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- "Bowled" Floors for Auditorium
- Strength of Beams and Posts

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140 Pages of Practical Building Helps in This Number
Now Gentlemen—Fair Warning!

Don't accept any saw represented as being an Atkins Saw unless it bears our name and trade-mark. The Atkins quality, the Atkins guarantee, and the Atkins trade-mark ALWAYS go together.

If you let anyone persuade you that you can get the Atkins quality and the Atkins guarantee with any saw that doesn't bear the Atkins trade-mark, you're the loser.

Think a moment.

Every genuine Atkins Saw represents over fifty years of effort to produce the fastest cutting, easiest running, most durable saw on earth.

That saw is our representative, has to make friends for us, has to uphold our reputation, has to advertise our business.

That's why it has to bear our name. And because it does bear our name, it mustn't disgrace that name. It has to make good.

If you want to take chances on a saw that doesn't bear the maker's name as evidence of his pride in its quality, that's your affair.

But if you expect Atkins quality in any such saw, you're going to be disappointed.

So remember that the famous old Atkins Saw always—not merely most of the time, but ALWAYS—bears the Atkins name and trade-mark.

Different and Better

Times have changed. So have saws.

The Atkins Saw represents PROGRESS—the ability to do more and better work, with less effort.

You'll find Atkins Silver Steel the best steel that was ever put into a saw blade. Better steel than is used in most of the high grade razors. Our own secret formula—used exclusively in Atkins Saws for over fifty years.

When gas-tempered by the Atkins secret process, this Silver Steel blade holds its shape better, stays sharp longer, needs less filing, and yet files easier, than any other saw you ever owned.

If your dealer doesn't handle Atkins Saws, or hasn't the particular saw you wish, ask him to order it for you from his wholesale house. He should be glad to do this—it's no trouble—and he will do it promptly if you make the request.
A TURN OF THE CRANK

Saves 4 MEN'S PAY

This Portable Saw Rig on the job or in the shop will pay for itself in a short time.

The Three-Horsepower Water Hopper Cooled Engine pulls the 10-inch saw with ease, cutting up to 3-inch lumber.

It Will Pay You

To Order Quick—Why not Now? All Parts From Engine Up Made in Our Factory

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This Portable Trench Pump is a complete power-driven outfit for use of builders where it is necessary to raise large quantities of water. Write for Folder

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**MONITOR SASH LOCKS**

*NEVER BREAK*

_Because they are made of very heavy gauge metal and perfectly constructed_

If the upper sash drops, the Monitor "Never Break" Sash Lock will pick it up from lower point than any other, adjust the masses perfectly, prevent all vibration and lock securely, as it cannot be opened from the outside.

_Made in two sizes and all furnished by_ The Champion Safety Lock Co.

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**Richards Steel Folding Builders Bracket**

Safe, strong, convenient and durable. Can be folded compactly without loosening or removing bolt or pin. The picture tells the story. Convenient for handling and requires small storage space. The strongest bracket made and the most easily applied. These brackets costs no more than wood brackets and will last a lifetime. Save their cost on any job requiring two dozen or more brackets. Contractors are enthusiastic about them. Made in two sizes, No. 1, 3 ft. long; No. 2, 4 ft. long. Sold by the Hardware Trade.

_Made by_ THE RICHARDS MANUFACTURING CO.

DOOR HANGERS AND HARDWARE SPECIALTIES

AURORA, ILLINOIS, U. S. A.

YOU CAN FEEL IT

If you feel over an undressed piece of wood, with your finger tips, you know it is not smooth, but to feel if a dressed piece is smooth—as smooth as plate glass—you must feel with the palm of the hand flat on it. The sense of touch is much keener there. Almost anyone can make a floor feel smooth to the finger tips rubbing with the grain, but to make it have that whole hand smoothness, that will feel smooth across as well as with the grain.

THE WRONG WAY

THAT CAN BE DONE

ONLY

With The

“Daisy” Floor Scraper

“THE ONE THAT DOES”

It always scrapes with a shearing cut, either with or across the grain with equal ease and the result is always a whole hand smooth floor.

SMOOTH AS A PIECE OF PLATE GLASS

The “Daisy” Scrape Floors Guaranteed To Please You—To

Our Booklet, like our Floor Scraper, is entirely different from others. Cut out coupon and send for it today.

— WILL LACEY, Phoenix, Ariz. Home address 91 Maple Ave., Cortland, N. Y.

Phoenix, Ariz. May 9th, 1910

Your scraper is the right principle, I believe, and the price certainly right. I looked for a price of $75.00 or $80.00, let a contractor here take booklet, he talks favorably of buying.

I am here for the winter from N. Y. I do contracting there. One year ago, I bought a ----- ---- but if I can dispose of it for about one half price, I’m going to get yours.

Will return to N. Y. July 1.

Yours very truly

WILL LACEY, Phoenix, Ariz.

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South Bend, Ind.

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IT PRODUCES ANY EDGE DESIRED. ANYONE CAN OPERATE IT, AND GET EITHER A LIGHT MEDIUM OR HEAVY EDGE

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Daisy “Daisy” Floor Scraper Booklet

Send me the “Daisy” Floor Scraper Booklet

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OILED Lion Brand Insulating Sheathing

GUARANTEED WATER, AIR AND VERMIN PROOF

36 inches wide, in standard rolls of 22 to 24 lbs. each 450 to 500 square feet.

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Use Oiled Lion Brand

The Latest and the Best Insulating Sheathing for Building Purposes

Oiled Lion Brand Insulating Sheathing is guaranteed by us to be absolutely water, air and vermin proof. Use it under all Siding whether Clap-boards or Stucco; use it between all Floors and under all Roofs. Shingles will not rot or Tin will not rust when laid over Oiled Lion Brand Insulating Sheathing. Make your houses Warm and Dry and protect the wood from rotting by using Oiled Lion Brand Insulating Sheathing. It costs no more than the low grades now used.

Oiled Lion Brand Insulating Sheathing will help you to build up a Reputation for Thorough and Satisfactory work. Recommend it and use it.

We will accept orders with check from builders and contractors for 50 rolls or more at 60c per roll, F.O.B. Chicago. Ask for samples, before placing orders, to satisfy yourself of its protective qualities.

The Fox Will Save You Time, Money and Trouble

SENT ON TRIAL

Built on scientific principles, simple in construction, light running, easy to operate.

Will Last a Life Time

Remember the Fox leads; others follow, and the best is what you want. We guarantee the Fox and back that guarantee by the largest floor scraper factory in the world.

Fox Floor Scraper No. 1

A Perfect Machine for Perfect Work.

The request brings the machine to your shop for you to use free.

J. B. Ackermann Co.
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A Perfect Machine for "Perfect" Work.

Knife Sharpening Device

A new feature in the Ackermann New Knife Sharpener—which ensures a sharp edge all the time and which works automatically. It means a big saving in time and labor. The request brings the machine to your shop for you to use free.
Right up to the wall

ONE MACHINE
DOES THE WORK OF TWO.

You don't have to use two machines—or special knives—to do perfect work all over the entire floor. A simple adjustment quickly made drops either end of the blade sufficiently to enable you to scrape right up to the baseboard without marring it. With a Weber you can push as well as you can pull—there isn't a piece of floor anywhere so narrow you can't give it an elegant finish clear up flush with the wall or stair landing. It can be instantly set at any angle for perfect work on all kinds of wood—maple, oak, yellow pine, fir, it makes no difference what. The blade holder is attached to a flexible frame by means of half-ball-end-socket bearings which absolutely prevent chattering and the leaving of waves in the floor—an improvement exclusively Weber.

TRY ONE AT MY RISK.

I will send a machine to any responsible contractor to be put into competition with any other make on the market, and if after a fair trial—on a week's free trial—you don't think it is the best one you have ever seen, send it back and the trial won't cost you a cent. I mean this—no scraping doesn't suit you perfectly. I don't want your money—it would not be good business to take it. If every machine I sell were not a standing advertisement, do you suppose my sales would show the enormous increase they do each year? Write today for my catalog, free trial offer, and price list—but don't buy a Floor Scraper until you have seen a Weber in action.

670 71st Ave., West Allis, Wis.

I PAY THE FREIGHT

Will You Accept This Free Offer?

Every Carpenter and Contractor is interested in a floor scraper because it does away with the old fashioned back breaking method of scraping a floor, and because it saves him much time and money. The question however is, how is he to know what make to get? The solution is simple—Try before you buy.

I offer to ship to you at my expense the complete Acme Floor Scraping Outfit on a Week's Free Trial. If it does not prove satisfactory in every respect, simply send it back.

The Acme Floor Scraping Outfit is acknowledged by those who know to be the best equipment on the market, because the scraper works automatically, the blade will not butt into the floor; it has a removable weight and also an extra attachable one, and the blade scrapes with a shearing cut. The outfit also includes a blade sharpener (which by the way is the only practical one ever invented) and always assures you of having just the right cutting edge on the blade. There is also a sander attachment for finishing.

I could enumerate many other features, but the best way for you to find out just what the Acme Floor Scraping Outfit can do is to accept my free trial offer and give the machine a thorough test.

Further information and booklet will be sent on request.

Jos. Miotke, 247 Lake Street, Milwaukee, Wis.
Only Perfect Floor Surfacing Machine

Will do perfect work on any kind of floor, whether even or uneven. Recommended by the best architects and contractors.

A BOY CAN OPERATE IT.

Sold on absolute guarantee. Price, complete with motor switch and 50 feet electric cord ready to connect with light socket, $125.00.

Write for further information.

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The Builder Who Knows: vs The Builder Who Guesses

It is easy to tell which wins out. Stop guessing. Learn to estimate safely and rapidly.

The New Sixth Edition of

THE LIGHTNING ESTIMATOR

shows you how

SIMPLE RAPID ACCURATE PRACTICAL
Rapidly and accurately estimates labor and materials for any job. Can be used in any trade. Absolutely guaranteed.

Easily adjusted to any locality. Based on experience not theory. Amply illustrated and bound in cloth. This is your opportunity to get on to the road to Success. Don't let it go by, but send $1.00 TO-DAY, for a copy of this interesting book.

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The only modern Sanitary Steel Medicine Cabinet or Locker. Handsome beveled mirror door. Snow white, everlasting enamel, inside and out.

For Your Bathroom

Costs less than wood and is better. Should be in every bathroom. Is dust, germ and vermin proof and easily cleaned with warm water.

Made in four styles and three sizes. Price $7.00 and up. Send for illustrated circular.

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Floor Scraper

Simplest, Cheapest and Best on the Market

Weight, 75 lbs.

Also Attachments for Floor Scrubbing, Wax Polishing, Tile Rubbing, at Small Extra Cost. Put on in an instant.

Retail at $18.00.
Enamel dark blue and gold.

Perfect Results Are Easily Obtained By

Using Schlueter Rapid Floor Surfer

This machine is built on the only correct principle. It is guaranteed to be The Best machine with which to produce an even, smooth surface on any kind of large or small wood floor, old or new, hard or soft, and in all buildings: Residences, Stores, Factories, Bowling Alleys, Roller Skating Rinks, Reception and Dance Halls, Etc.

The Schlueter will remove all joints or warped edges, and oil, wax, lime stains, or the "muck" from skate wheels, in a most satisfactory manner.

Earning capacity, $20.00 to $35.00 per day.

Send for prices and Free Trial Proposition.

POWER WITHOUT EXPENSE

The Tireless MOTOR SPRING in the Triple "A" Floor Smoother requires no "Juice" or Gasoline.

It's always ready and you can scrape a square in 20 minutes with the Triple "A" Spring Driven Floor Smoother.

The work of running an ordinary floor scraper is all in the pull while the forward stroke is idle and non-productive.

The TRIPLE "A" MOTOR SPRING stores POWER on the forward stroke which PULLS THE MACHINE on the cutting stroke. It does the work of a power machine at the cost of a hand machine.

Scraping floors by the old method is hard work. Make it easy by using the TRIPLE "A" SPRING DRIVEN, (the machine that runs itself).

Weights, handle and knife clamp are adjustable to meet every practical requirement.

Recommended by leading architects and guaranteed by us to do perfect work

In EASE of OPERATION, QUALITY and QUANTITY of work, the Triple "A" Spring Driven Floor Smoother HAS NO EQUAL.

Much depends on the quality of steel in the scraper blade. The high grade tempered steel blades furnished with the Triple "A" Spring Driven Floor Smoother are manufactured especially for us and are guaranteed to be the best on the market. These blades when used in the Triple "A" Spring Driven Floor Smoother will scrape any floor, old or new.

The Triple "A" Floor Smoothing outfit is the most complete on the market. It consists of a power driven floor scraper, a handy knife-sharpening outfit and an improved up-to-date sandpapering attachment.

Triple "A" Machine Co.
112 S. Clark St. Chicago, U. S. A.

TRY BEFORE YOU BUY

Let us send you the "LITTLE GIANT" Floor Scraper—Freight Prepaid. Absolutely FREE of any expense to you whatever

A request from you brings the "Little Giant" Floor Scraper to your door—you send no money and we pay all expenses. After you have given it a fair trial and have tested it as thoroughly as you know how, and have found it satisfactory, pay for it. If you do not think it is the best floor scraper made, return it.

TRY IT ON YOUR OWN FLOOR

You can try the "Little Giant" Floor Scraper on your own floor and the trial costs you nothing. All that we ask is that you give it a fair trial. You be the judge and jury. Every carpenter and contractor can afford to invest in one as the time and money saved will pay for the machine in a very short time. By using the "Little Giant" Floor Scraper you will be in a position to estimate much lower than your competitor and therefore have more work. Can you afford to be without this machine?

Write us for our Special Price

Hurley Machine Company
31 South Clinton Street, CHICAGO
1011 Flatiron Building, NEW YORK
73 First Street, SAN FRANCISCO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
The American Floor Surfacing Machine

is the original and only two-roll, self-propelling, dust collecting machine protected by U.S. and Foreign patents, and the only one that will satisfactorily surface any kind of a wood floor and has been in general use by contractors, hardwood floor companies and others for over 6 years.

Its work is rapid, regular, smooth and even, because the power that drives the rolls propels the machine at the same ratio of speed.

Its work has established the standard for surfaced floors, and the only machine whose work is specified by leading architects and meets the requirements of contractors, owners and hardwood floor companies for finely finished, smooth, even floors.

It has surfaced and polished millions of square feet of the finest floors in America and Europe.

Don't be fooled with an imitation, but get a machine that does work in paying quantities, and can be operated in small rooms.

The only one whose construction is guaranteed and sold on its merits.

Write for our book "Surfacing Floors as a Business."

Manufactured by The American Floor Surfacing Machine Co., Toledo, Ohio.

ROLLING PARTITIONS

Use our Rolling Partitions to subdivide rooms.

Ventilated Wardrobes

Space-saving and sanitary for modern schools.

WINDOW BLINDS

of all kinds; also

ADJUSTABLE SHADES

HENRY B. DODGE CO., 108 LaSalle Street, Chicago, Illinois

Silent Screen Door

Avoid the nerve-racking slam of the screen door. Stop its banging and jarring—by using

"Dime"

Screen Door Check

At your hardware or house furnishing store, or mailed for 12 cts. in stamps by

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THE LOCK THAT PROTECTS

Just what you have been looking for. Not only locks window, but when desired takes the place of sash weights. No. 1 on upper sash, No. 2 on lower. On balanced windows, use No. 1. Mortised in jamb, just above and below meeting rails. No. 2 uses same case as shown in No. 1.

Powers Burglar-Proof Sash Lock Co.
Hastings, Neb.

THE HAVEN FLOOR PLANER

HERALDS THE NEW ERA IN FLOOR SCRAPING

Eliminates all defects found in other floor machines. Does away with the man-killing toil of the heavy-weight machine. Makes floor scraping simple and agreeable.

It embodies the mechanical principles of the plane. Planes and scrapes floor at one operation. Does better work than most hand work. "Wavy" floors prevented. Most rapid scraper on the market.

Be an agent in your locality for the floor planer of the future.

Particulars on request.

THE HAVEN MFG. CO. : : : RACINE, WIS.
The "FAMOUS" Woodworker is really fourteen woodworkers—each doing a different line of work—combined on one base because of the low cost of purchase, and economy of maintenance.

Carpenters have long waited for this wonderful proposition. At last they can obtain a machine that's a band saw, a planer,—or a dozen other machines—by making a few simple adjustments.

Ordinary everyday business-sense is against buying fourteen expensive machines when one will do the work of fourteen. It's not business economy to waste all that extra floor space. Next to having the "FAMOUS" Universal Woodworker installed in your shop, is sending for catalog. Kindly write for particulars today.

The Friction Reverse Shaper Spindle

in an added feature that puts the "FAMOUS" Universal Woodworker still one further step ahead. Most carpenters need a Shaper Spindle. The reversible shaper attachment on the "FAMOUS" woodworker is a good shaper spindle. There is a multitude of work in carpenters' shops requiring such a machine and the wonderful success that has attended this attachment is real evidence of its efficiency.

But don't forget that the "FAMOUS" Universal Woodworker, besides being a good reversible shaper, is thirteen other machines besides—all driven by one belt or one motor.

The Sidney Tool Co.

SIDNEY, OHIO.

14 Machines In ONE

Every Carpenter Needs One

Take No Chances

USE

A CRESCENT Jointer with Safety Head

You run no risk of losing your fingers or a hand when using a Crescent Safety Head.

The knives in the Crescent Safety Head are made of high speed steel which hold the edge longer and turn out better finished and more accurate work than can possibly be done on a common jointer with ordinary knives. You can crowd this machine to the limit and the quality of the work will remain the same as if run at the ordinary speed.

The Price Is Reasonable

Write today for our new 1910 catalog giving complete description of our elegant line of Band Saws, Saw Tables, Jointers, Borers, Shapers, Planers and Matchers, Circular Saws, Swing Cut-Off Saws, Disc Grinders, Variety Woodworkers, etc.

The Crescent Machine Company

224 Main St., Leetonia, Ohio, U.S.A.

SMITH Machines for Working Wood Are Copied but Never Equaled.

ATTENTION

To get results—which means success—it is necessary to have modern machines—the kind that save power, shorten time and turn out accurate work.

Smith Machines are the culmination of more than sixty-five years experience in the manufacture of Wood Working Machines and positively secure these results.

The annexed cuts show only a few of more than 150 different machines which they make for working wood. If experience, and the knowledge which they have secured from thousands of machine operators, are worth anything, then they ought to know what to build and how to make it. Send for literature relating to Up-to-date Wood-Working Machines.


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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Do You Want a GOOD Floor Scraper?

Then let me send you

An Adjustable On Approval—Freight Paid

Compare it with all others, and, if you don't find it easier to operate, do more and better work than any other regardless of price, ship it back to me at my expense.

Don't buy any Floor Scraper until the Adjustable has had a chance to speak for itself.

H. P. DIDRIKSEN
1008 High Street
SOUTH BEND, INDIANA

Stop! Look! Listen!

HARGRAVE
COLUMN CLAMP

MOST PRACTICAL, QUICKEST ADJUSTED
ON THE MARKET

Write for Circular Price $2.00 each
Department H,
The Cincinnati Tool Co.
NORWOOD, CINCINNATI, OHIO

"SEAVEY"
MITRE BOX

Meets Every Requirement

Special Offer
On return of this "Ad" and $2.00 one of these Mitre Boxes will be shipped to any reader of "Carpenter & Builder." Offer good for 30 days from date of issue.

Portable—Can be carried in the Tool Kit

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ELEVATORS

The Best Value for the Money in the World
Mechanically Correct

Dumb Waiters, Carriage and Store Elevators, Sidewalk Hoists, Etc., Etc.
Our Elevators are noted for their EASY RUNNING and SERVICE-
ABLE QUALITIES. They are practically self-contained, and can be
erected by any carpenter in a few hours. We furnish plans for erecting.

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Do Your Own Millwork!!
Stop paying somebody else profit — put it in your own pocket. Be in a position to estimate below your competitors. You can do this by installing your own Machinery.

Money Saving Machinery
The contractor and builder who installs his own woodworking machinery can easily estimate under his competitors. Modern economic conditions demand it. Money you expend in mill-work is profit for somebody else — the profit that rightfully belongs to you.

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Our line is the most complete in the country and our prices are most favorable. All our machinery is of special construction to secure fine finished surfaces and reduce sand-papering to the minimum.

Send for Lists and Circulars
Our monthly list of rebuilt machines (free to contractors) shows just the machines you ought to have. Write today.

Chicago Machinery Exchange, North Canal Street Chicago

"A Bit Of Utility"
Guided by its circular rim — instead of its centre — the Forstner Labor-Saving Auger Bit will bore any arc of a circle, and can be guided in any direction.

Doesn't matter how hard the wood is, no consequence whether it is full of knots, or the grain awkward to negotiate. The Forstner Bit works with equal smoothness under any condition and leaves a true polished surface on every job.

Unequaled for Delicate Work
Supersedes chisels, gauges, scroll-saws, or lath tools combined, for all kinds of delicate work. Cabinet and pattern makers and carpenters are enthusiastic because they do more work than other bits and cost no more.

We can offer something special in the matter of price on sets packed in a sensible box. Send today for particulars and catalog.

The Progressive Mfg. Co.
Torrington, Conn.
This hook can be inserted or removed through a one-inch hole bored in the sheathing; it hooks around the studding instead of going through it. Where it is desired to plaster inside before scaffold is down, a piece of 2" x 4" turned flatwise may be used to fill in.

Made of best quality angle steel, strictly first-class and fully tested. Arms are notched and brace riveted fast in such a way that the strain is carried entirely on the solid metal instead of on the rivets.

4 ft. brackets 1 1/2" x 1 1/2" x 3/16"
5 ft. brackets 1 1/2" x 1 1/2" x 1/4"

Prompt Shipments Guaranteed.

If you wish to try a pair, before ordering in quantity, write for terms of special trial offer.

Quick-Acting, Self-Locking Screw Clamps. Ask for catalogue showing 21 different styles. Do you know about our improved gripping device, and the special grade of steel we use?

Huther Bros. Patent Groover or Dado Head
Will save its cost in three days' time

For cutting any width groove from 1/4" to 3" or over. Will cut a perfect groove, either with or across the grain, true and smooth. Will ship to any convenient firm on ten days' approval. If not satisfactory you can return same to us and have your money refunded. We also make a special arrangement of cutters, at engineer ground, smooth cutting circular Mitre Saw, for either rip or cross cut. Deserving fave for all kinds of special work. Look, Contact Cutters, Convex Cutting, Convex Saw, etc.

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1000 University Ave.
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This DUMB WAITER complete ready to erect for $18.50

SELF RETAINING MACHINE
HARDWOOD CAR
SECTIONAL WEIGHT
ROPE, GUIDES, HARDWARE,
kicked down and shipped with the only complete directions for erecting ever issued

SEND FOR SPECIAL PAMPHLET
R. M. Rodgers & Co.
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A WHOLE WOOD-SHOP IN ITSELF

Are You Looking For a Machine That Will

Plane out of wind; surface straight or tapering; rabble door frames; rabbit and face inside blinds; joint; bevel; gain; chamfer; plow; make glue joints; square up bed posts, table legs and newels; raise panels, either square, bevel or ogee; stick beads; work circular mouldings; rip; cross-cut; tenon; bore; rout; rabble; joint and bead window blinds; work edge mouldings, etc.? If so, write for illustrated circular Sheet No. 1-G. It shows two large half-tone photographs and contains full description of our No. 62 Universal Woodworker, together with a number of illustrations of the work done on this machine.

WRITE TODAY.

J. A. FAY & EGAN CO.,
545-565 West Front Street
CINCINNATI, OHIO

No. 62 Universal Woodworker.
"DEFIANCE" WOOD-WORKING MACHINERY

For Making:

AUTOMOBILE SPOKES, RIMS, WHEELS, and BODIES. Carriage and Wagon Hubs, Spokes, Rims and Wheels, Wagons, Carriages, Shafts, Poles, Neckyokes, Singletrees, Hoops, Handles, Spools, Bobbins, Insulator Pins, Balusters, Table Legs, Oval Wood Dishes and for GENERAL WOODWORK.

Invented and Built By
The Defiance Machine Works
Defiance, Ohio

No. 1 Swing Saw
No. 3 Power Feed Rip Saw
24" Single Surface Planer
No. 6 Vertical Borer
No. 9 Rounding, Chamfering and Cornering Machine

ROTHER MOTORS

Save 30 to 50%
When operating individually, as compared with group drive.

Ask ROTHER For Information

ROTH BROS. & CO.
1422 W. Adams St.
CHICAGO, ILL.

PARKS' COMBINATION WOODWORKING MACHINES

Make a Complete and Economical Operating Mill for Carpenters and Contractors. Take our No. 410 for instance—here is a Combination of Three

- A Table Circular Saw
- A Star-Lock Lathe and Boring or Routing Attachment
- Ready for Instant Use
- No limit shafts and large amount of floor space required.

SIMPLE—STRONG and Ready-to-Do Work with little power. We deliver on short notice.

Prices and Catalogue on Request.

Parks Ball Bearing Machine Co.
CINCINNATI, O.

BOURNIVAL & Co., St. Barnabe, P. Q., Agents Canada

Read what the State Superintendent of Construction of Minnesota says about the ABC Protractor Square:

Walker, Minn.
Mch. 9th, 1910.
Crookston Tool Co.,
Crookston, Minn.

Gentlemen: Replying to your letter of March 7th, as to how I like your ABC Protractor Square will say that I find it a PERFECT tool as well as very handy to have on the drafting table, and consider it the very best and most useful tool any mechanic can have in his tool chest.

With it any one can grasp and understand the art of roof and stair framing regardless as to the education of the owner of the tool. The tool does its own figuring. It is accurate, simple, compact and the selection of the name ABC was well taken.

Predicting you large sales of the tool as soon as its usefulness becomes known to the progressive mechanic, I remain,

Yours truly,
H. H. Vernon.

Do not try to work without the ABC Protractor Square.

Price $3.00

Crookston Tool Co.
Crookston, Minn.
THE "LIGHTNING" AUGER BIT

It will bore through any kind of wood in common use about twice as quickly as the best and fastest heretofore on the market. The worm has a double thread terminating in two cutting points. The double thread with the specially formed twist secures its double quick work without increase of power. Only by actual test can the great advantages of the lightning bit be fully realized. Secure from your dealer or sent by mail. Price postpaid.

TOWER & LYON CO., 95 Chambers Street, New York, N. Y.

CARPENTERS KNOW
that the best Bit is the
"RUSSELL JENNINGS"

Made from Selected Crucible Steel
Made by men of long bit making experience
Put up in attractive boxes and rolls
The best obtainable

Ask for new Catalog No. 30
Russell Jennings Mfg. Co.
CHESTER, CONN., U. S. A. 21-17

The TODD Clamp Will Save You Money

FOLDING HANDLE DRAW KNIFE.

Have you seen the Folding Draw Knife?
It's the Draw Knife that will draw;
Slickest thing you ever saw.

If your hardware dealer does not keep it, we will send it to your address postage paid.

F. C. BIT & TOOL CO.
Manufacturing Hollow Mortising and Wood Boring Bits and Tools

Our Hollow Chisels made to fit all Mortising Machines
For complete description write for Catalog H.

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The GRIMM WOODWORKER
PORTABLE

NINE MACHINES IN ONE
8" or 10" Rip Saw
8" or 10" Cross Cut Saw
6" dado Head
4" Jointer
10" Sander
Moulder, 8 pros' Knives
Jig Saw, 3 Blades
Boring Machine, 3 Bits
2 Emery Wheels

All, or your choice of attachments furnished!
Every machine carefully tested before leaving factory
Ready to start as soon as uncrated

IN THE SHOP
Complete Power Plant and Mill—Always Ready for Use with one
Turn of Fly Wheel
4 h. p., 4 cycle, air cooled Gasoline Engine “built in” does the work
Uniform speed under all loads
Cost of operation less than 3 cents per hour
Does the work of five men

FOOT. HAND and POWER
Wood-Working Machinery
FOR WORKING WOOD IN ANY MANNER

Carpenters, builders, cabinet-makers and wood-workers generally can successfully compete with the large shops by using our labor saving machinery. With any one of our machines one man will do the work of four to six men using hand tools.

They are built for hard work, accurate work and long service.

Each machine is carefully tested before leaving factory. We guarantee them to give entire satisfaction, and they may be returned at our expense, if, after ten days' trial you prefer your money back.

Ask for Catalog “A”

THE
Seneca Falls Mfg. Co.,
218 Water Street
SENECA FALLS, N. Y., U. S. A.
FREE 10 LOCK MORTISERS

A BIG SPECIAL OFFER TO PROVE TO ALL PROGRESSIVE, PRACTICAL MECHANICS JUST WHAT THE NICHOLLS LOCK MORTISER WILL DO.

We want every Contractor, Carpenter or Builder who appreciate good time-saving tools to have an opportunity to test our Lock Mortiser and discover the merits embodied in same. All you have to do is to deposit $4.50 as an evidence of good faith, we will then ship you a mortiser prepaid, you are to test and try our machine in every way. Find out how many uses it can be put to. Then write and tell us your experience. To the five best testimonials, the ones giving the best arguments in favor of our mortiser and its good qualities, we will refund the $4.50, thereby giving them a first class tool absolutely FREE. We want to get the actual experiences of all practical mechanics to be used for advertising purposes. No names mentioned without consent of writers.

REMEMBER—We will refund the money paid us for any and all mortisers sent out should the same not be perfectly satisfactory—all that we claim—and just what the mechanic desires. All you have to do is to return the mortiser at our expense and we will promptly refund your money.

Do you use your strong right arm in mortising window frames for the sash pulleys? Just consider boring 1½-inch centers and set the pulley in—i. e. the Grand Rapids No. 12. No cutting—no fitting—no counterboring—no breaking—no swearing—no nails—no screws. These Grand Rapids pulleys save more time than they cost in money. If we are telling the truth you cannot afford to use ordinary pulleys if you get them for nothing. We can prove it too.

WRITE FOR FREE SAMPLE

Say what pulleys you are using and how many you buy

Grand Rapids Hardware Co.
36 Pearl Street
GRAND RAPIDS, MICH.

MONEY REFUNDED IF MORTISER IS NOT SATISFACTORY

ADDRESS ALL ORDERS TO
SAX-NICHOLLS-COHN CO. (Incorporated) Sole Manufacturers FAIRFIELD, IOWA

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GET IN LINE NOW

MILLER'S LOCK MORTISER IS SCIENTIFIC

The regulation of the feed by the screw in the head is what makes the cutting of hard or soft wood easy.

The actual use of the tool to cut an opening for a lock is 4 minutes. The whole job is done in 3 minutes. Cutters for five sizes of locks ½ to 1½" is furnished with each machine. Its merit has been demonstrated thousands of times. Send on Trial.

