

# AMERICAN BUILDER

## THE WORLD'S GREATEST BUILDING PAPER

Vol. 42.

CONTENTS FOR DECEMBER, 1926

No. 3.

COPYRIGHT, 1926, BY AMERICAN CARPENTER &amp; BUILDER CO.

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**SUBSCRIPTION RATES**—One year, United States, Canada, Mexico, and U. S. Possessions, \$2.00; six months, \$1.00; single copies, 35 cents. Foreign countries, \$4.00.

**PROTECTION FOR OUR READERS**—The publishers of the AMERICAN BUILDER reserve the right to decline any advertising they believe is detrimental to the interest of its readers; to edit advertising copy and to change or eliminate any statements that reflect injuriously or cast discredit upon other building products, machinery, equipment, supplies or tools.

Be sure in writing to advertisers to say: "I saw your advertisement in the AMERICAN BUILDER."

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MEMBER OF THE AUDIT BUREAU OF CIRCULATIONS

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# Newspapers Get Behind Campaign for Model Homes

Carry Message of Home Ownership and Advantages of Quality Home Building to Millions of Readers

By L. PORTER MOORE,

*President Home Owners Service Institute*

**T**HE American press, so often accused of giving unnecessary publicity to lurid crime and sordid scandal, has recently undertaken at least one highly constructive piece of work, the ramifications of which will reach into millions of firesides from coast to coast and bring profit and glory to the entire building trade. The National Demonstration Model Homes Campaign being conducted by the Home Owners Service Institute in 28 "key" cities of the United States is backed in each city with newspaper support that is without precedent. The homes are being built with the co-operation of a leading newspaper that, in devoting its columns to the precepts of home ownership, is incidentally putting to work through the United States, many crews of bricklayers, plasterers and other members of the building trades.

These homes, 360 in all, will be built of standard, or trade marked nationally advertised materials and equipment from the best small home plans, by builders allied with realtor-builder members of local real estate boards in good standing; and this almost simultaneous demonstration, from Houston to New York City and Seattle to Atlanta, is a part of the 1926-1927 program of the Home Owners Service Institute, pledged to raising the standards of residence construction in this country.

The organization of the ever-influential press in each of the cities on this year's schedule is one of the brilliant achievements of the institute. Before the end of next spring thirty metropolitan dailies, scattered over the population centers of America, will be exhorting the renters of America to become home owners. Hammering away, week by week, and showing an often skeptical public that home ownership is attractive and practical for the average man of average means. These outstanding publications have added the pages devoted to this educational material to their regular run of pages and in every way made features of the "Small Homes" pages, "Better Homes" pages or "Model Homes" pages as they are variously known in different cities.

Reports of the progress of the demonstration homes, how they are built and why, are the features of these weekly pages; and here the builders putting up these homes, and the entire building trade receives columns of priceless publicity.

All of this material is designed to show the renting and the home seeking public that home ownership is desirable, profitable and vastly more enjoyable than renting and that good durable homes of charming appearance can be obtained at a moderate cost. Over and over again this will be presented—more consistently and persistently than any plea ever before put before the American public on this important matter.

When home ownership is encouraged on such a large scale, new business must result for builders and contractors whether or not they are allied with the Home Owners Service Institute in this demonstration home program. When new homes are built contractors and builders, architects and draftsmen, carpenters, bricklayers, masons and roofers and myriad others are busy and this campaign will certainly increase the output of new homes for the coming year. This program is so set up as to glorify any builder who uses standard, trade marked or highly approved materials and equipment, whether or not they be the same materials and equipment specified by the Institute for the demonstration houses.

Renters are being turned into home owners and prospective home owners are being educated in the advantages of dealing with any builder using good, durable materials and products in this remarkable merchandising campaign and the press of America is helping to put it over.

The model demonstration home campaign is now in full swing in many cities. Some of the houses are under construction, some are now open and ground is being broken for others as this issue of AMERICAN BUILDER goes to press. In Chicago two of the homes for this district are under way in nearby suburbs and a third and fourth will be announced in another week.

The first Chicago home is being built in the Crescent Park Development in Elmhurst, Ill., for Harry A. Brown & Co., subdivision managers for Goss, Judd & Sherman, one of the oldest real estate firms in Chicago. This house is being built by the Robert L. Pottinger Construction Company, builders of more than 3,000 homes on the north-west side of Chicago during the past eighteen years. Ground was broken amid impressive ceremonies on Thursday,

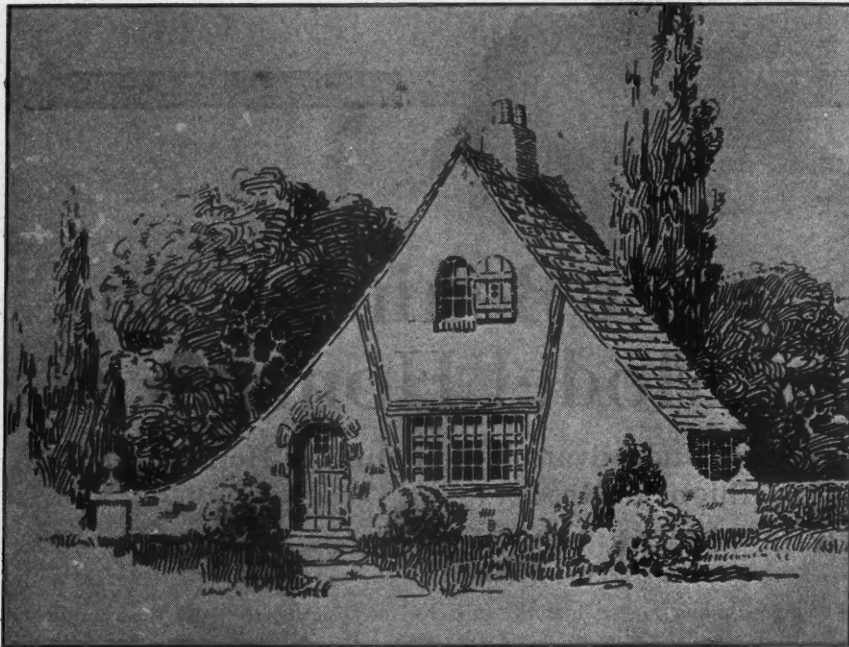


Approved Materials and Equipment for

the National Demonstration Model Homes



# Approved Materials and Equipment for the



**Original Master Plan for This Series, 6-Room Norman French Cottage Constructed of Portland Cement Stucco on Hollow Building Tile. Designed by Arthur Bates Lincoln, Architect, of New York City.**

November 5th, and excavating was begun immediately.

A picturesque miniature Italian villa, a six room design of stucco on hollow building tile was selected for the first Chicago home by Henry K. Holsman, A. I. A., eminent Chicago architect and expert on the small home problem who is acting as supervising architect for the Chicago series in this national program. It was designed by Henry G. Jefferson and Arthur Bates Lincoln, of New York City, the latter consultant architect of the Home Owners Service Institute.

The firm Goss, Judd & Sherman was organized in 1869 under the name of E. A. Cummings & Company and the present members of the firm were partners in it. Mr. Judd was president of the Chicago Real Estate Board in 1907 and is popularly known as "father" of the National Association

of Real Estate Boards as he was the leader in forming that organization. The Pottinger organization is one of the oldest building organizations on the northwest side of Chicago. In less than twenty years' time, Mr. Pottinger has practically built up five subdivisions in this section and dotted them with charming homes, apartment buildings, office buildings, theaters and a hospital. He has built forty homes in Elmhurst since February, 1926, and is one of the few builders in Chicago who employs all his own labor.

Ground was broken for the "third" Chicago home at Glen Ellyn, Ill., on November 8th on Crescent Boulevard in the Woodthrop Subdivision.

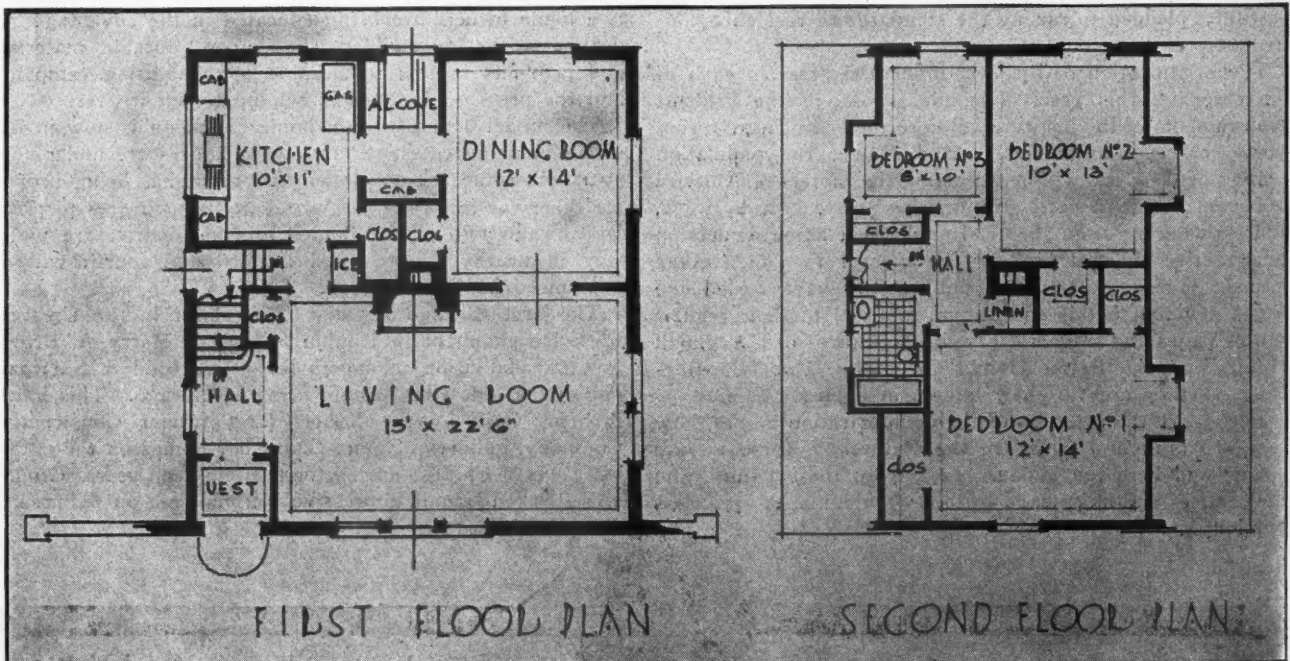
This property is owned by Lothrop Lee Brown, of Oak Park, Ill., for whom W. H. Wright & Company, well known realtors of Oak Park, are sales agents. These realtors have been identified with the development of Oak Park for many years and have specialized in the home building field. Mrs. W. H. Wright is one of the most successful women in

the country engaged in the real estate business and is chairman of the advertising committee of the National Association of Real Estate Boards.

Clement W. Dippel, of Elmhurst, Ill., a builder of long experience, will build this home, using, in accordance with one of the requirements of this undertaking, only standard or trade marked nationally advertised materials and equipment.

This house, as all the others, will be fully finished, furnished and equipped and opened for public inspection for a period of four weeks. If construction goes forward on schedule time this home will be opened early in April.

The Chicago *Herald and Examiner*, with a Sunday circulation of 1,100,000, is the sponsoring newspaper in this city. The Chattanooga *Times* announced on November 7th on



**This Standard Floor Plan Fits All Four of the Exteriors Illustrated This Month. They are among the most successful designs used for the National Demonstration Model Homes.**

# the National Demonstration Model Homes



### FINISHERS BEGIN WORK ON PRESS MODEL HOME

White Oak Floors Are Being Laid



Exterior View of PRESS Model Home

SALE OF HOMES SHOWS ACTIVITY

LANE BUILDING PROJECTS GO

An Unusual for ambitious

### REAL ESTATE BUILDING CLASSIFIED

THE HOUSTON CHRONICLE

#### VISITORS TO MODEL HOME IN RIVERSIDE TERRACE INCREASE

#### REALTORS TO DISCUSS NEW INDUSTRIES

#### CONTRACTS ON MODEL HOME ARE AWARDED

Every American Home is Another Step Toward the Solution of the Housing Problem

### MEMBERS JUST JOINED HOME AND GET PHOTOS

Dutch Colonial Type is Economical



A Monocle of

### REAL ESTATE BUILDING CLASSIFIED

#### Break Ground for First Demonstration Home in Week

NEW LOT IN WESTCHESTER FOR BUILDING

NEW BUILDING LAID OUT CORNER OF GLACI, LAKE

Gary's New Skyscraper

ELMHURST IS SITE OF NEW MODEL HOUSE

### COURIER-EXPRESS HOME WILL OPEN SUNDAY

Selecting Furniture, Baps and Equipment in Complete First British Model House



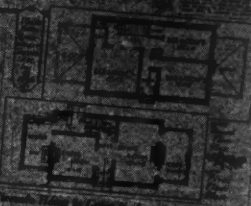
NEEDS CONTRACTORS BEGIN PUTTING FINAL TOUCHES ON THE HOME



### Crowds Gather at Teaneck: Brick Model Home Next to Open

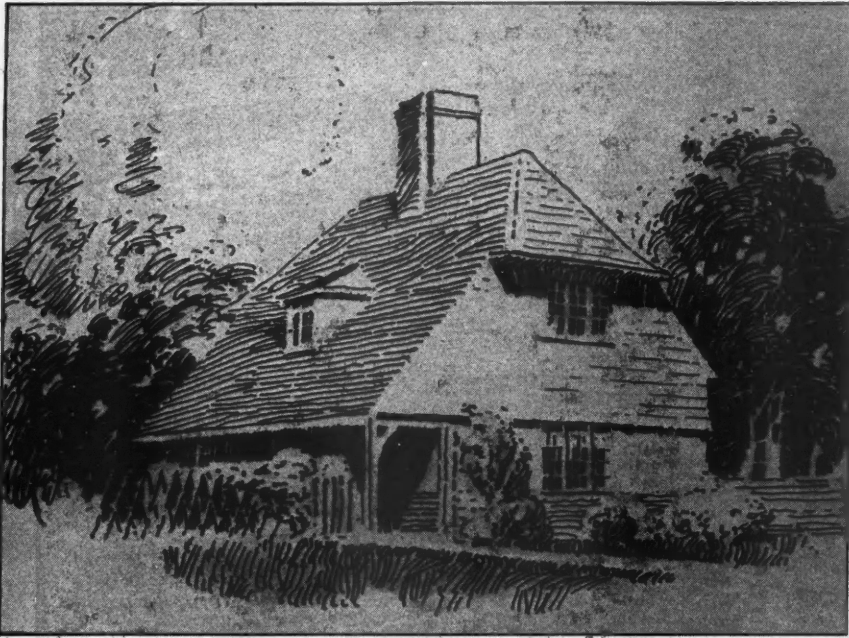


Complexity of Last Year's OF Alternative Possible Homes



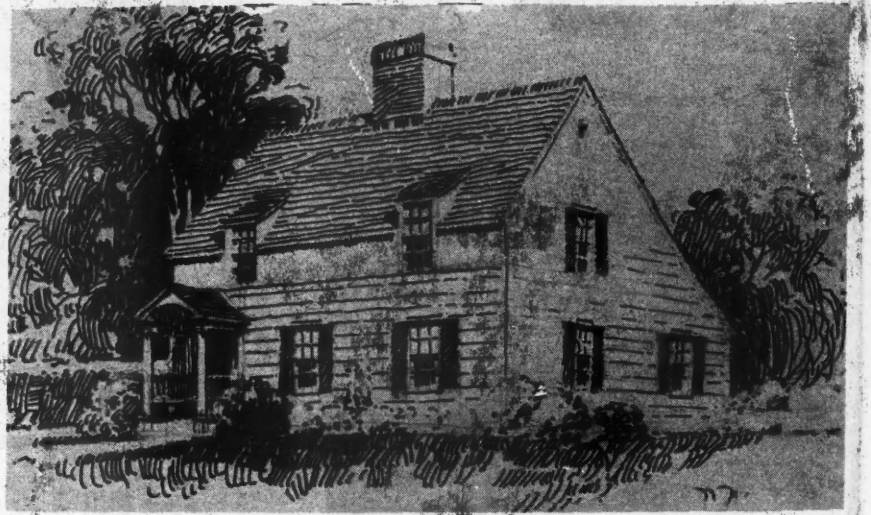


## Approved Materials and Equipment for



**Six-room Brittainy Cottage of Frame Construction with Exterior of Common Brick Veneer, Stucco and Wood Siding in Combination.**

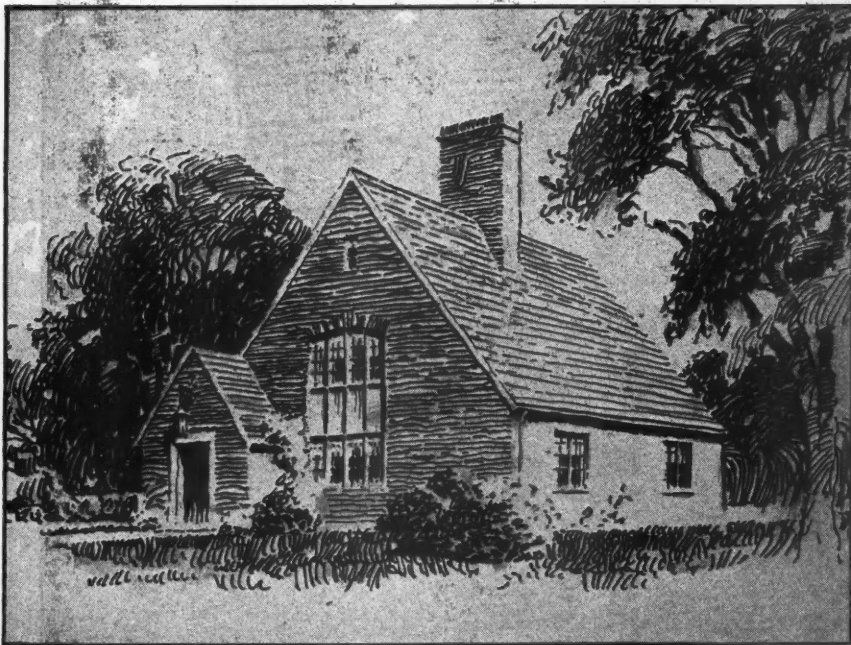
its new "Model" Homes page the advent of the first Chattanooga home. A six-room design of Colonial architecture to be built of hollow tile with a brick veneer exterior was selected by the builders in this city and construction is now under way. This home will be built in the Shepherd Hills Development of Paul W. Shepherd, trustee of the Shepherd Hills Development Company, who selected Albert V. Walker, prominent Chattanooga realtor, as exclusive sales agent for this property. Percy Shepherd has been appointed as supervising local architect in this city in accordance with the desire of the Home



**Six-room Early American Colonial Frame House.**

Son, Inc., builders of this house, secured contracts to build three other houses at the same time. Alexander T. Saxe & Co., Inc., is building the house at Wantagh, L. I., and George H. Riley is building the house at Westfield, N. J.

In each city visitors have not waited for the official opening of these homes when all the furnishings were in place, but have crowded to inspect the construction week by week, which is a good omen for those engaged in trying to educate the public in the fundamental principles of good construction. On Sunday, November 7th, 4,000 people inspected the Pittsburgh model home while under construction by the Fort Pitt Real Estate Company. The Wm. J. Mitchell organization of Cleveland, Ohio, builders of the Cleveland *Plain-Dealer* home, reported that so many visitors have inspected the construction of this house that it has held up the work of the men on the job



**Six-room English Cottage, Constructed with Common Brick Walls.**



# Announcing the Results of Our Nationwide Building Survey

**Y**OU readers who helped to establish the facts will be interested in the results of the nationwide survey of building recently completed by AMERICAN BUILDER. The totals compiled reveal an enormous annual value of building by our builder and contractor subscribers—almost four billion dollars in one year (1925-26), as shown by the complete tabulation in the adjoining column.

One of the most striking results was the great variety of buildings shown, including practically every type of structure erected throughout the United States in communities of every kind—from the smallest hamlet to the greatest metropolis.

The total value of residential construction shown is truly amazing and yet there is also an immense amount of business and public building construction reported and, we might add, in more illuminating detail than any previously published statistics. Reports furnished by our readers show that 64.7% of the total value was residential and this percentage agrees closely to the proportions shown by city building permits as reported by the Department of Labor, Bureau of Statistics. In other words, builder and contractor subscribers to AMERICAN BUILDER are engaged in a varied building program which includes all kinds of buildings in close conformity to the nation-wide demand.

The total value of private dwellings had almost three times the value of the apartment building total, with two-flats and terraces next, having a combined value about one-third that of apartment buildings. There were 261,184 houses built by builder and contractor subscribers, having a total value of \$1,667,516,703.

The survey showed that builder and contractor subscribers to AMERICAN BUILDER are erecting high class dwellings, the average value of which is 40% higher than the average value of the single family dwellings reported by city building commissioners to the Department of Labor. The comparative averages are: AMERICAN BUILDER survey, \$6,385; Department of Labor compilation, \$4,567.

The great variety of business and public build-

ings erected by AMERICAN BUILDER subscribers had a total value of \$1,355,626,239. The entire tabulation of values erected by builder and contractor subscribers is shown below.

## VALUES OF BUILDINGS ERECTED IN ONE YEAR (1925-26) BY AMERICAN BUILDER SUBSCRIBERS

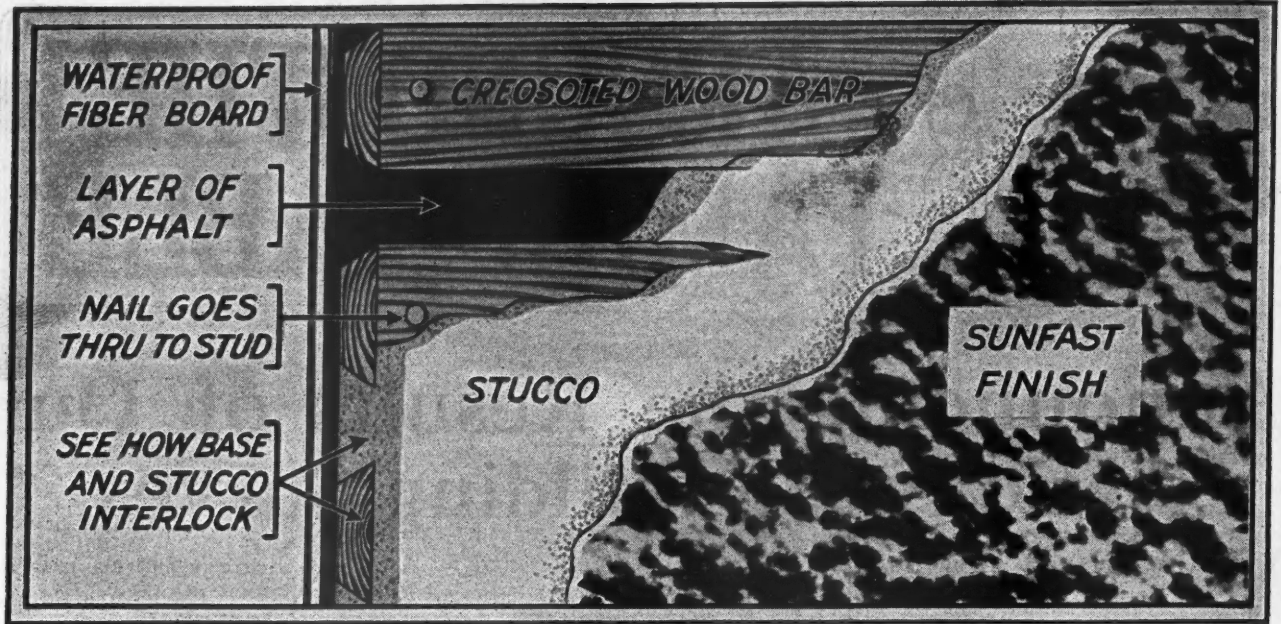
Private Dwellings .....	\$1,667,516,703
Apartment Buildings and with Stores Combined.....	597,407,550
Two-Flats .....	165,463,482
Private Garages .....	46,152,024
Apartment Garages .....	3,896,100
Terraces .....	7,992,000
Resort Cottages .....	255,300
Summer Houses and Arbors.....	188,700
Schools and Colleges .....	269,253,810
Hotels and Restaurants .....	217,515,600
Theaters and Halls.....	103,008,000
Clubs and Fraternal Buildings.....	91,686,000
Office Buildings .....	46,686,000
Business Blocks .....	90,964,500
Retail Stores and Store Fronts.....	81,136,005
Banks .....	7,881,000
State, County and Municipal Buildings.....	77,644,500
Churches .....	34,271,250
Community Centers .....	27,750,250
Hospitals and Institutions.....	19,833,480
Warehouses .....	72,867,948
Public Garages .....	50,821,350
Filling Stations .....	5,089,350
Factories and Shops.....	42,357,600
Railroad Stations .....	9,324,000
Bakeries .....	6,660,000
Telephone Buildings .....	5,550,000
Laundries and Dry Cleaning Plants.....	1,554,000
Lumber Camp Buildings.....	1,110,000
Grain Elevators .....	1,110,000
Barracks .....	721,500
Remodeling and Alterations.....	41,726,121
Farm Buildings .....	37,353,165
Roads, Water Supply and Sewers.....	3,352,200
Miscellaneous .....	8,398,260

\$3,844,498,098

Space is lacking to show here all the interesting facts and figures which were compiled as a result of this survey but these have been embodied in a 32-page booklet, illustrated from photographs, charts and graphs. This booklet will have special interest and value for manufacturers and advertising agencies planning campaigns in the building field. It is attractively printed in two colors and contains also AMERICAN BUILDER's forecast of 1927 construction, by classes, throughout the United States. Copies of this fine booklet will be mailed on request to those interested.

Again we want to thank those builder and contractor subscribers who co-operated in such a loyal and helpful spirit by sending us reports of their building operations. We wish to assure you that this co-operation has been most valuable and is highly appreciated.

Editor AMERICAN BUILDER.



See how the stucco keys itself into the dove-tail grooves, and is supported between the studs. The result is a solid UNIT WALL.

# More contracts — better profits!

## With this scientific stucco reinforcement

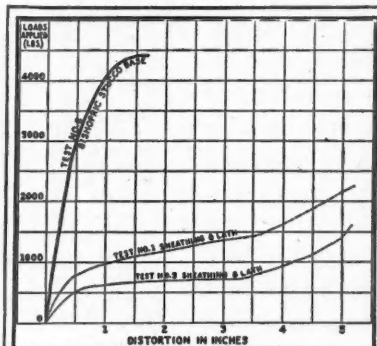
Bids which include Bishopric Reinforcing Base are *unusually successful*. That's because you can assure the prospective builder a stucco home with walls of *super-strength*. And profits on jobs where this superior reinforcement is used, are greater. That's because you *save 25% in labor and materials*.

Bishopric Base is stronger because it's made *scientifically*. Bone dry creosoted wood bars are embedded under great pressure into finest quality fibre-board heavily coated with asphalt mastic. The result is a sound-deadening, vermin-proof, fire-resisting base of unusual strength.

Actual tests show that Bishopric Reinforcing Base is over 6 times as strong as lumber sheathing. (See chart at right.)

With Bishopric Base you save one-fourth the usual cost—

—in labor, because Bishopric Base comes complete to the job in rolls, is



Test conducted by Robt. W. Hunt & Co., of Chicago, Illinois—one of America's foremost engineers.

### WHAT THE CHART REVEALS

The results graphically portrayed in this Chart show that by *actual test* Bishopric Stucco Base stands *twice* as much weight strain as wood sheathing and ordinary lath, with less than *one-third* the distortion of the base.

Bishopric will thus stand a *far greater strain* than any stucco base would ever be subjected to!

quickly cut to size, and can be laid by one man;

—in reinforcement, because Bishopric Base can be laid direct to studs, requiring none of the sheathing used to reinforce ordinary constructions;

—in materials, because the dove-tail construction requires less stucco, and the fibre-board prevents any of the stucco from falling between the inner and outer walls.

Send for NEW BOOKLET

If you want the most up-to-date information on how to get excellent results with stucco *every time*, send for our new booklet "Looking Behind the Stucco."

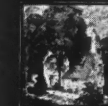
It is free to you. Simply sign and mail the coupon below

**The BISHOPRIC MANUFACTURING CO.**  
ESTE AVE CINCINNATI, OHIO

**The BISHOPRIC MFG. CO. OF CALIFORNIA**  
LOS ANGELES

THE BISHOPRIC MFG. CO.  
712 Este Avenue, Cincinnati, Ohio.

Please send me without charge your new booklet, "Looking Behind the Stucco."



LOOKING BEHIND THE STUCCO

PRINT NAME AND ADDRESS PLAINLY

# B I S H O P R I C

FOR ADVERTISERS' INDEX SEE NEXT TO LAST PAGE





Formerly AMERICAN CARPENTER AND BUILDER

1827 Prairie Ave., Chicago—250 Park Ave., New York City

### Big Building Gains in the West

**S**URPRISINGLY heavy gains in the value of contracts let in the Central West, Northwest and Texas during October are shown by the figures of the F. W. Dodge Corporation. This gain in building activity is revealed in the following comparison with September of this year and October of last year, as follows:

	Gain Over Sept., 1926	Gain Over Oct., 1925
Central West ....\$171,263,800	70%	35%
Northwest ..... 9,776,300	7%	37%
Texas ..... 16,361,000		53%

The only other gain was in the Middle Atlantic States which showed a decline of 9 per cent compared with September of this year but a gain of 11 per cent over October, 1925.

The total of the entire country for October of this year was \$515,726,000, which shows a decline of 3 per cent from October of last year.



### To Standardize Fireproofing

**S**TEPS toward extending the field of usefulness of structural steel for the benefit of the building industry, the general public and the fabricator, were discussed at the fourth annual convention of the American Institute of Steel Construction. A decision to embark upon a new move aimed to lessen the fire hazard in office buildings and other large commercial structures was a feature of the convention. A standard specification for the fireproofing of such structures will be formulated by the American Institute of Steel Construction during the coming year. It will be based upon a detailed study of existing methods and upon additional field and laboratory investigations.



### Cutting the Tax Burden

**I**N the recent November elections, three states, California, Washington and Minnesota, voted on proposed forest tax constitutional amendments. These amendments were aimed to relieve growing timber from the burden of annual taxation which is probably the greatest obstacle to the development of commercial reforestation. They followed the lead which has already been taken by ten other states, including Connecticut, Maine, Massachusetts, New Hampshire, New York, Pennsylvania, Vermont, Mississippi, Ohio and Michigan, of substituting a yield tax for the annual tax while, at the same time, retaining the regular tax on the value of the land.

The amendment offered in California was carried by a majority of nearly 200,000 votes. Returns from Minnesota are not yet complete but plainly indicate that the amendment was carried by an ample majority. In Washington, alone, the vote went against the interests of conservation and reforestation though in counties where there are timbered districts the vote was heavily favorable.

It is stated that this defeat was due to a misunderstanding in the agricultural districts where the erroneous report had been circulated that the amendment would result in the immediate withdrawal from all taxation of half the standing timber in the state and that it was sponsored by so-called "timber barons" to dodge taxation. Efforts undoubtedly will be made to represent and carry the amendment.

The California amendment has been described as "the most far-reaching and best reforestation tax law existing in the United States," because of its brevity, simplicity and directness. It will, undoubtedly serve as a model for other states contemplating the revision of the taxation of growing timber. Its effects were felt almost immediately in the lumber industry. Orders were issued, as soon as the results of the election were certain, to stop cutting all trees of 20 inches or under, by a company which had been cutting down to 12 inches. This same company also started negotiations for the purchase of a tract of cut-over land adjoining its property for the purpose of starting a reforestation program.



### Quality Construction

**W**ITH ample time elapsed in which to obtain a true and complete picture of the effects of the Florida hurricane disaster of September, the universal conclusion has been reached that this storm has proved a most emphatic vindication of quality construction. Flimsy construction, of poor quality material and hasty workmanship, was, in every instance, the great sufferer. Good construction generally came through with little if any damage. This simply drives home again the lesson which has been offered in every disaster of storm or earthquake which has tested the work of the building industry.



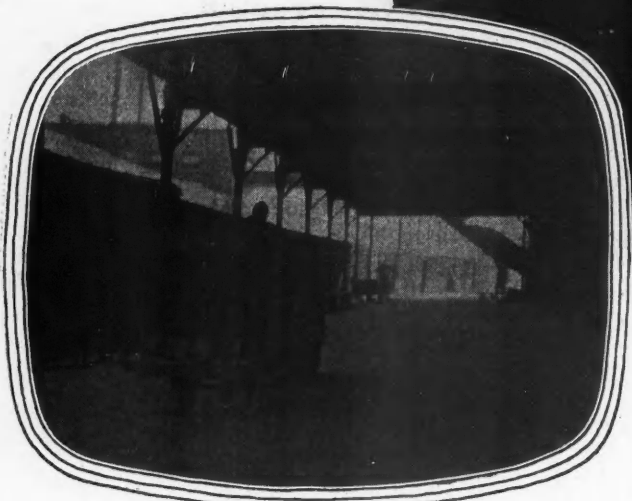
### High Standard for Expositions

**A**LL building materials and equipment shown at the 1927 annual New York and Chicago "Own Your Home Expositions" must submit to a severe test before they are accepted by the management. This plan will be known as an "Inspection Before Acceptance for Exhibition" and is in accordance with the policy of the organization of these expositions which is becoming more rigid in its requirements each year.

In addition, the exhibits will be assembled under the exposition "Code of Ethics" which bars all irrelevant displays, stunts and circus features. This code was drawn up two years ago by the expositions and some 40 national trade organizations and associations and has been revised to bring it up to date with recent advances made in the home building field. It is designed to work for the protection of the thousands of prospective home owners who attend the expositions and the 25 or 30 trades represented by the exhibitors.



*When time is money*  
 use Quick-Hardening Concrete  
 made with standard Universal Cement



Loading platform at Lehon Co., Chicago. Good concrete develops compressive strength of 2000 pounds per square inch in 28 days. Average strength of 4100 pounds at 3½ days secured on this job with High-Early-Strength *Universal* concrete. Standard *Universal* cement, the same quality *Universal* regularly handled, furnished by Adams Building Material Co., Chicago.

## New Shipping Platform . . . . No Interruption to Loading

To replace an old shipping platform for the Lehon Co., Chicago, without interfering with loading, the builders did the work in sections and used High-Early-Strength concrete. Three days after placing, each section was opened to heavy trucking. Shipping went on without interruption.

High-Early-Strength concrete made by using thoroly tested methods and standard *Universal* (not special) cement gives not only speed but also permanently better and stronger concrete. The accompanying coupon will bring full details.

## Universal Portland Cement Co.

Chicago Pittsburgh Minneapolis Duluth Cleveland Columbus New York

**Concrete for Permanence**

UNIVERSAL PORTLAND CEMENT CO.  
 210 South La Salle Street, Chicago

Without obligation, please send me detailed information on methods for securing strong Concrete in 3 days with standard *Universal* [not special] cement, the same quality *Universal* regularly used.

Name .....

Address .....

# Permanence of Steel Structures Assured by Rigorous Tests

**T**HE skyscraper has to work all the time, day and night, twenty-four hours a day for years at a stretch. Suppose it should suddenly grow tired and collapse. What nonsense. Tall buildings, you say, don't get fatigued. Theoretically, at least, science doesn't agree with you. Subject to the same strain over a prolonged period of time, steel girders are just as likely to demand a vacation as you are, and one of the main tasks of research experts in the U. S. Bureau of Standards hitherto has been to select steel beams which wouldn't rebel at being worked overtime.

Practically, recent investigations have revealed, there is no danger of a sudden strike or revolution among the steel skeletons that hold up tons of brick like so many Samsons rearing their heads forty stories in the air, because architects and builders select the right beam for the right job with as much care as they pick thoroughly qualified assistants for responsible positions.

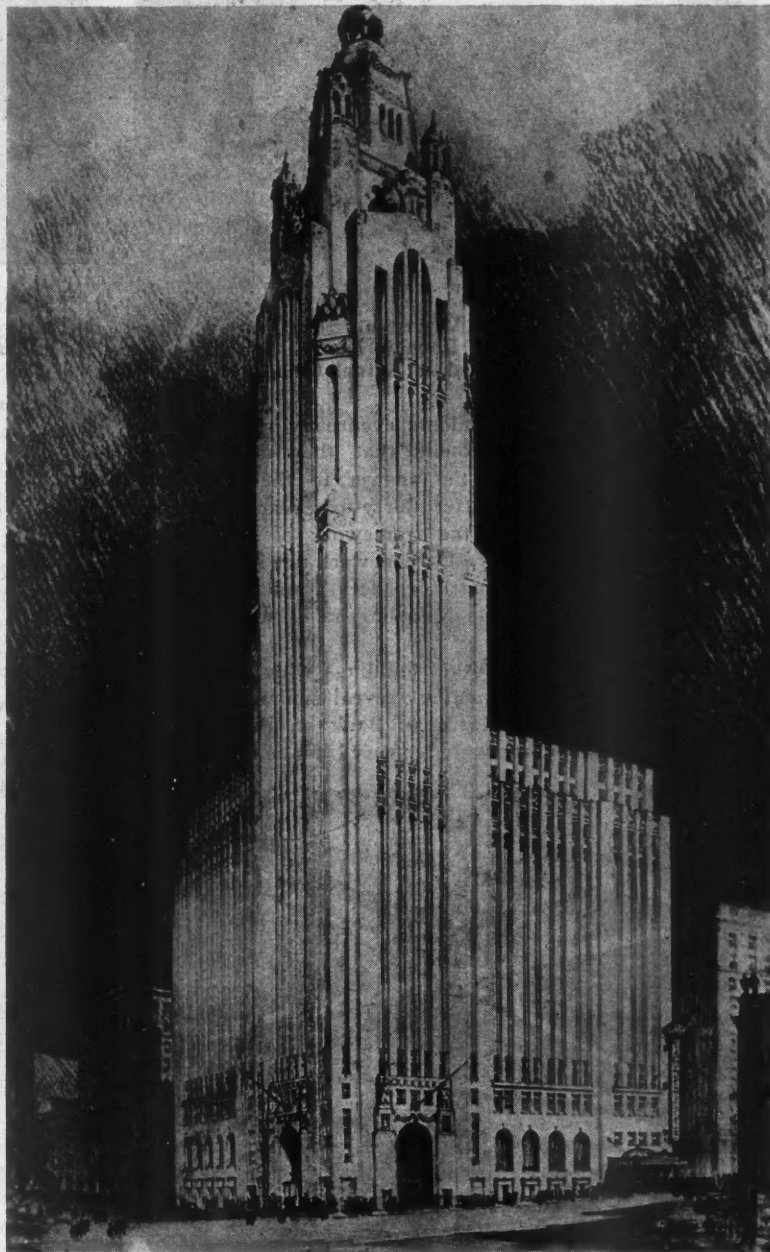
Unlike human employees, the steel applicants for jobs must undergo rigorous examination and suffer unutterable tortures in the grip of huge vises and in the midst of swirling tongues of flame that shoot up ten feet around their bases. With such preliminary tests as are conducted at the testing bureaus nowadays, it is small wonder that there is little trouble from the sturdy steel supports.

Any beam that can stand being hit on the head for the hundredth million time by a powerful sledge hammer, that can bear a pressure of 10,000,000 pounds in the mouth of a gigantic Olsen compression machine, or a twist of 1,500,000 pounds in an Emery machine, is no quitter in the world of steel beams, and is fully qualified, according to research experts, to play a part in the world of the skyscraper where beams must be beams.

Strange as it may seem to the person who regards the skyscraper from the outside, modern buildings are more dependent on their steel frames than they are upon brick and mortar, the latter substances acting merely as a covering to keep out wind and rain. The frames of modern skyscrapers are their strongest safeguards against the disastrous effects of fire. No matter how severe the flame, the building will stand if its frame endures.

Because the beams stand in the presence of inflammable materials and are likely to be affected by the state of their fellows, less sturdy substances, during a fire, they are subjected to particularly severe tests. Actual fire conditions are reproduced as nearly as possible, according to S. H. Ingberg, physicist of the Bureau of Standards, who with P. D. Sale, associate physicist, has recently conducted a series of experiments to see how the beams would behave in high temperatures.

Placed in a gas-fired furnace under loads equal to those they would carry if they were part of the framework of a building, with wire-attached pegs screwed to the specimen beams, an enormous amount of data concerning the

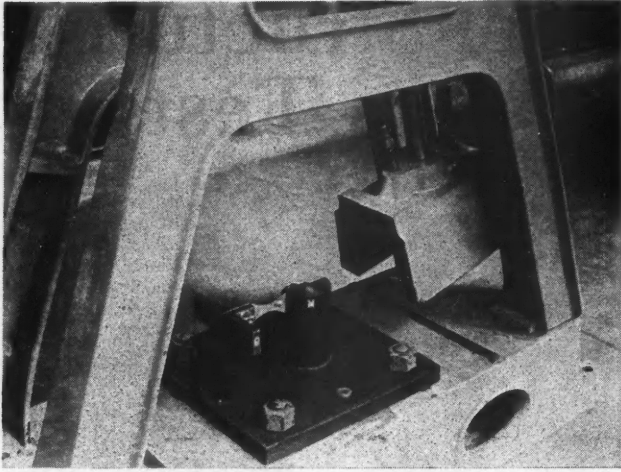


The New American Insurance Union Building, Now Under Construction at Columbus, Ohio, Will Be the Tallest Structure West of New York City. Such buildings are only possible because of the complete reliability of the steel used in their frames.

behavior of steel beams was collected. In some instances to re-enact the exact conditions prevailing at a fire, one of the scientists noted the data while the other in the role of fireman directed a steam stream of water on them.

Temperatures as high as 2,300 degrees Fahrenheit were investigated by the Bureau of Standards scientists, though even the most severe conflagration seldom entails a temperature over 2,000 degrees. If a steel column is surrounded by gypsum, hollow tile, brick, or some similar material, it has little difficulty in sustaining its load even after four or five hours of exposure to constantly mounting temperatures, the scientists found.

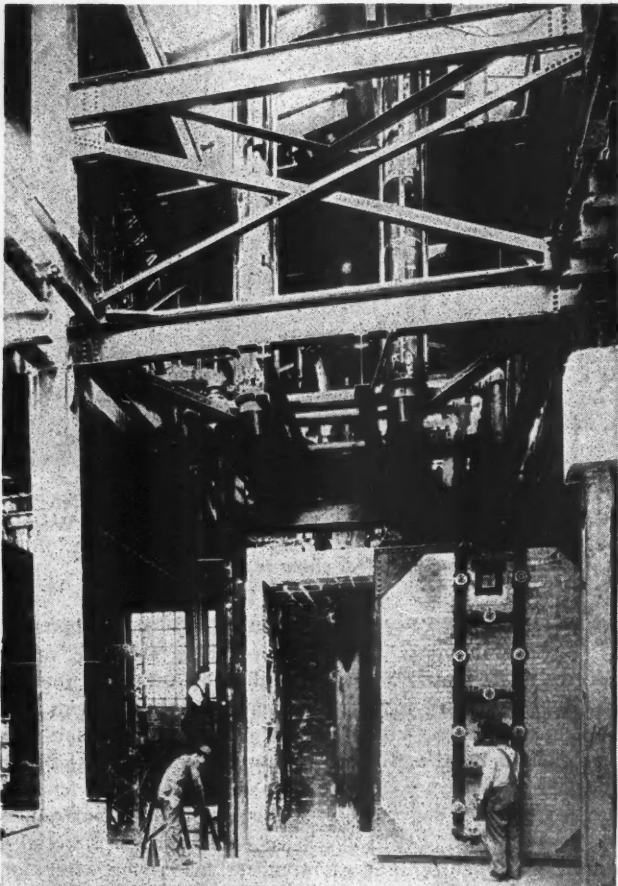
How about rust? Wouldn't oxidation, moisture, and



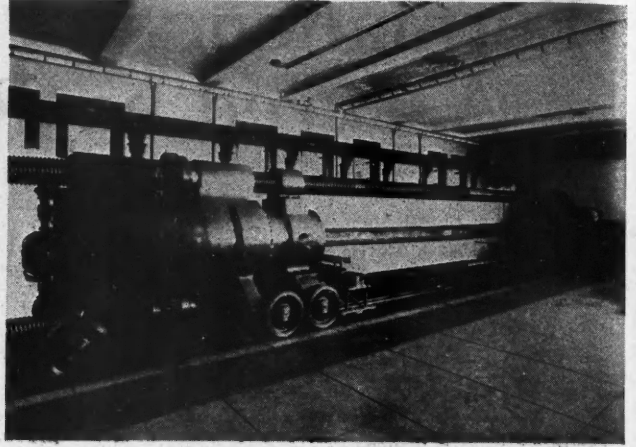
Any Beam Which Can Withstand the Test of Many Million Blows from This Impact Testing Machine Can Be Relied Upon When Used in Actual Construction.

molecular changes force builders eventually to retire steel beams like the old pensioners that they are? Recent investigations reveal that the answer to these questions must likewise be "no." After thirty-five years of service, steel beams employed in the framework of the recently demolished Madison Square Garden were not in the slightest degree impaired in strength or safety, Frank W. Skinner, consulting engineer, reports following an exhaustive examination.

Examination of several other buildings which have given place to more modern structures reveal similar conditions. The framework of the Harriman Bank on Fifth Avenue, New York, recently renovated, proved to be in excellent



Before Beams Are Declared Fit for Construction They Are Subjected to Fire Tests Where They Must Carry a Full Load Under Extreme Temperatures.



The Emery Machine Shown Here Tests the Steel Beams by Exerting a Twisting Force of 2,300,000 Pounds, Far More Than They Will Be Called Upon to Resist.

condition. When the Hoffman House, noted restaurant, was torn down, the Bureau of Buildings reported officially that the steel was in most instances intact without the slightest sign of corrosion. Even where moisture had been allowed to collect, rusting was not sufficient to impair the strength.

Conclusions reached in these investigations, together with the results of researches conducted at the Engineering Experiment Station of the University of Illinois under the supervision of H. F. Moore, show that practically steel never tires and point out the possibility that the modern skyscraper might outlive even the far-famed pyramids and Sphinx.

Structures erected many thousands of years ago reach hundreds of feet into the air, but their builders were able to attain great height only because they used almost solid construction, modern experts point out. Their walls were so thick that there was little interior space. Frequently, as was the case in the pyramids, there was scarcely any interior space at all.

A large amount of interior space is essential, on the other hand, in the modern skyscraper, if the costly structure is to make a fair return on the investment. Building for eternity is, consequently, a more difficult problem for the American architect today than it was for the master builder of Egypt or the constructor of the Grecian Parthenon.

Since modern civilization is progressive, it has been pointed out, it is unlikely that modern skyscrapers ever will be put to the test of time which has been successfully weathered by the relics of old Egypt. Buildings give place to others still greater in modern America with bewildering rapidity and voluntary demolition must necessarily be taken into consideration in estimating the years of service required of steel-beams.

Despite previous generalizations of science with respect to fatigue and endurance, recent investigations in Washington, Chicago, and New York, have shown that the great structures which are being built throughout the country today, construction of which is possible only through the employment of steel beams, might well stand as sturdily throughout the ages as the massive tombs of ancient Egypt.

GILLIAMS.



### National Lighting Exhibit

THE annual national exhibition and convention of the Artistic Lighting Equipment Association, will be held in Cleveland, Ohio, January 31 to February 5, 1927. Exhibition space will be open to all members, in good standing, of the Artistic Lighting Equipment Association.

# Magnificent New Elks Club in Los Angeles Cost \$2,500,000

Has Beautiful Memorial Hall, Banquet Room with \$50,000 Organ and Other Features

THE Elks, as an organization, have many fine club buildings in various cities of the United States and the Los Angeles Elks Club, recently completed, is one of the most magnificent. Its architecture makes it both a notable landmark and a memorial worthy of the name. Situated on a three hundred twenty-five foot frontage overlooking beautiful Westlake Park, the building is a memorial to the six thousand members whose faithfulness to the club made possible the erection of the new club house. The building was designed by its architects, Curlett and Beelman, to come within the height limit of 150 feet and has a central facade and two wings, one on each side of the central building. The architecture of the building is said to be generally Gothic in style, with touches of the Doric Romanesque and Renaissance. The high central portion rises in diminishing mass from a base greatly broadened

by its wings and is surmounted by a tower and flagpole reaching 200 feet above the street.

The interior, covering a space of some four million square feet, is certainly a thing of beauty. The Grand Hall has a 53-foot vaulted ceiling brilliantly paneled with artistic frescos. A lodge room 75 by 135 feet has a marble stairway leading up to the Memorial hall, while among the other rooms are: a spacious banquet hall with a concert organ costing around \$50,000; a main dining room with its spacious comfortable lounge, and enough extra rooms to accommodate 160 guests, with bell boy and all modern hotel services.

Billiard, card, and game rooms, together with a special room for women—the wives and daughters of members—complete the interior arrangement, while a patio for members wishing a view of the surrounding scenic beauty was built on the roof of the club house.



