same formula was used by these men which brought them up from carpentry; hard work, specialization, constant study, thrift and fair dealing with all who patronize their business. With it they have succeeded. The same course is open to-day to any young man who sees fit to enter the building trades and follow it.

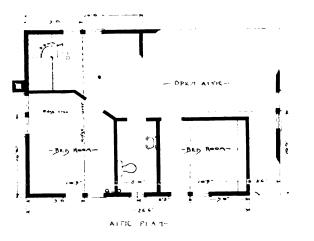




ERE are pictures and plans of two bungalows that were recently built at Atlantic Highlands, New Jersey. From the outside appearance one would hardly suspect that it contains eight good-sized rooms with two bathrooms. The quantity survey herewith gives the amount of material, etc., necessary for the completion of one bungalow. These houses were built for Smith & Corby, Atlantic Highlands, N. J.







Quantity Survey of Bungalow

of Dailgalov	•
MASONRY	
All excavating	174 cu. yds.
Concrete 1:2:4, mix	•
All footings—Concrete	185 cu. ft.
Cellar floor, 3 in. concrete, 1 in. cement finish	770 sq. ft.
Window areas	35 sq. ft.
Chimney caps, manhole slab	8 sq. ft.
Cellar walls, 8x12 in. x 16 in. concrete blocks	875 Blocks
Kitchen chimney, common brick	350 Bricks
Stone chimney, common brick	350 Bricks
Cesspool, common brick	1500 Bricks
Stone for chimney	75 cu. ft.
Fireplace, fire brick	150 Bricks
Flue lining, 8x12 in	42 lin. ft.
Flue lining, 8x8 in	26 lin. ft.
Chimney erooles 1.6 is	
Chimney crocks1-6 is	1., 1-J 1/2 III.
Drain pipe, salt glazed, 5 in	40 lin. ft.
PLASTERING	
First story, two coats, patent plaster	350 sq. yds.
Attic, two coats, patent plaster	120 sq. yds.
SHEET METAL	4. 7
Copper valleys	80 sa. ft.
CUDDEL Valleys	ou sa. IL.

CARPENTRY

Digitized by Google

Copper flashings Counter flashings

	D M E4 1040
Floor beams, 39 2x6 in. 20 ft	
Floor beams, 8 2x6 in 12 ft	B.M.Ft. 125
Wall studding, 150 2x4 in. 10 ft	B.M.Ft. 1000
Wall plates, 20 2x4 in. 16 ft	B.M.Ft. 214
Attic beams, 22 2x6 in. 12 ft	
Attic beams, 20 2x6 in. 10 ft	B.M.Ft. 200
	D.M.I. C. 200
(Exposed over living and dining rooms)	D 3 (D) 040
Attic beams, 10 4x6 in, 12 ft	B.M.Ft. 240
(Over wide window openings)	
Lintels, 6 2x6 in. 12 ft	B.M.Ft. 72
Raising plates, 8 2x4 in. 16 ft	B.M.Ft. 86
Main rafters, 20 2x6 in. 16 ft	B.M.Ft. 320
Main faiters, 20 2x0 in. 10 it	
Dormer rafters, 16 2x6 in. 12 ft	B.M.Ft. 192
Deck rafters, 6 2x6 in. 12 ft	B.M.Ft. 72
Porch, extension, 22 2x6 in. 16 ft	B.M.Ft. 264
Ridges 65 lin ft 2x6 in	B.M.Ft. 65
Dormer and gable studding, 35 2x4 in. 14 ft	B.M.Ft. 148
Donner and gable students, 55 2x4 m. 14 m.	B.M.Ft. 200
Porch timbers, 10 2x6 in. 20 ft	
Porch ceiling beams, 8 2x4 in. 20 ft	B.M.Ft. 107
Porch plate, 4 2x6 in. 20 ft	B.M.Ft. 107
Partition studding, 85 2x4 in, 9 ft	B.M.Ft. 510
Partition plates 15 2x4 in 16 ft	B.M.Ft. 160
Attic studding, 30 2x3 in. 14 ft	B.M.Ft. 270
Attic studing, 30 2x3 iii. 14 it	D.M.Ft. 270
	40.45
Total framing timber in board feet	5947
Sheathing for sides and roofs, 7/8 in. shiplap	B.M.Ft. 4200
Sheathing for sides floors and roofs, 7/8 in.	
	5100 sq. ft.
shiplap	
Roofs, red asphalt slabs, strip shingles	17 Squares
First story enclosure, 6 in. red cedar bevel	
siding	500 sq. ft.
First story enclosure gables, perfection red	
and a shingles	6500
cedar shingles	
All flooring, 2000 ft. 7/8x3 1/2 in	2000 sq. ft.
Porch ceilings and finish $1/2$ in. x 3 $1/2$ in.	
T & G	325 sq. ft.
T & G	325 sq. ft.
OUTSIDE FINISH	_
OUTSIDE FINISH	75 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits. 175 lin. ft. 1x12 in	75 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits. 175 lin. ft. 1x12 in	75 sq. ft. 150 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits, 175 lin. ft. 1x12 in Eave apron, 175 lin. ft. 1x2 in	75 sq. ft. 150 sq. ft. 30 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits, 175 lin. ft. 1x12 in Eave apron, 175 lin. ft. 1x2 in Eave frieze, 150 lin. ft. 1x12 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits, 175 lin. ft. 1x12 in Eave apron, 175 lin. ft. 1x2 in Eave frieze, 150 lin. ft. 1x12 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits, 175 lin. ft. 1x12 in Eave apron, 175 lin. ft. 1x2 in Eave frieze, 150 lin. ft. 1x12 in Gable frieze, 100 lin. ft. 1x3 in Gable crown mould, 100 lin. ft. 3 1/2 in. Front porch soffit, 50 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits, 175 lin. ft. 1x12 in Eave apron, 175 lin. ft. 1x2 in Eave frieze, 150 lin. ft. 1x12 in Gable frieze, 100 lin. ft. 1x3 in Gable crown mould, 100 lin. ft. 3 1/2 in. Front porch soffit, 50 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits, 175 lin. ft. 1x12 in Eave apron, 175 lin. ft. 1x2 in Eave frieze, 150 lin. ft. 1x12 in Gable frieze, 100 lin. ft. 1x3 in Gable crown mould, 100 lin. ft. 3 1/2 in. Front porch soffit, 50 lin. ft. 1x6 in Rear porch soffit, 16 lin. ft. 1x4 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in Eave soffits, 175 lin. ft. 1x12 in Eave apron, 175 lin. ft. 1x2 in Eave frieze, 150 lin. ft. 1x12 in Gable frieze, 100 lin. ft. 1x3 in Gable crown mould, 100 lin. ft. 3 1/2 in. Front porch soffit, 50 lin. ft. 1x6 in Rear porch soffit, 16 lin. ft. 1x4 in Rear porch inside facia, 66 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 25 sq. ft. 6 sq. ft. 44 sq. ft.
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds —cypress columns cy-
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds —cypress columns cy-
Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds —cypress columns cy-
Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds —cypress columns cy-
Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds —cypress columns cy-
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds —cypress columns cy-
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds —cypress columns cy-
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds —cypress columns cy-
OUTSIDE FINISH Water table, 150 lin. ft. 1x6 in	75 sq. ft. 150 sq. ft. 30 sq. ft. 150 sq. ft. 42 sq. ft. 42 sq. ft. 6 sq. ft. 44 sq. ft. ds

1 3/4 in. plank 1 cellar door frame, 2 ft. 8 in. x 6 ft. 8 in. cypress, regular 1 rear door frame, 2 ft. 8 in. x 6 ft. 8 in. cypress, regular 1 front door frame, 1 ft. 10 in. x 6 ft. 10 in. cypress, regular 2 triple window frame, 1 ft. 0 in., 2 ft. 6 in., 1 ft. 0 in. x 5 ft. 2 in.—No sills 2 triple window frames, 2 ft. 6 in. x 5 ft. 2 in., regular, no sills

2 mullion window frames, 2 ft. 6 in. x 5 ft. 2 in., regular, no

3 mullion window frames, 2 ft. 0 in. x 3 ft. 0 in., casement, with sills

2 mullion window frames, 2 ft. 0 in. x 2 ft. 6 in., casement, with sills

2 single window frames, 2 ft. 6 in. x 5 ft. 2 in., regular, no sills

2 single window frames, 2 ft. 0 in. x 4 ft. 6 in., regular, with sills

1 single window frame, 1 ft. 6 in. x 2 ft. 0 in., casement, with sills

2 single window frames, 2 ft. 6 in. x 4 ft. 6 in., regular, with sills

13 pair sash, 2 ft. 6 in. x 5 ft. 2 in. x 1 3/8 in., 6/1 lights, large lights, D. S.
2 pair sash, 2 ft. 0 in. x 4 ft. 6 in. x 1 3/8 in., 4/1 lights,

large lights, D. S. 2 pair sash, 2 ft. 6 in. x 4 ft. 6 in. x 1 3/8 in., 6/1 lights,

large lights, D. S. 4 casement sash, 1 ft. 0 in. x 5 ft. 2 in. x 1 3/8 in., 2/1 lights.

large lights, D. S.

4 casement sash, 2 ft. 0 in. x 2 ft. 6 in. x 1 1/8 in., 6 lights, 4 column sash, 2 ft. 6 in. x 1 ft. 6 in., 2 lights
6 casement sash, 2 ft. 0 in. x 3 ft. 0 in. x 1 1/8 in., 6 lights
1 casement sash, 1 ft. 0 in. x 2 ft. 0 in. x 1 1/8 in., 4 lights

4 hanks braided sash cord About 3500 lbs. sash weights

DOORS

1 front door, 2 ft. 10 in. x 6 ft. 10 in. x 1 3/4 in., 12 lights, as shown 1 rear door, 2 ft. 8 in. x 6 ft. 8 in. x 1 3/8 in., 4 lights 1 cellar door, 2 ft. 8 in. x 6 ft. 8 in. x 1 3/8 in., 4 panel 5 inside doors, 2 ft. 8 in. x 0 ft. 8 in. x 1 3/8 in., 5 panel 3 inside doors, 2 ft. 4 in. x 6 ft. 8 in. x 1 3/8 in., 5 panel 3 inside doors, 2 ft. 4 in. x 6 ft. 8 in. x 1 3/8 in., 5 panel 3 inside doors, 2 ft. 0 in. x 6 ft. 8 in. x 1 3/8 in., 5 panel 3 attic doors, 2 ft. 6 in. x 6 ft. 6 in. x 1 1/8 in., 5 panel Dresser, 1 pair sash doors, 3 ft. 0 in. x 3 ft. 2 in. x 1 1/8 in.,

6 lights Dresser, 1 panel, doors, 1 ft. 10 in.-2 ft. 2 in., 2 panels

INTERIOR FINISH 1N1 ERIOR FINISH

5 sets door jambs, 7/8x5 1/2 in.-2 ft. 6 in. x 6 ft. 8 in.

3 sets door jambs, 7/8x5 1/2 in.-2 ft. 4 in. x 6 ft. 8 in.

3 sets door jambs, 7/8x3 1/2 in.-2 ft. 0 in. x 6 ft. 8 in.

1 set wide opening, 7/8x5 1/2 in.-8 ft. 0 in. x 10 ft. 0 in.

3 sets door jambs, 7/8x4 1/2 in.-2 ft. 6 in. x 6 ft. 6 in. (attic)

Main stairs, 10 treads, 1 1/8 in. x 10 in. x 2 ft. 8 in. long

Main stairs, 10 treads, 1 1/8 in. x 10 in. x 2 tt. 8 3 winders, 1 1/8 in. x 10 in. x 3 ft. 4 in. long 12 risers, 7/8 in. x 8 in. x 2 ft. 8 in. long. 2 risers, 7/8 in. x 8 in. x 3 ft. 4 in. long 2 strings, 7/8 in. x 10 in. x 16 ft. long 1 stair newel, 4x4 in. x 3 ft. 0 in. long 1 piece rail, 2 1/4 in. x 6 ft. 0 in. long 24 1 in. square balusters 2 ft. 4 in. long Cellar stairs 10 treads 1 1/8 in. x 10 in. x 2 ft.

Cellar stairs, 10 treads, 1 1/8 in. x 10 in. x 2 ft. 6 in. long 10 risers, 7/8 in. x 8 in. x 2 ft. 6 in. long 2 strings, 2 in. x 10 in. x 12 ft. long

Skirting between ceiling beams, living and dining rooms, 1 x 6 in. x 12 ft.

Skirting between ceiling beams, living and dining rooms,

200 ft., 7/8 in. moulding 8 sheets wall board, 48 in. x 120 in. for ceiling 200 lin. ft. 7/8 in. x 5 3/4 in. plain base

200 ft. 1 1/4 in. base moulding

75 lin. ft. 1 1/8 in. x 3 1/2 in. window stool 300 lin. ft. 1/2 in. x 1 1/4 in. window stop

275 lin. ft. 1/2 in. x 1 3/4 in. door stop 50 pieces 7/8 in. x 4 1/2 in. round edged casings, 7 ft. 1 in.

2 pieces, 7/8 in. x 4 1/2 in. round edged casings, 7 ft. 3

in. long 18 pieces, 7/8 in. x 4 1/2 in. round edged casings, 5 ft. 8 in.

long 4 pieces, 7/8 in. x 4 1/2 in. round edged casings, 5 ft. 0 in.

10 pieces, 7/8 in. x 5 3/4 in. round edged casings, 5 ft. 3 in.

long 5 pieces, 7/8 in. x 5 3/4 in. round edged casings, 3 ft. 2 in. long

275 lin. ft. 7/8 in. x 5 1/2 in. head casings

300 lin. ft. 1 1/8 in. x 2 in. head mouldings 275 lin. ft. 1/2 in. x 1 1/4 in. fillet 275 lin. ft. 7/8 in. x 4 in. apron (round edge)

50 lin. ft. 7/8 in. x 4 in. closet trim

25 lin. ft. coat strip 4 pieces 1 x 12 in. 12 ft. shelving 100 lin. ft. 1 1/4 in. picture moulding

How to Read a Survey

This Chapter Describes the Use of the Level and Rods

By J. LAWRENCE MICHAELS

HE use of the transit in staking out the lot was described in our September issue. The lot having been staked, taking grade levels is the next step; that is, the rise and fall of the ground must be ascertained, so that the builder may know just what excavating and grading is necessary.

The instruments necessary for taking these levels are the transit-level as illustrated and described in pre-

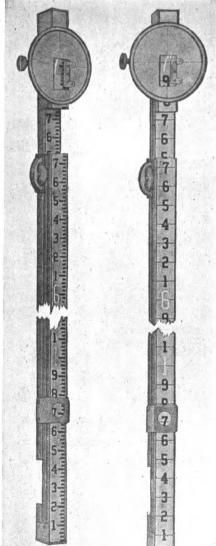


Fig. 2 illustrates two types of level rods with movable targets. These have two lines, vertical and horizontal, which cross, making it easier to locate the center when taking levels.

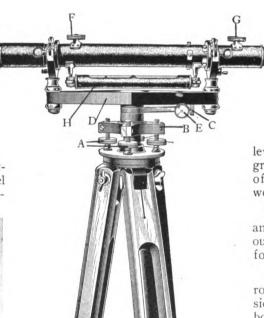


Fig. 1 shows a level. It is somewhat similar to a transit, but cannot be used as such. Levelling screws are marked A, B—Center Support Plate, C—Level Bar Screw, D—Level Bar, E—Level Bar Tangent Screw, F—Focusing Screw, G—Hairline Adjustment Screw, H—Spirit Bubble Level, I—Telescope Glass Protector, when this is removed sunshade is attached in place.

vious articles, or a level alone, together with level rods. The level is shown in Fig. 1, while two types of rods are shown in Fig. 2. These are measuring sticks divided into feet, inches and fractions, and are used for obtaining the different heights.

The level can only be used for this type of work and cannot be used for measuring angles. The instrument known as the transit-level which was described in previous articles on this subject can be used as either a transit for angles, or as a level, it being easily convertible by merely tightening certain screws.

There are numerous different types of level rods on the market, some marked off in feet and inches, and others subdivided in hundreths of a foot. Either are easily read and are not complicated. In Fig. 2, the target at the top of the rod has two crossed hairlines marked on it. The small brass plate which is seen fastened to the target in the center, is called the vernier. This is read prac-

tically in the same way as the vernier on transit, when turning angles. The set screw on the target is to permit it to be raised or lowered, while the small screw seen on the rod itself, just below target, is to permit the rod to be extended or taken in.

As either the transit-level or level alone can be used for taking grades, we will first describe the use of the transit-level for this kind of work.

The level or transit-level is set up and leveled outside the lot just staked out, just as was done when setting up for the staking out process.

The assistant now takes the level rod and holds it on the ground along-side of each stake used to locate the boundaries of the lot, and also on the curbs (if any), outside the lot. The correct way to hold the level rod is shown in Fig 3. Care should always be taken that the rod is held plumb.



Fig. 3 shows the proper way to hold the level rod when taking levels. Figures are held toward levelling instrument so as to be easily read.

The transitman watches the crosslines on the target of the level rod and by hand signals, instructs the assistant to move it up or down until the horizontal line on target is directly in line with the horizontal hairline in telescope. The figures on rod at target are then read and the level shown, is marked down on survey or note book.

The vernier on the target permits a more exact reading than if the rod was read just at the point where the horizontal line on the target crosses the figures. The number of feet is determined and then the vernier is read by finding the lines that are in conjunction with lines of markings on the level rod. A reading should also be taken on the ground as close up to the transit as is possible.

To find the grades on the lot, a number of intermediate readings at regular distances should be taken, say vision and all the different points are so many feet or inches up to line of vision.

The point at which level is set up is called "grade." Variations from grade level are then "so many feet or inches above or below grade."

Referring to Fig. 4, the first dimension taken by the level rod was fifty-four inches, this being at the outside stake of lot. The next dimension, ten feet back, is 48 inches or a rise of (54-48) 6 inches above the level at O. The next dimension, at twenty-foot mark, is forty inches or a rise of (54-40) 14 inches above the level ac

curacy. The transit or level should be set up at a point below that where levels are being taken, if there is a slight grade; but should there be a very decided slope to the ground, it might be better to set up the level at some point above that where levels are to be taken.

In many places the street itself slopes. It is then necessary to find the elevation of this slope; that is, rise of elevation in every hundred feet. To ascertain this rise we again make use of the levelling instrument, taking levels at two different points, usually 100 feet apart. For the first

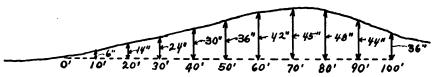


Fig. 5 shows same plot of ground. Levels are shown by upper row of figures and these are the actual elevations of the land above grade.

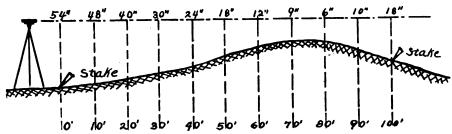


Fig. 4. Sectional diagram of plot of ground, 100 feet deep. Lower row of figures shows marked points for levels taken every 10 feet. Upper figures show elevation from line of vision down to surface of land.

every ten feet each way, especially if the lot is very hilly. When it is practically level, this is not necessary.

To put stakes or markers in the ground and mark them all on a certain level is the object of using the level and rod so as to obtain a desired horizontal line, say, the top of foundation wall or depth of cellar excavation, etc.

Fig. 4 shows a cross section of a piece of ground one hundred feet deep, sloping towards the street. The stakes indicating the boundaries of lot are at street line O and at the hundred foot mark.

Markers are now set every ten feet on the line between the two survey stakes at corners to show where level readings are to be taken. These are then marked down and we are ready to find the exact grade and levels needed.

The readings are all made on a line with the telescope of level and this imaginary line is called the line of

O. The other dimensions are taken in a similar way and then these grades are as shown in Fig. 5.

In Fig. 5, at beginning of lot, the surface is "at grade"; in the next 10 feet it rises 6 inches, while at 20 feet back it is 14 inches above grade. The ground continues to rise, and at about 75 feet back it is at its highest point, and then it slopes again to the back of lot, which is 36 inches higher than front point or "grade."

Where no level rod is to be had, the steel tape can be brought into use. Placing one foot on the ring of the tape at the zero end, the tape can be stretched to a height that can be seen by the transitman. A pencil should be held on the tape horizontally and moved up or down by signals from the transitman, until he signals O. K. when the tape should be read at the point at which the pencil crosses the figures. Of course, the level rod is far better and easier to handle than the tape, besides insuring greater ac-

level the instrument is usually left set up at point from which the intermediate elevations were taken on plot.

The level rod is then held by assistant at some fixed point in street, called "turning point." The level is now read through the instrument for this point. The next step is to move the levelling instrument to the other side of turning point, this being usually about 100 feet away from the first position.

When levelling instrument is set in its new position it is only necessary for the assistant to turn level rod; hence the name, "turning point."

Having secured readings from both positions of the instrument, difference in elevation between the two points can be found by subtracting the lesser elevation figures from the higher. For instance, if this difference should be six feet and the distance between the two points where the levels were taken is 100 feet, then the grade rise is stated as being "six feet to the hundred feet."

In exceptionally hilly places a number of turning points may be necessary to secure levels so as to accurately mark and determine grade of street.

Our next article will explain the use of the level on actual construction work.

Fig. 1. A typical heavy timber barn bent with purin posts held together with cross-ties (1 and 2). Fig. 2 shows it remodeled.

Making the Old Barn New

By J. L STRAHAN

Assistant Professor of Rural Engineering, Mass. Agricultural College

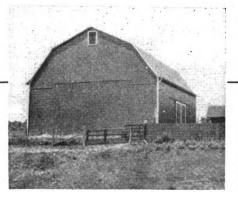


Fig. 3.

ITH the development of modern haying tools for handling hay in larger amounts and more rapidly than can be managed with a hand fork, there has grown up a need for large mow space, unobstructed by heavy cross timbers such as are to be found in the great majority of barns built fifty years or more ago.

From the standpoint of structural permanence fifty years might be considered youthful, or at the very most early maturity, for the type of heavy-framed barn that was built by our grandfathers, and there are many such today which are standing firmly against the wear and tear of the years of service they have seen.

The barns are, however, no longer giving the service they might, because they fail to meet the conditions imposed by more modern methods. In a good many such cases it is quite possible to bring them up to date by making a few changes in the interior framing which will have the effect of opening up the mows and clearing the way for the hay carrier. Such changes should be made, however, only after a complete understanding of the principles involved is reached.

Figure 1 illustrates diagrammatically a typical heavy timber bent. It consists essentially of two purlin posts, extending from the floor level to the purlin plates which support the rafters, and tied together by one or more heavy hewn pieces, sometimes 10 x 12 inches or greater, which extend across

the mow separating it into bays 10, 12, 14, or 16 feet wide, depending on the distance between centers of the bents. These cross ties are the pieces which are objectionable because they obstruct the passage of the hay carrier.

Certain carriers are so designed that the hay must be raised all the way to the peak before it can be carried lengthwise on the track.

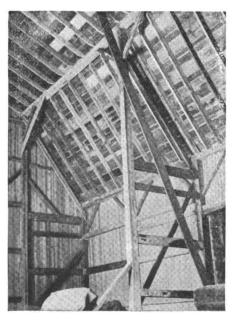


Fig. 4. A remodelling job well done shown in Fig. 3 and 4. A comparatively narrow truss of the cantilever type supports a roof that is wide and low without any tendency to sag.

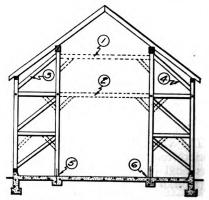


Fig. 2. Same bent remodelled. Crossties removed and replaced with diagonal braces (3 and 4). Foot of purlin post anchored at 5 and 6.

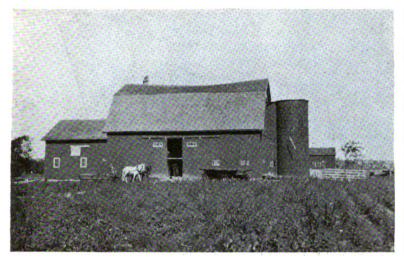
This type requires approximately 10 feet of clear space below the track when loaded with a large forkful. Another type is capable of traveling lengthwise of the barn when raised to any desired height off the hay wagon.

When the barn is empty it is a waste of power to raise the hay to the ridge from the wagon and drop it again to the floor at the far end of the loft. To conserve power at this time, when, using such equipment, it is essential to have the loft completely free from cross timbers of any kind from the ridge to the floor.

Figure 2 shows how the typical bent can be remodelled to meet such conditions. The members numbered 3 and 4 are framed into the purlin post and the wall post in such a way as to resist the thrust of the rafter which would naturally tend to push the purlin and wall plates out. They may be mortised in or they may be double members bolted to the outside faces of the posts.

Other braces are placed between the purlin post and wall post lower down to reinforce this action, and then the tie members numbered 1 and 2 are removed. The braces which are used to replace the ties have the effect of tying the purlin post and wall post together in such a way that they act as a unit to resist the rafter thrust.

This being the case, there is a tendency for the truss as a whole to act as a cantilever set vertically and rotate about the foot of the wall post, thus raising the foot of





Figs. 5 & 6. This partial failure resulted from inadequate bracing after removal of cross ties for the purpose of opening up mow space.

the purlin post. To counteract this tendency it is essential that the foot of the purlin post at the points numbered 5 and 6 be anchored to the floor in a permanent way.

Barns remodelled in this way are solid and show no tendency to settle or to bulge at the plate. It is surprising what a low and comparatively wide gambrel roof can be supported on such trusses without deflection at ridge or plate.

In figures 3 and 4 is shown a barn which has a total roof span of 40 feet, about 24 of which is clear space from ridge to floor, and in spite of the fact that the ridge is only 18 feet above the main plate, there is no evidence of a tendency to sag at the ridge or bulge at the plate. When the cross

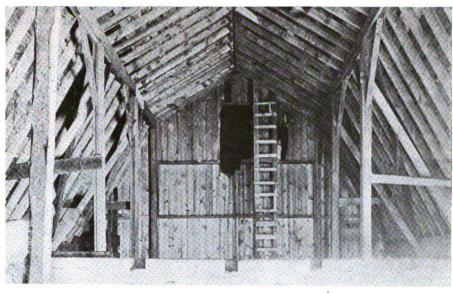


Fig. 8. Interior view figure 7 showing how this frame was remodelled from the old cross beam type to the cantilever type.

Fig. 7. Exterior view of the barn shows a very substantial building. The ridge is perfectly straight.

ties were removed, they were replaced by adequate braces and the results were entirely satisfactory.

This is not the case, however, in the barn shown in figures 5 and 6. These pictures illustrate clearly what happens when the bracing is omitted or carelessly applied. The result here shown was a direct result of failure to properly replace the cross timbers which were removed to allow free passage of the hay car.

The barn shown in figures 7 and 8 was rebuilt from timbers taken from an old frame, the cantilever type of truss being used to support the roof. The cross tie just below the level of the plate was left in on either side of the driveway but was removed from all

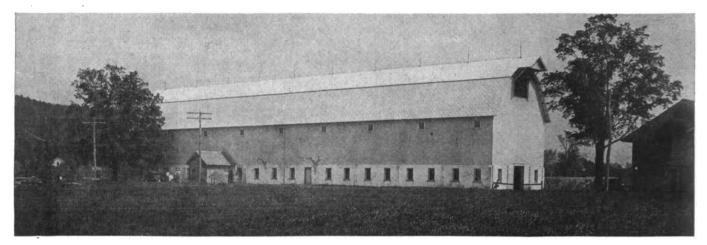


Fig. 9. Exterior view of barn, interior view of which is shown in Fig. 10.

other bents. Very good results were obtained.

In figures 9 and 10 is shown a barn built in the same general way. Here the purlin posts were tied together too near the ridge with the result that hay from the carrier catches on the tie pieces, making it more difficult than need be to load hay into the barn. These

ties could easily be removed and replaced by side braces without in any way weakening the structure.

There are many old barns in different parts of the country that can be modernized along lines that have been suggested in this article, structurally and in its conveniences. The exteriors can also be remodelled and made into modern efficient barns at but a fraction of the cost of erecting a new structure. Many of the older barns lack ventilating systems, which should be included when remodelling is considered. Pure air and sunshine are as necessary for domestic animals' health as it is for human beings, and it pays both in milk and meat production to have animals well housed.



Fig. 10. An interesting example of modern construction and antiquated ideas combined. Note the hay hanging to the cross ties.

This indicates difficulty in storing and could not happen if the ties weren't there.

OFFICE and JOB MANAGEMENT

Things the other man has found out that save money



Success in Estimating

How to Prepare Unit Cost Data for Your Own Jobs Short Cut Methods That Are Reliable

By I. P HICKS

HOW much time certain men take to do a job is no real guide in preparing unit costs. Some work slow, others fast, to secure average records.

Things like this happen right along on many parts of the work, such as fitting and hanging doors, running base, putting up picture mold, casing openings and fitting windows. It is very plain to be seen that a difference in the skill and speed of the workmen has very much to do with the contractor's success.

A difference on many parts of the work, such as we have mentioned above, is most likely to cause the contractor to lose out on a job unless he has a large margin to depend upon, which is seldom the case on ordinary residence work. We know this to be a fact for we have timed men while at work.

On an average, a real good worker ought to set a pair of door jambs in 40 minutes. This would be an average of 12 doors per day of 8 hours. Even if the workman

set a pair every 50 or 60 minutes it would not be so bad, but when a man takes 80 minutes to set a pair of door jambs it is more than likely he is not earning for the contractor the wages he is being paid. Such a man should be put on other work.

At any rate a man should average setting door jambs for 10 ordinary inside doors per day of 8 hours. This is a very reasonable average and the man that can't do it is not up to the standard on producing results.

ESTIMATING BY THE LINEAL FOOT

OUTSIDE WORK						1	NSIDE V	VORK			
Kind of Work	Number of Members	Average Day's Work	Labor Cost per Ft.	Material Cost per Ft.	Total Cost per Ft.	Kind of Work	Number of Members	Day's	Labor Cost per Ft.	Material Cost per Ft.	Total Cost per Ft.
Outside base Outside	2	120 ft.	7c		•••••	Inside base	2	100 ft.	8c		
base Corner	3	90 "	9c 8c			Inside base	3	80 "	10c		
boards Belt course	3 1 2 3	200 " 135 "	4c 6c			Picture molding	1	200 "	4c		
Main cornice	5	100 " 45 "	8c 18c			Plate rail	3	65 "	14c		
Verge b oards Verg e	1	100 "	8c			Room cornice	3	54 "	15c		ļ
boards Dormer	2 5	73 " 35 "	11c 23c			Beam ceiling	5	40 "	20c		
cornice Porch cornice	7	28 "	29c			Stair rail, level	_	14 "	60c		
Porch rail & balusters	2	20 "	40c	<u> </u>		Up steps		10 "	80c	<u> </u>	

ESTIMATING BY THE UNIT

ESTIMATING BY THE PIECE

	1 1	Average		1	 	Kind	Average	Labor	Material	Total
Kind	Ft. B. M.		Labor Cost	Material Cost	Total Cost	of Work	Time	Cost	Cost	Cost
of Work Floor	per Sqr.l	Sqrs.	per Sqr.	per Sqr.	l per Sqr.	Door open- ings:				
Framing:			****			Front door	10 hrs.	\$10.00		· · · · · · · · · · · · ·
2x6 16" O C 2x8 16" O C		\$3.75 2.80	\$2.40 2.88	•••••		Front door			i	
2x10 16" O C	158	2.67	3.00			with side lights	18 "	18.00		
2x12 16" O C 2x12 12" O C		2.23 1.91	3.60 4.20			Grade door	8 "	8.00		
Ceilings:	1				1	Double act-				1
2x4 16" O C	64	5.00	1.60	¦		ing door	8 "	8.00		••••••
2x6 16" O C 2x8 16" O C		4.00 3.00	2.00 2.68		••••	French doors, pr.	18 "	18.00		· · · · · · · · · · · · ·
Outside					ł	Single	8 "	8.00		· · · · · · · · · · · · · · · · · · ·
walls: 2x4 16" O C	64	4.00	2.00	 	l	Sliding				
2x6 16" O C	95	2.67	3.00		! • • • • • · · · · · ·	doors, double	20 "	20.00		
Flat roofs: 2x6 16" O C	95	3.75	2.40			Sliding				
2x8 16" O C	127	2.80	2.88	• • • • • • • • • • • • • • • • • • • •		doors,	12 "	12.00	1	,
2x10 16" O C Pitch roofs:		2.67	3.00		• • • • • • • • •	single Inside	12	12.00		
2x4 16" O C	64	4.00	2.00		••••	doors	6 "	6.00		• • • • • • •
2x4 24" O C 2x6 16" O C	47 95	4.71 3.08	1.70 2.60		• • • • • • • •	Cupboard	2 "	3.00		
2x6 24" O C	70	3.96	2.27			doors Flour bins	3 "	4.00		
Hip & Val- ley roofs:						Medicine	7			
2x4 16" O C	70	3.20	2.50			cabinet	5 "	5.00		• • • • • • • •
2x4 24" O C 2x6 16" O C		3.64 2.42	2.20 3.30		·····	Linen closet	8 "	8.00		
2x6 10 0 C		3.20	2.50		• • • • • • • • • • • • • • • • • • • •	Drawers	2½ "	2.50		
Frame						Clothes	2/2			
partitions: 2x4 16" O C		\$4.00	\$2.00	<u> </u>		closet	2 "	2.00	••••	• • • • • • • •
2x6 16" O C	95	3.00	2.67	••••		Clothes chute	10 "	10.00	••••••	••••••
2x8 16" O C Rough	127	2.40	3.35	• • • • • • • • • • • • • • • • • • • •	· • • • • • • • • • • • • • • • • • • •	Dindows,	10			
floors:		264	2.20			D. H.	4 "	4.00		• • • • • • • • • • • • • • • • • • • •
1x8 shiplap 1x6 boards	117	3.64 2.96	2.20 2.70	• • • • • • • • •		Twin win- dows	8 "	8.00		
Outside						Tripple	12 "	12.00		
walls: 1x8 shiplap	117	4.00	2.00			Single				
½x4" siding	134	2.00	4.00		••••	French Double	5 "	5.00		•••••
½x6" siding 6" drop sdg.	120 120	4.00 3.50	2.00 2.28		• • • • • • • •	French	10 "	10.00		
Roof shtg.:	! !					Triple French	15 "	15.00		
1x6 2" space 1x8 shiplap	100 116	4.69 3.64	1.92 2.20	• • • • • • • • •	• • • • • • • • • • •	Single sash				• • • • • • • •
Hip & Val-		0.01	2.20			windows	3 " 6 hrs.	3.00 \$6.00		• • • • • • •
ley roof: 1x6 2" space	106	3.81	2.10		• • • • • • • •	Dble. sash Triple sash	18 "	9.00		
1x8 shiplap	120	3.20	2.50		• • • • • • • •	Cellar windows	11/2 "	1.50		
lx4 porch ceilings	125	2.67	3.00		• • • • • • •	Front stairs,	1			• • • • • • • • • • • • • • • • • • • •
1x4 porch	1					per step Single	1½ "	1.50		•••••
floors Wood shing.	125	2.67	3.00	••••	• • • • • • • •	landing	4 "	4.00		
plain roof		2.00	4.00	! !* • • • • • • • • • • • • • • • • • • •	• • • • • • • • •	Double landing	7 "	7.00		
Hip & Val- ley roofs	1000	1.64	4.75	<u> </u>	• • • • • • • •	Rear stairs,				•••••
Outside		i				per step Single	1 "	1.00		••••••
walls shing. Stripping &	900	1.50	5.33	• • • • • • • • • • • • • • • • • • •	• • • • • • • •	landing	3 "	3.00	 	
papering	!	0.00	1.00			Doub le landing	6 "	6.00		
for stucco Finish floor:		8.00	1.00		• • • • • • • • •	Cellar stairs		0.00		
5¼" face	120	3.20	2.50		•••••	to grade, per step	1 "	1.00		
3¼" face 2¼" face	125 134	2.28 2.11	3.50 3.80		•••••	Plank steps	1/2 "	.50		• • • • • • • • • • • • • • • • • • • •
1½" face	140	2.00	4.00			Landing	3 "	3.00	•••••	
Scraping floors	100	2.00	4.00		• • • • • • • •	Ordinary coal bin	12 "	12.00		
110013						l				

These are the things that the carpenter contractor has to contend with and which add largely to the difficulties of estimating labor. The carpenter contractor must have a large margin to cover such conditions as we have mentioned, and which are known to be a common thing on job after job, or else he must have a bunch of the tried and true workmen if he would succeed. In fact, he must have men who are not lacking either in skill, ability or speed, for these are the things that count most for success in the building business.

Since it is so uncertain to lump off a job of carpenter labor, we should set about for the safest and most practical method of estimating the labor. To do this it is necessary to classify the work as before stated, under the three divisions or headings.

The first division follows, showing the kind of work, board measure feet required per square. The second division, an average day's work in squares. Third, labor costs per square. Fourth, a blank cost space for same, for

setting your own price. Material cost space, blank for making your own price to suit the time and locality. Fifth, a total cost column, blank for making your prices to suit your need at any time.

In our labor cost column the prices are figured on a basis of \$1.00 per hour and 8 hours for a day's work. With the blank spaces in which the contractor can fill in his own averages and prices, this should make one of the most valuable and reliable methods of estimating costs, both as to material and labor.

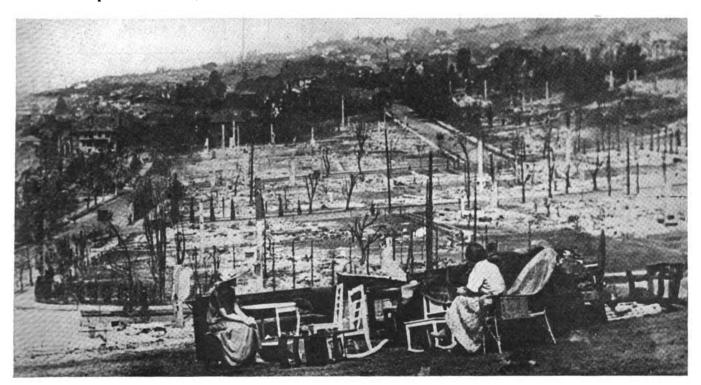
M UCH of carpenter work is so varied that it has to be left to the contractor's judgment when making an estimate. With the knowledge of this we have arranged the tables so the contractor can fill in the proper prices and data as he finds it from time to time. In this way he should soon have reliable data from which to figure the work he has at hand.

In estimating cornice work there are many things to be taken into consideration. What is termed a 5 member cornice used to consist

of a frieze 8 to 12 inches wide, a plancer board 10 to 12 inches wide, a fascia board 4 to 6 inches wide, about a 2 inch bed mold and a 3½ to 4 inch crown mold. The way to arrive at a price per foot is as follows: Plancer, 5c; frieze, 5c; fascia, 3c; bed mold, 2c; crown mold, 3c; total, 18c.

The wide bungalow cornice requires a somewhat different way of figuring. On a bungalow cornice the plancer is usually made up of ceiling, 3¼ inch face. On such work it is best to figure the plancer at 2c per lineal foot for each board and figure the bed mold at 3c per foot, because it has to be cut in between the rafters. Large heavy verge boards should be figured at 8c per lineal foot and the verge molding at 3c. Thus, it the plancer is 8 ceiling boards wide, we would figure as follows: Plancer, 8 boards wide, at 2c, 16c; frieze, notched for rafters, 8c; bed mold, 3; total, 27c.

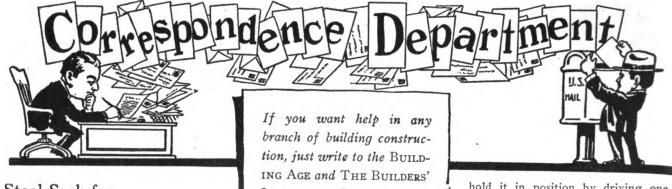
Gable cornice plancer, 16c; frieze, 6c; bed mold, 3c; verge board, 8c; verge mold, 3c; totai, 36c



THE penalty for building houses without due consideration of the fire hazard is vividly portrayed in this photograph taken at Berkeley, Cal., after the recent fire that laid waste the finest residential section of that

This Was
Berkeley!

city. Of 650 homes, nothing now remains but rows of blackened chimneys, rising out of the debris as monuments to the folly of those who fail to make their structures fire-resistant in their construction.

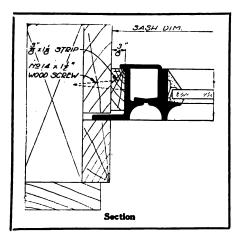


Steel Sash for Farm Buildings

AN abundance of sunshine in chicken or hog houses is absolutely essential if the houses are to be kept dry and healthful. This can be accomplished by placing a row of steel windows across the entire southern exposure of the buildings. Carpenters working on this type of a building may be interested in steel sash installation details in frame construction.

When two or more units are used together, they are joined by mullions, with the stem outside, as shown in the detail. Fixed light (no ventilator) units may be used with ventilator units in any combination desired.

In the head and jamb details, the ventilators are shown to illustrate the space required for clearance to assure



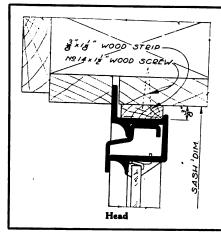
easy operation of the ventilators, when units of this type are used. The method of taking the sash and masonry or window opening dimension is also shown.

First erect the studding of the building and sheathe and side it before the sash is put in. Leave an opening equal to the sash dimensions, as mentioned above, plus 2" for each mullion to be used.

If only one unit is to be used to an opening, the easiest way is to set the studding and headers so that the opening will be just a little larger than the over-

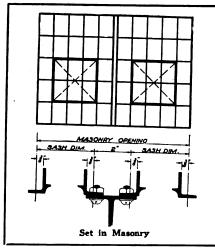
branch of building construction, just write to the Builders' Journal Correspondence Department. We will be glad to answer all your questions without charge.

All readers are invited to discuss the questions and answers published.



all dimensions of the sash. Then nail cleats 1/2" thick around the inside face of the studding and headers for a rebate against which the outside bars of the sash will rest.

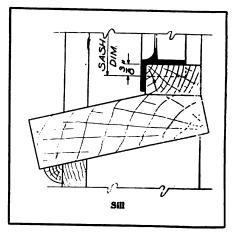
Insert the sash from the outside and



72

hold it in position by driving one or two screws through the sash at the head and sill. Remember that steel sash is glazed on the inside. Then nail cleats to studding and header on the outside of the sash to hold the window firmly in place. The cleat at the bottom is not needed and the sill will look better and shed water better without it. Trim and casings may be added, if desired.

In case two or more units are to be used, a slot must be made in the sill to accommodate the leg of the steel mullion which extends downward 2" beyond the sash dimensions. Bolt a mullion and one unit together loosely and set them in place, using screws at head and studding to hold it. Then set the next unit with its mullion up and bolt it loosely to the first unit. When all the sash is in place, "true it up" and then tighten the bolts at the mullions so as to hold the windows securely. Then nail cleats in place.—N. A. Harris.



Hand of a Door

Will you kindly publish just when is a door right-handed or left-handed?—Perplexed.

Answer.—As you face that side of the door on which the hinges show, if the hinges are on the left side, it is a left-hand door, and if the hinges are on the right side, it is a right-hand door. This terminology is based upon such a rule as would always indicate the side of the door taking the lock and also the bevel on the lock face and bolt.



Emergency Charcoal Furnace for the Soldering Bit

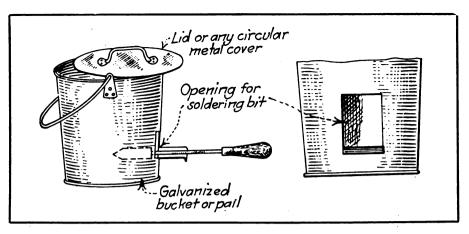
A N expedient for use in heating a soldering bit for exterior work, when the usual charcoal furnace is not available, consists in cutting out a section in the bottom of a galvanized pail or bucket and bending this outward as is shown in the attached illustration. The bent section forms a rest for the soldering bit and an opening for inserting the bit in addition to providing the necessary air for the furnace to burn properly. A lid or circular cover for the pail completes this improvised furnace. When the cover is fitted close at the top, the draft of air through the coals is prevented and the fire burns slowly. To increase the heat, the cover is opened slightly. This will be found a simple furnace to make and an effective heater. -I. A. Luers.

Repairing Knot Holes

I NOTICE in the Correspondence Department of the BUILDING AGE Mr. Moser's way of repairing knot holes. I have been doing this stunt for the last thirty-five years and I am going to tell him how I do it.

I have Forstner bits from 36 to 2 inches. I first bore the defect out to around half inch deep; then with the same bit I mark the scrap I am going to use for my patch; then with a sharp, thin chisel (I prefer one about 1½ inches wide) I trim to an octagon, just splitting the mark made by the bit, and giving it a slight bevel take off the resulting corners, give it a few rubs with sand paper, glue the hole and drive the plug home. You see I am not bothered with the center showing through.

And now I will tell him how I have often got by a small open knot in hardwood; in this case I do not bore; first saw a block that will split straight, about



an inch long, the tougher the better, split into pegs 1/8 or a little less square, dip each one in thin glue and fill the hole; then with an awl that you can open a hole about as deep as your pegs

HAVE you ever used any machinery or device which has saved you time and money?

Have you ever invented any way of doing a piece of work quicker?

If you have BUILDING AGE and BUILDERS' JOURNAL wants your experience, and will pay regular space rate for it.

Your description should tell just how you saved time and money, either by a special way of using machinery or by short cuts in construction. Point out what methods you were using before adopting your "Time Saver" and show how your new method turns the trick. You can submit as many articles as you want.

Address The Editor, BUILDING AGE and BUILDERS' JOURNAL 239 West 39th Street, New York.

are in the knot, sharpen a peg, glue the point and drive it home.

Repeat as long as you can drive a peg. When the glue has set, smooth off and you have a nice burl or a whorl, and no indication of a patch.—J. C. Manning.



WHEN the slaters laid the roof of the church they stole an inch of the lap on each course of slate—laid them with 2 inches instead of the regulation three inches.

This has caused many leaks, especially in the valleys. Can some of the brother readers suggest a way to overcome the difficulty without relaying the roof?

In placing common wire glass in a skylight, which side goes to the weather? Give reason.—Ervin J. Dye.

Large Capacity Wood Press

A BIT unusual is the wood press shown in the picture. It is used in a cedar chest factory in a Western town to hold the irregular-sized strips together after they have been glued for the tops and sides. Cedar is becoming so dear that the wood is no longer handled in the ordinary fashion. Instead every available piece or strip of even the most modest size is saved and utilized in this manner.

As may be been by the cut the press contains seven layers of these glued strips. Each set is wide enough for a side or top or bottom as the case may be, yet the height over all does not exceed nine inches.

Two horses have been spaced two feet apart at the top and on this is built a two-inch platform. At the outer edges of this platform two rows of one-half inch pipe have been set, four in each row. A supply of light iron straps with holes bored in the ends of the size slightly larger than the pipes have also been prepared. When one set of pieces has been glued, it is placed on the platform between the uprights. Small wood wedges are driven between the edges of these sections and the pipes to keep the joints tight. As other sections are added, the iron straps are laid over the pipes to maintain a space between the sections. It is very compact, efficient, and satisfactory, according to the owner who has used it for several years.-Dale R. Van Horn.





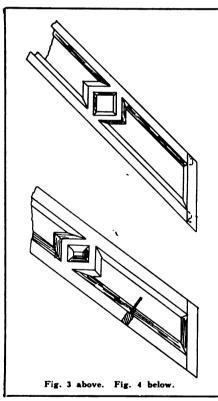
CARPENTRY

Good Practice in Frame Construction and Finish

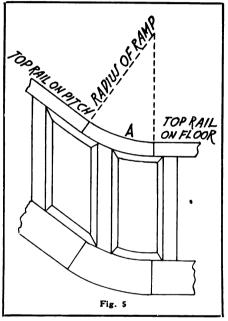
How Panel Work is Made and Set Up

By OWEN B. MAGINNIS

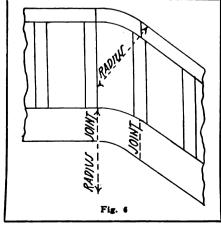
ONTINUING our remarks about the making of panel work we give some interesting examples that occur in stair work which cail for careful layout and construction.



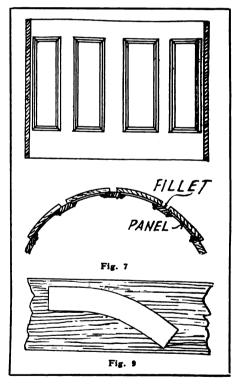
A peculiar geometrical variation and one which builders may perhaps come in contact with in the building of panelled stair strings or pitched panel work is that shown in Fig. 3 which shows an example of the "planted" kind, which consists of simply of 78" oak strips representing the frame nailed on a 2" white pine housed



string. The angle of the stairs being 45 degrees the panel will be square, whereas, in Fig. 4, a lesser pitch will be of rectangular form. The mitres of the panel



and moldings as shown in Fig. 3 are true 45 degree mitres. In Fig. 4 they all differ. If the pitch be higher than 45 degrees then the panel work will be oblong and the

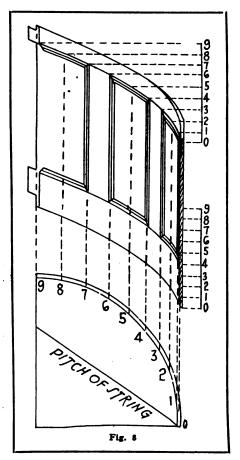


mitres will change again, as seen in this figure.

The section of pitch shown in Fig. 5 shows how it must be made when the stairs rise with a "ramp" or curve from any floor, and that in Fig. 6 shows how it ends at the floor above or the second story. Panels and rails must necessarily follow the curvature of the inside string and are struck from radii as indicated in these sketches.

Our readers will observe a section of the panel work quarter-circular on plan at Fig. 7, showing also its elevation. The sweeps for this may either be glued up in veneers or in laminated thicknesses or sawed with the band saw out of solid timber as shown in Fig. 9, and a similar method used for building a section of panel work on pitch for a winding stair as shown in Fig. 8. These are bent over drums in making so that the curvature will be correct. On Fig. 8 the like numbers correspond in points for laying out the work; the height from 0 to 9 equals the rise for the distance of panel work. By laying out the stretch out of the curved section and transferring the different points, the true shape of the panel work is obtained and this when bent will fit the curved space.

Almost any sort of wood is susceptible to be made into attractive panelled work. Yellow pine and cypress have been used to quite an extent and make handsome interior panels as well as other more expensive woods. These woods can be stained and finished natur-



ally but when panelled work is to be painted or enamelled, white pine and poplar, or birch for finer jobs, are used instead, as the smoother grain of these woods has a better surface for the enamelled finish.

Particular care should be taken in making joints to have them well fastened together. Every joint and mitered molding should be glued in place as well as being tenoned or dowelled. A great aid in preparing panelled work both in the shop and erecting on the job, is by the use of cold water casein glue, which has of late gained great favor.

. For the panels themselves, built up veneered stock is most often used as this can be purchased at moderate prices and has the decided advantage of not warping as thin sections of wood would be likely to do. Of course, for extra fine panel work having beveled edges, etc., thick pieces of wood are frequently used, thus producing results equalling that of the examples of panelled work in the old baronial halls of Europe.

How Sound Proof Rooms May Be Constructed

ISITORS to New York, who long for even a few moments' cessation of the city's racket may, if they are properly introduced, be taken into four rooms where practically no outside sound can reach them. These rooms, however, are not maintained to give relief to overstrained nerves. They are in daily use by engineers of the Western Electric Company in the Bell Telephone Laboratories at West Street for carrying on delicate tests of telephonic apparatus. The four rooms, which on the outside look like traditional "padded cells," are as thoroughly sound-proof as ingenuity can make them. Their design was based on principles and data published by the late Prof. W. C. Sabine of Harvard University.

To shut out the vibrations which would be transmitted by the floor, the rooms are built on foundations of three alternate layers of one-inch

thick special all-wool felt and sheet iron. The maple flooring, which is individual for each booth, is laid on top of this foundation and covered with battleship linoleum. The idea of the alternate layers of felt and sheet iron is that the sound vibrations, which are not damped out in passing through the felt, will be reflected by the sheet iron.

The walls are double and the inner one is built on top of the maple flooring. The framework for this inner wall is made of 2 by 3-inch timbers making a 3-inch air space. Nailed to the inside of this framework is a layer of sheet iron. Over the sheet iron is a 1-inch layer of felt and this is finished off with burlap. Nailed to the outside of the 2 by 3's is a layer of felt; outside of this is the outer wall. This rests on the main floor of the room in which the booths are built and is entirely free from the inner wall and its resilient foundation.

The outer wall consists of a framework of I-beams, and built up between these is a wall of gypsum blocks. The booths are entered from the outside world by double doors, one door mounted on the door-frame of the inner shell and the other mounted on the door frame of the outer gypsum block wall. The doors are provided with heavy glass panels set in felt.

The booths are ventilated by a small ventilating fan which has been mounted on a wall at a distance of about 15 feet so as not to convey any vibrations to the wall of the booth. The pipe carrying the air to the booth is lined with felt and terminates in a felt-lined box equipped with felt baffle plates through which the air escapes into the booth practically free from sound vibrations. The air also escapes from the booth through one of these baffle boxes.

The feelings of one who has been accustomed to city noises, for a time on entering one of these booths, is that of almost suffocating stillness such as might be experienced out in the woods on the stillest of stilly summer nights.

CONCRETE

Form Work-Reinforcing Methods Monolithic and Block Construction



For the Farm

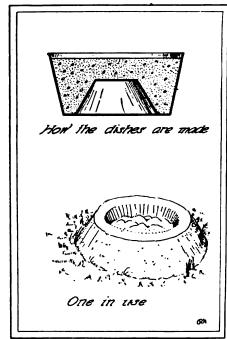
Some Things Easily Made of Concrete
BY DALE R. VAN HORN

HIS big out-doors of ours is crying for new and repaired equipment. It is safe to assume that more farm building will be done in the next four years than has been done in the past seven or eight years.

Heretofore bad weather removed all possibility of working the rural country with much success because only in ideal weather, were the roads good. Today sees especially constructed roadway leading in all directions, an endless ribbon beckoning to us. I sometimes believe we are darned chumps not to go after more of the business it has to offer.

Figure below suggests possibilities in the making of caves. This is run out from the basement. below frost line and of varying dimensions. It is provided with (preferably) a reinforced slab roof, since this will lessen the depth to be dug out, and a small ventilator.

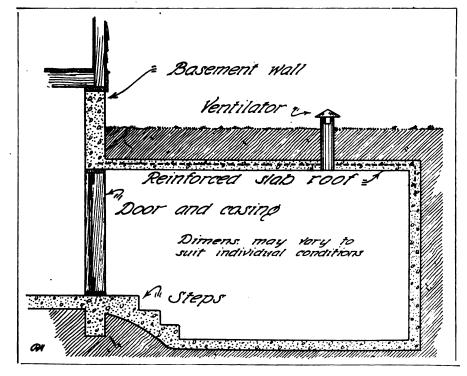
Another adaptation of the same idea can be turned out in the form of a storage space outside but adjacent to the basement, which can be used for coal storage. The top can be slab, reinforced, with a good sized hole through which the coal can be dumped, directly from the back of the wagon.



A concrete worker once made a small watering dish for his chickens by placing a small pan upside down in a larger one and filling the space between them with concrete. After the mortar had set, the pans were turned over, and the dish removed.

This little experiment turned out so well that he started making larger dishes on the same order, using a tub with smooth sides for the outside form and a low pail of large capacity for the inner form. After thorough curing, no one could wish for a better nor more serviceable salt box for the pasture. Woven wire netting was used for reinforcing. The figure tells the story in shorthand.

The forms can be used time and again and they sell very easily to farmers, at a good profit for sparetime work. This same man also makes urns for shrub trees, and bird baths and sells all he makes.





BUSINESS GETTING METHODS

Tdeas that have worked for others

Closing Difficult Sales

By FRANK H. WILLIAMS

MIDDLE western builder was having difficulty closing the contract for the erection of a \$14,000 house for a young man who had come to the city to accept a responsible position as a department head for a local manufacturing concern.

There was no doubt of the prospect's interest in the proposition. There had been sufficient talk to convince the builder of the young man's desire to put up the home. But there was a hitch and the trouble, as near as the builder could ascertain, was entirely due to the price of the structure, although the prospect advanced numerous other reasons for holding back.

Accordingly, the dealer determined to put up some arguments to the prospect on the price proposition which would convince him that the price was absolutely right and which would also convince him that his one best bet was to put up the house at once.

But while it was easy enough to come to this conclusion it was an entirely different matter to find arguments with which to put the proposition across.

At last, however, the builder found exactly what he wanted and went to the prospect with a typed sheet of paper in his hand. As he looked at this paper he said to the prospect:

"I've been wondering if your reason for holding back on this house is the thought that you might do better by renting. So I have gone to the trouble of digging up the rental prices

of various homes and apartments about town of as good a type as the home we are talking of erecting for you. The list is on this sheet of paper. Also, I've been around to ten or a dozen of the people for whom I've put up homes in recent years and have gotten some figures as to the way in which their properties have appreciated in value in recent years. This information is also on this sheet of paper. Look all this over and tell me what you think of it."

THE prospect took the sheet of paper and looked at it interestedly. He asked a few questions regarding the various apartments listed and then, at his request, the builder took him around to inspect a couple of the apartments that were unoccupied at the time. And, as the result of this little stunt on the part of the builder, the deal for the house was closed up at once.

Surely, in the experience of this particular builder there is a suggestion or two which could be used to good advantage by other builders in closing up deals of a similar nature which were found to be difficult.

And surely, too, there are other suggestions in the experience of another middle western builder who was having a hard time selling a home to an elderly couple who were anxious to move in from the farm where they had spent most of their lives and where they had accumulated quite a little money.

In this case, as in the first case cited above, the matter of price was the hitch which was hanging up the deal. The farmer and his wife, in fact, were just about appalled at the prices asked for homes of various sizes and characters.

"I guess," said the farmer, after giving careful consideration to all of the builder's propositions, "that the best thing for us to do will be to stay on the farm or to rent a little house somewhere in town. I'm not going to pay any such prices for a new home."

"But the homes are worth the money," the builder urged. "Homes nowadays can't be put up for less and you've got the money to pay for a good home."

"That may be all true enough," the farmer replied, "but I've got my mind set against paying any such prices."

T looked very much indeed as I though the deal couldn't be made. But this builder is a resourceful indi-·vidual and finding that it was impossible to close up the deal in this fashion began skirmishing around for another sales argument. And, in the course of looking around, he discovered that the couple had a charming young granddaughter of about 18 years of age whom they adored. Also the builder discovered that it was largely for the purpose of giving this granddaughter the advantages of the city that the move to the city from the farm was contemplated.

Here, then, was a good sales argument.

So, some little time later the builder went to the farmer and said, as he examined a sheet of paper in his hand:

"You'll be interested in this. I've been checking up on some of the young girls of the city who are of about the same age as your grand-daughter—the age when they make friendships which lead to marriages. There are certain girls of that age in this city who are absolutely certain to marry well. You want your granddaughter to marry well, of course, and so you'll be interested in knowing what one thing it is that is going to make good marriages certain for these young girls. Do you know what it is?"

"What is it?" questioned the far-

"The girls of your granddaughter's age in this city who are certain to marry well are those who live in nice, good-sized homes where they can bring their friends and entertain their friends and where their parents and grandparents can weed out the undesirables and diplomatically direct friendships so that good marriages will result. Here's a list of some of the girls who live in such homes and who should be your granddaughter's friends."

As the builder had expected, this rather unique argument at once made the farmer sit up and take notice and it needed only a little more sales talk along the same line to close up the deal.

I T will probably be found, too, that there are some worth while suggestions in the experience of still another middle western builder in putting over a sale which was causing him a lot of difficulty.

The prospect in this particular instance was a widower of about fifty years of age who had recently made quite a lot of money in the real estate business. He had no children and had been a widower for about ten years and during the time of his widowerhood had been living comfortably in a couple of furnished rooms in one of the best boarding houses in the city.

To all outward appearances this man was a mighty poor proposition for a builder to tackle because he was getting along all right as he was, he didn't need a home and there seemed

to be no reason why he should put up a home.

And those were the very arguments advanced by the widower as to why he wasn't interested when the builder called on him.

But there was a look in the widower's eyes as he said all this that convinced the builder there was a chance to sell him. But repeated talks got the proposition no farther along and the builder was becoming quite discouraged until he suddenly got an idea.

Having gotten this idea he waited until Labor Day came along, it was in the end of summer, and then on the afternoon of the holiday he called for the widower and asked him to go for a ride. During the course of the ride he stopped the car across from a cozy home in a very nice part of the city. A little party was being held at the home—a family party consisting of an elderly man and his wife, two young children and a quite old lady.

66 H OLIDAYS are fierce for the man who hasn't a home of his own," said the builder abruptly. "The unmarried man who lives in a boarding house is all right most of the time but when it comes to holidays he is lost. This man that owns this charming home used to dread holidays. He was a bachelor and he had this nice home but he dreaded holidays because he had to spend them all alone in his home. However, because he had the nice home, some of the women of the neighborhood took an interest in him. One of the neighboring women introduced him to a charming lady of the right age. They became married and now look at this man—a holiday is the day in the year for him. Now if you had a home—"

The deal was closed. And the reason the deal was closed was because the builder had intuition enough to see that although the widower seemed to be placidly content he was really far from being so and, actually, wanted to be married again and have a home of his own but didn't quite have the initiative to make the start.

All of which, it is hoped, will help other builders in making more sales.

Here are a few reasons why some builders never have trouble in closing a sale when the prospective home owner makes inquiry about the work. The mere fact of putting up the great majority of his homes in the good residence sections of the city where the greatest amount of attention is being paid by the people of the city to the new homes proposition, has given one builder a tremendous amount of highly valuable publicity which has been of immense help to him in getting more business. And, unquestionably, this is a highly important point for other builders to consider.

A NOTHER reason is that all promises made with regard to the character of workmanship, the quality of the materials going into the homes and the time when the structures will be entirely completed, has been kept to the very letter.

This constant keeping of promises has been highly effective in giving the builder a splendid reputation and has been extremely effective in bringing new business to him. It has given him a standing in the community and has made people feel perfect confidence in him. All of which has been a great help in selling homes and in making money.

Reason No. 3.—The builder never leaves a job unfinished when he puts up a home. He cleans up the yard around the house, he smooths down any mounds of earth that may be around and he puts the whole thing in just as good order as he possibly can.

Sometimes this thing of cleaning up after a home has been completed takes a couple of days or more and is a quite definite expense to the builder, but it is of immense help in making sales.

Also, where it seems propitious to do so, the builder plants the lots around the homes with shrubberv. puts grass on the yard and "dolls up" the whole place. The cost of doing this is then included in the price of the house and the purchaser is frankly told just how much he is paying for that particular work.

Of course, there are other reasons why this builder has made such a big success, but these are the outstanding reasons and the most interesting reasons. And it is hoped that a perusal of these reasons will offer moneymaking suggestions to other builders.



PLUMBING

Modern Methods and Equipment

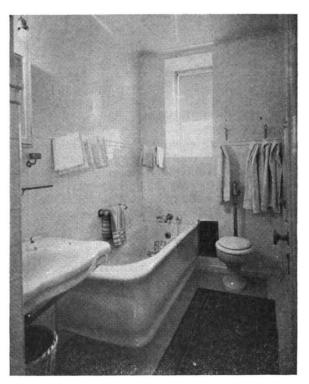
Concerning Bathrooms

THE time has passed when one bathroom suffices for the modern house. While many houses no longer new do make shift with only one, those that are now building do not regard it as unusual to have one for every bedroom in the house. A frequent practice, but not always a satisfactory one, is to have one bathroom between two bedrooms, with a door leading into each.

A decidedly sensible purpose is served by having the water-closet outside of the bathroom proper, so that its use may not be debarred while bathers monopolize the bathroom. The water-closet may have a door leading into the bathroom and another leading into the hall. It should, of course, be lighted and ventilated. Further convenience is had by the presence of an extra

Further convenience is had by the presence of an extra lavatory in this convenient toilet room.

It is also very much of a comfort to have an extra lavatory in the bedroom, appointed with a small medicine closet and a towel rack, and an electric outlet over it. Special bedroom sizes may be had with backs for the wall, and simple of installation. A thing like this if not in the bedroom itself, serves a good purpose placed in a passageway between the communicating rooms of mother and children. Every guest room should have one of these bedroom lavatories.



Bathroom suitable for bungalow shown on page 62.

Full bathing and toilet facilities should be provided for the help and should be located, not at a point in the basement removed from their bedrooms, but as close to them as possible. At least one bathroom and water-closet should be on every sleeping floor of the house, and on the main floor it will conserve much step climbing and much time if there is a lavatory and water-closet tucked away under the stairs or other convenient point. Noiseless plumbing may now be had that is very satisfactory, and indeed noiseless plumbing is much to be appreciated throughout the house. The lavatory under the stairs must, of course, receive outside light and ventilation.

The right valve is vital to good plumbing. Of ten plumbing troubles are due to the light weight, cheaply constructed valves commonly used. Costly repairs and the liability of damage to floors and furnishings through leakage can be largely forestalled if proper recommended valves are used.

An important feature is to have a correct number of shut-off valves installed. Each portion of the plumbing system may then be shut off without interfering with the water supply to other portions. Further, if the valves are so locally placed, it not only makes un-

necessary the steps to and from a central cellar valve, but removes the delay incident to such a trip during which the initial emergency may grow quite acute. Incidentally, householders should be cautioned not to postpone improving a too low water pressure after it has been found out. In time of fire, a low water pressure may greatly increase the hazard and be the cause of much preventable trouble.

Little nickel should be exposed throughout this room, as it constantly requires polishing, etc.

One Year Ago

N Building Age for October, 1922, there appeared a sketch, plans and quantity survey of necessary materials, of a practical six room cottage that was specially designed for us by R. C. Hunter & Brothers, architects. The estimated cost of construction was given as about \$5,000.

In conjunction with the published article, blue print plans and specifications were furnished at a nominal price to builders by our service department.

We recently received a gratifying testament to the practicability and proven worth of this service in the form of the following letter:

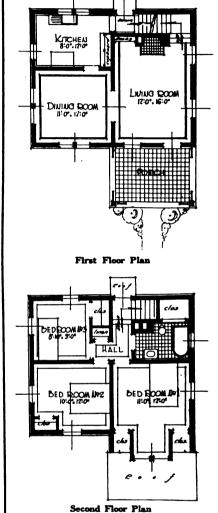
Royal Oak, Mich., August 17, 1923.

Editor, Building Age, Dear Sir:

I have enclosed two pictures of a house which we have just finished from plans purchased from you last year. The cost was the same as the published cost and we have had some very nice compliments on this little home.

Respectfully yours. Northwood Building Co., S. E. Smith, Jr., Pres.

It is pleasing to note that the service thus rendered by Building Age has borne fruit which has resulted in the development of some good types of American homes.









What the Editor Thinks

Winter Work

WE are now approaching the winter season and therefore should give thought to the best methods of working during these months. There is plenty of work to be done in cold weather besides the work that it is unwise to tackle on account of danger from frost.

One of the most important things to do is to schedule one's job so that there will be a continuity of work. In our November issue, considerable space will be given over to articles relating to this work and many interesting items and hints will be given which contractors can apply with profit to their own business.

Signs of Prosperity

NE of the best signs of the present prosperity in the building industry as well as the future is indicated in the large amount of cement and lumber now being ordered. The shipments of lumber are far in excess of production. Reserve stocks, of course, being drawn on to meet the demand.

All records for the production and shipment of Portland cement were broken in August, according to figures just issued by the U. S. Geological Survey. Several times this year people who have been in doubt as to the productive capacity of the cement industry, have had their guesses shattered by the way the industry has kept pace with demand.

Production during August was 12,967,000 barrels, an increase of 350,000 barrels over July, the best previous record, and 1,300,000 over August last year. Production for eight months ending August 31st, was nearly 88,000,000 barrels, or more than was produced in any one of the entire years, 1915, 1918 or 1919.

Rapid Estimating

S NAP estimates are faulty in a great many cases. Sometimes they are so high that many jobs are lost. In other cases, they are so low that they cause a smashup to a builders' business.

Perhaps one of the quickest and safest ways to do rapid estimating is by the unit cost system. There is, however, no set of rules that will give this. Each builder must make up his own cost record. No one knows better than yourself just how much material costs you on the job and how quick you and your men can work.

Careful records kept of a few jobs will give you unit costs that can be applied to any job that you undertake under similar conditions. In this issue there is an interesting article on this subject which gives some valuable pointers on how to prepare your own unit costs. The law of averages applies to building as well as in other lines.

Fire Prevention

PRESIDENT COOLIDGE recently made a proclamation setting aside October 9th as National Fire Prevention Day. This date is the anniversary of the great Chicago fire. With the lesson of the recent great fire loss at Berkeley, Calif., before us, we certainly should give heed to fire prevention.

Builders of today can do much to prevent huge fire losses. Big conflagrations always have a small beginning. Fire-safe construction will prevent the rapid spread of fire and no building erected today should neglect such precautions. Wood building can be made slow burning, allowing plenty of time for the fire to be extinguished before it has had time to communicate with adjoining structures.

Fair Treatment of Sub Contractors

O remain successful in the building game, it is essential to practice the square deal towards all. The general contractor should be particular about his treatment of sub contractors.

If they take the trouble to give you an estimate for work on some particular buildings and you receive the contract, to go ahead, you are in honor bound to give the work to that sub contractor who went to the trouble of supplying you with a bid.

Some contractors who thought themselves smart would get prices from some sub contractor who could figure and then, when awarded the contract, would turn the work over to some sub contractor who would do the job for a little less because he did not waste time figuring out an estimate.

After a short while this practice is discovered and the general contractor is in the unfortunate position of not securing reliable sub contracts in preparing his estimate. The golden rule is a good one to follow.

Shortage of Men

CTOBER brings us around to a rather curious state of affairs, in the labor market. Bricklayers who were so "high and mighty" but a few months ago, are now beginning to look for jobs as a good deal of construction work is being finished. But our friends, the plasterers, are now king. Some of them are making as high as \$105 for a six and one-half day week! They are receiving the base rate of \$12 a day with a \$2 bonus and this they receive for five and one-half days. They work all day Sunday at double pay, which brings their total wages up to the \$105 mark, per week.

USEFUL CATALOGS



Rotary Exhaust Ventilators for chimneys, barns, factories, etc. are described in an interesting pamphlet issued by E. G. Washburne & Co., 207 Fulton St., New York City. Weather vanes and lightning rods are also described and illustrated in another interesting catalog of this firm and builders will find both useful for their files.

Bath Tube having a combination of foot, shower, child's and seat bath are an attractive feature for builders to place in a new house. The Wheeling Sanitary Mfg. Co., Wheeling, W. Va., has issued an illustrated pamphlet giving detailed information about these tubs. The builder will be greatly interested in securing this booklet and learning about this new feature.

Timber Joints on any construction job can be made strong, safe and economical by using certain steel fasteners instead of dowels, drift pins, keys or wedges. The Midwest Steel and Supply Co., 100 E. 45th St., New York City have issued a descriptive folder about their Bulldog fasteners that will certainly interest builders.

Hot Air Furnaces and kitchen ranges are thoroughly described and illustrated in a number of catalogs published by the Co-Operative Foundry Co. of Rochester, N. Y. These will prove of exceptional interest to builders and they should be sure to secure them.

Mortar Colors are great factors in the beautifying of brickwork, especially where used for exteriors of homes. The Clinton Metallic Paint Co. of Clinton, N. Y. have issued an interesting catalog that thoroughly describes the use of this material which is simple of application and at the same time economical.

Steel Lath is fire resistant, prevents cracks in walls and forms a firm foundation for plaster. Many other of its features are described and graphically illustrated in a twenty-two page booklet entitled "Beautiful Permanent Walls," issued by the Bostwick Steel Lath Co. of Niles, O.

Garden Equipment that is graceful of design and beautiful of build, adds to the appearance of the grounds around any home and builders should furnish this to make their job complete. The Hartmann-Sanders Co., 2155 Elston Ave., Chicago, Ill., will send inquiring builders two books entitled "The Pergola" and "Garden Furnishing," which will be found interesting and educational.

Insulating Quilt for keeping houses warm in winter and cool in summer and that will also deaden sound in the rooms is a feature that builders will be greatly interested in for lining floors, partitions. etc. A large twenty four page, fully illustrated, descriptive catalog is issued by Samuel Cabot, Inc., Boston, Mass.

Store Fronts should always lend a pleasing appearance as they are leading factors in drawing trade. The Detroit Show Case Co., 1652 West Fort St., Detroit, Mich., have issued a large catalog containing illustrations and specifications and builders will be greatly interested in it.

Metal Weatherstrips eliminate the discomfort of inclement weather, inside the house. Dampness, cold, draft, dust, all are kept outside by these strips, which protect against the elements. The Diamond Metal Weatherstrip Co. of Columbus, O., have issued a boo'c containing blue print detail and description of this appliance. Builders should send for it at once.

O N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Drawing Instruments of high quality are useful to builders at all times and a full set should comprise part of the equipment. An illustrated sixteen page booklet issued by the David White Co., Inc., 901 Chestnut street., Milwaukee. Wisc. describes some of their useful instruments.

Roofing Slate not only lends beauty to the exterior of homes, but is durable and waterproof. The Vendor Slate Co. of Easton, Pa. has published a beautifully illustrated twenty two page booklet giving detailed description of the uses and application of this roofing material.

Fireproof Wallboard is fully described and illustrated in a book published by the United States Gypsum Co., 205 West Monroe St., Chicago, Ill. This book gived detailed instructions for applying and also several pages for time keeping records. Builders will find this book useful and should send for it.

Asbestos Shingle makes a permanent fireproof roofing material with which to cover any home. A large, beautifully illustrated catalog showing numerous illustrations how this shingle may be used can be secured by interested builders from the Asbestos Shingle, Slate and Sheathing Co., Ambler, Pa.

Sidewalk Vault Lights must be able to withstand severe usage, besides permitting plenty of light to enter through them. The American Three Way Luxifer Prism Co., 1309 S. 55th St., Cicero, Ill., has issued a forty-two page catalog showing a number of illustrations of the use of these prisms, with detailed drawings and specifications. Builders when sending for this catalog should mention No. 21.

Brick Siding stamped sheet metal that is made in roll form is a building commodity that is fire-resisting, and beautifies the home at the same time. The Amalgamated Roofing Co., 431 South Dearborn St., Chicago, Ill., will send to the interested builder a number of pamphlets fully describing this material and its use.

OCTOBER 1023

Flooring that is sanitary, flexible, durable and comfortable is a great convenience and attraction, and builders will surely be interested in the booklet published by the Everlasbestos Flooring Co., Rochester, N. Y., describing and illustrating the use of this material.

Plastering needs a good, firm base to prevent it from cracking and buckling. Such a base is found in the use of expanded wood lath. The Expanded Wood Lath Corporation, Conway Building, Chicago, Ill., has issued a number of interesting pamphlets containing descriptions of this lath and method of application.

Bathroom Fixtures must be attractive to please the prospective home buyer. The progressive builder will be greatly interested in a catalog issued by the Fairfacts Co., Dept. J, 234 W. 14th St., New York City. This catalog contains illustrations and description of different bathroom fittings and built-in features.

Heating and Ventilating is of the utmost importance in the home. With a warm-air heating system it is essential that the air be pure and healthful after heating. How this is accomplished is described in an interesting book issued by the Farquhar Furnace Co., Wilmington. O.

Lighting is one of the most important features of the modern home today and must be efficient and practical to please the prospective buyer. Builders must necessarily pay special attention to the location of electric lighting equipment, outlets and fixtures. An interesting catalog illustrating and describing different methods of proper lighting is issued by the General Electric Co., Schenectady, N. V.

Rigid Metal Lath is thoroughly described and illustrated in a thirty-two page booklet containing numerous photos and detail plates, issued by the General Fireproofing Co., Youngstown, O. Builders will be greatly interested in this booklet.

Electric Floor Surfacers are of great assistance to the builder in saving time and labor. The Globe Manufacturing and Distributing Co., 319 W. Chicago Ave., Chicago, Ill., has issued a pamphlet describing these useful machines.

Plumbing and Heating Fixtures are graphically described in a large catalog issued by the Hardin-Lavin Co., 46th St. and Cottage Grove Ave., Chicago, Ill. This book contains pictures, descriptions and prices of a large assortment of modern plumbing and heating equipment and is sure to be a handy book to have in a builder's file.

Plumbing Fixtures that are modern and efficient are leading factors in selling a home. Supplies of this type are described in a catalog issued by the Bowman Supply and Manufacturing Co., 872 Progress St., N. S., Pittsburgh, Pa.

Electric Surfacing Machines save time and labor in finishing floors. These machines and their many uses are described and illustrated in catalogs issued by the Wayvell-Chappel Co., 139 North Jackson St., Waukegan, Ill., and builders will be greatly interested in them.

Kitchen Ranges are always a big feature in selling the home and builders should install ranges of a modern practical type. The Wm. M. Crane Co., 16 W. 32nd St., New York City, will send builders a catalog containing illustrations of different styles along with specifications.

Wood Working Machinery of practical design is thoroughly described and illustrated in a one-hundred-forty-four page catalog published by the Crescent Machine Co., Leetonia, O. Builders will find this catalog of great value to them and should send for it for their files.

Hinges do much toward making a rather plain door artistic in appearance. A nne cloth-bound catalog issued by the Griffin Mfg. Co. of Erie, Pa., contains a large number of illustrations of plain and fancy hinges, hasps, etc. Builders should have this catalog in their files and should send for it immediately.

Electrical Equipment of modern design should be installed in the modern home and progressive builders will surely be greatly interested in a catalog issued by Harvey Hubbell, Inc., Bridgeport, Conn., containing illustrations and descriptions of different wiring devices, sockets, etc., which it is well for the builder to be acquainted with.

All Metal Porch Screens are sure to be big attractions when added to any home. Builders should include a full set of such screens with every home they build. The Higgin Mfg. Co., of Newport, Ky., have issued a finely illustrated catalog describing this material and builders should not neglect to send for it for their files.

Metal Ceilings with lock joints are offered the builder who has to install a good looking fireproof ceiling. The Keighley Metal Ceiling Co., 124 Third Ave., Pittsburgh, Pa., has issued a beautifully illustrated one-hundred-forty-two page catalog showing a large assortment of different designs and patterns of metal ceilings and builders will find this catalog of unusual interest to them.

Copper for all building purposes is described and illustrated in a catalog issued by C. G. Hussey & Co., Pittsburgh, Pa. This booklet contains cross section diagrams and instructions in using this material and builders will be greatly interested in its contents.

Steel Work for Buildings, such as trusses for garages and factories, steel sash, skylights, etc., is interestingly described in the booklet issued by the International Steel and Iron Co., Dept. 19, Evansville, Ind.

Hardware of every description for use on windows and doors is described and illustrated in a fine catalog issued by the H. B. Ives Co., New Haven, Conn. Builders should have this in their files to show customers.

Plastering can be made easy by the proper selection of finishing plaster. The Kelly Island Lime and Transport Co., Leader-News Building, Cleveland, Ohio, have issued an interesting booklet describing their Tiger White Rock Lime finish. This booklet contains some very valuable data and specifications, and builders should send for it.

Mortising by hand is a slow and tedious process, but there is a simple, low-cost machine that will do the work quickly with a clean cut and leave a finished job. Such a machine is described in the new folder issued by the Colgan Machinery and Supply Co., 701 Hayden Building, Columbus, O.

Incinerators to be practical must immediately dispose of garbage and refuse, eliminate obnoxious odors, and reduce everything combustible to ashes. Such equipment should be installed by builders when erecting any good residence. The Kerner Incinerator Co., 1027 Chestnut St., Milwaukee, Wis., has issued an interesting booklet containing description, etc.

Concrete Machinery is a great laborand time-saving convenience, and is a necessary part of the progressive builder's equipment. Builders will be interested in the comprehensive catalog issued by the Ransome Concrete Machinery Co., Dunnellen, N. J.

"The Blue Book of Steel Windows," issued by the Detroit Steel Products Company, 2250 East Grand Boulevard, Detroit, Mich., shows the complete line of Fenestra products. A special section is devoted to Fenestra Reversible Ventilator Windows, which are designed for school and office buildings. Sidewall, counterbalanced, monitor and Underwriters' sash, as well as details of mechanical operators and installation, are clearly shown.

The Ventilation of Buildings

Some Basic Facts and Figures

O keep on living, everybody must have sufficient air to breathe; and to keep on being healthy this air should be sufficiently pure and sufficiently moist and sufficiently cool, says the U. S. Public Health Service. By ventilation all these ends are sought to be attained.

In the open air, away from noxious gases, ventilation looks after itself; elsewhere, particularly in houses or in any closed spaces, it must be looked after. No matter how pure the air in such a space may be, anyone who enters it at once begins to pollute it with his breath; and it will ultimately become injurious to health unless it is renewed either by natural means (such as the wind) or by artificial means.

Renewal is necessary because when "breathing in" one takes away something from the air (oxygen); and when "breathing out" one adds something to the air (carbon dioxide). Oxygen is taken from in-breathed air by the blood that circulates through the lungs and is carried away to help the food build up the body, keep it warm, and energize it—give it power to move. Oxygen constitutes about one-fifth of the air; and about one-half of that one-fifth is breathed out, unchanged, and may be breathed over again.

Carbon dioxide is part of the waste that is left over in the body when oxygen and food combine to build up the body, etc. It is picked up by the blood, carried to the lungs, and breathed out. It is poisonous and injures the body when it is breathed in again.

Rosenau estimates (1917) that to keep healthy a man weighing 160 pounds needs 2,400 cubic feet of fresh air every hour when resting; 3,200 when doing light work; and 6,100 when doing hard work. A woman weighing 120 pounds needs five-sixths as much; and a child weighing 80 pounds needs seven-twelfths as much.

Factories, churches, theatres, offices, etc., all need abundant supplies of fresh air. Factories need them most of all, for persons doing physical labor breathe faster than those who are sitting quietly; and most factories use more or less machinery, whose fires use up (burn) oxygen and release carbon dioxide faster than the breath of many men.

THE simplest way of renewing used air by a supply of unused air is by opening the windows; but unless these are very carefully placed and supervised they seldom distribute the air evenly and they often cause persons in one part of a workroom to suffer from heat and bad air while those in other parts shiver and sneeze. Furthermore, in many factories the windows are constantly being obstructed by materials that are put there "temporarily," but are left there eternally. However, in these days the complaint committee of the workers can usually be trusted to see to their removal.

If natural ventilation is insufficient the best way to renew the air in factories is by the use of big electric fans, so placed as to draw off the foul air, or to drive in the fresh air, or both.

Temperature and humidity (per cent. of moisture in the air) are also closely associated with ventilation. The body heat given off by persons congregated in a workroom, church, theatre or other building raises the temperature and increases the moisture. When the temperature rises above 86°F. and the humidity above 80 per cent. they cause considerable discomfort; when they rise higher they cause suffering; and when they rise still higher they may cause heatstroke. In winter, on the other hand, the heated air in buildings is usually too dry; often the humidity falls to 20 per cent., which is lower than that in a desert. Air as dry as this draws moisture from the skin and from the mucous membranes of the nose, throat, and

mouth and irritates them. To be comfortable the humidity of a workroom should be about 50 per cent.; and it would pay the plant manager to see that it is kept that high, for at 50 per cent. less heat is necessary and coal is saved; a temperature of 62°F. is quite high enough if the work is active.

The ventilation of many factories and offices depends on factors over which the workers may have little control. At home, however, in their rooms they have fewer or no other persons to consider and may be able to insist on pure air, especially at night.

THE idea that night air is unhealthy and must be shut out is a survival from the days when men barricaded themselves to keep enemies from stealing upon them under cover of darkness; it was reinforced later, before window screens were invented, when malaria-bearing mosquitos entered by night through unclosed windows. Night air is exactly like day air; and neither of them is anything like so injurious as the air in a room whose windows are closed and whose door is probably never opened all night long, no matter how many persons are breathing into it carbon dioxide-and rebreathing it—all night long.

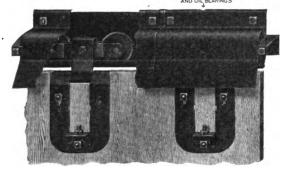
If drafts upon the bed are feared they may be prevented by getting a piece of board about 12 inches wide and nearly as long as the window sash is wide. Raise the lower sash, slip the board in beneath it, and draw the sash down upon it. Outside air will travel upward between the two sashes and spill into the room over the top of the lower sash. This is nothing like so satisfactory as having the upper sash completely down, but it will do a lot for that sick, headachy feeling that you have had every morning.

For further information write to the Surgeon General, U. S. Public Health Service, Washington, D. C., for Reprint 729: Efficiency of various systems of air-conditioning, etc.

NATIONAL

Door Hangers





No. 88 Hanger Storm-proof Adjustable Heavy Service

Carries the door closer to the rail than any other type hanger—Vertical and lateral adjustments made with extreme ease—Handles heavy doors smoothly—Gives perfect storm protection—Scientifically correct roller bearings distribute the load and ensure long service.

Storm-proof Rail

with Protective Cover

Exceedingly strong — Storm proof and bird proof—Rail joints dove-tailed — Requires no brackets or splice covers—Cover removable for painting inside of rail—Positive in satisfaction and easy to put up.



Send for your copy of the National catalog

NATIONAL MANUFACTURING COMPANY

STERLING

ILLINOIS



PAINTING

Practical Points of Interest to the Builder

HE architect's specifications tell us what work is to be done, how it is to be finished, and usually what kind of materials are to be used. They sometimes tell just what brand must be employed on the work.

The specifications are presumed to be complete, explaining just what the painter is to do. But the specifications are not always full and complete in details, hence the painter should carefully read them, and ascertain whether there are any things to do that are not specified on the plans.

For instance, there may be storm doors, storm sash, panel backs, and boxes for inside blinds, hall and window seats, dressers, bathroom and store room accessories, and perhaps other features, work he must do, without a hint of them on the plans or in the specifications.

Will you be paid for the work? Probably not. The owner may be honest enough to recompense you, but it is not at all certain that he will. Be on the sure side; ask questions, look over the specifications of other mechanics on the work. The plasterer's work will be on walls and ceilings, and his measurements should be useful to you. There are various ways of finishing woodwork, hence be sure to know exactly what form of finish is specified. For instance, the hardwood finish may be done in several quite different ways, some inexpensive as to labor, while others may be quite expensive.

You can water-stain, shellac and wax a job, a very cheap form of finish, or fill, stain, varnish with several coats, rub and polish, and so on, work requiring much time and skill. By estimating wrong on such work you stand to lose money. And there is the glass; ascertain whether you are

Painting Specifications

By A. ASHMUN KELLY

to furnish it or not, or only to set and glaze it.

Ascertain also what kind or quality of materials you are to furnish, how many coats of this and that, and be sure to find out whether woodwork is to be primed before or after putting up. Are picture mouldings to be painted? Are they to be given the last coat of paint or stain before or after the paper is hung.

A NY whitewashing in cellar? How about the radiators? Who is to finish them? Are any walls to be painted? If so, how many coats? What kind of paint? Are the walls and ceilings to be kalsomined, or decorated in water colors? What is the character of the decorations?

Are shingles to be stained? If so, are they to be dipped or coated on the roof, or both? What brand of stain? How many colors of stain to be applied? How many coats of stain? Are they to be blended on the roofs?

Then there is the matter of varnish—what brands or kinds are to be used? How many coats, on different parts of work?

Such hints as we have given should be enough to indicate the method to be followed in reading plans and specifications, and making estimates thereon.

Take nothing for granted, be positive in what you know or understand about the matter. In which case your chances for coming out right will not depend upon whether you have or

have not been circumspect in studying plans and specifications. And bid high enough.

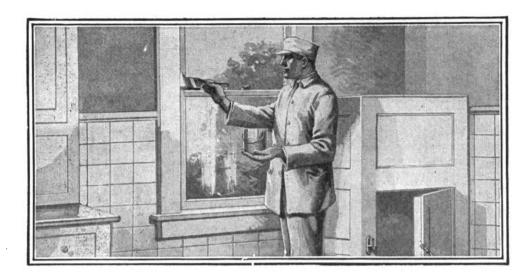
We should not omit calling attention also to the character and condition of the work that is to be done. The woodwork or walls may be either smooth and in good shape for finishing, or may be rough and require considerable work making them fit. This is a matter of labor. Then a poor surface will take more material, this being a matter of cost. Look over the pine woodwork and note how the knots abound, whether many or few, large or small.

See also how much putty work will be necessary to stop holes and make a solid job. Then see about how much work will be required in furnishing and rigging scaffolding. This item is very important. It will make considerable difference in the cost of doing a job. It has to be put up and don't forget—it has to be taken down. It may occur that you can use scaffolding that has been used by other workmen, and has not been removed. Sometimes much work can be done in this manner. On public work, such as churches and other high buildings, considerable scaffolding is usually required. Make this a separate item.

A WORKMAN can do more work on or very near the ground as a rule than he can on certain forms of scaffolding. He must be more careful about falling, and some men are naturally timid.

As a general thing, all exterior work requires more time than a corresponding amount of interior work. This is particularly true of roof work, when ladders or staging have to be employed. It is important to look up these details when estimating on painting work.

For Light, Cheerful Rooms



JOHNSON'S ENAMEL

You can't do your best work with inferior materials—and your reputation and success depend upon always turning out good work. Build up a reputation as the best contractor in your locality—then you can get the price and will never experience a poor season.

Contractors who use Johnson's Artistic Interior Finishes soon find themselves getting more of the profitable, better class work. Johnson's Artistic Interior Finishes are right when they go into the can and they stay right. They do not change or deteriorate in any way.

You can give your customers the finest kind of a job by finishing both walls and trim with Johnson's Perfectone Undercoat and Johnson's Perfectone Enamel. These products will give equally good satisfaction on wood, plaster and metal. With them you can turn out perfect work—satisfy your trade and complete more jobs each season.

FREE—Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of famous experts—illustrated in color. This book is written for the practical man—it gives covering capacity, includes color charts, etc. We will gladly send it free and postpaid.

USB COUPON AT RIGHT



S. C. JOHNSON & SON
Dept. B A. 10, Racine, Wis.
"The Wood Finishing Authorities"

Please send me free and postpaid your Book on Wood Finishing. I usually buy Varnish from.....

• • • • • • • • • • • • •	• • • •	• •	٠.	• •	٠.	• •	•	• •	٠	• •	٠
My Name								٠.			
My Address.					٠.						
City and Stat	te				٠.			٠.			

Digitized by Google

One Year's Progress of American Construction Council

HE first annual meeting of the American Construction Council, following the organization meeting that took place in Washington in June, 1922, was held in New York City on Friday and Saturday, September 21 and 22. At its sessions some of the more pressing problems awaiting solution by the industry received practical consideration.

Opening of the Council

The meeting of the Council itself, following a meeting of the Board of Governors at the home of Franklin D. Roosevelt, president of the Council, was opened by a note of welcome from President Roosevelt, in which he expressed his faith in the great usefulness of the Council and its field of constructive activity for the future, which was read by Vice-President John E. Lloyd, of Philadelphia. The Executive Vice-President, Mr. D. Knickerbacker Boyd, of Philadelphia, served as general chairman.

Mr. Boyd delivered an address in which he reiterated the purposes for which the Council had been formed and the major lines of activity along which it should operate.

Co-operation with Local Congresses

Among the problems discussed were: Local Autonomy and National Organization in the Construction Industry (how the American Construction Council should aid in the promotion and co-operation with local building congresses); Apprenticeship; Vocational Guidance and Crastsmanship in the Construction Industry; Reduction of Unemployment in the Construction Industry; the American Construction Council's Program on Research, and What the Construction Council Can Do to Help the Various Branches of the Industry.

Matters pertaining to the organization and actual operations of Building Construction Congresses in New York City, Boston, New Jersey, Philadelphia, and Portland, Oregon, were given special attention by the speakers.

Likewise, Apprenticeship, Vocational Guidance and Craftsmanship received concrete presentation by Fred F. Moran, managing director of the Apprenticeship Commission of the New York Building Congress.

Reduction of Unemployment in the Construction Industry received attention through a paper by A. P. Greensfelder, vice-president of the Associated General Contractors of America, St. Louis, and an address by Dr. John M. Gries, Chief of the Division of Building and Housing of the U. S. Department of Commerce.

The Council's Program on Research was presented by Dwight L. Hoopingarner, speaking as chairman of the Council's Committee on Public Information and Research.

What the Council Can Do

There was no more significant phase of the program than that at the evening session pertaining to What the American Construction Council Can Do to Help the Various Branches of the Construction Industry, which was participated in officially by the presidents or other representatives of about twenty or more of the leading national organizations interested in the construction industry, who set forth the problems confronting their branches of the industry on which the Council can render help.

Aside from the general attendance, delegates were present from the twelve constituent groups of the Council: Architects; engineers; general contractors; sub-contractors; construction labor; material and equipment manufacturers; material and equipment dealers; financial, surety, bonding, real estate, accounting, insurance, building and loan organizations; chambers of commerce and boards of trade; public utility construction departments; representatives of federal, state, county and municipal bureaus or departments concerned with construction; national associations of builders' exchanges; building trades employers' associations and similar associations or federations of building interests.

Indicative of the Council's progress along some of the more important lines are the resolutions, born of the discussions at the meeting and passed upon by the Board of Governors.

Help to Organize Additional Congresses

The first resolution adopted was one authorizing the expenditure of \$25,000 for the promotion of cooperative work on the part of the Council in promoting the organization of Building Construction Congresses throughout the various construction centers of the country where none already exists and co-operating in every appropriate manner with those already established.

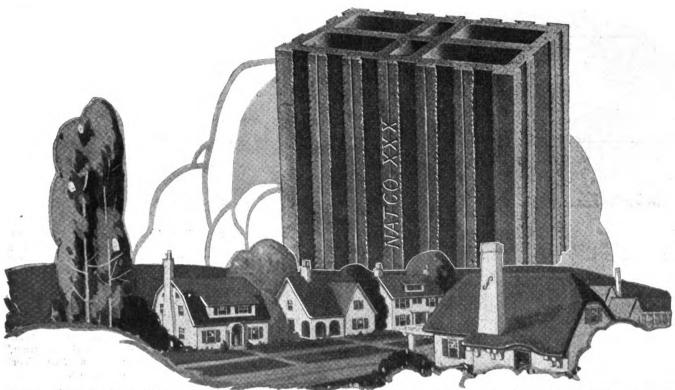
Training Young Men

A second resolution designed to further a sound and adequate program on apprentice training for the construction industry was adopted. The aim of this resolution is to further the organization and maintenance of agencies for such training which will provide apprenticeship training that will be attractive to young men and will afford the fullest means for the employment and training of efficient workers as apprentices. This resolution further authorizes as the first essential step in this program, the making of a national survey on apprenticeship needs and conditions of labor supply throughout the construction industry.