BUTT MORTISER

Cuts the seats for butt hinges in doors, ja mbs and other work. It does the work in one-third the time and makes a neat, clean, accurate job. Price, including rule gauge, 75 cents.

A. W. Miller Mfg. Co.
Western Office: Riverside, Calif.
Main Office: Cincinnati, Ohio.
HARDCORNERED SQUARES
Manufactured by a Secret Process

If you buy our Framing Squares or our No. 100, No. 1, No. 2, and No. 3 Standard, you get a Hardened-Corner Square, one that will not wear round, but if you buy any other make you get a Soft-Cornered Square.

Which Will You Take? No Extra Charge for Hardened Corners.

Our True Mortise Guide

You can bore a hole and at the same time watch Halley's Comet. The hole will be perfectly true.

The kind of wood has no effect on bit. One size only.

No. 20, Satin Nickel Finish

PRICE $3.25 DELIVERED

Guide Block

for ½, ¾, and 1½ auger, or we will furnish extra blocks for any size auger up to 1¾.

No Adjusting to Get Center of Door.
It Always Comes Central

Made Without a Weld

Save Your Hardened Corner Label and Watch this "Ad" in next Month Issue for Special Offer.

It Weighs 3½ Pounds

and is always ready for instant use. Our Trade-Mark speaks for itself.

Nicholls Mfg. Co.
Ottumwa, Iowa
Sole Manufacturers
MAYHEW 60° MITRE BOX

This box embodies more distinctive features than any other made.
- Designed for Simplicity, Accuracy, and Durability.
- Strictly a right hand tool for mitering.
- Box embodies a new feature in reversing the principle commonly used on other boxes.
- Any of three saws may be used—Panel—Hand or Back saw.
- Saw guide adjustable for any thickness of saw.

Extreme mitre to 60° without makeshift. May be used as a stationary or pivot box by use of the pin posts.
- In mitering duplicate cuts there is no restriction on length.
- Will cut compound mitre.
- Parts take down into space 10x10x4 inches.
- Weight 15 lbs. complete.
- Box contains full directions for use.

PRICE EACH, $10.00

H. H. MAYHEW COMPANY, SHELBURNE FALLS, MASS.

Universal Wood-Worker

Planes, Joints, makes moulding, Rips, Cross-cuts, Gains, Dadoes, Rabbets, Tenons, Raises Panels, Bores, Mortises, in fact its range in general work is unlimited.

It is a machine every shop of any importance should have. It is ten years ahead of any other wood-worker on the market. Write for photographs, circulars, prices, etc.

The Cordesman-Rechtin Co.
Cincinnati, Ohio

GOODELL MITRE BOX

Made of STEEL - Cannot Break
- First in Quality and Improvements
- Automatic Stops for holding up saw
- Corrugated Backs Graduated
- Gauge for duplicate cuts and many other features.

SEND FOR CIRCULAR

GOODELL MFG. CO., Greenfield, Mass.

Self-Setting Planes are not like other planes. Why not try one, and if it is not worth to you twice its cost, return it at our expense and we will return you the amount you paid us, and the trial will not cost you a nickel. During June, 1910, we will receive this advt. as $1.00 if the balance of the list price of a plane and 10 addresses of plane users, no matter where they live, is sent us from where the Self-Setting Planes are not sold.

If you send only the ten addresses, no matter where they live, we will send you circulars and a carpenter's hand, tough pencil.
If you send a two-cent stamp we will send you another pencil.

June 1, 1910.

gage tool co., Vineland, N. J.
STANLEY Plumbs and Levels both adjustable and non-adjustable are made of thoroughly seasoned and selected stock and have many special features which appeal to the workman; among them are:

A new form of adjustment for both plumb and level. Glasses carefully proved with the central position of the bubble plainly indicated by two indelible lines, and so located that the bubble may be readily seen from either side or from below in overhead work. "HANDY" grip on the side making it easier to handle or carry—and general heavy trim and fine finish.

Made in all styles and sizes for CARPENTERS, MASONs, PLUMBERS, MACHINISTS, MILLWRIGHTS, ETC.

The name STANLEY appears on every tool we manufacture and is a guarantee that for quality of workmanship and material they are UNSURPASSED.

STANLEY RULE & LEVEL CO.
NEW BRITAIN, CONN., U.S.A.

The Shelby Double-Acting Ball-Bearing Spring Hinges are built to give satisfaction to the contractor and builder. The working parts of these hinges are made of steel, and finished parts are steel, real bronze or brass, as desired. The weight of the door is sustained upon ball bearings set in hardened cups which have no perceptible wear after years of service.

The Chief floor hinge is very easily applied and can be adjusted after the door is hung by removing a side plate and turning the tension nut.

The Spring Butts have a carpenter’s gauge on each flange which greatly assists the carpenter in hanging the door.

Write and we will tell you more about them. We also make locks, screen door hinges and a fine line of builders’ hardware.

THE SHELBY SPRING HINGE CO., Shelby, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
SATISFACTION
THAT’S WHAT YOU WANT TO GET

When you buy tools you want those that will do your work and do it right. It is well worth while for you to insist that your dealer supply you with tools that will.

Ask for GOODELL-PRATT’S and see that you get it.

GOODELL-PRATT’S designs and workmanship always give satisfaction.

CATALOG FREE

GOODELL-PRATT COMPANY
Toolsmiths
GREENFIELD, MASS., U. S. A.

SARGENT’S
IMPROVED
STEEL SQUARE

The difference between good and indifferent Carpenters’ Squares lies in something more than excellence of material and workmanship, which are, of course, among other “Sargent” features—it is in the qualities that increase its all-round efficiency. That is why the practical “Sargent” Standard Steel Square is the universal favorite wherever Squares are used.

Our latest model has the scales and markings which enable the carpenter to lay out all kinds of work and to calculate quantities with an ease and accuracy never before thought possible. “A practical treatise on Steel Square” is what several recipients have declared our little publication. Copy free simply by mentioning you saw this ad in the American Carpenter and Builder.

Sargent & Company
1149 Leonard Street
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COMPLETE OUTFIT
Hand and Foot-Power MACHINERY

Our No. 3 Wood Turning Lathe can be speeded from 1,000 to 2,000 revolutions a minute with perfect ease. Stopped or reversed at will of operator.

74 RUBY ST.
Rockford, Ill.
The Famous Dorn Revolving Miter Box. Will saw compound as well as plain miters any width with a back saw 4 inches wide.

Send for Booklet Called "Tools That Last"

OUR "CHISEL" GUARANTEE

We guarantee that our chisels will hold their edge all day with one sharpening, even if used on quartered oak across the grain.

Chisels look simple, but there is no tool of which such hard work and varied service is required. Recognizing this we have given the choice of the steel, regardless of cost, and the design of these chisels, the most extensive study and experimentation, and in their manufacture the greatest care and highest order of skill is employed.

SPECIAL OFFER

To further increase the number of carpenters who insist on having B. M. Co. Chisels we will sell direct to readers of the American Carpenter and Builder, express prepaid any chisel or set of chisels with privilege of returning after ten days trial if they do not prove to be the BEST EVER USED.

BRAUNSDORF-MUELLER CO., Elizabeth, N. J.

The Carpenters Ever Ready

DOOR CLAMP

Durable, Efficient and Inexpensive

Saves cost in time and labor on one job.

Holds doors firmly on edge while hinges, lock and other attachments are being fitted.

Adjustable to any width of door.

Clamping faces padded to prevent injury

SATISFACTION GUARANTEED OR MONEY REFUNDED

Write for Free Trial Offer

Price so low you can’t afford to be without one.

WILLSHIRE CLAMP CO.

WILLSHIRE, OHIO

THE NEW SASGEN CIRCLE SWING DERRICK

No Stiff Legs

No Guy Lines

Light in weight, speedy in operation, all malleable castings, weight 250 lbs., capacity 1000 to 1500 lbs.

Fully equipped. Ready for F. O. B. Chicago

$35.00

Sold on trial to all reliable contractors. Catalogue FREE.

Manufactured by

SASGEN BROS.,

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CHICAGO, ILL.

New York Office: 103 Park Ave., N. Y.

"Sterling" Convertible Level

Two Instruments in One

The only perfect Builders' Level made that can be converted into an Instrument for Vertical Sighting.

Price complete $65.00

Send for 1910 Complete Catalogue.

Solo Manufacturers

Iszard-Warren Co., Inc.

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PHILADELPHIA, U. S. A.

LUFKIN

Tapes & Rules

are Standards of Accuracy, Durability and Workmanship.

SEND FOR CATALOG

THE LUFKIN RULE CO.

SAGINAW, MICH.

NEW YORK

LONDON, ENG.

WINDSOR, CAN.
It's a LANGDON ACME and is made in three sizes put up with varying lengths of saws.

The advantage over other styles are too numerous to mention in this advertisement, but our pocket catalogue tells the whole story. You can have one of the catalogues by asking for it. It illustrates our full line of tools.

The Master Bit Brace

is our latest product in this line of tools. It has a ball bearing head, ball bearing center handles, covered ratchet, and chuck that holds securely all sorts of shapes. In producing this Brace we have endeavored to make it a perfect tool in every particular. Sample it and decide for yourself whether we have succeeded or not.

Our new catalogue describes this Brace in detail. Ask for one.

Millers Falls Company

28 Warren St., New York, N. Y.
The L. & I. J. White Co.
Buffalo, N.Y.

The BEST that Money Can Buy

GUARANTEED PERFECT
In Quality, Shape, Material and Temper

The strongest, finest finished and most accurate Edge Tools made. For use on any wood, any job at any time. Always ready, sharp, accurate and perfect. The Best tools for Best work. If not at dealers, write us.

The Mark of

PEARSON MFG. CO., Robbinsdale, Minn.

GEO. H. BISHOP & CO., Lawrenceburg, Indiana, U.S.A.

Makers of

Fine Hand Made Hand Saws

The Purest of Quality Our "GREYHOUND" Hand Saw

In introducing our "GREYHOUND" brand of Saws to the trade, we have departed from our usual custom in naming instead or numbering the saw. This saw will be known as our "GREYHOUND" and will be the only Bishop brand of saw known by name.

We have had a Chemist experimenting for years to originate a purity of steel with a fine grain and tough body that would stand up under such a fearless warranty as we place on our "GREYHOUND" brand of saws. We now have it. We know its worth as well as its value. As workers of steel we understand it. We had to name it and we have christened it Bishop's Refined "GREYHOUND" Steel, associating our trade mark with its name. We have in this "GREYHOUND" Saw blade a purity of steel that is tough, temper accurately and even—together with the special way it is made—enables us to guarantee that this "GREYHOUND" brand of Saws will cut faster and run easier in all kinds of wood, hold its sharpness and set longer than any other makes of good Saws in the world. We Refund the Money if 30 days' trial does not prove our guarantee. Our pride is quality with an honest opportunity for the purchaser to judge. Each Saw is tagged with our warranty on it. No expense has been spared to make this Saw the most perfect in the world. We invite correspondence with anyone who has our "GREYHOUND" brand of saws in use.

Made in both straight and skew back. Packed One in a Box.

In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical.

If this saw cannot be found in the Hardware Store and they will not order it for you, write to us. Price for 26 in. saw, $3.00 delivered. We make anything in Carpenters' Saws.
"Last a Lifetime and Give Satisfaction To the End"

**SILVER LAKE**

Don't Ask the Dealer for Sash Cord. Ask for

and see that he gives it to you. It is impossible to substitute, as our name is stamped on every foot of cord.

Silver Lake Sash Cord is the Original Solid Braided Cotton Sash Cord, and has been the standard since 1868. No other is just as good.

**OHIO** CHISELS

Are made from a High Grade of Tool Steel, Skillfully Treated, Correctly Tempered, Accurately Ground.

Every "Ohio" Tool is fully warranted. They have been on the market a great many years and the experienced mechanic who does not care to take any chances on tools of doubtful quality always insists on having "Ohio" Tools from his dealer. He knows them to be good tools, with keen and tough cutting edges.

Look for this trade mark when buying Planes, either Iron or Wood, Chisels, Drawing Knives, Auger Bits, Gouges, Spoke Shaves, Renu and Hand Screws, Cabinet Makers' and Manual Training Shelves, Etc. Write for our Catalogue No. A, if you are interested in GOOD TOOLS.

**COMPO-BOARD**

A substitute for Lath and Plaster. Can be put on by any Carpenter.

It is Warmer, more Durable, Quicker and more Easily Applied. Manufactured all 4 ft. wide, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 ft. long.

For Sample, Price and full Description, Write

Northwestern Compo-Board Co.
4800 Lyndale
MINNEAPOLIS, MINN.
BURLINGTON
Venetian and Sliding BLINDS
Screens and Screen Doors
Venetian Blind for inside window and outdoor veranda.
Any wood; any finish to match trim.
Sliding Blinds for inside use.
Equal 500 miles northward.
Perfect privacy with doors and windows open.
DARKNESS and BREEZES in sleeping rooms.
Write for our catalogue, price list and proposition to you.
BURLINGTON VENETIAN BLIND COMPANY
341 Lake Street, Burlington, Vermont

PHŒNIX
INSIDE SLIDING BLINDS
WILKES BARRE, PA.
The Phoenix Sliding Blind Co.
Enclosed find my check for blinds. I am pleased with them and sorry I did not have them put throughout the whole house.
C. W. BURT.
Comfort!
Economy!
Convenience!
PHŒNIX SLIDING BLIND CO.
BRIDGE & CANAL STS.
PHŒNIX, N. Y.

Commonwealth Hotel
OPPOSITE STATE HOUSE, BOSTON, MASS.
Offers rooms with hot and cold water for $1.00 per day and up, which includes use of public shower baths.
Nothing To Equal This in New England
Rooms with private baths for $1.50 per day and up.
Suites of two rooms and bath for $4.00 per day and up.
Dining Room and Cafe First-Class. European Plan.
Absolutely Fireproof
Stone floors, nothing wood but the doors.
Equipped with its own Sanitary Vacuum Cleaning Plant.
Long Distance Telephone in Every Room
Strictly a Temperance Hotel
SEND FOR BOOKLET
STORER F. CRAFTS, Prop.

"YANKEE" Breast Drill
With Automatic Double Ratchet
Adjustable Ball Bearings—Cut Gears
Diffs from all others in what it does and how it does it.
The little shifter between gears converts it instantly into a plain drill—A Left-Hand Ratchet for removing taps, etc.—A Right-Hand Ratchet— or an Automatic Alternating Right and Left Hand Ratchet, the bit turning continually to the right regardless of the motion of the crank. A great advantage at close quarters where only a short throw of crank can be obtained. A real timesaver.
Lever A—For change of speed with forefinger, without releasing hold on crank or removing bit from hole.
This tool must be seen to be fully appreciated. Let your dealer show it to you.

Send for BOOK of LABOR-SAVERS—it's FREE
NORTH BROS. MFG. CO.,
Dept. A, PHILADELPHIA, PA.
A New Book About

STEEL CEILINGS

that YOU need
if you want to
be sure of get-
ing a design ex-
actly suited to
each particular
job—no matter
how particular.

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to interested
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WEST of the Mississippi river. Ask for catalogue No 11.

Knocked Down Skylights
Strong but not bulky. Take low freight rate. Easy
to erect. Comply with all insurance rules. Storm-
proof and condensation-proof. Shipped anywhere
WEST of Mississippi river. Ask for catalogue No 11.

Other Products
Roofings, Cornices, Gutters,
Ventilators, Crestings, Fire-
proof Windows and Doors,
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ST. PAUL ROOFING, CORNICE
AND ORNAMENT COMPANY
"The Leading Sheet Metal Plant of the West"
ST. PAUL, MINNESOTA

Saw Sets
"Special" for hand saws.
Nos. 3 and 4 for two man saws.
No 5 for timber and board saws.

Also other sawsets for other purposes.

CHAS. MRRILL
283 Broadway, New York, N. Y.

REASONS WHY IT IS THE BEST

1. Plates cast solid with frame, for strength and rigidity.
2. Bed and back ribbed allowing clearance for sawdust.
4. Lever locks at any angle.
6. Duplicate length gauges.
7. Automatic stops for holding saw.

CIRCULAR UPON REQUEST

H. C. MARSH CO.
606 Race Street, ROCKFORD, ILL
Cypress

The shifting scenes in the lumber world bring cypress to notice again, especially in the middle states, where a great deal more is now seen than a couple of years ago. Cypress is not only extensively used in doors and millwork, but also in bevel siding, for which purpose the cypress manufacturers have been industriously pushing it of late. It seems to be a very desirable wood, too, and the only objection heard to it is that it is a little difficult to finish off smoothly.

This objection, cypress men say, can be removed by the use of sharp-edged tools. It simply takes keen-edged tools to work in cypress, and this they say is not so much of a burden, for cypress is comparatively free from hard knots, and is therefore not hard on tools. Anyway, without arguing for or against it, it is desired to call attention to the fact that cypress is a more prominent building material than ever before and gives promise of growing more so during the coming year. Therefore it is well to make a study of its qualities and how to get the best results in working it.

Laugh it Off

Are you worsted in a fight?
Laugh it off.
Are you cheated of your right?
Laugh it off.
Don't make tragedies of trifles,
Don't shoot butterflies with rifles—
Laugh it off.

Does your work get into kinks?
Laugh it off.
Are you near all sorts of brinks?
Laugh it off.
If it's sanity you're after,
There's no recipe like laughter—
Laugh it off.

Hiding Poor Architecture

Badly designed houses can always be improved in appearance by a covering of vines. It is a matter of regret that the work of the turning lathe and fret-saw still holds its place in many American houses; but as long as we continue to decorate our dwellings with jigamarigs and porch-posts turned and carved into ugly, fantastic shapes, those who can discern their ugliness must content themselves by hiding it with the leaves and flowers of clinging vines.

The growing of temporary vines is only to be tolerated when permanent vines will follow. They should be planted together in order that, during the two or three years required to bring the permanent plants up, the temporary vines may serve as a substitute and then be dropped without much loss of beauty.
LIKE people in all other countries, the Mexicans make use of the materials easiest obtainable and best adapted to the conditions. Timber is scarce and lumber is high priced; stone is widely distributed and is cheap; brick clay is plentiful and with peon labor brick floor tile and roofing tile are manufactured and sold for about one half the prices current in the United States.

It is the general assumption that Mexico is a dry and nearly rainless country. This is true of that great plateau which is the extension of the Rocky mountains. This plateau extends nearly the full length of Mexico and slopes to the ocean on both sides. The altitudes vary from 3,000 to 9,000 feet with the average being close to 7,000 feet. On the plateau the rains come in the summer in the way of showers and at about the same time of the day, the total rainfall being light. Along the seacoast and in the lowlands called "Tierra Caliente" tropical conditions exist and rains are frequent and heavy, the yearly rainfall being very large. On the high and dry plateau all houses are built with flat brick roofs, which allow of a firewall or a parapet to be built all around to conceal the roof and to form a cornice. In the rainy country sloping pitched roofs covered with tile are a necessity and it is for these reasons that there are two distinct styles of architecture in the republic.

I will first give a description of the flat roof houses and details of their construction, taking for example a common one-story adobe house. Cellars are not put under houses for a number of reasons, chief of which is the hard rock which would have to be excavated in most places, the fact that no furnaces are needed and also that it is not necessary to store vegetables through a long winter season, as these products may be obtained fresh nearly all the time.

The ground is leveled off and the foundation put in, rubble stone and lime mortar being used. Then the walls are built of large adobe bricks or blocks laid in mud. The adobes are usually about 4 by 12 by 20 inches and made sometimes right on the ground or not far away. The dirt is dug out and put in pits where it is wet, and thoroughly mixed by the bare feet of the laborer; a quantity of straw or other fibers is added and the mud pressed into wooden moulds and smoothed on top with the hand after having first been dipped into water. These brick are allowed to sun dry for some time and are then stacked up loosely where they continue to dry and harden until they are used. These sun-dried bricks are hard enough to give a little ring like a soft clay brick when struck. I was not able to learn what these bricks are worth in Mexico but was told by a contractor in El Paso that a wall built of them cost in that town, $15 per thousand, adobe count, and this price would certainly be less in Mexico where labor is cheaper. That they must be cheap is evidenced by the fact that corrals, barns and even sign boards are made of them.

The mortar or mud is carried to the masons on the tender's head in a hod which looks for all the world like mother's chopping bowl. The walls are made one or two feet thick, using either one or two adobes. No window sills are used but over all openings lintels are placed, made of pieces of the joists. When the
ceiling height is reached, the joists are laid across and built into the wall just as we do, except that the ends are not beveled as we would do on a brick building. These joists are always about 4 by 8 inches and are of some kind of native wood which is very tough, like our hickory. The joists are about the same size all over the country and in many places they are rough hewn.

There are a number of materials used to cover the joists and to hold the thick layer of earth which is always put on. Formerly reeds were used in some localities but now one inch sheathing boards are most commonly used. In some places a rough tile is made about 10 inches wide and 20 inches long and laid across the joists. In the city of Mexico and in many other places, galvanized corrugated iron is used. The foot of earth is placed on the joists and the walls built on up about 2 or 3 feet above the roof. About one half of the adobe buildings have the last foot of the wall built of brick laid in cement or lime mortar and then finished with a cement or stone coping. The other half built more carelessly are run all the way up with adobes and left without any semblance of a coping. The top of these walls soon crumbles away and if unattended, the entire structure becomes before long, a heap of dirt. But if the tops of the walls are kept protected and there is sufficient cornice to throw the water well away from the foundation, these buildings will last for centuries in that climate.

The dirt on the roof is leveled off and sloped two or three ways toward the outside walls. It is then covered with a single layer of large clay-burned bricks laid in cement or lime mortar, a grout is made and brushed into the joints and the roof is water tight and will need but little attention besides an occasional repointing or regrouting. It must be remembered that while the nights are cool in Mexico there is never any freezing or heaving from frost.

Where the water comes through the fire wall there is a 2 or 3 inch tin spout about 4 feet long, the exposed end being ornamented. Other materials are used for spouts, those in churches and fine houses being of stone and elaborately carved into grotesque heads and shapes of mythical beasts. All Mexican houses in cities are built right beside the sidewalk and these spouts have a disconcerting way of pouring their stream during a shower down a person's neck, the writer having had the experience. The stream strikes about the outer side of the walk and this is said to be the origin of the custom of the gentleman always taking the outside while the lady walks next to the building.

If the house is in a town the walls will likely be
plastered both inside and out with lime plaster. In the country farm buildings are more often unplastered and are in consequence less durable and more ugly. It will be well here to say that the limes made in Mexico are much better than those made in the United States. Mr. Lamb, a prominent American builder in the city of Mexico, told the writer that he considered the limes of Mexico nearly equal to Portland cement. The first coat is thrown onto the rough wall from the trowel or paddle which leaves the surface very rough. The second coat is troweled on and made as smooth as we make our hard finish. The Mexicans are good plasterers and their cornices are works of art. The interior walls are plastered in the same way. I have seen some very poor houses that looked as if they had been plastered with mud. All partitions are made of adobe and not less than 12 inches thick.

The dirt on the floor is leveled down, and, in the poor people's houses, forms the only floor they ever have. In the better class houses concrete is laid and covered with red glazed tile, 8 or 10 inches square. Cement tiles are sometimes used and even cement floors, but by far the most common is the red tile. In some of the Smelters' company houses at Aguas Calientes, the floors were of beaded ceiling and the ceiling joists were covered with 4-inch yellow pine flooring. This
shows how the native workman delights in doing things wrong end to. An Irishman who had been a resident of the country for a long time, in speaking of this perversity of the Mexican, said: "Be dad but we have the best of them in one thing. When they want to dig a hole they have to start at the upper end!"

The ceilings in Mexico are never plastered. This is probably due to the fact that earthquake shocks are so frequent. The roof joists, which are also the ceiling joists, are covered from view with a canvas or muslin put up in some ingenious way which leaves it perfectly free from wrinkles. At each corner of the room there are round brass plates about 3 inches in diameter inserted in the canvas to give ventilation and prevent the rotting of the joists. The native painters do beautiful work and their ceilings are elegant.

Chimneys, like cellars, find no place in a Mexican house. One can go up on a high roof and look over a city and not see a single chimney. The poor people do their cooking on the dirt floors of their houses, using a charcoal fire in a small vessel. The smoke is allowed to go where it will and the outside plaster over doors and windows is always black. The better classes have stoves made of brick and about the size of a flat-top desk. There are holes in the masonry to hold the charcoal, but no chimney.

Most small Mexican houses have no windows, the wide door being used to let in the light and air and to let the smoke out. Recently windows have become more popular and now block after block of houses may be seen with the large door and the large window, both of which will be open in the day time, but are barred and locked at night. Both doors and windows are made by hand on the job, the workmanship being very crude. Double doors and double French windows are the only kind seen.

The hardware for doors and windows is noticeable because of its light weight and flimsy character. All of the older houses have iron over the windows but now ornamental iron railings are very common. Houses of the type just named are those found without a court and might contain as many as 4 rooms, although the one and two room houses are by far the most common. In the construction of a house with a patio or court the rooms are laid out around the court, which is open to the sky and is a beautiful little garden spot. The roof is made to project over the patio far enough to make a covered passage way all around to give access to the different rooms. Practically all houses are built next to the walk and have no front yard. The Mexican has ideas of his own regarding privacy and the patio serves the purpose admirably.

In some towns and cities stone is very abundant and is used almost entirely for all kinds of buildings but even then the external appearance is the same as that of an adobe house on account of the plastering.

It is not to be thought that there are no houses in Mexico other than the kind just described, for most of the modern cities have some very fine residences occupied by Americans and Europeans.

**Forest Products Laboratory Opens**

The opening of the Forest Products Laboratory at Madison, Wis., will take place on June 4. To aid by means of experiments and demonstration in lessening waste in the manufacture and use of wood is the object of this laboratory. The state of Wisconsin has erected for the purpose a new building at the university, and will provide light, heat and power. The Forest Service has supplied the equipment and apparatus and will maintain the force of thirty-five or forty persons required to carry on the work. Through this arrangement the United States has secured perhaps the largest and best equipped wood-testing laboratory in the world.

The laboratory will be prepared to make tests on the strength and other properties of wood, to investigate processes of treating timber to prevent destruction by decay and other causes, to study the saving of wood waste by distillation processes, to examine the fiber of various woods for paper and other purposes, and to determine the relation of the microscopic structure of wood to its characteristics and properties. Facilities are at hand, in fact, for almost any kind of test on wood that practical conditions may require.

It is expected that the lumber manufacturing and wood-using industries will make large practical use of this laboratory in finding methods of reducing the waste of wood—a subject of vital concern. Already they have proposed many experiments and supplied much test material, which is awaiting attention. Without doubt the laboratory will be from the start an important center of interest for all the industries which handle wood.
Three Successful House Designs

To anyone who has ever given the matter of scientific houseplanning any thought, actual examples of practical and successful work will always furnish material for interested study. Comparing the work now being done with what we were all familiar with twenty years ago, this improvement does become very striking.

While some of this progress is due, of course, to the general education of the public in matters of taste, still more must be credited to the practical carpenters and builders and to their architectural friends. By their combined thought and careful study, the excellence of modern American house planning has been attained.

In almost every residence built recently, some points will be found of special worth which may be incorporated in some future design to advantage. Carpenters, particularly those who make a specialty of house building, should lose no opportunity to file such away for reference and use. To have the name of being something of an authority on all matters pertaining to construction and house planning will be greatly to the advantage of any builder.

The three house designs shown in connection with this are all of medium size and medium cost. They are fairly typical of what is now desired by most home builders.

The first is a comfortable frame house of eight...
rooms. The arrangement of space on the first floor is rather unique and the second story balcony over the front porch is a very good feature.

The second house illustrates a very popular and successful city type. The porch is small and is placed at the side so as not to obstruct the light from the front. The arrangement of the rooms in this house is considered very good indeed. The lines of the exterior are also very graceful.

The third house has a split field stone under-pinning with cellar under entire house. The outside is finished with clapboards for the lower part painted a brick red; and cement plaster slap dash finish on upper part; cement color natural. The entrance porch is practically inside of the house and may be screened or glazed in. On the south side there is a terrace 7 feet wide. There is also a small porch off the dining room. Both are reached through
French casement doors. The seat in bay in living room is fitted with covers hinged to lift up, making a space under seat for miscellaneous articles.

Rooms are furnished in cypress stained a deep brown. Kitchen and bath have hard pine finished natural, chambers painted. The house is heated by steam. With a slight variation of floor plans, this house can be built for less than $3,000. As shown, it was built complete for $3,500.
Framing and Finish for Brick Veneer

In many sections of the country, especially where lumber is cheap and brick work comparatively expensive, it is quite common to build dwellings with the outer walls of frame construction, veneered with a 4-inch facing of brick. This method of construction gives the same appearance both outside and inside as when the walls are built of solid brick, and possesses the added advantages of lower cost, and dead air spaces, which prevent the passage of moisture, heat and cold.

In addition to the more rich and substantial appearance about the only advantage possessed over well-built frame buildings is that this method reduces the insurance rate. A veneered brick building will not catch fire from the outside as readily as one covered with siding, but will burn as rapidly when the fire is started on the inside.

In planning a brick-veneered building, it is necessary that the foundation walls be about 5 inches larger each way than the frame work above, in order to form support for the veneering. The wooden frame should be constructed in the ordinary manner, sheathed and covered with first quality building paper. It is important that the framing lumber be as dry as possible. The veneer is usually laid with pressed brick or face brick, and is secured to the framework with metal ties, placed on every other brick in every fifth course. The details show the construction ordinarily employed in brick-veneered buildings, but the same are capable of some variations. The details are all one-fourth full size.
DETAILS OF CELLAR WINDOW, SILL & WALL CONSTRUCTION IN BRICK-VENEERED HOUSE

SCALE 3" = 1'-0"

3"X4" STUDS 16" O.C.
2X4" STUDS 16" O.C.
2"X6" JOISTS 16" O.C.
3"X4" ANGLE
3X4'x4' ANGLE
FLOOR
SUB FLOOR
PLASTER
BASE

SECTION
BRICK
STONE

WINDOW JAMB
BRICK
STONE SILL

LETS OF OLLLAR WINDOW, SILL & WALL CONSTRUCTION IN BRICK-VENEERED HOUSE.

2X4" STUDS 16" O.C.