Los Angeles Elks Now Have One of the Finest Club Buildings in the United States as Pictured Above. Of inspiring architectural design, it has many interior features of decoration and entertainment. Curlett and Beelman, architects.

# This Builder's Prospects Plan Their Ideal Homes

EVERY person, married or single, has a mental picture of his or her ideal home. Many times prospects do not think that they are in position to begin the construction of their ideal homes, but according to G. M. Stewart, manager of the Higginbotham-Bartlett Lumber Company of Tahoka, Texas, more of these prospects are able to begin the construction of such homes than even the prospects think.

Mr. Stewart was of the opinion that there were a number of prospects over his trade territory that could be living in their own homes, instead of paying rent to other people. He was also of the opinion that many of these prospects were merely neglecting building such homes, thinking that they were not quite ready in a financial way.

With this as a working basis, this lumber retailer staged a contest that was open to all people over his trade section, which brought him more than expected results. He used a number of advertising methods to inform the public of his contest. Each person of the surrounding country was requested to submit a plan, giving floor space, and all details of their ideal home.

In addition to drawings and figures regarding the proposed house, each person was to include a schedule of payments that they would like to pay for such a home. The contestants were also advised to submit an estimate of the cost of such a home, as well as the salary received by this contestant and how much cash could be paid down, then the way that the other payments could be made and secured.

Contestants were advised to select original plans and be conservative in their estimations and building specifications. A first prize of a building lot was offered to the person that submitted the best building plan and the most sensible and businesslike plan of paying for a home. The cash value of the lot was offered to be applied on a residence in case the winner already owned a building site. A second prize of a certain amount of merchandise to be selected by the winner was also offered. Three business men of the town that were disinterested in the event were selected as judges.

Two months' time was allowed for all contestants to enter their specifications. The majority of the married couples of the trade territory competed in this contest, while many single people that were thinking of a home in the future also entered into the event.

Personal interviews, telephone calls, hand-bills and newspaper advertising informed the public of this contest. The prospects were informed that all information received in the contest would be kept strictly confidential.

Prospects over the section began to think in terms of home ownership. Many of them who had previously had vague ideas and plans of a home of their own completed these plans and submitted them in the contest. A large number of the contestants

had overestimated the building cost of their ideal homes, which had kept them from perfecting their plans previously, as they thought they would be unable to put their ideas into action.

Mr. Stewart found a number of the contestants who really desired a home of their own were financially able



G. M. Stewart, Manager of the Higginbotham-Bartlett Lumber Company, and Originator of the Effective Plan Described in This Article.



The Higginbotham-Bartlett Company Believes in Aggressive Advertising and the Competition Described Here Is but One of the Effective Means Which It Uses. This house is one of those built from plans submitted in this novel contest.

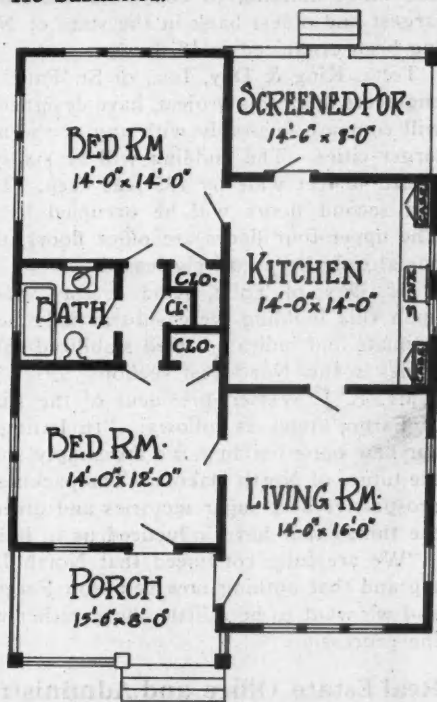


First Prize in the Higginbotham-Bartlett Contest Was Awarded to W. J. Wilson and Here Is the Home Which Was Built for Him by the Company from the Plan Which He Submitted.

to make a large cash payment and were receiving a substantial income that would make it easy for them to finish paying out the home on the installment plan. These prospects were quickly followed up by personal calls that resulted in twelve new dwellings being sold from this lumber company to prospects that had previously failed

to materialize their plans.

The direct results of this contest did not stop with this number of new building jobs. Other prospects over the vicinity began to make preparations towards building. A number of them have started a savings account for the first cost and will give this builder the benefit of their business when they have reached the time that they will put their daydreams into the walls of an ideal home. Other prospects who do not expect to put their ideals into action will



Floor Plan of the First Prize Home—Just as It Was Submitted by the Winner.

always have a friendly feeling for this dealer and this lumber company, which will result in his receiving their trade throughout the years to come, as these prospects become home owners.

This little publicity stunt was carried out with a total cost of less than three hundred dollars counting all advertising expenses. The increase in business that was traced directly to the contest paid for this expense several times over, while besides the direct profits from the event, this retailer is armed with some good information and a mailing list that will assist him in building a larger business in the future among prospects who desire to build on time payments.

CHAS. N. TUNNELL

### Payment Schedule for House Contest

By W. J. WILSON

Building lot now owned.

House to be frame structure on concrete foundation, concrete steps, brick columns. House will contain living room, 14 feet by 16 feet; bedroom, 14 feet by 12 feet; bedroom, 14 feet by 14 feet; bathroom and hall; kitchen, 14 feet by 14 feet, with built-in cabinet; two closets; screened-in back porch, 8 feet by 14 feet; front porch, 8 feet by 15 feet, to extend to front of house. House to be painted white and woodwork finished in light oak.

Salary now earned is \$150.00 per month.

Can pay cash of \$400.00.

Can pay balance in monthly payments of \$50.00 per month to apply to interest and principal, desire option to take up payments on or before due. If preferable to builder I can make payment of \$40.00 per month to apply to principal and pay interest as due.

First payment and building lot, estimated at \$300.00, will be builder's security. Title to be vested in builder until paid in full and insurance to be carried as interest appears. Minor details of payments and floor plans to be worked out with builder if building plan submitted is acceptable. (Cash payment and building arrangements can be completed with fifteen days from finish of contest.)

I estimate this building to cost as completed \$3,000.00.

Here Is the Plan of Financing Which W. J. Wilson Worked Out for the Home He Wished to Build. It was judged one of the most practical plans submitted.

# New St. Louis Court House Planned by Plaza Commission

Group of Prominent Architects and Engineers Produce Design of Court House,  
Perspective of Which is Shown

**T**HE Plaza Commission of St. Louis is composed of about a dozen of the most prominent architects and engineers of that city, who are working out the plans for the new Plaza, much as the Chicago Plan Commission is working on the widening of important thoroughfares or the Philadelphia Commission which planned the beautiful Fairmount Parkway. The perspective of the new St. Louis Civil Court House will have particular interest as representing the design ideas of such a large and prominent group of architects.

## First National Bank, Fargo, North Dakota

Toltz, King & Day, Inc., of St. Paul, Architects  
Keith & Kurke, of Fargo, Associate Architects

Striking evidence of the return of confidence in the business conditions throughout the Northwest and particularly in North Dakota, is evidenced by the fact that the First National Bank of Fargo has let contracts for its new bank and office building to cost over \$300,000.00. This is the largest and oldest bank in the state of North Dakota, having been organized in 1878.

Toltz, King & Day, Inc., of St. Paul, the architects and engineers upon this project, have designed a structure which will compare favorably with any of the newer banks in the larger cities. The building will be six stories high and of a size 46 feet wide by 135 feet deep. The basement, first and second floors will be occupied by the bank proper. The upper four floors are office floors, the space in which has already been entirely leased.

Mr. Day, of Toltz, King & Day, states that the costs upon this building were substantially below their original estimate and indicate a well stabilized condition in building trades in this Northwest section.

Mr. E. J. Weiser, president of the First National Bank of Fargo, states as follows: "In letting the contracts for our new bank building, we are simply showing our faith in the future of North Dakota. The packing plant, creameries, prospective beet sugar factories and diversified farming are the things that have influenced us in building at this time.

"We are fully convinced that North Dakota is over the top and that nothing now can stop Fargo's steady growth; and we want to be a little ahead rather than a little behind the procession.

## Real Estate Office and Administration Building Biltmore Shores, Massapequa, L. I., N. Y.

Charles G. Ramsey, of New York, Architect

Realtor-builders are today erecting tract offices which are commodious, well planned and attractive. The architectural features of this administration building at Biltmore Shores, Long Island, are exceptionally pleasing. The Spanish architecture, tile roofing in several tones of red and brown, the texture-finished buff stucco, together with the brightly striped awnings, strike a cheerful, colorful note. The observation tower is a new feature in such buildings, by means of which prospective buyers are given a bird's-eye view of the property. Its lines are pure "Mission" and add greatly to the appearance of the building. An intermediate balcony is provided for visitors who do not wish to go all the way to the top, which is 30 feet above the ground.

The plan includes a large reception room, closing offices, toilets, kitchen. On the rear of the building is provided a patio 30 feet by 50 feet, with awning protection from the sun and a fountain in the center.

## Proposed Frontenac Athletic Club, Chicago Jules Urbain, of Chicago, Architect

The rendering for this proposed athletic club building reproduced in this issue is by Architect Jules Urbain but the plans have been changed since our plates were made and another design by Architects K. M. Vitzthum and John J. Burns has been substituted. It is now stated that three sites for this building in Chicago's loop district are under consideration. The latest plans call for a building which is to be 557 feet in height above the street level. This will be 1 foot higher than the cross on the Chicago Temple, at present the loop's tallest building. The first 13 stories are to be devoted entirely to leased office space. Above this will be a chapel as well as 400 sleeping rooms and complete athletic and recreational facilities for Catholic men, of which the membership will be composed.

## New Court House, St. Louis, Mo. Designed by St. Louis Plaza Commission

Classic Greek architecture is the inspiration for this new building to house the civil courts and county officials. The most striking feature of its exterior design is the Greek temple effect above the tenth floor. At this floor there is a slight set-back and the temple appears to rest upon this base. The roof, however, is a pyramid crowned with two massive sphinxes. Just why the Greek is crowned with the Egyptian is not explained by the designers.

A free standing colonnade surrounds the temple and forms a promenade at a height of 245 feet above street level, giving visitors an unexcelled view of the city in all directions. The columns forming this colonnade are 42 feet high and 5 feet in diameter of the Ionic order, built of solid stone and each weighs 80 tons.

The entrance porticos in the shaft of the building are in the Doric order with columns 7 feet 6 inches in diameter and 44 feet in height, weighing 130 tons each. Stepped approaches lead to these porticos. Groups of statuary are to be placed to the east and west of the structure, while the great pilasters to either side of the porticos will be emblazoned with sculpture in flat relief. The base and approaches will be of granite, while the remainder of the structure will be carried out in Bedford

The structure will house the Circuit and Probate courts, the Court of Appeals, the Law Library and offices of the Circuit Clerk, the Recorder of Deeds, the Jury Commissioner and the Sheriff.

The fifth to the tenth floors, inclusive, are typical floors and each contains four court rooms with judges' quarters, stenographers' offices, etc.

The court rooms are located at the east and west ends of the building and are each 40 feet wide and 53 feet long. The public enters a court room at one end, the judge's bench is located at the opposite end.

The dimensions of the building are 135 feet north and southward and 162 feet east and westwardly, while the total height of the building above street level to top of pyramid is 380 feet.

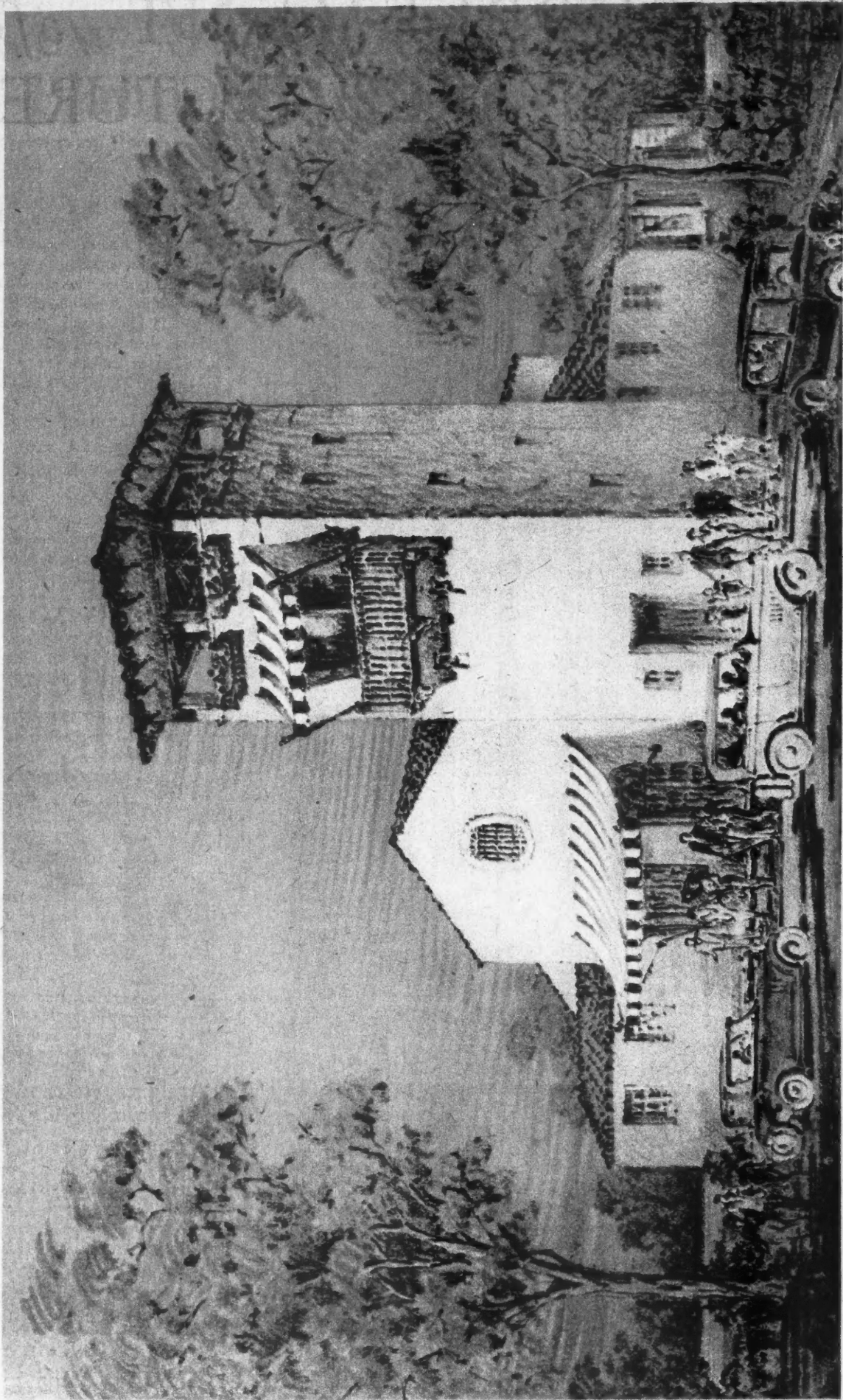


# ART SUPPLEMENT *of* NOTABLE ARCHITECTURE



PLATE 113

*The* FIRST NATIONAL BANK, of Fargo, N. D.; Toltz, King & Day, St. Paul, Minn.,  
Architects; Keith & Kurke, Fargo, Associate Architects.



REAL ESTATE OFFICE AND ADMINISTRATION BUILDING at Biltmore Shores, Massapequa,  
L. I., N. Y.; Charles G. Ramsey, of New York, Architect.

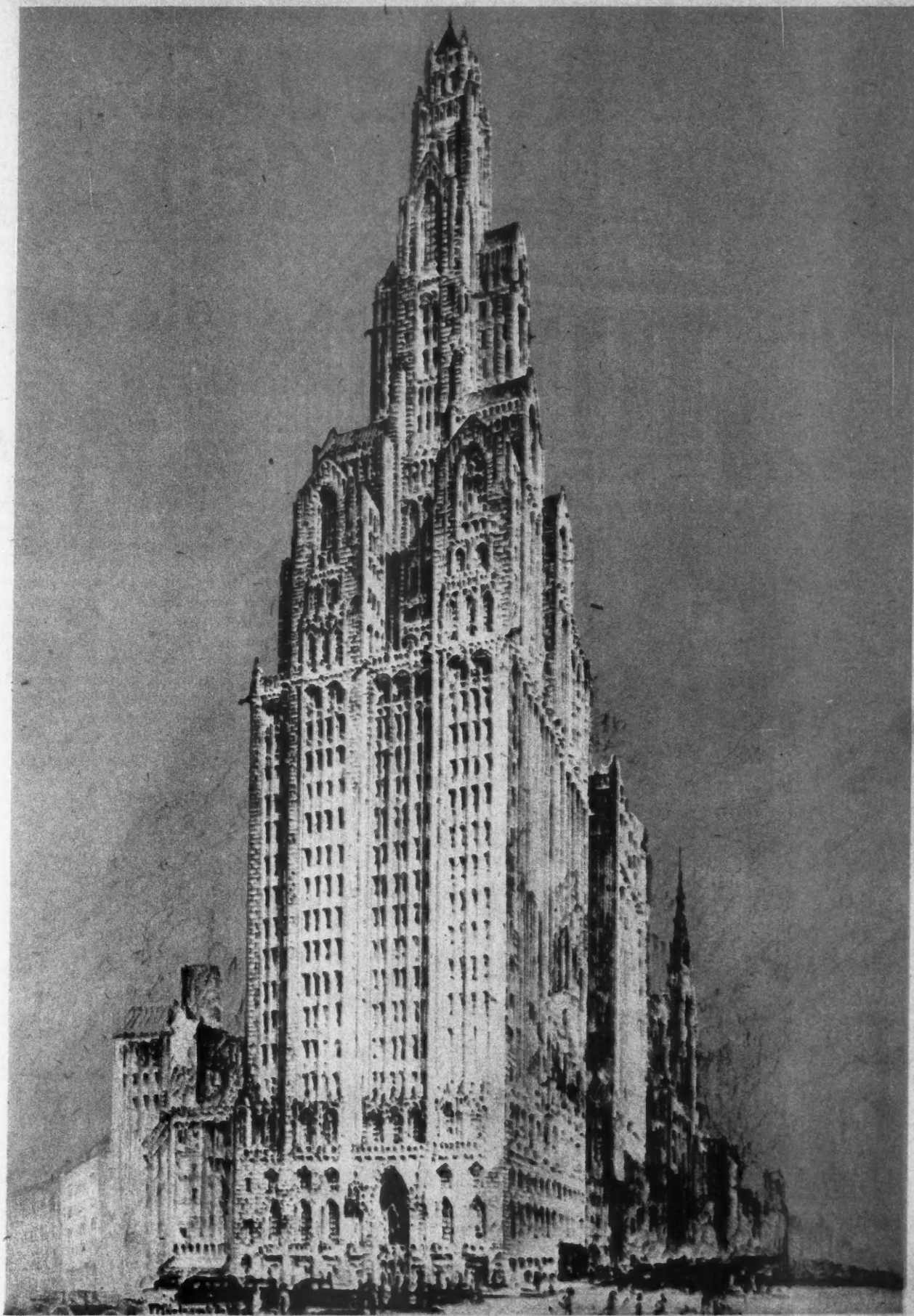


PLATE 115

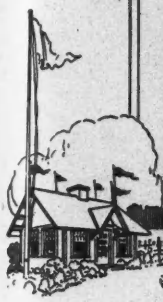
*The FRONTENAC ATHLETIC CLUB, Chicago; Jules Urbain, of Chicago, Architect.*



PLATE 116

*The* COURT HOUSE, St. Louis, Mo., forming eastern terminus of the Public Plaza group; designed by the Plaza Commission, Inc.

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# REAL ESTATE AND SUBDIVISION WORK

## Detroit Firm Has Effective Plan of Selling Homes

**A**N attendance of about 15,000 persons, resulting in 36 sales of homes at an aggregate of \$329,500, as a result of a two-page spread in a Sunday edition of the Detroit News, is the remarkable record achieved by Sorenson & Peoples, Inc., of Detroit, real estate brokers and merchandisers of quality homes. The size of the advertisement, its attractive layout, and the excellence of the typography, undoubtedly had something to do with the record-breaking response of the public, but the greatest inducement was the offering of several features new to real estate advertising. One of these features was "a free and clear home in case of death or total disability."

This feature is made possible by an arrangement with the Aetna Life Insurance Company whereby the home-buyer takes a policy for the same amount as the unpaid balance on the home. This policy has the same cash surrender value as the ordinary policy, but it is considerably cheaper, the premium being only about 1 per cent of the face value, whereas in ordinary insurance it runs about 3 per cent. In case of total disability, the insurance company pays the monthly payments on the home as long as the disability continues, any remainder being paid to the beneficiary. In case of death, the insurance company pays the balance due on the home, the remainder of the face of policy going to the beneficiary.

For example, if a home buyer owes \$6,500 on his home and his monthly payments are \$55, and he becomes disabled, the insurance company will pay the monthly payments of \$55 and the remaining \$10 to the beneficiary, thus making up the 1 per cent. If the face of the policy calls for \$6,500 and the buyer owes \$4,000 on home at time of death, the insurance company pays the \$4,000 to clear the home and pays \$2,500 to the beneficiary.

If nothing happens and the buyer pays for his home and keeps up the insurance policy, when the home is paid for he has a policy whose cash surrender value will make a substantial down payment on another home. In former cases, the real estate concern has had many complaints from intending home buyers that they were afraid to buy a home with large monthly payments as they were uncertain of being able to keep up the payments through a term of years. For persons so situated, the insurance feature has made a successful appeal.

This fear on the part of the prospective home builder springs from a human characteristic as fundamental as that desire to own a home which the building industry is



At the Left, S. H. Sorenson, President; at the Right, D. H. Peoples, Secretary-Treasurer, of Sorenson & Peoples, Inc., Which Has Made the Remarkable Record Described Here.

developing so effectively these days. In instituting their insurance plan Sorenson and Peoples have taken advantage of this characteristic to increase their own business while, at the same time, materially assisting their prospects in the realization of their desires.

Every wage earner and small salaried man who is the head of a family has constantly in the background of his mind the fear of old age, sickness or disability and death and their possible effects upon his family. He is constantly reaching out for assurance of security for himself and those who are dependent upon him, assurance against the loss of his job, against disability which will destroy his earning power and against death which will leave his family without support.

The insurance plan of home building offers insurance not only against the loss of what has already been accumulated in case of disability or death, but it also offers assurance that in case either of these misfortunes do overtake the earner his family will be permanently provided with a place to live. It is an exceedingly powerful sales aid which can be used by all builders of small and medium sized homes and at no cost to themselves as the cost of the insurance is paid by the purchaser and the risk falls entirely upon the insurance company.

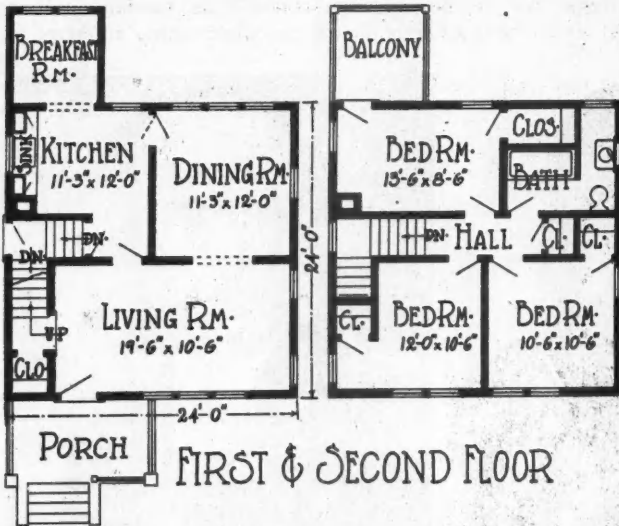
Another feature was the offering of homes completely furnished at a small additional down payment. A contract with the Peoples' Outfitting Company makes this feature possible. The contract for furnishing, however, is made direct with the furnishers, the additional down payment going to them, and the contract calling for a small monthly payment to them.

While customers could make all arrangements themselves for this service, the idea of a completely furnished home at the same prices others get for unfurnished ones, made a wide appeal as it insured customers of a home furnished strictly in accordance with harmony and good taste. The handling of the deal by the home seller also gives a prestige and backing to the buyer in his relations with the furnisher.

Still another feature of the advertisement was the illustration of three types of model homes, each built by a different contractor.

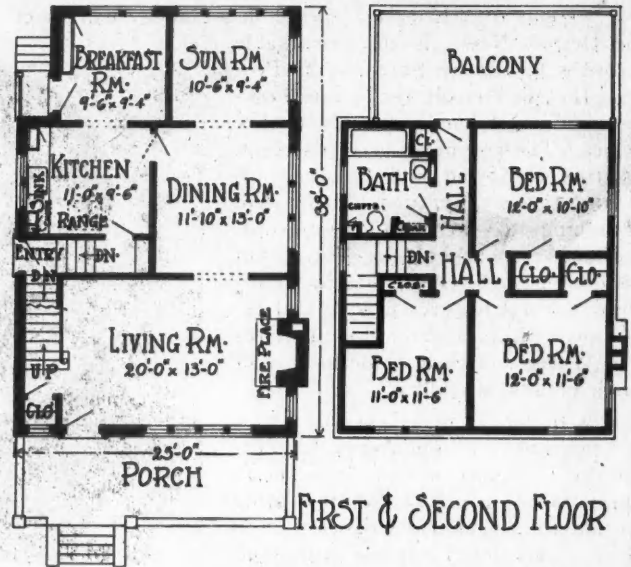


Six Houses of This Type Were Sold the First Day by Sorenson & Peoples, Inc., It is a Design that is Built to Sell for \$10,500.



FIRST & SECOND FLOOR

This Floor Plan is the One Designed for the "Detroit" Model Shown Below, Another Popular Type.



FIRST & SECOND FLOOR

Floor Plan of the "Aristocrat," Pictured Above, as It Appeared on the Day When the Sale Opened.

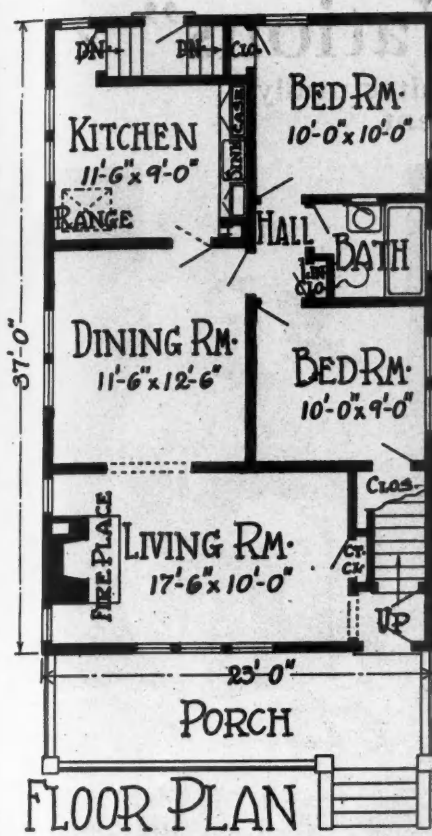


On the Opening Day Four Houses of This Style Were Sold and More Sales Are Being Closed from Day to Day.

The "Aristocrat," priced at \$10,500, is built by Wahler & Soder; the "Detroit," at \$7,250, by Joseph N. Keidan Building Company; the "Independent," at \$5,975, by D. J. Healy, Jr. Each contractor is an expert at his particular type of home. The idea in this is that as a usual thing, home sellers have all their homes built by the same contractor. As a result, although built with different layouts and exteriors, there is likely to be a sameness about houses so built. By employing different contractors, there is an individuality secured in the construction which appeals strongly to the home buyer.

Another unusual feature gave the names and addresses of all sub-contractors, all well-known firms. This feature assures home buyers that only first class materials and workmanship are used in the construction of these homes. These names also appear on all the billboard advertising of the firm.

The range of prices offered on the vari-



**FLOOR PLAN**  
This Floor Plan Shows the Simple but Practical Design of the House at the Right.



The "Independent," a Style of House of Which 22 Sales Were Made on the First Day that the Sorenson & Peoples, Inc., Advertisement Appeared.

ous types of homes makes it possible for every home buyer, regardless of his financial condition, to change from a renter to a home owner on terms compatible with his resources. Each illustration

**Weathering and Paint**

THE unfriendly wording of the old wooden sign, pictured here, was originally painted in red on a smooth surface. It stands out in relief because the background, unprotected by paint, has weathered away. Microscopic examination of the wood at the Forest Products Laboratory showed that rot organisms were not responsible for its disintegration.

Only when wood is allowed to remain damp for long periods are decay organisms likely to rot it. When it is subjected to ordinary wettings and dryings of the exposed surfaces it is more apt to weather. Weathering is the "raising of the grain," checking, cracking, splitting, wearing, tearing loose of fastenings, and gradual disintegration of wood, due to stresses set up in the piece by its swelling and shrinking with the alternation of rain and sunshine. It also includes any mechanical wear which may result from wind, rain, frost, hail and similar causes.



This Old Sign Has Weathered Away, Except Where the Painted Lettering Protected the Wood, Until the Letters Stand in Relief.

Paint is not, as many think, completely impermeable to moisture and rot fungi. Neither does it stop the growth of fungi already in the wood. It is, however, the best known protection against weathering because it retards the absorption of moisture sufficiently to spare the surface of the wood the extreme and rapid variations in moisture content which cause deterioration of the sort shown here.

**The Annual Road Congress**

TWENTY-TWO Latin-American nations have been invited to appoint official delegates to the 1927 Road Congress to be held in Chicago during Good Roads Week, January 10 to 15, 1927. The meeting will be the twenty-fourth annual convention and road show of the American Road Builders' Association.

was accompanied by a full description. The 22 salesmen of the firm were kept busy on Sunday showing the three model homes completely furnished. When the day's business was checked up, it was found that the sales included 22 Independents at an average of \$5,975 each; six Aristocrats at \$10,500; four Detroiters, at \$7,250; one small house at \$4,000; one bungalow at \$8,500; one bungalow at \$7,800; and one Colonial at \$8,200. Each day since, from two to six sales have been made and each salesman has from 10 to 20 bona fide prospects.

The advertising will be kept up in the newspapers and in addition, 20,000 circulars will be mailed, each with a letter, to the lot owners in the territory covered by their operations. The original advertisement carried a coupon for prospects who could not go out Sunday, and these coupons are coming in at a great rate, over 100 coming in within three days after the advertisement appeared.

Each salesman is at a high pitch of enthusiasm and each believes thoroughly in his product. Of the 22, there are 16 who are home owners and 12 of these carry the insurance policy of the Aetna company, and right here is a point which carries considerable weight in the closing of sales. When salesmen think enough of the thing they are selling to put their own money into it they will put the force of conviction into their sales efforts.

The firm of Sorenson & Peoples, Inc., has been in existence for two years and for some time has been using the methods to which it is now giving publicity. S. H. Sorenson, the president, was in the automobile business before embarking in the real estate business. D. H. Peoples, secretary-treasurer, was secretary of ex-Governor Cox of Ohio.

The remarkable response of the home buying public to their advertising seems to substantiate the claim of Sorenson & Peoples, Inc., of being the largest merchandisers of quality homes on Detroit's east side and to justify them in the use of their slogan, "A full dollar's worth for every dollar." H. L. SPOONER

# "The Court of All Nations"

A Picturesque But Highly Modern and Architecturally Harmonious Residential Development

**E**IGHTEEN years ago, R. C. Hillen came to Oakland, Calif., and started to build bungalows. In the last 15 of these 18 years, he has built 1,500 homes on the east side of San Francisco Bay—100 homes a year. And he has sold every one of them.

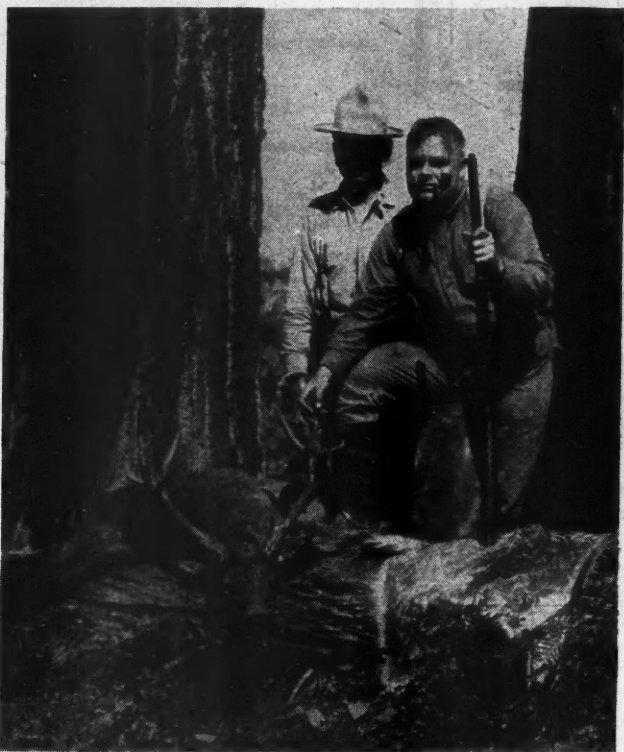
Along with this record, he has made for himself a reputation as a builder of not only picturesque but highly modern and comfortable homes—"modest mansions"—and the idea of old world exteriors, adapted to the most up-to-date five and six-room interiors, and featuring all the desired improvements, appealed at once to the home-loving public.

The Court of All Nations, a restricted district in East Oakland which contains homes representing every type of architecture from Sweden to Spain and Italy and from Russia to France and England, is one of the most distinctive he has built.

The story of the inception and growth of the Court of All Nations typifies the manner in which Hillen went at his home building in the East Bay district. It has always been his aim to keep a year or two ahead of all the other home builders in the East Bay district. In 1924, he spent nine months in Europe, absorbing the atmosphere of buildings in every country on the continent. He brought home with him sketches and ideas, and submitted them to W. W. Dixon, a well-known East Bay architect, who adapted those ideas to modern American home-building methods.

The stimulus of travel is a recognized force in any sort of creative work. Hillen became a well-known sportsman and fisherman. He went to Alaska on fishing expeditions, and went north into the wilds to hunt deer. He poked into nooks and crannies of the old world, and brought home gems of architectural detail in his head. Those ideas, woven into modern American homes, appealed to the public, and every one of the homes in the Court of All Nations sold immediately, most of them before they were completed.

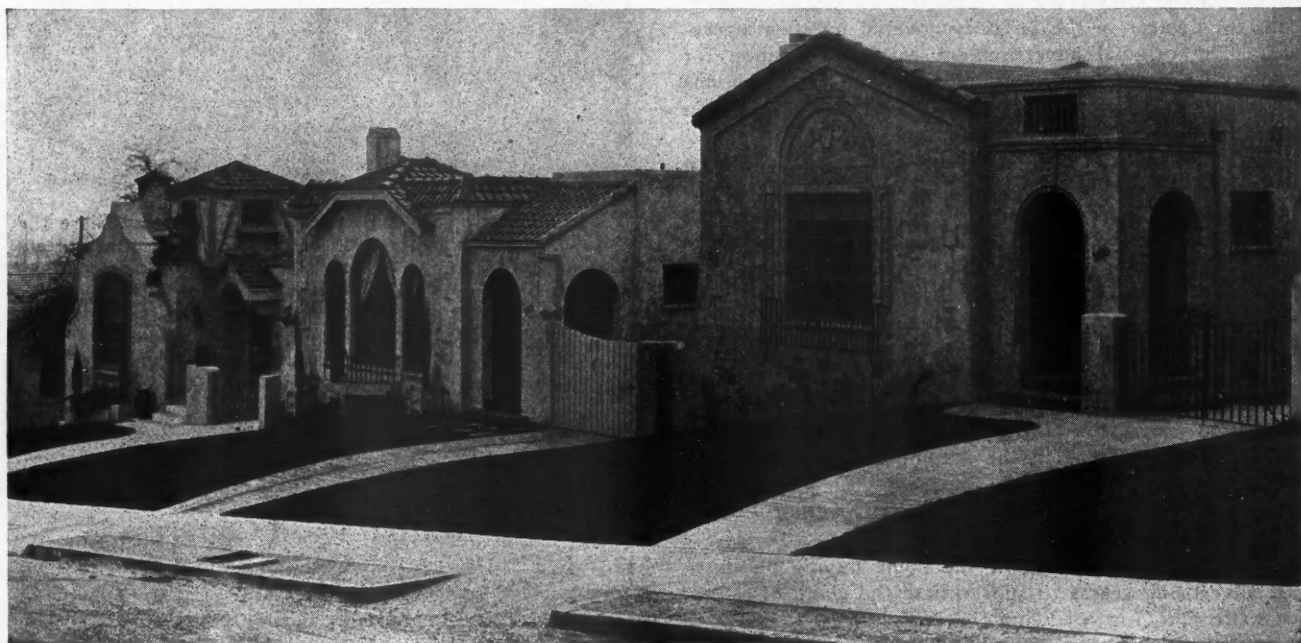
It is Hillen's belief that a harmonized neighborhood is the solution of the problem of obtaining the ideal in com-



In His 18 Years of Activity in Oakland, California, R. C. Hillen Has Made a Record as a Builder of Picturesque Homes. He is also well known as a sportsman.

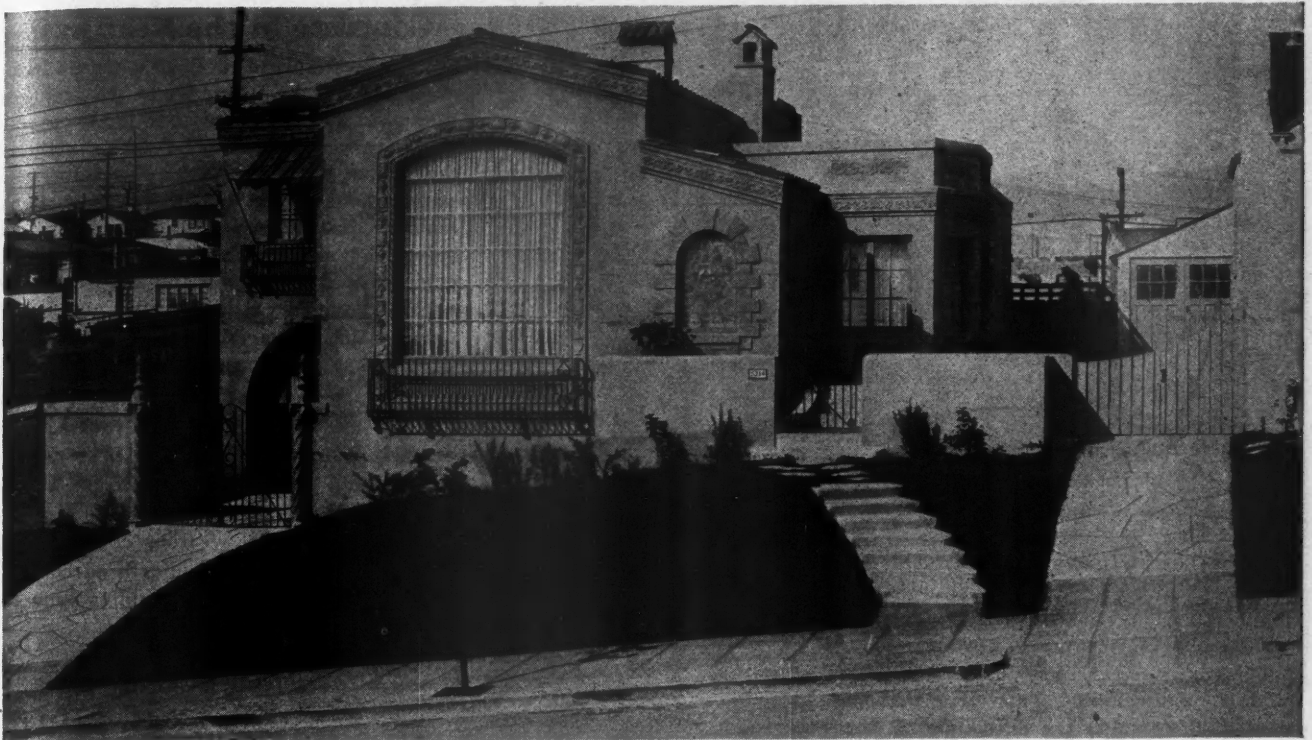
munity beauty. A Russian or a German type of home in a hodge-podge setting would lose half its value.

"Just as a rare picture depends for its enhancement on an artistically appropriate frame—so with houses," Hillen says. "Until very recently, too, little thought has been given to this very important phase of subdivision planning. As a result, the architectural effect of a neighborhood is left entirely to chance. Houses that are in themselves beau-

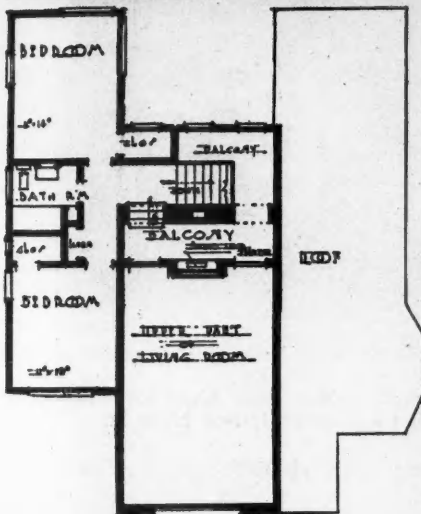


A Typical Group of Houses in R. C. Hillen's Court of All Nations. Here Italian and German architecture has been used side by side but so skillfully treated that complete harmony is achieved along with a pleasing effect of variety.





An Italian Type of Home in the Court of All Nations. The designs for these houses were developed by W. W. Dixon, Architect, from notes and sketches made by Mr. Hillen in Europe.

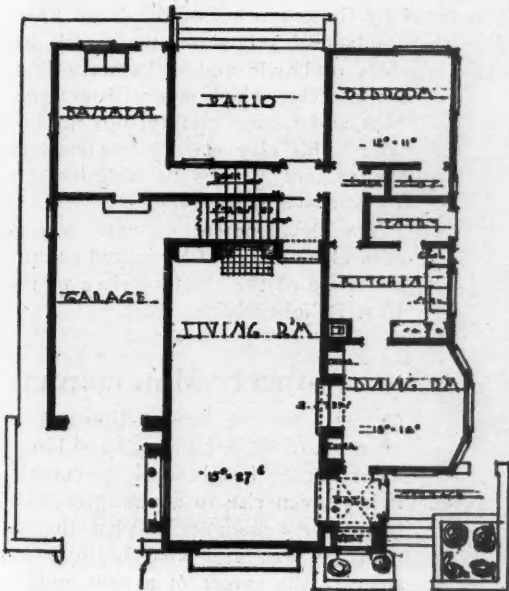


tiful follow one another along a row, without regard for laws of artistic harmony or contrast, and the resulting confusion jars no less because it is so common.

"The individual builder is naturally at the mercy of circumstances as to what the



The Spacious Living Room in the House Pictured Above Is Two Stories in Height and Includes a Charming Balcony at the End Above the Fireplace.

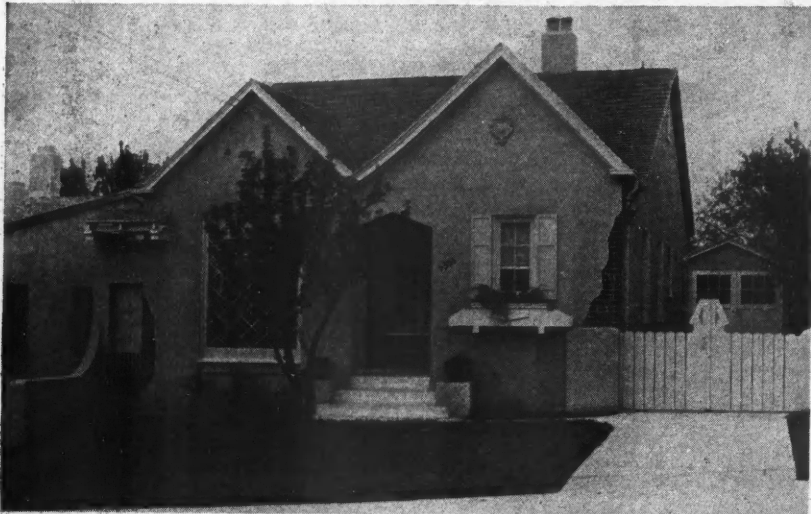


Floor Plans of This House Show a Home Thoroughly Modern and Complete and Possessing a Picturesque Charm.

setting of his home picture will be, since he has no control of what will be next door. The matter is far too subtle to be covered by building restrictions."

The Court of All Nations is a brilliant example of the success of Mr. Hillen's idea; its separate units are carefully planned designs, typical of the cottage architecture of the countries represented. The group pleases with its variety, yet, with such sure artistic knowledge was the arrangement planned that never does the diversity approach the bizarre.

"Back of the whole idea of the harmonized group is the inspiring thought that a fine distinction—and a wide differ-



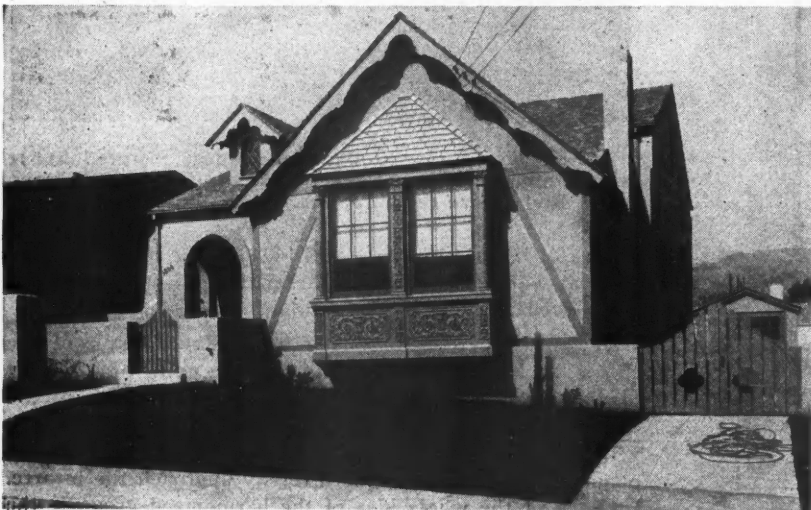
The Three Houses Shown on This Page May All Be Seen in the Court of All Nations. They represent three styles of architecture, but they harmonize perfectly. The one above is in English style.

ence—exists between a house and a home," Hillen says. "The house is a structure, the home is a dwelling. That very personal element that makes the difference between the two also makes various types of people choose for themselves the various types of dwellings.

"And while this diversity of taste and expression makes for charm, when properly harmonized, haphazard arrangement of homes cannot promise architectural harmony. And because not only the exterior of the house itself, but the neighboring buildings play such an important part in the true home achievement, the planning by one expert of the entire group is the truly successful way to community beauty."

Hillen's homes sell for \$7,250 to \$20,000, and he says it is easier to sell a \$10,000 home in a "harmonized neighborhood" than a \$7,000 one in a haphazard setting.

Beside the Court of All Nations, Hillen is noted for his College Court, built on land nearly adjacent to Mills College, and for Normandy Gardens. The latter is the most pretentious arrangement of homes that this original builder has yet attempted, and it was built on an old landed estate, one of the landmarks of the vicinity. **FORD WILKINS.**



And Here Is a Home in the German Style Which Has Been Used to Good Effect in the Development of the Court of All Nations.

### Concrete in the Near East

THE widespread use of concrete construction by Americans in refugee camps and orphanage buildings, seems likely to revolutionize builders' methods throughout the Near East. Heretofore the native houses and buildings have been mainly constructed from adobe, brick and stone, but Americans found the local cements far more useful and almost equally cheap. Even pipes, bowls, sinks and drains were shaped over reinforcements of steel wire mesh, with entire success.

The native cement is of volcanic origin and is found in pockets in the rocks, ready pulverized for mixing. The best quality comes from the island of Santorini, and is declared to be as easily worked and as durable under local weather conditions as the lower grades of manufactured cement. Few difficulties attend its mining, and its



A Modified Russian Style of Architecture Has Been Used for This Home Without Any Clash With the Other Houses Near It.

cost is extremely low, only slightly more per cubic yard than sand or gravel.

Concrete plumbing was a complete innovation in Greece when introduced by the engineers of the Near East Relief in building their industrial school on the Greek island of Syra. The interiors of bowls and sinks were lined with a white clay which sets with extreme hardness and lasting quality, not unlike porcelain. This clay was the material used by the ancient Greeks as a lining for their aqueducts and reservoirs.

The development of new uses for the natural resources of backward countries has been one of the chief services of the Near East Relief activities.



### Property Management

THE planning, construction and management of office buildings and large apartment houses has become so complex that it has given rise to a new profession, that of property manager. What the property manager does and what he must know in steering the career of a new building will be put down in black and white in a job analysis which is now being made by the National Association of Real Estate Boards.