Building Statistics

A third resolution based on the Council's statistical program was adopted. Earlier in the year, the Council called attention to the necessity for securing at regular intervals adequate data that would give the public information which it could use as a barometer of present and anticipated volume of construction by important districts throughout the country.

The need for such information has become all the more apparent with the rapid expansion of the industry in its many angles and the desirability of co-ordinating its activities toward a better stabilization of the industry itself.



BACK of every NATCO HOME

Write for your eopy your day

is the integrity and dependability of an institution with a record of over thirty years real service to the building industry. Natco Hollow Tile is the specialized product of this long experience. Its flexibility and all around dependability have made it a popular building unit for practically every type of building from the towering skyscraper to the small bungalow.

The architect who specifies Natco Hollow Tile for home construction assures his client all the superior comfort features that years of Natco experience have made possible.

The Natco Home Book, illustrated with many pictures of attractive homes, will be mailed on request.

NATIONAL FIRE PROOFING COMPANY 524 Fulton Building - Pittsburgh, Penna





HE decision of the Vermont Supreme Court in the case of Prouty vs. Pellett & Skinner, 117 Atlantic Re-

Building Confor Injury to Pedestrian

porter, 373, deals with the responsibility of tractor's Liability building contractors for injuries sustained by pedestrians in passing along a sidewalk obstructed by building operations.

Defendants were remodelling a bank building in Brattleboro, Vt., and had fenced off an abutting sidewalk, necessitating use of the street by pedestrians. Defendants' workmen had permitted bits of refuse to accumulate in the street at this point, and plaintiff, while passing by, sustained injury through falling on some broken brick. She sued for damages and was nonsuited. The Supreme Court affirmed the action of the lower court in denying her right to recover.

Among other points decided in the case, it is held that the trial judge properly excluded from evidence an ordinance requiring official permit for the erection of staging over any street or sidewalk. The ordinance was inadmissible because any failure on defendants' part to obtain a permit had no relationship to the accident in question. The court said:

"The lack of a written permit did not have the remotest causal relation to the presence of the broken brick in the roadway."

Approving an instruction given by the trial judge to the jury—to the effect that defendants had a right to the reasonable use of the highway at the point where the accident happened, for the purposes of their repairs, and that if the cause of the injury was in such reasonable use by the defendants the plaintiff could not recover, the court observed:

"The trouble with the plaintiff's position is that her suit was predicated, not upon an unauthorized obstruction of the highway, but upon the negligence of the defendants in handling their work. Whether she could have recovered on the theory invoked had she brought her

action on that ground we are not called upon to say. Certainly she cannot successfully invo'e that theory in this suit, for she must recover here, if she recovers at all, upon the case made by her complaint."

The court also rules that it is not "always necessary to obtain permission of the municipal authorities in order to make lawful an obstruction in the street. The right of the public to the free and unobstructed use of a highway is not absolute and unlimited; it is subject to the right of the abutter to make such incidental, temporary, or partial obstructions as his reasonable necessities require. Such obstructions must be reasonable in character and duration, and not such as unduly to interfere with the rights of travelers. Subject to these conditions, an abutter may use the sidewalk for anloading goods, deposit thereon wood to be carried into his building, or building materials to be used in repairs thereon, or refuse to be carried away. . . . This qualification of the rights of the public is of great importance to the abutter, and without it business of all kinds would have to be done under serious handicap. Take this very case: Without this right to use the street, the extensive repairs shown by the record would be practically impossible. No permit or license from municipal authorities being necessary in such cases, civil liability attaches only when negligence is shown."

THE gentleman who propounded the query discussed in the preceding article also states that a building contract required the contractor to do the

work as required by Architect's general provisions of Control the contract, including a clause reading Over as follows: "Any part Contractor not mentioned

drawings in particular or general data must be brought in advance to the architect's attention for decision." We are asked whether the contractor is bound to follow the architect's directions.

In our opinion, this does not give the architect arbitrary power. It merely gives him the right to exercise reasonable discretion in the matter of giving directions on phases of the work not specifically covered by the plans, specifications and contract.

I MADE a simple written contract to erect a store building with flats above. but the owner was not satisfied and had his lawyer draw up the contract," writes a New York

contractor.

What Are This Building Contractor's Rights?

"This instrument ends with this: 'In witness whereof, the said parties have hereunto

set their hands and seals the day and year first written above.' We signed before one witness, who attested the contract. The lawyer did not write any date in the contract, unless the owner has dated his copy. I claim that the owner had no right to fill in a date without my consent, and that a contract without a date is void.

"The owner unreasonably refuses to pay for things verbally ordered by him. For example, in digging the cellar a spring of water was opened; so, the cellar was made 6 ft. deep, instead of 7 ft., to keep above the water level. Now, the water level has risen three feet around the cellar walls, causing seepage into the cellar. The contract does not call for water-proofing. But the owner insists that I do it, without extra compensation. I claim that he should pay for the water-proofing.

"The contract calls for full payment of the contract price when the owner takes possession. He wants to move in, although he owes me about \$5,000 and there is some more work to be done. I claim that as the contract calls for him to pay when the building is ready, he is breaking the contract by taking possession without my consent and without paying me. I told him to stay out until the work is completed, and that he could then choose between acceptance of the building with payment of the contract price and staying out until matters are settled. If he gets possession without paying me, no mortal knows when I will get my money."

1240 MILES

of Kawneer

S. Mary Street S

The Kawneer Company of Niles, Michigan points with pride to more than 260,000 installations of its resilient, solid copper store front construction.

These Kawneer Store Fronts placed side by side, would reach from Key West to beyond Chicago—more than 1,240 miles.

Successful contractors have found that the surest way to build prestige and patronage in store front work in install

Kawneer STORE FRONTS

The Kawneer Company, 3125 North Front Street, Niles, Michigan.

Please send me a copy of your new BOOK or DESIGNS and full information about Kawneer Store Front work.

Name

Address

- 1. You are in error in assuming that a written contract is invalid because not dated. It is always permissible for either party to the agreement to show when the contract was entered into, when the precise date is important in settling a controversy. There is nothing shown here, however, to indicate that the date is vital.
- 2. You are right that the owner would not be entitled to insert a date without your consent. But his insertion of the true date would not be prejudicial to you. Should he insert prejudicial matter. vou would not be bound by it and could avoid its becoming binding upon you by showing that it was inserted without mutual consent.
- 3. As to the extra work entailed, we note that you refer specifically only to the work entailed by the spring. We are, therefore, not in a position to express an opinion as to your rights concerning any other extras. And, as to the cellar condition, we hesitate to express an opinion without knowing just how the contract was worded.

Unless there is something in the contract to exempt the contractor from responsibility, he may find that he is up against the necessity of taking care of the water. The owner may have plausible ground for taking the position that delivering a structure with three feet of water standing in the cellar is not a compliance with the requirements of the contract.

In some respects the case appears to be like that very recently considered by the Washington Supreme Court, and mentioned in another article written for this journal-White vs. Mitchell, 213 Pacific Reporter, 10. There the court decided that a contractor could not excuse failure to complete work according to contract, on the ground that unexpected soil conditions were encountered. The court said:

"The general rule is that a builder must substantially perform his contract according to its terms, and, in the absence of contract governing the matter, he will be excused only by acts of God, impossibility of performance, or acts of the other party to the contract. If he wish to protect himself against the hazards of the soil, the weather, labor, or other uncertain contingencies, he must do so by his contract."

In the same case it was decided that if water standing in a basement caused the finishing work to be unreasonably damaged, it was the duty of the contractor "to remedy that condition and remove the water by drainage, or otherwise." But the opinion was based on a finding of the court that there was nothing in the evidence "to show that it was impossible to build the house without the presence of great quantities of water constantly standing in the basement "

It is probably true that the contract is so worded that the contractor in the case before use is not legally bound to waterproof the cellar walls. But if it is possible for him to avoid seepage of the spring water into the cellar, he may find that he is bound to take some sort of steps to stop the inflow of water and to drain water already in.

Ordinarily, an owner does not contemplate taking over a basement with a well in it. And our friend may have difficulty in avoiding liability for the expense of getting rid of the water.

- I advise that the contractor consult some good local attorney to assist him straightening this difficulty out.
- 4. If the owner owns the lot on which the building has been erected, he can force himself into possession of the building, without paying the balance claimed to be due the contractor. And it will probably not prove to the contractor's advantage to try to keep the owner out. On consulting local counsel, it may be found to be best to let the owner take possession and then resort to mechanic's lien proceedings, if the owner refuses to make inunediate settlement.

But the contractor should make sure that he has substantially performed his contract before he files a lien. Whether there has been substantial performance or not seems to rest on the language of the contract, and, perhaps, on the cost of excluding water from the basement. If the water can be taken care of at comparatively small expense, the contractor has substantially performed his contract, although it may appear that he was bound to take care of the water. In that case the owner would merely be entitled to deduct the amount of this expense.

LL readers are invited to ask any questions that will help them solve any legal difficulty that they may be in. Our legal adviser will answer direct by mail and give his opinion as to the correct procedure. Questions and answers of general in-terest to the trade will be pub-lished in these columns. All inquiries must be accompanied by the name and address of the correspondent so that he may be answered direct or that he may be requested for further information if necessary to the intelligent answering of his question. No names will be published, only initials or a nom de plume. Remember that this service is free to subscribers. Address Legal Department, Building Age and The Builders Journal, 239 West 39th street, New York City.

MASSACHUSETTS builder asks concerning his right to recover compensation for drawing plans for a garage. The owner furnished a rough

Compensation For Drawing Plans

draft of the building Builder's Right to he had in mind, and directed preparation of the plans by the builder, who is not a ficensed architect.

Nothing was said as to the amount of compensation beyond the builder's assurance that he would treat the owner "right." Various changes were made in the drawings as a result of conferences with the owner, and considerable time was spent in the work-all of the builder's "spare time" during three weeks.

A set of plans, embracing basement and floor plans, elevations, sections, etc., was substantially completed and submitted to the owner. He expressed satisfaction with them and asked what pay was desired. The builder replied that the charge would be three per cent. of the estimated cost of the building. which was \$15,000.

A month later he telephoned that he would not pay more than \$75, and that if that was not satisfactory the builder could have his plans back. He stated a day or two later that the plans were not what he wanted, but he still retains them, and has obtained construction cost figures on them.

The builder now asks \$300 for his services, which were rendered with a view to the possibility of his getting the construction contract.

Although the gentleman from Massachusetts is not a regular architect, we see no reason for doubting his right to recover reasonable compensation for the services rendered by him, on the facts stated. And it would seem that he is entitled to recover materially in excess of \$75, although, perhaps, not as much as would be collectible by a regular architect.

The work was done under a mutual understanding that some compensation would be paid, and since there was no agreement as to rate or amount, the law implied a promise for payment of reasonable compensation for acceptable plans.

The owner appears to be clearly estopped to deny the satisfactory character of the plans, by reason of his original approval of them and his retention of the same.

In our opinion, the builder would make out a right to recover on proving the facts stated, and on making further proof by local builders and architects concerning the value of the services rendered. He should not have difficulty in establishing a claim for \$250 or \$300.





Oak floors are laid throughout "The Perfect House," Glen Ellyn, Ill., shown below, with the living room at the left, now being featured in motion picture houses throughout the United States, under the title, "The Great Idea."

If the home now has old-fashioned carpeted softwood floors, it can be modernized by % inch oak flooring, laid right over the old floor. The work may be done one room at a time, if convenient, at a cost less than the old floor, plus carpet. The floors will then be sanitary, with no carpets or cracks to collect dirt and disease germs. Housework will be reduced, as endless sweeping is no longer necessary to keep an oak floor bright and clean.

Oak floors for beauty, adarability and economy

Put your flooring problems up to our experts. We will gladly serve you

Oak Floors throughout

-for permanence, character, charm

As guests enter the home, they are welcomed by oak flooring in the hallway, reflecting in its bright polished surface the beauty and variety of figure that characterize oak. Hospitality extends into the living room, comfortable and "home-like" in its appointments, enhanced also by Nature's permanent floors of oak.

♦ In the dining room, too, oak floors finished to harmonize with the coloring of walls and hangings, convey a sense of wellbeing and enjoyment; in the bed rooms they possess that quiet dignity and charm that invite rest.

All these advantages are lasting, for oak floors improve in mellowness and beauty with the years, and are always modern.

Information on the uses of oak flooring, with data on how to lay and finish, color illustrations of the new finishes, and other practical suggestions, will be sent on request. Mail the coupon below for your copy of the new book.

OAK FLOORING BUREAU 1041 Ashland Block, Chicago

Please send me your free book "The Story of Oak Floors."

Name

Address.

NATURE'S GIFT OF EVERLASTING BEAUTY DIGITIZED BY

Review of the Building Situation

BUILDING statistics for August just published by the F. W. Dodge Corporation show that the volume of contracts awarded during August amounted to \$298,629,400. This was a decrease over July of only 5% and over August, 1922, of 15%. The gradual decline in construction volume since May has taken place in an orderly manner with a continuation of relatively large building volume.

Construction for the first eight months of this year in the section of which our report covers, is about equal to the corresponding period of 1922. Residential buildings continue to lead all other classes, 42% of the entire amount being for this type of construction; 21% of the entire amount was for public works and utilities; 12% for business buildings; 9% for educational buildings and 6% for industrial buildings.

In the New York district, residential buildings show a large increase over July, and this is a very favorable sign. The total for August was \$81,747,300; a decrease of 2% from July, but an increase of 1% over August, 1922.

The Central West shows a decrease of 12% over July and 6% over August, 1922. While the

Northwest shows a decrease of 8% over July figures, the total of contracts awarded shows an increase of 31% over that of August, 1922.

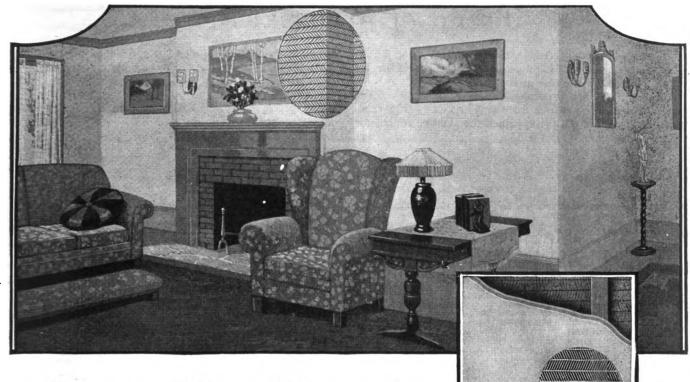
The volume of money spent for new homes is still greatest in the East, despite the slight falling off in percentage over July figures. In this section, residential construction contracts were awarded in August amounting to \$71,000,000 for the three Eastern districts. Residential projects contemplated amounting to \$98,790,000 show an increase and prove that there will be no falling off in this class of construction in the Northeastern district.

Record of August, 1923, Building Contracts Awarded

Classification of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$4,323,800	\$7,781,100	\$2,134,700	\$4,145,200	\$8,143,500	\$640,500	\$10,288,500	\$37,457,300
Educational Buildings		8,952,800	322,600	2.575,200	5,869,000	1,445,700	4,824,400	25,860,800
Hospitals and Institutions		838,300	107,200	1.583.000	1,049,600	95,000	1,521,000	6.016.600
Industrial Buildings		3,334,500	1,213,500	7,016,000	4,043,500	180,800	1,641,600	19,358,800
Military & Naval Buildings		23,600	30,000		5,000	4,500	*****	63,100
Public Buildings		299,000	1,100	287,900	572,100	555,000	303,300	2,573,500
Public Works and Public			•			,	,	-10.0100
Utilities	£ 900 000	7,700,400	4,142,300	11,782,500	18,973,400	1,635,500	11,529,800	62,663,800
Religious and Memoria		.,,	.,,	,,	,,	-,000,000	,,	,000,000
Buildings	1,352,200	2,157,300	2,530,700	1.352,800	2,180,000	212,000	2,252,300	12,037,300
Residential Buildings	11,432,100	49,375,400	10,551,800	13,151,700	26,690,900	3,115,200	12,514,000	126.831.100
Social and Recreationa		,	,	,,	,	0,000,000	,,	220,001,100
Ruildings	484,100	1,284,900	214,500	979,100	,1616,000	540.000	648,500	5,767,100
Total	\$29,669,700	\$81,747,300	\$21,248,400	\$42,873,400	\$69,143,000	\$8,424,200	\$45,523,400	\$298,629,400

Building Projects Contemplated. August, 1923

Classification of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY l'ittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$5,328,800	\$21,783,200	\$4,739,700	\$4,748,700	\$17,438.100	\$634.500	\$5,191,800	\$59,864,800
Educational Building	6,046,500	4,901,800	3,964,000	2,835,500	5, <i>77</i> 3,800	1,351,200	3,500,900	28,373,700
Hospitals and Institutions	1,987,500	3,748,000	2,615,000	2,312,000	1,475,000	235.000	1,156,000	13.528.500
Industrial Buildings	2,716,400	6,451,500	15,158,000	12,161,000	27,232,500	326,000	5,000,000	69,045,400
Military & Naval Buildings	25,000	36,000	150,000	•••••	25,000	•••••	50,000	286,000
Public Buildings	70,000	1,035,000	266,000	336,000	875,000	67,000	673,000	3,322,000
Public Works and Public		• •	•	•	•	•	•	-,,
Utilities	7.006,500	11,058,400	4,239,900	22,032,000	42,204,400	2,994,100	25,022,200	114,557,500
Religious and Memorial			.,,			, ,		, ,
Buildings	752,300	1,076,300	985,000	1,297,500	2,863,000	368,000	1,574,500	8,916,600
Residential Buildings	12.882,100	70,817,000	22,536,200	19,350,800	46,800,700	4,166,400	15,281,300	191.834.500
Social and Recreational	,00-,-00	. 0,000,000	,,	<i>,</i> ,		,,	,,	
Buildings	2,032,800	2,017,000	1,686,000	2,300,500	8,767,800	161,000	1,788,500	18,753,600
Dunumgs							-,- 30,000	
Total	\$38,847,900	\$122,924,200	\$56,339,800	\$67,374,000	\$153,455,300	\$10,303,200	\$59,238,200	\$508,482,600



Proven Fire Protection for Frame Construction

Gypsum plaster on Herringbone Rigid Metal Lath protects the wooden supports of walls and ceilings from the spread of interior fires.

This economical construction will confine fire to the room of origin for at least an hour.

Exhaustive tests made by the Underwriters' Laboratories have caused those authorities to accord metal lath on wood studding a full one hour rating.

For safety and economy specify Herringbone—a light, strong, self-furring and crack preventing reinforcement for plaster.

Other GF Materials

- Self-Sentering-A combined form. lath and reinforcement.
- Trussit—A reinforcement for solid partitions.
- GF Expanded Metal-A concrete reinforcement.
- GF Steel Tile-For concrete floors.
- GF Steel Lumber-Used in place of wood joists and studs.
- GF Steel Channels-Studding for solid partitions.
- GF Peds-Spot grounds for at-taching trim to concrete and plaster.
- GF Waterproofings-For concrete and masonry.

Write for illustrated literature,



Herringbone Rigid Metal Lath

THE GENERAL FIREPROOFING CO., Youngstown, Ohio

Branches:

KANSAS CITY MINNBAPOLIS IA NEW YORK CLEVEL **CHICAGO** MILWAKEB SYRACUSE LOS ANGELES SAN FRANCISCO ATLANTA PHILADELPHIA CLEVELAND

Export Department: 438 Broadway, New York City-Cable Address: "Genfire-New York"

Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

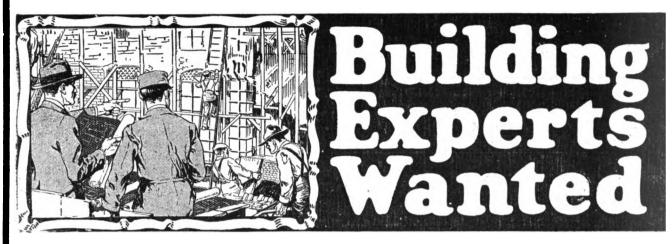
niese prices are presented to show the trend of the wholesate market, which forecasts prices in the retail market. They are not prices which the average contractor

can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

NEW YORK PRICES		Aug. 25	Sept. 25
Aug. 25	Sept. 25	PLASTER ROARD—	
LONG LEAF YELLOW PINE—	•	MAGNESITE STUCCO—	\$0.22
B. and Better Edge Grain Flooring, 13/16x23/4" Face \$92.00 Dimensions, SISIE, No. 1 Commun. &x4", 10'	\$90.00 43.75	res lon	\$70.00
Timbers, Merchantable, '05, 12x12", 10 to 40', 57.50	56.00	TILE	•
B. and Better Ceiling, 1/2/3/4	42.50 61.00	1 in. Square or Hexagon, White, per sq. ft	\$0.25 0.49
B. and Better Ceiling, 1/2x3/4	70.50	8 x 8 in. Red Floor	0.46
No. 1 Common Boards, 1x8" 53.25	53.25		
NORTH CAROLINA PINE-	440.00	CHICAGO PRICES	
No. 2 and Better Flooring, 13/16x2½"	\$68.00 31.50	YELLOW PINE— Boards, 1z8, No. 1 Com	
BOUGLAS FIR—	72.00	Ceiling, 34x4, B. and Btr	\$40.00 44.50
No. 2 Ulcar and Better V. G. Flooring, 123" \$74.50	\$74.50	Dimension No. 1. 2x4, 12 to 14 ft	34.00
No. 1 Clear V. G. Flooring, 1x4"	69.50	Drop Siding, 1x6, B. and Btr	55.50
No. 2 Clear and Better Ceiling, 3x4"	48.50 65.00	Flooring, B. and Btr. E. G., 123	66.00 87.30
No. 2 Clear and Better V. G. Stepping 95.25	95.25	Latn, 4 It., No. 1	6.50
WESTERN RED CEDAR-		Timbers, Long Leaf No. 1, 10-20 ft., S4S, 6x12 to 12x12 51.00	51.60
B. C. Periection Shingles, per M	\$7.61	HARDWOODS— Mayle Hawang 13/16r24 clear time time m	\$109.00
Washington Perfection Shingles, per M	6.48 40.30	Maple Flouring, 13/16x24, clear	77.00
CANADIAN SPRUCE—		Oak Flooring, 13/16x24, Cl. Pl., White 108.00	108.00
No. 1 Lath, 1½"	\$8.63	REDWOOD— Bevel Siding, S1S1E, 10 ft., 20 ft., 1/24, clear	\$47.25
Dimension, 2x4", 10 to 16"	43.00	Finish, S2S or S4S, 1x6 to 8 in. clear	7
HARDWOOD FLOORING— Clear Quartered White Oak, 13/16x2x234**\$152.50	\$152.50	WESTERN RED CEDAR-	
Clear Plain White Oak, 13 lox254"	121.50	Bevel Siding, ½x4 in., Clear	\$50.75 4.52
Clear Plain Red Oak, 13/loss/ha"	123.50	COMMON BRICK-	7.45
Clear Maple, 13/10x234"	117.00	Per M. f. o. b. job	\$12.60
COMMON BRICK—		PORTLAND CEMENT— Bbls. in car lots to contractors, not including con-	
Per M. f. o. b. job\$25.00	\$23.00	tainers	\$2.20
PORTLAND CEMENT—	•	STRUCTURAL STEEL	
Bbis. in car lots to contractors, delivered \$3.20	\$2.90	Per RU lbs. at warehouse	\$3.29
Per 100 lb. at warehouse	\$3.54	\$ in	\$3.00
CRUSHED STONE (cu. vd.)	•	1½ in 2.75	3.00
\$4 in. \$2.60 1½ in. \$2.50	\$2.60	WALL BOARD— Per 1,000 eq. ft. in lots under M	\$40.08
WALL BOARD—	2.50	Per 1,000 sq. ft. in lots 1 M to 2½ M	35.00
Per 1,400 sq. it. in lots under 1,000 sq. ft \$50,00	\$50.00	SAND AND GRAVEL-	
Per 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft 45.00	45.00	Sand (per cubic yard)	\$3.00 3.00
METAL LATH— 23 lb.—& gauge price per 100 sq. yd. delivered \$0.18	\$0 ·S	¾ in. Gravel (per cubic yard) 2.75 1½ in. Gravel (per cubic yard) 2.75	1.00
28 lb.—24 gauge light price per lW sq. yd. delivered. 0.21	0.21		
3.4 lb24 gauge heavy price per 100 sq. yd. delivered 0.24	0.24	ST. LOUIS PRICES	
Add 5 cents per sq. yd. tor galvanized. LIME (Hydrate)—		YELLOW PINE— Boards, No. 1 Com., 1x4	\$38.00
Finishing, per 50 lb. bag\$0.60	\$0.60	Partition, 14x314, B. and Btr	54.00
Masons, per 50 lb bag	0.49	Dimension, No. 1, S1S1E, Short Leaf, 2x4 in., 12 & 14 ft. 32.50	37.00
IAND AND GRAVEL	** **	Finish, S2S, B. and Btr., 1x4, 6 & 8 ft	62.75 85.00
Sand (per cubic yard)\$1.90 % m. Gravel (per cubic yard)	\$1.95 2.85	Flooring, B. and Btr., F. G., 1x3	56.00
134 m. Gravel (per cubic yard)	2.85	Lath, 4 ft., No. 1	5.69
ACE BRICK-		Timbers, No. 1, rough, short leaf, 6x12 to 12x12 ta. 10 to 20 ft	41.99
Tapestry (delivered)	\$48.50 38.00	CALIFORNIA REDWOOD-	
(aledoman (delivered)	41.00	Finish, S2S, Cl., 1x6 in	\$94.50
Smooth Grey (delivered)	49.00	Siding, 4 in. Bevel, 10 to 20 ft	Ø.3
Fisk Luck f. o. b. factory	42.50	8 inch Colonial	78.25 76.75
Apphalt, Single (per square)	\$7.56	HARDWOODS-	,,,
Aspnalt, Strip (per square)	6.65	Oak Flooring, 1/x11/2 and 2 in., Clear Qtr. White\$105.00	\$102.00
IS IN LEXTRA Clear (per square, delivered)	\$11.50	Maple Flooring, 13/16x294 in., Clear	105.50
18 in. Eureka (per square, delivered) 11.50	11.50	RED CEDAR— Siding, 1/2x6, Clear	\$45.90
18 m. Pertection (per square, delivered)	12.50	Shingles, Clears, Per M 4.21	4.26
24 in. Royal (per square, delivered)	12.50	COMMON BRICK-	
4 in. (cents per foot)	\$0.121/2	Per M., f. o. b. job	\$20.00
6 in. (cents per foot)	0.181/2	Bbls. in car lots to contractors, not including con-	
LATE ROOFING— Bangor or Statington, 8x16 in (per sq. at quarry) \$12.60	\$12.60	tainers \$2.35 STRUCTURAL STEEL—	\$2.35
ORNER BEADS (Galvanized)—	420.00	Per 100 lbs, at warehouse	\$3.35
Per Foot \$0.05	\$0.0 5	CRUSHED STONE (eu. yd.)	
WALL TIES (Galvanized)— Per Thousand	\$5.00	14 in. \$2.18 13/4 in. 2.18	\$2.18
RUB IINING	43.00	WALL BOARD—	2.18
804 x 814 in Per Poot	\$0.36	Per 1,000 sq. ft. in lots under M	\$55.00
87/2 x 13 m., Per Foot	0.48	Per 1,000 sq. ft. in lots 1 M to 2½ M	50.00
#OLLOW TILE # v 12 x 12 m., heavy. Each, delivered	\$0.221/8	Sand (per cubic yard)\$1.20	\$1.20
LAIR—		34 in. Gravel (per cubic yard) 1.45	1.45
Per Bushel \$0.60	\$0.60	1½ in Gravel (per cubic yard) 1.45	1.45



The Big Money Goes to the Man Who KNOWS

The man who can read plans, make estimates, superintend jobs or take contracts is the man who makes the big money in the building business. Can you do these things? If you can't do them you are not in the real moneymaking class. You are not prepared for the great rush of building work,—the building boom,—that even now

But, you can become a building expert quickly by giving some of your spare time to home study under the direction of experts of the Chicago Technical College, which for 20 years has been known as "America's Greatest School for Builders." These men will train you in every important branch of the building business by practical and individual instruction on blue print building plans and specifications which we send you. No "high-brow" book to study. The plans cover all kinds of buildings and are the same as used by the contractor. They are yours to keep.

No Matter What Your Job This Great Opportunity Is Yours

There is no longer any need for a man to stay in a job that offers little or no chance for advancement and more money. There is always a market for brains and the man who gets this Chicago Tech. training soon becomes a top-notcher in the building business; he gets more because he is worth more.

There is a building boom coming,—it's here now! Get this training and your opportunity will come quickly. There will be a lot of money made in the next five years by men who know the fine points of the building business. Take the Chicago Tech. Builders' course,—it is planned for practical men. No time given to "fancy"

studies or use-less theories. Just everyday practical infor-mation that you must have to make a big success as

Easy Methods—Quick Results

You get the same blue prints, the same lessons, etc., that are used by the hundreds of builders who attend our evening school in Chicago. The same experts who teach them are your instructors. You get the same training at home at a big saving of time and money.

Complete Courses for Men in the Building Trades

PLAN READING

PLAN READING
How to read a building plan. Floor plans and
elevations. Use and meaning of different lines
on the plan. Bections and section lines. Cross
sections. How different materials are shown on
the plan. How to read dimensions. Detail
drawings. How to lay out work from the plans.
Tracings and blue prints—how they are made.
Practice in reading complete plans from basement to roof, etc., etc.

CONSTRUCTION

Brickwork: Footings and foundation walls of brick, concrete and stone. Brick laying, joints in brick work, pointing, two pointing, etc. Brick and stone arches. Use of different kinds

Brest and stone arenes. Use of different kinds of stone. Carpeatry: Kinds and uses of woods, cornices, interfer details, framing, roof construction, bridging, miter joints, butt joints, etc. How plans are made. Complete instructions illustrated by working blue prints of residences, apartment buildings, factory buildings, school houses, hospitals, store and office buildings, bank buildings, etc., etc.

ESTIMATING Practical rules for figuring costs on all classes of construction. Problems worked out from the plana. Methods of practical builders.

Some of the points covered are—Figuring labor and material on brick, frame and concrete work—footings. walls, chimneys, fire places and ciscums. Fire proofing, itle-footing, arches, partitions, furring, terra cotta, etc.

Lumber and timber; figuring board feet. Bertimating posts, girders, sills, joists, studs, bridging, rafters, etc. Betimating all kinds of roofs, floors, sidings, cornices, etc.

Estimating mill work. Labor and material for window and door frames, each, bilinds, baseboard, wainscoting and all kinds of closeis, cupboards, etc. Lathing and plastering, sheet motal work, decorating, glasing, plumbing, beating, wiring, etc.

SUPERINTENDING

Methods of work on all classes of buildings. Uses and preparation of material. Hiring and handling of men.

We also offer complete home-study courses in Architectural and other branches of Drafting, If interested in any branch of Drafting mention subject and ask for special catalog.

SEND THE COUPON FOR PROOF

Don't delay. Send the coupon and prove to yourself what this course will do for you. You incur so obligation in asking for our new book, "How to Read Blue Prints," a Trial Lesson in Plan Reading for Builders; also blue prints and drawings. All sent free to any builder who sends in the

CHICAGO TECHNICAL COLLEGE

1038 Chicago Tech. Bldg., CHICAGO, ILL.

i	Two Books FREE
Ī	on "How to Read Blue Prints"
!	a Trial Lesson in Plan Reading for Builders. Just off the press. Full of building informa-
	tion. Sent Free with Blue Prints, Drawings, etc., to any man now in the build-
	ing line, who sends us his name on this coupon. Mail the
	coupon to Chicago Tech-

C. T. C. Send me your two, big FREE Books and Blue Prints for Men in the Building Trades. Send TECHNICAL postpaid to the address below.

ical College, 1638 Chicago Tech. Bldg.

Name	
Address	
Post Office State	· • • •

Occupation

Digitized by GOGIC



News, Notes and Comment



Fire Prevention Exposition

NE of the outstanding features of Fire Prevention Week this year (October 8 to 13, inclusive) will be a great educational National Fire Prevention Exposition in New York City.

The focal point of the National Educational Fire Prevention campaign in its physical aspects will be the National Fire Prevention Exposition in New York City. Here, for the first time, will be shown thousands of products and devices, such as fire resistive roofing, metal doors, windows, sprinkler systems, fire extinguishers, safes, electrical goods, etc., which have been tested by Underwriters' Laboratories. Only those products which have passed the rigid tests of this non-commercial, non-profit making and public service institution, will be eligible for display at the Exposition.

The Exposition will be participated in by many important organizations and will visualize to the public what is meant by an average fire loss of a thousand dollars per minute throughout the year. It will show that at least 80 per cent. of this destruction is totally unnecessary, that it constitutes a terrible drain on the resources of the nation, that it costs the life of one person for every thirty-five minutes in the year, and that it holds the menace of a possible conflagration over every community in the country, according to statements made after investigation by a Federal bureau.

U. S. Civil Service Examination

THE United States Civil Service Commission announces the following open competitive examination for architectural draftsmen:

The examination will be held throughout the country on November 7 and 8. It is to fill vacancies in the Department Service and in the field, at entrance salaries ranging from \$1,500 to \$2,000 a year, plus the increase of \$20 a month allowed by Congress.

Applicants must have graduated in architecture from a technical school of recognized standing, or have had at least five years' experience in progressive architectural office drafting work. If the applicant is not a graduate, but has had special training in architecture in a technical school of recognized standing, such training, according to its value, will be considered equivalent, year for year, to not more than two years of these five.

Competitors will be rated on the following subjects: Drawing and design, free-hand drawing, ornament and projection; building materials and construction, and training and experience.

Full information and application blanks may be obtained from the United States Civil Service Commission, Washington, D. C., or the secretary of the board of U. S. civil service examiners at the post office or custom house in any city.

Book Reviews

Structural Members and Connections, edited by George A. Hool and W. S. Kinney. 611 pages, illustrated, cloth bound, price \$6.00. Published by McGraw Hill Co., New York.

This book is principally designed for the use of the civil engineer rather than builders, but it is hard to say where plain building stops and engineering begins. Therefore, practically all the information given in this excellent book will be of considerable value to builders no matter what size structures they erect. It will be especially useful to the builder erecting wide span structures such as garages, churches, theatres, etc., as the information and details on steel work and reinforced concrete members is quite complete and, fortunately, tersely stated.

Automobile and Gasoline Engine Encyclopedia, by A. L. Dyke. 1,226 pages, illustrated, leather binding, price \$7.50. Published by Goodheart-Willcox Co., Inc., Chicago, Ill.

As practically every builder has one or more automobile or motor trucks, he is interested in their care and upkeep and in this handy encyclopedia he will find answers to practically all questions regarding the subject. It certainly is a most valuable reference book and its instruction may be the means of saving some expensive repair bills. It is excellently illustrated and contains a vast fund of information on the subject.

Portfolio of Modern Single Homes, from designs prepared and published by Henry W. Grieme, Architect, Engineers' Building, Cleveland, Ohio, price \$2.50.

This large portfolio contains elevations and floor plans of thirty different artistic house designs. Different types of architecture are illustrated and a variety of house designs are shown such as an average builder will find the most calls for. Six or seven room houses are the principal ones illustrated.

Measuring Stone Fatigue

I T has long been known that a load much below its apparent breaking strength would cause failure of stone after a long time. The U. S. Bureau of Standards is now underta ing a series of tests to determine the extent of this effect and to see how much load can safely be borne by stone for indefinite periods.

Samples of stone will be tested both in straight compression and in bending. Loads will be put on and left there, and the deflection of the stone will be measured from time to time.

Marble has the peculiar quality of sagging slowly, even under its own weight. Thus many cases are known in which marble slabs placed in horizontal position for a hundred years or so have sagged down several inches; and thin tombstones of marble have bent over.

Safer Elevators

NEARLY three-fourths of all fatal elevator accidents are found to occur at the hoistway door, either because of the door being opened when the elevator is not there or because of the elevator starting when the door is open. These accidents can be prevented by a reliable interlock, as when such a device is used the elevator must be stopped at the floor before the door can be opened, and the door must be closed before the car can be started again.

During the past year the Bureau of Standards has been conducting tests to determine the reliability of the various types now on the market. The devices have been given endurance tests under normal conditions, they have been tested in a corrosive atmosphere, in a dust-laden atmosphere, without lubrication, and under conditions of misalignment likely to occur in practice.

The tests were conducted at the request of the City of Baltimore, and will permit city governments to base their approval of such devices on actual performance tests instead of on visual inspection alone. The results have also been made available to the manufacturers of the devices tested, and in most cases they have improved their designs in accordance with the suggestions offered.



To Advertisers and Agencies:

The below statement from the Post Office will, we believe, make it clear that it is a matter of enlightened self interest to include street and number address in every advertisement, regardless of how well known the advertiser may be—since the omission of such definite address results in delay, and actual non-delivery of mail sent in response to advertisements, thus depriving the advertiser of part of his proper return.

Building Age and The Builders' Journal

CLASSIFICATION SECTION

United States Post Office

PLEASE REFER TO INITIALS AND DATE

NEW YORK, N. Y.

SEPTEMBER 18, 1923.

PUBLISHER BUILDING AGE AND THE BUILDERS' JOURNAL,

My Dear Sir:

In about fifty per cent of the advertisements which appear in newspapers and magazines the advertiser's name and city only are printed at the bottom of the advertisement, the street address being omitted. The omission of the street address from mail sent to the advertisers not only imposes a constantly increasing burden upon the post office, but seriously interferes with the prompt disposition of such mail; in fact, nondelivery is often the result of the failure to furnish a complete street address.

About 80,000 pieces of mail, exclusive of those addressed to the largest and best known firms, are received at this post office daily without street address, and this condition is true in a greater or less degree in all of the larger post offices in the country. The delivery of this incompletely addressed mail is delayed from 8 to 24 hours. Much of the mail sent in response to advertisements is first distributed in railway post offices. The distributers on the trains know their schemes of distribution by street and number, but are not familiar with the street address of even some of the largest firms. A letter bearing a complete street address can be boxed or distributed to the point of delivery and the package sent directly to that point, thereby insuring its prompt delivery. If there is no street address on a letter it can not be sent direct to the delivering station; such mail is tied in packages and sent to the General Post Office where it must be turned over to the expert assorters. These experts dispose of as much of the mail as they can and after they have handled it there are about 20,000 pieces, the addresses for which must be searched for in the directories, and of that number as many as 10,000 remain undelivered.

The importance of including the street and number in addresses for mail matter is increasing every day. As our great cities grow, the necessity for specific local directions becomes more pressing.

In no city is the need for specific addresses greater than in New York. The city is so large, its growth is so rapid and the changes so frequent, that it is physically impossible for postal employees to memorize the names of the thousands of hotels, apartment houses and office buildings that abound, to say nothing about the names of business concerns.

If advertisers do not include in their advertisements the complete address that will assure delivery of mail sent as the result of such advertisements, not only will the burden of disposing of this mail continue, but the advertiser will lose the business which he is seeking by reason of delay or nondelivery of the replies.

I am sure that if you will point out to the advertisers in your publication the benefit to them to be derived from the use of a complete street and number address in their advertisements they will recognize that it will be to their interest to include the street and building number and will arrange to have this information shown, even though in some cases it may require an extra line in the advertisement.

I am, therefore, soliciting your cooperation in the campaign for complete addresses on mail in view of the advantages which will result to your advertisers and readers as well as to the postal service, and will be very glad to receive any reply which you will be good enough to make, for which purpose an official envelope (which requires no postage) is enclosed.

Sincerely yours,

(Signed) E. N. MORGAN.

Postmaster.





BEAUTIFUL BUNGALOWS

Entirely different from the average bungalow book in that it presents bungalows already actually built in all sections from Maine to California

43 Designs by 40 Architects 190 Illustrations 100 Pages—Size 9" x 12"

Practically the entire range of bungalow homes is shown in this new book attractively presented as a compilation of exteriors, interiors, floor plans, side elevations, details of entrances, fireplaces, cornices, etc.

The text — the illustrations — the arrangement—all contribute to ready

The book will be no less interesting to

handling by the Builder for practical use. The book will be no less interesting to the Architect, the Building Supply Dealer, the Real Estate operator, the prospective home owner or the Loan organization, as typifying modern bungalow construction.

Whether it is a 3-room Bungalow or a 7-room design—a Cottage, Chalet, Colonial, Special Low-Cost Bungalow, Farm Bungalow, Bungalow with Garage, or other type—whether of frame, shingle, stucco, stone, hollow tile, brick or half-timber construction—you will very probably find in this unusual collection precisely the little home you have in mind. Here are a few of them:

RANDOM EXAMPLES OF THE 43 BUNGALOWS

BUNGALOW WITH BASEMENT GARAGE. A plan irresistibly appealing to the small family that wants a thoroughly complete home all in one unit; floor plans show laundry, coal storage space, boiler room and cold room, as well as garage, in the basement. See page 33, "Beautiful Bungalows."

FARM BUNGALOW, on page 54, "Beautiful Bungalows." This design features 8-inch boards placed vertically instead of horizontally, the joints covered with battens, the battens painted a darker shade than the boards. Practical considerations, such as feeding the help in the kitchen, with its handy washroom adjoining, will be noted from the cuts of elevations, floor plans and details beginning on page 54, "Beautiful Bungalows."

LOW COST BUNGALOW AND HOW IT WAS PLANNED is the subject of pages 74 and 75 in the plan bock, "Beautiful Bungalows." An elastic method of planning this little home in various sizes to meet several definite cost figures is developed. You will want this data no matter where you are located or how costly the general run of your work.

PRICE In heavy paper covers......\$1.00

For price of this book in combination with other books offered by this company, see special offer on third page following.

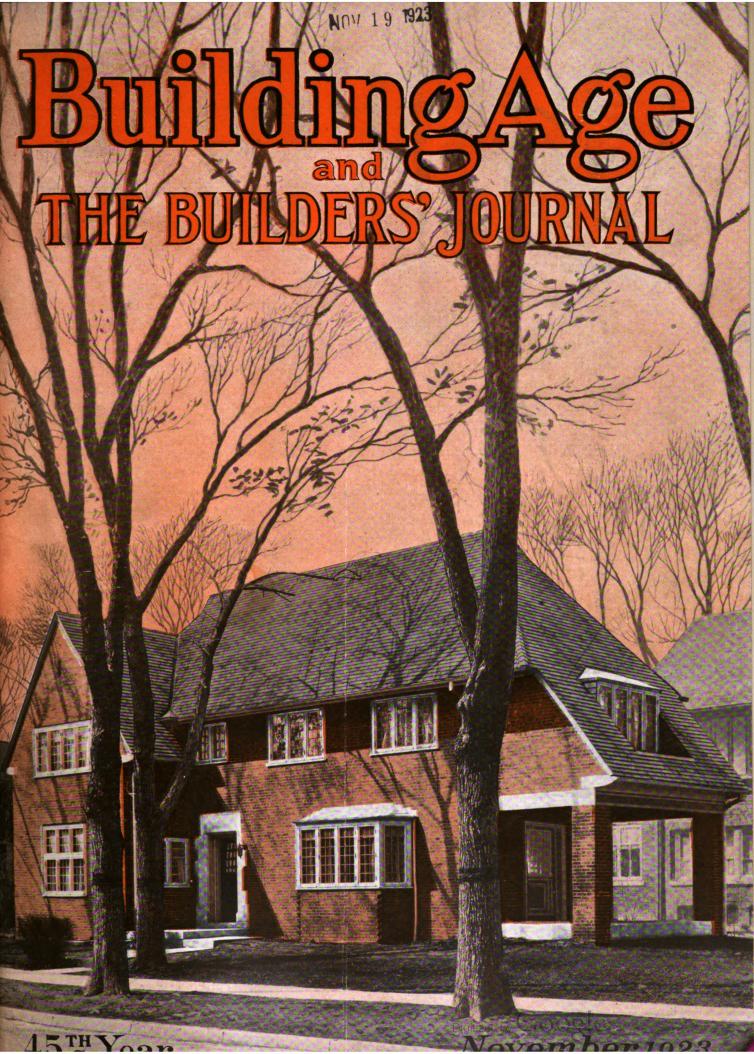
Building Age and The Builders' Journal

239 WEST 39th STREET

Book Department

NEW YORK





CON-SER-TEX

CANVAS ROOFING

for Roofs and Porch Floors

CONSERTEX is the ideal covering—it is inexpensive to buy and easy to lay. For new or old buildings it is unequalled. Years of hardest use find it still waterproof, weatherproof and attractive in appearance.

It is a quality roofing and flooring sold at a fair price. Its use means true economy.

Consertex enables the builder to quote a reasonable price to clients. It gets business and holds it.

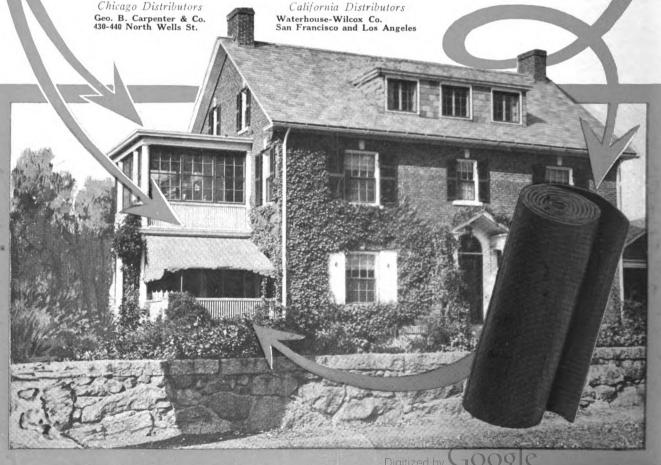
Given a thorough, preservative treatment so it will not crack, stretch, shrink, curl or peel. Sun and rain will not affect it—easy to keep clean.

"Roofing Facts and Figures" gives you some valuable data on cost problems. We will gladly send you a copy together with samples.

WILLIAM L. BARRELL CO. of N. Y., Inc.

50 Leonard Street

New York City



Building Age

ANI

THE BUILDERS' JOURNAL

New York, November, 1923

The Present Building Shortage and Probable 1924 Construction

Results of a Countrywide Survey Made by Building Age

HAT is the building situation today? Is it back on a normal basis? Have we caught up with the great shortage which resulted from the cessation of practically all building construction during the war period? What is the outlook for building during 1924?

The survey made by BUILDING Age through the Chambers of Commerce in the United States and here presented gives the answer to these questions.

Two years ago, Building Age made a similar survey. It proved helpful to the building industry in particular, and to the nation generally. The marked activity in building construction last year and this year has properly been cred-

ited as perhaps the most potent factor in the prosperity which has prevailed. It is hoped that the present survey will be no less useful and valuable.

In the present instance, a questionnaire was addressed to over 1,500 Chambers of Commerce throughout the United States. We received reports from 441 cities and towns giving in detail their building requirements. These reports were not confined to any one state or section, but came from East to West and North to South, so that the figures can fairly be relied upon, according to the general law of averages, as representing the building needs of the United States at the present time.

One of the most interesting facts

revealed by our investigation is the vastly greater amount of construction still needed in cities and towns of less than 25,000 inhabitants than in cities of over 25,000 inhabitants.

In cities and towns of under 25,000 population, there is a shortage of 533,179 dwellings. Cities of over 25,000 population require 165,899 dwellings. Places of less than 25,000 require, therefore, over 2½ times as many dwellings as their larger neighbors. Included in the term "dwellings" are one and two-family houses and apartment houses.

Apartment houses are considered primarily a product of city housing conditions, but the many conveniences of this type of home

Building Construction Required in the United States*

Based on Information from The Chambers of Commerce in 441 Cities and Towns

TYPE OF BUILDING		vns and Rural 000 Population	287 Cities of Over 25,000 Population		
TYPE OF BUILDING	Number	Value	Number	Value	
Residences		\$2,631,617,000 545,777,000	150,523 15,376	\$1,034,162,000 1,174,742,000	
Schools	2,739 1,319	349,222,000 125,073,000	343 92	78,890,000 18,400,000	
Theatres	1,305 2,944	76,081,000 289,203,000	254 174	36,576,000 54,810,000	
Store Buildings Office Buildings	1,000	191,608,000 143,900,000	1,310 627	36,025,000 175,560,000	
Factories Public Buildings, Garages, Banks, Miscel'n's.	2,791 4,568	156,296,000 247,860,000	2,102 7,355	157,650,000 210,790,000	
Totals	560,857	\$4,756,637,000	188,077	\$2,977,605,000	

*For classes of construction not included in this Survey see next page.

Building Requirements of 441 Cities and Towns

Based on Figures Furnished "Building Age" September 1923 by Chambers of Commerce

TURN OR DAIL DING	375 Cities, Towns, Under 25,000 Population		66 Cities of Over 25,000 Population		
TYPE OF BUILDING	Number	Value	Number	Value	
Residences	37.376	\$189,477,000	45.609	\$313,357,000	
Apartments		39,304,000	4,659	355,947,000	
Schools		25,117,000	104	23,920,000	
Hospitals	95	9.015.000	28	5,600,000	
Theatres		5,480,000	77	11,088,000	
Hotels		37.036.000	53	16,695,000	
Store Buildings		13,798,000	397	10,917,000	
Office Buildings		10.360.000	190	53,200,000	
Pactories		11,256,000	637	47,775,000	
Public Buildings, Garages, Banks, Miscel'n's.	329	20,176,000	2,235	127,048,000	
Totals	40,382	\$361,019,000	56,389	\$965,547,000	

are making it more popular in the smaller cities also. Our figures disclose that while 15,376 apartment houses are required in the larger cities, there is a demand for 14,069 apartment houses in the smaller cities and towns. In short, the demand for this class of housing construction appears to be as great in cities and towns of under 25,000 population as in the cities of over 25,000 population.

The money value of the present housing shortage is \$3,177,394,000 in cities and towns of under 25,000, and \$2,208,904,000 in cities of more than 25,000 population. The money value for all classes of construction needed is \$4,869,700,000; for places under 25,000 inhabitants each, and \$2,977,605,000 in cities over 25,000 inhabitants each, making a total of \$7,847,305,000 for the value of all classes of construction mentioned.

Our figures do not include farm buildings needed with the exception of dwellings. Exclusive of homes, there are, according to best information obtainable from the latest census records, about 41,000,000 structures on the 6,448,000 farms in the United States. These, estimated at a conservative figure, have an average money value of \$300 each.

Let us continue to be conservative in our figures and take 50 years as the average life of a farm building. This would mean, then, a replacement of practically 838,240 farm structures every year.

There is little reason to doubt that

farm building construction is at least two years behind normal requirements or needing approximately 1,-676,480 structures. At an average value of \$300 each these amount to a total of \$502,944,000.

Lest these figures seem high, consider that there are 6,448,000 farms in the United States. This means that the new construction needed would only amount to \$78 for each farm.

The amount of this farm building shortage (\$502,944,000) should be added to our survey figures for towns. under 25,000 population, making that total \$5,372,644,000.

In addition our survey figures do not include churches, memorials, military and naval buildings, public works and utilities, such as water works, embankments, electric light plants, etc. When these are added to the figures presented here it will be seen that the present building shortage will total well near the \$10,000,000,000,000 mark.

A small percentage reported the housing situation normal, and a few reported a surplus of building of every kind due to the Eighteenth Amendment killing the principal industry of these towns. Replies from these places are rather mournful, saying that the towns were "on the downward path owing to prohibition."

The tables given here contain the latest and most authentic information on the building needs of our country. All of the information presented was obtained direct from the secretaries of the Chambers of Commerce, who secured the data at the special request of BUILDING AGE from the most reliable local sources at their command, during the past few weeks.

Answers were received from 441 cities and towns in every part of the United States. Sixty-six of the cities reporting have a population of over 25,000 each. The other 375 cities and towns reporting have a population of less than 25,000 each.

To classify this information properly and to arrive at a figure representing the shortage of the entire country, the following method was used:

In the United States there are 287 cities having a population of over over 25,000 inhabitants, which cities have a total population of approximately 37,770,114, or 35.8 per cent of the entire population of the United States (105,710,610 in the 1920 census).

The total population of the 66 reporting cities of over 25,000 each amounts to 11,478,475, or approximately 30.3 per cent. of the total population of this class of cities. We assumed for the purpose of this survey that the construction needed by the 66 cities reporting is also 30.3 per cent. of the total construction needed in the other large cities throughout the entire United States. The same method was applied to cities and towns with less than 25,000 population.



Probable 1924 Construction

O discourse on economics generally or on economics of the building industry is here presented, but merely a few deductions from the building reports this year and other years, and from the figures as established by the building survey through the Chambers of Commerce of the United States which we have just completed.

It is true, of course, that when there is a genuine need for a certain thing, that need is usually satisfied. That there is a great building shortage is unquestioned. The amount of building in any year will depend, however, not alone on the shortage, but to some extent also on building costs which, if too high, will slow up construction, and on business generally which, as a whole, if depressed, will be reflected in the building industry.

Such a thing as absolutely reliable figures as to the probable construction for a year in advance is quite impossible to obtain. For who knows exactly what will be built a year ahead in his village, town or city?

It was not surprising, therefore, to find that a very large percentage of those who furnished us with figures as to the building shortage did not reply at all to that part of the questionnaire which asked them for the probable 1924 construction. Neither was it surprising to find that there was far more definite knowledge on houses to be erected in 1924 than on what other forms of structures would be built. In fact, information regarding structures other than residential to be built during 1924 was so meagre that we have disregarded it entirely.

The figures of probable 1924 construction of residences as obtained from the Chambers of Commerce of the United States and proportioned for the total population show that 35 per cent. of the shortage will be made up during 1924.

If we use this figure of 35 per cent. for construction of all kinds as shown in our survey, we get a figure of \$2,746,556,750. Our figures of the total building shortage, however, do not include mili-

tary and naval buildings (arsenals, armories, etc.), or public works and utilities (bridges, car barns, lighthouses, railroad stations, water supply systems, etc.), which in the past three years have represented about 18 per cent. of the total construction. Our figures for 1924 construction may be said, then, to represent 82 per cent. of the total construction. Figuring on this basis, we get a figure of \$3,349,459,000.

To this total must be added the figures of church and memorial construction, amounting to over \$100,000,000 per annum and farm construction of over \$500,000,000. We thus get a figure of probable new construction for 1924 totaling \$3,950,000,000. Another ten per cent, or \$395,000,000, is to be added for repairs and alterations to existing structures, thus making a grand total of probable 1924 building construction amounting to \$4,345,000,000.

BY way of comparison we have examined the building reports of the past. The month of September is used because most of our reports in the present survey were dated that month.

In September, 1920, the reports from twenty-five states showed building contemplated that month as over \$310,000,000. The year 1921 showed contracts awarded from the same section, \$2,241,000,000. There was, then, about seven times as much building done during 1921 as there was reported contemplated in the month of September, 1920.

In September, 1921, in the same states, the amount of contemplated construction reported for that month was over \$318,000,000. Contracts awarded in the same section for the year 1922 totaled more than \$3,345,000,000, or over ten times as much as was reported contemplated the previous September.

In September, 1922, the contemplated construction in the same territory exceeded \$340,001,000. In 1923 (figuring the whole year in proportion to what the first nine months have shown), contracts awarded in the same territory will total over \$3,500,000,000, which is also more than ten times as much

as reported in September of the previous year.

Summarizing, we find that 1921 construction was seven times as much as the contemplated construction reported for the month of September, 1920, and it should be remembered that 1921 was a year of business depression and a poor building year.

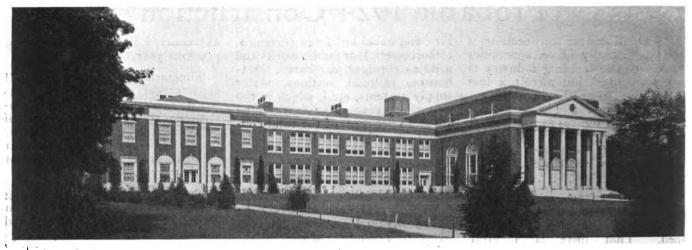
The contracts awarded during 1922 and 1923 totaled ten times in value the amount of contemplated construction for the month of September in each previous year; 1922 and 1923 figure as very good building years. If there is any reliance in data of this kind we may assume that, on an average, nine times the amount of construction contemplated in September will be the amount of total construction for the year following.

In the same states the contemplated construction as reported for the month of September, 1923, is over \$340,000,000, which, if multiplied by 9, would show \$3,060,000,000 for 1924.

The section referred to has about 70 per cent. of the total population of the United States. If, then, we regard this figure of \$3,060,000,000 as 70 per cent. of the whole, we get \$4,371,448,570 as probable 1924 construction.

THIS is very close indeed to our figure, \$4,345,000,000, as based on the Chamber of Commerce reports sent to BUILDING AGE. Either figure indicates that 1924 will be well above the normal \$3,000,000,000 construction year—from at least 25 to 50 per cent. above normal. 1924 construction will rank along with 1922 and 1923, which have been the two biggest construction years in the United States.

To arrive at some idea of the normal requirements of housing, we must consider that the increase in population of the United States amounts to 4,620 persons a day. Now as the average number of persons in a family is five, it is absolutely necessary for the U. S. to provide 924 new homes every day, and as there are 365 days in the year, this gives us a figure slightly in excess of 300,000 homes needed every year in the U. S.



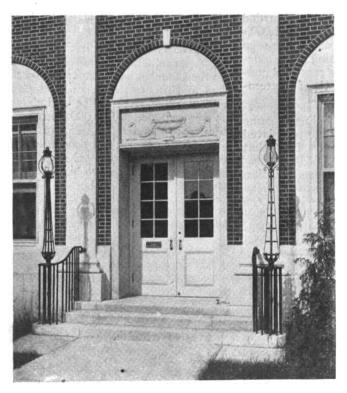
The new high school at Hempstead, Long Island, New York.

Building Better Schools

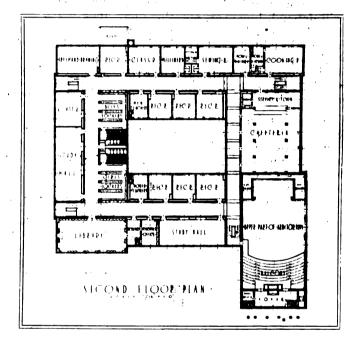
Here Is a Small Town High School
That Would Be a Credit
to a Large City

ERNEST SIBLEY, Architect

Kirwin-Estabrook Construction Co., Builders



One of the dignified entrances to the school.



HE future prosperity of our country is really in the hands of the children. How they are being trained to assume the duties of citizenship will be the factor that will decide our nation's fate. Shall we continue to excel in the mechanical lines and general business in which we today proudly hold first place or shall we go backwards? It depends entirely on what education we give our children.

Just to teach children "readin', 'ritin' and 'rithmetic," is not enough. Other practical subjects must be taught, especially along vocational lines, and this should be a part of common school education. In this way, the mechanical instincts of our boys and the domestic qualities of our girls will be developed.

What we need for the future is trained hands as well as trained heads. When Europe stops "scrapping" and settles down to work, there will be a good deal of competition of the keenest kind for the world's trade and it is the youngsters of today that will feel the brunt of this competition. It is



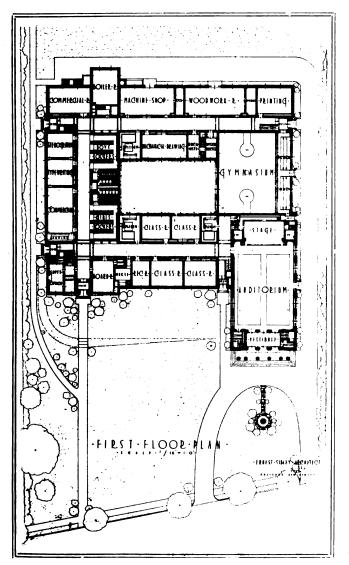
up to us, therefore, to give them the best possible training, not only in literature, but in commerce and mechanics.

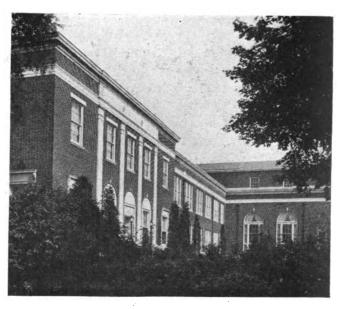
Hempstead, a town situated on Long Island, New York, with but a population of about 7,000, has made a noble contribution to the education of their boys and girls.

The foresight of the citizens of Hempstead is to be commended. They have taken a look into the future. They have seen the problems that will confront our younger generation and they have done their best to send them out into the world equipped to fight the real battle of life—Commerce.

The building industry should play an important part in the erection of the proper kind of schools. Many builders serve on their town's Board of Education. When a new school is contemplated, take up the need of educating a certain number of young men in the building trades.

Remember, the building industry is the second largest in our country, therefore, let us train some of our youths so they will have an aptitude for some building trade when their school days are over.





Pleasing view along the front, looking toward auditorium.

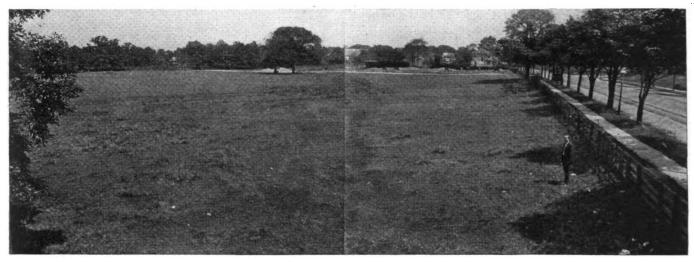
In designing this structure, particular attention was paid to safety. Ample exits have been provided at different parts of the building. Different classrooms are built around a central court and this forms a corridor arrangement on each side. There are four main stairways, also an additional one serving the balcony of the auditorium. The corridors are of good width and the stairs are located at the ends. These stairs are of steel construction with slate treads, making a fire-safe staircase.

The floors of the different classrooms and gymnasium are of hardwood. In corridors, library, and auditorium, the floors have been covered with linoleum, which has been cemented down.

The different classrooms are of ample size, well lighted and ventilated. The trim throughout is of chestnut with doors of the same wood. This has been filled and varnished so as to show the beauty of its grain. Slate blackboards have been provided in all these classrooms.

The heating and ventilation of a school is one of its most important points. Just simple heating is not enough. The condition of the air must be such as to prevent drowsiness amongst the pupils which will result if the moisture content or humidity is not right. Therefore, in addition to the heating equipment this school has been supplied with a humidifying apparatus to take care of this matter. The heating is by a low pressure steam system with a thermostatic control so that temperature can be regulated automatically to the degree desired. For ventilation a blower system has been used.

This dignified school building was built by a firm of local builders and they have co-operated successfully with the architects in carrying out the design according to the wishes of the school board. The photos shown here were taken by J. Wallace Gilles. The total cost of the completed structure was \$654,000. Quite a sum to be expended in a town with such a small population, but its citizens believe that it is money well spent.



The Place: Just a cow pasture with its future being visualized by Mr. Becker-The Man.

The Place, The Man, The Result

How Success Came to a Young Builder Through "Quality First" Work

In these days of everurgent housing needs and consequent large scale realty developments, the spectacle of dwellings being erected by the wholesale in suburban communities has become a not uncommon sight. In some localities whole colonies of

homes appear to literally "spring up over night" like the proverbial mushroom. And the casual observer, taking note of the completed project, displays but a passing interest, sub-consciously linking the idea with "big business," involving million dollar corporations and syndicates and the like,—and passes on.

"IF a man write a better book, preach a better sermon, or make a better mouse-trap than his neighbor, though he build his house in the woods, the world will make a beaten path to his door."—Emerson.

better book, preach or make a better is neighbor, though in the woods, the beaten path to his beaten path to his beaten probably become more about the casual observer were to learn that the master hand guiding the creation of such a development, that is, the person who conceived the project and engineered the entire construction program, was a man just barely in his "thirties," his interest would probably become more

probably become more acute and he would see in the completed property the inspiring goal of another's success.

George H. Becker, of South Orange, N. J., is just such a man to whom the casual observer might well take off his hat and say "well done," for he is the man



The Result: Panorama view of the same property six months later.

responsible for the birth and growth of "University Courts," a residential colony described in this article.

Though only thirty-three years old, Mr. Becker has long enjoyed a commendable reputation as a builder and contractor in his community. Following in the footsteps of his father, Henry Becker, who built several of the public buildings in South Orange and many in other towns in the section, he has won his way to prominence by conscientious effort and its subsequent achievement.

Born in South Orange April 6, 1891, Mr. Becker was educated in the public schools of the town and graduated from the South Orange High School. Upon leaving school he joined the staff of the Orange "Journal" as a reporter, but soon decided his natural vocation lay in another line and he

eventually became an apprentice in the mason trade, working for his father on many building jobs.

Having started thus from the bottom he gradually worked his way up until he became his father's associate in building operations. Later, with a reputation already established, he organized the firm of George H. Becker & Bros., taking his two brothers into partnership.

He organized his company with the chief aim of building homes of a better type and his first venture



GEORGE H. BECKER

along these lines was started about three years ago with the erection of two dwellings. These houses were sold by the Raymond Connolly Co., realtors of South Orange, before they were completed, and with this encouraging start, Mr. Becker was inclined to go into operating on a more extensive scale.

With the adoption of this idea he practically forsook his former method of building by contract owing to the uncertainty of the labor and material markets. He realized the advantage in being able to control the selling price of his organization's services and materials by confining the major portion of his efforts to erecting homes for the market and reserving the matter of selling prices until all materials were purchased and the buildings were well

under way, so that approximate costs could be judged with a fair degree of certainty.

Mr. Becker's second venture consisted of the erection of a batch of twenty-six homes. Before these were completed, he and Mr. Raymond Connolly coined the phrase "Beckerbuilt is Betterbuilt," which was copyrighted and has since become a well known trade mark in New Jersey.

Upon completion of the second lot of houses, Mr. Becker purchased a tract of about ten acres, cut



This part of that cow pasture is now a handsome residence street.



being no advantage allowed to direct buyers, which means that there is no conflict on this important point. He also maintains a liberal service policy toward his buyers, as he holds that no manufacturer has ever produced an article which is perfect. He retains the faith and good will of his clients by the simple expedient of rendering complete satisfaction. He occupies one of the University Courts dwellings, and is therefore always "on the job."

through a street and built twenty more houses, selling all of them before they were finished. Just prior to the completion of these twenty homes, Mr. Becker negotiated the purchase of an additional tract of forty acres.

To this tract, which is located in one of the choicest residential sections of South Orange, he gave the name "University Courts," and broke ground for his third and biggest project. Just after the purchase of the land Mr. Becker was induced to attend the Chicago convention of the National Association of Real Estate Boards with Mr. Connolly and several other members of the Board of Realtors of the vicinity.

On the way to Chicago and after the convention Mr. Becker and Mr. Connally made several side trips to inspect sub-division work in Chicago, Evanston, Lake Forest, Detroit and Buffalo. The chief result of these trips was to convince Mr. Becker and Mr. Connolly that the tentative figure which they had in mind as to selling price of the frontage on the new streets to be cut through the University Courts development was too low.

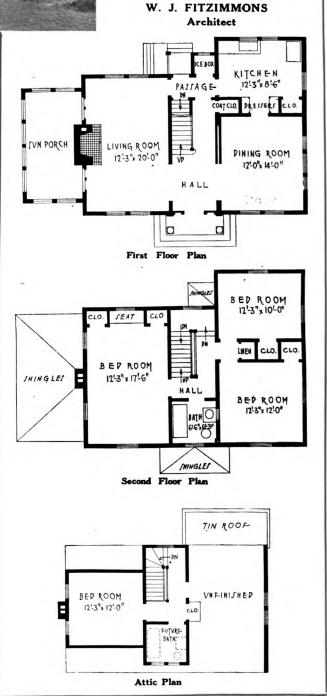
After still further investigation as to the price secured for similar property within the Oranges and Montclair, the figure of \$60 per front foot was decided upon as being a fair and just valuation instead of the original estimate of \$40 per foot. Since there are over four thousand front feet in the University Courts tract, the estimates thus obtained proved quite profitable.

That \$60 per foot was a fair price to ask was soon proven by the large number of sales made before any building operations were started. Had he so desired, Mr. Becker could easily have disposed of the entire tract without erecting a single building.

He preferred to develop the property himself, however, and within a year more than sixty per cent. of the total frontage in the tract had been built upon.

At the present time, the last of 75 dwellings are nearing completion. Of these a large number are already occupied and many have been sold not only before completion but before even being started.

In selling his houses Mr. Becker has but one price and that is invariably the same to every one, there

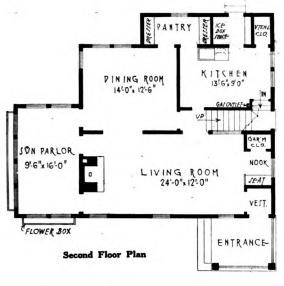


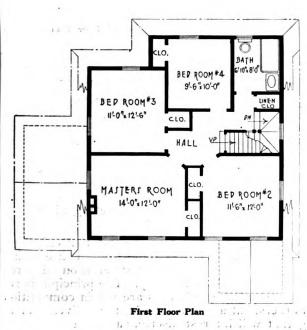
NOVEMBER 1923

Mr. Becker through experience in erecting different houses has found out what appeals to the majority of prospective home owners, and therefore has incorporated in his different homes the things that he knows will be good selling arguments. He has found that the majority of people who become his customers like a lot with a sixty-foot frontage. This is not too large for the householder to take care of himself, and not so skimpy as to make the house look cramped.



HERMAN FRITZ
Architect





To give a good appearance to the street, he has set the houses back from the lot line forty feet. This gives a distinctive appearance to all the houses in the street.

Too often a house is completed by the builder with heaps of rubbish both inside and out. Not so with Becker's homes. He finds that it pays to have all lawns front and rear properly graded with good top soil, well seeded, and planted with shrubbery. In the back yard, he provides another feature in the way of removable clothes posts, which always please the woman who looks out of the windows and wonders where the wash is going to hang.

In the attention given to many such details as these, Mr. Becker has applied psychology to his home building ideas, and it has proved highly profitable in marketing his buildings. In showing a prospective buyer through a Beckerbuilt home, Mr. Becker, or Mr. Connolly, points out these many distinctive details and seldom fails to close the prospect if he or she is at all serious in the contemplation of buying.

In making the foundations for the houses, concrete block was used. The blocks were coated on the outside with waterproof compound. The cellar floors were also waterproofed. Tile flues were used for the chimneys and the fireplaces have ash pits in the cellar and iron throats and dampers. The fireplace flues are $8\frac{1}{2} \times 13$ ", insuring a perfect draft and the fireplaces are lined with fire bricks.

The walls are finished in hard plaster and Mr. Becker stresses the point that the lath has been spaced wide, to prevent falling and cracking of ceilings and walls, even though this practice uses more plaster.

Attention is also called to the metal corner beads on all exposed plaster cornices, and to the fact that the plastering has been carried out to the window frames, to prevent drafts and leaks. The cellar ceilings are all plaster board covered.

In framing the houses, all joining parts are mortised and tenoned instead of being spiked together, and all openings for doorways, etc., are properly braced. Another point brought to the prospective buyer's attention is that waterproof paper is placed



Mr. Becker is always "on the job"; he lives in the third house from the left. The floor plans are shown below.

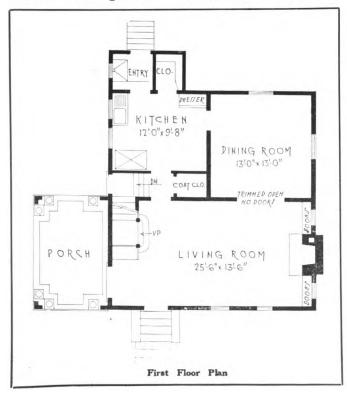
B. HALSTED SHEPARD Architect

between the sheathing and the outer clapboards or shingles.

The roofs of the houses are covered with 18-inch Perfection Red Cedar Shingles. Double floors are laid throughout, the finished floors on first and second stories being of ½-inch selected oak.

Like the floors, the stair treads are also of oak, while the trim is selected white wood with panelled doors. Picture moulding is put up in every room.

The kitchen is equipped with a gas range with automatic heat regulator for ovens and an automatic





hot water system with a heating attachment at boiler in cellar for use when furnace is lighted.

Particular attention has been paid to the plumbing. Kitchen sinks are porcelain, one piece with drain board and high back with a combination mixing faucet. The water closets are of syphon jet with porcelain tanks, there being no metal to corrode. A drain pipe takes care of the refrigerator waste. Bath room floors and walls are tiled, with built-in fixtures; built-in tubs and each bath room is equipped with an overhead shower.

Particular stress is laid on the fact that only high class American mechanics are employed in erecting these houses, under the daily supervision of three members of the Becker family. The principle is regarding quality. The houses are not in competition with others, but are in a class by themselves—something that will interest discriminating purchasers.

The Services of an Architect

By C. E. SCHERMERHORN, Architect

Member American Institute of Architects, Philadelphia, Pa.

THE thinking public are awake to the value of the services capable of being rendered by an architect, and recognize that his province bears the same relation to the owner as that of a specialist in medicine or surgery to his patient. In countless ways the expert advice and suggestions of an experienced architect will be found to have substantial value, and his work, in this respect, cannot be economically ignored by anyone who has determined to build, whether it be a bungalow or a great commercial or monumental project.

When a location is in contemplation or has been determined upon, the architect selected should be made acquainted with the owner's ideas and conception of what the building should be, and its character and purposes. The exigencies of the site should then be studied, and the climate, outlook, grades, drawings and other essential factors carefully considered as their influence makes for the success or failure of the completed building.

This will enable the architect to obtain a knowledge of the essential requirements, to discuss any fallacies, and to sketch out practical and comprehensive plans for the interior arrangement and exterior design, organized adapted to the real need and precise conditions, in conjunction with economic conditions that underlie the problem. These preliminary studies may offer several solutions, one being advantageous from one point of view, and another from another point of view, which are then capable of being intelligently discussed with the client and permit of definite conclusions being reached.

From these sketches and studies, showing the general plan and design of the contemplated building, with their accompanying synopsis of the materials of construction, fixtures and finish, close approxi-

mate estimates may be obtained These estifrom contractors. mates may afford a basis for determining future possibilities of the project and enable its further development by the preparation of the final working drawings, which involve an accurate layout of all floors, of all the elevations, both interior and exterior, also typical sections and detailed methods of construction. The working drawings must be so complete that a contractor will know exactly how and of what material every part of the building is to be constructed, thereby forestalling any guessing, which so frequently is costly to the owner and unsatisfactory to the builder.

THE working drawings are accompanied by specifications, taking up in the form of a description what it is impossible to express on the drawings, and stating therein with clearness and precision the grades and character of the work, materials, ingredients, appliances and fixtures required to be used and installed.

These specifications also show how the contractor shall do certain portions of the work and cooperate with the various subcontractors; they also state the indemnity bonds, insurance, etc., required, and, in general, form a complete thesis of the building to be constructed, leaving no doubt in the mind of the bidder, as to the exact amount and character of the work called for.

This assures that all estimates received shall have been intelligently submitted, and that, when the contract is ultimately awarded, the contractor can plan its progress with a definite knowledge of the materials and requirements, the work being thus carried out with greater expedition and consequent economy.

After it has been determined to proceed, a legal, binding and defi-

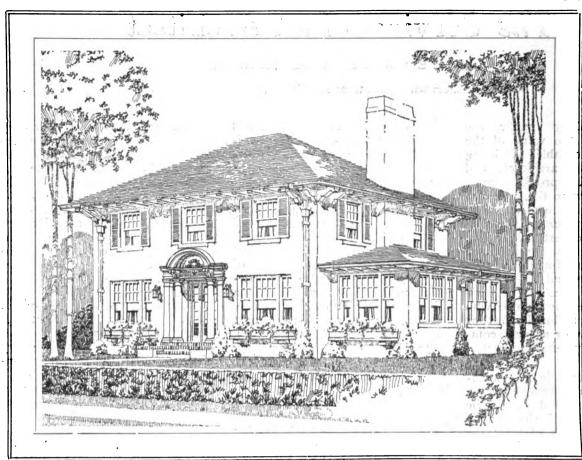
nite contract must be prepared by the architect, in which the requirements on both sides are clearly set forth, the "instruments of service," in the form of specific and technically intelligible drawings and specifications, being made a cohesive part of this contract. Definite terms of payment, time of completion, and requirements in connection with lien laws must be provided for.

There must also be provisions in the contract for fire, lightning, casualty, compensation and contingency insurance, for necessary bonds in connection with completion, and for compliance with local municipal or state requirements, departmental directions or rulings, ordinances and acts.

It is only by following these steps, in their logical, natural sequence, from the very conception of the building to its final completion, that an owner can obtain the best results with a minimum of worry and a maximum of economy.

In order to construct a building successfully, it is necessary to anticipate each step in the progress of its development, and to outline a complete system for its erection, and to control the work until the building is turned over completed to the owner.

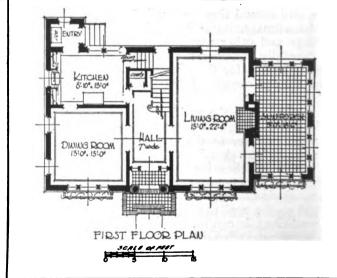
FULL architectural services, rendered by a competent man, will save many times his comparatively small compensation. The instruments of service, the plans and specifications, are the fundamental element in the contract, and to produce them requires thought, experience and learning, also familiarity with the qualities, properties, peculiarities, weight and strength of materials, the weights of structures and the relationship of the various operations to be performed by the many trades represented in the building.



Artistic Stucco Residence

Specially Designed for BUILDING AGE and THE BUILDERS' JOURNAL

By R. C. HUNTER & BRO., Architects



UIET dignity seems to emanate from every side of this picturesque home design. One gleans from the outside appearance an idea that the family housed within are good, substantial citizens—the kind that any town would be proud of.

The rather formal appearance of the entrance is relieved by the two quaint outside lanterns and the dignified recessed door arrangement with a sidelight on each side. All bespeaks a hospitable welcome to the entering guest.

A formal type of house like this has a certain reserve and dignity that appeals to many. If properly designed, it also carries an air of stability and permanence—a suggestion of substantial worth.

For the city or the closely built suburbs, this type of house seems ideal; it does not require a large lot with spacious grounds as befits a rambling English or Colonial house, but it can be built quite close to the property line and yet not look cramped.

The details of the accompanying design have been carefully worked out by the architects. The floor plans are well arranged and the rooms are of good size. The sun porch is completely enclosed and

are three good bedrooms, two entire house: baths and plenty of closets.

A cellar extends under the entire The bath rooms have tiled floors house and here is the laundry, the and wainscots and the tubs are heating plant, coal bin and the like. built in. The bath rooms are located over the kitchen, so that one with stucco finish, brick trimmings

has a tile floor. On the second floor line of plumbing pipes serves the and slate roof, and the estimated cost is about \$13,000.

A garage is provided under the sun porch, an incline leads down from the grade in the rear to the garage floor. The garage is completely fireproofed.

Quantity Survey of Stucco Residence

THE quantities given are for estimating. All measurements are NET unless otherwise noted; areas given for such items as sheathing, flooring, etc., are net areas to be covered, with no allowance for matching, waste, etc. Minor outs have been disregarded.

Such items as clearing site, temporary work and protections, scaffolding and general equipment and supplies, have not been included.

Such items as are marked "Unit" are to be estimated in lump sum, following requirements of plans and specifications.

EXCAVATION

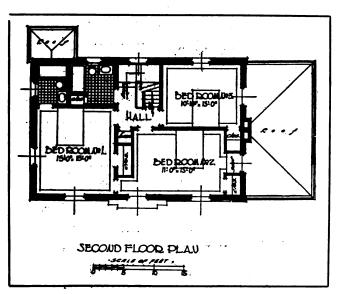
(Excavation for pipe trenches not inclu	ıded)
Excavation for cellar	310 cu. yds.
Excavation for footings	
Excavation for runway	38 cu. yds.
Excavation for trench walls	3 cu. yds.
Excavation for leader drains and dry wells	10 cu. yds.
Backfilling around walls, etc	39 cu. yds.
Leader drains and dry wells.	
Field stone for dry wells	8 cu. yds.
4 in. salt glazed tile drain pipes	32 lin. ft.
4 in. elbows	5

MASON'S IRON WORK

Fireplace damper (3 ft. 0 in. opg. with throat etc.) C. I. ash dump. C. I. cleanout door for ash pit (16 in. x 12 in.) C. I. cleanout door for boiler flue (8 in. x 8 in.) Thimble for boiler flue. Anchor bolts for wall plate (34 in. x 24 in.)	
Wrought iron pipe railing (3 ft. 0 in. high)	

MASONRY

Concrete work.			
Concrete for cellar walls			
Concrete for footings	336	cu.	ft.
Concrete for trench walls	93	cu.	ft.



	_ ,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Reinforced concrete retaining walls	190 cu ft
Cellar floor (3 in. concrete and 1 in. and run-	102 ca. 10
way, cement finish)	1140 sq. ft.
Porch floors (12 in. cinders, 3 in. concrete	Trio bdi tti
and brick finish)	45 sq. ft.
Concrete forms	3500 sq. ft.
Cement steps	24 sq. ft.
Reinf. concrete window lintels, concrete	120 cu. ft.
Reinf. concrete living porch floor	162 .q. ft.
Concrete brackets for flower boxes	6
Pointing cellar window sills	22 lin. it.
HOLLOW TILE	
8 in. x 12 in. x 12 in. block	1780 sa. ft.
(on 1700 blocks)	
4 in. x 12 in. x 12 in. block for corners	120 blocks
8 m. jamb blocks	230
1 in. levelling slab	80
BRICK WORK	
Common brick work for chimney, etc	142 au fe
(or 2.8 M.)	142 Cu. 1t.
Face brick for fireplace (or 169 brick)	20 sq. ft.
Fire brick for fireplace (or 100 brick)	20 sa. ft.
8 in. x 12 in. T. C. Flue Lining	60 lin. ft.
PLASTERING	
Three coats patent plaster on metal or patent	•
wood lath, gross	500 sq. yds.
(Net, 425 sq. yds.)	ooo sq. yus.
Three coats patent plaster on hollow tile, gross	260 sq. yds.
(Net, 191 sq. yds.)	
Stucco on hollow tile, etc., gross	330 sq. yds.
(Net, 250 sq. yds.)	• •.
Damp prooffing under stucco, net	2800 sq. ft.
Stucco on metal lath, net	12 sq. yds.
G. I. corner beads	80 lin. ft.
TILE WORK	
Tile work for bath rooms.	2.4
Floor (1 in. hex. white ceramic)	72 sq. ft.
Wainscot, 3 in. x 6 in. white wall tile	176 sq. ft.
6 in. base	30 lin. ft.
Cap	47 lin. ft.
Quarry tile, porch floors	192 sq. ft.
Base	51 lin. ft.
SHEET METAL WORK	
Constant for bloom for more for the	

B LUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by Building Age and The Builders' Journal, 239 West 39th Street, New York.

80 lin. ft.

22 lin. ft, 5 sq. ft.

104 lin. ft.

24 lin. ft.

Copper flashings for roofs, etc.....

Flash, and counter flash, for chimney......

Copper chimney cricket 3 in, x 4 in. copper or zinc leaders.....

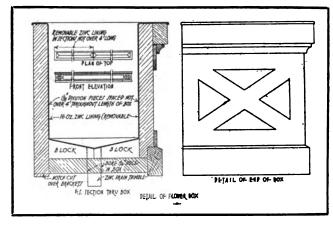
3 in. dia. copper or zinc leaders..... Bends for same..... Ornamental heads

Cap and thimble for same.....

ROOFING	
te roofing underlaid with felt	18 squares 16 sq. ft.
CARPENTRY	

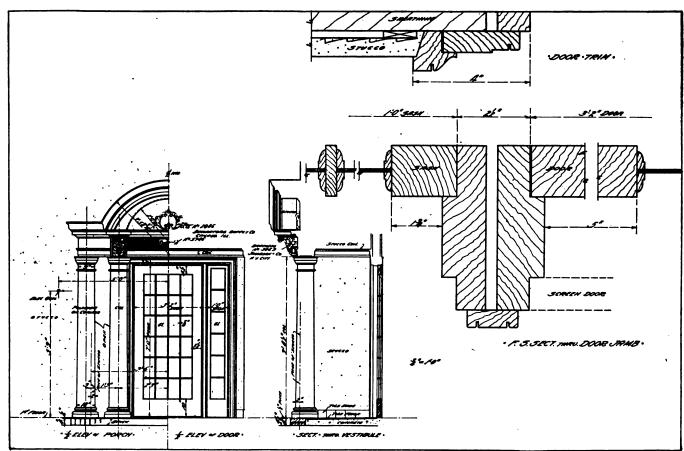
	KOOFING	
	Slate roofing underlaid with felt	18 squares 16 sq. ft.
	CARPENTRY	
	Timber. All No. 1 common stock, hemlock; rough, unless noted.	
	Cellar girders. 2 in. x 3 in. nailer—96 lin. ft	48 F. B. M. 240 F. B. M.
	6 in. x 10 in. spruce—2/16, 2/8	
	3 in. x 8 in.—4/16, 1/14, 3/12, 6/10, 1/8 Studs, girts and plates, first floor.	
	2 in. x 4 in.—76/8	405 F.B.M.
	Studs, etc., second floor. 2 in. x 4 in.—50/10, 60/8	654 F.B.M.
	First floor joists. 2 in. x 10 in.—42/14, 22/8, 2/10	
	Second floor joists.	
	2 in. x 10 in.—42/14, 22/8	
	2 in. x 8 in.—40/14, 20/8	963 F.B.M.
	Rafters. 2 in. x 8 in.—46/16	980 F.B.M.
	2 in. x 6 in.—14/12	168 F. B. M.
	Hips and ridge. 2 in. x 8 in.—4/20, 1/14	126 F.B.M.
	Collar beams. 2 in. x 6 in.—10/10	100 F. B. M.
	Porch ceiling heams etc	
	2 in. x 4 in.—20/10	134 F. B. M.
	2 in. x 4 in.—220 lin. ft	137 F. B. M.
	Floor bridging. 2 in. x 3 in.—350 lin. ft	175 F.B.M.
	Cellar partitions. 2 in. x 4 in.—13/14	121 F. B. M.
	Sheathing (% in. x 8 in. shiplap).	
	Walls—to cover	100 sq. ft. 1800 sq. ft.
	Sheathing paper (waterproof)	100 sa. ft.
	Grounds (¾ in. x 2 in., surfaced one side) Sheathing for cellar partitions.	2200 nn. it.
	(% in. x 8 in. shiplap)—to cover	320 sq. ft.
	Rough flooring (% in. x 8 in. shiplap). First and second floors—to cover	1430 sq. ft.
	Furring (% in. x 2 in.)	400 lin. ft.
	EXTERIOR FINISH	
	Main cornice. 4 in. x 6 in. wood gutter	148 lin. ft.
	4 in. x 5 in. wood gutter	82 lin. ft.
	Brackets. 8 in. x 16 in. x 30 in	
	2 in. x 8 in. x 30 in	52 310 lin. ft.
	34 in. x 4 in. M. & B. ceil.—to cover	600 sq. ft.
	2 in. bed mould	300 lin. ft.
	Hood with columns, pilasters, brackets, etc	1 Unit.
1	Flower boxes, 12 in. x 12 in. x 9 ft. 0 in	3
	Pa .	

¹⁰ >40>40>40	ssAllrin 		tex
OR SHOP	Morrian Morrian Marian	minus comes	and M
ייוקות	mu com mm	gmnd ^{ar}	3



Windows.	
Frames, complete with sash, outside trim, etc. Sash 1½ in thick, glazed D. T.	
(Masonry walls unless noted.)	
Cellar windows. Single top hung sash, casem., 3 ft. 0 in. x	
2 ft. 0 in., 4 light	4
Single, 3 ft. 0 in. x 1 ft. 8 in., 4 light	1
First floor windows.	• • • • • • • • • • • • • • • • • • • •
Triplet D. H. sash, side 1 ft. 8 in. x 5 ft. 0 in., center, 3 ft. 6 in. x 5 ft. 0 in	6
Single D. H. sash, ea. 3 ft, 6 in. x 5 ft. 0 in	1
Single D. H. sash, ea. 2 ft. 6 in. x 5 ft. 0 in Single D. H. sash, 2 ft. 6 in. x 3 ft. 0 in	2
Mull. D. H. sash, ea. 2 ft. 6 in. x 3 ft. 0 in	1
Single casem. sash, 2 ft. 0 in. x 2 ft. 6 in Second floor windows.	1
Single D. H. sash, 3 ft. 6 in. x 4 ft. 0 in	2 5
Single D. H. sash, 3 ft. 0 in. x 4 ft. 0 in Single D. H. sash, 3 ft. 0 in. x 3 ft. 0 in	1
Single D. H. sash, 3 ft. 0 in. x 3 ft. 0 in Single D. H. sash, 2 ft. 6 in. x 3 ft. 0 in	2
Attic windows. Mull. D. H. sash, ea. 2 ft. 6 in. x 3 ft. 0 in.	
(frame)	1
3 ft. 6 in. x 4 ft. 1 in., pair	2 pr.
3 ft. 0 in. x 4 ft. 1 in., pair Exterior door frames.	5 pr.
(134 in. thick, rabbeted), complete with out-	
side trim. Frames for front entrance door.	
Door 3 ft. 2 in. x 7 ft. 0 in., with side lights	1 Unit.
Frame for rear entrance door. Door 2 ft. 8 in. x 6 ft. 10 in	1 Unit.
Frame for cellar entrance door.	
Door 2 ft. 8 in. x 6 ft. 8 in	1 Unit.
Doors 8 ft. 0 in. x 8 ft. 0 in	1 Unit.
Frames for doors to living porch. Doors 3 ft. 0 in. x 7 ft. 0 in	2
Exterior doors (all to detail).	2
Front entrance door, 3 ft. 2 in. x 7 ft. 0 in. x 134 in., glazed with side lights	1
Rear entrance door, 2 ft. 8 in. x 6 ft. 10 in. x	
134 in., glazed	1
134 in., glazed	1
8 ft. 0 in. x $2\frac{1}{4}$ in., glazed	1 pr.
Doors to living porch, 3 ft. 0 in. x 7 ft. 0 in. x	2
Finished flooring.	2
Living room, dining room, hall and adjoining closets, plain sawed, white oak.	
13/16 in. x 21/4 in.—to cover	567 sq. ft.
Kitchen, entry, etc., No. 1 maple, 13/16 x 2¼ in.—to cover	147 sq. ft.
Second story.	•
No. 1 comb grain Y. P., 13/16 in. x 2½ in.— Lining paper under floors	611 sq. ft. 1500 sq. ft.
Slat floor under laundry tubs, 3 ft. 0 in. x	_
4 ft. 0 in	1

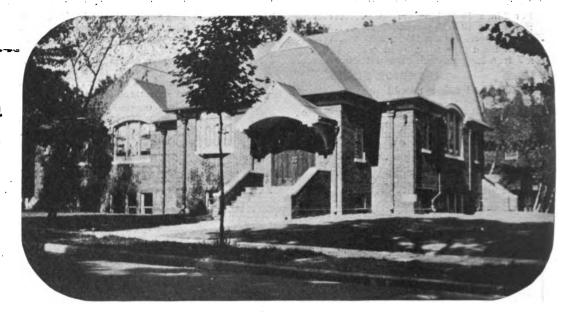
Joist hangers (1¼ in. x 2 in. W. I.) For 2 in. x 10 in. beams	For windows, single, 3 ft. 6 in. x 4 ft. 0 in. For windows, single, 3 ft. 0 in. x 4 ft. 0 in. For windows, single, 3 ft. 0 in. x 3 ft. 0 in. For windows, single, 2 ft. 6 in. x 3 ft. 0 in. Base.	2 Sets. 5 Sets. 1 Set. 1 Set.
x 7 ft. 6 in. long, with caps and bases 4	% in. x 6½ in., moulded	370 lin. ft.
INTERIOR FINISH (Whitewood unless noted.)	 ½ in x 4 in. plain (closets) 2 in. base mould ⅓ in. quarter round floor moulding 	60 lin. ft. 370 lin. ft. 450 lin. ft.
Door trim. 1/8 in. jambs, 1/2 in. stops, 1/8 in. x 41/2 in., moulded and mitered, trim with wall moulding.	Picture moulding. % in. x 2½ in	350 lin. ft.
For doors 2 ft. 6 in. x 6 ft. 8 in	Seat for bed room No. 2	1 Unit.
For doors 2 ft. 4 in. x 6 ft. 8 in	Mantle for living room	1 Unit.
Trim for inside of exterior doors. Front entrance, 3 ft. 2 in. x 7 ft. 0 in., with	2 ft. 8 in. x 6 ft. 8 in. x 1½ in	7 9
side lights 1	1 ft. 2 in. x 6 ft. 0 in., Dutch	1



Rear entrance, 2 ft. 8 in. x 6 ft. 10 in Cellar entrance, 2 ft. 8 in. x 6 ft. 8 in Garden entrance, 8 ft. 0 in. x 8 ft. 0 in Doors to living porch (trim both sides). 3 ft. 0 in. x 7 ft. 0 in Trim for cellar doors (plain). For door 2 ft. 6 in. x 6 ft. 6 in Trimmed openings, 5 ft. 0 in. x 6 ft. 8 in	1 1 2 1 Set. 2 Sets.	Cellar door—(solid pine or fir). 2 ft. 6 in. x 6 ft. 6 in. x 1½ in	1 35 lin. ft. 25 lin. ft. 20 lin. ft. 14 lin. ft.
Tin-clad door frame and trim to garage, 2 ft. 6 in. x 6 ft. 6 in. x 134 in	1	With glazed doors, front, 3 ft. 0 in. x 4 ft. 0 in. With glazed doors, front, 3 ft. 0 in. x 4 ft. 0 in. Main stairs, first to second floor. 14 risers, 3 ft. 0 in. wide, exposed string, semi-caged starting newel, balustrade, etc. Cellar stairs, 12 risers, box pattern	1 Unit. 2 Units. 1 Flight. 1 Flight. 1 Flight.
For windows, triplet, side 1 ft. 8 in. x 5 ft. 0 in., center 3 ft. 6 in. x 5 ft. 0 in For windows, single, 3 ft. 6 in. x 5 ft. 0 in. For windows, single, 2 ft. 6 in. x 3 ft. 0 in. For windows, single, 2 ft. 6 in. x 3 ft. 0 in. For windows, mull., ea., 2 ft. 6 in. x 3 ft. 0 in. For windows, single, 2 ft. 0 in. x 2 ft. 6 in.	6 Sets. 1 Set. 1 Set. 1 Set. 2 Sets. 1 Set.	GENERAL CONDITIONS Add for permits, fees for water and sewer etc., insurance and general overhead charges. general work not listed, as grading, planting, e sub-bids: Hardware and applying same, painting orating, plumbing and gas fitting, heating, elections.	Allow for tc. Include ng and dec-

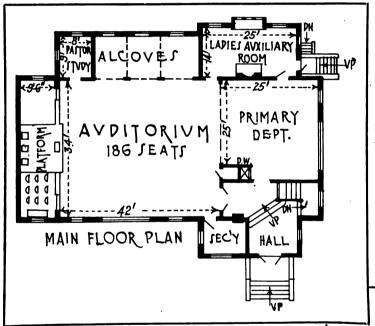
Digitized by Google

Small Brick Church



ALBERT MARTIN BEDELL,

Architect



choir space, and center pulpit platform. The ellipse idea is also carried out over the windows, pew ends, furniture and panels.