BRICK VENEER WALL PLAN

STONE SILL
DETAIL OF CORNICE CONSTRUCTION IN BRICK-VENEERED HOUSE.
SCALE 3"=1'-0"
It has long been conceded that the steel square, in the hands of one versed in its uses, is an instrument of mighty reckoning powers, yet as true as this is, to the majority of those having occasion to use it, it is only a measuring instrument or a tool for squaring off the ends of boards or other timbers; and for obtaining a few of the simple cuts, such as the seat and plumb cuts of common rafters. Beyond that, its use is locked in mystery and to them its usefulness ends. It is the purpose of this series of articles to show those not skilled in its use, how to apply it intelligently and at the same time illustrate in a simple way why it gives correct results. Most all framing is for square cornered or right angled buildings; so the foot run. The plan is represented by the triangle, A B C, just the same as in the two preceding illustrations for the square and pentagon buildings; but in those we showed only the geometrical solution, that is, by a system of lines and letters. But as this is a little hard for some to catch onto, we will now illustrate with the square, showing why certain figures are taken on the square to obtain the desired results. Remember we said in our last article that the figures that give the miter of the corner on which the hip rests furnish the basis from which the lengths, cuts and bevels may be obtained. So we will take the same examples as in the previous article, a square and a pentagon building using, as we said before, a 9-inch rise to the foot. In Fig. 16 are shown the position of the squares in reference to the timbers to obtain the different cuts, as follows:

Note the plan A B C. B C represents the run of

![Fig. 16.](image)

we will start out with a common example, one of the more common pitches.

Fig. 16 is for such a case. Here is a 9-inch rise to the common rafter for 1 foot, as shown by Square No. 1; and A C represents the corresponding run for the hip, as shown on Square No. 2, and will be seen...
is equal to 17 on the tongue. A B represents the tangent and is equal to 12 inches, which in this case is the same as that of the run for the common rafter. Hence, 12 and 12 taken on the steel square give the miter for the square corner, which corresponds to the roof we have under consideration. Then 12 and 9 give the seat and plumb cuts for the common rafter, as shown on Square No. 1. Seventeen and 9 give the same for the hip or valley, as shown on Square No. 2. This is plain enough; everybody understands these cuts so far, but it is the side cuts we wish to illustrate.

The reader will notice that, resting parallel with the pitch of these rafters a plan of their backs, respectively, is shown; with the squares in position to give the side cuts. The proportions of which are as follows:

The tangent (A B) on the tongue and the length of the common rafter (B D) on the blade (which in this case is 15 inches) always give the side cut for the jack rafter.

![Fig. 17.](image)

For the side cut of the hip, it is the tangent (A E) on the tongue and the length of the hip (A D') on the blade; and the latter will give the side cut of the hip.

To prove this, trace the dotted lines from the plan of these rafters shown in the plan A B C and they will be found to coincide with these cuts.

The tangents in the square cornered building are equal to the runs of the rafters; but this does not occur in any other shaped building.

In the pentagon building, the tangent A B is equal to 8 17/24 instead of 12 inches; but the procedure is just the same as here shown for the square cornered building. It also applies to unequal pitches for square cornered buildings, which we will take up and illustrate more fully next month.

However, before closing, we wish to call attention to the jack rafters. We have been requested several times to explain how to find the common difference in the length of jacks with the aid of the steel square.

This is a very simple operation and any one who knows how to find the length of the common rafter by running the steel square as shown in the early part of this series, ought to be able to readily find the common difference, because the jack is only a part of the common rafter. Therefore, the length is found in identically the same way. If the jacks are spaced on 1-foot centers, the common difference would be 15 inches, as shown in Fig. 17. Now, if the jacks are spaced on 18-inch centers, the length would be 1 1/3 times 15, equals 22 1/3 inches, which represents the length of the first jack or common difference. Or, if one is not versed in figures, the length may be readily found by placing the square on the side of the rafter at the figures which give the seat and plumb cuts and as shown. Now mark along the tongue and slide the square out with the tongue on this line 6 inches further and the length along the edge of the rafter from the tongue to the blade will be the proper length for the first jack, or common difference, as shown in the illustration. From this, it will be readily seen that fractions of an inch in the spacing can be as easily taken care of as whole numbers.

The above applies to the jacks for square cornered building. In our next, we will take up the subject for other shaped corners.

### Grading Rules for Mahogany

The Hardwood Manufacturers' Association has included in its 1910 grading rule book, which became effective March 31, rules on Cuban, Mexican and African mahogany. The greater detail is given to the grading of Mexican and African mahogany, and it is a little difficult to understand at first why all mahogany might not be put under general rules, yet there is probably a difference in species, making this separating of the grades necessary.

The Cuban mahogany is divided into five classes, as follows: Prime, selects, rejects, shorts and counters, and the lengths run from 2 feet up, measuring odd as well as even lengths, and the widths 3 inches and up. Mexican and African mahogany is separated differently in grades, which run as follows: No. 1 common, No. 2 common, shorts and counters. The lengths and widths are the same as the Cuban. In both instances the thickness is given as standard, and applies to mahogany lumber.

### Louisiana Leads in Cypress

Louisiana again in 1908 was pre-eminently the cypress-producing state, furnishing almost two-thirds of the total cut of lumber of this kind. In this state the production of 1908 was less than that of 1907 by only 20,995,000 feet, or 4.1 per cent. While the quantities of cypress lumber cut in the other states were relatively small, their combined output was larger in 1908 than in 1907. The cut from this species has increased heavily since 1900.
FROM time to time requests have been received for pointers on the design and construction of "bowled" floors. The following letter is an example and offers opportunity for taking up the subject at length.

To the Editor: Sackville, N. B.

I have been a constant reader of your valuable magazine ever since it started and I look forward for its monthly arrival with considerable pleasure. I classify its different departments and preserve them on file, which gives me a handy and veritable encyclopedia of construction. The collection of artistic homes, bungalows, churches, school houses, barns, etc., make a volume which surpasses anything of the kind I have ever seen on the market.

There is one thing which perhaps would be of interest to more than myself, and that is the description of the construction of "dished" floors for an audience-room. Would like two or three points made clear. Should the front circular rows of seats be level from end to end, or is it permissible that the outer ends be somewhat elevated? What is the proper incline and should it continue to the rear of the seating space or can, say a one-fourth or one-third of the rear be made level?

J. W. Doull.

It is comforting to know that the efforts that are being put forth to make the American Carpenter and Builder the best building journal ever published are appreciated by Mr. Doull and many others, as their letters that come to our desk bear witness. It helps to make Ye Editor forget his troubles, because it helps to smooth the rough places in his path and makes his labors seem worth while.

As to the question concerning dish-shaped or "bowled" floors, as they are called, will say that they are a decided improvement over the all-level floor. The audience can see the speaker better and the speaker can see his hearers; and if there is any one thing that a public speaker desires above another, it is to be able to look his people squarely in the eyes all the time, so that he may have their undivided attention. Nothing lends to this end so much as the inclined floor.

We believe practically all new church buildings of any importance nowadays are being built with bowled floors. It is true they cost more, but the extra expense required to build them is well spent, and when once done the extra cost is never regretted.

How to build and what the best pitch to give them are questions requiring careful consideration before the construction is attempted. Otherwise the builder will soon find himself engulfed in a brain-wracking, lop-sided problem that will tend to make him almost, if not wholly, forget what churches were ever intended for. There are high floors, low floors and intermediate floors that lead off from the bowled floor into lecture-room, etc., all of which should be carefully figured out as to the proper levels with one another; since they
The proper slant to give the floor varies with the size and arrangement of the rooms. Usually from a half to three-fourths of an inch to the foot will be found to give very satisfactory results. All points should slope to a common center on a line back of the speaker's stand. This point should be in the open; that is, it should be a fixed point at an accessible place, a point to which a light wire may be attached to use for a radius to strike off the required arcs or part of circle at front and back; that is, where the slant dies out on the low floor and where it begins to fall from the high floor. Thus, it will be readily seen that any point of the dish will be at a dead level with any other point on the radius line of equal distance from the central point. Then each row of seats will be level from end to end as they should be. Mistakes are often made by not understanding this leveling question by supposing that the line of the dish where it strikes the wall or sides of the room is a straight incline. This cannot be, except where the central point is located in the corner of the room; then the walls are in line with that point and consequently the lower edge of the base will be straight.

Where one set of joists are used to form the dish, they must be laid in line with the central point, or fan shape, and the girders on which they rest, must be a part of a circle conforming to the radius from the central point. These girders should be built up with 3/4-inch dressed plank with width equal the desired depth of girder, sprung to the proper curve and well nailed with joints broken, and be continuous from end to end. This construction, as shown in Fig. 2, is all right where it is not particular about the supporting posts being regular in the basement rooms, or to have the ceiling level, as the posts must conform to the girders’ curve and the ceiling to the slant of the floor. But where it is desired to avoid these objections, it is best to have a supporting floor level with the lower point of floor. This will require straight girders, which with their supporting posts will permit of better taste in the arrangement of the basement rooms, and the ceilings will be level. The joist for this floor should be reckoned not only heavy enough to carry the live load that it will be subject to, but also its own weight and the dished floor that is to go on top of it. These joists should be covered with good sound sheathing, or have the proper flare and the pew ends fit to the floor. Then when all is completed each row will be level from end to end. The pews should be placed from 32 to 36 inches apart. It gives the best effect to have the first two or three rows of seats rest on the level floor before starting the incline, which should extend back to the last row in the rear of the room.

The accompanying illustrations show sectional elevations of the construction of bowled floors.

Fig. 1 shows the level bearing floor as before specified, and on this the bowl floor is constructed.

Fig. 2 shows the section of a bowl floor at the outer wall line, the bowl being formed by the one set of joists which must rest on circular girders to the curve to correspond with that of the bowl. The basement ceiling would, of course, have the same incline as the floor above. This section shows that for a corner rostrum, the center from which the curves are struck, being at the corner of the room.

Cottonwood

The cottonwoods are among the most widely distributed species of wood, and yet the bulk of the lumber manufactured from them comes from the Central and Southern states. There are also included under this heading relatively small quantities of lumber cut from the aspens or other species of the genus *Populus* which grow in the Northern and New England states, where they are known locally as “poplar” or “popple,” and also small quantities from the balsam poplar or balm of Gilead in Minnesota.
WOODEN columns are used principally in such buildings as large stores, houses, factories and warehouses, and constitute part of a system of slow-burning construction. In case of fire the wooden columns will become charred upon the outside, and thus protected, the body of the column will retain its strength.

The following formula can be applied to all wooden columns, the length or height of which is not under 10 times nor over 45 times the dimension of the least side. If under 10 times the least side we can use the full compressive value of the material of the column, which will be the value “u.”

\[ S_c = u - \left( \frac{u \times 1}{100 \times d} \right) \]

\( S_c \) is the ultimate breaking value of the column per square inch of cross section.

\( u \) is the ultimate compressive strength of the material of the column per square inch of cross section, which can be found in the table on the ultimate compressive strength of materials.

\( l \) is length of the column in inches.

\( d \) is the least unsupported or unbraced diameter or side of the column in inches.

**Problem:** What should be the size of a square yellow pine column or post 15 feet long to support a load of 150,000 pounds, using a factor of safety of four?

**Solution:** We have a load of 150,000 pounds that the column must support with safety, and as we are required to use a factor of safety of four, the ultimate load that the column will be designed to support will be four times 150,000 pounds or 600,000 pounds. In the table we find that yellow pine has an ultimate compressive strength of 4,400 pounds per square inch, and to find the approximate number of square inches required in the cross section of the column, we will divide 600,000 pounds by 4,400 and have for an answer 136. As the column increases in length, its compressive value decreases, so say we will assume a 13-inch square column, which has 169 square inches of cross section, and then apply the formula,

\[ S_c = u - \left( \frac{u \times 1}{100 \times d} \right) \]

in which \( u \) equals 4,400 pounds; \( l \) equals 180 inches, and \( d \) equals 13 inches.

\[ S_c = 4,400 - \left( \frac{4,400 \times 180}{100 \times 13} \right) \]

\( S_c \) equals 4,400 minus 610.

\( S_c \) equals 3,790 pounds.

Therefore \( S_c \) is 3,790 pounds, which is the ultimate breaking value of the column per square inch of cross section, and as we have 160 square inches of cross section in our column, the ultimate load that the column is capable of supporting will be 169 times 3,790 pounds, or 640,510 pounds.

As we are required to support an ultimate load of 600,000 pounds, 150,000 pounds with a factor of safety of 4, we can see that a 13-inch square column will answer the purpose.

### Breaking Loads for Yellow Pine Columns

The following is a table of the approximate breaking loads for northern yellow pine columns in thousands of pounds, calculated by the above formula:

<table>
<thead>
<tr>
<th>LENGTH</th>
<th>6 x 6&quot;</th>
<th>7 x 7&quot;</th>
<th>8 x 8&quot;</th>
<th>9 x 9&quot;</th>
<th>10 x 10&quot;</th>
<th>11 x 11&quot;</th>
<th>12 x 12&quot;</th>
<th>13 x 13&quot;</th>
<th>14 x 14&quot;</th>
<th>16 x 16&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOAD</td>
<td>33</td>
<td>480</td>
<td>550</td>
<td>580</td>
<td>640</td>
<td>700</td>
<td>760</td>
<td>820</td>
<td>880</td>
<td>1000</td>
</tr>
<tr>
<td>LOAD</td>
<td>190</td>
<td>289</td>
<td>324</td>
<td>359</td>
<td>414</td>
<td>470</td>
<td>520</td>
<td>570</td>
<td>620</td>
<td>750</td>
</tr>
<tr>
<td>LOAD</td>
<td>126</td>
<td>178</td>
<td>238</td>
<td>290</td>
<td>344</td>
<td>408</td>
<td>460</td>
<td>520</td>
<td>580</td>
<td>720</td>
</tr>
<tr>
<td>LOAD</td>
<td>113</td>
<td>174</td>
<td>236</td>
<td>290</td>
<td>344</td>
<td>408</td>
<td>460</td>
<td>520</td>
<td>580</td>
<td>720</td>
</tr>
<tr>
<td>LOAD</td>
<td>120</td>
<td>170</td>
<td>230</td>
<td>290</td>
<td>344</td>
<td>408</td>
<td>460</td>
<td>520</td>
<td>580</td>
<td>720</td>
</tr>
</tbody>
</table>

For white pine take 7/10 of the above loads.

For hemlock take 1/2 of the above loads.

For spruce take 7/10 of the above loads.

For oak take 3/5 of the above loads.

By dividing the values in all cases by the required factor of safety, usually 4, 5 or 6, the safe supporting strength of the column will be obtained.

### Wooden Beams

To find the size and strength of square and rectangular wooden beams for the usual systems of loading we have at hand very convenient and simple formulas, by which the size of the beam to carry a certain load can be found, and also the safe load a beam of given size can carry. In the following formulas, we will use a constant “C,” the value of which for certain woods are as follows:

- White pine...... 60 pounds
- Hemlock ...... 50 pounds
- Spruce ...... 65 pounds
- Yellow pine ...... 60 pounds
- Oak ...... 70 pounds

**Case 1 (Fig. 5).—Beam Fixed at One End, Load at Other End:**

\[
\text{Safe Load in Pounds} = \text{breadth} \times \text{square of depth} \times \text{"C"} \\
\times \left( \frac{4 \times \text{length in feet}}{4} \right)
\]

**Problem:** What safe load will a yellow pine beam 4 inches wide by 6 inches deep carry, if fixed in a
wall, with the load located 5 feet from the wall?

Solution: Using the formula for safe load and using the value “C,” for yellow pine, which is 90 pounds, we are ready to solve the equation, which will be as follows:

\[
\frac{4 \times 6 \times 6 \times 90}{4 \times 5} = 648 \text{ pounds.}
\]

Problem: What size yellow pine beam is required to carry a load of 1,090 pounds, the beam being fastened into a brick wall at one end, with the load situated 6 feet from the wall?

Solution: In this case it is necessary to assume the depth of the beam, which we will take at 8 inches, therefore the equation to find the breadth of the beam will be as follows:

\[
\frac{4 \times 1000 \times 6}{8 \times 8 \times 90} = 4.2 \text{ inches.}
\]

Therefore we will use a 4 by 8 inch beam to support the load.

Case II (Fig. 6).—Beam Fixed at One End and Loaded with a Uniformly Distributed Load:

Safe Load in Pounds = \(\frac{\text{breadth} \times \text{square of depth} \times \text{"C")(span in feet)}}{2 \times \text{length in feet}}\)

Breadth in Inches = \(\frac{2 \times \text{length in feet} \times \text{load}}{\text{square of depth} \times \text{"C"}}\)

Case III (Fig. 7).—Beam Supported at Both Ends and Loaded at Middle:

Safe Load in Pounds = \(\frac{\text{breadth} \times \text{square of depth} \times \text{"C"}}{\text{span in feet}}\)

Breadth in Inches = \(\frac{\text{span in feet} \times \text{load}}{\text{square of depth} \times \text{"C"}}\)

Case IV (Fig. 8).—Beam Supported at Both Ends with Load Uniformly Distributed:

Safe Load in Pounds = \(\frac{2 \times \text{breadth} \times \text{square of depth} \times \text{"C"}}{\text{span in feet}}\)

Breadth in Inches = \(\frac{\text{span in feet} \times \text{load}}{2 \times \text{square of depth} \times \text{"C"}}\)

Problem: What safe load is a 4 by 6 inch hemlock beam capable of supporting, having a span of 10 feet, and the load situated 3 feet from one end?

Solution: First draw the diagram (see Fig. 11) to see the conditions and referring to Fig. 9 in Case V we find that “a” equals 3 feet and “b” 7 feet. Putting the values in the formula for safe load given in Case V we have the following equation:

\[
\frac{4 \times 6 \times 6 \times 10 \times 50}{4 \times 3 \times 7} = 857 \text{ pounds.}
\]

Therefore a 4 by 6 inch hemlock beam will safely support 857 pounds, when loaded under the above conditions.

Problem: Find the size of a yellow pine beam, 20-foot span, to carry a load of 2,000 pounds, load located 8 feet from one support.
Solution: Referring to Fig. 9, Case V, we find that “a” equals 8 feet and “b” equals 12 feet, as shown in the diagram, Fig. 12. We will assume a depth of 10 inches and apply the formula given in Case V for breadth in inches. The equation will then be as follows:

\[
\frac{4 \times 2000 \times 8 \times 12}{10 \times 10 \times 20 \times 10} = 4.2 \text{ inches.}
\]

Therefore a 4 by 10 inch beam can be used with safety.

Problem: What safe loads will an 8 by 12 inch spruce beam carry, having a span of 20 feet, each of the loads being located 5 feet from their respective ends?

Solution: In this case our “d” values equal 5 feet, and using formula given in Case VI, we have the following equation:

Safe load \( W \) in pounds at each point=

\[
\frac{8 \times 12 \times 12 \times 65}{4 \times 5} = 3744 \text{ pounds.}
\]

The stiffest rectangular beam containing a given amount of material is that in which the ratio of depth to breadth is as 10 to 6; hence in designing beams, the depth and breadth should be made to approach as near this ratio as is practicable.

**Kitchen Cabinets and Cases**

**HOW THE MODERN SMALL KITCHENS SHOULD BE PLANNED, FINISHED AND EQUIPPED FOR CLEANLINESS AND CONVENIENCE—PRACTICAL CABINET DESIGNS**

A small kitchen may be likened to a compact little work shop or laboratory. To be a success it must be built rightly, then equipped rightly. Robert Spencer, Jr., in a recent number of "American Homes and Gardens" offers some suggestions along these lines which should be useful to the readers of the AMERICAN CARPENTER AND BUILDER.

Right building means right planning. The location of the kitchen should give it enough sun-light to keep it sweet, not so much as to make it needlessly hot. The prevailing summer winds should carry kitchen odors away from the house—not into it. The small kitchen may be relatively long and narrow, amply windowed on one side or approximately square, never deep and narrow with windows only at one end.

Nearly every woman would like to have a kitchen with tiled floor and tiled walls, but it is seldom that the appropriation for a small house is sufficient to provide these luxuries. For the average kitchen there is no better looking, more comfortable or sanitary floor covering than heavy linoleum, preferably laid down in one piece before the floor connections for the plumbing have been made and before the mouldings covering the joint between the baseboard and floor have been placed. A good linoleum will last and give excellent service for at least ten years. It is agreeable under foot and easily cleaned. It should always be laid on a fairly good, durable wood floor with the joints of the boards planed true and level, in order that they may not show through the linoleum and cause uneven wear.

**Fig. 1.—A Liberally Planned Working Case for the Pantryless Kitchen**

The kitchen walls should be finished in a good standard cement or patent hard plaster, troweled to a smooth polished surface, then painted at least four coats with a dull gloss finish. There are a number of paints on the market specially prepared to resist heat and moisture which are particularly suitable for kitchen finish. For the woodwork, which should be as plain as pos-
sible, I prefer a similar painted finish, in ivory white. If the woodwork is sufficiently plain and devoid of mouldings, which catch the dirt, a white painted finish is not at all difficult to keep clean.

Work counters, sink drain-boards, window stools, etc., should be of birch or white maple stained and oiled. The finishing hardware used in the kitchen, such as door knobs, butts, drawer pulls, etc., should always be of solid or stamped bronze metal. Plated steel, so commonly used through false economy, soon rusts in the kitchen and becomes unsightly.

The accompanying illustrations of typical kitchen and pantry cabinets, cases, etc., exemplify some ideas of kitchen equipment which have been found to work excellently. Fig. 1 shows a liberally planned working case or cabinet for the "pantryless kitchen." The shelf supporting the sifting flour can is hung by a flat steel bar from the top of the case. The three upper drawers are "bin-drawers" with extension slides. Next to the cupboard at the right is a pocket with rollers at the bottom, to receive the bread-board when not in use. A slide connects the counter of the sideboard on the opposite side of the partition. Note that the two lower shelves are comparatively narrow, in order to allow the free use of the counter as a work table. The front of a case of drawers under a table or work counter should be recessed toward the bottom, in order to allow room for the feet when standing, a point overlooked in most kitchens and pantries. The lower shelves above the counter of a built-in cabinet should be comparatively narrow, in order to clear the head of a person working at the counter; the upper shelves above head height may be 10 or 12 inches wide.

Where proper jars and receptacles are provided for the various supplies and materials, it is more convenient if doors be dispensed with in connection with these shelves. A great convenience in the kitchen or cook's pantry cabinet is a series of three or four deep "bin-drawers" with flaring fronts just below the counter, arranged to pull out almost full length on hardwood anti-friction slides. Fitted with removable bright tin linings, these drawers make most convenient receptacles for sugar, pastry flour, cornmeal, oatmeal, etc. In the average small suburban home, flour is nowadays seldom bought by the barrel, and can therefore be conveniently kept in a large tin flour can fitted with a rotary sifter in the bottom. A flour can of this type can be set into the shelving at a convenient height above the counter, where it is out of the way and always ready for use.

The most convenient type of sink cupboard for pots and pans is the swinging cupboard illustrated in Fig. 2, which was devised by Mr. Spencer because of the somewhat dark, inconvenient and unsanitary character of the ordinary pot closet. As shown, the swinging cupboard is practically a rather wide and low paneled gate, strongly hinged on one side with several shelves on the inside, the largest at the bottom, for pots, pans and covers. By means of a large bar-pull, which serves as a handle, it may be easily swung out into the full light of the kitchen for easy access, inspection and cleaning. When closed, it is neat and simple in appearance.

There is little new to be said about the equipment of a good serving and china pantry. A convenience sometimes overlooked is a suitable storage rack for table leaves or a deep pocket for the sections of extra round table tops. As to the relative merits of swinging or sliding glazed doors for china cases, it is easier to secure fairly satisfactory results with the swinging than the sliding doors, owing to the difficulties involved in keeping the latter in permanent good working order.

How to Make a Metal Counter
By W. W. Daniels.

This is the steel age. Every piece of furniture in the home and office will soon be at least part metal. The writer will explain briefly the construction of a metal-covered counter. The scarcity of timber and the high rate of labor combined, put fine paneled counters beyond consideration. This is something the carpenter can do better than any other craftsman on account of the woodwork, which is the most important part. This should be well done. Then the metal will give the finishing touch.

Framing.—The framing is all rough lumber. Use any convenient size. The object is to get a frame to nail the metal to, all well braced. The carpenter will need no special instructions along these lines.

Metal Work.—In selecting metal for counter as shown in sketch, the object was two-fold; first, to reduce number of joints; second, plainness. Four members complete the work, as follows: 3-inch metal crown mould; 24 by 24 inch metal panel, 1½-inch recess; 4-inch metal base mould, and ½-inch corner bead. No cutting or fitting are necessary, except at "a"; here the carpenter will have to form a miter. The miter in crown mould is furnished ready formed by manufacturers. All joints must be well nailed with a small flat-head nail.

Estimated Cost.—A counter finished as described above will cost approximately $1.00 per foot. Some very attractive finishes can be had at about the same cost. The metal is estimated at 15¢ per running foot, leaving a balance of 85¢ for lumber, paint and labor.
Modern Steam Heating

THIRD OF A SERIES OF ARTICLES DEALING WITH THE VARIOUS SYSTEMS OF HEATING—HOW TO INSTALL A MODERN LOW PRESSURE STEAM HEATING SYSTEM

IN a preceding paper, April number, we have discussed the subject of hot water heating for residences. Last month we took up warm air heating and showed how such a system should be installed for best results. The present article has to do with modern practice in steam heating. Steam heat has been too long in use and its advantages, especially for buildings of large size, are too well known to make necessary any argument as to its efficiency and success. It is in order, however, to consider briefly the best methods for installing such a system together with the rules for figuring amount of radiation, pipe sizes, etc.

The modern low-pressure system of steam heating is usually a gravity job, the boiler or steam generator being placed below the level of the steam mains. While the two-pipe system is still at times advocated and employed, practically all of the installations of low-pressure steam heating in these days are erected by what is known as the one-pipe method. There are several adaptations of this method—namely, the "one-pipe circuit" system, the "divided-circuit" system, the "one-pipe system with dry returns," the "one-pipe system with wet returns," etc.

In planning for the installation of a low-pressure steam heating apparatus, it is necessary to figure the size of radiator needed for each room to be heated; and after the total amount of radiation has been determined, the proper size boiler can be figured.

How to Figure Radiation

The amount of radiation required depends upon three factors: (1) the size and location of the room; (2) the square feet of its glass exposure (windows and outside doors counted as glass); and (3) the square feet of outside or exposed wall surface. Too many fitters and contractors are using "rule of thumb" methods in calculating such requirements, thereby causing trouble and unsatisfactory results from installations of this character. Only such rules as are absolutely accurate should be used in figuring on work.

The Mills rule, known also as the rule "2—20—200," is easily applied, and it is the one generally used by heating men. Its explanation follows:

Find the following three quantities in each room to be heated: (1) the cubic feet of contents, by multiplying together the length, width, and height; (2) the square feet of exposed or outside wall (not deducting the space occupied by doors or windows); and (3) the square feet of glass (counting outside doors as glass). After obtaining these results proceed in figuring thus:

For each 2 square feet of glass, allow 1 square foot of radiation; for each 20 square feet of exposed wall, allow 1 square foot of radiation; for each 200 cubic feet of contents, allow 1 square foot of radiation.

The total of these different results will be the number of square feet of radiation required to heat the room to 70 degrees with a pressure of 2 pounds of steam, the outside temperature being at zero.

For example, consider a corner room (two walls exposed) having three windows 3x6 feet in size. Dimensions of room, 15 by 20 feet, with a 10-foot ceiling.

\[
\begin{align*}
3' \times 6' &= 18 \text{ sq. ft.} \\
15' + 20' &= 35 \text{ feet} \\
15' \times 20' &= 300 \text{ cu. ft. of contents} \\
54 + 4 &= 58 \\
350 + 20 &= 370 \\
3000 + 200 &= 3200
\end{align*}
\]

Total, 59.5 sq. ft. of radiation required.

Having determined the number of square feet of
radiation necessary to heat the building, we proceed to the selection of the boiler.

The selection of a boiler of sufficient size means much for the efficient and economical operation of the entire job.

The catalogue ratings of all boilers for house heating, or "low-pressure" boilers, are gross ratings; that is, in the stated capacities, not only is the amount of radiation to be supplied considered, but all pipe, fittings, etc., on the work are counted as radiating surface, and allowance must be made for the same in accepting the printed ratings.

A safe plan when using such ratings, is to make the following allowances:

| Actual square feet of radiation in building | 600 |
| Add 25 per cent for uncovered mains and risers | 150 |
| Add 20 per cent for friction and condensation loss | 150 |

showing that for good service on the work the boiler selected should have a gross rating of approximately 900 square feet.

For economy, choose a boiler so constructed that it may be easily and thoroughly cleaned in all its parts. Soot is a great non-conductor; and the heating surfaces, to be effective, must be kept free from an accumulation of it.

The firebox and grate provided are features worthy of particular attention, as a firebox of proper depth, and a type of grate which can be easily cleaned and which is able to carry its full load of fuel without a sagging of bars, are essential points to consider.

One-Pipe Circuit System

The one-pipe circuit system of steam piping is doubtless used more than any other plan, as it is the one having the most advantages when installed in a square or rectangular building.

In this system, the upright pipe out of the boiler rises to as high a point as possible, up to within a few inches of the cellar joists. On its top is placed an elbow from which the circuit is started. This starting place is the high point of the main steam pipe; and from it the main should have a gradual fall or pitch from the boiler of ½ to 1 inch in each 10 feet of length. The branches should pitch up from main at least 1 inch in each 5 feet of length, and as a rule should be of one size larger pipe than are the risers which they feed.

The circuit continues around the basement at a distance of from 3 to 4 feet from the outside wall, continuing until an advisable point at or near the boiler is reached, where a reducing elbow is placed on the end of this main, and a drop made with a smaller size of pipe into the return opening of the boiler.

Fig. 1 shows the basement plan of a piping job of this character. The main acts as a reservoir supplying the various branches leading to the radiators, and, also as a return pipe receiving the condensation from the various branches it feeds. By reason of this latter function, it should not be reduced, but should be run full size from the boiler to the end where the return connection is made. The condensation from the system runs along the bottom of the main in the same direction as the course of the steam.

At the extreme end of the main, where the connection to the return is made, there should be placed an automatic air-valve, in order that all air in the main may be quickly exhausted, and the main put in shape to be rapidly filled with steam so that all branches will be supplied at practically the same time, thereby securing an equal proportion of heat for all radiators.

Each branch connection may be taken from the main by either of two methods—namely, (1) by using a nipple and 90-degree elbow, and (2) by using a nipple and 45-degree elbow. The first method is preferred for the reason that in all low-pressure mains the steam flows along the top, the condensation along the bottom. With the 45-degree connection, the condensation from each branch enters the main without saturating the steam, while with the use of the 90-degree connection this water of condensation flows into the main on top of the steam supply, saturating it and thereby greatly reducing its efficiency. This difference is very clearly explained by Fig. 2.
Points marked A A A on Fig. 1 indicate the 45-degree connection; B B B, the risers to radiators; and C the point at which the automatic air-valve should be placed. The arrows indicate the downward pitch of the main and the upward pitch of the branches.