# Standardized Steel Roof Truss Aids the Builder

**S**TANDARDIZATION has meant much to the building industry. It has helped materially in designing. It permits the contractor to estimate with accuracy. It speeds up delivery and has made possible the erection of buildings in record time. The steel roof truss is another building product that has been presented by a manufacturer in standardized form. The thousands of garages going up in all parts of the country require roof trusses to secure a clear open floor space. Many other buildings use them to advantage.

One manufacturer has picked out the "bow string" or curved chord truss for standardization. This type is one of the flattest trusses made. In this case the pitch or ratio of height to span is 1/10th. Compared with other type trusses it means there is less actual roof area to be covered. Again it requires less brick or tile in the end walls. Then the rounded roof eliminates the ridge roll that is required with a hip or triangular truss.

Each truss is a true curved chord truss designed for a definite span. The end construction is such that the truss may be used for a variation in spans. For example, one truss is designed for a 68-foot span. This same truss is used for any span down to 64 feet. Another truss is



For Garages, as Well as Many Other Types of Building Requiring a Clear Floor Space, the Standard Roof Truss Simplifies the Problem of Construction.

designed for a 64-foot span. It in turn is used for spans down to 60 feet. In this manner the manufacturer has developed a complete line of trusses and carries them in stock for all spans within the range of economical design.

When a truss is used for a minimum span the ends naturally project beyond the walls. These ends may serve for eave supports. Where the builder does not wish the ends to project beyond the walls the manufacturer cuts them off to the specified overall length. This does not in any way affect the load-carrying capacity of the truss.

The conventional curved chord truss calls for a double angle section for the top and bottom chords. Heavy single angles are used in this truss in place of the lighter double angle construction. Using the same weight of steel with the same strength, the truss is made up of heavier, thicker angles. It eliminates the danger of damage to the truss in shipping and holding. The trusses are shipped to all parts of the country. Hence they must be able to endure a long rail haul, a rough boat passage, a bumpy truck trip over mountain roads or a combination of all three.

Electric arc welding plays an important part in the manufacture of the trusses. The larger ones are shipped in two sections for ease in handling and erecting. This splice is taken care of by bolting in the field. All other connections are electric arc welded. Welding has played a prominent part in recent developments in the structural steel industry. It eliminates the rivet holes that tend to weaken the members of a section.

Tests have proven that electric welding will build up a joint that is stronger than the individual members connected. As a result these trusses, built under standardized shop practice with full opportunity for thorough inspection and testing, should prove to be an advance over the typical riveted truss.

The fact that the trusses are shipped from stock is one advantage of this standardized product. But probably the chief advantage lies in the ease of designing and laying out the job. The manufacturer has published safe loading tables for the trusses. This permits the architect or the contractor who does his own designing to pick out the trusses, get his quotation, and lay out his own job. It is another example of what standardization is doing for the building public.



These Trusses Are Designed to Withstand, Without Damage, the Rough Handling of Shipment by Train, Boat or Truck.

# The Cause and Cure for Efflorescence

By R. P. BROWN

**"FUZZ"** or "bloom" on brick, tile, concrete or other masonry is most annoying to the architect and builder. No matter how good the construction, design and workmanship may be, the presence of these white splotches, technically known as efflorescence, sometimes mars and disfigures the appearance of the best of jobs. Inasmuch as the "fuzz" is white, and everyone knows that lime is used in the mortar, it is common to accuse this material as being the source of the trouble. Actually, the cause is purely a chemical one in which lime never enters. Dry lime and crystals of efflorescence may look somewhat alike, but similarity stops at this point.

Efflorescence indicates water in the wall. What actually happens is not hard to explain. The water in the masonry must find an outlet. Ordinarily, it seeps to the surface and evaporates without any trouble. If, however, there are present in the materials any salts that water can readily dissolve, they go into solution. Consequently, when this water reaches the exposed surface and evaporates, they are deposited on the wall patches of fine, white, powdery crystals of the chemicals which were originally in solution and which, because of their appearance, may be mistaken for lime.

The trouble-making chemicals are usually well known sulphate or chloride salts which may have been present in some dirty sand, in the water used, or in the brick itself. Of the sulphates, those which occur most frequently are sodium sulphate (Glauber's salts), magnesium sulphate (Epsom salts), and calcium sulphate (Gypsum). Sodium chloride (common table salt) and calcium chloride, both of which are often used in cold weather to lower the freezing point of the mortar, are the chlorides most frequently present.

Simple tests will show readily what caused the efflorescence. Scrape off a little of the "bloom" and dissolve it in distilled water. To this add a drop or two of ordinary silver nitrate solution. If chlorides are present the solution will immediately become cloudy. If they are present in quantity, a considerable amount of whitish precipitate will be deposited. When exposed to light, this precipitate will turn dark.

To test for sulphates, dissolve a sample of the fuzz in

boiling distilled water to which a few drops of muratic acid has been added. This solution should be strong enough to turn blue litmus paper red. While it is still boiling, add some 10 per cent barium chloride solution. If sulphates are present in appreciable quantities a heavy cloud will at once appear and drop to the bottom. The amount of sulphate occurring is roughly indicated by how rapidly the cloud forms and how much precipitate is deposited.

All the chemicals needed can be purchased for a few cents at any drug store and it is an easy matter to test the sand and water to be used on a job and with only a little more trouble, even the common brick, by applying the tests outlined.

Lime may contain a trace of calcium sulphate (due to the presence of some sulphur in the coal used for burning the lime), but careful analyses of hundreds of commercial limes have proved that the amount is so small as to make it impossible for lime to be a factor in efflorescence.

Efflorescence can usually be avoided by simply using washed sand and pure water in the mortar and by protecting the job so that the walls do not become soaked during construction. Even after it makes its appearance, it can be remedied if taken in time. A liberal application of water with hose or brush will dissolve the fuzz and wash it away. If the accumulation is very heavy it may be necessary to add a little commercial muratic acid to the water, making about a 10 per cent solution. When this treatment is used, the wall should be thoroughly washed down afterwards.

A most interesting case of efflorescence occurred recently on a large brick wall. Lime was blamed for the trouble, but investigation showed that the difficulty was due to soluble salts. In this instance complaint was made about the scaling and spalling of mortar joints. The masonry had been laid up in wet weather, using lime-cement mortar. During the following winter the exterior face of the wall was exposed to driving rains, followed by freezing weather. The face brick were very dense and their absorption was negligible, but the backing brick were soft and highly absorptive.

The face of the wall, with the exception of the mortar joints, was impervious and consequently the excess moisture



The Discoloration of Masonry Known as Efflorescence Disfigures Many Buildings But It May Be Avoided by Those Familiar with Its Causes.

in the backing brick and mortar was forced to evaporate through the outside mortar joints. Most of the moisture came through the outside face because evaporation took place more readily there.

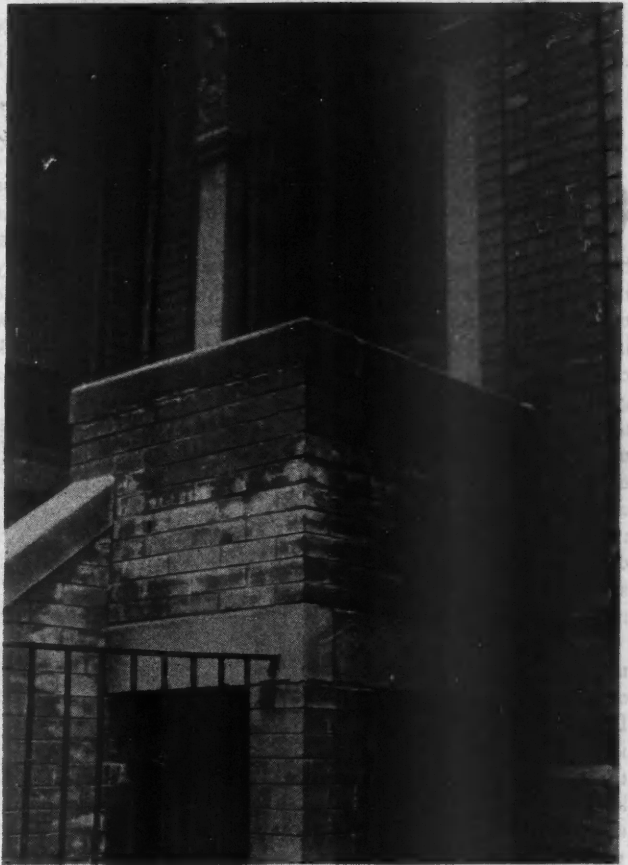
The mortar joints had been trowelled to a slick, dense surface, which drew the lime and cement to the face, leaving a film which was particularly subject to contraction. This surface, in many instances, was dried rapidly by hot winds, becoming very weak. Some crazing was noticed, but no attention was paid to it.

As the water came out of the wall it deposited its soluble material as crystals in the shrinkage cracks of the mortar or just behind the film on the face of the joints. When these crystals formed they exerted enough force to loosen the face of the mortar joint. The crack thus started by crystals of efflorescence collected rain and snow and as this free water froze and thawed, it spalled off the face of the mortar joint.

Where the joints were "cut" or left comparatively rough, in contrast to those which were "struck" and slick, no difficulty was experienced, for there the mortar was sufficiently porous to allow the water to carry the salts out to the surface; the crystals formed freely and were washed away by the rains without causing trouble.

Careful chemical analyses were made of the lime, cement, sand, water and brick used. The only place where soluble salts were found was in the common brick used for backing. There was not a great deal of soluble material even in these brick, but when it was leached out and concentrated in the form of crystals just under the face of the mortar joints, it was sufficient to start spalling, and this was completed by frost action.

Thus it was shown conclusively that the whole trouble was due to a combination of type of joint, soluble salts in



**Contrary to Popular Belief, Efflorescence Is Not Caused by Lime But Salts Which May Be Present in Dirty Sand, Water or in the Brick.**

the backing brick, hot winds, and finally the freezing behind the scale on the joints. Lime, originally blamed for the whole trouble, had absolutely no part whatsoever in the proceedings. Science, or to be more specific, the chemist, had riddled another popular fallacy.

When there is any chance of soluble salts being present in the materials which must be used, the danger of serious efflorescence may be minimized by a few simple precautions. The common brick may be protected against soaking, but that should not be interpreted to mean that they should not be dampened before laying. During wet weather the wall should be protected by boards or tarpaulins.

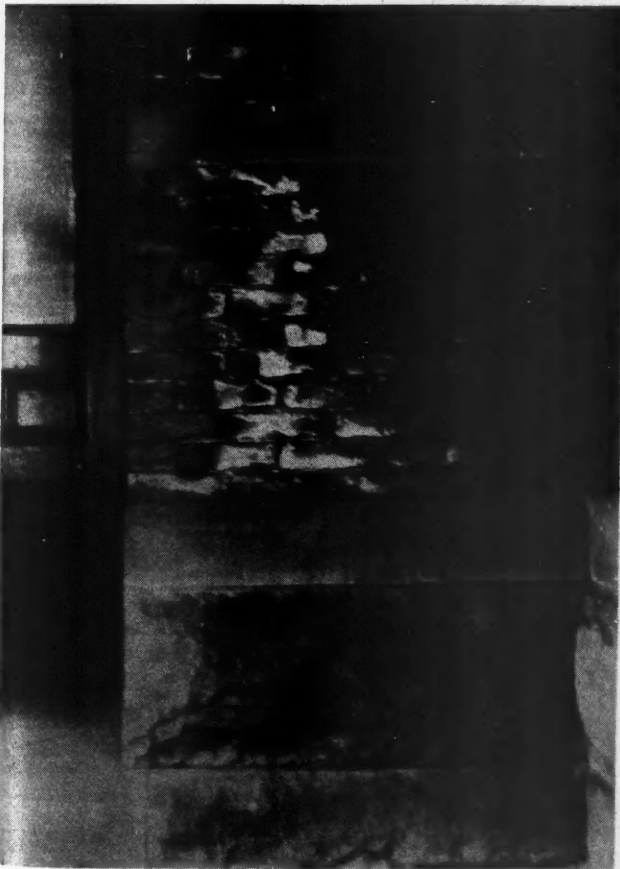
Also, a cut or raked joint will give best results, although a weather joint which has not been slicked will be satisfactory, for in joints of that character any efflorescence that might occur will be on the face where it is harmless and may be easily washed off.

In practically every case, good workmanship will prevent efflorescence, but where it does occur, its cause may usually be determined quite readily. Before any material is blamed, the character of the workmanship on the job should be investigated, for there should never be an excess of moisture in a wall where the joints are full and where it has been protected during wet weather.



### Announce Plan Contest

**A** PRIZE of \$2,500 has been offered by C. W. Stimson, Seattle lumberman, for an all-wood home design which will present the possibilities of woods native to the Pacific Northwest. This prize has been offered through the West Coast Lumber Trade Extension Bureau, of Seattle. It is to be awarded in a nation-wide contest open to all interested persons. The contest will begin next January and close July 1, 1927.



**Simple Tests, Which Will Quickly Show the Cause of Efflorescence, Can Be Made and These Will Indicate the Remedy.**

# Prevent Damage to Buildings Caused by Insects

**O**WING to lack of information on the destructiveness of our native termites or white ants and their wide distribution throughout the United States, buildings are often erected with untreated woodwork directly in contact with the ground, leaving the way open for the entrance of these insects. In consequence, termites burrow into the wood and may greatly damage the woodwork of the building before their presence is detected. It is a great hardship for a man on a moderate salary to make a large initial outlay on a new house and, after one or two years, be forced to expend several hundred dollars additional to reconstruct the building to eliminate the termites.

The only effective permanent preventive and remedy, says the United States Department of Agriculture, is proper construction of the building with the knowledge of the habits of termites and the specific that will eliminate them. This specific is "insulation" of all untreated woodwork from contact with the ground; it can be accomplished by the use of stone or concrete foundations and lower flooring or the use of foundation timbers impregnated with coal-tar creosote.

Practically all the termites which damage buildings in the United States are of subterranean habit; if they can be kept from reaching woodwork from the ground they cannot survive in the building. Also, if present in a building, after all untreated wood, such as joists, wooden floors, sills, etc., has been removed from contact with the ground, they will die out, i.e., dry up, even if the termites have penetrated to the height of several stories in the building. They have been cut off from their moisture supply in the ground, which is necessary for their life.

Recently the Bureau of Entomology of the Department of Agriculture has been advocating the modification of the building regulations of various cities so as to include the following simple rules to prevent attack by these insects.

No floors, sills, beams, clapboard, etc., of untreated wood should be laid on or in the earth, and untreated beams should not be laid in concrete without at least one inch of concrete underneath and separating it from the earth. No lime mortar should be used in foundations or in cellar walls where they are in contact with the earth, since termites are able to penetrate lime mortar after some years' service. All brick work extending below the surface of

the ground should be faced and capped with concrete at least one inch thick. These slight modifications of the building regulations of cities by city engineers would save much property as well as the time and worry to householders. It is a form of house insurance.

The recommendation of the use of heat, steam, insecticides, and fumigants against these subterranean termites is of no permanent value and is futile. If conditions in a building are unsuitable to termites they will leave; if they can be prevented from leaving or

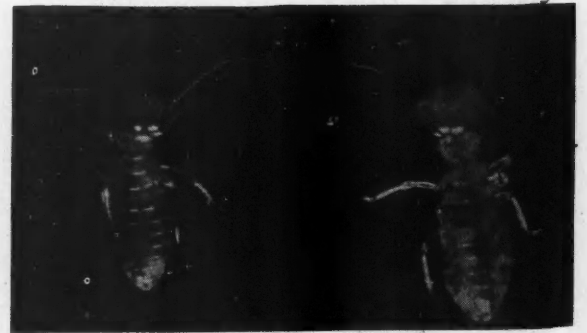
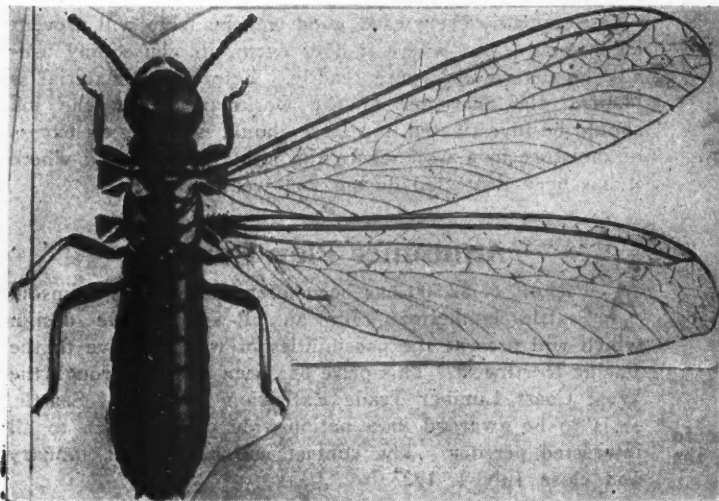
coming in again by shutting them off from the ground, nothing further need be done and anything else indeed is only a waste of time and money.

Complete insulation of all untreated woodwork from the ground is the only effective method of preventing the ravages of termites in buildings in the United States. A prospective home builder should insist on obtaining this safeguard! It will pay in the end.

Considerable damage to the unbarked logs of the principal woods used in the construction of log cabins and rustic work is caused by insects. Woods cut at certain seasons of the year are subject to attack by beetles, which riddle the bark with holes, causing sawdust-like borings to fall out and cover the wood; and by the larvae, or grubs, of wood-boring beetles, which mine the inner bark, causing it to loosen and fall off, and which bore into the sapwood and sometimes the heartwood of logs, making



Earth-Like Shelter Tubes Built Over a Wall by the Workers Among the Termites, or White Ants, Which Cause Extensive Damage to Buildings.



Above: The Workers. This is the injurious form of termite but it remains hidden within the wood that it damages.

Left: The Winged, Flying, Adult Which Appears Each Spring. The presence of this form in a house should be a warning that the woodwork is being damaged.

large holes and often reducing them almost to dust within a few months. This damage causes large financial loss, annoyance, and unsightly condition of the material.

It has been found that by cutting the wood at certain seasons of the year and by treating it with protective, repellent, or insecticidal substances, practically all insect damage can be prevented or held in check. In most instances the injury can be detected by the presence of the characteristic piles of reddish-brown or whitish particles of boring dust, or shredded wood fiber, which the insect makes while working in the bark or wood and which it pushes to the outside in order to clear its gallery.

The beetles or grubs in the bark and wood can be killed by thoroughly saturating all parts with liquid orthodichlorobenzene. As it is necessary for the solution to penetrate the wood and reach the insect in order to kill it, great care must be taken to apply the liquid thoroughly. This solution is colorless and will not stain. It has a slight odor which disappears after a short while. Orthodichlorobenzene can be effectively applied either with a brush or a forceful sprayer. The spraying method is preferred since it saves much time and labor. One pint will treat a chair. Three gallons is sufficient to treat 100 square feet of log surface.

The injury can be prevented by adopting one of the following methods: When possible, delay the cutting of the trees for log cabins until fall (October to November) when the insects are not active. The period of insect activity about Washington, D. C., extends from April 1 to October 15. Farther north insect activity would begin from two to four weeks later and end from two to four weeks earlier;

farther south the season would begin two to four weeks earlier and end that much later. Place the logs at once in open piles, either off the ground or under cover in such a manner as to offer the best facilities for the rapid and thorough drying of the inner bark. This will prevent attack by most insects. To insure the maximum amount of protection, however, the logs should be sprayed the following spring when the insects become active. This method is especially recommended where it is desirable to retain the bark on the wood.

When it is necessary to cut the trees during the spring or summer months, treat them as soon as cut with a solution of coal-tar creosote, grade 1 liquid oil, 1 part, to kerosene, 3 parts. Before use this should be strained through burlap. The creosote stains the wood very little when diluted in this way.

When the treatment of the bark with creosote is objectionable, and the bark can be readily peeled, remove the bark from the tree in strips, treat the wood with the creosote and kerosene mixture, and replace the bark, using large-headed nails. This will prevent insect attack and preserve the rustic appearance of the wood.

Where the bark is not especially desired, fell the trees at any time of the year, although preferably in the fall, remove the bark, and brush the logs with creosote. This will give them a pleasing stain.

Wood used in the manufacture of rustic furniture should be cut during the fall and winter months and removed from the woods to a place of protection before insect activity begins in the spring.

## A Home Designed for Permanence

**H**OWARD G. WILSON, Vice-President of the Wm. F. Pelham Co. (well known Chicago bankers and financiers of building construction), has spent many years inspecting and appraising values of homes. In the course of this work, he has been struck with the rapid depreciation that is always observed in homes of flimsy construction. When he decided to build a new home for himself and his family, he determined that he would use permanent materials that would not only eliminate risk of fire, but keep depreciation and maintenance costs down to a minimum.

The high cost of fuel in the severe Chicago winters made him anxious to build a home that would conserve heat in winter and keep out heat in summer. After more than a year spent in investigating building materials of all kinds, he decided on a concrete house using cinder concrete block walls covered with portland cement stucco with the inside faces furred, lathed and plastered. For the roof he selected concrete tile. The result is highly satisfactory.

Architects and builders have been giving much consideration of late to the problem of insulation, devising methods of giving a "thermos bottle" effect to the building of walls and roofs, particularly roofs, which endure the most severe exposure to the sun's rays. All day long the roof is exposed to the intense rays of the boiling sun. Naturally, it absorbs this heat, ready to radiate it into the surrounding air when the sun goes down. The idea is to prevent this heat from reaching the interior of the roof and thus increase the temperature of the rooms below.

The "thermos bottle" principle is not a difficult one to apply. It is simply that of

interposing between the exterior and interior an air space which serves to intercept or stop the passage of heat. Where concrete tile are used, the method of laying them on battens or strips resting slightly above the sheeted surface of the roof, provides just that air space which is needed to intercept the passage of heat. Furthermore, it can be done without additional expense.

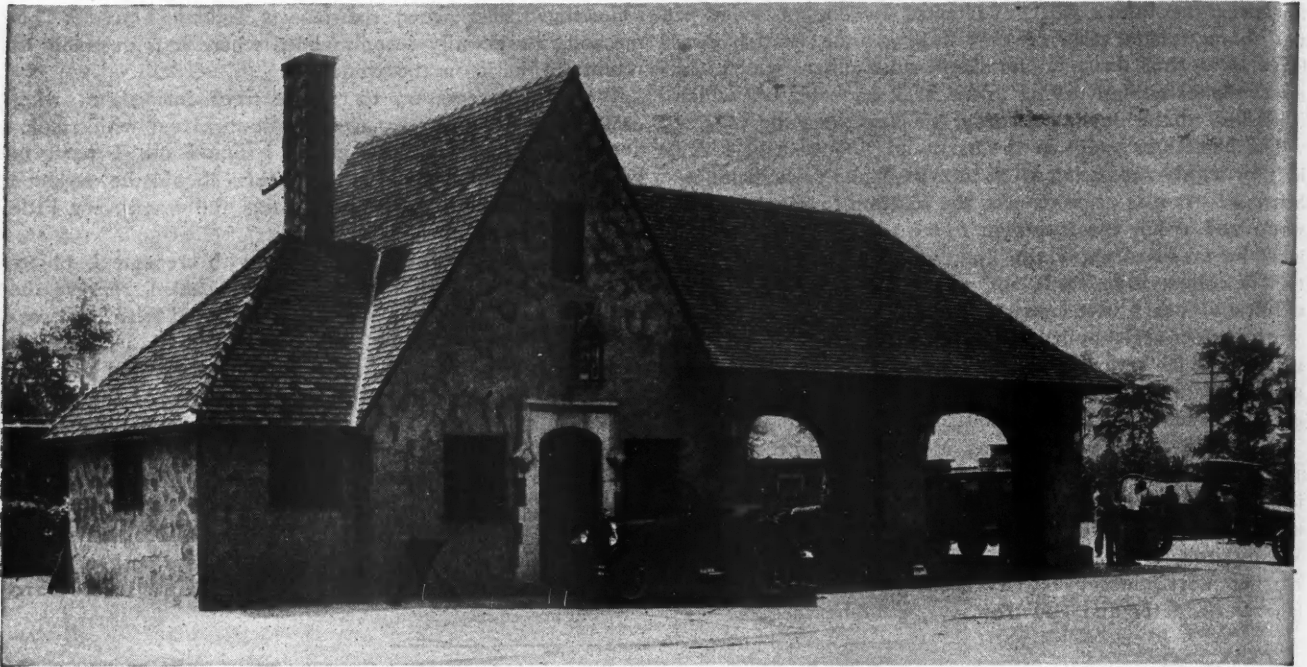
This outstanding advantage to be gained from the use of tile is often lost sight of by the home builder, and it is a very pleasant discovery to him to find how cool and comfortable his home is after the tile have been placed. This is particularly noticeable where old houses have been re-roofed with tile. Bedrooms which have been unbearably hot in midsummer are now found to be comfortable.



Permanence of Construction and Insulation Against Heat and Cold Were Demanded by the Owner of This House and the Methods Employed Have Given Complete Satisfaction.

# The Better Service Station

It Is a True Landmark and a Sure Stopping Place on the  
Cross Country Motor Route



In Planning This Service Station the Design Was Counted on to Attract the Passing Motorist to It Rather than to the Innumerable Stations Which Are Passed on the Road. It is one of the most attractive that will be seen by the cross country traveler passing through Wilson, Ark.

**I**N order to assure itself of the probability of getting a paying amount of business a certain retail chain-store company stationed a man on every prominent corner in a city and counted the number of people who passed in a day. The busiest corner has selected for the future store location.

To a certain extent this is applicable to the service station business though, of course, the number of automobiles that passed would be the criterion upon which prospects could be based. However, the selling of gas and oil and tires depends upon more than just location, and here is where the builder and designer come in.

Taking for granted that the gas station is located where it draws upon tourists as well as home folks for trade, the element of service enters largely into the game, and to give service, the gas station must be properly designed. Further, the design or architecture of the station must let motorists know at a glance that right here is where he can get everything that he wants for his car and passengers.

The writer has driven across the country several times and service stations are as vivid to him as the sheep jumping the fence are to the insomnia patient as he counts himself to sleep. In cutting across Arkansas the tourist will run across a service station, among the cotton and corn fields with their familiar hoers lazily at work, the gen-

eral lines and neat appearance of which would be a credit to the finest suburb in the East.

Designed and built by George T. Mahan for Lee Wilson, of Wilson, Arkansas, this service station need take second place to none of the thousands and thousands of its brethren that line the highways. The design is French, more or less, and adapted most pleasingly to the requirements of the business under its roof. The shingles are variegated in color and staggered. The exterior is stucco and tinted a dark tan. The surface is worked to an interesting texture in keeping with the architecture.

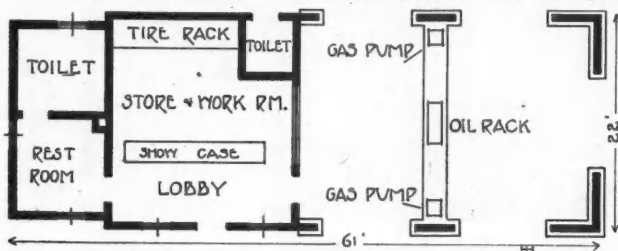
The facade of the entrance into the lobby might be that of an exclusive, well done residence. There is a pair of leaded glass casements on each side of the stone door frame, and an ornamental lamp hangs from above. On its glass are painted the word, gas, and the name of the town. The door is constructed of wide planks running vertical, and a small stained glass window centers its upper portion. Even though the supply tanks of the automobile are full, a passing tourist feels almost obliged to stop and at least draw a long breath within the cool interior.

The wing off the main store and work room is divided into a rest room and a toilet for women. In the opposite, back corner of the work room, with its entrance door on the outside, there is a toilet room for men. The two service drives pass under substantially looking arches and handily located gasoline pumps quickly replenish the fuel supply.

In the rear of the service station, which is surrounded with ample concrete paving for the maneuvering of the car, are located the crankcase draining equipment and air hoses.

Even though the motorist may have preferences as to the make of gasoline and oil he buys, he feels sure that in such a tidy establishment he can get what he wants, and the lack of unsightly advertising signs does his soul good.

J. HAROLD HAWKINS.



A Simple Service Station Layout Which Includes All the Desirable Features Demanded by the Motorists.



# Space Saving Beds Aid the Builder

## Now Every Family Can Have All the Room It Needs, with New Beauty and Low First Cost

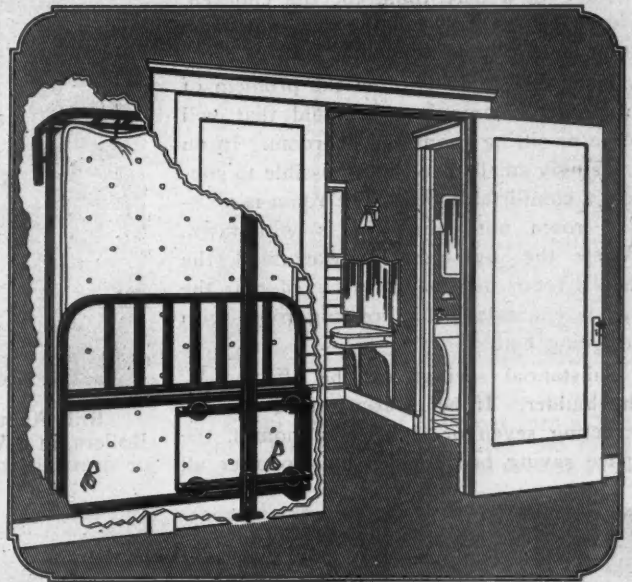
**A** NEW demand, insistent and nation-wide, is making itself felt in the home building industry today, a demand for more room without increasing the size of the house, more convenience with this compactness, more beauty with economy in first cost and upkeep. Builders who have sensed this demand and built their homes to meet it have found ready buyers. They have built what is wanted and the buyers have bought.

In apartments and hotels, the space saving bed has long been recognized as a commercial economy. With the beauty that now distinguishes this concealed furniture, home buyers appreciate it as a means to having the spaciousness and convenience of eight rooms in a six-room home. Few families can afford all the room they need, yet all want to provide a room for guests, self-contained quarters for a maid, a play room for the children, or an upstairs room. The put-away bed gives them these extra rooms at no extra cost, and, at the same time, adds distinctive beauty to the home in methods of concealment, as well as in the beds themselves.

French doors in a living room or sun room are always attractive. Mirrors, too, make rooms seem more spacious and lend an inviting atmosphere to their interior. Behind such attractive features may be concealed twin beds or a bed of any standard size, rivaling the finest furniture in



This Type of Bed Is Mounted on a Pivoted Door, Disappearing into the Closet Behind. The details of its operation are shown in the sketch directly below.



The Construction and Door Details of the Bed Shown Above. This bed rolls to the side leaving free access to the dressing room both when folded and when in use.



Beds Equipped to Roll on Large Rubber-Tired Castors Are Now Available with Wood Head and Foot Ends, in Period Designs and Finished in the Finest Woods Such as Mahogany and American Walnut.

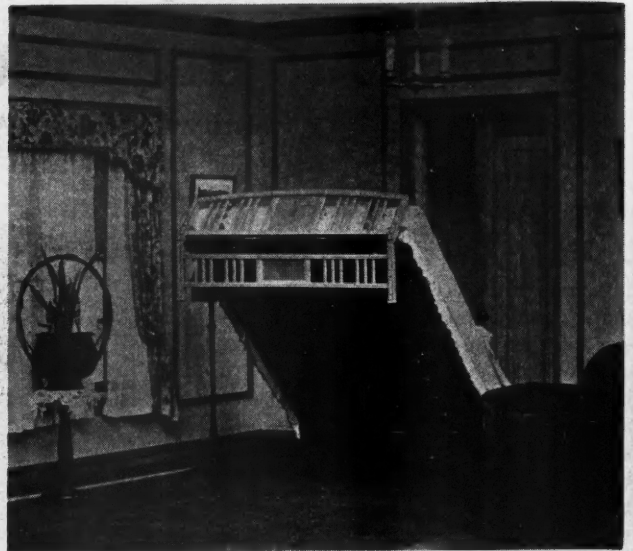
beauty and offering the comfort of full coil springs. Where paneled walls are used, the beds can be so effectively concealed that few would suspect that they are hidden in the wall.

Where it is desired to move the bed from one room to another, the roller bed fills the bill. These beds, mounted on large roller bearing casters, may be rolled into a closet for concealment and moved to any room or porch for use.

Improvements in the types of beds that are fastened to walls have done away with the old disadvantage of leaving the head in a closet as the bed is lowered. In the newer types, the head comes out into the room, assuring plenty of fresh air. Still other types are pivoted so that, as the door is swung around, the bed swings into the room. When the bed is in sleeping position, the door may be



When in Use This Bed Has All the Appearance of the Detached Bed but Is Actually Hung on a Pivoting Mechanism on the Door Casing.



The Bed at the Left Is Here Shown Partially Opened Showing How It Is Raised Into the Vertical Position Before Being Swung Back Into the Closet.

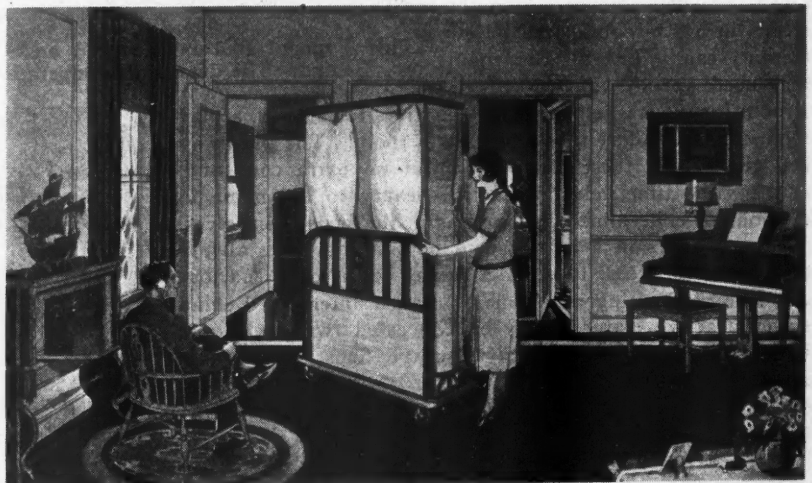
closed, eliminating draughts over the head of the bed.

To builders of home the space saving bed offers unlimited opportunities to appeal to prospective buyers. Every woman appreciates the convenience of these extra rooms that are available at a moment's notice to comfortably house her guests. Every woman appreciates the blessing of a play room for the children, where the bed is out of the way, not to be jumped on or disarranged.

Then, too, there is often the problem of providing a room for the maid that will serve as sitting room and bedroom. In an amazingly small space, it is possible to conceal a comfortable bed. The room is a sitting room until the bed is withdrawn. Where the investment is warranted, the maid's room may be so arranged that the bed is concealed in a dressing room with adjoining bath.

Substantial savings can be effected by the builder. If he is accustomed to constructing seven or eight-room homes, the space saving bed enables him to offer all

the conveniences of seven or eight rooms in a five or six-room structure. Not only does the builder have less money tied up in construction, but the buyers are offered a sub-



Still Another Type of Put-Away Bed Is a Detached Unit, Carried on Rollers, in a Vertical Position. When not in use it is rolled into the closet or dressing room entirely out of sight.



The Bed on Rollers Can Be Placed Anywhere Desired and Lowered, as Seen Here. It looks almost exactly like the ordinary bed of the non-disappearing sort, the roller device being inconspicuous.

stantial reduction in the price they expect to pay.

In every class of residence the put-away bed effects welcome economies and adds to the attractiveness of the rooms. In industrial housing projects, when hundreds of small homes are erected, the disappearing bed is welcomed for its economy and convenience. It enables a four-room house to take the place of six rooms—yet imposes no penalty on any of the tenants.

The arrangement shown in the photograph on the preceding page and in the smaller line drawing makes it possible for the builder to have a pivot bed in the dressing room concealed at all times from the adjoining room and yet have one full door access at all times. A full size bed requires but two 2-foot 6-inch doors; yet one 2-foot 6-inch access to bath or dressing room is absolutely clear and free at all times. The

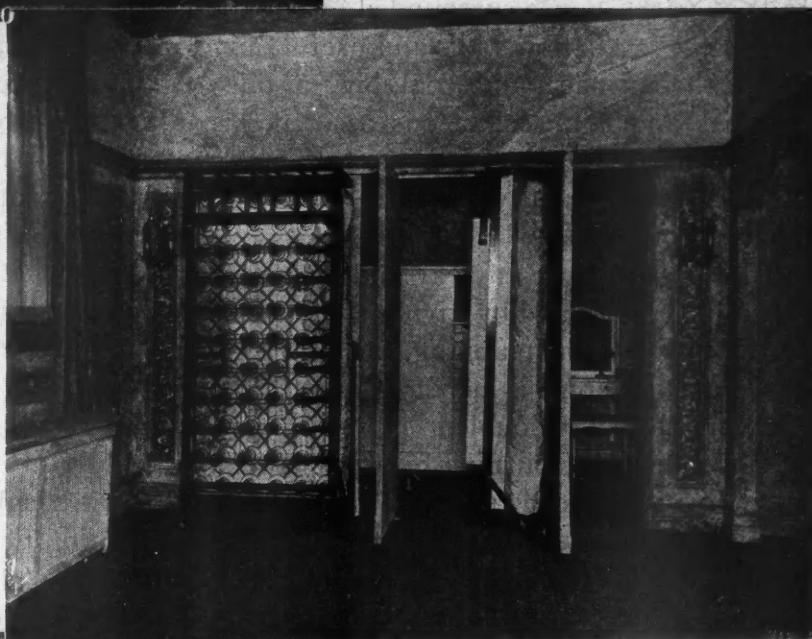


No One Would Ever Guess that This Attractive Living Room Is Also Made to Serve as a Bedroom, with Twin Beds, at Night.

bed is entirely concealed back of the other door.

When this installation is in use both doors can be closed and you still have 2-foot 6-inch access to dressing room or bath. The bed operates on a ball-bearing carriage, which insures ease of operation. This may be had in fabric, coil or box spring equipment with a complete range of design and finish of beds. Another modern advantage of many disappearing beds is that they use standard sizes of doors. Also, the more advanced types require doors no thicker than would ordinarily be used.

Eight-room convenience at six-room price is the popular demand growing louder



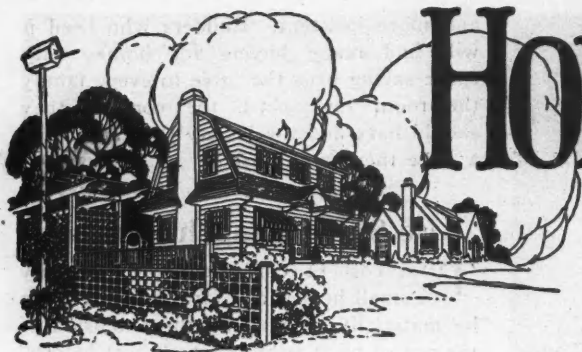
Here May Be Seen the Way in Which the Room Above Is Converted Into a Bedroom. The panels are pivoted and reveal twin disappearing beds on the reverse sides.

while 20 per cent of the lumber used in the average American home is short length lumber, that is lumber less than 8 feet long, only about 1½ per cent is purchased as such at the present time. In other words it is the custom of builders to order lumber in long lengths of 8 feet and more and cut it as it may be needed for short lengths. The result is the loss of both money and material by using the long lengths when cheaper short lengths would serve the purpose as well.

"Steel Construction Allowable Load Tables" is the title of a booklet which has been published by the American Institute of Steel Construction, Inc., 285 Madison Avenue, New York City. This handbook is intended for the use of engineers, architects, designers of steel construction and for engineering students.



With the Twin Beds Lowered Into Place the Room Shown at the Top of This Page Makes Just as Attractive a Bedroom as It Does a Living Room When the Beds Are Swung Out of Sight.



# Homes in COLORS

## More Ceiling Height Needed in Basements

By WILLIAM A. RADFORD

*President and Editor-in-Chief of the American Builder*

**F**IGURATIVELY speaking, the basement is coming up in the world. What used to be considered just a hole under the house surrounded by the foundation walls and useful only to house the furnace and coal bin, a pile of potatoes and a miscellaneous assortment of rubbish has of late years come into its own as an important and very useful part of the modern home.

The space is there anyway and by spending just a little more and by giving some thought and attention to the planning, the usable space in a two-story home is increased one-third and in a bungalow it is doubled.

Oil burners, gas burning heating plants and other forms of clean fuel have made possible the full and satisfactory use of the home basement. We have helped to plan a number and we have inspected a great many that are truly a delight to the family and an object of wonder and envy to their friends and neighbors.

The modern basement is clean, tidy, dry, well lighted. In general there are three important uses to which the basement is put and these should be provided for. First, the heating plant and fuel supply must be properly placed, and the heater doesn't have to be right out in the middle of the floor either; put it back into a corner and have the fuel supply arranged so that it can be put in directly from the wagons and so avoid costly handling. In the same corner with the heating plant you naturally place the garbage incinerator and the hot water heater.

The second important basement duty is to provide a cold room for winter storage of fruit and vegetables. Often this can be arranged nicely under a projecting porch or ell; but in

any case it ought to be as far as possible from the heating plant and separated from the warm basement by a solid, well insulated partition.

The third basement use is for the laundry. The modern laundry equipment of set tubs, electric washing machine, laundry dryer and ironer should be placed in the best lighted part of the basement away from the heating plant and convenient to the outside door. Good ventilation should be provided.

Then after these three important and necessary functions are taken care of there will be left considerable space which is very much appreciated as a playroom for the children, a workshop or a billiard room for the grown ups. One basement we have seen was made into quite a gymnasium with a trapeze hung from a ceiling beam and with other interesting gymnastic apparatus.

Now all these things should have more ceiling height than the ordinary seven or seven and a half feet. Eight, eight and a half or nine feet is much better and costs very little more. With proper ceiling height in the basement, furnace pipes can be run at a steeper angle and deliver heat much more efficiently; the ventilation is better for the laundry, and larger windows can be used, letting in more light. For the gymnasium, shop or game room the extra ceiling height is a great advantage.

It is not our idea to be extravagant in finishing the basement. That is not necessary. But a little extra care in planning, and more ceiling height and better lighting—both window lighting by day and plenty of electric lights switch controlled for night—will produce an extra floor for the home that will prove very useful, and worth many times the extra cost.

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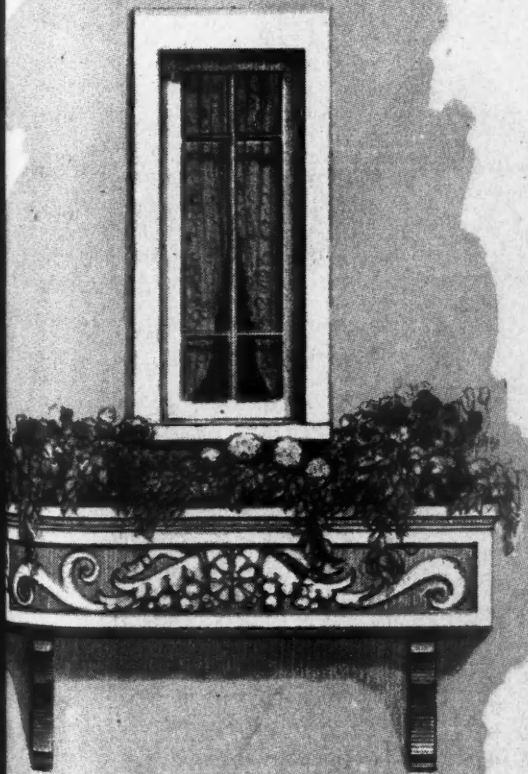
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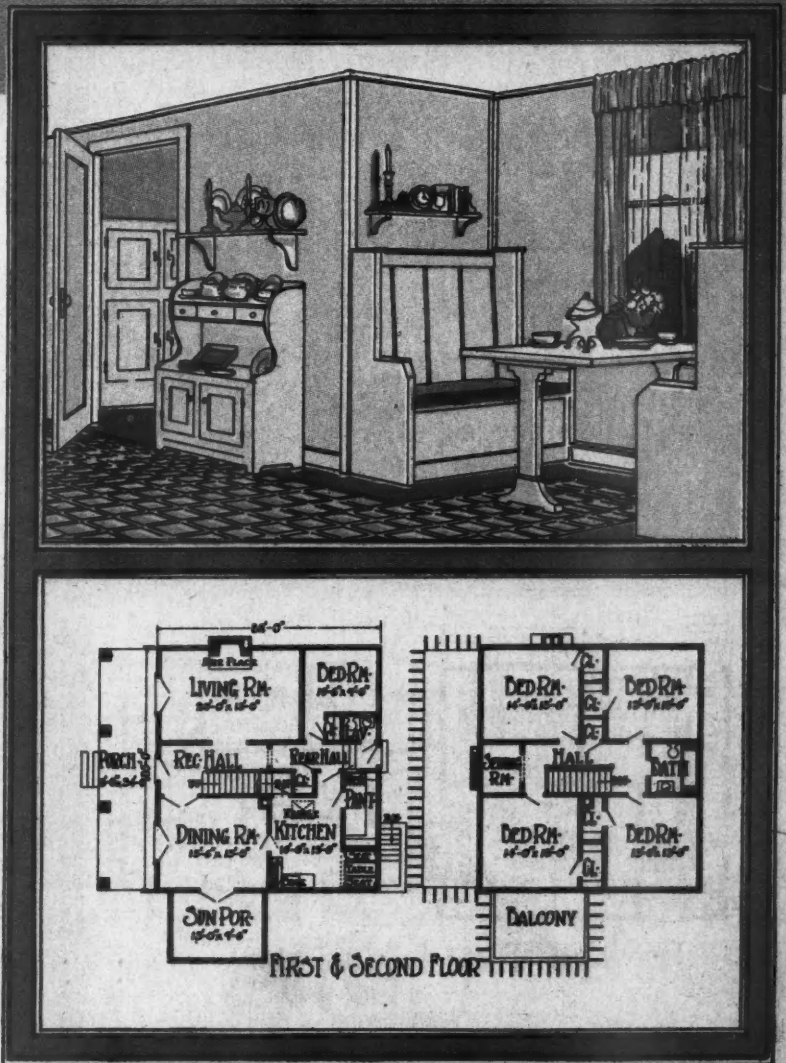


# The BADGER

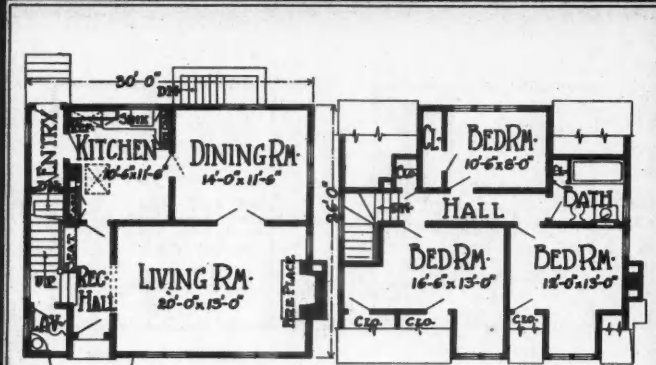
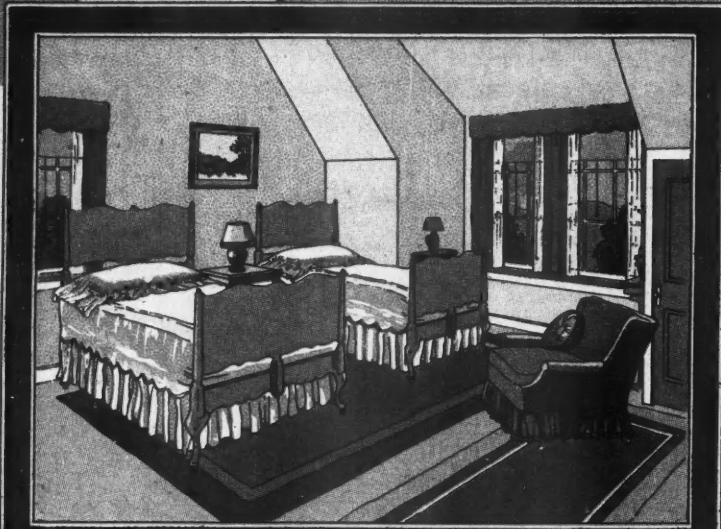
POPULAR and economical square type home with eight rooms.



of Ornamental Flower Box which Decorates the Upper Front.



Pat. March 15, 1921 and Sept. 30, 1924.  
Copyright 1926. Wm. A. Radford, Chicago.



FIRST & SECOND FLOOR

## The BAILEY

AN artistic shingled home of English style containing six rooms and bath. Color sketch shows one of the interesting bedrooms.



Detail of Front Entrance.