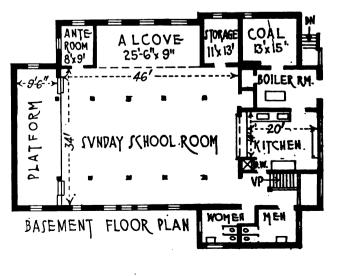
A feature of special interest is the Ladies' Auxiliary Room situated in the wing, which may be entered direct from the street or through the auditorium and primary department room. This room is fitted up similar to a living room and is very cozy indeed, with its fire place, window seat and comfortable furniture. On this floor there is also a pastor's study and a secretary's room.

The basement is devoted to the use of the Sunday school and for social and civic gatherings. The main room is large enough to seat one hundred and fifty people at a time to a good dinner with ample space for serving. The kitchen is large and well thought out to accommodate the needs. In the basement there is also the usual boiler and coal room, two retiring rooms, storage room and closets.

PPER RIDGEWOOD, New Jersey, boasts of a small community church that is unique. It is built of brick and is of pleasing design, but nothing elaborate; something good and dignified and not too expensive for a small community.

The aim has been to make this a community church both in service as well as name. It was organized for the religious, social and civic benefit of all residents, regardless of former creed or beliefs. Both from the interior and exterior appearances, there is nothing that suggests any special dogma or belief other than the desire to serve its community.

The auditorium has a well proportioned elliptical ceiling, giving an appearance of heighth, which would otherwise not be obtained. Following the lines of the ceiling, there is a large arch way over the platform, giving a broad view of the



VERY successful building contractor has found the need of insurance in one or more forms in which it is applicable to his particular business.

Many, however, not realizing that insurance is a commodity that, like material, equipment and labor, should be bought with care, have gone into it blindly and have consequently wasted much money where it might be saved.

With a view toward enlightening the readers of Building Age, as to the most profitable and economical methods of buying such insurance, Mr. Coe will, in this and future articles, explain insurance for builders in detail.

There may be some particular phase of the insurance question that puzzles you. If so, send your problem to the editor and we will ask Mr. Coe to answer it.

Saving Money on Builders' Insurance

How to Secure Complete Coverage at the Least Cost Edited by GEORGE COE, JR.

THE story of insurance itself reads like a romance and forms of it may be traced back to the days of Babylonia and Ancient Greece, but in the articles to follow we are to deal primarily with the present development of what is the youngest, but by no means the smallest or least important, of the different branches of insurance. We refer to Casualty Insurance, which insures against accidents to persons and property.

Before considering, in detail, the various forms of insurance needed by a contractor to properly protect him against liability for injuries or death to employees or to the public, or the destruction of property of others arising out of the conduct of his business, it might be of interest to make a few observations regarding the subject of insurance in general and the forms of which we are to deal in particular.

THE underlying principle of insurance is that a great many persons contribute a small amount each toward the payment of losses which will be suffered by a few. Each contributor is in danger of a loss, but neither the severity of the loss nor the one on whom it will fall can be foreseen. It can readily be appreciated, therefore, that since any one of the group may be the beneficiary of these contributions, it is but just and equitable that each one contribute his proportionate share whether he suffer a loss or not during a given period.

Modern insurance has its foundation on the above principle, but because of the many details entering into the business, such as different legal requirements in the individual states, the many forms of policies required to meet the demands of the insuring public, the making of scientific and accurate rates, and many other factors, it has become highly specialized.

An insurance company must be in a position to tell a contractor in advance what his insurance cost on a given job will be, for such cost must be included in the bidder's estimates. The making of rates is, therefore, one of the most important details of the insurance business, and great care and study are given to this work.

ESIDES the payment of losses, B ESIDES the payment of local insurance companies perform many other functions little thought of by the insuring public. All losses and claims must be investigated; reports, especially in the case of compensation losses, must be filed with the proper state department or commission; suits against polholders must be defended whether groundless or otherwise; close contact with legislative enactments in all states must be maintained and policy forms, rates, procedure, etc., must be made to conform to changes in the laws.

Fully equipped hospitals are maintained by some companies to treat injured employees of policy holders; large and efficient inspection departments are needed for accident prevention work among policy holders. Some companies maintain service departments in Washington for the sole purpose of advising contractors of all government contracts let or to be let, of bids to be received, etc.

WHILE it is true that insurance, as such, has been one of the greatest factors in the development of modern civilization by the. substitution of confidence and surety for chance and insecurity and has eliminated hazard from commercial and social life, it has not stopped there. The modern insurance company is an institution which combines with its normal business functions, a vision of its value as an agency of real service to its policy holders by placing at their disposal its far-flung organization, and, even more, its value to humanity through its constant efforts to reduce social and economic waste occasioned by the destruction of life, limb and property.

According to Rexford Crewe, assistant manager of the Maryland Casualty Co., there are, broadly speaking, four methods of insuring open to a contractor:

Stock Insurance, i. e., in a stock company having paid in capital and surplus. Here the premium paid is definite and final and any losses from underwriting would have to be met from the surplus and capital of the company.

Mutual Insurance, i. e., in a mutual company which has no capital or paid in surplus. If operations are successful a dividend is returned to policy holders. If operations are not successful an assessment is levied, as provided for in the policy, to make up the deficit.

State Funds—for compensation. These funds are under control of commissioners or boards appointed or provided for by law. Contrary to the belief held by many, State Funds are not backed financially by the states in which they operate, but make up any deficit by assessing the policy holders.

Self Insurance - is what the name implies. Any one may assume his own risk, but in most states with compensation laws, an employer desiring to become a self insurer as to compensation must satisfy the proper industrial or compensation commission of his financial ability to meet compensation claims likely to arise, and deposit security in any amount required.

Let us now consider the forms of casualty insurance needed by a contractor if he is to be fully insured.

1. Workmen's Compensation.

2. Employers' Liability.

3. Contractors' Public Liability.
4. Contractors' Con-

tingent Liability.

5. Teams Liability and Property Damage.

6. Automobile Liability and Property Damage.

7. Boiler.

8. Property Damage.

9. Payroll Robbery.

10. Bid, Contract, Supply and Fidelity Bonds.

As subsequent articles will deal with these in detail, we shall only attempt here a very brief outline of the coverage granted under the different forms, so that the reader may receive an idea of the functions performed by each.

1. Workmen's Compensation

This insurance is now provided

for by statute in 42 of the 48 states of the Union, in the various territories, and in the neighboring provinces of Canada. In addition, there is also a Federal Compensation Act covering employees of the government. There is hardly a civilized country in the world that does not have some form of workmen's compensation legislation on its statute books.

Workmen's compensation acts replace, as a rule, the less satisfactory employers' liability acts



An example of property damage that contractors should guard themselves against by adequate insurance. Here a portion of the wall of the building adjoining the excavation for a new structure collapsed into the excavation. This particular accident occurred last September at Washington, D. C.

previously in force. In some states it is compulsory that an employer provide compensation insurance for his employees, and in other states it is elective with him whether he do so or not. In these latter cases the law is usually so framed that it is to the advantage of both employer and employee that compensation be provided for.

While the details, such as waiting periods, weekly payments, death and total disability benefits and other provision, are different in each of the compensation laws enacted by the various states, the idea back of them all is that the injured employee shall receive, without the necessity of litigation or delay, compensation for injuries received in the course of his work. The social value of this insurance, through the reduction of suffering and poverty, cannot be overestimated.

A compensation policy is unlim-

ited as to the amount of insurance provided. While the law specifies the payments to be made for injury or death, yet there is no limit to the number of claims a company may have to pay under its policy.

2. Employers' Liability Insurance

North Six states, Carolina, South Carolina, Florida, Mississippi, Arkansas and Missouri. have not enacted compensation laws, and in these states the relations of the employer to the employee are defined under so-called employers' liability acts.

Prior to the enactment in England, in 1880, of the first employers' liability act, the only recourse of an injured employee for the recovery of damages against the employer was under the Common Law as applied to master and servant.

Great hardships were experienced by employees because it was almost impossible for them to recover for injuries even if a judgment had been rendered in their favor. Employers' liability acts attempted, quite unsuccessfully it seems, to modify the Common Law especially as to the so-called "fellow servant," "assumption of risk" and "contributory negligence" defenses.

Under employers' liability poli-

cies, the insurance carrier agrees to indemnify the employer for any loss to which he may be subjected by reason of injuries to employees while engaged in their duties. The policies are limited as to the amount the company will pay to any one person or for any one accident. The limits may be for any amounts the policy holder desires, however, and are available for any number of accidents.

3. Contractors' Public Liability

Protects the contractor against loss by reason of injuries to the public (i. e., others than employees of the insured), due to or caused by the operations of the assured. The policy can be limited to accidents occurring on any particular job or can be extended to cover his liability on all jobs being carried on by him.

4. Contractors' Contingent Liability

This form is needed by contractors who sub-let part of a contract. Even though a contractor may retain no control over the sub-let portion of the work other than to see that the work is done in accordance with specifications, there may be certain accidents for which he can be held liable. There are many more cases in which he must defend himself against suit even if he cannot be held responsible.

It is to take care of these suits and any judgments that may be obtained against the principal contractor that this form is designed. It will be noticed that a point of difference between this form and the contractors' public liability form is that the latter covers accidents caused by his own direct employees and not by the employees of others. The premium for a contractors' public policy is based on the payroll of the contractor's employees. The premium for the contractors' contingent policy is based on the total cost of the sub-contracted work.

5 and 6. Teams Liability and Automobile Liability

These are designed to protect the assured against liability by reason of accidents to others than employees caused through or by the ownership maintenance or operation of teams or automobiles, including the hazards of loading or unloading merchandise.

Damage to property of others,

and not in the custody of the assured, caused through the operation of teams or automobiles, is usually written in connection with the liability policies for a small additional premium.

7. Boiler Insurance

Contractors using boilers for generating power for various purposes, such as generating steam for drills or for operating air compressors, hoists, dredges, steam shovels, etc., need a boiler insurance policy to protect them against loss by reason of the rupture or explosion of the boiler.

An explosion not only destroys the boiler, but usually destroys other property of the owner, property of others, and frequently causes injury or death to members of the public. A boiler policy protects against these hazards in any amount from \$1,000 up.

8. Property Damage Insurance

This coverage is usually provided for by endorsement attached to a contractor' public liability policy and covers damage done to property of others by reason of the work being done by the contractor. A falling derrick may injure property of others—an excavation may cave in, carrying with it a wall or a building, or permit of the settling or cracking of adjoining buildings -a water main or gas main may be severed—a blast may shatter a plate glass front. It is the function of property damage insurance to indemnify for such losses.

9. Payroll Robberty Insurance

It is hardly necessary, in view of the stories chronicled almost daily in the newspapers, to advise why this form of insurance is needed. It is designed to protect the assured against loss of money, securities or merchandise, whether intended solely or not for the payroll of the assured, by robbery, from a custodian while engaged inside or outside of the premises, whose regular duties include the handling of such property. It covers between the hours of 7:00 a. m. and 7:00 p. m. and is not designed to make good any losses through burglary or theft.

10. Bonds

The functions performed by Bid, Supply and Contract bonds are too familiar to all contractors to need description at this point. Their main features will be discussed later.

Fidelity bonds, however, are not used so generally by contractors, but there is no doubt of their place in a consideration of complete protection. They are designed to protect an employer against actual financial loss caused by the dishonesty of employees who are entrusted with the handling of funds.

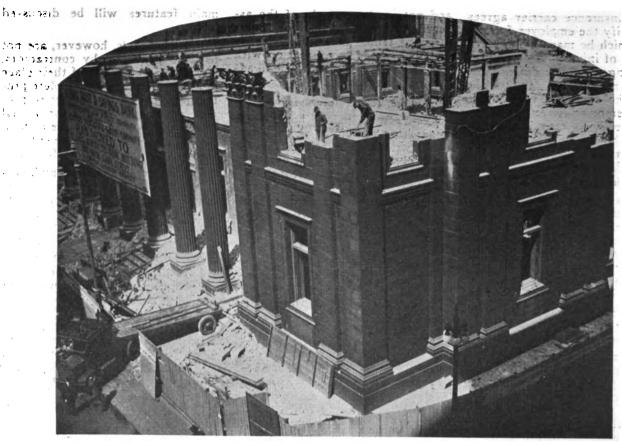
Even the most trusted employees sometimes go wrong, and where money for payrolls, payment of supplies, etc., are being handled constantly it is well to have those entrusted with the care of such funds covered by a fidelity bond.

In addition to those forms of coverage outlined above and which we consider absolutely necessary for complete protection, we might mention also for the benefit particularly of the larger contractors, Check Forgery insurance, which, as the name implies, is designed to protect the assured against loss due to the forging or raising of checks, and Automobile Collision insurance, the purpose of which is to reimburse the policy holder for damage through collision to his own automobile.

There is one more point of contact between contractors and the business of insurance which should not be overlooked. The premiums received by insurance companies that are not used for immediate payment of losses and expenses are invested in safe securities of various kinds.

These are usually Federal, State, County and Municipal bonds, the proceeds of which are used to construct roads, streets, water systems, irrigation projects, school and other public buildings; Railroad bonds, covering maintenance of way, new equipment, building of new lines, stations, bridges, viaducts, terminals; Public Utility bonds, issued to raise funds for extensions of power lines, new power house, dam construction; mortgages on buildings; and other approved projects, in all of which the contractor is vitally interested.

It is, undoubtedly, a fact that the funds invested by insurance companies have been a great contribution to the financing of public and private projects which have carried this country so far along the road of development and prosperity.



B UILDING is the art of erecting structures. For many reasons it is often necessary to take down a building. Perhaps an old building has outlived its economic usefulness and its place is to be taken by a modern structure. This is often the case in old residential neighborhoods that are changing to commercial zones.

There are three ways of removing a building from a site. One is to move it bodily to some other site. Another article in this issue illustrates some very interesting examples of this sort of work.

The second operation is demolishing, that is, razing the structure without the thought of saving any material. In the case of concrete buildings it is necessary to utterly demolish them as no section of it can be used again for another building.

The third operation, if we are permitted to coin a new word, we will call the "deconstruction" of buildings. That is, the careful taking down of each part so that it may be used again in another construction.

A most interesting example of the latter is shown in the picture above where a handsome bank building of granite was being razed to make room for a new and more elaborate home — a twenty-one story building, the old home being only a three-story.

The building pictured here shows how carefully the old home of the Illinois Trust and Savings Co. of Chicago was carefully deconstructed. Observe use of derricks, etc.

In the case of demolishing a reinforced concrete building, compressed air has come into use and our illustration shows a few of these compressed air paving breakers at work demolishing the wall; the rods were cut with chisel ends in the same tool.

Another method is to use electric drills for cutting big sections and then cutting the reinforcing rods by an acetylene torch and throwing down the wall and floors in pieces. The compressed air hammer breaks off small pieces which are easily removed.

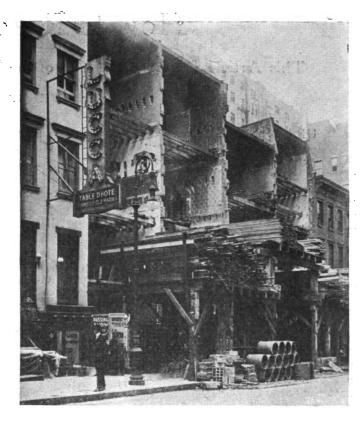
In every case of razing of the building, no matter for what purpose, it is always well as a measure of safety to build a substantial sidewalk shed and to avoid accidents at night, and it is a wise precaution to have it illuminated. It is also a good idea to erect a temporary fence around the entire site to prevent any trespassing, and as a matter of safeguarding the public. Such a fence should be at least eight feet high and provided with either hinged or sliding doors at convenient places. Examples of shed and fence are shown in the illustrations.

When the building that is to be demolished is higher than any of the adjoining ones, precautions should be taken against injuring them. Skylights should be carefully covered. In some cases it is well to build a temporary roof over the roof of the adjoining structure.

Another point to look after is the safety of your workmen. Proper scaffolding should be erected just the same as for the erection of a building. All the floor openings should be covered until it is time to tear down the joists. It is unwise practice to store any taken down material on the floor.

The Deconstruction and Demolishing of Buildings

Some Precautions to be Observed for Safety and Economy





How to Read a Survey

This Article Explains the Use of the Transit-Level During Construction

By J. LAWRENCE MICHAELS

UR last article explained the use of the level in determining the rise and fall of a plot of ground before building. This taking of the levels finishes the pre-construction work. But by no means, is the use of the instrument to be dispensed with.

When footings are being laid and foundations erected, the builder should keep close check on such walls, to make sure they are being built on the lines laid out for them, and do not encroach on adjoining property. It is always best to use the "safety first" method of building a few inches inside of lot lines where possible, as this will eliminate the danger of encroachments, to a large extent.

Fig. 1 shows the next step in leveling work. After the first or street floor beams are on the house, beam levels must be taken. This is done to prevent one corner of the house from being higher than the other.

When leveling for foundation or beam levels, the level rod or tape should be held on the four corners of the house and the levels read and figured as done in taking levels in the staking out process.

Fig. 1 shows the transitlevel set up at a point outside the plot of ground, which permits clear sight of all the corners where levels must be taken. The assistant is holding the level rod on the front corner, the bottom of the rod being on a level with the bottom of the beam. The target can be lowered and moved up or down as signalled by the transitman, but in this case, a pencil is being used. This about completes the leveling work.

There is another level that will be useful to note and that is, the depth of the sewer that may run through the street on which the house is being erected. This information will come in very useful when dig-

ging to install sewerage systems in the new building.

This describes the use of the transit-level in taking levels. The work is done in the same manner when using the level instrument, as shown in Fig. 2. This is set and leveled up just as was the transit-level, by manipulating the thumb screws, A, the thumbs of the operator moving either toward or away from each other. This should be done until the bubble in the spirit level, H, secured beneath the telescope is in the center.

When the telescope is level, the screws may be tightened just enough to prevent the head plate, B, from shaking. The operator, once again glancing at the bubble to check its accuracy, is ready to read the levels.

Screw marked C, permits the telescope to turn on the level bar, D, thus enabling the operator to lo-

cate the level rod, by looking through the telescope. Sighting it, screw C, is tightened, and screw E, turned until level rod is on line with the vertical hairline in the telescope.

Clear focus is gained by turning Screw F, just as is done with a pair of field glasses. Levels are then taken just as was done with the transit-level. Screw G permits adjustment of the hairline in the telescope to the eye of the operator, so that they stand out plainer.

In cases where the walls are erected on or close to the lot line, it will be difficult to get wall measurements, as the wall, of course, will interfere. In such cases, we must resort to a little trick, by placing another mark to one side of the original lot line cross cut on which to set up the transit for taking measurements.

This mark is set off to one side a certain distance, which should be enough to permit

clear vision past the obstructing wall and then measurements can be made from the line of the extra mark. This is called an "offset" and the distance from the true mark is called the "layover."

It must be remembered that after offsets have been taken from this line, that it is necessary to deduct from the measurement secured the amount of the distance of layover, as doing this, gives the true measurement just the same as it would be if taken from the lot line cross mark.

It is possible, where the wall is but a few inches from the lot line to use a folding rule in taking measurements, known as offsets. This can be done by one man, where using the steel tape requires two; one to hold the zero end against the wall, and the other to work the pencil along the tape so as to find the exact distance in feet and inches.

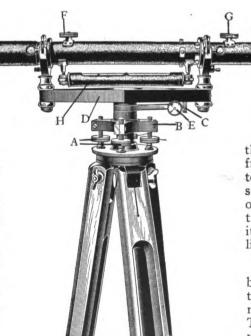


Fig. 2 shows a level. It is somewhat similar to a transit, but cannot be used as such. Levelling screws are marked A, B—Center Support Plate, C—Level Bar Screw, D—Level Bar, E—Level Bar Tangent Screw, F—Focusing Screw, G—Hairline Adjustment Screw, H—Spirit Bubble Level, I—Telescope Glass Protector, when this is removed sunshade is attached in place.



Fig. 1 illustrates the correct method of holding level rod on corner of uncompleted building to obtain first floor levels. Note level set up for taking readings.

Fig. 3 shows the method of holding the pencil and tape. The transitman moves the pencil right or left as done before and when the pencil is on line, signals the man holding it, who then reads the measurements secured. This is done at all projecting points on the wall, such as porch projections, bay windows, etc., not forgetting to take offsets at each end of house.

To find out if the overhanging roof or other projections such as the leaders, eaves, etc., overlap the lot line or not, we plumb down the extreme outer edge by holding a rule or tape on the wall underneath; the transitman sighting the vertical hairline in the telescope on extreme end of overhanging point and plumbing this down to rule or tape on wall below.

When the side wall offsets are completed, the instrument should be set up on a stake or fixed point in rear of building and the rear offsets taken, just as was done on the sides. When all offsets have been taken, the building should be measured by measuring around the whole house.

Where two or more houses are being erected on lots adjoining

each other, and where party walls are being erected, the method of taking offset measurements is a little more difficult. Each lot line has a crosscut, or should have had one cut into the pavement at the time the lot was staked out. this cut is accurate, it should be in the center of the party wall. A layover is made as described before from a point know to be accurate. and a distance measured over to permit clear vision past the wall, a point being given on the line by the transit. Offsets are then taken on the wall inside the building itself.

Should it be dark in the interior of a building, it will be found helpful to the transitman for the man holding the pencil on tape to use a flashlight or match behind the pencil to show it up plainly.

Builders can make their work much easier and at the same time insure the certainty of accurate measurements by following the instructions set forth herein. Encroaching walls and eaves that project over onto a neighboring piece of property will be prevented and much time, trouble, labor and expense saved.

A small point to be remembered is to adjust the telescope of either the transit-level or level, to the eye, by using the grooved rear eyepiece, which slides in and out. By moving this the hairlines can be brought into sharp relief to suit the eye of transitman. Of course, some instruments have a rear screw G on the top of telescope for this purpose and then it is of course more easily adjusted.

Care must be taken in handling the transit, as too violent a jar is liable to throw it out of adjustment.

To get the best results, proper equipment and good care of it will greatly aid. The builder's surveying equipment should consist of the following: A transit-level or both transit and level, two level rods, a plumb-bob for every man doing survey work, two or more steel tapes, a folding rule for each man, a tape repair kit and spare plumb-bob cord, in case the cords fray and break, as often happens. The plumb-bob should never be dropped as the point is easily bent or thrown out of center, this causing

faulty point getting and waste of time.

Vernier plate reading glass should always be kept clean so that there is little chance of misreading the angles due to obstructed vision. Should anything on the instrument get out of adjustment or break, it would be a wise policy for the builder to send it back to its manufacturer for repairs as any attempt he might make to repair the damage might injure the instrument more.

It should be remembered to keep steel tapes clean and free from rust. There is no surer way to make mistakes in reading measurements than to permit a wet tape to be placed away without rubbing it dry. Errors of this kind can cause unlimited trouble and inconvenience, besides opening the way for endless litigation over a few inches encroachment on adjoining land.

Our next article will cover one of the most important subjects in reading surveys and that is the locations of monuments, where and how to find them and how to use them after they are found.



Fig. 3 shows the proper way to hold the pencil on tape in taking offsets from side of building. The zero end of the tape is held by the helper, while the rod-man holds and moves the pencil as directed by the transit-man.

Preparing a Carpenter's Estimate

Describing a Simple Method of Listing Prices
Suitable for the Small Contractor

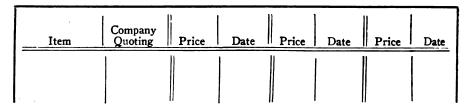
By EDWARD W. LaRUE

►HERE are many contractors and engineers who contract to do work on a large scale and handle to completion the whole of a construction job without the assistance or cooperation of any Many more consubcontractors. tractors, however, specialize on a particular line of work, such as carpentry, roofing, plumbing and heating, etc. The subcontractor is probably kept as busy as the big contractor because of the fact that he generally attends to every detail of his business personally, from the office work to the superintending of the job.

The estimating of ordinary dwellings and also some of the larger buildings, the carpenter contractor in all probability spends more time in preparing his estimate of labor and quantities than any other of the subcontractors. This is due to the many comparatively small details that must be taken into consideration and also to the difference in time rates for the various details that will be under construction. If the carpenter spends more time at his desk than any one of his co-workers, he should devote some thought to a system that would save him time and make his work as simple as possible.

There are two big things to be considered in making the estimate and they are labor and materials. Material can, in almost every case, be figured quite accurately and the material cost in almost all cases where experienced men are bidding would be within a few dollars of their respective bids.

The labor item is the greatest factor in underestimating a competitive bidder. The contractor who works on a large scale and who executes hundreds of thousands of dollars' worth of work each year, always has on each job a manager or superintendent and a timekeeper, who aid him in keeping a labor cost record and other data that will be of future use. This facility is not possible with the subcontractor who employs twenty or twenty-five men, because it is not con-



venient for him to see all of the details of progress and attend to business affairs at the same time. It is practical, however, for him to make brief notes at odd times on the account of time consumed on a certain unit of work.

THE best aid toward estimating labor cost is to hire first-class, dependable men. A man cannot be judged as an expert mechanic by first appearances, but upon finding out that he is such a workman, an endeavor should be made to keep him always on the payroll. It is not important that the workman be exceptionally rapid in his work, but he should be a steady plodder and be able to handle a job without spending too much time in thinking how to go about doing it.

Another method that is beneficial to an employer is to keep on hand a certain number of apprentices and to try to keep these fellows in his employ long after they have fully learned their trade. By keeping these men, they will have been acustomed to the type of buildings their employer erects and they will be more efficient than an outsider.

This matter pertaining to the experienced carpenter is related in an effort to impress upon the mind of the employer that he should know his men and the kind and efficiency of their work. After he has acquainted himself with this knowledge, he has a very substantial basis on which to estimate his labor cost and his chance for becoming a successful contractor is greatly improved upon. It is conceded that the question of labor cost is the greatest difficulty the carpenter contractor encounters, therefore his efforts to eliminate this difficulty should be seriously considered.

After the labor cost has been analyzed as much as possible, the material cost must be considered. When estimating the cost of a proposed structure, the material cost, of course, would be made first, but the labor cost appears first in this article because it is the most important both as a monetary item and as the greatest difficulty to overcome.

There have been numerous lists provided of items entering into a carpenter's estimate. These lists are used by estimaters to check off each item as it is computed in order that nothing shall be forgotten in the final estimate. A good plan is to collect a few of these lists together and from these, compile a list which will be more suitable for personal needs.

THE person making the estimate should also have attached to the list mentioned above, another list which will show the names of all materials and the unit price of each. A simple form is shown herewith for that purpose. The company quoting the price should be recorded and each new price and the date that it was given should be marked on the list, keeping the prices corrected to date at all times.

When the board foot measure, lineal and square measure, and all other quantities have been taken from the drawings and simultaneously checked with the first list, the second list is used to compute the cost of the material.

With the experience that the builder has already had relating to labor costs from previous work, combined with these two lists, an accurate estimate can be formed. This completes a system that is very simple, but which contains practically every requisite necessary to form an estimate in a quick and convenient manner.

MASONRY

Practical Information on Materials and Latest Construction Methods



Saving the Old Wall

N the heart of New York's famous theatre district where congested street traffic handicaps building operations by hindering the hauling and unloading of materials and where loss of time through such handicaps means loss of money to both owner and contractor, a novel salvaging operation was recently executed.

The tentative plans for the enlargement called for the remodeling of the existent building on 42d Street and the reconstruction of the newly acquired structure which had formerly been a garage, fronting on 43d Street.

The contract for the job was let to Rheinstein & Haas, İnc., Build-

Suvan, that concern's superintendent, the work of remodeling and rebuilding was started.

Before wreckers were put to work to demolish the old garage, an inspection was made to determine what parts, if any, of the building it might be practicable to save and thereby cut costs and save

It was found that the two side walls were of sturdy brick construction, twelve inches thick and were in good condition, so it was decided to retain them, while the front and rear walls and the interior were condemned to go.

One of the two walls stands flush against the adjoining building on the east side of the property and the other stands independent, being separated by a twelve-foot wide alley from a theatre on the adjacent property on the west side.

As the work of ripping out the interior progressed, preparations were made for the bracing of the two walls and before the floor beams were entirely removed a network of shoring and bracing was erected.

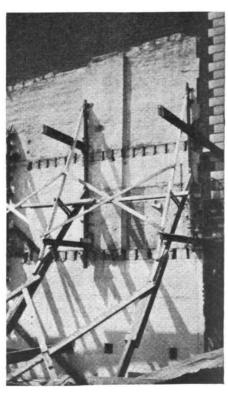
The east wall was shored up simply by running diagonal braces of heavy timber against it from the cellar, but the other wall presented a slightly more complicated prob-lem, as it had to be braced on both sides.

This was done by cutting through the wall at the second and third floor levels at intervals of about ten feet and running heavy beams through to the wall of the theatre building across the alley.

ers, and under the direction of Mr. Heavy timbers were then run up perpendicularly on both sides and secured to the horizontal braces.

> These horizontal braces served to steady the wall on the alley side and on the inside heavy timber shores were then put in place against the perpendicular supports at an angle. This bracing was further strengthened and steadied by lighter truss work.

> This supporting framework remained in position until the new floor beams of the rebuilt interior were laid and was then removed. leaving the walls as strong and true as the day they were originally built and at a considerable saving of bricklayers' work at \$14 per.



THE author claims for this the very best possible arrangement of furnace and pipes leading to and from it. Runs of pipe are short and very direct. It is the heating system in his new home and he knows that it works to perfection. Some good points are given about installing a successful hot air heating system. It will pay you to read this article.

Heating a Small House by Hot Air

Showing Special Features of the General Arrangement of Warm Air Heating Pipes and the Cold Air Returns From the Different Parts of the House

By I. P. HICKS

HE basement plan shows arrangement of piping used in what I call my Model Bungalow. This was described in the March issue of BUILDING AGE and now that the fall season is here, the little description of my heating system will, I think, be also of interest.

R1 supplies heat to the living room, R2 to the front bedroom, R3 to the bath room, R4 to the dining room, R5 and 6 to the rear bedroom and the kitchen, R7 to the finished room on the second floor.

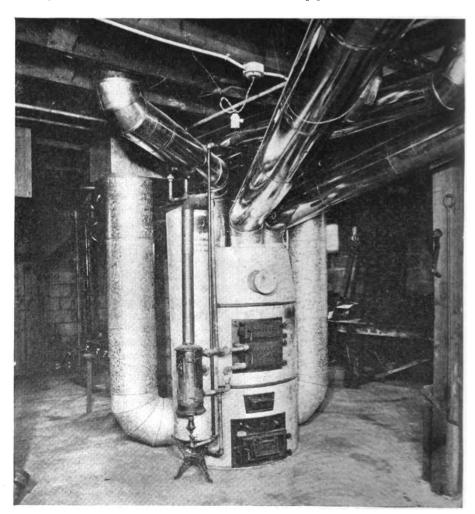
The furnace takes its cold air supply from two opposite sides; the cold air entering at the bottom from large vertical pipes which extend to the ceiling of the basement, connecting with square or rectangular galvanized iron boxes into which the cold air pipes from the different parts of the house are connected.

C1 takes cold air from the living room and front bedroom and connects with box 1. C2 takes cold air from under the seat in the dining room, connecting with box 1. C3 and C3 is a double run of pipe taking cold air from the hall and bathroom and connects with box 2. C3 takes cold air both from the dining room and the rear bedroom connecting with box 2.

The cold air being taken from so many and varied parts of the house with cold air pipes of the same capacity as the heating pipes and in such a direct manner, there are no rooms in the house that are hard to heat. Open any of the registers and the heat responds at once and as much of it as anyone could ask for. Further more we are thoroughly convinced that it does it with less fuel.

Ordinarily there is not enough attention paid to planning out the best way of taking the cold air out of the rooms to be heated. If there is no way for cold air to get out of the room it will be very difficult to force warm air into it. That is one reason why some furnaces have to be continually forced to make them heat.

Better spend an extra \$20 or \$25 and have a perfect cold-air system—without it your furnace will never give the best results. A perfectly installed furnace takes the cold air out of the rooms through its cold air supply and sends it back into the rooms in a heated state through the warm air pipes.



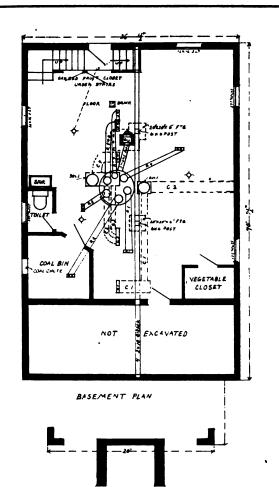
Here is a picture of Mr. Hicks' furnace, which shows the arrangement of the piping that so efficiently heats his house.

Anybody will see that the most perfect arrangement of pipes the more successful will be the working of furnace. Many a furnace has been condemned when it was the fault of the method of setting it up and running the pipes more than it was the furnace.

The defective planning of pipe lines, both warm air and cold air, and locating the furnace in a bad position, are things that may make the best furnace in the world fail.

If you have a flue 8x12 inches never run the smoke pipe into the chimney on the 8-inch side. You might think this would make no difference. Take our advice and never do it. From some cause or other it retards the draft, and sometimes even causes a furnace to smoke.

No furnace flue should be smaller than 8x12 inches, inside measure, and there should be no other pipes to enter this flue. Nobody should take the least possible chance of letting

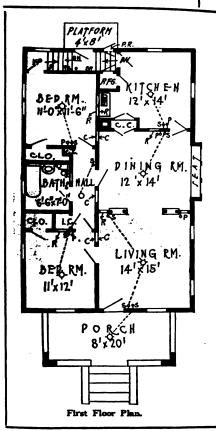


installation of our furnace. The pipes are all covered with asbestos paper, but were not covered when the photo was taken.

The coal bin is covered on the outside with asbestos paper so that it is dust proof. Where the one pipe passes through over top of coal bin it is made absolutely fireproof with asbestos lining, so there can be no objection regarding it from this standpoint.

The basement has an 8-foot ceiling so that all pipes are well above a man's head. There are no pipes to dodge under.

The first and second floor plans of this house are shown and the locations of the various hot air registers are indicated by R, and the return or cold air register by C. The unfinished attic space has no register but even this is not uncomfortable if the bedroom door is left open and the hot air allowed to circulate for a time.

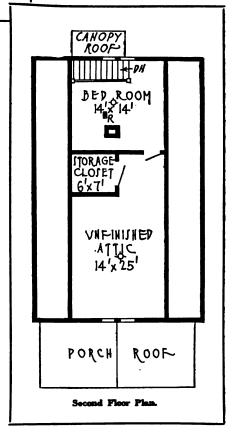


anything stand in the way of having a furnace that will work to the highest degree of satisfaction.

When they work perfectly they are a pleasure and you enjoy the comforts that they give you in the way of heat with the least effort on your part. But oh, if they don't work, then what? They are a curse to the house and everybody that lives in it. This may be putting it rather strong but it is a fact just the same.

Don't be afraid to spend a few dollars more to have your furnace put up right, you will save the extra cost on your first winter's supply of coal besides getting your money's worth in added comfort and convenience. You will also be saved a lot of disagreeable talk about some rooms in the house that just can't be heated, or that the furnace is taking too much coal and giving insufficient heat, etc.

The photograph and the accompanying drawings show the complete



CONCRETE

Form Work-Reinforcing Methods Monolithic and Block Construction



Cold Weather No Bar to Successful Concrete Construction

ESITATION on the part of owners to start new construction, and the stoppage ot actual building operations on the part of others has, in the past, been a custom rather than an actual necessity. Eight months' work and four months "wintering" seems to have been the contractor's fateand quite frequently his financial ruination. Interest and depreciation of idle equipment with the added overhead of a skeleton organization, were his yearly burdens. He was obliged to disband his construction forces which he had spent months in assembling, organizing and perfecting.

utstatistion of the birms * 11; for the first in the firs

The loss to his men was as great, proportionately, as his own. The yearly unemployment situation, which has been annually a national problem, is traceable in a large measure directly to this general shutdown of construction activity during the Winter. Can there be any wonder at the dissatisfaction of the wage earner at such treatment?

And, on the other hand, who was obliged finally, to bear this added expense of increase in rate due to lack of continued employment? The client, being served by the contractor, clearly pays this added increment in his construction projects. Not only has his first cost been thus materially increased, but the several months yearly delay has cut into his production and subsequent profits to a degree.

Cessation of construction on account of Winter weather is neither

necessary nor advisable. Simple precautionary measures, such as heating the aggregates and using salamanders in the structure where the new concrete is being placed will insure protection during the hardening process. To prevent freezing before setting is the object.

The Turner Construction Company of New York, has erected many concrete structures in severe cold weather and the experience has been summed up in a set of instructions for their superintendents as follows:

1. Aggregates are heated to best advantage by 1½-inch steam pipes laid as a grill under the piles or by a 6-ft. length of perforated pipe inserted into the pile.

- 2. Water is heated by running a 1½-inch steam pipe into the water barrel.
- 3. A 50-horsepower boiler carrying 50 to 60 pounds of steam is required for a large job, but an 18 to 25-horsepower boiler is sufficient for jobs of not more than 5,000 square feet of floor area.
- 4. One salamander is usually sufficient for 300 square feet of floor area and a heat hole should be provided for each salamander.
- 5. Columns should be concreted the same as the floor and column tamping continued for an hour or more after the floor is completed.
- 6. Bases of exterior columns are most difficult to protect and in ex-



Preparation is the keynote of successful concrete work in cold weather. Here coke stoves are being put in readiness for heating enclosure where concrete block walls are being laid.

tremely cold weather, a salamander should be placed on two sides of exterior columns.

- 7. For unusual speed or cold weather or when monolithic walls are carried up, the lower floor should be curtained and salamanders placed at exterior columns.
- 8. Apply fuel to salamanders frequently and in small quantities to minimize smoke and provide uniform temperature.
- 9. Water barrels should be provided to extinguish fires and care should be taken to secure canvas against blowing against salamanders.
- 10. A detailed temperature record should be kept showing date,



Hot water is necessary for winter concreting. Here it is being heated in pipe coils in which a fire has been kindled.



Concrete mixing in winter time is shown in this picture. Here the aggregate is being heated by being placed on metal pipe in which fire has been kindled.

hour, outside temperature, temperature at bottoms of columns, underside of slab, under the canvas over the slab, temperature of concrete as deposited and, especially, temperature at bases of exterior columns on windward side of building.

These suggestions have also met the approval of the Portland Cement Association who have been advocating not only the possibility but also the advantage of continuous concrete work throughout the Winter months.

In order to place concrete successfully in cold weather, it is necessary to be prepared to use somewhat different methods than in Summer months. The fundamentals of these methods are easi-

ly comprehended by an understanding of the action of concrete in hardening.

Hardening of concrete is not a process of drying out as some people suppose, but is a chemical reaction between the cement and the water used in the mixing. Two things are necessary for proper hardening—namely, warmth and moisture.

Low temperatures will retard the hardening of concrete, extreme cold will prevent it altogether. Since water is necessary for the chemical action of hardening, evaporation of the water used in mixing the concrete must be prevented. This is often done by keeping the surface covered with wet sand, saw-dust, or burlap. As

the temperature is lowered and the moisture content is reduced, the gain in strength and the entire hardening process become much slower and practically cease when the temperature of the water used in mixing falls to the freezing point.

If concrete that has frozen once is thawed out and protected from freezing again, it will harden properly providing no appreciable loss of water used in mixing has occurred. In this case, the hardening process is merely suspended during the frozen period. However, if alternate freezing and thawing occur several times, the concrete will be seriously injured and may have to be torn out. The exact period that may be allowed to elapse between placing concrete and subjecting it to freezing temperature cannot be definitely stated because of the influence of unknown variations in temperatures and other conditions. However, experience shows that this period should never be less than 48 hours and if the temperature average below freezing 3 to 5 days should be allowed.

Since warmth and moisture are required for the proper hardening of concrete, cold weather work should be planned with those necessities in view. The methods to be used on any particular job depend, of course, upon the local conditions. Both the mixing water and the aggregates should be heated, but it is well to keep it in a warm place for a few hours before it is used.



CARPENTRY

Good Practice in Frame Construction and Finish

Storm Doors

November Is the Time for This Kind of Work, This Article Tells How They May Be Made and Set

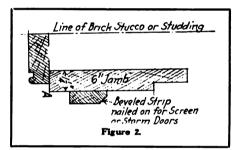
By OWEN B. MAGINNIS

HE Summer and Fall pass each year and Winter looms and approaches. It is then that all storekeepers and householders realize that the time has arrived to remove awnings and screens from windows and take down the screen doors, which, although useful in warm, fine weather, are useless and deteriorate if exposed under the wet, cold and snowy conditions which prevail in winter.

As this work comes within the scope of and really is the task of carpenters, builders and contractors, it is fit at this time of the year to touch on the subject and note some details in regard to it.

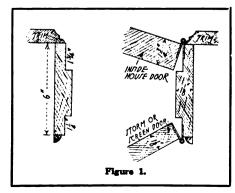
There are many forms of storm doors, ranging from the simplest battened door made of 7/8-in. x 4-in. tongued and grooved flooring or ceiling to those of hardwood panelling and plate glass so often noticed on banks, department stores and office building entrances, all of which serve their general purpose of excluding cold, rain and snow—so we must start with the simplest form, namely that for which there is the most demand and which would, of course, be that of the home owner, especially of the small 5, 6, 8 or 10-room houses.

At the outset I might state that all sets of outer door jambs, ought to be made with a rabbet on the outer edges into which the storm



and screen door may fit, as on Fig. 1. Strange to say, on most small houses this is rarely provided, although the cost is trivial.

As seen all outer jambs should be double-rabbetted inside and out, and the outer joint closed with a quarter round or molding. In the absence of this essential rabbet a 1/2-in. strip about 1¼-in. wide may be nailed on the faces of jambs far enough out from the inner door to leave room for the door knob, as shown in Fig. 2, or if desired, the strip may be kept to the edge A and the screen and storm doors hung



to the outside casing but this is not good mechanical practice — best keep strip back.

The storm doors for ordinary small houses can be of the cheapest form, made up of any widths of beaded 7/8-in. or 1-1/8-in. tongued and grooved ceiling or flooring cross-battened and braced so as not to sag out of shape, and put together after the method shown in Fig. 3, which is strong if the battens and braces be screwed on; this being preferable to nailing although clout and wire nails may be used—same going through the doors and clinched on outside. This is a cheap but an unsightly job.

For wide openings 4 feet and over, two doors are made and hinged one on each jamb and may be employed with an astragal or strip at the center meeting joint, this method is to be commended as only half the opening is exposed for entrance or exit, and the house thereby is kept much warmer and coal saved.

It might here be stated that every dwelling, if the owner can afford it, should as soon as possible after he has acquired possession be provided with screens and storm sashes for all windows and screen and storm doors. The cost is not much, averaging \$100.00 put up for storm sashes and doors, screens much less. Every house owner

should have both and keep them constantly in good condition and repair. Now is the time to solicit this sort of trade.

Concerning enclosed storm doors or outer vestibules, as they might properly be termed, they may be as simple as possible when made of matched stuff (preferably 7/8-in. x 3-in. or 4-in. in width on account of the little shrinkage in the narrower material) and, screwed or nailed together there should be three sections, the two sides about 2-in.-6-in. in width and the front the width of the outside casings of each entrance door. When ready to put up it will be found that hooks and eyes are handiest for holding the sections together and to the house. Have two or three to each corner or angle. The hooks are screwed into the sections inside and eyes to the door casings, thus leaving no mark to mar the entrance. Brass hooks and eyes should be used.

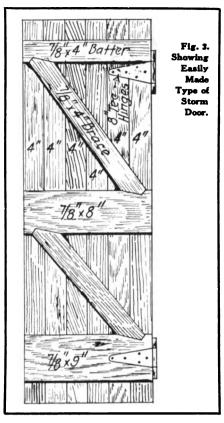
All storm enclosures on cottage and bungalow piazzas and porches may reach from floor to ceiling, but where they do not a roof must be provided for such storm enclosure.

Every storm door and enclosure should have a small window to give light within and enable occupants

VERY year the equivalent of a city of more than 500 buildings is demolished on Manhattan Island, New York City, and every year a new city of the most imposing types of construction rises to replace the demolished city.

This annual disappearance and reappearance of a vast city within a city offers an interesting revelation of the tremendous forces which constantly are exerted to provide building facilities for Manhattan. In no city in the world are such Herculean processes of demolition and rebuilding at work as there are within the limited confines of this Island.

According to statistics made public by S. W. Straus & Co., from compilations by the Building Department of the Borough of Manhattan, there were during the ten-



to see out. For fastening good locks with knobs and spindle are best, yet for cheapness inside hooks and eyes may be used.

To make the doors self closing coil springs may be put on, but these rust rapidly, so the writer

has found the expedient of an old sash weight and cord much more The jamb against serviceable. which the door closes is bored through with a half-inch bit two inches from the head and a pulley, either of sash or awning variety placed on the inside casing just under the hole. The door is bored to suit and a piece of ordinary sash cord put through and knotted on the outside. Inside the weight is attached so as to pull the door shut when anyone passes through. The weight for sake of appearance may be either boxed in or placed in a piece of galvanized iron pipe which prevents it from swinging about and making noise.

Panelling, moldings or any kind of ornament or fancy work on storm doors or enclosures are not to be recommended. They only catch rain and snow and rot quickly. All outside surfaces should be as smooth as possible, even beading is objectionable and all these details need good painting regularly.

Builders and mechanics will gain increased information by observing details of this description now existing from revolving doors down to the simplest made. We all have to make and put them up and take them down now and then, so it is wise to get some knowledge of them.

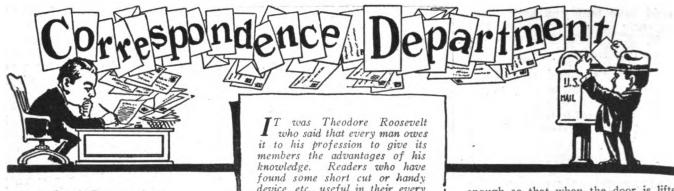
Rebuilding a City

year period 1913 to 1923, a total of 3,609 buildings of all types completed, against a total of 5,736 of all types demolished. These figures include 235 one and two-family dwellings erected, against 2,242 demolished, and 926 tenements and apartments erected, against 1,258 demolished.

While the figures call attention to the rapid disappearance of one and two-family houses in Manhattan, it is significant that these old residences are seldom replaced with tenements or apartments. They are usually removed to make room for commercial structures.

It is also noticeable that during the decade, 332 more tenement and apartment buildings were destroyed than were erected. This decrease in the number of residential types is offset by the fact that generally two or more old tenements or apartments, housing a few families, are demolished to make room for one large, modern building sometimes housing hundreds of families. If two old buildings, for example, housing 25 families in all give way to one modern building housing 100 families, the gain in housing space is only for 75 additional families.

According to the records of the Manhattan Borough Building Department, tenements, apartments and one and two-family houses, providing for 110,549 families, have been erected since the tax exemption law on residential building went into effect, Feb. 26, 1921.



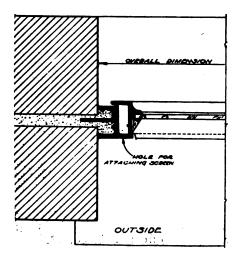
Self Centering Lock on Steel Window

C ONTRACTORS and builders will be interested in the new jamb detail and "self centering" lock recently incorporated into the design of a well known steel basement window. This particular window has an equal leg channel frame construction at the head and sill which makes it possible to set the window without bracing.

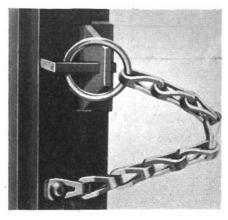
With this new jamb it is not necessary for the mason to plumb the jamb. The two channel legs provide a guide for the mason when he lays up the wall. An extending fin between the two channel legs at the jambs sets into the wall and assures solid anchorage.

Practically every builder has at some time or other discovered that after a steel basement window has been installed the jambs of the wall have been built so close to the ventilator as to bind it. This difficulty is entirely eliminated when a window with a channel frame is used. The channel legs prevent the mason from building the wall so close as to hinder the easy operation of the ventilator.

A casual examination will disclose to the contractor or builder the advantages of the "self centering" lock. At the sill of the sash a shallow slot has been cut. This straddles a slotted bracket with tapering edges, solidly riveted to the



who said that every man owes it to his profession to give its members the advantages of his knowledge. Readers who have found some short cut or handy device, etc., useful in their every day work, should spread the news to their brothers in the industry. Building Age would like to publish such little items for the benefit of all, so send in your scheme. Never mind if you are note used to writing for publication—we will put it in shape, but send along a sketch or photo if possible. Of course, we will pay our regular space rate for your contribution.



frame at the sill and, by guiding the sash as it closes, makes it accurately seat. This new locking device is shown in the illustration.—N. A. Harris.

A Handy Jack

THE jack shown in the accompanying illustration for holding crated plate glass on edge, is made on the principle of a handy door-jack, only on a larger scale. For the benefit of those who may not know of the handy door-jack, we would say that it is just what its name implies—handy. It is used for fitting doors.

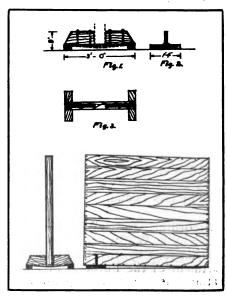
Place the door into the jack, just as we show the crate of plate glass in Figs. 4 and 5. This will hold the door on edge so it can be planed off. The spring board must be flexible enough so that the weight of the door will spring it down, and thus clamp the door in an upright position.

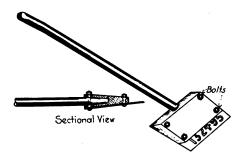
An easy way is to kerf the springboard between the jaws of the jack. The spring-board, however, must be stiff enough so that when the door is lifted from the jack, the clamps will automatically release the door. By using nails in place of bolts and screws, and cutting down the size by about 2/5, the directions below will be sufficient to aid any one in making a handy door-jack.

Fig. 1 shows a side view. Note that the blocks at the ends are beveled at the bottom. The dotted lines show the effect that the weight of the glass has on the spring-board, and how this securely clamps the crate into an upright position. Figs. 4 and 5 will make this clear. The jaws of the clamp are bolted to the spring-board as indicated by the dotted lines in Fig. 1.

Fig. 2 shows the end view, and Fig. 3 the plan. The spring-board is fastened to the end blocks with wood screws. This board should be dressed down until the weight of the glass will easily spring it, but at the same time it must have enough strength to carry the load. Use good tough white oak material.

If the sides of the crate are made of very light boards, the jack should be placed right at the end so that it will clamp against the end piece. Fig. 5 shows the jack set back from the end a little. The jaws should be set apart enough to receive the largest ordinary glass-crate. For the smaller crates, simply place a block of wood between one of the jaws and the crate.—H. H. Siegele.





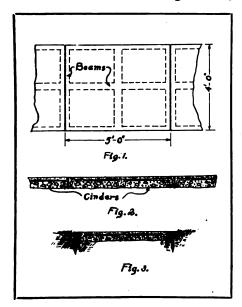
Simply Made Scraper

A MOST efficient tool for scraping the grease and oily dirt from the cement floor of the garage is a steel bladed scraper. The tool shown in the illustration below is an inexpensive scraper, which consists of a blade made from an old license plate, with a broom or other suitable handle and a body of wood, to which the license plate is screwed.

When the edge of the plate is scraped off, it is only necessary to remove the screws and put on another license plate. This tool is also of use in the removal of snow and ice.—G. A. Luers.

Beam Construction for Walks, Cellar Floors and Drives

WORKING in the ruts of established customs often proves to be more expensive than nevessary. There is probably no branch of industry where this is as prevalent as in the building trades. The writer is for substantial construction, but he does not believe in wasting material in order to make a thing look strong. Good judgment seasoned with common sense is the best gauge to be had for ascertaining whether or not one is wasting material,



by going beyond a substantial construc-

The accompanying drawings show a plan and two sections of a beam-construction for sidewalks, which will save the builder approximately fifty per cent. Fig. 1 is a plan of one section of sidewalk, 4 feet by 5 feet. Two adjoining sections are shown, in part. The double lines at the joints indicate expansion joints. The dotted lines show how the beams are located. Fig. 2 is a longitudinal section of the plan just described. The irregular lines represent woven wire fencing, which is used for reinforcing. The heavy dots in the beams show the location of pencil rods.

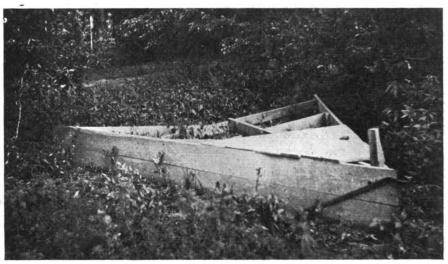
Between the beams, it will be noticed, is a filling of cinders. A wooden form, shaped like the beams of one section of the walk, is set in place, after which the spaces between the beams are filled

as 4 feet from center to center. This would be sufficient for cellar floors that receive just ordinary usage.

In an experiment made with four sections of walk several years ago, the thickness of the top slabs were respectively as follows: 2 inches, 1½ inches, 1 inch and ¾ inch. An examination of the four sections, just before writing this, revealed that the work was still without defect. These sections received the ordinary amount of traffic.—H. H. Siegele.

A Serviceable Snow Plow for Highway Use

THE photo shows a large but simple snow plow which has been used for several seasons on a Nebraska highway, with much success. It consists of two-inch material for the sides with the cross



Something that will sell in November and December

in and thoroughly tamped. When one sections of cinders is in place, the form is lifted out and set for another section, and then the process just described is repeated and repeated until all of the cinders are in place.

Then the reinforcing is laid and the concrete run. Fig. 3 shows a cross section—also the two side forms. The top slab is 1½ inches thick, and after the ½-inch finish is put on it will be 2 inches thick. The size of the beams should be governed by the amount of traffic the walk will be subjected to, for ordinary purposes, 3 inches below the slab is sufficient.

This construction can be used for building drives and cellar floors with good results. The description given for sidewalks will hold good here, excepting the spacing of the beams, which must be regulated by the kind of traffic the work must bear up. For instance, if the traffic is very heavy, the beams must be spaced very close together, say, 16 inches is very light, the spacing may be as wide

from center to center; and, if the traffic ties of one by six-inch lumber and the short platform in front of the same material.

Particular note should be made of the unique bracing effected. This renders the plow, though large, thoroughly able to cope with rough usage. A heavy strap iron bent and bolted in front as shown, furnishes the means for attaching to the tractor.

With this type of plow, as much weight can be applied to the front as necessary. With varying loads possible it is easy to clear roads whether they be covered with but an inch or two of snow, or a foot or more, even when badly drifted.

It is an easy matter to make several of these in spare moments in the shop and they can be sold at a fair profit, in anticipation of the annual snow fall.

The angle formed by the sides is thirty degrees and each side is twelve feet long.—Dale R. Van Horn.

Two Master Builders of Pittsburgh



DAVID T. RIFFLE

CLEVER administration explains how Mr. Riffle keeps in close touch with all details of his work and still finds time to devote to work of associations that are helping the building industry.

Mr. Riffle is in the general contracting business in Pittsburgh. He was president of the Pittsburgh Builders Exchange from 1920 to 1922, and he is now the first vice-president of the National Association of Builders Exchanges, also first vice-president of the National Association of Building Trades Employers.

Amongst some of the important jobs that he has recently finished, is the factory of the Westinghouse Electric Products Co., Mansfield, O.; a five-story reinforced concrete building of 75,000 square feet floor area costing \$250,000. Then there was the Y. M. C. A. Building at Uniontown, Pa., erected at a cost of \$200,000 and the Colored Branch of the Y. M. C. A. at Pittsburgh, Pa., which cost \$250,000.

At the present time, he has under construction, buildings for the Kingsley House Association, comprising a community house, power plant and gymnasium that will cost \$400,000. Also the Donaldson Warehouse, a six-story building, 60 x 260 ft., which is being erected at a cost of \$200,000. HERE is Mr. S. P. Trimble of Wm. F. Trimble & Sons, General Contractors. He was president of the Pittsburgh Builders Exchange from 1915 until 1920.

Amongst some of the most important contracts undertaken by him was the giant Telephone Exchange, originally an eleven-story building. The job was to take off one story and add eleven additional stories, making a building with a total of twenty-one stories. The cost of this job was \$2,000,000.

Then there were the Westinghouse factory building, costing \$300,000 and the Ward Bakery addition, costing \$200,000. He also undertook to remodel and build an addition to Duffs College, this job costing \$75,000.

At the present time he has several jobs under construction, including The Fairfax Telephone Exchange, North Side, Pittsburgh, which is to cost \$500,000, the Braddock Telephone Exchange, Pittsburgh, Pa., a \$300,000 job, and an addition to the Fort Pitt Bedding Company's factory at Pittsburgh, Pa., amounting to \$75,000.

To look after nearly \$1,000,000 worth of construction work at one time is enough to keep a man busy. However, Mr. Trimble manages it and has time to look after the welfare of his fellow builders as well. Proper organization explains his success.



S. P. TRIMBLE

What the Editor Thinks

Let Us Give Thanks

WELL can it be said that every one in the building industry should be thankful this year for the exceptional prosperity we have had. When we gather around the Thanksgiving table enjoying our feast, this year, we can truly do so with the feeling that we have earned it. Not alone in the knowledge that we have not injured anyone in our scramble for wealth, but we have done some real constructive work that has added comfort to many thousands, and also greater wealth to our nation.

When we examine the data in this issue of BUILDING AGE on the need for new construction of various kinds in our country, and find it way up above normal, we have reason for further thanks that our exceptional prosperity will last for many years more.

Forgetting Apprenticeship

WE have had several comments on our stand of dropping the word "apprentice," as a name for young men in the building industry. Calling them anything but apprentice, seems to be the opinion of those who have been most successful in handling young men.

Call them instead "kids," "helpers," "rookies," etc.

We know of one case where a building superintendent was speaking about his "kids" and he proudly showed us some half dozen big strapping six-foot "kids" that were learning the building business and he liked them and could depend upon each one. They were anxious to learn the business and the fraternal feeling was there—it helps—loyalty is worth cultivating.

Another interesting case we heard of was of a painter who called his young men "Dutch Boys" and in many cases they were simply called "Dutchy" and the

boys liked it. They all knew the boy painter of Dutch Boy White Lead. There was a grin all over their faces when they would hear the name applied to them.

The next thing to do is to make the boys more self reliant. Give them something that will make them feel responsibility. As every business man knows, some of the most loyal assistants have been boys of other years who have grown up in their business.

Signing the Building

W^E note with considerable satisfaction that a number of builders are putting their names on the structures that they build. To put up a sign during its construction period is a good advertisement. No man would sign a building unless he was doing good work on it. It is possible to carry this out more completely by also giving the names of the foreman and workmen on the job. Just mere pay does not bring out the best in a workman, but pride does. Play to a workman's pride, pay him good wages and good jobs will be done as speedily as possible.

Winter

Work

RADUALLY the building industry is finding ways and means of working throughout the entire year. In several articles in this issue better methods of doing Winter work are told by a number of writers.

Building contractors should have the proper equipment so that they will be able to tackle any job even in the coldest weather.

Concrete work is perhaps the hardest thing to do in cold weather and yet ways have been found to surmount all difficulties.

There is plenty of work to be done in the shop to keep men busy. Repairing and remodelling work on the interiors of houses is especially in order in the Winter time. The up-to-date builder will have canvassed his prospects and have a number of Winter jobs lined up so that he can keep his crew together. Nothing makes a man so satisfied with his boss, as the knowledge of many good jobs ahead that will mean steady employment.

When no jobs are at hand, it will pay to look over your equipment and have your men put that in first class shape. There are also different specialties that a builder can sell and install in different houses, such as weather-strips, storm doors, screens, built-in fixtures, etc.

Insurance

Protection

THERE are so many risks in the building industry that it is unwise for builders to go along without adequate insurance of different kinds. This is an item that must be properly charged to the job, but one can overpay for this insurance unless a knowledge of rates that apply to each particular job is known.

There is no need of having a policy in force for the full amount when it is not needed. A proper knowledge of rates enables one to save a considerable sum of money annually. In fact, the item is so large on the bigger jobs that it really would pay the larger construction companies to have an insurance expert as he would more than save a very liberal fee.

In a series of articles in this and future issues of BUILDING AGE, we expect to present some reliable information that will enable builders to secure full coverage at the minimum amount of cost.

Quality Pays

I N an interesting article on another page of this issue, a story is told of the success made by a young builder who followed the idea that people are willing to pay a reasonable price for a good article, whether it is clothing, an automobile, or a house. Building up a reputation for only doing a good job is a good plan to follow.

REDUCING UNEMPLOYMENT IN BUILDING TRADES

How Winter Construction Will Help Workmen, Builders and Public

By A. P. GREENSFELDER

Vice-President, Associated General Contractors of America Secretary, Fruin-Conlon, Contracting Company.

NEMPLOYMENT in the construction industry is a luxury that the Nation cannot forever afford. It is a great waste and a vast expense. The waste can be largely eliminated and the cost must be greatly reduced. Unemployment in the construction industry is not a new problem, but it is particularly vital at present, due to the post-war shortage in construction work throughout the United States.

It is appropriate that the construction industry, operating through its National Council, should assume its own burden and attempt to guide its industry toward better standards and finer obligations. It is not sufficient to say that unemployment in the construction industry is not caused or desired by the industry itself. Certainly all branches of the industry would much prefer continuous operation of the many plants manufacturing and fabricating materials and erecting structures. The public wants results and will be insistent in its demands for construction in sufficient quantity, proper quality, and at a fair cost.

Amount

The amount of unemployment is a volume barometer of business. Bank clearings are evidence of the bank's connection with industry, and unemployment in the construction industry goes straight back to reduce the volume of banking. If the payrolls of the construction industry were plotted by weeks, months and years, and the Federal Reserve Bank would have reason to study and predetermine the financial needs of the industry. Chambers of Commerce, the clothing industry, and the department stores

HERE is a clear, interesting statement of facts of the utmost importance to building contractors. At the present time nothing is of so much moment to the building industry as a whole, as the subject of keeping the men employed all the year round.

Lack of continuity of employment, as was brought out in our recent survey, is the most serious objection young men have to entering the building trades. Labor turn over is expensive; it is as bad for the contractor as for the workman.

The interesting remarks and facts stated here were made by Mr. Greensfelder at the recent meeting of the American Construction Council. He points out very clearly the bad results of seasonal employment and gives some constructive suggestions on how this bad situation can be remedied. Every paragraph is worthy of careful consideration.

are merely examples of groups affected by the buying power of employed construction labor.

Unemployment affects not only the amount of labor available and the amount of production and buying power, but presents a social welfare problem equally important. In construction alone it is estimated that approximately 35,000 new skilled workers and 12,000 additional unskilled laborers are required to annually

replace losses by death, retirement and other causes.

The Census Bureau tells us that construction employs 22 per cent. of all skilled and common labor. Increase in population makes a constant demand for construction, while a rising scale of living tends to improve the quality of the work constructed. Fires, depreciation, and obsolescence, with their repairs and alterations is one-seventh of the total volume of annual reconstruction.

An idle hour is an hour lost, and as labor in its final analysis is 95 per cent. of the total cost of construction from mine and forest to finished building, unemployment is a tremendous factor in an annual \$4,000,000,000 program. The annual bill for construction in the United States is about \$200 for each family per year and is reflected through rents, not only of their domicile, but that of the grocer, the butcher and baker, as well as the ways of transportation and public facilities.

Causes

The causes of unemployment are either voluntary or involuntary. Among the voluntary reasons are insubordination, laziness, ambition, as well as the four hundred and fifty labor strikes per Involuntary causes are annum. of two kinds, physical and economic. Among the former may be cited sickness, accidents, inaptitude, lack of training, and age. The latter includes cyclical, seasonal and competitive conditions, as well as the customary or climatic problem of weather.

Voluntary causes are chiefly the result of temperament and factors and phenomena inherent in the human race. As man has

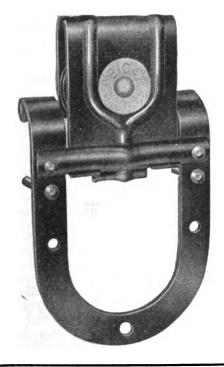
NATIONAL

"Big 4" Door Hangers

10 Reasons for Its Choice

- 1.—The "Big 4" Hanger is built on extremely heavy lines, and in the simplest form of construction
- 2.—It is made entirely of steel
- 3.—Anti-friction-steel roller bearings give a perfectly free motion to the door
- 4.—It is both a rigid and a flexible Hanger
- 5.—Easy to attach—fastened to but one side of the door
- 6.—Door is held closer to the track than with other Hangers
- 7.—Axle has a shoulder on the end to prevent wheel-housing from being pressed together and binding on hub of wheel
- 8.—Axles and rivets are sherardized to prevent rust
- 9.—Wheel and frame are japanned before assembling and wheel
- reamed out after japanning—no japan in the bearings 10.—The two studs, together with the hook turned under the rail, absolutely prevent Hanger from jumping the track





Braced Rail a Fit Mate

- —because brackets are same width and thickness as the Rail itself
- -it is braced below so the screws will hold more than three times as much
- —holes are staggered so screws will not go into the same grain of wood
- -brackets are only 12 inches apart and doubleriveted, giving rigidity
- -millions of feet are in use

Every heavy door you hang that slides along the rail as if it were greased—is an advertisement

It is the moving parts of a building by which people judge the entire job.

See full description of "Big 4" and Braced Rail in the catalog. Sent free.

NATIONAL MANUFACTURING COMPANY **ILLINOIS STERLING**

always had a tendency to wander over the face of the earth and discover and settle in new lands, so even today youth will have its independence and will pioneer on Pullmans in place of mounted crusaders or drivers of ox-drawn wagons. Experience seems to be the only teacher some individuals will respect, and yet histories of countries and books of men will slowly have their effect in conveying through schools and printed pages the penalties of their predecessors.

I NVOLUNTARY physical causes are eminently the problem of the industry itself. Due to the increasing use of machinery, every industry is beginning to realize that modern industrial production must assume the responsibility incident to the employment of its labor. Sickness, accident, old age and unemployment pensions are properly receiving due consideration as part of the expense of production to be borne by the respec-Men may never tive industries. be born equal, but they will demand equal opportunities, and industry must recognize that guidance and training of its employes is one of its functions.

What seemed unpreventable panics are today recognized as preventable, and we have invented a Federal Reserve system of banking to effect this result. We are plotting our cycles of humps and slumps in business with the idea of prevention rather than cure.

We have come to recognize that man is not a fur-bearing animal and need not hibernate as the bears. Deciduous trees and evergreens grow alongside each other, and the latter predominate in cold climates, so it is not an impossible biological problem to keep men warm by working in winter time, and at the same time make it worth while to the employer.

Cost

The cost of unemployment is enormous and is borne largely by the employed. Three million days a year are lost in the building trades due to strikes and are reflected, of course, in the wages of the strikers and in the costs of living for the materials or structures subsequently manufactured by these men. Accidents in the building trades are indicated by the insurance rates, and during 1919 in Massachusetts alone half a million days were lost in five thousand accidents among one hundred and fifty thousand men. Insurance is only one-fourth of the total economic loss.

Unemployment has a moral effect on the stamina of men and is one of the serious social problems of the world today. The post-war, world-wide unemployment hardships will take a generation or two to eliminate.

We are apt to feel that efficiency is a factor of slack times and that men work harder to hold their jobs in dull times and in winter weather. This is perhaps true in a measure, and yet they are equally tempted to stretch out their jobs when they feel that unemployment is likely to reach them.

THE construction industry must learn to evaluate the different factors in the whole labor problem, and to remember that some of them cannot be financially measured. Most men want a chance, not charity.

Vacant lots pay interest and taxes and cannot earn until a designated building is completed, perhaps six months later than it need be. Climatic conditions are not insurmountable. In fact, it is custom, rather than climate, that today delays work in the winter, even in the Southern States. It is only mortar and men's fingers that are affected by the cold, and with modern methods both can be properly guarded at nominal cost.

Remedies

Prescribing remedies for various causes of unemployment is the interesting task of every individual in the industry. Both employer and employe must face the question and co-operate in its solution. It will not do for the representative of labor to make sweeping statements of the responsibility of capital without offering to co-operate in the solution of this manifold question. Farmers and millers have learned

to harvest their grain and store it in elevators throughout the country in order to provide bread not only throughout the year, but through those lean years when crops may be insufficient. So the construction industry must arrange to cut and ship and store lumber, cement, and brick, the same as cotton and corn.

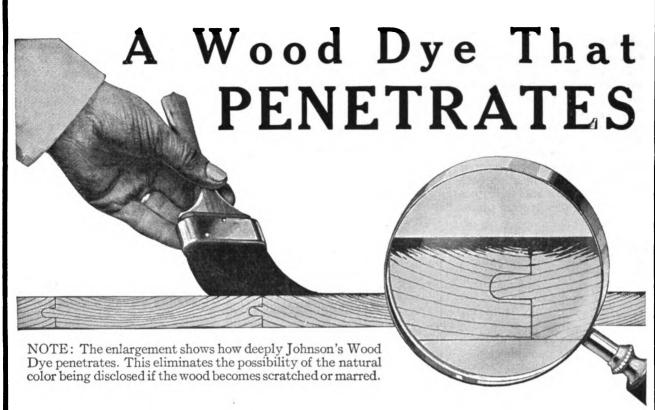
The standardization of ordinary designs and simplification of sizes and types will enable manufacturers and fabricators of construction materials to continuously manufacture and store these articles. Not only will it reduce factory overhead, but it will benefit field service and reduce that element of unemployment known as waiting time for material.

Labor Turnover

Labor turnover goes hand-inhand with unemployment, and when the employer in the construction industry will tabulate the costs due to hiring, instruction, wear and tear on tools, reduced production, accidents, and spoiled work, and finds that they run from ten dollars for unskilled to fifty dollars for skilled labor per capita, he will realize that outside of its faulty management it is an expensive procedure. Labor turnover can be materially reduced by suspending employes in order to insure discipline, rather than permitting their discharge for ordinary offenses by petty foremen.

SAFE practices insure safe profits, and reduction of accidents are not only possible but profitable. Through proper co-operation of entire organizations, an esprit de corps can be generated well worthy of the work.

A few years ago, when post-war unemployment was at its height, President Harding and Secretary Hoover, in communication with forty-eight governors, were able to interest the majority of state highway officials in awarding highway contracts in the early winter. Work awarded in the fall benefits all. When a contractor definitely knows that he has contracts signed and work can proceed as soon as weather and ground conditions permit, he can easily keep a portion of his organization busy preparing his equipment, roughing out the job and storing materials.



JOHNSON'S WOOD DYE

Johnson's Wood Dye is entirely different from the many wood stains and tints on the market. With it inexpensive soft wood such as pine, cypress, fir, etc., may be finished so they are as beautiful as hardwood. Its brings out the beauty of the grain without raising it in the slightest.

Johnson's Wood Dye is a *dye* in every sense of the word. It contains no finish whatsoever and, like most first class products, it answers one purpose only—it dyes the wood—the finish must be applied over it. We recommend Johnson's Varnishes or Johnson's Polishing Wax.

Johnson's Wood Dye goes on easily and quickly without lap or streak. It dries in four hours and will not rub off or smudge. You will find Johnson's Wood Dye a big help in working out color schemes in stained woods. Johnson's Wood Dye is made in 15 beautiful shades, all of which may be lightened, darkened or intermixed. Full directions on the label.

FREE—This Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of the famous experts—illustrated in color. This book is written for the practical man—it gives covering capacity, includes color charts, etc. We will gladly send it free and postpaid. Use coupon at right.



S. C. Johns	on & Son
"The Wood Finish	ing Authorities'
Dept. B. A. 11	RACINE, WIS

Please send me free and postpaid your Book on Wood Pinishing.

Digitized by Google

It will be equally as equitable for the building fraternity to have architects and engineers prepare their plans in the Fall, so the work may be continuous throughout the year. Owners and bankers, building associations, and realtors will not only likewise benefit through assistance in continuous employment throughout the year, but it will react upon their own business. Savings accounts are not built up by unemployed labor. Newspaper advertising is dependent upon continuous employment, and so it goes through the various trends of industry.

NUMEROUS methods are at hand to reduce unemployment in the construction industry. Education of the public through advertising and insistent selling can prove effective agents to attract work. Seasonal discounts among the material manufacturers, as well as contractors, designers and labor. can make a substantial inducement to wavering owners to get work started. Repairs to public buildings, office buildings, and mercantile establishments, as well as public utilities, can be largely arranged for that season when there is the least new construction work. Substantial financial benefit to themselves will result from better service, and there will be a direct benefit to the community of which they are a part.

Good accounting today takes cognizance of depreciation reserves, and it is equally sound economics and proper finance to anticipate requirements, set up reserves for the future, and thus take advantage of opportunities to buy when the markets are ripe. Such savings will pay large dividends.

Public works may be reserved for dull year periods in many cases and held to relieve the stress in busy times and assist quite materially in reducing the unemployment situation. Secretary Hoover has recently called together a committee on seasonal unemployment in the construction industry, composed of representatives of various groups throughout the country, who are now studying the questions and will state the problems. Each group of the industry need not wait, however, on any single effort, but can properly start factfinding commissions for themselves.

We must prevent waste in boom time as well as relieve suffering in times of depression. Economic losses can only be measured for the nation as a whole, and every industry is related to each other. Employment as a business forecaster is aptly shown in charts prepared by the President's Conference on Unemployment.

Hard times dislocate the affairs of many persons otherwise unaffected by seasonal trade fluctua-

Some Advantages of Winter Work

MAXIMUM return from buildings and equipment are realized only by all-year operation.

Labor organization is kept together for contractor and products plant operator. Continual employment means contented and efficient workers and a low cost of labor "turnover."

Buildings are completed earlier—the owner realizes an earlier return on his investment. Residences started in fall or early winter will be completed and ready for sale in the spring, when the homeowning desire is strongest.

tions. When regular income ceases, family, friends and tradesmen are all affected.

Growth of population creates an imperative demand for structural cubic contents and public facilities to serve, and although the square feet per family is being rapidly reduced in modern apartments and country bungalows, the greater demands for better quality and modern appliances probably more than offset this construction decrease.

Assuming the average building wage at \$6.00 a day and a million and a half wage earners, the loss of sixty days each means an annual

tax of a half billion dollars. The difference in cost between summer work and winter work is only a few per cent., and this can be frequently overcome by the increased income enabled by the structure, as well as the decreased cost or saving which such work represents.

There is only ten to twenty per cent. difference in total production between good times and hard times, so that there is only a small variation needed to even the scale. It is the spirited bidding for the ten per cent. shortage which booms the cost for material and labor. Reduction in the number of trades into such crafts as woodworkers, trowel men, metal workers, pipe fitters, etc., will prevent much unemployment and waste of time traveling to and fro between jobs.

The commerce of the country is based on continuous weekly or regular payments, both in purchase of labor and by labor in the purchase of goods, as well as shelter, and any obstruction to the regular flow dams the prosperity of the country. The purchasing power of wages bears a direct influence on unemployment.

S INCE unemployment of capital coincides with or closely follows unemployment of labor, it behooves the entire industry to grapple the problem and smooth the paths. When ten men are unemployed, it starts a ripple on the placid waters of commerce, and unemployment proceeds in arithmetical progression down the ranks of all industry, and it is frequently months before the climb back to normalcy is accomplished.

Efficient management recognizes the need of co-operating not only with its individual labor, but nationally and internationally. American Construction Council in its earnest work of stabilizing the industry can serve as an effective means of spreading the gospel and interchanging thought and experience.

We have many times been hours wise and days foolish. Because labor wants the eight-hour day is not reason why we should suffer them the eight-month year. Let us keep the hammers ringing throughout the twelve months.





A JOURNEYMAN painter who lives in Connecticut asks instruction in the art of collecting from a former employer. But one day's work

Collecting
Wages
in
Connecticut

was done, the employee quitting because he became convinced that his new found boss was "poor pay." \$6 is due for the

work, and remains unpaid, although the employer has frequently promised to settle.

Since we are told that the employer "makes big money contracting" it would seem that judgment against him would be collectible. But the main trouble lies in the point that if he will not voluntarily settle it is almost certain to cost more than \$6 (perhaps several times \$6) to collect what is due. The assistance of an attorney will be practically, although not theoretically, necessary, and quite naturally the attorney's charges will be graduated according to the time taken in collecting, rather than according to the amount collected.

Ordinarily, it is cheapest to "forget" small claims of this kind when it becomes apparent that they are collectible only by legal proceedings. Occasionally, however, a collection firm or collection attorney will be able to secure a settlement with out much trouble. So, it might be well for our friend to consult one.

W ISCONSIN has a statute which makes it unlawful to advertise for workman without stating in the advertisement that a strike or lockout exists

at the place of emvalidity and Effect of Law Govthe fact.

erning Advertising for Workmen law was challenged in the late case of Bier-

sach & Neidermeyer Co. vs. State, 188 Northwestern Reporter, 650. The Wisconsin Supreme Court, however, rules that the law is constitutional—a proper measure protecting workmen against being imported to scenes of strike troubles without previous knowledge on their part. It is further held that the law does not make any unreasonable classification in failing to embrace other

classes of employees, such as clerks, stenographers, etc. The Supreme Court savs:

"It is a well known fact that the labor troubles referred to in the statute contemplate the existence of such troubles in relation mainly to workmen, and by workmen are meant persons employed in manual labor in various avocations where such labor is required, and particularly to those employed in industrial labor.

"Courts also can and must take notice that efforts on the part of employers to hire labor to take the place of those locked out from employment are frequently connected with acts of violence, bloodshed, and breaches of the peace. The existence of lawlessness under conditions as above stated was clearly in the mind of the legislators at the time of the enactment of the statute, and it was the evident intention of the Legislature to meet such situation and to provide protection for the benefit of the public. Without the provisions of this statute, employers who had labor

UILDERS have many legal questions that arise in their daily work. Just what to do and not to do will mean either saving or losing of considerable sums of money. The builder should be fairly well posted on the different points of law regarding contracts, dam-ages, etc. What has happened to other builders is liable to happen to you; therefore, the articles in our legal department will be of interest to all. Mr. Arthur L. H. Street, who conducts this department, will be glad to answer your questions direct by mail and give his opinion as to the correct procedure to steer you out of trouble. Should we publish any of these in BUILDING AGE, they are printed without any name. This printed without any name. Inis service is free. Simply address your inquiry to Legal Depart-ment, BUILDING AGE and THE BUILDERS' JOURNAL, 239 West 39th Street, New York City.

troubles could indiscriminately advertise for help without apprising the prospective employes of actual conditions, as the result of which many would leave their homes and travel long distances, only to find that a strike or lockout existed in the plant, which would make employment uncomfortable, to say the least, and in many instances dangerous. So that in the enactment of the statute it must be assumed that the Legislature had a clear, well-defined policy in mind, designed to protect the interests of the public in general."

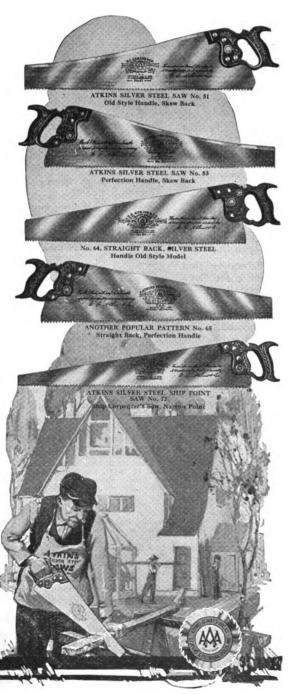
In the case of Walter W. Oeffein, Inc., vs. State, 188 Northwestern Reporter, 633, however, the Supreme Court holds that the existence of labor troubles in one department of an employing builder's operations does not require a statement concerning it in advertising for labor in another department as to which no such troubles exist.

In this case the company was convicted by a lower court of having violated by stating in an advertisement for bricklayers that "no labor trouble existed." Reversing the conviction, the Supreme Court finds that there was no existing labor trouble as to bricklayers and that any trouble in another craft was not covered by the law, as applied to the advertisement for bricklayers. In the course of its opinion, the court says:

"If the Legislature had intended the statute to apply to any strike at an employer's plant or place of business, regardless of whether it involved the particular craft for which employment is sought by the advertisement, it could have readily so declared. The construction herein indicated is the only logical one, particularly in view of the general rules of construction above set forth. . . .

"While the statute makes it an offense for an employer to advertise for help when there is a strike or lockout at the place of the proposed employment, when he fails to state in such advertisement that such strike or lockout exists, such general language is clearly modified by the subsequent language used, wherein it is stated, 'when in fact such strike or lockout then actually exists in such employment at such place.'

AITHINS SILVERSAWS



Christmas Is Coming!

And with its coming, one's thoughts naturally turn to gifts of remembrance utility gifts.

The age-old question of what to give HIM can be easily settled right here and NOW.

What could be better than an Atkins Silver Steel Saw—Our No. 400—the Elite of the Saw World?

Can you imagine the delightful surprise in store for Father, Son, Brother, Sweetheart or Buddy when he opens his presents on Christmas morning to see a bright, shiny Atkins Saw, made of Silver Steel, Mirror Polish, Genuine Solid Rosewood Handle of our Improved Perfection pattern, attached to the saw with nickeled screws; put up attractively and neatly in a special blue and white box for the holidays? Can you? Wouldn't it make you feel happy? Sure it would.

If you want to know how to get an Atkins Silver Steel Saw for Christmas, send ten cents in coin or stamps to cover cost of mailing and we will send by mail a beautiful gold plated miniature Saw Charm and a Saw Sense Book, provided you give us the name and address of your hardware merchant. Full information will accompany our letter. Clip this out and send it NOW.

E.C.ATKINS & CO.

ESTABLISHED 1857 THE SILVER STEEL SAW PEOPLE
Home Office and Factory, INDIANAPOLIS, INDIANA
Canadian Factory, Hamilton Ontario
Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks In The Following Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore. San Francisco Seattle Paris, France Sydney, N. S.W. Vancouver, B.C.

"'Such employment at such place' cannot mean any employment at the employer's place of business, but the particular employment for which the employer has advertised for help. It cannot be assumed, for instance, that the mere fact of the existence of a strike of electricians, carpenters, or other artisans on a given job will in any way affect a bricklayer seeking employment, when in fact no strike in this craft actually exists on the job."

A N Illinois general contractor asks concerning the right to use the word "Company" as part of the name of an unincorporated organization. For

example, can John
Right to Use Jones, a contractor,
Word "Company" validly do business under the name John in Business Jones & Co., without incorporating? Woul! Name use of the name be legal in the case

of a contract in which a second party is interested as a silent partner?

An examination of the Illinois statutes does not disclose a prohibition against use of such a name as that above mentioned. But a statute would make it unlawful to use the name John Jones Company. As we understand it, the name John Jones & Company is not generally regarded as a corporate name. But the name, John Jones Company, does imply incorporation.

As to the second question, it seems that John Jones and William Smith might have a limited partnership for the purpose of certain transactions, and that the business might be conducted under the name John Jones & Company. But the Uniform Limited Partnership Law, which is in force in Illinois, forbids use of a limited partner's name in the partnership name. And it would be necessary to file a certificate with the county recorder of deed, setting forth the names, interests, etc., of the partners.

This section appears in the article providing for the insuring of liability. The annotations of the law do not disclose any court decision on the subject, although there may be one or more in existence. But the context of the law does seem to clearly show that the company in this case was bound to carry insurance if the subcontractors did not do so.

As to attempted cancellation of the insurance contract, attention is drawn to Section 100 of the Workmen's Compensation Law, which provides that 'Any employer may, upon complying with subdivision two or three of section fifty of this chapter, withdraw from the fund by turning in his insurance contract for cancellation, provided he is not in arrears for premiums due the fund and has given written notice of his intention to withdraw not less than

thirty days before the expiration of the period for which he has elected to insure in the fund."

"The provisions of section 50 referred to provide for insurance in a mutual or stock company, or for proof of financial ability to carry one's own risks. It would seem that there was no such cancellation of the contract with the Fund as released the company for continuing liability for premiums until the policy was actually cancelled.

N 1919 we took out a policy of com-I N 1919 we took out a point, pensation insurance with the State Insurance Fund which we returned for cancellation in 1921, believing it was of

Workmen's Compensation Insurance in New York

no value to us, as we let out to subcontractors or independent contractors all the various kinds of work on our jobs for a cer-

tain contract price, we dealing only with the subcontractor in directing the work, making payments for the work only to him, etc,," writes a New York homebuilding company. "The Fund kept the policy alive up to February 19, 1922, sending bills from time to time. notwithstanding the fact that the policy clerk sent us a registered letter October 20, 1920, notifying us the policy would be cancelled as of November 3. 1920, unless the bill they claimed should be paid on or before that date. The Fund threatens to sue to enforce payment of their bill. We claim we owe them nothing as the policy covered nothing, was not applicable in this case.

Letters from the Fund, stating that the counsel for the State Industrial Commission had given an opinion that the company must carry insurance, and stating that there were court decisions upholding the company's liability for insurance covering the subcontractor's men since the subcontractors did not carry insurance, are furnished.

It seems from such examination of the law as is permissible under the circumstances that the Fund is right in its statement that this company was bound to carry insurance. Section 56 of the Workmen's Compensation Law provides that "A contractor, the subject of whose contract is, involves or includes a hazardous employ, who subcontracts all or any part of such contract shall be liable for and shall pay compensation to any employee injured whose injury arises out of and in course of such hazardous employment, unless the subcontractor primarily liable therefor has secured compensation for such employee so injured as provided in this chapter."

It follows that it is our impression that the Fund is right in its contentions. However, before paying the bill it might be well to ask the Fund to cite the statutes and court decisions on which it is claimed that liability to pay the bill arises.

Legal Notice

Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912.

Of Building Age and The Builders' Journal, published monthly at New York, N. Y., for October 1, 1923.

State of New York County of New York 88.:

Before me, a Commissioner of Deeds, in and for the State and County aforesaid, personally appeared Charles G. Peker, who, having been duly sworn according to law, deposes and mys that he is the editor of the BUILDING AGE AND THE BUILDERS' JOURNAL, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:
Publisher-Building Age Publishing Corporation, 239 West 39th Street, New York.
Editor-Charles G. Peker, 239 West 39th Street, tion, __ Editor—Cu_ York.

Managing Editor—Charles G. Peker, 239 West 39th Street, New York. Business Manager—David Meyers, 239 West 39th Street, New York.

2. That the owners are: Building Age Publishing Corporation, 239 West 39th Street, New York.

That the stockholders owning or holding one per cent or more of the total stock of Build-ing Age Publishing Corporation are as follows:

B. A. & C. P. Holding Corporation, Times Building, New York.

That the stockholders owning or holding one per cent or more of the total stock of B. A. & C. P. Holding Corporation are as follows:
Frank Meyers, 239 West 39th Street, New York City; David Meyers, 239 West 39th Street, New York City; W. H. Parsons, 239 West 39th Street, New York City; W. H. Parsons, 239 West 39th Street, New York City; Walter A. Bardgett, 239 West 39th Street, New York City; George Meyers, 1196 First Avenue, New York City; Michael Miller, 794 St. Nicholas Avenue, New York City; S. Cowen, 20 East 97th Street, New York City; David L. Short, Columbus Avenue and Hancock Street, Philadelphia, Pa.; G. Friedman, 627 Broadway, New York City; A. Cowen & Son, 34 West 25th Street, New York City; John J. Robbins, 317 West 93rd Street, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are:

Architectural and Building Press, 243 West 39th Street, New York.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholders or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

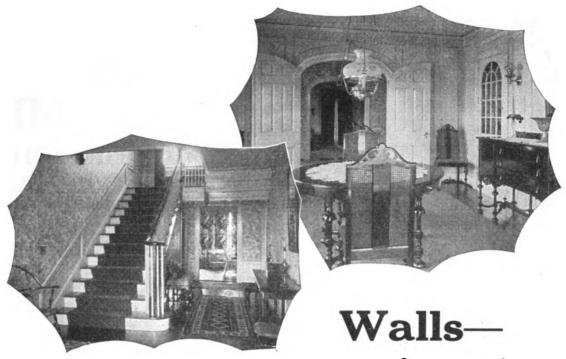
CHARLES G. PEKER, Editor.

CHARLES G. PEKER, Editor.

Sworn to and subscribed before me this first day of October, 1923.

[Seal] SADYE BLUMENFELD, Commissioner of Deeds, New York City.

My commission expires February 20, 1925.





ONE of the first requirements in modern building is combating the elements that destroy. Preservation foresight is essential. This is as true of interior walls as of exterior.

Aiding in this preservation of interior walls is OHIO WHITE FINISHING LIME. In fact, the walls finished with this lime are not only beautifully white, permanent, and free from chipping, checking and blistering, but also fire-resisting, metal-preserving and acoustics-improving.

These distinctive characteristics of OHIO WHITE FIN-ISHING LIME are due to the purity and peculiar natural composition of the limestone rock from which it is made, plus an unusual chemical content.



He Knows

In scratch and brown coats its use insures permanency, while in exterior stucco or plaster work it combines beauty with permanence.

Because OHIO WHITE FINISHING LIME is so "fat," or plastic, it spreads easily and enables the plasterer to finish a larger area in less time and with less effort than ordinary limes.

Your copy of our booklet, "The Tale of the Clam," awaits your request. This booklet tells the interesting story of lime as produced in "The Lime Center of the World," with information on its use and abuse.

duced in "The Lime Center of the World," with information on its use and abuse.

The Ohio Hydrate & Supply Co. Woodville, Ohio

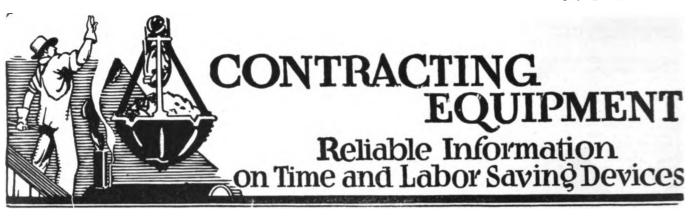
"The Lime Center of the World"



OHIO WHITE FINISHING LIME is marketed under these four Brands:—

Ohio White Finish Woodville White Finish Buckeye White Finish Hawk Spread White Finish

Each of the same quality and guaranteed to give the same satisfactory results.



Modern Equipment Prevents Accidents

By B. W. DELANEY
Claim Agent, Post & McCord, Inc., New York

HE only practical way, known to Post & McCord, to prevent accidents in the construction field is as old as antiquity and at the same time seems to hold good against any other form of safety as yet introduced. It is embodied in two divisions:

The exercise of eternal vigilance, or personal surveillance; and the use of the best equipment procurable.

It has been the experience of Post & McCord during the past ten years, in which the firm has carried its own insurance, that over ninety-five per cent. of the accidents occurring among employees working on the many steel structures erected during that period have been due to the carelessness of the injured or to that of his fellow workmen.

This in itself emphasizes the necessity of constant watchfulness on the part of both employee and employer, and is supplemented by the fact that many of the most serious accidents which occurred during the period mentioned were due to the momentary carelessness of expert workers; men who had had years of experience in their trade and who were well known as the most careful and competent in their particular line. Hence it is considered necessary to keep in constant and intimate touch with the men in the field.

This program is personally conducted by the Vice-President, Mr. Frank B. McCord, and by the Superintendent of Erection, Mr. Wil-

liam H. McCord, through direct contact with superintendents, foremen, sub-foremen, timekeepers, gang bosses, etc., on the various jobs.

EVERY job is visited daily by either of the above men who carefully inspect and analyze, with the superintendent and his assistants, each operation and problem involved in the progress of the work, and so become acquainted with all the men and all conditions.

Suggestions and criticisms are invited; infractions of rules detected; penalties inflicted; dangerous practices eliminated; and, in a word, the whole organization kept on its toes both for efficiency in production and prevention of accident.

This, the firm believes, makes every man a separate unit of safety. Of course, this system of supervision is supplemented by various efforts to get the men to think safety, but when it comes to influencing the human element the principal dependency is on the verbal contact established between employer and employee in the way above mentioned.

In the matter of equipment, it has always been the endeavor of Post & McCord to provide the best and most modern machinery and tools obtainable for construction work. In fact, I think it may be said without fear of contradiction that the erection plant of Post & McCord is the most complete outfit of its kind in the territory of New York City. This does not

merely mean that the plant is large and capable of handling big work, but rather that every tool and piece of machinery, from the drift pin to the fifty-ton derrick, was selected with the predominating thought of Safety First.

In this respect the firm makes no claim to altruistic motives, simply considering a wide margin of safety the best of insurance protection, a plain duty to the public in general and especially to the employees who have to entrust their lives to the proper performance of the equipment furnished.

M ERELY purchasing good equipment and putting it on the job does not mean efficiency or accident prevention. The first cost of the average tool or machine used for structural steel erection work is soon lost sight of in the items of upkeep and repairs. Therefore, eternal vigilance is almost as necessary in the inspection and care of the equipment as it is among the men.

At the storeroom of the company in Brooklyn a complete repair department is maintained. This outfit is in charge of men expert in repairing and overhauling the special machinery, tools and rigging used in erection work. These men are held responsible for the condition of all equipment sent to the various jobs and are therefore careful to have everything in good and safe working order.

[The above is from a paper read at the recent Buffalo meeting of the National Safety Council].