The end of the steam main should never be lower than a point 14 inches above the water line of the boiler; and, if possible, a distance of 20 inches should be maintained between the two points. Fig. 3 shows an elevation of the boiler and return connection of a piping system as shown in plan in Fig. 1 and clearly indicates the space to be maintained between the end of the main and the water-line of the boiler.

**Divided-Circuit System**

The divided-circuit or two-circuit system is quite similar in its general plan to the single-circuit, and what has been said regarding the details entering into the one will apply to the other. When the boiler is located on one side of a rectangular building, frequently it is better practice to run the main in two circuits; and the method this provides is known as the divided-circuit system. On leaving the boiler, the mains pitch down from it in either direction, following around the basement until they meet at the side opposite to the boiler, or perhaps at some other point, the place of junction depending upon the character of the building or on circumstances surrounding the installation. At this point a reducing elbow and an automatic air-valve are placed on the end of each main, and a drop made to the floor of the basement, where, below the water line, these returns are connected together, and a single pipe having a capacity equal to that of both the drop pipes is run across the cellar floor, either on the surface or under it, to the boiler, where it is connected into the return opening.

Fig. 4 illustrates the divided-circuit system.

One distinct advantage of a one-pipe circuit system is that all piping is overhead and out of the way. In addition it affords a very neat and attractive method of piping, and will be found sufficiently effective provided care is exercised in properly proportioning the sizes of the pipes. Pipe-sizes for one-pipe systems are given in the following table:

**Sizes of Main and Return Pipes—One-Pipe System of Steam Heating**

<table>
<thead>
<tr>
<th>Sq. Ft. Direct Radiation</th>
<th>Size of Main</th>
<th>Size of Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 to 250 sq. ft.</td>
<td>1 1/4 in.</td>
<td>1 in.</td>
</tr>
<tr>
<td>250</td>
<td>2 in.</td>
<td>1 1/4 in.</td>
</tr>
<tr>
<td>400</td>
<td>2 1/4 in.</td>
<td>1 3/4 in.</td>
</tr>
<tr>
<td>650</td>
<td>2 1/2 in.</td>
<td>2 in.</td>
</tr>
<tr>
<td>900</td>
<td>2 3/4 in.</td>
<td>2 3/4 in.</td>
</tr>
<tr>
<td>1,200</td>
<td>3 in.</td>
<td>3 in.</td>
</tr>
<tr>
<td>1,600</td>
<td>3 1/2 in.</td>
<td>3 1/2 in.</td>
</tr>
<tr>
<td>2,000</td>
<td>4 in.</td>
<td>4 in.</td>
</tr>
<tr>
<td>2,500</td>
<td>4 1/2 in.</td>
<td>4 1/2 in.</td>
</tr>
<tr>
<td>3,500</td>
<td>5 in.</td>
<td>5 in.</td>
</tr>
<tr>
<td>5,000</td>
<td>5 1/2 in.</td>
<td>5 1/2 in.</td>
</tr>
</tbody>
</table>

NOTE: The maximum amount of radiation given for any size of pipe is based upon favorable existing conditions, such as a short main (under 100 feet) and a compact job. When the mains are extremely long and the amount of radiation scattered, the larger size of pipe should invariably be used.

While some engineers consider the sizes as given somewhat excessive, the fitter can make no mistake by adopting them on heating work. Perhaps circum-
sant with the effect these conditions exert on the plant, it is better to be guided entirely by the sizes given, which have been proven by conclusive tests as worthy of general adoption.

One-Pipe System with Dry Returns

The one-pipe system of steam heating is so called from the fact that there is but one pipe connection to each radiator, this pipe acting the dual role of flow and return. For this reason the use of this arrangement requires pipes larger in size than those necessary for the two-pipe system. There are several adaptations of the one-pipe method, that illustrated in Fig. 5 being the one particularly suited to a building where the main flow pipes may be run straight from the boiler in either direction.

Note the manner in which this connection is made. The return pipe is always one or two sizes smaller than the flow, and the connection from main to return is accordingly made with two reducing elbows and a close nipple.

Where the elbow is placed on the end of the dry return for the drop connection into return opening of boiler, an automatic air-vent should be used, and this point should not be less than 14 inches above the water-line of the boiler, as previously described.

All branches are taken from the main with a 45-degree connection and they should always pitch upward from the main at least ½-inch in each 5 inches of length. When supplying large radiators, the branches, as a rule, should be one size larger than the riser or radiator connection which they feed.

It is well to make connections to radiators in such a manner as will permit of some expansion of the riser. A swing joint at base of riser is sometimes employed for this purpose.

One-Pipe System with Wet Returns

The one-pipe system of steam heating with wet returns does not differ materially from any one of the methods previously described so far as the manner of running the mains and connecting the branches is concerned. There are some heating men who favor a wet-return system, believing that the provision of the wet return steadies the working of the system or "balances" the job. This system is specially adapted to jobs where the mains are exceptionally long or when surroundings make it necessary to work unusually close to the water-line of the boiler.

A wet return would be started on a circuit job as soon as the last branch or radiator has been connected, but the drop should not be made directly at the last connection. The main should be extended not less than two feet beyond this point, where a reducing elbow tapped for an air-valve should be placed on the end, and the drop then made into a wet return. This return, as a rule, is carried along the cellar wall to a point where a connection with the boiler can be conveniently made.

One method of installing a wet-return system is to bleed all risers, as illustrated in Fig. 6. If the job is of such a character that the risers can be treated in this manner, much smaller piping may be employed than is ordinarily necessary with one-pipe work, as no condensation enters the main from radiators or branches, and its entire area is free space for the conveyance of live steam. Also, where risers are dipped into the return in the manner illustrated, it makes no difference in the results attained whether a 45-degree or a 90-degree connection is used in starting the branch from main.

Imperfect Gas Heaters Cause Death

Improperly installed gas water heaters and stoves especially in bath rooms have caused many deaths from carbon monoxide gas poisoning in different parts of the country recently. Attention was called to this danger in a forceful manner for the first time about a year ago when an entire family was killed at Washington, D. C. Undoubtedly many deaths ascribed to asphyxiation by illuminating gas have been due to this form of poisoning. There is always danger where the gas heater or stove is improperly installed and there is no ventilation for the room. All the oxygen in the room is quickly consumed, and the poisonous gas fills the lungs. Several instances of death in this form occurred within the last month in Chicago.
Concrete and the Carpenter

THE CARPENTER’S INTEREST IN MODERN CEMENT CONSTRUCTION—POINTS IN THE MANUFACTURE AND USE OF BLOCKS OF INTEREST TO BUILDERS

By James F. Hobart, M. E.

The carpenter cannot deny the fact that his trade is in a precarious condition, due to the increasing scarcity of lumber of all kinds. The ever-increasing price tells the story all too plainly; and unless the carpenter “takes the bull by the horns” he will be severely maimed, if not exterminated, by that same bovine. For years the builder has been on the lookout for a substitute for wood and he has tried almost every material to be found upon the face of the earth. Within the last few years he has come to accept a material so common and so despised that it had been overlooked by everybody as utterly useless for that purpose.

Less than ten years ago, only a few far-sighted people realized that the despised gravel bank contained a substitute, not only for lumber but for brickwork and stonework as well. Not only is gravel proving a very efficient substitute, but it is found to possess qualities which place it far in advance of either the lumber pile, the stone quarry or the clay bank.

The gravel bank, when properly combined with a certain quantity of good hydraulic cement and water, forms a material which will not burn or crush, and which neither wind, sun, rain nor earthquakes can destroy. While lumber may rot or weather and dissolve under the action of rain and sun, while certain kinds of stone may be dissolved by the elements, properly made concrete will endure forever. Concrete is always becoming harder, but it never attains its full strength. This may seem a queer statement to the man who has not given the matter thought, but such is the case. While concrete attains nearly its full strength in 28 days after having been properly made and kept wet for that period of time, the concrete hardens a little more during the succeeding 28 days, but not nearly as much as during the previous period.

And succeeding periods or months witness still further hardening until the material does not harden in a year as much as it did in the first week. And in the next year and each succeeding year it does not harden as much as it did in the preceding year, yet it hardens a little—though very little in each of the latest years. By “hardening” it is understood that the strength of the concrete as to resistance to crushing, increases each year.

The writer has repeatedly demonstrated that from any ordinary gravel bank containing material up to the size which will pass through a ½-inch sieve and be retained upon a ¼-inch sieve, there can be made at will building blocks which will, with 12% of cement, weigh 175 pounds to the cubic foot, crush at least at 300 pounds to the square inch, and absorb less than 5% of water. Also, that from the same gravel bank there can be made blocks which will not weigh more than 155 pounds to the cubic foot, which will crush at 800 pounds to the square inch, and which will absorb at least 20% of water! All this from the same gravel and anywhere between the extremes noted above. In the case of the dense, strong concrete the sizes of sand and gravel will be exactly proportioned, while to make the porous block, a single size of material will be selected, hence the necessity of properly combining the several sizes of sand and gravel in a manner which will insure the voids being filled completely.

Fig. 1—Window and Door Frame in Concrete Block Wall
Even though concrete blocks are abused horribly in their making, they are abused worse in the setting. It is comparatively easy to pile the blocks one on top of two others, in the form of a wall, but that does not constitute all there is to concrete block using—not by a good deal. Only today a gentleman wrote to know why his blocks cracked so badly. He stated that at nearly every window and every door a crack had developed at a corner, either above or below the opening, and he desired to know how to remedy the trouble, which prejudiced people against the blocks he made.

Here, blocks were saddled with a trouble which did not belong to them; for insufficient foundation, which permitted local settling, was the cause of this man’s trouble. How often have we seen the walls of brick houses cracked at doors and windows, from the same cause, yet no one ever thought of trying to lay the trouble on the bricks from which the walls were made. It’s another apt illustration of the old adage: “Give a dog a bad name and it’ll hang him sure.”

And there is another matter which is brought up against houses made of concrete blocks—they ask how to put up interior finish, and how to attach it to the concrete work! Now, really, wouldn’t that jar you? Do you hear anybody ask how to put up finish in a brick or in a stone house? No. Then why not do the same way with a concrete house? Door and window frames should be set in exactly the same manner that they are handled in a brick house. Fig. 1 shows the manner in which a window jamb should be fastened into a block wall. In making the block two methods are available: an attachment may be used which will turn out a block as shown at A, Fig. 1, or a plain block of wood may be placed in the mold as at B, to form the corner or jog in the concrete block to receive the window jamb and the weights.

And the making of window and door frames fast in the block walls? Why, a splash of mortar is all that is required, the same as when frames are set in brickwork! A cleat nailed to the wall side of a door jamb and well flushed with mortar when setting the blocks will hold the door-frame tightly in place for more years than any person will ever live to see or use the door.

The concrete block made with the block machine attachment, as shown at A, Fig. 1, is for a frame made very slight and cheap, with a corner piece as shown, and mere cleats of box casings to hold both inner and outer sash in place against the parting bead. The block made by placing a block of wood in the mold is to receive a regular box casing as shown at C, Fig. 1, makes a much more satisfactory job, and it also costs a good bit less than the arrangement shown at A, where the weights hang directly in a pocket in the concrete wall.

If desired, nailing pieces may be built into the inside faces of the blocks to receive the nails in inside window casings, but more often these nails are driven right into the mortar joints between the block courses, the same as is the practice in nailing to a brick wall.

In setting door frames, the jamb block may be used the same as for windows, or the ordinary block may be employed and the frame held in place by means of a strip or cleat nailed to the frame as shown at E, Fig. 1, and with cement mortar flushed into the block around the cleat, the door-frame can never shift its position in the least. Personally I would recommend, however, that whenever custom or convenience calls for a bit of wood, as in the nailing strip, or in the door frame or even in the door, a way should be found of putting in something else instead of wood. The steel window frame, the steel door frame and the steel door and steel window are all here to stay. The steel cornice has been in use for ten years and then some, and no builder would today think of putting up one of the heavy, clumsy, fire-trap cornices used twenty years ago.

When the desire comes to put a nailing strip in a concrete block, see if some other way cannot be found to do the same work without the use of wood. Fig. 2 shows a couple of nailing strips and the manner in which they are made into the blocks when the latter are molded: A shows a vertical nailing strip and B a horizontal strip. C shows a metal nailing strip which may be purchased by the yard, or in any length desired, by the thousand, and placed in the block joint just where it is required to receive a nail.

But the use of metal nailing strips, or pockets, requires a detailed laying out of the inner walls, so that each and every nail may be accurately located before the blocks are made for the building. Furthermore, it calls for the numbering of each and every block and the placing of that block in the exact position called for by the drawings. This seems like a whole lot of work, but it is really very simple. The wooden nailing strip (when used) must also be accurately located. The cut-stone contractor has long been making drawings of each stone, fitting each very accurately and then numbering them—he has been doing this for many years, and why should not the block maker do it as well, as long as it adds to the accuracy of the work to fireproof qualities thereof, and to prospect of a profession independent of lumber or its increasing scarcity?
Two Garage Designs

As a factor in the evolution of business and social life, the automobile, or self-propelled power-driven vehicle, is already playing a part as spectacular and important as did its predecessor, the bicycle. While it is probable, on account of its cost, that the automobile, for purposes of pleasure and social intercourse, will always be classed as a "luxury" and its use confined to those who might be designated as the "well-to-do," yet for business purposes the facilities it affords are coming more and more to be looked upon as a "necessity" even for those of moderate means; and in this connection it is destined to play a part of continually increasing importance as a great modern convenience and a much-needed supplement to any business equipment.

At the present time, the increasing popularity of the motor vehicle is perhaps most apparent among people living in suburban towns and in the outlying districts of the larger commercial centers; but even in the crowded business sections it is much in evidence, and is the basis of a distinctly new line of commercial activity—that of the erection and maintenance of special structures for the safe housing and storing of automobiles and meeting the fluctuations of supply and demand for the conveniences that these afford. These buildings are known as garages—a term of French origin—and they range from the simplest type of protective enclosure to very costly structures fitted with elaborate details of accessories and equipment.

The first design presented is for a two-story private garage to be built of stucco. Lower floor is devoted entirely to the storage of machines, work...
room, coal room and heater room. The second floor contains the living quarters for the chauffeur. The pleasing features of this design is the wide cornice and the flower box over the front entrance. The other is a very attractive Mission design in stucco for small private garage.

Common sense should prevail in the construction of garages, just as truly as in any other line of intelligently directed activity. And yet we know of instances where a stable costing $2,000 or upward is used to house a one-hundred-dollar horse, while a $5,000 automobile is committed to the protection—or rather the counterfeit pretense of protection—afforded by a flimsy wooden shack that offers no obstruction to vandalism or the ever-present danger of a catastrophe of fire.

On account of the necessity of storing gasoline, oil, and other combustible materials, a garage—specially if built entirely of wood—is peculiarly exposed to the dangers of fire either as a result of carelessness on the part of the chauffeur or other help in the storing of materials, the handling of lights, tools, etc.; from spontaneous combustion; or, as often happens, from the spread of fire from outside conflagrations. Special precaution should therefore be taken to provide against the danger by adopting a material and type of construction that will reduce the risk to a minimum. The increase of safety is a consideration that will far more than offset the small excess of cost in a substantially fireproof structure as compared with the ordinary flimsy shed that is liable to burn at any moment.

Automobile owners are beginning to realize this, and are demanding that all the conditions of safety as well as economy and convenience shall be met in the plans from which their garages are built.
Varnish and Varnish Rubbing

SOME PRACTICAL SUGGESTIONS AND RULES FOR SUCCESSFUL WORK IN PRODUCING THE MODERN EGG-SHELL GLOSS AND DEAD FLAT FINISHES

By A. Ashmun Kelly

The architect specifies hard wood rubbing in two forms, namely, the egg shell gloss and the dead flat. Simple as the operation is, yet varnish rubbing demands an experienced hand. And the varnish must be right, saying nothing of various other conditions which make or mar success. Varnish intended for rubbing is made with that specific purpose in view, and it must contain the right proportions of gum and oil if it is to rub well. Then, the workman must understand the varnish, and be able to tell just when it is fit to rub. If the directions on the can call it a two-day rubbing varnish, it may undoubtedly be that, but it is not well to be guided solely by those directions, for more will depend upon the weather and the atmosphere of the room. If, when you press a finger nail into the surface, it does not yield, that is a good rule. Otherwise it is too soft to rub well; when the varnish it not hard dry enough it will rub up under the rubbing, and go soft also. An amateur hand once came to me to say that his work was all in little bare patches, and what could be the matter? He was rubbing with oil, and the oil had softened up the varnish, and the pumice had cut through. The trouble was with the varnish not being sufficiently dry for the rubbing. Then, the oil is more liable to rub up than water, so that it is safer for the learner to rub with water, which, particularly if very cold, tends to harden, rather than soften the varnish. When you rub through that way the job is spoiled as far as the work goes. The rubbing accomplished, wash off with water, and look at the work. The idea is to rub just as little as will do the work, over-rubbing doing much harm, while under-rubbing can easily be remedied by a little more rubbing. What is desired is to merely remove the gloss from the varnish, and not to level it down.

The rubbing accomplished, wash off with water, and a sponge and dry with a chamois skin.

The finest work will demand more coats of varnish, and each coat rubbed. After the rubbing with pumice stone powder and water you can rub with oil and rotten stone. The pumicestone makes many fine scratches on the work, and it is the office of the rottenstone to remove these scratches. Further rubbing may be done, on the very finest work, with the palm of the hand, which is considered to be the best possible rubbing pad. The last coat may be a high-grade varnish. When rubbing with the hand is done dry lampblack and sweet oil is used. Then cornstarch is dusted on the work, this taking up the oil and removing it. Yet it does not remove every trace of the oil, a very thin film remaining to mar the polish, and this is removed in turn by a rag moistened slightly with alcohol, the rag being passed quickly and very lightly over the surface. Easily indeed might the entire fine finish be ruined if this were done carelessly. The alcohol would do the work. But the expert dampens the rag in the alcohol, then wraps another piece of rag around that, and very deftly wipes off the surface, causing the full polish of the work to show.

Use and Abuse of Varnish

When a can of fine varnish comes to us from the maker thereof we find it in a fluid condition, ready for use. It has a very pleasant odor, and an unctious feel. There is no sign of skin about it, though the varnish may have been in that can a year. Pour some of it into a shallow dish and set it away until the morrow. A skin has formed. Coat a piece of wood or glass with the varnish from the can, and in a day it is apparently dry all the way through. Such in brief is the process that varnish goes through in drying. Keep the air away from it, as in a can, and it will maintain its fluidity indefinitely. Contact with the air
causes it to dry. Perhaps drying it is not the proper word, for it does not dry as wet cloth dries in the breeze, but, rather, it takes up oxygen and hardens. When we apply a coat of varnish to a proper surface we want it to dry within a reasonable time, failing to do which the job will not be right. Varnish needs air to dry in, and the air must be pure, and there must be sufficient circulation of the air and ventilation too. Impure air interferes with the drying. Air full of gas and vapors impairs the luster. The varnish room should of course be shut up, but there must be in it plenty of fresh and clean air from the outside. Then, after the varnishing is done, open up and let the air in freely.

Varnish will not dry well in the dark; this seems strange, but it is true. It will dry more in an hour of daylight than in two hours of night time. The best work we do is that done in the morning. Then the varnisher needs plenty of light that he may see to do his work well. Varnishing demands good eyesight and plenty of daylight. Dry air is essential. The temperature of the room should not be lower than 60 degrees, nor higher than 70 degrees. Too high a temperature will retard drying.

**Surfacing and First-Coating**

After the wood has been filled with paste filler it should be coated with a liquid filler, which is not a filler at all, but a surfacer. Though the wood has been well filled with paste filler, yet the fibres will absorb a good deal of liquid if given the chance, and unless we apply a surfacer to satisfy this thirst it will come out of the first varnish we apply to it. When this occurs we will find the varnish full of pin-holes, showing where the varnish was taken in by the wood fibres. Shellac is often used over the filler, but something cheaper will do just as well. Any good varnish makes a surfacer, with a little mineral in it. Thin it a good deal, the same with shellac when used for this purpose. What is known as liquid filler, used on cheap work, will not do in this case. It makes a rough surface and one very hard to smooth down. A thin surfacer does not form a rough surface, and it is easy to rub down smooth.

**Some Rules for the Varnisher**

See that the surface is clean, free from dust or grease or marks, and smooth, or the varnish will not bear out brilliant. If the varnish coating is too thin it will not bear out well; if too heavy it will not spread and level up smoothly.

Use clean varnish, clean pot, clean brushes, clean overalls. Never turn back into the can any unused varnish; pour it into another can for another purpose, or for work that is not particular. Never wet your brush with oil or turpentine during the operation of varnishing.

See that the varnish room is free from flies, dust and dirt. For the flies, set a saucer near the light, and in it place some formalin, diluted with water, which makes a good fly killer.

Allow each coat of varnish as much time for drying as possible, and never less than one day, while two or more are better still.

Never add cold oil or turpentine to the varnish if it is thick, but heat either and heat the varnish too, then add the thinners. Shake well also. Too much turpentine will effect the lustre of the varnish, while too much oil will make it too soft.

Varnish often cracks because the first coat was not dry when the second coat was applied. Keep your varnish stock in an even temperature, and never let it become chilled. If chilled it is not fit to use until heated. Chilled varnish will spoil a job.

Light bodied varnish brushes out easily and does not show the brush marks as a heavy varnish will unless carefully laid.

Heavy bodied varnish should not be brushed out much, but be flowed on in a full coat, so that it will level up itself.

Always use a brush of a size suitable to the extent of surface that is to be coated. Sometimes a bristle brush is best, and at others a soft hair brush, depending on the nature of the varnish and the character of the work. For ordinary house varnishing use a good elastic hog bristle brush is good. Usually the varnish used on house work is more or less heavy bodied and needs a stiff bristle to cut through; then the bristles in cutting the varnish allow the air to enter more freely.

Never try to hasten the drying by adding driers to the varnish. It will pin-hole the varnish when it is on and dry. If the varnish is too slow, better add some quick-drying varnish to it.

If the varnish you are using remains sticky after it has had ample time for drying, be sure that it is a very low grade article. It contains rosin and rosin oil likely. Neither will dry, but get softer the longer it remains.

Always use the varnish that was made for the purpose in view. Never use a varnish for a purpose to which it is not adapted.

**Chestnut**

For several years Pennsylvania has ranked first as a producer of chestnut lumber, its proportion of the total cut in 1908 being 18.9 per cent. The output, however, was a decrease of more than 25,000,000 feet from the cut in 1907. West Virginia ranked second in 1908, as in 1907, though with a decrease of 28,000,000 feet, or 24.5 per cent, in the later year. The output of chestnut lumber in Connecticut in 1908 was 2,711,000 feet more than in 1907, giving this state third place instead of Tennessee, which held it in the previous year. The decrease in the output in Tennessee was nearly 15,000,000 feet in 1908 as compared with 1907. Taken together, these four states furnished three-fifths of the total production in 1908.
Complete Plans for Modern House

Full Set of Architect’s Drawings for a Very Fine Brick Veneer and Cement Plaster Residence of Nine Rooms

The accompanying is a rendered perspective of a very attractive and substantial residence, thoroughly modern in both construction and design. On the eight pages following will be found the complete working plans for it, all drawn to scale and carefully worked out in every detail.

Standard frame construction is used, with the popular exterior treatment of dark brown pressed brick for the first story, from grade up to the second story windows, and cement plaster above. The design would undoubtedly be improved by keeping as large a space as possible that could be thrown into practically one room on occasions. Sliding doors between living room, hall and dining room accomplish this.

From an Experienced Paint Man

As to the best time to paint, a practical painter writes Brush and Pail, that the wide-awake painter who is out for business, will advocate spring painting in springtime, and fall painting in autumn.

As to the durability of paint, here is my experience:

First—Paint applied to a damp surface will not stand.
Second—Paint applied three hours before frost will not stand.

First—Paint applied to a damp surface will not stand.
Second—Paint applied three hours before frost will not stand.
Third—Paint mixed with boiled oil in midsummer will not stand.

Fourth—Paint applied to any surface containing even the smallest per cent of alkali will not stand; the alkali must be eliminated or a new, "inert" surface made.

Fifth—Paint mixed with a large portion of turpentine, benzine or kindred products will not stand on outside work.

Sixth—I have had as good results from some of the leading brands of ready-mixed paint as from straight lead and oil, but no better. Good mixed paint, used by a scientific painter, is as good as lead and oil, but no better.

Two houses—one painted with lead and oil and one with a good brand of mixed paint, and both houses painted by first-class painters—may show a vast difference in wearing body. In this southern country the mixed paint house may show up better in five years.

In Minnesota the lead and oil job may show up better. In an eastern state or in Mexico the difference may again change. Again, two houses may be painted with the same brand of paint—one by a practical painter, the other by a novice—then a man half blind can see the difference.

Further, on my experience as to the time to paint: Paint applied on the outside in the spring should be mixed with raw linseed oil, with just enough dryer to set it in five hours. In paint applied in summer there should be no dryer, no turpentine, simply straight raw
Paint applied in fall should be mixed with boiled oil, and if the owner is wise to his interests and has one more coat applied the next spring with pure raw oil, he will undoubtedly have a durable job.

All ready-mixed paint should be thinned for priming, with boiled linseed oil, and for finishing with raw oil. This makes a durable job if you have a good brand of mixed paint.

Yellow pine should not be primed with any kind of paint containing turpentine or benzine.

Lead mixed with raw linseed oil and run through a piece of cheesecloth so that every particle of lead has its required amount of oil and is not cut up with turpentine or benzine or burned up with dryer is bound to stand if applied by an expert brush wielder. Readymixed paint thinned with raw linseed oil and put through a strainer and applied by a practical painter will stand, if it is a good brand of paint.

A painter often thinks that because his keg of lead or his can of paint looks clean it does not need to be strained, but there he is wrong, for he may stir and stir till he is aweary, and when he uses to the bottom of his paint bucket he will find lumps and particles that are not well mixed: but if he uses his strainer properly, the last brushful will be as good as the first.

It pays to strain, it pays to study climatic conditions, and it pays to take interest enough in your business to know how to mix your paint to combat the biting frosts in winter and the fierce rays of Old Sol in mid-summer.
FOUNDATION AND CELLAR PLAN—HOUSE PAGE 58
FIRST FLOOR PLAN—HOUSE PAGE 58
SECOND FLOOR PLAN—HOUSE PAGE 58
Why Good Paint Sometimes Fails

First: Cheap, poor lumber under it.
Second: Moisture, sap, soot or grease under it.
Third: Non-drying pigments like ochre, metallic, etc., used in priming.
Fourth: Non-drying oils, or oily, fatty, non-drying paint used in priming.
Fifth: Because flowed on with a broad, thin, flat brush, instead of being rubbed out well with a good full round bristle brush.
Sixth: Because of an insufficient quantity on a given surface. Two thin coats of paint will not wear well.
Seventh: Not allowing enough time to dry between coats.
Eighth: Excess of oil in under coats, especially the middle one in three-coat work.
Ninth: Carelessness or lack of judgment in methods of application.
Tenth: Thinning too much with oil, turpentine, etc., to save labor and cost of material.
Eleventh: Damp plastering when paint is applied.
A Substantial Country School

WELL BUILT TWO ROOM BUILDING FOR COUNTRY OR VILLAGE SCHOOL SHOWING FLOOR PLANS AND RENDERED PERSPECTIVE

Another two-room county school building of attractive appearance and thorough enough in construction to be a permanent rather than the very temporary investment that most rural school buildings are, is presented herewith.

Standard frame construction is used with an exterior veneer of brick. The space above the windows, under the eaves, and in the gable front is covered with cement plaster. The roof is dark green slate.

The building is without basement, the rooms being heated and ventilated by means of two small warm air furnaces, especially designed for the purpose, one in each room. They are so arranged that the foul air in the class-room is automatically drawn up the flue, while fresh air is taken in from outdoors to be warmed.
Elton A. Smith—President H. B. Smith Mach. Co.

W e want to introduce this month an old friend, Capt. Elton A. Smith—"Smith of Smithville," president of the H. B. Smith Machine Company, and the presiding genius of that institution. Who in the wood-working world does not know of Smithville—that model New Jersey village, the home of prosperity and contentment, the site of one of the greatest wood-working machinery industries in the country? Quiet and obscure, with most delightful surroundings, it stands as an enduring and picturesque monument to the ability and industry of its founder, Captain Smith's father, H. B. Smith.

Captain Smith, who is just past the meridian of life, was born at Woodstock, Vt. As a boy it is recorded that the prosaic life of the shop had no charms for him, and at the age of 16, while on a visit to his father's woodworking machinery plant, he deliberately pulled up stakes and ran away. He shipped as a sailor on a schooner lying in the Delaware, only a few miles from Smithville, which was south bound on a coasting trip. The sea possessed a boundless fascination for him, and his advancement was rapid. In a very short time he was made mate of a vessel and soon afterward captain. The lessons in discipline here required, left their stamp upon his character, and have contributed largely to the success that has always followed his commercial enterprises. He eventually drifted to the port of Savannah, Ga., where he entered the stevedore business. He augmented this work with the lighterage business, and in finally paid dollar for dollar on the indebtedness incurred. His natural inclination to develop himself by mechanical training in harmony with his tastes led to his inventing many new devices for working wood, and he eventually spent nearly all his time at this work. His first product was a machine for mortising stationary blinds. Blind makers did not take kindly to the invention, contending that it took too much labor out of the hands of the working men. Mr. Smith then went to Boston and commenced the manufacture of blinds himself. Soon after, he began pro-
At the age of 31 Mr. Smith located in Lowell, Mass. By that time his machines had achieved sufficient prestige to cause considerable demand, which afforded him a constantly increasing business. They were then being built in the various shops in that city, but as he was very particular about material and workmanship, especially the fitting of working parts, he soon started a machine shop of his own, where he continued his manufacture with success until 1865, when he decided that a larger shop and a more central location were necessary.

As a boy, the water-wheel was Mr. Smith's toy, and in seeking a new site, he evidently kept water power in mind, for he visited only places where it was obtainable. Eventually he selected Shreveville, N. J., at which place were located the old thread mills formerly occupied by Shreve Brothers. He bought the Shreve Brothers' plant, and the water power and farms thereabout, starting in to establish practically an altruistic community, which should be devoted not only to the manufacture of wood-working machinery, but to the higher purpose of providing comfortable and happy homes for working men who should grow up with his business. He builded better than he knew, for today in the great Smithville shops may be found working side by side, fathers, sons and grandsons.