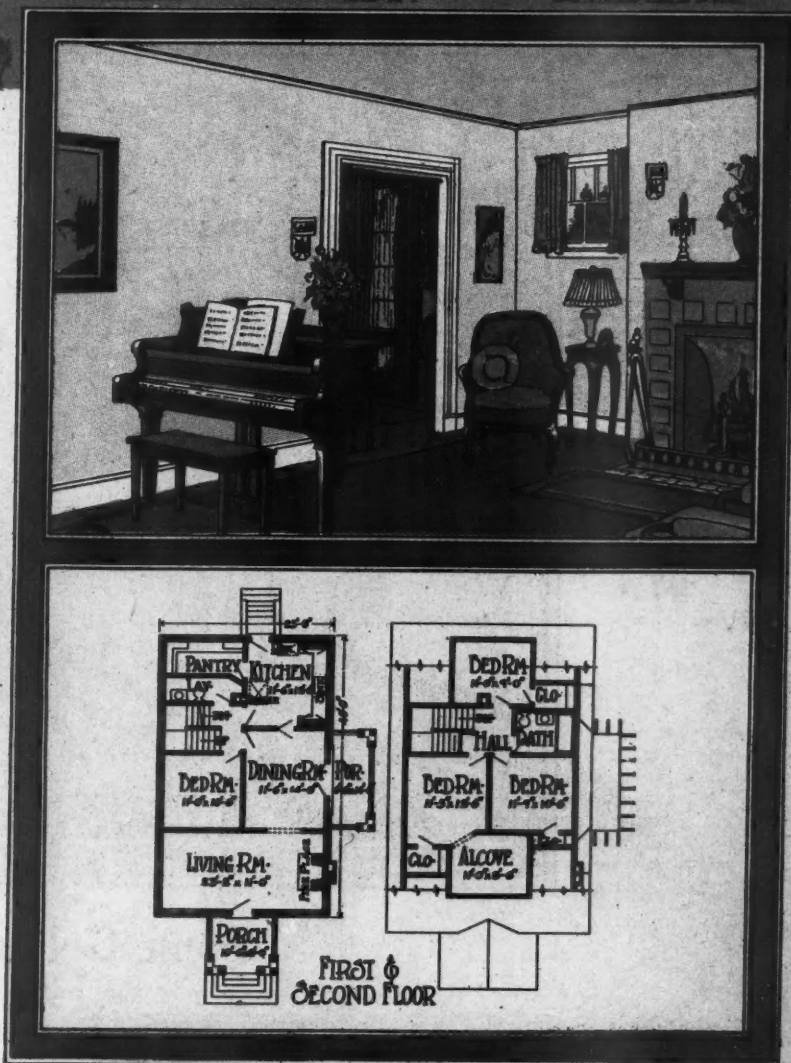
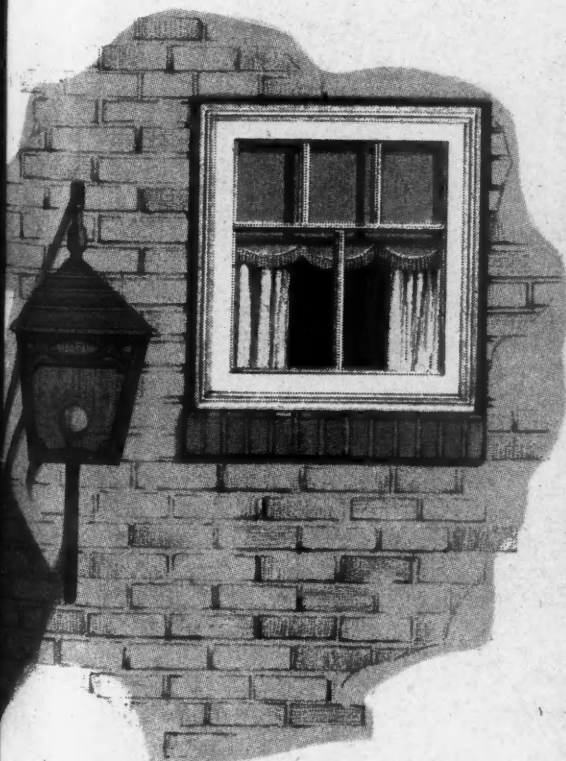
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## The BALDWIN

COMPACT and attractive brick bungalow measuring 25x40 feet not counting the porches. Opportunity here to finish the second floor later on if desired.



Use of Ornamental Lantern to Illuminate Side Porch and Grounds.

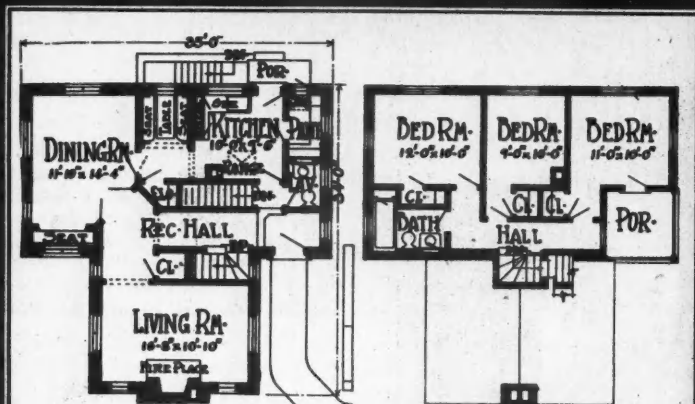
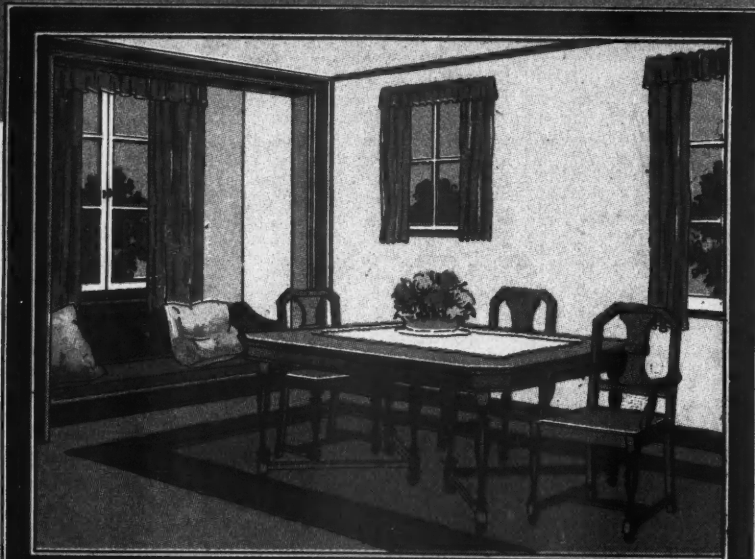


Some Colonial Stairs and  
Hallways





ON this and on the page opposite we illustrate some very well handled Colonial stairhalls—a wealth of suggestions for home designers and home builders and for those searching for ideas for appropriate furnishings and decorative plans.



FIRST & SECOND FLOOR

## The BARCELONA

A VERY interesting Mediterranean design containing five rooms.

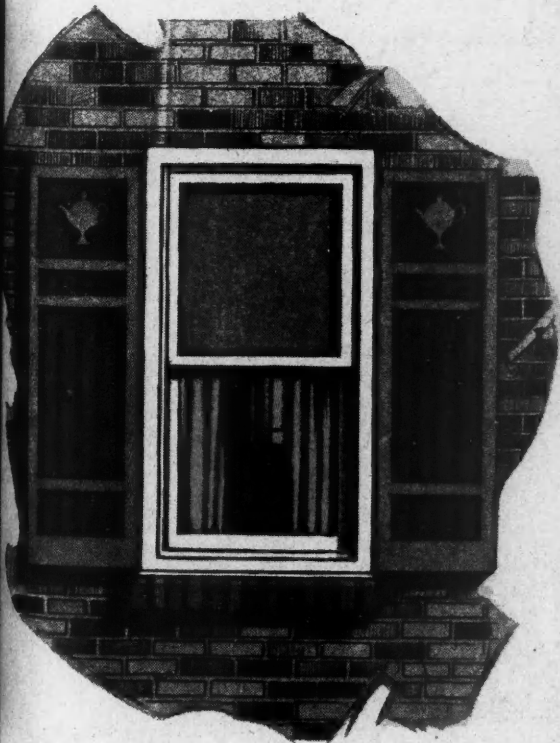


Detail of Outside Canvas Curtains for the Entrance Door—A Late Idea from California and Florida

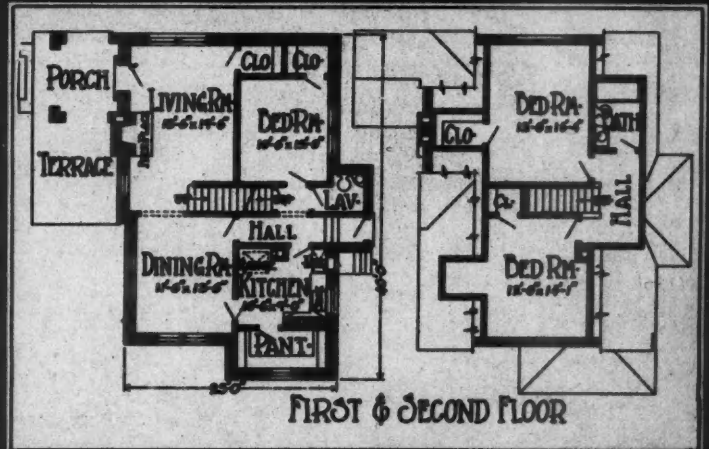


# The BARRINGTON

BRICK home of delightful English lines containing six rooms.



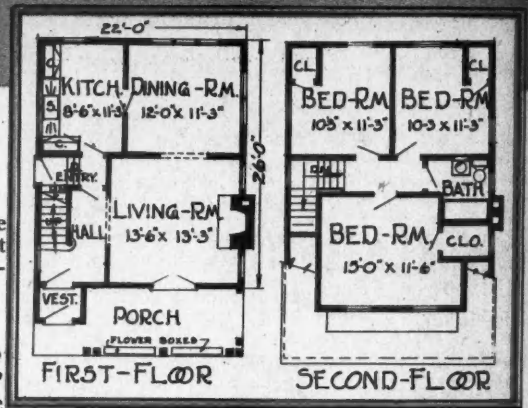
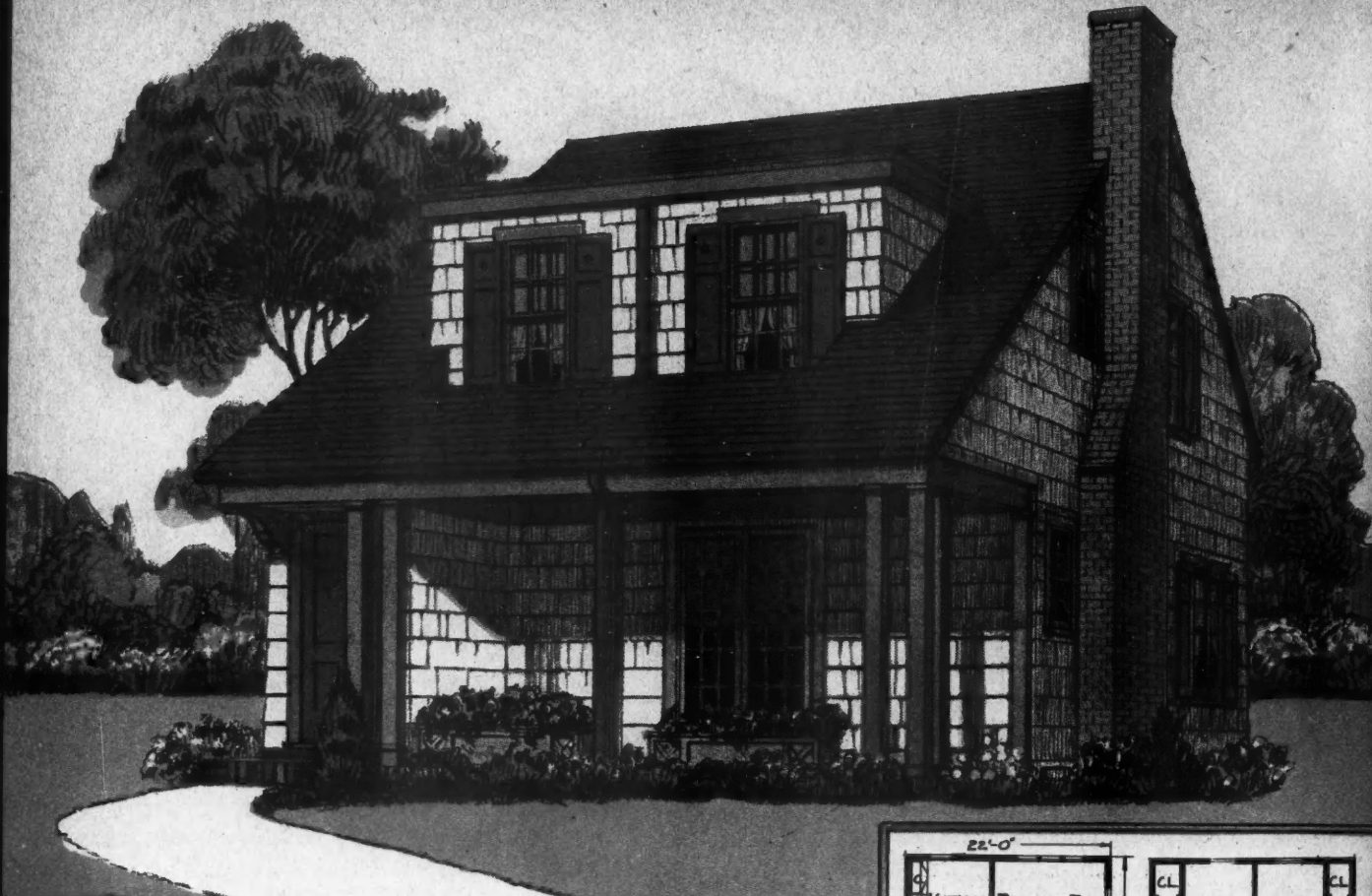
Detail of Ornamental Window Shutters.



FIRST & SECOND FLOOR

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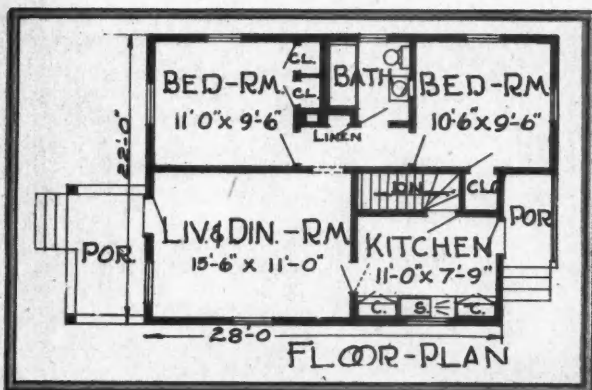


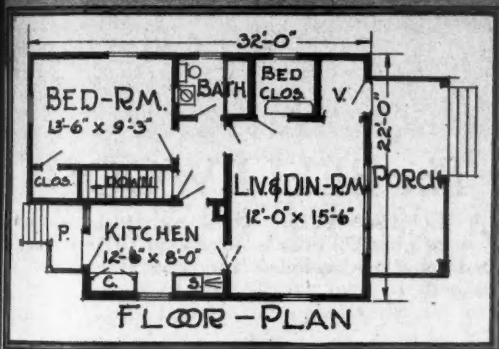
**The BATES**

ABOVE and to the right we present this narrow lot, six-room cottage.

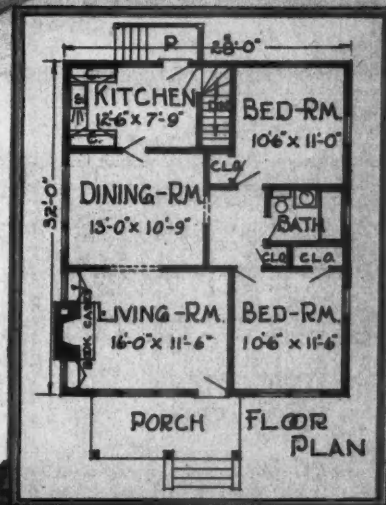
**The BAYSIDE**

BELOW and to the left is illustrated a good, inexpensive cottage for a narrow lot.

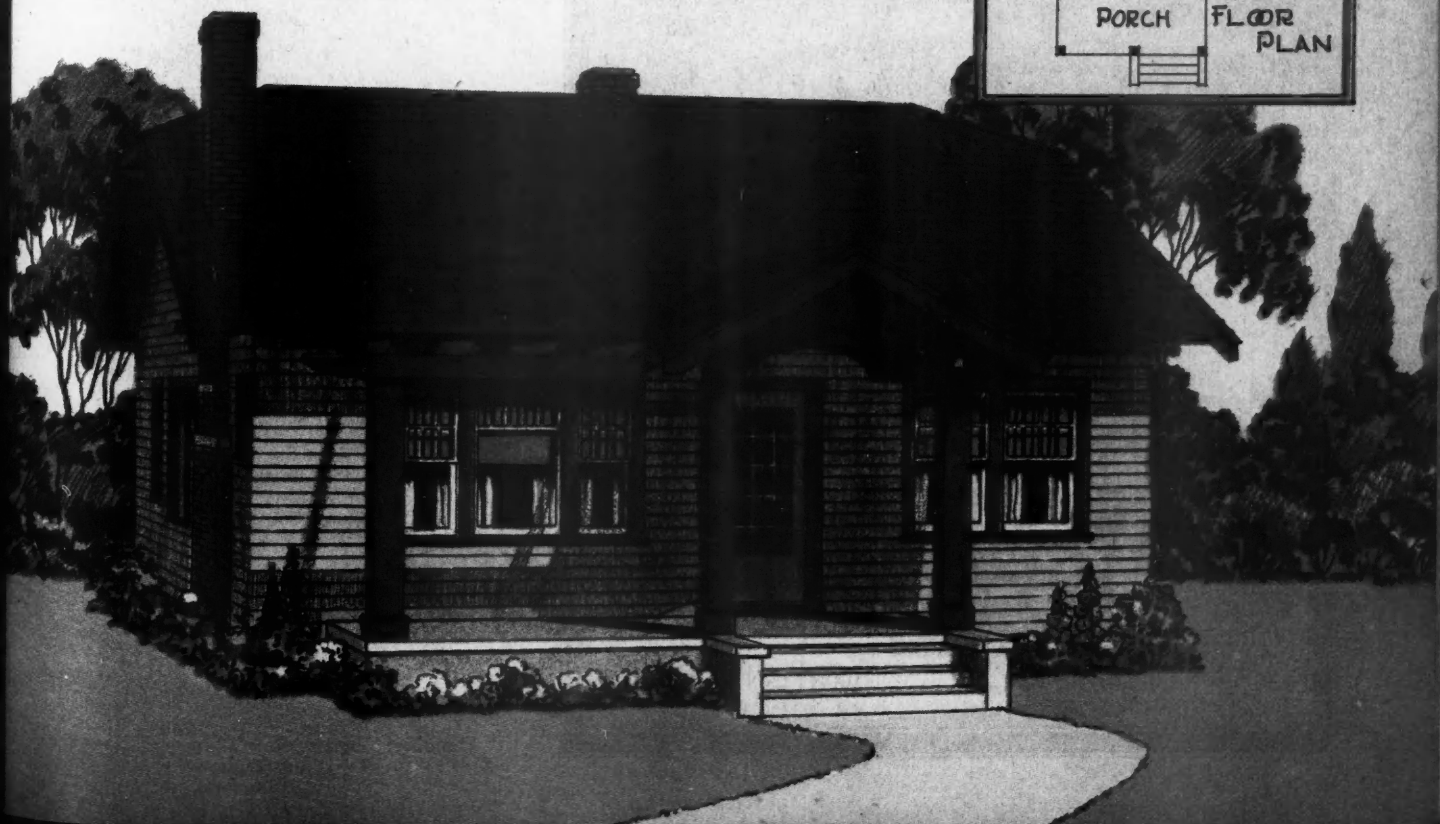


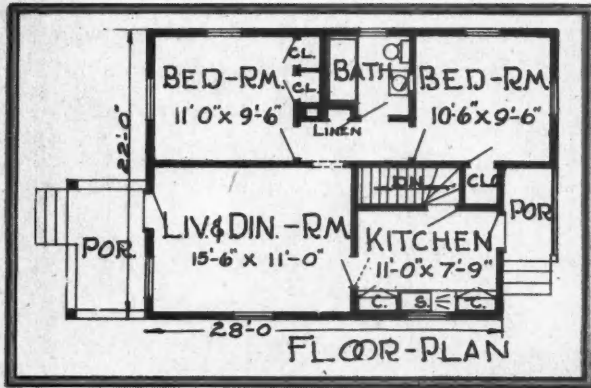


**The BECKLEY**  
 ABOVE and to the left is a little three-room home with four-room efficiency, size 22x32 feet.

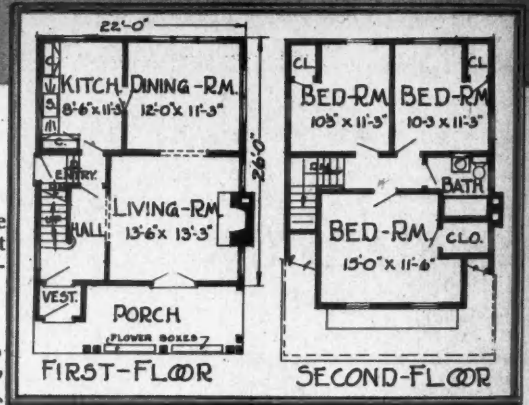


**The BELAIR**  
 BELOW and to the right is a compact little home of five rooms.





**The BATES**  
 ABOVE and to the right we present this narrow lot, six-room cottage.

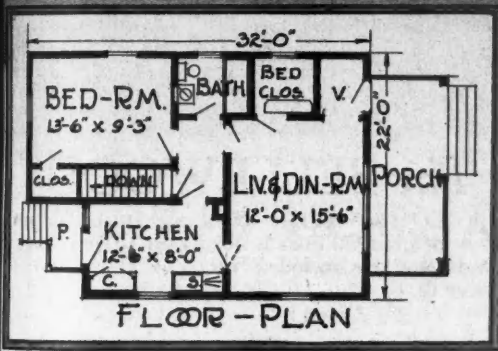


**The BAYSIDE**  
 BELOW and to the left is illustrated a good, inexpensive cottage for a narrow lot.



COLORPLATE 2B-X



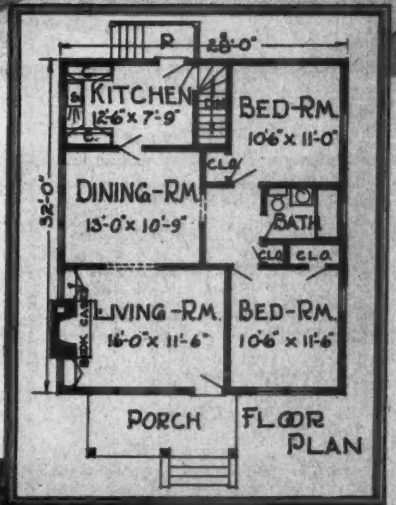


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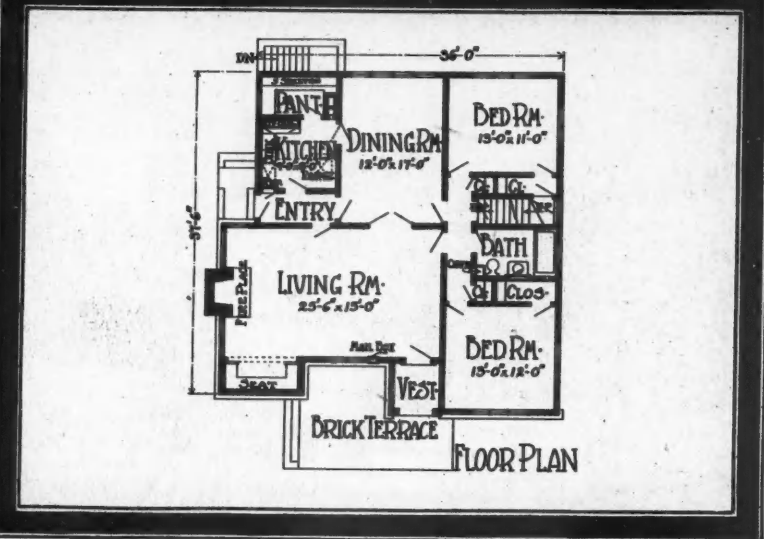
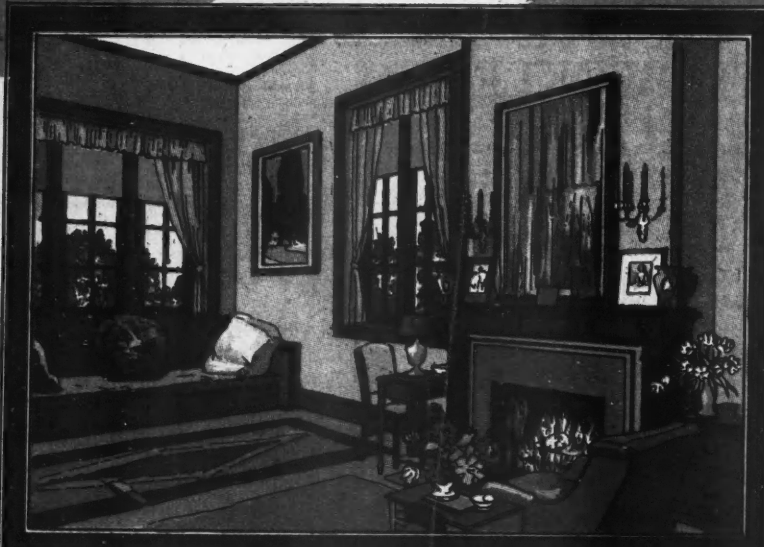
## The BELAIR

BELOW and to the right is a compact little home of five rooms.



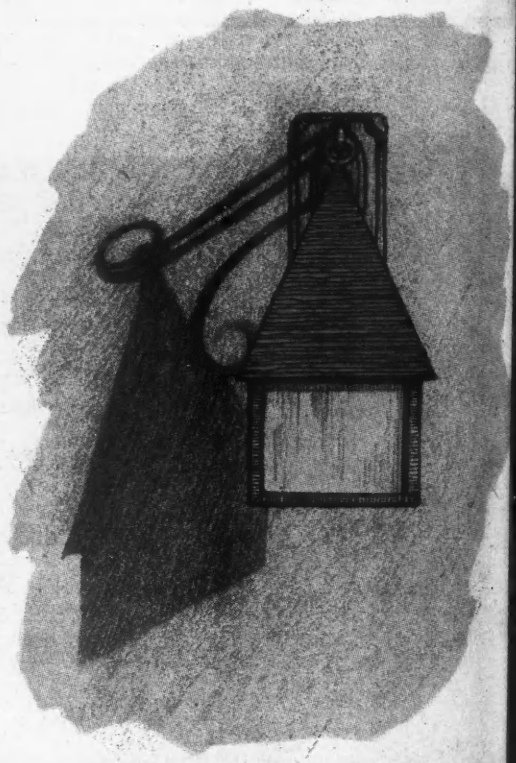
COLORPLATE 2B-XI





## The BELLEWOOD

A COMBINATION brick and stucco home of graceful lines is illustrated. Five rooms and bath are included very conveniently arranged.



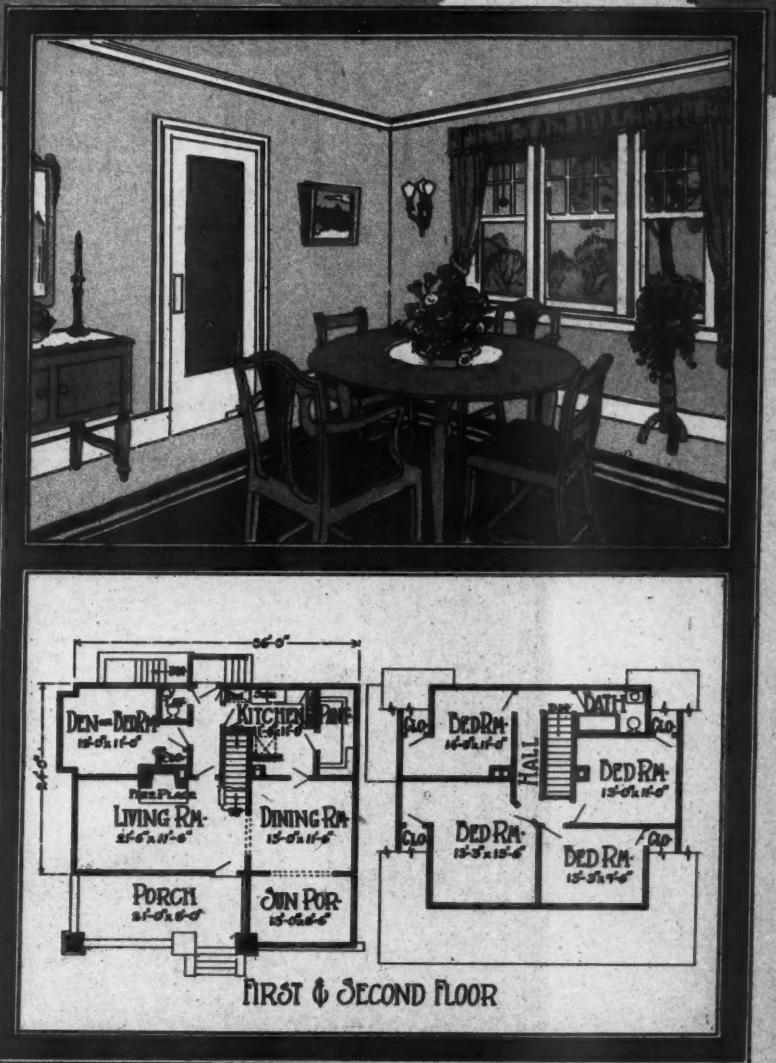
Detail of Ornamental Lantern Outside the Vestibule.





## The BELVIDERE

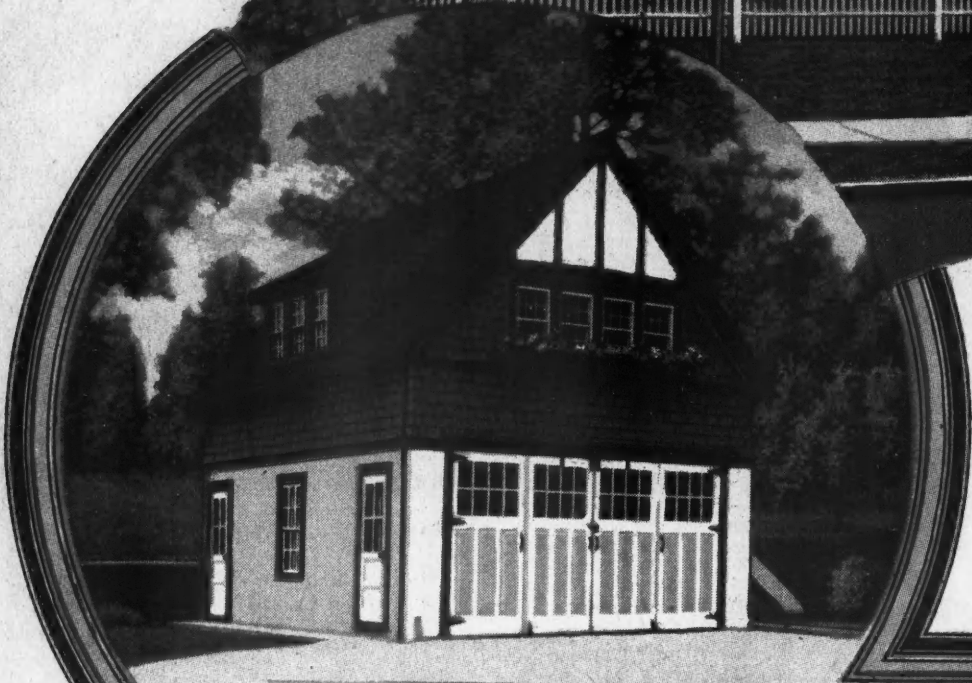
A FAVORITE bungalow design containing eight rooms, bath, lavatory and large sun porch. Color sketch to right shows the attractive dining room.



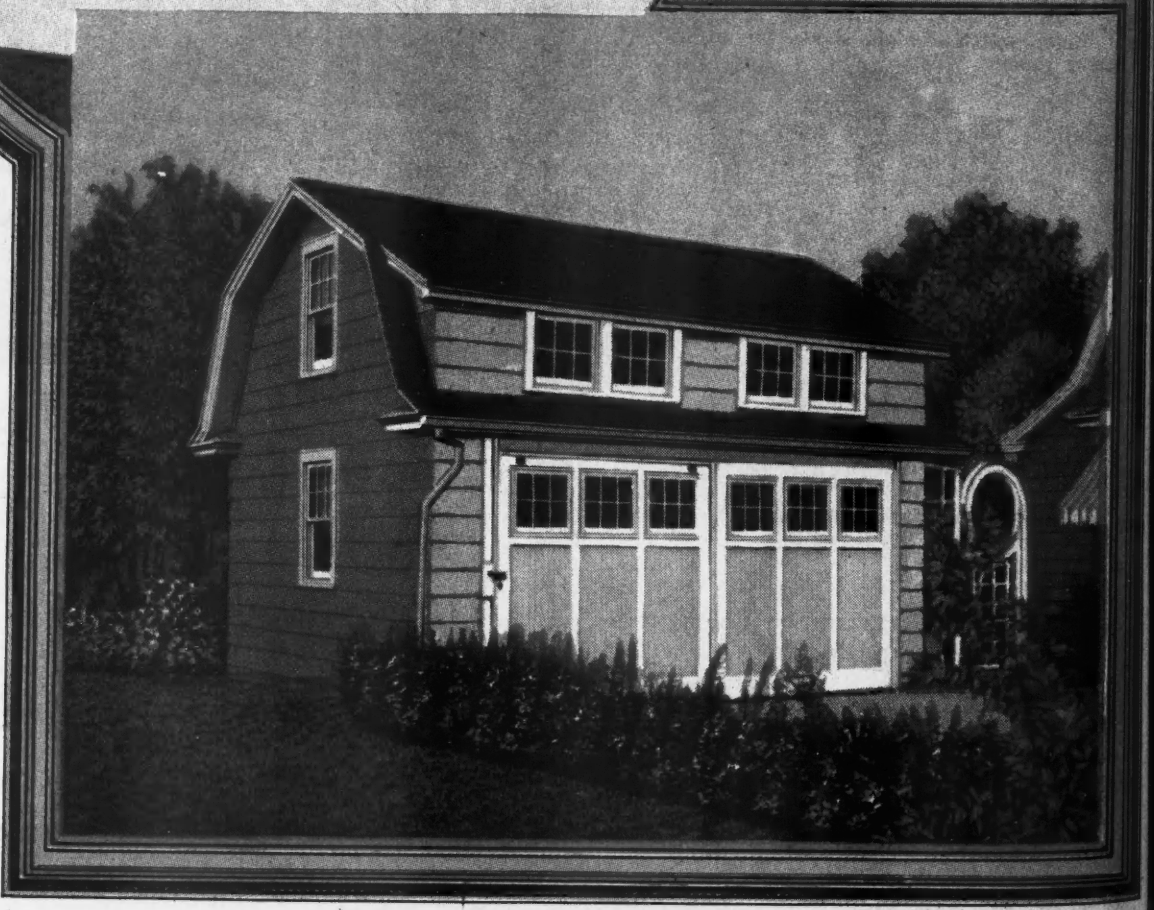
Detail of Ship's Lantern to go on the Front Porch Post.

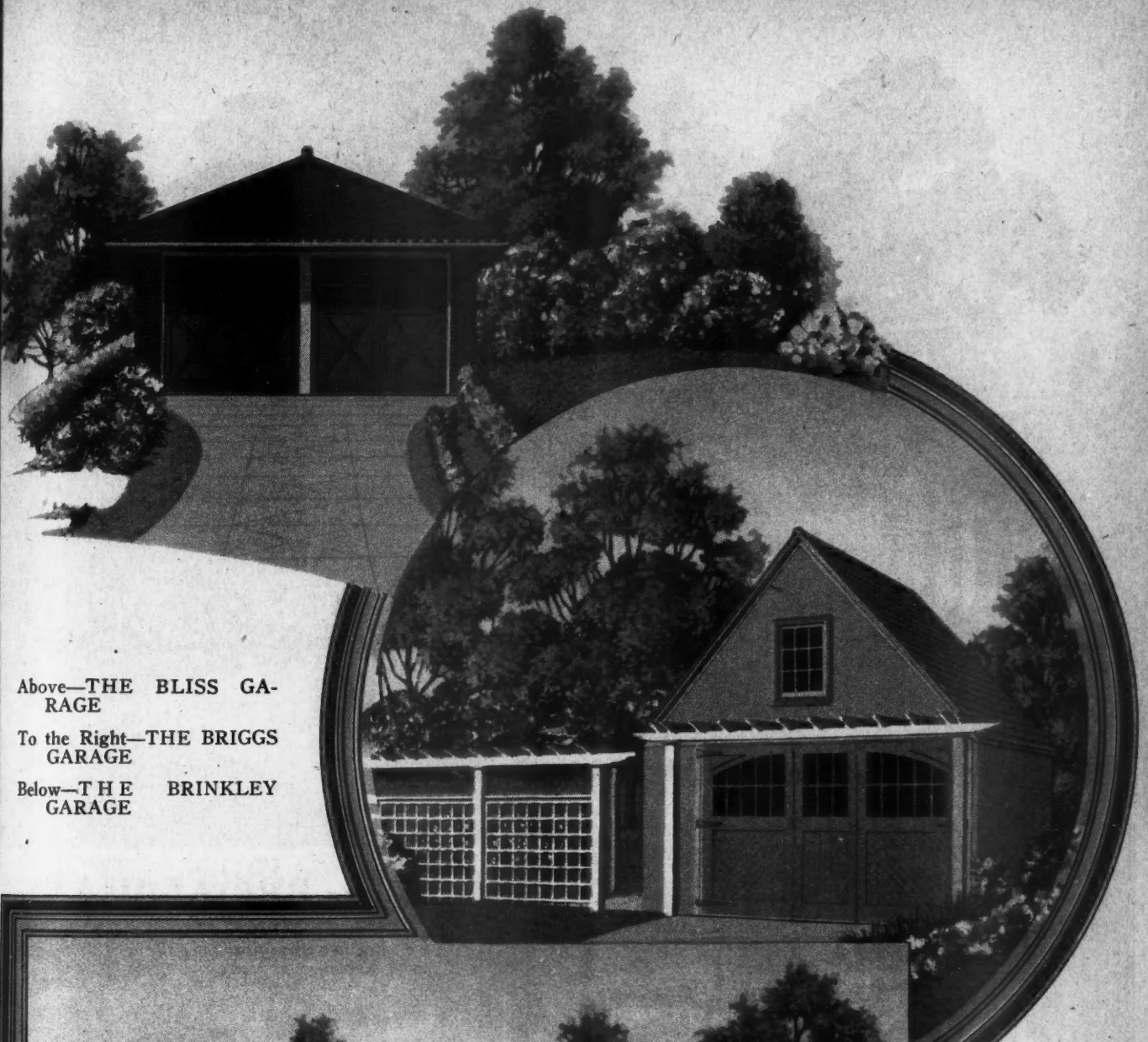
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Above—The BETA GARAGE  
To the Left—THE BIOLA GARAGE  
Below—THE BLACKWELL GARAGE

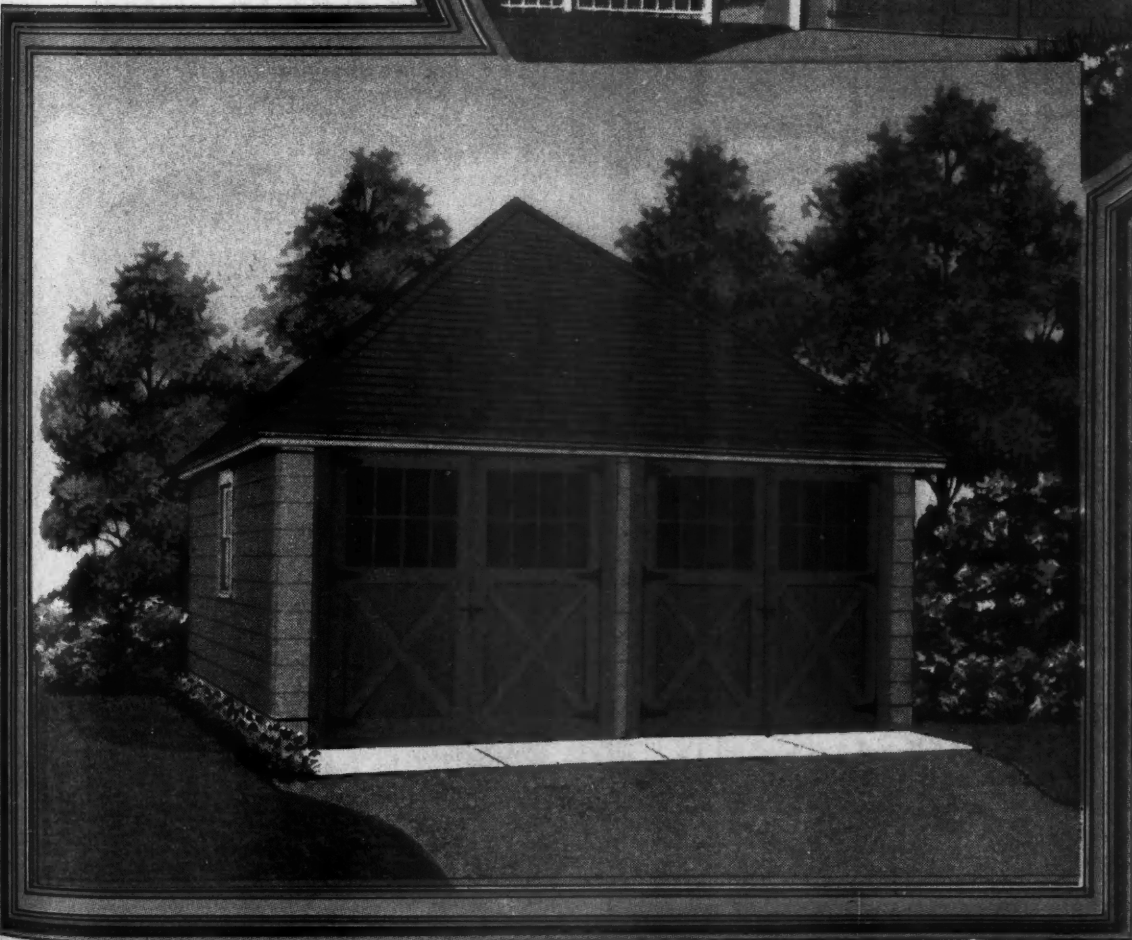


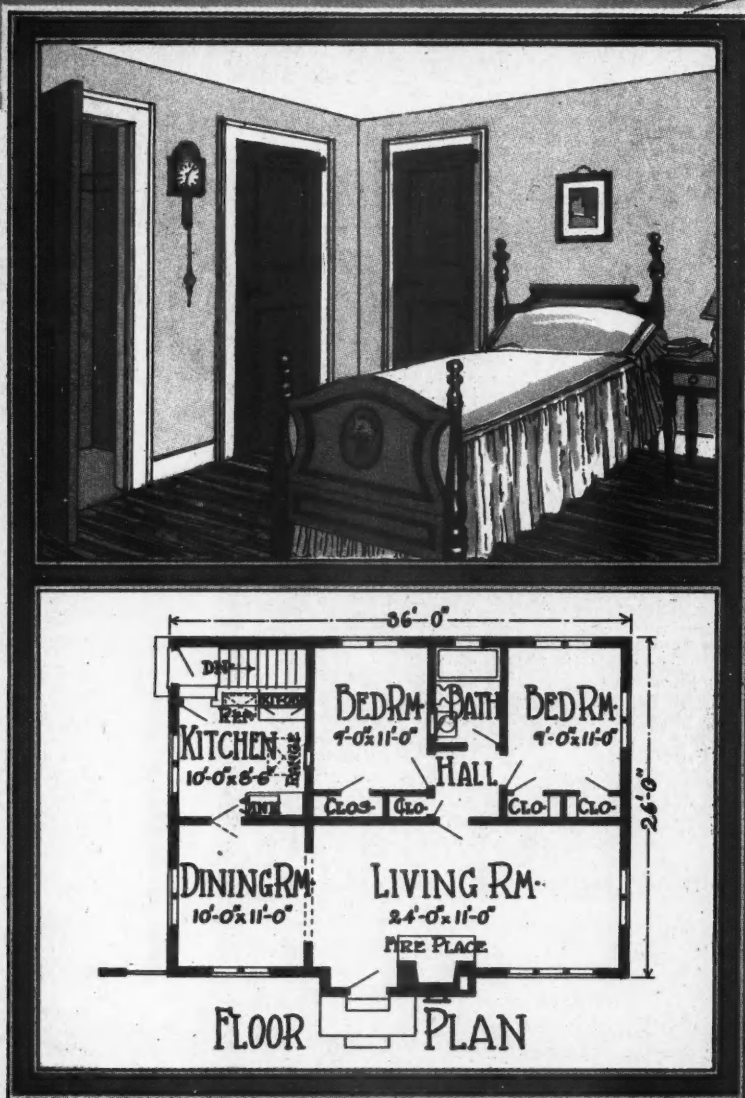
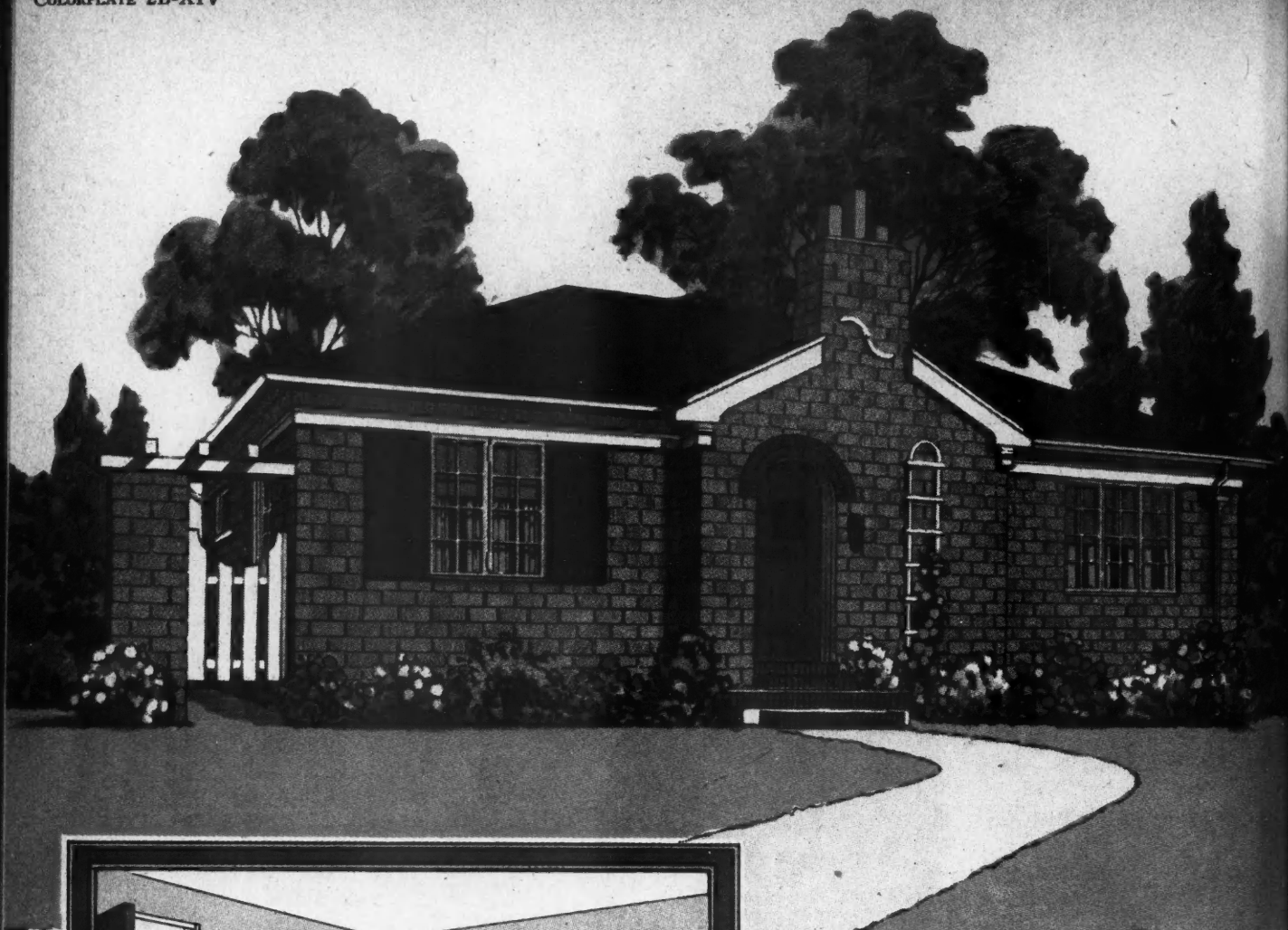


Above—THE BLISS GARAGE

To the Right—THE BRIGGS GARAGE

Below—THE BRINKLEY GARAGE





## The BROADWAY

AN interesting five-room bungalow design making use of hollow clay tile or portland cement units.