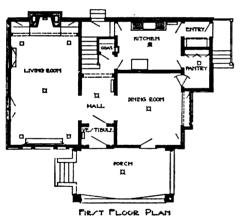


Send for these Free Books and Blue Prints

Every man in the building trades—journeyman or apprentice—ought to have these books and blue prints which include a complete lesson in Plan Reading. They are free. Send for them and let them show you how easily you can master the higher branches of your trade in your

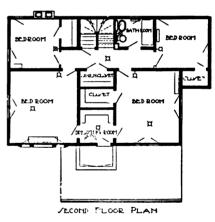
spare time at home by the Chicago Tech. method of training by mail. Everywhere are men who once were drawing small pay—now in big jobs or in business for themselves as a result of this training. Find out what it can do for you. Not a penny to send—only the coupon, or a postcard or letter.

Can You Plan Buildings and Figure Costs? Make Estimates and Direct Construction?



Ask yourself this question—"How much do I know?" If you have to admit to yourself that you can't do the things which pay best, now is your time to get the practical training which will put you in the money making class. Hard work alone won't do it—it is what you know that determines the size of your income.

Ma're your start now. At least send for the free lesson and let us tell you all about the Chicago "Tech" way of training men in their spare time



Pay Raising Training for Men in Building Trades

Chicago "Tech" Courses are planned for practical men who want to become better informed on subjects which apply to their daily work. No time is given to "fancy" studies or useless theories.

Plan Reading. How to read a building plan. How to read dimensions. How to read detail drawings. How to lay out work from plans. How to stake out buildings. Practice in reading complete blue print plans from basement to roof, etc., etc. Many complete sets of blue print plans and specifications are furnished to the student.

Estimating. Figuring amount and cost of material. Estimating time and labor. How to figure carpenter work such as stairs, roofing, rafters, etc. Millwork, window and door frames, mouldings, cornices, etc. All about the steel square. Lathing and plastering. Excavating. Brick, stone, and concrete work. Fireproofing. Glazing. Plumbing. Heating. Wiring, etc., etc.

S. perintending. Methods of work on all classes of buildings. Uses and preparation of all kinds of material. Hiring and handling men.

Also Special Courses in Architectural Drafting for Builders taught by practical men. These courses fully explained in separate Catalog "D" sent on request.

Send this Coupon Today

CHICAGO TECHNICAL COLLEGE, Dept. 1138, Chicago Tech., Bldg., 118 East 28th Street, Chicago, Ill. Please send me your Free Bocks and Blue Prints for men in the Building Trades. Send postpaid to my address below. WRITE OR PRINT NAME PLAINLY.
Name
Address
Post Office State
Occupation

Digitized by Google

Review of the Building Situation

B UILDING statistics for September just published by the F. W. Dodge Corporation show that the volume of contracts awarded during September amounted to \$288,931,700. This was a decrease over August of only 3% and over September, 1922, of 7%.

Construction during the first nine months of this year has been just equal to the amount for the corresponding period of last year, although on June 1st, this year had a lead of 15% over last year. The gradual decline in construction volume since May, however, has tended to overcome this lead, equalling last year's building record for the same period.

Residential building continues to lead all other classes, 39% of the entire amount being for this type of construction; 19% of the entire amount was for public works and utilities; 15% for business buildings, 13% for industrial buildings and 5% for educational buildings.

In the New York district, residential buildings show a slight decrease over August, which is expected at this season of the year. The total for September was \$76,991,600; a decrease of 6% over August, but an increase of 20% over September, 1922.

The Central West shows an increase of 3% over August but a de-

crease of 19% from September, 1922. While the Northwest shows a decrease of 12% from August, the total of contracts awarded shows an increase of 45% over that of September, 1922.

The volume of money spent for new homes is still greatest in the East, despite the slight falling off in percentage over August figures. In this section, residential construction contracts awarded in September, amounted to \$101,000,000 for the three Eastern districts. Residential projects contemplated amounting to \$103,000,000 show an increase and prove that there will be no falling off in this class of construction in the Northeastern district.

Record of September, 1923, Building Contracts Awarded

SECTION OF COUNTRY								
Classification of Buildings	New England District	New York District	Mid Atlantic District	Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$2,825,600	\$14,784,400	\$2,808,900	\$3,105,000	\$14,848,000	\$581,600	\$5,188,200	\$44,141,700
Educational Buildings		2,945,300	948,000	3,186,900	4,489,400	1,038,400	2,908,100	16,369,000
Hospitals and Institutions.		3.166,600	204,200	237,000	2,211,000	535,000	575,000	8,448,800
Industrial Buildings		6,394,500	908,200	21,800,800	5,250,300	235,000	2,140,500	38,059,300
Military & Naval Buildings			260,000		18,000			278,000
Public Buildings		166,500	2,000	135,500	457,200	5,000	297,400	1,383,000
Public Works and Public	,	,	,	,	•		•	,,
Utilities	2,891,800	5.658,700	2,265,100	9.837.000	19,175,100	2,202,700	12,980,400	55,010,800
Religious and Memorial	,			, , ,	, ,		• •	
Buildings	630,900	773,500	167,500	1,459,200	863,500	197,000	923,000	5,014,600
Residential Buildings	12.847.900	41,356,900	11.694.100	11.870.400	22,180,000	2,381,700	9,575,000	111,906,000
Social and Recreational	,- ,	,,	,,	,,	, ,	, ,		
Buildings	944,5 0 0	1,745,200	383,200	2,004,500	2,402, 000	22,000	819,100	8,320,500
Total	\$24,163,000	\$76,991,600	\$19,641,200	\$53,636,300	\$71,894,500	\$7,198,400	\$35,406,700	\$288,931,700

Building Projects Contemplated, September, 1923

SECTION OF COUNTRY								
Classification of Buildings	New England District	New York District	Mid Atlantic District	Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$4,072,600	\$19,157,500	\$4,087,000	\$4,444,500	\$15,448,200	\$1,020,600	\$4,509,300	\$52,739.700
Educational Buildings		7,334,600	1,543, 000	1,537,500	8,331,000	457,400	5,129,000	26,534,900
Hospitals and Institutions.		1,080,000	<i>2</i> 87, 0 00	920,000	823,000	50,000	910,000	4,800,000
Industrial Buildings	1,238,000	6,323,000	3,849,200	2,023,600	9,193,900	379,000	3,94 5,500	26,952,200
Military & Naval Buildings						•		
Public Buildings	175,000	33,000					50,000	258,000
Public Works and Public							•	
Utilities	867,000	223,000	303,000	607,500	670,400	29,000	1.053,400	3,753,300
Religious and Memorial	•	,	·	,	•	•	,,	- 1 1
Buildings	2,499,500	9,153,000	2,454,500	25,322,300	21,226,400	2,663,300	13.715.700	77,034 <i>,7</i> 00
Residential Buildings	465,000	1,565,000	830,000	779,200	1.247.500	585.000	1,564,000	7.035.700
Social and Recreational		57,928,400	31.753.000	14,806,200	43,415,600	3,107,900	14,933,500	179,303,500
Buildings	738,500	439,000	1,560,200	2,139,000	2,876,000	95,0000	1,662,600	9,510,300
Total	\$26,346,900	\$103,236,500	\$46,666,900	\$52,579,800	\$103,232,000	\$8,387,200	\$47,473,000	\$387,922,300

Ambler Asbestos Mixed-Color Shingles

offer builders an opportunity to design roofs of distinctive beauty, combined with endurance. Ambler Asbestos Shingles cannot burn, rot, split, warp or check and never require either paint or repairing.

This new type of shingle is made in six colors—Natural Gray, Pearl Gray, Slate Black, Brown, Indian Red and Tuscan Red. By combining two or more of these colors and laying them without regard to uniformity, a polychrome or variegated effect of unusual beauty is produced.

Mixed-Color Shingles come in the American style 9" by 18" in ½" and ½" thicknesses and may be had with broken butt edges—if ordered—an added artistic feature that offers further opportunity to design roofs that will meet individual tastes of property-owners.

Tapestry Design—Where a simple color scheme is desired, a tapestry pattern can be worked out with the combination of just two colors.

Write us for color charts, showing roofs covered with Ambler Asbestos Shingles in varying color combinations.

Asbestos Shingle, Slate & Sheathing Company

Branch Offices:—Baltimore, Boston, Buffalo, Chicago, Cincinnati, Detroit, Cleveland, Minneapolis, New York, Omaha,
Philadelphia, Pittsburgh, Washington, Wilkes-Barre, Toronto, Canada
Southwestern Distributor: R. V. Aycock Co., Kansas City, St. Louis, Tulsa, Houston
Western Distributor: J. A. Drummond, San Francisco, Los Angeles, Fresno
Other distributors throughout the country



Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which torecasts prices in the retail market. They are not prices which the average contractor

can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

An prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

NEW YORK PRICES			Sept. 25	Oct. 25
Sep	pt. 25 Oct	t. 25	PLASTER BOARD— 32 x 36 x 39 in., Each	SO 22
LONG LEAF YELLOW PINE—			MAGNESITE STUCCO-	\$0.22
B. and Better Edge Grain Flooring, 13 16x21/5" Face \$ Dimensions, SISIE, No. 1 Common, 2x4", 10		92 00 43.75	fer lon \$70.00	\$70.00
Timbers, Merchantable, '05, 12x12", lu to 20 5	io.u) 5	56.00	TILE—	
B. and Better Ceiling, 1/2x3/4		42.50	1 iii Square or Hexagon, White, per sq. it	\$0.25 0.60
B. and Better Finish, 1x4"	1.00 C	64.00 70.50	8 x 8 m. ked Floor 0.45	0.45
No. 1 Common Buards, 1x8" 5.	s5 \$	53.25		
NORTH CARULINA PINE-			CHICAGO PRICES	
No. 2 and Better Flouring, 13/16x2½"	8.00 \$6	56.00	YELLOW PINE— Busids, Ixo. No. 1 Com	
DOUGLAS FIR-	1.50	31.50	Cening, >2x4, B. and Btr	\$40.00 44.50
No. 2 Clear and Better V. G. Flooring, 1x3" \$7	4.50 \$7	78.25	Dimension No. 1, 2x4, 12 to 14 it	3+ W)
No. 1 Clear V. G. Flooring, lx+"	9.50 7	73.00	Prop Salueg, 1x6, B and Btr	55.50 56.00
No. 2 Clear and Better Ceiling, \$2x4"		16.75	Flooring, B. and Btr. E. G., 1x3	66.00 87.00
		58.50 96.25	Lath, + 11., No. 1	6.25
WESTERN RED CEDAR-			Timbers, Long Leaf No. 1, 10-20 ft., S4S, 6x12 to 12x12 51.00	50.00
		7.06	HARDWOODS—	6104 66
		6.58 17.50	Mapie Figuring, 13/16x214, clear	\$104.00 75.00
CANADIAN SPRUCE—	u.su 4	w.30	Oak Flooring, 13/16x21/4, Cl. Pl., White	111.00
No. 1 Lath, 172 \$	8.63 \$	8.63	REDWOOD—	
		12.00	Bevel Siding, SISIE, 10 ft., 20 ft., 1/2x4, clear	\$47.25 94.50
HARDWOOD FLOORING-			WESTERN RED CEDAR-	J-1-20
Clear Quartered White Oak, 13/16x2x234"		17.50 12.50	Bevel Siding, 1/2x4 in., Clear\$50.75	\$50.75
Clear Plain Red Oak, 13/10x234"		8.00	Shingles, Extra Clears, 16 in	4.52
Clear Maple, 13. 16x234"	7.00 10	12.50	Per M. f. o. b. job\$12.00	\$12.00
(All lumber prices furnished by Lumber)			PORTLAND CEMENT—	•
COMMON BRICK— Per M. f. o. b. job	3 nn · ea	23.00	Bbls. in car lots to contractors, not including containers	\$2.20
PORTLAND CEMENT—	3.00 . 42	۵.w	STRUCTURAL STEEL—	-
Bbis. in car lots to contractors, delivered \$2	2.90 \$	2.68	Per 100 lbs. at warehouse	\$3.30
STRUCTURAL STEEL-	2 54 .	3.54	CRUSHED STONE (cu. yd.)—	\$3.00
Per 100 lb. at warehouse \$ CRUSHED STONE (cu. yd.)-	3.34 4	D.J7	1½ in	3.00
34 in	2.60 \$	3.75	WALL BOARD—	
	2.50	3.65	Per 1,000 sq. ft. in lots under M	\$40.00 35.00
WALL BOARD—			SAND AND GRAVEL-	33.00
Per 1,000 sq. ft. in lots under 1,000 sq. ft		0.00 5.00	Sand (per cubic yard)	\$3.00
MFTAL LATH-			14 un. Gravel (per cubic yard)	3.00 3.00
2.3 lb.—26 gauge price per 100 sq. yd. delivered \$(2.8 lb.—24 gauge light price per 100 sq. yd. delivered. (0.18	172 III. Olavei (per cubic yaid)	
		0.21 0.24	ST. LOUIS PRICES	
Add a cents per sq. yd. for galvanized.		•	YELLOW PINE—	
LIME (Hydrate)— Finishing, per 50 lb. bag	n en 💮	0.60	Boards. No. 1 Com., 1x4	\$40.00 56.00
		0.60 0.49	Dimension, No. 1, S1S1E, Short Leaf, 2x4 in., 12 & 14 ft. 33.00	33.00
MAND AND GRAVEL-			Finish, S2S, B. and Btr., 1x4, 6 & 8 ft	65.30
Sand (per cubic yard)\$1		2.75	Flooring, B. and Btr., E. G., 1x3	86.59 60.89
		3.90 3.90	Lath. 4 ft., No. 1	5.60
FACE BRICK—		3.70	Timbers, No. 1, rough, short leaf, 6x12 to 12x12 in.	
Tapestry (delivered)\$49	R.50 \$4	6.50	10 to 20 ft	41.50
Harveale (Delivered)	B.00 3	7.50	Finish, S2S, Cl., 1x6 in	\$94.50
Caledonian (delivered)	1.00 4	3.00 9.00	Siding, 4 in. Bevel, 10 to 20 ft	47.25
Fish Lock f. o. b. factory 42	2.50 42	2.50	8 inch Colonial	78.25 76.75
SHINGLES—			8 inch Bungalow	70.73
Asphalt, Single (per square)\$7		7.11	Oak Flooring, 14x11/2 and 2 in., Clear Qtr. White \$102.00	\$107.00
Asphalt, Strip (per square)	5.65	6.65	Maple Flooring, 13/16x234 in., Clear 105.50	90.50
16 in. Extra Clear (per square, delivered)\$11	1.50 \$11	1.50	RED CEDAR—	
18 in. Eureka (per square, delivered)	1.50	1.50	Siding, ½x6, Clear	\$45.90
18 m. Pertection (per square, delivered)		2.50 2.50	COMMON BRICK—	4.36
VITRIFIED SEWER PIPE-			Fer M., f. o. b. job	\$20.00
4 in. (cents per foot)\$0.1	21/4 \$0.1		PORTLAND CEMENT—	•
6 in (cents per foot)	8/2 0.1	181/2	Bbls. in car lots to contractors, not including containers	e 2 25
Bangor or Slatington, 8x16 in. (per sq. at quarry) \$12	2.60 \$1	2.60	STRUCTURAL STEEL -	\$2.35
CORNER BEADS (Galvanized)—			Per 100 lbs. at warehouse\$3.35	\$3.45
Per Foot \$0 WALL TIES (Galvanized)—).U5 \$ (0.05	CRUSHED STONE (cu. yd.) 1/4 in. \$2.18	\$2.18
Per Thousand\$5	5.00 \$	5.00	1½ in 2.18	2.18
FLUE LINING			WALL BOARD—	
874 x 874 in. Per Foot	7.30 \$().48 €⊈	0.36 0.48	Per 1,000 aq ft. in lots under M	\$55.00 50.00
HOLLOW TILE			SAND AND GRAVEL—	
8 x 12 x 12 in., heavy. Each, delivered	21/6 \$0.2	23/8	Sand (per cubic yard)\$1.20	\$1.20
HAIR— Per Bushel	0.60 🐿	0.60	¼ in. Gravel (per cubic yard)	1.45 1.45
A				

This ad is sending thousands of customers to Beaver dealers Be one of them



Beaver advertising is successful because it continually directs buyers to the dealer.

Thousands of customers report direct to Beaver dealers. Other thousands "clip the coupon" and write us. We turn these live prospects right over to the dealer.

Above we reproduce the two-color, two-page "Saturday Evening Post" advertisement of October 27th. This is *just one* smash in the big campaign which is educating the public to demand the "Red Beaver Border" with its SIX VITAL ADVANTAGES.

Get your share of this growing demand. Mail the coupon TODAY for the two new Beaver Books and for details of our proposition.

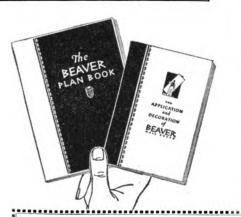
THE BEAVER PRODUCTS CO., Inc.
Thorold, Canada BUFFALO, N. Y. London, England

Makers of Beaver Wall Board, Beaver Vulcanite Roofing, Beaver Gypsum Wall and Gypsum Products

BEAVER

WALL BOARD

"The all virgin spruce fibre wall board"



COUPON

The Beaver Products Co., Inc. Dept. 10 Buffalo, N. Y.

Gentlemen:

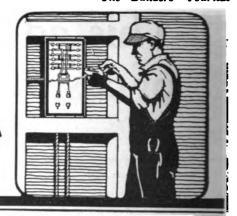
Please send me at once copies of your free books— "The Beaver Plan Book," and "Application and Decoration"; also your dealer proposition.

	Name	 	
:			

Address

ELECTRICAL WORK

Wiring-Fixtures-Devices for Lighting and Power



Why Not Bury Feed Lines?

Just Plain Common Sense Will Prevent the Disfiguring of Buildings

HY is it that so little attention is paid to running the electric light feed line into a residence? In the majority of cases, it unfortunately is made as conspicuous as possible. The remedy is so easy and comparatively cheap in price, that the great wonder is that the wires are not more often buried in the ground.

Lead covered underground cable is not expensive, nor is the outer covering of pipe in which it should be run. The digging of the trench is also a comparatively inexpensive problem; in most cases, the feed line can be placed in the same trench as the water supply pipe, thus cutting down an additional expense item.

Overhead wires are unsightly and there is no excuse for them when the feed line can be run down the pole and under the street if necessary and then entering the cellar of residence, where the cutout switch and fuse box should be located.

The two pictures given below are typical examples of what may be found in even some of our select residential districts. These are not cheap houses by any means but their outside appearance has actually been spoiled—not by the idea of saving fifty dollars, but just simply by not thinking what can be done to get rid of such an eyesore.

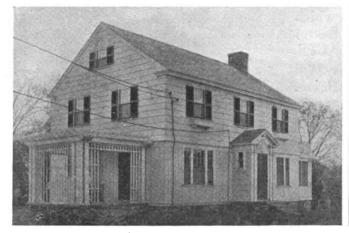
This problem of the electric feed wires should be directly handled by builders and they should insist that if any feed lines come overhead they should enter at the back of the building rather than at the front or side.

If you will insist that the feed line be buried, it will be done. The electric light wireman is a peculiar animal. He seems to love his wires and likes to have them in view. They (the men—not the wires) are hard to reform, so do not expect any help from that end.

All they are interested in is to run the wires from the pole to the nearest spot on the house. What care they, if the whole appearance is spoiled or not. Now builders can do something, too, that will help and here is a suggestion:

Build a pipe (a 1-inch galvanized iron will do) in the wall, if it is a masonry or stucco covered house and then your lineman will not have to drill through the wall—perhaps saving it from disfigurement. Another thing is that the feed wires will go there because you have made a place for it.

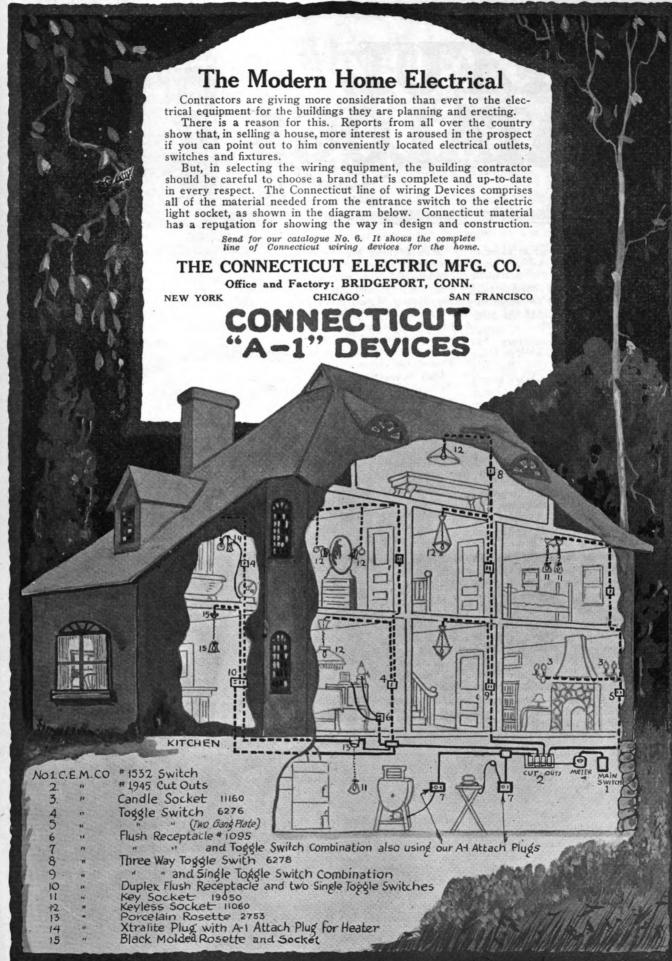
This little scheme works and will save you much patching and grumbling from your electricians and from the owners, too.



About as had as it possibly can be. Here the telephone lineman also added to the disfigurement.



Not quite so bad, but still a horrible example. Burying feed lines would prevent such disfigurements.



USEFUL CATALOGS



Concrete Mixers are of great value to the builder on any job, as they save time, money and labor. The Little Whirlwind Mixer Co., 438 Gould St., La Crosse, Wis., has issued a pamphlet describing concrete mixers that are original of design and practical.

Lumber and its manufacture has plenty of romantic color to it. The Long Bell Lumber Co., Kansas City, Mo., has issued a beautifully colored book giving the story of the board from the time it is a tree until it is placed in the home. Builders will find it most interesting and instructive.

Transits and Levels are instruments that will prove of great value on any building job. B. L. Makepeace, Inc., 387 Washington St., Boston, Mass., has issued a booklet containing illustrations of these instruments along with description and specifications. The articles on reading surveys appearing monthly in Building Age are a few reasons why the builder should send for this booklet.

Artistic Roofs can be had by the use of ruberoid roofing. This material can be used either in roll form or cut into shingles. The Ruberoid Co., 95 Madison Ave., New York City, will send interested builders a catalog and sample of this material. This book will be very interesting as well as instructive.

Sash Cord that will last is described in a very interesting little catalog issued by the Samson Cordage Works, Boston, Mass. This firm will send interested builders their booklet along with a card of samples.

Roof Framing Problems are easily solved by the use of a steel square. Sargent & Co., 53 Water St., New Haven, Conn., has issued a very interesting and instructive booklet on the use of this tool and builders will be well pleased with its useful information.

Dumb Waiters are a necessity in the home, permitting things to be sent from floor to floor without unnecessary climbing of stairs. The Sedgewick Machine Works, 150 West 15th St., New York City, will send interested builders their illustrated catalog.

Woodworking Machines for the shop save time, labor and money for the builder, and it is well to be equipped with the best and most modern types. The Master Woodworker Míg. Co., 614 Brush St., Detroit, Mich., has issued a most interesting catalog illustrating a woodworking machine that does many tasks and the builder should have this book in his files.

Mail Boxes that are built-in eliminate the necessity of going outdoors for the mail after it is delivered. They are described and illustrated in a very interesting booklet issued by the Penn-Greg Mfg. Co., 811 University Ave., St. Paul, Minn. Builders should send for this book, as nearly all homes should be equipped with this built-in feature.

Fireproofing is the biggest factor in home construction today and this is accomplished by the use of double walls. The Van Guilder Double Wall Co., 20 Engineering Bldg., Rochester, N. Y., will send builders their booklet entitled "National School of Fireproof Construction" which will be found most interesting and instructive.

Magnesite Stucco is a building commodity that has fine covering power, tensile strength and elasticity, and makes the house whose exterior is covered with it, a home of beauty and neatness. The Franklyn R. Muller Co., Inc., 608 Madison St., Waukegan, Ill., will send interested builders their detailed catalog along with specifications.

Bathroom Fixtures that are neat, efficient and practical are always attractive to the prospective home buyer. The Kenney Cutting Products Corp., 507 Fifth Ave., New York City, has issued a pamphlet illustrating and describing a few of their products and builders will be interested in its contents.

Built In Equipment is gaining in popularity day by day and the builder who installs it in his homes has a fine selling point to bring out when disposing of his products. The National Mill and Lumber Co., 2 Rector St., New York City, will send their catalog of built in equipment, such as ironing boards, seats, cupboards, etc.

Roofing Slate of different colors can be used for producing artistic and substantial roofs and without the necessity of using stronger rafters. The Sheldon Slate Co., of Granville, N. Y., will send interested builders a catalog that will prove most valuable and instructive.

Steel Scaffo'ding makes the work of building mechanics safer and chance of accident almost negligible. The Steel Scaffolding Co., 1605 North Governor St., Evansville, Ind., has issued a pamphlet describing and showing the reasons why this type of equipment is bound to be of use to builders.

Carpenter's Tools should be of the best quality in order to withstand hard usage. The James Swan Co., Seymour, Conn., will furnish interested builders with a finely illustrated catalog giving descriptions and specifications.

Metal Roofing Shingles are lasting and give an attractive appearance to the home. A large book containing prices, and specifications will be furnished by the National Sheet Metal Roofing Co., 339 Grand St., Jersey City, N. J.

Metal Lath is one of the best fire stopping constructional materials. Incombustible plaster over it forms a fire barrier that resists the hottest flames. The North Western Expanded Metal Co., 1204 Old Colony Road, Chicago, Ill, will send inquiring builders their catalog, which will be found to be of greatest interest and value.

Finishing Lime and its quality, are told in two books entitled "The Tale of the Clam" and "Our Code of Service" which the Ohio Hydrate and Supply Co., Woodville, O., will send to interested builders upon request.

Steel in Building construction is used in many ways. The handy Truscon Data Book issued by the Truscon Steel Co. of Youngstown, O. contains useful data regarding their different products such as reinforcing bars metal lath, light steel shapes, steel sash, roof trusses, etc. It is pocket size and has one hundred twenty seven pages, and is cloth bound.



It is an infringement to make, use or sell a patented invention without authority under the patent. Our patents have been sustained by the United States Courts in six different instances. Purchasers of our Mixers are protected.

Why this New Jersey Contractor Swung Back to the Jaeger

IS first concrete mixer was a Jaeger—one of the Big-An-Little models we made years ago. It made money for him—but he took its excellent qualities for granted. Then along came a salesman and induced him to buy a drum type mixer—but he quickly discovered that he couldn't afford to run it. This is what he told the Jaeger distributor: "This mixer (not a Jaeger) is just as good as the day we bought it. We haven't had a bit of trouble with it. It cost us \$800, but we will sell it for \$400. We want a Jaeger."

He sold the mixer and bought a Jaeger 4L—because—"the other mixer took 8 men to do the work that a Jaeger would do with 5 men." He proved that he could save many dollars every day by using the Jaeger! And that's a common experience!

A Better Mixer in Many Ways

The Jaeger has an enviable reputation for speed and labor-saving. It loads quickly, mixes fast and discharges the batch almost instantly because it Tilts and Pours. Records prove you can average a Mix-a-Minute.

The Jaeger is light, yet strong—and it is extremely simple. It has a single center bearing instead of eight as in non-tilting mixers—and this center bearing will last as long as the mixer. The Jaeger is a real engineering achievement. Its many superior features are fully explained in the new Jaeger catalog. Write for it today.

The Jaeger Machine Co. 216 Dublin Ave., Columbus, Ohio

Concrete Mixer Mixer-Trailers
Placing Plants Pavers



Elevators and Dumbwaiters of every kind and for every purpose from hoisting people to hoisting material on building jobs are described in a thirty two page booklet issued by the Kimball Brothers Co., 1106 Ninth St., Council Bluffs, Ia.

Copper Store Fronts that are attractive tend to bring a better class trade and builders will find it profitable to install them when erecting store buildings. The Kawneer Co., 1625 Front St., Niles, Mich. will send inquiring builders an interesting book of store front designs.

House Moving is a profitable line of work that any builder can undertake. The LaPlante Choate Co., 3025 First Ave., Cedar Rapids, Ia. will send interested builders a number of booklets instructing them in the equipment necessary for this kind of work and how to use it.

Casements and Double Windows is the title of a most interesting catalog issued by David Lupton's Sons, Company, Philadelphia, Pa., describing different types of windows for use in residences and business buildings, giving detailed illustrations of both inward and outward swinging casements and their application.

Redwood is an economical and lasting material for use on the exterior of the house. The Pacific Lumber Co., 932 Pershing Square Building, New York City will send interested builders their booklet entitled "California Redwood" which gives an interesting story of the adaptation and value of this material.

Garage Hardware of every description is illustrated and described in a catalog issued by the National Manufacturing Co., Sterling, Ill., and builders will find it of value to them as it shows how doors can be properly hung and fastened.

Pumps and Pump Supplies are finely illustrated and described in a large catalog issued by F. E. Myers & Bro. Co., Ashland, O. Builders will find this catalog of unusual interest and value to them.

Woodworking Tools must necessarily be able to withstand heavy usage. The Mack Tool Co., Inc. of Rochester, N. Y. will send interested builders their two books entitled "Carpenters' Catalog" and "True Stories." These books describe woodworking tools that will do work efficiently.

Flint Rock Stuceo is of magnesite composition, therefore it can be applied on jobs at this season of the year with no fear of its freezing. A catalog describing it is issued by the Flint Rock Corporation, 220 W. 42nd St., New York City.

Steel Partitions for toilets, showers, dressing rooms, etc., are easily installed at considerable saving in cost. Working drawings and specifications describing these partitions can be obtained from the Hart & Hutchinson Co., New Britain, Conn.

Concrete Blocks can be made in the least possible time and with the best possible result if one's plant is equipped with the proper machinery. The Ideal Concrete Machinery Co., 5012 Spring Grove Ave., Cincinnati, O., have just issued a catalog describing their efficient machinery.

Artistic Roof Effects can be obtained by using asphalt shingles. A particularly handsome roofing in rich weathered brown finish is described in the illustrated booklet just issued by the Richardson Co., Lockland, O.

Plumbing is an important factor when building and certain specialties aid in its installation. An interesting booklet containing dimension sheets, diagrams, etc. has just been issued by the Groeniger Mfg. Co., Michigan & Buttles Ave., Columbus, O.

O N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Roofing Slate can be had in a variety of colors, thicknesses, and graduations. enabling the builder to erect homes of beauty with Old World designs, for the roof. The Knickerbocker Slate Corporation, 153 E. 38th St., New York City will send to interested builders their folder on the subject.

Builders Levels and Transits, along with a variety of drafting room material for use in the builder's work shop, are graphically portrayed in a large cloth bound catalog issued by the Keuffel & Esser Co., 127 Fulton St., New York City. Builders should have this book in their files.

Rapid Brick Laying is rendered easy by the use of the right kind of mortar. A most interesting book on the subject of good cement and mortar has been issued by the Carney Co., Mankato, Minn., and builders will find much of interest in it.

Zinc Shingles do much to add to the roof attractiveness of any home. The Illinois Zinc Co., 280 Broadway, New York City, in their catalog on the subject, give specifications and description along with detailed drawings

Casement Windows are been more and more in demand and but will do well to recognize this fact sending for the catalog issued by Hope & Sons, 103 Park Ave., York City. This describes and trates numerous types and stylemetal casement windows.

construction Machinery of letters is a necessity in modern be Pumps, hoists, elevators mortar a etc., are just a few of the construction of the co

Weatherstripping is required on tically all buildings and the control is the man to secure this extra New houses should have weathers installed when being built. The crete Engineering Co., Department 140 South Dearborn St., Chicago, will send interested builders their calog, containing full descriptions illustrations.

Metal Shingles that are hand-direction molten zinc after having been and stamped, lend beauty as well protection to any home. The Cortical Metal Roofing Co., Philadelphia, will send their illustrated catalog interested builders.

Two Family Houses are in great mand today, due to the housing should age, and a book of designs of this tof homes can be secured by built from Henry Grieme, 110 Engine Building, Cleveland, O. This book tains a great number of illustrational and floor plans and will be found great value.

Chains are used for many purpose in building construction and to eat the builder to select the right kind each particular place, the Bridge Chain Co., Bridgeport, Conn., is issued a useful descriptive catalog will be found of considerable interest.

Door Hangers that are noiseless operation are described in a folissued by the Lane Brothers Poughkeepsie, N. Y. As these has are of improved design, builders find much of interest in the descript

Floor Surfacing Machines are a aid as they are a time and labor at to builders. M. L. Schlueter, 225 W. Illinois St., Chicago, Ill., has issue catalog giving description and illustrions of these machines, and build will find it of interest.

Panic Locks would certainly have the duced the casualty lists in many first that have occurred in public meeting places, had they been installed. The Frank F. Smith Hardware Co., 81 Clay St., Newark, N. J., have issued a catalog describing and illustrating these locks which are specially adapted for use in theatres and other places where large gatherings are held.

Building Age and Sand Builders' JOURNAL



45TH Year

December 1923



Building Age

ANI

THE BUILDERS' JOURNAL

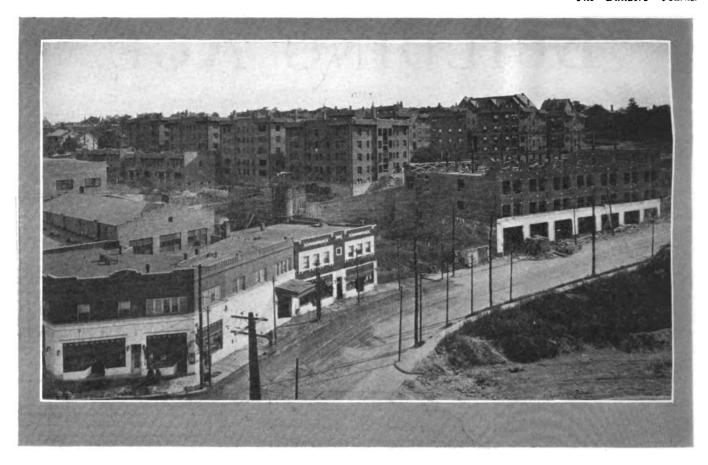
New York, December, 1923



The Watkins Development at Pittsburgh

In emulation of the biblical parable, "A city that is set on an hill cannot be hid," a building development which bids fair to gain a place of prominence among the achievements of the building industry, is being reared on the slope of a hill on the outskirts of Pittsburgh, Pa.

The entire project was conceived and nnanced by one man, Mr. Thomas Watkins, and when completed it will be a veritable city within a city, and practically independent. Pictures, plans and descriptions of this remarkable building enterprise are given on the following pages.



A CITY THAT IS SET ON A HILL

A Description of the Remarkable Watkins Development

PITTSBURGH, known the world over as a great industrial center, and consequently a city of prosperity and progress, has become the birthplace of an innovation in city dwelling development. This development, located in a section of the city known as Squirrel Hill, has become the center of attention among enterprising builders of the country by virtue of the fact that it represents the embodiment of every practical improvement and convenience in modern apartment house construction.

Supplying not only housing accommodations for 323 families but also marketing and amusement facilities, the tract when finally completed will assume the proportions of an independent community of no small size.

List of the Buildings

- 11 Five Family Apartment Houses.
- 1 Six Family Apartment
- 4 Fourteen Family Apartment Houses.
- 6 Four Family Apartments.
- 24 Two family Apartments.
- 1 148 Family Apartment House.
- 1 Two Story Bowling Alley and Restaurant.
- 1 Five Story Garage Building with Stores.
- 8 Store Buildings with Apartments Above.
- 1 800 Seat Moving Picture Theatre with Dance Hall.

In choosing the hill site for his project, Mr. Thomas Watkins, the owner, succeeded in establishing an ideal location for an urban residential colony. Situated as it is on the crest and side of a long and rather steep hill, the tract holds a prominent and picturesque place in the surrounding landspace. While near enough to the center of the city to be easily accessible to the business district it is just far enough from the noise and congestion of the city to lend the atmosphere of a suburban locality.

In planning the layout of the tract. Mr. Watkins sensed the desires of the city dweller who seeks the conveniences and comforts of the modern city apartment with the added advantages of plenty of light, fresh air, green grass and flowers.

Without having to walk more than two blocks at the most, any resident of the section can reach his garage, theatre, restaurant, dance hall or bowling alley, while the housewife can do her marketing within the same confines. Other stores, of which there are a number in the development,

will be rented to different kinds of tradesmen, so that the wants of tenants can be supplied practically at home.

With the large 148family apartment house completed, it is Mr. Watkins' idea to form the development into a sort of center for professional, literary, art and musical The large people. solarium on the roof is especially designed as a meeting place for tenants, where they may hold musicales, lectures, teas and other social gather-This meeting room is not only for the tenants of the large apartment house but also for use of tenants of the other buildings as well. From this solarium a most magnificent view is to be had, as the front of it looks down valley toward Schenly Park and the business section of Pittsburgh.

Many modern conveniences that would cut down housekeeping cares to a minimum have been provided in the different apartments. The different apartments are rented by Mr. Watkins as an income producing investment. The smaller apartment buildings have been rented unfurnished, but with the large apartment house it is the intention to rent some, if not all, of the apartments completely furnished for housekeeping.

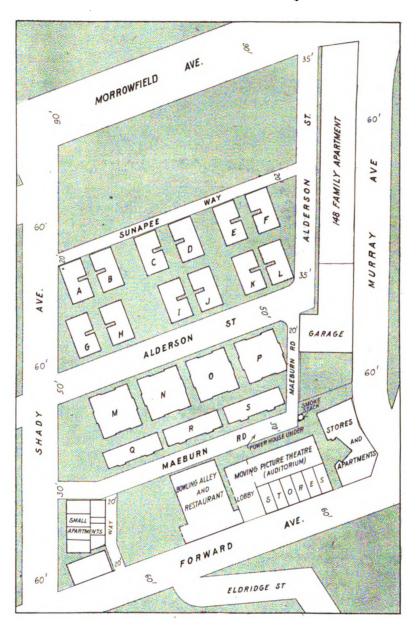
Full advantage was taken of the hilly site making it serve as an actual aid in construction. The description of the different buildings, given later, will explain this matter in defeatures of this group of buildings

Among the most interesting is its central heating plant, which not only supplies heat and hot water to every building but also is equipped with a refrigerating system which will cool the refrigerators in each apartment so that tenants need not buy ice. The power house construcition work is decidedly interesting, as its rear wall forms the front

foundation wall of some of the apartment buildings. The entire power house is located under the new street, Maeburn Road.

As there are hills and steps in different parts of the property, one end of a building would be in the ground while the other would be at a considerable distance above grade. Advantage has been taken of this in constructing the buildings by utilizing the undesirable space as a cellar, thus saving the cost of expensive rock excavation for cellar space. In another row of houses two apartments were placed in the rear below the street level, but these are actually a considerable distance above grade with cellar space beneath them and provided with windows.

The plans for all of the buildings located on the tract were drawn by Mr. J. E. Dwyer, architect, of Pittsburgh. The owner, Mr. Thomas Watkins, is also builder. and the work of construction is being carried on under the supervision of his two sons, Messrs. Clarence and I. K. Watkins. both of whom are graduate civil engineers. The editor's thanks are due these gentlemen for their kindness in supplying the necessary data and plans, also to Mr. F. Viets, photographer, of Pittsburgh, for the



Plot Layout of Watkins Development J. E. DWYER, Architect

A-6-family apartment house B, C, D, E, F, G, H, I, J, K, L-5-family apartment house M, N, O, P-14-family apartment house Q, R, S-4-family apartment house.



View on Macburn Road showing two units of the four-family house. A third unit of two four-family houses is still to be erected

As mentioned before, full advantage was taken of the site, therefore the excavation was reduced to a minimum. Nevertheless, 60,000 cubic yards of excavation were necessary, 24,000 cubic yards of this being alone necessary for the site of the large apartment building.

To move materials, trailers, etc., around the property, a Cleveland tractor, made by the Cleveland Tractor Co. of Cleveland, Ohio, was found a handy means of locomotion.

On a hilly site like this it is certainly necessary to have transit and levels, and two of these are almost in constant use.

Both wire and manila rope have been used to quite an extent, with

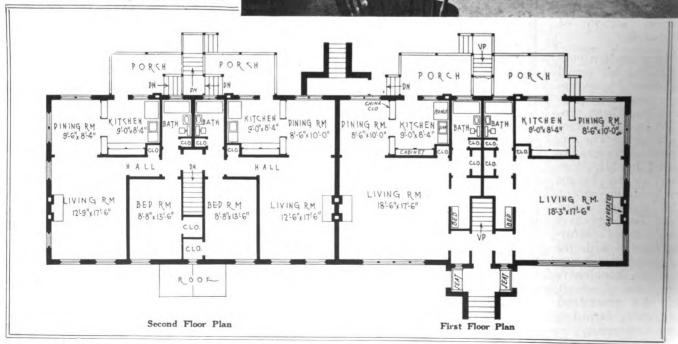
interest he took in securing the different pictures illustrating this article.

Equipment

Naturally, in so large an operation, advantage has been taken of machinery. To aid in the excavation, an Erie Steam Shovel has been used. This has been a wonderful help in excavating and removing the blasted rock. As a good deal of the excavation work was in solid rock, blasting by dynamite was used for this purpose, and this was furnished by Du Pont of Wilmington, Del.

View of living room on the first floor of one of the four-family apartment houses. This view was taken from the entrance and through the cased opening the dining room can be seen





the necessary block and falls for hoisting materials. Ladders, horses, planks, etc., were used in considerable quantities for staging at different levels, while numerous derricks were, of course, in use.

Considerable planking was also used for form work. For the reinforced concrete floors, collapsible, corrugated iron, pan forms were used for the floors of the garage. These were made by the Blaw-Knox Co. of Pittsburgh.

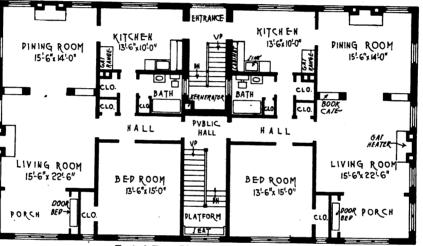
As large quantities of concrete had to be mixed it was found economical to have some concrete mixers on the job, and three Jaeger mixers were kept busy constantly. These were made by the Jaeger Machine Co. of Columbus, Ohio.

Labor

Regarding the problem of securing workmen to carry on the different projects of Mr. Watkins, it is interesting to know that he has had no serious trouble due to a shortage of men. When a mechanic who goes to work for him proves satisfactory he is assured practically of steady job throughout the year, as this is not the only building operation that



Two of the five-family apartment houses. A group of similar apartments are shown on page 3



Typical Ficor Plan of Five-Family Apartment

Mr. Watkins has undertaken in Pittsburgh.

It is a steady employment that he offers that makes his jobs attractive, and, besides that, he treats them right. There is a feeling of cooperation amongst the workmen that reminds one of a contented family.

Construction

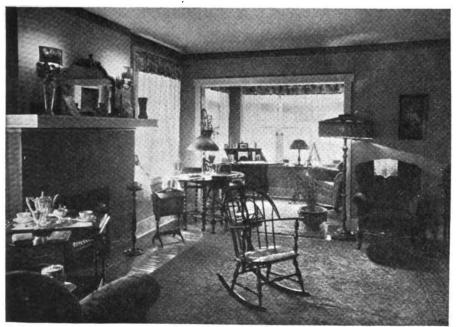
A hill site such as this consisting

of a mass of stone would present difficulties for ordinary building that would be hard to overcome except at tremendous expense. In this case the owners and architect took advantage of the site to produce their building operation at low cost.

Deep excavations were eliminated, shallow cuts at one section of a house were used and then this portion used as cellar space. This also cut down the cost of foundation work, for, being built on solid rock, expensive footings were not necessary.

Foundations were mainly of stone excavated from the site. Concrete, however, was used in other places, excavated stone being broken up for the aggregate, but considerable gravel was purchased.

In the erection of the steel frame work of the large apartment house a distinct advantage occurs due to the site. A traveling crane will be



View of living room looking towards sun porch, in one of the five-family apartment houses. It is on this sun porch that a Door Bed is located and at night this serves as an extra bedroom



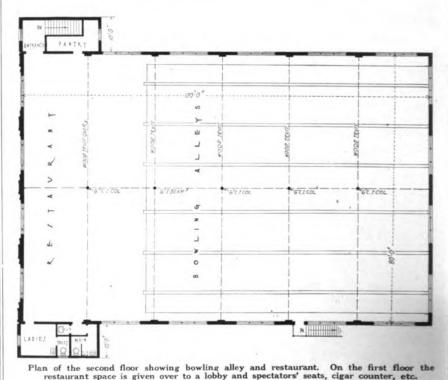
How bowling alley and restaurant appear from the street

located on the higher level so that the boom can swing over the lower portion, and this same procedure will be used as the structure goes up. As the distance is some 340 feet the crane will have some distance to travel, and the contractors were not slow to see the considerable saving that this little construction feature will effect over the ordinary ways of erecting steel work.

There is nothing very different in the construction of the various houses, only good workmanship has been used throughout. In all of the smaller buildings wood joists and studs have been used; these are of yellow pine. Studs and joists have been covered with wood lath and plastered in the main rooms. The bathrooms are, of course, tiled, and this on a Portland cement plaster base supported on metal lath. The plastering in the halls, air shafts, etc., is all done on metal lath made by the Bostwick Steel Co., Niles, Ohio.

The doors throughout are of wood, those in the large apartment building will be the new style Miracle doors as made by the Payne Lumber Co. of Oshkosh, Wis. All of the windows throughout are fitted with metal weatherstrips made by the Athey Co. of Chicago.

Particular pains were taken to have all the hardware of pleasing design and finish. The windows have sash locks made by the Payson Mfg. Co. of Chicago, also sash lifts made by H. B. Ives of New Haven, Conn. Doors have been hung on butts made by the McKinney Mfg. Co. of Pittsburgh and fitted with inside door sets made by the Penn Hardware Co.. Reading, Pa. The swing hinges used in the double swing vestibules



are made by the Bommer Spring Hinge Co., Brooklyn, New York. Closets are provided with coat and hat hooks made by the Champion Hardware Co., Geneva, Ohio.

Grading

Considerable grading was necessary, as several entire new streets were made. The whole scheme of the development grading has been to make access easy to the main street thoroughfares, especially the one on which the carline is located. This is Murray Avenue.

Forward Avenue rises quite sharply towards Shady Avenue, and Shady Avenue itself rises toward Morrowfield Avenue. From Shady Avenue to Murray Avenue, Morrowfield Avenue has quite a steep grade. The highest point of the property, 92 feet above Murray Avenue, is at Shady Avenue and Sunapee Way. The steepest elevation, 43 feet, is from Forward Avenue and Murray Avenue back to Alderson Street and Maeburn Road. This will be more clearly understood by an examination of the several pictures.

An examination of the general panorama view of the operation, shown on page 36, discloses the good reason for building the group of six four-family houses (Q, R, and S on the layout diagram). These buildings were made only two stories high so that they do not obstruct the

view of the larger fourteen-family apartments M, N, O, and P.

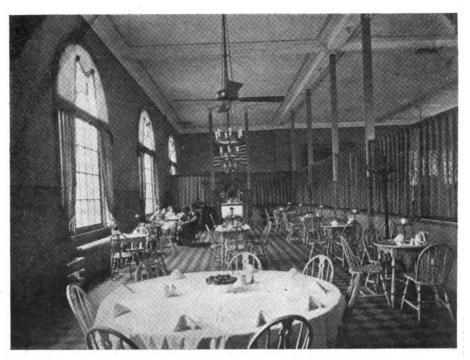
These smaller four-family apartment houses are built in groups of two each. Two units are shown completed in the picture on page 2. The third one is still under construction, as it could not be built until the power house was under way, as the rear wall of this power house serves as the foundation of the front wall of these 2 four-family houses (S on diagram).

These houses face on Maeburn Road and the power house is located beneath this road.

Maeburn Road is retained by a concrete wall and the space between wall and hill has been filled with excavated material and refuse, thus cutting down the expense of hauling the material away. It is in this way that a hill site is so often an expensive job, whereas in this case it has been a direct saving. No material had to be moved any creat distance, and nothing has been allowed to go to waste.

Plumbing

Naturally in a development of this sort where so many families have to be served it was necessary to give considerable thought to the plumbing. Good fixtures were essential, and particular attention had to be given to the sewer drain and vent pipe system.



View of the interior of restaurant

To give some idea of the magnitude of this plumbing job it is only necessary to mention that about 62,000 feet of pipe was used to supply the buildings already completed. This is exclusive of that which will be needed for the large apartment building now under construction. This is a little over eleven miles!

Over 7,000 feet of soil pipe was used. Castiron pipe is used for soil

pipe and black and galvanized pipe for venting. Brass pipe is used for the water lines in the apartment buildings already erected, and will also be used for the large apartment building. It might be interesting to note that in the small apartment, buildings the following quantities of brass pipe were used:

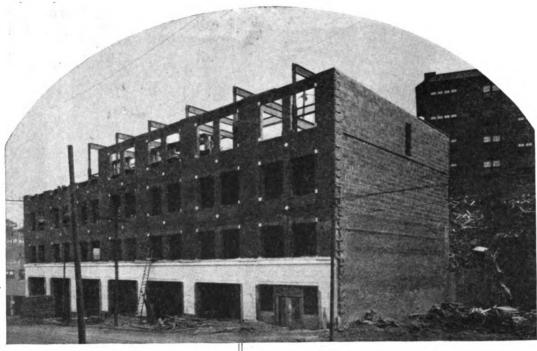
> 60 ft. of 1½ in. pipe 804 ft. of ¾ in. pipe 3,300 ft. of ½ in. pipe 600 ft. of ¾ in. pipe

The kitchens are practically uniform in their equipment, and a one-piece enamel sink with back and drain board has been adopted as standard. This is shown in the interior view of the kitchen. There are independent shut-offs on both hot and cold water lines, so that washers may be installed at each individual sink faucets without closing down any other fixtures. All of the traps, valves and faucets and piping exposed in the kitchen are nickel plated finish.

Bathrooms, as our illustration shows, are very conveniently arranged and equipped. An enameled iron bath tub has been built in the tile walls; this is provided with overhead shower and curtain. Lavatory is an enameled iron bracket basin with a deep apron. The water closet is a porcelain syphon jet with a mahogany seat. The water supply



Interior view of one of the bowling alleys. There are twelve separate alleys on this floor



View of the garage from Murray Avenue. On Maeburn Road and Alderson Street this garage appears two stories lower. Compare with other picpicture shown on page 46

for same is from a low-down porcelain tank.

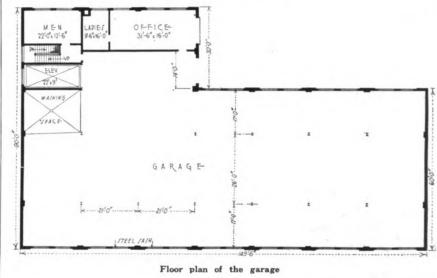
Here again, all exposed fixtures and piping are nickel plated. Shut-off valves are located for each fixture. All of the plumbing supplies and fixtures, also piping, etc., of the heating system were supplied by the Bowman Supply and Manufacturing Co. of Pittsburgh.

The arrangement of the fixtures in the bathroom is very convenient, and while the room itself is small there is plenty of room. A feature is a linen closet located in the bathroom; this is shown in our picture. Below this linen closet is another closet which serves as a wash hamper, and in this are located the shut-offs for the bathtub and shower.

Gas Equipment

Fireplaces are located in many of the living rooms, and in some apartments the dining rooms have also an open fireplace. These are provided with the Brilliant Gas Heaters made by the Ohio Foundry and Manufacturing Co. of Steubenville, Ohio. In other rooms gas outlets have been provided so that gas heaters may be attached.

The kitchens of all the smaller apartment houses have been equipped with Estate Gas Ranges made by the Estate Stove Co. of Hamilton, Ohio. These are provided with a vent pipe connecting with a small chimney, as indicated on the plans.



Heating

All of the buildings in the entire development are to be heated from one central heating plant, with a competent engineer in charge. A special power house has been provided for the boilers, pumps and refrigerating machines. Electric current, however, is from the Public Service Supply. This plant will also supply the domestic hot water supply.

The power house is constructed of concrete, as mentioned before, the rear wall serving also as the front foundation wall of two of the four-family apartment buildings. The roof of the boiler house forms the street above it; coal for the bunkers

is dropped from the concrete roof, or rather street, through a number of convenient coal holes; therefore there is no handling of the coal. Steel sash and doors are provided at all openings of the power house. Ashes are removed from the lower level by a truck coming in the alley behind the moving picture theatre, access to which will be between the theatre and corner stores.

A large smokestack of reinforced concrete, 150 feet high, has been built not only to provide sufficient draft, but also to get the smoke above the different buildings. This stack is 9 feet diameter at the base and 6 feet at the top and lined with fire brick

about 50 feet up. The top will be crowned with a row of electric lights.

Steam will be supplied by four tubular boilers of 2,500 square feet of heating capacity each. These were made by the American Iron Works Co. of Oswego, New York. From the boilers, steam is distributed by a main line 14 inch diameter. From this main different branches extend to the various buildings. These steam lines are covered and buried in trenches so that heat losses through radiation is reduced to a minimum.

Each line of steam pipe is, of course, supplied with valves at different points, so that any section may be closed for repairs when necessary. These valves were made by the Crane Co. of Chicago. To provide access to these valves in portions of the building that are not accessible from

the cellar, an ingenious use has been made of a Majestic coal chute cover with wired glass as made by the Majestic Chute Co. of Hun'tington, Ind. These coal chute covers were built in the walls and allow a man to enter the space within.

Radiators made by the American Radiator Co. of Chicago, Ill., are placed in practically every room of the different apartment houses—60,000 square feet of radiation have been provided exclusive of the various pipe lines.

The Trane system of vapor heating has been adopted, and the special control valves as made by the Trane Co. of LaCrosse, Wis., have been supplied. These, together with the necessary pumps, etc., were all furnished by the Trane Co. through Bowman Supply and Manufacturing

Co., from plans made by their engineer, Mr. R. H. Andregg.

All the different piping was made by the Central Tube Co., with fittings by the Illinois Malleable Iron Co These with the shut-off valves were all supplied for the job by the Bowman Supply and Manufacturing Co of Pittsburgh, who also supplied the various plumbing fixtures and fittings

The system of vapor heat as installed allows each tenant to control the temperature of their own apartment entirely independent of what other tenants may desire in the way of heat. With the Trane special control valve this is easily accomplished and as the return is hastened by pumps located in the power house a perfect circulation is always maintained.

Refrigeration

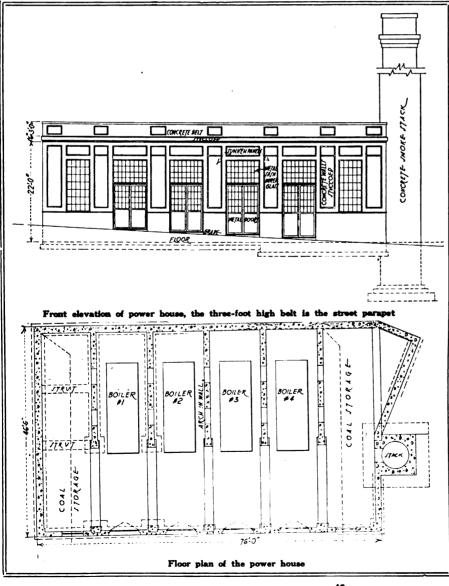
One desirable feature that will be appreciated by the tenants is that the iceman's visits will not be necessary. A refrigerating machine has been placed in the power house. This is a C, O, 2 Machine cooling brine water and this brine is circulated by pumps throughout the entire apartment buildings. The ice compartment in each refrigerator in the kitchen is fitted with a coil which will cool it to This is the required temperature. not only a great convenience to the householder but a considerable saving to them. There is no need to wait for the iceman or have food go bad because of lack of ice when one is forced to be absent from home for a day or more.

Electrical Work

Each apartment, of course, is wired on a separate circuit, as each tenam pays for his own electricity. The meters are located in the cellars where a special meter room has been provided. This is kept locked and prevents any tampering, and when the meter reader comes around he obtains a key from the janitor.

In each apartment a panel board is located in the kitchen which contains the fuses and switches for that particular apartment. This panel box is provided with a cover, and in the majority of kitchens is located directly over the sink. It may be seen in our illustration of the kitchen.

Considerable thought has been paid to the location of outlets. In some of the rooms ceiling lights controlled by wall switches have been used. One feature that is to be commended is



STORE#6

STORE#7

STORES

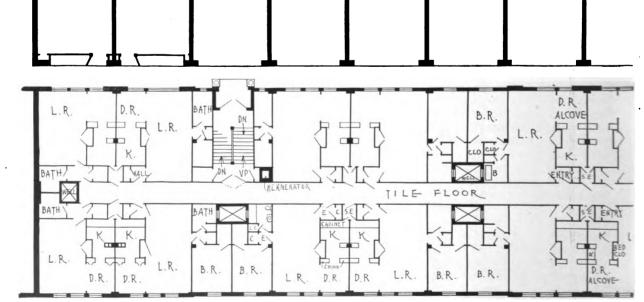
Front Elevation
of the
148 Family
Apartment
House
in the
Watkins
Development
Pittsburgh



First Floor Plan STORE#1

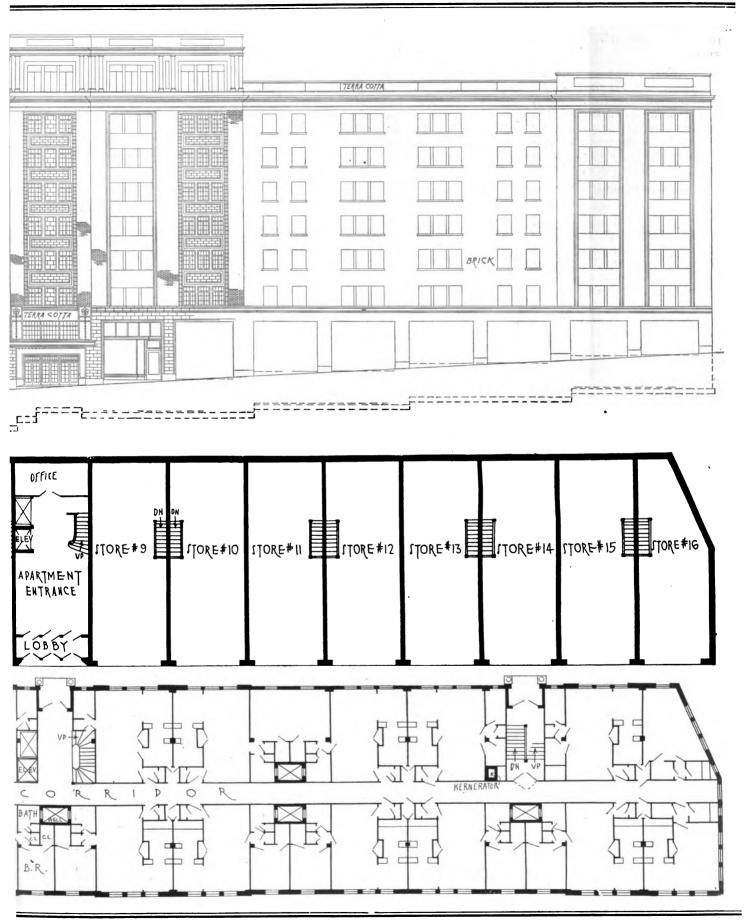
Fourth Floor Plan

Typical of All
Upper Floors



STORE#4 STORE#5

STORE#2 TORE#3



large quantity of baseboard outlets that have been provided for attaching different lamps and other electrical appliances.

In the kitchen a light has been installed directly over the sink, while a ceiling light illuminates the room. A special wall outlet has been placed in the kitchen for attaching the electric iron. In the vestibules of each building, push buttons are located with a name plate and telephone announcer.

Garbage Disposal

Where so many families are housed, the garbage disposal would be offensive if carried on in the oldfashioned way. Modern thought has entered here, and each building is equipped with a Kernerator made by the Kerneer Incinerator Co. of Miswaukee, Wis. An opening to the incinerator is located directly between every two apartments in the smaller houses, usually reached from the rear porch. The incinerator proper is located at the cellar level and a netting placed over the chimney containing the incinerator prevents sparks flying around and becoming a menace. The janitor attends to the burning of the rubbish at stated intervals.

In the large apartment house now under construction two large Kernerators will be installed. These will be located at either end of the building, and in this case the janitor will call for the garbage and place it in the incinerator, thus saving the tenant from doing this work. Further details regarding this service will be described later.

Four Family House

In the group of 6 four-family houses the general construction has been followed. A small entrance hall gives access to the apartments on either side on the first floor and the stairway leading to the second floor. The apartments on each side are identically laid out, but there is a slight difference in arrangement between the first and second floors.

On the first floor an extra large living room has been provided but no separate bedroom, a Murphy In-a-Dor Bed being used. This is located in a large dressing room or closet on one side of the living room. From this dressing room a short hall connects with bathroom, and in this hall a convenient clothes closet has been placed. It will be noticed that in the space under stairs sufficient

room has been left for a chiffonier or dressing table.

Up on the second floor a smaller living room has been provided, which, however, allows space for a separate bedroom. The idea in this case was to please both kind of tenants—the ones who preferred a bedroom and the ones who would rather have a large living room.

The rear porch treatment is worthy of comment. Each tenant has their own private rear porch. The first floor is served by direct steps while the second floor porches are served by a common stairway up to a platform and from there individual steps lead to each porch. In this way absolute privacy is assured. The only common meeting place of tenants is a small vestibule on the first floor.

The dining room is of small size but large enough to accommodate a gateleg table or the popular modern breakfast set. Our illustration shows the outside of these houses as they appeared just before completion, and the floor plans show the arrangement of the different rooms. The interior view is that of a living room on one of the first floors, and shows how cosily they may be fitted up.

The Five Family House

One of the most attractive types of houses in the group is the five-

family apartment house, eleven of which were constructed. One of the same type, owing to its peculiar location on the hill site, has been arranged for six families. Pictures of the exterior of this type of house in group arrangement is shown on page 35, also on page 39 two are shown, together with the plan and interior view of one of the living rooms looking toward the sun porch.

From the public hall one enters the different apartments. On the first floor in eleven of the houses there is only one apartment and this is located on the side with the lowest grade, thus keeping this apartment a good distance from the ground.

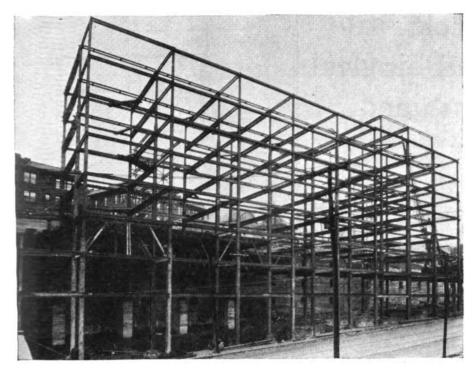
This space on the other side is usually very close to the ground and in some cases in an excavated portion of it and this space with but the one exception has been used as cellar space. This arrangement has made it unnecessary to have any deep cellar excavation and thus there was considerable saving in construction cost.

It may be thought that the owners would lose by not using space of one apartment but it must be remembered that this would be considered as an undesirable one being partly under grade and therefore hard to rent to the class of tenants desired.

The exterior design is quite pleas-



The Garage practically complete



Progress of large apartment house November 25th

ing in appearance. The buildings are of Alliance tapestry brick in different varying shades with several terra cotta inserts as ornaments.

It will be noticed from the photograph of these finished buildings how the grounds have been taken care ot. It must be remembered, however, that these buildings have been occupied only about five months and the shrubs have not had time to grow to show off to advantage. Beds of flowers and hedges are around each building and these are kept in order by men employed by the owners.

The private hall leading from the public hall gives direct access to the living room and bedroom while a shorter hall connects bathroom and kitchen. The desirable feature of the plan design is to be noted in that the bedroom door is directly opposite the passage to bathroom. The whole arrangement of four rooms is very compact; the rooms are of good size and well finished.

The porch is equipped with a Murphy-In-a-Door Bed which really provides an extra room in space that would not otherwise be utilized and also provides accommodation for the extra guest.

The Kernerator is placed on the rear stairway easy of access to all tenants as opening to it is placed on

the platform a few steps down from the different floor levels.

An open fireplace has been provided in both living and dining rooms, and is equipped with a Brilliant gas heater. An interesting interior view of the living room and sun porch was taken from the corner apartment of the building illustrated above it, and it might be interesting to readers of the Building Age to know that this apartment is occupied by a building superintendent connected with one of the large construction companies of Pittsburgh.

Fourteen Family Apartment House

The photograph on page 92 shows the exterior of one of the fourteen family apartment houses. There are four of these fronting on Alderson Street. These are marked M. N. O. P. on the layout plan. The street scene showing these houses under construction illustrates how they are grouped on Alderson Street.

Like other buildings of the group these are built of Alliance tapestry face brick. These buildings are three stories high on the front and four stories on the rear, that is, two apartments are reached by going downstairs from the main entrance, the large central hall makes rather an imposing entrance.

The rooms, as our floor plans indicate, are very conveniently laid out. The front and rear apartments have

a common central porch giving access to the kitchens, and it is on this porch that the opening to the Kernerator is located. This is shown in the smaller photograph page 98.

An interesting arrangement is that of the lower floor apartments, we can hardly call it basement. The apartments here are located in the rear but owing to the hilly site there is considerable distance above grade so that all rooms have a maximum amount of light.

The front portion of this lower floor is devoted to cellar space and in this is located four sets of laundry tubs, steam dryer and each tenant has a storage locker. Entrance to this cellar is from the side steps only, there is no connection between the public hall and the cellar. Notice the location of the meter room on this floor plan.

Casement windows have been used on these fourteen-family apartment houses. Wood casements were first used and as an experiment metal casement sash was used on the one apartment building, these being supplied by Henry Hope & Sons, New York.

The Large Apartment Building

This building will be of skeleton steel construction. The engineering design is the work of Mr. Cecil H. Haggart, structural engineer of Pittsburgh, Pa. The steel work will consist of columns and girders; the intervening spaces between steel girders will be filled with reinforced concrete beams and Natco hollow tile following the regular standard hollow tile and reinforced concrete beam construction as recommended by the National Fireproofing Co.

Sleepers will be imbedded in the concrete on which the oak flooring will be laid, this flooring will be supplied by W. M. Ritter Lumber Co., of Columbus, Ohio. Floors of the corridors and stair halls will be tiled. The partitions between the apartments and corridors will be plastered on metal lath. As a sound deadening between the different apartments Permo asbestos sheathing will be used. This is made by the Crandall Packing Co., of Palmyra, New York.

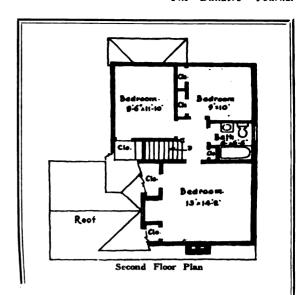
The outer walls of this large apartment house will be built of brick and white glazed terra cotta. The face brick used is of various shades of tapestry brick made by the Alliance Brick Co. of Alliance, Ohio.

(Continued on page 90)

Siucco, Brick, Clapboards and Shingles Are Here Combined

A Six Room House of Distinctive Design

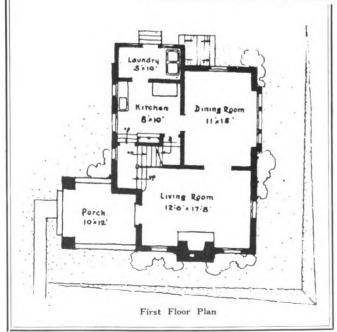
BOYD, ABEL & GUGERT, Architects, Philadelphia



Good lines to the roof account for the attractiveness of this home



Convenient room arrangement makes this home appeal to the



THIS charming small home was built at Wayne, Pa., by Fallon & Harris. There is a certain charm about its lines that appeals to the discrimating home seeker. It is something a little different.

The stucco surface on the first story is relieved by the little color added by red brick lintels. Then against the second story wide white clapboards, there is the red brick chimney. The graceful roof has several breaks—the portion over the porch being carried across the entire front. Then there is the little dormer on the left side which adds just the necessary break to offset the flat appearance of the roof at this end, and it also makes a cozy nook inside the bedroom for a window seat.

In a great many houses where the staircase is placed in the living room, it too often takes space from the room proper, but here a couple of steps from the front door and you are at the stairs. The laundry added at the rear of the kitchen is a nice feature. It gets the tubs out of the way in the kitchen without having them in the cellar which is objectionable to some ladies. The small hall upstairs conveniently connects all rooms.

Nature and Frequency of Builders' Exchange Meetings

HEN I received word that I was on the conference program to speak on the "Nature and Frequency of Exchange Meetings" at the Youngstown, Ohio, conference of the National Association of Builders' Exchanges, I was glad to find the subject one in which I have taken the greatest interest since becoming the Exchange secretary.

It seems to me that frequent meetings and get-togethers are the life of any organization—especially that of a builders' exchange.

When I took over the secretaryship of the Toledo Exchange, monthly meetings were held at night. The attendance was poor, many of the members finding it a hardship to leave their homes after having reached there at the end of a hard day in the office or on the job.

I found that in going after new members that the Exchange was practically unknown—that is, that it was an invisible organization. There was nothing tangible to show the prospect except once a month, and then only a few members gathered in the Exchange club rooms.

Shortly afterward we started the weekly noon luncheons in a private dining room in the Chamber of Commerce. At first the attendance was about that of the old night meetings. It soon picked up in good shape, however, until we now have an average attendance of 50, and have had to take over two dining rooms, thrown together. We expect to soon have the attendance up to 100.

We get the very best speakers possible—some on building subjects and others on matters of general interest. Care is taken to hold the speakers to 20 minutes and to end the meeting in an hour and ten minutes. In that way no one is held away from his office or job.

We have gotten fine space in the papers on every meeting. We By JAMES E.GRUBE

Secretary Builders Exchange,
Toledo, Ohio.

invite the newspaper men to the meetings and pay for their lunch. In case they have other assignments and cannot get there, I use what little newspaper experience I have and write the story myself.

We have never gotten less than half a column in the morning paper—the first to come out after the meeting. This is due to the fact that the speakers we have secured have been men whose utterances demanded that much space.

I KNOW a number of Exchanges that have weekly meetings and some who meet daily. Others hold their meetings farther apart. Several have cafeterias in their buildings and their members are able to meet daily. These should certainly be the most successful Exchanges of all. The Toledo Exchange expects to move to new quarters soon and when we do every effort will be made to include a cafeteria, where the members can meet every day and discuss their problems.

There should be no necessity of putting on a program every day, but one should be staged once a week.

It seems to me that these noon meetings are invaluable, for the reason that men are more sociable and in a better mood when at the lunch table. The fact that they are losing no time at a meeting of this kind helps greatly. They all have to eat somewhere and might as well eat together and hear something of profit as well.

These meetings do much to create a better spirit among the men of different crafts. I have noticed very distinctly in my work in

the Exchange a feeling of distrust and dislike in many cases of men in one line for men in another line. It is that feeling that must be eradicated if the building industry is to thrive, and I believe the noon meetings will do much to do away with the feeling that exists. I know it has cut it down considerably in Toledo.

Care should be exercised in selecting speakers who will be of interest to all lines—that is, not centering on any one subject for more than one speaker. The subjects do not have to center on building particularly.

The bigger and more prominent the speaker the more publicity you will get and that is what makes any organization.

All this serves to increase the spirit in an Exchange and in time will do much toward eliminating any feeling between the members.

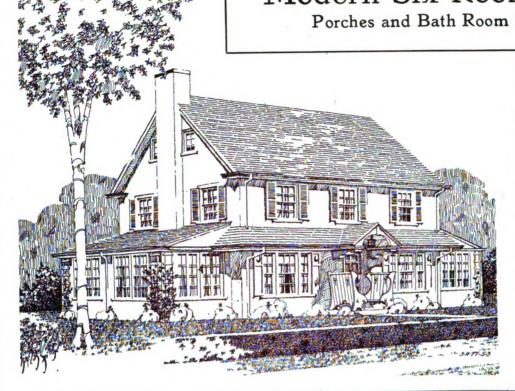
HAPPEN to be a member of the Kiwanis Club and have always been impressed with the cooperation and good feeling that exists among men of all lines in that and similar organizations. The members of the Toledo Exchange who afford the greatest help whenever wanted are men who belong to clubs of that kind. This is because they are already trained along the lines we hope to train the others.

If we can instill into the Exchanges the spirit and pep that pervades Kiwanis, Rotary, Exchange and other clubs of that kind, that have made them internationally famous for the way in which they pull together, the building industry will surely be 100 per cent. better off than it is at present.

I feel sure that the noon luncheon meetings of the Exchanges is the best way to bring this about.

Modern Six Room House

Porches and Bath Room Featured



Specially Designed for BUILDING AGE and THE BUILDERS' **IOURNAL**

By R. C. HUNTER & BROTHER Architects, New York

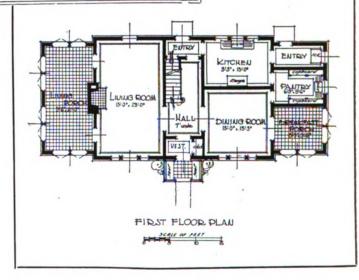
NCLOSED porches have become almost a necessity in the modern home, and their popularity is justified.

An open porch is, at best, but a shelter that can be used but a short time each year, the rest of the year the porch remains idle, but it must be kept in order and repair, just the same.

With the enclosed porch we have what is really another room added to the house, and, when the windows are properly designed, the exposure is delightful, plenty of sunshine during the winter months and plenty of air during the summer.

With an open porch one must retreat inside the house during a storm and also move all of the furniture inside, while in the case of the enclosed porch, it is simply necessary to close the windows on one or two sides. Temporary sash and screen enclosures for porches are seldom satisfactory, as they are not tight at the joints, etc., and therefore the porch cannot be proply heated, and it is difficult to keep out the wind and storm on account of the light flimsy construction

Constructive Details Show How the Bench and Cornice Should be Made



almost always adopted for these temporary enclosures. The enclosure should be built as a part of the house and just as substantial in every respect.

In the house shown herewith, two enclosed porches are provided, a large one that opens from the living room, and a smaller one that connects with the dining room—a breakfast porch.

A door can also be provided from the breakfast porch to the pantry, so that meals can be served in the porch without disturbing the main dining room.

The living room occupies the full half of the main house on one side of the hall, with the dining room and kitchen in the opposite half. The pantry and kitchen entry are placed in the wing at the rear of the breakfast porch. This arrangement gives a good relation in the size and location of the various rooms.

Quantity Survey for Modern Six Room House

HE quantities given are for estimating. All measurements are Net unless otherwise noted; areas given for such items as sheathing, flooring, etc., are NET areas to be covered with no allowance for matching, waste, etc. Minor outs have been disregarded.

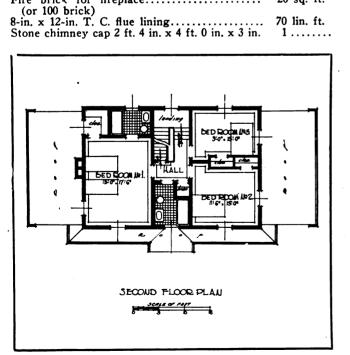
etc. Minor outs have been disregarded.
Such items as clearing, etc., temporary work and protection, scaffolding and general equipment and supplies have not been included.

Such items as are marked "Unit" are to be estimated in a lump sum, following requirements of plans and specifica-

tions.		E	XCA'	NOITAV	
	(F	£	-:		 (babulani

(Excavation for pipe trenches not incl	uded)
Excavation for cellar	250 cu. yds.
Excavation for footings	15 cu. yds.
Excavation for areas	4 cu. yds.
Excavation for trench walls	21 cu. yds.
Excavation for leader drains and dry wells	12 cu. yds.
Backfilling around walls, etc	43 cu. yds.
Leader drains and dry wells	
Field stone for dry wells	9 cu. yds.
4-in. salt glazed tile drain pipe	36 lin. ft.
4-in. elbows	10
MASONRY	
Concrete Work.	

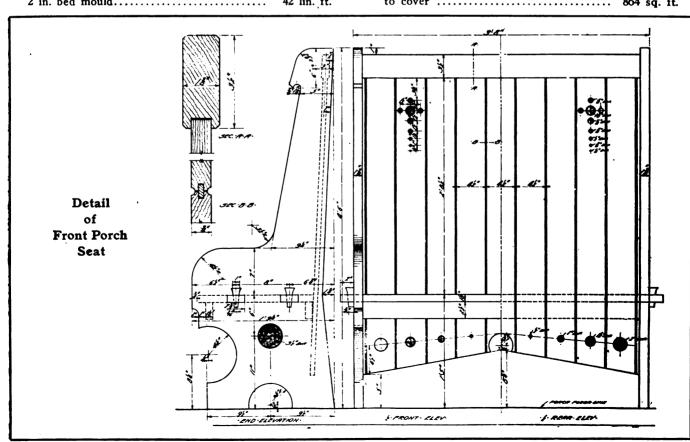
Concrete for cellar walls	830	cu.	ft.	
Concrete for footings	184	cu.	ft.	
Concrete for trench walls	167	cu.	ft.	
Cellar floor (3-in. concrete and 1-in. cement				
finish)	725	sq.	ft.	
Area bottoms (brick and sand)	40	sq.	ft.	
Porch floors (12-in. cinders, 3-in. concrete and				
1-in. cement finish, colored and blocked off)	42			
Concrete forms	2800	sq.	ft.	
Pointing cellar window sills	22	lin.	ft.	
BRICK WORK				
Common brickwork for chimney	162	cu.	ft.	
(or 3.3 M)	15		£4	
Face brick for hearth and jambs	13	sų.	11.	
Fire brick for fireplace	20	sa.	ft.	

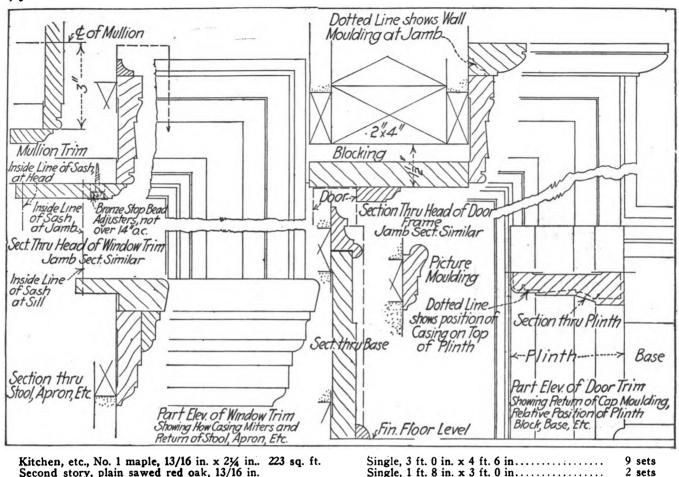


MASON'S IRON WORK	
Fireplace damper (3 ft. 0 in. opg. with throat,	
etc.)	1 Unit
C. I. ash dump	1 Unit
C. I. cleanout door for ash pit (16 in. x 12 in.)	1 Unit 1 Unit
C. I. cleanout door for boiler flue, (8 in. x 8 in.) Thimble for boiler flue	1 Unit
PLASTERING	1 Ome
	050
Three-coat patent plaster on wood lath—gross. (Net, 692 sq. yds.)	850 sq. yds.
On masonry—gress	80 sq. yds.
G. I. corner beads	60 lin. f
Stucco on metal lath—gross	360 sq. yds.
(Net 290 sq. yds.)	
TILE WORK	
Tile work for bath rooms.	
Floor (1 in. hex. white)	64 sq. ft.
Wainscot (3 in. x 6 in. white wall tile)	176 sq. ft. 33 lin. ft.
6 in. sanitary base	44 lin. ft.
SHEET METAL WORK	11 1111 101
	190 lin. ft.
Flashing for roofs, etc	12 lin. ft.
3 in, leaders	100 lin. ft.
2 in. leaders	8 lin. ft.
Bends for leaders	10
Gutter thimbles	10
4 in. half-round hanging gutter	36 lin. ft. 12 lin. ft.
3 in. x 4 in. gas range vent	26 lin. ft.
Cap and thimble for same	1
CARPENTRY WORK	
Timber-All No. 1 common stock, yellow pine,	
unless noted.	
Cellar girders, 6 in. x 10 in.—2/16, 2/8	240 F. B. M.
2 in. x 3 in. nailer—92 lin. ft	46 F. B. M.
Sills, 4 in. x 6 in.—14/12	336 F. B. M. 320 F. B. M.
Studs, girts and plates, 1st floor	
2 in. x 4 in.—298/10	1985 F.B.
Studs, etc., 2nd floor.	1505 D D 35
2 in. x 4 in.—16 4/10, 81/8	152/ F. B. M.
2 in. x 8 in.—55/14	1026 F. B. M.
2 in. x 8 in.—55/14	420 F. B. M.
2nd floor joists.	
2 in. x 8 in.—11/16, 44/14	
2 in x 8 in.—11/16, 42/14	1020 F. B. M.
2 in. x 8 in.—39/8, 24/12	988 F.B.M.
2 in. x 4 in.—5/14	47 F.B.M.
Ridge. 2 in. x 8 in.—3/12	48 F.B.M.
Floor bridging. 2 in. x 3 in.—600 lin. ft	200 E P 14
Cornice outlookers, hood rafters, etc	300 F. B. M.

D LUE Print Plans and Specifications of many Beautiful Homes of Moderate Cost can be supplied at a nominal price by BUILDING Age and The BUILDERS' JOURNAL, 239 West 39th Street, New York.

CARPENTRY—Continued		Porch seats-4 ft. 0 in. long x 4 ft. 0 in. high	2
Porch ceiling beams, etc.		Lattice panels—1 ft. 4 in. x 8 ft. 6 in	6
2 in. x 4 in.—36/10	240 F. B. M.	Windows—Frames complete with sash, outside	
Cellar partitions (studs).		trim, etc., sash 13% in. thick, glazed D. T.	
2 in. x 4 in.—8/14	75 F.B.M.	Cellar windows (trim both sides).	
Sheathing (7.8 in. x 8 in. shiplap, no outs).		Single top hung casem. sash,	
Walls—to cover	3200 sa. ft.	3 ft. 0 in. x 2 ft. 0 in.—4 light	2
Sheathing paper (waterproof)	3200 sq. ft.	Mull. top hung casem. sash,	
Shingle lath, 1 in. x 2 in	4650 lin. ft.	ea. 3 ft. 0 in. x 2 ft. 0 in	2
Grounds, 34 in., surfaced one side	2200 lin. ft.	First floor windows.	
Sheathing for cellar partitions.		Triplet D. H. sash, cent. 3 ft. 0 in. x 5 ft. 2 in.,	_
7/8 in. x 8 in. shiplap—to cover	200 sq. ft.	side 1 ft. 6 in. x 5 ft. 2 in	2
Rough flooring (1/8 in. x 8 in. shiplap).	•	2 pr. casem. sa., ea. pr. 3 ft. 4 in. x 5 ft. 2 in	6
1st and 2nd floors—to cover	1960 sq. ft.	Single D H. sa., 3 ft. 0 in. x 5 ft. 2 in	1
Furring (% in. x 2 in.)	400 lin. ft.	Single D. H. sa., 2 ft. 6 in. x 3 ft. 6 in	2
Shingle roof	21 squares	Triplet D. H. sa., ea. 2 ft. 6 in. x 3 ft. 6 in	1
(or 14,500 shingles).	•	Second floor windows.	
EXTERIOR FINISH		Single D. H. sa., 3 ft. 0 in. x 4 ft. 6 in	9
	140 11 4	Single D. H. sa., 2 ft. 6 in. x 3 ft. 6 in	1
4 in. x 5 in. wood gutter	138 lin. 1t.	Attic windows.	
Main cornice.	00.11 6	Single D. H. sa., 2 ft. 6 in. x 3 ft. 6 in	1
7/8 in. x 6 in. fascia	80 lin. ft.	Single casem. sa., 1 ft. 8 in. x 3 ft. 0 in	2
7/8 in. x 10 in. soffit	80 lin. ft.	Single casem. sa., 1 ft. 8 in. x 2 ft. 6 in	1
2 in. bed mould	80 lin. ft.	Pr. casem. sa., 3 ft. 8 in. x 3 ft. 0 in	1
Hood and porch cornice.	(0.11 ()	Shutters (11% in. thick, paneled).	
7/8 in. x 6 in. fascia	60 lin. ft.	1 ft. 6 in. x 5 ft. 3 in., single	4
5 in. crown mould		3 ft. 0 in. x 5 ft. 3 in., pr	1 pr.
2 in. bed mould		Blinds (11/8 in. thick, with louvres, etc.)	•
7% in. x 4 in. fascia	44 lin. ft.	3 ft. 0 in. x 4 ft. 7 in., pr	9 pr.
Fascia for hood over front entrance, with key	•	Exterior door frames (134 in. thick, rabbeted	
block, etc.	1	complete with outside trim).	
Sawed wood brackets for hood.	2	Frame for rear ent. door, 2 ft. 8 in. x 6 ft. 8 in	2
10 in. x 14 in. x 40 in	2		۷
Raking cornice. % in. x 4 in. fascia	72 lin. ft.	Frame for front ent. door,	1
5 in. crown mould	72 lin. it. 72 lin. ft.	3 ft. 0 in. x 6 ft. 8 in., with trans., etc	1
		Exterior doors (all to detail).	1
7% in. x 8 in. soffit		Front ent. door, 3 ft. 0 in. x 6 ft. 8 in., glazed	1
	/2 nn. 11.	Rear ent. door, 2 ft. 8 in. x 6 ft. 8 in. x 134 in.,	2
Dormer cornice. % in. x 4 in. fascia	42 lin. ft.	glazed	4
5 in. crown mould	42 lin. ft.	Living room, dining room, liv. porch, etc.,	
% in. x 4 in. soffit		plain sawed white oak, 13/16 in. x 2½ in.,	
2 in. bed mould		to cover	864 sq. ft.
Z III. DEU IIIOUIU	→2 IIII.,It.		oo+ sq. it.





Kitchen, etc., No. 1 maple, 13/16 in. x 2¼ in 223 s Second story, plain sawed red oak, 13/16 in. x 2¼ in., to cover	sq. ft	Single, 3 ft. 0 in. x 4 ft. 6 in	9 sets
Slat floor under laundry tubs, 3 ft. 0 in. x 4 ft. 1. Joist hangers (1/4 in. x 2 in. wrought iron).	sq. it. sq. ft.	Single, 1 ft. 8 in. x 2 ft. 6 in Pr. 3 ft. 8 in. x 3 ft. 0 in Basement. % in. x 6 in., moulded % in. x 4 in., plain (closets) 2 in. base mould ½ in. base quarter round floor moulding	2 sets 1 set 1 set 500 lin. ft. 90 lin. ft. 500 lin. ft. 590 lin. ft. 540 lin. ft.
	• • • • • • • • • • • • • • • • • • • •	Mantle for living room	1 Unit
2 ft. 6 in. x 6 ft. 10 in	sets sets sets sets sets sets set set se	Interior doors. 2 ft. 10 in. x 6 ft. 10 in. x 1¾ in., glazed. Pr., ea. 2 ft. 4 in. x 6 ft. 10 in. x 1¾ in., glazed. 2 ft. 10 in. x 6 ft. 10 in. x 1½ in. 2 ft. 6 in. x 6 ft. 10 in. x 1½ in. 2 ft. 4 in. x 6 ft. 10 in. x 1½ in. 2 ft. 6 in. x 6 ft. 8 in. x 1½ in. 2 ft. 6 in. x 6 ft. 8 in. x 1½ in. 2 ft. 4 in. x 6 ft. 8 in. x 1½ in. 2 ft. 4 in. x 6 ft. 8 in. x 1½ in. 2 ft. 5 in. x 6 ft. 8 in. x 1½ in. 2 ft. 6 in. x 6 ft. 8 in. x 1½ in. 2 ft. 6 in. x 6 ft. 8 in. x 1½ in. 2 ft. 6 in. x 6 ft. 8 in. x 1½ in. 2 ft. 6 in. x 7 ft. 0 in. x 1½ in. 2 ft. 0 in. x 6 ft. 0 in. x 1½ in., cellar door. Closet shelving (⅙ in. x 12 in. pine). Hook strip (⅙ in. x 4 in). Rabbeted shelf cleat 1 in. dia. pipe clothes rod. Pantry cupboard (front, 6 ft. 6 in. x 8 ft. 6 in.), countershelf, drawers, doors, etc. Main stairs, 1st to 2nd stories, 15 risers, open balustrade, etc., 3 ft. 2 in. wide, newels, etc. Cellar stairs, 12 risers, box pattern, 2 ft. 8 in. wide, yellow pine, wall hand-rail, etc Attic stairs, 13 risers, box pattern, 2 ft. 6 in. GENERAL CONDITIONS Add for permits, fees for water and sewer etc., insurance and general overhead charges. Allow for general work not listed, such as griing, etc. Include sub-bids: Hardware and applying sa and decorating, plumbing and gas fitting, heating the sub-bids: Hardware and applying sa and decorating, plumbing and gas fitting, heating the sub-bids: Hardware and applying sa and decorating, plumbing and gas fitting, heating the sub-bids: Hardware and applying sa and decorating, plumbing and gas fitting, heating the sub-bids: Hardware and applying sa and decorating, plumbing and gas fitting, heating the sub-bids: Hardware and applying sa and decorating, plumbing and gas fitting, heating the sub-bids: Hardware and applying sa and decorating plumbing and gas fitting.	ading, plant- me, painting



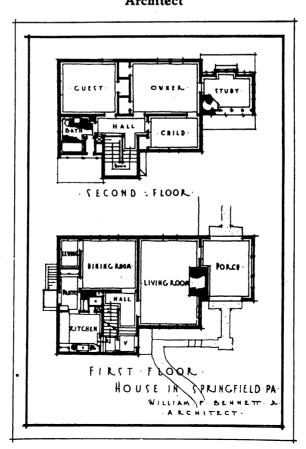
Graceful Roof Lines Feature This Cottage

WM. F. BENNETT, JR.,

NUSUAL in lines, is the design of this Something cottage. out of the ordinary like this will be sure to attract attention, still there is nothing freaky about its design, but it is a break away from the commonplace and this result builders are after.

The awful monotony of having houses so alike in design is painful to behold. Builders and architects have been striving to educate the public away from the commonplace. It costs but little more in most cases and in some cases far less, to build a building that has real style to it.

The grouping of the casement windows, the hooded entrance and the high window on stair landing are some of the features that are peculiar to this design. The exterior as our picture shows is stuccoed, being built on a wood frame, sheathed and covered with metal lath as a base for stucco.



Architect

Note how one window on the second floor front is provided with shutters; this is the only one so equipped; its object being to cut down the wide expanse of stucco surface that would otherwise appear.

The roof is covered with wide slates, laid after the fashion of the old time English house. Note how flue lining extends from the chimney top at different heights. Also how the side window of the child's bedroom breaks through the roof. These are some of the little details that add distinction to this house and gives it an individuality of its own.

Stripped of these the house would be just an ordinary gabled affair such as can be seen by the thousand throughout the country. However, it takes real knowledge of design to just put on the touches that are needed to elevate a common design to something that has originality besides good form.



BUSINESS GETTING METHODS

Ideas that have worked for others

Interesting Newcomers in Home Building

By FRANK FAULHABER

VER in Brooklyn, N. Y., there is a building contractor who has made a notable success in his field, who recently declared: "In our trade it is just as important as in others to interest prospects; in fact, more so. It is not so much the percentage of returns that must be considered; if, following some special sales campaign, we receive a few contracts our work here will not have been in vain. My advice to other builders is to make the most of every prospect. If a person is at all interested in a home for himself one must not lose sight of the opportunity.'

This counsel should be well taken. It is not to the best interests of the builder to take whatever business happens to come along. There is more always to be had-by making special efforts for it; and it will be the purpose of this article to illustrate how the builder can make for more business with a certain class of prospects. There comes to mind the newcomer to town. How often does the family take up a preliminary residence, awaiting opportunity until a favorable proposition in the form of a home comes along? Is it not worth while to interest these people?

Perhaps the family comes from a distant neighborhood, or from another town. Father's going to buy a house, but he wants first of all to get the lay of the land; he must know something about the community: its people, its houses, its facilities. Very well, but the foresighted builder will lose no time here. Many times it will prove profitable to visit the newcomer directly. In other instances sales letters will come in timely. Now a word will be uttered relative to the procurement of these specific prospects. The building contractor should experience little difficulty here. And much of this work can be attended to by some dependable assistant.

ONSIDER your local newspapers. These often list the names and addresses of newcomers to town. Then there are the moving-van men, who have the desired information at their very finger tips. Other business men in the town often have valuable lists of these possible prospects. Just as you can make a satisfactory arrangement with the moving-van people, so, too, should a mutual plan be made with the other merchants.

Now having the names and addresses, what is the builder going to do? He may send a representative, or he may immediately use some sales letters. But these letters, it should not be overlooked. should be made as specific as possible, also as personal as possible, so that the recipients will really welcome them and be receptive to your propositions. If the builder goes into this work thoroughly the results will be gratifying. first letter is not expected to bring in the business; this particular message should be more designed to get better acquainted with the newcomer. That is the prime and valuable object. Get acquainted with the new family; the good work will come later.

Naturally every family written to is not a potential prospect; however, that is no deterring feature. Some of the newcomers will not be interested in the purchase of a home at the time, but may be in the market later. If you think of them, they will think of you. Those prospects who are in any way at all interested, represent many possibilities. And these newcomers who indicate they will not be in the market can easily be eliminated. By including stamped postal cards with your letters, about which more later, you will be providing yourself with much valuable data of subsequent use.

Let us present the first, the getacquainted message. The following illustrates:

Dear Mr. and Mrs. Sherwood:

We are mighty pleased to hear that you have moved to this town. We are sure you will never regret the move. Your new surroundings, as also your new neighbors, we are sure will appeal to you in every way. And we have hopes that we can count you as one of us for a goodly number of years.

Naturally we like to get acquainted with all the people coming to our neighborhood, and it is with this in mind that we hereby invite you to call, whenever convenient, the quicker the better, so that we can all find out a little more about each other. We will assuredly deem your visit a high honor to us, and are now awaiting it with great anticipation. At the same time, when you come, we

will gladly tell you something about our homes, which we are furnishing to so many of your neighbors. We are sure you will want to know something about these. Come soon! Thank you!

In the foregoing we have an appeal that gets close to the pros-There is nothing dry-aspect. dust; nothing hackneyed and nothing to repel. To the contrary, the recipient reads onward to the end, and is favorably impressed. This particular message should be especially valuable by reason of the close personal touch and its timely element. Many people will be sure to respond. Thus you will have many opportunities to tell about the homes. Those who do not answer require a follow-up.

Doing this sales-letter work properly and thoroughly is certain to assure its success for the builder. Now, in the succeeding is presented another interesting and sure-to-be-effective appeal:

Smith & Jones, Builders. Dear Mr. and Mrs. Sherwood:

For some time we have been awaiting a visit from you. But it does not surprise us at all that you have not yet come. Let us tell you about a young woman who had finally accepted our invitation to call. This young woman said: "Indeed, I should have called much sooner, had I but had the time! I think you peo; le can well appreciate the much annoyance involved when removing to another home! It was that way with us, but now I am glad to say that everything is fixed up and there is more time to get better acquainted. You must know, when we started to arrange our furniture, nobody was pleased. First my husband objected to the way certain articles were placed; I didn't like his suggestions! Then there was my mother who had ideas of her own! So you can see we had quite a bit of work until everything was set up to the satisfaction of all! But now we are nicely placed, and I must tell you that we are, just as you suppose, contemplating the purchase of a home for ourselves. My husband will talk that over with you later. Meanwhile, you can tell me all about them now."

And that is just what we did.

THERE is a suggestion in this article on how builders can prepare a valuable list of prospects for future work. Home building will be the backbone of the building industry in the smaller towns for many years to come. Therefore, it is well for builders to establish good will so that when jobs are to be given out, the owners will come to you.

We are gratified to say these people have now a cozy little home of their own. We are expecting you, too, soon, and will then gladly tell you more about our services.

SMITH & JONES, Builders.

I N the preceding the builder has another effective sales letter. Everything in tune with the subject; there is both timeliness and the personal touch. The recipients of this second letter will not all respond; therefore we mail a third, including a stamped postal card that will furnish the builder with valuable information. The succeeding specimen is an important one:

Dear Mr. and Mrs. Sherwood:

We have been wondering why we have not as yet heard from you. Surely we desire to get better acquainted with all our new neighbors. But we are not disappointed; positive are we that sooner or later you will come and then talk things over. When you do come, no one will be more pleased than we.

Meanwhile, we must tell you just a little bit about the homes we are building for so many pleased people. We are sure you desire a home of your own; perhaps you are not as yet prepared to contemplate its purchase, but just the same we will be more than glad to talk all this over with you.

One woman beamed her gratification following the purchase of a pretty little house. Happily, she observed: "That was my constant longing—a home for myself! Now

we have it! Everything so attractive, so much room for all; we are never bothered; the children can play to their hearts' content; my husband is more happy; and I!—well, you people have taken a load of worry off my mind! Really, I can't ever thank you enough for having brought the matter to our attention! Our comfy, little home will be a happy reminder for the remainder of my life! Let me thank you again!"

The experience of this woman is but typical of many of our clients. The purchase of the right home for you is an important event in your life. Let us help you never to regret it. We shall expect you, but are now enclosing a card for which we thank you to fill out. Let us hear from you, either by personal call, by phone, letter or card. Thank you!

SMITH & JONES, Builders.

Thus the builder has another helpful appeal. Everything is in concord with what the recipients have recently experienced; the entire three letters are specific; they are the kind that get there. By quoting the conversation of a client who is pleased with your service you make an effective sales argument. Through such conversation you can weave interesting and compelling arguments for the purchase of a home, often much better than by stating so many dry facts that do not awaken the proper interest in a prospect.

Now with regard to the postal cards. These should contain such questions as: "Are you contemplating the building of a home of your own?" "When?" "Wouldn't you want to hear all the interesting facts about our homes?" "Shouldn't we send our representative, so that he can talk things over with you?" and "Would you please tell us of your friends who may want to town a home of their own?" These are but representative queries; the individual builder can alter them and add such others as suitable for his particular purposes. With the incoming postals the builder will have more definite information before him; he will be in a satisfactory position to advance his future appeals Get acquainted with the newcomers! It pays.



NE of the largest retail candy companies in the country—the United Retail Candy Stores, Inc., of New York, has recently launched a unique advertising campaign, the crowning feature of which is to be the giving away of a completely furnished, sixroom house to be located at Forest Hills, Long Island, New York.

In the decision as to who will get the house when the campaign is brought to a close next April, paper coupons will play the part that money would ordinarily play in such a transaction. The person for whom the greatest number of trade coupons have been registered as "votes" will be presented with a deed to the house, its grounds and its furnishings.

The house, picture and plans of which are shown on this page, was designed by Aymar Embury, 2nd, well known suburban home architect. It will be built on a corner plot with a total frontage of 150 ft.

The architecture of the building will follow the general Colonial style with some of the spirit of the early Pennsylvania houses. This is exemplified by the Germantown hood across the front, somewhat modified by the arched break over the entrance door.

The foundations of concrete will enclose a large, airy cellar extending under the entire house and containing the laundry, storage room and heating plant. The first story walls will be faced with soft toned red brick; the second story, covered with wide shingles painted white.

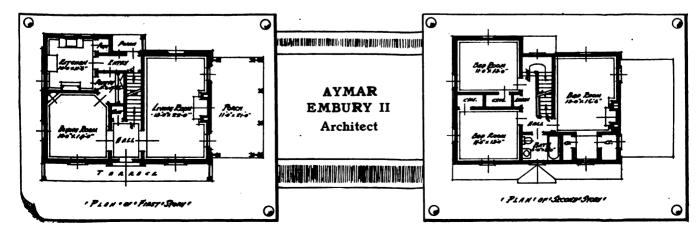
At each end of the house trellisses will be set to mark the termination of a broad brick terrace running the entire length of the front. All windows will be fitted with green shutters. The roof is to be of green slate and copper will be used in all flashing and sheet metal work.

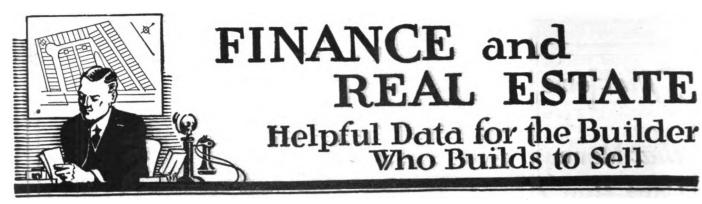
The interior is designed to harmonize with the exterior. An attractive entrance hall, in the center of the house, opens on the right into the spacious living room and on the left into the dining room. In the outer wall of the living room is a fireplace framed with a colonial mantel, with French doors on either side opening upon a large, glass enclosed porch.

The dining room is fitted with a built-in china closet, and, at the opposite angle, has a door leading into a small pantry which is equipped with a built-in dresser. This pantry is large enough to provide ample space for the refrigerator.

On the second floor there will be three bedrooms with abundant closet room and a linen press. The master's bedroom will be cozily set off by a fireplace and mantel.

The woodwork throughout will be painted with the walls and ceilings plastered and painted. The floors throughout will be of hard wood, stained and waxed. Construction of the house will be supervised by Mr. J. B. Pfeiffer.





Novel Division of Lot to Secure Maximum Frontage

a subdivision is to divide the lots into rectangular lots of 20 x 100 feet, or etc., usually with four square corners, and this is especially so in localities where houses are to be erected in rows or terraces as they are termed in some localities.

A rather novel way of dividing a plot is shown in the accompanying illustrations which is a German idea originated by a real estate operator in a Berlin subdivision.

Even in Germany, small buildings are often built in rows for the sake of economy as in this way they require less ground space and the party walls require less building material than the detached house.

One great fault, however, of this type of building is that it cuts off light and air on two sides, and this is generally the deepest part of the building so light and air is only had from front and rear; cross ventilation is of course impossible.

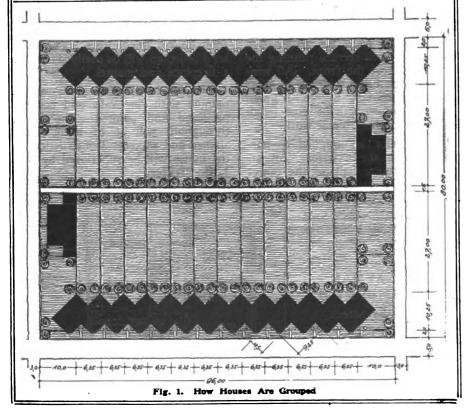
The different illustrations given here show how this German idea worked out. The white space in diagram Fig. 4, shows exact shape of lot which belongs to each owner of a house. It certainly makes a curious figure, but some decided advantages have been obtained.

The floor plans of the house have been laid out according to German ideas. A living room and kitchen comprise the first floor layout. One corner of the kitchen which is of very large size has a built-in bench which provides seats for two sides of the dining table, forming a rather attractive dining nook.

The bathroom and scullery open from the kitchen and at the very rear a small stable is attached, this feature, however, certainly would not appeal so well in America. On the second floor two large bedrooms are laid out.

Placing the house at a 45 degree angle as shown here provides light and air to practically four sides of the building. There is only one section of the wall that is blank.

Each house has its own little private front garden, its triangular shape secures it against the prying curiosity of neighbors and an equally well protected garden is located in the rear. The front garden has an area of approximately only four square yards, but the garden in the rear can be of considerable size, depending on depth of lots. One end of this big garden is of course tri-





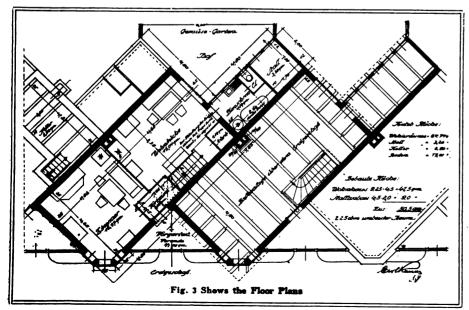
angular in shape. The plot plan calls for an alley to be open between the backs of lots.

There are many advantages in having light and air come from four directions as is possible by this arrangement. The very curious shape of the property made necessary by such a layout, however, will, we feel, prevent this scheme from becoming popular in America.

Most of our developers are too much wedded to the rectangular cutting up of plots. In some of our later developments, however, the use of curved and diagonal sites are coming into more use and this of course has brought radially divided plots into more common use. It may be that such an idea as we present here will find some sponsors in this country.

Except in cities where the rectangular street is the only kind used, a little thought should be given to the proper placing of the house, for at no extra cost it will be made so much more attractive to live in.

By properly placing a house, or



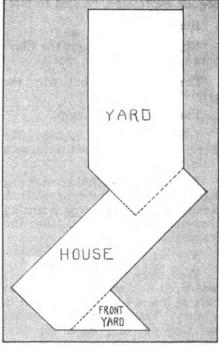


Fig. 4. The Exact Shape of Lot

"orienting it, as it is called, the principal rooms will receive sunlight and shade at the times most desirable for the comfort of the occupants.

A little study of this subject will enable builders to advise their clients regarding the different points that really should be taken into account before the house is planned.

OFFICE and JOB **MANAGEMENT**

Things the other man has found out that save money



What Will the Job Cost?

Some Pointers on Preparing Estimates

By MORGAN G. FARRELL

Vice-President, Frank Hill Smith, Inc., Engineers, New York

BUILDER met a friendly competitor on the street recently. Noticing his woebegone expression, he said to him:

"Business bad?"

"No, in fact, I just got the Clayborne job."

"Congratulations, but why the grief?"

"I've lost before I begin."

"I knew you must be low. We were. But we expected to make a little on it."

"I did too, until I looked over our estimate when we were elected. Remember the alternate omitting the monitor that ran the full length of the building?"

"Yes, what about it?"

"Well, they took us up on it. I was tired out when I got to that part of it and I went through it in a hurry. They left out the monitor but they put in a lot of big skylights instead—which were only shown on the plans. No sign of them in the elevations or specifications. I forgot them. Six thousand dollars." And he sighed.

"Too bad. I hope you have better luck on the rest of it.'

And builder Number One went on with a cheerful expression on his face. It was the first he had heard of the skylights. He had forgotten them, too!

· Co CONTRACTORS. ESTIMATE CHECK SHEET.

SHEET NO

ESTIMATE No DATE Plain, Rein Wall Footing Rer Chimney Found Tank Machy Fig. 1 Exterior Steps Interior Stairs Pits Trenches Manholes Sills Lintels Cost Stone UnderFloors Floors Platforms Roof Fill Sidewalk Drive Girders Beams Spandrels Floor Slab Roof Slab Found Wall Curtain " Retaing " Partitions Fireproofing Wood forms Metal . Hardener Waterproofd Cem. Top Coat Tarpaulins Covering Machine Rent

E RRORS in estimating are responsible for a greater percentage of builders' losses than any other single cause. The items overlooked or misinterpreted, the omission of work clearly to be included, or of work "to make a complete and workmanlike job" (as the specifications so glibly put it), mistakes in the extension of amounts, incorrect unit prices, haste, negligence in taking off quantities, catch bids on the part of sub-contractors, and worst of all, inexperience or self-deception on the part of the contractor—these are some of the fruitful reasons why the job loses money before even a shovel has been put in the ground.

Estimating the cost of a building from the plans and specifications requires the highest degree of concentration and continuity. The estimator should not be compelled to carry any more in his mind than the job immediately before him. All other information needed by him should be available for reference by him, in the most complete form.

He should have at hand, ready reference sheets giving in compact form information such as the amount of cement, sand and gravel in different concrete mixtures, the board feet in lumber of all sizes and length, the covering value of paints, and all the miscellaneous data for converting quantities taken off by the foot into the units in which the material comes or in which the work is executed.

He should have his handbooks for timber, steel, reinforced concrete, etc., beside him. More important still, he should be provided with a standard itemized list of every kind of labor, and material, of all equipment, and of all operations entering into a complete job, against which he must check off the items as he completes them. One page of such a list is shown in Figure 1.

Many contractors use a printed estimate form which applies to any kind of building. All the main headings of Figure 1 are printed on the right hand side of the sheet with proper spacing for the necessary entries. Each item is numbered for ease of reference in correspondence, telegrams, etc.

The left hand side of each sheet is left blank for calculations, which,

Don't Guess at Costs

TO KNOW just how much the job is going to cost is of vital importance to every contractor. There are too many other risks involved in the business to make the practice of guesswork in estimating anything but foolhardy.

For, while such guesses sometimes bear out favorably, they more frequently prove disastrous, turning the tables against the contractor and paving the way for a "blow-up" rather than a "blow-out" when the job is finished—if the unlucky guesser lasts that long.

In this article, Mr. Farrell gives some sound, practical advice on estimating. He shows in detail just how accurate costs may be determined. The ideas are gleaned from his own experience—and he has had many years of it.

On a chilly December night you can sit by the fireplace (or it may be a radiator or register) and spend an hour or so quite profitably in reading and digesting this article. It will surely give you some points that you can apply to your own cost system.

THE EDITOR.

by the way, should always be kept in some such fashion, for reference and checking. It is often very useful in re-figuring a job, to have all the original calculations, so that changes can be followed through with the least liability to error.

Then, too, the estimator should be free from interruption until he is finished. Many a loss occurred when an estimator broke off his work in the middle and went at something else. When he got back to the first job again some important item had slipped his mind and was left out of the final bid. After all the quantities have been taken off the plans and all items in the specifications entered and checked, the next important step is to set down the unit costs. It goes without saying that these unit costs must be accurate, and accuracy depends upon a correct cost-keeping system, such as was outlined in the last article in this series, which appeared in the May and June issues.

In the latter issue a sample Unit Cost Sheet was illustrated, which furnished the data for entry upon a Cost Estimate Card as shown in Figure 2. This particular card records the cost of brickwork in the curtain walls of a reinforced concrete factory. It was all straightaway work, common brick laid in common bond with 1 to 3 cement mortar, except that there was some corbelling under the concrete cornice.

As the Cost Estimate Card File is arranged by classification, this card as well as those from other jobs are found under "Brickwork." When using the file for estimating, that card is selected which records the cost of a job most nearly like the one in hand.

As the card gives not only the over-all cost, but the price of brick per M, of cement, sand, etc., the wages of bricklayers and laborers, and the cost of handling, it is easy to adjust the unit cost to fit present conditions, if it should be necessary.

Similar detailed cards are made out for the few principal classes of work, such as masonry and carpentry, etc. The remaining classes are summed up briefly on a single card or two, to reduce the labor of recording them.

Most of the items in the estimate can be priced from such a cardfile, but there will still remain the sub-contractor's bids, allowances for contingencies, insurance and overhead, to be included, not to mention profit. It is usual to leave all but the last named to the estimators, and in limited organizations it is the only possible course.

Where, however, the office force is sufficiently extensive, it has been found best to have one estimator take off the quantities and another insert the unit prices and extend the amounts. The chief estimator checks their work and himself examines and analyzes all sub-bids determining which one is to be used.

He also decides upon and enters the allowances for wrecking, surveys, permits, plant and tools, cleaning up, insurance, contingencies and job overhead.

He should have a Salvaged Material file, in which is recorded all left-overs from other jobs, from which he can select whatever is available for use and alter the quantities and costs accordingly.

Finally the estimate, completed thus far, should go to the desk of one of the principals in the business, for examination and the addition of a percentage to cover general overhead and profit. Here also the mature judgment of the executive must consider the conditions prevailing which affect the estimate; the manner of handling the job, the amount of supervision, the superintendence, and any unusual difficulties which may be anticipated. Other considerations are: the state of the local labor market, the trend of material costs, the type of competitors against whom the firm is bidding, and the personal peculiarities of the architect.

When all these have been given due weight the estimate is ready to be written up in the proper form.

The steps in preparing an estimate, then, are:

- (a) The Quantity Survey.
- (b) Pricing and Extending the Unit Costs.
 - (c) Checking and Allowances.
 - (d) Collecting Sub-bids.
- (e) Executive Supervision and Control.
- (f) Totalling and Writing in Form.

While the mechanical means for accomplishing each of these are numerous, a few practical pointers may not be out of order.

Quantity Survey

First: the method of making a quantity survey from the plans and specifications. Figure 3 shows several partial pages from the estimate form already referred to. These sheets are bound in book-form, so

that the printed matter is on the right-hand sheet as the book is opened. The left-hand sheet, which is the back of the preceding page, is left blank for calculations. Two columns are provided, one for material and one for labor cost.

Specially ruled pages are used for certain large classes of work such as carpentry and millwork, steel, concrete, brick, etc., so arranged that the entries must be made in a systematic manner.

The estimator turns to the sheet with which he is immediately concerned, let us say: Trim. He has beside him the list of operations and materials as shown in Figure 1, which he has checked with the specifications, marking off the items to be included and adding any which may not appear on the standard list.

Thus he may have checked off: wood, exterior doors and frame, wood canopy over office entrance, dwarf trim partitions, interior doors, frames and trim, base, picture moulding, window trim, wainscot, toilet partitions and doors, stair hand-rails and all other trim items mentioned or implied. Turning to the drawings he will take

off the exact measurements of each, ready for pricing. The same procedure is followed for each of the other classes of work.

The point emphasized is that the quantity survey should be accurate. It is more laborious but brings returns in the percentage of jobs secured. Guess work and "safe-allowances" merely result in lost jobs with consequent loss of the cost of preparing the estimate; or in securing the job because the estimate was too low.

Figure 3, showing the estimate forms, will be published in our next issue. It is well to bear in mind that no unit system of figuring can be absolutely correct for any two jobs since minor variances in design or the cost of the materials are bound to occur and these may result in quite a difference either above or below the estimated cost of the first building. Having these figures at hand, however, will save many hours time and form an accurate check list of the items.

In our next article the method of analyzing in detail the make up of each operation in a projected building. On this depends the finding of accurate costs.

			Bric	kwork
	Contr			
		Cost Car		
Description: 5	own & Jones Da 5 Sts. Reinf. 1 tories. 12" on 20n brick in co 1 toid wash. Poin 1 todar cornice	te: July to Concr. Facto urtain walle ommon bond, nted joints. on 3 elevati	ry, 100 x 200, and end wall o 1 to 3 cement m S corbel cours	12 ft. of com- ortar. es
No. Brick: Con	mon 308,500 @	\$22.00 per	M plus \$2. for	unloading.
Fac	ers - "	•	•	
Sand 220 ou	. yds	and 642. 05 p 65 2.25 and 65	er bbl. net plu " o.y. " " bbl. " "	
	Unit	Cost Per M	, laid	
	Common	Face	Others	
Labor Material Washing Down	\$ 20.95 \$ 27.07 \$ 1.00	- -	-	
Total	\$ 49.02	-	-	
			1	1

MASONRY

Practical Information on Materials and Latest Construction Methods



Laying Brick in Cold Weather

By WILLIAM CARVER, Architect

UST now contractors are very much concerned about getting as much work completed this winter as possible, owing to present conditions and to the conditions which those who forecast business conditions tell us may prevail next spring. In many buildings the contractor is rigidly bound by specifications, of course, but I submit to you that in cases where you are allowed a free hand you can use brickwork for any masonry walls or footings you may have to place this winter, and lay them at less cost and with less fuss than any other kind of masonry construction.

I was talking to a contractor only a few days ago in Cleveland, who will be shortly laying the foundation of a large apartment house which he is building for himself as owner. His plans do not call for brick footings, but he told me that he had satisfied himself that he could save money by putting in brick footings, laying brick on edge without end joints, simply bedding the brick above. He said that the only protection he would use would be to spread some manure on the bottom of the trench in case the trench diggers got too far ahead of his brick masons. He also said that brick footings would not only save him money right now in the winter time, but he was rather surprised to find that they would show a saving also in the summer time.

Every one knows that the danger of winter construction lies in the freezing of the water content of the masonry. That sums up the whole problem, apart from keeping the bricklayers warm. It stands to rea-

son, therefore, that the most suitable masonry for winter construction is that containing the least water. After the masonry is built, is should, of course, be capable of resisting fire and have all the other favorable characteristics which masonry is supposed to have, but which some types of masonry do not have.

Just a Few Precautions

WITH all these points in mind, brick shows up as a most desirable and practical material for winter use. The fewest precautions have to be taken with brickwork, and if the weather does not get too cold the job may be so run that hardly any extra precautions have to be taken; and precautions against freezing cost money, and a lot of money, too.

When the brick arrive on the job they should immediately be covered with a tarpaulin to keep off the snow and prevent ice forming on the brick. Brick with ice on them are dangerous to use because they will not get the proper bond with the mortar. That, of course, is self-evident.

When sand is brought on the job, it can be heaped in a long, high heap, the outside of which will, of course, freeze. The sand required can be tunneled out from the ends, and a tarpaulin placed over the holes.

As to mortar, I know what I am about to say will be questioned by many architects or structural engineers; and that is that a successful winter job can often be put through with no other sources of artificial heat than hot lime, freshly slacked, mixed directly into the mortar and laid in the wall before it gets cold.

Theoretically, conservative architects and contractors are perfectly correct when they say that there is a chance that the lime might not be properly slacked before it is placed in the wall and that such mortar might pop out afterwards, but I personally know of many jobs that have been built with such mortar, and upon close inspection the brickwork shows no flaws, although the buildings have been standing for years. On some of these buildings, I have been told by men who were working on the wall that the mortar was frequently brought up to them smoking

AM not putting forward any new theory, I am simply drawing your attention to facts. Before recommending such practice promiscuously, however, I believe that a thorough investigation by the Lime Association or the Bureau of Standards would be in order. It is a subject on which more enlightenment will be of great value to the building industry.

This method of putting up brickwork in cold weather is vitally interesting to every contractor because of its money saving possiblities. There is really no good reason why brickwork should be stopped when winter starts, except, of course, when a blizzard or something unusual is actually going on. I have seen brick-work laid in Winnipeg, Manitoba, when the temperature was hovering around 40° below zero. I have also seen buildings wrecked that had been built some years previously during the winter months, and it was a difficult matter to get the brickwork down. (Continued on page 75)



Conducted by ARTHURAL. H. STREET

In the course of an opinion on the right of a building contractor to quit work on account of a requirement made by a building inspector, the Appellate

Municipal Building Inspectors Are Not Omnipotent Division of the New York Supreme Court said in the case of Paturzo vs. Shuldiner, 125 App. Div. 636: "A building inspector

has no power to impose any conditions different to the specifications on file with and approved by the building department, as has to be the case in respect of all buildings being erected. If this inspector imposed anything illegal, the plaintiff was not bound to comply with it."

But the court held that a requirement by the inspector that the frame superstructure of a building be bolted to the foundation was not in conflict with the specifications on file, although they did not specify such requirement. The court said on this point:

"Specifications do not as a rule provide for the nails and bolts necessary to make a structure safe—that is an implied detail of the work for the contractor to attend to—and the specifications in this case do not."

A MICHIGAN subscriber formerly engaged in contracting writes that a client owes him a balance for work done from a client who has since gone

Validity of Claim Against Bankrupt Client through bankruptcy. When the bill was first presented the client gave him a post-dated check for \$25 to apply on the \$50 due. When

the check became payable the client sent \$15 to apply on it, stating that he could not meet the check in full. Without making any further payment, he went through bankruptcy. The gentleman from Michigan wants to know what can be done toward collecting the balance due.

If the claim was scheduled by the bankrupt, the contractor was merely

entitled to prove his claim in the bankruptcy proceedings and collect whatever dividend, if any, became payable on settlement of the estate. If the claim was not scheduled, it is not barred by the bankruptcy proceedings and suit may be brought on it, the same as if there had been no bankruptcy.

The fact that the check was given makes no difference, especially since it appears that the contractor never presented it for payment at the bank. However, had the client fraudently given the check in advance of the doing of the work by the contractor, that would have amounted to such wrong on his part that his discharge in bankruptcy would not have released this claim. The Bankruptcy Act distinctly provides that a discharge in bankruptcy shall not release liabilities arising through obtaining property by false pretenses or fraudulent representations. But this case does not appear to fall within this rule, for the check was given after the work was done.

Unless some attorney is willing to take the claim on a contingent basis, we advise dropping it.

W HETHER you are a contractor, supply dealer, architect or mechanic working in the building industry there are some difficulties that you will be bound to encounter. Now if you need help to guide you the Legal Editor of "Building Age" will be only too glad to advise you just what method to proceed so that you will be set right.

This is a service that we offer our readers free of charge. You will receive an answer to your question direct by mail.

Send in your troublesome problems and we will do our best to aid you. Address your letter to Legal Editor, "Building Age," 239 W. 39th St., New York. I BUILT a duplex apartment for an owner who after it was nearly completed decided to build another one. Not being too well satisfied with the plans of

Right to Compensation for Preparing Plan, Etc. the first building, which he had prepared himself, he asked me to draw him a plan for the second building. I did this and the plan

proved to be very satisfactory to him. He then requested me to make out a bill for the lumber. Then he opened the job for bids, and, of course, I was underbid. He passed my plan over to the contractor who was awarded the work. They also used the lumber bill I had prepared.

I feel that I should have something to compensate me for my work in preparing the plan and the bill, but the builder thinks that I should receive nothing for my pains beyond the consciousness of having been a "good fellow." Please advise me what steps to take, and how much, if anything, I am entitled to recover. I would not trouble him for this except for the fact that he refuses to pay for extra work done on the first building, and I feel that if I have to bring suit I should have enough to justify.—J. E. S., Pa.

Whether you can recover anything for the work of preparing the plan, etc., depends on your being able to prove a mutual understanding, express or implied, that you were to be paid for that work—either through award of the new contract or through payment of reasonable compensation for your labor in preparing the plan and the lumber bill.

The law governing this question is a fundamental rule applicable to all sorts of business contracts. If a contractor goes to a dentist and directs the latter to pull a tooth, the dentist is entitled to recover a reasonable fee for his work, although not one word may have been said concerning his making a charge. In such case, the law presumes a mutual understanding for payment of compensa-

tion, in the absence of a showing of agreement either written or verbal to the contrary.

So, if the dentist goes to the builder and directs him to make a plan for a building, it will be presumed that the dentist is to pay the builder for the work—the price agreed, if there is a direct agreement as to compensation, or a reasonable price, if nothing is said as to the amount of compensation.

But, of course, it is open to the owner to show that it was mutually understood, or that the builder should have understood, that he was merely invited to submit a plan and prepare a lumber bill on the chance of being awarded the contract, without any right to pay for this preliminary work should he not become the successful bidder for the job.

However, the burden is distinctly on the owner to prove the facts which deprive the builder in this case of right of pay for the work he did. He must convince the judge or jury that you did not understand, and had no right to understand, that you were to be paid for your service, excepting as he might award you the contract for executing the plan.

He is, it seems, aided somewhat in this position by your admission that you did not intend to charge him for the work in the first instance, nor until after he refused to make satisfactory settlement under the first contract. If that is true, you have no valid claim for your work on the plan and lumber bill; expectation of pay must exist while the work is being done.

The law on this subject has been accurately summed up by a standard legal authority, as follows:

"If an architect prepares plans and specifications for a building pursuant to an unconditional order or direction of the owner, but without any express agreement as to compensation, he is entitled to recover the reasonable value of the services rendered, whether the plans are used or not, as where the owner abandons his intention to build, or stops works on the plans before they are completed.

"Where the contract so provides, the architect's right to compensation may be dependent upon the plans and specifications submitted by him being satisfactory to the employer or approved by him, or upon the acquisition by the employer of the property designed to be improved, or upon the ultimate determination of the employer to build in accordance with the plans submitted; or it may be dependent upon some other condition or contingency.

"Sometimes architects are invited to submit plans for a building, subject to

the condition that any and all plans submitted may be rejected, and where the plans are to be submitted subject to approval, and several have been submitted and rejected, the employer is justified in procuring plans elsewhere, and need wait no longer on the first architect." 5 Corpus Juris, 261, 262, citing numerous decisions.

On establishing your right to be paid for your services, you would be entitled to reasonable compensation, according to the nature of the work you did and what is commonly charged in the same locality for the same general kind of service. It seems that an award of a lump sum would be fairer than an attempt to compensate you on a percentage basis, particularly if you are not a professional architect.

The only feasible thing for you to do is to consult some attorney in your county and arrange with him for bringing of suit, on it appearing that the amount involved is large enough to justify the expense and trouble that will follow litigation. Quite often the most profitable course is to simply forget the incident and in the future be more definite as to payment.

A NEW YORK subscriber writes that he took an option from a development company to purchase lots, under assurance that gas and water "would

Representations in Selling Lots

positively be put in the street" by certain dates, respectively. It now appears that no mention will be made in the contract guar-

anteeing these improvements, and we are asked for an opinion whether, if the same are not put in within the times assured, but at a later time, the purchaser can be assessed for the same, or seek redress from the development company.

The fact that the improvements may not be put in by the agreed time will not prevent the local authorities from later putting them in and making such assessments as are permitted by law.

The gentleman's letter leaves it very doubtful that he would have any recourse against the company. This, however, depends on the precise nature of the representations made to him concerning the time within which water and gas service would be made available. If the company's representative expressed a mere opinion that the water and gas would be in by certain times, that would sustain no claim against the company. But if his statements were to the effect that such proceedings had been had as to assure the water and gas service being installed, falsity of those statements would give a right of action for damages.

Rights in the case may depend somewhat on the language of the option. However, we are of the opinion that nothing is presented to indicate that in any event the company would be liable for the assessments to be levied on account of the improvements.

I CONTRACTED to buy a lot of a real estate company," writes a Californian. "I paid down \$10 and gave a note for \$125 as first payment on the whole contract price, Validity \$1,415; agreeing to pay \$15 per month with interest. The note was due June 15 and before that time

I asked the company to send the note to my bank and I would pay it. I went down to the bank the day the note was due, and the next, but it was not there as I expected.

"The following day I got word to pay the money to their agent here, which I refused to do as I think when they did not present the note when due that would make the contract invalid. The note and contract were made and signed Decoration Day, and I believe dated that day. Can they sue me and collect this note or not? Does the fact of the business being transacted on a holiday make any difference?"

We fear that the gentleman has misconceived the law on both points involved.

The fact that the note was not presented at the bank where our friend asked that it be sent does not relieve him of liability on the note, and much less does it make the contract invalid, it is still good.

If note specified where it was payable it should have been presented there. If it did not specify where it was to be paid, it would have been proper to have presented it at the maker's residence or place of business.

We do not believe that the delay in having the note ready for payment, nor the particular place designated by the holder for payment, should be treated as specially irregular as a matter of courtesy. Certainly, it was no such violation of the maker's legal rights as to release him from obligation to pay the note or carry out the contract as he agreed to.

Nor is the note invalid because it may have been made out or signed and delivered on a legal holiday. The law does not invalidate private transactions of this character on account of their having been executed on a legal holiday. The holiday statutes are mainly directed against the transaction of public business, keeping open of courts, issuance of legal process, etc.

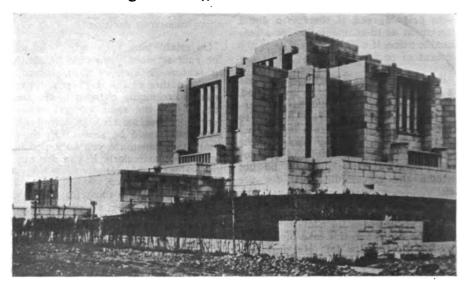
Two Extremes of Church Design

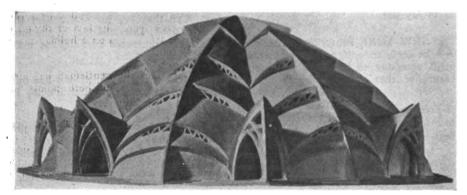
Odd Architectural Motifs Carried Out in Contrasting Buildings

HE accompanying photographs present an interesting study in contrasts. Two distinctive religious sects, whose creeds differ as widely as their ideas on church designs, have sponsored the erection of the two strange buildings.

The building shown on the right was recently completed at Cardston, Alberta, Canada, as a Mormon temple. Situated on the top of a hill in the center of the Mormon community, it stands out in bold relief as a massive pile of masonry in which no curve or rounded corner appears.

The severity of this straight-line design is carried out even in the interior of the structure where the





unlike the scales of a fish both in appearance and purpose, rise from the ground to the centre point of the dome-shaped roof. There are six entrances, one located in each of the indentations between the six star points. This church will be the only one of its kind in the world.

The Mormon church, while representing a distinctive type of architecture seldom, if ever carried out to such painstaking detail, is not as novel in type as the "Star" church.

general theme of long, unbroken lines and sharp angles is followed in detail. The cost of the structure exceeded \$1,000,000.

The other building, of which both interior and exterior views, are shown, will soon be erected near Berlin, Germany. It will be known as the "Star" church of Otto Bartning. As an extreme opposite to the design of the Mormon church, the basic scheme of this structure's architecture is one of all curves and no angles.

As may be noted from the illustrations, which are taken from a model of the building, there are no straight lines to be seen anywhere in the building with the exception of the pulpit which is shown in the foreground of the interior view.

The method of ventilating and lighting the building is interesting. A series of eyebrow windows, not



AVE you made a contract to deliver a building complete by a certain date under a forfeit clause of so much per day? If so, look out that your insurance will cover you if a fire should occur. Other paints are just as important, too, so it will pay you to read

Buying Fire Insurance

By GEORGE COE, Jr.

HERE is not a contractor or builder that does not carry insurance. The great trouble is however that many do not know the coverage they can have. In most cases this ignorance reflects on the local insurance agent. A casual reading of the ordinary insurance trade journal will show the desperate efforts that are made to educate the insurance agent. The companies send out voluminous printed matter and elaborate rate books, etc., but unless an agent comes in contact with a head of a department of a company whose special line is acquainting the agent with what the company can offer, he many times does not know what his company can offer. One large company advertises largely that they have over 100 "coverages" it is not likely that there is a single man in the entire company that can tell what they all are or what they really cover.

Therefore it behooves the contractor and builder to know what he can have and ask for it if the local agent is not acquainted with the different forms. Or only looks to see how he can give as large a policy as possible and thereby overlooks many contract forms he might have inserted if he knew about them. It is not the ordinary that matters. It is the extraordinary that counts when the unforseen happens.

Many of the large companies offer today a fully equipped safety department that they maintain at an enormous cost. This is for the purpose of effecting a saving in compensation insurance. Since 1900 it has occurred to the fire companies that they also have a duty to perform not only to prevent fires after the building is completed but to go back to the beginning and show the builders that many times beauty and practicability are two different things.

To draw a beautiful appearing

building is the work of the artist. To make the same building safe to live in is the work of the architect, and the builder who should realize the material side. Fireproof construction is the fad of today and the market is flooded with these materials. Clever salesmanship sells them. The practical man will know their value. All have merit or they would not be sold as they are.

THE question, however, is "What type of insurance will cover me?" Never try to save money on "insurance." Try, however, to secure complete "coverage." In plain words do not carry an umbrella in a rainstorm and wear slippers on your feet. As fire insurance is something to figure on as soon as a foundation is completed and in some cases before that time it is well to know what the insurance companies consider in figuring a policy and "coverage."

Loss by Fire

"Does insure against all direct loss or damage by fire." Two conditions will be noted in the foregoing language, namely, that the loss shall be "direct" and that it shall be caused "by fire" and this language is used both in all old and new standard policies.

The word "direct" here has the meaning of proximate. The fire itself, or those things which are an accompaniment of a fire, must be the actual cause of the loss. Thus damage caused by heat or smoke from a hostile fire, or by firemen endeavoring to extinguish the flames, or by rain or other of the elements as a result of a fire, are all covered by the policy, and constitute a proper claim. On the other hand: Loss of trade, or of use of building, or of leasehold interest, or of rents are not covered (unless liability is specifically assumed), for such are held to be indirect, not direct losses.

An eminent authority of adjustments gives the following definition of loss by fire:

"Within the meaning of an ordinary policy of insurance the word 'fire' must be construed in its ordinary popular sense, and not be given such technical or restricted meaning as might be applied to it upon scientific analysis. There must be something besides mere combustion; the element of flame or glow must be present. The fire must be without intent on the part of the insured or his responsible agent to injure the property; it must be accidental with respect to the insured. If intentionally kindled for a useful purpose in a place specially designed or provided, the fire does not change its character because the flames extend unusually high, or the heat becomes excessive, or smoke escapes therefrom and causes damage. The fire must be hostile as distinguished from what is universally regarded as friendly, and it must be proximate and not the remote cause of the loss.

F a hostile fire causes an explosion, the fire is held to be the efficient cause of the whole loss which ensues in the premises where it originates when its effects are produced in direct sequence, though one of the incidents of the sequence may be an explosion, on the theory that it could not have been intended to nullify such predominant cause by the explosion exemption provision.

"If, as the result of a hostile fire the concussion of the air causes damage to neighboring property, the explosion or concussion, and not the fire, is held to be the proximate cause of the loss: If a friendly fire causes an explosion, none of the damage resulting can be regarded as a loss by fire." (Bament, "What is a Fire Loss," Ins. Soc. of N. Y.)

As a rule the average business man does not read his insurance pol-

icy. Therefore it is well to set forth the standard policy forms to read at his leisure. A glance at your own policies will show one whether the right form is used.

Builder's Risk-Owner's Form

(Contractors interest not covered.) \$.....On the interest of the insured to the extent of payments made thereon in the..... building and additions, in course of construction, including all fixtures installed therein, situate..... (Usual or rerequired clauses follow.)

Builder's Risk-Contractor's Form

(Owner's interest not covered.)
\$.....On the interest of the insured in the..... building and additions in course of construction, including all materials and supplies therefore, also all contractor's equipment, while on the site of said building or within.....feet thereof. situate..... (Usual or required clauses follow.)

Builder's Risk Form

(Owner's and contractors' interest.)
\$.....on the..... building and additions, in course of construction, including all permanent fixtures and all materials and supplies for use in the construction or completion of said building, while contained on its site or within.....feet thereon situate..... (Attach usual or required clauses.)

Note-With this form policy may

be issued to owner or contractor as interest may appear, or to either individually with loss payable to the other as interest may appear.

Builder's Risk Form

(Uniformity West.)

 \dots On the \dots story \dots roofbuilding, including plumbing, electric wiring and stationary heating, lighting and ventilating apparatus and fixtures therein; and all permanent fixtures belonging to and constituting a part of said building, which is now in process of erection and to be occupied when completed as a and, when not otherwise insured, this item shall also cover building materials to be used in the construction of said building while contained therein or on the premises immediately adjacent thereto; situateCity ofTown of State of

It is made a condition of this insurance that the premises shall not be occupied for manufacturing, mercantile or for any other purposes during the continuance of this policy, without containing the written consent of the company hereon; excepting that machinery may be set up and operated solely for the purpose of testing the same without prejudice to this policy.

Caution: See that due care is exercised in regard to cleaning up shavings, oily rags and other refuse.

Other insurance permitted.

Contractor's Forfeit Interest Form

On the interests of the assured, as set forth below, as contractors in building, additions and extensions in course of construction situate on premises of.....said interest to be based upon an agreement in their contract whereby a forfeit or penalty of Fifty dollars (\$50) a day is extracted from the assured if said building is not completed by..... (date.)

The object of this contract is to indemnify the insured from loss by reason of such forfeiture or penalty which the insured will be obliged to pay on account of their inability to complete said building, additions and extensions, due to loss or damage by fire or lightning, occuring therein; it being understood and agreed that this company will pay the insured Fifty dollars (\$50) per day for each day from (insert date), to the time when, with ordinary diligence and dispatch, said building, additions and extensions can be completed and the contract fulfilled.

Use and occupancy policies are now used generally by contractors and builders and generally cover the profits contingent on the completion of the building or buildings. These forms are simple but do not cover loss or damage by cyclone, tornado or windstorms. Many companies are making a specialty of this latter type of insurance. That phase will be taken up in future articles.

New Houses

THE making of "real antique" furniture is well known, but the builder of "antique houses" is met with less frequently. The illustration shows the work of one of these artists. Genuine old oak beams, doors, window frames, fireplaces, etc., are brought up from



From Old

uninhabitable cottages and incorporated with modern brickwork. The whole is then plastered and distempered and finally thatched and the result is a very picturesque "real old Jacobean Cottage." This interesting old house was recently built in England.

WHAT'S NEW



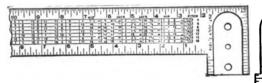
New Materials and Equipment that Keep Your Work Up to Date

Cylinder Cutter Head

POR running light moldings in the shop or on the job a most useful device has just been placed on the market by Huther Bros. Saw Manufacturing Co., of Rochester, New York.

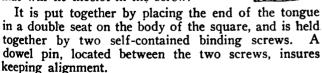
It consists of a cylindrical cutter head, which can be fastened on to a saw mandrel so that your small-power saw can also be used for jointing and sticking light moldings. This device increases the variety of work that you can run on your saw, and really makes of it an added machine.

The knives are set with the use of a headless set screw. The side plates are flanged and strengthen the head, thereby keeping the knives from twisting while being set. These features make it desirable from a safety standpoint as in some places the square cutter heads are not looked upon with favor.



A Novel Take-Down Steel Square

SARGENT & COMPANY, New Haven, Conn., have just brought out a patented Take-Down Standard Steel Square, made with a screwlocking device, which is easily operated by a coin or any instrument that will fit the slot in the screw.



There is a slight clearance between the body and tongue when locked which will take up any slight wear, and the screws are case hardened to withstand hard usage. The square can be taken apart easily even if rusty as the tongue lifts out of the seat in the body when the screws are loosened.

There are no parts to lose as the screws are self-contained. It is made in a body size, 24×2 ; tongue, 16×134 , and on the square is contained information needed for: Brace Measure, Patent Rafter Table,

Table for Hip, Valley, Jack and Cripple Rafter; also a Table of Cuts for Polygons.

It is made in different finishes—plain steel, blued with white enamel figures and marks; also royal copper finish

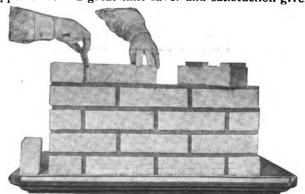
Wood Mosaic Flooring

THE attractiveness of parquetry floors is known. There is no necessity for especially emphasizing their artistic supremacy. This is conceded. The mission of this little booklet is to show that the spirit of refinement, culture and good taste which parquet floors have always carried can be added to your homes and to prove to you that hardwood floors are not alone for the residences of the wealthy. How they are made and laid is attractively set forth in the book, just issued by the Wood Mosaic Co., New Albany, Ind.

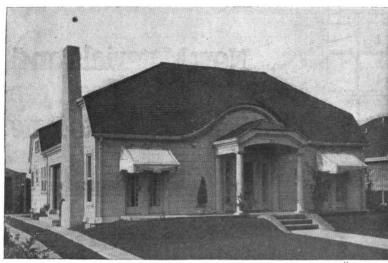
Mortar Color Experimenter

WHEN erecting face brickwork it adds much to the appearance to have the right color mortar so that it will harmonize with the bricks selected. Just how this will look when erected is a matter, in most cases, of good judgment. Of course, on some large jobs a small section of the wall is built up as a sample for approval, but this is costly and takes a lot of time.

A little ingenious device called the Mortar Color Experimenter is made by the Clinton Metallic Paint Co., of Clinton, New York. As shown in our illustration, it consists of a number of strips of wall board cut to size and having the edges tinted to represent various colored mortar. With this experimenter it is therefore possible to set up a panel showing brick of any color or texture, laid in any bond or pattern, and with mortar joints of any color. In this way your clients can see exactly how the finished wall will appear. It is a great time-saver and satisfaction-giver.



CHAMBLE!



Curved Roofs Feature These Two Bungalows

URVES are but seldom used in our small house architecture. It is far easier to follow the straight line and square corners. However, many pleasing effects may be obtained by the judicious use of curves for some part of the design. We show

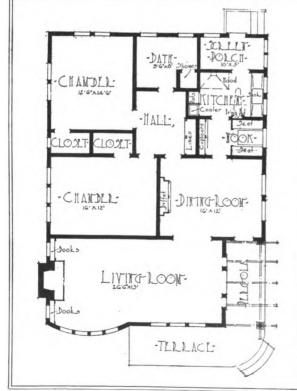
'LIVING ROOM! 'CHANDLE' two bungalows on which a slight use has been made

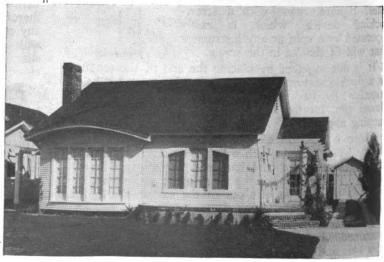
DINING ROOM!

of curves.

In the bungalow shown in the upper picture, the tops of the French doors covered by the awning are also semi-circular carrying out the curved idea. In the bungalow shown in the lower picture a bow window is used on the front and over this is a curved roof projection similar to the well-known eyebrow dormer.

There is really nothing hard in framing or sheathing curved parts but it requires careful and painstaking work if a good effect is to be produced. Do not attempt it unless you are willing to do the job right. Shingles curve very easily but sheathing and clap boards require kerfing and to do this takes a little time.





What the Editor Thinks

Close of

a Prosperous Year

I N but a comparatively few days the vear 1922!! and it has been a very prosperous year for those connected with the building industry. 1922 was considered a phenomenal and abnormal year but 1923 not only equalled it but went ahead a trifle.

Our recent survey, a report of which was published in our November issue, indicates that 1924 also will be a good year for the building trade, probably every bit as lucrative as

Yes, the building business is a good one and we have plenty of room for bright, ambitious young men. We can thankfully say to all—a Merry Christmas and a Prosperous New Year!

Shortage of Mechanics

CONTRACTORS throughout the United States are co-operating with the unions and educators to train young men as recruits for the building trades. This is, indeed, a very hopeful sign but no real method has as yet been universally adopted as the best way of training them. The Government is aiding in the establishment of vocational schools.

It is no use to complain about the ack of workmen if you are not doing your part in getting young men to work on the jobs. Now do you, yourself, employ a boy on every one of your jobs?

If every contractor would make a point to do this, it would do more to encourage young men to enter the building industry than anything else. The most important thing to them is to have a job. Why not give the American boy a chance?

Quality

· Construction

BUILDERS know the full value of good building materials. Therefore they should impress their customers with the desirability of building with as good material as the cowner can possibly afford. Good

workmanship will cost the same whether a good grade of material is used or a poor one. Quite often it is the poor material that needs the most working. Then, with good material, there is the freedom from future repairs. It certainly pays in more ways than one to use good material-let us boost them whenever we can.

Amateur Builders

N our newspapers and popular magazines every now and then we read the story of a man who has built his own house and saved a lot of money. Considerable space was recently given in a large nationally circulated magazine to one of these freak home builders who produced an architectural monstrosity and then glowingly wrote about it saying how much he had saved, etc. Perhaps he will learn to his sorrow some day that it pays to employ someone who knows something about building.

A house well built and of good design finds a more ready sale than a make-shift affair. People are becoming educated to what is good house design and now there is no excuse for a poorly designed house. They detract from the value of their neighbor's property and are simply monuments to the ignorance and folly of their owners.

The men engaged in the building industry have learned something by their experience and are therefore better fitted for turning out a finished and satisfactory house than the amateur.

Financing Small Homes

MAN who owns and loves his home can usually be depended upon to practice the virtues of good citizenship. The big problem before builders in the near future will be the supplying of homes to the man of moderate means. Our survey, published in our November issue, disclosed this fact.

Ways and means must be found to properly finance the prospective small home owner, and builders

should acquaint themselves with the different loaning methods so that they can advise their prospective customers.

To help in this matter a most interesting booklet, entitled "Financing the Small Home," has been published by the National Lumber Manufac-Association, Washington, turers' D. C., and a copy will be sent to any builder on application. It is worth while sending for and soundly digesting. It contains many good sales arguments for builders to use.

Accurate Cost Finding

NO problem before the builder is of so much importance as to correctly know his costs. It is the key to successful estimating; or, we might say, it is the key to the whole contracting business.

If you fail in making right estimates you will lose and go out of business. If your price is so low that you lose or so high that you have no show of getting the contracts -it will cause trouble.

In this issue we publish an article that will be of considerable interest and help. It is from the pen of a well-known New York contractor, and gives some first-hand facts.

Alphabetical Index for 1923

E have prepared an alphabetical index of the contents of BUILDING AGE AND THE BUILDERS'
JOURNAL for this year. A copy of
this will be gladly mailed free of
charge to any reader upon request.

Building on a Large Scale

N this issue we devote quite a few 1 pages to describing a building operation at Pittsburgh which ought to be very interesting reading for builders. It shows what can be done to create an income producing property on what others would consider an unfavorable site for an economical building operation. It is well worth a little study.



ELECTRICAL WORK

Wiring-Fixtures-Devices for Lighting and Power



Decorating Chandeliers and Covers to Harmonize with Other Details

OT enough thought has been paid to the color of chandeliers and the covers of switchboxes, outlets, etc. There has been but one universal finish and this was brass. There is fortunately a tendency, however, to get away from this by painting the brass plate where they are an eyesore and the same is also true with the chandeliers. They should harmonize with the color of the furniture, walls and trim and not clash as they so often do.

Suppose we take the kitchen as an example—if everything is white in this room, that is trim, walls, etc., it will do to have the fixtures either nickel plated or white but not brass. The same is true of the bathroom, should there be exposed nickel work in this room then nickel plated lighting fixtures and nickel plated cover plates on the switch and outlet receptacles would be in order, but there



In the bedrooms a light on either side of the dressing table is a convenience and don't forget the outlet for the curling iron



In the living room the indirect bowl lighting combined with the shower allows for two means of central fillumination, while convenience outlets permit the use of mantel lamps and floor lamps

is one thing about nickel work and that is that it needs polishing to keep it shining, therefore white finish has been growing in popularity.

For bedrooms both chandeliers and cover plates should be tinted so as to harmonize with the decorations of the room. Brass work is easily painted. One bedroom that we saw was finished in pastel shades of pale green and orchid and the chandeliers were finished in the same way. They were ordinary low cost fixture, but the way they were touched up under the builder's direction transformed them into something unique and beautiful and they really looked like a very expensive fixture.

The same treatment was carried out at the push button switch plate cover. This was painted the same orchid color and the bevelled edge was done in green and as the wall was orchid color this made quite a

little defining line between the two. The push button itself, which is so usually black, was painted green.

Now the cost of doing this is not much but the effect produced was certainly unique and pretty. It is a little out of the ordinary and therefore attracts attention. In the same house the other rooms were similarly treated and all the brass plates were painted to harmonize with the painted woodwork. The dining room was paneled in oak and here the natural brass finish looked the best, the strap hinges on doors and cupbcards, latches and other hardware were all brass and perfect harmony resulted.

In living rooms the same scheme may also be carried out. Many unique and pleasing combinations are possible that will make a house distinctive and more attractive in its electrical equipment.



In the kitchen a center ceiling fixture provides contral illumniation while a lamp over the sink makes it more convenient to work there



How to Read a Survey

FACTOR that many builders overlook, is the location of monuments from which to measure to their lot boundaries, and the checking up of such monuments to ascertain their degree of accuracy.

Many builders believe that a monument must necessarily be accurate, if they mark city or township lines. In the majority of cases they are but when wrong they lead to endless trouble and annoyance, and money loss.

A few little illustrations of how these monuments become worthless at times, is given here. In winter. the ground naturally freezes up solid and when the warmer weather comes it thaws, the monument which was firmly imbedded in the frozen earth is released from its bonds and shifts with the thawing process. This shifting throws it out of line and makes it inaccurate. For this reason, surveying parties from the cities and towns usually go over these monuments regularly, checking them up and regulating them, so as to make them once again accurate and ready for use.

Then again, excavating may be done in the vicinity of the monument, the earth caving away, causes the monument to shift. No matter how slight this shifting may be, it is enough to cause trouble if it is used in its inaccurate state. Rain, washouts of the earth, are other things that cause faulty monuments. Trucks also can cause them to be thrown out of adjustment by riding over them. Naturally a heavy motor truck, even without its load, being driven over a granite block is going to disturb it.

Many builders have been puzzled as to how and where to look for these monuments. In city districts and just outside cities, these monuments are placed at street intersections when the streets are cut through. Some of these monuments or markers, have been in place for many, many years and their actual placement is a matter of dim and distant history. The writer has had experiences where the record of the placing of them cannot be located. They appear on the town maps, but how they came to be there in the

This Chapter Describes
Location of Monuments
Staking Out of Lot Lines

By J. LAWRENCE MICHAELS

first place is lost as far as documentary evidence goes.

In many towns, there are building departments which regulate the erection of structures throughout its jurisdiction. No building may be erected without a permit to do so. These departments have maps for every section of their prescribed boundaries and copies of same can be had by builders upon application. These maps are complete and show every marker on the land in question. Distances between monuments are clearly shown and this in a large way is of great help to the builder anticipating laying out his own lot lines.

It should be borne in mind, however, that the measurements shown on these maps should not be accepted as accurate. Often these maps may be of ancient vintage, so to speak, and quite some erection in the neighborhood involved may render the map of little use as far as measurements are concerned. However, if it shows the location of monuments, the builder should measure between them on either side of his property and even to monuments at street intersections above those on each side of his property. This will check up on map measurements shown and at the same time, enable him to familiarize himself with the layout of the surrounding territory.

In towns of smaller size, where no building departments are part of the town government, these maps might be secured from Chambers of Commerce, County Clerks' offices, where deeds and records are kept of title transfers, mortgages, deeds, etc.

Monuments or markers are of different types. The most common in use in cities and near city districts are the granite block monuments. They are square and range in size from four inches to eight inches, depending upon in what locality they are used. These granite blocks have either a small hole drilled in the center or a copper plug inserted, which shows the exact center of the city line or datum lines, as it is called. As before mentioned, different causes may cause these monuments to shift, throwing the drilled hole or copper plug out of dead center and rendering them inaccurate; hence the necessity of checking up with other monuments in the vicinity, and consulting the map when so doing.

In other districts where there are no monuments or cuts, stakes may be used. These stakes are of wood, about two inches square and have a small nail driven into the top to mark the datum lines. Great care should be exercised in using such stakes as they are more easily knocked out of place than monuments, for the granite monuments weigh over 100 lbs. each.

THEN another type of city line marker is the "topo cut," or topographical marker; topo being the abbreviation of the word. Fig. 1 shows a "topo cut" which is just a small hole drilled in pavement, with two wings horizontal and vertical and four diagonal smaller wings. These are merely to render the hole easy to locate. This cut is used on city pavements, where monument has been removed, and marks the datum line.

Cross cuts, too, are often used on paved streets, being cut in with a cold chisel, to a depth of about 1/8 to 1/4 inch to prevent wearing away with the action of people walking over it.

In rural districts, datum line markers are often in the following form: A spike driven into a tree trunk, a cross cut on a boulder or rock whose top shows above ground, etc. The aforementioned are just a few of the different types of monument datum line markers commonly used

Where to look for these monuments is the next important point. In city streets they are found at street intersections as shown on the map illustrated in Fig. 2. This map is a simple survey map showing location of monuments at the different street intersections. Note markings such as drilled center, copper plug, topo, etc. Notation is also made on the map where the monument is out of line. All maps will not have this on and it is therefore necessary to check monuments before using.

In rural districts, monuments, stakes and markers of datum lines can be found at property boundary lines, if marked, which they often are, by a straight line of rock, a stone wall, fence, row of trees, etc.

COMETIMES, the builder will look for a monument where it is supposed to be located, according to the map, and will find it is not visible anywhere in the vicinity. The writer had such an experience while doing a sur-Digging in a radius veying job. of about two feet, he located the monument under the dirt and it was down about 12 inches. This covering of monuments may be caused by rainfall washing the earth over them, or by a careless builder or laborer throwing dirt on them and covering them up. Before leaving a place where a monument is recorded as being located and not found, dig down a short distance and if not found a few inches from the surface of the ground, proceed to the next monument shown on the map and. run the line through from there.

The use of the survey map is given in the practical illustration following, making use of the map shown in Fig. 2.

The builder has his property, let us say, on the north side of 4th St. between Ave. B and C. Consulting his map, he notes that the monuments nearest him are at the southwest corner of Ave. C and 4th St. and Ave. B and 4th St. His transit man sets up the instrument on the monument at the corner of Ave. C and 4th St. The builder goes to the southeast corner of 4th St. and Ave. B and cannot find the monument which is, according to the map, supposed to be there. He then goes to the southeast corner of 4th St. and Ave. A, and there finds the monument, having a copper plug, as stated on map. His transit man takes a line from this monument and the builder returns to the place at which he could not find the monument. The transit man gives him the line at a point about where the monument should be and after digging a while he locates the monument, under a few inches of earth.

Holding a plumb bob over the cross cut on top of this monument he takes line from the transit and learns that the cross cut is one-quarter inch out of line. That is, it is not exactly on line with the monument on which the instrument is set or the one at the corner of Ave. A and 4th St. In blue pencil, a mark is made on this monument that is out of line, and this pencil mark is to show the exact center or datum line.

This operation of locating the nearest monuments has been very easy. But there might have been a good deal of trouble. If for instance the monuments at the corners of Ave. B and A had not been found, it would have been necessary to take line from the monument at the corner of Ave. C and 3rd St., then turning an angle of ninety degrees which is

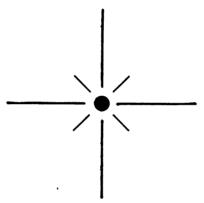


Figure 1. The Topo Cut

the angle at this point, line could be secured at the corners of Ave. B and Ave. C on 4th St. in order to attempt to locate the monuments designated on the map as being there. This is just a little instance of how hidden monuments may be located.

Some monuments are covered with an iron box to which is attached a hinged cover that is easily raised. This protects the monument from being covered with dirt. These boxes are used at points where the street was graded after the monument was placed in the ground and to avoid covering up the monument, the box was placed over it. The marker usually lays about six inches down in the iron box, and is easily reached.

Topo cuts are shown illustrated on the map in Fig. 2 on the southwest corner of Ave. C and 4th St. and this acts in place of the granite marker or monument. Then other topo cuts are at the northwest corner of Ave. C and 1st St., and Ave. B and 3rd St. on the northeast corner.

After the builder has succeeded in locating his monuments, he proceeds to chain through between them, using the steel tapes. Having finished the chaining, he checks the measurements between the monuments, which should be the same as the monuments shown on map.

The measurements between the two monuments on the southeast corner of Ave. B and 4th St. and the topo cut monument on Ave. C and 4th St. should be 451.96 feet.

Between the monuments at Ave. B and 4th St. and Ave. A and 4th St. should be 452.10. These measurements being checked to satisfaction the next step is laying out the lot lines from the line he is at present on. This may be done in two ways.

First: Taking line on the monument at southeast corner of Ave. A and 4th St. a sight is placed on the vertical face of the curb on this corner so as to enable the transitman to pick up line without the necessity of a helper going back to the monument and giving line to him. This sight is obtained as described in an earlier article appearing in BUILDING AGE.

MEASURING 210.24 feet east from the monument at the southwest corner of Ave. C and 4th St. a mark is placed. Setting up the transit on this mark, a ninety degree angle is turned from the sight at the corner of 4th St. and Ave. A. A mark (M) is placed on the pavement across the street. Setting up the instrument on this mark, a line is taken on the point across the street just left and a ninety degree angle turned to the east. Measuring 25 ft. from the point under the transit a mark (N) is placed and this is the east line of the lot to be staked out, the instrument being set up on the west lot line. This. however, is a roundabout way of marking lot lines.

Second: A shorter way is this; the instrument is set up on the topo cut monument on the southwest corner of 4th St. and Ave. C., line being taken on the monument at the northwest corner of Ave. C and 3rd St., a sight being placed on the vertical face of the curb at this point. Measuring some even foot across the street

to the northwest corner of Ave C and 4th St., a point (o) is marked and line obtained from the transit. These two lines should intersect forming a cross, which should be cut in with a chisel to make a permanent mark. Setting up the transit on this mark, and taking line from the sight on the northwest curb of 3rd St. and Ave. C, a ninety degree angle is turned as specified on the map, and a sight placed at some point that is visible to the transit, such as on the curb at the northeast corner of Ave. B and 4th St. Measuring 210.24 feet east from the point under the transit, will

place. The map has been used throughout this whole operation, and if carefully used, there will be but little opportunity for a mistake. The latter instructions are the shorter way of securing the lot lines, as it eliminates a number of unnecessary turnings for securing angles.

Accuracy is the most important factor in the reading of the survey map and in staking out property from it. Measurements should be checked up before being accepted as correct. Care should also be taken in making chalk sights for use in re-

COPPER PLUG 451.90 MONUMENT 451.92 452.0 TO NEXT MT. 1st. ST. 9 49/ 2nd. <u>57.</u> MONUMENT 1 INCHOUT OLD CTR 452.0 452.0 3 rd. SI OLD CTR. 1/2 INCHOUT 261.84 **ST.** 451.96 452.10 451.96 TO NEXT MT. COPPER PLUG MONUMENT

Figure 2 shows a simple survey with monuments located

give the west line of the lot, according to the map. Twenty-five feet east from this measured point will give the east lot line, the datum line center being procured from the instrument.

The lot lines are now laid out and ready for the stakes to be set in

locating line with the transit instrument. Sharp clear lines should be made to render easy finding.

Corrections that are made in the measurements prescribed on map should be noted thereon; such as monuments being found out of line, which will naturally throw measure-

ments between monuments out. No matter how slight the difference, if it is only one-quarter of an inch, it should be noted.

It is hoped that these few lessons will have helped builders to understand surveys a little more clearly.

Laying Brick In Cold Weather

(Continued from page 63)

One of the most interesting operations recently put through that has come to my attention, was the building of about thirty-five or forty small homes by the Chicago Housing Association. The brickwork of all these houses was done in the terribly severe winter we had four years ago. The men worked every day except when it was actually storming, and no trouble was experienced on any of the houses except in the case of one wall, in one house only, which was drawn out of plumb a little when the warm rays of the sun struck it one afternoon. The bricklaver foreman, however, told me that it settled back into position again and there was no harm done.

All contractors know, of course, that very impervious bricks offer a little difficulty to the bricklayer in very cold weather because he has to nurse the wall along a little more. The walls should be kept at about the same height all around, and the use of metal wall ties and clipped bond should always be avoided as these invite trouble in case the sun's rays should strike one side of the wall. The wall should be thoroughly well bonded together with real headers.

In case the cold is very intense, or if for any special reason it is deemed necessary to take precautions other than I have mentioned, sand may be heated by piling it around a culvert or some similar round iron section.

Water may be heated by placing in a can over a fire or by building a fire within a coil connected to the city water supply.

These are only some of the advantages of using brick in cold weather. No doubt other reasons will occur to you as practical contractors which I have not touched on.

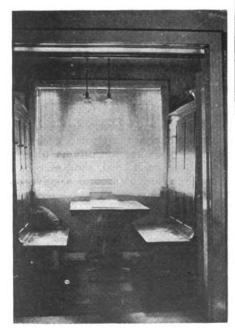
Correspondence Department HOW DID YOU DO IT? WHY not sit down and write a little letter telling just how you worked out some little difficult job in building? It will

Marking a Miter-Cut With a Rule

By referring to the drawing, it will be seen how very simple a matter it is to mark a miter-cut with a rule. The rule is opened once and laid on the material to be marked, as shown by the drawing—in this case it is a 1-inch by 4-inch piece of board. The first requisite is that the board have a straight edge; and the second is that the rule be applied painstakingly. Any two like-related figures on the rule will do, in this case we chose "31" and "9." Making those two points intersect with the straight edge of the board, will place the rule at a 45-degree angle; thus leaving only the marking along the edge left to complete the laying out of a miter-cut.

Different angles can be obtained in the same way, for example: To obtain what is known as a 9-and-12 cut, let the straight edge of the board intersect with the points "9" and "30½." For a 6-and-12 cut, use "9" and "30½." For a square cut, use "9" and "30," etc.

Many other angles can be obtained after the principle, used in the examples above, is known.—H. H. Siegele.



As a Dining Nook

W HY not sit down and write a little letter telling just how you worked out some little difficult job in building? It will surely be of interest to a great many readers; and remember that, for every letter published in this department, you will not only he doing a good turn for others, but you will be receiving a \$2.00 bill from Building Age for your trouble. Send in your little idea and help along your brothers in the building industry.

Novel Built-In Feature for Apartments

CERTAIN apartment building locations are such as to necessitate the most rigid economy of space. Where space is curtailed in this fashion, it is up to the designer or contractor to see that the tenant is to get as much as possible for his money. And, in fact, the number of features available directly determine the rental value of the apartments.

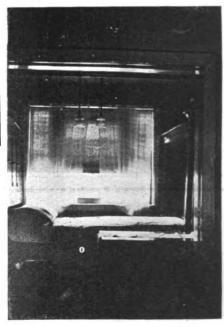
One feature which is meeting with success is shown in the two accompany-

ing photos. The flat in question comprises a sun parlor which may be used for a bed room; a living room, kitchenette, bath and the breakfast alcove which, at night, is converted into comfortable sleeping quarters.

The breakfast alcove is between the kitchenette and the bath. Built up to the height of six feet there are hardwood compartments the width of the room, which is about five feet. The compartment on the one side contains the bed proper. This bed is made up with a two-section mattress, two-thirds being contained on this side in the day time.

The other compartment consists of cupboard space above and the head of the bed with the one-third mattress below. The cupboard opens by means of doors both from the alcove and the kitchen. By turning a lever on each side the two mattress sections are lowered into place, after the movable table is pulled out as shown. The bed then rests upon the seats, as shown.

In the morning the bed is quickly made up, the panels raised into place and the table replaced as shown in the second photo. In this way the one room, small as it is, serves the purpose of both



As a Bedroom

bedroom and dining room. The wide double windows on the east allow plenty of fresh air during the night hours, or at any time during the day.—Dale R. Van Horn.

Steel Square Cuts Easily Made

In reply to your letter stating that there had been nothing from my pen since you became editor, I wish to say that the first article that was published from my pen appeared in Carpentry and Building about a third of a century ago. I well remember it, as I made the drawing in Hy Maacks' architectural office in St. Louis. Now, my latest drawing and method I submit to you. It is the underlying principle of using the steel square to find rafter cuts.

Simply measure across the rise and run and that gives you the length of any rafter. For an ordinary hip roof place your square on the rise and run and if the rafters are 16 inches apart, shove your square up to 16, or if they are to be 8 inches apart, up to 18 on the square.

This gives the first length and the two applications gives the length of second rafter. Of course this method is only good where the hip is on the diagonal of a right angle, that is a distance from the hip to the plates being the same for each corresponding set of rafters.

If the rafters are to be spaced 2 feet apart and the rise is so great that you cannot get it on the square in the one operation simply take one foot at a time, as illustrated.—Dwight L. Stoddard.



Low Down Windows Make a Very Light Garage

Steel Sash Used in Small Garage

The automobile has become such a necessity in our daily life that many home owners have their garages put up at the same time their houses are built, or even before. Since many of these car owners do the minor repair jobs themselves, the need of an abundance of daylight is as necessary in these small private garages as in larger ones. Ventilation also is necessary to draw off the carbon monoxide gas, present in exhaust fumes, which accumulates rapidly in a small place. Hence the need of large steel windows with their easily opened ventilators.

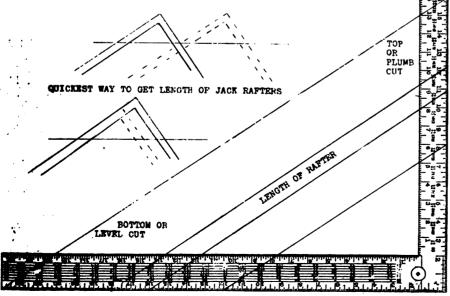
This type of window works in equally well with brick, concrete block or frame construction. Installation is a very simple matter, as the sash is inserted into prepared openings after the wall is up and the roof is on.

When working in brick, either build offset jambs or make prepared rebates at the jambs sufficiently large to allow leeway when setting the sash in the opening. This is necessary because the overall dimensions of the sash are always greater than the dimensions of the window opening. Two angle irons at the head, with their backs about ¼-in. apart will accommodate the extending leg of the framing member.

When you are ready to install the sash, set it in the opening with the extending leg of the frame between the angle irons at the head and in the prepared rebates at the jambs. Remember that steel sash is always glazed from the inside, and do not get the sash turned around. Place small chips or blocks of wood under the sash to hold it up in its proper place. Then grout in securely at the head, jambs and sill. If desired, a concrete sill may be poured on the job. Steel sash is much easier to handle when the ventilators are wired shut.

The owner of the concrete garage, shown in the accompanying photograph, has secured a flood of daylight on the inside by bringing the windows close to the ground. As a result, he can see when working under his car almost as easily as though it was out in the open. In this case, the concave end of the blocks furnish the rebate.

When the sash has been installed, paint, attach cam handle, lock the ventilator shut, then glaze. Be sure to glaze from the inside, using steel sash putty and glazing clips, which help hold the glass firmly in place. Do not open the ventilator until the putty has thoroughly dried. This takes longer than when wood windows are used as the putty has to dry by evaporation.—N. A. Harris.



How the Rafter Cuts Are Easily Made

USICIUL, CATALOGS

Hand Axes that can withstand rough and hard usage are a necessity on the building job and the L. & I. J. White Co., 100 Columbia St., Buffalo, N. Y., will send to inquiring builders their large illustrated catalog giving detailed description and specifications.

Ventilators that insure a plentiful supply of clean, fresh air under all conditions, for commercial buildings, barns, etc., regardless of weather, are described in a catalog issued by the Royal Ventilator Co., 410 Locust St., Philadelphia, Pa.

Door Checks eliminate the annoyance of a door slamming and at the same time keeps the door closed. The Park Manufacturing Co., 48 Lagrange St., Worcester, Mass., will send interested builders their new catalog of Worcester Blount Door Checks.

Bench Jointers do much to cut down expense and increase production, as they save time. These machines may be equipped with a motor that is silent, swift and steady. Builders should send to the American Saw Mill Machinery Co., 62 Main St., Hackettstown, N. J., for their catalog.

House Models will aid builders to sell homes and a few should be kept on hand. A model can be made from the plans of any home that is or is to be built. The Architectural House Planning Service Co., 20 South 18th St., Philadelphia, Pa., have issued a circular which fully describes the advantages of these models to progressive builders.

Movable Stairways eliminate much waste space, especially in places where it can least afford to be wasted. The Bessler Movable Stairway Co., Akron, O., have issued a catalog illustrating and describing their movable stairways, and builders will surely be interested in this innovation.

Brass Pipe is a commodity that will at all times insure a supply of pure water, inasmuch as it is non-corrosive. The Bridgeport Brass Co., of Bridgeport, Conn., will send interested builders their catalog entitled "Brass Pipe and Piping" which thoroughly illustrates and describes its many uses.

Wood Carvings are highly ornamental and can be used in many parts of buildings where fancy work is desired. The Ornamental Products Co., Detroit, Mich., will send to any builder their large, beautifully illustrated book containing a number of different ornamental designs for every purpose.

Drawing Materials are necessary at some time or other during the building operations from the time the job is figured until it is finished. The Peerless Blue Print Co., 341 Fifth Ave., New York City, will send interested builders their useful catalog describing their supplies and materials.

Saws for Machines, that combine the highest workmanship, ability and longevity of service are manufactured by Huther Brothers Saw Mfg. Co., Rochester, N. Y. Circular saws of every description are described and illustrated in a fine catalog issued by them.

Shelf Pins for supporting shelves, book cases, cabinets, etc., are very useful for interior work of this character and the J. D. Johnson Co., 75 Mill St., Newport, R. I., will send interested builders their catalog describing this and other types of building hardware.

Wood Dye of good quality can be used on inexpensive soft woods such as pine, cypress, fir, etc., to make them look as beautiful as hardwood, bringing out the grain without raising it in the least. S. C. Johnson & Son, Dept. BA7, Racine, Wis., will send inquirers their very interesting book entitled "Book on Wood Finishing."

Cement Molds, to be practical, should be strong, light, and simple to use. Such molds are described and illustrated in a catalog issued by the Universal Cement Mold Co., North Milwaukee, Wis., and builders will be interested in this. Transits and Levels of latest type are illustrated in a large book issued by Geier & Bluhm, of Troy, N. Y. The use of these instruments has been described in a series of articles in Building Age, and builders will no doubt find this book very interesting.

Water Pumps for city and country dwellings, shallow and deep wells, and in fact for every purpose where water pumps are used, are described in a new twenty-eight page catalog, containing full data, illustrations and specifications, issued by the Duro Pump and Mfg. Co., Dayton, O.

Slate in Building Construction has many uses. Some of these uses are described in a booklet issued by the National Slate Association, 757 Drexel Building, Philadelphia, Pa. This booklet also contains some fine illustrations of the adaptation of slate.

Two Family Houses are well illustrated and described in a large catalog containing numerous designs of this and other type houses. Builders will be pleased with this book and should send to the Curtis Companies Service Bureau, Clinton, Ia., for a copy of "Better Built Homes."

Oak Flooring gives a beautiful finish to any home and is also a good selling point for the builder to bring to his customer's attention. The Oak Flooring Bureau, 1041 Ashland Block, Chicago, Ill., will send interested builders their new catalog which explains the uses and advantages of oak flooring in a convincing manner.

Wire Products are in great demand in present day building operations and the Buffalo Wire Works, Buffalo, N. Y., have issued a large catalog illustrating their numerous products. Wire screens, lathing, teller's cages, railings, etc., are just a few of the products described therein and builders will do well to secure this book for their files.

Sheet Metal Details of every description are illustrated in a large catalog issued by the Edwards Mfg. Co., Cin-

cinnati, O. Cornices, moldings, canopies, steel doors, etc., are just a few of the products offered interested builders.

Mineral Woel when used for lining the walls of a house, renders it more comfortable both in summer or winter. A booklet describing the use of this insulating material can be secured from the United States Mineral Wool Co., 280 Madison Ave., New York City.

Woodworking Machines for use in the shop are fully described and illustrated in a large, finely illustrated catalog issued by the Sidney Mackine Tool Co., Sidney, Ohio. Full specifications and detailed descriptions make this book valuable to builders who wish to add to their shop equipment some efficient machines.

Open Fireplaces lend a warm, cozy atmosphere to the home and when being built should be made as attractive as possible. The Donley Brothers Co., 3700 E. 74th St., Cleveland, O., have issued a number of small catalogs describing devices for the installation of these fireplaces.

Concrete Brick Machines of improved design that can be operated either by hand or power tamper are described and illustrated in a large, beautifully illustrated catalog issued by the Anchor Concrete Machinery Co., 532 Dublin Ave., Columbus, O., and the progressive builder will find it of the highest value to him.

Magicoal Electric Fire provides the comfort and "firelight happiness" of a real hearth fire without any of the dirt or trouble which a coal or log fire invariably causes. It simulates the glowing and flickering of real burning coal. Magicoal grates and heating apparatus, suitable for any fireplace are illustrated and described in a booklet issued by Mayer Bros. and Bramley, Inc., 417 W. 28th St., New York.

Garment Care Closets are described in an explanatory booklet, "Her House in Order," isued by the Knape & Vogt Mig. Co., Grand Rapids, Mich. Their device transforms old closets into orderly garment cases, it is an easily installed device which utilizes all the spaces in a closet in an orderly and accessible sys-

Door Beds have proven a boon to modern apartment and small house construction. The Murphy In-a-Dor Bed, one of the pioneer products of this line, is illustrated in detail in a booklet issued by the Murphy Door Bed Co., 22 W. Monroe Street, Chicago, Ill. It is so constructed as to be easily made ready for sleeping, or swung back into its closet where it is entirely hidden from view and out of the way, in a very few moments.

Sanitary Steel Furnishings are the finishing touch to the perfect modern bathroom. The White Steel Sanitary Furniture Co., Grand Rapids, Mich., are the makers of white steel medicine cabinets and other bathroom furnishings which are described in their catalog.

Vapor Heating systems have been found not only desirable from the point of view of easy control but highly efficient and economical in heating houses of various sizes. The Trane Company of LaCrosse, Wis., issue descriptive catalogs on Trane Vapor Heating systems and pursues.

Multi-colored Brick and multi-colored hollow building tile offer wonderful possibilities to the builder or architect who seeks beauty as well as serviceability in his materials. The Alliance Brick Company, 17 Review Building, Alliance Ohio, manufactures multi-color ruff-face brick and hollow tile in various sizes. Samples and descriptive catalogs of these products can be obtained from them.

N this page we give short descriptions of some very interesting catalogs, etc., that have just been issued by different manufacturers.

They will be sent free on application to any of our readers who are interested, but should you prefer to write us, give the date of this issue and title of the catalog desired, and we will have them sent to you.

Clamps for practically all purposes are described and illustrated in a booklet issued by the James L. Taylor Mfg. Co., Poughkeepsie, N. Y., manufacturers of the Taylor Quick Acting Self Locking Clamps.

Kerosene Burners for steam and hot water furnaces and stoves are illustrated in Bulletin No. 33B of the Aeroil Burner Co., Inc., Union Hill, N. J. These burners can be installed in a very short time without alterations of the furnace or stove. They give intense heat and are easily regulated. A special type is made for drying out and heating new buildings.

Floor Grinding Machines which embody the practicability of regular floor grinders plus a new and highly efficient polishing attachment have recently been put on the market by the Campbell Machine Company, Wollaston, Mass. This new machine, which can be used used for surfacing wood, marble, mosaic, terrazzo and granolithic floors, is described in their illustrated booklet.

Cedar Wardrobes guard against the destruction of clothing by moths. Kilmoth Products Corp., 50 Union Square, New York, supply material for clothes closets that are really large cedar chests, being a built-in closet constructed of red cedar which guarantees the preservation of clotking as it not only prevents moths but kills their larvae. An illustrated catalog describing Kilmoth cedar products can be obtained from the manufacturers.

Doors of distinctive design and cabinet shop construction are illustrated in a catalog issued by the Paine Lumber Company, Ltd., Oshkosh, Wis., manufacturers of "Miracle Doors." These doors are a truly beautiful product at a remarkably low price.

Red Cedar Shingles are ever popular with prospective home builders. They are not only attractive in appearance but keep a house cooler in summer and warmer in winter. They are also economical in first cost and upkeep. The Red Cedar Shingle Bureau, 38 South Dearborn Street, Chicago, Ill., can furnish catalogs explaining the advantages of red cedar shingles of various sizes and thicknesses.

Shelf Pins for use in supporting movable shelves in book cases, china closets, cabinets and other places are illustrated and described in literature furnished by J. D. Johnston, 7' Mill Street, Newport, R. I. These pins are well made, strong, and can easily be put into place by anyone.

Wall Board is one of the staple building materials whose comparative qualities are too often submerged in generalization of the name. The Upson Company, Lockport, N. Y., puts out a fibre Processed Board and a Processed Fibre Tile. They issue a catalog describing their products and pointing out the advantage of choosing wisely when buying wall board.

Windows are the "eyes" of a house and should therefore be a paramount consideration in building. They not only give light and air to the interior of a home but give character to the exterior. Various types and sizes of windows frames, sash and shutters are shown in a catalog which can be obtained from the Curtis Companies Service Bureau, 1311. Curtis Building, Clinton, Iowa. This catalog is but one of a series of booklets dealing with Curtis products for modern homes.

Weatherstrips are a small, but indispensable item, in better building. The Victor Parting Bead Company, Dept. B, Reading, Pa., has a proposition to make to weatherstrip contractors on their product, "Victor Stripping," and can supply literature relative to their product and its installation.



CARPENTRY

Good Practice in Frame Construction and Finish

Building of Moth Proof Closets

By C. J. KRIEGER

HE field of building materials is constantly being enlarged. This is evident in that a particular product heretofore prohibitive for general building is now made practical for the most modest home as well as for the largest development.

For example, the use of preservative wood in modern construction has solved an important problem for the present American housewife.

Clothing, carefully laid away in a trunk or hung from a hanger in a closet was previously considered sufficently cared for. Until recently, moth balls were the best known protection; while they kept the moth away, they were effective only when used before the moth laid its eggs.

The came the cedar chest, effective in moth prevention, but with all the physical inconveniences of a trunk.

The solution appeared to be an upright cedar chest, large enough to permit the hanging of clothing so that garments would not crease, or become wrinkled. Yet, few houses or apartments could offer wardrobe space in addition to that already devoted to clothing closets. This solution did not meet the need.

Every advantage of an up-right cedar chest with plenty of space and without inconvenience can now be obtained with built-in aromatic red cedar clothes closets.

To insure the best results from the standpoint of good installation only well milled aromatic red cedar should be used. Never paint it! HERE is an idea that will add another good selling point to your houses. The author is Secretary of the Kilmoth Products Corporation and knows whereof he writes.

The pungent odor, the real moth destroying quality would be affected.

Quick to recognize the value which clothes closets so lined must afford, the progressive builder is eliminating lath, plaster and baseboard and preparing the closets of master and guest bedrooms to receive this wood. The method of application is simple and does not necessarily require special skilled labor.

THE lining is blind nailed to studs, on side walls and to floor joists of ceilings, quarter round neatly finishes the already attractive closet. California red wood shelves harmonize with the cedar and are more readily worked than would be straight edge 1/8" cedar.

The United States Department of Agriculture has scientifically verified the pronounced killing effect the aroma of this wood has upon moths, eggs and larvae, as in Bulletin No. 606. J. O. Howard, Chief of the Bureau of Etymology:

"A red cedar chest of 10 cubic feet capacity was utilized. No record of the date of manufacture of the chest could be obtained. On May 6, 1915, 10 adult moths and a supply of flannel were placed in the chest. Ten more moths were added

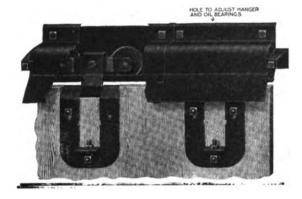
every two weeks until a total of 70 was reached. Two months after the last moths were added examination showed that all had been killed and that no eggs or larvae were present. . . . Two years later (1917) 30 moths and a supply of flannel were added to the same chest. Observations made nine weeks after the experiment was started revealed no living adults, no eggs, and no larvae. In a trunk, serving as a chest to which the same number of adults were added at the same time, more than 50 live larvae were counted on the flannel at the close of the experiment.'

Some question as to the permanency of the aroma may arise and in this connection Bulletin No. 707 goes on to say:

"During the recent pilgrimage to the 'Hermitage' on the plantation of Andrew Jackson, near Nashville, Tennessee, in the heart of the red cedar belt, there was seen a handmade cedar chest which was considerably over a hundred years old. . . . This chest still retains the full fragrance or aroma of the cedar and doubtless still possesses its original efficiency."

HILE it is by no means essential to have every joint closed tight when the highest grade of aromatic red cedar is used, good construction adds much to the appearance, utility and long life of the closet. It has been our experience that when this wood is put in horizontally, tighter joints and a more economical installation is obtained.

NATIONAL DOOR HANGERS



No. 88 Hanger

The Storm proof, adjustable hanger for heavy service, carries the door closer to the rail than any other type hanger—Vertical and lateral adjustments made with extreme ease—H andles heavy doors smoothly—Gives absolute storm protection—Scientifically correct roller bearings distribute the load and ensure long service.

Storm-proof Rail

with Protective Cover

Exceedingly strong — Storm proof and bird proof—Rail joints dove-tailed—Requires no brackets or splice covers—Cover removable for painting inside of rail—Positive in satisfaction and easy to put up.



Send for your copy of the NATIONAL Catalog

NATIONAL MANUFACTURING CO.

STERL 'NG

ILLINOIS



PAINTING

Practical Points of Interest to the Builder

Decorative Treatment of Interior Walls

Little Things That Will Help Sell a House

By A. ASHMUN KELLY

T was the great authority on decoration, William Morris, who said: "Whatever you have in your rooms, think first of the walls." They are the key to the whole decorative color scheme that is devised for a residence of importance, as well as for a humbler one. If the walls are bungled, then the whole scheme falls flat. Nothing will look well in the room, no matter what else may be right.

In these days there are expert interior decorators who undertake to do walls, choose draperies, and do all else that may be included in the art of house-decorating. Given carte blanche and a free purse the results will scarcely fail to satisfy the most exacting of patrons; but these conditions, unfortunately, do not always, nor indeed usually exist

Plain colored walls prove acceptable to the taste of some, and also suit the room. But most people prefer some pattern or some particular arrangement of colors to the plain wall. Some walls, such as those of a living room, must always be regarded as a background, hence they cannot well be broken up with color so that their flatness is destroyed.

Broken color effects are designed to afford richness and add variety to an otherwise plain wall. In such case the colors should be kept refined and harmonious. Whatever ornament may be employed should be original and specially designed for the room, and both in scale and style of ornament, belong to it.

The tendency today is towards severe plainness, and where color effects are used they are simple and very attractive. The flat wall paints have therefore great vogue, as also the commercial calcimines.

THE sand-finished wall lends itself to good decorative effects, and when not left in the natural finish may be done either in water or oil color. But it must be well prepared first, roughness rubbed off, using water and float or cork trowel. This fetches the loose sand to the surface and gives a smooth and regular surface.

If it is to be oil painted, the wall is sized with rosin or so-called gloss oil, thinned with benzine; the addition of some plaster of Paris will stop suction and fill the pores.

If the wall is rough, uneven, and has some little hollows, give it a strong-sized coat of calcimine, and when this is dry apply a coat of white lead paint, thinned with oil and turpentine; after which you may finish it with paint as you do a hard-finished wall.

The finish may be either plain or fancy, white finish, tint or color. The last coat may be either a dead flat, gloss, or egg-shell finish, as you prefer. By laying the proper ground you can glaze over it with a blended effect, mottled effect,

clouded or scumbled, leather, or fabric effect. These will give you deep, rich colors.

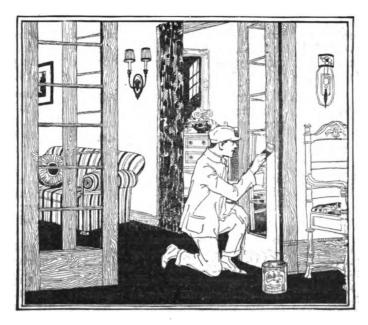
A wall not in the best of condition for plain painting may be done in oil color, but it will show very fine cracks, this occurring after the first coat of paint. Let it dry, then fill the cracks with a rather thick coat of paint, rubbing it well into the wall, and after letting it dry, smooth off and proceed as usual. Finish with oil-color paint, not flat. When dry, give it a coat of cooked starch, and stipple it as you proceed.

This will give to the surface a uniformly dead effect. This may be washed off whenever it becomes dirty or soiled with time, and a fresh coat be applied; in this way the original paint retains its freshness indefinitely; and the plan may be used with any painted wall.

To finish a plaster wall in flat oil paint, a job demanding skill and care, the following method should be employed:

Fill all cracks with plaster and sandpaper smooth. Apply a priming coat of white lead, 5 lbs. to the gallon of thinners. When dry, apply a coat of hot glue size, which rub in. Then apply a coat of paint made from white lead thinned with equal parts of raw linseed oil and turpentine.

Tint it to agree with the color of what the finishing coat is to be.



How to Make Soft Woods Beautiful as Hardwood

IT is generally admitted that wood finished in its natural shade cannot be worked as successfully into color schemes of decoration as stained wood. It is also true that color brings out the grain and enhances the natural beauty of most woods. For these reasons we manufacture a line of wood color known as Johnson's Wood Dye.

Johnson's Wood Dye is for the artistic coloring of wood. With it inexpensive soft woods such as pine, cypress, fir, etc., may be finished so they are as beautiful as hardwood. Johnson's Wood Dye is very easy to apply—it goes on easily and quickly without a lap or a streak.

Johnson's Wood Dye is a dye in every sense of the word. It penetrates so deeply that the natural color is not disclosed if the wood becomes scratched or marred—it brings out the beauty of the grain without raising it in the slightest—it dries in four hours and does not rub off or smudge.

Johnson's Wood Dye is made in 15 shades, all of which may be easily lightened, darkened or intermixed—full directions on every label.

JOHNSON'S WOOD DYE

FREE—Book on Wood Finishing

It's the best book ever published on Artistic Wood Finishing—the work of famous experts—illustrated in color. This book is written for the practical man—it gives covering capacities, includes color charts, etc. We will gladly send it free and postpaid.

Use Coupon at Right



Wis. prities."
d post- Finish-
om



The next coat is made from white lead, tinted, and thinned with 1-4 oil and 3-4 turpentine; tint a little darker than the finish is to be. Stipple this coat.

Now apply the last coat, 3-4 zinc white and 1-4 white lead; stipple. Or lithopone may be used for the last coat, instead of the lead and zinc. Add driers to each mixture as indicated. This formula has the sanction of the Master Painters' Association.

I shall have to skip over a number of more or less useful schemes for decorating the wall, some of which date back to the days of the Pharaohs, and say a few words about flat wall paint. Out of a mass of conflicting testimony we may gather and put together a safe scheme for its satisfactory using.

It is the consensus of opinion that the first coat on the wall that is to be done with this paint, assuming it is a bare plaster wall, new or never painted, should be mainly of raw linseed oil. And the makers of the paint, some of them at least, supply a thinning vehicle that appears to be mostly linseed oil.

There are, however, expert workmen who use a first-coater made from a good, free-working varnish size and wall paint, a quart of the paint to a gallon of the size. It is important to get the surface right in order to secure a good finish. This is accomplished with the sizes indicated.

Flat wall finishes are all made on the same fundamental formula, the essential pigments being lithopone and zinc oxide with or without an inert pigment and with the addition of the usual colored pigments in the tints and shades. But of course not all brands are equal in merit, as there are the liquids to consider, saying nothing of methods of manufacturing. Besides, its use on walls, this form of paint may be used to decided advantage as an undercoating for enamel paint on woodwork. This mainly

because it is so easy to sandpaper smooth. It answers well on steel ceilings, on plaster board, fiber board, burlap, etc.

Another use is found in refinishing window shades, and for radiators it is excellent, as the white and tints show little if any changes under the influence of heat.

It should be pointed out that while lithopone can be used quite extensively in interior painting, it cannot be used in the same way as white lead or white zinc oxide; you must understand its nature, or fail—it will not do to use green or chrome yellow with it.

It must be flowed on more liberally than white lead paint, and in its application lay it off like calcimine, not as you do oil paint. If you use a good brand it will not set too quickly, but will allow you to do a large area alone. Should you wish, however, to slow it more, add a tablespoonful of raw oil to the gallon of the paint, stirring it in well. This will also prevent laps.

Keeping
The
White
House
White

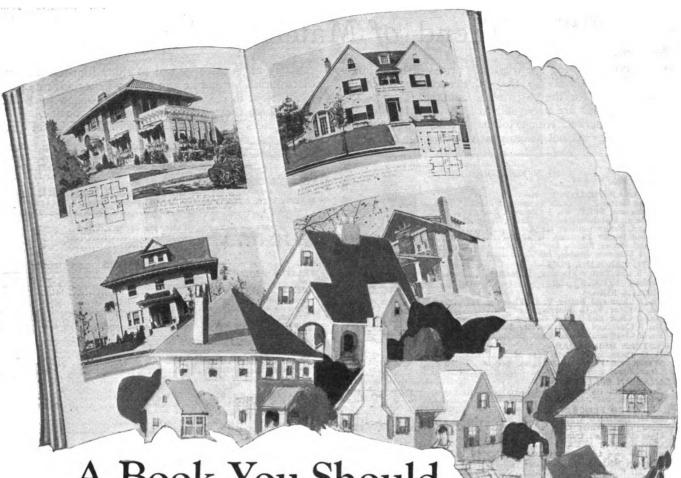


Uncle Sam
Believes in
Preserving
Our Historic
Buildings

EVERY American has, of course, heard of the White House, but not so many know its history and how it received its name. Up to 1814 this handsome example of architecture was officially "The Executive Mansion" and had no other name. In the year 1814 the British occupied Washington, and they set fire to both the Executive Man-

sion and the Capitol. In repairing both structures it was found that the stone was so badly discolored that it was painted over. The old portion of the Capitol has always been painted a light gray, but the Executive Mansion was painted white, hence it became known as "The White House," and the name has clung to it for over one hundred years. To keep

it in spic and span condition as befits the residence and office of our
Chief Executive, it needs regular
painting every few years. The picture we show here was taken this
summer while our late President
Harding was away on his unfortunate vacation. Twenty - five
painters were employed on the job
and two hundred gallons of white
paint were used for the work.



A Book You Should Have on File

EVERY contractor and builder should have a copy of "Natco Homes" on file constantly. This book contains many pictures of attractive dwellings that have been built of Natco Hollow Tile. Last year over ten thousand of these books were mailed to building prospects who requested a copy in answering our advertisements in general publications. This represents real interest that may prove profitable to you. Write for a free copy of "Natco Homes" today.

NATIONAL·FIRE·PROFING·COMPANY
526 Fulton Building · Pittsburgh, Pa.

NATCO

HOLLOW TILE

Digitized by Google

Trend of Material Prices

HE following are wholesale prices of basic building materials in the three markets which set prices for the rest of the country.

These prices are presented to show the trend of the wholesale market, which forecasts prices in the retail market. They are not prices which the average contractor

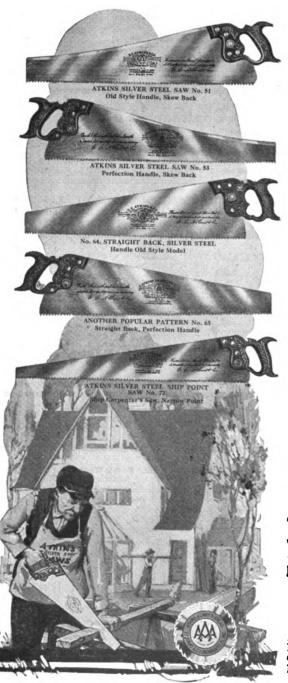
can buy at, but are quoted to show him the movement of materials so that he can buy to better advantage.

Followed in conjunction with the Review of Building Conditions, these prices will prove invaluable.

All prices are for carload lots, F. O. B. market quoted, unless otherwise noted.

NEW YORK PRICES		Oct. 25	Nov.
Oct. 25	Nov. 28	PLASTER BOARD-	
IG LEAF YELLOW PINE—		MAGNESITE STUCCO—	\$0
and Better Edge Grain Flooring, 13/16x24" Face \$92.00 mensions, S1S1E, No. 1 Common, 2x4", 10' 43.75	\$90.0 0 43.7 5	Per Ton \$70.00	\$70
mbers, Merchantable, '05, 12x12", 10 to 20' 56.00	56.00	TILE—	-
mbers, Merchantable, '05, 12x12", 10 to 20' 56.00 and Better Ceiling, ½x3½ 42.50	42.50	1 in. Square or Hexagon, White, per sq. ft	*
and Better Partition, 14"x314"	64.00 70.00	8 x 8 in. Red Floor	(\$
1 Common Boards, 1x8"	53.2 5		•
RTH CAROLINA PINE-		CHICAGO PRICES	
p. 2 and Better Flooring, 13/16x2/6"\$66.00	\$63.00	YELLOW PINE—	
oofers, 13/16x51/4"	31.50	Hoards, IxA No 1 Com	\$
JGLAS FIR—		Ceiling, 36x4, B. and Btr	
2 Clear and Better V. G. Flooring, 1x3" \$78.25	\$78.00	Dimension No. 1, 2x4, 12 to 14 tt	
1. Clear V. G. Flooring, 1x4"	74.00 47.50	Finish, 1x4, B. and Btr	
2 Clear and Better Ceiling, 16x4"	58.50	Flooring, B. and Btr. E. G., 1x3 87.00	
2 Clear and Better V. G. Stepping 96.25	96.25	Lath, 4 ft., No. 1	
STERN RED CEDAR—			
C. Perfection Shingles, per M	\$6.84	HARDWOODS— Vanle Flooring 13/16v24 clear #104.00	
ashington Perfection Shingles, per M	6.48 45.00	Maple Flooring, 13/16x24, clear	\$1
ear Bevel Siding, ½x6"	43.00	Oak Flooring, 13/16x21/4, Cl. Pl., White 111.00	1
ADIAN SPRUCE-	\$8.50	REDWOOD-	
mension, 2x4", 10 to 16'	46.00	Bevel Siding, S1S1E, 10 ft., 20 ft., 1/24, clear	1
DWOOD FLOORING-	,	WESTERN RED CEDAR— 94.50	
ear Quartered White Oak, 13/16x2x234"\$147.50	\$145.00	Bevel Siding, 1/2x4 in., Clear \$50.75	•
per Plain White Oak 13/16+244	100.00	Shingles, Extra Clears, 16 in	,
par Plain Red Oak, 13/16x234"	96.00 105.00	COMMON BRICK—	
(All lumber prices furnished by Lumber)	105.00	Per M. f. o. b. job	1
IMON BRICK-		Bbls. in car lots to contractors, not including con-	
r M. f. o. b. job\$23.00	\$22.00	tainers \$2.20	
TLAND CEMENT—		STRUCTURAL STEEL	
ls. in car lots to contractors, delivered \$2.68	\$2.60	Per 100 lbs. at warehouse	
UCTURAL STEEL— r 100 lb. at warehouse\$3.54	\$3.64	% in	
SHED STONE (cu. yd.)—	40.0	1½ in 3.00	
in \$3.75	\$3.75	WALL BOARD-	
in 3.65	3.65	Per 1,000 sq. ft. in lots under M	1
LL BOARD—		Per 1,000 sq. ft. in lots 1 M to 2/2 M 35.00 SAND AND GRAVEL	
r 1,000 sq. ft. in lots under 1,000 sq. ft	\$50.00	Sand (per cubic yard)\$3.00	
r 1,000 sq. ft. in lots 1,000 to 2,500 sq. ft	45.00	44 in. Gravel (per cubic yard)	
lb26 gauge price per 100 sq. yd. delivered \$0.18	\$0.23	1½ in. Gravel (per cubic yard)	
lb24 gauge light price per 100 sq. yd. delivered. 0.21	0.26	ST. LOUIS PRICES	
1b.—24 gauge heavy price per 100 sq. yd. delivered 0.24	0.29	YELLOW PINE—	
Add 5 cents per sq. yd. for galvanized. E (Hydrate)—		Boards, No. 1 Com., 1x4\$40.00	
nishing, per 50 lb. bag\$0.60	\$0.60	Partition, 34x334, B. and Btr 56.00	•
nsons, per 50 lb. bag 0.49	0.49	Dimension, No. 1, SISIE, Short Leaf, 2x4 in., 12 & 14 ft. 33.00	
D AND GRAVEL-		Finish, S2S, B. and Btr., 1x4, 6 & 8 ft	
nd (per cubic yard)\$2.75	\$2.75	Plooring, B. and Btr., F. G. 1x3	
in. Gravel (per cubic yard)	3.90 3.90	Lath. 4 ft No. 1	
-	3.70	Timbers, No. 1, rough, short leaf, 6x12 to 12x12 in.	
E BRICK— pestry (delivered)\$46.50	\$46.50	10 to 20 ft	
rveale (Delivered)	37.50	CALIFORNIA REDWOOD—	•
ledonian (delivered) 43.00	43.00	Finish, S2S, Cl., 126 in	3
nooth Grey (delivered)	49.00 42.50	8 inch Colonial 78.25	
k Lock f. o. b. factory 42.50	42.50	8 inch Bungalow	
NGLES— phalt, Single (per square)\$7.11	\$8.50	HARDWOODS-	
phalt, Strip (per square)	7.00	Oak Flooring, 1/211/4 and 2 in., Clear Qtr. White\$107.00	\$1
INED WOOD SHINGLES—		Maple Flooring, 13/16x2% in., Clear 90.50	1
in. Extra Clear (per square, delivered) \$11.50	\$11.50	RED CEDAR— Siding, ½x6, Clear	
in Eureka (per square, delivered)	11.50 12.50	Shingles, Clears, Per M. 4.36	*
in. Perfection (per square, delivered)	12.50	COMMON BRICK—	
RIFIED SEWER PIPE—		Per M., f. o. b. job \$20.00	\$
n. (cents per foot)\$0.121/2	\$0.121/2	PORTLAND CEMENT-	
n, (cents per foot)	0.181/2	Bbls. in car lots to contractors, not including coatainers	
TE ROOFING— ngor or Slatington, 8x16 in. (per eq. at quarry) \$12.60	\$12.60	STRUCTURAL STEEL—	
NER BEADS (Galvanized)—	410.00	Per 100 lbs. at warehouse	
r Foot \$0.05	\$0.05	CRUSHED STONE (cu. vd.)	
LL TIES (Galvanized)—	AP	1/4 in. \$2.18 1/4 in. \$2.18	
Thousand\$5.00	\$5.00	1½ in 2.18 WALL BOARD—	
JE LINING—	\$0.35	Per 1.000 ag. ft. in lots under M	\$
x 874 in. Per Foot. \$0.36 x 13 in., Per Foot. 0.48	0.45	Per 1,000 sq. ft. in lots 1 M to 25/2 M 50.00	
LOW TILE		SAND AND GRAVEL-	
		hand (non-outpo word) \$1.20	
k 12 x 12 in., heavy. Each, delivered\$0.221/8	\$0.22	Sand (per cubic yard)	

AITINIS SILVERSAWS.



Christmas Is Coming!

And with its coming, one's thoughts naturally turn to gifts of remembrance utility gifts.

The age-old question of what to give HIM can be easily settled right here and NOW.

What could be better than an Atkins Silver Steel Saw—Our No. 400—the Elite of the Saw World?

Can you imagine the delightful surprise in store for Father, Son, Brother, Sweetheart or Buddy when he opens his presents on Christmas morning to see a bright, shiny Atkins Saw, made of Silver Steel, Mirror Polish, Genuine Solid Rosewood Handle of our Improved Perfection pattern, attached to the saw with nickeled screws; put up attractively and neatly in a special blue and white box for the holidays? Can you? Wouldn't it make you feel happy? Sure it would.

If you want to know how to get an Atkins Silver Stee Saw for Christmas, send ten cents in coin er stampe to cover cost of mailing and we will send by mail a beautiful gold plated miniature Saw Charm and a Saw Sense Book, provided you give us the name and address of your hardware merchant. Full information will accompany our letter. Clip this out and send it NOW.

E.C.ATKINS & CO.

Home Office and Factory, INDIANAPOLIS, INDIANA

Canadian Factory, Hamilton Ontario

Machine Knife Factory, Lancaster N.Y.

Branches Carrying Complete Stocks in The Following Cities:

Atlanta Memphis Chicago Minneapolis New Orleans New York City Portland, Ore. San Francisco Seattle Paris, France Sydney, N. S.W. Vancouver, B.C.

Review of the Building Situation

B UILDING statistics just published by the F. W. Dodge Corporation, for October construction showed a surprising increase which was heaviest in New York state and northern New Jersey. The total number of contracts awarded and of building projects contemplated, show an increase in value of \$71,757,900 and \$178,569,100 respectively over the figures reported for the month of September.

The volume of the increase is absorbed in the residential class. Apparently the fact that building costs have declined only slightly is not acting as a deterrent on building.

Coming as it does after a steady decrease since Spring, this phenomenal rise in the trend of building activity can be taken as a good sign. It indicates a heavy construction volume during the Winter months and a flying start for next Spring's construction program.

Included in the October record are the following important items: \$173,041,600, or approximately 48 per cent. of the total for residential buildings; \$35,133,100 or 10 per cent. for business buildings; \$32,721,300 for industrial buildings; and \$26,084,700, or 7 per cent. for educational buildings.

The total amount of construction started during the first ten months of this year amounted to \$2,947,787,000, an increase of 2 per cent. over the corresponding period of last year.

Contemplated new work reported in October showed an increase in value of 43 per cent. over the September figure.

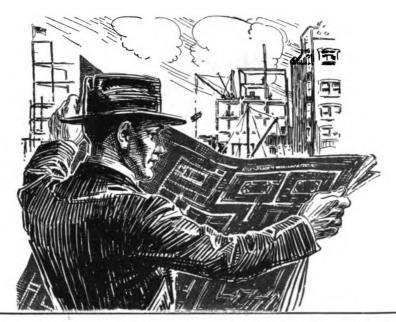
There is every indication that the addition of the November and December figures will bring the total for 1923 far above the 1922 total, making the year 1923 a banner year in the construction industry. It makes a new record.

Record of October, 1923, Building Contracts Awarded

Classification of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$4,906,200	\$10,226,200	\$2,548,000	\$5,573,200	\$6,812,200	\$ 619,600	\$4,447,700	\$35,133,100
Educational Buildings		7,615,400	560,900	3,025,900	6,633,400	1,130,200	4,161,500	26,084,700
Hospitals and Institutions		3,121,700	458,700	1,624,700	1,858,300	162,000	1,546,500	9,666,900
Industrial Buildings		5,133,500	10,976,600	5,309,400	6,906,000	222,700	2,029,100	32,721,300
Military & Naval Buildings		230,000	22,500	•••••	40,000	40,000	,	715,500
Public Buildings	257,500	373,000	147,900	576,900	548,400	40,000	278,600	2,222,300
Public Works and Public		0.207.100	2 666 900	16 745 200	10.054.200	2 570 200	0.502.100	62 400 600
Utilities		9,297,100	2,666,800	16,745,200	19,854,200	3,570, 200	9,592,10 0	63,498,600
Religious and Memorial	E02.000	1 241 600	402 500	1 156 000	2 102 000	100 500	1 025 000	7 (01 400
Buildings		1,241,600	492,500	1,156,000	2,192,000	180,500	1,835,000	7,601,400
Residential Buildings(a)		70,562,000	14,523,700	17,658,000	34,545,900	2,984,400	16,057,400	173,041,600
Social and Recreational		2147000	002 700	£00 £00	4 552 000	404 000	070 500	10 004 000
Buildings	629,500	2,147,000	803,700	508,500	4,553,000	484,000	878,500	10,004,200
Total	\$31,156,600	\$109,947,500	\$33,201,300	\$52,177,800	\$83,943,400	\$9,433,600	\$40,826,400	\$360,689,600

Building Projects Contemplated, October, 1923

Classification of Buildings	New England District	New York District	SECTION OF Mid Atlantic District	COUNTRY Pittsburgh District	Middle West District	North West District	South Atlantic District	Totals
Business Buildings	\$4,931,700	\$11,978,000	\$4,892,500	\$10,117,500	\$22,892,700	\$1,084,100	\$5,189,200	\$61,085,700
Educational Buildings	2,909,800	11,237,000	1,748,000	4,854,000	15,072,000	1,419,500	2,896,000	40,136,300
Hospitals and Institutions.	800,000	2,625,000	2,159,000	2,477,000	3,246,500	379,000	439,000	12,125,500
Industrial Buildings	2,051,000	9,623,000	11,746,400	14,942,400	15,762,500	949,500	5,736,600	60,811,400
Military & Naval Buildings		13,000	23,000	80,000	10,000	1,200		127,200
Public Buildings Public Works and Public	3,438,500	976,000	44,000	2,347,000	713,400	96,500	497,600	8,113,000
Utilities	1,424,000	5,328,600	3,624,300	13,884,300	36,999,100	6,279,700	14,112,300	81,652 ,30 0
Religious and Memorial	001 000	1 (20 400	1.044.000	4 0 4 0 0 0 0	4 000 000	E00 E00	1 540 500	15 221 200
Buildings	881,800	1,620,400	1,044,000	4,848,000	4,808,000	580,500	1,548,500	15,331,200
Residential Buildings(c)	20,339,400	98,519,200	33,417,900	26,024,900	70,432,900	4,089,300	15,133,900	267,957, 5 00
Social and Recreational Buildings	1.620.500	3,106,000	1,358,500	2,216,000	8,540,700	222,600	2,087,000	19,151 ,300
Buildings	1,020,300	5,100,000	1,000,000				2,007,000	17,131,300
Total	\$38,396,700	\$145,026,200	\$60,057,600	\$81,791,100	\$178,477,800	\$15,101,900	\$47,640,100	\$566,491,400

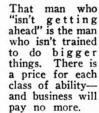


Building "On the Boom" Means Big Jobs for Trained Men

Every man whose eyes are open realizes that there are bigger opportunities for building experts today than ever before. Everywhere we see construction of all kinds going on-houses, mills, factories, stores, bridges, warehouses-all needing men to plan the work and men who have the training which enables them to direct those who do the manual labor. The big pay goes to the ones who do the thinking and carry the responsibilities. And everywhere we hear the call going out for more of these trained men.

No man can complain today that he "hasn't a chance." Every man who is an expert in any branch of building can get all that his services are worth, and he will find opportunities looking

for him.



As long as a man is willing to mix mortar, lay brick, chisel stone, drive nails, string wires, wipe joints or do other manual work he will be limited to the prevailing scale of wages.

As long as a contractor is satisfied with taking on small jobs he will see the large profits go to men who know how to handle the big jobs: That is why ambitious men are training—getting the knowledge which makes their services worth more. They know that brains always command more money than muscle or skill of hand.

For over twenty years Chicago Technical College has been helping this kind of men to advance-to get where they draw the high salaries or make the big profits that are paid to experts.

Hundreds of these ambitious men have stepped into the big pay class

while their fellow workmen remained at the bench.

There, for instance, is J. D. Woodside, of Oklahoma, who was working for \$6 a day, who took the Chicago "Tech" Builder's Course and in 3 months was foreman on a big apartment building at \$8 a day, 5 months later was superintendent on a reinforced concrete job covering nearly half a block, and is now in business as a contractor.

There, also, is S. J. Dickerson, of Rhode Island, who writes that his Chicago "Tech" training

raised his income from \$50 a month to \$150 a week. And A. C. McEvoy, of Chicago, quickly advanced from a bricklayer to foreman as a result of taking this instruction.

These are only three out of the hundreds of forward-looking men who saw what this training would

do for them and who got it.

Chicago "Tech" is ready to give you the same training in Plan Reading, Estimating, Superintending. Builder's Course makes building experts-men who know every practical point about planning, figuring costs and directing all classes of construction.

TRAIN BY MAIL

No need to leave your present job to get this training. We will teach you by mail and you can use your spare time for study under the di-rection of our experts. No special education required.

2 Books and FREE **Blue Prints**

Your request brings our 2 books, one on "How to Read Blue Prints," containing a lesson in Plan Reading, and with it we send blue prints, drawings, etc. With this lesson you can test yourself. See how easily you can learn by our method before you decide about enrolling. The you can learn by our meeting. The fore you decide about enrolling. The Chicago "Tech" Method of training by mail.

Send the

Coupon

To get these books and valuable information just sign your name on the coupon and mail it today to Chicago Te chnical College, 1238 Chicago Technical Building, 118 East 26th Street, Chicago, Ill.



Chicago Technic	cal Co	lleg	ge,		
1238 Chicago Tech. Chicago, Illinois.	Bldg.,	118	East	26th	St.,

Please send me your Free Books and Blue Prints for men in the Building Trades. Send postpaid to my address below.

Name		 	 		
Addres	s	 	 		
Post C	Office	 	 	State	
•					

Digitized by GOOGLE

(Continued from page 47)

A white glazed terra cotta block has been used and this contrasts harmoniously with the different chromatic shades of the tapestry brick. It will be noted that a balustrade of terra cotta balusters and rails with solid brick portions forms the roof coping.

A large ornamental iron marquise is placed over the main front entrance and this will be illuminated by electric lights at night.

The stores have ceilings of different heights due to the grade of the street as the front elevation of the large apartment house clearly shows. The stores have cellars beneath them, this being the excavated portion shown in our photograph of the site. This particular picture was taken from the opening in the garage building as will be noticed in that view on page 42.

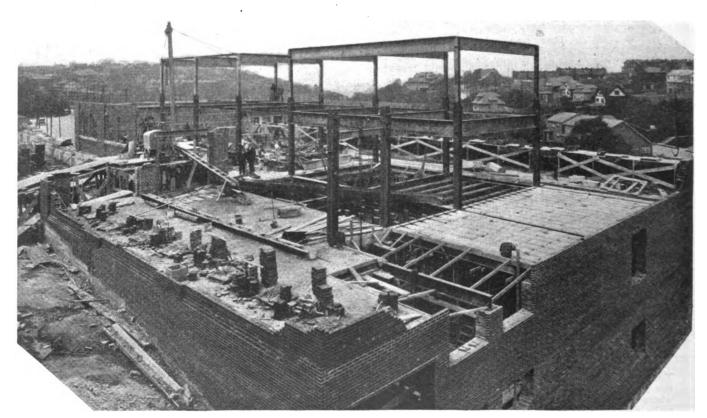
The main entrance is located on Murray Avenue and the office of the building is placed in the rear of the entrance lobby. A ladies' reception from is located on the second floor directly over the main entrance. This makes a convenient meeting place for the casual caller as the telephone



The excavation and foundation for the large 148-family apartment house. The steel work is just arrived. Compare with later picture on page 47

operator may call any tenant down to meet the visitor at the reception room or, should one be out, this room will serve as a waiting room for the

guest. Such a feature is usually found in hotels but it is somewhat of an innovation in an apartment house. (Continued on page 92)



The large garage in course of construction. Note particularly how the concrete mixer is placed on an elevated platform and the concrete rum through chutes to the pan floor forms

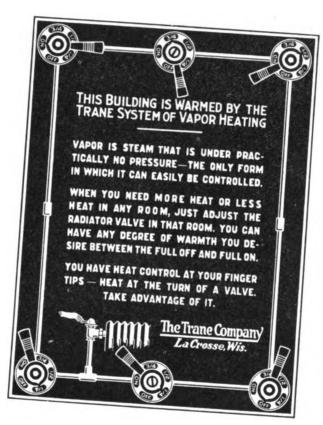
THE WATKINS DEVELOPMENT AT SQUIRREL HILL, PITTSBURG, PA., USES

Trane Vapor Heat

and

Trane Pumps

furnished through Bowman Supply & Manufacturing Co., Inc., Pittsburg



In buildings where there are tenants the brass etched plate shown here is furnished for each apartment without extra charge. This assures efficient operation, with a maximum of comfort for the user and fuel economy for the owner.

The Trane Company La Crosse, Wis.

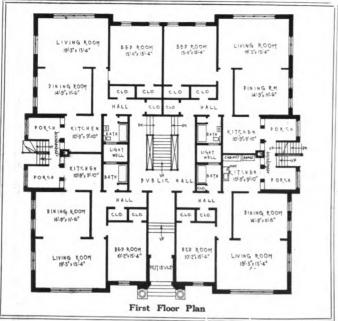
Branches and selling connections in the United States at

New York Boston

Boston Philadelphia
Albany Washington

BUFFALO PORTLAND DETROIT CLEVELAND GREENSBORO, N. C.

SEATTLE



The fourth floor is on a level with Alderson Street and here three entrances are provided, each with its own stairway, the central one, of course, is served by the two elevators which are also reached from the Murray Avenue entrance.

For the tenants of the other houses this middle entrance to the large apartment house will serve as a short cut to reach Murray Avenue, and of course this makes the stores located on that street of so much more value.

From the tile floor corridors of the upper floors one enters the separate apartments through a small entry marked E on the plan, off this is a convenient cloak closet. This entry opens directly on living rooms, 13x25 ft. in size.

The separate apartments have practically all the same layout, consisting of a living room, dining room, kitchenette, bedroom and bathroom. The majority of the

(Continued from page 90)

The second floor consists of apartments in the front over the left end of the structure; there is no second floor to the right of the entrance. The third floor has apartments in the front only as the rear is below grade of Alderson Street.

A laundry of ample size is located on the third floor rear. This is equipped with a number of washtubs, ironing machines, dryers, ironing boards and electric irons. Here, tenants can either do their own washing or have a laundress do it for them. The balance of third floor together with rear of second floor is devoted to storage rooms.



One of the fourteen-family apartment houses on Alderson Street. A living floor is located one flight down from the entrance. The carpenter at work on the top floor is fitting metal weatherstrips to the casement sash

DINING ROOM

1915-1314

PINING ROOM

1915-1314

PORCH

PRIVATE HALL

CLO CLO CLO

PRIVATE HALL

100-91-91-61

PRYER

PORCH

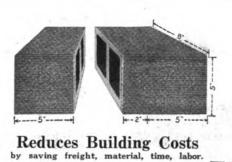
PORC

apartments have attached bedrooms with the addition of a Murphy-In-a-Door Bed opening into the living room, thus having this room serve the dual purpose of bedroom and living room. A few apartments have no separate bedrooms simply the door bed concealed in a double door covered closet.

The dining room is reached from a cased opening direct from the living room. It is 8 ft. wide by 9 ft. long and is separated from the kitchenette by two glass door china closets. Kitchens will be equipped with an electric range and convenient Cosy Kitch cabinet, made by La Grange Fixture Corporation, La Crosse, Wis., which contains a constantly cooled refrigerator. This will be equipped with a coil through which brine of low temperature will circulate providing refrigeration without ice.

One end of this kitchen cabinet will be arranged in two small upper and lower compartments opening into a little service entry marked S E on the plans. The lower com-

(Continued on page 94)



Wonderful **Possibilities** for the Architect

and Builder-

Alliance Multi-Color Ruff-Face Hollow Tile-

As beautiful in color-tones and textures as the finest face brick and just as permanent.

> TIME-FIRE-FROST AND DAMP PROOF

5x8x12 Alliance Ruff-Face Hollow Tile Alliance Multi-Color Ruff-Face

Alliance Multi-Color Ruff-Face Brick

Alliance Multi-Color Ruff-Face Brick excel all other brick as to beauty and harmony of blend and coloring. The chroas to beauty and narmony of blend and coloring. The enro-matic scale of colors runs through their beautiful rough-texture faces, most of the individual brick showing on the face of each brick three or four or more of the seven prim-ary colors or their shades—gun-metals, wines, chocolates, browns, ox-blood reds, buff tones and multi-colors.

These brick are made of Ohio shale of the highest grade. They are thoroughly vitrified, permanent in color, standard in size—right in every characteristic. They provide a richness and a dignified beauty that is causing them to be used in many of the finest homes and commercial buildings in America. These brick were used in the Watkins Development in 24 houses and one large nine-story apartment nouse. Some of the buildings illustrated below.

Hollow Building Tile

Make a beautiful wall, of color and texture equal to the best rough-face brick.

They are made in two sizes—5x8x12's, for an eight-inch wall, and 5x4x12's, for a four-inch wall, for veneering on fireproofing or any other back-up material most economical.

These tile are rough-face on all sides, thus affording choice of the 5x12 faces in laying and excellent bonding surfaces for the mortar.

Their advantages—beauty, permanence, low cost. If in-erested, write for samples, prices and full description.

The Alliance Brick Company

29 REVIEW BUILDING

ALLIANCE, OHIO





(Continued from page 92)

partment of the cabinet opening on this service is a receptacle for the garbage can while above this is a package receiver through which delivery of groceries, milk, etc., are made.

All deliveries will be made by the janitor through this service entry and the garbage is removed from the compartment and deposited in the Kernerator, one of which is located at each end of the building. Thus the occupant of the apartment is not bothered with calls, dumbwaiters, etc. Simply put the garbage in the receiver and it is attended to at stated times of the day. The service entry door will be kept locked by the janitor.

Opening from the living room is another small entry leading to bedroom, and bathroom. In this entry is located a convenient closet. The bathroom equipment and arrangement will be similar to that shown in our picture on page 98 with a linen closet at one end of the bath tub. This closet is for linens above while the lower one is used as a hamper

for soiled linen. The bedrooms are 11 ft. x 13 ft. 6 in. in size and are provided with large closet 4 ft. x 6 ft. in size which is something unusual in a small apartment.

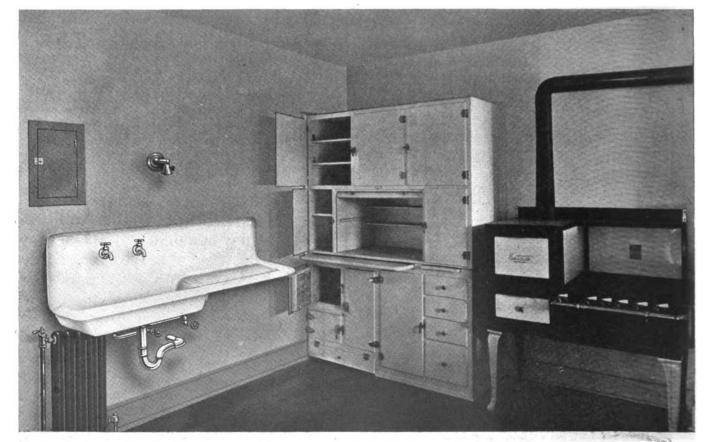
Radio

One of the most novel and interesting features in the detailed equipment of the 148 family apartment house is an elaborate radio receiving system. A radio "loud speaker" is to be installed in the living room of each of the 148 apartments. These loud speakers are

connected with a central receiving station where an operator tunes four separate receiving sets to as

The 1n-A-Door-Bed as installed in one of the four-family apartment houses. The same type of hed is to be used in the large 148-family apartment house

many broadcasting stations. Thus, the tenant can make his choice of (Continued on page 98)



Interior view of kitchen in one of the fourteen-family apartment houses. Note particularly the type of sink used. Also the location of radiate with the special control valve which allows the heat to be regulated according to the desires of the occupants. The little cupboard above the sink contains the electric fuse blocks and switches for this particular apartment. The electric light over the sink is a convenience that should be placed over every sink. Note the kitchen cabinet. One bottom cupboard of this is a refrigerator and in this the brine cell will be located.



J. E. DWYER, Architect

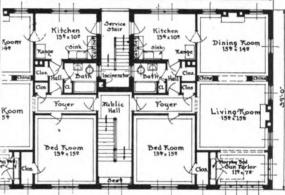
AN

APARTMENT DEVELOPMENT

Pittsburgh, Pa.

WATKINS REALTY COMPANY

Owners and Builders



WATKINS REALTY CO. Owners and Builders

J. E. DWYER Architect

Garden Court Group in Development

This development is one of the thousands of builders' endorsements of the Murphy In-A-Dor Bed.

The economy of providing extra bedroom space without extra cost is reason enough for the builder to install Murphy Beds.

Add to this the convenience it gives to the tenant to have the use of one additional room without the upkeep or furnishing costs.

Because of this double appeal, to builder and tenant, Murphy Beds are fast becoming standard equipment in apartment buildings, private homes, apartment hotels, in fact wherever people sleep.

Wire or write for full information.

TYPICAL FLOOR PLAN

Two 4-Room Apartments with Sun Parlor, Equipped with Murphy Bed Per Floor.

The MURPHY IN-A-DOR BED

There is only one In-A-Dor Bed-"The MURPHY"

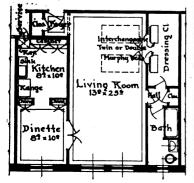
The MORROWFIELD APARTMENT HOTEL

now under construction, the main building of the development, will contain 140 efficiency apartments, equipped with Murphy In-A-Door Beds, and is in addition to buildings containing over 500 tenants, owned and operated by the Watkins Realty Co.

It will contain a large lobby and lounge, a men's club and smoking room, a dining room and roof garden overlooking Schenely Park.

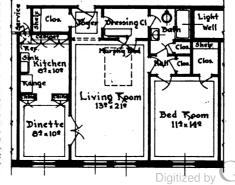
The arrangement of its accommodations, the spaciousness of its rooms, the abundance of light and air, due to the fact that all rooms are outside rooms with all modern conveniences, places the Morrow-field among America's finest Apartment Hotels.

Typical Apartment Units in the Morrowfield



The typical two room A part ment with the living accommodations of four rooms—a permanent home for 2 People.

The typical three room apartment with 100% added to the sleeping accommodations by the installation of the Murphy Bedapermanent home for 3 or 4 people.



THE MURPHY DOOR BED COMPANY

Offices in all Principal Cities

The Murphy Built-in Ironing Board is meeting with enthusiastic approval. Folds compactly in the wall and is always accessible. Ask about it.



An Important building Project in Pittsburgh.

The operation comprises the following buildings:

- 10-5 Family Apartments
- 1-6 Family Apartment
- 1-7 Family Apartment
- 4-14 Family Apartments
- 24- Duplex Houses
- 1- Apartment Building of 139 Apartments
- 1-2 Story Bowling Alley and Dining Room
- 1-5 Story Garage
- 8- Store Rooms
- 1-2 Story Dance Hall and Amusement Building

PRACTICALLY all of these buildings are under roof with the exception of the 139 family apartments (the foundation of which has just been completed). The buildings will all contain the Trane System of Vapor Heat, furnished from a central heating plant, there will be a central refrigerating system, also a central hot water circulating system, and all of the buildings will be furnished with Bowman Modern High Grade Plumbing Fixtures.

All of the plumbing and heating material and about 90 percent of the material required for the refrigerating and hot water circulating system is being furnished by the Bowman Supply & Mfg. Co.

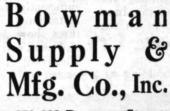
Further data regarding the Watkins development appears elsewhere in this issue

BOWMAN ~

Modern Plumbing and Heating Equipment furnished Mroughout the Watkins Realty Company's buildings

THE preference shown Bowman equipment is based on the reputation of our company, the superior quality of our products and the extreme care we take in serving our customers. The Watkins contract is just another indication of the trend of the times as regards sanitary equipment, plumbing and heating supplies. The preference shown our products by architects and builders everywhere is indicative of the success we have made and the years of constant service to the trade. Your wishes and requirements always receive our special study and our engineers may help you in visualizing the bathroom furnishings, plumbing and heating installations.

Every Builder should have our complete catalogue





Digitized by GOOGIC



A couple of steps from the kitchen door and the garbage is placed in the kernerator

(Continued from page 94)

four programs and by calling the operator on the telephone can have his loud speaker plugged in on the program he wishes to hear.

Garage

A five story garage building af-

fording space to serve the needs of all of the residents of the section has been erected at a point where it is easily accessible to any part of the development. This building has ingeniously been designed to conform to the irregular contour of the ground on which it is built, making use of the varied street levels in a highly practical way by using two ramps.

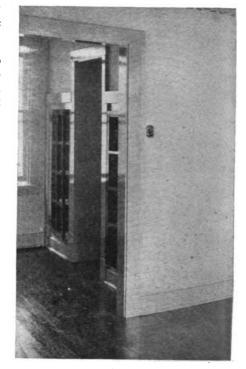
The ground floor, or rather, the lowest street level floor is divided into seven stores which are independent of the rest of the building, and fronting on one of the main thoroughfares that skirt the tract. The second, third and

fourth floors are to be used for car space and the fifth floor will be equipped as repair and paint shop.

While there is a large elevator to carry automobiles from one floor to another, both the second and third floors are connected with the street by ramps. At one end of the building, the second floor is just below the level of Maeburn Road while at the other end the third floor is on the level of Alderson Street. At each end of the building a ramp connects the second and third floors with their respective street levels.

As may be noted in one of the accompanying photographs, this underhill construction greatly facilitated the work of pouring concrete during the building of the structure. As the greater part of the building was below ground on the uphill side, it was a comparatively easy matter to run the concrete mixers right over the forms to be filled, thus eliminating the labor attendant upon mixing the concrete below and carrying it to the higher level where it was to be poured.

The construction of the garage is sufficiently shown by the different illustrations. The walls, as our pictures show, are of combination brick and terra cotta and terra cotta blocks. The front of the building is of white glazed terra cotta for the stores and



The china closets in the dining room are cupboards above on the kitchen side

above this tapestry pressed face brick, the same as will be used on the large apartment houses.

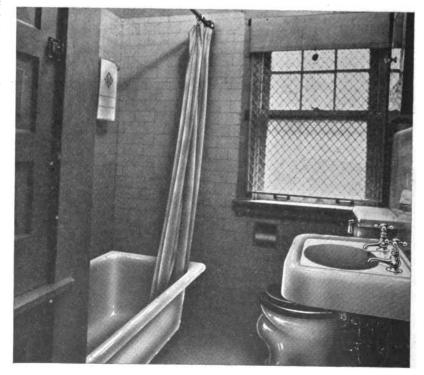
Bowling Alley and Restaurant

This building as pictured here is rather an attractive and unusual design. It is built of Alliance tapestry

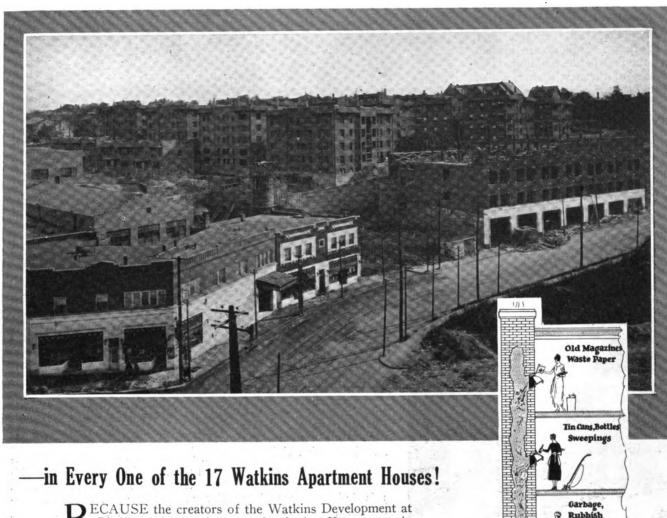
face brick similar to that used in the apartment buildings. Different terra cotta inserts add a pleasing touch of ornament and color but it is not overdone. Surrounding the arches and sides of the four windows are a row of electric lights which illuminate the street at night, and transform it into a miniature gay white way.

Bowling alleys, six in number, are located on each of the two floors. These bowling alleys are fitted and equipped in the most up-to-date manner; the entire equipment being furnished and installed by Brunswick-Balke-

(Continued on page 100)



Interior view of bathroom, showing type of fixtures installed in all of the smaller apartment houses. The closet towards the left is for linens, wash hamper below



BECAUSE the creators of the Watkins Development at Pittsburg know the record of the Kernerator in helping win quick renters and reducing tenant turnover, every building in this project is 100 per cent Kernerator-equipped!

Tenants in these seventeen apartment houses will never have a garbage problem. Housewives will experience a new delight in that the Kernerator makes waste disposal the easiest task in the kitchen. For the efficient, time-tried Kernerator disposes of all waste—garbage, sweepings, tin cans, bottles, rubbish of all sorts—and this without one cent of upkeep.

For the owners, janitor service cost is also reduced—and the halls, the rear porches and the alleys will always be tidy.

The KERNERATOR consists of a brick combustion chamber, built at the base of the chimney, with convenient hopper doors on the floors above. The refuse, falling to this chamber, is dried by natural draft for occasional lighting. Non-combustibles are flame-sterilized for removal with the ashes. The waste itself is all the fuel required.

For full details, see pages 2340-41, Sweet's (1923), or write us for references as to nearby installations.

KERNER INCINERATOR CO.

1027 CHESTNUT STREET

MILWAUKEE, WIS.







Broken Cros

Wilted Flowers

INCINERATOR

BY PASS GRATE

FIRE 474 DRAFT DOOR

ASH PIT

Refuse

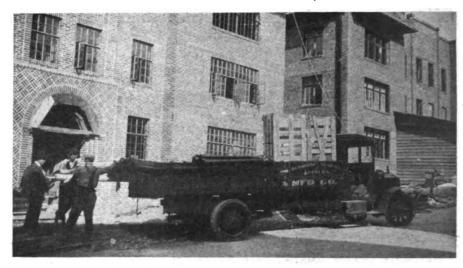
(Continued from page 98)

Collander Co., of Chicago and New York. The alleys are located toward the rear of the building. The front part of the first floor is given over to visitors' seats when match games are played. A cigar counter is also located on the first floor. Nothing has been overlooked to provide for the pleasure of tenants.

On the second floor a large space has been dewated to a restaurant covering the entire front portion of the floor. This dining room has been tastily fitted up and decorated in blue and gray. The floor has been covered in linoleum in block pattern. The tables and chairs which are of unique design, carry out the same blue and gray decorative treatment.



The alley between the five-family apartment bouses. This view was taken on Alderson Street looking towards Shady Avenue. The second and third houses on the left of this picture is of the same two houses shown in the front on more W.



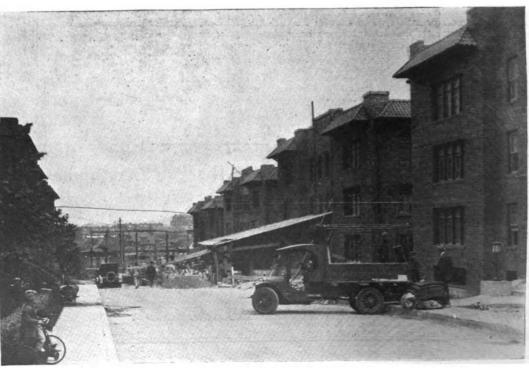
View of fourteen-family spartment house on which steel casement sash was first introduced Our camera caught some of the plumbing supplies being delivered

A soda fountain is at entrance but separate from the restaurant space. The kitchen is located on the side connected with the pantry. The entire kitchen equipment, soda fountain, chairs, tables, dishes, etc., were supplied by A. Pick & Co., Chicago.

The construction of this building is mainly of brick and equipped with steel sash made by David Lupton's Sons Co., of Philadelphia.

Other Buildings

Other buildings in the development contain stores on the first floor with living apartments above. These are shown in the panorama picture. A number of small apartments are located on Shady Avenue and also on the other side of Forward Avenue. The triangular space between Forward Avenue and Eldridge Street has been utilized as a garage, entrance is from the Eldridge Street side. Eldridge Street is at a steep incline from Forward Avenue and Forward Avenue slopes toward Murray Avenue, therefore the garage is at a considerable height above the Forward Avenue level. Advantage has again been taken of the unusual site for stores.



View looking down Alderson Street during construction showing plaster storage shed. The stee frame work seen lower down on the street is that of the large garage

QUALITY

A CONTROVERSY prevailed among the beasts of the field, as to which of the animals deserved the most credit for producing the greatest number of young at a birth. They rushed clamorously into the presence of the Lioness, and demanded of her the settlement of the dispute. "And you," they said, "how many sons have you at a birth?" The Lioness laughed and said: "Why, I have only one; but he is all lion!"—Aesop's Fables.



OR 45 years BUILDING AGE and THE BUILDERS' JOURNAL has held steadfastly to an ideal of quality—not quantity. It has meas-

ured up to that ideal so successfully as to be recognized everywhere as America's Standard Authority on Building Construction. It is used as a text book by almost every well known school and college teaching architecture and building, and it is the most widely quoted building magazine in the world

SERVICE TO

UILDING AGE and THE BUILDERS' JOURNAL conceives that its first and foremost duty is to render through its columns a service so complete that it anticipates every regular and customary requirement of its readers in their relation to the building industry. It not only chronicles the best in design and construction, in machinery and equipment, financing, advertising, and selling, but it endeavors always to point the way of progress, rejecting the bizarre for the beautiful, the fad of the passing moment for construction that will endure.

Then it holds itself in readiness, through proper equipment and connections, to satisfy directly and immediately any special, personal or extraordinary need of its readers. This of course without charge, as an extension of the service rendered through its columns. And lest to many these may seem as mere words, a few extracts from editorial mail may be enlightening:

ROM far off Regina, Saskatchewan, Canada, comes this inquiry from a registered architect: "I wish to get full particulars of the iceless refrigerators—that is, the machine which is run by electric motor and either manufactures the ice in the religious results of the iceless retrigerator or cools the air."

A builder at Carthage, New York, writes: "Will you give me the name of the stair builder book with black cover that had in it a detail sheet for stairways, and will you tell me where I can get some transfer graining paper?"

From Richmond, Virginia, comes this inquiry: "What precaution would you advise against corrosion of water pipes in cinder concrete?"

A contractor and builder at Cleveland, Miss., asks: "Where can I buy Rowney's English tracing paper? And is there a paper from which blue prints can be made without the necessity of making tracings or inking in?"

From McMillan, Mich., comes this inquiry: "I have read with great interest the article on Ernest

have read with great interest the article on Ernest Flagg's methods of construction. I would like to know if the metal clips for holding rooting strips are being manufactured, and, if so, by whom and

where."

A subscriber at Elmira, N. Y., writes: "What will I have to do to get a license to practice architecture in New York State? I have followed building all my lite, and practised architecture in Ohio where I did not have to have a license, but I understand you have to be licensed in New York."

From Aylesford, N. S., an architect subscriber asks: "What is your opinion of the permanency of white cast cement artificial stone? Will it stay white in a rural location? Will any white paint



Editor-in-Chief CHARLES G. PEKER Registered Architect; Member American Institute of Architects, Member New York Society of Architects; Author of "How to Read Plans." "Practical House Fram-ing," "Short Cuts in Carpentry," etc.

treatment on common clay bricks stay white? Do you consider the interlocking tile as suitable as brick for exterior load bearing wall of a four-story building such as a city hall with large auditorium?" A contractor and builder subscriber at Holliston, Mass., inquires: "Do you consider a cement block wall for cellar seven feet high safe enough to hold a house 25' x 24', two stories high of balloon frame construction? Would you recommend this wall construction?"

From a builder at Goshen, N. V.: "I will be in

From a builder at Goshen, N. Y.: "I will be in the market shortly for about 3,000 cork brick suit-able for stable floor. Please furnish address of manufacturer."

able for stable floor. Please furnish address of manufacturer."

This inquiry comes from New York City: "I want to install a sewage disposal system for a small camp in the Adirondacks, but no sewage must enter the lake on which the camp is located. Could you give me information concerning incinerator or other systems and the names of firms that supply sewage disposal systems?"

From Manville, N. J.: "Please send me plans and specifications for design No. 4 in "Beautiful Homes of Moderate Cost.' Would the above house with shingles or siding, or a combination of both, have any material effect upon the appearance of the house? Perhaps you could inform me as to what exterior wooden combination would be best, and color scheme for same."

From Media, Pa.: "I am building twin houses on the plans that I am herewith enclosing. I would like you to give me suggestions as to any improvements that you think would help or improve the plan. I have already built twenty on this plan and expect to continue building more, but would like to see if I could make changes for the better."

The information asked for in each case was promptly furnished. No request is ever answered by saying we don't know or we can't find out, but, on the contrary, definite, specific information is always given. So we want here to emphasize that when we invite, as we do, any and every subscriber to call on us for data, suggestions or recommendations with respect to design, construction, financing or equipment, publicity or decoration, or anything else having to do with building, we are not using just words that have a pleasant tinkle to the ear, but are offering a SERVICE that costs thousands of dollars a year to turnish, and a service that is worth many more thousands of dollars to our readers.

Here are some departments that appear regularly in BUILDING AGE and THE BUILDERS' JOURNAL:

CORRESPONDENCE DEPARTMENT

A meeting place for readers to express their views on building construction and to get answers not only from the editor, but from other readers on any of their building problems.

PAINTING

Practical points of interest to the builder.

USEFUL CATALOGS

Where the latest literature of manufacturers is listed.

REVIEW OF THE BUILDING SITUATION

TREND OF MATERIAL PRICES

LEGAL DEPARTMENT

SELECTED LIST OF MANUFACTURERS' LITERATURE

A list of eight pages or more of the most important catalogs issued by leading manufacturers with title, number of pages, and brief outline of contents.

CARPENTRY

Good practice in frame construction and finish.

FINANCING AND REAL ESTATE

Helpful data for the builder who builds to sell.

MOTOR TRUCKS

Efficient methods in their use and upkeep. MASONRY

Practical information on Materials and Latest Construction Methods OFFICE AND JOB MANAGEMENT

Things the other man has found out that saved money.

BUSINESS GETTING METHODS

Ideas that have worked for others—a department devoted to building new houses and to getting orders to build houses. **ELECTRICAL WORK**

Wiring, fixtures, devices for lighting and power.

HEATING

ALTERATION AND REPAIR WORK SHOPWORK AND FURNITURE

Designs for the finish man. CONCRETE

Form Work-Reinforcing Methods-Monolithic and Block Construction Contracting Equipment-Reliable information on time and labor saving devices.

WHAT'S NEW

New materials and equipment that keep your work up to date.

The subscription price of BUILDING AGE and THE BUILDERS' JOURNAL is \$2 the year in the United States and Mexico; \$2.50 in the Dominion of Canada; all other countries \$3.

Address: Subscription Department, Building Age and The Builders' Journal, 239 West 39th Street. New York



READERS



Advisor on Finance
WALTER STABLER
Comptroller of Metropolitan Life Insurance Co., N. Y., who has the placing of mortgage loans aggregating millions of dollars annually.



Legal Advisor
ARTHUR L. H. STREET
Attorney at Law. Expert in cases relating to the building industry. In charge of our Legal Department, giving advice to readers.



Advisor on Construction NOBLE FOSTER HOGGSON President Hoggson Brothers, New York, builders of banks, office buildings, industrial villages, etc. Well known writer on building.



Advisor on Design ROWLAND C. HUNTER Registered Architect: Member of R. C Hunter & Bro., Architecta, New York. A recognized authority on the design of artistic suburban homes.



Advisor on Decoration

A. ASHMUN KELLY
Author of "Expert House Painter," "Expert Wood Finisher," "Expert Interior Decorator," etc.

Board of Editorial Advisors

THE publishers of BUILDING AGE and THE BUILDERS' JOURNAL have been fortunate in obtaining the cooperation of the recognized experts shown on this page, who constitute our Board of Editorial Advisors. Specific questions are invited, but they must in every instance be addressed to The Editor, not to any member of the Board. This is a service to our subscribers of the greatest value, and is in addition to the usual editorial service.

The publishers feel themselves fortunate, also, in their Editor-in-Chief, Mr. C. G. Peker. His work, as reflected in the columns of this paper, speaks for itself.



Advisor on Contracting
18AAC P. HICKS
Bullding Contractor, Omaha, Neb. Author
of "Bulklers' Guide," "Estimator's Price
Book," etc.



Real Estate Advisor
CARL B. EIMER
Former Sec. Long Island Real Estate
Board; Member of Nat. Assn. of Real
Estate Boards: New York Nate Association of Real Estate Boards, Executive
Committee Own Your Home Exposition.



Heating and Ventilation
CHARLES L. HUBBARD
Consulting Mechanical Engineer, Boston,
Mass.; Author of "Power, Heating and
Ventilating," etc.



Advisor on Sanitation
WILLIAM C. GROENIGER
Consulting Sanitary Engineer, Columbus.
O.: Pres., American Society Sanitary Engineers, etc.

Digitized by



Advisor on Electrical Work
WILLIAM L. GOODWIN
Electrical Engineer. Assistant to President, Society for Electrical Development.
Expert on layout of wiring and electrical equipment for the modern building.

SERVICE TO ADVERTISERS

WHY does a manufacturer advertise? The answer is, of course, to sell that which he manufactures.

To sell he must reach a buying audience. And it follows as inevitably as the day follows the night that it is the buying power of the audience that counts, and not the number of that audience. Obviously, a publication with a list of 22,000 subscribers having a purchasing power of two billion dollars annually is of far greater value to the advertiser than another publication of even 100,000 circulation, the buying power of whose readers is limited to one billion dollars. Quality, not quantity—reach the lions of business!

BUILDING AGE and THE BUILDERS' JOURNAL exercises a degree of care in the selection of its subscribers that is not only unusual, but probably is without parallel among journals of any kind. The result is a subscription list of highest quality, and with a purchasing power in the building industry which we believe is greater than that of any other one publication in America.

So our service to the advertiser is

First, a subscription list of great purchasing power;

Second, a publication which the advertiser values and respects. Some measure of the value of a publication to an advertiser is the value that that publication has in the eyes of its readers;

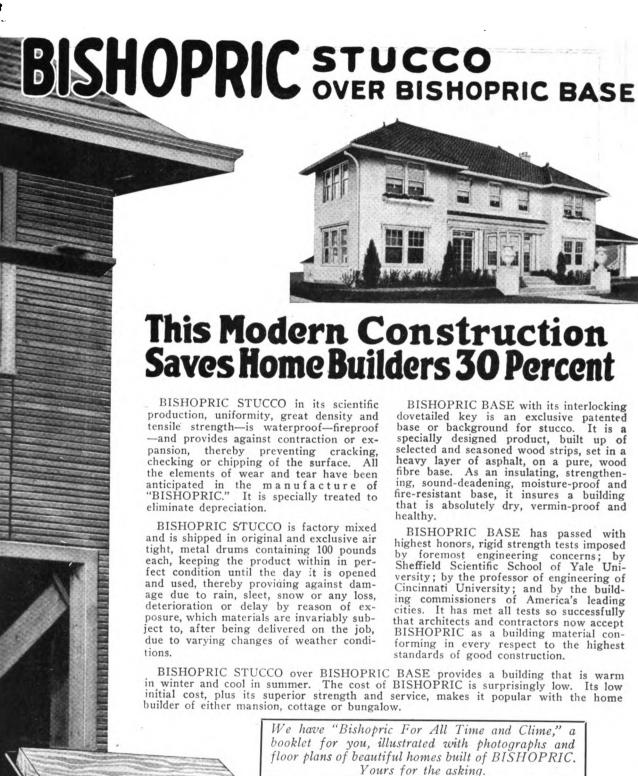
Third, excluding from its columns irresponsible advertising;

Fourth, exercising censorship over its advertising columns. It is proper to say here that with advertisers of unquestioned worth and integrity censorship is rarely necessary. Yet it did happen recently, and under rather trying circumstances. One advertiser spoke disparagingly of a similar product made by other advertisers. This escaped our proof reader and was not noticed until the issue was printed and bound, and ready to be mailed. We had to remove the cover, split open the paper to move the form containing the offending advertisement; we had to ask for new copy, then had to reprint the form and rebind the issue, with a consequent loss of considerable time and money. But we could do no less. We could not depart from a practice of assuring to advertisers, as far as within our control, against any depreciation of their investment for space in our columns.

Fifth, a Research Department for information concerning all phases of the building field, including data on the sales outlet for any commodity entering into building construction. This letter from an advertising agency, dated June 26, 1923, speaks for itself: "I want to thank you very much for your excellent and thorough answers to questions in my letter of June 14th, and I want to add this—you are scheduled for the largest amount of space because from you only were we able to obtain the desired information. I am giving you the preference on the basis that a publication that knows its field must be of greater value than those that do not or are unwilling to give information requested. Permit me to thank you again for your co-operation."

The foregoing are but high lights. A complete outline of our service and its cost will gladly be submitted on request, without obligation. Address Advertising Department, BUILDING AGE and THE BUILDERS' JOURNAL, 239 West 39th Street, New York.

Digitized by Google



SHIPPED IN ROLLS

LOS ANGELES CALIFORNIA

Digitized by GOOGLE

Bishopric is Sold by Dealers Everywhere
The BISHOPRIC MANUFACTURING CO.
17 ESTE AVE., CINCINNATI, OHIO

NEW YORK CITY NEW YORK Founded 1879

BUILDING AGE

THE BUILDERS' JOURNAL

DECEMBER, 1923

Vol. XLV, No. 12

Contents

The Watkins Development at Pitts-		What's New:	
burgh	35	Cylinder Cutter Head	69
A City That is Set on a Hill	36	Take Down Steel Square	69
	ν	Wood Mosaic Flooring	69
Stucco, Brick, Clapboard and Shingles	40	Mortar Color Experimenter	69
Are Here Combined	48		•
Nature and Frequency of Builder's Ex-		Curved Roofs Feature These Two	
change Meetings	49	Bungalows	70
Modern Six-Room House	50	What the Editor Thinks:	
Quantity Survey for Modern Six-		Close of a Prosperous Year	71
Room House	51	Shortage of Mechanics	71
Graceful Roof Lines Feature This	••	Alphabetical Index for 1923	71
Cottage	54	Amateur Builders	71
Interesting Newcomers in Home	•	Financing Small Homes	71
Building	55	Quality Construction	71
The Home That Money Can't Buy	57	Accurate Cost Finding	71
Novel Division of Lot to Secure Maxi-	J/	Decorating the Chandeliers and Covers	-
mum Frontage	58	to Harmonize With Other Details.	72
What Will the Job Cost?	60	How to Read a Survey	73
	63		/3
Laying Brick in Cold Weather	03	Correspondence:	
Legal Department:		Marking a Miter-Cut With a Rule	76
Validity of Claims Against Bankrupt		Novel Built-In Feature for Apart-	
Client	64	ments	76
Municipal Building Inspectors Are		Steel Square Cuts Easily Made	77
Not Omnipotent	64	Steel Sash Used in Small Garage	77
Right to Compensation for Prepar-		Useful Catalogs	78
ing Plan, etc	64	Building Moth-Proof Closets	80
Representation in Selling Lots	65	Decorative Treatment of Interior	
Validity of Note Questioned	65	Walls	82
Two Extremes of Church Design	66 .	Keeping the White House White	84
Buying Fire Insurance	67	Trend of Material Prices	86
Now Houses Prom Old	68	Parriett of the Building Cityation	98

BOARD OF EDITORIAL ADVISORS

WALTER STABLER Comptroller
Metropolitan Life Insurance Co.

il Estate CARL B. EIMER Former Secretary, Long Island Real Estate Board

ARTHUR L. STREET
Attorney, Expert on Building
Cases

WILLIAM C. GROENIGER President American Society of Sanitary



ROWLAND C. HUNTER

WILLIAM L. GOODWIN
Society of Electrical
Development

NOBLE FOSTER HOGGSON President President Hoggson Bres., New York Builders

Contracting

ISAAC P. HICKS
Contractor
Authority on Estimating

CHARLES L. HUBBARD, M.E. Heating and Ventilating Engineer

Painting and Decorating
A. ASHMUN KELLY
Author of many books on House
Painting and Decoration.

Building Age and The Builders' Journal is published monthly at 239 W. 39th St., New York, by Building Age Publishing Corporation, Frank Meyers, President; William C. Shaughnessy, Vice-President; David Meyers, Treasurer; William H. Parsons, Secretary; Charles G. Peker, Editor. Branch Offices: William G. Young, Central Western Manager, 1034 Hanna Building, Cheekand, Ohio. William C. Shaughnessy, Western Manager, First National Bank Building, Chicago, Ill. W. A. Douglass, Pacific Coast Manager, 330 Market St., Sen Francisco, Cal. Member of the Associated Business Papers, Inc. Member of Audit Bureau of Circulations. Subscription price, \$2.00 in the United States and Mexico; \$2.50 in the Dominion of Canada; All other countries, \$3.00. Single copies, 35 cents. Foreign subscriptions payable in New York funds. No change of address can be effected in less than one month. Entered as accord class matter, December 30th, 1909, at the Post Office at New York, N. Y., under act of March 3rd, 1879. Copyright, 1923, by Building Age Publishing Corporation.

Alphabetical Index to Advertisers......

Digitized by GOGIC

What Will Your House Be Worth When 10 Years Old?

Frame House-Original Cost \$ 10,000 Depreciation-21/2% a Year for 10 Years 2,500

Sales Value of Frame Houseafter 10yrs. 17,500

Face Brick House-Original Cost \$ 10,700 (Use 7% as Extra Initial Cost Over Frame)

No Depreciation 1st Syrs. 1% per yr. for 2nd Syrs. 535

Sales Value of Brick House after 10 yrs. \$10,165



The eighth of a series of maxims on the need for Face Brick Construction

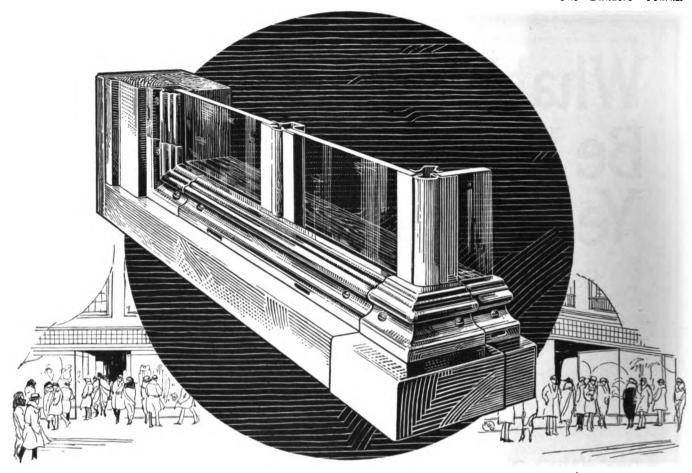
SAVE THEM

USE FACE BRICK-it Pays

If you are sincerely interested in finding out WHY IT PAYS TO USE FACE BRICK, you will write for "A Story of Brick." Sent without charge. Address Dept. B-12

THE AMERICAN FACE BRICK ASSOCIATION

130 North Wells Street . CHICAGO OG C



Profitable Contracts Readily Secured

When one merchant installs a modern copper store front, his competitor is almost forced to. That's the reason these contracts come easily to contractors prepared to handle them.

"Desco" Metal Store Front Construction makes it possible for any contractor to figure on these profitable jobs. The simplified construction, which automatically provides for glass expansion and contraction, drainage, ventilation, cushioning of the glass, etc., makes technical knowledge unnecessary. Inexperienced mechanics can handle the work.

Write for the "Desco" book for contractors which tells how you can enter this big paying field.

DETROIT SHOW CASE CO. 1651 West Fort St. DETROIT, MICH.



(152)

STORE FRONTS Digitized by GOOGLE







Carney, the cement perfected by forty years of experience, was used in the erection of the Churchill Apartments at Chicago, Illinois.

Architects: H. L. Stevens & Co., Chicago, Illinois. Contractors: B.W. Construction Co., Chicago, Illinois.



This book tells the complete story of Carney. It will be sent free to anyone interested in building.

Carney Saves You Money

HUNDREDS of contractors know from practical experience that they are saving big money with Carney. No lime is required which results in a big saving in the mixing cost. The simple mixing formula prevents loss and waste through carelessness. Carney lays the maximum number of brick to the barrel. With Carney mortar the mason can work faster and easier. Because of these exclusive qualities of Carney every contractor who has had experience knows that it saves him money.

Carney Has These Exclusive Merits

It can be used directly after mixing or left in the box over night. There is no waste to Carney. It requires no lime, which saves time and labor in mixing. It prevents loss and waste through carelessness. Being more plastic and smoother working, the mason can work faster and easier on the wall. It lays the maximum number of brick to the barrel. It is ideal for wall bearing buildings. It becomes harder than the brick and tile it binds, continuing to harden indefinitely as time goes on. It sets a creamy white, contrasting beautifully with brick and tile. The final cost of a Carney wall is always lower. Contractors bid lower, do better work and make more profit with Carney.

Carney is the perfected cement for brick and tile mortar.

The Carney Company

Cement Makers Since 1883 Mankato, Minn.

Mills: Mankato, Minn., Carney, Minn.

District Sales Offices:

Leader-News Bldg., Cleveland; Chamber of Commerce Bldg., Chicago; Omaha National Bank Bldg., Omaha; Syndicate Trust Bldg., St. Louis; Book Bldg., Detroit; Builders' Exchange, Minneapolis.



Specifications: 1 part Carney to 4 parts sand. (due to refined process of manufacture.)





Steel Windows for Apartment Houses

APARTMENT house owners find Lupton Residence Windows a profitable investment in many ways.

Their casement-like beauty is welcomed by tenants.

Their slender, copper-steel frames admit more light. Their outswung ventilators and high openings invite the breeze.

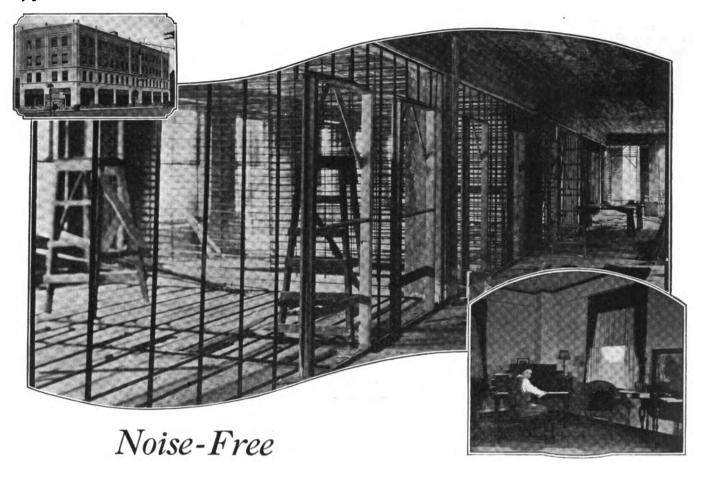
The Lupton "projected" movement permits washing both sides from within the room. No safety belts and no risk.

Best of all—air leakage is reduced, and the periodical refitting expense is saved, by the use of steel instead of wood.

Digitized by

May we send the catalogue?





Tho One Hundred Pianos Play at Once

UIET reigns in the corridors and halls of the McPhail School of Music and Dramatic Art, Minneapolis. Though the hundred practice rooms on the upper three floors of this, the largest school of its kind in the Northwest, are in constant use, yet there are no clashing discords to try the nerves of faculty and students.

Magney & Tusler, of Minneapolis, the designing architects and engineers, approached the task of making these rooms soundproof, understand-

ingly.

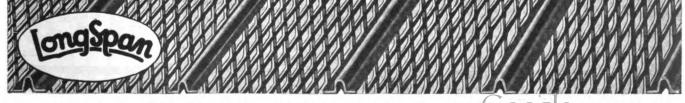
Scientific tests previously made to determine the relative intensity of sound transmitted through various types of partitions had clearly established the superiority of the Metal Lath and Gypsum Plaster walls over the three other types of construction tested. Several tests as to the soundproofness of the rooms were made while the building was in course of construction, and the results were entirely satisfactory.

The McPhail School, be it said, is but one of the many educational institutions in which Metal Lath and plaster partitions have been specified, the economy and space saving advantages of this type of construction rendering it especially advantageous.

The 3/8" Self-Furring U-Rib LONGSPAN Lath used in the McPhail School is most satisfactory for any kind of partition or ceiling work, as also for commercial plastering. Write today for samples and recommended specifications.

NORTHWESTERN EXPANDED WETAL CO.

1204 Old Colony Bldg. CHICAGO



Digitized by Google

When they stop and ask



G-E Two-Gang Tumbler Switches at every doorway give complete control of light from one room to another. G-E Twin Convenience Outlet gives

All dependable and experienced contractors using General Electric Reliable Wiring Devices are prepared

to cooperate with you in making your houses "complete

National distribution of the booklet "The Home of a Hundred Comforts" has focused the attention of hundreds of

thousands of home builders and buyers on

complete wiring and quality wiring devices.

Send for your copy of this booklet today.

simultaneous use of two devices.

Address Section BA-12.

electrical homes.

"How is the stairway lighted?"—you show them how you have provided switches—both downstairs and up—for flooding the steps with light and for turning the lights off as soon as you are up or down.

Builders get better returns by putting in Electrical sales makers

Mrs. Prospective Buyer measures the value of the house largely by saved steps—saved time—saved labor.

She wants to see how much work Electricity will do for her.

And so, while she goes from room to room, the wiring devices—their number—their location—their character—become sales makers for you.

She is delighted with the convenience of G-E Twin Convenience Outlets, G-E Tumbler Switches and G-E Three and Four Way Switches. As she examines these modern devices, one after another, her desire for the house increases.

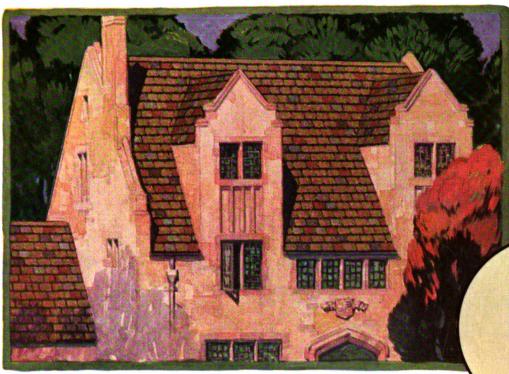
The knowing builder takes account of her interest in complete and dependable electrical equipment when specifying his materials, and gets a good return for the small additional cost.

G-E Reliable Wiring Devices, nationally known as the standard of excellence, are the home buyer's assurance of dependable electrical service.

Merchandise Department
General Electric Company
Bridgeport, Connecticut

ring Devices

41.225



One of the tiny flakes of slate (greatly enlarged) which are enameled upon the Richardson Super-Giant Shingle. Each flake is merely a miniature of the great blocks of slate from which it was broken. It can no more change color than the huge blocks themselves

RICHARDSON Product

From the makers of Flex-a-tile Housetops, Viskalt Membrane Roofs, Viskote, Wall Board, and similar

Roofing beauty as *lasting* as the hills from which it comes

Here's a beautiful new roofing color in slate that can never fade! A blast in the Georgia hills revealed it weathered brown with its rich, mellow beauty of autumnal woods.

Centuries of pressure under mountains of earth and rock have fixed its color into the very structure of the slate. The most rigid weathering tests fail to affect it.

The permanent color effects of the weathered brown have delighted architects, especially when it is

blended with other Richardson shingles of jade green, tile red, or black pearl. To you, it gives an exceptional opportunity to secure new customers.

A super-shingle

Weathered brown is used exclusively on the Richardson Super-Giant Shingle-a unique roofing product which in addition to its beauty, offers you an unusual degree of roofing serviceability. For example, its greater size (10" x 14") saves 35% in cost of laying. Its 50% greater thickness makes it last much longer, and cast a deeper shadow line on the roof. And its 100% greater stiffness keeps it rigid and firm in all kinds of weather.

Moreover, its inner materials, felt and asphalt, give conclusive evidence

of its endurance. Richardson felt has for fifty years been recognized as the best. And the asphalt which goes into it is of the highest grade raw materials refined by a special Richardson process.



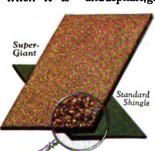
A super-shingle indeed, when you weigh its points one by one! First—absolutely exclusive color effects. Second -unusual dimensions which give added life to the roof at 1/3 less in cost oflaying. And finally-exceptionally high test standards in its materials.

These definite talking points—especially the exclusive color effects -will bring you new customers. And, of course, Richardson Super-Giants are equally good for new or "over the old roof" jobs.

Send for our beautiful new booklet, Roofs of Distinction, together with samples of Richardson Super-Giant Shingles in weathered brown and other colors. For every roofing use there is a Richardson product -from Lok-Top Asphalt Shingles to Rubbertex Roll Roofing with Pyramid Kaps. Just use the coupon below.

RICHARDSON COMPANY Lockland (Cincinnati) Ohio

Melrose Park (Chicago) Ill. New Orleans, La.



The Super-Giant Shingle — 50% thicker, 100% more rigid, and 35% more economical in cost of laying

Clip and mail this coupon

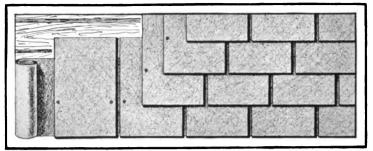
The Richardson Company Lockland, Ohio

Gentlemen: Please send me samples of Richardson Super-Giant Shingles, your new booklet and further facts about Richardson Roofing.

Address.....

RICHARDSON ROOFING

Digitized by GOOGLE



Flex-a-Tile Standard Individual Shingles

You can always sell a RICHARDSON Product

for every roofing use

In addition to the Richardson Super-Giant Shingle described on the other side of this page, there are many other Richardson products—one, in fact, to fit every roofing need. Thus, no matter whether your customer emphasizes endurance, beauty or economy in the roofing he selects, you can be sure to please him.

Here are a few of the Richardson products. Like the Richardson Super-Giant Shingle, each one contains quality materials adapted to a specific use.

Other Richardson Shingles

Lok-Top Asphalt Shingles give at remarkably low cost a locked-down roof of good appearance and sturdy endurance. Surfaced in jade green, tile red, or black pearl slate.

Flex-a-tile Style 4 Slab Shingles, measuring 10 in. x 32 in., combine 4 shingles in one. Being self-spacing, they are easily and quickly laid, and come surfaced with jade green, tile red, or black pearl slate.

Flex-a-tile Standard Individual Shingles, as shown above, are stiff, strong, and uniformly well made for a wide variety of uses. Surfaced in jade green, tile red, or black pearl slate.

Richardson Roll Roofing

Rubbertex Roll Roofing is a flexible, durable, allpurpose product especially good for factories, warehouses, barns, and garages. It should be applied with Zinc Pyramid Kaps. Flex-a-tile Shingle Roll Roofing with a permanent shingle design embossed right on the roll gives at very low cost the effect of individual shingles. It can be laid equally well over old shingles or new sheathing, and is surfaced in jade green or tile red slate.

Flex-a-tile Slate Surfaced Roll Roofing combines the high quality of Richardson products with the economy of roll roofing. Its firm surface of jade green or tile red slate flakes is enameled on to stay. Packed with Zinc Pyramid Kaps.

Other Richardson Products

Viskote—a sanitary sound deadening and insulating material, is especially suitable for laying under linoleum. It is also used as insulation between walls and beneath floors.

Viskalt Paints, Cements, Coatings include an extensive variety of protective products which it will pay you to follow up.

As you see, these principal Richardson products fit every type of customer, every kind of roofing problem. And remember—one Richardson Roofing job sells another. For complete details and for our latest price list, write us today.

WRICHARDSON COMPANY

Melrose Park (Chicago) Illinois

Lockland (Cincinnati) Ohio

New Orleans, Louisiana

RICHARDSON ROOFING



KNAPE & VOGT CLOTHES CLOSET FIXTURES

A Tremendous Selling Asset—

Whether you are building a house to sell, or laying out the plans and making the specifications for a prospective home builder, Knape & Vogt Clothes Closet Fixtures represent a tremendous selling asset because of their many unusual features, providing greater home comforts and conveniences at low cost.

Here are some of the advantages they bring:

- 1. Less Closet Space, resulting in larger rooms or restricted building area.
- 2. Better storage with almost unlimited capacity. No sagging, wrinkling, crowding, tearing, or soiling of garments.
- 3. Permit instant inspection and selection of garments. Entire ward-robe can be pulled out in light and air of room.
- 4. Wide range of uses. For private residences, clubs, schools, lodges, offices, factories, stores, cloakrooms, etc.

Knape & Vogt Clothes Closet Fixtures are sold through hardware stores. They are immediately available in multiples of 2 inches from 12 inches to 60 inches in length. Special lengths can be made to order. Send specifications for our quotations. If no dealer in your city, your requirements will be taken care of direct.

KNAPE & VOGT MANUFACTURING CO. GRAND RAPIDS, MICHIGAN

FREE To contractors, builders and architects, and others interested in building, we will gladly send, on request, how early K. & V. Clothes Closet Plans, showing how early K. & V. Clothes Closet Braues and be installed or included in all building plans.



Grand Rapids, Mich.	
(Ch ☐ Architect	eck)
	tractor
Closet Fixtures.	
Name	



KEYSTONE Copper



The Mark of Superiority!

Chicago

is a distinct achievement for quality—the first Copper Steel manufactured, so branded and marketed.

Being the *pioneer* in the field, Keystone is backed by greater skill and experience than any competitive

copper-bearing material. The alloy of Copper gives to Steel Sheets and Tin Plates the maximum of rust-resistance. This fact should not be overlooked by builders and users of sheet metal. Read the reports of weather tests of the American Society for Testing Materials --- or send for our booklet The Testimony of a Decade, giving the facts in condensed form.

merican Sheet and Tin Plate Company General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES: New Orleans

Export Representatives: United States Steel Products Company, New York City

Pittsburgh

St. Louis

Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle



ACH brand of our manufacture has behind it a service—the scope of which represents a tangible value to the user. This Company is prepared to meet your every requirement for





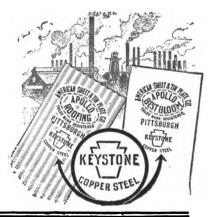


Black and Galvanized SHEETS

Tin and Terne Plates, Etc.

Our service and products, known the world over, mean much

to builders and contractors. The extent of our equipment and organization is an indication of the amount of practical help we can give to buyers and users of standard sheets and plates, or products for special purposes. Sold by leading metal merchants. Write the nearest District Sales Office relative to your sheet metal problems and requirements.



American Sheet and Tin Plate Company General Offices: Frick Building, Pittsburgh, Pa.

Sheet and Tin Mill Products for all purposes—Black Sheets, Galvanized Sheets, Tin and Terne Plates, Special Sheets for Stamping, Corrugated and Formed Roofing and Siding Materials, Long Terne Sheets Wellsville Polished Steel Sheets, Automobile Sheets in all grades, Deep Drawing Sheets, Fire Door Stock, Black Plate, Etc.





andat Karnak

RUE builders of permanency have long sought the secret of the Pharaohs, the foremost builders of the world.

While Time bodes destruction to all things, fifty centuries have not entirely obliterated the architecture of the ancient Egyptians.

Founded during the period of the 12th dynasty (2778-2565 B.C.)* the hall in the temple of Ammon at Karnak (ancient Thebes) still stands, a vanquished Empire's monument to artistry and permanency in building.

Today, nearly five thousand years later, A.M. 5923, architects are meeting a kindred demand for permanency and beauty through the use of



A quarry of raw limestone of unusual chemical content and 99½% pure dolomitic, plus modern methods of hydration, explains why Ohio White Finishing Lime produces a smooth, hard, snow-white wall, free from chipping, checking and blistering. Its peculiar natural composition, which scientists have failed to

fully explain, gives to it its fire-resisting, metal-preserving and acoustics-improving properties.

Like the lime of the ancient Egyptians, OHIO WHITE FIN-ISHING LIME is exceedingly "fat" or plastic, making maximum coverage possible with a minimum of labor and material.

The complete story of lime is told in our interesting booklet, "The Tale of the Clam." Write for your copy today.

The Ohio Hydrate & Supply Co.

Woodville, Ohio

"The Lime Center of the World."

*From the "New Century Book of Facts" by Wright.



Herringbone solid partition construction.

Herringbone Solid Partitions Save Space In This Hotel

The two-inch solid partition of Herringbone Rigid Metal Lath on GF Cold Rolled Channels, substituted for walls of ordinary four-inch block construction, effects a saving of one square foot of floor space for every six running feet.

In a typical 500-room hotel this saving amounts to 3,500 square feet of floor space. This is the equivalent of about ten rooms. At a rental of \$5 a day per room, Herringbone thus affords an additional income of \$18,000 per year.

The two-inch plaster wall formed by Herringbone on GF Channels is fire-and-sound proof, light, rigid and sanitary. It is the ideal partition for apartments, hotels, hospitals and office buildings.

GF solid partition construction saves labor and material costs in erection. Specify it for economy.

Other GF Materials

cause they are soundproof."

A Statement by Harry Wardman

Self-Sentering-A combined form, lath and reinforcement.

Trussit-A reinforcement for solid partitions.

GF Expanded Metal-A concrete reinforcement.

GF Steel Tile-For concrete floors.

GF Steel Lumber-Used in place of wood joists and studs.

GF Steel Channels-Studding for solid partitions.

GF Peds-Spot grounds for attaching trim to concrete and plaster.

GF Waterproofings-For concrete and masonry.

Write for illustrated literature.



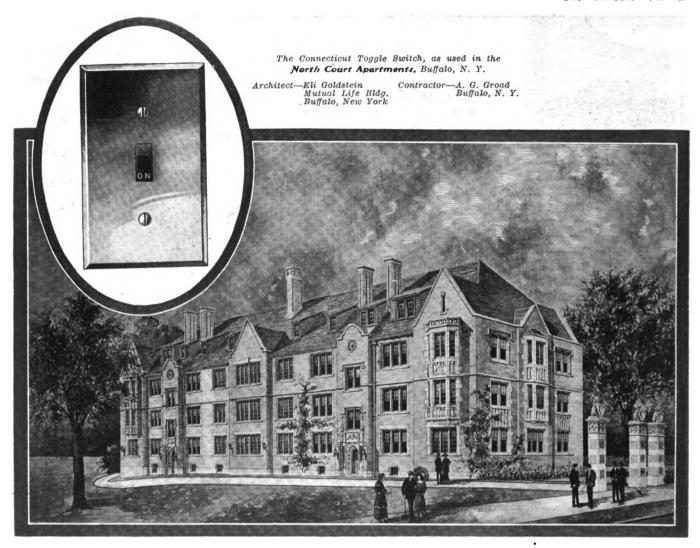
THE GENERAL FIREPROOFING CO., Youngstown, Ohio

Branches:

SYRACUSE CHICAGO SAN FRANCISCO BOSTON ATLANTA

MILWAUKEE KANSAS CITY MINNEAPOLIS ST. LOUIS OMAHA PHILADELPHIA NEW YORK CLEVELAND LOS ANGELES

Export Department: 438 Broadway, New York City-Cable Address: "Genfire-New York"



Another Typical Connecticut Installation

The wide use of Connecticut Wiring Devices in buildings of the better grade, is proof of the increasing popularity of this material with architects and contractors.

The modern home requires an electrical installation that will insure convenience for its occupants. The Connecticut line of wiring devices, meets this demand with a wide range of material that is designed according to the latest and most approved ideas.

If you will write to our factory, or nearest office, we shall be glad to send you a sample of the attractive Connecticut Toggle Switch, illustrated above. We feel certain that if you will place this switch in your own home, or use it on your next job, you will be so impressed with its smooth action and refined appearance, that you will insist on using it in the future. Send now for a sample—"Seeing is believing."

The CONNECTICUT ELECTRIC MFG. CO.

Main Office and Factory: BRIDGEPORT, CONN.

New York

Chicago

San Francisco

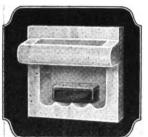


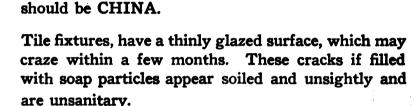
CONNECTICUT "A-1" DEVICES

Why a *tiled* bathroom

should have

china fixtures





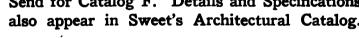
OR covering bathroom walls, tile is the accepted standard, but the fixtures built into these walls

Fairfacts Fixtures are made of solid snow-white CHINA. They are durable—they will even outlast the tiled walls and they never crack, craze or discolor.

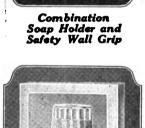
Fairfacts Fixtures are made in a wide variety of styles, including many combination fixtures. They cover practically every possible need of the bath. The designs are simple, distinctive, and harmonious.

Fairfacts Fixtures are installed by tile contractors the only trade that does this work and should be included in the tile contract. We do not sell the plumbing trade.

Send for Catalog F. Details and Specifications also appear in Sweet's Architectural Catalog.



THE FAIRFACTS COMPANY, Inc. 234-236 West 14th Street Dept. J. New York City



Tumbler Holder



Sponge Holder

Look for this Jairfacts Trade Mark PIXTULES BUILT IN YOUR BATHROOM WALLS



A "Fisklock" Home—Money Wisely Spent

FISKLOCK" is made with the same care and skill as our "Tapestry" Brick, famous for a generation for beauty in brick construction.

A "Fisklock" Brick is equivalent in size to two standard bricks, and the ease with which it is handled makes it the most economical type of face brick construction. A "Fisklock" wall has all the advantages of solid brick, and in addition the air spaces within the wall afford better insulating qualities than any other material.

Let us show you how "Fisklock" will enable you to build your home economically, yet with the utmost in structural worth.

Fiske & Company

Incorporated

NEW YORK

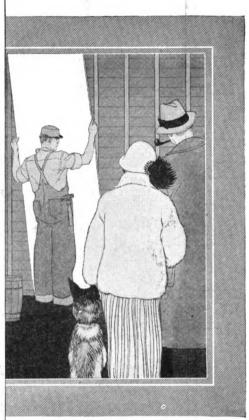
BOSTON

WATSONTOWN, PA.



FISKLOCK
THE TWO-IN-ONE BRICK





Written after he used it in 1500 homes

W. A. Magoon, Construction Manager of the B. E. Taylor Company, Detroit, says: "We used Sheetrock in the construction of about 1500 cottages in our Brightmoor properties and have found it thoroughly satisfactory both as to finish and durability."

Good builders in every locality are standardizing on Sheetrock—the wallboard made of gypsum rock—for two important reasons: (1) It makes tight-jointed, fireproof, permanently smooth walls and ceilings which take any decoration perfectly. (2) Its rigid, easily handled sheets speed construction and lower building costs.

Are you using Sheetrock to full advantage on your new construction and repair jobs? Your dealer in lumber or builders' supplies sells this *better* wallboard. Mail the memo below for a sample and free copy of the Sheetrock Time Book.

Sheetrock is inspected and approved by The Underwriters' Laboratories, Inc.

SHEETROCK

The FIREPROOF WALLBOARD

UNITED STATES GYPSUM COMPANY, General Offices: Dept. H, 205 W. Monroe St., Chicago, Ill.

World's Largest Producers of Gypsum Products

Clip and mail this coupon today!

UNITED STATES GYPSUM COMPANY, Department H, 205 W. Monroe St., Chicago, Ill. Please send me the Sheetrock sample and the free Time Book.

Name	
Address	

Sheetrock comes in standard sizes: 3/8 inch thick, 32 or 48 inches wide and 6 to 10 feet long

Digitized by Google

HUBBELL



FUSSELL FI F TOA-2309 FI F TYLESIN

Duplex Convenience Outlet, Composition body No. 5890; Porcelain body No. 6287. Stamped brass flush plate for either of above, No. 6258.





Hubbell Convenience Outlets are also made in the single types shown above, with round or rectangular plates.

a Duplex Outlet

Waist-high—within easy reach—is the place a business man likes to have a Hubbell Duplex Convenience Outlet, accommodating both desk lamp and dictating machine. He appreciates a builder's forethought in equipping the office with this double and constantly used convenience.

Hubbell Duplex Outlets provide two-fold service without additional wiring, and are made with shallow bodies for thin partitions. Their double Te-Slots take any standard cap, whether the blades be parallel or tandem.

Our fullest cooperation in advantageously locating outlets in any class of building is gladly extended.

HARVEY HUBBELLING DEVICES CONN. U.S.A.



Remember it's the TeSlots, that make outlets"Convenient"

Digitized by GOOGIC

B



Look for ALL these qualities when you buy roofing

Point by point, Beaver Vulcanite meets every demand you make of roofing material.

First, you demand a roof which is storm-proof. Beaver Vulcanite is made of nature's own waterproofing—asphalt. With patented Vulcanite shingles, your roof will have a *triple-thick* covering where protection is most needed, and double-thick elsewhere.

You want a fire-safe roof. The National Board of Fire Underwriters vouches for the fire-resisting qualities of Vulcanite slate-surfaced roofing. You want a durable roof; users who have known Vulcanite since it was introduced 25 years ago attest to its long life.

The warmth and depth of Vulcanite's non-fading colors and the distinctive shingle designs give you beauty.

Vulcanite, too, is a non-conductor of heat and cold; keeps your home warm in winter and cool in summer.

Test each quality of Beaver Vulcanite yourself; learn all about this wonderful roofing material. Send coupon for free sample and complete information.

THE BEAVER PRODUCTS COMPANY, Inc.

Thorold, Canada

BUFFALO, N. Y.

London, England

Manufacturers of Beaver Wall Board, Beaver Vulcanite Roofing, Beaver Plaster Board and Plaster Products

BEAVER VULCANITE



Beaver Vulcanite Self-Spacing Shingles have a patented shoulder which seals the roof above the notch against driving rain or snow. Space automatically, saving labor cost.



Beaver Vulcanite Doubletite Slabs build a roof of tile-like effect, triplethick at butts and double-thick at slots-Fewer shingles are needed to cover any given area. Space automatically.



Beaver Vulcanite Hexagon Slabs have a distinctive design and produce a roof triple-thick at the buts and double-thick elsewhere. They are the equivalent of four shingles in one. Space automatically. Especially suitable for laying right over old shingles.

Beaver Vulcanite is slate-surfaced in rich Italian red, sage green and distinctive blue-black. Produced also in plain, slate-surfaced or sand, mica or talc-surfaced rolls in various weights.

COUPON

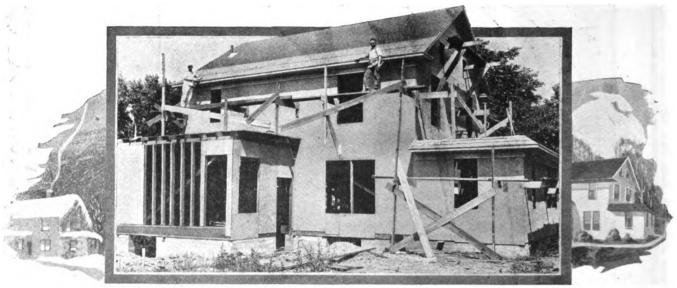
The Beaver Products Co., Inc., Buffalo, N. Y. Dept. 10

Gentlemen: Please send me free sample of Beaver Vulcanite roofing; also Vulcanite booklet.

Name

State

Digitized by GOOGIC



Turns Winter's Cold

Home of Harry Mitten, Architect, Syracuse, New York. Celotex used for sheathing and insulation on walls and roof, for sound deadener in floors, for plaster base on interior walls.

Sheds Summer's Sun

You can't beat Celotex!

Celotex lumber has the insulating value of cork. A house with walls and roof built of Celotex can be heated in winter for two-thirds the usual fuel cost. And in summer, a Celotex house is cool. You can't beat it.

Celotex is a rugged building lumber made from the long, tough fibres of cane. Nails direct to studs and rafters just like ordinary lumber. Is not easily damaged by weather nor by ordinary rough handling.

As a sound deadener, Celotex is ideal. It makes a perfect plaster and stucco base.

Stock Sizes: Thickness 1/6 in., width 4 ft., lengths 8, 8 1/2, 9, 9 1/2, 10 and 12 ft. Weight about 60 lbs. per 100 sq. ft.

We want to put samples and complete information in the hands of every contractor, lumber merchant, home builder and architect in the country. If you do not know all about Celotex, write us. THE CELOTEX COMPANY, 111 West Washington Street, Chicago, Ill. Dept. F. 12.



Zinc Roofing

are well known. There are today, both in Europe and this country, many famous buildings protected by zinc roofs one hundred years old or more, that have never needed any repairing since they were first laid.

Illinois Zinc roofing materials are fabricated from this same sturdy metal. Their use always results in complete satisfaction both to the builder and to the dealer who sold them and laid them; handsome, lifelong protection without maintenance for the former, and a reputation as a first class roofing contractor for the latter.

Let us send you detailed information about our products.



ILLINOIS ZINC COMPANY

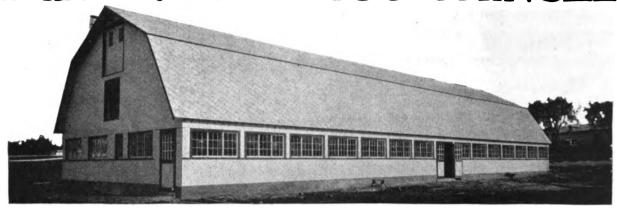
332 So. Michigan Avenue, Chicago, Ill. 1306 Chamber of Commerce Bldg., Pittsburg, Pa.

280 Broadway, New York City 1331 Filbert Street, Philadelphia, Pa.

Smelters and Rolling Mills, Peru, Ill. Established 1870

Corrugated Zinc Sheets for Roofing and Siding—Illinois Zinc Shingles—Strip or Ribbon Zinc—Slab Zinc (Spelter)—Wide Zinc Sheets. Producers of Electrolytic Slab Zinc, guaranteed 99.99% pure zinc. The highest grade of Slab Zinc produced in the world.

Fireproof, Permanent AMBLER ASBESTOS SHINGLES



These are views of the reconstructed Rancocas Stock Farm buildings at Jobstown, N. J.

Zev, who won the great race from Papyrus, is safely housed here

An interior fire quickly burst through the original roof and spread before the valuable stock could be removed. The loss of valuable blooded horses was estimated to be in excess of \$700,000.

The owner, desiring a fireproof roof, covered his new buildings with Ambler Asbestos Shingles—"Permanent as the Everlasting Hills." The track itself is three-eighths of a mile long. Some 950 squares of shingles were used in the complete roofing.

Ambler Asbestos Shingles are composed entirely of the highest quality of hydraulic cement, into which a substantial mat of long asbestos fiber is interwoven. Nothing about these sturdy shingles to burn. They grow stronger as they age. Cannot curl, rust or rot. Made in three shapes for laying in American, French or Honeycomb styles and in Tuscan Red, Spanish Brown, Moss Green, Blue-Black, Newport Gray and other colors and shades.

Send for facts invaluable to architects, contractors, engineers and property-owners planning roofs for new or old buildings.

Asbestos Shingle, Slate & Sheathing Company

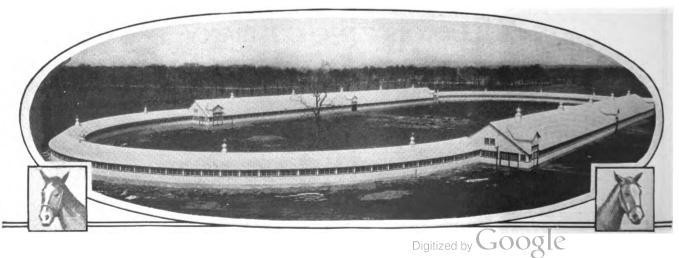
DEPARTMENT C

AMBLER, PENNA.

Branch Offices:—Baltimore, Boston, Buffalo, Chicago, Cincinnati, Detroit, Cleveland, Minneapolis, New York, Omaha, Philadelphia, Pittsburgh, Washington, Wilkes-Barre; Toronto, Canada Southwestern Distributor: R. V. Aycock Co., Kansas City, St. Louis, Tulsa, Houston Western Distributors: H. G. Sperry Co., Salt Lake City, Utah, Seattle, Wash.; J. A. Drummond, San Francisco, Los Angeles, Fresno

Other distributors throughout the country

"By the mile"



"Increases the Sales Value of Apartments"

That's what the Queensboro Corporation says of the

VULCAN SMOOTHTOP COMPACT CABINET GAS RANGE

Put this range into the kitchens of your homes and your prospective buyers will select that home out of hundreds.

For the Vulcan Smoothtop has every feature every other gas range has *plus* many other distinctive improvements which make cooking easier, quicker and pleasanter.

Write for Booklet

WM. M. CRANE CO.



THE QUEENSBORD CORPORATION

MANMATIAN OFFICE: 50 EAST 487 STREET

New York City October 26th, 1923.

Wm. M. Crane Co.,
16 West 32nd Street,
New York, N. Y.

Gentlemen:

Endeavoring to furnish the new garden apartments at Jackson Heights, New York, with the best Top Gas Range wich has given such satisfaction to the the increase of sales value of the apartment. The fact that we consider it a distinct advantage in fact that we are the largest single purchaser of your ranges is evidence of our faith in them.

Yours very truly,

Yours very truly,

FRHOWE:W:B

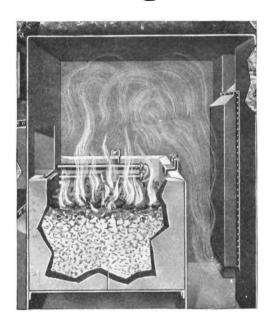
In the Chateau Apartments at Jackson Heights, Andrew J. Thomas, the well-known apartment house architect, achieved his ideal of open planning. His arrangement of individual buildings having only two apartments on a floor, provides a maximum of sunshine, a variety of exposures and corner fooms, like a suburban house.



One of five sizes

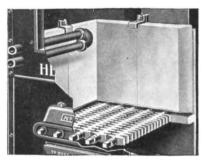
Digitized by

Why a HESS! Reason No. 5 Rectangular Fire-Box!



"Every Inch a Furnace"

The illustration at the left shows the efficient, rectangular fire-box enclosed in the leak-proof, riveted and welded steel radiator, and the heat-saving smoke outlet. The illustration below shows the thick, protective fire-brick lining of the fire-box, and the individually operated grate bars which give perfect control of the fire.



Most Efficient Heating With Any Kind of Fuel—Simplified Operation

IN 1898, we discarded round fire-boxes and grates, after using them for 24 years, because the rectangular fire-box, such as is universally used in locomotives and power plants, had been definitely accepted by heating engineers as the most efficient type.

The square fire-box has a larger area to throw off heat, and permits a grate under the entire area so that there are no corners to fill with dead ashes. It permits individually operated grate bars, easy to turn, keeping every part of the fire live and bright. Any portion of the fire can be cleared without disturbing the rest of it. Clinkers rarely form. The fire-box and grates are close to the front, so the fire can be cared for easily and conveniently. The square ash pit is easily cleaned.

HESS furnaces, because of their grate arrangement, are adapted to burn any fuel—hard or soft coal, coke, wood, corn cobs, lignite, soft coal slack, gas, or oil. Space is also provided for a smoke settling chamber and special smoke outlet. The square, welded steel, leak-proof radiator makes HESS furnaces particularly adapted to oil heaters, as it radiates immediately, and no odor, gas fumes nor smoke can escape into the rooms.

Write for "Modern Furnace Heating," a book that will help you solve your heating problems

HESS WARMING AND VENTILATING COMPANY 1201-N Tacoma Building · Chicago

Branch Offices: New York City, Detroit, Minneapolis, Milwaukee, Cincinnati
Local Distributors: B. M. Huntington, Walla Walla, Wash.; Henry Taylor & Sons, Jacksonville, Fla.;
Frank Mezera, Eastman, Wisc.; C. E. Shingledecker, Clarion, Pa.; Harry Cable, Falls Creek, Pa.

HESS Welded FURNACE



Expanded Wood Lath

PROVED STIFFER THAN STANDARD CONSTRUCTION

Comparative tests made by Robert W. Hunt @ Co., Engineers

Results of Test

Actual Movement of Upper Sill				
Load Applied in Pounds	A—Lath and Sheathing	B—Expanded Wood Lath		
200	0.06 inches	0.06 inches		
400	0.15	0.13		
600	0.26	0.20		
800	0.59	0.29		
1000	1.07	0.37		
1200	1.93	0.51		
1400	3.65	0.67		
1500	5.13	0.92		

DENTICAL panels with frames four feet high and eight feet long, constructed with sills and studs 17/6x33/4 in. and studs placed 16 in. on centers, were prepared.

FRAME A had one side covered with 3/4x6 in. dressed sheathing nailed at each stud with 8D nails, and the other side covered with common lath spaced 2 in. on centers and staggered in the usual way.

FRAME B was covered on both sides with Expanded Wood Lath sheets 8 ft. long and 16 in. wide, fastened at the juncture of each rib and stud with 5D nails.

In testing these panels the bottom sill was clamped to the base of testing machine and the pull applied to the top sill in the direction of its length.

Expanded Wood Lath, by this test, has been proven much stiffer than the old standard construction. But added to this advantage are its high insulating qualities and the much lower construction cost when used for either exterior stucco or interior plaster.

Automatically Backplasters

between the lath and asphalt felt. Not an ounce of material wasted.

You get the intrinsic value and strength of every ounce used.

Complete Report of This Test and Descriptive Literature Will be Sent on Request

Gentlemen: Please send me free samples and descriptive literature on Ex-Wo-Lath.
Please send me free samples and descriptive literature on Ex-Wo-Lath
Treate send me free samples and descriptive mediate on 2x 110 2xtm.
Name of Firm
Individual
Address

૱ૡ૾૱ૡ૾૱ૡ૽૱ૡ૽૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૾૱ૡૺ૱ૡૺ૱ૡૺ૱ૡૺ૱ૡૺ૱ૡૺ૱ૡૺ૱ૡૺ૱ૡૺ૱ૡૺ૱ૡૺ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ૡ૱ These Books Make Wonderful Christmas Gifts

For Builders and Prospective Owners



"Homes of Beauty and Convenience"

32 Houses of Varied Character by 25 Architects

These exterior and interior floor views, plans and details of attractive, cozy and inexpensive homes are being

used by Builders to get contracts signed and questions of construction adjusted. Full descriptive text-218 illustrations-100 pages-size, 9x12 inches —heavy paper covers.

> A Wonderful Value at \$1 Use Coupon

A Book of Favorite Bungalow Types

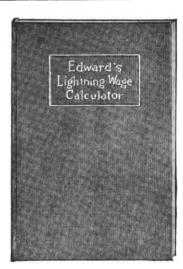
"Beautiful Bungalows"

Forty leading architects planned the 43 popular bungalows shown in this fascinating new book. Practically all materials and types o f bungalows are represented; Colonial, Cot-tage, Chalet, Farm, Garage types. 3 to 7 types.



Actually built in all sections of the rooms. country, and therefore of proven adaptability to your needs wherever located. 100 pages. 190 illustrations. Size, 9x12 inches. Heavy paper covers.

> Price, \$1-Use Handy Coupon For All Who Build or Plan



"Edward's Lightning Calculator"

Makes Play of Payroll Work

47 full page tables tell what the employee gets per hour on a weekly pay basis—per day monthly on a basis — per pay week on daily basis - for pay period at any hourly rates

the fractional tables literally save hours of

Cloth Covers—60 Pages Size, 6x9 Inches-\$1

Blue Prints for this book

"Beautiful Homes of **Moderate** Cost"

44 designs by nationallyknown architects. Complete blue print plans and specifications available at nominal cost for each design.

Practical, beautiful, economical types of

nomical types of 1- and 2-family houses and bungalows—frame, brick, stone, hollow tile, etc.

Besides homes, the book shows Garages, Pergolas, Furniture and contains articles on Finance, Landscaping, Wiring, Heating and Plumbing. A most unusual plan book.

109 Pages—165 Illustrations—9x12 Inches

Heavy Paper Covers-\$1

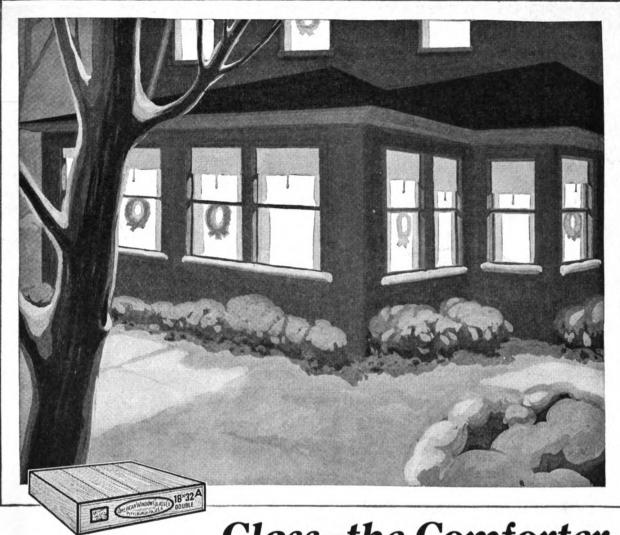


SPECIAL COMBINATION PRICES

All 4 books \$3.20; any 3 books, \$2.40; any 2 books, \$1.60

BUILDING AGE and THE BUILDERS' JOURNAL, 239 West 39th Street, New York.		1923.
Remittance of \$ is enclosed, for which send books checked to the following		
☐ Homes of Beauty and Convenience—Name		
☐ Beautiful Bungalows ——Name		
☐ Edward's Lightning Wage Calculator—Name		
Beautiful Homes of Moderate Cost——Name		
ORDERED BY (NAME)		
ADDRESS		
These prices apply whether sent to one or to different	addresses.	

Digitized by GOGIC



Our scientific methods of flattening give "the Best glass" its perfect smoothness and brilliant surface. It is uniform in thickness and cuts evenly on both sides. "The Best glass" is made in the largest melting furnaces in the world. It is drawn and blown by our improved mechanical processes. It is crystal clear and of greater tensile strength than any other window glass, rolled glass, or plate glass. "The Best glass" is graded to the highest known standards and carefully packed in well made boxes.

"Let in the Sunlight"



Glass-the Comforter

CHRISTMAS—that gladsome time when brightly lighted evening windows beckon their promise of the comforts to be found within.

Behind the shining squares of glass, in cozy interiors, happy voices intermingle and joyous laughter rings out from gay groups gathered about friendly firesides.

The very spirit of the season seems to be reflected in the perfectly smooth surface and brilliant lustre of "the Best glass". It is crystal clear and shows less wave than other glass.

Framed in storm sash and window "the Best glass" adds to the distinction and comfort of the home.

AMERICAN WINDOW GLASS CO.

GENERAL OFFICES: PITTSBURGH, PA.

BRANCHES IN PRINCIPAL CITIES
Digitized by OOS C

For Fast, Accurate Work

You'll find that your job is going fine—in a way that means satisfaction to you and the owner you're serving — when you use

MCKINNEY Hinges Butts

They are made for all grades of buildings, in every finish and in accurate dimensions. That's what makes them easy to use.

MCKINNEY MANUFACTURING COMPANY
PITTSBURGH
PENNSYLVANIA

Western Office and Warehouse - Chicago

Garage hardware, door hangers and track, door bolts and latches, shelf brackets, window and screen hardware, steel door mats and wrought specialties

Digitized by GOGIC

Why Architects, Contractors and Dealers Recommend

Andersen Frames

- Immediate delivery—no expensive delays waiting for special custom made frames.
- 121 sizes ready for every purpose.
- Delivered in two compact bundles plainly marked and easily handled.
- 7 parts instead of 57.
 No small parts to be lost or broken.
- A frame up in ten minutes. No sorting, measuring or refitting. Pockets and pulleys in place.
- Accuracy gives smoothrunning windows, yet excludes all weather.
- Modern machinery, methods and specialization lowers cost at factory; quickness of assembly saves you time, labor and money on the job.
- Better results in frame, brick or stucco buildings.
- White Pine preserves original accuracy and gives continuous service.
- Made by the largest exclusive standard frame manufacturer. The trade-mark is absolute protection.





Why Andersen Frames Fit Better Than Others

A VISIT to the Andersen factory would quickly show you why windows run so smoothly, yet fit so snugly, in Andersen Frames.

Each section of the frame must be absolutely accurate. Special machinery and skilled workmen turn out the parts with such exactness that any carpenter can nail up the seven units of an Andersen Window Frame in ten minutes, without any tinkering or truing.

The original smooth-running qualities stay with the frame because its White Pine construction resists warping, shrinking, cracking or rotting.

In addition to satisfactory service, Andersen Frames give the immediate advantages and economies listed here in the margin. Insist upon frames that have all these features.

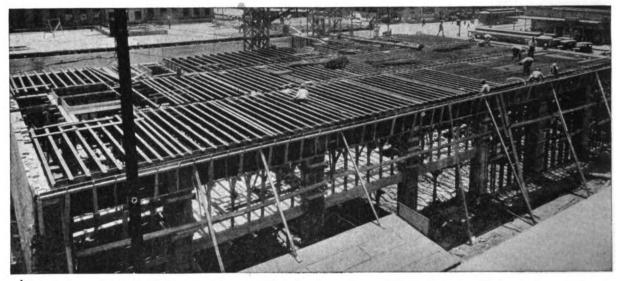
Free Booklet on Request

Write direct to us for the complete story of Andersen Frame savings. Please tell whether you are building your own home, or whether you are interested as an Architect, Contractor, Carpenter or Dealer.

Andersen Lumber Company
Dept. F-12 Bayport, Minnesota

Andersen

TRUSCON AND NATIONAL STEEL JOISTS



Hotel and Saenger Theatre Arcade, New Orleans, La. Emile Weil, Archt., for theatre; Weiss & Dreyfous, Inc., and Toledane Wogan & Bernard, Assoc. Archts., for hotel. R. P. Farnsworth & Co., General Contractors. Truscon Steel Joists.

The Backbone of the Structure

TRUSCON STEEL JOISTS, together with accessory materials, are intended primarily for the construction of fire-proof floors and roof supports.

Truscon Steel Joists which form the backbone of the floor structure, are designed for use in every type and size of building. They can be attached to structural steel, reinforced concrete, brick, stone—and all other materials used in modern buildings.

The illustration shows a typical building under construction in which Truscon Steel Joists, and Metal Lath are used. This actual installation illustrates the application of Truscon Steel Joists to any type of building.

They are simple to use, requiring no special or elaborate equipment in the field, no centering or false work. Completely shop-fabricated, cut to length and fitted, they require only a small working force to install. Truscon Steel Joists weigh little more than wood joists and possess many times the strength, as well as unusual fireproof qualities. The reduced weight means economy in materials to buy, handle, erect and on which transportation charges must be paid. Crackproof, vermin-proof and economical, Truscon Steel Joist Construction is being used for apartments, hotels, stores, offices, hospitals, schools and residences, large or small. Well adapted to buildings already planned in wood.

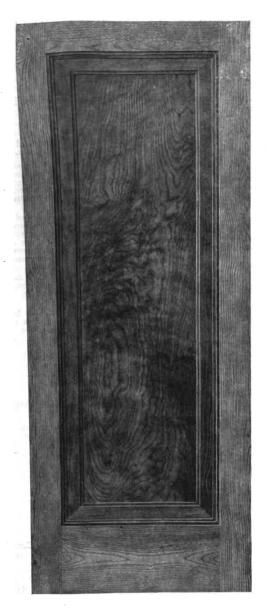
Write for Truscon Steel Joist Data Book.

TRUSCON STEEL COMPANY

YOUNGSTOWN, OHIO, U. S. A.

Warehouses and offices from Pacific to Atlantic. For addresses see phone books of principal cities.

Canada: Walkerville, Ont. Export Div.: New York.





The Miracle Door is a revelation of beauty and economy.

In producing the Miracle Door we operate from tree to finished product with unparalleled facilities.

The Miracle Door is made possible by entirely new patented standards of precision in wood manufacture.

Miracle Doors are being used in the better class of buildings and they have been enthusiastically received by the entire building industry.

The Softwood Miracle Door costs about one dollar more than a one-panel Softwood door.

The Hardwood Miracle Door costs no more than a one-panel Hardwood door.

Wholesale stocks of Miracle Doors are carried in over eighty cities. For sale by all dealers or write us direct.

Catalogs showing the Miracle Door in detail and in colors are ready for distribution.

Paine Miracle Doors were used throughout the Watkins Development at Squirrel Hill, Pittsburgh, Pa.

PAINE LUMBER COMPANY, Ltd.

OSHKOSH, WISCONSIN

Digitized by Coogle

Selected List of Manufacturers' Literature

FOR THE SERVICE OF BUILDERS, CONTRACTORS, ARCHITECTS AND ENGINEERS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to Building Age & The Builders' Journal, 239 West 39th Street, New York, or the manufacturer direct, in which case kindly mention this publication. Either the titles or the numbers may be used in ordering.

(See also Alphabetical Index, Page 146)

AIR REGISTERS

The Hart & Cooley Co., Inc., New Britain, Conn.

747. "Are You Looking for Facts?" folder, 4 pp., illustrated.

ASBESTOS PRODUCTS

Asbestos Shingle, Slate & Sheathing Co., Ambler, Pa.

- Ambler Asbestos Shingles. Catalog 5½ x 8½ in. 40 pp. Illustrated.
- Ambler Asbestos Corrugated Roofing and Siding. Catalog, 8½ x 11 in. 36 pp. Standard Purlin Spacing Tables. Ambler Asbestos Corrugated Roofing and Siding. Catalog, 8½ x 11 in. 20 pp. Illustrated. Prices and specifications.
- Ambler Asbestos Building Lumber. Catalog, 81/2 x 11 in. 32
- Engineers' Data Sheets. Catalog, 8½ x 11 in. 40 pp. Illustrated. Specifications and working sheets for Ambler Asbestos Corrugated Roofing and Siding.

Mohawk Asbestos Slate Co., Utica, N. Y. 730. Descriptive folder containing available prices.

ASBESTOS ROOFING-See also Roofing Materials

ASH HOISTS—See also Hoists

BALANCES, SASH

Caldwell Mfg. Company, The, Rochester, N. Y.
9. Suggestions for the Present-Day Architect. Booklet, 6 x 9 in. 16 pp. Illustrated. Gives full size dimensions and information for the purpose of writing specifications for Caldwell Sash Balances.

Pullman Mfg. Co., Rochester, N. Y.

10. Catalog No. 38, describing new form of removable sash balance. Illustrated.

- American Saw Mill Machinery Co., Hackettstown, N. J.

 11. Catalog No. 22, describing a general line of band saws made in various sizes.
- Technical Data. Four-page folder 8½ x 11 in. containing specifications and descriptions.

Atkins & Co., Inc., E. C., Indianapolis, Ind. 731. An interesting booklet entitled "Saw Nense."

Crescent Machine Co., Lectonia, Ohio. 241. Descriptive 144-page catalog.

BAR BENDERS AND CUTTERS

Koehring Company, Milwaukee, Wis.
 Four-page folder, giving illustrations and sizes of Koehring Bar Benders and Cutters.

BATHROOM APPLIANCES—See also Plumbing Equipment BEDS

Murphy Door Bed Company, 22 W. Monroe Street, Chicago, Ill. 402. Eight-page illustrated, "How to Use the Murphy Bed."

BLUE PRINTS

Makepeace, Inc., B. L., 387 Washington St., Boston, Mass. 891. Send for samples.

Peerless Blue Print Co., 347 Fifth Avenue, New York City.

103. Splendid Drawing Board Outfits are manufactured in conjunction with the making of blue prints.

BOILERS—See Heating Equipment

BOOKS

Architectural House Planning Service Co., 20 So. 18th Street,

Philadelphia, Pa. "Small Homes of Character." \$1.00.

Building Age and The Builders' Journal, 239 West 39th Street,
New York.

"Beautiful Homes of Moderate Cost."

"Homes of Beauty and Convenience."

"Beautiful Bungalows."

\$1.00.

Chicago Technical College, 1038 Chicago Tech. Bldg., Chicago, Ill. 337. Free for the asking, the following two books: "Building Construction" and "Plan Reading and Estimating."

Curtia, Companies Service Bureau, Clinton, Iowa.

961. Better Built Houses. Vol. XIII. This volume contains floor plans and perspectives of 21 two-family houses. The designs were made by Trowbridge and Ackerman, Architects, New York, and illustrations rendered by Schell Lewis. Printed in sepia on heavy cream paper. Sent free to architects, east of the Rockies, requesting it on business stationery, otherwise price \$1.00. 24 pp. Ill. 9 x 12 in.

Grieme, Henry W., Engineers' Building, Cleveland, Ohio. See listing under "Bungalow and Small House Plans."

Keith Corporation, 620 Abbay Bldg., Minneapolis, Minn. See listing under "Bungalow and Small House Plans."

U. P. C. Book Co., 243 West 39th Street, New York City.

BRICK

The Alliance Brick Co., 17 Review Bldg., Alliance, Ohio.

1064. "Alliance Multi-Color Ruff Brick." 4 pp. Illustrated folder describing the color, texture and beauty of this brick.

describing the color, texture and beauty of this brick.

In the Story of Brick. Contains the history of, and basic requirements of building brick, artistic, sanitary and economic reasons, comparative costs, and fire safety with photographs and drawings, and illustrates ancient and modern architectural works of note in brick. Sent free.

A Manual of Face Brick Construction. The history of brick making, types of face brick, showing details of construction for walls, chimneys and arches. Details of use of tile and brick construction and different types of bonds are given. A series of plans and elevations of small brick houses, descriptions, useful tables and suggestions are illustrated and described. Size 8½ x 11 in. 116 pp. Price \$1.00.

The Home of Beauty. A booklet containing fifty prize designs for small brick houses submitted in national competition by architects. Texts by Aymar Embury II, Architect. Size 8 x 10 in. 72 pp. Price 50 cents.

Architectural Details in Brickwork. Three series of beauti-

Architectural Details in Brickwork. Three series of beautiful half-tone prints of brickwork detail, contained in closed folders suitable for standard vertical letter file. The three series contain 124 prints in all. Size 8½ x 11 in. Price \$1.50 per set.

Bungalows and Small House Plans. Four booklets containing plans for attractive small brick houses, containing 3-4, 5, 6, and 7-8 rooms. 50 pp. Ill. 8½ x 11 in. 25 cents each, \$1.00 for the set.

Piske & Company, Boston, Mass.

245. Tapestry brick, other grades of front brick. Manufacturers of "Fisklock" Brick.

BUILDING CONSTRUCTION-See also Garage Construction

Concrete Engineering Co., 140 So. Deserborn St., Chicago, Ill.

701. Handbook of Fireproof Construction. An illustrated treatise on the design and construction of preinforced concrete floors with and without suspended ceilings. The Meyer Steelform Construction is emphasized and tables are given of safe loads for ribbed concrete floors. 40 pp. Ill. 8½ x 11 in.

National Manufacturing Co., Sterling, III.
404. "National Garage Hardware" is a 32-page book, 6 x 9 in.,
illustrating a number of garages with their corresponding
working drawings. The booklet describes the equipment for
those of simple design to those of more elaborate proportions.

Truscon Steel Company, Youngstown, Ohio.
 Truscon Floortyle Construction. Form D-352. Contains complete data and illustrations of Floortype installations. 16 pp. Ill. 8½ x 11 in.

Truscon Standard Buildings. Form D-398. Describes Truscon Standard Steel Buildings, with diagrams, illustrations of installations, descriptive matter and list of users. 48 pp. Standard Steel Buildings, with diagrams, mustrations of installations, descriptive matter and list of users. 48 pp. Ill. 8½ x 11 in.

Truscon Building Products. Form D-376. Contains a brief description of each of the Truscon Products. 112 pp. Ill.

Modern School Construction. Form D-395. Contains illustrations of schools, with typical elevations, showing advantages of Truscon Products for this construction. 16 pp. Ill.

BUILDING HARDWARE—See Hardware

BUILT-IN BATHROOM FIXTURES

The Fairfacts Co., 234 West 14th Street, New York.

46. "The Perfect Bathroom," illustrated catalog, will be of great value to all builders and prospective builders.

BUILT-IN CLOTHES HANGERS

Knape & Vogt Mfg. Co., Grand Rapids, Mich. 405. 16-page bookiet, describing the "Garment Care System."

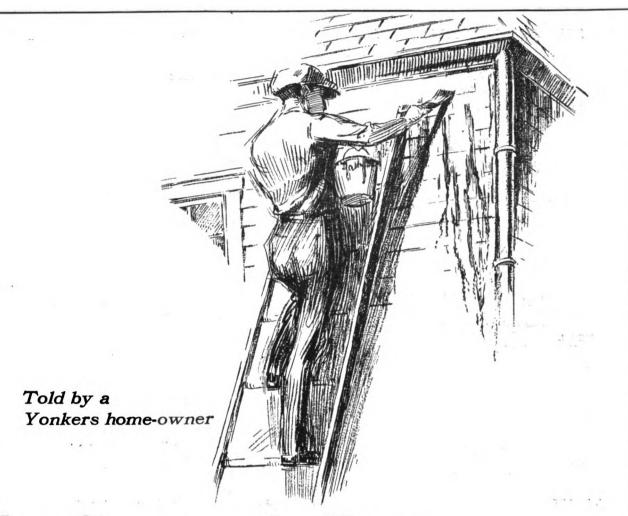
Wasmuth-Endicott Co., 502 Snowden Street, Andrews, Ind.
757. Practical Built-In Kitchen Equipment. A complete description, with dimensions, of kitchen cabinets, kitchen dressers, work tables, ironing boards, broom closets, dish compartments, cereal and plate warmers, chairs and medicine chests, also plans showing arrangement of fixtures. 12 pp. Ill.
81/2 x 11 in.

BUNGALOW AND SMALL HOUSE PLANS

American Face Brick Association, 130 No. 12th St., Chicago, Ill.

25. Four booklets of small houses from 3 to 8 rooms, containing 98 reversible designs. (1) 3-4 rooms, (2) 5 rooms, (3) 6 rooms, (4) 7-8 rooms; size 8½ x 11 in. Each booklet 25 cents; set \$1.00.

Architectural House Planning Service Company, 20 South 18th Street, Philadelphia, Pa. See listing under "Books." Digitized by Google



How Copper on the House Loosens the Banker's Purse Strings

(Mr. —— had applied to his local bank to take over the mortgage on his house in order to get the advantage of a better rate of interest).

From every angle—to eliminate costly repairs and replacements, to protect the value of the house—it pays to install Copper leaders, flashings and gutters, and Brass pipe plumbing. Copper and Brass never rust and do not deteriorate with age as do corrodible substitute materials.

COPPER & BRASS RESEARCH ASSOCIATION

25 Broadway - New York

Digitized by GOOS

Building Age and The Builders' Journal, 239 West 39th Street, New York.
"Beautiful Homes of Moderate Cost." \$1.00.
"Homes of Beauty and Convenience." \$1.00.
"Beautiful Bungalows." \$1.00.

"Beautiful Bungalows." \$1.00.

Grieme, Henry W., Engineers Bldg., Cleveland, Ohio.

890. A loose-leaf portfolio, 11 x 15 in. bound in leatherette. Contains 27 designs of the two-family type. Price \$2.50.

Keith Corporation, 126 No. 7th St. Bldg., Minneapolis, Minn.

26. Twelve different plan books at \$1 each. Cottages, bungalows, two-family garages, etc.

27. Fifty Small Homes of Character. Price \$1. Working drawings, specifications and models of small homes.

CABINETS

Hees Warming & Ventilating Co., 1204-7 Tacoma Bldg., Chicago, III.

111.

804. The Hess Sanitary Medicine Cabinet Lockers and Mirrors.
Description with details of an enameled steel medicine cabinet for bathrooms. 20 pp. 111. 4 x 6 in.

White Steel Sanitary Furniture Co., Grand Rapids, Mich.

969. "Medicine cabinets for the Home." Write for full particulars.

CANVAS—See Roofing Materials

CASEMENTS-See Doors and Windows

CAULKING AND GLAZING COMPOUND

Allmstal Westherstrip Co., 229 W. Illinois St., Chicago, Ill. 246. Illustrated catalog sent on request,

Concrete Engineering Co., 140 So. Dearborn Street, Chicago, Ill. 739. Write for interesting dealer proposition.

CEILINGS, METAL

The Edwards Manufacturing Company, Cincinnati, Ohio.

33. Pamphlet of 32 pages, describing metal ceilings and wainscoting. Well illustrated, with list prices and rules for estimating. 7 x 10 in.

Keighley Mfg. Co., 124 Third Avenue, Pittsburgh, Pa.

407. Catalog "M" describes the Lock Joint Metal Ceiling.

CEMENT

The Carney Company, Mankato, Minn.

702. The Board That Guarantees the Wall. Attractive catalog for architects, engineers, contractors and dealers. Describes fully the characteristics, durability and economy of this nature mixed cement that requires no lime. Contains sample formula for mixing and illustrations of Carney-laid buildings. Twenty-four pages. Ill. 8½ x 11 in.

805. A circular describing improvements in manufacturing the material, cost comparisons, physical tests and specifications for use. 4 pp. Ill. 8½ x 11 in.

CHEMICAL TOILET

The Robinson Household Mfg. Co., 625 Huron Street, Toledo, Ohio. 923. "Comfort Sanitary Chemical Toilet" is a 4-page descriptive circular describing "the old way" and the "nu-way." The advantages of the latter are described.

CLAMPS

Taylor, James L., Mfg. Co., Poughkeepsie, N. Y.
963. 32-page illustrated pocket size catalog, giving the styles and prices of the Taylor quick adjusting self-locking clamp.

CLOSETS (Meth Proof)
Kilmoth Products Corp., 50 Union Square, New York.
959. An 8-page illustrated booklet describing the modern wardrobe built of aromatic red cedar, thus insuring clothes against

COAL CHUTES

The Donley Bree. Ca., 3700 East 74th Street, Cleveland, Ohio.
409. An interesting folder, describing the advantages of the Donley Coal Chute.
International Steel & Iron Co., Dept. 19, Evansville, Ind.

COLUMN BASIS

Cheney, S., & Son, Manlius, New York.
250. An interesting descriptive booklet may be had on request.

COLUMN AND BEAM COVERING

United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. COLUMNS

mann-Sanders Co., Elston and Webster Avenues, Chicago, Ill.
Catalog No. D-47. 48 pages, illustrated. 734 x 10 in. Illustrating the Koll's Patent Lock-Joint Wood Columns. Price

Pacific Lumber Company of Illinois, The, 2060 McCormick Bldg., Chicago, Ill.
732. "Construction Digest" contains important Redwood information for Builders. Write for your copy.

tion for Builders. Write for your copy.

CONCRETE APPLIANCES
Universal Cemest Mold Co., No. Milwaukee, Wis.
41. Illustrated Folder, describing mold for building hollow concrete walls for homes, garages, barns, silos, etc.
Van Guilder Double Wall Co., 77 South Avenue, Rochester, N. Y.
42. A catalog describing the Van Guilder system of portable forms for the building of hollow concrete walls on the thermos bottle idea for the erection of homes, ice houses, barns, silos, etc. Walls are dry, as there is continuous air space around entire building.

CONCRETE CHITTER

CONCRETE CHUTES
Ransoms Concrets Machinery Co., Dunellen, N. J.

736. Ransoms Bulletins, 8½ x 11½ in., is an 88-page loose leaf book giving illustrations and specifications of the entire line of Mixers, Pavers and Steam Boilers. 48 pages of this bulletin are devoted to Concrete Chutes and Equipment. Details of the various equipment are given to show the sturdy, practical construction. Also many plans and views of complete plants are shown.

Aeroil Burner Co., Inc., 266 Hudson Ave., Union Hill, N. J. 954. "Concreting in Zero Weather," an illustrated catalog telling how concrete may be produced from 70 to 90 degrees in how concrete zero weather.

CONCRETE MACHINERY

The American Coment Machine Co., Inc., Keokuk, Iowa.
410. An interesting 68-page illustrated catalog, describing the "Boss" Labor Saving Construction Machinery.

Anchor Concrete Machinery Co., Adrian, Mich.

Od. "The Anchor Line of Concrete Machinery" is a 36-page illustrated catalog, describing their line. The keynote of the machines being their simplicity, durability and efficiency.

Sixteen-page illustrated folder, describing the Hobbs Concrete Block Machine. 905.

905. Sixteen-page illustrated folder, describing the Hobbs Concrete Block Machine.

Concrete Equipment Co., 535 Ottawa Street, Holland, Mich.

411. Catalog No. 22 describes in detail the various products manufactured by this company.

Construction Machinery Co., 403 Vintom St., Waterloo, Iowa.

251. The Wonder Catalog thoroughly illustrates and describes the Wonder design. Also contains a complete price list.

C. H. & E. Mfg. Co., 259 Mineral Street, Milwaukee, Wis.

412. Bulletin No. 1 describes the Portable Saw Rigs.

413. Bulletin No. 2 describes the Power Driven Pumps, Centrifugal, Pistons, Diaphragm, Triplex.

414. Bulletin No. 3 describes the Hoists, Mortar Mixers, Material Elevators, Engines.

415. Bulletin No. 4 describes the Tractor.

Ideal Concrete Machinery Co., 1334 Monmouth St., Cincinnati, O.

416. A 100-page ill. catalog, describing the Ideal Machine and also data for mfg. and curing Ideal Concrete Blocks.

417. Catalog No. 37 describes the Ideal-Cincinnatus Batch-Mixers.

Jaeger Machine Co., 216 Dublin Avenue, Columbus, Ohio.

418. "Concrete Misers," the new Jaeger catalog, contains 48 pages of information on the Jaeger Tilting Drum, Tip-over Water Tank and the in-built Jaeger Hoist.

419. 16-page folder, illustrating a Jaeger for every mixer need.

Koshring Co., Milwaukee, Wis.

46. Koshring Construction Mixers. Booklet. 734 x 10% in. Illustrated. 96 pp. Complete information on construction type concrete mixers.

47. Koshring Dondie Mixer. Booklet, 6 x 9 in. Illustrated. 24 pp. Illustrating and describing Kochring line of Dandie light mixers.

48. Hollation Modern Construction Embodying the Element of Permanency.

38. Concrete—Its Manufacture and Use. Book, 4½ x 7 in. Illustrated. 27 pp. Comprehensive discussion from the practical construction the practical construction in the practical c

of Permanency.

Concrete—Its Manufacture and Use. Book, 4½ x 7 in. Illustrated. 207 pp. Comprehensive discussion from the practical standpoint of concrete.

Ransons Concrete Machinery Co., Dunellen, N. J.
736. Ransons Bulletins, 8½ x 11½ in., is an 88-page loose leaf book giving illustrations and specifications of the entire line of Mixers, Pavers and Steam Boilers. 48 pages of this bulletin are devoted to Concrete Chutes and Equipment. Details of the various equipment are given to show the sturdy, practical construction. Also many plans and views of complete plants are shown.

CONSTRUCTION, FIREPROOF

International Steel & Iron Co., Inc., Evansville, Ind.
720. "International Service," Supplement 22, illustrate the uses of structural steel and iron for buildings. illustrates clearly

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa. 226. Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fireproof floor construction.

North Western Expanded Metal Co., 1204 Old Colony Bldg., Chicago, Ill.

Truscon Steel Co., Youngstown, Ohio.

United States Gypsum Company, 205 W. Monroe St., Chicago, III.

49. Bulletin, 8½ x 11 in. Containing details and specifications for Pyrobar voids for use with reinforced concrete joist floor construction; Pyrobar roof tile; and monolithic gypsum floors and roofs.

CORNER BEADS

The Consolidated Expanded Metal Companies, Braddock, Pa.

CORRESPONDENCE COURSES

Chicago Technical College, 1038 Chicago Tech. Bldg., Chicago, III. See listing under "Books."

DAMPERS AND ASH DUMPS (Fireplace)

The Donley Bros. Co., 3700 East 74th Street, Cleveland, Ohio.

DAMPPROOFING-See also Waterproofing

Amalgamated Roofing Co., 431 So. Dearborn Street, Chicago, III. 425. Six-page folder, describing the Nu-Tile 4-in-1 Shingle.

Asbestos Shingle, Slate & Sheathing Co., Ambler, Pa. 426. Send for catalog on the advantage of the Asbestos Shingle.

18 An eight-page folder, describing the roof that is always new.

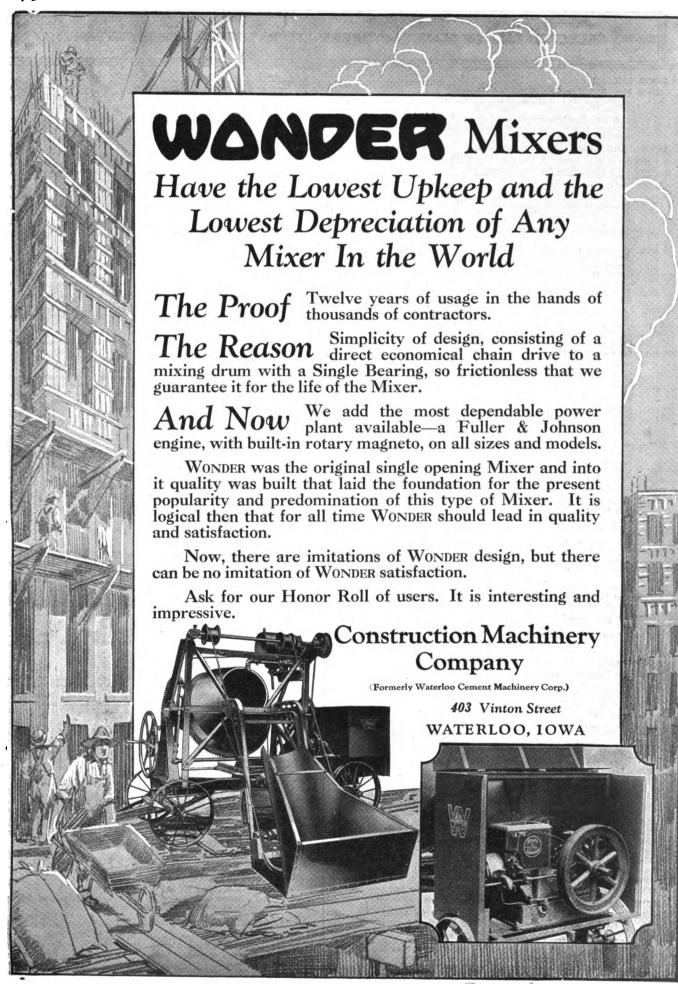
National Sheet Metal Roofing Co., 339 Grand St., Jersey City, N. J.

429. 68-page book, illustrating the "Shingles That Last."

Rochond Co., Van Wert, Ohio.

130. An eight-page folder entitled "Fortifies Your Home Against the Element of Time."

eldon, F. C., Slate Co., Granville, N. Y.
 A 16-page illustrated booklet, describing "The Most Enduring and the Most Attractive Roof at the Most Reasonable Cost."



DOOR CHECKS

Park Manufacturing Co., Worcester, Mass.

50. Catalog contains description of six models of the new improved Worcester-Blount Door Check.

Sargent & Co., New Haven, Conn.

738. A handy booklet may be had on request. It describes the many benefits of the Sargent "Door Check."

DOORS AND WINDOWS

American 3 Way-Luxfer Prism Co., 1309 So. 55th St., Cicero, Ill. The Curtis Companies Service Bureau, 1310 Curtis Bldg., Clinton,

Pocket Size Catalog showing Curtis Entrances and Exterior Doors.

Hope & Sons, Henry, 103 Park Ave.. New York.
 51. Hope's Casements—Printed circular describing steel casements of standard size and types carried in stock for immediate delivery, particularly suitable for apartment houses, office buildings and residences.

office buildings and residences.

Lupton's Sons Co., David, Philadelphia, Pa.

807. Catalog No. 11, Service, Products. A complete technical catalog for the engineer and contractor of large industrial plants and business buildings. Contains full architects' specifications and details for laying out industrial, school and office sash, partitions, doors and skylight for large projects.

191 pp. Ill. 8½ x 11 in.

Lupton Casements and Double Hung Windows. A book showing details and applications of steel casements and steel plate windows for the higher grade of banks and business buildings. Complete details and specifications. 41 pp. Ill. plate window buildings. C 8½ x 11 in.

8½ x 11 in.

Lupton Steel Windows. A catalog covering types of sash suitable for small to medium sized industrial and office buildings. Contains everything needed for the average builder in compact form. 70 pp. Ill. 8½ x 11 in.

Steel Windows for Apartment Houses, Residences, Offices and Schools. Booklet on "out-at-side" windows of casement appearance for medium priced residences. Covers also steel basement windows, and types of steel windows, suited for Schools, Hospitals and Office Buildings of moderate cost. 16 pp. Ill. 8½ x 11 in.

Truscon Steel Company, Youngstown, Ohio.
52. Truscon Steel Sash. This handbook has been prepared for detailers and specification writers. The descriptions are clear and the details are complete. 80 pp. Ill. 8½ x 11 in.
53. Truscon Steel Sash. A catalog containing designing data, tables and views of Stock Sash installations. 65 pp. Ill.

DOOR AND WINDOW FRAMES

Andersen Lumber Company, Bayport, Minn.

55. General Catalog for architects, contractors, engineers, carpenters or builders. Describes and illustrates full Andersen Standard White Pine Window, Cellar Frames, Sash Frames and Door Frames. Gives details of construction, variety of sizes and uses for ordinary as well as special construction, and method of assembly. Size 74 x 104. 24 pp.

56. Better Frames for Less Money for consumers. Interesting folder showing advantages of Andersen Standard White Pine Frames. Uses, sizes and details of construction.

Casement Hardware Co., 250 Pelouze Bldg., Chicago, Ill.

740. Write for details concerning this new casement.

Lupton's Sons Co., David, Philadelphia, Pa.

See listing under "Doors and Windows."

Pacific Lumber Company of Illinois, The, 2060 McCormick Bldg.,
Chicago, III.

See listing under "Columns."

DOOR FRAMES AND CELLAR SASH FRAMES

Andersen Lumber Company, Bayport, Minn.

55. General Catalog for architects, contractors, engineers, carpenters or builders. Describes and illustrates fully Andersen Standard White Pine Window, Cellar Frames, Sash Frames and Door Frames. Gives details of construction, variety of sizes and uses for ordinary as well as special construction, and method of assembly. Size 7½ x 10½. 24 pp.

56. Better Frames for Less Money for consumers. Interesting folder showing advantages of Andersen Standard White Pine Frames. Uses, sizes and details of construction.

DOORS

Paine Lumber Co., Ltd., Oshkosh, Wisc.

954. "Concreting in Zero Weather." an illustrated catalog telling describing and illustrating in detail the many kinds of doors manufactured by this firm.

Curtis Companies Service Bureau, 1311 Curtis Bldg., Clinton, Iowa.

966. "Interior Doors and Trim." Illustrated catalog.

DRAFTING MATERIALS

Keuffel & Esser Co., Hoboken, N. J.
434. A 486-page Bound Book. This is the thirty-sixth edition of the catalog.

Makepeace, Inc., B. L., 387 Washington St., Boston, Mass. Peerless Blue Print Co., 347 Fifth Avenue, New York City.

Warren-Knight Company, 136 No. 12th Street, Philadelphia. Pa. 135. 36-page booklet, describing the "Sterling" Transits and Levels.

DUMBWAITERS—(See Elevators and Hoists)

Kimball Bros. Co., 1106 Ninth Street, Council Bluffs, Iowa.
436. 30-page illustrated catalog, describing the various models of Dumbwaiters.

bigwick Machine Works, 156 W. 15th Street, New York.

High grade Hand Power Elevators and Dumbwaiters for All
Purposes. Illustrated catalog, 52 pages; dumbwaiter service
sheet, and pamphlets descriptive of many special types of
outfits.

ELECTRICAL APPLIANCES

Mayor Bros. & Bramley, Inc., 417 W. 28th St., New York.

45. "Magicoal" is a 6-page illustrated folder describing several styles of Magicoal Grates.

ELECTRICAL EQUIPMENT

Connecticut Electric Co., Bridgeport, Conn.

607. Xtra-Lite, a black moulded two-way plug, described in a 4page leaflet.

951. Up-to-Date Electrical Specialties Catalog. 3 x 436 in. 305
pp., illustrated. Gives sizes, weight, prices and data for
sockets, receptacles, rosettes, switches, cut-outs and other
wiring devices.

sockets, receptacies, rosettes, switches, carous and wiring devices.

Connecticut Electric Switch folder. 3½ x 6½ in. 4 pp. illustrated. Describes latest idea in electric switch and gives list price, catalogue numbers and schedules.

ral Electric Co., Bridgeport, Conn.

Wires and Cables. Booklet, 8 x 10½ in. 85 pp. Illustrated.
Four bulletins in a binder, describing wires and cables in
general conductors insulated with vulcanized rubber compound, varnished cambric and paper insulated cables, splicing
materials and junction boxes for cable installations, armored

cables.

514. Electric Fans. Folder, 6 pp. 3½ x 6 in. Illustrated. Describes 1922 line of electric fans, giving catalog numbers, voltages and frequencies.

515. Reliable Wiring Devices. Catalog, 3 x 45½ in. 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptions, switches, rosettes, cutouts and fuses for miscellaneous devices.

516. Lighting of Public Buildings. Bulletin, 6 x 9 in, 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

Harvey Hubbell. Inc., Bridgeport. Conn.

Harvey Hubbell, Inc., Bridgeport, Conn.

703. Electrical Specialties. Catalog No. 17, 1921. This catalog contains descriptions with prices of the thousand and one items connected with electric light, electrical alarm and small electrical appliance installations in modern buildings.

104 pp. Ill. 8 x 10½ in.

ELECTRIC METER BOXES

The Donley Bros. Co., 3700 East 74th Street, Cleveland, Ohio.

C. H. & E. Mfg. Co., 259 Mineral Street, Milwaukee, Wis. International Steel & Iron Co., Dept. 19, Evansville, Ind.

Kimball Brothers Company, Council Bluffs, Iowa.
 Kimball Elevators. An illustrated catalog of hand power, sidewalk, and garage elevators and dumbwaiters and electric passenger, freight and push button elevators.
 pp. III.

edgewick Machine Works, 156 West 15th Street, New York.
7. Catalog and descriptive pamphlet. 44 x 84 in. 70 pp.
Illustrated. Descriptive pamphlets on hand power freight
elevators, sidewalk elevators, automobile elevators, etc.

ELEVATOR DOOR EQUIPMENT

Richards-Wilcox Mfg. Co., Aurora, Ill.

59. "Ideal" Elevator Door Equipment. Catalog showing elevator door hangers for one, two or three speed doors, also doors in pairs and combination swing and side doors. Door closers and checks. 24 pp. Ill. 8½ x 11 in.

FIRE DOORS AND SHUTTERS-See Doors and Windows

FIREPLACES

Mayor Bros. & Bramley, Inc., 417 W. 28th St., New York.

945. "Magicoal" is a 6-page illustrated folder describing the advantages of electric fire.

FLOOR HARDENERS

Truscon Laboratories, The, Detroit, Mich.
61. Agates and Its Performance. Booklet. Describes the methods of hardening concrete floors by the application of a chemical which forms a new surface as hard as agate.

FLOORING, LUMBER

The Long-Bell Lumber Co., R. A. Long Bldg., Kansas City, Mo. 63. The Perfect Floor. Tells how to lay, finish and care for Oak Flooring. 16 pp. 14 illus. 5½ x 7¾ in.

Oak Flooring Bureau, 1014 Ashland Block, Chicago, Ill. 64. Modern Oak Floors. Booklet, 6½ x 9¼ in. 24 pp. Illustrated. A general book that tells the complete story on Oak Flooring, How and Where to Use It. Booklet. 3½ x 6¼ in. 16 pp. Illustrated. A small, technical book showing the general rules, standard thickness and widths, how to lay, finish and care for oak floors.

257. Oak Flooring for Factories and Warehouses. Booklet. 3½ x 6 in. 16 pp. Illustrated. Small general book featuring No. 2 Common Oak Flooring for hard usage in factories and warehouses, with testimonials.

Pacific Lumber Co., 2070 McCormick Bldg., Chicago, Ill. 438. A sixteen-page treatise on the construction Digest of Information on the Values and Uses of Redwood.

Ritter Lumber Co., W. M., Columbus, Ohio.

Ritter Lumber Co., W. M., Columbus, Ohio.
32. Technical information on the proper methods of laying and finishing flooring will be gladly given.

FLOORING COMPOSITION

Everlasbeatos Flooring Co., Rochester, N. Y.
439. Sixteen-page ill. booklet, describing the really modern floor.
United States Gypsum Company, 205 W. Monroe St., Chicago, Ill.
66. Gypsum Powerd, Steel Reinforced. Loose-leaf bulletins, 814
x 11. Pyrofill.





AND FACE OF THE PARTY OF THE PA

104 S-4 Cubic Feet Mixed Concrete



107 8-7 Cubic Feet Mixed Concrete

Foreign Department, Office 1370, 50 Church St., New York City;
Canada, Kochring Company of Canada, Ltd.,
105 Front Street, East, Toronto, Ontario;
Mexico, F. S. Lapum, Cinco De Mayo 21, Mexico, D. P

Get the Price — Get the Specifications

NO, it's not the cheapest mixer in price—but it is the greatest value in the light mixer class and it is within the light mixer price range. It will outwork, outwear and outlast ordinary light mixer construction. It will still have a long profitable future ahead of it, when the ordinary light mixer is costing you big money to keep it out of the junk pile!

Send back the coupon. Get the Dandie catalog that informs you how to judge mixer values. You'll find it a practical, helpful, money-saving booklet.

Dandle Capacities

4 and 7 cu. ft. mixed concrete, steam and gasoline. May be equipped with power charging skip, low charging platform, light duty hoist, automatic water measuring tank. Mixes mortar as well as concrete. Send back the coupon today.

KOEHRING COMPANY

Manufacturers of Concrete Mixers, Cranes, Draglines, Shovels
MILWAUKEE, WISCONSIN

Sales offices and service warehouses in all principal cities.

	KOEHRING COMPANY MILWAUKEE, WIS.
	Please send me Koehring Dandie Mixer Catalog No. 4, and give full information on inter- changeability for mixing concrete and mortar.
	Name
Ad	dress

FLOORING, HARDWOOD

Wood-Mosaic Co., New Albany, Ind.

20. Catalog of wood-carpet, strips, plain and ornamental parquetry, tongue and groove flooring in natural wood colors.

FLOORING-PARQUET

Wood-Mosaic Co., New Albany, Indiana.
968. Wood-Mosaic Floors. Catalog 7 x 10 in. 36 pp. Illustrated.

FLOOR SURFACING MACHINERY

Amer. Floor Surfacing Machine Co., 521 So. St. Claire Street,
Toledo, Ohio.
440. An eight-page illustrated booklet, describing the "American
Universal." Also opportunities of making money in the
"American Universal Way."

Campbell Machine Co., Wallaston, Mass.

949. 16-page illustrated catalog describing a floor surfacing machine which sandpapers, waxes, oils and scrubs.

Chappell & Co., Wayvell, 137 No. Jackson Street, Waukegan, Ill.

441. Four-page folder, describing the "Little-Automatic Electric Surfacing Machine."

National Sanding Machine Co., 319 W. Chicago Ave., Chicago, Ill.

21. The Lightning Electric Floor Surfacer is described in a 4-page circular. The illustrations show the floor surfaces, the gears and the sand roller. There are 28 features built in the "Lightning." Write for this circular and see them for yourself.

Schluster, M. L., 223 W. Illinois Street, Chicago, Ill.
442. Eight-page illustrated folder, the various "Improved Schlueter" Floor Surfacing Machines.

FLOOR VOIDS FOR USE IN CONCRETE

United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. 67. Loose-leaf Bulletins. 8½ x 11. Pyrobar Gypsum Floor Tile, FURNACES-See Heating Equipment.

GARAGE CONSTRUCTION—See also Building Construction.

Allth-Prouty Co., Danville, Ill.

508. Catalog No. 91 is made up of 44 well illustrated pages. It describes thoroughly the various hardware used in garages.

rnational Steel & Iron Co., Dept. 19, Evansville, Ind. Catalog entitled "Garage Illustrations." Contains 50 modern buildings designed by us. Contains at least

McKinney Mfg. Co., Pittsburgh, Pa.
283. Interesting 16-page Catalog, describing the complete hardware for various types of Garage Doors.

National Mfg. Co., Sterling, Ill.
404. Catalog of Garage Hardware.
Richards-Wilcox Mfg. Co., Aurora, Ill.
See listing under "Hardware."

GARBAGE DESTROYERS

Kerner Incinerator Company, 1027 Chestnut St., Milwaukee, Wis. 68. The Sanitary Elimination of Household Waste. M-3 Folder. Description of construction, installation and operation of the Kernerator for residences. Illustrated by views of residences in which the Kernerator is installed, with cuts showing all details. 15 pp. 4 x 9 in.

GARBAGE RECEIVERS

The Donley Bros. Co., 3700 East 74th Street, Cleveland, Ohio. GAS RANGES

Crane, Wm. M., Co., 18 E. 41st Street, New York.

800. Vulcan Smoothtop Compact Cabinet Gas Ranges are completely described in an illustrated booklet.

Mages Furnace Co., 38 Union Street, Boston, Mass.

897. "Cook the Insulated Way With Gas." 16 pp. Illustrated booklet, 614 x 914 in.

GLASS

American Window Glass Co., Pittsburgh, Pa.

69. Send for circular describing different varieties of window glass and how to select the proper kind.

grass and now to seek the proper and referent Thres-Way Luxfer Prism Co., Cicero (Chicago), Ill. Write for details and prices of glass prisms that will project daylight into dark interiors. Other literature with reference to apartment house installa-

Plate Glass Mfrs. of America, 1st Nat'l Bank Bldg., Pittsburgh, Pa.

GRILLES

Buffalo Wire Works Co., Inc., 322 Terrace St., Buffalo, N. Y. 818. Descriptive folder describing grilles for windows, radiators, tellers' cages, floor railings, etc.

GRINDING MACHINERY

Huther Bros. Saw & Mfg. Co., Inc., Rochester, N. Y.

948. 2-page leaflet describing the new patented grinding attachment.

CYPSI IM

United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. HARDWARE

Allith-Prouty Co., Danville, Illinois.

General Catalog No. 90. This catalog embraces a description of a complete line of door hangers and tracks, garage door hardware, spring hinges, rolling ladders, fire door hardware, overhead carriers, light hardware and hardware specialties. 144 pp. Ill. 734 x 10½ in.

Trolley Door Hangers, Track and Brackets. Catalog 71-X Line, Intermediate size—a complete description, giving dimensions, weights and prices. 8 pp. Ill. 734 x 1032 in. **3812.**

Caldwell Mfg. Co., 5 Jones Street, Rochester, N. Y.
445. Sisteen-page illustrated catalog, entitled "Suggestions for the Present-Day Architect."
446. Illustrated catalog and price list of "Casement Window Specialties."

Griffin Mfg. Co., Erie, Pa.
447. "Hinges," a seventy-five page illustrated, cloth bound book.

17 Inger, a seventy-nee page illustrated, cloth bound book.
 18 Co., H. B., New Haven, Conn.
 448. Write for their illustrated folder, describing hardware, window and door specialties.
 Johnston, J. D., 75 Mill Street, Newport, R. I.
 344. Interesting folder showing the various uses of "Pins" in the home.

The Kawnser Co., Niles, Mich.
 Kawnser, Simplex Window Fixtures. Booklet, illustrated. Drawings, photographs and text describes weightless, reversible window fixtures, its ease of installation, ventilation and light control. Size 8½ x 10¾ in. 16 pp.

McKinney Mfg. Co., Pittsburgh, Pa.

449. McKinney's "Complete Garage Sets," an interesting illustrated eight-page folder.

Myers & Bros. Co., F. E., Ashland, Ohio.

450. Catalog, describing the No. 30 Simplex Garage Door Hanger.

National Mfg. Co., Sterling, Ill. 404. An interesting illustrated catalog on "Garage Hardware."

Pullman Mfg. Co., Rochester, N. Y.

602. Pullman Unit Sash Balances. The Pullman Unit Sash Balances is a coiled spring in a housing that replaces weights and cords. This book tells why it costs less on nearly all installations; why it is better in all respects; and gives a list of important buildings in which this balance is in satisfactory use. Contains blue print sheet of details. 12 pp. 8 x 11 in.

11 in. Richards-Wilcox Mfg. Co., Aurora, Ill.

75. Modern Hardware for Your Home.
vanishing French doors; "Air-Way" multifold hardware for sun parlors and sleeping porches; "Sidetite" garage door hardware. 24 pp. Illustrated. 8½ x 11 in.

Distinctive Garage Door Hardware Catalog No. A-22. This is more than a catalog. It is a treatise for architects and builders on the door equipment of garages, covering sliding, folding and combination sliding and folding doors, with their hardware. 94 pp. Ill. 8½ x 11 in.

Sliding Door Hardware, Catalog No. A-17. A catalog of sliding door hardware of Parallel, Accordion and Flush Door partitions. 32 pp. Ill. 7 x 10 in.

Sargent & Company, New Haven, Conn.

Smith, Frank F., Hardware Co., 81 Clay Street, Newark, N. J.

819. Forty-eight-page illustrated catalog describing a splendid line of Panic Exit Locks, Builders' Hardware Specialties, etc.

963. 32-page illustrated catalog of the Taylor quick adjusting self-locking clamp. Prices are also represented in this booklet.

HEATERS FOR ASPHALT AND PITCH

Aeroll Burner Co., Inc., 266 Hudson Ave., Union Hill, N. J. 955. "Hotstuff," an illustrated leastet showing a rapid method of melting asphalt and pitch.

HEATING EQUIPMENT

Aeroil Burner Co., Inc., 266 Hudson Ave., Union Hill, N. J. 957. Bulletin No. 33B describes Aeroil Kerosene Burners used for steam, hot air furnaces and stoves.

owman Supply & Mfg. Co., 886 Progress St., Pittsburgh, Pa. i. Write for the permanent catalog. It is an excellent reference book.

ence book.

The Farquhar Furnace Company, Wilmington, Ohio.

80. Healthful Helpful Hists. A discussion of furnace and chimney design and capacity for hot air heating and ventilation.

16 pp. Illustrated. 4½ x 9½ in.

81. A Plain Presentation to Dealers. A book of selling talk for dealers in Farquhar Furnaces. Four model heating and layouts are shown and there is a page of useful "Do and Don't" advice. 24 pp. Illustrated. 8½ x 11 in.

Hardin-Lavin Co., 4538 Cottage Grove Avenue, Chicago, Ill.

455. Handy-Man Book, or Plumbing and Heating Encyclopedia. Price 50c.

The Hart & Cooley Co., Inc., New Britain, Conn.

748. Write for their illustrated circular. It contains much valuable information.

Hess Warming & Ventilating Co., 1205D Tacoma Building, Chicago, Ill.
 Modern Furnace Heating. Catalog, 6 x 9 in. 48 pp. Illustrated. Complete information on hot-air furnace heating useful to the architect and contractor regardless of what makes of furnace he uses.

Kelsey Heating Company, James Street, Syracuse, N. Y.

Booklet No. 5. 4 x 9 in. 32 pp. Illustrated. A dealer's booklet showing the Kelsey Warm Air Generator Method of warming and distributing air. Gives dimensions, heating capacities, weights, kind of coal recommended, and shows the mechanical and gravity system of heating homes, churches and schools and schools.

 Monroe Pipeless Booklet. 4½ x 8 in. 20 pp. Illustrated.
 Monroe Tabular Heater. Booklet, 4½ x 8 in. 20 pp. Illustrated. General Booklet giving capacities, dimensions, weights, etc.

Syracuse Pipeless Booklet. 4% x 8 in. 12 pp. Illustrated. General Booklet giving sizes and capacities.

Magee Furnace Co., 38 Union St., Boston, Mass.





Every Jaeger Display Room a Complete Mixer Show in Itself!

The Jaeger Line includes 24 different outfits, in four different sizes—mixers with and without loaders, hoists, water tanks, engines—mounted on trucks or skids—equipped with steel wheels or wheels with rubber tires. Big and small mixers—ranging in capacity from 2½ cu. ft. to 14 cu. ft. mixed concrete. Every model of known efficiency and dependability!

Every Unit Built Right

If your requirements demand a heavy duty mixer, by all means get the facts about the big-capacity Jaeger models. They have

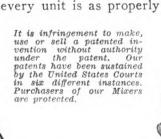
built a world-wide reputation. Long experience and engineering skill have made every Jaeger unit-Tilting Drum, Power Loader, Tip Over Water Tank, Hoist and Engines—the best the inco-ordinated as in the production of a highgrade automobile or truck.

That's why Jaeger heavy duty mixers as well as the smaller models have set the standard for the concrete mixer industrya standard that is recognized throughout the world. Get all the facts about the

superior features of the Jaeger before you buy your next mixer.

The Jaeger Machine Co. 216 Dublin Avenue Columbus, Ohio

> Write for Catalog Today



dustry has produced. And



Mayer Bros. & Bramley, Inc., 417 W. 28th St., New York.

245. "Magicoal" or "Firelight Happiness" describes various styles of grates, also electric fire.

Rybolt Heater Co., Ashland, Ohio.

"Heating Comfort with Rybolt Reliable Furnaces" in a 16 pp.

illustrated catalog showing the reliable features of this furnace.

The Trane Company, La Crosse, Wisconsin.

HINGES—See also Hardware Griffin Mfg. Co., Erie, Pa. See listing under "Hardware."

McKinney Mfg. Co., Pittsburgh, Pa.
449. Complete Garage Sets for all types of hinges. An interesting 8-page folder.

The National Mfg. Co., Sterling, Ill.

743. A complete catalog covering the entire subject may be had on

request.

HOISTS-See Elevators

American Saw Mill Machinery Co., Hackettstown, N. J. 89. Bulletin No. 10, describing several kinds of builders' hoists.

Brown Clutch Co., Sandusky, Ohio.

903. An illustrated booklet, describing in detail the mechanism of a hoist, also prices of the same.

C. H. &E. Mfg. Co., Milwaukee, Wis.

90. Bulletin No. 3. Hoists and Mortar Mixers.

HOLLOW TILE

National Fire Proofing Co., Pittsburgh, Pa.

461. Several interesting booklets can be procured, namely: "Natco on the Farm," "Natco Grain Bins, Corn Cribs and Storage Bins," "Fire Proof Buildings of Natco Hollow Tile," "Bulletin No. 171, Standard Fire Proofing."

HOUSE MOVING

La Plant-Choate Co., Cedar Rapids, Iowa.
510. Descriptive Catalog of House-moving Appliances.

INCINERATORS—See Garbage Destroyers

INSULATION—See Stucco Bases

Bishopric Mfg. Company, 103 Este Avenue, Cincinnati, Ohio.

92. Homes Built on the Wisdom of Ages. Catalog, 6 x 9 in.

48 pp. Illustrated. Describing the use of Bishopric StuccoBoard and Bishopric Sheathing Board.

Cabot, Inc., Samuel, 141 Milk Street, Boston, Mass. 249. Cabot's Quilt. Catalog containing drawings and descriptions.

249. Cabot's Quilt. Catalog containing drawings and descriptions.
The Celotex Co., 111 W. Washington St., Chicago, Ill.
944. Samples of their insulating lumber and general information will be gladly sent on request.
U. S. Mineral Wool Co., 280 Madison Avenue, New York, N. Y.
94. The Uses of Mineral Wool in Architecture. Illustrated booklet. Properties of insulation against heat, frost, sound, and as a fire-proofing, with action drawings and specifications for use. It gives rule for estimate and cost. Size 5½ x 6½ in.

JOISTS AND STUDS, PRESSED STEEL

The Consolidated Expanded Metal Companies, Braddock, Pa.

General Fireproofing Co., Youngstown, Ohio.

53. Fireproofing Handbook. A book dealing with the problems of fireproof construction containing complete data, tables and specifications.

International Steel & Iron Co., Dept. 19, Evansville, Ind.
North Western Expanded Metal Co., 1204 Old Colony Bldg., Chicago, Ill.

Truscon Steel Company, Youngstown, Ohio.

95. Truscon Steel Joists. Catalog, 8½ x 11 in. 24 pp. Illustrated. Information on Pressed Steel Beams and Joists for light occupancy buildings. Tables, specifications and views of installation.

KITCHEN RANGES-See Gas Ranges

LATH, METAL AND REINFORCING

The Bishopric Mig. Co., 17 Este Avenue, Cincinnati, Ohio.
Bostwick Steel Lath Co., Inc., Niles, Ohio.
279. "Beautiful Permanent Walls." 22-page illustrated catalog.
Concrete Engineering Co., 140 So. Dearborn Street, Chicago, Ill.
605. How to Use Ceco Lathing Materials. An illustrated treatise
on the use of expanded metal lath. Contains construction
details and complete specifications, with sample piece of lath
in pocket on cover of book. 16 pp. Ill. 8% x 11 in.
The Consolidated Expanded Metal Companies, Braddock, Pa.
706. Steelcrete "Rigid" Metal Lath is described in an illustrated
four-page circular.
Consolidated Expanded Metal Companies, Braddock, Pa.

eneral Fireproofing Co., Youngstown, Ohio.

7. Catalog describes Herringbone Rigid Metal Lath, how it is applied and used, with detailed drawings, specifications, etc.

North Western Expanded Metal Co., 1204 Old Colony Bldg., Chicago, Ill.

Truscon Steel Co., Youngstown, Ohio.

99. Hy-Rib and Metal Lath. 18th Edition. Catalog, 8½ x 11 in. 64 pp. Illustrated. Gives properties of laths, specifications, special uses and views of installation.

LATH (WOOD)

Expanded Wood Lath Corp., 155 No. Clark St., Chicago, Ill.
764. An important catalog for every builder. It describes the uses and purposes of Wood Lath.

LEVELS AND TRANSITS

Keuffel & Esser Co., Hoboken. N. J. Lufkin Rule Co., Saginaw, Mich.

Makepeace, Inc., B. L., 387 Washington St., Boston, Mass.

892. Catalog describing Surveying Instruments and Repair Service. Send for it.

911. The "Loxo" Compound Level meets a long-felt want. Write for catalog describing this instrument.

Warren-Knight Company, 136 No. 12th St., Philadelphia. Pa.

100. "Sterling" Levels and Transits. 32 pp. Illustrated catalog. Descriptions, specifications and structural advantages required in modern practice for establishing lines, levels, angles, etc. Vest Pocket Manual of Adjustments.

White Co. David. 907 Chestnut Street. Milwaukee. Wis.

White Co., David, 907 Chestnut Street, Milwaukee, Wis. 164. Catalog A, "White's Improved instruments," is a 36-page booklet with a hard cover and illustrated.

LIGHTING-See also Electrical Equipment

American 3 Ways-Luxfer Prism Co., 1309 So. 55th St., Cicero, Chicago, Ill.

98. Descriptive Circular on the use of prisms for directing light to dark corners.

Harvey Hubbell, Inc., Bridgeport, Conn.

707. Hubbell Flush Door Receptacle. Description of a safe, convenient and practical wall outlet de luxe for the residences, clubs, hotels, public buildings and offices. 4 pp. Ill. 8 x 10 in.

LIGHTNING RODS

Washburne Co., E. G., 207 Fulton Street, New York
232. Descriptive Catalog in Colors. Showing different designs of
weather vanes, lightning rods, ventilators, etc.

LIME

The Ohio Hydrate & Supply Co., Woodville, Ohio.

708. A Job That Took a Million Years. A description of how limestone is formed and how it is later converted into lime. All the processes are shown in detail and the uses of lime are illustrated. 16 pp. Ill. 8½ x 11 in.

LOCKS-PANIC EXIT

Smith Hardware Co., Frank F., 75 Clay Street. Newark, N. J. 958. Bulletin B, an 8-page illustrated folder describing Smith's improved window hardware.

LUMBER

Kilmoth Prod., Inc., 50 Union Square, New York.

959. "Are Your Clothes Well Cared For?" an 8-page illustrated booklet describing the value of aromatic red cedar versus the moth.

Long-Bell Lumber Co., R. A. Long Building, Kansas City, Mo. 104. The Post Everlasting. Booklet. 10½ x 7½ in. 32 pp. Illustrated. Information regarding creosoted yellow pine fence posts, barn poles, paving blocks, etc. 228. Poles That Resist Decay. Booklet, 9½ x 4 in. 16 pp. Illustrated. Poles for telegraph, telephone, high power transmission lines.

105. "From Tree to Trade," a 48-page illustrated description of the manufacture of lumber from tree to use. Describes methods of logging, construction, etc.
 Pacific Lumber Company of Illinois, The, 2060 McCormick Bldg., Chicago, Ill.
 106. Construction Digest. Redwood Homes Book.

Paine Lumber Co., Ltd., Oshkosh, Wisc.
962. "The Miracle Door," 36-page catalog illustrating and describing the various types of modern doors.
Ritter Lumber Co., W. M., Columbus, Ohio.

LUMBER ASBESTOS

Asbestos Shingle, Slate & Sheathing Co., Ambler, Pa.

108. Ambler Asbestos Building Lumber. Catalog illustrated. Describes uses of this fireproof product for both exteriors and interiors. Tables of sizes and illustrations of various types of buildings in which it has been used. Size 8½ x 11 in.

METAL LATH-See Lath, Metal and Reinforcing

METALS AND METAL BUILDING SPECIALTIES

American Shoet & Tin Plate Co., Frick Building, Pittsburgh, Pa.

11. Reference Book. Pocket Edition. 2½ x 4½ in. 168 pp.
Illus. Covers the complete line of Sheet and Tin Mill
Products.

113. Apollo and Apollo-Keystone Galvanised Sheets. Catalog, 8½ x 11 in. 20 pp. Illustrated.
114. Research in the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.
115. Each Similar and Builds Tald. Populate 8½ x 11 in 16

Facts Simply and Briefly Told. Booklet. 8½ x 11 in. 16 pp. Illustrated. Non-technical statements, relating to Keystone Copper Steel.

Black Sheets and Special Sheets. Catalog, 8½ x 11 in. 28 pp. Illustrated. Describes standard grades of Black and Uncoated Sheets, together with weights, building tables, etc. Bright Tin Plates. Catalog, 8½ x 11 in. 16 pp.

Bright In Flaces, Canada, 672.

Bridgeport Brass Company, Bridgeport, Conn.

525. Seven Centuries of Brass Making. Booklet. 10½ x 8 in.

78 pp. Illustrated in color. A brief history of the ancient art of Brass Making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—a twentieth century achievement of the Bridgeport Process—a twent Brass Company.

Tested High Speed Brass Rod. Booklet. 10½ x 8 in. 16 pp. Illustrated. Short treatise on the manufacture of Brass Rod for use in Screw Machines, with particular reference to improvements originated by the Bridgeport Brass Company.

Digitized by GOGIC



Old SALEM

protects its roofs with

STRIP SHINGLES

Old Salem, Mass., learned a costly lesson from her \$14,000,-000 fire of 1914. She means to protect her beautiful and historical old homes from fire as well as from weather. None but fire resisting roofings may be used. Over 50% of her homes are now covered with fire resisting roofing. Of this 50% ASPHALT STRIP SHINGLES form an ever increasing proportion.

REX FLINTKOTE STRIP SHINGLES

PROTECT FROM FIRE AS WELL AS FROM WEATHER

FLINTKOTE ROOFINGS

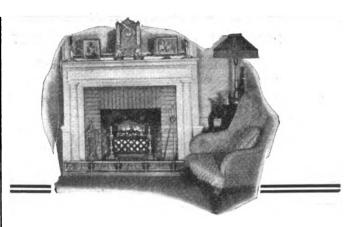
"Better Roofings for Less Money"

THE FLINTKOTE COMPANY

NEW YORK
342 MADISON AVE.

CHICAGO
PEOPLES GAS BLDG.

BOSTON 31 ST. JAMES AVE.



Chimney Flues

are expensive and often unnecessary

Unless a fireplace is used for burning wood or coal, its flue was an unnecessary expense.

Thousands of fireplaces, so designed, are standing idle today because a real fire means work, dirt and ruined draperies.

In Magicoal Electric Fire you can have all the beauty and charm of a real open fire—its heat and comfort, too—without these drawbacks. No flue is needed.

Magicoal will turn a dead fireplace into the most attractive spot in the room. Just provide an electric outlet in the fireplace. For the firelight effect the ordinary lighting circuit will do; for heat, heavier wiring is needed.

Whenever you build, save the expense of chimney flues, yet provide the means for "Firelight Happiness" which every one longs for—a fireplace opening, a mantel and Magicoal.

Send for complete data regarding installation, heating capacities and styles of grates to harmonize with mantels of any design or period.

Mayer Bros. & Bramley, Inc. 411 West 28th Street, N. Y.

Sole Distributors for U.S.A., H. H. Berry World Patents

MAGICOAL

REG. U. S. PAT. OFF.

ELECTRIC FIRE

"Firelight Happiness" at the turn of a switch

The Consolidated Expanded Metal Co., Braddock Pa.

722. Steelcrete Products' is an interesting 28-page catalog describing the uses of Reinforced Concrete and Cement Construction of every character.

Struction of every character.

Copper & Brass Research Association, 25 Broadway, New York, N. Y.

528. How to Build a Better Home. Booklet. 734 x 10% in. 30 pp. Illustrated. A book on building written for the prospective builder. Contains keyed illustrations of houses and details of houses and should be of value to architects in dealing with clients.

The Donley Bros. Co., 7400 East 74th Street, Cleveland, Ohio.

37. 28-page Illustrated Catalog on "Donley Devices and Building Specialties." 6 x 9 in.

METAL TRIM-See Doors, Windows and Metal

MORTAR COLORS

Clinton Metallic Paint Co., Clinton, N. Y.

Clinton Mortar Colors. Booklet. 3½ x 6½ in. 8 pp. Illustrated. Complete description of Clinton Mortar Colors with color samples.

MOTOR TRUCKS

Federal Motor Truck Co., Detroit, Mich. 745. Write for Folder S-17. It contains much useful information.

ORNAMENTS-WOOD

Ornamental Products Co., 750 14th Street, Detroit, Mich. 929. Catalog No. 9, 42 pp., illustrated, describing wood ornaments for buildings.

PACKAGE RECEIVERS

The Donley Bros. Co., 3700 East 74th Street, Cleveland, Ohio.

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

Cabot, Inc., Samuel, Mfg. Chemists, 141 Milk St., Boston, Mass.

Cabot, Inc., Samuel, Mfg. Chemists, 141 Milk St., Boston, Mass.

534. Cabot's Creosote Stains. Description of a standard stain
for shingles, siding, boarding and timbers, with covering
capacity and specifications. 16 pp. 4 x 8½ in.

Johnson & Son, S. C., Racine, Wis.

122. The Proper Treatment for Floors, Woodwork and Furniture.
Booklet. 6½ x 8¾ in. 32 pp. Illustrated in color. A
treatise on finishing hard and soft wood in stained and
enameled effect; also natural and wood effects.

123. Portfolio of Wood Panels. 5½ x 10¾ in. 14 pp. Containing actual panels of finished woods. Also contains valuable
information of finishing and re-finishing floors and woodwork.

work.

Ripolin Co., The, Cleveland. Ohio.

256. Ripolin Specification Book, 8 x 10% in. 12 pp. Complete architectural specifications and general instructions for the application of Ripolin, the original Holland Enamel Paint.

Directions for the proper finishing of wood, metal, plaster, concrete, brick and other surfaces, both interior and exterior, are included in this Specification Book.

Truson Laboratories, The, Cor. Caniff Avenue and Grand Trunk R. R., Detroit, Mich.

131. Spread the Sunshine Inside. Booklet. 5 x 8 in. 24 pp. Describes methods for light saving by the application of light reflecting enamels to interior walls of factories.

PARTITIONS

Richards-Wilcox Mfg. Co., Aurora, Ill.

529. Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Shows complete line of tracks and hangers for all styles of sliding, parallel, accordion and flush door partitions.

PARTITION SYSTEM

United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. 133. Loose Leaf Bulletins, 8½ x 11 in. Jester-Sackett, consists of plaster board applied to metal channels with special clip, ready for plastering.
134. Fireproof. 32-page booklet, 8½ x 11 in., including description, specifications, and working details of Pyrobar partition tile.

PERGOLAS

Hartmann-Senders Co., Elston and Webster Avenues, Chicago, Ill. Four-page illustrated circular D-61 on Pergolas and Arbors will be sent free on request.

PIPE-See also Metals

Bridgeport Brass Company, Bridgeport, Conn.

941. Brass Pipe and Pipings; When and How It Should Be Used.
Bulletin No. 15. This book contains valuable tables, charts,
and examples for the design of hot-water installations, with
illustrations of details and connections. It also discusses the
use of pipe of different materials; various processes for preventing rust and corrosion in iron and steel pipes. It is a
valuable treatise for all architects and engineers. 47 pp. Ill.
8 x 10% in.

PLASTER BASE-See also Stucco Base

PLASTER BOARD

United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. 135. Pamphlets, describes Sackett Plaster Board used instead of wood or metal lath.

PLUMBING EQUIPMENT

Bowman Supply Mfg. Co., 886 Progress Street, Pittsburgh, Pa.

512. Profusely illustrated catalog of 178 pages, describing entire line of Plumbing and Heating, Water Supply Systems, Farm Light and Power Plants, and Sheet Metal Products.

Bridgeport Brass Company, Bridgeport, Conn.

530. Plumbing Supplies. Catalog of adjustable swivel traps; basin and bath supplies and waste; basin and sink plugs; low tank bends; iron pipe sizes of brass pipe. 20 pp. Ill. 8 x 10½ in.

The Fairfacts Co., 234 West 14th Street, New York.

746. "The Perfect Bathroom" will be of great value to all builders and prospective builders.

Hardin-Lavin Co., 4538 Cottage Grove Avenue, Chicago, III.

Heese Warming & Ventilating Co., 1205D Tacoma Bldg., Chicago, III.

Ill.

804. The Hess Sanitary Medicine Cabinet Lockers and Mirrors.
Descriptive with details of an enameled steel medicine cabinet for bathroom. 20 pp. Ill. 4 x 6 in.

The Robinson Household Mfg. Ca., 625 Huron Street, Toledo, Ohio.
923. "Comfort Sanitary Chemical Toilet" is a 4-page descriptive circular describing "the old way" and "the nu-way." The advantages of the latter are fully described.

advantages of the latter are fully described.

sling Santtary Mfg. Co., Wheeling, W. Va.

Complete Catalog "E." Describes all Clay Sanitary Baths,
Lavatories, Kitchen Sinks, Laundry Trays, Drinking Fountains and Urinal Stalls of Semi-Vitreous Porcelain Ware;
also Closet Bowls, Flush Tanks, Lavatories, Basins, Urinals
and Drinking Fountains of White Vitreous China Ware. 125

pp. Ill. 5 x 8 in.

PUMPS

943. Bulletin No. 2 Fumps.

Myers & Bro. Co., F. E., Ashland, Ohio.

137. General Catalog. 6 x 9 in. 392 pages. Shows complete line of Myers Products—Pumps for Every Purpose, Hay Tools, Door Hangers, Store Ladders, etc. Of particular interest to hardware and implement dealers; plumbers, architects, contractors and builders: mill, mine, factory and railway superintendents and purchasing agents; highway contractors and builders. builders.
The Trane Company, La Crosse, Wisconsin.

RANGES-(Restaurant and Equipment)

Crane Co., Wm. M., 18 East 41 Street, New York.

Crane Co., Wm. M., 18 East 41 Street, New York.
898. "Vulcan Smooth Top," an interesting illustrated catalog describing one of the best ranges manufactured.
Magee Furnace Co., 38 Union Street, Boston, Mass.
899. "Magee Electric Gas," an 8-page illustrated catalog describing the combination range of electricity and gas.
900. "Magee Electric Ranges," an 8-page illustrated catalog describing several electric ranges.

REFRIGERATION

McCray Refrigerator Co., 2264 Lake Street, Kendallville, Ind.

466. Catalog No. 95—Refrigerators for Residences.
 467. Catalog No. 53—Refrigerators for Hotels, Restaurants, Clubs.
 468. Hospitals and Institutes. Catalog No. 64—Market Coolers and Refrigerator Counters.

ROOF DECKS

Barrell Co. of N. Y., Inc., Wm. L., 50 Leonard Street, New York. See listing under "Roofing Materials."

Boyle, John, & Co., Inc., 116 Duane St., New York, See listing under "Roofing Materials."

United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. 139. Loose Leaf Bulletins. 8½ x 11. Describing Pyrobar Roof Tile, which is laid directly on purlins or tee irons, jointsgrouted, and is then ready for roof coverings.

ROOFING MATERIALS

Amalgamated Roofing Co., 431 So. Dearborn Street, Chicago, Ill.

American Sheet & Tin Plate Company, Pittsburgh, Pa.

40. "Better Buildings." Catalog. 8½ x 11 in. 32 pp. Describing Corrugated and Formed Sheet Steel Roofing and Siding Products—Black, Painted and Galvanized; together with directions for application of various patterns of Sheet Steel Roofing in various types of construction.

Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy.

Asbestos Shingle, Slate & Sheathing Co., Ambler. Pa.

141. Specifications and Price List. Descriptive booklet. Details of Ambler Asbestos Cement Roofing Slates, "Century" Asbestos Shingles and Asbestos Corrugated Sheathings. Tables and drawings. Size 6 x 9 in. 44 pp.

142. Ambler Asbestos Corrugated Roofing. Catalog gives complete data for specifying drawings, methods of applications, tables, etc. Size 8½ x 11 in. 20 pp.

Barrell Co. of N. Y., Inc., Wm. L., 50 Leonard Street, New York. 143. Con-ser-tex Canvas Roofing. Description of a specially treated fabric used for roofing with directions for laying. 12 pp. Illustrated. 334 x 7 in.

Beaver Products Co., Inc., Buffalo, N. Y.

469. Illustrated catalog will be sent on request.

Boyle & Co., Inc., John, 112-114 Duane Street, New York. Boyle's Bayonne Roof and Deck Cloth. List B-93. A pre-pared roofing canvas guaranteed waterproof for decks and the roofs and floors of piazzas, sun-parlors, sleeping porchesi

Copper & Brass Research Association, 25 Broadway, New York.

528. "How to Build a Better Home." 36-page illustrated catalors, 8 x 10½ in. This not only describes but teaches the propective buyer the essential facts of building, finance, hs reware and roofing.

Digitized by GOGIC



Rev. W. T. Elsing's Residence, Lakewood, N. J. Insulated with "Quilt," as per letter below:

De Witt Memorial Church, New York, March 10, 1908. "I built a house last summer in which I used your Sheathing 'Quilt' under the shingles and also between studding. I sheathed all the rooms with half-inch tongued and grooved boards, and decorated the walls with sanitary and Japanese crepes. The result is, I have a cheaper, warmer and more beautiful house than I could possibly get by using laths and plaster."—W. T. ELSING.

Make Your Houses Frost-proof by insulating them with

Cabot's "Quilt"

F is cheaper to build warm houses than to heat cold ones. A cold house will waste enough coal in two winters to pay for enough Quilt to make it warm for all time. Quilt is not a mere building paper, but a thick, matted lining of cured eel-grass that is twenty-eight times warmer than common papers. It will make your house warm in winter and cool in summer. cut down your doctor's buils and keep the whole family comfortable. It will never not or disintegrate—lasts forever—and is fire-retarding. A full investigation will cost you a postal card—which will bring you a sample and the proofs, with name of your nearest agent. Will you write now?



SAMUEL CABOT, Inc.

Mfg. Chemists, Boston, Mass. 342 Madison Ave., New York 24 W. Kinzie St., Chicago

Also Cabot's Creosote Shingle Stains

Make Your \$20.00 Every Day Selling ALLMETAL WEATHERSTRIP

45 46 86 88

There will be days this winter when building is quiet. That's just when the weatherstrip business comes in handy. You can be earning money and never lose a day from work. You can keep a competent staff of men busy every day in the year.

ALLMETAL WEATHERSTRIP is the easiest strip to sell. It is simple. Never gets out of order.

INSTALLATION is easy. Our book of instructions makes it possible for any experienced carpenter to master this

There is a profit on the labor and a profit in the material. Get into business for yourself. The high price of coal has made this business boom.

Write for our agency plan.

Allmetal Weatherstrip Company 225 W. Illinois St. Chicago, Ill.

The Original and Only

First Consideration of Finest Hotels

"White-Steel" products are found in the bathrooms of the world's white-Steel" products are found in the pathrooms of the world's finest hotels. Medicine Cabinets made of the world famous Henzin Metal—a rust-resisting material—and permits the six coats of "White-Steel" enamel to stick for all time. Enamel will not check, peel, craze or discolor. Solid construction. Cabinet made of the pieces. First quality mirror plate. Polished plate glass shelves. The ideal cabinet for homes and apartments. "White-Steel" is the owner's only assurance of permanent installation.

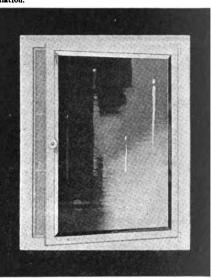
Medicine Cabinets for the Home

Contractors and Builders:

Write for Details

"WHITE-STEEL" SANITARY FURNITURE CO.

Dept. 312 GRAND RAPIDS,



Campbell No. 1 **Improved Floor Sander**

Total Weight, 180 Lbs.

Only Machine on the Market having cylinder waxing brush interchangeable with sanding drum, which makes it a two in one machine.



Tol. Granite 3095-R-0017-W

"Copper Roofing," a manual for architects and builders. Weights of various roofing materials. Up-to-date practise in the laying of copper roofs—Batten or wood rib methods, Sanding seam method, Flat copper roofs, Copper shingles, Suggestions for avoiding error and obtaining the full value of copper. Decorative effects and how to obtain them. Flashings, reglets, gutters and leaders. Cornices. Copper-covered walls. Specifications. 32 pp. III. 8½ x 11.

walls. Specifications. 32 pp. 11. 878 x 11.

Cortright Metal Roofing Co., Philadelphia, Pa.

236. Four-page circular describing the various shingles.

237. Write for this beautifully illustrated catalog describing the benefits of metal roofing.

Cree-Dipt Company, 1025 Oliver Street, North Tonawanda, N. Y.
153. Standard Stained Shingles. Samples of different kinds mailed.
154. Architectural Service Sheets. 8½ x 11 in. Illustrated. Working drawings of construction, with standard specifications for design and construction of same.

dward's Mfg. Co., 433 Eggleston Avenue, Cincinnati, Ohio.

1. Catalog No. 65 describes fully Metal Roofing, Siding, Ornamental Ceilings and other Sheet Metal Work. This is a 210-page catalog well illustrated.

The Flinkote Co., 88 Pearl Street, Boston, Mass.

195. Descriptive circular, describing Flinkote Roofings and Sheath-

ing Papers.

Hussey & Co., C. G., Pittsburgh, Pa.

942. Copper Roofing and Flushings. Book No. 6. 34 pp.

Illinois Zine Company, 280 Broadway, New York.

155. "Isco, the Metal of Permanence." Eight-page, illustrated booklet describing the durability, service and maintenance cost of Corrugated Sheets of Pure Rolled Zine.

156. The Roof That's Always New. Booklet. 334 x 6 in. 12 pp.

Illustrated. Story of Illinois Zine Shingles, their everlasting and artistic qualities. Information regarding a complete zine roof, shingles, starting piece, valley ridge and hip piece.

Mahawk Ashastes Slate Co. Utica N. V.

Mohawk Asbestos Slate Co., Utica, N. Y.

749. An interesting booklet—may be had on request.

National Sheet Metal Roofing Co., 339 Grand St., Jersey City, N. J.

159. Manufacturers of Metal Shingles in various designs both in painted tin or galvanized iron. Samples sent on request.

National Slate Assn., 757 Drexel Bldg., Philadelphia, Pa.
38. "Slate Roofs Serve for Centuries." An illustrated booklet
describing the economy, durability and beauty of slate.

describing the economy, durability and beauty of slate.

The Richardson Company, Lockland, Cincinnati, Ohio.

472. Viskalt Membrane Roofs. Contain specifications for applying Membrane roof over boards, and also for applying over concrete. Illustrated with line drawings of several approved methods of flashings. 3 pp. 8½ x 11 in.

The Ruberold Co., 95 Madison Avenue, New York.

750. Write for information regarding the "Strip Shingle."

Sheldon Slate Co., F. C., Granville, N. Y.

173. Sixteen-page colored catalog, describing the "Most Attractive Roof at the Most Reasonable Cost."

United States Gypsum Company, 205 W. Monroe St., Chicago, III. 161. Gypsum Poured, Steel Reinforced. Loose-leaf bulletins. 8% x 11. Pyrofill.

/endor Slate Co., Easton, Pa.
4. "A Book for Architects" is the title of the new 24-page well-illustrated catalog. See also listing under Slate.

RULES

Lufkin Rule Co., Saginaw, Mich.
Makepeace, Inc., B. L., 387 Washington Street, Boston, Mass.
Sargent & Co., New Haven, Conn.
SASH—See Doors and Windows

SASH CORD

Samson Cordage Works, Boston, Mass.

477. An interesting catalog with actual samples of the various grades of cordage therein.

American Saw Mill Machinery Co., Hackettstown, N. J. 162. Catalog No. 21, describing Circular Saws of all sizes. 163. General Catalog No. 22 and special Bulletin No. 77, describing sawing machinery for use on the job in the shop.

sawing machinery for use on the job in the snop.

Barnes Co., W. F. & John, 71 Ruddy Street, Rockford, Ill.

478. Catalog No. 84 describes in full detail the Patent Foot and Hand Power Wood Working Machinery.

C. H. & E. Mfg. Co., 259 Mineral Street, Milwaukee, Wis.

164. Bulletin No. 1, Saw Rigs.

Croscent Machine Co., 206 Main Street, Leetonia, Ohio.

479. This 1921 catalog contains improvements on No. 3 and No. 5 Saw Tables, No. 2 Motor-Driven Saw Table, New Motor-Driven Sharper, Hollow Chisel Mortiser.

Little Rose Saw Mfg. Co., Rochester, N. Y.

Huther Bros. Saw Mfg. Co., Rochester, N. Y. 480. Catalog No. 38 describes the complete line of Saws.

Parks Ball Bearing Machine Co., Station A. Cincinnati, Ohio. 482. Catalog B describes in detail Wood Working Machines.

482. Catalog B describes in detail Wood Working Machines.
Sidney Machine Tool Co., Sidney, Ohio.
483. Twelve-page illustrated booklet, describing the "Famous Universal Wood Workers."
484. One hundred-page pocket-size catalog, giving full information on the "Famous Woodworking Machinery." 484.

Atkins & Co., E. C., Indianapolis, Ind.
286. Booklet and chart describing saws, especially the cross-cut saw.

Huther Bros. Saw Mfg. Co., Rochester, N. Y.

947. Catalog No. 43 is 100-page well illustrated pocket size book, describing patent dado heads, milling saws, patent boxboard matcher cutters, lock corner cutters, concave saws, saw fitting machinery and all kinds of special grooving saws.

SCAFFOLD CLAMPS

Richards-Wilcox Mfg. Co., Aurora, III.

Steel Scaffolding Co., 1101 N. Governor Street, Evansville, Ind.
751. Write for this booklet. It contains some very valuable information; also the prices.

SCREENS

American Wire Fabrics Company, 208 So. La Salle St., Chicago, Ill.

III.
165. Catalog of Screen Wire Cloth. A catalog and price list of screen wire cloth, black enamel, galvanized, galvanoid, American bronze. 30 pp. Illustrated. 3½ x 6½ in.
Buffalo Wire Works Co., Inc., 322 Terrace St., Buffalo, N. Y.
The Higgin Mfg. Co., 5th and Washington Avenue, Newport, Ky.
710. Screen Your Home in the Higgin's Way. A description of Higgin Door and Window Screens with practical data. 16 pp. Ill. 8½ x 11½ in.
Wickwire Spencer Steel Corp., 41 East 42nd Street, New York.
752. Complete information in regard to their product will be gladly sent upon request.

SHEATHING

Bishopric Mfg. Company, 103 Este Avenue, Cincinnati, Ohio.

171. Homes Built on the Wisdom of Ages. Catalog, 6 x 9 in. 48
pp. Illustrated. Describing the use of Bishopric StuccoBoard and Bishopric Sheathing Board.

Celotex Co., 111 W. Washington St., Chicago, III.

Write for this 24-page booklet. It describes in detail a number of tests in heat and strength which show the great value of this product.

The Flinkote Co., 88 Pearl Street, Boston, Mass.
896. A 4-page illustrated circular, describing the various kinds of sheathing paper.

United States Gypsum Company, 205 W. Monroe St., Chicago, III.

173. Eight-page Folder. Describes Adamant Sheathing Board for use instead of wood sheathing.

SHINGLES-COMPOSITION-See Roofing Materials

The Ruberoid Company, 95 Madison Avenue, New York, 711. A folder describing the "Stripshingle" will gladly be sent on request.

SHINGLES-METAL

Cortright Metal Roofing Co., 50 North 23rd St., Philadelphia, Pa.
 174. "Concerning That Roof." A complete catalog describing and illustrating Cortright Metal Shingles and Trimmings. 7 x 10% in. 32 pp.
 National Sheet Metal Mfg. Co., 339-345 Grand St., Jersey City,

N. J.

712. Write for their catalog, giving a full list of the prices. Full size samples of the shingles will also be sent, if you write for

SHINGLES-WOOD

Pacific Lumber Company of Illinois, The, 2060 McCormick Bldg., Chicago, Ill.

SHOWERS, CURTAINLESS

Kenney-Cutting Products Corp., 507 Fifth Avenue, New York.
260. 4-page File and Reference Sheet describing six different models of the shower.

SIDEWALK LIGHTS

American 3 Way-Luxfer Prism Co., 1309 So. 55th St., Cicero, Ill.

SLATE-See also Roofing Materials

Knickerbocker Slate Corp., 153 East 38th Street, New York.
485. Four-page folder, describing the "Graduated Slate Roofs."
National Slate Assn., Drexel Building, Philadelphia, Pa.
939. "Slate, Consider Its Uses." 16-page illustrated, pocket size, catalog. Explaining the varied uses of slate in buildings.
Sheldon Slate Co., F. C., Granville, N. Y.
175. Commercial and Architectural Roofing Slate in all colors and textures. Also blackboards structural and electrical slate.
Slate Granules. Slate Granules.

The Structural Slate Co., 120 Robinson Ave., Pen Argyle, Pa.

893. Structural Service Data and Standards consists of thirteen chapters. Each chapter presented as a separate catalog.

894. Slate for Electrical Uses. Another catalog in the above series.

Vendor Slate Co., Inc., Easton, Pa.

31. The Vendor Book of Roofing Slate for Architects. Contains original information on slate in various architectural uses; history, geology, sundry, practical matters; complete descriptive classifications; extended treatise on architectural roof design and specifications. 44 pp. Illustrated. 8½ x

STAIRWAYS-MOVABLE

Bessler Movable Stairway Co., Akron, Ohio.

169. Illustrated catalog, containing 24 pp., describes how the
Bessler Movable Stairway save floor space and adds an
extra convenience to the home.

STANDARD BUILDINGS

Truscon Steel Company, Youngstown, Ohio.

176. Truscon Standard Buildings. Fourth Edition. Catalog, 8½

x 11 in. 40 pp. Illustrated. Erection details, cross-section diagrams and adaptations are given.

STORE FRONTS

Coulson Co., J. W., Columbus, Ohio.

278. Store Front Construction simplifies the problem for the builder and owner. It beautifies and enhances the value of store property. A special device prevents glass breaking.

Digitized by GOOGLE



Can You See Beyond Next Saturday Night?

Then you know the need of tooling up to get production

Bigger production means bigger profits.

The Hutchinson Woodworking Machines will cut the labor cost 20% on any project and increase profits proportionately.

It is portable, rapid and accourate and runs from any light socket. Capacity 2" stock. It cross-cuts, dadoes and mitres at any angle overhead. And it will rip, mold, sand, bore, bevel, rabbet and plane.

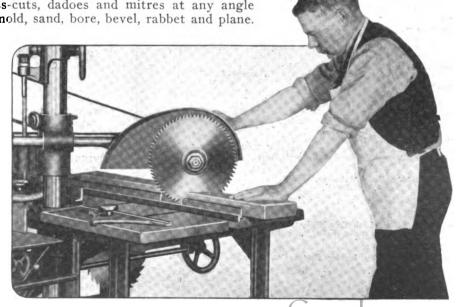
If you handle heavy work you will need a "Speed Marvel."

Capacity 8" stock.

You have given some thought to the motor driven machine for your job, write for illustrated folder on the "Beaver."

Richards & Co., Inc.

200 Causeway Street Boston, Mass.



Detroit Show Case Co., 160 W. Fort Street, Detroit, Mich. 916. Designs. A booklet. Store fronts and display we designs, giving plans and elevations and descriptions. 914 x 12 in. 16 pp. window

Details. Sheets of full size details of "Desco" awning transom bar covers, sill covers, side, head and jamb covers, ventilated hollow metal sash and profile of members. Size, 16 x 21½ in. 3 sheets.

x 21½ in, 3 sheets.

Kawmeer Co., Niles, Mich.

177. Kawmeer Store Front. Illustrated catalog. Drawings and details of construction. Size 8½ x 11 in. 32 pp.

178. Full Size Details Kawmeer Construction. Blue prints. Size 30 x 30 in.

179. A Collection of Successful Designs. Portfolio. Shows 24 typical store fronts with elevations. Size 9 x 12 in. 32 pp. Catalog B. J. 8. 6 x 9 in. 68 pp. Illustrated. Key to Getting the People In.

STOVES AND RANGES-See Gas Ranges

STRUCTURAL STEEL

International Steel & Iron Co., Dept. 19, Evansville, Ind.

STUCCO-See also Cement

The Bishopric Mfg. Co., 17 Este Avenue, Cincinnati, Ohio.
Flint Rock Corp., 20 W. 42nd Street, New York.
802. An interesting booklet, "A Home the Elements Cannot Destroy," describes the permanent, as well as ornamental qualities of Flint Rock.

qualities of Film Rock.

Rocbond Co., Van Wert, Ohio.

268. "Fortifies Your Home Against the Elements and Time." 16page folder. 3½ x 6 in.

269. "Better Homes." 12-page booklet, 7½ x 8 in., describing the
advantages of "Rocbond."

STUCCO BASES

Bishopric Mfg. Co., 103 Este Avenue, Cincinnati, Ohio.

181. Bishopric for All Time and Clims. Catalog, 7½ x 11 in.

52 pp. Illustrated. Describing the use of Bishopric Stucco and Plaster Base and Bishopric Sheathing.

STUCCO-MAGNESITE—See Stucco Flint Rock Corp., 220 West 42nd Street, New York.

SURVEYORS' INSTRUMENTS-See Levels

SUSPENDED CEILING

United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. 186. Loose-leaf Bulletins. 8½ x 11 in. Jester-Sackett, consists of plaster board applied to metal channels with special clip, ready for plastering.

THAWING EQUIPMENT

Aeroll Burner Co., Inc., 266 Hudson Ave., Union Hill, N. J. 956. "Thawing Outfits and Torches," an 8-page illustrated folder describing torches, thawing apparatus and their uses.

THERMOSTATS—See Heating Equipment

TILE HOLLOW

National Fire Proofing Co., 250 Federal Street, Pittsburgh, Pa.
188. Standard Wall Construction Bulletin 174. 8½ x 11 in. 32
pp. Illustrated. A treatise on the subject of hollow tile wall construction.

Natco on the Farm. 8½ x 11 in. 38 pp. Illustrated. A treatise on the subject of fire safe and permanent farm building construction.

TOILET PARTITIONS—STEEL

Hart & Hutchinson, New Britain, Conn.
284. Write for this Catalog, describing the sanitary and durable usages of these partitions.

TOOLS

Mack Tool Co., Inc., Rochester, N. Y.
491. An interesting Carpenter's Catalog may be had on request.
492. "True Stories," a lively booklet, bound to be pleasant and worth while reading.

Progressive Mfg. Co., Torrington, Conn.
493. Twelve-page booklet, describing the "Forstner Bits."
Sargent & Co., New Haven, Conn.
754. An interesting booklet describing the Steel Square may be had on request.

Swan & Co., James, Seymour, Conn.
496. An interesting 104-page catalog, describing "Premium Mechanic's Tools."

White Co., The L. & L. J., Buffalo, N. Y.
497. Catalog No. 19A describes Carpenters' Tools.
498. Catalog No. 20B describes Cooper's Tools.

TRACTORS
C. H. & E. Mfg. Co., Milwaukee, Wis.
275. Bulletin No. 4, Tractors.

TRANSITS-See Levels

TRUSS LOOPS

The Bostwick Steel Lath Co., Niles, Ohio. 179. "Beautiful Permanent Walls," 22-page illustrated catalog.

VAIDT LIGHTS

American Three Way Luxfer Prism Co., 1309 So. 55th Street, Cicero, III.

915. Daylighting. Catalog 915. A complete catalog on glass prisms for use in transoms, sidewalk and floor lights, skylights, etc., for lighting places inaccessible to direct daylight. Contains also measurements, specifications and other data required by designers. 42 pp. Ill. 8½ x 11 in.

VENTILATION

International Steel & Iron Co., Dept. 19, Evansville, Ind.

Royal Ventilator Company, 415 Locust Street, Philadelphia, Pa.
193. Descriptive Catalog of round and rectangular ventilators made in galvanized iron, copper, etc. Illustrated.

Washburne Co., E. G., 207 Fulton Street, New York.

194. Illustrated Booklet of metal ventilators, weather vanes, lightning rods, etc.

WALL BOARDS

Asbestos Shingle, Slate & Sheathing Co., Ambler, Pa.

195. Descriptive catalog and samples of Linabestos Wall Board for interior construction. Flame-proof and fire-resisting wall

Beaver Products Co., Inc., Buffalo, N. Y.

196. Illustrated folder, describing various uses and the methods of handling Beaver Board to the best advantage. Samples with descriptive literature sent on application.

The Celotex Co., 111 W. Washington St., Chicago, Ill.

55. Important and interesting information may be had on request.

Write for it.

po-Board Co., 5778 Lyndale Ave. No., Minneapolis, Minn. Catalog sent on request with sample. Describes many uses of Compo-Board.

United States Gypsum Computary, 205 W. Monroe St., Chicago, III. 201. Walls of Worth. Booklet, 8½ x 11 in. 24 pp. Illustrated. Describes Sheetrock, the fireproof wall board, its advantages and uses.

WALL FURRING

United States Gypsum Company, 205 W. Monroe St., Chicago, Ill. 202. Thirty-two page booklet. 8% x 11 in. Pyrobar. Tile.

WATER HEATER (GAS)

Crane Co., Wm. M., 18 East 41st Street, New York.

927. A well illustrated booklet describing the efficiency, economy and convenience of installing a Crane Water Heater in the building.

Hardin-Lavin Co., 4538 Cottage Grove Avenue, Chicago, III.

WATERPROOFING-See also Dampproofing

WATERPROOFING—See also Dampproofing

Truscon Laboratories, The, Cor. Caniff Avenue and Grand Trunk
R. R., Detroit, Mich.

206. Science and precisive of Integral Waterproofing. Pocket size.
33 pp. Illustrated. Contains full specifications for waterproofing MASS Conservet, Stucco and Cement Plaster Coat.
Entire chapter devoted to "Practical Application of Waterproofed Cement Plaster Coat."

207. Technical Pomphiet No. 8. Booklet. 4 x 7 in. 28 pp. A discussion of why concert requires waterproofing and the properties an integral waterproofing must possess to operate effectively with the natural properties of concrete.

WATER SUPPLY SYSTEM

Hardin-Lavin Co., 4538 Cottage Grove Avenue, Chicago, III.

Allmetal Weatherstrip Co., 229 W. Illinois St., Chicago, Ill.

Sis-page illustrated circular, describing the product as used for Hotels, Residences and Institutions.

prete Engineering Co., 140 So. Dearborn Street, Chicago, III.

Caco Metal Weatherstrips "Outstrip All the Others" is a 16page illustrated catalog describing, both by photographs and
blue prints, the advantages of installing them.

Diamond Metal Westherstrip Co., Columbus, Ohio.
242. 34-page illustrated catalog. 8½ x 11½ in. Containing blue prints of the various styles and sizes of Weatherstrip.

prints of the various styles and sizes of Weatherstrip.

The Higgin Mfg. Co., 5th and Washington Aves., Newport, Ky.

713. Higgin All Metal Weatherstrips. A booklet of considerable value to architects and builders on the use of weatherstrips. Ask also for the companion book, "The Reason Why." Each booklet 12 pp. Illustrated. 6 x 9 in.

Victor Parting Bend Co., Reading, Pa.

209. Through the Closed Window. 12 pp. Treats of Victor Parting Bend as a modern stripping device. How to Weather Strip Doors and Windows the Victor Way. 32 pp. Complete instructions on how to install parting bends and metal weather stripping. stripping.

WEATHER VANES

Washburne & Co., E. G., 207 Fulton Street, New York.

211. Descriptive Catalog in Colors. Showing two different designs of weather vanes, lightning rods, ventilators, etc.

WINDOW CASEMENTS

Lupton's Sons Co., David, Philadelphia, Pa.

775. "Casements and Double Hung Windows." A splendid illustrated and instructive catalog, gviing in detail the various types of casements.

WINDOW FRAMES

Anderson Lumber Company, Bayport, Minn.

Andersen Lumber Company, Bayport, Minn.

55. General Catalog for architects, contractors, engineers, carpenters and builders. Describes and illustrates fully Andersen Standard White Pine Window, Cellar Frames, Sash Frames and Door Frames. Gives details of construction, variety of sizes and uses for ordinary as well as special construction, and method of assembly. Size 7¾ x 10¾. 24 pages.

56. Better Frames for Less Money for consumers. Interesting folder showing advantages of Andersen Standard White Pine Frames. Uses, sizes and details of construction.

Digitized by GOGIG

"Square Shooting"

You'll never find "Rocbond" mixed up in questionable tactics or sharp practices. Rocbond policies won't permit it—Rocbond Stucco doesn't invite it.



"A Good Half Inch"

The Wallmark of Stucco Quality

Made to fulfill a mission to carry a structural responsibility.

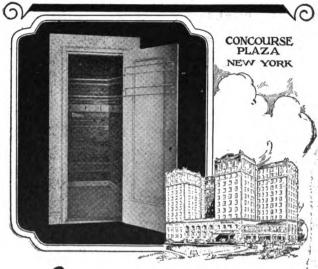
The Strongest Selling ::
Line the Dealer Can
Handle

Three Plants
Write the one nearest you

THE ROCBOND COMPANY

Plants

Van Wert, Ohio. Cedar Rapids, Iowa. Harrisburg, Pa.



400 KILMOTH CLOSETS

Increase the rental value of the Concourse Plaza Apartments. The builders recognized the renting features of Kilmoth and profited by their judgment.

Other builders are increasing the sale and rental value of private dwellings by installing Kilmoth, in closets.

They are popular and Kilmoth costs but little more than lath, plaster and baseboard. Easily handled, simple to install.

Kilmoth is genuine red cedar, transported from the manufacturer's own tracts. Its aromatic qualities are everlasting and while the odor is pleasing to humans, it is death to moths and vermin.

We will place you in touch with the nearest Kilmoth distributor.

Sign This



DISTRIBUTORS

There still remain a few openings for responsible distributors. If you are a lumber supply dealer or manufacturer's representative write for our proposition to distributors.



KILMOTH PRODUCTS CORP., 50-B Union Sq., New York

Please send complete details regarding Kilmoth.



Check opposite your business.

Sash Door, Mill and Supply

☐ Builder or Contractor
☐ Lumber and Supply

KILMOTH is AROMATIC

RED CEDAR

WINDOW HARDWARE

Caldwell Mfg. Co., Rochester, N. Y.
946. Detail Drawing and Information Regarding Sash Balances.
16-page catalog illustrated by photographs and working drawings.

drawings.

Casement Hardware Co., 250 Pelouze Bldg., Chicago, Ill.

The Kawneer Company, Niles, Mich.

213. Kawneer Simplex Windows. Catalog, 8½ x 10½ in. 16 pp.

Illustrated. Complete information, with measured details of
Kawneer Simplex Weightless Reversible Window Fixtures,
made of solid bronze. Shows installation in residences and
buildings of all sorts.

214. Detail Sheets and Installation Instruction. Valuable for
architects and builders.

National Mfg. Co., Sterling, Ill. 500. An interesting, well illustrated catalog.

Pullman Mfg. Co., Rochester, N. Y. 502. Catalog No. 38, describing the "Unit Sash Balances."

Richards-Wilcox Mfg. Co., Aurora, Ill.
 Cement Window Hardware. Booklet. 8½ x 11 in. 24 pp. Illustrated. Shows typical installations, drawings, details of construction (blue prints if desired). Describes Air Way multifold window hardware.

Samson Cordage Works, Boston, Mass. 501. Catalog. 3½ x 6¼ in. 24 pp. Illus. Covers complete line. Sargent & Co., New Haven, Conn.

Smith Hardware Co., Frank F., 79 Clay Street, Newark, N. J.

819. Bulletin "B" describes pivoted window fixtures, hinged window locks, sash fasteners, sash lifts, sash pull plates, overhead pulleys, side pulleys, etc.

WINDOWS, METAL-See also Doors and Windows

Hope & Sons, Henry, 103 Park Avenue, New York.

714. Hope's Casements, printed circular, describing steel casements of standard size and types carried in stock for immediate delivery, particularly suitable for apartment houses, office buildings and residences.

WIRE LATHING

Buffalo Wire Works Co., Inc., 322 Terrace St., Buffalo, N. Y.
815. Pocket edition, Catalog No. 2. 180 pages, with flexible covers. Describes the entire line in two sections. Section No. 1 deals with wire cloth, plain and figured. Section No. 2, with ornamental iron and wire work.
816. Sixteen-page illustrated folder describing Plain and Galvanized Wire Lathing, showing faces of mortar.

WIRE REGISTER FACES

Buffalo Wire Works Co., Inc., 322 Terrace St., Buffalo, N. Y. 817. Four-page illustrated folder showing those of the most popular degion

WOODWORK

Curtis Companies Service Bureau, Clinton, Iowa.

960. Keeping Down the Cost of Your Woodwork. A book illustrating Curtis interior woodwork and built-in cabinets and fixtures designed by Trowbridge and Ackerman, Architecta, New York. Colored illustrations and details. 16 pp. Ill.

New York. Colored illustrations and details. 16 pp. Ill. 7 x 9½ in.

Hartmann-Sanders Company, 6 East 39th St., New York.

533. Catalog No. 47. Illustrating Koll's Patent Lock Jointwood stave columns for exterior and interior use. 48 pp. Ill. 7½ x 10 in.

WOODWORKING MACHINERY

American Saw Mill Machinery Co., Hackettstown, N. J. 217. Contractors' Bulletin No. 77. Describing various types of portable Variety Woodworkers. General catalog No. 22, describing a general line of woodworking machinery.

Barnes Co., W. F. & John, 71 Ruddy Street, Rockford, Ill. 218. Catalog. Containing description of rip and other machine saws, formers, mortiess, tenoners, lathes. 38 pp. Illustrated. 950. "Motor Driven Wood Working Machinery," a 4-page illustrated folder describing the new Barnes electric bench scroll saw.

saw.
C. H. & E. Mig. Co., 259 Mineral Street, Milwaukee, Wia.
119. Catalog of portable saw rigs, pumps, compressors, engines, 219.

etc.

The Crescent Machine Co., 259 Main Street, Lectonia, Ohio.

220. Catalog. Describing band saws, shapers, jointers, planers, borers, mortisers, etc. 144 pp. Pocket size. Illustrated.

967. Catalog, 8½ x 11 in., 24 pp., illustrated. Describing Crescent Universal Wood-worker, No. 101 to No. 112.

Kidder Co., R. E., 35 Hermon Street. Worcester, Mass.

222. Catalog. Describing improved boring machines and how it can be used.

Master Woodworker Mfg. Co., 614 Bush Street, Detroit, Mich.

263. 18-page illustrated pamphlet, 10½ x 7½ in., called "The Master Woodworker." The Model No. 7 machine is described.

Parks' Ball Bearing Machine Co., Sta. "A," Cincinnati, Ohio.

223. Illustrated Folder. Describing Parks' Planing Mill Special, comprising circular saw, jointer, band saw, shaper, borer, tenoner, etc.

tenoner, etc.

Richards & Co., Inc., 200 Causeway St., Boston, Mass.

965. "The Beaver," an illustrated folder describing the motor driven machine.

PLATE 10-E-PATENTED

It's made of white enameled iron ware

Wheeling Combination Bath

SEAT BATH FOOT BATH SHOWER BATH CHILD'S BATH

Same design as our Semi-Vitreous Porcelain Combination Bath, Plate 30-E.

FEATURES: Anti-slipping raised ledge on seat; one size only for all size people; white painted front; either right or left waste—easily installed in a recess. Takes less space and weighs no more than the regular built-in type of enameled iron bath.

AS FOOT BATH-Feet bathed without removing all the clothing by filling foot bath only—note convenient ledge for comfortable foot treatment.

AS A SHOWER BATH—Standing on seat keeps head dry.

AS A CHILDREN'S BATH—Splashless and safe (water in

foot tub).

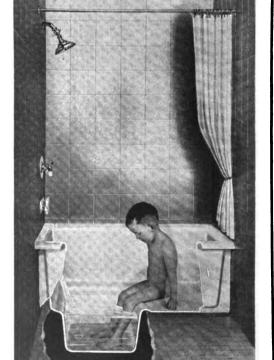
AS A REGULAR BATH-Miles ahead of the regular long

type tub.
Write for descriptive literature. Order from jobbers of plumbing supplies.

This line is being very generally specified by Architects and Builders the country over.

WHEELING SANITARY MFG. CO.

Wheeling, West Virginia



44 inches long, 30 inches wide,

ପ୍ରତାର ପ୍ରତାର ପ୍ରତାର ପ୍ରତାର **ପ୍ରତାର**

LAST YEAR

We introduced our new FLOOR REGISTERS with 25 per cent increased free air capacity! And our new BASEBOARD REGISTERS with 40 per cent increased free air capacity!

THIS YEAR

We have more than DOUBLED our facilities for producing these remarkably efficient registers.

NEXT YEAR

We will be in a position to render real SERVICE in the prompt excution of orders.



No. 200



The Hart & Cooley Co.

Incorporated

New Britain, Conn.

New York

Philadelphia

Chicago

Boston

\$\\ \alpha\\ alpha\\ \alpha\\ \alpha\\ \alpha\\ \alpha\\ \alpha\\ \alpha\\



YOU have in your locality many an old home, staunchly built and well designed, whose owner thinks longingly of the OAK FLOORS in the new house across the way.

He doesn't know that 38 oak flooring is recommended expressly to meet his situation.

He doesn't know how easily and quickly his home can be modernized, one room at a time, with little disturbance to the household.

He believes the cost prohibitive. His idea of an oak floor is that it is a luxury, to be enjoyed

only by the very well-to-do. Tell him that while the family is on a vacation, you can lay oak floors throughout his home, in various widths and grades, each

noors throughout his nome, in various widths and grades, each suitable for different rooms, at a cost more than justified by the added value, ease of cleaning, durability, and beauty.

Directions for proper laying and finishing are contained in a booklet, which will be mailed free, upon request, together with other literature on the advantages of oak floors. Write for your copy today.

OAK FLOORING BUREAU, 1041 Ashland Block, Chicago

OAK FLOORS
NATURE'S GIFT OF EVERLASTING BEAUTY •

Digitized by Google



Slate for Cottage or Mansion

THE wise man whether building a large or small house protects the money he invests. He doesn't put on a slate roof because his house is big or little but because a slate roof will protect an investment of \$7,500 as well as one of \$500,000. He knows that most deterioration comes through the roof not the cellar.

There are many uses for slate. But slate in any form retains the protective, economical and beautiful properties which nature has given it. Slate may be utilized in many ways both indoors and out but regardless of usage it will be permanent, beautiful and moderate in cost.

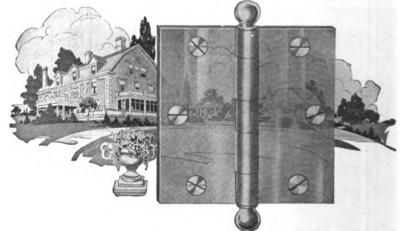
May we send you a booklet showing the varied indoor and outdoor uses of slate?

NATIONAL SLATE ASSOCIATION 757 DREXEL BUILDING, PHILADELPHIA

UNIFORM

THE precise uniformity of GRIFFIN Hinges is a practical expression of the care they receive in manufacture and the rigid inspection which marks their final approval before being neatly packed for shipment.

Uniform in highest quality as well as details of construction—this is the GRIFFIN standard. Their finish is lasting and durable, giving unlimited service and conforming with pleasing harmony to all styles of interior appointments. GRIFFIN Hinges are made in a variety of sizes and designs that answer the requirements of all types of building construction.



Write for Catalogue and Quotations

GRIFFIN-

"The Door Butt of America"

From the rolling of the steel to final completion, GRIFFIN Hinges are constructed in our own plant to an exacting standard of worth and dependability.

We also

Manufacture

Cellar Window Sets,
Hasps and Safety Hasps,
Door Handles and Door
Holders,
Brackets, Push Plates,
Drawer Pulls, Door Stops,
Sash and Screen Lifts,
Barrel Bolts, Corner
Braces,
Corner Irons, Washers,
etc.

GRIFFIN MANUFACTURING COMPANY

45 Warren St., New York

ERIE, PA., U. S. A.

74 W. Lake St., Chicago



Build That Home —the Keith Way

Send for our new volume De Luxe, 336 homes, pictured and described in such a way as to appeal at once to every prospective home builder that visits your office. They will be drawn to these homes by their charming exteriors, but it is within the walls of each room that their superiority is felt strongest. It is the wife who usually settles on which house it will be, and she will be instantly attracted to Keith details that make housekeeping more comfortable and convenient-provision for equipment, kitchen conveniences, closet room, etc.

Keith plans will help you satisfy every desire of your customers. The result of twenty-five years of successful home planning, consolidated in this one volume will enable you to give them something different, yet sound in construction, and at a known cost. Every Keith house has been actually built. As a

special service to contractors and lumber dealers, ask about our loose leaf binders, and large size photographic prints of home designs.

Keith's Magazine

(Est. 25 years) published monthly, is an invaluable aid to building, decorating and furnishing the home. Tells about building materials and their latest uses. Complete with home builder helps.

3 Special Offers to Contractors

Here is your opportunity to get the De Luxe plan book, and Keith's Magazine, for 24 years a recognized authority on the correct building of the moderately priced home.

KEITHS

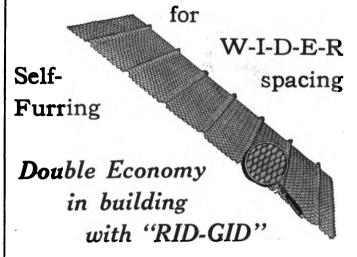


KEITH CORPORATION, Minneapolis, Minn.

Clip and mail this coupon NOW

KEITH CORPORATIO I enclose \$4.50 for wh book of 336 Plans and	N, 149 N. 7th St ich send me prep l Keith's Magazi	., Minneapolis, Minn. aid complete De Luxe ne for one year.		
☐ I enclose \$1 for a six months' trial subscription to Keith's Magazine devoted to home building and home furnishing.				
I enclose \$2 for Kei 112-Plan	ith's Magazine fo Volume listed be	or eight months and elow:		
Bungalow Homes	1½-Story Homes	2-Story Homes		

"RID-GID Metal Lath



WO FEATURES that mean most in the use of Metal Lath are combined in RID-GID—the all-purpose lath.

Its 30% greater strength permits wider spacing of studding. The fact that it is Self-Furring brings economy and convenience, too.

RID-GID weighs no more, costs no more, than ordinary metal lath. In the use of RID-GID Metal Lath you add to your profits every penny of saving from its "wider spacing" and "self-furring" features.

Wherever Metal Lath is to be used, RID-GID will pay you best.



Channels and Corner Beads

Steelcrete is your assurance of dependability they are right and ready—your dealer can supply you immediately.

The Consolidated **Expanded Metal Companies** BRADDOCK, PA.

PHILADELPHIA: 1075 Germantown Ave. PITTSBURGH: Oliver Bid NEW YORK: 537 W. 38th St. CHICAGO: 1234 W. Washington Blvd.



by Using Ritter Brand

NY builder, contractor, architect or floor layeranyone who has seen and compared—will vouch for the superiority of Ritter Appalachian Oak Flooring over ordinary oak flooring.

"Ritter Brand" oak flooring gives an underfoot surface of lasting beauty-smooth, perfectly matched and of fine grain and uniform color. Yet, despite its superior quality, this flooring costs very little, if any more, than the ordinary kind when finished.

Ease in Laying and Finishing

Because of the fine grain and mild texture which is characteristic of Appalachian Oak, and because of the exacting care exercised in its manufacture, Ritter Flooring is easily and quickly laid, nailed and finished. This results in a saving which more than makes up for the small difference in the initial cost.

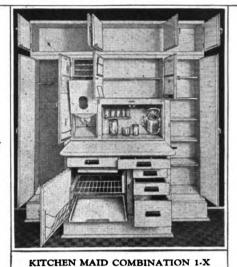
As a protective measure Ritter Appalachian Oak Flooring is stored in steam-heated warerooms at the mills awaiting delivery. Let us send you our booklet on oak flooring, which further explains why it will pay you to insist upon "Ritter Brand."

W. M. RITTER LUMBER COMPANY

America's Largest Producer of Hardwoods RICH AT THIRD STREETS-COLUMBUS, OHIO

Branch Offices Pittsburgh, Philadelphia, New York, London and Liverpool

RITTER APPALACHIANSOAK FLOORING



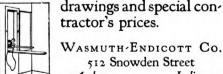
Make your kitchen walls make money

A well-planned kitchen saves floor space —and floor space is worth money in a home. You can save kitchen floor space with Kitchen Maid Standard Units.

Install an ironing board which folds into the wall. Make a place for the Pulmanook -four chairs and a table which form a "disappearing breakfast nook." Kitchen Maid kitchen cabinets, dish cupboards, broom closets, all other units help to make the houses you build rent for more, sell for more, please the people who live in them.

Such kitchens make money for the owner, the builder, everyone along the line. Kitchen Maid Standard Units cost no more than old-fashioned pantries. They are beautifully built, by cabinet makers, in the factories which build the famous Kitchen Maid kitchen cabinet.

Write for 12-page catalog, dimensional



This ironing

WASMUTH-ENDICOTT Co. 512 Snowden Street Andrews Indiana



Digitized by

Perfect Sidewalk Lights





Last month we told how we had solved the problem of making sidewalk lights a permanent, no upkeep installation. We told about the use of Lazalite-Flintex glass—every piece of which is tested under the polariscope and only perfect lenses accepted. So important has this become that some of the country's biggest engineers and contractors are *insisting* on the use of polariscope tested glass, only, in their jobs.

But there are other important elements that we have developed as necessary to perfect sidewalk lights. The second is the use of

REGROUND CEMENT

Even perfect lenses may be broken if the expansion of the concrete after setting exerts its tremendous pressure. Ordinary coarse cement does not all get wet through in the first mix. So rain and snow gradually saturate it, causing a setting after the installation is finished. This

secondary setting causes expansion pressure that cracks both the cement and the glass.

So we use only reground cement—so fine that 95% goes through a 200 mesh screen.

To be sure that you get only reground cement in your sidewalk lights, insist on 3 Way-Simplex Constructions. There are several types to suit different conditions.

Write for Bulletin SS that gives you details.

American 3 Way-Luxfer Prism Company

1309 South 55th Street CICERO, ILLINOIS

Daylight Engineers

358-368 Webster Avenue LONG ISLAND CITY, N. Y.

TheVENDOR:/IATE:C

DARK and COLORFUL ROOF VALUES

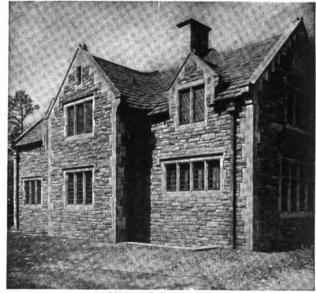
THE color of weathering, the color of shadows, of texture, of atmosphere; subtle, dignified, yet color: all this is offered through a special study of the architectural possibilities of Pennsylvania slate made by the Vendor Company's Department of Architectural Slate.

Service is free including advice, approximate cost, etc. Drawings and the governing conditions, if any, are the only preliminaries. Let us work with you.

We design roofs and supply material of every kind and color from every slate district without preference.

On receipt of blueprints we will promptly describe an appropriate slate roofing (including its cost) based on our knowledge of available slates and how to work them. Such service is under professional direction. Have we also your address for our occasional literature on roofing slate?

MAIN OFFICE AND DEPARTMENT OF ARCHITECTURAL SLATE AT EASTON, PA. SALES BRANCHES IN PRINCIPAL CITIES.



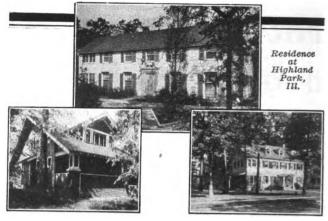
Michael Stillman, Archt



· Large of Moofing Slate in the World · VENDOR: LATE Of Roofing Slate in the World · VENDOR: LATE Of Roofing Slate in the World · VENDOR: LATE OF ROOFING Slate in the World · VENDOR ·







Residence at Chetek, Wis.

Build with REDWOOD and You Keep Down Repairs

THE natural, odorless preservative, which permeates growing Redwood trees and protects them against all forms of fungus decay and insect activity, assures houses sheathed with Redwood many years of protection against decay and repairs.

Houses shaded with trees and climbing vines that keep surfaces damp, should be protected with rot-resisting Redwood.

For pergolas and summer houses, porch columns, moulding and trim, balusters and railings, lattice work and fences, clapboards, shingles and gutters, foundation timbers and mudsills, Redwood gives exceptional service. Grade for grade Redwood costs no more than other woods that cannot compare with it for permanence and low repair costs.

To acquaint Builders and Architects with Redwood's special fitness for many architectural and building construction purposes, we have compiled a "Construction Digest" which we will gladly send on request.

CHICAGO 3070 McCormick Bldg. 332 So. Michigan Ave. THE PACIFIC LUMBER CO. of Illinois

NEW YORK CITY 932 Pershing Sq. Bldg. 1 Park Ave.

SAN FRANCISCO Robert Dollar Bldg. 311 California St.

LOS ANGELES Central Bidg. Sixth & Main Sts.

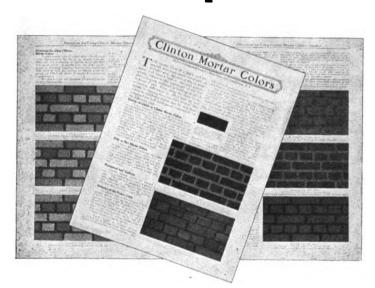
THE PACIFIC LUMBER CO.



The Largest Manufacturers and Distributors of California Redwood

Digitized by GOOGLE

The Most Complete and Practical Information



ever compiled on the use of Mortar Colors has now been published in leaflet form, for your convenience. It reproduces in color numerous interesting combinations of brick and colored mortar and contains the following information:

- (1) Formulas for cement mortar and cement lime mortar, with colors.
- (2) Tables for converting mortar color bulk into weights.
- (3) Practical suggestions for mixing.
- (4) Method for determining in advance the effect produced.
- (5) Formulas for coloring stucco.

Write for a copy-to-day.

The Clinton Metallic Paint Co. Clinton, N. Y.

Clinton Montan Colors

Nature's Permanent Colors. Made Since 1887.

Three Sources of "International Service"

Steel Mill Buildings
Truscon Steel Sash
Trusses and Girders
Steel Highway Bridges



INTERIOR VIEW OF STEEL PLANT

Designs and Estimates of Store Fronts and Garages Free of Charge



MAIN OFFICE AND ENGINEERING

Modern Store Fronts Complete Public Garages Elevators, Skylights Steel Ceilings, Glass



INTERIOR VIEW OF WOODWORKING PLANT

QUALITY

SERVICE

COURTESY

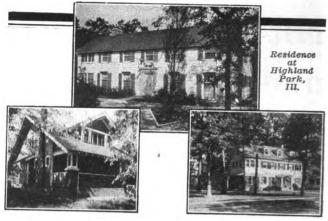
International Steel & Iron Co.

Address Dept. 19

Evansville, Indiana

e Illustrations'' showing at least 50 modern buildings designed by us





Residence at Chetek, Wis.

Residence at Plainfield, N. J.

Build with REDWOOD and You Keep Down Repairs

THE natural, odorless preservative, which permeates growing Redwood trees and protects them against all forms of fungus decay and insect activity, assures houses sheathed with Redwood many years of protection against decay and repairs.

Houses shaded with trees and climbing vines that keep surfaces damp, should be protected with rot-resisting Redwood.

For pergolas and summer houses, porch columns, moulding and trim, balusters and railings, lattice work and fences, clapboards, shingles and gutters, foundation timbers and mudsills, Redwood gives exceptional service. Grade for grade Redwood costs no more than other woods that cannot compare with it for permanence and low repair costs.

To acquaint Builders and Architects with Redwood's special filness for many architectural and building construction pur-poses, we have compiled a "Construction Digest" which we will gladly send on request.

CHICAGO 8070 McCormick Bldg. 832 So. Michigan Atc. THE PACIFIC LUMBER CO. of Illinois

NEW YORK CITY 932 Pershing Sq. Bldg. 1 Park Ave.

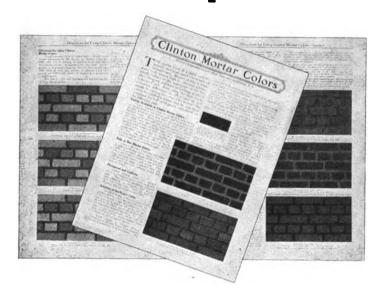
SAN FRANCISCO Robert Dollar Bldg. 811 California St. THE PACIFIC LUMBER CO.

LOS ANGELES Central Bidg. Sixth & Main Sts.



The Largest Manufacturers and Distributors of California Redwood

The Most Complete and Practical Information



ever compiled on the use of Mortar Colors has now been published in leaflet form, for your convenience. It reproduces in color numerous interesting combinations of brick and colored mortar and contains the following information:

- (1) Formulas for cement mortar and cement lime mortar, with colors.
- (2) Tables for converting mortar color bulk into weights.
- (3) Practical suggestions for mixing.
- (4) Method for determining in advance the effect produced.
- (5) Formulas for coloring stucco.

Write for a copy-to-day.

The Clinton Metallic Paint Co. Clinton, N. Y.

Clinton Montan Colons

Nature's Permanent Colors. Made Since 1887.

Three Sources of "International Service"

Steel Mill Buildings
Truscon Steel Sash
Trusses and Girders
Steel Highway Bridges



INTERIOR VIEW OF STEEL PLANT

Designs and Estimates of Store Fronts and Garages Free of Charge



MAIN OFFICE AND ENGINEERING DEPARTMENT

Modern Store Fronts
Complete Public Garages
Elevators, Skylights
Steel Ceilings, Glass



INTERIOR VIEW OF WOODWORKING

OUALITY

SERVICE

COURTESY

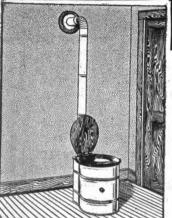
International Steel & Iron Co.

Address Dept. 19

Evansville, Indiana

Write for "Garage Illustrations" showing at least 50 modern buildings designed by us

A Modern CONVENIENCE



for the Country Home

Odorless-Sanitary-Germproof-

Will give years of service, comfort and satisfaction. Chemicals kill all germs, is absolutely odorless. Thousands in use.

Write for our proposition to builders and rock-bot-tom factory price. Agents wanted everywhere.

THE COMFORT CHEMICAL INDOOR TOILET

is a necessity in every country home and the builders are the logical ones to introduce it and install it in the homes. Provisions should be made in every country home for one of these conveniences. It is strong, well made, beautifully enameled in white, solid oak seat and cover, in natural oak finish.

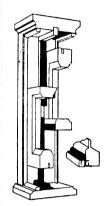
Robinson Household Mfg. Co.

HURON and CHERRY STS.

TOLEDO, OHIO



Winter winds will bring in Weatherstrip Orders



BE OUR AGENT!

Ceco Metal Weatherstrips, the best, improved line, are easy to sell and simple to install. On our proposition you can have a business of your own— a steady, year 'round business, that will increase in pre-portion to your own initiative.

Dozens of features! A hundred talking points!

2 PROFITS

One on the original sale, another on the installation. OW! When winter winds can help you prove their cd, is the time to line up. Get started in a business your own before the new year.

Write us for details.

(DO IT NOW)

Concrete Engineering Co.

Dept. M

1926 So. 52nd Ave., Chicago, Ill.

R YBOLT **F**URNACES

MONEY FOR BUILDERS MAKE

AND GIVE PERMANENT SATISFACTION TO THE HOUSEHOLDER



The unusual simplicity of instal-lation of this remarkable furnace results in economy of time and materials.

Mechanical and scientific correctness in design as-

Most Heat for **Least Cost**

The Trade

is invited to write us at once for our Profit - Proposi-tion; it means Money and Satis-

THE RYBOLT HEATER COMPANY

ASHLAND, OHIO CINCINNATI

INDIANAPOLIS



Porch addition to remodeled home of Mr. Murphy, Evanston, Illinois. Childs & Smith, Architects.

COLUMNS are an architectural feature of the building. Koll's Columns are the natural choice because they are architecturally correct from cap to base. They are columns of permanence, made of carefully selected wood with closely knit interlocking joints which prevent them from coming apart.

Sizes range from 6 to 48 inches in diameter. Either plain or fluted. Catalogue D-47 shows the wide adaptability of Koll's Columns. 20c. in stamps brings a copy by return mail.

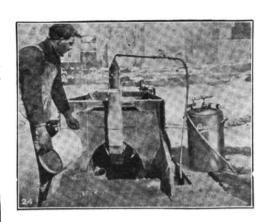
HARTMANN-SANDERS COMPANY

Main Office and Factory: 2155-87 Elston Ave. Chicago

Originators and Sele Manufacturers Koll's Patent Lock-Joint Columns.

Eastern Office and
Showrooms:
6 East 39th St.,
New York
Manufacturers of Colenial Entrances, Pilasters and Perch
Materials.

S Lock-Joint



Concrete Heaters and Thawing Torches Make Winter Jobs Profitable!

Hot Concrete in Zero Weather.

Melt Ice and Snow out of Forms. off girders, bricks, etc., with

AEROIL THAWING TORCHES

Send for Bulletin No. 26-B

AEROIL BURNER CO., Inc. Union Hill, N. J.



EVERY BUILDER NEEDS A STEEL MEASURING TAPE

IT INSURES ACCURACY AND SAVES TIME



"BANNER"

Popular Priced

STEEL TAPE

ITS PRICE CLOSELY APPROACHES THAT OF A GOOD WOVEN LINE, YET IT GIVES YOU THE ACCURACY OBTAINABLE ONLY IN A STEEL TAPE. %" wide steel tape, standard width and weight, 25 to 100 ft. lengths, with "Instantaneous" Readings and Nubian Printing Printin Finish. Put up in metal lined Auto Leather Case, having fine wearing qualities.

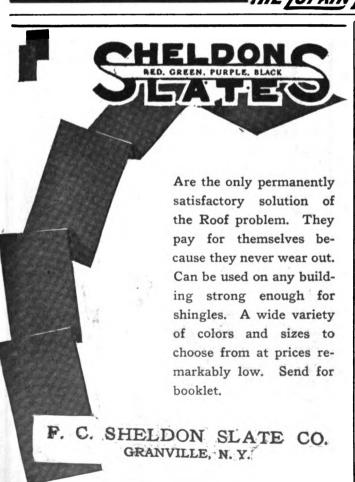
If Unobtainable at Dealers Write Us Direct

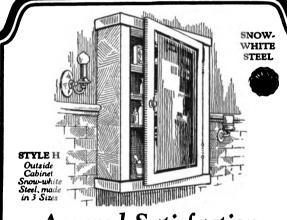
SPRING JOINT and BOXWOOD RULES

"UNIVERSAL" SQUARES

MEASURING TAPES

Send for Catalogue THE <u>LUFKIN</u> RULE CO. SAGINAW, MICHIGAN New York Windsor, Canada





Assured Satisfaction

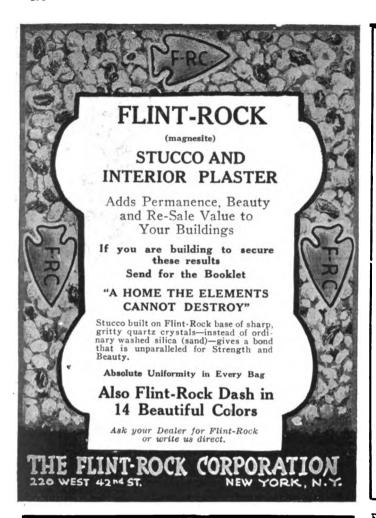
THE beauty, durability, and sanitary character of HESS white enameled steel medicine cabinets, with welded corners, and the high quality of the materials and workmanship represented in them are a lasting source. of satisfaction to the owner and a credit to your building ability. HESS Cabinets and Lavatory Mirrors are made in numerous sizes and styles to meet individual requirements.

Write for our illustrated catalogue

HESS WARMING & VENTILATING CO. Makers of HESS Welded Steel FURNACES 1201 Tacoma Building, Chicago

and MIRRORS Snow-White Steel

Digitized by GOOGLE



PEERLESS

PERFECT PRODUCTS

Superior Tracing Cloth and

Vellux Tracing Paper

are

necessary

where

Drawings

are made

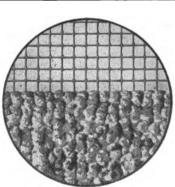
to

LAST

Send for Samples and Prices
Also our Catalogue "B"

THE PEERLESS BLUE PRINT CO. 341-347 Fifth Avenue

New York City



Clinton Wire Lath

Standard
Since 1856

Adapted to all kinds of plain and ornamental plastering.

A glance at the key side of a wall plastered on Clinton Wire Lath will show the perfect manner in which the plaster surrounds the lath. The clinch of the back plaster will so cover every wire that it is difficult to detect a single strand showing in this perfect key.

Complete information upon request.

Wickwire Spencer Steel Corporation GENERAL OFFICES

41 East Forty-second Street, New York

OFFICES AND WAREHOUSES

Worcester Buffalo San Francisco Philadelphia Detroit Chicago Los Angeles



Digitized by GOOGIC



IT PAYS TO USE

Gravity Types

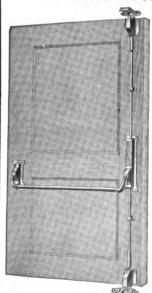


Mortise Types

Horizontal Rim Types

PANIC EXIT LOCKS

Recommended and Approved by STATE INDUSTRIAL BOARDS



THE STANDARD for PUBLIC SCHOOLS and THEATRE BUILDINGS.

Their SIMPLICITY of Construction, makes them EASY TO INSTALL, and insures UNFAILING OP-ERATION.

He serves both the PUB-LIC GOOD, and his own BEST INTERESTS, who figures on using "SMITH'S IMPROVED" Panic Exit Locks.

Write for Catalog No. 20 and Price List.

Frank F. Smith Hardware Co.

75 Clay Street, Newark, N. J.



The Builder's Guide

By I. P. HICKS

THIS handbook solves every difficult problem in building construction.

It covers every operation in the construction or alteration of a building. The mechanic will find it useful in so ving all problems that will rise in excavating, altering and underpinning, masonry and concrete work, house and roof framing, fireplace and chimney construction, bollow tile and stucce work.

It shows how to accurately estimate material and labor for all kinds of work by easy and practical methods.

360 Pages, 4½x7 in., 300 Figs. Flexible Fabrikoid, \$3.00.

- Just Out -

Estimating the Cost of Buildings

By ARTHUR W. JOSLIN

A SIMPLE system for estimating the actual cost of all kinds of residential buildings, schools, etc. It sise explains an excellent method of estimating alterations and remodeling jobs.

Important chapters included are:—Rules for Estimating also Plan Reading.

228 Pages, 6x9 in. Illustrated, Cloth, \$2.00.

OTHER BOOKS FOR THE CONTRACTOR, BUILDER AND CARPENTER

Arthur's New Building Estimators' Handbook,	1923	edition		6.00
William's Stair Builders' Guide, 1923 edition	1			2.50
Arthur's Estimating Building Costs				
McCullough's Practical Structural Design				
Otter's Furniture for the Craftsman, New 1923				
Crussell's Jobbing Work for the Carpentor, Now	1923	Egition.	• • • • •	2.50

			•	
U. P. C.	BOOK COMPA	NY, INC., 23	9 West 39th	St., New York
Send me	the books checked	below for 10	days' FREE	EXAMINATION.
lf I keep	them I will remit	the purchase 1	rice.	

New Building Estimator\$6.00 Hicks' Builders' Guide 3.00 Furniture for the Craftsman 2.50 Jobbing Work for the Carpenter 2.50	☐ Practical Struct, Design \$3.00 ☐ Stair Bidg. Guide 2.50 ☐ Joslin Estimating 2.00 ☐ Estimating Bidg. Costs. 1.50
Name	· • • • • • • • • • • • • • • • • • • •

Address.

Digitized by GOOSIC

Subscriber to Building Age.



Package Receiver Coal Chute Meter Box Garbage Receiver Fireplace Damper Fire Baskets Ash Dumps Basement Columns

Send for the Donley Catalog

The Family **Purchasing Agent**

N the building or buying of a home SHE must be shown.

A Donley Package Receiver always takes a woman's eye. If she finds also the Donley Coal Chute, Meter Box and Garbage Receiver as well as a fireplace, whose clean warmth is due to a Donley Damper and other Donley Fireplace Devices-

Why then—she is sure to think the whole house is built with the same honest forethought.

The Donley Brothers Co.



13920 Miles Ave. (II) Cleveland, Ohio

LOXO Compound Level

for Builders, Contractors and Architects



Instantaneous in its action from levels to vertical angles, without having to be lifted out of its

Snaps in and out of position like a jack-

Ideal for quick plumbing of pier forms and other ver-

No other instrument just like it. Our patented clutch arrangement permits this rapid change.

LOW IN PRICE

LIGHT IN WEIGHT

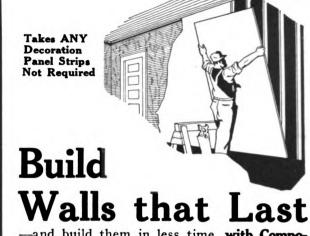
Write for special folder, giving complete information

B. L. MAKEPEACE, Inc.

Manufacturers

387 Washington Street

Boston, Mass.



and build them in less time, with Compo-Board. This sturdy wood core wall board will not crack, crumble, buckle, warp or shrink.



The WOOD CORE Wall Board

Its great strength, moisture-resisting and insulating qualities combined, mean fully satisfied customers. Hundreds of builders are increasing their prestige and their profits with Compo-Board. Manufactured and sold for 30 years. Try it this season. Write today for illustrated booklet and sample.

The Compo-Board Co. 5778 Lyndale Ave., N., Minneapolis, Minn.

SLATE STAIRS



Slate Stairway in the Adelphi Theatre, Phila.

This is but one of the important and diversified uses of man to which Slate may be put. Informative literature on characteristics, finishes and uses always ready.

The Structural Slate Co. 120 Robinson Avenue Pen Argyl, Penna.

For Satisfaction!



To plan a Kenney Shower into the bathroom of your next house will mean constant satisfaction in the days to come.

The Congress Exposed Model (illustrated) is reasonable in cost, fine in appearance, curtainless, durable, easy to install—in short, it has all the advantages of every Kenney Shower.

Larger Illustration shows Congress Exposed Model Smaller Illustration Shows a Portable Fixture.

Every Bathroom Needs Its Shower

For quick information refer to Sweet's, 18th Annual Edition, Page 1763, and for all details write today to

The Kenney-Cutting Products Corp.
507 Fifth Avenue New York City

KENNEY SHOWER

Curtainless

YOU NEED A HUTHER DADO HEAD



Hother Bres. Dade Head

The saw that makes intricate cutting and grooving simple.

This saw, developed from our own patents, consists of two outside cutters and a sufficient quantity of inside ones to perform the required cut. The outside cutters can be used singly or in pairs as required.

Every builder or contractor, wishing lock corners or any sort of grooving will find his production costs lowered by this saw.

Write for complete information and prices, or send for one on approval. It may be returned at our expense if unsatisfactory.

Huther Bros. Saw Mfg. Co.

Rochester, N. Y.

Makers of Botter Says for More Than 10 Years



No building material so lends itself to architectural treatment and color harmony as "CREO-DIPT" Stained Shingles.

"CREO-DIPT" Stained Shingles on side walls as well as roof, whether in solid tones alone or in carefully selected shades of variegated colors—give an effect that is not possible with other materials.

If you are going to build a large or small house and want suggestions for architectural design, send \$1.00 for Portfolio of Fifty Large Photographs of Homes of all sizes by noted architects.

CREO-DIPT COMPANY, Inc.

General Office: 1030 Oliver St. North Tonawanda, N. Y.; St. Paul, Minn., and Kansas City, Mo. Sales Offices: Principal Cities

Leading Lumber Dealers Everywhere Carry Standard Colors in Stock

"CREO-DIPT"

Stained Shingles



A Low Priced Operator With a High Priced Look

HEAVY brass plate throughout, or galvanized for painting. Looks like a thoroughbred. Operates inside screen by notching bottom rail. Has detachable handle. No ratchets. No gears. Self locks in 9 positions. Doesn't rattle. Screws on top of stool and directly to bottom of sash.

No trick to put on. Price is right.

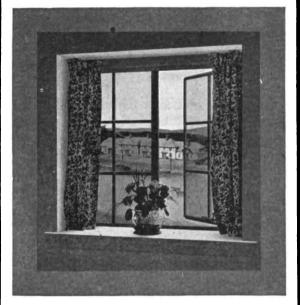


Handle detachable

The Casement Hardware Company 250 PELOUZE BUILDING, CHICAGO

Digitized by GOOGIC

· HOPE'S · CASEMENTS



HENRY HOPE & SONS LTD 103 PARK AVENUE NEW YORK 205 YONGE STREET TORONTO

Lay Everlasbestos Floors This Winter

in new buildings and in the hundreds of old buildings that need new floors. There is plenty of profitable business during the slack months. This is an opportunity to make money and many good customers.

Everlasbestos makes the finest floors for homes—kitchens, bathrooms, covered porches—for factories—offices, vestibules, restrooms—for stores and all public buildings. They are economical floors, long-wearing, seamless and sanitary. They look attractive and feel comfortable.

An inexperienced man can lay perfect Everlasbestos Floors with the accurate, easily followed directions in our Manual of Instructions. Success is always assured by the high quality of ingredients and the careful mixing of Everlasbestos.



Store Front Construction Which Suits the Purse, Purpose and Person — That's Coulson!

To help you decide on the proper Store Front for your client—write today for our free descriptive literature and plans.

Coulson Store Fronts are built to fit and guaranteed absolutely satisfactory.

Send for your free copy of an interesting booklet on Store Fronts.

J. W. Coulson & Company
95-107 West Spring Street
COLUMBUS OHIO



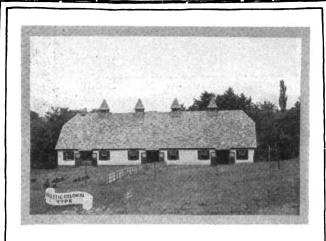
GUARDS YOUR CLIENTS AGAINST THE WINTER WINDS

Let the new improved Worcester Blount Door Check be your ally in the struggle to keep out the winter winds. Like an army of silent watchmen they swiftly and surely close your doors with no sound save the clicking of the latch. The reasonable price of the Worcester Blount will enable your client to enjoy a convenience that might otherwise be an extravagance. Made in six models, a size for every door.

PARK MANUFACTURING CO.

FACTORY AND MAIN OFFICE: 46 LAGRANGE STREET WORCESTER, MASSACHUSETTS

NEW YORK OFFICE: 117 CHAMBERS STREET



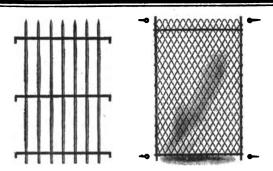
ON THE ROCKEFELLER ESTATE

The tapered butts and rough hewn surface, the subdued celors and the perfect protection of Mohawk Asbestos Shingles, add to the beauty and security of the estate of Mr. John D. Bockefeller, Pocantico Hills, N. Y.

Samples and literature free on request to builders and dealers.



MOHAWK ASBESTOS SLATE COMPANY. UTICA, N.Y.



WINDOW and DOOR **GUARDS**

"BUFFALO" Window and Door Guards are known as guards of "a better quality"—of better design and finish, built stronger and therefore more durable.

For more than half a century "BUFFALO" Guards have provided protection for well-known banks, factories, schools churches, residences and other buildings the country over.

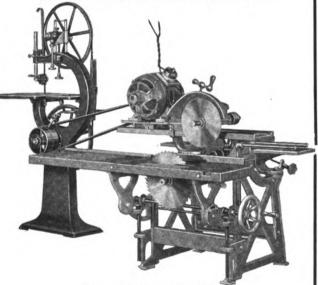
"BUFFAI.O" Guards add noticeably to the appearance of buildings and their great strength and well-thought-out, sturdy construction provide as near absolute protection as can be provided. And they last a lifetime.

Removable and stationary types—in numerous designs of any size and to any specifications—from iron and wire of many different meshes. Also manufacturers of wire cloth, wire work and artistic metal work for all purposes.

WRITE for our General Catalogue No. 8-H, mailed gratia.

BUFFALO WIRE WORKS CO., Inc.
Buffalo, N. Y.

THE MASTER WOODWORKER



Patented Nov., 1914-July, 1923

MODEL NUMBER NINE-E

MODEL NUMBER NINE-E

A portable universal woodworker driven by special electric motors, developing 4½ H.P.

Designed to be taken right on the job

Cross cuts, rips, joints, bores, mitres, dadoes, rabbets, planes, cuts any form of moulding, cuts jackrafters, routs out stair strings, sands, and every other operation necessary in building.

Goes through a 2'6" door

Pays for itself while you are paying for it. COMPLETE CATALOGUE ON REQUEST.

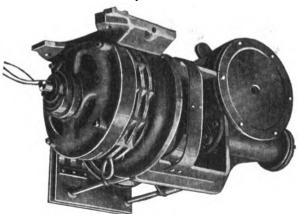
The Master Woodworker Mfg. Company

614 BRUSH STREET

DETROIT, MICHIGAN

Electric Attachments forHandPowerElevators

Any hand power elevator can be changed to an electric in a very brief space of time. This small electric machine shown below will fit any type of hand power elevator and occupies about three cubic feet of space.



Hardware Dealers: Write for special dealer offer. "A Kimball Elevator built for every requirement."

Special pamphlet sent on request.



1106-22 Ninth Street

Council Bluffs, Iowa

Install screens the HIGGIN WAY



HIGGIN All Metal **SCREENS**

You are getting more than mere merchandise you are getting a

SERVICE

The HIGGIN

expert takes personal interest in every house you screen.

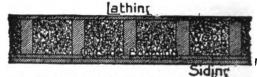
every house you screen.

He'll go over the plans for your house from top to bottom and have screens made for each particular need. Estimates furnished without cost or obligation to you. This means giving your client solid comfort tailor-made, which is the HIGGIN WAY and the only way to screen a house properly. Offices established in the principal cities making every section of the country and the only way to screen a house properly. Offices established in the properly. Offices established in the properly offices established in the properly of casy access to a Higgin Expert.

Next we give you HIGGIN QUALITY, which means the very best screens that can be produced. Character and Individuality are built into every window, door or porch. You can safely recommend them as being substantial, satisfactory, rust-proof products that outlive the expectation. They will stand the roughest usage.

Manufactured of the best material, perfected bests made under adverse climatic conditions, their value has been proved. The strong, light metal frame presents a neat and attractive appearance. We are manufacturers of the Higgin All-Metal Weather Strips as well as Higgin Screens and the cooperative service is rendered with both products.

The HIGGIN MANUFACTURING Company
Newport, Kentucky



Section of Outside Wall of House, Showing Wool Between Studding.

Mineral Wool for Building

Mineral Wool has superseded all other materials used for similar building purposes because it does "a great work at little expense." A house lined with Mineral Wool has an indestructible, fireproof and vermin-proof guard; it protects the entire household. In the winter time it keeps the cold air out, facilitating proper heating and economy in fuel. In the summer it keeps the heat out.

This material, being of fibrous, inelastic composition, acts as a deadener and muffles all sound. It is considered the best insulator material on the market, making it a perfect refrigerating machine.

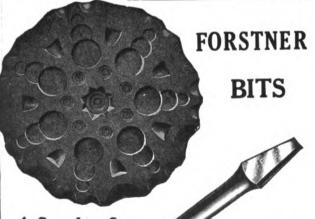
Mineral Wool makes life-long friends of all its users. If you are skeptical as to its power, let us demonstrate. We can prove all claims. Write us to-day.

U. S. Mineral Wool Co.

280 Madison Avenue, New York [Cor. 48th Street]



Section of Sound-Proof and Fire-Proof Partition.
Can be used for outside walls also.



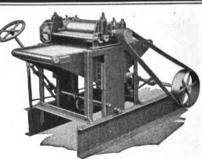
A Complete Set of Tools in One

A Truly Remarkable

Tool

for smooth, round, oval or square boring, scroll and twist work. Takes but little practice to put this tool to many varied uses such as core boxes, fine and delicate patterns, veneers, screen work, scalloping fancy twist columns, newels, ribbon molding and mortising. Just the thing for cabinet makers, carpenters and woodworkers. Write for dealers' proposition.

The PROGRESSIVE MFG. CO. TORRINGTON, CONN.



Parks "Endurance" 20 in. Planer \$340

f.o.b. Cincinnati

Single Surfaces 8 x 20

THE Parks "Endurance" Self-Feed Single Surface 20 inch planer is big enough for any job you need it for, and it does the small jobs as well as the big ones. Heavy and vibrationless. Does clean work. No waves or marks.

Accurate adjustment for thickness. Sets to plane one-eighth inch material. This is an accuracy test on any planer!

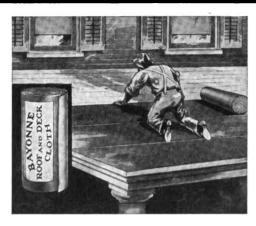
Strong, rigid all-steel electric-welded frame. One-piece steel table machined level and true. Self-feed, two speeds. All bearings babbitted and equipped with oil-cups.

Write for Parks complete catalog of woodworking machin-ery including individual and combination machines for any kind of woodworking.

The Parks Ball Bearing Machine Company Cincinnati, O. Station A

Canadian Factory: 200 Notre Dam East, Montreal, Can-





BAYONNE ROOF and DECK CLOTH

Reg. U. S. Pat. Off.

meets the severest demands. It is a specially prepared Roofing Canvas, soaked in oil and ready for painting. It is flexible, durable and guaranteed waterproof.

For the Roofs and Floors of piazzas, sun parlors, sleeping porches and flat roofs.

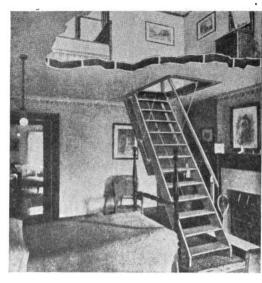
Will not crack, buckle or peel. Easy to lay, as it requires no white lead bedding.

Send for our sample book "R" and ask for one of our Repeat Memorandum Pads

JOHN BOYLE & CO., INC.

Established 1860

112-114 Duane St. New York 78-72 Reads St. Branch: 1317-1319 Pine Street, St. Louis



Bessler Movable Stairway

Call on your Lumber Dealer and he will tell you all about the Bessler.

A Real Stairway

but cheaper—equally strong—more easily installed—simple in operation—utilizes attic space—solves the "extra room" problem—helps close contracts.

Write for catalog giving sizes of stairs, opening widths, ceiling heights, prices, etc.

The BESSLER Movable Stairway Co.

General Offices: 1962 E. Market St., Akron, O. New York Offices: 163 Park Ave.



The FIRMNESS, DURABILITY and ATTRACTIVENESS of AMERICAN BRAND SCREEN WIRE CLOTH will appeal at once to the architect, home builder, or screen manufacturer who desires to give maximum Fly Screen satisfaction.



AMERICAN BRONZE: This grade is made of best hard drawn wire 90% copper, 10% non-corrosive alloy, principally zinc. BRONZE should last as long as the house in most sections.

Avoid copper substitutes, as these are too soft.

GALVANOID: This grade is heavily electro-zincked after weaving, then varnished. It is the recognized leader in its field—the best grade of zincked cloth made.



PAINTED, GALVANIZED, COPPER, KOPNIK, MONEL

and many special grades of wire cloth. Samples and descriptive literature sent upon application.

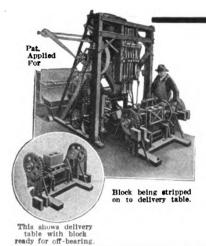
Order from your Hardware Jobber or Dealer, if he cannot furnish, advise us, and we will see that you are supplied.

AMERICAN WIRE FABRICS CORP. CHICAGO, ILL.

FACTORIES:

Chicago, Ill.

Mount Wolf, Pa.



If you want to be busy later Get. Busy Now!

Install your machinery now, manufacture plenty of high-grade Blocks and you will be kept humping next Spring taking orders, while Friend Competitor takes his time.



ROLL-OVER STRIPPER

-speed of an automatic; simplicity of a power machine

THE IDEAL CONCRETE MACHINERY CO. 5012 Spring Grove Am. CINCINNATI, O.

A Life Time of Service



D. R. Barton Tools

Reproductions of actual photographs show two chisels—one new—the other after forty years' hard usage, and still in daily service.

Experience has taught users of D. R. Barton Tools to expect this length of service. It is the rule rather than the exception.

GENUINE ONLY WHEN STAMPED D. R. BARTON

Machine Knives for planer, jointer and paper. Edged tools for manual training, pattern making, carving, and carpenter.

If your dealer can't supply you, we will. Write for free copy of the "Carpenter's Catalogue" and "True Sto-

Mack Tool Co., Inc., Rochester, N. Y.





Fig. 367
Metal Spanish Tile
for main part of
roof.



EDWARDS Metal Spanish Tile

It is wonderful what a renarkable transformation takes
place when an "Edwards"
Metal roof is properly applied
to a house—all of the charm
of the old Spanish Terra
Cotta Roofing Tile is preserved, even to the color.
The house takes on a new to

The house takes on a new lease of life. It seems a better place to live in. It helps put the stamp of progressiveness and thrift on a community. An Edwards Metal or Tile Roof is a real commercial asset and will bring a better return in rent or sale.

rent or sale.

Edwards Metal Roofings made in various styles, to have the appearance of wood shingles, tile, slate, or any other roofing effect, and none of these fine artistic effects will come any more than a plain, commonplace roof.

All Edwards Metal Roofing is easy to lay—no big expense for skilled labor—storms and winds will not wrench it loose or make it a rattle-trap. It is lightning-proof and fire-proof—Reduces Insurance Rates.

When an Edwards Roof is laid, it is there to stay.

Send for our literature—it explains

The Edwards Mfg. Co. 1 HC EMWAINS ANA., Cincinnati, O. The World's Largest Manufacturers of Metal Roofing, Metal Ceilings, Metal Garages, Portable Bulldings, Eolling Steel Doors, etc.



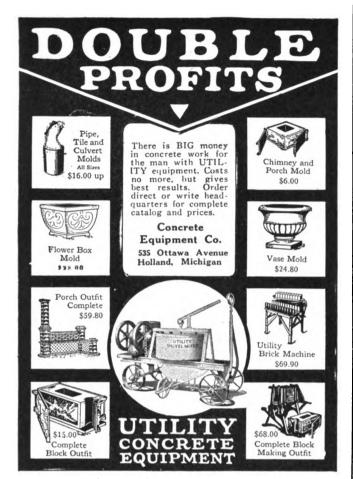


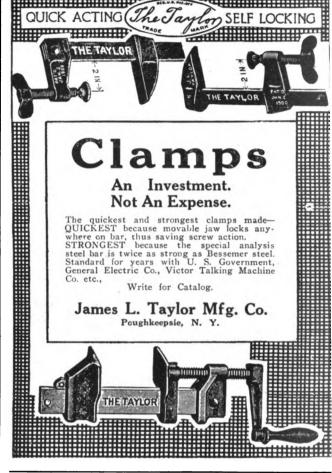
Saw Rigs Pumps Hoists Elevators Mortar Mixers **Engines**

Write for our new catalog just off the press.

C. H. & E. Manufacturing Co.

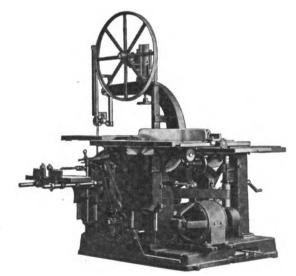








Substantial—Efficient—Practical



Each CRESCENT machine must measure up to the high standard of efficiency established during years of service in thousands of shops and factories throughout the world. The CRESCENT line is the result of years of skillful efforts continuously devoted toward the perfection of wood working machines that are substantial, efficient, practical and entirely satisfactory to users who know quality and who demand it in their wood working equipment.

Ask today for catalog giving complete description of our line of band saws, saw tables, shapers, variety wood workers, fointers, planers, planers and matchers, table cut off saws, swing saws, disk grinders, borer, hollow chisel mortisers, universal wood workers.

THE CRESCENT MACHINE CO.

206 MAIN STREET

LEETONIA, OHIO, U. S. A.

GREATER PRODUCTION? — SURE! MORE PROFITS?—CERTAINLY!

-and you get both with low first-cost, less labor, less floor space and an upkeep practically nil!

That's the "nut-shell" story of the

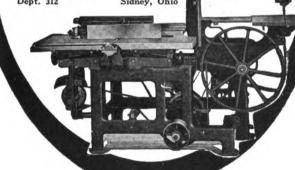
Famous Universal Woodworker

Incorporating the five principal machines found in the modern wood-working shop—band saw, saw bench, jointer, shaper and boring machine, the FAMOUS UNIVERSAL accomplishes more results with lower costs than any other wood-working machine. For variety and volume of work, prevention of costly delays, increased production with lower labor costs, the Famous Universal makes profits grow where losses grew before.

If you make anything out of wood, send for new book-let, "Answering a Knotty Problem." It's Free.

grow where losses grew before.

The Sidney Machine Tool Co. Dept. 312 Sidney, Ohio



PATENTS
TRADE MARKS COPYRIGHTS

Patent and protect your inventions and profit by your ideas. Register your valuable trade marks in the United States Patent Office. Twelve years' experience. Prompt, efficient and personal service. Write to-day.

LESTER L. SARGENT

Registered Patent Attorney

524 Tenth Street, N. W. Washington, D. C.

Save \$2.20 by Subscribing

BUILDING AGE

THE BUILDERS' JOURNAL

Single Copy, price 35c. or \$4.20 Yearly Yearly subscription, payable in advance, \$2

Save the \$2.20 by sending us yearly subscription, and thereby make certain also of getting your copy promptly and regularly.

BUILDING AGE

and

The Builders' Journal 239 W. 39th Street, New York



LOOK FOR THE "SWAN" TRADE MARK

On Chisels, Bits, Gauges, Augers, Draw Knives, Screw Drivers, etc. High Grade Mechanics' Tools known to all good workmen.



Inquiries Solicited

THE JAMES SWAN COMPANY, Seymour, Conn. Awarded the Medal of Honor on Mechanics' Tools at the Panama-Pacific Exposition

Your Files

Builders, contractors and architects can be up-to-the-minute on all products and services Complete rendered by manufacturers in the building industry by referring to and writing for the catalogs listed in our "Selected List of Manufacturers' Literature," appearing on pages 102 to 118 of this issue. They may be had without charge, unless otherwise noted, by writing Catalogue to us or by writing to the manufacturers direct, mentioning this publication. In ordering, use either the title or the number appearing before the name of each catalog.

BUILDING AGE & THE BUILDERS' JOURNAL, 239 West 39th Street, New York City

AN AGENCY IS A PERMANENT BUSINESS PROFITABLE, THE YEAR ROUND. **INVESTIGATE** DEMAND NOW. CREATED DIA DINON STRIPPING ADDRESS AT ONCE EXCLUSIVE THE DIAMOND TERRITORY TO METAL WEATHER STRIP CO. **BUSINESS PRODUCERS** COLUMBUS, OHIO.

Digitized by GOOGIC

ADJUSTABLE



100% Efficient Always Ventilating-

Rain or Shine

"Royal" Ventilators are giving positive results in hundreds of buildings the country over. They ventilate from the ground up and under all conditions. They are built for service and long life. They have a strong, steady pull. They are approved by the highest authorities.

The secret lies in the bottom cone which is sharpened. They are protected against down-draft because of their double come and tapered deflection. The air is forced out and over the ventilator.

ROYAL VENTILATOR COMPANY 410 LOCUST STREET

PHILADELPHIA, PA.

Rain or Shine

Our catalog gives all details-write for it

...... No. 30

Myers Simplex Garage Door Hanger

You are familiar with door hangers in general, but are you acquainted with the Myers Simplex—the hanger that produces snug, tight fitting, easy to open and close, all year doorways for garages, barns and other buildings? Being adjustable and fitted with patented crank stem, and used with Myers New-Way Tubular Garder Steel Track, it will please your most particular customers with the door service it produces. Write us today for catalog and prices, and make this proven and practical Myers Hanger your leader.

The F. E. Myers & Bro. Co. ASHLAND, OHIO



THE BOSTWICK STEEL LATH CO. NILES, OHIO

House Moving Pays Big Demand Everywhere Bigger Than Ever In every town and city throughout the United States there is a remarkable opportunity for good live wide-awake men to engage in the house moving business. I don't care if there are one or more house movers in your town now. I can show you how to Clear \$100 to \$300 On a Job With the plan I have to offer you, you can get the business in spite of any and all competition: besides, I can show you how to develop your business in a profitable, moneymaking way that other house-movers don't think of. Write me today. Ask for catalog (E) and full details of my unusual proposition. Also Free Magazine for house-movers or others interested, "Successful House Moving Contractor." Write today. E. W. La PLANT, President La Plant-Choate Mfg. Co. 3025 First Avenue, East Cedar Rapids, Iowa



THE OWNER WANTS KELSEY HEALTH HEAT

The idea of Kelsey Health Heat has been thoroughly sold to the public. The prospective owner wants Kelsey Health Heat because he knows it will keep his house filled with fresh, warm, humidified air at a low fuel cost.

That is why a house with a Kelsey Warm Air Generator is so easy to sell.

Let us send you "Kelsey Achievements" and any other information you desire.

HE KELSE 281 James Street, Syracuse, N. Y.

NEW YORK

BOSTON 403-B P. O. Sq. Bldg.



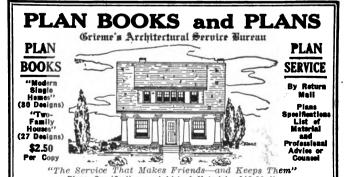
Samson Spot Sash Cord

Trade Mark Reg. U. S. Pat. Off.

Extra quality stock, firm braid, smooth finish and careful inspection. Guaranteed free from imperfections. Far more durable than metallic devices or common roughly braided sash cord.

Send for Samples and Catalogue

Samson Cordage Works, Boston, Mass.



e Service That Makes Friends—and Keeps Them'' Plans, Specifications and List of Materials, \$15.00 Up Henry W. Grieme Bestigner of Real Homes

Engineers Building

Digitized by GOOGIC



Here's A Question!

When you buy a hand axe, do you want one that will last you for years, keep an edge and not chip out?

Then try one White "Old Fashioned Quality" hand axe at your dealers, or write for catalogue.

THE L. & I. J. WHITE CO.
100 Columbia St. Buffalo, N. Y.



Quality HARDIN-LAVIN CO. Quality
50 years at 4538-48 Cottage Grove Avenue, Chicago
\$500,000.00 Plants Behind Our Guaranty



YOUR PROFITS

WIII

"STERLING"

CONVERTIBLE LEVEL

Your profits and reputation for high grade work depend on your means of QUICKLY and ACCURATELY setting lines and levels. A free examination will show you why the "Sterling" is your best investment.

Write today for new Folder B-10.

WARREN-KNIGHT CO.

136 NORTH 12TH STREET

PHILADELPHIA



THINK THIS OVER

The dealer who sells Curtis Woodwork sells more—much more—than mere woodwork. He sells merchandise with a personality, a character, a prestige built by 57 years of quality products and the reputation that results from such a policy.

If you've grown just a little weary of selling merchandise in competition with other merchandise that is just like yours, consider trying something different.

The Curtis Companies, Incorporated
1912 CURTIS BUILDING CLINTON, IOWA

50% Build The Hollow Wall Way 50%



Like a thermos bottle— Warmest in winter, coolest in summer. Fireprool. Everlasting.

Cheapest, best and most perfect way known to the Building World.

The reason the most wall can be built for the least money with our forms is because they are STRONG-EST — LIGHTEST—SIMPLEST and most PERFECT—

and the price of a complete set can be saved on one small job.

Send for Literature!

THE UNIVERSAL CEMENT MOLD COMPANY
NORTH MILWAUKEE
WISCONSIN

The WAYVELL CHAPPELL AUTOMATIC Ball Bearing Electric Floor Surfacing Machine is what you need to finish your new or old wood floors quickly and just the way you want them. Patented roller eliminates vibration, also reaches all baseboards, doing away with unsatisfactory work of narrowedger roller. Four sizes—for the largest areas or the smallest



rooms.
Built to last.
The LITTLF AUTOMATIC Electric Surfacing Machine (on table) is a wonder for removing varnish from desk tops counters, etc., or for all sorts of new work.

Accept Our Free Trial Offer



Manufactured by
Wayvell Chappell & Company

42-44 N. JACKSON ST.

Dept. O

WAUKEGAN, ILL.



H.B. Ives Co.

New Haven, Conn. U. S. A.

Established 1876 Incorporated 1996

Manufacturers

BUILDERS' HARDWARE
HIGH GRADE WINDOW AND DOOR
SPECIALTIES

WRITE FOR ILLUSTRATED FOLDER



JOHNSTON'S Patent

Doz. 25c

Gross

\$2.50

These pins are used for supporting movable shelves in Book Cases, Cabinets and other places.

Cannot fall out or sag down.

The best shelf pin made; neat, strong, and can easily be put in place or removed by any one.

Send order. Money refunded if not satisfactory.

J. D. JOHNSTON, NEWPORT, R. I. 75 Mill Street

CALDWELL SASH BALANCES

HAVE STOOD THE TEST OF TIME UNIFORM MORTISES



For use in all classes of new work Box Frames Unnecessary

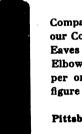
Mortises cut at mill reduce cost of in-stalling. They counterbalance sashes at any given point and outwear ordi-nary weights and cords. Unaffected by atmospheric conditions.

Cheapest method for modernizing old windows, as alterations in sashes and frames are not necessary. Sashes should be weighed before ordering.

Write for Circular

Caldwell Mfg. Company 5 Jones St., Rochester, N. Y.

WHAT IS THE COST?



Comparatively little, if you use our Copper Conductor Pipe and Eaves Trough, Copper Nails, Elbows, Shoes and Sheet Copper on your building. Let us figure on your requirements.

Pittsburgh Copper and Brass Rolling Mills

C. G. HUSSEY & CO. PITTSBURGH, PA.
U. S. A.
ST. LOUIS
CHICAGO PHILADELPHIA CINCINNATI NEW YORK

lmproved Convertible



Make the Change in Ten Seconds. Combination Level and Transit.

Send for Catalog Showing Our Complete Line DAVID WHITE CO., Inc., 963 Chestnut St., Milwaukee, Wis.

WANTED

In Every City and Town

METAL CEILING CONTRACTOR

To Handle Our Exclusive Line

LOCK-JOINT METAL CEILINGS

KEIGHLEY METAL CEILING CO.

124 THIRD AVENUE

PITTSBURGH, PA.

ZIMMERMAN **IRON BASE**

The Zimmerman Base protects the base of the column from rot, preventing the wood soaking up water, besides giving protection from the usual wear and tear. It is the only base having center bearings. It lifts the column from 12% to 6° off the floor, allowing air to circulate between floor and column.





Nothing Else is Like it





For the past year we have carried on an advertising campaign for the National Cabinet Ironing Board.

A growing demand has been created and we are now seeking reliable Agents and Distributors. Write for particulars. Advise us the territory you cover.

MILL and LUMBER CO.

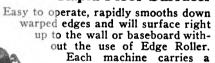
2 RECTOR STREET

NEW YORK

Cleveland Distributor: Building Sales & Service Co., Ulmer Building, Cleveland, Ohio

Improve Your Work - Increase Your Profits

THE IMPROVED SCHLUETER Rapid Floor Surfacer



guarantee of

5 YEARS

against imperfection in work-manship and materials. More than 30,000 Improved Schlueters in use should convince you that they are giving satisfaction. Send for our free trial offer.
It will interest you.

M. L. SCHLUETER, 223 W. Illinois Street, Chicago, Illinois

BARNES Hand and Foot Power CIRCULAR SAW The strongest, most pow-erful, and in every way the best machine of its kind ever made for ripping, cross cutting and for grooving, graining, dadoing and rab-beting. Solid iron table planed perfectly true.

We make nine other machines for wood workers.

The Only Complete Line of Such Machines Made

Catalogue Free on Ap-

W. F. & John Barnes Co. 71 Rudy St., Rockford, III.



Cardboard Model No. 184

SHOW YOUR **CUSTOMERS** MODELS

We furnish cardboard models with our plan service.

Our plan book, "Small Homes of Character," contains 50 examples of 4, 5, 6, and 7 room homes. Plans, Specifications, Bills of Material and Cardboard Models are available for each house.

Send \$1.06 for the plan book, "Small Homes of Character," and get acquainted with our service.

We will make models from your plans.

Architectural House Planning Service Co. P. O. Box 2128 20 S. 18th St., Philadelphia, Pa.

ALL

WEATHERSTRIP CONTRACTORS

using "VICTOR STRIPPING" spend less time and make more money. If you are anxious to secure exclusive local agency, write at once, giving full experiences, references as to character and financial responsibilities.

We will submit full details.

THE VICTOR PARTING BEAD CO. DEPT. B., READING, PA.

REFRIGERATORS FOR ALL PURPOSES

You architects and builders know the value of experience. Thirty-four years' experience is built into every McCray refrigerator. It's knowing hew that makes the difference in quality—McCray is the recognized standard for all purposes. Sizes and styles for residences, hotels, hospitals, institutions, grocery stores, markets and florist shops.



Send for latest catalogs for

Send for latest catalogs for your files

Free Plans—Send a rough sketch of your client's requirements and we'll submit blue prints of specially built equipment when desired.

McCray Refrigerator Co. 2364 Lake St. Kendallville, Ind.

Salesrooms in all Principal Cities

Improved Boring Machine



This machine is from new design, and no pains have been spared to make it a first-class machine in every respect. The spindle is made of crueshle steel, has No. 2 Morse taper hole to receive chuck, and the bearings are of genuine babbitt metal. It has two stops to regulate the travel of the spindles, and in the head to adjust the downward stroke and one in the head to adjust the downward stroke and one in the treadle for the upward stroke. Greatest length of travel of spindle is 6 % inches. Distance from center of spindle to column, 10". Table is 36" x 36". It is balanced and has a vertical movement of 21". Spindle is balanced by a coil spring stateched to arm on top of frame, making it self-contained. The bracket that carries the driving pulleys has an adjustment of two inches, which is very desirable. The Lipulleys are 8" x 3" face, and should make about 800 revolutions per minute. If belt gets loose loosen screws in front of bracket and by turning set screw on top till your belt is of the right tension.

Manufactured by

R. E. Kidder Co.

35 Hermon Street Worcester, Mass.

Lignine (Wood) Carvings—<u>Unbreakable</u>



Practical Indestructible **Economical**

While equal to Expensive Hand Carvings are MUCH CHEAPER.

Capitals, Pilaster Capitals, Scrolls, Wreaths, Drops, Heads, Classical Period Carvings, such as Adam, Hepplewhite, Chippendale, Louis XVI, English and Italian Renaissance.

New catalog No. 9 and sample—Free ORNAMENTAL PRODUCTS CO. 750 14TH AVENUE DETROIT, MICH., U. S. A.









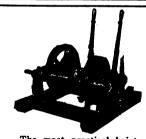
There's Money in Concrete Bricks

Anchor Equipment, a system of individual units, is the most practical for the production of cement brick, either face or common. Anchor Brick Machines have proven highly satisfactory in the two largest brick plants in the world and hundreds of smaller onesthey will prove just as profitable for

Anchor Machines are made in two types—face up or face down. Either operates very efficiently under hand or power tamper.

Start with a Single Unit-Add as You Grow

ANCHOR CONCRETE MACHINERY CO. 544 Dublin Avenue Columbus, Ohio



The Junior No. 2 on the Job

I T is a back geared hoist with small drum in rear of main drum which is

used for pull back.

Just rig it up to suit your particular work of 1,000 pounds and under.

The most practical hoist on the market for contractors in light work. Larger hoists for heavier work to be driven with either electric motor or gasolene engine drive.

Write us for hoist catalog. We have nine different styles of hoists to choose from

THE BROWN CLUTCH COMPANY SANDUSKY, OHIO

HAND POWER ELEVATORS and DUMBWAITERS

F the Dumbwaiter makes trouble, not only do you get the blame, but you probably lose as well the customer's future business and perhaps that of his friends. If the Dumbwaiter makes good your reputation is strengthened and the customer becomes a business getter for you.

There are hundreds of successful builders who, having had experience with many different makes, will not furnish anything but Sedgwick Dumbwaiters and Hand Power Elevators.

SEDGWICK MACHINE WORKS 156 WEST 15th ST. NEW YORK, N. Y.



ALPHABETICAL LIST OF ADVERTISERS

(See Also Classified List in Manufacturer's Literature, Pages 102, 104, 106, 108, 110, 112, 114, 116, 118.)

This index is an editorial feature, maintained for the convenience of readers. It is not a part of the advertiser's contract and Building Age assumes no responsibility to advertisers for its correctness.

A	Copper and Brass Research	K	Parks Ball Bearing Machine Co., The
Aeroil Burner Co., Inc 129	Assn	Kawneer Co., The Third Cover	Co., The
Alliance Brick Co	Coulson & Co. T. W 134	Keighley Míg. Co	Peerless Blue Print Co 130 Plate Glass Manufacturers of
Allith-Prouty Co	Crane Co., Wm. M	Keith Corp 121	America
Allmetal Weatherstrip Co 113	Creo-Dipt Company, Inc 133	Kelsey Heating Co 141	Progressive Mfg. Co., The 136 Pullman Mfg. Co 137
Amalgamated Roofing Co 130	Crescent Machine Co., The 139 Curtis Companies. Inc 142	Kenney-Cutting Products Corp 133 Kerner Incinerator Co 99	Pullman Mig. Co
American Cement Machine Co.,	D	Keuffel & Esser Co 145	Ð
Inc., The 145	Datumit Cham Com Co	Kidder Co., R. E 144	-
American Face Brick Associa-	Detroit Show Case Co 6	Kilmoth Products Corp 117 Kimball Bros. Co 135	Ransome Concrete Machinery
tion. The 5	Diamond Metal Weatherstrip Company, The	Knape & Vogt Mig. Co 13	Co 144
American Floor Surfacing Ma-	Donley Bros. Co., The 132	Knickerbocker Slate Corp 141	Richards & Co., Inc
chine Co		Koehring Company 107	Richards-Wilcox Mfg. Co 168
Co 125	E	_	Ritter, W. M., Lumber Co 122
American Sheet and Tin Plate	Edwards Manufacturing Co 138	L	Robinson Household Mfg. Co 128
Company	Everlasbestos Flooring Co 134	La Plant-Choate Mfg. Co 141	Rocbond Company, The 117
Company 123	Expanded Wood Lath Corp 29	Long-Bell Lumber Company 124	Royal Ventilator Co
American Window Glass Co 31		Lufkin Rule Co., The 129	Ny bolt liteliti Co
American Wire Fabric Corp 137 Anchor Concrete Machinery Co. 145	P [Lupton's Sons Co., David 8	8
Andersen Lumber Co 33	Fairfacts Company, Inc., The 19		C C 1 577 1 4m
Architectural House Planning	Farquhar Furnace Co., The 124	Me	Samson Cordage Works 142 Sargent, Lester L 140
Service Co	Fiske & Co		Sargent & Company 125
Asbestos Shingle, Slate & Sheathing Co	Flinkote Co., The	McCray Refrigerator Co 144	Schlueter, M. L 144
Atkins & Co., E. C 87	Flint-Rock Corp 130	McKinney Manufacturing Com-	Sedgwick Machine Works 145
_	That Rock Corp.	pany 32	Sheldon Slate Co., F. C 129 Sidney Machine Tool Co 140
₽	G		Smith Hdw Co Frank P 121
Barnes Co., W. F. & John 144	0 151	M	Steel Scaffolding Co
Barrell Co., W. L., of N. Y.,	General Electric Company 10	Mack Tool Co., Inc 138	Swan Co., James 140
IncSecond Cover	General Fireproofing Company, The	Magee Furnace Co 131	
Beaver Products Co., Inc 23	Grieme, Henry W 141	Makepeace, Inc., B. L 132 Manufacturers' Literature,	T ·
Bessler Movable Stairway Co 137	Griffin Manufacturing Company. 120	102, 104, 106, 108, 110, 112, 114, 116, 118	Taylor, Jss. L., Mfg. Co 139
Bishopric Mfg. Company, The 3	· · · · · · · · · · · · · · · · · · ·	Master Woodworker Mfg. Co.,	Trane Company, The 91
Bostwick Steel Lath Co., The 141	· H	The 135	Truscon Steel Company 34
Bowman Supply & Mig. Co.,		Mayer Brcs. & Bramley, Inc 111 Mohawk Asbestos Slate Co 135	Truscon Steel Company
Inc	Hardin-Lavin Co	Murphy Door Bed Co 95	ช
Boyle & Co., Inc., John 137 Bridgeport Brase Co. Fourth Cover	Hart & Cooley Company 119	Myers & Bros. Co., F. E 141	
Brown Clutch Co	Hart & Hutchinson Co 142		U. P. C. Book Co
Inc 135	Hartmann-Sanders Company 128	N	United States Gypsum Co 21
_	Hess Warming & Ventilating	National Pine Process Co. of	U. S. Mineral Wool Co 136
C	Co	National Fire Proofing Co 85 National Manufacturing Co 81	Universal Cement Mold Co 149
C. H. & E. Manufacturing Co. 138	Higgin Mfg. Co., The 136 Hope, Henry, & Sons, Ltd 134	National Mill & Lumber Co 144	v
Cabot, Inc., Samuel 113	Hubbell, Harvey, Inc	National Sanding Machine Co 145	·
Caldwell Mfg. Co	Huther Bros. Saw Mfg. Co 133	National Sheet Metal Roofing Co	Van Guilder Double Wall Co.,
Campbell Machine Co 113		National Slate Assn 120	Inc Vendor Slate Co., Inc 123
Carney Company, The 7	1	Northwestern Expanded Metal	Victor Parting Bead Co 144
Casement Hardware Co 133	Mark Comments Washing on Co	Co 9	Victor Parting Bead Co
Celotex Company, The 24	Ideal Concrete Machinary Co., The	o	w
Celotex Company, The 24 Chappell & Co., Waywell 142 Cheney & Son, S. 143	Illinois Zinc Company 25		l
Cheney & Son, S	International Steel & Iron Co 127	Oak Flooring Bureau 119	Warren-Knight Co 142 Washburne & Co., E. G 145
Clinton Metallic Paint Co 127	Ives Co., H. B., The 142	Ohio Hydrate & Supply Co 16	Wasmuth-Endicott Co 122
Compo-Board Co., The 132		Ornamental Prod. Co 145	Wheeling Sanitary Mig. Co 118
Concrete Engineering Co 128 Concrete Equipment Co 139	J	P	White Co., David, Inc. 143 White Co., The L. & L. J. 142
Connecticut Electric Mfg. Co 18	Jaeger Machine Co., The 109	.	White Steel Sanitary Furniture
Consolidated Expanded Metal	Johnson & Son, S. C 83	Pacific Lumber Co., The 126	Co 113
Cos., The 121			
Construction Machinery Co. 105		Paine Lumber Company, Ltd 101	Wickwire Spencer Steel Corp 130
Construction Machinery Co 105		Park Manufacturing Co 134	

Walter's and Cooper's Metal Shingles

The Shingles That Last

















The Shingles That Last

The Most Complete Line of Designs

The Best Material, Workmanship and Finish

Made in Painted Tin, Genuine Re-Dipped Galvanized Tin, Sheet Zinc and Copper

Sold at the right price. May we send you full-size samples and prices?

National Sheet Metal Roofing Co.,

339-345 Grand Street JERSEY CITY, N. J.



You Must Have Good Tools to Do Excellent Work

You can't expect good results when you are not fully equipped with necessary working equipment—on any job.

You can be sure of having made the best selection of materials for each job, and of procuring the most satisfactory equipment for your own use, by consulting the

Selected List of Manufacturers' Literature, beginning on Page 102 and noting on this coupon the **numbers** of the catalogs and booklets that interest you.

Send the coupon to us, and the valuable literature offered by leading manufacturers represented in the list will be sent to you promptly—free unless otherwise specified.

SERVICE DEPT.

BUILDING AGE and THE BUILDERS' JOURNAL

239 WEST 39TH ST., NEW YORK, N. Y.

COUPON

BUILDING AGE AND THE BUILD-ERS' JOURNAL, 239 W. 39th St., New York

Gentlemen: Please send me, without charge, the booklets shown in your "Selected List of Manufacturers' Literature," the numbers of which I have noted below:

No.:	No	No
No	No	No
Name		
Address	· · · · · · · · · · · · · · · · · · ·	
Date		
Occupation		









Using the Porch the Year 'Round

Merely for the few short months of summer—and then only on warm, pleasant days—can an old-fashioned open porch afford comfort and enjoyment to a family. At slight additional expense, AiR-Way Multifold Window Hardware will make the porch

a delight all the year 'round. Wide open to the cooling breeze in summer—a cozy, sunshiny nook in winter—absolutely weathertight on unpleasant, stormy days. You actually add another room to the house when you equip an open porch with—



Don't think of building or remodeling another home without first investigating the many advantages of AIR-Way hardware. Write today for Catalog J-4, which tells all about it.

New York
Boston
Philadelphia
Cleveland
Indianapolis
St. Louis



Multifold Window Hardware

AiR-Way equipped windows slide and fold inside, completely out of the way. They are easy to operate—no interference with screens or drapes, and are weather-tight and rattle-proof when closed. AiR-Way Multifold windows may be only partially opened, for ventilation, at any point desired.

AiR-Way provides the most perfect enclosure for sun rooms and sleeping porches. It also is ideal for bedrooms, living rooms, dining rooms and kitchens. Old-fashioned double-hung windows may easily be replaced with the AiR-Way Multifold type.

Most hardware and lumber dealers carry AiR-Way Hardware in stock. If not, they will order it for you from our nearest branch. Remember, there is no substitute for AiR-Way

Richards-Wilcox Mfg. Co. Aurora, Illinois, U.S.A.

RICHARDS-WILCOX CANADIAN CO., LTD.
Winnipeg LONDON, ONT. Montreal

Chicago Minneapolis Omaha Kansas City Los Angeles San Francisco

Exclusive manufacturers of "Slidetite"—the original sliding-folding garage door hardware

Kawhee 12 STORE FRONTS

These tests show the essentials of a correct plate glass setting

Plate glass vibrates. It also bends.

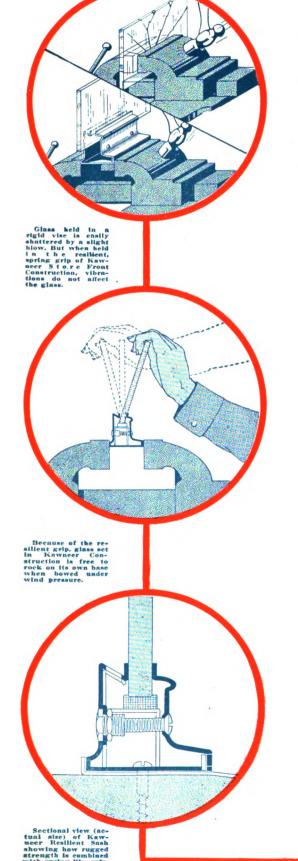
Strike your knuckle against a large plate of glass and you will hear it vibrate. Watch it on a windy day and you can easily see the glass bend under wind pressure.

Plate glass is brittle. When it is held in a tight, rigid grip, vibrations from street cars, busses, ect. and bending under wind pressure frequently cause breakage.

Kawneer Resilient Store Front Construction holds glass between two spring faces so that the vibration waves pass out thru the edges of the glass in a natural way. This spring-like resiliency also permits the glass to rock on its base when bent under wind pressure, eliminating the danger of breakage.

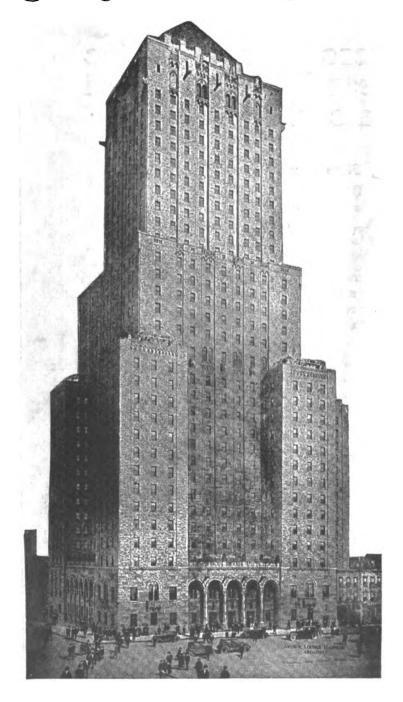
This feature of resiliency has been proven successful in more than 260,000 Kawneer Store Fronts. You will find them on most business streets.

If you plan to build or remodel let us send you our Book of Designs showing a large number of successful types of Kawneer Resilient Store Fronts. We also should like to show you how a Kawneer Store Front will pay your rent for you. Your request will bring both books promptly.





Bridgeport Plumrite The Brass Pipe



will be installed in the

SHELTON Club Hotel

Arthur Loomis Harmon, Architect
William C. Tucker, Sanitary Engineer
Shelton Holding Co., Owners & Builders
Geo. E. Gibson Co., Plumbing Contractor

Shelton Club Hotel now under construction in New York City is thirty-one stories in height, has 1200 rooms and 3000 plumbing fixtures.

Plumrite Brass Pipe provides the factor of safety required to insure against maintenance and repair expense on the hot water system so long as the building remains standing.

The fact that Plumrite was adopted because of its absolute integrity of quality by many of the oldest as well as many of the newest important hotels is a significant one.

A booklet "Brass Pipe and Piping" will give you an interesting insight into the relation of Plumrite Pipe to your building investment. Ask for booklet B. A. 12-23.

BRIDGEPORT BRASS COMPANY

Pershing Square Building, New York, N. Y. General Motors Building,

Detroit, Mich.

BRIDGEPORT



CONNECTICUT

North American Building, Philadelphia, Pa.

Wrigley Building, Chicago, Ill. UNIV. OF MICH!
MAR 26 1924
BOUND

3 9015 01646 5596