The old thread mills were rebuilt and new structures of very substantial character were erected. During his entire lifetime the founder of Smithville never ceased building. A characteristic feature of his structures is that every one is put together in the most substantial manner possible. If a 12-inch wall were deemed strong enough to withstand the strain upon it, he would have it made 3 feet in thickness, supplementing it with cast iron door and window frames. His floors he invariably made of great ribbed plates of cast iron. In many respects the Smith works, which undoubtedly will stand to the end of time, resemble a fortification more than a group of factory buildings.

As before noted, the great operation at Smithville, which has been in existence at this point for forty years, is unique in the steadfastness and loyalty of its employees. Scores of men employed there in foundry, at lathe and bench, have grown gray-headed in the service. Their sons are there beside them, also their grandsons. It is a community of craftsmen who strive to do their best in building tools that shall be suitable for the finest kind of wood-working.

The founder of the company died in November, 1887, and the continuance of the enterprise eventually devolved upon his son, Capt. Elton A. Smith. The inventive genius of the father has given place to the more energetic and progressive methods of the son, who since that time has devoted his life and his fortune very largely to the improvement of the manufacturing facilities of the institution, not only keeping up the high standard of excellence, but bringing out new and improved ideas in construction as the demand required.

Captain Smith is essentially a self-made man, and he is proud to be thus known. The fact that he was the son of a rich man has never in the slightest degree been a detriment to his ambition or to his success as a business man. Since he became the ruling spirit of the H. B. Smith Machine Company, his energy has been infused into every department of the work. He immediately adopted the most advanced and progressive methods of manufacture, added to his force of experienced inventors and draughtsmen, increased his sales force, established branch stores and agencies, and by the very strength of his vigorous character forced a monumental success out of the enterprise.

Personally Elton A. Smith is a big, bluff man, who greets you with a hearty grasp of the hand that is unmistakably sincere, and you are at once taken into his confidence. Five minutes' contact with him leads you to believe that you have known him half your life. He is the personification of good nature, is loyal to his friends, generous to a fault, extremely hospitable, and from first to last is a man thoroughly worth while. It is with no ordinary degree of pleasure that we have the privilege of presenting the portrait and this brief sketch of Captain Smith.

Silver Plating Without Battery

Dissolve eight silver quarters (money) or silver of equivalent amount in two ounces of nitric acid (strong), and to this add four ounces of common salt dissolved in as little water as possible. A heavy precipitate is silver chloride. Decant the liquid, add more salt solution to see if all the silver has been taken out. Wash the silver chloride precipitate with water and then dissolve it in a solution composed of two ounces potassium cyanide and three ounces sodium hypo-sulphite in six ounces of water. Filter the solution, it necessary and make up to two quarts with pure rain water. Hang the articles to be plated in the solution suspended by a strip of lead or immerse the articles and boil them for ten to twenty minutes, according to the thickness of the plating desired. The articles to be plated must be free from grease, fat and dirt. By this method we get durable and handsome silver plating on watch chains, rings, medals, watches, ornaments and German silver articles.

Larch

"Larch" is used to designate "western larch," or tamarack, which is chiefly produced in western Montana, northern Idaho, and eastern Washington. The term is sometimes applied locally to the noble fir, and to lodgepole pine on the Pacific coast.
THE great demand for information relating to the planning and construction of dairy building has led the Dairy Division of the U. S. Department of Agriculture to start a line of investigation for the purpose of developing the basic principles of such work. In order to make their designs thoroughly practical, these studies were extended to the planning and actual supervision of construction of a number of dairy buildings in different sections of the country.

One of these, thus planned and constructed, is the dairy barn and silo for 20 milch cows, the plans of which are presented herewith.

It is a simple, gable roof barn, 44 feet long by 33...
feet 6 inches wide. The arrangement is the simplest possible, with a broad driveway through the center of the stable and the row of stanchions on either side.

Dry fodder is stored above and a silo of 58 tons capacity is located conveniently at one end. In a small one-story, lean-to addition at the other end is a milk room and a grain room.

The cross section shows the system of roof framing. The lower chords of the scissors truss are used as ceiling joists on which smooth sheathing is nailed, making a sanitary ceiling.

The detail shows a sanitary and humane stall construction with iron-pipe fittings, and chain hanging stanchions. The dimensions are suitable for cows of average size. The stalls are provided with a movable wooden floor. The advantages of this will be appreciated by those who find the uncovered cement too cold for the best comfort of the cows during the northern winters. The wooden platform is kept in place by two iron pins set in the cement floor near the front corners of the stall in such a way that the floor panel is easily removed for cleaning.
Two Good Handicraft Pieces

COMPLETE DETAILED INSTRUCTIONS, WITH WORKING DRAWINGS, SHOWING HOW TO MAKE AN ELECTRIC DROP LIGHT AND A SMALL SIDE TABLE

A VERY simple piece of work is offered this month in the electric table light with art shade. The side table, too, intended to serve as a reading table is of simple construction. These two pieces may be made of either red or white oak. If made of red oak they will look best if finished in some dark finish. If of white oak the wood should be ordered quartersawn. The following stock bill is made out with the pieces specified exact in thickness and width, unless marked S-2-S, surfaced on two sides only; in which case an extra quarter of an inch has been added to the width for squaring up.

For the light stand there will be needed:
- Base, 1 piece, 1\(\frac{1}{4}\) by 8 by 8 inches, S-2-S.
- Top, 1 piece, 1\(\frac{1}{2}\) by 3\(\frac{3}{4}\) by 3\(\frac{3}{4}\) inches, S-2-S.
- Upright, 2 pieces, 5\(\frac{1}{4}\) by 19 inches, S-2-S.
- Upright, 2 pieces, 5\(\frac{1}{4}\) by 2\(\frac{1}{4}\) by 19 inches, S-2-S.

Begin work by squaring up the base and top pieces to the sizes indicated in the drawing. Before laying out the bevels—or at least before cutting them it will be best to make the upright and lay out from its ends the locations on the base and top pieces.

The upright is to be made by planing up the four pieces of 5\(\frac{1}{4}\)-inch stock and gluing them together, using good hot glue and plenty of clamps. After the glue has hardened, square up the ends of the upright and fit it to the base and top, using glue and screws, the bevels having been planed on both base and top. Bore the holes for the wire as indicated on the drawing.

Bog Oak Finish

The following finish will be appropriate for both light stand and table. Apply one coat of bog oak water stain and allow it time to dry, after which sand the raised grain off, using fine sandpaper, No. 00. Apply a second coat of stain but weaken it by the addition of an equal volume of water. This second coat of stain is to produce more marked relief. Sand this lightly and then put on a very thin coat of shellac. Sand this shellac lightly when it has hardened and apply a coat of black paste filler. Clean off the filler according to the directions which will be found on the can, being careful to clean out all corners and crevices. A coat of orange shellac should follow the light sandpapering of the filler when that has had time to harden. On the shellac put two or three coats of some good...
quality rubbing varnish. The first coats should be rubbed with hair cloth or curled hair and the last with pumice stone and crude oil or raw linseed oil. This produces what is known as an egg shell gloss. The effect is dark in general tone, the filled being black and the high lights showing through in shades of yellowish green. It is known as bog oak.

Shades can be purchased ready to fasten to the stand. They may be of wood frame with art glass panels or they may be of metal. A metal shade such as is shown in the photograph is easily made. Secure a piece of 22-gauge sheet copper. Make a paper pattern with an outline of the dimensions shown on the drawing, putting in whatever is desired in the way of a decorative design. With a piece of carbon paper trace this outline and design upon the metal. Two ways may be used to lay on the design. By placing the edge of the second side on that of the first, etc., only one joint will need to be fastened. This method is rather wasteful of material, however. A second way would be to invert the pattern at each placing, separate the sides after they have been traced and make a fastening at each corner. This fastening may be done by soldering, by placing an ornamental strip of copper or brass down the corner, riveting it to the sides at regular intervals, or it may be done by making one of the sides enough larger than the other to admit of having "lugs" which may be concealed, to which the other side may be riveted.

To work out the design, place the metal—before the parts are fastened—upon a board, and with an awl or a nail, punch holes in the background as shown in the drawing and along the outlines of the panel and the decorative figure.

There are various ways of treating the copper, but the easiest way to obtain a satisfactory finish is just to allow the copper to age itself naturally. We give the following solution for coloring copper green, however, for the one who wishes to try something else: 1 ounce sal ammoniac, 3 ounces cream tartar, 6 ounces common salt, 12 ounces hot water, 2 ounces copper nitrate. Sprinkle the solution over the metal and dry it over a hot flame.

How to Make the Small Side Table

For the small side table there will be needed the following pieces:

**Stock Bill for Small Side Table**

- Top, 1 piece, 27 by 37½ inches, S-4-S.
- Legs, 4 pieces, 2½ by 2½ by 30½ inches, S-4-S.
- Side rails, 2 pieces, 3½ by 5 by 31½ inches, S-4-S.
- End rails, 2 pieces, 3½ by 5 by 21½ inches, S-4-S.
- Drawer front, 1 piece, 3½ by 3 by 19 inches, S-4-S.
- Drawer back, 1 piece, 3½ by 3 by 18½ inches, S-2-S, yellow poplar.
- Drawer bottom, 1 piece, 3½ by 17½ by 18½ inches, S-2-S, yellow poplar.
- Drawer sides, 2 pieces, 3½ by 3½ by 17½ inches, S-4-S, yellow poplar.
- Drawer guides, 2 pieces, 1 by 2½ by 21 inches, S-4-S.

The work may be begun by shaping the legs as specified in the drawing. They are to be sloped on the inside surfaces, the face surfaces, only. After this has been done the mortises may be laid out and cut. Use knife and trysquare in doing this, marking the sides of the mortises by means of the marking gauge.

With the mortises in the posts cut, the tenons on the ends of the rails should be laid out and cut. Since these rails are to have their outer faces extend within

The supports for the shade may be made of copper or of iron and black japanned. The wiring is a simple matter. Fixtures suitable can be bought at most any electrical shop.
allow the mortises to be kept farther away from the outer surface of the post and thus lessen the danger of their splitting out when the tenons are inserted. A good size for these tenons would be $\frac{3}{4}$ or $\frac{1}{2}$ inch thick with a $\frac{3}{4}$ or 1 inch shoulder on the top edge.

These parts may be thoroughly scraped and sandpapered and put together, using good hot glue. Put glue on the sides of the tenons and also on the sides of the mortise, using a small brush or a stick to do so. Often, when glue is put on the tenon only, if the tenon fits snugly, the glue will be pushed ahead into the bottom of the mortise, thus making a weak joint. In putting on the cabinet clamps test to ascertain whether or not the rails form square corners. This can be done by taking a stick and measuring the two diagonals. If one diagonal is longer than the other, put on a clamp diagonally or cut a stick and place it diagonally in the frame until both diagonals measure the same.

While the glue on the tenons is drying, the top may be squared to size and the drawer made.

The front of the drawer should be made of oak to match the rest of the table. The back, sides and bottom, however, may be made of some soft wood such as yellow poplar.

Groove the drawer front, the sides, and join the sides to the front by means of the blind dovetail.

The drawing shows the manner of shaping and placing the drawer supports and guides. The supports are to be rabbeted so as to act as guides as well as supports.

There are several ways of fastening the top of the table to the frame. An examination of any of the tables you may have access to will show you how it can be done, should you be uninformed.

**Another Fool Question**

Cohen—Vy don’t you reduce der price of dose all vool suits?
Levy—Vat! Vos you crazy! Vid cotton so high!
How About Terrazzo Floors?

To the Editor: Chicago, Ill.

Who has had practical success in laying terrazzo floors? I have heard that this is a very fine flooring for vestibules, bath rooms, barber shops and such, but that it is very hard to lay so as not to crack. If any of the brothers are experts along this line I would like to hear from them through the paper. What foundation is required for the terrazzo coat; of what is it composed and in what proportions? How should it be laid on and polished for a good durable job? What about the coat and general desirability of this kind of a floor as compared with tile mosaic.

C. E. Paul.

Arrangement for Sliding Door

To the Editor: Floyd, Va.

Being a subscriber of the AMERICAN CARPENTER AND BUILDER, I would like for you to answer a question for me. I would like for you to show a diagram of a sliding door, a detail of the partition studding, and the hanger in place.

H. L. Red.

Answer: The accompanying sketch is a vertical section at head showing door hanger and rail.

Location of Cess Pool

To the Editor: Vail, Iowa.

Would like to know how far a cess pool must be from a well to keep from spoiling the water? Is there any way to make a cement floor waterproof, that is, so it will not become damp from the ground underneath?

H. C. Gronemeyer.

Answer: Good engineering practice has decided that a cess pool should not be located within 300 feet of any well or water supply, and that a cess pool which is built with a sand or gravel bottom so that liquids filter directly into the earth, should not be located within 300 feet of any well or water supply. We should not consider the location of the well which you describe in your letter to be safe, and would advise analysis of the water from same before using for household purposes. If the soil is sandy or loose, a common scheme, which is used with success in many cases, is to turn a considerable amount of ordinary kerosene into the cess pool and note within a few days whether any indications of kerosene are noticed on the surface of the water from the well after it has stood for a short time in an open glass, or pail. Do not think this method an absolute test for the purity of the water, as other conditions may be present which will prevent the carrying of the coal oil, whereas impurities and disease germs might be carried in harmful quantities.
buttering the bricks; the idea is to get a thin mortar-joint.

It is not necessary to butter the bricks to get a thin joint. If the mortar is fairly rich and the brick hard, or, if soft bricks are kept fairly damp, the bricks can be bedded down to a tight joint; and then there is no danger of the water lodging between the bricks as there is with buttered joints. There are various kinds of wall ties used. I have used narrow strips of galvanized iron, and nailed one end to the sheathing; also short lengths of hoop iron, and also galvanized wire, one end bent to lie in the mortar joint and the other end bent so it will not pull over a nail head. No doubt some of the advertisers in metal and wire would be glad to furnish information about wall ties.

W. H. Hamblett.

High Value Put on "Cyclo"

To the Editor:
Carrollton, O.

I am sending you a picture of a house that I was foreman on. Three of us got it ready for the plasterer in nine days. We drive our own slate and build our own stairs instead of having to call in regular slaters and stair builders.

I think the Radford "Cyclopedia of Construction" is the most complete work I ever saw. I would not take $100 for it if I could not get another one.

Riley Lucas.

Laying Shingles

To the Editor:
Ft. Supton, Colo.

I noticed an article in your publication several months ago concerning the best way to lay shingles and whether or not to leave a small space between them.

A while ago I helped to roof a large house and the shingles on hand were very dry, having been exposed to a drying wind and hot sun, and for three months at least there had been no rainfall. Fearing they would buckle when it rained if put on in this condition we put each bundle in a half barrel of water for several minutes and they absorbed the water fast. This only partially expanded them, but we laid them up tight, and a week or so later we had a heavy fall of snow, and nearly all of the shingles were buckled. Some of the wide ones were raised 3 inches in the middle and that roof surely looked bad. In another week's time they had not only all receded to their proper places but had begun to show cracks between them. These were cedar shingles and I believe this expansion was due to the great extremes of dryness and moisture. The next rain they did not buckle so much, probably because there was not as much moisture.

Now they are covered with a preservative and are again apart. In this vicinity it is customary to leave a space of from 3/4 to 1/4 of an inch between them according to width to allow for expansion.

Before coming to Colorado I resided in Ohio where we always laid them up close together, but I never noticed a buckled roof.

Drawing my conclusions in this matter I will say that from my experience the question of whether or not to leave a space between them and if so, how much, should be decided entirely by the degree of dryness which the shingles have obtained.

Thomas Brumenschchenkel.

Writing Desk for Summer Cottage

To the Editor:
Muskogee, Okla.

Your Summer Cottage article last month brings to mind a handy little desk that I built last year in our cottage. The accompanying sketch shows the arrangement. It is a great convenience and can be put in easily especially where the wall is unceiled. A 2 by 4 nailed in between the studding forms the foundation and an ordinary moulding board hinged to it is held in the proper position by a small chain. Racks for paper, envelopes, etc., can be easily arranged.

W. B. Ashley.

Miter for Circular Bays

To the Editor:
Mendocino, Cal.

Here is a little problem that bothers me; the only way I can do it is by the try-and-fit process. It is this: take a circular bay window of 7 or 8 feet radius and starting at A with a crown mould, and as the radius mould has been gotten out on a shaper, what figures on the square should I use to get the miter cut at B on the circular crown mould?

P. Maxwell.

Answer: There is no way, so far as we know, of readily getting at the miter with the steel square without first laying off the angle full size and finding the bisecting line between the two pieces as shown, which we have added to Mr. Max-
well’s drawing. Then the steel square can be applied to these angles, noting the bisecting figures; then place the square on the moulds at like figures.

A. W. Woods.

**House Moving Trucks**

To the Editor:

University Place, Neb.

In the February number of The American Carpenter and Builder, Mr. W. W. Glew wishes some points on house use our carrying timbers in a V-shape using only three trucks which will carry the house by cross timbering without breaking the plastering.

I have moved houses for a good many years on these trucks, from ½ mile to 18 miles, pulling direct and making frequently in a day, 5 and 6 miles. These steel wheels can be had from the Electric Wheel Company, Quincy, Ill., and they will make to your order any sort of wheel wanted.

Any further questions will be answered cheerfully.

A. H. Thompson.

[Diagram of House Moving Trucks]

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moving trucks. I herewith send a sketch of trucks used in this part of the country.

Fig. 1 shows the construction of the front truck of four wheels; front wheels cut under same as a platform spring wagon and can be turned in a short space.

Fig. 2 shows construction of back or rear truck consisting of two wheels in a wood frame but would be better to use steel for the frames.

Fig. 3 shows construction of frames for rear trucks. We
To Exchange Ideas on Barn Framing

To the Editor: Napoleon, Ohio.

Enclosed find photo of barn I have built this spring. It is 40 feet wide and 65 feet long with 22½-foot posts; sills 4 by 9; post beams and wall plates 9 by 9; purline plates and posts 8 by 8; two rows of brace girts around barn 7 by 7; nailing girts 4 by 5; storm braces 2 by 8, doubled and spiked on inside of girts; purline braces 4 by 4 with 4-foot run on post and 6-foot run on plate. Every stick is mortised and pinned, except the 3-foot run braces.

The barn is to have a straight roof, 11 inches rise per foot run. Rafters are 2 by 6, set 18 inches on centers; roof strips are 1½ by 3 inches laid 7½ inches on centers. The roof is to be covered with 9 by 18 inch quarry slate.

I am sending the photo just to exchange ideas with the brother carpenters and would like to see more of them do the same.

Eow. M. Burgel.

To Proportion Parts of a Gambrel Roof

To the Editor: Lake Odessa, Mich.

As I have two 40 by 60 foot barns to build, would like to know if there is any general rule for laying out a gambrel roof. I have framed one roof first pitch, 12 inch run, 18 inch rise; second pitch, 7 inch run, 12 inch rise; but it looks rather flat and leaves the center span rather too wide. Please advise through your valuable paper what you think would be a good proportion for a gambrel roof.

H. S. Knapp.

Answer: The accompanying drawing shows a very handy method for proportioning the two parts of a gambrel roof so that the general effect will be good. That part of the figure to the right of the center line shows a roof design according to this principle while the part of the drawing to the left shows the roof described in your letter. It has been found that any gambrel roof drawn within a half circle makes a good appearance. The base line at the eaves and joining ridge of the two pitches should touch the circle, and the ridge should be also on the circumference at the 90 degree mark.

A Mason Talks on Chimney Building

To the Editor: Greencastle, Pa.

I have often been amazed as I look upon modern homes and their architectural designs, especially in regard to the chimneys. How often have I been called in to remedy or devise some way by which the owner or occupant of the home might receive the comforts due him. I have been called to see homes beautifully and artistically designed, but bleak and cold as a sepulchre, due to the fact that the most essential feature had been neglected. The chimney is put off to the most insignificant place possible, the more obscure the better, instead of first building the chimney and then the home around it!

And right here let me say that much depends on the mason, also on the contractor, for he must furnish the proper material. So many contractors employ the cheapest as well as the most inexperienced man to do the work, instead of putting on the most careful and painstaking mechanic possible. We often hear people say, "I am surprised to hear that such and such a house has taken fire from a defective flue, for such and such a contractor built it." Too often the contractor is a carpenter and has not the experienced, practical knowledge so essential to good chimney construction. After having been called in to examine and test for defective and leaky flues, I am amazed that so few buildings burn!

I was called in one day to inspect a fireplace chimney just completed. It looked like a sieve, the sunlight looking in at almost every vertical joint; yet was told by the owner that the insurance agent accepted the building at a low rate. I have often wondered why fire insurance companies do not insist on having all chimney flues in buildings thoroughly inspected and tested before taking the risk on any building. Would it not be a wiser plan for them to employ at their own expense some competent man to inspect and test all chimneys at a salary of say $5,000 a year and save a $100,000 loss in unsuccessful chimney construction?

There are so many things to be considered; the first is the amount of work expected of the chimney, capacity, air currents and position on the building, as well as surrounding buildings or obstructions. No chimney should have a smaller opening than 9 by 9 inches, or 81 square inches. The area should not be decreased as we advance toward the upper or outer air, but rather increased, for as we advance from the fire the gases cool and move more slowly and heavily. No wood should come nearer than 2 inches of the flue or chimney; not even the floors. They should be plastered and the flooring fitted to that.

In building a chimney I do not allow any plastering (or pargetting) on the inside, as this is a fruitful source of trouble. The gases loosen the mortar from the bricks, often taking with them both horizontal and vertical joints, causing leaky flues or chimneys. I invariably require all joints filled flush, full, and the inside kept as clean of mortar as possible. This is one of the secrets of successful chimney construction.

Then again, chimneys are often built for a specific purpose. After a while the building as well as ownership changes; the chimney is then often required to do a work quite different from that for which it was originally intended, and sometimes attended with disastrous results. I was called in to see a flue constructed in a frame building. It was builded against the weather boarding, pargetted; intended for stoves on the upper floors. The furnaces men persuaded the owner to allow them to change to it for their furnace pipe. They dug a
hole in the foundation wall to make connection, resulting in a badly burned building almost as soon as completed. These are only a few of the troubles I have met with in my experience; am meeting new ones almost every day.

In some localities there is an inclination to build flues too small—4 by 9 and 4 by 12 inches—and expect them to do the work of a 9 by 12 or 9 by 14 inch flue. A safe guide is to have one-fifth the area of grate surface equal the area of the flue, but never less than 9 by 9 inches, and I have often seen these sooted shut so that they became a menace to safety.

A. J. LOHR.

A Small Bridge

To the Editor: Fossum, Minn.

Piles or posts "a a" should be long enough to drive solid, and use three, four or five for each side, according to width of bridge. Four is the usual number, unless bridge is very high, when five may become necessary, because ends have to be planked up or backed by other materials, and poles and brush soon rot. After piles are set, level off and cut to height; then place the 6 by 8 inch sills, "b" (or whatever size is used), on top of piles, fasten with 3/8 or 3/4 drive bolts, one in each post. Frame stringers, "d," and truss pieces, "e e," and bore holes for rods, "g g." The size of "d" depends on span of bridge; "e e" are usually 6 by 6 inches, cut about like rafters. I think half pitch is as good as any. The carrying lintel, "c," is 6 by 8 inches or heavier and is hung underneath by rods, "g g," which are usually 1-inch for small bridges over creeks. Rods may be made with solid square heads or threaded both ends, using nuts for heads. They are bored through centers of braces, "e e," at upper ends, onto which is fitted a steel plate, usually made of old plowshares, etc. (in country shops). At the bottom, the rods "g g" run, one outside, the other inside of stringer "d" with a heavy iron yoke set cornerwise. If the beams, "d," are 6 by 10, then the joist should be 10-inch.

I would improve upon bridge building one way, that is, most bridges here are a trifle hollow, holding the water longer, even though planks are laid apart somewhat. I think that bridges should be crowned along center of driveway, so that water would shed to both sides. How best to do this I am not sure, but at ends of bridge, the two or three middle piles could be cut a little longer than the outside ones. In center of bridge it may be more difficult, because by laying a strip on top of beam, would cause it to rot sooner, unless beam was covered with galvanized iron to keep the water out. Side railing can be put on, if desired.

A. O. STIEN.

Some Questions

To the Editor: Stuart, Ia.

Here are a few questions I would like to have answered through the correspondence department.

What is the rule to govern the height of a door knob from the floor? Also, height of bottom hinge and distance from the top of door of top hinge? What is the modern rule governing the width of base in a room? What is the best method of determining the width and depth in soil, of wall and pier footings; height and size of posts, and size of girders?

W. T. MARSHALL.

Something Different

To the Editor: Kalispell, Mont.

Will you please give me a chance in your valuable paper. I have taken it since its first year I believe, but have never had the courage to call on you before.

I enclose you a roof plan that I think is doubtful. In part I do not think it can be framed in a mechanical manner.

Wm. CARVER.

Answer: You are right, and to call such a roof as this "doubtful," is certainly expressing it very mildly! This is one of those abortive attempts at designing where "something different" is wanted. The result is altogether bad from point of

Wants to Know about Sun Dials

To the Editor: Syracuse, N. Y.

Will you publish in the AMERICAN CARPENTER AND BUILDER a drawing or diagram of a sun dial? How should it be placed?

HOWARD T. YATES.
Scaffolding for Silo

To the Editor: Pingree Grove, Ill.

As silo time is coming I am sending you a sketch of silo scaffolding for stave silo with bill of material for same. This is the lightest and strongest of any that I have ever used. It is made of 2 by 4 posts with 1 by 6 inch braces and 2 by 10's, 14 feet long for run planks. The 1 by 6's are nailed to the posts with 10d nails, three in each end, leaving the heads projecting a little so that they may be more easily drawn when taking down the scaffolding. Notice that one span of the braces goes inside or next to silo and one outside; while all the boards for plank go inside; also that one board goes under the other and the brace under that. This gives 8 nails to hold up the plank. The posts should be set 34 inches from the outside of silo which will give plenty of working room. Twenty-foot stud-ding may seem a little long for posts but often on account of unevenness of the ground, they will be found none too long. The posts should rest on solid bearing, because if one settles it will pull the scaffold out of plumb. Drive a stake on center from which to strike radius and use some of the timbers for the upper braces to hold the scaffold in place till the first round or lower section is up; then the scaffold will hold itself. The lower braces are 16 feet and those about 14 feet. Measure up 10 feet from the top of the foundation for the cross pieces so as to keep the run boards level. I used this form of scaffold last year for 28 silos, using the same material for all of them.

Sheldon Logan.

Wants a Screen Wire Stretcher

To the Editor: Halifax, Nova Scotia.

Have just received my journal for May, and notice on the first page of interesting subjects, "Beware of the Flies." The papers here are calling the public's attention to the matter by printing the following remark in several of their columns: "Swat the Fly;" "Screen Every Door and Window in the House." Well I have had quite a few doors and window frames to screen of late and would like to know if some reader will give an idea and means of stretching the screen wire over the frame while tacking or putting strips into the groove for that purpose. I think it will be of great value to many, not only to those concerned in the building and wood-working trades alone, but to every amateur and householder that comes across it.

A. E. Fassett.

An Odd Roof Problem

To the Editor: Whiting, Iowa.

Enclosed you will find the plan of a house that we are remodeling at this place and for which I would like to have you plan a hip roof for me. I have been taking the American Carpenter and Builder for the past three years and the Cement World from the first issue. I have found them a great help to me. I cannot begin to tell on these little sheets of paper but I can tell you this: that I will continue to take them as long as I can scrape up the price. Your more than satisfied subscriber.

H. W. POLLY.

Answer: The roof in question is not so difficult as it is odd in shape, as will be seen by the accompanying plan. No builder with an artistic sense would plan a new building this shape to go on the regulation city lot; certainly not where space is unlimited. In remodeling jobs "freaks" are often encountered and have to be handled the best one can. If framed with equal pitch and without decks, there would be two square peaks resembling somewhat the Bactrian camel's humps, and we might add, with appearance about as graceful. The best way to handle this problem is to cut off these "humps" on a level with the intersecting ridge between them, thus forming decks as shown in the plan. The deck covering should lap over the roof, showing the same as the saddle board of the connecting ridge. This will tend to conceal the decks and thereby in a measure, tend to tone down the oddity of the shape.

Editor.
Wants Method for Brightening up Marble

To the Editor: Corpus Christi, Tex.

Will you kindly publish at least two good, reliable formulae for cleaning and re-polishing marble (tomb stones and monuments)? Do any of the brothers know how this is done?

I am highly pleased with our magazine. There's nothing like it. I have all the numbers from first to last. I refer to them often. Success to you.

W. D. McBride.

†

It Wouldn't Do in Kansas

To the Editor: Agra, Kan.

M. L. Parsons, Jerome, Idaho, asks in May number whether it is good policy in framing outside door openings where the finish and treatment of the finish are surprisingly different. The care and technique of the expert finisher seem to be lacking. This pine was not only finished natural but was often finished with graining and varnish to that unsightly yellow color.

That might do in Idaho where there is no wind, and less rain; but here in Kansas, where most every rain is accompanied with a high wind, it would take a gasolene engine and a rotary pump to keep the occupants from drowning after the threshold had become cut out a little from use!

As I am a charter member to the American Carpenter and Builder, and have not registered a kick as yet, I thought it about my turn; but I am going to kick the editor and not a brother "Chip"! It is in regard to the details of a china closet last month asked for by Bro. A. Stephens, Cornings, Iowa. The sides and back should not be lathed and plastered. The sides should be paneled and the back should have paneled doors so as to have access from either room. I have built a good many of that style and have not had a complaint.

W. H. Wilson.

†

As a Westerner Sees It

To the Editor: State College, Pa.

Perhaps when a woodworker moves from one part of the country to another the first difference that strikes him is the difference in the workroom of the houses from which he has moved and the houses to which he moves—not only differences in the kind and quality of wood used in the average, middle-class house, but the differences in the design of trim and moldings and the manner in which they are finished.

For instance, in similar houses of similar-sized towns, one located in Pennsylvania and the other in Oklahoma, the kind and treatment of the finish are surprisingly different.

In the middle west yellow pine is the common finish lumber, though not excluding altogether birch, oak, cypress and white pine. This pine was not only finished natural but was often stained to give various effects, with wood dyes or oil stains. In this part of the east, on the other hand, with a possibility of two or three notable exceptions all interior trim is ash, and what isn't ash is grained to imitate it. Now ash can be finished by an expert finisher to be a thing of beauty and not an eyesore. It can be given any one of a dozen different tones that appeal to the artistic eye. But when it is invariably finished with graining and varnish to that unsightly yellow color it becomes an eyesore indeed.

Fir doors and all woodwork that is not ash are mopped over with burnt umber to approximately the same color and painted with a coat of graining varnish, and there you are. The care and technique of the expert finisher seem to be lacking and the artistic possibilities of brown ash totally ignored.

Then also, there is a difference in form as well as wood. In the west a square-edge door or window casing is almost unknown. In this section of the east anything other than square-edged is almost unknown. In the west baseblocks are universal and also regular head casing with cap and mould is always used. Here the casing runs from the floor to a square head casing. No base blocks, no mould, no cap. The patterns of base are very similar in both places. These same differences in form extend through all classes of houses, from the cheapest to the best. In the west, round-edge and o. g. stops predominate. In the east, neither is common, square-edged and corner-beaded being the most common. No observable difference between the windows of the two sections.

In the west, the cross-panel doors are the most common; in the east, 4-panel doors are nearly universal. The front doors in this part of the country (Pennsylvania) are much larger than corresponding doors in the west, 3 foot 6 inch by 7 foot 2 inch door being very common, while our western neighbors rarely have anything larger than a 3 by 7 foot door.

Taken as a whole, from the dozens of houses under my immediate notice in both western and eastern towns, the eastern householders seem to be much more tolerant of defects in the material and workmanship, it being nothing at all uncommon to see one or two balusters in a stairs with glaring defects, or a newel with great unsightly nail holes carelessly filled with putty so as to be conspicuous instead of the reverse.

The trouble is that people do not seem as a whole to appreciate the possibilities of ash as an artistic hardwood, and then they are careless or ignorant of the fact that every defect in the raw wood is only accentuated by careless treatment from the finisher. Much of this hardwood finish is not even machine sanded, let alone receiving the careful hand finishing so essential to perfect work.

Homer Cloukey.

†

Repairing Cracked Stucco

To the Editor: Mangansville, Md.

I built a stucco house this summer which was somewhat a new piece of work to me as well as to the plasterer; and the consequence was we have a wall full of cracks. It is a frame building sheathed, furred with 1-inch lath every 9 inches, then covered with expanded metal lath. First coat plaster, sand 3 parts, lime 2 2/3 parts, cement 3 1/4 parts with a good quantity of hair. Second coat, 1 part ground sand and 1 part cement. The sides to the sun are cracked badly. The other sides scarcely any. Now I would like to know if I can give this house another coat of a cement mixture that will close the cracks and that will give me a uniform color.

Would a cement wash suffice, or should it be a scum coat of cement plaster? Please state how mixed and how colored. I want nearly white with the stone (blue) tint in it.

H. B. Weber.

Answer: From the fact that the trouble developed almost exclusively on the sunny sides of the building it is evident that either greenness of the lumper or else improper, hasty drying of the cement plaster—or perhaps both—may be assigned as the cause. A cement plaster work should be protected with wet burlap for at least a week after being put on, so that it may set and season uniformly. The trouble may be partly due also to the quality of mixture in the plaster. We believe more cement and less lime should have been used.

We hardly know how to advise you with any great degree of reliability as to a method of repairing such a wall. It is one of the hardest propositions which the plasterer has to face. We suggest the following as being as good as any of which we know:

Clean wall thoroughly, removing any loose material, give wash coat of neat cement and then a coat of 1 cement to 2 clean sand, with a little lime paste mixed with same. Brush over surface thoroughly after troweling to remove tension in cement. Better wait until near summer to do this work so that the house may have gone back to its original condition again after the effects of winter and spring weather.

The matter of coloring this wall to match other parts of the structure will be difficult. If color of wall now up is lighter than the cement mortar would be, it may be necessary to paint wall, after dried thoroughly, with a special cement paint, or tint it with some of the prepared tints which are used for such purposes. The whole job might be given a wash coat afterwards to even up the color.
Progressive Ideas in Mantels and Fireplaces

A very attractive catalogue has recently been issued by Moormann & Otten of Cincinnati, in which is shown a very artistic collection of new ideas in mantels and fireplaces. A special unique feature of this catalogue is a three-colored sheet illustrating photographic reproductions of the exact grain and colors of six different woods and finishes. This is certainly a work of art, and enables the prospective buyer to make an intelligent selection of mantels in the different woods and finishes. While this firm is principally in the wood mantel business, having started manufacturing twenty years ago, they are also extensive dealers in tile mantels, and do tile work of all kinds. Their catalogue, containing almost one hundred illustrations, can be had free, if you contemplate building, or to contractors and builders by writing direct to the firm.

A Good Thing to Know

The editor occasionally follows his own advice—and reads the advertising pages. In looking over those in the present number he ran onto something good—a good thing to know; how to test a hardwood floor for smoothness. Look on page 3.

Stop-Look-Listen

A little book is being sent out by the Willis Manufacturing Company of Galesburg, Ill., that every reader of the American Carpenter and Builder should own. It costs nothing and is of interest to you all—every one of you.

It treats of ventilators and skylights, in detail, showing all the different sizes and styles of each. Mr. Willis has been making ventilators and skylights for over twenty years, and each succeeding year has added to his knowledge. This book shows a ventilator with a skylight in the top, and by installing this two birds are killed with one stone—so to speak.

Send for this little book today. It cost you not a penny, and will benefit you very much. Address Willis Manufacturing Company, Galesburg, Ill., and it will be sent by return mail.

Ventilation Control

For Show Windows

Found Only in the Improved

No. 30 Ventilation & Drainage Sash

of the Kawneer System

of Store Fronts

A side from the question of Architectural design, material used, method of grip on glass and durability, the one point of supreme importance in store front construction is the principle of ventilation and drainage and its efficiency.

To have an all-metal air-tight sash—one that consumes less than 3° of your show window space—only an inch of the glass area and which at will can be made to ventilate and drain successfully is something never before produced.

The introduction of our new sash which by means of a simple slide regulates the ventilation of the show window, marks the greatest advancement in store front and show window construction since the origin of the Kawneer System. By simply pushing a slide, a full and effective current of air is admitted—creating a perfect circulation next to inner surface of glass—thus eliminating all possibility of frost or sweat accumulating on the windows during sudden changes in temperature or under extreme climatic conditions.

Corner and division bars are small and unobstructive yet strong and durable. Jam, sill, transom bar and bulkhead mouldings can be supplied in a variety of standard or special shapes—thereby offering unlimited opportunity for adapting same to your own originality of design. Copper, brass, aluminum and bronze metals of the highest quality are employed in the manufacture of all Kawneer products—thus ensuring a highly attractive, serviceable and satisfactory store front.

Descriptive booklet No. 2 fully illustrates and explains. Ask for it to-day.
Hundreds of people were undoubtedly impressed a year ago by the mere smartness of the Hupmobile—its beauty, its generous size, the obvious strength of its construction, the clean-cut appearance of the power plant, the very evident use of the best materials.

It took very little motor judgment or experience to see that $750 had never bought such value before.

But in the year that has elapsed since the Hupmobile made its bow, this first judgment has been supplemented and confirmed by a series of performances which are remarkable.

The Hupmobile, in contests of speed and endurance, has repeatedly shown itself to be the peer of cars of twice its power and even four and five times its price.

Early in the year it won cups and perfect scores, for instance, in the Baltimore and Detroit reliability and endurance runs.

It carried off the palm in the Buffalo fuel economy contest.

At San Francisco it made the fastest time and a perfect score in the 200-mile annual mud plug.

In its class it won the six-hour race at Brighton Beach, and on the Los Angeles motordrome turned the mile in 58 seconds.

Crossing the desert in the Phoenix-Los Angeles race, the Hupmobile took its place among the larger competing cars.

It climbed to 9,000-foot elevations in the Colorado mountains; topped the peaks of the Adirondacks; it was the first car ever to negotiate Georgia’s famous Stone Mountain, under its own power, and the second to ascend Mount Greylock, Massachusetts.

In the dead of winter—through the season’s deepest snows and severest cold—three Hupmobiles were driven from Detroit to New York; while in the West a tour, under conditions equally severe, was made for 800 miles from North Dakota into Canada.

The Hupmobile is today without an equal in its class, as it was the day the first Hupmobile left the factory at Detroit.

It is prized alike by the man who owns but one car—the Hupmobile—and the man whose private garage houses the costliest types of American and foreign manufacture.

It has made possible the joys of motoring to hundreds who, of necessity, awaited the coming of such a car as the Hupmobile.

Your ideals of motor car construction may be high, but you will find them realized in the Hupmobile.

If you have the engineer’s love for fine machinery—the expert’s admiration for skilful workmanship—you will take your hat off to the Hupmobile.

It remains the most remarkable car the industry has produced. The Hupmobile is relied upon exclusively by many busy men to transport them from place to place in the least time and with the least trouble—a use to which it is particularly adapted day in and day out because of its simplicity and rugged build.
For Warmer and Dryer Building

We have often had occasion to remark in these columns that the art of building is showing great improvements along all lines. Not only have the owners come to realize, very generally, that the very best of materials and construction is the cheapest in the long run, but the contractors and builders themselves, in the interests of their clients, are insisting on using the best materials—with which they know they can produce a thoroughly satisfactory and lasting piece of work. One of the latest innovations and improvements is along the line of insulating sheathing, or building paper. All practical builders know that a liberal use of insulating sheathing goes further toward real comfort and satisfaction in a building than perhaps any other one factor, certainly of the same cost. At a very small expense good quality building paper can be put on underneath all siding, whether it is shingles, clapboards or cement plaster, between all floors and very often as a part of the roof construction; thus making the building warm, dry and clean, the extra expense being made up many times in the decreased coal bills and increased comfort and satisfaction.

Along this line we take pleasure in calling the attention of the readers of the American Carpenter and Builder to Oiled Lion Brand insulated sheathing. This is an oiled building paper which has been perfected, after a long course of experiment and study, by the Rosenberg Paper Company of Chicago, and is now being put out by them to the contractors and builders direct. The Rosenberg Paper Company want every carpenter and building contractor, who desires to build up a reputation for satisfactory and thorough work, to examine this new and improved, this oiled building paper. Send direct to them at once for free samples.

The claim is made for Oiled Lion Brand that it is absolutely water-tight, dust and vermin proof. Shingles will not rot, nor tin rust when laid over this building paper, and by its use houses can be made dryer, warmer and cleaner than by any other means, yet at no greater cost than for the ordinary low grade papers now in use.

Elaborate, practical tests have been made of this oiled building paper, proving conclusively that it is moisture-proof and that any wood laid over it will not rot. The oil which is incorporated in this building paper is entirely free from odor and the claim is made for it that it will never evaporate even under the most trying conditions of exposure.

All readers of the American Carpenter and Builder will do well to write at once to the Rosenberg Paper Company, Chicago, III., asking for free samples of Oiled Lion Brand insulated sheathing, and for full particulars concerning prices, shipping, etc.

New York and Chicago Cement Shows Announced

Official announcement has just been received from the Cement Products Exhibition Company, 155 Adams street, Chicago, regarding the New York and Chicago cement shows. The eastern event will be held in the Madison Square Garden, New York City, December 14-20, 1910, and the Chicago show will be held as usual, in the Coliseum, Chicago. The dates of the latter event will be from February 17-23, 1911, inclusive. All contracts of importance in connection with the shows have already been placed, and the intervening months will be spent in perfecting the details.

The result of the ballot taken to ascertain the feeling in regard to the New York show is also announced. This enterprise is unanimously endorsed and somewhat more than 80 per cent of the exhibitors at the recent Chicago show have signified their intention of exhibiting at New York. The interest manifested by eastern manufacturers, who have not hitherto exhibited, is already apparent, the number of inquiries for space at the New York show, being such as to hasten completion of the "general prospectus" of the New York and Chicago cement shows, which is at present in preparation. This prospectus will contain full information regarding both events, together with diagrams showing space available at the Madison Square Garden and at the Coliseum, and the rules and regulations by which exhibitors will be governed, and application forms.

Cheaper and Better Sand-Screening

There is possibly more time lost handling by the old method the sand which goes into the construction of an ordinary house than in anything else. The Cement Tile Machinery Company of Waterloo, Iowa, are manufacturing a sand-screen device that will affect a saving of its own cost in time alone in a very little while. In the first place, it screens the sand thoroughly and with great rapidity; it is tireless and is always ready to do its work. It makes no difference whether the sand is damp or wet, the result is the same. A machine of this sort is greatly needed and this machine fills a want that has been long felt. A card addressed to the Cement Tile Machinery Company, Waterloo, Iowa, will bring you their illustrated circular.

Diamond Velvet Castors — Revolutionize Castor Industry and Open Field for Tremendous Profits to Agents

Every reader of the American Carpenter and Builder knows what an abomination the ordinary castor is. It sticks in the socket, skids instead of rolls, drops out when furniture is lifted, scratches and mars expensive hardwood floors, rugs, carpets, etc. It squeaks and groans when moved and is, generally speaking, a household nuisance. It is as common in expensive furniture as in the cheapest, because until Diamond Velvet castors were invented there was no good castors made. Diamond Velvet castors have completely changed the situation. The rollers are made of vulcanized raw cotton, and cannot mar the finest floors. Two thousand pounds can be rolled across a highly polished floor without leaving a mark. They will not skid, cannot drop out; they roll noiselessly, will not squeak, need no oiling. The heaviest furniture will move with a slight push when equipped with Diamond Velvet castors. Furniture manufacturers are adopting them in place of the old kind. Wherever they are known and sold, people buy eagerly. Many re-caster their entire house and find the new castors were an unmitigated success. Furniture manufacturers are losing a great deal of money by not using this castor. There is a tremendous demand for castors at present, and the market is a wide open one. The castor industry is practically open to new makers, and the profits are substantial.
Universal Intercommunication

Universal service as typified by the Bell System today is the result of thirty years of unceasing endeavor.

The equipment for this service includes ten million miles of wire, more than twenty-five thousand miles of underground conduit, buildings enough to house a city of people, thousands of switchboards with millions of tiny electric lights and billions of miles of fine copper threads—over five million telephones in daily use.

This great development has been made possible only by sound financing and proper provision for maintenance and reconstruction; while fair profits and substantial security have won the confidence of conservative investors. Especially when considered with the fact that the value of Bell properties exceeds the outstanding capital.

The Bell System was so wisely planned and soundly constructed that it has kept pace with the constantly increasing demands of a Nation.

Twenty million connections made daily show the usefulness of the Bell Service

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES
One Policy One System Universal Service
Bishopric Wall Board and Sheathing

Just a little over a century ago, the combination of laths and mortar became one of the accepted essentials of building. That revolution in structural methods early in the eighteenth century was no more notable than the one wrought by Bishopric wall board. This twentieth century invention does away with all the dust, dirt, dampness, disintegration and other faults of plaster walls and ceilings.

Bishopric wall board is fast winning recognition among builders and contractors as a substitute for lath and plaster. Today it is in use in buildings of all classes from the Atlantic to the Pacific coast.

It is made of the kiln-dried dressed laths, imbedded in hot asphalt mastic (99 per cent pure) at a pressure of 500 pounds to the square inch. It is surfaced with heavy sized cardboard and cut at the factory into sheets (laths and asphalt mastic combined) 4 by 4 feet in size and 3/8 inch thick—all of uniform size and thickness. These sheets are ready to be nailed at once to studding—also ready for immediate decoration.

Asphalt mastic, referred to above, is toughened asphalt. To produce it, amorphous carbonate of lime, a waste product of the best sugar refinery, is combined with pure asphalt, producing a homogeneous mixture, known as asphalt mastic.

Asphalt mastic is proof against moisture, heat, cold, wind or air, sound, vermin, acid and fire. The many advantages which arise must be apparent, therefore, when asphalt mastic is used with laths in the construction of Bishopric wall board and sheathing, also when used with wooden felt in construction of Bishopric ready roofing.

The laths which are inseparably imbedded in asphalt mastic make the best kind of a binder. With the laths thus imbedded, there is no danger of the wall board warping or getting twisted out of shape. Furthermore, the laths make it possible to nail the wall board securely to the studding.

Asphalt mastic is unaffected by climatic conditions or changes in the weather. Its advantage, therefore, over lime plaster for wall and ceiling purposes at once becomes apparent.

You don't have to wait for "good building weather" when you use Bishopric wall board as a substitute for lath and plaster. It is delivered to you dry, is applied dry and keeps dry for all time. It is positively proof against moisture. Therefore, it will not swell, shrink, warp, crack, flake or blister. You can apply it equally well in cold or hot, wet or dry weather, therefore, it does away with all bad weather delays in building.

Because Bishopric wall board does not absorb moisture, it stands to reason it will not swell. And because it won't swell it won't shrink. That's why loose and crumbling plaster, and the unsightly, ragged, ever-lengthening and widening cracks common in plaster walls and ceilings are not to be found in houses finished with it. Asphalt mastic is not only proof against moisture—it is a non-conductor of heat and cold. It is also proof against air, sound and vermin. Insect life in the walls is impossible. No bugs can either enter or live between its walls. Rats and mice sharpen their teeth on common plaster, but Bishopric wall board homes escape these nuisances. The reason is obvious. Chewing through the asphalt mastic is impossible, as the tendency of the composition is to gum the teeth of the gnawing pests, and they quit the job for something easier.

Bishopric wall board is suitable for costly dwellings—modest cottages—bungalows—flats—pleasure and health resort buildings—office and factory buildings—new partitions in old buildings, finishing attics, back porches, laundries, cellar ceilings or any other building involving the health and comfort of man.

Bishopric Sheathing

Bishopric sheathing is made of the very same materials used in Bishopric wall board. It is made in precisely the same way, the only difference being in the finish, which is not necessarily so smooth as that of bishopric wall board, and therefore costs less. So far as practical service is concerned, it is equal to bishopric wall board, there being but a slight difference in appearance.

Bishopric sheathing is cheaper than lumber. Being free from knot holes, cracks and rough spots, it makes a more
Enormous Direct Demand on Dealers from Seventy-five Million Readers in this Biggest Irwin Advertising Campaign of All
—If You Are Ready To Supply Buyers in Your Locality

AGAIN we come to you, to tell you of our continued largest and most costly Advertising Campaigns ever carried on to create a general public demand for a wood-working tool of any kind.

You, the Irwin Auger Bit Dealer, have had profitable reasons, during the past several seasons, for welcoming these announcements.

Irwin Auger Bit Advertising Campaigns continue, year after year, to create "The Irwin Habit" and send big trade to Irwin Dealers.

We realize that Dealers everywhere in this country have co-operated with us in carrying representative stocks of the Irwin Auger Bits—have anticipated the demand—have forwarded their orders in advance, appreciating our great advertising co-operative plan of referring individual inquiries and the written requests of thousands and thousands of buyers to them.

You can now again confidently order representative stocks of Irwin Bits based upon the certain results of our continued Advertising Campaigns.

Every dealer who is prepared, or who will now quickly prepare himself to meet the demand, can count upon our co-operation direct with him between our factory and the public at large, in closing sales of Irwin Auger Bits, the average volume of which has been larger during the past two years than that of any other bits made today.

Read Over this Large List of Magazines and Newspapers Carrying the Irwin Auger Bit Advertising —Read by Over Seventy-five Million Readers Every Month

Saturday Evening Post Technical World
Uncle Remus Home Magazine Collier’s Weekly

ILLUSTRATED SUNDAY MAGAZINES
(Published in Fifteen Cities)
Pittsburg Gazette Times Detroit News Tribune Columbus Dispatch Providence Times Louisville Courier-Journal Cleveland Leader Milwaukee Sentinel
Cincinnati Commercial Tribune New Orleans Picayune

SEVERAL years’ advertising experience on the Irwin Auger Bit through the most expert advice and with most careful consideration, both for our dealers’ interests and the interests of our factory, have demonstrated that the above list of representative magazines and newspaper publications will bring from day to day and week to week and month to month, throughout the year, the greatest trade into the stores of our dealers of any list of publications that could be used.

Nothing succeeds like success—and we may say, without fear of contradiction, that the Irwin Auger Bit Company today stands in the unique position as the only Auger Bit manufacturers in the world who have created a big trade through advertising for their dealers.

Irwin Bits are maintained the standard for highest quality, and it would mean business suicide for us not to keep them so.

We prevent substitution both in your interest and in the interest of our factory by placing our stamp “Irwin” on every Irwin Auger Bit—Reg. U. S. Pat. Off.

We do this—
To protect the consumer in buying the best.
To protect dealers and jobbers in selling the best.
To protect the Irwin Auger Bit Company in producing the best.

All profit by taking advantage of this advertising which we create, and we invite you, the dealer, to co-operate with us by immediately placing yourself in the position to fill the demand which we shall send to you as a result of our advertising campaign.

THE IRWIN AUGER BIT CO.
Largest in the World
WILMINGTON, OHIO

(Orders all filled through jobbers. Look over your stock and send in your orders at once.)
solid and even surface than lumber. It is nailed to studding in half the time required for lumber, which means an additional saving in labor. Then again, its use does away with the expense of building paper, both in purchase price and in cost of labor in applying it.

Concrete is said to be the ideal material for cement exterior or stucco work as well as for frame buildings. The cement firmly adheres to the laths and asphalt mastic, making a solid, smooth exterior. The spaces between that part of laths not imbedded in asphalt mastic form an excellent key for firmly holding the cement. For factory or residence, this form of concrete or stucco construction is the cheapest and best known.

A free book description of Bishopric wall board emulsions, made available by the Bishopric wall board & Roofing Manufacturing Company, 24 West Third street, Cincinnati, Ohio, mentioning the American Carpenter and Builder.

Which Concrete Mixer?

So much has been said about mixers, and so many are advertised, that it undoubtedly puzzles the average purchaser to know which one he should buy. A mixer must have efficiency, must it not? And the price cuts a figure too, with the average man. Every up-to-date concrete worker, certainly to know which one he should buy. A mixer must have efficiency, this form of concrete or stucco construction is the advertised, that it undoubtedly puzzles the average purchaser more than that he has a much larger field before him to get the maximum profits out of the business. But do not buy a mixer with your eyes shut. You will regret it if you do. These mixers are not so intricate but that the average man can understand them, and know what features they should possess. The Raber and Lang Mfg. Co., Kendallville, Ind., urge all concrete men to read the description of the "Crescent" Continuous Concrete Mixer, and then—think! Just think! Think of—efficiency, adaptability, durability, size for your business, how much money you can make, and save in a year by having a good mixer, what opportunities it will open to you for increased business, and last, but not least—think of price.

The Raber and Lang Mfg. Co. are anxious to let the "Crescent" Mixer prove that it will save you money, no matter in what branch of the business you are engaged, and lastly, that it is easily within your reach—in price. They want to have the opportunity of making good everything they say about the "Crescent" Mixer. They are now distributing a very complete and interesting catalog on this Mixer proposition which every cement worker should have. Write for it.

The Porter” Hand Jointer or Buzz Planer

The accompanying cut illustrates the hand jointer and buzz planer manufactured by the C. O. Porter Machinery Company, Grand Rapids, Mich. It is especially adapted for contractors and for carpenters’ shop work. The claim is made for it that it is the best jointer on the market, without exception for this purpose. Strong, rigid and durable, it has an independent table adjustment. The tables have steel lips and are ground. It will be observed that the cutter head is of the patented round safety cylinder type. Has a pattern draft attachment for planing on a bevel. Bearings are large and long and supported by the side walls of the new shaving draft, a new and distinctive feature. The bearings are self oiling. Cylinder pulley is grooved for letting out air.

This machine is made in seven sizes, viz.: 5-inch, 8-inch, 12-inch, 16-inch, 20-inch, 24-inch and 30-inch width. Those of our readers who are interested in new equipment of this kind should write the C. O. Porter Machine Company for full information and prices.

Better Protection for Jointer Operators

So many expensive damage suits result from improperly guarded wood-working machines that shop owners are constantly looking for every efficient means of protecting their workmen.

The favor with which protective devices are received, indicates that mill and factory owners are very anxious to guard the safety of their machine operators. The modern factory owner takes pride in providing every possible protection to his employees, because he realizes that law suits must be paid for out of the profits of the business.

Many wood-workers, of the older school, would have more fingers today had the jointers on

$50 to $150 a Week to Carpenters

NO MORE DRUDGERY—LONG HOURS—POOR PAY—THAT'S ALL GONE. READ ON IT'S GREAT

What are you earning? $5.00 to $20.00 a day. All right. We'll double triple you quadruple that for you with short hour men's work. You've been looking for opportunity-do it were for better things. Here are you. Wonderful opportunity. It beckons calls-upplies you. Every home needs-wants

DIAMOND VELVET CASTOR COMPANY, 50 N. Mill St., Grand Rapids, Mich.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
YOU DON'T HAVE TO WAIT for good building weather when you use Bishopric Wall Board. This substitute for lath and plaster is made of kiln-dried, dressed lath, imbedded in hot Asphalt Mastic under pressure of 500 pounds to the square inch, surfaced with sized cardboard and cut at the factory into 4x4 ft. sheets, of uniform thickness (3 inch), which are easily and quickly nailed to studding, ready for immediate application of wall paper, paint, burlap or other decoration.

Applied
Dry,
Winter or Summer

Importance of Lath

The lath forms a perfect binder—a guarantee against warping or twisting out of shape. Furthermore, insures perfect adhesion when nailed to studding. Beware of cheap imitations. Bishopric Wall Board is protected by U. S. patents. Prosecution will follow infringement.

PRICE AND SHIPMENT FROM NEAREST POINT: Crate of 16 sheets, covering 256 sq. ft. of surface, $6.40 or $2.50 per 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, O., or Alma, Mich.


BISHOPRIC SHEATHING

Made of the same materials used in Bishopric Wall Board and same way, though finish is not necessarily so smooth, therefore costs less. It is nailed to studding on outside of the building, with lath and Asphalt Mastic exposed. Over this you nail weather-boarding. This gives solid sheathing with dead air space between Sheathing Lath and siding. Ideal material for cement exterior or stucco work. Cement firmly adheres to lath and Asphalt Mastic, making a solid, smooth exterior. For factory or residence, this form of cement construction is the cheapest and best known.

Bishopric Sheathing is cheaper than lumber; is free from boles and rough spots; is nailed to studding in half the time required for lumber; does away with expense of buying and applying building paper; is proof against heat, cold, dampness, frost, wind and vermin. Being a non-conductor, it keeps the building cooler in summer and saves fuel in winter. It is used with excellent results as a lining for dairy barns, poultry houses, driveways, or other outdoor buildings.

PRICE AND SHIPMENT: Crate of 16 sheets, covering 256 sq. ft. of surface, $5.12, or $2 per square of 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, Ohio, or Alma, Mich. We ship from nearest point.

BISHOPRIC ROOFING

Standard Quality, Bishopric Asphalt Mastic Roofing will not dry out; therefore requires no paint. The asphalt composition is toughened and perpetuated by an exclusive process, which converts asphaltum into Asphalt Mastic. May be exposed direct to weather in any climate without danger of softening, drying out, cracking or crumbling. The only asphalt roofing with successfully stands the direct exposure test.

Made of pure woolen felt, coated on both sides with pure Asphalt Mastic and flaked mica, making a neat, clean, artistic, durable roof, which never needs paint. Absolutely proof against cold, heat, moisture, wind and weather; will not crack, curl or break; wholly unaffected by climatic conditions. Will reduce fire insurance. Easily laid.

PRICES: Freight prepaid East of the West Line of Minnesota, Iowa, Missouri, Oklahoma and Texas:

3-ply. $2.50 per square of 108 sq. ft.
2-ply. $2.25 per square of 108 sq. ft.
1-ply. $1.75 per square of 108 sq. ft.

Write for descriptive booklet and samples of Bishopric Wall Board, Bishopric Sheathing and Bishopric Roofing—all sent free.

The Mastic Wall Board & Roofing Mfg. Co., 24 E. Third St., Cincinnati, O.
LET us send you test packages of these three Johnson's Wood Finishing Specialties absolutely free. These are the best money makers among all wood finishes for Painters and Decorators and we want to prove it to you at our expense. Johnson's Electric Solvo—to remove old finish in a jiffy; Johnson's Wood Dye, for artistic, rich, permanent color; Johnson's Prepared Wax, for the beautiful polish of subdued lustre.

Johnson's Wood Dye
Made In 14 Standard Shades

No. 126 Light Oak
No. 123 Dark Oak
No. 125 Mission Oak
No. 140 Manila Oak
No. 110 Bog Oak
No. 128 Light Mahogany
No. 129 Dark Mahogany
No. 130 Weathered Oak
No. 131 Brown Weathered Oak
No. 132 Green Weathered Oak
No. 127 Moss Green
No. 122 Forest Green
No. 172 Flemish Oak
No. 178 Brown Flemish Oak

Price—all shades—half gallon size—$1.50.

Johnson's Electric Solvo softens all old finishes in 15 or 20 minutes without the slightest injury to wood. Goes farther than any other varnish remover.
Price—Gallon Size $2.50.

Johnson's Prepared Wax gives the "hand rubbed" effect and does not catch and hold dust or dirt or show heel-marks.

Our Beautiful 48 Page Text Book which we will send free with samples, is the most helpful guide to decorating published. Send the coupon or postal now for the whole outfit—free.

S. C. Johnson & Son
RACINE, WIS.

"The Wood Finishing Authorities"
JOHNSON'S
Business Getters
FREE

This Set of Wood Panels —
14 Natural, Standard Colors—
Will Get Contracts for You.

We want you to have this complete set of Wood Panels showing
Johnson's Wood Dye in its 14 shades. We'll gladly send them
free because they will prove to you beyond doubt that
Johnson's Wood Dye produces better results than any other
wood-coloring material made.

Also, they will get you the business in competition with any other
set of panels or color card ever put out.

They show the real colors on the real wood — colors of life and
richness. And you are safe in contracting to match any shade —
Johnson's Wood Dye never varies.

Johnson's Color Panels and
Guide Book Always in Demand

In every city and town the best trade is coming to depend more and more
on Johnson's Wood Finishing Materials and the Johnson Suggestions for
interior decorations.

You will find our book, 'The Proper Treatment for Floors, Woodwork and Furniture,'
Edition A. C. B. 6, equally helpful to you and to your trade. Beautifully illustrated in
natural colors from life — complete in color scheme suggestions, and valuable information
on all kinds of wood finishing work. Tells about the matchless results possible by
the use of Johnson's Wood Dye, Johnson's Under-Lac, Johnson's Prepared Wax,
and other wood finishing specialties.

Cut out Coupon now to remind you, fill in your name and address and
send by next mail, or mail postal if more convenient. Remember this bus-
ness-getting outfit is absolutely free — All yours for the asking.

S. C. Johnson & Son
Racine, Wisconsin

"The Wood Finishing Authorities"

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
which they worked been provided with the modern round safety head. One of the most serviceable devices of this kind that has yet been placed on the market is shown in connection with this article. The construction of the head is such that the knives are securely wedged in place and the centrifugal force only tends to hold them all the tighter. The knives are made of high speed steel, so that jointers equipped with this head are more efficient and will turn out greater quantities of accurate work with less attention to the knives. The knives have a bearing the full length, and are gripped tightly the full width to the very cutting edge. A very convenient and effective means is provided for adjusting the knives. On most round heads it is not possible to use moulding cutters, but with this one, special throat pieces are furnished, so that moulding cutters or special knives of any kind may be used. The head is manufactured by the Crescent Machine Company, No. 224 Main street, Leetonia, Ohio, and they will be glad to give you additional information.

A Most Beneficial Pastime

Once a person learns to ride a bicycle, the interest in this exhilarating pastime never wanes. Bicycles have held a high place in popular favor and while the introduction and use of the automobile has created a great enthusiasm along the motoring line, the steady, genuine liking for bicycling continues. Bicycling appeals to the average person in three powerful, vital ways:

1. It affords exercise.
2. It provides a change.
3. It is practical.

Exercise is essential to health, and health is life itself. The brisk ride to the office with the lungs pumping deep their supply of oxygen gives the man a start, a poise, worth gold dollars. The afternoon spin on the boulevard will make roses deepen in cheeks that need no rouge or powder. The dancing eyes and "awful" appetite of the boy or girl, testify to the health-making exercise on the bicycle.

J-M Asbestos Roofing is the only Smooth-Surfaced Ready Roofing Permitted

Statistics gathered by the National Board of Fire Underwriters show that the fire loss in the United States during the ten years ending in 1907 averaged $203,000,000 a year. Statistics further show that over half of these annual fire losses were the result of flames being communicated from another building by burning sparks, embers, etc., landing on an inflammable roof.

In SAN FRANCISCO, CAL. where the authorities are using every precaution to prevent a possible recurrence of the terrible fire loss of 1906, J-M ASBESTOS ROOFING is the only smooth-surfaced ready roofing permitted within the city fire limits.

In JACKSONVILLE, FLA. where the building laws regarding fireproof materials are severe since their $10,000,000 fire in 1901, J-M ASBESTOS ROOFING is included among metal, slate and other fireproof roofings which can be used.

In MINNEAPOLIS, MINN. after an official test, during which the flame of a blow torch failed to ignite wood covered with J-M ASBESTOS ROOFING after a ten minute exposure, the city council amended their city building ordinances to include this roofing.

In ATLANTA, GA. the Building Committee has pronounced J-M ASBESTOS ROOFING equal to metal, tile and slate for resisting fire.

When, after thorough investigation and careful tests, such cities as the above pronounce J-M ASBESTOS ROOFING absolutely fireproof, isn’t it a pretty safe guide for you to follow? J-M ASBESTOS ROOFING is ABSOLUTELY fireproof because it is made entirely of minerals—Asbestos and J-M Trinidad Lake Asphalt.

Write nearest branch for Samples and Booklet—or simply write your name and address on the margin of this advertisement and mail it to us.

H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos and Magnesia Products

Asbestos Roofings, Packings, Electrical Supplies, Etc.

Baltimore Boston Buffalo Chicago Cleveland Dallas Detroit Kansas City London Los Angeles Milwaukee Minneapolis

New Orleans San Francisco Seattle St. Louis

For Canada—THE H. W. JOHNS-MANVILLE CO., Limited

Toronto, Ont., Montreal, Que., Winnipeg, Man.,

Vancouver, B.C.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
By Far the Strongest Gripping Brace You Have Ever Had

The greatest improvement ever made in brace construction is the ball-bearing chuck.

It can be tightened with the bare hand to a firmer grip than you can get with a vise on any other brace. It can be released so easily that the weakest wrist can do it.

The only brace made with this patented chuck is the top-notch of our large line of braces and other guaranteed carpenters' tools, the

P. S. & W. SAMSON BRACE

Tenpenny nails held by this brace have been bored through solid oak. Five sixteenths-inch rods with one end in a vise, have been twisted to the breaking point.

Beside the wonderful ball-bearing chuck, the Samson has a steel clad head with dust-proof ball-bearings—not a cast iron head nor a flat plate, but a steel cap completely surrounding the head to the height of 3/8 of an inch.

The Ball-Bearing Chuck

The Alligator Jaw is still another asset of the Samson Brace. It parallels itself to fit the shape of any drill shank. Will hold round, square, or tapered shank drills with a grip that never slips.

The Alligator Jaw

The Steel Clad Head

THE MARK OF THE MAKER is on every P. S. & W. Guaranteed Tool. It represents 90 years experience and plenty backed by the highest quality. Look for that trade mark on every tool you buy.

Sold by all leading dealers.

WRITE US FOR OUR FREE BOOKLET. Our 160 page Mechanics' Handy List contains many pages of valuable information, and a complete catalog of over 200 tools for Carpenters, Mechanics, Electricians, and Tinsmiths. Sent free at your request.

The Peck, Stow & Wilcox Co.

MANUFACTURERS of the Largest Line of Mechanics' Hand Tools Offered by Any Maker

Established 1819—Five Large Factories

Address Correspondence to 22 Murray Street, N. Y. City

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
of machinery and up-to-date equipment, but the problem of the work and do it perfectly, the inventor of the "Acme," come the burdensome task of hand scraping, but in almost every case their success has only been a partial one. Believing that a floor scraper could be constructed that would do as well as to increase the efficiency of the work to be performed. In the builder's line much has been accomplished to lessen labor and reduce operating expenses by the installation of machinery and up-to-date equipment, but the problem of floor scraping has been a difficult one to solve. Many devices have been placed on the market that were heralded to overthrow that a floor scraper could be constructed that would do the work and do it perfectly, the inventor of the "Acme," who is an expert mechanic with many years of practical knowledge as an asset, did, after months of experimenting, perfect a scraper that will, it is claimed, scrape a floor, no matter what kind of wood it consists of, better than can be done by hand and in one quarter of the time. Ease of operation is the most essential feature of any machine, and this factor is one of the strong points in the makeup of the Acme Floor Scraper. Its action is entirely automatic. There is no lifting to be done, the operator simply stands in an upright position, pulls the machine towards him and scraping is accomplished. It brings floor scraping down to a simple push and pull affair. No scraper can accomplish good work unless the blade is in proper condition, and realizing the difficulty encountered by a person who is not a mechanic to place the proper edge on a blade, the inventor also perfected a device which will enable any person to properly sharpen a blade in a very few minutes. The Acme Blade Sharpener is an absolute necessity to a man operating a floor scraper and who is not a skilled mechanic. Another attachment that adds to the completeness of the outfit is the Acme Sander and by its use a smooth and finished surface can be readily attained. Mr. Miotke makes it his boast that all the material used in the construction of the Acme machines is the best the market produces and the workmanship is of the highest standard. The Acme machines have been tested under all conditions and in every conceivable manner, and in no way have they been found defective. They are fully guaranteed in every respect. For further information, address Jos. Miotke, 247 Lake Street, Milwaukee, Wis.

"Acme" Floor Scrapers

In these days of progressiveness, new inventions are being daily introduced in order to lighten the burdens of mankind as well as to increase the efficiency of the work to be performed. In the builder's line much has been accomplished to lessen labor and reduce operating expenses by the installation of machinery and up-to-date equipment, but the problem of floor scraping has been a difficult one to solve. Many devices have been placed on the market that were heralded to overthrow that a floor scraper could be constructed that would do the work and do it perfectly, the inventor of the "Acme,"
This is the greatest book of its kind that ever came off the press. It contains designs for city and country residences, cottages and bungalows, all the very latest types—the cream of the architectural world's most approved styles.

The great Gordon-Van Tine Plan Book is the accepted authority on architecture. It contains the best ideas of famous architects, who have prepared this wonderful book for us at a tremendous expense. It represents a cost of $5,000.

The book is simple and practical. It has been compiled so as to enable our customers to build with the utmost economy, yet secure for themselves artistic, well-laid-out homes at the highest possible degree of convenience and comfort.

**What Our “Book of Plans” Contains**

Our Plan Book contains 56 designs—accurately drawn by skilled architects. There are 39 plans for residences and 17 for farm buildings, including Barns for all kinds of stock, Granaries, Poultry Houses, Hog Houses, Ice Houses, Corn Cribs, etc. The plans show the exterior view, floor plans, size of rooms, etc.

Every one of these plans is practical, having been proved by actual construction, which saves you the expense and worry of costly mistakes.

When you build from these plans you are entitled to receive the wholesale prices on the material, which we supply you direct from our immense plants and save you from a third to a half on the usual cost. We can save you from $100 to $300 on every car of lumber you buy, and will give you bright, new lumber just from the mill.

**Write Today for this FREE Book!**

Send at once for this $5,000 "Book of Plans"—it means you can save a third to a half on your home and get better results than you could if you hired a special architect. You can construct a home from the "Book of Plans" all the way from a few hundred dollars up to many thousands.

Write at once, enclosing 10¢ to cover postage and packing, and this great $5,000 book will be on its way to you by return mail. No builder or contractor can afford to be without it. Don’t think of building till you see it.
carpenter contractors. Very clear illustrations and complete descriptions of each machine are shown.

The Chicago Machinery Exchange, 7-11 N. Canal St., Chicago Ill., will be pleased to mail this catalog to all interested parties.

Its Simplifies Framing Problems

Many volumes have been written on the steel square, but still it is a mystery to thousands of its users, and will continue to be, as it is not made so it can be adjusted to any position, and there are so many figures to remember and rules to follow that the majority forget it and cannot get the desired results. There is no third member to complete the triangle, but the third member is imaginary, which fact confuses the ordinary user of the common steel square.

A great many architects today are drawing their plans and specifications in degrees, and the ABC protractor square, which is being put on the market by the Crookston Tool Company of Crookston, Minn., is said to be overcoming all of the defects of the common square, removing the difficulties in roof and stairway work as well as in all circular and degree work. By the use of this valuable tool all work is said to be made as plain as ABC. It is very simple and easy to use and the degree circle in connection with the adjustable triangle makes it a tool that should be in the hands of every carpenter in the country. It gives lengths, bevels at both ends and degrees all at the same time, and it takes no figuring to use it. Just set the ABC protractor square at the dimensions given and it gives you what you want, bevels as well as lengths.

For instance, if you want to get bevels and length of rafters for a house 20 feet wide and 44-degree roof, just set member C to member A at 10 (one-half width of building) and set member B at 44 degrees, with member A and member B will give you the length of your rafter, to be 13 feet and 11 inches; member C will give you the upper cut and member A the lower cut of your rafter, and member C at the same time will show you that the rise of your roof in this case is 9 feet and 8 inches. These results you get from the ABC protractor square in less time than it takes to write it, and to get hip and jack rafters is just as easy.

The illustrated directions which the manufacturers put out with each tool makes roof, stairway and circular work so plain with the ABC protractor square that a boy who can read is able to use it.

The Crookston Tool Company will be pleased to furnish all information regarding this square, which they sell on a guarantee that it will do the work they claim for it.

There is No Exercise to Equal Cycling

Among all the sports or forms of exercise, which have found any degree of favor with Americans, cycling is most ideally suited to American needs and American temperament. It satisfies our passion for being "on the go" in a sane, health-building manner. There is no nervous tension to cycling, such as attends the swift ride on the speeding motorcycle, or in the whizzing auto.

Giding along on a light-running wheel, one forgets he has nerves, or muscles. Instead of a rush of air in the face that renders breathing a difficult task, it seems second nature, when wheeling, to drink in long sweet, soul-refreshing breaths of
The Tribute of a Great Newspaper

In the rapid whirl of events which have world wide interest and significance, it is seldom that the management of a great metropolitan newspaper is profoundly impressed by the methods and achievements of any individual enterprise.

But on February 6 last, the Philadelphia Record, one of the foremost journals of the nation, employed an entire page to illustrate and describe the Disston Saw Works; to tell the deeply interesting story of its founder and his successors, of their purposes, their ideals and their accomplishments.

Here are some of the editorial statements that were made:

“There are various reasons for the growth of this Philadelphia industry from nothing to the greatest of its kind in the world. One is that it has kept ahead of all others in the processes and inventions for sawmaking.

“In the beginning, Henry Disston made saws to live. Later, when wealth came, he lived to make saws. He studied his art—for it is an art—as a painter studies colors. And he produced a masterpiece.

“He was the great improver and developer who placed Philadelphia saws in their present position at the head of the markets of the world for quality, finish and correctness of pattern—a position which his successors so ably maintain.”

Disston saws, files and tools give longer and more efficient service than any other implements of similar character manufactured.

Business association with an organization which occupies so high a place in the commercial and manufacturing world; an organization which expends so much time and effort to serve the interests of its patrons, is an asset for every merchant and mill owner who handles or uses saws, files, or tools.

Henry Disston & Sons, (INCORPORATED)
"Here’s the Job—NOW PRODUCE"

"The last man at this job was a fine chap, but he couldn’t ‘make good,’ so we had to let him go. As I said before, the position calls for a TRAINED man. Now it’s ‘UP TO YOU.’"

Suppose it were up to you—could you ‘make good’? Don’t you know perfectly well that your failure to get ahead is owing not to lack of brains—but to lack of training? What is the great difference between you and the fellow able to ‘produce’ as a foreman or superintendent or manager? Training—that’s all. A thousand jobs await the man able to ‘produce.’ Employers want him—are always eager to secure his services. The world has no patience with drones—no pity for failures; it says to every man, ‘get ready to ‘produce.’’

Every month there are received at the I.C.S. upwards of 300 voluntary letters from men that spare-time study has qualified to ‘produce.’” Those letters prove conclusively that there is a way for every man—for you—to get ready to ‘produce.’ The I.C.S. will give to you the same training that has qualified tens of thousands to rise to higher and better paid positions. The I.C.S. can help you. Are you willing to help yourself?

To find out all about how you can learn to ‘produce,’ mark and mail the coupon. Doing so will cost you only postage and will place you under absolutely no obligation. Send the Coupon NOW!

The Many Uses of Beaver Board

The rapid growth during recent years of the use of this material and the many ways in which it can be applied to purposes of building and remodeling, has roused general interest in the advantages claimed for it by its manufacturers. Our readers will no doubt be interested to learn how Beaver Board is made and how it can be used.

Beaver Board is manufactured by The Beaver Company, of Buffalo, N. Y., who state that it is made entirely of selected woods reduced to fibrous form and pressed into panels of uniform thickness. Although this is but a scant three-sixteenths of an inch, the panels are very stiff, tough and strong. Beaver Board is designed to take the place of lath, plaster and wall-paper for the walls and ceilings of new and remodeled buildings of every type whatsoever. Among the many advantages claimed for it are the following:

It resists the passage of heat and cold so that it tends to make a house warmer in winter and cooler in summer. It also has high resistance to sound, which of course is an advantage in private houses as well as in office buildings, factories, clubs, bowling alleys and other places where it is often desirable to shut off noises from adjacent rooms. The makers also claim that it will not crack, chip or deteriorate with age; that it resists fire and stands shocks, strains and vibrations which would bring plastered walls and ceilings down in ruins. They have published some very interesting testimonials in support of these claims, notably the use of Beaver Board by the United States Government at Fort Banks, Mass., where it successfully withstood the concussions caused by firing large disappearing guns, although plastered walls had been severely dam-
THE New Rambler has many little features of safety and convenience which are most appreciated by the experienced owner. Both brakes may be adjusted by raising the hinged aluminum floor and turning two winged thumb nuts. The safety spark-retarder protects you from a back kick of the starting crank. A convenient gasoline lock prevents the unauthorized use of your car. In these features and in the Rambler door lock, adjustable steering column, and handy spark-plug connection, you find evidence of careful attention to details—the mark of quality. Besides every Rambler has the Off-set Crank-Shaft, Straight-Line Drive, Thirty-Six Inch Wheels and Spare Wheel feature.

Rambler automobiles $1,800 to $3,750

Thomas B. Jeffery & Company
Main Office and Factory: Kenosha, Wisconsin
Branches: Chicago, Milwauke, Boston, Cleveland and San Francisco
aged thereby. Another interesting evidence of this quality was given by an explosion in Buffalo, where a bridge was dynamited by strikers. Every wall and ceiling in an adjacent building was demolished, with the exception of one room finished in Beaver Board, although this was one of the nearest rooms in the building to the point of explosion.

An even more important and interesting characteristic of Beaver Board is its adaptability to various conditions. The Beaver Company state that it is not only serviceable in point of artistic merit, durability and economy for the wall and ceilings of entire new and remodeled buildings, but that it has developed a surprising number of special uses. This is largely because it is so easily handled and put up, and so economical in cost. The panels are nailed directly to the studding of new rooms, or can be put on directly over the lath and plaster of old ones. The accompanying illustrations show clearly how Beaver Board can be used, and also the artistic treatment it makes possible. The seams are covered with decorative strips of wood and thus admit a general plan of panel and frieze design of infinite variety. Fine effects can also be obtained by the use of beamed ceilings, wainscot and dado, and other well-known architectural devices. As the panels can be cut and put up by any good workman or even by the owner himself, if a mechanic is not available, it becomes an easy matter to transform or remodel any individual room.

Thus attic and cellar space can be readily transformed into comfortable and serviceable rooms. An old out-building can be used for children’s play-room, gymnasium, workshop, billiard-room, etc. Summer cottages can be quickly and economically given an artistic interior finish, and at the same time be protected against the heat of summer and the frosty nights and mornings of the early fall.

Besides these more general uses of Beaver Board, many useful and decorative household articles can be made of it, such as fire screens, three-panel screen, taborets, waste baskets, shelves, book racks, cabinets, fireless cookers, etc. The Beaver Company, Buffalo, N. Y., have published a little booklet, in which they describe in detail many such uses for their product.

The decoration of Beaver Board offers a wide scope for the ingenuity and artistic taste of the user. The panels have a pebbled surface well adapted to treatment in flat oil paint. Many beautiful designs can be worked out by the employment of stencils, tinting or hand painting. In fact, so wide is the adaptability of this material that the makers claim it is only limited by the needs and ingenuity of the individual user.

**Fire-proof Construction and Its Advantages**

Probably no subject in the building world is so important, or has been given so much thought and study, as that of fire-proof construction. It is no longer a question among owners of how cheap can a building be erected, but how much fire prevention can be had. Builders and owners everywhere—in both the United States and
Transom Operation Perfected

The many faults of appearance and operation characterizing the old style transom rods, so objectionable to everyone are overcome in the

"RICHMOND"
Concealed Transom Lift

Simply turn the knob on door trim and transom opens or shuts to the required angle and is held steady there until the knob is again turned. No locks, hinges or catches are required.

In the RICHMOND Concealed Transom Lift all parts as implied by the name are concealed, excepting only the knob. The fixture is completely assembled before leaving our factory. Booklet descriptive of the operation and installation of this fixture will be mailed upon application to

THE MCCRUM-HOWELL CO.
MANUFACTURERS
Park Avenue and 41st Street
NEW YORK CITY
Any Carpenter will recognize at once the advantages of the Round Sharpening Stone—
The old style oblong stone wears down in the middle—Only about two inches square of the surface is used—

With the round Carborundum Stone the entire surface is used and the rotary motion so necessary to a keen even edge is possible.

Carborundum is the greatest sharpening agent ever discovered.
It is intensely hard and very sharp—It cuts very fast and puts a smooth lasting edge on a tool in half the time required with other stones.

This round stone is made especially for carpenters who have chisels, planer irons and similar tools to sharpen—It contains 12 square inches of surface, practically all of which is used in the sharpening operation.

One side is coarse for taking out nicks and bringing the tool to an edge, the other side fine, for giving the keen finished edge—

Carborundum Sharpening stones are sold by hardware dealers everywhere—Insist on getting them—

Write for the Carborundum Booklet

THE CARBORUNDUM CO.
NIAGARA FALLS, N. Y.
We want every reader of the American Carpenter and Builder to have one of our New 1910 Portfolios

This Portfolio will help you in your interior work by furnishing a complete scheme of home decoration.

Fill In and Mail the Coupon Today—Don't Delay

Be sure and mail the coupon today, before the edition is exhausted. This beautiful Portfolio shows each room of a model house, illustrating in exact color the finishes, paints, varnishes, etc., to be used for the walls, floors, ceilings and furniture. Complete specifications are given as to how to obtain each result. It will save you time in planning your work and by following the suggestions and ideas given in this portfolio you will be sure that they are absolutely up to date, as it is just off the press and contains the very latest designs and decorations. Each design has been thoroughly tested and worked out by our Decorative Department.

SHERWIN-WILLIAMS
PAINTS AND VARNISHES

not only mean a finish for every purpose, but several finishes for the same purpose, varying according to the quality of the work to be done. If you have a high grade piece of work to undertake either on the exterior of the building or on walls, ceilings, floors or woodwork, we can give you just the proper finishes. The same also applies in the case of medium grade and low priced interior decorating.

Let Us Solve Your Problems for You

If you are at a loss just how to finish the particular work which you have on hand, fill in the coupon at the bottom of this advertisement. This coupon designates three classes of finishing materials, high grade, medium grade and low priced for floors, woodwork, walls and ceilings and exteriors.

Put a check against the surfaces which you want to finish and the grade of work specified, and sign your name. We will send you complete specifications covering just the proper finishes for these particular surfaces corresponding to the grade of work indicated. Of course this places you under no obligation whatever; we simply wish to demonstrate our ability to be of assistance.

SHERWIN-WILLIAMS CO.
PAINT AND VARNISH MAKERS
612 CANAL ROAD, N. W., CLEVELAND, OHIO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
AN EDWARDS METAL SPANISH TILE ROOF

COSTS NO MORE THAN A GOOD TIN ROOF

Artistic and Ornamental in appearance and is positively guaranteed to be Fire, Lightning, Rain, Storm and Wind proof.

Its extreme lightness (about one-eighth that of slate), durability and moderate cost commend it to those wishing something out of the ordinary in roofing.

Manufactured from best quality Worcester Grade Terne Plate, furnished painted or galvanized (galvanized after being formed) size 10 x 14 inches.

Descriptive Booklet sent free on request

The Edwards Manufacturing Co.
"The Sheet Metal Folks"
401-417 Eggleston Ave. Cincinnati, Ohio

The lath that is positively different to anything else made; different because it combines more good features.

Cup lath is the only Expanded Metal Lath that can be plastered on either side—cannot be applied wrong because both sides are alike.

We make two kinds—Sykes Expanded Cup Lath, and Sykes Trough Lath. Both are supreme for their own purpose.

The top illustration shows Trough Lath, bottom cut depicts Cup Lath.

NO PICKLED LATH

Sykes Lath is absolutely guaranteed not to have been pickled in an acid bath.

This means that the weight and thickness is not reduced and is less susceptible to rust.

Requires no furring out from studs because it is self-furring.

It has been approved by U. S. Government and by leading architects, carpenters and builders throughout the country.

In fact, when we say it is the best ever made we are simply stating a proven fact.

Samples and prices mailed upon request.

Sykes Metal Lath & Roofing Co.
NILES, OHIO

absolute success. The hardened corner has been a long-felt want of the carpenter; and, as necessity is the mother of invention, the result was finally attained.

The Nicholls Manufacturing Company claim that theirs is the only square manufactured which contains a complete roof framing rule which gives side cuts of jack rafters, hip and valley rafters and length of same, as well as lengths and cuts necessary to a roof of any kind, size or shape. These figures are stamped plainly on body of square with no character marks used, which eliminates the necessity of a carpenter trusting to his memory.

All squares manufactured by the Nicholls Manufacturing Company, both framing and standard, are in one piece (the tongue is not welded on body). The squares are cut from sheet steel with a heavy machine designed especially for this purpose and said to be the only one of its kind in use. The steel itself is of the best quality, being made and rolled for this express purpose.

Substitution

The smartest repartee does not always come from the side of the clerk, as is shown by this incident related by Harold Skinner in the Bohemian:

"Good morning, madam," volunteered the cheery salesman.

"Good morning," echoed the pleasant looking matron. "Have you something choice in real Irish lace?"

"Well-er-no; but here is something just as good at 75c a yard."

"Just as good?" doubtfully.

"Yes, indeed. In fact," confided he, "superior to the real article. How much do you wish, please?"

"Just a yard," with suspicious slowness. "Here's your money."

"But, madam," in confusion, "you have made a mistake. This isn't money."

"No?" agreeably.

"Why, no. It's a matinee ticket."

"So it is. But it represents seventy-five cents, and while it isn't actual money, it's just as good."

And the salesman collapsed.

A New Portable Trench Pump

A practical compact portable trench pump generating its own power is the C. H. & E. portable trench pump illustrated herewith.

The nature of the apparatus is such that it can readily be taken from job to job. This outfit is built for use of contractors, builders, railroads, ship and barge owners or on public works where it is necessary to raise large quantities of water or to handle water containing mud, sand, grit, gravel, grain or chips, sewage or any liquid that will flow.

The engine is a strong 3-horsepower, water-hopper cooled, and runs between 400 to 450 revolutions per minute, which exerts a pull or lift of 1,000 pounds on the lever at each stroke.

The wrist pin on gear wheel can be changed to either one of the four different strokes, and the revolutions of the engine
ASBESTOS
“CENTURY” SHINGLES

“The Roof that Outlives the Building”

Your client’s first thought is his roof. Probably he has had more than one bitter experience with a roof that developed an unexpected leak. He has been forced to pay out good money for constant repairs, painting and incidental damages.

Nothing pleases him better than to know that his roof is storm-proof—fire-proof—time-proof.

Asbestos “Century” Shingles are absolutely indestructible. Made of hydraulic cement, reinforced with asbestos fibers. Compacted by tremendous pressure.

They cannot rot, rust, crack, split or blister. They literally outlive the building without repairing or painting. The first cost is the final cost.

You can get Asbestos “Century” Shingles in shapes and sizes to fit any architectural scheme. Three colors, Newport Gray (silver gray), Slate (blue black) and Indian Red. Ask your Roofer for new quotations. Write for Booklet “Everlasting 1910”

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania

Good Roof Protection

32 POUNDS COATING

ROOFING TIN

“The Terne which turns the elements”

makes the roof of service and satisfaction. Careful builders concede that a good terne plate is the best roofing material obtainable. MF is the original Old Style—carefully manufactured, high in quality and noted for good and lasting service wherever applied. The weight of coating—32 pounds—is stamped on every sheet.

American Sheet and Tin Plate Company

DISTRICT SALES OFFICES:
Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh Portland San Francisco St. Louis

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
There's Money for You in Steel Ceiling Work

And you can easily handle it. Our construction is planned to simplify erection and reduce number of pieces to handle, thus saving time, labor and expense. Any good mechanic, with the aid of our working drawings can easily do the work and secure a neat, snug-fitting, workmanlike job.

We help you by preparing free suggestion drawings and estimates. Send sketch and dimensions of room or rooms to be covered and we will submit suggestions and quote exact prices on the material delivered at your depot.

Berger's "CLASSIK"
is the most complete line of artistic Steel Ceilings in existence AND OUR CATALOGUE PROVES IT.

Write for it TODAY. Ask for No. D-55.

THE BERGER MFG. CO., Canton, O.
New York Philadelphia Boston Chicago
Atlanta Minneapolis San Francisco St. Louis

There are many ready roofings made of flimsy, light-weight paper, scantily coated, which last only a year or two.

Granite Roofing does not belong in that class.

Good materials and plenty of them are used in making it.

There is nothing flimsy or fragile about Granite Roofing. It has a heavy sea-grit surface, which takes the place of the usual coat of paint, and wears indefinitely.

Other roofings require coating with some special compound every year or two, but Granite Roofing never requires any coating. After the roof is laid, it will take care of itself.

A Free Sample will be sent "for the asking." You will be astonished to see how heavy, firm and durable a ready roofing can be made.

EASTERN GRANITE ROOFING CO.
19 Battery Place, NEW YORK.
CHICAGO ST. LOUIS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

The pump is of up-to-date design, strong and simple in construction.

It has a diaphragm of the highest quality of rubber, which can be regulated to run the pump from 30 to 50 strokes per minute.

The pump is of up-to-date design, strong and simple in construction.

It has a diaphragm of the highest quality of rubber, which can be readily replaced when worn.

The outfit can be supplied either with bottom or side suction as desired, 3 inches in either case, and can be used with either pipe or suction hose.

The capacity of this outfit is from between 3,000 to 3,500 gallons per hour.

The C. H. & E. Manufacturing Company, located at 309 Mineral street, Milwaukee, Wis., manufacture this portable trench pump, as well as their portable saw rig and portable hoist.

Hercules Waterproofing and Strengthening Compound

The Hercules Waterproof Cement Company, of Buffalo, N. Y., have equipped one of the finest mills in northern New York with a complete installation of the most modern and efficient machinery for the manufacture of their Hercules water-proofing and strengthening compound.

The company have placed before the public a water-proofing compound which, it is said, not only water-proofs but absolutely strengthens cement. Ordinarily 2 per cent of the compound is used, but as large a quantity as 10 per cent will not break down the concrete, and the water-proofing shows absolute impermeability even in as lean a mixture as 1:3.

The advantage of such a compound to the users of cement is incalculable, especially since it does not require an expert to mix. The large sale and the requests for agencies demonstrate the quick acceptance of a good article by the cement users in general.

The Hercules Waterproof Cement Company will gladly send free to all users of cement a copy of their "Treatise on Water-proofing," and place at their disposal the services of their experts and laboratories on all questions of waterproofing.

The general sales-rooms and office are located at 259 Washington street, Buffalo, N. Y.
ACME
WOVEN WOOD LATH

Is the Acme of Perfection For Home Builders.
The U. S. Government uses it—Why don't you?
Our booklet tells the tale—Its free upon request

Acme Woven Wood Lath Co.
Suite 1015, New Bank of Commerce Building
ST. LOUIS, MO.
U. S. A.

Cast Iron Gutters Last

Easily put up. Once up, always up. Do not bend or break by pressure of ladder against them. Will stand greater weight of snow or accumulation of ice than any other gutter. Not affected by acid fumes that in some vicinities play hob with all other metal gutters. They are adaptable to any kind of building or type of construction. Cast with moulded face to form part of cornice, or rounded to serve as a hanging gutter Used almost exclusively in England and all over Europe. Supplied in 6-foot lengths. Joints fitted ready to erect. No soldering required. Send at once for circular and prices.

HITCHINGS & COMPANY :: :: Elizabeth, N. J.

Lasting Store Fronts

The Petz System affords the most permanent form of store front construction. It is also the most beautiful, and the form that requires the least space and gives the most light. Quickness and ease of installation are other features of the Petz System.

It is recommended by insurance companies, specified by hundreds of the best architects, and should be insisted upon by careful builders.

We have a booklet, “Modern Store Front Construction,” that you should have. Write for it today.

DETROIT SHOW CASE CO., Sole Makers
491 West Fort St.
DETROIT, Mich.
A Frank Statement

HOW many manufacturers of ready roofing will tell you frankly how their goods are made? Mighty few. They will talk about "secret formulas," "special waterproofing compounds," etc.—all nonsense. They don't tell you what the goods are made of because they don't dare. From the start we have never hesitated to tell the buying public just what Amatite is made of and just what it will do.

How Amatite is Made

Amatite is made of two layers of Coal Tar Pitch—the greatest waterproofing material known. Alternating with these two layers of pitch are two layers of coal-tar-saturated felt to give it tensile strength.

On top of these four layers is a real mineral surface—five layers of protection. The mineral surface is permanent, fireproof, and absolutely requires no painting.

It Needs No Painting

Roofings that require painting are a worry and an expense. Every year or two the owner has to give them a coating with some special compound, or he is pretty sure to have a leaky roof.

Something Back of It

Remember, in this connection, that Amatite is made by the largest manufacturers of roofing materials in the world, and that when you buy this roofing there is something behind it. We know we are offering the best and the most economical ready roofing on the market.

For sample booklet and prices address our nearest office.

Barrett Manufacturing Company
New York Chicago Philadelphia Boston Cleveland St. Louis

UNION METAL COLUMNS

Most Durable Columns for Porches and Pergolas

MADE in all required sizes from the smallest up to 40 inches in diameter and as high as 35 feet, following Classic designs.

They support far more weight than the best wood columns of same diameter, last much longer, cost no more.

Splitting, Warping and Rotting Impossible

Made with fluted and tapered steel shafts and best grey cast iron bases and capitals. Broadly protected by patents allowed and pending.

In use on homes of every type and size from mansion to cottage, with absolute satisfaction to every owner.

Every Carpenter in the Country—should send for catalog and prices.

The Union Metal Mfg. Co.
530 Clifton St., Canton, O.

New Spiral Plug Cutter

A glance at the larger of the accompanying illustrations will readily show the superior advantage and practical construction of this tool in cutting plugs. It is the new No. 600 Spiral plug cutter of the Forest City Bit and Tool Company, Rockford, Ill.

This plug cutter is made with several spiral cutters, milled out so as to make four or more separate cutting knives. These knives being independent of the inside circular knife, it is impossible for any chips to get between the plug and the circular knife, as the outside cutters are made with sufficient room to carry away all chips. Therefore an easy and perfect cutting tool, free from choking and binding is insured.

This tool can be used in cutting several plugs into a board, which when sawed or ripped, removes these plugs in one operation, and makes all same length. If very thin plugs are wanted, they can be cut through the board as there is an opening provided on the side, where these plugs can readily be removed.

This plug cutter is also made with a large diameter shank and a hole through the shank so the plugs can be removed through same.

This cutter is made in all sizes and will cut plugs in any kind of wood, such as poplar, oak, hard maple and mahogany, and can be used in any boring machine. It is used to the best advantage in the manufacturing of chairs, tables and furniture, and in all work where plugs are used for the purpose of plugging up holes where screws are countersunk.

This plug cutter is made with the regular standard shank, 2½ inches long by ½ inch diameter, and the plug cutting barrel is ½ inches long, making same 4½ inches over all.

For further information address Forest City Bit and Tool Company, Rockford, Ill.

Contractors Enthusiastic

The Richards Manufacturing Co., Aurora, Ill., are offering the Steel Folding Scaffold Bracket, as shown in the accompanying illustration and for which great claims are made. It is said that the carpenters and contractors who are now using

The Folding Scaffold Brackets

These brackets are easily placed in position or removed. Require very little space for storage or for transportation and are perfectly safe. If you are interested in frame buildings you cannot afford to be without them. Will pay for themselves in a short time. We guarantee them to give satisfaction.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Roof Framing Made Easy

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By Owen B. Maginnis, Inspector of Buildings of the City of New York, Author of "HOW TO MEASURE WOODWORK FOR BUILDINGS," "BRICKLAYING," etc.

ILLUSTRATED BY 100 CLEAR ENGRAVINGS
164 LARGE PAGES, HANDSOMELY BOUND
SENT TO ANY ADDRESS POSTPAID ON RECEIPT OF $1.00

THE carpenter or builder who will study the methods described in this book will realize the constructive value of every piece of timber which enters into a framed roof and will understand how to lay out every piece of timber used without wasting valuable time and material on cutting and trying.

The language used is that of the practical workman—scientific phrases and confusing terms have been avoided where possible—and everything has been made so plain that anyone who will faithfully study the book will understand it from beginning to end.

Any intelligent mechanic will be able to save at least ten times the cost of this book in time and material during the first few weeks that he has it in use.

The following synopsis of the contents will give a faint idea of the character and scope of this book:
The Principle of the Roof and General Directions; Laying Out and Framing a Simple Roof; Hip and Valley Roofs; Roofs of Irregular Plan; Square Pyramidal Roofs; Pentagonal Roof; Hexagonal Pyramidal Roofs; Conical Roofs; Conical Roof Intersected by a Pitched Roof; Octagonal Roofs; Framing an Octagonal Roof of Gothic Section; Octagonal Molded Roof; Octagonal Roof with Circular Dome; High-Pitched or Church Roof; Mansard Roof; Hemispherical Domes; To Frame a Circular Elliptic Dome; Elliptic Dome with an Elliptic Plan; Circular Molded Roof; Gothic Square Roof of 4-Center Section; Trussed Roof of Moderate Span on the Balloon Principle; To Frame a Roof of Unequal Heights of Pitches and Plates; Hip and Valley Roof of Unequal Pitch; To Frame a Roof of Unequal Lengths of Rafter; Roof with Pitched Ridges; Round-House Roof; Framing Cantilever Roofs; Roof with an Elliptic Plan and Straight Ridge; Church Roof Construction; Bow Truss; Studio Roofs; How to Build a Circular Framed Tower with a Molded Roof; Miscellaneous Details and Suggestions.

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Swings Easy as a Top, Under Heavy Load, Mr. Builder

The Strongest Ever Built. Fully Guaranteed
Will Never Get Out of Order

DIAMETER TABLE AND WEIGHTS

<table>
<thead>
<tr>
<th>DIAMETER</th>
<th>WHEEL BASE</th>
<th>WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 ft.</td>
<td>119 in.</td>
<td>3000 lbs.</td>
</tr>
<tr>
<td>14 ft.</td>
<td>145 in.</td>
<td>3700 lbs.</td>
</tr>
<tr>
<td>16 ft.</td>
<td>171 in.</td>
<td>4200 lbs.</td>
</tr>
<tr>
<td>18 ft.</td>
<td>197 in.</td>
<td>5000 lbs.</td>
</tr>
<tr>
<td>20 ft.</td>
<td>223 in.</td>
<td>6000 lbs.</td>
</tr>
</tbody>
</table>

A Pit Only 12 inches Deep is Required

Easily erected on upper floors with special timber work
The Table comes in knock-down shape, so that one man can handle each piece and set it up. There are no intricate parts—it is simple in construction. Nothing better made.
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The Acme Pipe Has All the Qualities of a Fine Cigar and Smokes Like One

(1) Note the top part of this pipe is made of Vienna Meerschaum with a Flat bottom and Vertical walls. The tobacco can't pack in the Acme bowl.

(2) Note the series of holes in this bowl all angling to a center hole at the bottom. This construction ensures the Free Circulation of Air through all parts of the tobacco—A Cool, Sweet Smoke is the Result.

(3) No moisture or saliva can get into the tobacco bowl—that's Guaranteed. No moisture or saliva can get into the tobacco bowl. It is claimed that this is the strongest bracket made and the most easily applied. These brackets cost no more than wood brackets and will last a life time, saving their cost on any job requiring two dozen or more brackets.

(4) The Meerschaum bowl screws into the lower briar bowl. Note the Saliva and Nicotine Wells in the briar part.

If you are a Pipe lover send $1.00 for an Acme. Your satisfaction is our guarantee. If any one who buys an Acme has a particle of trouble with it, or is in the least not satisfied, we ask you to let us know. Your Satisfaction is Our Success. ACME PIPE CO., Station M., Cincinnati, Ohio

A New Scaffold Bracket

The Bracket Hook Co. of Rockford, Ill., are offering a new and improved folding scaffold bracket for which great claims are made. The accompanying cut shows the arrangement, both the complete bracket and the hook, which is the key to the success of this scaffold bracket.

The Bracket Hook Co. are urging all carpenters and builders to stop wasting valuable time and money in lugging around the unworkmanlike brackets they have been using these twenty years—use something that is neat, strong and will save any man's time.

"It does not amount to much," you say. No, not on one job, but on a season's work from $10 to $100 is something which is guaranteed can be saved by using these patent hooks. Shrewd contractors always post themselves on the best and most practical way of doing their work, the way that will take least time to do a job. By using these hooks, it is claimed,
We can save you money on Cornice, Skylights, Ventilators, Metal Ceilings, Roofings, Sidings, Eave Trough, Conductor Pipe

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Wood Carvings for Interior Finish
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Practical Art Metal Ceilings
Quickly and easily applied. We are the only manufacturers who cut the heads in the dies after casting. Reasult—Square and accurate plates—which will save you time and labor in cost of erection.

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We have just published our new catalog and descriptive literature about Ideal Concrete Machinery, Ideal Blocks, and the Concrete Construction of today. This elaborate book is worth more than money to you. It tells you how to enter an absolutely profitable line of work, because it explains the details of concrete block manufacture; and also tells how to select a satisfactory machine. It is not advertising literature, but rather a genuine attempt to arouse people to a knowledge of how really wonderful this hollow concrete block manufacture is.

Concrete block construction is coming to be recognized as the present day method in all classes of building, and you cannot afford to neglect this opportunity of learning all that is possible about the business, though you may not care to start in such work yourself, immediately.

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Roenius Wood and Coal Chutes
A NECESSITY TO EVERY MODERN HOME
NO MORE DAMAGED CASINGS OR SASH
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Safe from outside tampering or entrance and weather-proof. Are easily opened and locked.

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GREEN LABEL VARNISHES
VELVET WHITE ENAMEL
(Egg Shell Finish)
This is a pure white enamed of the very highest quality. It dries with an egg shell gloss producing a natural rubbed effect without the necessity of rubbing. Is waterproof and not affected by washing or changes in temperature. Can be successfully used on new or old woodwork.
Price $5.00 per gallon; quarts $1.35 each

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Makers of High Grade Varnishes for all purposes
Glidden Building
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“Protex-Lite” Coal Window
The Holland Furnace Company, Holland, Mich., ask the readers of the AMERICAN CARPENTER AND BUILDER to investigate the merits of their improved coal window, “The Window Chute” or “Protex-Lite” coal window.

This means wall and house protection when used as a coal chute and a light basement when closed. It locks automatically from outside by pushing steel sheet (which protects the glass when open) over locking lugs provided on lower sides of the wall frame.

Note the recess feature of window. It conforms with basement lines.

The “Protex-Lite” lasts a lifetime and costs only a little more than a wooden frame and sash.

There are ten special advantages of

REVOLVING SAND SCREENS
If you have sand or gravel to screen or grade you should know more about the S. & S. Revolving Screens. Write us giving an idea of your requirements and we will gladly send literature, prices, etc.

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THE HONEYWELL SYSTEM

It is not only the cheapest system to install, but by far the most sightly, efficient, responsive and economical system on the market. It contains one-third less water and heats one-third quicker, with a resultant saving in fuel. The water circulates from the boiler to the radiators from three to five times faster than in the old style system, hence quick results from firing with a minimum loss of heat in transmission. No large, unsightly piping through the rooms with this simple system. Owing to the very rapid circulation of the water 

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34,000 SYSTEMS IN USE

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Free engineering advice given to trade on all installations. Failure absolutely guaranteed against.

If you have an unsatisfactory job of hot water heating, we can cure it at a very small cost and without remodeling.

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Meets all the requirements of Hardwood Floors

Hardness
Durability
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Won’t Buckle, Curl or Sliver

Manufactured in narrow widths and long lengths, which makes it easy to lay, entails small amount of waste and avoids frequent joinings.

Standard Widths 34" and 21/2"
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Edge Grain Flooring is bright, clean, non-absorbent, sanitary, susceptible to high-class finish, and easily kept in perfect condition.

Strong and durable as oak or maple, but,—COSTS LESS

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Edge Grain Flooring

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You are running no risk—it passed the experimental stage thirty years ago.

Always for sale by first-class lumber dealers.

Copy of Standard Grading Rules and Classification furnished on application.

Yellow Pine Manufacturers Association

Suite 707 Wright Bldg. : St. Louis, Mo.

mason or carpenter to set—no slanting top or bottom; five, will not rust out, and is strong enough to support the wall above it without buckling; six, locks automatically from the outside by merely closing it; seven, can be opened only from the inside; eight, no climbing over a dirty coal pile to lock or unlock; nine, no bolts, hooks, or clips to get out of order; ten, the only legitimate combination hopper coal chute and window.

Carved and Ornamental Work

We have received Catalog No. 21 from the Waddell Mfg. Co., Grand Rapids, Mich., and a really exceptional catalog it is. In it we find illustrated the many lines of manufactured wood ornamentation and carving made by this company. In the Foreword we find the following:

"Should you fail to find anything suitable for your purpose in the catalog, write us giving size of space and for what purpose wanted and we will submit a special design with cost of same. By taking advantage of this plan, you will get something ornamental to suit the place you wish to ornament. We employ a number of skilled designers and we feel confident that we can furnish to the trade up-to-date work.

"Our Embossed Mouldings are superior to anything in the market. The trade knows our machine carving so well that we fully guarantee everything we make to be superior in finish and made of the best kiln-dried wood that can be bought.”

All readers of the American Carpenter and Builder should get into touch with the Waddell Mfg. Co., Grand Rapids, Mich., and investigate their line.

Simonds Build New Steel Mill

The Simonds Manufacturing Company of Fitchburg, Chicago and Montreal, make announcement of the completion of plans for the erection of a new steel mill at Lockport, N. Y., that will at once double the capacity of their Chicago mill and before long increase the first Lockport output. The contracts

Johnson’s Patent
Scaffold Bracket Hooks

are safe, strong, and easily put on the brackets. No unsteady or wiggling scaffolds where these hooks are used. Made of best malleable iron. Will save lots of time and money.

Send $1.00 for Four Sample Bracket Hooks
and make your own brackets, or we will make our complete brackets, with hooks, at a low price. Special prices for hooks or complete brackets in large numbers. Ask your dealer, or order direct. Circulators.

Bracket Hook Company,
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Carpenters, Builders, Contractors
You Need This Book
It's Free

We want you to read it. It is worth reading, and will give you valuable facts about roofing in general. The reason we publish it is to acquaint you with the name and merits of

REX FLINKKOTE ROOFING

Rex Flintkote is the highest Quality sheet roofing in the world. It has exclusive advantages, possessed by no other. It has covered for years buildings of all classes all over the world, under every possible condition. You should at least know why it is rated as the best. Send for the Book.

60,000 Columns
At an average of $5.00 each or 6,000 at $50.00 each gives you an idea of the annual capacity of our plant.

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Sold Manufacturers of
KOLL'S PATENT LOCK JOINT COLUMNS
2155-2187 ELSTON AVENUE : CHICAGO
Eastern Office: 1123 Broadway, New York City
The best columns for porches, pergolas or interior use.

BUY A BOVEE FURNACE
Direct from the Factory
AND SAVE $50.00 to $100.00 ON YOUR HEATING PLANT
They Actually Save from One-third to One-half of the fuel.
We have one of the best equipped furnace factories in the west and make more than 30 different furnaces of seven heating styles and can furnish our customers with practically any size or style of furnace they may desire, either Single or Multidis, sufficient to heat a five-story office building, or a large heating plant complete with all pipe, register and fittings for $55.00.
Our furnaces are the only furnaces having a perfect ventilating system for every part of the house. We ship our furnaces cut to fit. Any handy man can install them without the aid of a tinner. Catalogue and full specifications free.

Bovee Grinder & Furnace Works
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The Greatest Work ever published on Architecture, Carpentry, Contracting, Building and all allied branches is the new 10 volume edition

Cyclopedia of Architecture, Carpentry and Building

Ten massive volumes; 4,670, 7x10 inch pages; 3,000 full-page plates, detail drawings, plans, color plates and photos of buildings completed and in course of construction. Bound in half morocco leather and printed on special enameled paper in large, clear, readable type. Titles beautifully engraved and stamped in 23 carat gold.

No work so comprehensive, so authoritative, has ever before been placed on the market. This great work is a complete review of architecture, carpentry and building. Every problem likely to confront you in your daily work is solved and the solution explained before you in such a clear manner that you cannot fail to understand and profit by it.

If you have a building contract in hand, this Cyclopedia will show the most economical and practical method of handling the work and purchase of materials. For the practical carpenter and student, its value as a Home Study instructor cannot be estimated.

Just examine the "Partial List of Contents" below and you will at once realize how broad is the scope of this work—how thoroughly it covers the building trades.

Read Our Liberal Offer
To prove our absolute confidence in the superiority of this work over all others, we make this liberal offer. Upon receipt of the coupon in the lower right hand corner, we will place the entire cyclopedia of ten volumes in your home or office— you keep the books five days— examine them thoroughly, critically—subject every formula and problem to a severe test. If you are satisfied, send $2.00 after examination and $2.00 every month until you have paid the special $24.00 price. The regular list price is $50.00. As a further guarantee, we will remove the books at our expense if you are not satisfied. We pay all express charges.

PARTIAL LIST OF CONTENTS

For a short time we will include as a monthly supplement, for one year, the TECHNICAL WORLD MAGAZINE. This is a regular $1.50 monthly, full of Twentieth Century inventions, written in a nontechnical way, for the use of every man and woman interested in inventing, discovery, industry, etc.

AMERICAN SCHOOL OF CORRESPONDENCE
CHICAGO, U. S. A.
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Please send me Cyclopedia of Architecture, Carpentry and Building for five days' free examination; also Technical World for 1 year. I will send $2.00 within five days and $2.00 a month until I have paid $24.00 or notify you and hold the books subject to your order. Title not to pass until fully paid.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
call for completion of the building and installation of machinery so that production will begin by October 1. The initial investment will be fully a quarter of a million dollars.

This announcement will be of direct interest to the hardware trade, lumbering, saw and planing mill operators, as well as hundreds of thousands of satisfied customers who have used and proven to themselves the absolutely sound warrant of the trademark sentiment of the Simonds people that "Simonds Saws are the Best," something equally proven for the knives, files and other products.

This preparation for a new plant that will, by its central location, serve as an economical distributing plant to the factories in the three cities first named, has been carried quietly forward, and the announcement comes as a distinct surprise to the trade and metal-working interests generally.

That the existing manufacturing plants have been hard pressed for room—large as they are—has been appreciated by those who are in touch with the trade, but it was not perhaps so generally understood that the great Chicago steel mill was not able to keep pace with the shop demand for plates of the special Simonds steel that goes into all their varied products, and is responsible for the world-wide reputation of the Simonds goods.

In addition to the three plants and the new steel mill, the Simonds Manufacturing Company has branch houses at New York, Portland, Ore., Seattle, Wash., New Orleans, San Francisco, Vancouver, B. C., St. John, N. B., and London, England.

There were four determining factors in the choice of the Lockport location: the labor, power, land and water, the last two factors answering the purpose, the first of a site served by proper manufacturing and residential opportunities, and second a site offering suitable transportation facilities.

It is unnecessary to discuss the very evident advantages Lockport offers for such a plant. On the item of power, the electric service direct from Niagara Falls assured the flexible power the Company desires and its adaptability to the peculiar needs of a steel plant make it still more attractive and available.

On the matter of land, there was acreage enough at hand for immediate purchase and use, with opportunity yet at hand for further enlargement in good time. On the transportation side, the plant will lie between the New York Central and Erie railroads and will have direct track connection with both, and a private siding a mile long for the company's special use. Furthermore, the Erie canal runs directly along the Simonds property, and delivery from its 1,000-ton barges meets another requirement of selection.

A half hour electric schedule connects the plant with all local points in Lockport as well as furnishing service to Niagara Falls and Buffalo; and the International railway will establish a special Simonds station. Incidentally, it is interesting to note that after the completion of the new Detroit tunnel, the Michigan Central through trains and the New York Central's Twentieth Century Limiteds will pass directly by the Simonds works.

There will be built at once fifty houses for the company's employees on the best lines that can be found for dwellings of the type desired, and the settlement will be brought up-to-date in point of perfectness of equipment and completeness, and every provision made for the health and pleasure of their employee-tenants. This is in line with the Simonds policy, so well-known, in its co-operating relations with its employees. It is proper to say, in a word, and right here, that at the Fitchburg plant the company maintains a clubroom, recreation-room, baths, "gym," and medical service for its many hundred hands. The company has also established a complete pension system for its employees in its several plants, office force and operates both. These considerations determined the location of the new plant.

The first and original Simonds plant, to review the company history a bit, was organized 78 years ago in Fitchburg, Mass., then a little New England village, but possessing that skill of

Ten Substantial Reasons Why You Should Purchase the CLIMAX Line of Furnaces, Stoves and Ranges—and no other.

1. Because the line has been well and favorably known in every city, village, and corner in the State, for more than ten years.
2. Because the line is sold directly, or indirectly, and has field agencies to look after every detail to the satisfaction of our customers, as well as that of our customers.
3. Because you get a Factory Guarantee on your whole outfit.
4. Because your heater is made by, and installed by practical men—only those who know how to do it.
5. Because your heater is made by, and installed by practical men—once known how to do it.
6. Because you can burn any kind of fuel in the CLIMAX—even the refuse from other Furnaces.
7. Because the furnaces are made by stove-plate Molders, of stove-plate material, all brand new, and not half old junk.
8. Because of improved principle of combustion, giving you over-draft, down-draft—any kind of draft.
9. Because equipped with large double feed doors—big enough to drive in horses and cattle.
10. Because we sell all our heaters under the strongest guarantee, that the only reason they are not sold is the WAR OF TRAPS FOR THE UNWARY -

The TAPLIN, RICE-CLERKIN CO., MFRS., AKRON, OHIO

The Only Stove and Furnace Folk Send for Catalog

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ORNAMENTAL GLASS FOR EVERY PURPOSE

You, Mr. Contractor, will find it will pay you to order your Ornamental Glass direct from the Manufacturer. We make and sell more Decorative Glass for Residences, Churches, Schools, Public Buildings, Offices and buildings of all kinds, than any other manufacturer. We have the largest and most completely equipped factory in the United States for making glass for Front Doors, Transoms, Windows, etc., in a Chemist, Sideboards, Bookcases, Bathrooms, Office and Bank Fixtures.

In door lights and transoms, we have thousands of patterns and can promptly duplicate any design wanted in

Ground Mitered
Chipped Colored
Embossed Art Glass
Etched Sand Blast
Enameled Glass Signs

The cuts shown here are some of our popular standard patterns. Send us a trial order for one or more of these lights. 10 per cent discount on an order amounting to $10.00.

See page 529, January number American Carpenter and Builder for additional patterns. RAWSON & EVANS CO.

Washington and Union Sts., CHICAGO
What is the best material for roofing?

Ask the best roofer you know: — Right off the reel he'll tell you heavily coated tin plate.

He's right — so we use it.

Cortright Metal Shingles

are merely the most advanced application of this roofing material which has always been acknowledged the most durable and dependable for the purpose.

Many people get an idea that Cortright Metal Shingles are new. Twenty-four years ago they were as new as they’ve ever been and then they were merely an improved application of an old material. Every Cortright Metal Shingle is made of prime full weight tin such as I have here in my right hand. This sheet is stamped into a shingle like that in my left hand (or some of our other designs). Then it is either painted or galvanized, completing the roofing, which lasts as long as the building itself.

There's more about this point in our two free books. Will you sign the attached coupon so we can send them?

Cortright Metal Roofing Company
Philadelphia and Chicago

This is one of a series of Selling Talks published to help you make more profit through Cortright Metal Shingles.

NEXT MONTH'S TALK will be about The Design of Cortright Metal Shingles.

Gentlemen: — You may send me the two free books offered by you in the June issue of American Carpenter and Builder.

Name
Street Address
City
Business

Mr. Block-Maker

Wet Process is Right.
Face down is Right.
Three blocks at a time is Right.
Triple Tiering is Right.
Damp Curing is Right.

The Mogul Invincible Block Machine

COMBINES ALL THESE

IT IS RIGHT

It is 48 inches long and will make three 16" or two 24" blocks at one operation. It makes sills, caps, copings, rails and steps, faster and better than a special sill machine. It has every adjustment that any other machine has and many that no other machine has.

PRICE—Machine and Outfit, $75.00

WRITE FOR CATALOG

THE PETTYJOHN COMPANY
634 No. 6th St., TERRE HAUTE, IND.
artisanship that has made New England famous throughout the world, and which still keeps her in the forefront of the procession in spite of all the stupendous competition the middle states and middle west have developed.

The Fitchburg plant grew and prospered, and less than a decade ago a wonderful new plant was erected, and the old ones discarded. The new plant has since been enlarged, and is already feeling the strain of the demand upon it. The Chicago plant, the steel mill, was erected that the proper business advantage might be taken of labor, coal, markets, etc., and the Montreal plant was added a few years ago to serve the demands for the Simonds products in the Canadian lumbering operations, and in other directions. But, vast as this equipment all is, it has not been enough, and the Lockport plant is planned on lines to meet immediate demands and to provide for a long future growth.

Sheet Metal Goods

Messager & Parks Mfg. Co., Aurora, Ill., are distributing to the trade a very serviceable catalog of their sheet metal goods, prices revised to April 10th, 1910. This catalog shows their line of eaves trough, conductor pipe, roof and box gutters, ridge rolls, finials, terminals, ornamental hip shingles, cut off's, Acorn ventilators, Acme ridge tile, steel ceilings, etc., cornices and skylights. Full line of galvanized and black sheets, tin plates, furnace fittings and registers, also furnace piping and steel ceilings.

Rambler Plant Enlarged

Plans just made public by Charles T. Jeffery, head of Thomas B. Jeffery & Co., provide for several large additions to the Rambler factory, which now occupies a large portion of the western section of the city of Kenosha.

Ground has already been broken for three of these additions. The most important building to be erected will be a new power plant, by which 1,500 horse power will be added to the present boiler capacity and the present engine capacity will be increased by 1,000 horse power.

A Dead Shot on Livers

"I hear, doctor, that my friend Brown, whom you have been treating so long for liver trouble, has died of stomach trouble," said one of the physician's patients.

"Don't you believe all you hear," replied the doctor. "When I treat a man for liver trouble, he dies of liver trouble."

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This bit moves up and down while boring. This machine can be adjusted with a screw driver to make any size openings from a round hole to a 6½ inch mortise. Makes all size mortises perfect, without the use of brace or chisel, will not split or mar any kind of wood. The only machine of its kind in the world. Worth its weight in gold to the twentieth century Carpenter and Contractor. Automatic and ball bearing. Made of malleable, light, strong and durable. Any size bits furnished.

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for wood turners and pattern makers. Furnished complete with countershaft, rests, steps, bolts, center and face plate. A high grade machine at a reasonable price. We also make Hand Jointers, Shapers, Swing Cut-off Saws, Pony Planers and Post Boring Machines. Better get our Catalog.

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<tr>
<td>Extra 9-8 x 5 in. No. 1-2-3</td>
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<td>Clear 3/4 in. 4-4</td>
<td>$10.00</td>
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<tr>
<td>Siding</td>
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<td>No. 3-4-5 3/4 in. 4-4</td>
<td>$10.00</td>
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<td>No. 2-3-4 3/4 x 4 White Pine</td>
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<td>No. 2-3-4 x 4 Red Cedar</td>
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<td>No. 2-3-4 x 4 Canadian Spruce</td>
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<td>C &amp; Better 1 x 4 Arkansas</td>
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<td>Yellow Pine</td>
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<td>$8.10 Beasts Beautiful</td>
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<tr>
<th>Mill Work Bargains</th>
<th>WINDOW FRAMES</th>
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<tr>
<td>Lot No. 4-A-1608</td>
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<tr>
<td>Evanston Door Sets</td>
<td></td>
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<tr>
<td>300 sets as illustrated.</td>
<td>$75.00</td>
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<tr>
<td>Wrought steel, Antique</td>
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<tr>
<td>Finish Plated Front mortise lock 3/4 in.</td>
<td>$1.10</td>
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<tr>
<td>1 set key, one pair knobs, two escutcheons, Packed complete with screws, $0.40</td>
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<tr>
<td>$1.40 per dozen sets</td>
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<tr>
<td>Wrought Steel , Copper Finish Front Door Sets, complete Price per set</td>
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<tr>
<td>Lot No. 4-A-699</td>
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<tr>
<td>Upright Rim Knob Locks, Japanese, complete illustrated and shown.</td>
<td>$0.10</td>
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<tr>
<td>Each</td>
<td>$0.25</td>
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<td>Per dozen</td>
<td>$2.75</td>
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<tr>
<td>Lot No. 4-A-710</td>
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<tr>
<td>Wrought steel, half turned loose pin Button, copper finish complete with screws, 3/4 in.</td>
<td>$0.75</td>
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<td>3 sets per dozen</td>
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<tr>
<td>Lot No. 4-A-753</td>
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<tr>
<td>Sash Locks, copper finish each</td>
<td>$0.05</td>
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<tr>
<td>Per dozen</td>
<td>$0.48</td>
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| $1.40 per dozen sets |               |
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| Evanston Door Sets |               |
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| Each | $0.25 |
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| 3 sets per dozen |               |
| Lot No. 4-A-753    |               |
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| Per dozen | $0.48 |

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<th>35th and Iron Sts., Chicago</th>
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<tr>
<td>R. F. D.</td>
<td>P. O. Box</td>
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<tr>
<th>Mail This Coupon Today—Don’t Delay</th>
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<tr>
<td>Chicago House Wrecking Co., Chicago</td>
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<tr>
<td>I saw your page ad in June 1910 A. &amp; B. now, and am interested in</td>
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<td>Send Mammoth</td>
<td>Send Free</td>
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<tr>
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<td>Pitch Book *</td>
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<tr>
<th>Rawhide Rubber Roofing</th>
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<tr>
<td>The greatest bargain in the world. First class, first grade.</td>
<td>$1.60</td>
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<tr>
<td>Roofing per 100 sq. ft.</td>
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<tr>
<td>$36 Buys 2 H. P. New Gasoline Engine</td>
<td>$64.00</td>
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<tr>
<td>A Brand new 2 H. P. electrical equipped Gasoline Engine complete in every detail. Ready to run when you receive it, for $36.00</td>
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<td>H. P. Gasoline Engine for larger sizes at equally low prices.</td>
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<td>Our five-year guarantee on these engines covers all materials and workmanship and is without question.</td>
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<td>This is the greatest offer ever made on Gasoline Engines. This engine, originally listed at $75.00, first class and covered by a binding guarantee, is the well-known &quot;Superior&quot; make.</td>
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