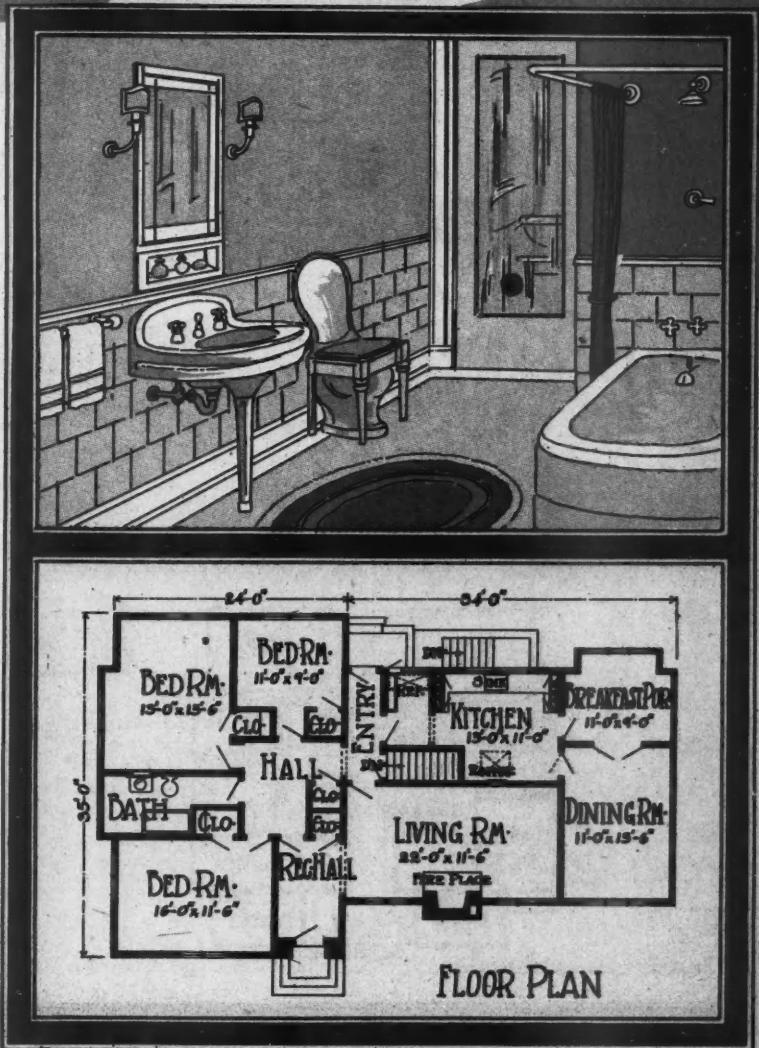


Detail of Strong Entrance Door with Hand Wrought Hardware.



# The BRUSSELS

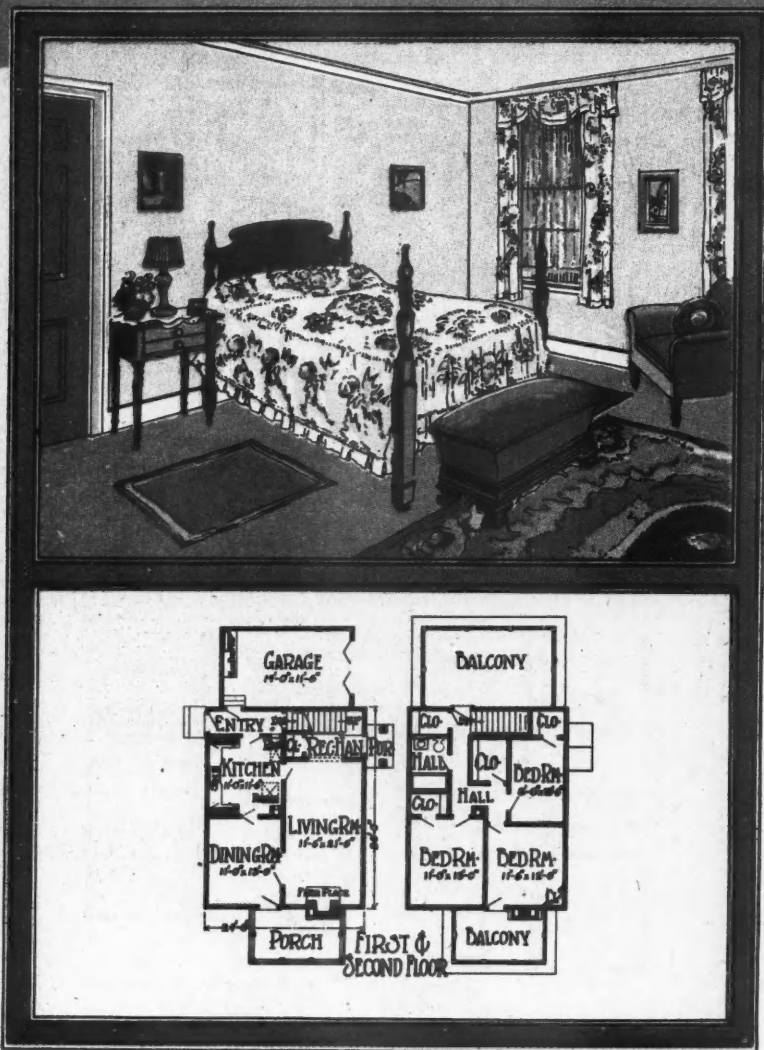
LOW, broad cottage in the European manner containing six rooms and bath besides big breakfast porch. Color sketch to right shows modern equipment in bathroom.



Detail of Front Entrance.

Y  
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Hand



## The BRYN MAWR

A WELL designed Colonial home with attached garage. The house contains six rooms and a bath.



Detail of Colonial Window with Ornamental Shutters.

# OUR FRONT COVER HOME



## *A Story and a Half House, with Insulated Roof, That Provides a High Degree of Comfort and an Attractive Dwelling Place*

**I**N addition to the pleasing appearance which it makes against its background of snow-laden trees, Our Front Cover Home possesses a large number of points which recommend it to the family considering the all-important problem of building a new home. In the first place it is well designed to fit the lot upon which it has been placed.

It has been most effectively tied into its setting by the well selected planting of shrubbery. Its exterior design is simple but artistic and nicely balanced. The expanse of windows at the front gives one the feeling that the interior will be well lighted and airy and the ornamental brick work about the porch, above the foundation line and around the windows sets off the plain stucco walls.

This home is of the story and a half type and adapted to the requirements of the growing family of limited means. The first floor is a complete home in itself, of sufficient size to comfortably accommodate a small or moderate sized family. The rooms of the second floor may, if desired, be left unfinished at the time of building to relieve the pressure of immediate expense. Later, when changing conditions demand the extra space and increasing pros-

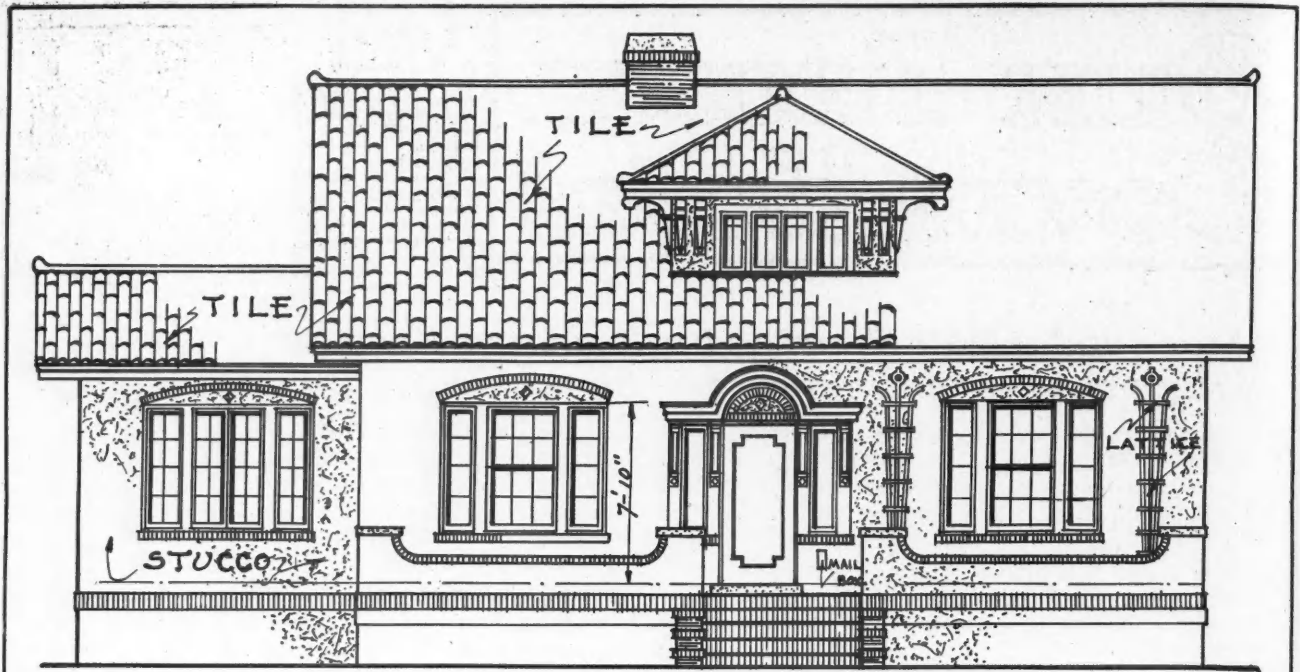
perity justifies, they may be finished.

This will add two more bedrooms to the two already in use, another bathroom and a sewing room or play room for the children. This plan, of course, involves somewhat more expense in the long run but is one which may make possible the building of a home that will not only take care of all present requirements but provide as well for the requirements of future years.

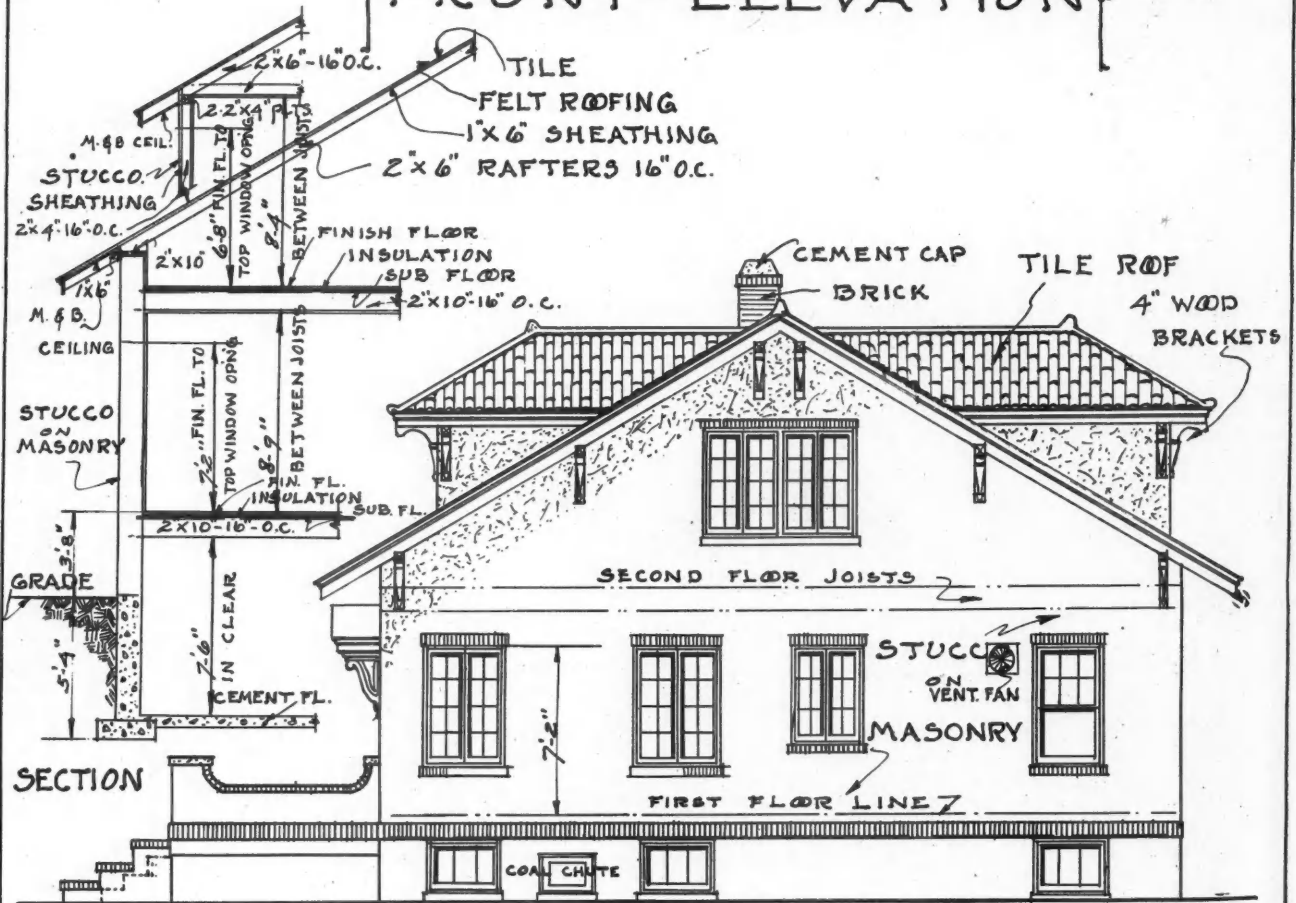
The painting on page one, reproduced in full colors, shows us the added beauty of this home resulting from good color treatment. On the four pages which follow this will be found a series of drawings which show the excellent arrangement of rooms, elevations, and full details of construction. In studying these plans it is especially worth while to note the many items of equipment such as the built-in mail box, the kitchen ventilating fan, and the arrangement of the basement with separate laundry, fuel and furnace spaces. It is the attention to these points which makes a house modern and desirable, increases its living comfort and gives it a greater resale value in case the owner may wish to dispose of it at some future time.



A White Christmas Was the Order of the Day When This Photograph of Our Front Cover Home Was Made and the Snow Not Only Forms a Becoming Mantle but, Unmelted on the Roof, Proves the Worth of the Insulation Indicated in the Plans Shown on the Pages Which Follow.



### FRONT-ELEVATION



### RIGHT-SIDE-ELEVATION

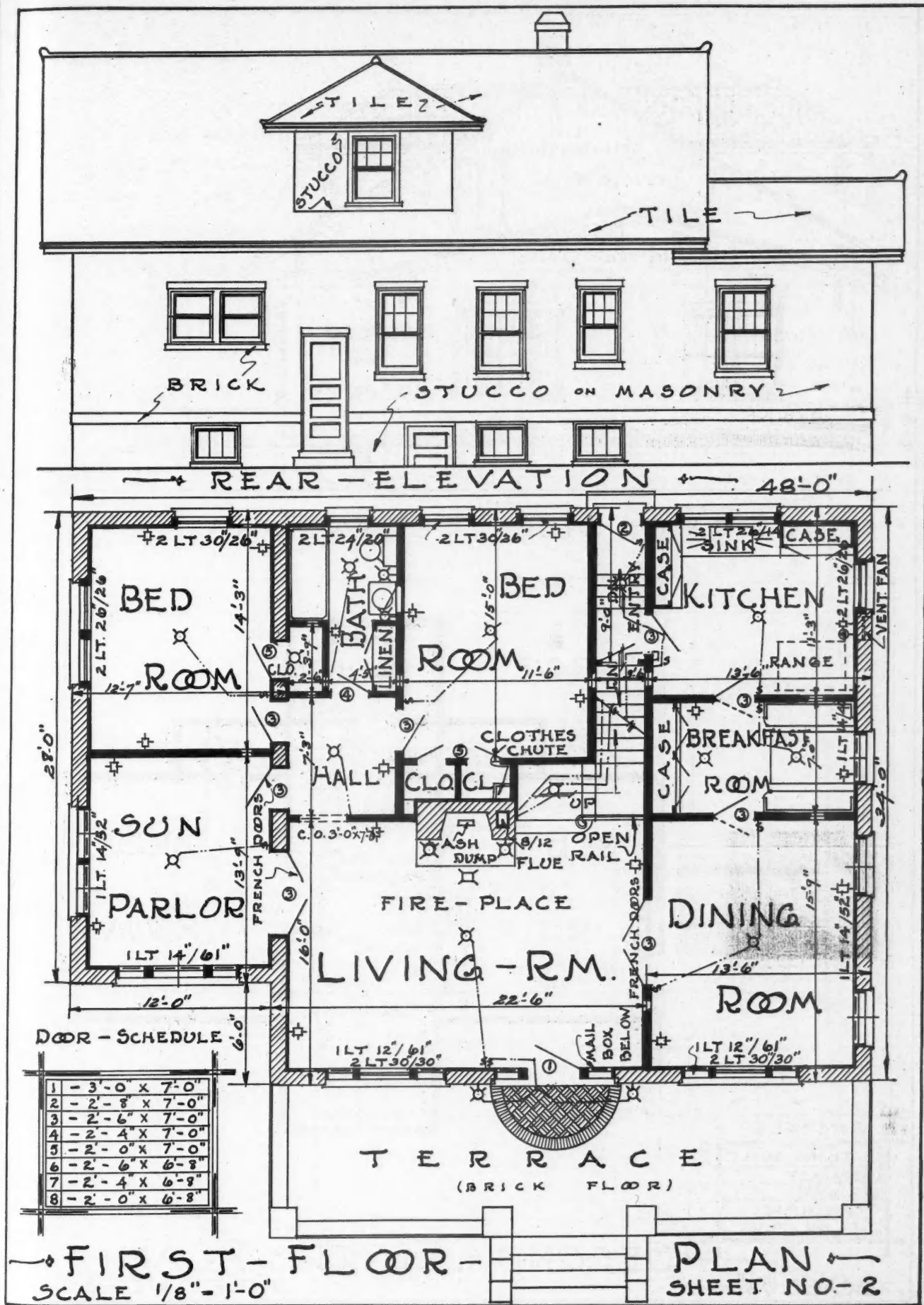
SCALE 1/8" = 1'-0"

SHEET NO.-1

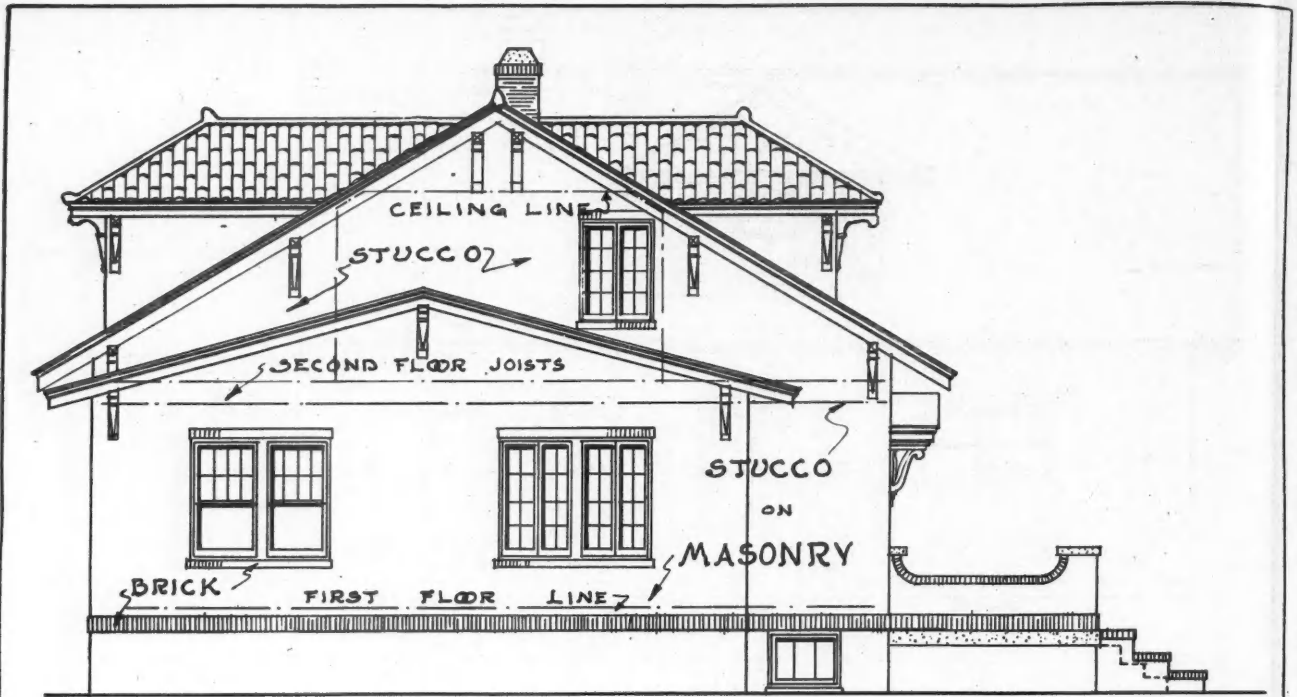
Though Hidden by the Newly Fallen Snow When Photographed, the Roof of Our Front Cover Home Is Here Revealed as Being of Tile and These Drawings Also Indicate the Wall and Roof Construction and Built-in Specialties.

The

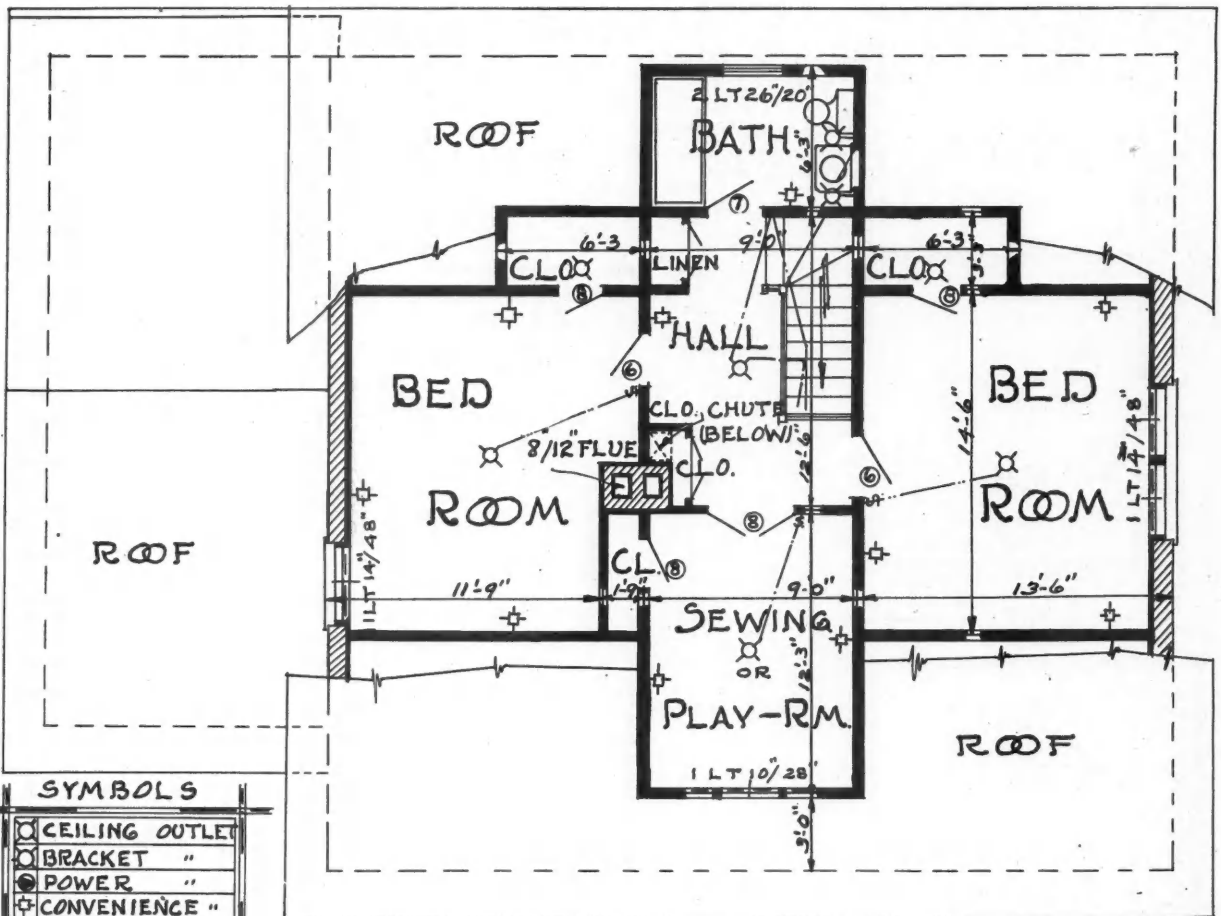




The Rear Elevation Is More Simple Than Those on the Preceding Page but the Floor Plan Offers a Multitude of Details in Addition to Displaying the Excellent Arrangement of Rooms. Other details on the pages which follow.



LEFT - SIDE - ELEVATION



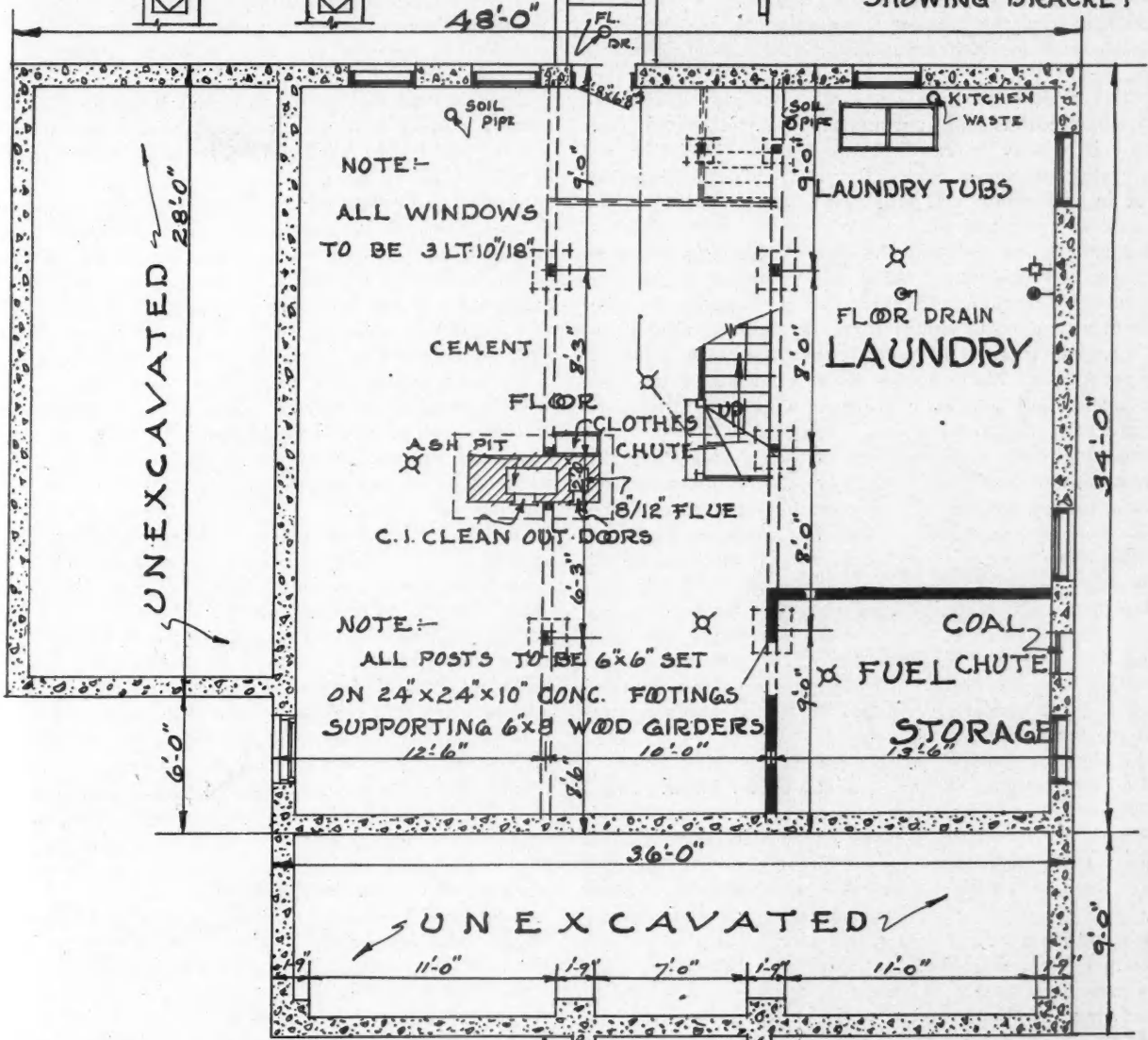
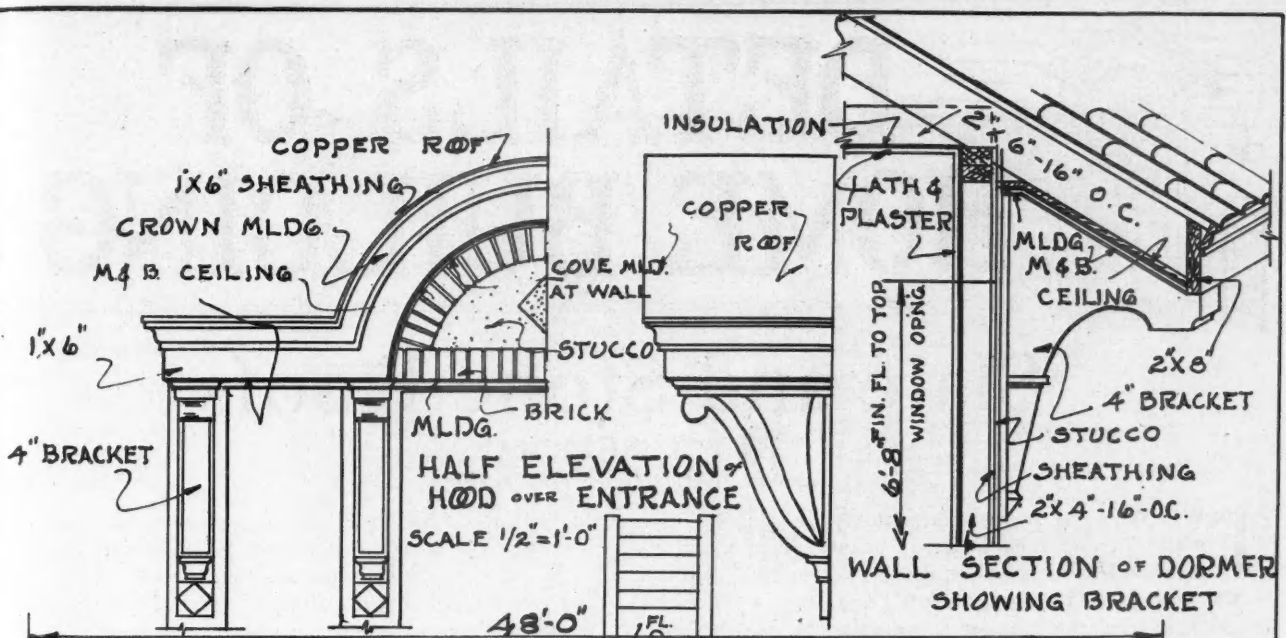
SECOND - FLOOR - PLAN

SCALE 1/8" = 1'-0"

SHEET NO. - 3

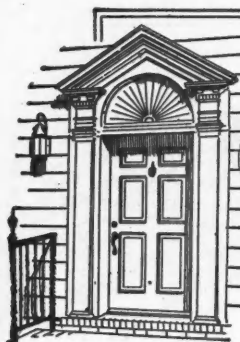
Here We See the Second Floor Plan of Our Front Cover Home. These rooms may be left unfinished, to save immediate expense, and later they may be finished off to add extra accommodations to those on the first floor.

At



BASEMENT PLAN  
SCALE 1/8"=1'-0"  
SHEET NO. 4.

At the Top of This Page Are Details of the Entrance and Dormer, While Below We Find a Basement Plan Providing a Clean Laundry Space and a Fuel Storage Room Which Confines the Coal Dirt to the Place Where It Belongs.



# DETAILS OF HOME BUILDING

## Slate and Stone Roofs

By V. L. SHERMAN,  
*Lewis Institute of Technology*

**T**WO days out from Southampton we struck a gale which in all of its hilarious beauty made me think of shingles. I suppose the ever changing shadows of the waves, their ridges, valleys, hips; and a feeling of security in the ship, somewhat similar to the sense of security under a substantial roof in the same kind of a wind.

If this article on slate and stone shingles is as safe from windy enthusiasm, it would be very well, but in such a topic it is easy to yaw. There are two kinds of roof which elicit universal approval. Both are probably the oldest in civilization and will never be succeeded. They are slate or stone and tile.

The split stone roofs in the old wool-raising countries of England, romantically called the Cotswold district, are remarkably beautiful. In this district a good share of one's views on roofs comes from an elevated view point, and a roof just has to look good when the house proper is only secondary. Many houses there, small and large, have split stone roofs and so overgrown with moss that their age is a matter of guesswork.

What impresses one, however, is that a really superior roof, excepting of course for beauty, can be obtained from artificial roofing material. Experimenting seems to be nearly gone, since manufactured roofing has made such strides. So that it seems quite feasible to me in imitating a split stone roof to resort to modern products. Cement lips replace the inserted wooden pegs between the roofers, and if not rough enough to start with, a few might carelessly be handled with the best intentions. A stone roof is not underlaid with felt or laid with special care for alignment, but it is of all things a permanent roof, and needs no care until the house caves in.

The slate roof, which is also common in the Cotswold, is possessed of more variety than any roof I know. Fig. 1 is a sketch of a house-court quite common in the district. The main house roof is a smooth blue slate with weather lengths graduated down from the ridge. The greatest exposure to the weather is hardly more than four inches. The roof then in its long waves gives a fine even shading which contrasts well with a rustic porch roof of stone just below. There is a marked contrast in the shadows on each.

It may seem absurd to stress the matter of shadows on a roof, but the shadows really indicate the structure of the roof itself and consequently call for some attention. A slate roof should be laid only on roofs of one-third pitch or more. The steeper roofs show more of the surface ordinarily.

Slate roofs are to be laid carefully on felted sheathing and nailed to it with two rust-proof nails per slate. Where the thickness of slates exceeds 3/16 inch the nail holes are to be drilled and countersunk instead of punched. Slates should be rendered in slaters' cement for protection at

ridges, hips, valleys and at junctures with rising parts or changes of pitch. Eaves and ridges should be double. From these points one may see that a slate roof has every idea of being permanent although, through slight inequalities of thickness, the surface may not be dead flat. Such monotony is not desired except in formal roofs for public buildings and such.

The real slate roof for small homes is the rustic, informal homely roof of unsquared edges or with edges sufficiently uneven to prevent slickness. The roofs should be quiet in tone if the house itself is featured with ornament, but with well proportioned plain walls it seems impossible to spoil the roof by overdoing color. With the first class of roof a little less surface of the slates should be exposed to the weather, with the latter the exposure is often large enough to create splotches of color on the roof. With real slate this color is not too great because shades in slate are soft and not so great in variety as to look riotous.

But there is a chance to produce nearly identical results with manufactured roofing. I know a number of homes whereon such roofing is used in place of slate, both squared edges and ragged. After years of wear, the texture is just as good as it was originally, and still is generally taken for slate.

In Fig. 1 it will be noted that all of the pitches are steep. In Fig. 2 the pitches are less so. As a general rule slate does better on a steep pitch, and conversely steep pitches show slate to better advantage. There is in the present fashion of English roofs a real requirement for slate, and since such roofs can be made in such variety of texture and tone, both of the slate itself and manufactured roofing, a builder does not seek far for suitable material.

I may be wrong in this contention that artificial roofing slate answers the purpose in small homes, but such seems to me to be the case. When more size and expense are to be considered and with them heavier framing, it may be that real slate justifies its cost. It will outlast everything and likely outlast the house itself. After years of wear it will increase in beauty.

There are too many finishes for ridges, risings and so on to make any definite comment on advantages. I have been told, for instance, that a rough ridge will spoil a slate roof. Yet as in Fig. 3 where the tile and cement are as clearly visible as any patchwork masonry, there seems to be no distraction even when the ridges are uneven as they are in this case. Fig. 7 is taken from a country-council house, one of the general type and built with a good deal of regard for appearances.

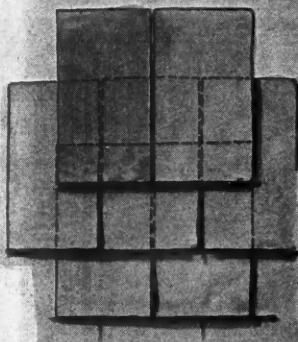
When anyone becomes more than properly enthusiastic over a subject, their chief failing is the belief that all the merits of the subject are obvious. The slate roof enthusiast will not hold other types inferior because he has no reason to, but all he can consider in peace of mind is slate.



**FIG. 3.** DETAIL OF THE RIDGE SHOWN FIGURE 1.

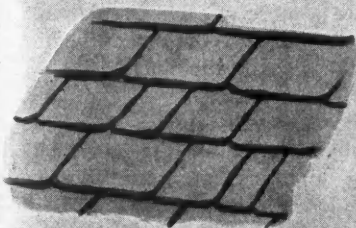


**FIG. 1.** A SPLIT STONE ROOF OF THE COTSWOLD DISTRICT. A VERY ATTRACTIVE, COLORFUL AND SUBSTANTIAL ONE FOR STEEP PITCHES. SAME EFFECT CAN BE GAINED WITH HEAVY RAG-EDGE FIRE-PROOF SHINGLES LAID TRIPLE AT THE EAVES AND BOUND OVER AT THE GABLE ENDS.

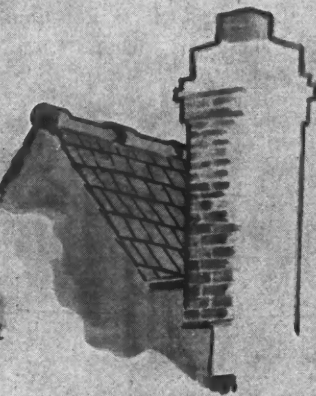


**FIG. 4.** 14" SLATE - 5 1/2" TO WEATHER - 3" HEAD COVER - SQUARED SLATE.

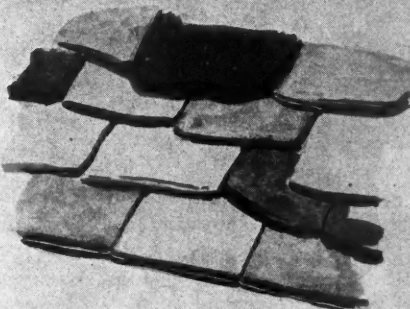
THE ROOFS IN FIG. 2 ARE EVEN-TONE, SMOOTH, UNIFORM SLATE ABOVE, AND LIGHT, ROUGH, SPLIT STONE OVER THE COURT. THE LATTER WILL MOSS OVER.



**FIG. 5.** UNEVEN, MONOTONE ARTIFICIAL SLATE. LENGTHS TO 20" MAKING FOR PLENTY OF COVERING STIFFNESS.



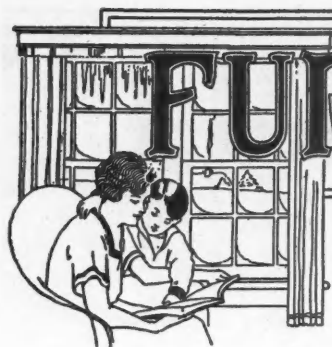
**FIG. 7.** HEAVY, CEMENTED TILE RIDGE AND A TILED CRICKET AT CHIMNEY.



**FIG. 6.** MIXED TONE, ROUGH-CUT SLATE MAKES EXCEPTIONALLY ATTRACTIVE ROOF ON A PLAIN STRUCTURE.



*V. L. Sherman - 11-2-26.*



# FURNACE HEATING

## The Warm Air Furnace in Industrial Heating

How Warm-Air Heaters May Be Used to Advantage in Small Factories, Garages, Shops and Similar Buildings

This Department by R. C. Nason, Heating Expert, appears every month in American Builder

THE modern trend toward single story buildings with large windows, in industrial construction, has brought about marked changes in heating methods. Whereas older types of buildings usually were equipped with either direct radiation or hot blast systems with long ducts, the current trend favors unit heaters and warm air furnaces with and without short ducts. Although furnaces can be used to heat factories of several floors, this type of heating plant is best adapted to one and two story buildings having 50,000 square feet or less floor area.

Stripped of technical terms it must be recalled that a furnace resembles a stove, with a galvanized iron casing fitted loosely around it. Cool air is supplied at the bottom of the casing, comes into contact with the hot cast iron or steel sides of the heater or stove, rises and passes outward to the rooms to be warmed through sheet metal ducts. When a mechanical fan is placed in the path of air travel, being located preferably where casing and air supply duct join, the flow of air over the hot surfaces of the furnace is increased.

The more rapidly air is passed over heated surfaces, as in a furnace, the more heat the furnace generates and the greater the quantity of heat units delivered through the system. Mechanical furnace fans, therefore, may be and often are, appropriately called "boosters," because their

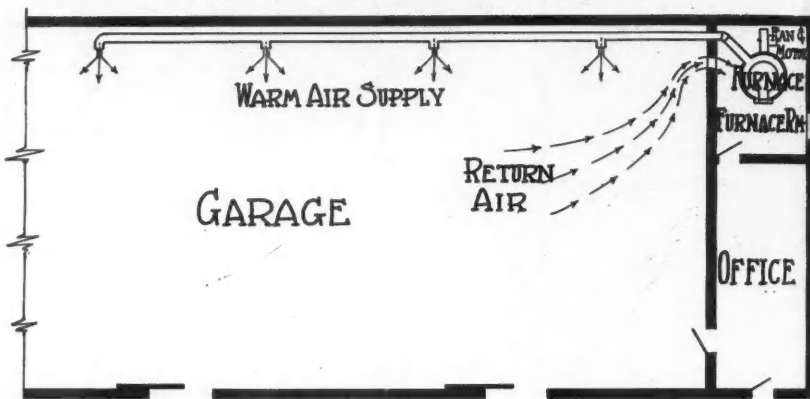


Fig. 1—A Fan Furnace Arrangement Which Has Proved Satisfactory for Heating a Garage 200 Feet Long. The outlets are 20 feet apart and the final one 50 feet from the end of the building.

chief function is to induce a more positive circulation. The distance the warm air can be delivered from the furnace depends directly upon the size of the ducts, size of furnace, size of fan and its rotative speed.

In hot blast heating systems, still often used in industry, it is not unusual to deliver warm air through ducts 500 feet or more. Yet, long ducts in heating are slowly passing out of vogue. In warm air furnace heating, no difficulty should be encountered in delivering heat a distance of 300 feet through ducts without great loss in effectiveness. Consequently, there are many buildings, including warehouses, garages, shops, stores, churches, schools, lodges and small industrial plants where warm-air heaters with fans may be installed with excellent results.

The author has in mind a switch engine repair shop and small power plant combined, 60 by 60 feet in size and of a single story, where a fan furnace proved its worth many times over. A warm air heater and centrifugal fan of the multiblade design are located in the repair shop and a 10-inch diameter, 26 gauge, bare, galvanized iron duct extends through the wall to the adjoining room which houses a horizontal steam engine.

One-half of the heat is delivered to each room through separate discharge nozzles in the side of the duct. As the fan is located on the floor, at the base of and directly connected to the bottom of the furnace casing, it secures its air supply from the floor line without outside connection. Sufficient fresh air is admitted through the door, which is opened at

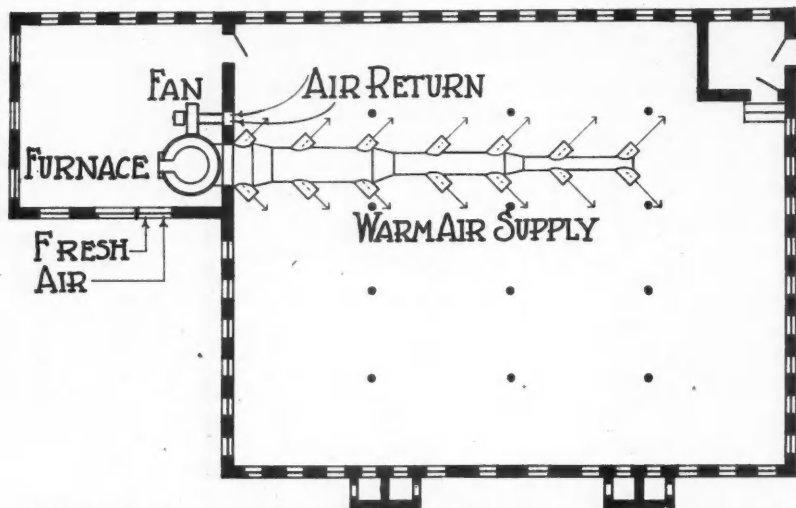


Fig. 2—A Common Arrangement for Heating a Small Factory with the Duct Extending Down the Center of the Room Just Beneath the Roof and Opposite Outlets Every 20 Feet.

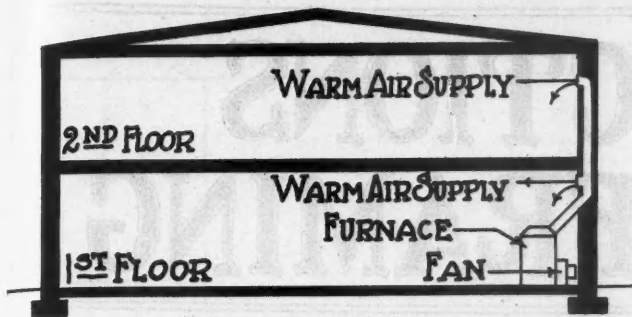


Fig. 3—Elevation of a Suggested Fan Furnace Installation Where the Heat Distribution Is at the Side and There Is More Than One Floor.

frequent intervals to permit entrance of persons and equipment for repair.

The unit is what is known as a "direct-fired" fan furnace heater. A similar arrangement may be had by connecting a mechanical fan of either the propeller or centrifugal type to any piped furnace and this type of unit is becoming daily more popular.

The author has in mind another installation where a garage 200 feet long is being heated satisfactorily with a fan and piped furnace wherein the heater and its fan are located in a small corner room. A galvanized iron duct extends along one side of the storage floor just above the windows, similar to the arrangement shown in Fig. 1, and there are delivery outlets 20 feet apart. The final outlets are about 50 feet from the end of the room. Cool air is picked up by the fan through a grilled opening in the bottom of the heater room wall and delivered to the furnace. In this case the air is entirely recirculated, as is common in fan furnace systems.

### Carrying Power of Forced Warm Air

Criticism of warm-air fan heating systems may be avoided if installers will familiarize themselves with the carrying power of air moved by mechanical fans. Slow moving warm-air currents, for example, provide better diffusion of heat than those of high velocity. It is seldom necessary to deliver air in a fan unit at greater than 1500 linear feet per minute and velocity as low as 400 feet per

minute may represent good practice. Some air speed between the two limits is best and many engineers of late have recommended about 1000 linear feet per minute.

High speed air currents are liable to cause drafts and bring discomfort to occupants such as is experienced with any kind of breeze, warm or cold, when one is attempting to perform some manual task. Low air speeds, on the other hand, lack penetration and thus are liable not to reach remote corners of rooms to be warmed. As between the two, slow-moving warm air supply is preferable because the delivered heat mixes with the air existing in the rooms more completely.

The loss in motive head in getting heat into far corners may be overcome by extending the supply ducts and their outlets. Recent tests reveal that, with 1,000 feet per minute, outlet velocity, good heating may be accomplished over distances of 150 feet from the point of discharge. The distance over which the air can be spread horizontally seems to be between 10 and 15 feet for every 100 feet outlet velocity.

The variance in the foregoing figures comes about from difference in tightness of construction, infiltration, outer wind pressure, types of roof and truss construction and other considerations. It will be observed, nevertheless, that with 1000 feet velocity of the air at the point of discharge, warm air may be blown 100 feet as a minimum horizontally and, with a velocity of 500 feet heat in a fan furnace system may be delivered some 500 feet from the discharge outlet.

In warming the ordinary loft or small factory long enough to require a duct, an arrangement similar to that shown in Fig. 2 is common. Here the warm-air duct extends just beneath the roof and down the center of the room, with opposite discharge nozzles about every 20 feet. The warm air thus is sent towards the outer walls to combat in-leakage of cold air. Air discharge outlets would best be not higher than 15 feet above the floor.

Another method of distributing the heat, especially when there are two or more floors to be warmed, is like that shown in Fig. 3. Here the warm-air duct connects to the furnace bonnet, thence to the wall, upwards by ducts between studdings and the warm air is discharged

(Continued to page 170)

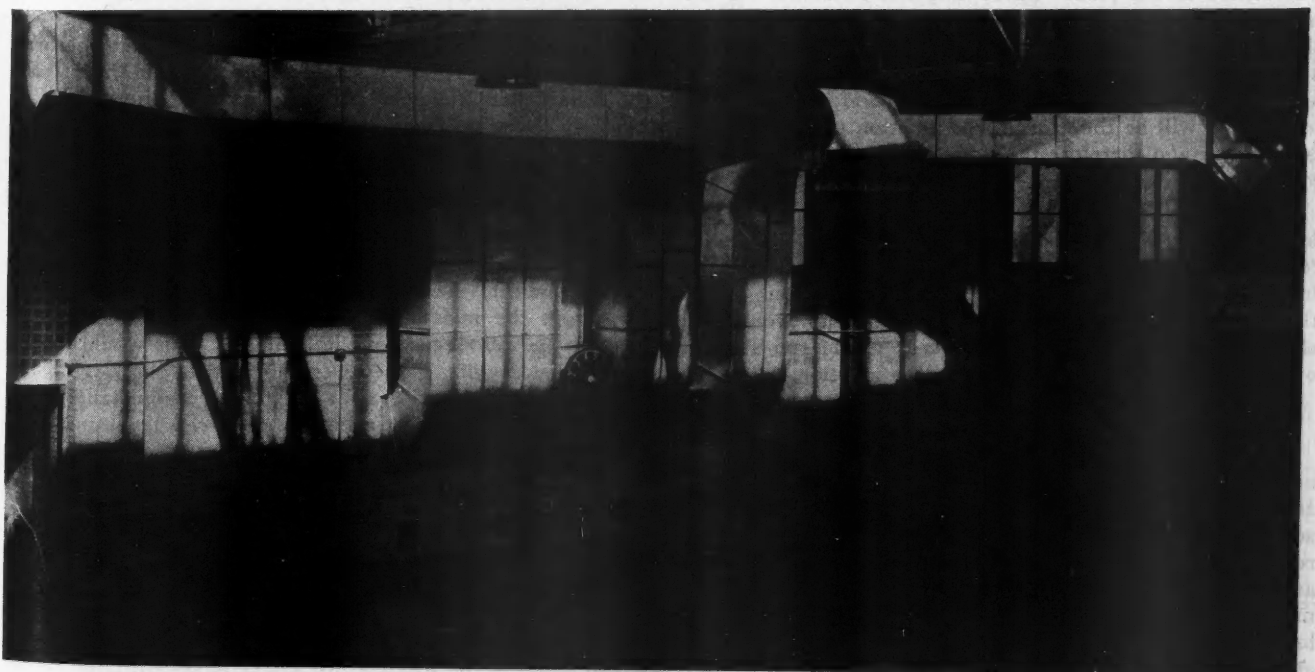
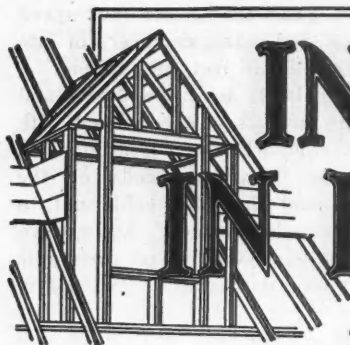


Fig. 4.—The Fan Furnace Is Effective in Large Buildings Such as Auditoriums and Gymnasiums When Handled as Shown in This Installation in the Coliseum at Jackson, Mich., Which Contains 60,000 Cubic Feet.



# INSTRUCTIONS IN ROOF FRAMING

*This Department Appears Every Month in American Builder—Editor*

## Planning and Laying Out Rafters

By JOHN T. NEUFELD

**I**N this last year we have covered all the principles of roof framing, but so far have not given much discussion on the planning or laying out of rafters. This year's series of articles on roof framing will, therefore, be finished up by an article on this most important subject. We believe that this discussion will also give us a good introduction to the new series of "Instructions on Roof Framing," which will begin with the January issue of this publication.

### A Hip Roof for an Irregular Plan

At upper left we show the plan of a building that is irregular in shape. The problem is to properly place a hip roof over this plan. We naturally ask the question, "How do we go about this?" or "How do we start?" Mr. Kidder in his Builder's Handbook suggests that in a problem of this kind we select the largest rectangle that can be placed over the plan. Thus at upper right we have drawn a rectangle, over that portion of the roof, that has the biggest over-all dimensions. This we will assume to be the main portion of the roof and the other portions will be treated as additions.

The next step, as shown, is to draw diagonal lines from all corners of the plan. These diagonal lines indicate the hips and valleys of the roof. From the intersections of these diagonal lines we draw straight lines for ridges. The addition on the lower side of the figure is the same width as the main portion of the building. Therefore, the height of the roof will be the same. The addition on the left side is narrower and therefore the ridge for this addition will be lower than the main ridge.

In the fourth figure each rafter has been drawn in and lettered. The letters refer to the kind of rafter. We wish to call special attention to the rafter H, which is a blind hip up to where it meets the ridge of the addition. From there on it is a regular hip. The blind hip would not show on a finished roof as the boards would run straight over the hip from the main roof to the addition.

### Proportioning the Gambrel Roof

Nearly all books or courses in roof framing include instruction on the proper proportions for a gambrel roof. In nearly every case they show the rafters laid out in a semicircle or perhaps with the upper rafters having the reverse pitch of the lower rafters, but of the same length as the lower rafters. Gambrel roofs proportioned in this manner are suitable for certain kinds of buildings, such as barns; however, for residences the proportions are not always satisfactory.

A study of the history of architecture and especially a study of the history of Dutch Colonial architecture gives

us a method of proportioning the gambrel roof that if followed will result in more pleasing designs. The roofs in this class of architecture were usually designed rather steep even before the gambrel roof was ever thought of. They did this in order to insure a good roof and also to get more room in the attic. Increasing the pitch of the roof, however, increases the length of the rafters and as long timbers became scarce and expensive, they naturally sought for a different type of roof in order to avoid using such long timbers. They therefore cut off, as it were, the upper portions of these roofs (that is, in planning), as is illustrated on opposite page, and gave the upper rafters less slope. Thus the gambrel roof was developed.

By following these methods, we are able to proportion our gambrel roofs properly. A few rules to remember in this case are: First, to make the lower rafter too steep, rather make them only as steep as we would expect them for an ordinary steep roof.

Secondly, make the upper rafters shorter than the lower rafters and not too flat.

### Proper Bracing of Rafters

Very often rafters are braced with odd pieces of material and there is not much thought as to the effective methods of bracing. The last two figures give just a suggestion as to proper and improper methods of bracing. In the first case the braces have been nailed so as to tie the rafter and the ceiling joist together, but they only transfer the load from the middle of the rafter down to the ceiling joists. This results in both the rafters and also the joist sagging, as illustrated by the dotted line.

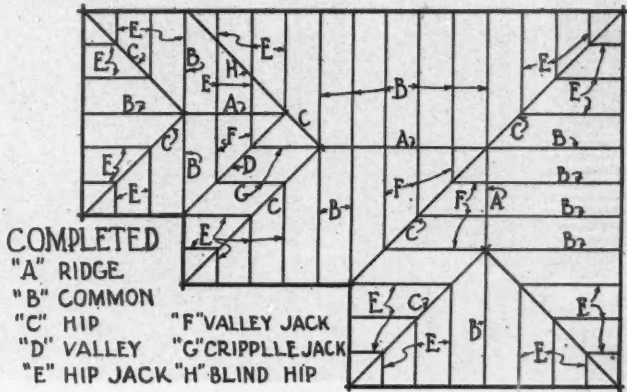
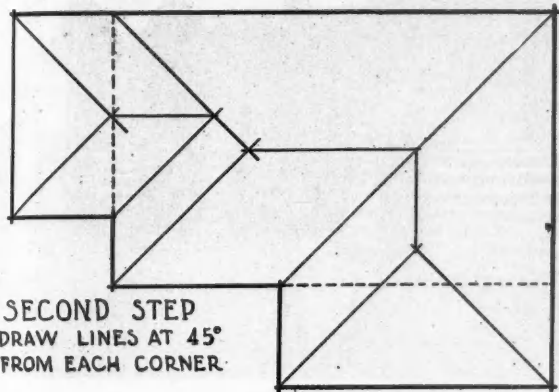
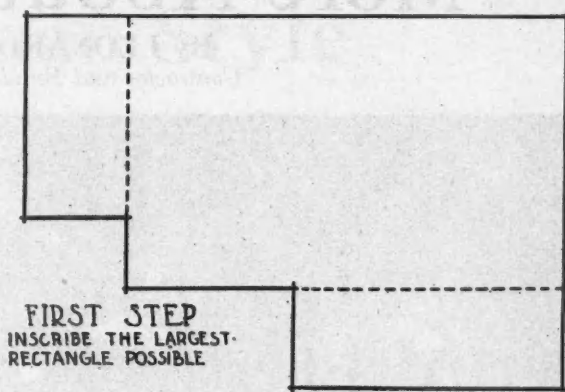
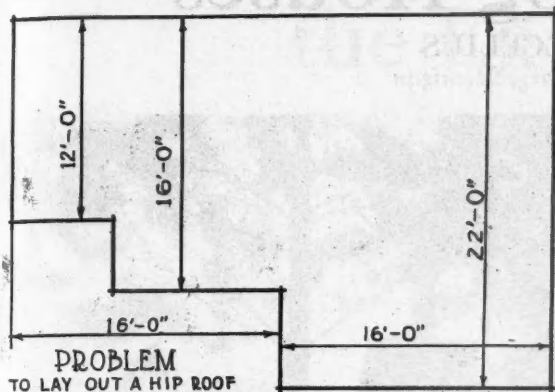
In the last figure the braces, rafters and joists form perfect triangles. The triangle is a fixed shape and therefore is the proper shape, or any framework that should be rigid. Arrows indicate the lines of forces and we notice that the load from the middle of the rafter is transferred to the joists at the center part of the building. This would result in the joist sagging if they were not tied to the ridge by a tie piece. The whole framework forms a rigid and solid piece (as it were) which transfers all forces down onto the main walls of the building.

### Questions for Review and Preview

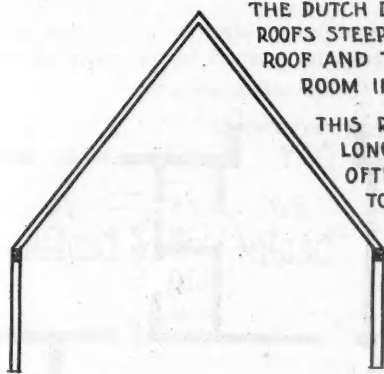
The following list of questions will serve as a review for those of our readers who have followed the series of instructions on roof framing given in the last year. They will also serve as a preview to those readers who have not followed last year's articles, as they will suggest a sort of examination as to whether we are familiar with the principles of roof framing or not.

*(Continued to page 170)*





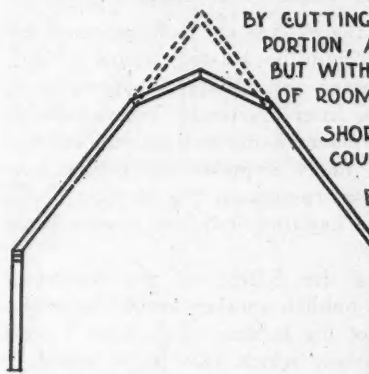
## DEVELOPING THE GAMBREL ROOF



THE DUTCH DESIGNED THEIR ROOFS STEEP TO INSURE A GOOD ROOF AND TO ALLOW MORE ROOM IN THE ATTIC

THIS REQUIRED VERY LONG RAFTERS AND OFTEN MADE THE ROOF TOO HIGH

## CORRECTING THE DEFECTS

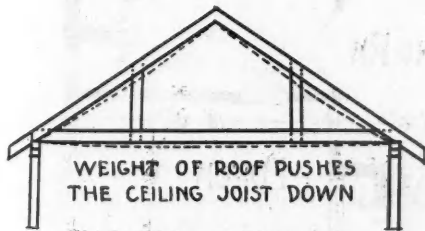


BY CUTTING OFF THE UPPER PORTION, A LOWER ROOF, BUT WITH THE SAME AMOUNT OF ROOM, WAS OBTAINED.

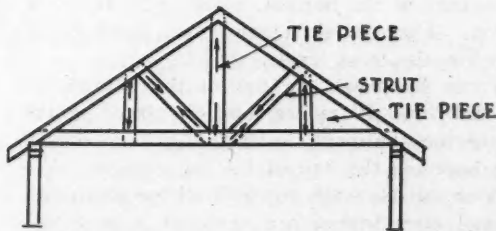
SHORTER PIECES OF LUMBER COULD BE USED

BY PLANNING THE LOWER RAFTERS AS FOR A STEEP GABLE ROOF AND LEAVING THEM LONGER THAN THE UPPER RAFTERS A WELL PROPORTIONED ROOF IS OBTAINED

## INCORRECT BRACING



## CORRECT BRACING



A Knowledge of Planning the Roof and Laying Out the Rafters is an Essential Part of a Thorough Knowledge of Roof Framing and Here We Have Illustrated the Principles Which Are Discussed in This Article on Planning and Laying Out Rafters.

# More About Log Houses

By LEONARD C. VECELIUS  
Contractor and Builder, Hamburg, Michigan



For the Rustic Setting Log Houses Are Especially Appropriate and Many Families Have Already Adopted the Log House as a Permanent Residence. With the pine trees in the foreground and a lake beyond, this home fits into the site as one of no other construction could.

THE circulation of the AMERICAN BUILDER must be far reaching, as the inquiries relative to my article, "Log Houses—Summer and Winter," appearing in the July issue, have come from practically every state in the Union. The article, evidently, did not go into enough detail, judging from the many requests for information concerning the general construction of log houses. Also the large number of these inquiries indicates a very large interest in the subject.

Because of these facts the Editor of the AMERICAN BUILDER has consented to publish another article regarding the general construction of log houses. This time I shall answer the various questions which have been asked in the many letters received by me since the publication of the July AMERICAN BUILDER.

Numerous inquiries have been made in regard to the foundations used. When concrete abutments are used for foundations, those supporting the outside walls and partitions should not be over 6 feet apart. They should be at least 24 inches square at the bottom, tapering to 10 to 12 inches at the top. They should extend to a depth of at least 8 inches below the frost level.

Log uprights can be placed on top of the abutments, providing a 1/2-inch bolt, 10 inches long, is placed in the green concrete of the abutment, leaving 4 inches exposed to catch a hole bored in the end of the log upright. We use log uprights on outside walls to catch all log partitions.

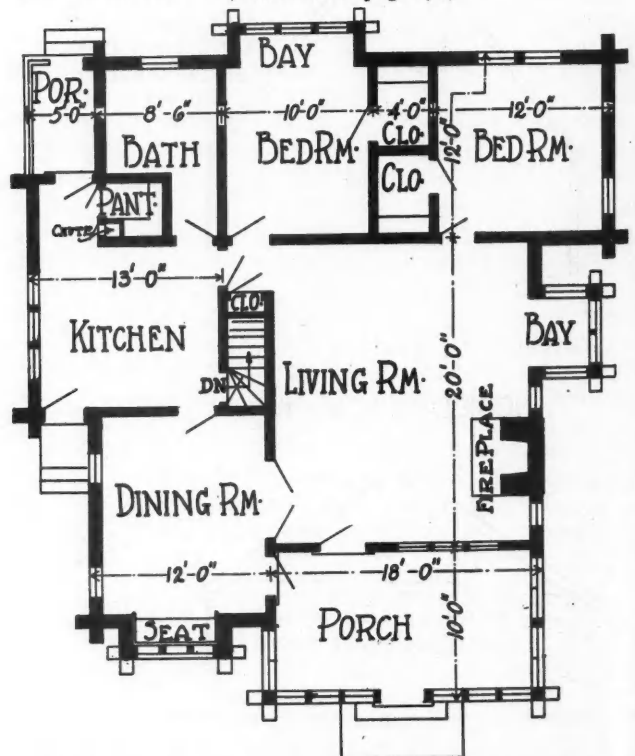
All window and door frames are made of 2 by 8-inch cypress or white pine lumber.

Chinking is done with a mixture of 18 shovels of fine, sharp sand, one bag of lime and one-half bag of cement.

For the oil stain we use the following formula: Five gallons of linseed oil, boiled; two quarts of turpentine, with color to suit.

The plastic gum, which we use for waterproofing, is

made in two shades of brown, two of green, two of gray and two of red. This gum is made to our order to get the right consistency. (Continued to page 170)



This Plan Affords Every Comfort and Convenience to Be Found in Any of the More Conventional Styles of Home and, with a Good Heating Plant Installed, It Easily Can Be Kept at a Comfortable Temperature in Even the Most Severe Weather.

# Building A Fireside Stool In the Egyptian Style

**T**HERE was the stool that My Lady had dreamed about, the very stool she had wanted exceedingly for years—something to sit low in front of the soft glow of our fireplace. Unfortunately for me, that stool was 3300 years old, of the period of the Egyptian Empire; the frame was of ebony, inlaid with ivory, mother of pearl and studded with turquoise and the corner fittings looked like solid gold or electrum.

It stood in a little niche of its own in the British museum and the curator was quite nice about it, when he assured me that positively it was not for sale. The nearest to a profitably dicker we could get was to carry away a photograph of it (shown in the right hand corner of the sketch). Not having unrestricted access to Uncle Sam's mint, I gave up any further idea of bargaining for it and decided to go to work and build one for myself.

Studying the thing to see how it was made, I found that what surprised me more than the preciousness of the material was the evidence that 3,300 years ago this clever race had a correct knowledge of the engineering principle of the trussed beam.

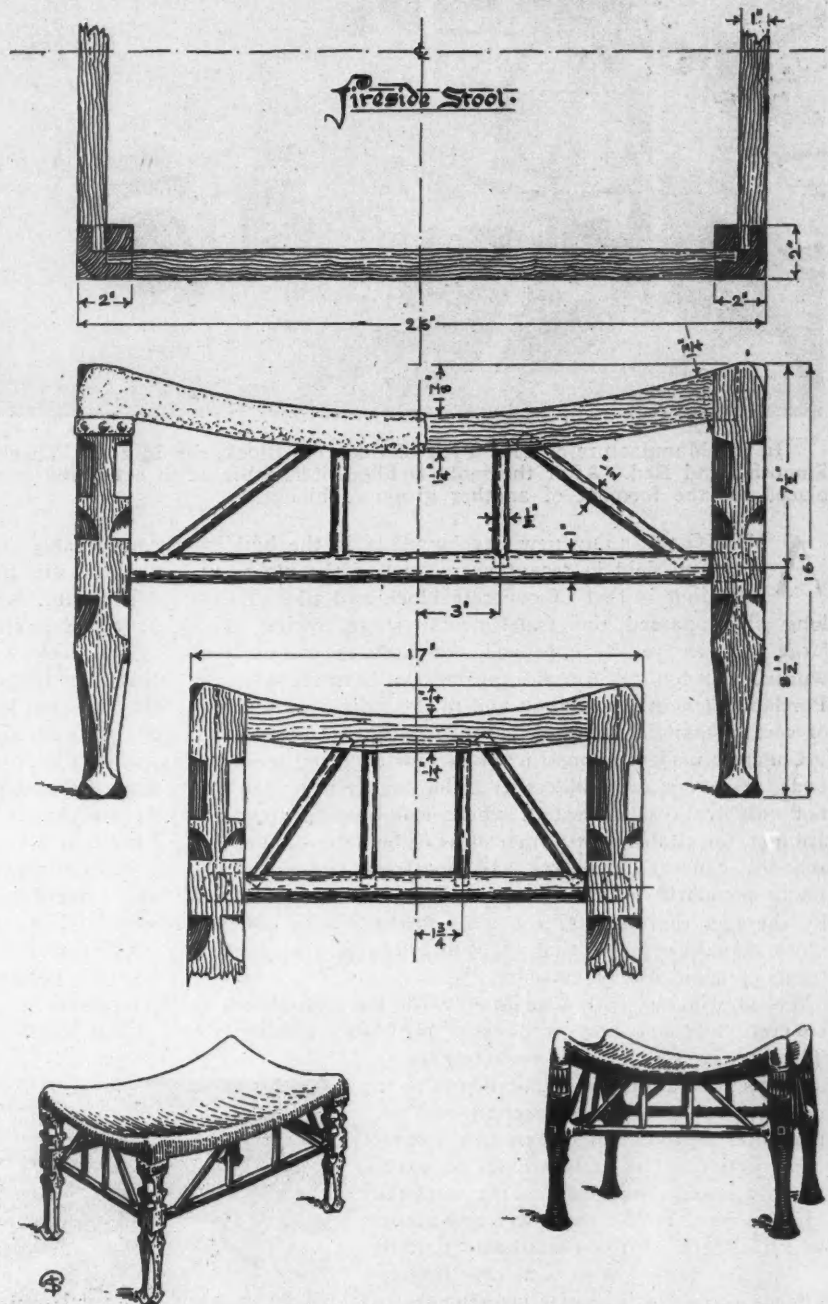
For my copy the four legs were made from hard maple two inches by two inches, whittled to shape with the drawknife, the vertical cuts being incised to the mark with a fine toothed hacksaw. The lower rungs are four pieces cut from 1-inch maple broom sticks and the uprights and standing pieces are 1/2-inch dowel pins obtainable from any hardware store. The upper curved piece was cut from a 3 1/2-inch by 1-inch maple board, tenoned and mortised into the legs.

The whole is carefully sandpapered, fitted and glued together with real cabinet-makers' glue—no ready made substitute for me. A dark brownish weather oak stain gave it a nearly black hue and a coat of thin flat varnish produced the desired eggshell finish. This was when it still felt sticky, rubbed down with a mixture of one-half turpentine and one-half linseed oil, soaked in a little ball of silk cloth. It just looks as if it was carefully waxed, but water cannot hurt it.

For the top covering I got half a hide of cowhide, belt lace leather and had enough left for the seat and back of a dining chair—but this is another story I may come back to some time. To get the surplus fat out of the leather, the roughly cut piece was soaked in gasoline and when dry put into a solution of 15 per cent formaldehyde (formalin), the same as farmers use to sterilize their seed grain. It was left steeping for 24 hours at a temperature of about 75 degrees. This gave it a beautiful soft finish and left the original red tinge and grain of the belt lacing intact.

That it might have enough give to bring it down over

the corner without folding, it was stretched on wet and tacked down first in the back of the middle of the four curved top pieces, then each corner was worked down sep-



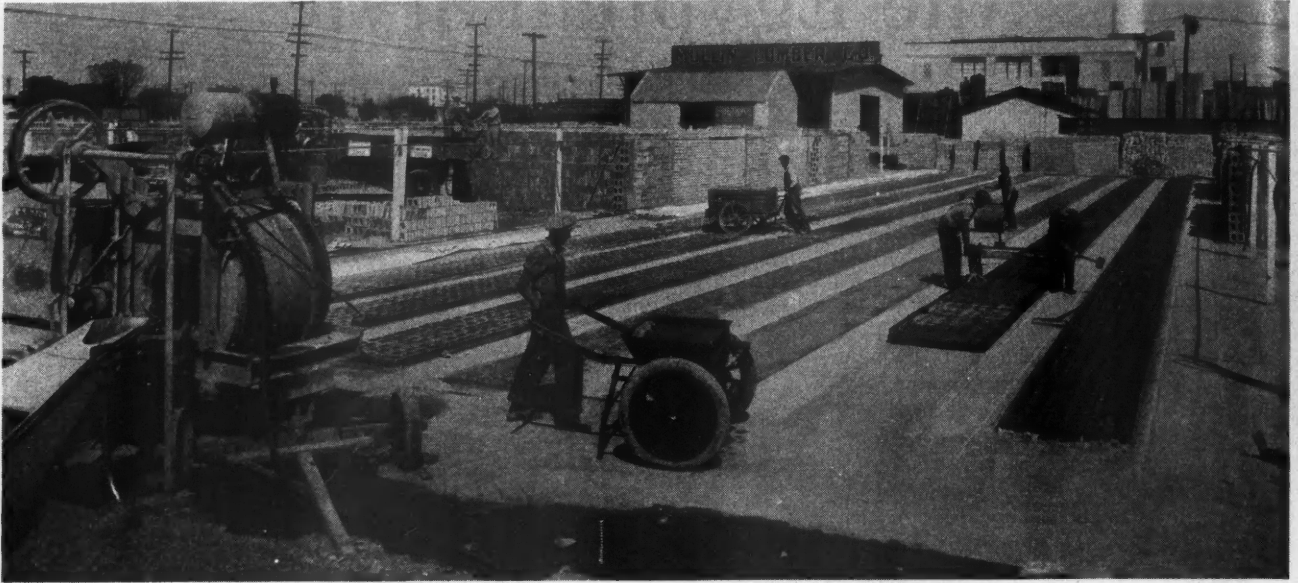
Sketches Showing, Lower Right, the Original Antique Stool, and the Method of Building Its Modern Counterpart.

arately by stretching and massaging it, as the gymnasium instructor does with a cramped muscle. When dry, the border strips were tacked on with the most decorative upholsterers' tacks obtainable and, last, a slight application of linoleum wax brought out the gloss of the leather.

The sketch shows a perspective view of the finished stool in the lower lefthand corner; on top is a view from above, underneath it, front elevation and side elevation with details of the legs.

PAUL C. H. SMITH.

# Making Concrete Blocks



In the Manufacture of This Type of Concrete Block, the Mix Is Wheeled to the Molds, Which Are Placed on a Smooth Sand Bed. After the mold is filled, it is vibrated to settle the mix and the mold is immediately removed and placed for the forming of another group of blocks.

**A**MONG the many new developments in the building material field in recent years, one of the most outstanding is that of concrete block and tile. It has long since passed the experimental stage, owing in a large measure to the improved standards of manufacture worked out by the American Concrete Institute and the Portland Cement Association and to the individual initiative of certain manufacturers.

Concrete masonry construction is now accepted by architects, designers and builders as a thoroughly practical type not only for residences but, where load-bearing standards are met, for almost every other class of building—industrial, schools, churches, theaters and apartment houses. The rising popularity of this method of construction is shown by the fact that in 1925 the total production of concrete block actually equaled that of common brick, measured in terms of cubic feet of masonry.

Those who are not acquainted with the advantages of concrete masonry may well ask, "Why this popularity?" The answer is that good concrete masonry construction fulfills the requirements of the designer and builder for strength and permanence, flexibility of design and speed of construction. The units provide an exceptionally strong bond with mortar, and they form an ideal surface for stucco and plaster, which adhere with a remarkable tenacity.

For the home owner concrete masonry affords economy in initial investment, low depreciation and practically no maintenance costs. It affords fire safety, and because of the air spaces in the hollow units, insulation against heat, cold and dampness.

There are many different types of concrete building units varying in size, shape, composition and process of manufacture. Some are single hollow units. Others are made of two pieces to form a continuous air space in the wall. One of the most interesting is a one-piece hollow unit very much smaller in size than the ordinary cement block or hollow tile. It also differs

considerably in composition and in texture and inherent qualities due to its method of manufacture.

This unit is made of graded aggregates and is actually poured concrete, in convenient shapes for handling. Because of its thick webs and walls it has load-bearing qualities that fit it for use in industrial and other types of buildings that require load-bearing walls. Furthermore it makes a complete hollow wall because it does not require patching with brick around windows, doorways and the like. This gives thorough insulation and protection from possible dampness. It is extremely flexible in use and is easy to handle and lay.

Most concrete blocks are a dry-tamped mixture of sand and cement just moist enough so that the mix will pack and hold its shape. Others are made by the wet mix process which involves leaving the mixture in the molds until the product has hardened, a slower and more expensive operation.

This block is like neither of these for, although the units



A Stripper, Which Lifts the Mold Without Disturbing the Freshly Cast Units, and a Mix of a Special Consistency, Make Possible a Remarkably Rapid and Economical Process.



Twenty-Four Hours After Casting the Units Can Be Removed from the Casting Bed to the Stock Piles for Seasoning.

are cast from "wet mix" concrete, the patented process allows the removal of the molds immediately. This speeds production and lowers its cost for fewer molds are needed and less labor.

The blocks made by this process are in units of uniform sized face,  $3\frac{1}{2}$  inches by 12 inches, and various widths (four, six and eight inches). The face proportions are the same as those of brick. The soft gray color and pitted surface of the units give pleasing results when laid in the wall if no exterior finish is used and with plain or buff mortar joints. With a white brush coat or a stain additional distinctive effects are obtained. As for stucco, there is no better base.

This block, as has already been said, is actually poured concrete, but the proportion of water is regulated so that the water ratio cannot materially exceed the proper one for maximum strength. The units are cast directly on the ground on sand beds which have been carefully leveled and rolled. The sand beds are placed between concrete side strips which serve as

to the prepared sand bed.

Until you have actually seen it done it seems incredible that the molds can be withdrawn immediately after the pouring of the concrete, but this is the case in this process. The complete cycle for each one sack batch of concrete consumes less than four minutes, as a rule. The units are left on the casting bed for 24 hours after which they are ready to be moved to the stock piles shown in the illustration at the top of this page for seasoning.

After seasoning they are quickly and easily handled for delivery as they can be dumped from a truck without any loss by breakage.

Reputable firms in all parts of the country, associated with the parent company, manufacture these units under its patents. A single standard of quality prevails throughout the industry. Rigid specifications for manufacture have been established by the parent company and are a condition of each franchise so that this block, though made by hundreds of different manufacturers, is the same wherever bought.



The Soft Gray Color and Pitted Surface of These Blocks Make a Pleasing Wall When Laid in Plain or Buff Mortar and Left Unfinished.



When Used with a White Brush Coat or a Stain Distinctive and Attractive Effects Are Obtained.



These Units Offer a Perfect Stucco Base for Any of the Popular Stucco Finishes.

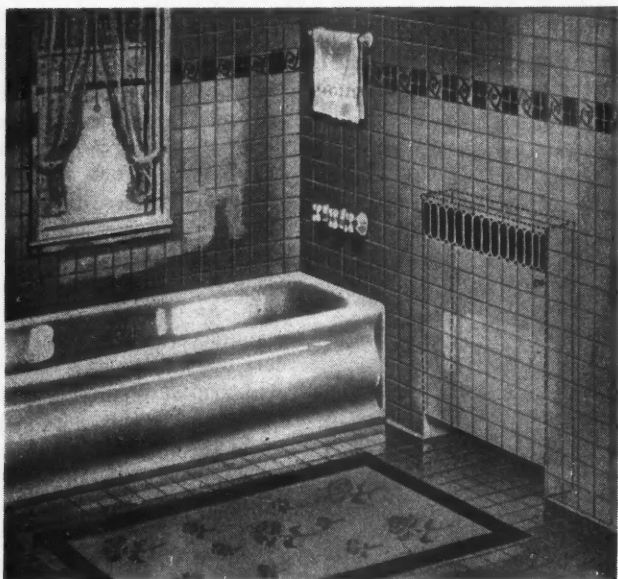
# An Innovation in the Field of Heating Equipment

**T**HE illustrations show something entirely new in heating equipment which has been designed to replace the usual cast-iron radiator, and can be used equally well with any hot water, steam, vapor or vacuum heating plant. According to the statements of the manufacturer the new heating fixture possesses a number of distinct advantages among which is a fuel economy said to amount to from 20 to 35 per cent.

These fixtures are light in weight, one unit weighing only about one-tenth as much as a cast-iron radiator of equal capacity. The cost is about the same as for the ordinary radiator and with the cabinet included is less than for a radiator and radiator cover. A smaller space is required for installation and when desired the heater may be installed within the wall where it takes up no floor space



Outwardly the Cabinet of This New Heater Resembles a Raditor Cover but the Heating Is Based on an Entirely Different Principle.



The Heating Element May Be Installed in a Wall Cavity, as Indicated by the Dotted Lines, with Only the Inlet and Outlet Openings Visible.

and is invisible except for inlet and outlet grills. At the same time it does not lose in efficiency.

The cabinet is furnished unpainted to be finished to match the room decoration and without a top or cover. A top of wood or marble may be applied as desired and it may be used for any purpose, such as a shelf for books, without affecting the heating. The cabinet is solid and rigid without joints or seam. Almost instant heat control is claimed.

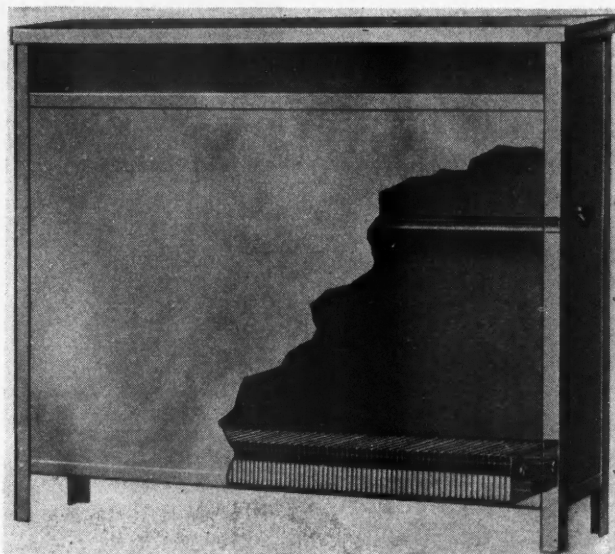
This heat control consists of a damper in the cabinet or, when the installation is within the wall, in the wall cavity. The heating element consists of a copper "U" tube, surrounded by copper sheets or fins, which is kept at a constant temperature. This element heats by convection and not by radiation. When the damper is closed, though its temperature remains the same, the heat is not given off to the room. When the damper is open the air passes

through the heating element at a velocity of 100 to 150 feet a minute and the heated air passes into the room through the opening or grill at the top.

It is stated that experiments have shown that, with this appliance in use, the floor and ceiling temperatures are kept practically the same instead of showing the 15 degrees difference which is commonly found. Because of the simple "U" tube construction, with copper fins, there is no place for air pockets to form and cause binding. The tube heats up as readily as the pipe of the supply and return system.

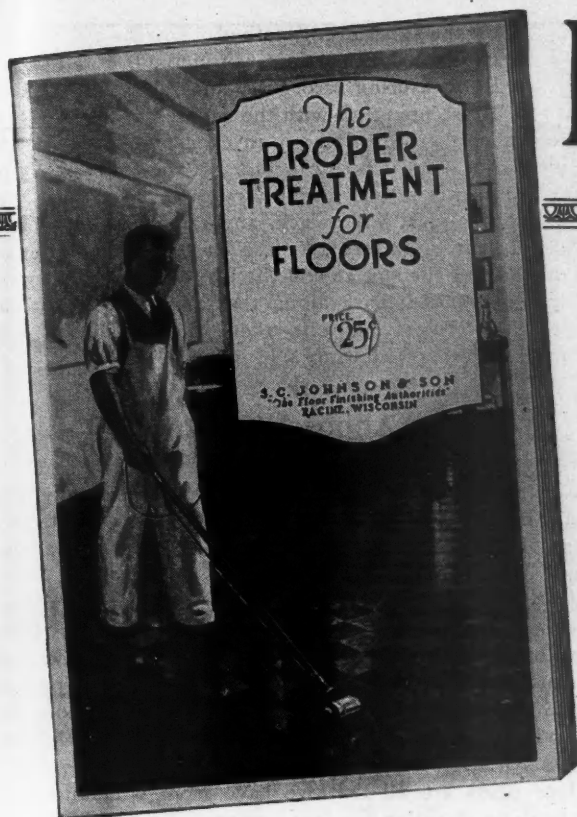
There is no serious disadvantage, it is claimed, to installing the fixtures on inside walls. The rapid circulation of air from the cabinet overcomes the poor distribu-

*(Continued to page 170)*



The Cabinet Is Set Over the Heating Unit, Which Is Hung by Brackets from the Wall, and Service in Much the Same Manner as a Chimney with the Hot Air Current Regulated by a damper.

# FLOORS



Hard-wood, Soft-wood  
Open-grain, Close-grain

*Dance Floors*

*Linoleums Rubber Tile*

*Cork Carpet*

*Cork Tile Magnesite*

*Mastic Terrazzo*

*Cement*

## ALL FLOORS

**H**OW to finish them. Where and When and *Why* to use Filler, Varnish, Wax, Shellac, Oil, etc. Covering capacities, Proper methods of cleaning and refinishing. A gold-mine of practical information for Builder, Contractor or Architect.

### JOHNSON'S INTERIOR FINISHES

*Varnishes*

*Fillers*

*Waxes*

*Wood Dyes*

*Enamels*

*Undercoats*

*Wall Finishes*

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S. C. JOHNSON & SON, Dept. A. B. 12, RACINE, WIS.  
*"The Wood Finishing Authorities"*

- Please mail me immediately the new Johnson Floor Book—no charge—no obligation.
- We do our own finishing and are also interested in *Wholesale Price List on Johnson Finishes* and your **FREE** offer on the new Johnson Electric Floor Polisher.

Signed \_\_\_\_\_

(Address given on attached card or letter-head)

## Furnace Heating

(Continued from page 161)

at points about eight feet above the several floors. Ducts must be insulated with air-cell asbestos or other equally efficient covering to prevent loss of heat.

The methods shown in Figs. 1 and 2 require no insulation, as heat lost by radiation from piping goes directly into the interior, thus serving as additional heating surface. In fact, a certain prominent architect with flowers as a hobby is known by the author to heat his green house in part by means of the heat radiated from warm air ducts placed beneath the glass roof. Radiated heat throws up a film of warm air on the under side of the glass, hence prevents loss of heat.

That large buildings like auditoriums and gymnasiums may be warmed effectively by the fan furnace method is evidenced in the illustration, Fig. 4, showing a coliseum in Jackson, Mich., with 60,000 cubic feet contents. This building is heated successfully by an ordinary warm air furnace having a fan directly connected to the bottom of its casing.

It will be noted that the warm air duct extends along one wall, just beneath the trusses, some 15 feet above the floor, and the heat supply nozzles are flared and have spreading webs. Heat is delivered downward at an angle of 45 degrees and broadening of the opening diminishes the velocity of the supply air, also diffusing it more widely.

At the extreme left and right will be noted vertical ducts with openings in them near the floor. These openings, which usually are protected with plain grilles, provide for the passage of the cool air back to the fan inlet and thence to the furnace casing for reheating and redelivery to the coliseum. Fresh, outdoor air may be mixed with the interior air when desired.

Whereas application of the average gravity type warm air furnace without mechanical fan is limited to small, compact buildings, mostly residences, due to the gentle air circulation in such systems, when mechanical fans are employed to assist circulation, the field of usefulness of warm air heating is greatly enhanced. In fact, the limitation is a commercial one rather than a mechanical one. For lofts, workshops, small manufacturing plants, and similar buildings no method is superior to warm air and industrial management has, as a result, exhibited increased interest in the warm air furnaces and combined mechanical fans.



## Planning and Laying Out Rafters

(Continued from page 162)

### Questions

1. What are the terms applied to the different kinds of rafters?
2. Give three methods of expressing the pitch of a roof.
3. Give four methods of finding the length of rafters.
4. How does the run of the hip rafter compare to the run of the common rafter?
5. Which of the rafters named in problem No. 1 may require or does require a side or bevel cut?
6. What general rule may be given in regard to the bevel cuts (side cuts) for all kinds of rafters?

### Answers

1. The common, hip, valley, hip-jack, valley-jack and cripple-jack.
2. The pitch of a roof may be expressed:
  1. By the ratio of the rise to the span.
  2. By the ratio of the rise to the run.
  3. By degrees.
3. The length of rafters may be found:

1. By the square root method.
2. By the length per foot run method.
3. By measuring across the square.
4. By stepping off with the square.

4. The run of the hip rafter on an even pitch roof is 16.97 inches for a 12-inch run (1 foot) of the common rafter.
5. The following rafters usually require bevel cuts: hip, valley, hip-jack, valley-jack, and cripple-jack.
6. For side cut of rafters take the length of the rafter on one arm of the square and the run on the other arm of the square and mark along the arm of the square on which the largest figure is taken. This rule holds good for all rafters requiring side cuts.



## More About Log Houses

(Continued from page 164)

It is advisable to use a varnish which is heavy with rosin, and one that dries quickly, for the first coat. For the second coat of varnish use the best grade of spar varnish.

We do not furnish logs for buildings other than those we construct ourselves as our motto is "Build Anywhere." Log houses are practical in any climate. We have built in many states and find that the climatic conditions are favorable for log construction. The logs will not deteriorate as long as they are kept varnished and given the same care as a frame building should be given.

Floor plans are all that we have from which to work. We have no elevations as our workmen do not need them, for the reason that outside door frames are leveled for the floor level on the second layer of logs. The tops of doors and window frames are leveled for plate level, giving us our side elevation. Roof design is entirely up to the owner.



## An Innovation in the Field of Heating Equipment

(Continued from page 168)

tion of heat which is present with radiators used on interior walls. They may also be installed between joists in the basement, with proper provision for cold air and for hot air to be delivered to the room above.

Because of their light weight the heating elements can be handled easily by one person, which facilitates installation, and the cabinets may be removed at any time to permit repairing work or decorating in the building without disturbing the piping connections as they are merely set over the heating unit.

The heating units are six inches wide and three inches high. The cabinets are seven inches wide, of varying heights and of lengths from 13 to 56 inches according to the size of the heating unit they are designed to cover. When installed within the wall the heating unit is set on edge so that its 3-inch dimension fits between the sheathing and interior wall finish. The installation may be made under a window with the window sill serving as a cover.



## Will Form Association

ACTING in behalf of 32 of the leading producers of small dimension stock, and with the approval of the National Committee on Wood Utilization and W. A. Babbitt, chairman of the Directory of Small Stock Sub-Committee, E. C. Kratsch, managing editor of the Wood Working Industries, has called a meeting of such producers for November 10, at the Hotel Sinton, Cincinnati, Ohio. The purpose of this meeting is to form a dimension stock association. It is open to manufacturers only and an invitation to attend has been extended to both hardwood and softwood manufacturers.





Typical houses  
built and sold  
by E. J. Andrews,  
Cleveland.



# They make and hold friends for you

"I use all *"Standard"* Plumbing Fixtures," says E. J. Andrews, well-known builder of fine homes in Cleveland, "because many of those who purchase my houses are personal friends, and I want them to be absolutely satisfied."



YOU DO more than assure the buyers of your houses satisfaction when you use all *"Standard"* Plumbing Fixtures. You save yourself a vast amount of time, bother, and uncertainty.

You merely turn to one catalogue when planning the Plumbing features of your houses. There you find everything from Laundry Trays to massive Built-in Baths. All manufactured completely by one concern—all of the selfsame quality, whether in Enameled Ware, Vitreous China, or Brass. All backed by the same responsibility—and readily available through your Plumbing contractor.

Write for *"Standard"* Catalogue.

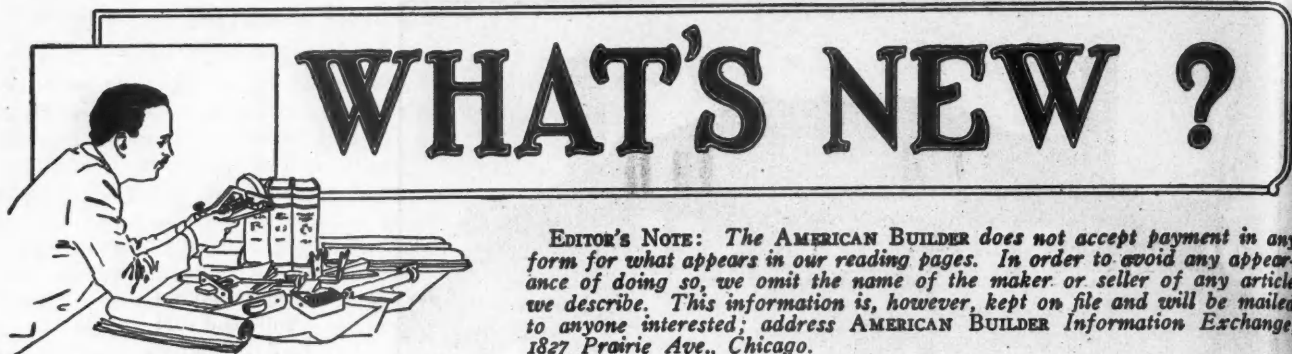
**Standard Sanitary Mfg. Co.**  
PITTSBURGH

# *"Standard"*

## PLUMBING FIXTURES

Your specifications, prepared this way by *"Standard"* Promotion men, will insure bids for exactly the Plumbing Fixtures wanted for your houses.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



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### Floor Type Jointer Announced

**T**HE new floor type, portable, electric jointer shown here is being added to a well-known line of woodworking machines. This jointer has previously been manufactured in the portable bench type and the addition of the floor type makes this popular machine available in either form.



**This Portable, Electric Jointer Was Formerly Made in the Bench Type Only, But Is Now Available in the Floor Type.**

The head is covered at all times by an automatic guard. The fence slides forward to any position on the table and also tilts to full 45 degrees.

The motor is located at the side instead of at the base and is controlled by a switch on the front of the machine. It drives the head by a high grade leather belt which insures smooth running and protects the motor from injurious shocks. Provision is made for keeping the belt to the proper tension.

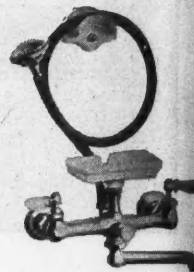
The floor type base is rigidly constructed from cast iron and structural steel and is light enough that the machine is easily portable. The top of the table is 36 inches from the floor. A slide carries the shavings outside the base. The net weight of the complete machine is 240 pounds.



### Improved Combination Faucets

**O**NE of the latest developments in combination sink faucets is shown in the illustration. It is furnished either with or without the spray attachment and may also be obtained, upon specification, with inlet connections which are eccentric, allowing an adjustment of  $\frac{1}{2}$  inch. The inlet connection is regularly furnished 8 inches on centers.

The vitreous china soap dish can be removed from the pedestal for cleaning. The opening at the back allows all drippings to run into the sink without striking the fitting. The swing spout has a check which prevents striking against the sink back, and the spout outlet is equipped with an anti-splash device. The control valve makes it possible to direct the water either through the spout or through the spray. It is a push valve, operating in the horizontal position, and it is not necessary to keep one hand on the valve for controlling the water. Either hot or cold water or tempered water may be obtained in a continuous flow from either the spout or spray.



**Here Is a Highly Improved Type of Combination Sink Faucet.**



### An Advanced Step in Heating

**T**O get the right heat wherever and whenever it is wanted is the idea behind the development of the gas radiator pictured here. Each unit is thermostatically regulated by an individual thermostat which gives absolute control of the temperature within the room, regardless of fluctuations of outside temperature or the temperature in other rooms. One room may be maintained at a temperature of 70 degrees while another is maintained at 50 degrees.

These units are so vented as to carry off all gases, moisture of combustion and vitiated air. When used with a fan they form an effective ventilating unit.

The radiator may be easily disassembled, a wrench being the only tool required, and when disassembled the parts can be handled by one man. Because of this the delivery and installation can be made a one man job. It is only necessary to unscrew the tie rod, remove the radiator tops and columns, except the end pipe columns, take off the combustion chamber covers and lift out the combustion chambers.

These radiators are shipped complete and assembled ready for installation. They are painted with a high grade aluminum bronze. The thermostat is attached and it is only necessary to connect the gas outlet. This is an air radiator and does not require the use of water or any attention from the user.



**A Thermostatically Controlled Gas Radiator Which Gives Absolute Heat Control in Each Room.**



**97% of America's homes need this protection**  
 Nearly every house in your town represents an opportunity for a sale of Celotex. Here is a big immediate market that does not depend on new construction.

# Now... to build up your Winter Business...

**H**ERETOFORE most of us in the building business have had to depend upon new building.

But now comes an opportunity for builders and carpenters everywhere to get behind a product that can be sold to every home . . . old or new. It gives you an opportunity to make an extra profit during the dull winter months and to get hundreds of new customers on your books.

That product is Celotex Insulating Lumber.

You don't have to wait for people to build to sell them Celotex. The use of Celotex as attic, basement

and garage lining is rapidly spreading over the country. People are wanting to make their present homes more comfortable . . . to get their share of the big savings Celotex makes in fuel bills.

This idea is being featured in Celotex national and newspaper advertising during the fall and winter months.

You can make a good profit on each job and this profitable extra business isn't hard to get. When you explain the many advantages and the low cost of lining an attic, basement or garage with Celotex you are

offering your prospects a real service —one they'll be quick to appreciate.

Get in touch with your local lumber dealer. He will be interested in getting some extra business too and will be glad to work with you.

Also send the coupon below for more information about the winter uses of Celotex. It will be the means of increasing your profits several hundred dollars this season.

**THE CELOTEX CO., CHICAGO, ILL.**  
 Mills: New Orleans, La.

Branch Sales Offices in many principal cities  
 (See telephone books for addresses)

Canadian Representatives: Alexander Murray & Co., Ltd.  
 Montreal, Toronto, Halifax, Winnipeg, Vancouver

# CELOTEX

INSULATING LUMBER

THE CELOTEX COMPANY, Dept. T-152  
 645 N. Michigan Ave., Chicago, Ill.

Send more information about Celotex as attic, basement and garage lining.

Name.....

Street.....

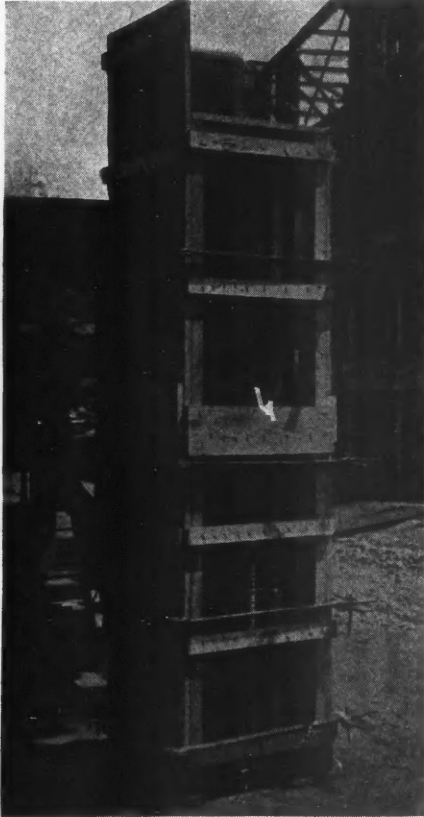
City..... State.....

Am. Builder—12-26

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### Metal Concrete Column Forms

**M**ETAL column forms, such as those shown in the illustration, are proving to be a decided economy in the construction of reinforced concrete buildings, according to contractors now using them. The metal forms give a uniformly good finish to the concrete, free from honeycomb and grain imprint. Bulging is impossible because the forms can be securely clamped. Stripping the metal forms from the concrete is quick and easy because they



**Metal Forms for Concrete Columns Which Make for Speed and Economy in Construction.**

Every piece is punched with  $\frac{1}{8}$ -inch round holes for nailing, spaced to suit any arrangement of wood battens or cross pieces. Every section can lap 1 foot or less. The sections are nailed to wood battens. No bolts, wedges or small parts are required.

These forms are made of special-analysis iron of rust-resisting properties and are therefore durable. Oiling them now and then also helps to prevent rust and facilitates stripping. Contractors say that, using these forms, carpenters of average ability can build twice as many column sides as with wood, in the same amount of time. This would cut labor costs in half, on the building of forms, and there is also the saving in stripping and replacement. Because of this it is said that the greater additional first cost of these forms is very soon overcome and that they are less expensive in the long run.



### A Safe Wall Safe

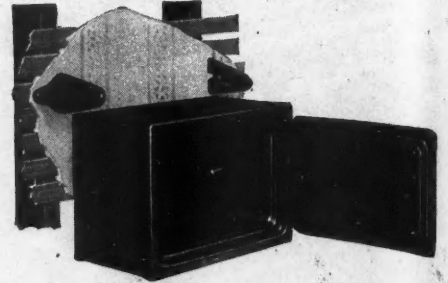
**A**NOTHER innovation which makes the well built house more salable is a wall safe which is both theft and fireproof. This safe has been put on the market at a low cost and will afford permanent protection from loss of jewelry, valuable papers and documents. It is so designed that it can be installed anywhere and anyone can fasten it in place in wall or floor, wherever desired, without special tools.

never stick like wood forms and the labor cost for stripping is therefore reduced in size to suit the specifications of the upper floors. They are used over and over again. With careful handling, they will last for years and even though bent in places they can be straightened easily. They are as easily handled as wood form, being light in weight, and are quite rigid.

Channel shaped sections of 16 gauge iron are furnished in 2 and 4-inch widths and in 3, 4 and 5-foot lengths.

These sections are made up into columns of any length or width without waste.

Once bolted in place this safe cannot be removed except by one who knows the combination, opens the door and removes the bolts from the inside of the safe. The combination cannot be picked, it is said, because the silent tumblers give no tell-tale click to the most sensitive fingers and there is no clue as to which of the 500,000 possible combinations is the right one. The manufacturer has a standing offer of \$100 to anyone who can pick the lock of this safe.



**A New Wall Safe Which Gives Complete Protection Against Both Theft and Fire.**

The thick walls of the safe are insulated with a special fire-resisting compound. As a test of fire-resisting ability, one of these safes was filled with papers and placed in a forced draft furnace firebox for more than an hour. When opened the edges of the paper had not even curled. This test was more severe than anything that would be encountered in an ordinary residence fire.

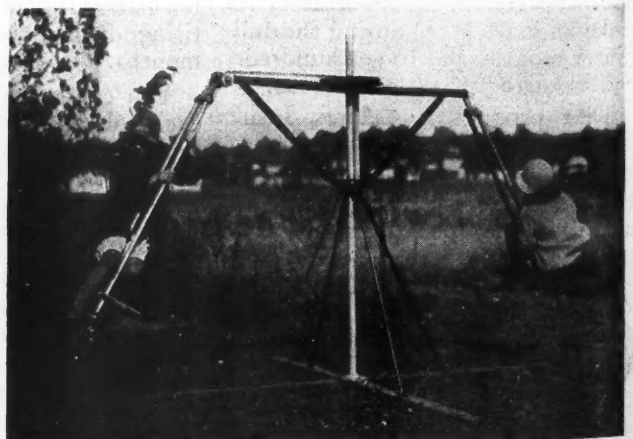
The outside dimensions of this safe are 8 by 10 by 14 inches, a size which will fit anywhere between studs or joists. The unit includes two attractively lined jewel cases, each with its individual key. The total weight of the safe is 40 pounds.



### Equipment for Playgrounds

**F**OR homes, parks, schools, beaches, resorts and other places where there are children in need of healthful exercise and amusement, the piece of playground equipment illustrated here is safe, simple and practical for children of all ages from 2 to 12 years. This swing is operated by pedals, like a bicycle, which propel the riders in a circle around the central standard, like a merry-go-round or whirl.

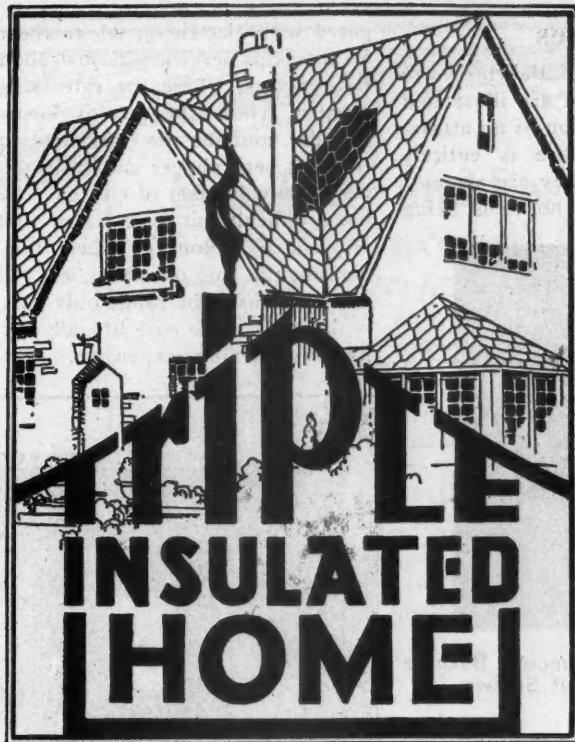
As the speed of pedalling is increased the momentum sends the carrier out into the air, widening the circumference of the circle from 5 feet to approximately 12 feet. The children get the mild and beneficial exercise of pedaling along with the thrill of riding, whirling, flying and swinging which keeps them entertained. The device can be operated as slowly or as rapidly as desired. The seats are adjustable for different leg lengths. The complete outfit is 5½ feet high, 8 feet wide and requires a space from 10 to 15 feet square for operating. The weight, with seats for four passengers is 200 pounds.



**Playground Equipment Is Being Demanded for Many of the New Apartment Buildings Which Cater to Families With Children.**

**Triple Insulated Home**

—a sound and proven plan that speeds sales and increases profits.



**Asbestos Shingles**

—each one a slab of indestructible mineral—*asbestos*. Permanent protection against fire, time, weather and repair bills.



**Housline**

—an efficient insulator that keeps heat where it belongs; inside in winter, outside in summer and acts as a sound deadener besides.



**Improved Asbestocel**

—each 3-foot section of this insulation saves approximately ten shovelfuls of coal per season so it soon pays for itself.

*This Trade Mark is selling homes*

**T**HAT'S why builders reorder. One realtor in the middle west has reordered nine times in one year. Now he standardizes on Triple Insulated Homes because he's found that they make short work of the "For Sale" sign.

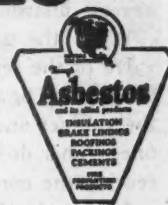
Each Triple Insulated Home is certified and trade-marked by Johns-Manville. Prospects can see the trade-mark framed inside the cellar wall—visual proof of hidden value. The Asbestos Shingles, Housline and Improved Asbestocel (briefly described on this page) all mean home-comfort, your most powerful sales point.

Add Johns-Manville's reputation to yours and sell more homes this season. Let us tell you more about the plan.

*The Triple Insulated Home*

*A Johns-Manville idea*

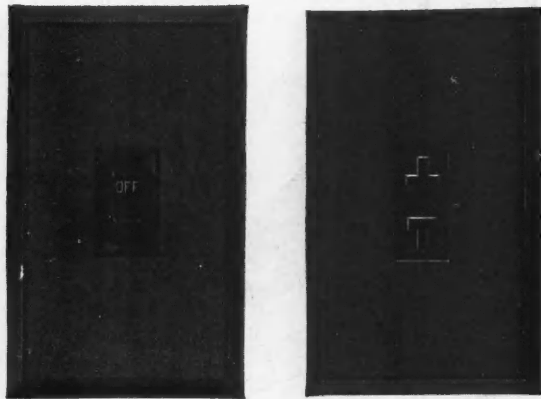
JOHNS-MANVILLE Inc., 292 Madison Ave., at 41st St., New York City  
Branches in all large cities For Canada: CANADIAN JOHNS-MANVILLE Co., Ltd., Toronto



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### Screwless Switch Plates

**S**CREWLESS switch and outlet plates of Bakelite have recently been placed on the market and are illustrated here. These plates are of molded composition of an attractive brown color and their smooth surface is entirely unmarred by screws or other fastening. They are snapped into place by the pressure of the fingers, no tools being



These Switch and Outlet Plates Are of Smooth Bakelite and Are Attached to the Wall Without Screws.

required, and are readily removed for the purpose of painting or papering, without disturbing the position of the switch.

Another point of advantage is the fact that the plate of Bakelite, as it has no metal screws, is a perfect non-conductor of electricity and may be wiped off clean, with a damp cloth, without the slightest danger of a shock. The installation of these plates requires no change in the standard wiring practice nor special instructions. The outlet plate is made in both single and double types and the switch plate, of screwless design, can also be furnished in brass in any finish or design.



### Gas Service for Country and Suburban Homes

**T**HERE has been perfected a service to meet the needs of suburban and country homes situated beyond the reach of the usual gas supply, for an economical, efficient and dependable gas service. A gas has been developed which, it is stated, has a greater heating value than city gas. It is supplied in steel containers in such a highly condensed form that the equivalent of about 5,000 cubic feet of city gas is discharged from a single cylinder.

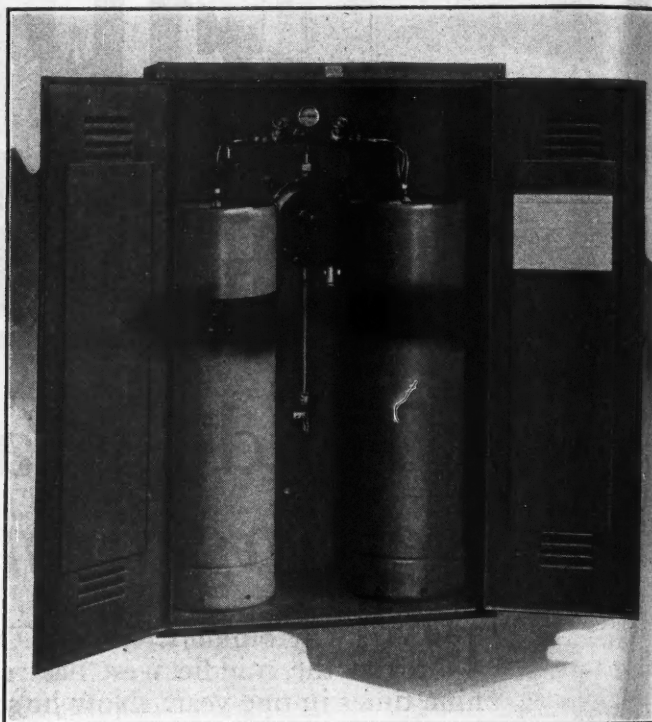
These cylinders are installed in a neat and substantial, enameled steel cabinet, on the outside of the house. The contents of the cylinders passes, in the form of gas, through an automatic controlling device, into the usual iron service pipe connected with the gas range or other gas using equipment.

Two cylinders are furnished with each installation, one being held in reserve while the other is in use. The gas is produced in the various plants of the company and the charged containers are shipped to distributing points throughout the country. From these points the containers are delivered to the householder through the local dealer or, if he is not accessible to a dealer, by freight from the nearest distributing point.

When the gas in one container has been exhausted, the valve of the reserve container is opened and the distributor notified. The distributor brings a fresh container, unlocks the cabinet and replaces the empty chamber with the fresh one. This does not require anyone to remain at home to receive the container.

It is a simple matter to estimate the cost of this service as compared with city gas or with electricity. As com-

pared with electricity, where the rate per kilowatt hour is 5 cents, this service will cost about 60 per cent what electricity costs, where the rate is higher the saving will be greater, where the rate is lower it will be less. As a cylinder contains the equivalent of 5,000 cubic feet of gas, the cost per cylinder can easily be compared with the cost per 5,000 cubic feet of city gas. A comparison with coal is more difficult but it is stated that, where a large amount of cooking is done or where the range operates for long periods, the cost of coal is less, while for the average family, which uses the range only part of the time, the expense of keeping up a coal fire all day whether in use or not, makes coal more expensive.



The Cylinders, in a Neat Steel Cabinet, on the Outside of the House, Supply a Highly Efficient Gas Service.

A complete installation consists of the steel cabinet containing the necessary controlling equipment to automatically maintain a constant pressure. This cabinet is 5 feet high, 3 feet wide and 18 inches deep. It is placed on a small concrete foundation in some inconspicuous place. Standard gas pipe to convey the gas to appliances is also furnished. This gas can be used with any standard gas range or other gas burning household appliance.



### Improved Printing Paper

**A** NEW printing paper which produces positive prints has recently made its appearance. This paper makes dark red or maroon lines on a light cream background direct from the original negative. It is printed in the same manner as blueprints but, instead of washing with water and fixing with bi-chromate of potash and then drying, these prints are developed dry by a brief exposure to ammonia water vapor.

This process produces a non-fading print that can be shaded or colored or written upon with pencil and ink, a valuable feature for alterations that it is desirable to draw or write onto the print. Because the print is developed dry it does not shrink or wrinkle and is true to scale, easy to handle and the paper retains its original strength. Prints made on a thin grade of this paper can be used as originals from which other prints can be made. Sub-contractors can use these prints for skeleton drawings for detailing their work and then make other prints from them.

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## Simplicity and Ease of Construction are Features of Massillon Floors

**T**HE ADVANTAGES of Massillon construction to contractors are known to those who have built Massillon buildings. They know that there is a direct saving in labor in erecting the floors.

They know that further savings result to the building as a whole. They know that the standardized features have made the construction economically available for the small building as well as the large building.

Each contractor erecting a Massillon building is furnished with an instruction manual "The Handling and Erection of Massillon Bar Joists." From its nature it might be termed a text book on Massillon construction.

We will send a copy of the pamphlet to any contractor upon request. If you have a job where you would like us to figure Massillon Construction against any other type of floor tell us about it.

**THE MASSILLON STEEL JOIST COMPANY, Canton, Ohio**

Sales Offices in all principal cities

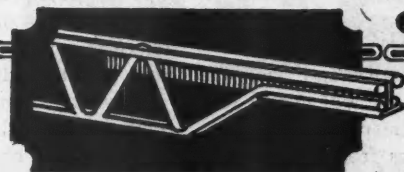
Canadian Manufacturing and Sales Agents:  
Sarnia Bridge Company, Ltd., Sarnia, Ontario



# MASSILLON

● **BAR** **JOISTS**

Two Bars Top and Bottom



Solid Steel Welded Joints

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### Complete Line of Built-In Units

**B**UILT-IN units which are so designed that they may be used in various combinations to meet space requirements and the personal preference of individual builders are probably the most advanced step in the development of modern built-in equipment. Such a line of fixtures is illustrated in the accompanying picture. This shows one popular group of units for the kitchen.

The storage cabinet at the left is equipped with a drop seat in the front to serve the table of the center section. On the inside of the door there is a folding ironing board while the cabinet itself contains a series of storage shelves. The center section also contains storage shelves with a drop table in the front. This table has no obstruction be-



A Group of Kitchen Fixtures Taken from a Line Which Enables Any Grouping to Fit Available Space and Personal Requirements.

neath and is of a size to comfortably accommodate five people. It is rigidly supported by steel braces and all working parts are of steel. The unit at the right is composed of an ice chest holding 35 pounds of ice and a cooler above.

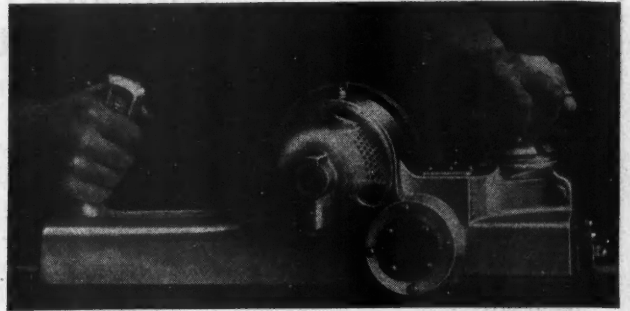
This is only one of the many combinations which are possible with this complete and well constructed line of units. The line covers practically every possible requirement including all the accepted kitchen units, medicine cabinets, telephone cabinets and nooks, broom closets, seats, tables, breakfast nooks, regular kitchen cabinets, sink cases, china cases and buffets. ❀

### Electric Hand Plane

**A**N electric hand plane, for use on doors and sash, is being manufactured which, it is said, will work ten times as fast as ordinary hand tools. The cutting is done by a jointer head which is driven by gears from the motor.

The motor is a 3/10 horsepower universal type and operates from any light socket.

A short shoe at the front of this plane, and just ahead of the cutter, can be raised or lowered by turning a knob with the left hand, regulating the depth of the cut. A graduated dial at the base of the knob enables the operator to set for



This Electric Hand Plane Is One of the Latest Power Tools Which Has Been Perfected to Save Time and Labor.

any cut from 0 to  $\frac{1}{8}$  inch. This adjustment feature, by turning the knob backward or forward while advancing along the material, makes it possible to vary the depth of the cut and smooth out humps and hollows in one stroke.

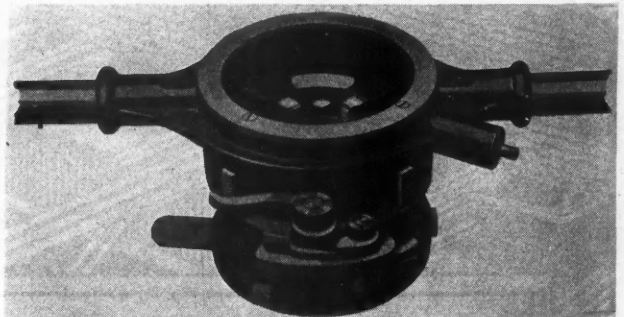
Another interesting feature is the beveling attachment which can be set to cut accurately any required bevel on the edge of the door or sash. The body of this tool is aluminum and the total weight is 19 pounds. It is easy to handle and simple to operate. The high speed steel blades are easily removable for sharpening and the dust-proof ball bearings insure long life and efficiency.



### New Adjustable Die Stock

**T**HIS adjustable die stock provides free oiling and chip clearance. There is no obstruction around the dies. The die adjusting cam is underneath the dies and this arrangement eliminates all obstruction above and around the the threading dies and the full width of the dies is openly exposed above the body of the tool for free application of oil directly onto the dies. This is considered an important improvement as the life of the threading of dies depends largely upon their being properly lubricated.

Also by this improved construction there is a solid wall opposite or back of the throats of the dies, which reduces the tendency of the dies to tip when presented against the



A New Adjustable Die Stock Incorporating Several Improved Features.

pipe and causes them to take hold and start more easily. Due to the open construction the chips fall out and away from the dies instead of accumulating within the stock. There is a free chip clearance around the largest size pipe each tool threads as well as around the smaller sizes.

Provision is made for the quick changing of dies, without removing any parts and without the aid of tools. A three-jaw universal chuck quickly centers all sizes of pipe.





Most any new saw will cut for a time. But for year after year of fast, easy cutting, choose a Disston Saw.

## Consider what a saw must do



### *Service!*

Forty and fifty years of cutting from a Disston are not unusual. Here are just a few "Old Timers."



"41 years of continual use." H. J. Kleaver, 201 Seventh St., Kulpmont, Pa.

"Have a Disston that is 55 years old." E. J. Davis, 207 W. Spruce St., Tamaqua, Pa.

"Have a Disston that has been used by the family since before the Civil War." W. M. Rockafellow, Box 256, Cochlontown, Pa.

"Have used a Disston 62 years." C. W. VanNess, 801 E. Academy St., Bingham, Tex.

"Have a Disston in use 52 years." Edward Joyce, Local 661, Ottawa, Ill.

"I am 92 years old. Still using a Disston I bought in 1864." J. J. Henderson, R. F. D. 35, Hadley, Pa.

A Steel Blade . . . . one edge cut to form teeth . . . . and a handle. That is what a saw looks like. Saw making looks easy!

But—consider what your saw must do: Hard wood or soft—day after day—those teeth must do the work of planes and chisels.

Those teeth must hold their "set" so the blade will not stick. That thin blade must have spring—yet be stiff to take your thrust.

The handle must be balanced with the blade to work with the natural movement of your arm, to avoid cramped and tired muscles.

Few can make a saw like that. It depends upon steel, upon hardening and tempering, upon the eye and hand of the skilled sawmaker.

Such a saw Henry Disston made several generations ago . . . . from his own steel.

Such a saw (any size or style) you will find today in your hardware store, ready to cut for you. Just look for the Disston name.

HENRY DISSTON & SONS, Inc., PHILADELPHIA, U. S. A.  
Makers of "The Saw Most Carpenters Use."

# DISSTON

## Heating with Waste Steam

**H**ERE is a heating system which, once installed in any plant using a steam boiler, cuts out all expense for heating as it uses the excess steam from the boiler, which usually is wasted. It is simple in construction and operation and the possibility of breakdown and repairs is negligible, as compared to an electric motor, according to the manufacturer.

This heater is a self-contained unit, a heavy steel cabinet 10 feet high, 27½ inches wide and 27½ inches deep, enclosing a steam turbine, fan and copper coils. It is connected with the boiler through a control valve. The exhaust steam passes through the turbine, which drives the fan, and then through the heat coils. The fan drives air over the coils and throughout the room. The speed of the turbine can be increased or decreased as desired by means of the control valve. Air circulation ranges from 400 to 2,800 cubic feet per minute, while the fan speed ranges from 200 to 2,000 revolutions per minute. The heat delivery ranges from 28,000 to 150,000 B.t.u. per hour.

The heat coils are copper finned having a radiation capacity six times as great as cast iron. This is a considerable item in the reduction of space required. The cabinet is substantially made with an angle iron frame. The unit is supplied complete, ready for installation, and can be placed in the room or recessed behind the wall by the addition of boots made the thickness of the wall. A grill covers the opening at the floor where

This Heater Utilizes the Excess Steam from the Steam Boiler for Heat and to Drive a Forced Circulation Fan.

the air is drawn in and a reflector at the top where the air is forced out. The standard finish is white enamel but other finishes are supplied without extra charge.



## An Economical Electric Range

**A**N electric range, attached to the wall by brackets and complete in every detail, is one of the latest appliances which has been designed to make the modern home a model of convenience and attractive appearance with a minimum of labor in housekeeping. This range is delivered mounted, ready for use. It stands 37 inches high and is 25 inches deep from the wall. The width is 23 inches with 5¼ inches added at each side for the shelves. It weighs, complete, 161 pounds and is finished in pure white porcelain enamel and polished nickel.

On the top there are four full sized heating units, 8½ inches in diameter, two are 1,200 watt capacity and one is 1,500 watts. The fourth unit is 720 watts, for slow cooking, and has a removable, aluminum, griddle top. In connection with it a toaster and waffle iron are provided, with heat applied to both sides at the same time. In the front of the oven door is the heat control which can be set for any

temperature which it is desired to maintain and the thermostat prevents waste of current. Being effectively insulated this oven is highly economical of current. It is large enough for any of the usual family cooking, 14 inches high, 14 inches wide and 19½ inches deep. The broiler element is 1,000 watts while the baking element is 1,500 watts.

At the side of the stove is the control, an eight-day clock which can be set to start and stop the oven cooking at any desired time. There is a convenience outlet, on each side, for plugging the percolator, electric iron, vacuum cleaner, or other appliance. The one at the right is time controlled by the clock so that it may be set to start the morning. The switches are entirely concealed and can be turned in either direction to supply low, medium or high heat. The markings are clear and permanent, black lettering fused into white enamel.

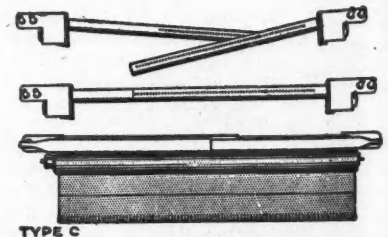
The brackets are of polished nickel plate and because of the bracket method of installation there is nothing on the floor to interfere with sweeping and mopping and no unsightly leg spots on the floor. The range is placed at a correct height for cooking on the top and for easy access to the oven.



## Better Shade and Drape Hangers

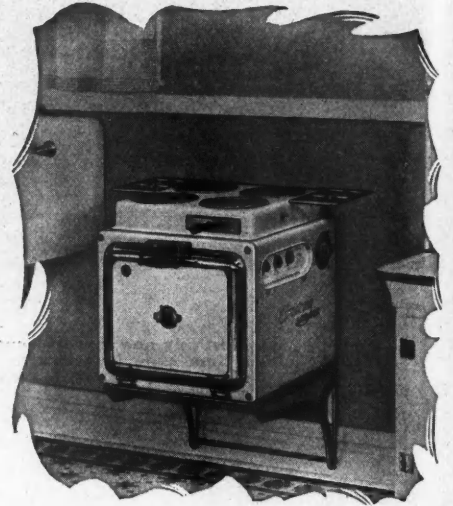
**A** MEANS of hanging shades, curtains and draperies without using nails, bolts, screws or tools, on concrete, steel or wood construction, is provided in the clamp bracket shown here. The installation is simple. It is only necessary to get the distance between the jambs, insert the key in the clamp and push up. Rubber blocks at either end protect the wood trim against marring and the hanger is rigidly held in place. It is stated that 100 pounds weight will not disengage it.

This fixture is made in several styles for hanging shades only or for hanging shades and drapes. The former type is provided with slots into which drapery holders may be inserted. The combination type extends over the window casing with the drapery holders made integral. The drapery holder provides for the use of either one or two rods. These fixtures are adjustable to windows from 24 to 36 inches wide and extensions may be had for both clamp and rod up to any desired length.



TYPE C

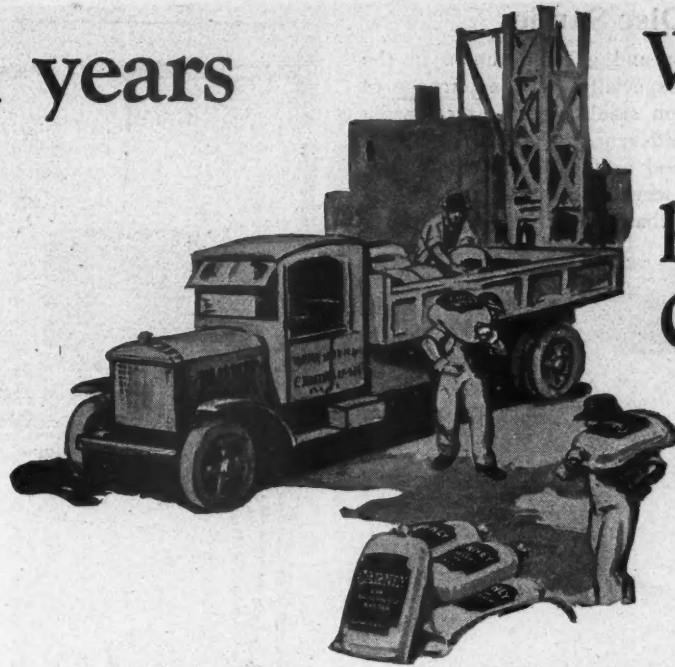
Here Is a Hanger for Shades and Draperies Which Can Be Installed on Plaster or Metal Trim or Without Marring the Woodwork.



The Rapid Development of Electric Appliances Has Produced This Economical and Efficient Range.

For ten years

Walbridge,  
Aldinger  
have used  
**CARNEY**  
Cement



**WHEN** a company the size of Walbridge, Aldinger uses a product consistently for ten years, and then comes out with a statement like the one on the left, it's generally worth listening to.

Wherever you find builders using Carney Cement, for the brick and tile mortar, you will find the same enthusiasm. They all will tell you they never have seen a product with so perfect a combination of economy and quality.

It's easy to see how Carney Cement cuts labor costs. Carney Cement comes all ready to use—no lime to be added—no soaking or slaking to be done. One mixer can produce two or three times as much mortar as he could under the old method. Besides, the smooth plastic quality of Carney Cement Mortar, combined with the fact that no time is lost tamping or re-tempering, enables the masons to lay considerably more brick.

**USE CARNEY CEMENT IN COLD WEATHER**

Here's another thing you will like about Carney Cement Mortar—it can freeze solid in the wall without affecting the quality of the bond—a wonderful advantage for winter construction.

**THE CARNEY COMPANY**

District Sales Offices: Cleveland, Chicago,  
Detroit, St. Louis and Minneapolis.

"We are pleased to state that we have used Carney Cement on our brick work for a number of years and have always found same uniform in quality and a labor saver.

We first started using Carney Cement on the Book Building of this city in 1916 and have continued to use same on a number of buildings we have erected since then.

From our past experience, we can heartily recommend Carney Cement for use on brick work."

CHAS. E. LEVITT,  
WALBRIDGE, ALDINGER CO.,  
Detroit, Mich.

**Specifications:**

1 part Carney Cement  
to 4 parts sand.

*Cement Makers* **CARNEY** *Since 1883*

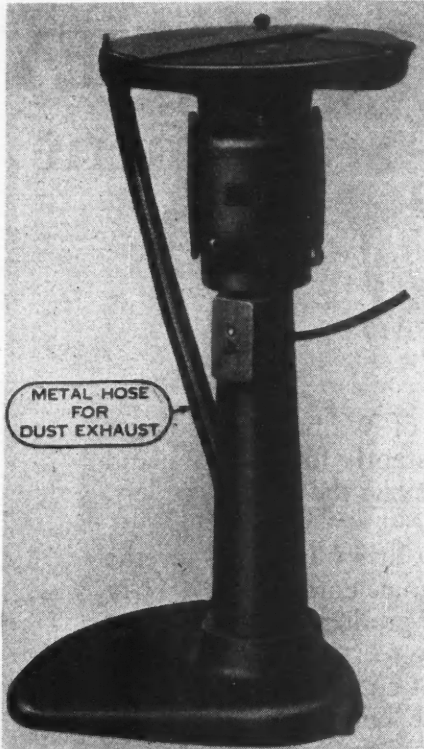


**CARNEY CEMENT**  
*for Brick and Tile Mortar*

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### Horizontal Disc Sander

THE horizontal disc sander and grinder shown in the illustration was designed especially for the purpose of removing surplus material from small pieces after sawing or planing. It makes no difference what the material may be as discs for either wood or metal can be obtained for this machine. For rapidly securing a flat finish on small parts it is said to be faster than a vertical disc sander or grinder.



Here Is a Horizontal Disc Sander Which Will Operate Equally Well on Small Wood or Metal Pieces.

and that it will pay for itself by the saving of tedious hand sanding and polishing, at the same time producing a better product.



### Cooking with "Retained Heat"

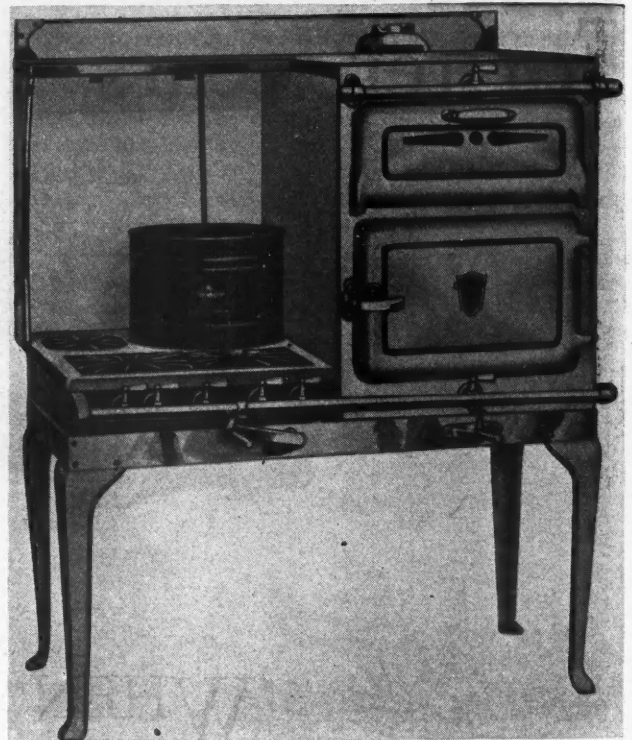
DESCRIBED as a building feature with real service to the tenant, the gas range equipment illustrated employs the principle of the fireless cooker to reduce gas bills and save time and labor for the housekeeper. It is made in a number of sizes and styles to suit all requirements and varying tastes.

This range has the appearance of the usual fine gas range of handsome finish and design and it can be used, at any time, as any other range is used but it also includes other possibilities which make it distinct from other ranges. It includes an insulated oven with a vent in the rear wall which assures even circulation of heat. The walls are so perfectly insulated that the bare hand can be placed on the outside walls, even when the gas has been burning for as much as 30 minutes, the time required to start a large roast. This insulation makes it possible to turn off the gas after the food to be cooked has been started. The cooking process continues on retained heat just as in a fireless cooker.

The same method is used for cooking on top of the range. Heavily insulated, dome shaped hoods are provided. These are suspended by chains over the open burners on the cabinet models and work on vertical rods on the small ranges. Their weight is counter-balanced by weights concealed at the back of the range and only a touch is required to turn the handle that raises and lowers them. In use these are placed over the cooking utensil, the gas is turned

In use the operator rests his arm on the guard plate and, using his elbow as a pivot, moves his hand through a small arc, at one end of which is a box containing the parts to be sanded, and at the other end the revolving disc. The speed of the operation is only limited by the speed of the operator as the disc quickly removes the splinters left after sawing and the dust is carried away by a patented vacuum dust remover.

In operations where this machine is used, it is said to be extremely useful



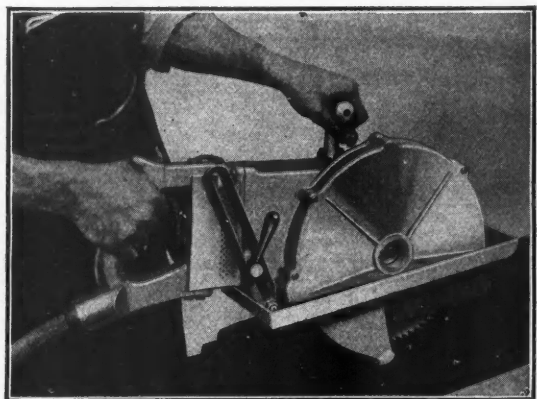
The Principle of the Fireless Cooker Has Been Utilized in This Modern Gas Range to Obtain Economical Use of Oven and Top Burners.

on for a few minutes, for starting, and then turned off and the cooking is completed by the retained heat just as with the oven. This results not only in a saving of gas but also in a cool kitchen and saves watching to prevent boiling over or burning.



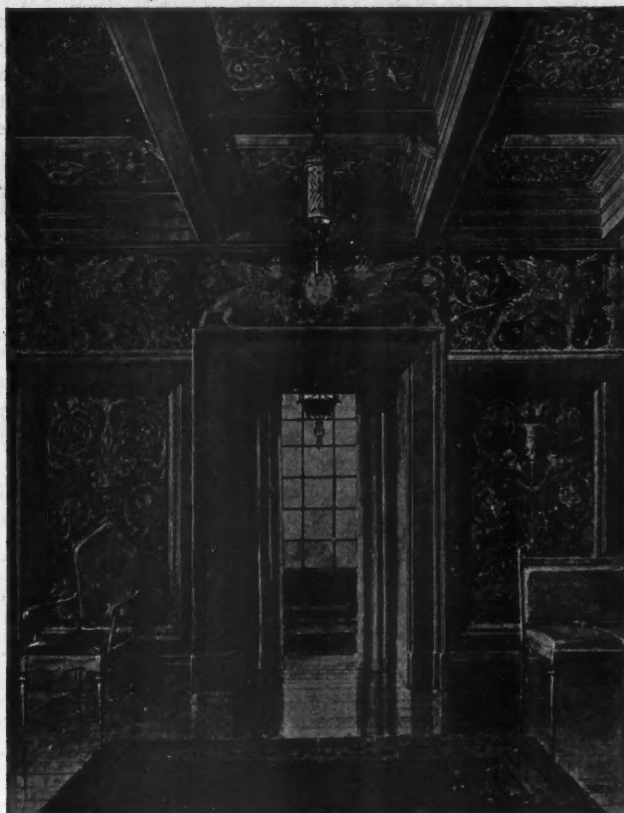
### A New Electric Hand Saw

THE portable electric hand saw shown in the illustration is adapted to use on construction work or in any place where lumber is to be sawed. It is said that with this saw one man can accomplish as much work as ten men using hand saws in the same length of time. Heavier material that is ordinarily carried to a table saw can be cut off or ripped with this tool, thereby reducing the handling time.



Here Is a Portable, Electric, Hand Saw for Use on Construction Work Which Will Cut Heavy Material Ordinarily Carried to the Table Saw.

The outstanding feature of this tool is the safety guard which is a very important factor in a tool of this kind. The blade is completely enclosed by a telescopic guard which automatically opens only when the saw is pushed into the material. It automatically closes again when the cut is completed. This affords a maximum safeguard against accidents and protects the blade from damage.



#### A SUPERB LIBRARY OR DIRECTORS' ROOM

This beautiful Italian room of breath-taking splendor is one of a group of display rooms at the home office of the Marietta Manufacturing Company. Note how superbly the decorated black SANI ONYX panels harmonize with the rare, hand-carved mahogany. No other material surely would serve with such telling effect. What a superb Library, Directors' Room or Club Room this would make

IMAGINE a material far stronger and more enduring than marble, tile or plaster, yet lending itself to marvelous decorative effects possible in no other product.

That is SANI ONYX, the marvelous modern-day material for walls, ceilings, wainscoting, floors, and a hundred other practical purposes, in homes and public buildings.

SANI ONYX, you know, is a vitreous substance, fused from rock ingredients. It is available in six standard colors—White, Blue, Ivory, Green, Gray, and Black, and in a variety of textures including Flame Glaze, Semi-Matte, Matte, Tapestry, Polychrome and Embossed. Special sizes, designs and colors to order. Installed and guaranteed by construction houses in principal cities.

Canadian Factory—  
Sani-Products Co., Ltd.  
155 Richmond St., West  
Toronto, Ontario.

**SANI ONYX**  
**A VITREOUS MARBLE**

Send for a copy of our beautiful new book illustrating actual SANI ONYX installations in full color.

MARIETTA MANUFACTURING COMPANY, 80 Brookside, Indianapolis, Ind.

### This Increases Closet Capacity

A SIMPLE and convenient means of increasing the closet capacity of any house is available in the form of a rack which is attached to the inside of closet doors. This rack is so simple in construction that it can be put up by



Here Is an Inexpensive Fixture Which Can Be Installed in Any Closet to Materially Increase Its Capacity.

anyone in ten minutes' time and should prove of value in the modern house or apartment where compact design and limited space require the most complete use of every inch of available space.

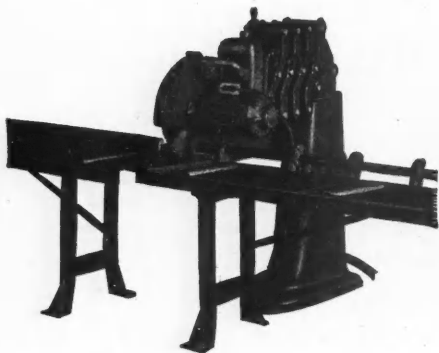
The rack, which is illustrated here, provides for the hanging of hats, canes, umbrellas, dresses, coats, sweaters, trousers, scarves and other clothing, without crushing or mussing, while below is an especially ingenious device for shoes. The rack is a neat appearing fixture, heavily nickelplated and should last indefinitely. It is made to fit any door and the price is quite reasonable.



### Improved Cut-Off Saw

THIS new, electric, cut-off saw is quite novel in construction and its design presents many features which make for exceptionally fast and convenient operation. All operating and controlling mechanisms are conveniently placed. The push button start and stop switch, operating handle, lever which actuates the automatic rebound lock, crank handle for raising and lowering the saw and the adjustable stop stud for regulating the forward movement of the saw are all right at the operator's hand. He does not have to stoop or reach under the work table to make adjustments.

The column which supports links, ball bearing, built-in motor and saw is heavily cast with ample floor bearing. Its three point suspension feature guarantees a perfectly level setting regardless of an uneven floor.



Fast and Convenient Operation Are Featured in the Design of This New, Electric, Cut-Off Saw.

Links are wide and solid to give the necessary strength and rigidity. They are hinged on enclosed, grease packed ball bearings. When fully extended each bearing makes scarcely more than an eighth of a revolution, so that there is practically not wear here and the

operation of the links is almost frictionless.

The saw is easily pulled through the heaviest cut with slight effort. There is no chance for dust or dirt to accumulate on working parts and cause wear. A positive and automatic lock lever prevents the saw from rebounding, affording complete safety to the operator.

Stock up to 5 inches thick and 22 inches wide can be handled. Pressed steel work tables, 8 feet long, on either side of the saw, may be obtained. The rollers are ball bearing and the patented length gauge is equipped with automatic swinging stops. ✦

### A Pneumatic Masonry Drill

THIS portable, pneumatic, concrete drill has been designed with the idea of embodying all the features necessary for most successfully and economically doing the work in a mechanical way which has heretofore been done by hand or other slow and expensive methods. Its use reduces the time required for such work to minutes where formerly hours were required. Its range of usefulness is wide, being applicable to the work of the general contractor, electrical contractor, steam fitter, plumber and installer of machinery.

This drill strikes 1,000 blows per minute and each blow is produced by compressed air. The air is compressed and utilized in the drill itself at each stroke of the hammer. It is primarily operated by electricity. Current may be taken from the standard light socket as the drill may be used with either direct or alternating current, 110 or 125 volts, single phase.

An advantageous feature is that the steel is rotated by power, relieving the operator of the necessity of rotating by hand in order to change the position of the cutting edges and to work out the cuttings out of the hole. The power rotating gear is detached when the tool is used for cutting or chipping. For drilling up-holes, a supporting yoke is furnished to carry all the weight.

Standard steels furnished are 12 inches long and 1 inch in diameter. In hard concrete these will drill at a rate of approximately 3 inches per minute. Larger or small holes require a proportionate variation of time. The diamond point for rough dressing,  $\frac{3}{4}$ , 1 and  $1\frac{1}{2}$ -inch chisel points for surface dressing, breaking out or grooving, 1 and  $1\frac{1}{2}$ -inch hround chisels for making rounding grooves for wire, conduit and similar purposes, as well as other special tools can also be furnished.



For Drilling All Kinds of Masonry This Pneumatic Drill Enables Rapid, Economical Work.

# Make \$25<sup>00</sup> to \$40<sup>00</sup> a day Winter and Summer

**No Dull Seasons  
No Lay-Offs  
Your Own Boss**

Make up your mind today to write us in regard to this wonderful opportunity which the American Universal Floor Surfacing Machine offers you. It keeps the money rolling in during the winter months when the building business is often slack. It affords you an opportunity to become an American Floor Surfacing Contractor and make big money as well as create a permanent and profitable business that is all your own.

With an

**American Universal**  
FLOOR SURFACING MACHINE

you can not only do the work which it would take six men to do by hand scraping, but you can do it much better and at the same time earn six men's pay.

## Work Easy To Get

Every new floor has to be surfaced and every old floor resurfaced. You need no special training. Any man who is willing to work can make big money as an American Floor Surfacing Contractor. Fill out coupon or write today and we will furnish you absolutely free full information in regard to this wonderful opportunity.

## The American Floor Surfacing Machine Company

*Originators of Floor Sanding Machines*

515 So. St. Clair St.

Toledo, Ohio

**Cut out and mail  
this coupon today**

The American Floor Surfacing  
Machine Co.,  
515 So. St. Clair St., Toledo, Ohio

Please send me, without obligation  
on my part, full information about  
the "American Universal" Floor Sur-  
facing Machine.

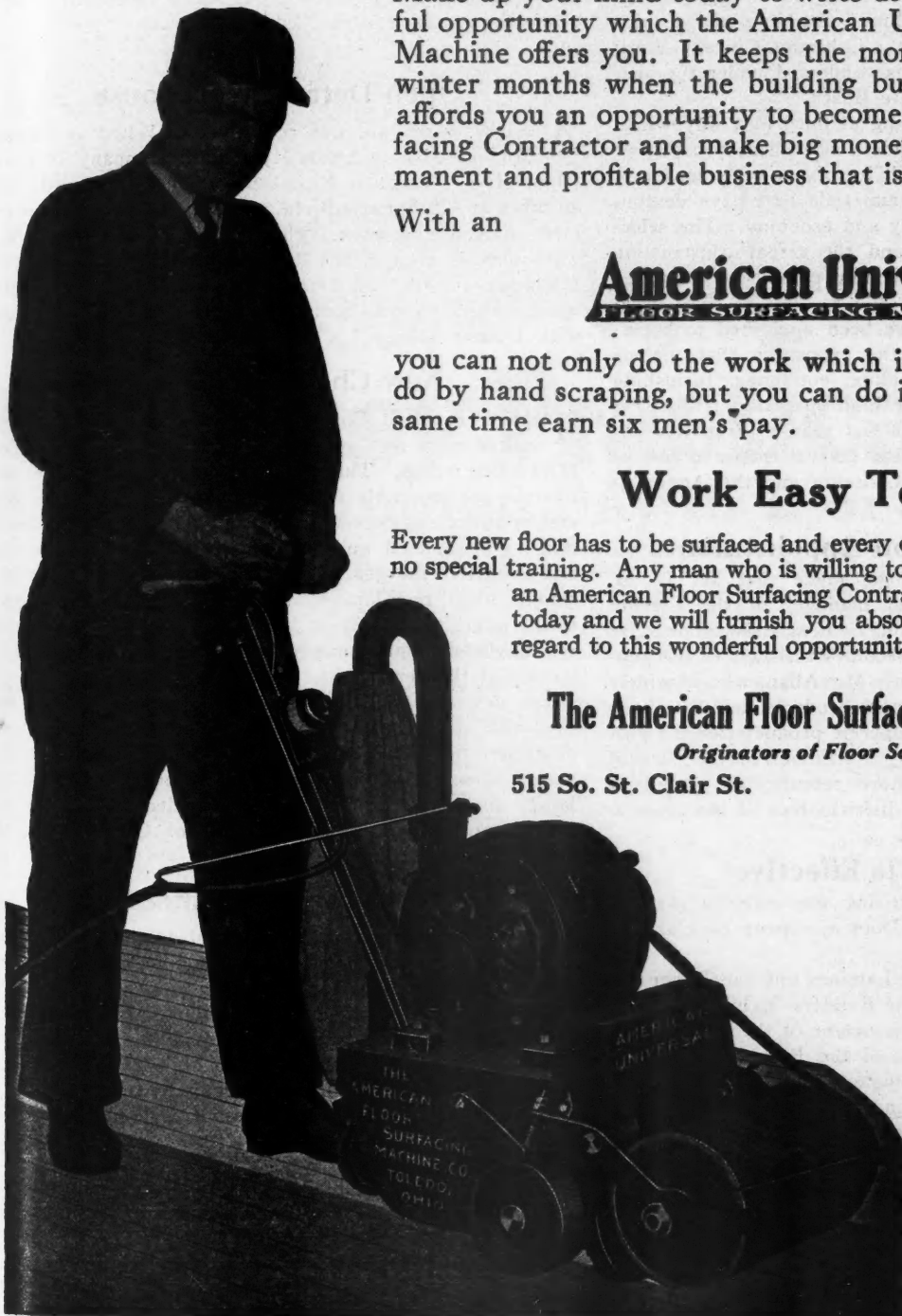
- I am a building contractor.
- I am interested in becoming a  
floor surfacing contractor.

Name.....

Street.....

City.....

State.....



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

# NEWS of the FIELD

## Own Your Home Show

"A COURT of Homes," featuring an artistic grouping of a number of full sized homes, built of the various accepted and popular materials, will be a part of the seventh annual "Own Your Home" Building and Equipment Exposition, to be held in the Coliseum, Chicago, April 2 to 9, 1927. This exposition is conducted under the auspices of the Chicago Real Estate Board.

The "Court of Homes" is being planned in a way which will interest architects and builders as well as prospective home owners. The houses will be of concrete, masonry, brick, frame, stone and other materials that have demonstrated their worth, permanency and economy. The selection of architectural designs and the actual construction will be supervised by an architectural committee composed of eminent Chicago architects.

New exhibit committees have been appointed to supervise the various divisions in the exposition that include home financing, planning, building, equipping, furnishing and landscaping. The sale of exhibit space is far in excess of the amount sold at this time last year, especially in the electrical division and in addition several thousand feet of exhibition space, both in the Coliseum and the Annex, is under reservation.

## Cement Association Appointments

ANNOUNCEMENT has been made that W. D. M. Allan has been appointed manager of the Cement Products Bureau of the Portland Cement Association. He succeeds A. J. R. Curtis who becomes assistant to the general manager of the association. Mr. Allan, who is widely known in the building and cement products field, has been engaged in the promotion of concrete products for the past seven years. He was formerly a member of the Cement Products Bureau staff but more recently he served as office manager of the Illinois district office of the association.

## Advertising Is Effective

AN effective piece of advertising was recently used by the Waterfront Sash & Door Company of Oakland, California.

On Monday morning a stock Laminex one panel door was placed in a tank of water in the Builders' Exhibit Building, Oakland. Hon. John L. Davie, mayor of the city of Oakland; E. M. Tilden, president of the Builders' Exchange and of the Tilden Lumber Company, and Maury I. Diggs, prominent architect of Oakland, attested to the weight, width and length of the door before its submersion in water. The door was autographed by Mayor Davie to prevent substitution.

The door was then remained submerged until Friday afternoon, being viewed during the days and nights of its soaking by innumerable passersby. A group of interested people was gathered about the exhibit most of the time. When the door was removed from the tank of water the public was given an opportunity to see it after being dried.

The door was re-weighed to ascertain the amount of

water it had absorbed and it was found that its weight gain, after being in the water five days and four nights, was 7 pounds 14 ounces. In spite of the water absorbed, the expansion in width and length was a scant  $\frac{1}{8}$  inch, and in thickness,  $\frac{1}{16}$  inch. The door was inspected by the committee and found to be free from warp, buckle or blister, with panels and joints undamaged and veneer solid.

Generous publicity helped to make the contest a success. Striking newspaper advertisements, which featured the Laminex soaking test, were used immediately preceding the submerging of the door and during the next four days. In addition, letters of invitation to attend the conclusion of the test were sent out to all contractors, architects and retail sash and door dealers in the East Bay district.

This soaking test has proved a great stimulus to the business of the Waterfront Sash & Door Company, of Oakland, the local dealer, which made the demonstration. Since the test was held, this company has noted an encouraging increase in sales and believes it has really succeeded in capturing the attention of the Oakland builders.

## Open Detroit Warehouse

A NEW warehouse was recently established at Detroit, Michigan, by the Sykes Metal Lath Company, of Niles, Ohio. It is located at Russel Street and Boulevard, with an office at 425 Farwell Building, and is under the management of A. L. Peterson. The purpose in establishing this warehouse is to give the dealers throughout the state of Michigan quicker and better service on all the products manufactured by this company and to keep in closer touch with Detroit buyers.

## New Chain Belt Plant

THE Chain Belt Company, Milwaukee, Wisconsin, has started work on a new engineering building at its West Milwaukee works. This building will house the steel fabricating and assembly department, drafting room and general contract engineering offices. This is the third major unit to be erected on the 59-acre West Milwaukee site, and is part of the general plan to gradually move the Milwaukee plant, now located at 16th Avenue and Park Street, to the larger tract in West Milwaukee. When this building is completed, approximately half the organization will be located at the new works.

The new unit will be of steel, brick and glass construction with approximately 80 per cent of the roof and walls of glass. It will be equipped with every modern convenience including eight traveling cranes and several new and larger machines which are being added to the present equipment. Frank B. Chase, Inc., of Chicago, are the engineers and designers.

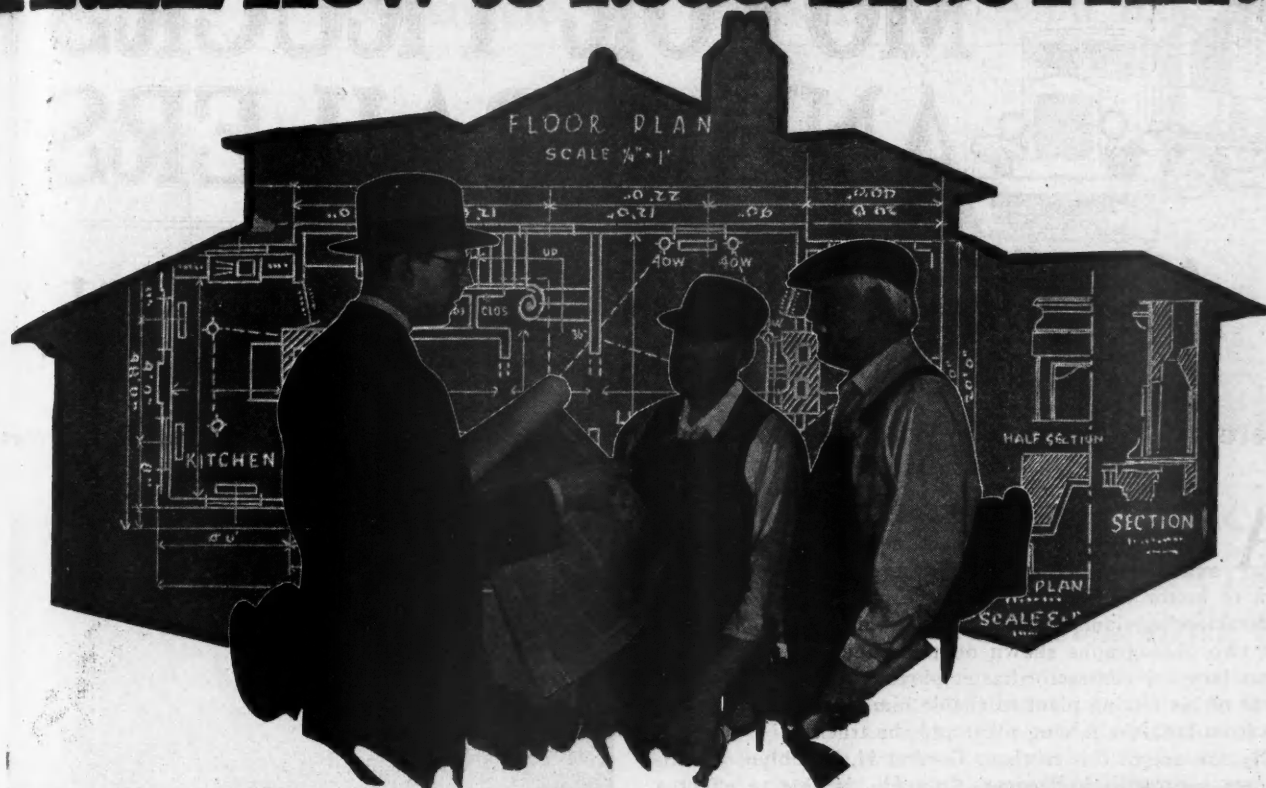
## Occupy New Offices

IT has been announced that the Philadelphia branch office of the Asbestos Shingle, Slate & Sheathing Company, the main office and factory of which is located at Ambler, Pa., will occupy new quarters about December 1, at Rooms 1001-4 Liberty Trust Building, Broad and Arch streets, Philadelphia. At the same time the Philadelphia warehouse will be discontinued as the close proximity of the company's factory enables it to render prompt and efficient service direct from that point.

"Practical Structural Design," by Ernest McCullough, published by the Scientific Book Corporation, 15 East 26th Street, New York City, is a text and reference work on design in timber, steel and concrete, for engineers, architects, builders, draftsmen and technical schools especially adapted to the needs of self-tutored men. A new, third edition has been published which is revised and enlarged. Price \$4.



# FREE How to Read Blue Prints



## New Easy Practical Way That Has Doubled Pay in 2 or 3 Months!

Thousands of Men in the Building Trades Have Discovered an Altogether New Way to Double and Triple Their Incomes! Surprising, Yes,—But True! Almost Overnight They Have Stepped Into Interesting, Big-pay Jobs—Become Foremen and Superintendents—Or Are Making Big Money in Business for Themselves. The Same Wonderful Opportunity Is Now Offered You. Don't Send One Penny. Just Mail the Coupon for Full Set of Valuable Blue-Print Plans, Big Free Book, and Complete Details.

**Y**OU men who work with your tools in the building trades make good money. But you don't get one penny more than you're entitled to. Every boss on the job—every foreman, every superintendent—is making plenty more than just your wage scale, to say nothing of the real money the contractor and the builder clean up. Why do these men get more money for their work than you do? Why do they clean up \$6,000 to \$15,000 a year or more? It's simply because they're trained in the "headwork" side of Building and Contracting work. They can read Blue Print Plans. They know how to lay out and run jobs.

### Get This Big-Money Training

Many men think the only way they can get practical "headwork" training is on the job. Perhaps that was true once. But thousands of Chicago Tech graduates have proved that the idea is all wrong now. You know yourself that a man can spend 5 or 10 years working with

his tools and never get a real chance to learn the things he must know, if he is ever to get into the big-pay class.

But it's all different the new Chicago Tech Builders' Course way—amazingly different! It's quick, easy, certain. Right at home, you get real Blue-Prints used on actual jobs to examine and keep for reference. In language you can understand, as plain as A-B-C, everything is told you and worked out for you. You are taken by experts right through every step of Plan Reading, Estimating, and Superintendence. You don't need even a grade school education to understand every word and absorb every fact.

### Make More Money

Woodside, in three months, rises from journeyman carpenter to foreman, then makes big money in contracting business for himself. In a few months McAvoy goes from bricklayer on the wall to foreman in charge at a big increase in pay. Marchand says, "Ten days after completing course my pay was raised 100%." Hundreds—yes, thousands of others say the same, Chicago Tech has helped them to bigger jobs or a business of their own.

### READ!

"Since starting the Builders' Course I have been raised to Superintendent and my pay raised 100%." F. F. Blair, Okla.

"I owe a lot of credit to your course. Am now listed as a Brick Contractor and made about \$3,000 clear money this summer." E. F. Baker, Ohio.

### If You Live In or Near Chicago

Visit our day or evening classes which over 500 Builders attend. You can get the same training by mail—same Plans, Lessons and instructors. Mail the coupon for details.

### BLUE PRINT PLANS FREE!

We want you to see for yourself how easily you can learn to read Blue Prints and do Estimating this new, quick way—how easily you can double and triple your income. Don't send one penny. Just mail the coupon. We will send you absolutely FREE a full set of practical, working Blue Prints, also the valuable book, "How to Read Blue Prints." Act at once.



Chicago Technical School for Builders, Dept. W-30, Chicago Tech Bldg., 118 E. 26th St., Chicago, Ill.

Please send your Free Books and Blue Prints which I understand are mine to keep without obligation. It is understood no salesman will call on me.

Name .....

Address .....

City..... State.....

Occupation .....

**Chicago Technical School for Builders**  
Dept. W-30 118 East 26th Street CHICAGO, ILL.



# MOTOR TRUCKS AND TRAILERS

## A Truck Served Mixing Plant Saves Time and Money

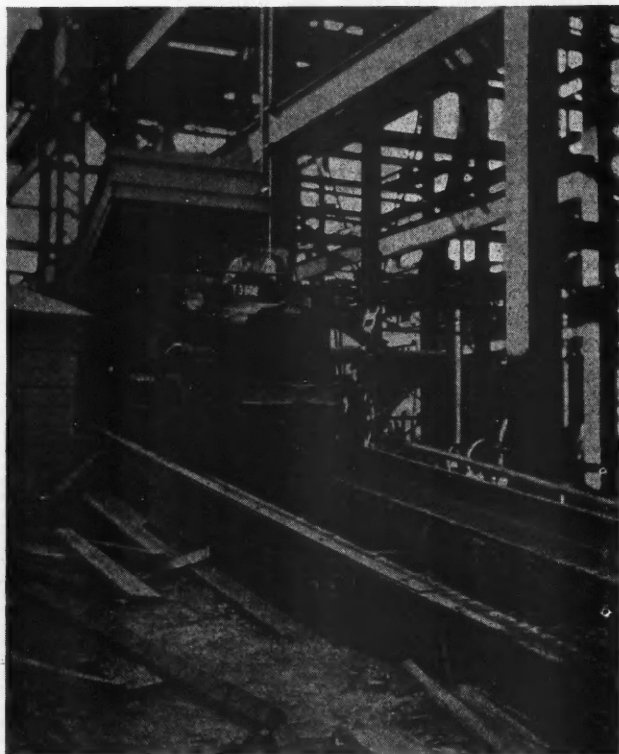
Here Is a Contractor Who Places His Mixing Plant in the Basement and Delivers Material to it Directly With Trucks

**A** LITTLE ingenuity will often go a long way to make useful and economical equipment more useful and economical and this is just as true in the operation of motor trucks as it is in the use of other kinds of contractors' equipment. Evidence of this fact is offered in the two photographs shown on this page. These pictures show how one contractor has employed an unusual arrangement of his mixing plant to enable him to get greater service from both the mixing plant and the trucks.

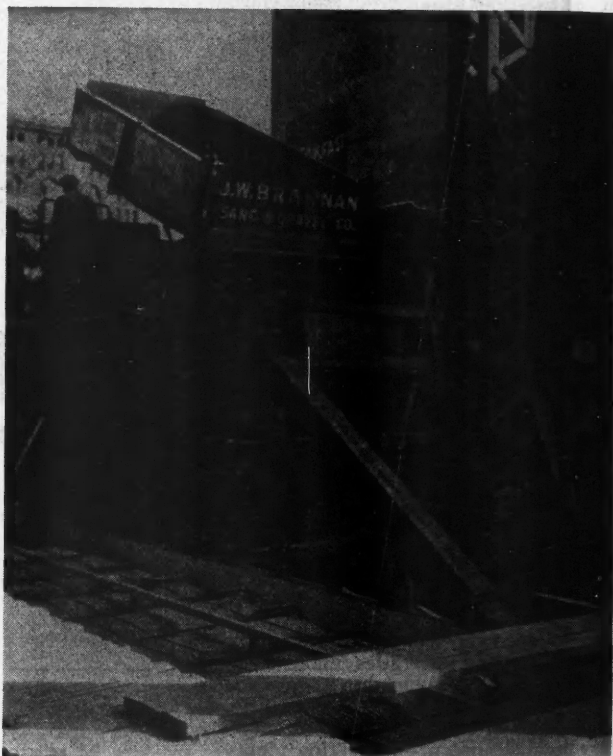
By the use of this method, Gordon H. Tamblyn, a well-known contractor in Denver, Colorado, is able to effect a very considerable saving in both time and labor in the construction of office buildings. It can be applied equally well in any operation where concrete construction is used.

The concrete batcher and mixer are installed in one corner of the basement of the building to be erected but just outside of the building line. From the mixer, a hoisting mast rises to the various floors of the building.

To eliminate the usual gang of wheelbarrow men at the



The Runway to the Sand and Gravel Bins of the Basement Mixing Plant Showing One of the Trucks Dumping Into One of the Bins Over the Batcher.



View of the Bins, Cement Shed and Hoisting Mast Used in the Basement Mixing Plant, with a Truck Which Has Just Dumped Its Load of Material.

mixer, sand and gravel bins, holding 50 yards of gravel and 30 yards of sand, are built directly over the batcher. An incline is built up to these bins so that the material trucks can back up the incline and dump directly into the bins. This incline is built of heavy timbers, crosslaid with narrow strips to afford traction for the heavy truck wheels under all weather conditions. Guard rails of heavy timber are also provided at each side to keep the wheels from running off the incline.

Four men are required for the mixing operations, one man at the mixer, another who, by means of two levers, manipulates the batcher, and two men in the cement shed above, the corner of which may be seen in the pictures. These last two men dump two sacks of cement into a chute leading to the batcher each time the bell rings to hoist.

With this system in use, according to Mr. Tamblyn, a speed of a batch a minute is readily maintained, providing of course that conditions, in general are reasonably favorable.

JOSEPH C. COYLE

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26

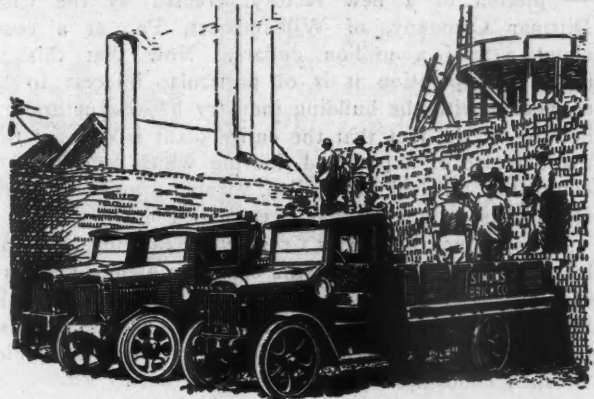
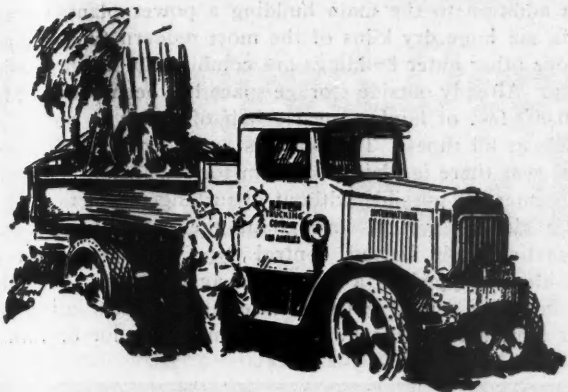
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Both are in Los Angeles—it happens that each has 26



Mayhugh owns 26 International Trucks —and standardizes on them!

I FIND that International Trucks earn me a greater profit than any other make I ever owned," says Claude Mayhugh of the Mayhugh Trucking Company. "Having used a great many different trucks, there was no question in my mind as to the make of trucks that I should buy for the West Pico Boulevard job, but I was undecided as to the size best suited for fast batch hauling. Speed turned the trick; I make mighty good time with my 2-ton Internationals.

"In heavy excavation hauling, such as I encountered on the Saw Pit Dam project near Monrovia, I use the larger Internationals most successfully."

Mayhugh has standardized on Internationals because their ability to do all work at comparatively small cost enables them to earn real dividends.

The experience of this local firm, identified with some of the biggest construction projects on the Coast, is typical of the experience of other International owners in all lines of business. Let us point out to you some of the reasons why International Trucks will solve your hauling problems.

"26 International Trucks are always on the job for us" says Simons Brick Co.

THIS big firm, known as the world's largest manufacturer of common brick, is standardizing on International Trucks. In their own words, the principal reason is "the excellent service these trucks have always given us." At this time Simons are using 26 Internationals (a number with 6-wheel equipment) at their Los Angeles, Pasadena, Simons, Montebello, Santa Monica, and El Centro factories. Internationals already haul more than two-thirds of the total output, and to such good advantage that Simons say, "We are gradually replacing our other trucks with Internationals."

They have this to say about the service for which International Trucks everywhere are famous: "We also like the attention you give your trucks after they are in use. The courtesy extended by the members of your organization is very much appreciated."

The successful record of Internationals in everyday hauling of heavy, gritty brick is a real reference. The kind of International construction and service that has made this record possible will help you to solve your transportation problems.

The International line includes Speed Trucks, Heavy-Duty Trucks, and Motor Coaches. Also, the McCormick-Deering Industrial Tractor. Served by 121 branches in the United States, world's largest Company-owned truck service organization.

INTERNATIONAL HARVESTER COMPANY

606 So. Michigan Ave. of America [Incorporated] Chicago, Ill.

INTERNATIONAL HARVESTER TRUCKS COMPANY

### Crooks-Dittmar Occupies New Model Factory Building

LAST spring an announcement was made of the completion of a new factory, erected by the Crooks-Dittmar Company, of Williamsport, Pa., at a cost of about a half a million dollars. Now that this plant is in full operation it is of particular interest to those connected with the building industry both structurally and because of the fact that the entire plant is devoted to the manufacture of a patented flooring which is shipped in a completely finished state, filled, varnished and waxed, ready for use as soon as it has been nailed down.

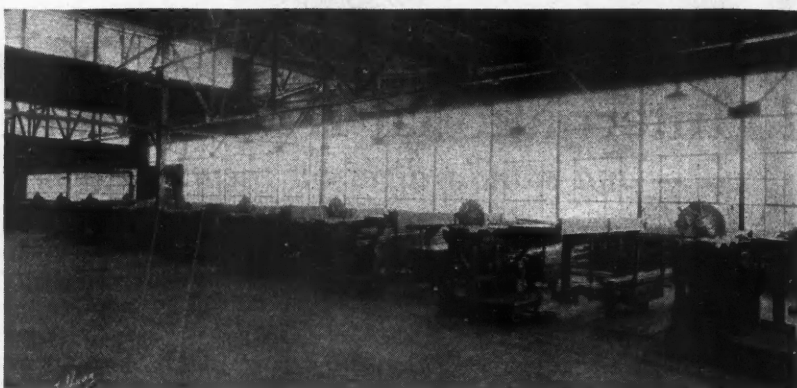
This product, known as Cromar oak flooring, was named by using a combination of the company names, Crooks and Dittmar. It is designed to effect economy and convenience for both the contractor and the home owner. Because of the fact that it is supplied to the contractor in a completely finished condition it can be laid and used the same day, eliminating the muss and delay connected with the finishing process. In a reflooring job this means that the room is out of use for only one day and in new construction saves delay in going ahead with other portions of the work while waiting for the finishing of the floors to be completed. The special type of tongue and groove is also designed to make possible quick and easy laying and to afford an easily cleanable surface.

The old Crooks-Dittmar plant, containing a floor space of 42,000 square feet, was of no mean proportions but, by comparison, the new structure with its 100,000 square feet dwarfs the old building. It is in many respects a model factory plant, the main

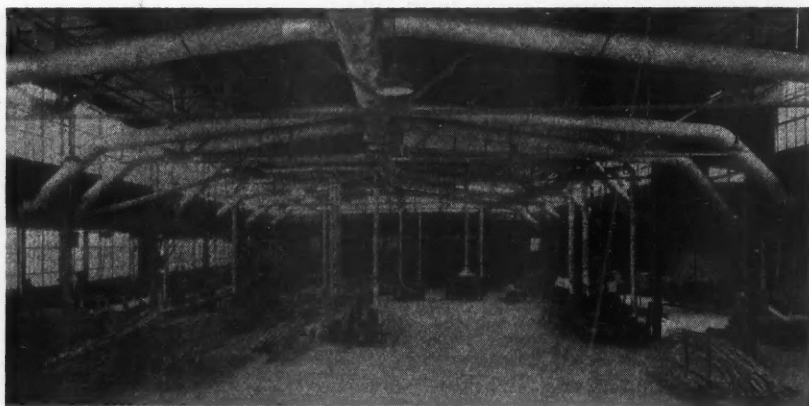
building being of brick, steel and glass construction, a daylight plant in every respect. It is a one-story building designed for a straight line production, with a second story devoted to general offices, engineering department and sales and executive offices.

In addition to the main building a power plant, storage sheds, six huge dry kilns of the most modern type and numerous other outer buildings are combined in an impressive group. Already outside storage space has been provided for 2,500,000 feet of lumber, nearly half of which is carried on wheels at all times. The plant is so laid out, in a 12-acre tract, that there is plenty of room for expansion and quick enlargement is possible without disturbing production.

The electric system throughout the entire plant is an automatic, push button control type and the plant is sprinkler equipped as a protection against fire. It is also so efficiently served with air filtering and ventilating systems that, even in the finishing rooms, the odor of varnish



A Battery of Ten High Speed Trim Saws Installed as a Part of the Equipment for Turning Out Flooring.



The Main Milling Room of the New Plant Which Is Equipped Throughout with Complete Electrical Equipment.

fumes is hardly apparent in spite of the fact that many thousands of feet of flooring are standing on the floor at all times with the newly spread varnish in a wet and semi-dry condition.

This finishing department is, according to the belief of the Crooks-Dittmar Company, the only place in the world where a cabinet finish is applied to wood by machinery. This is done by patented machines which apply filler, varnish and wax and a moisture proofing compound on the back and edges of the flooring strips.

The business which requires this great factory building has been entirely developed within the past seven years. Since the opening of the new plant the output of this company has already doubled.



A Front View of the New Crooks-Dittmar Company Plant, with the Power House in the Background, as It Appeared During Construction. This has been called the most modern woodworking plant in the country.

for Economical Transportation



# A Rugged, Dependable 1-Ton Truck, \$495

*f.o.b. Flint Mich*

Remember—this amazing low price includes every basic automotive improvement developed by engineers during the last twelve years. Remember too, that Chevrolet alone offers them in a one-ton chassis for \$495.

That's why the Chevrolet One-Ton Truck has won a world-wide reputation for unfailing performance, economical operation and slow depreciation, combined with low first price.

CHEVROLET MOTOR COMPANY, DETROIT, MICH.  
*Division of General Motors Corporation*

### Quality Features found only in Chevrolet at these Low Prices

Easy gear shifting, with 3-speed control. Disc-clutch of latest improved design.

Valve-in-head motor that delivers more power and miles per gallon than any other truck engine of equal size.

Positive motor lubrication by a combined pump and splash system.

Positive cooling in all weather by a water pump and extra-large Harrison radiator.

Positive, reliable, semi-reversible steering control.

Extra-large, equalized brakes—12<sup>3</sup>/<sub>8</sub>-inch diameter drums.

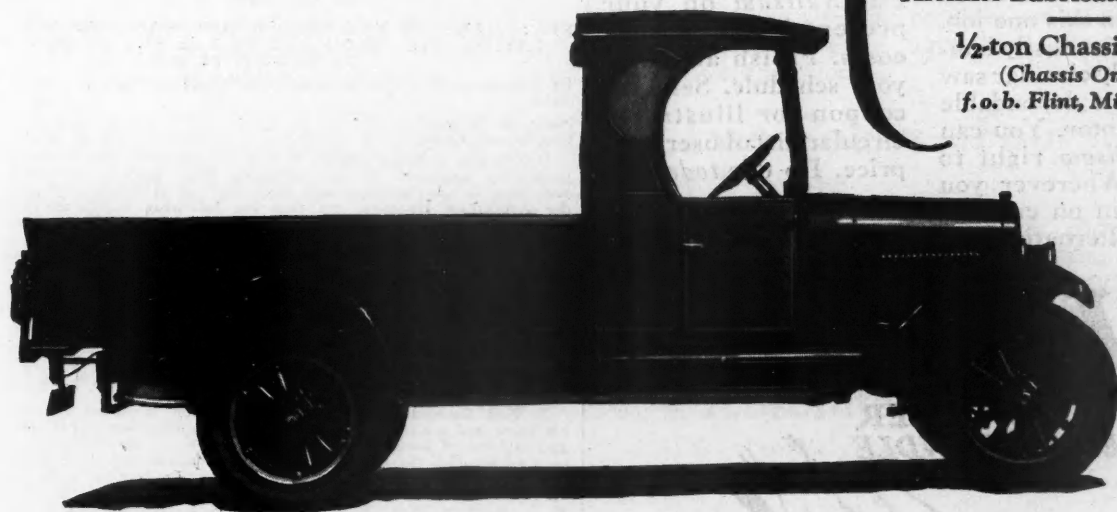
Big, oversize rear axle with spiral-cut, bevel gears.

Semi-elliptic steel springs.

Full length, 177-inch, deep channel steel frame, rigidly braced.

Alemite Lubrication.

**1/2-ton Chassis \$375**  
(Chassis Only)  
*f. o. b. Flint, Michigan*



# CHEVROLET

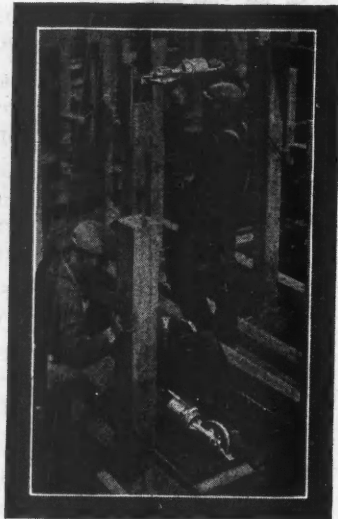
# ONE TON TRUCKS HALF TON

World's Largest Builder of Gear-shift Cars

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

# 2 Quick BITES at a 6 X 6!

This picture shows *Skilsaw* cutting—at a height above the workman's head—one of the six by sixes used in the concrete forms of the double decked Wacker Drive, along the river front, Chicago. *Skilsaw* cuts but three inches so the workman cuts first across one side and then the other. And he does it with startling speed in a position where using a handsaw would be torture.



Small wonder that the president of the construction company building Wacker Drive says: "*Skilsaws* have proved indispensable." Eleven are used on this one job. *Skilsaw* is an easily handled, sturdy circular saw driven by a dependable electric motor. You can carry *Skilsaw* right to the job. Wherever you can plug in on current, direct or alternating, you

can use *Skilsaw* to cut at twenty times your fastest hand sawing.

Put *Skilsaw* on your present job. Cut your costs. Finish ahead of your schedule. Send the coupon for illustrated circular, list of users and price. Do this today.

**SKILSAW, Inc.**

3818 Ravenswood Ave., Chicago

## SKILSAW

**PUTS HORSE POWER  
AT THE SAW HANDLE**



**SKILSAW, Inc.**  
3818 Ravenswood Ave., Chicago, Ill

Please send me your descriptive circular A B 12, and price of *Skilsaw*.

Firm Name \_\_\_\_\_

Your Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

FOR ADVERTISERS' INDEX SEE NEXT TO LAST PAGE

### Waste Prevention Prizes

AN announcement was recently made at the Hardwood Manufacturers' Institute office in Memphis, of a prize competition for the best original devices or methods of operation to decrease waste in the logging or milling of hardwoods, improve the quality of mill output or reduce manufacturing costs. This contest is open to all men employed in hardwood logging or milling operations by members of the institute.

For the three best entries submitted cash prizes of \$75, \$50 and \$25 will be paid. An additional important feature of this contest is that all original and practical pieces of equipment, devices or methods of operation submitted will, whether or not they are awarded a prize, be entered in the contest conducted by the National Lumber Manufacturers' Association, which is open to all employees of the lumber manufacturing industry in the United States and in which nine prizes, aggregating \$2,000, are paid annually.



### New Heltzel Plant Started

THE Heltzel Steel Form & Iron Company, of Warren, Ohio, has announced that the unprecedented demand for its equipment, during 1926, has necessitated an expansion of manufacturing facilities to take care of the business. A new addition to the plant is already well under way which will give the company 42,000 square feet additional floor space. This space will be devoted to the manufacture of steel bins, road forms and other items as well as new equipment which is to be announced at the Road Show, January 10 to 14, 1927. The addition is of the double bay type and will be equipped with two new 10-ton cranes and other modern machinery necessary for the fabrication of contractors' equipment.



### STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912

OF AMERICAN BUILDER, published monthly at Chicago, Ill., for October 1, 1926.

State of Illinois } ss.  
County of Cook }

Before me, a notary public in and for the state and county aforesaid, personally appeared E. L. Hatfield, who, having been duly sworn according to law, deposes and says that he is the general manager of the AMERICAN BUILDER 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 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, managing editor, and business managers are:

Publisher—American Carpenter & Builder Co., Chicago.  
Editor—Wm. A. Radford, Chicago.  
Managing Editor—B. L. Johnson, Chicago.  
General Manager—E. L. Hatfield, Chicago.

2. That the owner is: (If the publication is owned by an individual his name and address, or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the names and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given.) Wm. A. Radford, H. M. Radford, R. D. Radford, Wm. A. Radford, Jr., B. L. Johnson, E. L. Hatfield, all of Chicago; G. W. Ashby, Berwyn, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

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.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown here is. (This information is required from daily publications only.) E. L. HATFIELD.

Sworn to and subscribed before me this 1st day of October, 1926.

ANDREW JOHN NAUMANN.

(My commission expires October 29, 1929.)



# "Blue Ribbon Homes"

## This "Business Booster" Free of Cost

Every builder, dealer in building materials and architect knows how necessary it is to have modern, up-to-date nicely arranged plans to show prospective customers—to excite their interest and make them want to build. "BLUE RIBBON HOMES" has been published to assist and help—to be a "business booster" for our readers.

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No expense has been spared to make this the best and most complete book of home designs ever published. It is a collection that cannot help but stimulate home building and add to the

business of every man that shows it to his prospects. Every plan and perspective in this great collection of designs is of a home that has been actually built.

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Also send me *Absolutely Free, Postage Prepaid*, one copy Radford's "Blue Ribbon Homes."

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Check your  
Occupation.

Post Office.....State.....

- Building Contractor
- Dealer in Building Materials
- Architect

AB-12-36

### Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to the readers of American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

The Truscon Steel Company, Youngstown, Ohio, has prepared a treatise, under the title "Copper Bearing Steel Resists Corrosion," containing facts, figures and photographs showing the rust resisting properties of steel containing a percentage of copper.

The National Lime Association, 918 G Street, Northwest, Washington, D. C., has issued its new bulletin, 316, "The Fallacy of Unnecessary Strength," dealing with economy in the preparation and use of mortar.

"The Upsonizer," periodical publication of The Upson Company, Lockport, N. Y., contains, in the November issue, the first of a series of three articles under the title of "Cost Accounting for the Retail Lumber Dealer," prepared for it by an expert accountant, F. L. Gilbert, a partner in the accounting firm of Ernst and Ernst.

The Lincrusta-Walton Co., Hackensack, N. J., has published a very handsome book, in hard covers, containing complete illustrations and information on its Lincrusta-Walton wall coverings and containing samples of this material in a cover pocket.

The McGill Manufacturing Company, Valparaiso, Indiana, offers a new catalog, No. 21, covering its line of electrical specialties for all types of construction.

The Wickwire Spencer Steel Company, 41 East 42nd Street, New York City, has published a complete new catalog of its wire products for the hardware trade.

The Home Incinerator Company, Milwaukee, Wisconsin, has published a pamphlet, under the title "Educating the Basement to Take a Place in Society," containing suggestions for adding another living room to the house.

"Winter Concrete" is the title of a pamphlet prepared by the Atlas Lumnite Cement Company, 25 Broadway, New York City, on methods of handling winter concrete without expensive protective methods.

The Carthage Marble & White Lime Company, Carthage, Missouri, has published a booklet of specifications and information on the use of its marble for exterior work.

The Schlage Lock Company, San Francisco, California, has published a complete and attractive catalog of its locks and door hardware.

"Better Plastering for Modern Homes" is a handsome new booklet prepared by The National Council for Better Plastering, 1305 Madison Square Building, Chicago, and is full of valuable information.

The Delco-Light Company, Dept. R-15, Dayton, Ohio, has published a booklet describing its new Frigidaire system of cooling drinking fountain water.

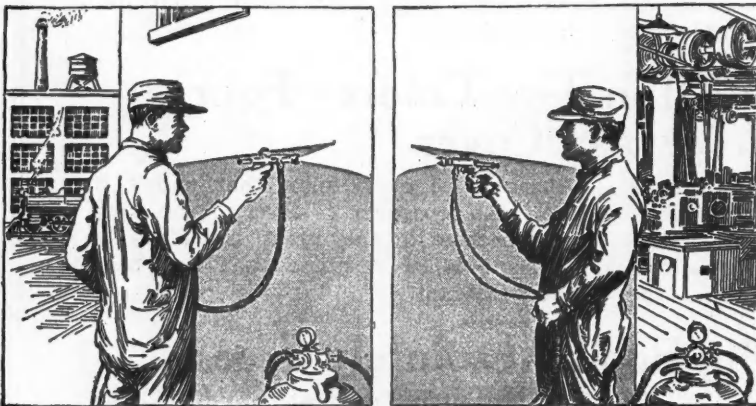
The Bridgeport Brass Company, Bridgeport, Connecticut, offers a circular describing its various types of flush valve control.

"A Zoning Primer" and "A Standard State Zoning Enabling Act" are the titles of two revised booklets by the Advisory Committee on Zoning which are obtainable from the Division of Building and Housing of the Department of Commerce or from the Superintendent of Documents, Washington, D. C., at 5c each.

The Asbestos Shingle, Slate & Sheathing Company, Ambler, Pennsylvania, offers a new circular on the advantages of its asbestos shingle roofs.

The Century Electric Company, 1806 Pine Street, St. Louis, Missouri, has issued a new circular on its repulsion-start induction single phase motors.

The Mutual Electric & Machine Company, Detroit, Michigan, has published a bulletin, No. 107, superseding Nos. 102, 103, 104 and 105, on its line of fuserenters.



## Outside or In —

*You'll make more money painting the DeVilbiss way*

No matter what nor when you paint, painting with the DeVilbiss Spray-painting System speeds up your work 3 to 5 times. Hours of time are saved and more dollars of profit made.

Besides, improved work is done on every sprayed job and you have a more satisfied crew of painters.

Investigate this well established, greater profit DeVilbiss way of painting. Interesting facts will be gladly mailed. Address—

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**DeVilbiss**  
**Spray-painting System**

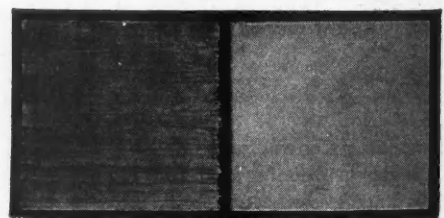
Indianapolis  
St. Louis  
Milwaukee  
Minneapolis  
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### Illustrating the Comparative Hiding Power of Brushed and Sprayed Coats of Paint

The hand brush puts on an uneven coating and the thin paint in the grooves wears away quickly. . . . The DeVilbiss Spray Gun applies a strong, even paint film that covers perfectly, that is durable and that wears down uniformly.

(Illustration shows same paint applied on identical surfaces —Photograph is unretouched and greatly reduced in size.)

One brushed coat :- One sprayed coat





# “FORCED AIR” HEATING will make your houses sell faster

**YOU** give your customers the best heating system money can buy when you install “FORCED AIR” Heating.

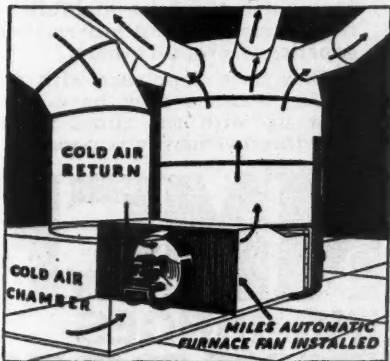
“Forced Air” is the latest development in the science of heating. It is the most revolutionary advance that has been made in heating methods for a generation. It is so comparatively new in its application to residence work that architects and builders are just beginning to realize its enormous importance to them as a factor in selling.

### Most Flexible and Economical Heating

Always the warm air furnace has been the cleanest, the most healthful heating system, the most economical to install. Now with “Forced Air” added it is the most efficient, the most flexible, the most economical and most dependable. Any warm air furnace may be converted into a *Forced Air Heating System* by the installation of a *Miles Automatic Furnace Fan*.

### What “Forced Air” Means

Its use means that in a few minutes after pushing the button,



Forced Air means blowing the air up the pipes instead of depending upon gravity. Note how fan is placed in cold air duct.

even on the coldest mornings, warm air comes pouring up through the registers into every room.

In fifteen minutes it will double the heating capacity of any fur-

### Four Advantages through use of Miles Automatic Furnace Fan

1. Doubles Heating Capacity of any furnace.
2. Saves 30 to 40% fuel —any fuel.
3. Gives 4 changes of air every hour in every room.
4. Supplies cool air in summer. Blows it up through registers.

*Can be used with any furnace.*

nance by doubling the volume of heat units extracted from the furnace castings (firepot, radiator). It literally steals the heat ordinarily wasted through radiation into cellar and through smoke pipe losses and then pushes, blows, or forces it up the registers before it has a chance to leak into the cellar or out the chimney.

### No more cold rooms

Gives four changes of air every hour into every room no matter how distant from furnace. Draws cold air out of the rooms and makes every register active.



Miles Automatic Furnace Fan with louvers open. Fan is now idle. Immediately when it begins to operate the louvers close automatically.



This shows fan in operation. Louvers close automatically when fan builds up positive pressure air circulation. Without the “automatic louvers” you could not have a successful “Forced Air” System.

*Forced Air Heating* means guaranteed heating service for residences, schools, churches, garages, foundries, machine shops, factories, and stores at lowest cost. No matter what you are building, give us a chance to submit a *Forced Air Heating Plan free to you*. You can have our suggestions verified by any heating engineer. You will find that with “Forced Air” you can save money and give your customers the best heating system.

**50 Furnace Manufacturers Endorse and Recommend “FORCED AIR”.**

Write or use coupon for full information.

THE WARM AIR FURNACE FAN COMPANY, 6515 Cedar Ave., Cleveland, Ohio

# MILES AUTOMATIC FURNACE FAN

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

THE WARM AIR FURNACE FAN COMPANY  
6515 Cedar Avenue, Cleveland, Ohio

- Send catalog and data on “Forced Air” and Miles Automatic Furnace Fan.
- Enclosed find blue prints, please lay out suggestion for Forced Air Heating.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

### Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to the readers of American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

The Aladdin Manufacturing Company, 626 East 18th Street, Muncie, Indiana, offers a new catalog, No. 26, illustrating in colors its Aladdin portable electric lamps.

"Out of the Mud with Lime" is the title of a new bulletin, No. 317, prepared by the National Lime Association, Washington, D. C., on the use of lime in paving.

The Hardwood Manufacturers' Institute, Bank of Commerce Building, Memphis, Tennessee, has published a booklet containing tables of estimated weights, per thousand feet, of hardwoods.

"Building Mechanics," by W. G. Sheppard, published by the Oxford University Press, American Branch, New York City, has been prepared with the idea of filling the gap in the literature on this subject which requires a book not too highly mathematical for the student without university training. Price \$4.

The Maple Flooring Manufacturers' Association, 1053 Stock Exchange Building, Chicago, has published a booklet of "Grading Rules" for maple, beech and birch flooring.

The Quigley Furnace Specialties Company, Inc., 26 Cortlandt Street, New York City, offers a booklet on the protection of property against corrosion by the use of its products.

"A Nation Plan," by Cyrus Kehr, Oxford University Press, American Branch, New York City, is described as "A basis for the co-ordinated physical development of the United States of America with a suggestion for a world plan." Price \$5.

The Stanley Works, New Britain, Connecticut, has pre-

pared a new catalog, No. 34, covering the line of tools manufactured by this company.

The Atlantic Terra Cotta Company, 350 Madison Avenue, New York City, has published a very fine book of its stock designs also illustrating each with a color plate.

The United States Department of Commerce has published a "First Tentative Draft of a Uniform Mechanics' Lien Act" for criticism by interested parties before preparation of a final draft.

The American Cable Company, Inc., 105 Hudson Street, New York City, has issued a practical treatise on the selection, use and care of wire rope in elevator service.

The Morton Manufacturing Company, 5105 West Lake Street, Chicago, is preparing a new catalog covering all the items included in the Acme line of railroad appliances and industrial steel products. It will be ready for distribution early in January.

The Heltzel Steel Form & Iron Company, Warren, Ohio, has issued a new catalog covering its line of contractors' equipment.

The Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania, has published a booklet under the title "The Arc Welding of Structural Steel."

The Adjustable Clamp Company, 417 North Ashland Avenue, Chicago, has issued a new catalog, No. 6, covering its complete line of clamps.

"The Domestic Architecture of the Early American Republic," by Howard Major, published by J. B. Lippincott Company, Philadelphia, Pennsylvania, is the first book which has attempted to incorporate in a comprehensive manner all the various types of the domestic phase of the architecture characteristic of the period known as the Greek Revival. It is a truly comprehensive work of reference, illustrated with 168 plates as well as many other cuts. Price \$15.



*These HEAT WAVES show how the heat RISES and ESCAPES through the roof and walls of your house*

That's what makes the snow melt so fast on your roof. Do you like to buy coal to melt snow? This is sheer waste, and you can stop it by insulating the roof and walls of your house with

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You can lay Quilt under your shingles, siding, tiles or boarding, or between your studs or rafters or under your attic floor. It will save enough coal to pay for itself in two or three Winters, and keep on saving heat and doctor's bills and making you comfortable as long as the house stands.

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**Buy the Best  
HARDWARE  
For Hard-wear**

For more than 50 years Bommer Spring Hinges have maintained their leadership and proven their superiority over all others.

They have kept pace with the times, because they have been kept up with the times whenever improvement was possible.

# BOMMER SPRING HINGES ARE THE BEST

They are in universal demand—easiest to apply and the most satisfactory spring hinges made.

Your Dealer handles them.

Send for New Catalog 47. It is a big help in ordering.

**Bommer Spring Hinge Company  
MANUFACTURERS  
BROOKLYN, N. Y.**



# Unusual Latches

*from a Complete Line of  
Guaranteed Builders' Hardware*

All of the Latches in the Frantz Line of Guaranteed Builders' Hardware are made entirely of steel. There are no weak parts to break or give way. Their life of usefulness is much longer than with ordinary latches. Each is simply constructed to perform a distinct duty well.

The upper illustration shows Latch No. 23—attractive and sturdy. Operated by a turn of the handle, either to the right or to the left. The Latch has a closed, smooth handle and a sliding bolt that is galvanized to prevent rusting. The operating spring is solid brass. The Latch is adjustable for use on doors ranging from  $\frac{3}{4}$  of an inch to  $2\frac{1}{4}$  inches in thickness. A catch for holding the door open is furnished with each Latch.

The center illustration shows Latch No. 28. The long, beveled escutcheon plate and graceful handle makes this Latch add to the beauty of any door on which it is installed. Though massive in appearance, this Latch has a surprisingly few number of parts. The bolt is galvanized to prevent rusting. The Latch is adjustable to fit doors from  $1\frac{1}{8}$  inches to  $2\frac{1}{4}$  inches in thickness.

Latch No. 2528, the lower illustration, operates the same as No. 28. By eliminating the escutcheon plates and the elaborate handles it is possible to obtain the same results of the No. 28 at a proportionately lower cost.

## The FRANTZ Line

Every piece of hardware, from the smallest to the largest, made in the Frantz Manufacturing Company Plant is the result of high quality material fashioned by careful, expert workmen using modern machinery. A great deal of time and effort is spent in research and experimenting before a new item ever is added to the Frantz Line. Frantz workmen are trained thoroughly and well paid to insure excellent workmanship no matter what their task may be. Every effort is made to use only the best and most practical materials in Frantz Products. Frantz workmen long have had a reputation for producing easily installed, smooth operating and long lasting Builders' Hardware and of the good will this has created the Frantz Manufacturing Company justly is proud. To protect this reputation they place a written guarantee in every carton of FRANTZ Hardware.

In order that the users of Frantz Products readily may distinguish the line of Frantz Guaranteed Builders' Hardware, a bright red label is placed on each carton. Look for it. It is your guide to the satisfaction which only Frantz Guaranteed Builders' Hardware gives.

FRANTZ MANUFACTURING Co., Sterling, Ill.



owners  
eral Gov.



**Latch No. 23**

Adjustable for doors of  $\frac{3}{4}$  of an inch to  $2\frac{1}{4}$  inches in thickness. Works on doors opening either right or left. Packed one Latch in a carton with padlock eyes, screws and template for installing.



**Latch No. 28**

Adjustable for doors of  $1\frac{1}{8}$  inches to  $2\frac{1}{4}$  inches in thickness. Works on doors opening either right or left. Packed one Latch in a carton with padlock eyes, screws and template for installing.



**Latch No. 2528**

Adjustable for doors of  $1\frac{1}{8}$  inches to  $2\frac{1}{4}$  inches in thickness. Works on doors opening either right or left. Packed one Latch in a carton with padlock eyes, screws and template for installing.

**"No Hardware Is Genuine FRANTZ QUALITY Without the Red Label"**

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER