Special Features This Month

Building Plans

Bungalow and House Designs
Village Bank and Store Building
Small Cold Storage Plants

Practical Carpentry

Methods of Rapid Estimating
Tile Veneer for Frame Buildings
Bed-Room Furniture—Hand Made

Modern Methods

Principles of Heat Engineering
Modern Builders' Hardware
Cement Building Construction
DO YOU NEED AN ELEVATOR?

Announcement and Special Offer

THE

Hand-Power Elevator

shown in this illustration is our newly perfected steel frame type

Price is F.O.B. Moline and includes all material listed in specification herewith

Specification (size 4A)

Winding machine
- Cast iron drums
- Steel shaft
- Roller bearings
- Gearing
- Rope or pull wheel brake

Platform - 4'x5'
- Steel frame
- Safety device
- Cast iron guide shoes

Cables
- Two 1'' iron lifting
- One 1'' iron weight
- One 11'' Manila hand rope
- One 3'' brake rope

Counterweights
- 200 lbs. in excess of car

Guide strips
Supports for winding machine

Drawings for setting up

Capacity 1500 lbs. for 2 Stories and Basement (or less)

Address

OTIS ELEVATOR COMPANY

First Avenue

Moline, Illinois

We manufacture a complete line of elevators & dumb-waiters

When writing advertisers please mention THE AMERICAN CARPENTER AND BUILDER
THE "LITTLE SHAVER" FLOOR SCRAPER

Sold to You at FACTORY PRICES

It will pay you to write us this month, as we are positively selling at factory prices.

We are going to move five hundred scrapers the next few months and your inquiry at this time will not only save you money, but get you the best floor scraper on the market. Write us.

INTER-STATE EQUIPMENT & ENGINEERING CO.
OLD COLONY BLDG. CHICAGO, ILL.

The Floor Scraper

THAT'S ABSOLUTELY PERFECT

Of all the floor scrapers on the market not one can be quite as good as the Star, because no other embraces such durable features.

There's practically nothing about it to wear out. Consider the benefit obtained by the new mechanical principle. The principle that means better work and quicker. The Star does clean work. A patented Ball and Socket device allows the blade to be set diagonally at any angle. This gives a shearing cut to the machine. It means a finished floor free from planer marks and "waves." It works the same on old floors as it does on new.

Star Scraper Co., Elkhart, Ind.

Five Days Free Trial

As a duty to yourselves you are asked to test this machine before you spend a cent on floor scrapers. A postal stating you will use the star for five days brings one to your door. We want you to be the judge of the best floor scraper. We want you to be thoroughly convinced of Star superiority.

We pay the Freight

Particular literature on request

THE FOX FLOOR SCRAPER

It Will Save You Money

The Fox Floor Scraper Costs Some Money—but It Saves the Salaries of Several Men, So That It's Original Cost Quickly Disappears.

Scrape Up a Few Dollars for Yourself

Buy a FOX FLOOR SCRAPER

The Simplest and Best Device for Perfect Floor Scraping.

The handiest wood scraping device on the market. Body of tool slides on the floor, insuring a uniform cut, blade is held by a clamp and can be adjusted or reversed in a second's time. Unexcelled for any kind of wood scraping. Never jumps or leaves waves. Every carpenter needs this tool. Price of Fox Cabinet Scraper, $1.25.

Ask your dealer to order it for you, or we will ship on receipt of price.

FOX MFG. CO., 346 Broadway, MILWAUKEE, WIS.

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

**Does the Work of 20 Men**

<table>
<thead>
<tr>
<th>BETTER</th>
<th>QUICKER</th>
<th>CHEAPER</th>
</tr>
</thead>
<tbody>
<tr>
<td>The only machine whose work is specified by architects and meets the requirements of contractors and owners, giving a level, smooth, sand-paivered finish, that harmonises with the balance of the interior wood work.</td>
<td>It has surfaced and polished millions of square feet on every kind of floors, from common pine to the finest parquetry, from bowling allies to sky scrappers. It is self-propelling, no pushing or pulling, no blades to dull or sharpen. Used and indorsed by leading contractors everywhere. Big money in floor surfacing as a business, one machine earned over $1850.00 in seven weeks. Guaranteed and sold on its merits.</td>
<td>Write for our New Booklet. “Surfacing Floors as a business”</td>
</tr>
</tbody>
</table>

The American Floor Surfacing Machine Company

TOLEDO, OHIO

---

With a Man’s Life at Stake

**Does it Pay to Take Chances?**

Use brackets that are ABSOLUTELY SAFE—a pair of our smallest ones carry a ton weight, without even spring. They LAST A LIFETIME, and what is more, they are CHEAP, there are some other features, too, you will find well worth investigating. Write for catalogue, and special trial offer.

Our SHINGLE BRACKETS surprisingly strong—we’d like to tell you about them.

**Agents Wanted.**—We have a first class proposition for hustlers, who will agree to canvass thoroughly.

JAMES L. TAYLOR MFC. CO., Bloomfield, N. J.

---

LATEST IMPROVED ALL IRON

**SWING CUT-OFF SAW**

alone of its kind

- Properly Counter-Balanced
- Adjustable Hanger

With Six Inch Adjustment

**CAN BE HUNG ANYWHERE**

- On the Floor
- Under the Floor
- On the Wall

With same ease of operation

Write for FREE Catalog of our complete line.

LOVELL MACHINE WORKS, Gardner, Mass.

---

STARRETT

**COMBINATION SQUARE**

THE ORIGINAL : : THE MUCH IMITATED

Send for free Catalogue No.186, of Fine Tools for all kinds of mechanics.

The L. S. STARRETT CO., Athol, Mass., U. S. A.

---

COMPLETE

**OUT FIT**

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.

Write for Particulars:

W. F. & Jno. Barnes Co. 74 RUBY ST.

Rockford, Ill.
We Cannot Guarantee

to Fill Orders Until After October Fifteenth

So extensive have been the orders which we have received, as a result of carpenters seeing the Weber at the Fall fairs, that we are awed behind in our shipments. The practical men who have seen the Weber have recognized its worth, and we have a tremendous number of orders on hand. The best we can do on future orders, for the present, will be to fill them in rotation as received.

However, we are working at full capacity in the Floor Scraper Department to catch up, and if you are interested in the Weber, we will be glad to take care of your order as soon as we can. We expect to have several hundred machines out about the middle of October. Send for a copy of our booklet and particulars of our free trial offer, stating how many days' trial you require, and you will be looked after just as soon as possible.

WEBER MANUFACTURING COMPANY
670 Seventy-First Avenue, WEST ALLIS, WISCONSIN

FAR AHEAD for Smooth, easy work and holding edge will be YOUR VERDICT ON TRYING

CHAPLIN'S IMPROVED PLANES

We invite the Severest Comparative Tests

We want you to have a copy of our booklet

"A Plane Talk About a Good Plane!"

We want you to have a copy for it is a booklet you really need Comparative in your business.

We'll gladly send you this booklet with our compliments, promptly upon receipt of your request.

Tower & Lyon Company, 95 Chambers Street, New York

FOOT, HAND AND POWER

Wood-Working Machinery

For Carpenters, Builders, Cabinet-Makers, and Other Wood-Workers

BUILT FOR HARD WORK, ACCURATE WORK AND LONG SERVICE

ONE MAN with one of these machines will do the work of four to six men using hand tools; will do it easier, will do it better.

WE GUARANTEE each machine to be thoroughly practical and accurate. Machines sent on trial, and if not found entirely satisfactory, may be returned at our expense.

SEND FOR CATALOG "A"

The Seneca Falls Manufacturing Co.
218 Water Street, Seneca Falls, N. Y., U. S. A.
Books on Estimating

Estimating Frame and Brick Houses
This book tells how to estimate, step by step, the cost of labor and materials necessary in building a frame or brick house from the excavation for foundation through the various processes up to painting. Simple and practical 324 pages. $1.00.

Estimators Price Book and Pocket Companion
This book gives the contractor and builder a handy reference book for the prices of all kinds of building material. It lists in systematic form all items which make up a complete builder's estimate. Approximate prices are given with a blank column in which to mark your correct local prices. This book will be quite a time-saver. By I. P. Hicks. 172 pages, pocket size. $1.00.

Builders' Guide
An easy practical system of estimating materials and labor for contractors, carpenters and builders. Gives the average day's work that can be performed by various building mechanics, and the average rates on which to figure in almost all details of building construction. By I. P. Hicks. 160 pages. $1.00.

Estimating
A practical system of estimating, taking up each successive step in detail and covering all important points in building construction. As a practical example a complete plan of a house is given, and an estimate worked out from this. By Edward Nichols. 140 pages. $1.00.

Contracts and Specifications
A practical working guide of forms for the contractor, architect and owner. The duties and responsibilities of each are fully explained. Forms of public and private specifications, contracts, etc., are given. By James C. Plant. 130 pages. $1.00.

The Building Estimator
This book covers practically the entire field of building construction from small buildings up to large hospitals, office buildings, machine shops, etc. Photographs of the various buildings are given to show the style of building on which the facts are based. Treats of concrete work, steel construction, etc. One of the best books on the subject. By William Arthur. 184 pages. $1.50.

How to Measure Up Woodwork for Buildings
Giving reliable directions to enable builders to measure up the quantities of woodwork for brick or frame houses. By Owen B. Maginnis. 79 pages. 50 cents.

The above books are well known as trustworthy guides. We recommend them. Any book sent postpaid on receipt of price. Money refunded if not satisfactory.

Industrial Publication Co.
14 Thomas Street, NEW YORK
One Week's Free Trial

I WANT EVERY CONTRACTOR OR CARPENTER who has any floor scraping to do to send for the Acme Floor Scraping Outfit on a week's free trial basis. Put the machines to work. Give them a thorough tryout. Let your men operate them, then judge for yourself as to their merit. No deposit required. No strings to this offer. It is a straightforward business proposition, based on the fact that I do not expect you to buy an article without you knowing what it is and what it will do. Talk is cheap, so are words on paper. The Acme Machines do their own talking. Will you listen to what the Acme has to say? Kindly remember it costs you nothing, neither do you obligate yourself in any way to buy the outfit. I want to introduce the machines to you so that when you are ready to buy, you will know what the Acme is like. Send for the machines today, also for booklet which fully describes the same.

JOS. MIOTKE
249 LAKE STREET
MILWAUKEE
USA
SUCCESSFUL

Draftsmanship

TAUGHT PERSONALLY AND INDIVIDUALLY BY
CHIEF DRAFTSMAN
of large concern, who guarantees you a first-class drafting-room knowledge, experience and high salaried position in few months, home instruction.

Complete Drawing Outfits, Highest Quality, FREE
Address, CHIEF DRAFTSMAN, DIV. 17,
Engineers’ Equipment Co. (Inc.), Chicago, Ill.

PHOENIX
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. MILLER.

Comfort!

Economy!

Convenience!  PHOENIX SLIDING BLIND CO.

BRIDGE & CANAL STS.
PHOENIX, N. Y.

THE AMERICAN
Combined Level and Grade Finder

All Progressive and Up-to-date Mechanics as well as Manufacturers having use of a Level, are getting one

An instrument with which at one glance you can get the true slant on any line or grade either in degrees, inches or percentage, or all at the same time, and will at once give the exact distance need to plumb up to a true level.

A Civil Engineer that you may have with you at all times.

The most practical, durable and convenient instrument of the day.

Write at once for large list of testimonials from all over the United States, and special introductory price given only to first applicants with privilege of taking agency. Address Edward Helb, Railroad, Pa.

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.
MINNEAPOLIS :: :: :: MINN.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Before Buying a Floor Scraper

DO THIS:—Let Us Send You

THE "LITTLE GIANT"

Prepaid, Absolutely FREE of Any Expense to You Whatever

15,000

"Little Giants"

Now in Use

Testify to its Utility

Write Now Today For Free Catalog

HURLEY MACHINE CO.

GENERAL OFFICE AND WORKS
155 South Jefferson St., CHICAGO
BRANCHES:—New York, San Francisco and Toronto, Can.

CUSTOM MADE

FLY SCREENS

Our work is far superior to the usual output of local mills and has a style and finish not obtainable from those who do not make a specialty of screens.

For outside screens we use the identical finish of the outside of Pullman cars.

The best grades of Wire Cloth, enameled, galvanized, genuine bronze, etc. Fastened by tacks or by the "lock-strip" process.

Intending purchasers may have free by mail samples of woods, finishes, and wire cloth and copy of catalog and price list. Agencies in many cities. Special terms to contractors and builders.

The A. J. PHILLIPS CO.

FENTON, MICH.

23 Years' Experience 3½ Acres of Floors

PLATE GLASS

Bath Room Fixtures

FOR RESIDENCES, HOTELS, OFFICE AND APARTMENT BUILDINGS

Absolutely sanitary, require no cleaning, never wear out or show the effects of use. Not affected by hot or cold water. The modern 20th century toilet and lavatory fittings.

PLATE GLASS TOWEL BAR

Price $1.50

No. 141 24 inches, adjustable. Also made in 30, 36, 42 and 48 inch lengths at slightly higher prices.

Round glass towel bars, $2.00

Adjustable glass towel shelves, $3.50, $4.00, $6.00

We also sell plate glass with polished edges for table tops, any size, and glass push plates for use in fine residences and apartments, manufacture and re-silver mirrors, etc.

CATALOGUE SENT FREE ON APPLICATION

Geo. H. Anderson & Co.

Manufacturers and Jobbers of Plate Glass Specialties
281-291 W. Superior Street - - CHICAGO
Carpenters, Electricians and Plumbers Nest of Saws

Especially designed for their use. The handle and Blades are so constructed to allow the Blades to be Changed, Reversed and Adjusted to suit the work desired. The Hack Blade is Toothed and Tempered to saw Metal. Runs without set and can be resharpened until the Blade is used up. Made like our No. 78 Hack Saw. Use a five inch file and thrust the file straight through. "No bevel".

If your dealer will not supply you. We will deliver one set for . . . . $1.65

1 18-inch Hack Blade for Sawing Metal . . . . $12.00
1 12-inch Compass " " " Wood . . . . 3.00
1 10-inch Keyhole " " " " " . . . . 2.00
1 Handy Handle Complete with Screws . . . . 3.00
Per Dozen : $20.00

GEO. H. BISHOP & CO.,
Lawrenceburg, Ind.

Nicholls Common Sense Miter Box

We have endeavored to place on the market a Mitre Box suitable for practical work, and having tested it thoroughly, we are satisfied we have succeeded in doing so, and are placing this Mitre Box on the market warranted in every respect.

Nicholls Manufacturing Co. :: Ottumwa, Iowa

Ball-Bearing Spring Hinges.

THAT ARE PRACTICAL

The Shelby Chief Double Acting Floor Hinge has solved the problem of easily get-at-able, hinges, impervious to water and dampness. It doesn't go in the floor but rests on top. Easily applied, and very economical.

The labor saving feature is being appreciated by carpenters and builders everywhere. Send for our free catalog which contains some sensible hinges and also shows our full line of Double Acting Ball-bearing Spring Butts and Builders Hardware. Free on request.

Write Today.

The Shelby Spring Hinge Co.,
Shelby, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
TOOLS FOR SLATERS MANUFACTURED BY Belden ARE GUARANTEED

Their superiority over others is acknowledged by thousands of users. Made-to-order steel used in their manufacture adopted only after most careful experimenting gives them their value.

ONE HAMMER
ONE RIPPER
ONE STAKE
ONE PUNCH
Constitute a Set

If Your Dealer Cannot Supply You, Write Us Direct

The Belden Slaters' Tools.

12 in

THE BELDEN MCH. CO., Whalley Ave. and Tryon St.
NEW HAVEN, CONN., U.S.A.

DEFIANCE

Cuts shown in ad will give you an idea of our latest improved

Variety Woodworker

Six Distinct Machines in One

Write for catalogues and full descriptive matter.

THE SIDNEY TOOL COMPANY
Sidney, Ohio

NO QUESTION ABOUT IT

IT'S THE BEST

ACKERMANN'S RAPID FLOOR SCRAPER

Is Guaranteed to do More, Better and Easier Work than any other on the market.

Knife Advantages

By means of a simple eccentric device, the knife blades of the Rapid can be instantly moved or set at any angle, thus securing a "drawing out." No floor scraper can be a success that does not have the knife blade across the floor surface with a natural hand-like movement. The Rapid does this perfectly. Any size blade up to 4 x 8 inches can be used on this machine.

Exclusive Knife Sharpening Feature

By simply reversing the position of the machine (turning it over) it forms its own knife sharpening vise, the blade being brought into a perfect upright position, ready to sharpen without removing it from the machine. This saves time and money. The operator proceeds to sharpen the knife, turns the machine over and goes ahead with his work.

Our Special Guarantee Offer

We will ship a Rapid Floor Scraper, charges prepaid, subject to use FREE for three days, by any responsible person. If you are then satisfied the machine is all we claim for it you can purchase it; if not we will have the machine returned at our expense. Further, if after you purchase this machine, you find that, at any time under equal conditions it will not do "More," "Better" and "Easier" work in a given number of hours than any other floor scraper, we will refund your money and you can keep the machine free of cost. This is a straight offer, without any strings to it, made to anyone desiring to secure the best floor scraper made without risking their money until they know what they are buying. We refer to the State Bank of Michigan, Grand Rapids, Mich., as to our guarantee and responsibility.

J. B. ACKERMANN CO.
Solo Manufacturers
Board of Trade Building GRAND RAPIDS, MICH.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER.
Here is a **Gimlet**

Equal in quality and usefulness to any Brace Bit

**HANDLE OF SELECTED COCOBOLO WOOD**

**THREE SIZES ONLY**

Cutting 4-32, 6-32, and 8-32 Holes

Price Postpaid 15 cents each

H. H. MAYHEW COMPANY

SHELBURNE FALLS, MASS.

You will increase your profits and save a lot of time by making **Crescent Machines**

an important part of your shop equipment. They are well built by mechanics skilled in building wood working machinery, and only the best materials are used in their construction.

**THIS is the No. 2 Crescent Saw Table illustrated and described on pages 28 and 29 of 1908 catalog.** It is a thoroughly substantial machine, well suited for general work. Can be furnished with Boring Attachment if you want it that way. Table tilt 45 degrees, and mandrel ½ made long enough so dado head may be used. Machine is self-contained, no countershaft required. It is complete with saw and endless belt when it reaches you. Send for 1908 catalog giving complete description and telling about our line of Band Saws, Saw Tables, Jointers, Shapers, Borer, Swing Cut-Off Saw, Disk Grinder, Planers, and Planer and Matcher.

The Crescent Machine Company

224 Main Street

Leetonia, Ohio

MALLORY'S

Standard Shutter Worker

New and improved patterns and designs.

Opens and closes the blinds without raising the window. Automatically locks the blinds in any position desired. Made of gray and malleable iron. The best and most durable blind hinges. Incomparable for strength, durability and power. Can be applied to old or new houses of brick, stone or frame. Send for illustrated Circular. If your hardware dealer does not keep them send direct to MALLORY MANUFACTURING CO.

204 Flemington National Bank Building. FLEMINGTON, N. J.

YOUR OUTFIT IS NOT COMPLETE WITHOUT A

**BOSTROM**

**Improved Builders' Level No. 3**

We say that because those who buy from us tell us so. For all general work it answers the purpose as well as any instrument, regardless of price.

At $25.00 for the complete outfit, including Tripod and Target Rod, they all buy as soon as they read descriptive matter, which insert upon request.

Would You Keep Abreast of the Times?

From Here Up  We are Akin to the Gods
From Here Down  We are Akin to the Ox

THE CALHOON
Rafter and Polygon Bevel

Every bevel in the universe is contained in a quadrant; pass a line through it, from the center of the square to any degree or pitch, register on it the length (per foot run) and the opposite blades of the square will automatically (from that line) give bevels desired. See?

All calculations are based on 12 inches the unit of base run and 24 inches the unit of pitch or rise, and all hip, valley, octagon and jack, or cripple rafters on run and rise of principal or common rafter. We all know how difficult it is to read and apply the square. This tool will help you do both, or, rather, do both for you, as it is a practical tool.

The relative use of this tool in a carpenter's hands is that of an X-Ray machine to the surgeon, or of an interest book to a banker, or the computing scale or cash register to the merchant.

It is an organization of draft-board, square, tri-square, bevel-square; plumb, level and bevel-protractor into one tool.

This is a substantial TOOL 94—104. Made of Nickleed Steel.

Testimonials

"The best framing tool in existence."—O. C. Kagelmacher, Case School of Applied Science, Cleveland, Ohio.

"The most complete tool I have ever seen."—M. M. Lloyd, Master Mechanic, East St. Louis & Suburban Railway Company.

"The best mechanical device ever put on the market."—District Council, Kansas City, Mo., C. J. Huston, president, Edd. S. Abdill, secretary; District Council, Indianapolis, Ind., Chas. E. Bacon, president, Z. F. Carrigan, secretary; District Council, Cleveland, Ohio, Phil. Hyde, president; Jno. B. Melcher, secretary; District Council, St. Louis, Mo., Wm. M. Davis, secretary.

Ask your Retail Hardware Dealers for them, or write to the following Jobbers for one:

Vonnegut Hardware Company  Indianapolis, Ind.
The W. Bingham Hardware Company  Cleveland, Ohio
The McIntosh Hardware Company  Cleveland, Ohio
Geller Ward & Hasner Hardware Company  St. Louis, Mo.
Witte Hardware Company  St. Louis, Mo.
Tenk Hardware Company  Quincy, Ill.
Townsley Metal & Hardware Company  Kansas City, Mo.

Or Send $3.50 to  A. O. CALHOON & COMPANY  Perry, Mo.
COMPLETE WOOD-WORKING SHOPS
For CARPENTERS and CONTRACTORS

These Four Machines
with a Gasoline Engine or
Motor make a Model Shop

You can save time and money by being in a position to manufacture your own millwork.

We also carry a LARGE STOCK OF UP-TO-DATE, BUT SLIGHTLY USED MACHINES. We can surprise you with the small investment it requires to be independent. Write us today for full information.

CHICAGO MACHINERY EXCHANGE
9 to 10 North Canal St., CHICAGO

A Book Worth Having—It’s FREE
Our New Book of "YANKEE TOOLS" Packed Full of new ideas in time and labor saving tools, for Carpenters and all classes of mechanics. The embodiment of Yankee ingenuity and invention, illustrated with photographic reproductions of the tools in use. It’s an eye-opener. Write to-day. A postal brings it if you mention the American Carpenter and Builder.


WE WANT TO ASSIST mechanics not acquainted with "Reliance" Tools to test the exceptional merits they possess. Chisels, Gouges and Drawing Knives made of the choicest materials—constructed and tempered so as to give satisfaction at all times. Our new circular, "E," will be mailed upon request.

THE RELIANCE EDGE TOOL CO., Youngstown, O

Over 18,000 of our STEEL RACK VISSES IN USE
25 doz. Clamp Fixtures bought by one mill last year. We ship on approval to rated firms and guarantee our goods unconditionally. Write for list of Steel Bar Clamps, Vises, Bench Vises, etc.

E. H. SHELDON & CO.
84 North May St., CHICAGO

Wood Bar Clamp Fixtures Per Set 50c Price $2.60 to $4.00

When writing advertisers please mention the American Carpenter and Builder.
SMITH of SMITHVILLE

Modern Shop Equipments a Specialty
We Make 150 Different Kinds of Machines

ASK FOR CATALOG

No. 341 A Combination Double Arbor Saw

EVERY user of machinery knows that if he were obliged to reduce his equipment to one machine he would retain a Universal Saw. The Circular Saw is the indispensable tool—the beginning of all things in a shop—therefore why not make a wise selection? We build 21 different types of sawing machines and feel competent to consult intelligently with you on this subject. The Machine shown here-with is very useful for general work, and a great labor saver when operated on specific wood working problems. Please bear in mind that all machines designed by Smith of Smithville always contain approved features for the elimination of danger to the operator. We also guard against the annoyance and expense of breakage by building machines sturdy and well, regardless of the influence of low priced competition. The name Smith in connection with wood working machinery is a synonym of Quality. Write for special circulars and prices.

H. B. SMITH MACHINE CO.

SMITHVILLE, N. J., U. S. A.

BRANCHES:
CHICAGO
NEW YORK
ATLANTA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
ASHBY
SCHOOL HOUSES

display a composition of utility, durability and good, pure architecture without any "gingerbread."

No buildings are too large or too small for our personal and prompt attention.

We develop your own ideas into a practical set of plans and specifications with which they can be executed to the smallest details into a building that can be built within your means and to your entire satisfaction.

Ashby's Portfolio of School Houses will be sent to parties interested in the erection of a school building for which plans have not yet been procured.

G. W. ASHBY—ARCHITECT
11th Floor, Medinah Bldg.
CHICAGO, ILL.
Coming right down to the economy question Clincher Lath has got everything beaten.

As a practical man you can understand the principle by the illustration. **Notice** the level plastering surface—the construction that's different.

**Sagging Is Impossible**

Sagging between the studding is rendered absolutely impossible if Clincher Lath is used. Read what progressive carpenters have to say about it.

Easier to handle and easier to erect than any other lath on the market. Prove this by sending to Department C for samples. Free to anybody interested.

**The American Rolling Mill Co.**

**MIDDLETOWN**

**OHIO**

---

Send for Our Map of Boston,
Showing Exact Location of

**Hotel Rexford.**

75 Cents
Per Day

25 Suites with Bath
250 Rooms Newly Furnished
With Brass Beds

When you visit Boston, if you desire the greatest comfort with the least expense, you will find Hotel Rexford all right. You will notice the central location of the hotel, its nearness to the Union Station, State House, Court House, theatres, and business houses. In other words, it is a part of Beacon Hill. Of course what you want when you visit Boston is comfort and safety, and, if economy goes with it, that makes a combination that will undoubtedly prove satisfactory. Therefore, when in town, "TRY THE REXFORD" and we will make special efforts to please you.
Carpenters will find this tool of great assistance in all cases where it is necessary to plane a bevel.

This tool can be attached to any Iron Plane and with a little practice an inexperienced workman can do as good a job as an old carpenter, and in so short a time as to put the other man to shame.

All up-to-date carpenters should provide themselves with this labor-saving and time-saving attachment.

Catalog giving complete description will be sent free on request.

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

We Will Send ONE ONLY

Knurled Nail Set for Five Cents

and a Two Cent stamp for Postage—if after trial you will part with it, we will pay you Fifteen Cents to get it back. This is done to make them known. You can have either 1/8, 1/4, 3/8 or 1/2 point.

Booklet, "Tools That Last," will be mailed upon application:

Braunsdorf-Mueller Co.
201-211 Madison Ave. ELIZABETH, N. J.

STANLEY MITRE BOX

On the edge of the Solid Metal Base (where they will always remain correct), degrees are accurately graduated.

As the Swivel will automatically lock at any point, the operator can quickly set the Saw to cut the angle needed.

For duplicating work, a stock guide can be screwed in a threaded Plate, inserted in base board, making a perfect length gauge.

With these new features, the Stanley Mitre Box is more than ever a necessity to all wood-workers.

For full description, sizes, and prices, write for Catalogue No. 34.

Sold by all Hardware Dealers.

Stanley Rule & Level Co.
New Britain, Conn., U. S. A.
How to Read Plans

A Valuable New Book by Charles G. Peker

60 Pages (5x7 ins.)
43 Drawings in Text, & Large Folding Plates
Showing the complete plans of a 7 room house
Handsomely Bound in Cloth

Price, 50 cents
Sent postpaid on receipt of price

Many building mechanics are handicapped from getting more pay because they are unable to read plans and work from a drawing. This book simply explains the meaning of the various lines, plans, views, elevations, sections, scales, blue prints, devices, symbols, etc., to be found on a set of plans. Each subject is taken up and explained and illustrated separately, and then a full complete set of architect's plans for a frame house is taken up and explained so that the reader will be sure to understand how to read plans.

INDUSTRIAL PUBLICATION CO
14 THOMAS STREET NEW YORK

ARE YOU A Carpenter?

Have you seen the NEW BRACE?

Adjustable 6, 8, or 10 inch!

It will bore a hole centered one inch from a corner where ordinary brace cannot work:

Send for Circular

The E. S. Brace Co.
NIAGARA FALLS NEW YORK

JOIST HANGERS
For Wood Timbers, Concrete Blocks, or Iron Beams.
Many Sizes in Stock
Special Shapes to Order
Steel Post Caps Wire Floor Clips
STRAPS, BOLTS, PIN ANCHORS
BLACKSMITH WORK AND IRON FOR CARPENTERS' REQUIREMENTS
Telephone Yards 403
Chas. Mulvey Mfg. Co. 85th and Ashland Ave. CHICAGO, ILL.

GOING TO BUILD?
Don't buy your Builder's Hardware before you get our prices. Send for our Catalogue and Net Price. We will mail it Free to Contractors and Builders.
Rehm Hardware Co.
354 Blue Island Avenue, CHICAGO

Smooth, tough "leads" are the result of skilful and careful grinding, working and firing. It is this care and skill that make Dixon's Carpenter Pencils standard. Send 16c for generous sample lot 183 J.
JOSEPH DIXON CRUCIBLE CO.
JERSEY CITY, N. J.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
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
New York

The Best 3 Made
EVERY TROWEL GUARANTEED
No Mistake in Insisting on MARSHALL-TOWN

We manufacture a full line of High Grade Plasterers' Tools, and it would be well for every plasterer, bricklayer and contractor to have one of our catalogues.

Marshalltown Trowel Co.
Marshalltown, Iowa, U. S. A.

ARE YOU GOING TO BUY A Builder's Level or Transit?
Let us demonstrate to you the superior quality of the "STERLING" INSTRUMENTS.
In Design, Workmanship and Quality they are unequalled and only cost $50.00. Complete.

We are headquarters for Level Rods, Tapes, Drawing Tracing and Blue Print Papers, Drafting Instruments, Scales, Triangles, T Squares, Links, Pencils, etc. at very moderate prices.

Send for Circulars and Book of Instructions and Adjustments.
ISZARD-WARREN CO., Inc.
1122 VINE STREET - PHILADELPHIA, PA.

ARE INDISPENSABLE FOR ACCURATE WORK
Made by The Lufkin Rule Co.
Saginaw, Mich., U. S. A.
New York London
For Sale Everywhere.
Send for Catalogue.
The construction is practical and thorough in every detail. Made of wrought steel, 1 1/2 inch by 1 inch beam, with 1 inch by 4 inch flat bar running through at right angles, forming a net work to receive either Plain Lens or 3-Way Prisms, and is made to size as ordered in black, and then galvanized, making it positively immune from corrosion.

Small cut shows sectional view of construction with Prism Lens, and is intended to be used as sidewalk or vault lights, same construction with Plain Lens is used as a floor or skylight. Leading architects and engineers have heartily endorsed the principle.

Large cut shows the 3-Way Prisms that are saving money for hundreds of concerns throughout the country. By installing them in the lobby of the Broad Street Station at Philadelphia, the Pennsylvania Railroad were enabled to dispense with eight hundred incandescent lights. The natural light from the sky is diffused to a distance of three hundred feet of what was previously darkness. This is the story that is being told wherever 3-Way Prisms are used. More light—better light—expense eliminated are three features effected by this system. All are explained in the catalog, free to anybody interested.

American 3-Way Prism Company
134 North 10th St.
PHILADELPHIA
Are You Interested in Mitre Boxes?

If you are it will pay you to investigate the Langdon Acme. It has all the advantages of any other box made and several that others do not comprise. Our pocket catalogue "D," representing our full line of tools, will be sent if asked for.

MILLERS FALLS COMPANY
28 Warren Street, NEW YORK:

BLAKE QUICK ACTING VISE

For Cabinet Makers and Wood Workers. Simplest—Strongest—Cheapest—Best.
Send for Catalogue of all kinds of Vises.

PRENTISS VISE COMPANY, MAKERS
44 Barclay Street, New York, U. S. A.

PARKER VISES

MADE ESPECIALLY FOR WOOD WORKERS
FOR SALE BY DEALERS
SEND FOR CATALOG

CHAS. PARKER CO.
MERIDEN, CONN.
"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 Celebrated Barton Planes and Edge Tools for carpenters and all other woodworkers are unequaled by any other make for keen, hard, smooth cutting edges. If your hardware dealer does not handle The Celebrated Barton Tools, send direct for Catalog. Be sure and specify "CARPENTER'S CATALOG"

MACK & CO., 20 Brown's Race, Rochester, N. Y.

Using the

A.B.C. PROTRACTOR SQUARE

is the easiest and quickest way to get correct bevels, cuts and measurements Ask your dealer for it or write us direct.

Union Made

Price $3.00

CROOKSTON TOOL CO.

CROOKSTON, MINN.

Buy Art Glass

From the Manufacturers

We are actual manufacturers of Art Leaded Glass in all the latest and best styles, with Copper and Brass settings. Also Colored Glass of all kinds for making lamp shades, etc.

25% Discount to Contractors

Let us give you an estimate on your next job. Quality of goods is all it should be, prompt shipment is certain, price is always low.

Estimates and Designs Furnished Promptly

McCULLY & MILES CO.

76 Wabash Avenue

CHICAGO
Summary of Wearing Test of SAMSON SPOT SASH CORD
Made at the Massachusetts Institute of Technology
The wear was determined by pulling the weights up and letting it down over a pulley. Every lift corresponded to once opening and shutting a window. Weights used, 25 lbs. Pulleys used, 2 ½ inches in diameter.

<table>
<thead>
<tr>
<th></th>
<th>Average Number of Lifts Before Breaking</th>
<th>Cost per Foot</th>
<th>Cost per 100 Windows</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampson Spot Cord No. 8</td>
<td>214,371</td>
<td>$3 Cent</td>
<td>$18.00</td>
</tr>
<tr>
<td>Best Metal Sash Chain</td>
<td>75,848</td>
<td>5 Cents</td>
<td>$120.00</td>
</tr>
</tbody>
</table>

Full tests, samples, etc., sent on application

SAMSON CORDAGE WORKS
BOSTON, MASS.

The National Roofing Tile Co.
LIMA, OHIO, U. S. A.
Manufacturers of the Celebrated "National" Double Interlocking Roofing Tile
WATER TIGHT EVERLASTING HANDSOME

Send Plans at Our Expense for Estimates Write for Catalogs, Samples and Prices

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Don't Ask the Dealer for Sash Cord. Ask for "SILVER LAKE" and see that he gives it to you. It is impossible to substitute, as our name is stamped in red on the 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.

The Modern Wall and Ceiling Material Takes Place of Both Lath and Plaster
The carpenter nails it direct to the studding. It is then painted. No waiting for plaster to dry. Susceptible to finest decoration. "Determining Facts in Wall Building and Decoration" tells about the six kinds. A copy and sample free. Write today.
The Beaver Mfg. Co., 247 Perry St., Buffalo, N. Y.

MONITOR SASH LOCKS
(PATENTED)
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 a lower point than any other; adjust the sashes perfectly, prevent all vibration, and lock securely, so it can not be opened from the outside.
MADE IN TWO SIZES AND ALL FINISHES BY
The Champion Safety Lock Co. Geneva, Ohio

GOODELL MITRE BOX
Made of STEEL - Cannot Break
First in Quality and Improvements
Automatic Stops for holding up saw.
Corrugated Racks. Graduated.
Gauge for duplicating cuts and many other features.
Send for Circular "G."
GOODELL MFG. CO., Greenfield, Mass.

GRAND RAPIDS
All-Steel Sash Pulleys
Are sold DIRECT to Builders, Contractors and Mills at prices under the common ordinary goods.

If you make ten or ten thousand window frames, we can save you money and give you a superior sash pulley. We are the largest sash pulley makers in the world. We ship direct, or through dealers and jobbers everywhere.
Write for catalogue and free samples and prices on gross, barrel, or any quantity.
Direct from the makers to you. Inquiries welcome.

GRAND RAPIDS HARDWARE CO.
34 Pearl St., Grand Rapids, Mich.

FREE SELF-SETTING PLANES
Advertised in this paper since it started

GOODELL MFG. CO., Vineland, N. J.
We Want You

to know us; to get our catalogs and see what we have to offer in goods and prices. Get a catalog and look it over. It will put you under no obligation and you will not be bothered by a lot of advertising matter that is no good to you.

ORDER CATALOG BY NUMBER

Number 371
WOODWORKERS' TOOLS—Contains tools for the cabinet maker, car builder, carpenter, carriage builder, cooper, draftsman, furniture maker, hatter, manual training school, millwright, pattern maker, ship builder, wagon maker, and for carvers, engravers, turners and all workers in wood. The only complete catalog ever issued of this line.

Number 372
BUILDERS' HARDWARE—Contractors' Edition. 198 pages of the finest hardware in the world. Shows everything necessary to equip any building. Sent free to contractors, architects or owners of proposed buildings.

Number 376
REFRIGERATORS, HOUSEHOLD—An abridged catalog which explains the reasons for the superior ice-keeping qualities of our "A" Refrigerators.

Number 377
DUMB WAITERS AND HAND ELEVATORS — Giving details required to enable us to quote you intelligently. Sent free.

Number 3714
CONTRACTORS' TOOLS — Showing tools for the bricklayer, cement contractor, mason contractor sewer builder, lather plasterer, plaster stonemason, stone mason. Is the most complete work for contractors ever issued.

ORR & LOCKETT HARDWARE CO.
Estab. 1872
CHICAGO
The Important Notice

When your subscription expires, renew at once, using the blank enclosed in your final copy. If it expires with this issue, your renewal must reach us before October 23 to avoid missing the November number. Use P. O. or Express Money Order if possible, but bills or 2-cent stamps may be sent at our risk.

American Carpenter and Builder

Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill. under the Act of Congress of March 3, 1879.

Published monthly by
American Carpenter and Builder Company
185 Jackson Boulevard, Chicago.

Vol. VI OCTOBER, 1908 No. 1

The AMERICAN CARPENTER AND BUILDER is issued promptly on the first of each month. It aims to furnish the latest and the most practical and authoritative information on all matters relating to the carpentry and building trades.

Short practical letters and articles on subjects pertaining to the carpentry and building trades are requested.

SUBSCRIPTION RATES.
One year, $2.00; six months, $1.00; payable always in advance. Single Copies, 20 cents. Canadian Subscriptions, $2.50. Foreign Subscriptions, $3.00.

Subscriptions may be sent by check, express or money order, or registered letter. Make all remittances payable to the American Carpenter and Builder Company. Postage stamps are not desirable, but if necessary to remit them, two-cent stamps are preferred.

IMPORTANT TO SUBSCRIBERS.—Do not fail to notify us promptly if you wish your magazine forwarded to another address than that originally ordered. We will not guarantee to furnish missing numbers in cases where subscribers have neglected to inform us of their change of residence. We will be pleased to change the address of any subscriber at any time, but have no means of knowing that they have moved unless they notify us of the fact. The postoffice authorities will not forward newspapers or magazines from one address to another unless extra postage is paid by the subscriber. Write us as soon as you move, giving your new address, and we will correct our mailing list and there will be no delay in your getting your magazine.

ADVERTISING RATES.
Furnished on application. The value of the AMERICAN CARPENTER AND BUILDER as an advertising medium is unquestioned. The character of the advertisements now in its columns, and the number of them, tell the whole story. Circulation considered, it is the cheapest trade journal in the United States to advertise in. Advertisements, to insure insertion in the issue of any month, should reach this office not later than the 20th of the month preceding.

Too many young men strive to be good fellows rather than good citizens.

Smiling will not only get you more than frowning, but it leaves the face in better shape.

Be careful about cultivating the habit of saying "That's good enough," it too often leads to carelessness and slovenly work.

Much trouble is caused in this world by throwing mud at the hornet's nest. Some people don't seem to be happy unless they are trying to get stung!

Following the ideas of others may help you some, but it is only when you begin to generate ideas of your own and follow them that you are in line to amount to something.

"De man dat succeeds," said Old Unkle Eben, "is de one dat has de grit to get up every mornin' an' put ditto marks under his New Year resolutions."

Honest Material and Good Work

A man is known by the company he keeps. A carpenter's tools and his materials are his company. Good tools and good materials go with good workmanship—which means another job at good pay. Three cents saved somewhere in buying some little piece of cheap building material may mean another job; but that job will go to another carpenter. Buy honest goods and goods that you know are honest by experience. And whatever you do, whether it's a small job or a big contract, do good work!

Public Education in Architecture

A popular chord with the architectural profession was struck recently by George Oakley Totten, of Washington, D. C., in an address in which he took the position that the public should receive a certain amount of education in architecture.

"Everybody should be able," he said, "to criticize, with accuracy and intelligence, the public and private buildings which are rising rapidly on every hand. This knowledge would be of great advantage to the individual, but of vastly more advantage to the public. As T. G. Jackson of the Royal Academy said at the recent international congress of architects in London, architecture is a necessary art; in fact, the only neces-
Be an Optimistic Thinker

Did anyone ever get any good from talking about hard times, or fault-finding, or allowing himself to think that the lack of a college education handicaps him, or that he does not have the chances others have, or that there is no use for him to try to do anything above the ordinary, and so on? Can you recall any man having been made better, or attracting to himself more friends or pleasanter surroundings, by such thinking? If not, then you can make up your mind that such thoughts are a waste of energy. Though he may think he has good ground for anger, hate, envy, fear, worry and the like, did such feelings ever get anything worth having?

On the other hand, haven't you noticed that the man who doesn't complain about his trade, or his circumstances, or his lack of early advantages, or people or things, but keeps right on plugging away, thinking and doing things that are worth while—haven't you noticed that such a man forges steadily ahead?

Cement Show Feb. 18-24

The executive committee of the Cement Products Exposition Company, Messrs. B. F. Affleck, Wm. Dickinson and J. U. C. McDaniels, has closed negotiations with the Coliseum Company, of Chicago, for the Second Annual Cement Show, which will open in the Coliseum Feb. 18, at noon, closing Wednesday night, February 24.

Destroying Insanitary Buildings

The City of Washington is setting an example to other large cities in the country, destroying buildings which the health authorities believe to be insanitary. Thirty-two such buildings were razed during the month of March and about the same number were destroyed during each of the months of January and February. In less than two years about 1,000 buildings have been either destroyed or have been brought up to the sanitary standard required by the District ordinances. These numbers would indicate that it was high time that such action was taken; and in fact many sections of Washington and even parts of its prominent thoroughfares were quite recently disfigured by shacks that would discredit a country town; but the greatest evil lay in the insanitary conditions existing in many buildings, aside from their appearance. At the present rate the Insanitary Buildings Board will, in a short time, have redeemed Washington's reputation and made it, as it should be, a model for the cities of the country.

Kitchen Architecture

It may seem strange to some to speak of kitchen architecture, when possibly less thought is expended there than on any other part of the house. But that is exactly the reason why the subject is being put forth now. The kitchen needs more architectural attention.

Sometimes a kitchen is simply a lean-to; sometimes it is a cubby hole; sometimes, where old-fashioned ideas prevail, it is large and roomy. But it is seldom that proper thought is used in its designing. What is wanted is not merely a kitchen that is inviting of itself, but one so constructed that the odors of cooking will not permeate all the corners of the house. To this end it would seem that special attention should be given to ventilation in connection with a kitchen. A kitchen might be isolated from the balance of the house, but that would put it out of touch with the dining room and cause many inconveniences, especially in the modest homes where the housework is done by the family instead of by servants.

So it is really the kitchen problem in the modest home that needs attention and needs solving. We might well use now some of that thought and energy that has been expended on sanitary plumbing, and on front effects, in designing kitchens that will be odor proof, that will not distribute the odor of the cooking all through the house. If the enterprising writers of The American Carpenter and Builder have hobbies or ideas that they think are worth while on this subject, we will be glad to hear about them; there is need for more attention to the kitchen end of the house, that its numerous problems may be solved.
WANTED.
1st class
CABINET MAKER
APPLY U.S.

I am still on the job.

REPUBLICAN

DEMOCRAT

INDIVIDUAL

PROHIBITION

SOCIAL
The Classic Theatre in America

By J.R. White

The World's Most Famous Theatre, Magnificent in its Ruins—The Colosseum at Rome

The latest thing in open-air theatres, until the one planned by Elbert Hubbard for the Roycrofters at East Aurora becomes a fact, is the one at the University of California at Berkeley. It is still in a perfect state of preservation, having weathered the earthquake; this, in spite of the fact that a German newspaper insisted recently that on that occasion the roof fell in!

About fifteen years ago one of the students discovered that behind the University there was a certain curve in a certain hillside, and that at the base of this there was a level stage of greensward. An out-of-door extravaganza was arranged by this same student for Junior Day, and so great was the success of the first performance in "Ben Weed's Amphitheatre," that from that time on it became the authorized spot for college festivities, and midsummer night's dreams of various sorts, and various occasions.

Five years ago the curve in the hillside was made more regular and outlined in stone. A theatre was built on the general plan of the theatre of Epidaurus in Greece, though somewhat smaller than the classic model, and with the stage considerably larger. The Greek stage was sometimes not more than five feet in depth. The stage of the Berkeley theatre is twenty-eight feet deep, one hundred and thirty feet wide and accommodates comfortably six hundred actors. The auditorium is two hundred and fifty-four feet in diameter and is made up of stone steps, rising tier on tier, above the orchestra—a circle of hard-packed earth fifty feet across. Back of the stage is a bare white wall ornamented with Doric columns. Two massive pylons finish the ends of the side walls, which extend out toward the auditorium.
It has been proposed that a row of marble seats should outline the orchestra and that each class should contribute a carved chair marked with its year, to be occupied on all public occasions by its most distinguished member. One can imagine that there might be some bit of discussion as to who was the most brilliant light of the many who had tried to shine. One can imagine, too, the anguish of some modest little scientist who, shrinkingly sensitive, is nevertheless decreed by vote to be the most distinguished graduate of his year and is deposited in the great white marble arm chair, in view of all the world! Perhaps it is just as well that the present system should be continued of reserving the front rows of cane chairs for those who possess the distinction of being able to pay the extra price these seats command.

Reference is often made to the stone theatre of the University of California. If the tourist complains that it is only plain gray Portland cement, he is informed that if it is not stone it soon will be, for the donor of the theatre, William R. Hearst, has promised to face the entire structure with marble.

It is a distinctive privilege and honor to perform on the stage of the Greek theatre of Berkeley. The distinction is unique enough to tempt the greatest actors, musicians and orators to try there the power of human expression. The test is a severe and sure one; for the stage furnishes none of the extraneous stage helps in the way of scenic effects supplied by the ordinary theatre.

It must be a supreme moment when the bare white wall for background and colorless sky for canopy an individual feels himself a solitary figure giving color

and life and imagination to thousands of human souls who think his thoughts and feel his emotions. Here Bernhardt recalled the days of Phedre. Shuman-Heink brought back the mediaeval Rhine world, and Roosevelt stirred his vast audience with desire for strenuous and righteous living. There have been Greek plays, the old miracle and morality spectacles, the Elizabethan masques—everything that is of interest in connection with the development of the drama has had here adequate and often excellent presentation.

These are the mid-week events. The regular Sunday afternoon performance is a half hour of music. The best musicians from all corners of the world are allowed to contribute their time and talent for one-half hour on Sunday afternoon as a free gift to the thous-

ands of music lovers who come to Berkeley for this event from the half dozen towns and cities that surround San Francisco Bay.

The curious tourist comes, the father with his family, the student, music hungry, the lover and his lass—all sorts and conditions of men rest here after roaming the Berkeley hills and find, let us hope, the balm they seek, in this atmosphere of music and sunshine. No Sunday afternoon entertainment, it would seem, could be more conducive to real happiness and goodness than this half hour of music in the Greek theatre at Berkeley, under the clear blue of the California sky.

Man has constantly grown in power, strength, wisdom, excellence and worth. If he has ever fallen it has been upstairs, not down.
A Model Country Bungalow for $1500.

By Mary H. Northend

This house is situated on the crest of a hill, at Fayal Mountain, Westboro, Massachusetts. It is owned by Mr. J. B. Strongman, and was designed by Calvin Kiessling, architect, of Boston, Mass., as an adaptation of the Swiss Chalet.

The spot chosen for the location is the highest land between Westboro and Worcester, with a long grassy sweep upon each side, and a background of forest trees. The exterior view here shown is that of the north corner of the house.

The exterior of the house is finished in the country pine, laid in the rough state. The second story shows wide boards placed vertically, the joints covered with battens, the boarding upon the lower story is laid horizontally and is tongued and grooved. The little overhanging balcony, with its balustrade and brackets, is similar to those seen all through the mountains of Switzerland. It adds very much to the cosy charm.

Both the shingles of the overhanging roof and the weather boarding of the sides are deeply weather stained, which gives the bungalow the appearance of having been built much longer than is really the case. The effect of this coloring is to fit the house to its surrounding of grassy lawns, and background of oak and pine, as unobtrusively as the grey lichens fit into the hillside pasture. The only paint is that used upon the window sashes; it is pearl white.

There are two verandas, of moderate size, the one upon the northeast side, the other upon the southwest; there is also a pergola with a trellis upon the south.

The living room, which is twenty-one feet long by fourteen wide, lies between these two verandas, with doors opening upon each of them, and a third outer door opening upon the northwest, under the little overhanging balcony. These three doors give a delightful circulation of fresh air. Being glazed their whole length, they also admit much light, so that only case-
ment windows are necessary. This assists in the disposition of the furniture.

The fireplace and chimney received original treatment, from the fact that they were built from headers of clinker brick, taken from an old kiln, near by. The beauty of the material consists in the fact that it shows so many different colorings, with attractive shadings of grey, dull purple, and blue.

The architect who designed the house also planned the plain and solid combination settle and magazine-table, which may be seen before the fireplace.

The whole interior is at present unplastered. It is the purpose of the owner to finish the inside with rough plaster, and to make the bungalow an all-year-round-home, in the near future. In the meantime, it is perfectly comfortable for occupancy, except during the winter months. The joists are double, one foot on centers and boarded across the bottom, to give the effect of one long beam.

Behind the living room are the kitchen and dining-room, the latter occupying the whole eastern corner of the house. The finish and the furniture are similar to those in the living-room.

Upon the second floor, are three bed-rooms and a bath. There are hard pine floors throughout the house, all the woodwork is stained dark brown, and there is a good cellar, to contain the furnace which will be placed when the bungalow is in use during the whole year. This cellar is cemented, sides and floor.

The cost of this attractive little bungalow to build was approximately $1,500. In many parts of the country at the present time it could be built for less.
The general introduction of cold storage during the past few years has had an enormous effect in stimulating production and opening new avenues of wealth for agriculturists and others engaged in the distribution of food products the world over.

By means of refrigerator cars, western beef is now delivered in prime condition all over the continent and together with the fruits of California finds a ready market in London, Paris, and other European cities, by an extension of the principle to ocean liners. The experience of Argentina, Australia and New Zealand as to the benefits of cold storage makes a very interesting story. In 1886 sheep had become so numerous in Australia that their carcasses were used for mutton, and they were bred for their skins and tallow only. In that year, however, a small beginning was made in cold storage, and 400 carcasses of sheep were exported in chilled or refrigerating chambers of steamships.

At the present time, Australia exports about two million carcasses, and the Argentine Republic and New Zealand each send nearly double that number annually to the over-crowded manufacturing cities of Great Britain and the continent of Europe.

Cold storage plants are also a feature in all our large cities today, and under the fostering care of the federal Department of Agriculture, cold storage collecting stations have been established in many farming districts on the co-operative plan. By means of these collecting stations, the farmers of the districts round about them can keep their perishable fruits and vegetables, eggs and poultry, for a long time in prime condition, and can avoid marketing their products all at one time, so creating glutted markets and consequently ruinous prices.

The advantages of this, both for the local trade and for markets in distant cities, are too obvious to need dwelling upon. In point of fact, the refrigerating industry has become so important in all countries that it now forms a branch of engineering by itself. It is not the purpose of this article, however, to deal with the principles or construction of large plants involving the installation of machinery, but rather with small, simple storage houses, which can be cheaply and easily built, and for which there is an increasing demand in many localities. The farmer, the small country butcher and the storekeeper handling eggs, butter, small fruits and many other perishable commodities, are all looking for some simple and inexpensive means of cold storage.

With the view then, that readers of the American Carpenter and Builder, who may have had no experience in building ice houses and refrigerating chambers, may become acquainted with the methods and principles involved, this article, dealing with the plans and specification for a simple and low-priced plant, has been prepared.

The Hanrahan System

The system is based upon the well-known and widely used Hanrahan system, the best known for long distance transportation on the railroads of this continent. It is also similar in principle to many domestic ice chests or refrigerators, and consists in passing a current of air over a mass of ice and thence into a separate chamber in which the food products are stored. From the simple natural law that warm air rises and cold air falls, a continuous circulation of cooled air passes through the refrigerating chamber and back onto the surface of the ice in the ice chamber. Any odors and gases from the food are thus brought into direct contact with the melting surface of the ice, which absorbs them and keeps the air in the food chamber in good condition.

The design here given is adapted from one recommended by the Ontario government, and has been built in many localities with complete success. The higher portion is the ice chamber, the lower the food chamber. Each portion has a metal ventilator, of the type advertised in the columns of this magazine, fixed on the ridge. The roofs are of shingles, laid on one inch boarding in the usual manner, and capped with five inch ridge boards and two inch roll.

Details of Construction

The size of house recommended by the Ontario government for the average small plant would call for an

---

**AMERICAN CARPENTER AND BUILDER**

**How to Build a Small Cold Storage Plant**

**DEVELOPMENT OF REFRIGERATION AND ITS SPECIAL VALUE TO FARMERS—WORKING DRAWINGS OF A PRACTICAL MODERN PLANT FOR PRIVATE OR CO-OPERATIVE USE**

By T. B. Kidner

---

**Plan—Showing also Wall Construction**
oblong formed of 2 by 8 pieces, 11 feet 6 inches the short way and 17 feet 6 inches the long way. On this 2 by 8 studs are erected and spiked into position at the foot. The studs for the ice chamber are 18 feet long and for the refrigerating room 9 feet, and are spaced as shown in the plan.

The ceiling joists, 2 by 4, are spiked to the sides of the studs, so that the bottom edge of the joists will be 12 inches below the top of the stud. The joists extend far enough over the sides to allow the rafters to be spiked to them, thus forming a good support for the latter. The ceiling is formed of 7/8 matched boarding, nailed to the underside of the joists and covered with 14 or 15 inches of well-packed, dry sawdust. All spaces between the studding are also packed with sawdust, well pressed down into every nook and cranny.

On the outside of the studs, 2 by 2 straps are nailed horizontally at 18 inch centers, and on these vertical matched boarding, 10 inches wide, is well nailed; the joints being afterwards covered with a 2 by 1 chamfered fillet, nailed closely over them.

The paper should be the heaviest building paper obtainable and is tacked on in an ingenious way. The specification for this is as follows. The inside of studding to be first sheeted with 1 inch matched boards, then with paper on walls and around corners. In fastening paper on walls with tacks about 5/8 inch long, do not drive the tacks home, but let them project half their length. Then take a ball of twine (No. 8 cotton, if procurable, or something similar, such as thick yarn, not too hard); run this twine
over the heads of the tacks, which must be placed so as to have a line of twine directly under the 2 by 1 inch battens to be put on. When the twine is on, drive tacks home; on the paper, and over the twine, place vertically 2 by 1 inch dressed battens at about 18 inch centers. Between these battens fix similar ones horizontally, over the twine and about 36 inches apart. These horizontal battens must be cut true on the ends and fitted tightly between the upright pieces. Over these battens lay another layer of paper and twine, put on as before; then sheet with matched lumber fixed vertically. Over this inside sheeting, place 2 by 1 battens, fixed vertically from floor to ceiling at about 18 inch centers. (These battens are not required in food chamber.)

The floor of the ice chamber is built up on the 6 by 6 sills, referred to before, and consists of alternate layers of matched boarding and quartering. The floor must have a fall of at least one inch towards the central gutter. As may be seen in the cross section, the first layer consists of pieces of 2 by 4 on flat, well spiked to the 6 inch sills, 1 foot apart, and thoroughly packed round with sand. On these is laid the first floor of 1 inch planed matched boards. On this, and directly over the 2 by 4 pieces, are laid pieces of 2 by 3 to support another floor of 1 inch planed matched boards. A reference to the longitudinal section will show in this floor an opening 12 inches wide and extending the full width of ice chamber and a narrower one at the end. On this upper floor is laid another set of 2 by 4 on edge over the under bearers; across these are placed 2 by 4 on flat, 3 inches apart, to receive the blocks of ice. The two layers of boarding form a set of cold air flues, through which the air passes to the food chamber.

The floor of the food or refrigerating chamber is formed of 1 inch matched boarding laid on pieces of 2 by 4, spiked on two 6 by 6 sills and with a fall towards the gutter. Pieces of 2 by 4 on edge are then laid on top of the 1 inch boarding at 15 inch centers, and across these 1½ by 2 inch battens, 1 inch apart, are firmly nailed. This lattice floor should be in two or three sections, so as to allow of its being readily lifted for cleaning.

The partition between the ice house next requires attention. It is formed of 2 by 6 studs laid on a 2 by 6 shoe piece spiked on top of the first layer of 2 by 3 bearers in the ice chamber. These studs must be planed on all sides, as they form the sides of the flues for the passage of the warm air from the refrigerator to the ice. A layer of planed matched boarding, laid horizontally, is then nailed to the studs, followed by a layer of paper and another layer of planed matched boarding, laid vertically. These layers of boarding are stopped 10 inches from the ceiling of the ice chamber to form the outlet for the warm air flues.

The end wall of the ice chamber, above the food chamber must now be formed. First spike some planed pieces of 2 by 4 to the 2 by 6 studs just described and to the 2 by 8 studs at the outer end of the food chamber, to form joists. The under side of these 2 by 4 joists is covered with planed matched boarding, all except a space of 12 inches at each end. Short pieces of planed 2 by 4 are then spiked against the edges of the 2 by 6 studs to piece out the flues to 10 inches wide. Upon their edges are laid two layers of boarding with two layers of paper, and battens be-
tween. Next, 2 by 8 studs, resting on 2 by 8 pieces, supported on the 2 by 4 longitudinal ceiling joists, are fixed in position, and these are in turn covered with 2 by 2 strapping, vertical boarding and battens, as before described for the outside finish.

The spaces between the 2 by 8 studs and 2 inch strapping are packed with sawdust, as before specified. The ceiling proper of the refrigerating chamber is then formed of 2 by 4 joists, with matched boarding on the under side and a 15 inch layer of sawdust on top.

The ice chamber end of the building has a small door in the gable to afford means of access to the space over the ceilings, so as to allow of the sawdust being packed down and added to from time to time. There is also a door below which gives access to the ice-chamber and is built in three pieces for convenience in charging. The doors are of 1 inch matched boarding on the face and of the same material, laid diagonally, on the inside; stout building paper is laid between the two layers of boarding. Wide rabbets or stops should be formed and rubber draught stop tubing nailed on them, so that the doors close tightly against it.

The other end of the building, as shown in the elevation, has a door in the gable similar to that in the ice chamber end, but, as may be seen from the plan, the door to the refrigerating chamber is double, with an air space between. Each door is constructed in the manner described for the ice chamber doors. A good birch or oak sill should be provided. The windows in the refrigerator chamber are quadruple. Each of the four sashes is fitted closely into the frame and held in place with ¾ inch stops, as shown in detail. The window frame is of stout 1 inch stuff and the sill is 2 inch. Great care must be taken in making the window frame, so that no leaks can occur. This is important, for the efficiency of the whole plant depends upon every part being as far as possible air tight, so that the condition of the atmosphere outside shall not interfere with the circulation in the interior.

When food is placed in the refrigerating chamber (on suitable shelves, hooks, etc.), the warm air rises from it and passes through the flues into the ice chamber. There it comes into contact with the ice and passes down at the sides and end, through the cold air flues under the floor and into the food chamber again. This process continues indefinitely but, of course, becomes slower when the contents of the refrigerator chamber are thoroughly chilled.

The drain is also an important part and must be carefully constructed or it may afford a means of entrance for warm air from without. The drain inside the chamber is of wood, lined with heavy galvanized iron, and should discharge into a terra cotta gutter trap, connected with a few feet of pipe to carry the drainage clear of the site. The banking of the building with earth for a height of 12 or 15 inches is another precaution.

The inside of the ice chamber is left rough. The food chamber must have two or three coats of good shellac varnish and the whole of the exterior should be painted in the usual manner.

The size of house here described is the smallest recommended, but no difficulty will be found in adapting the methods and specifications to larger houses.

"Ah, the Pity of It"

Sing a song of swellheads, a fellow full of gin, coming home at 2 a.m., his wife won't let him in. His feet are full of tanglefoot, his head is full of wheels, the keyhole runs around the knob, he a funny feeling feels. He puts his feet upon the porch, his head upon the ground, and all the same within his "mug" the wheels are going round. He thinks that he is sober and everyone is tight, and he's in his bedroom instead of out at night. He thinks the moon's a dollar and will buy a dozen drinks, and many other thoughts he thinks and drinks and thinks. But when his wife she cometh and with a hickory slat, he gives a shout and yelleth, "Now, Mary Ann, quit that."
How to Use the Steel Square

SHOWING HOW TO FIND THE BUTT JOINT FOR HOPPERS BY DIAGRAM. ALSO HOW OTHER ANGLES REQUIRED IN BUILDING HOPPERS MAY BE OBTAINED

WELL, we are still in the hopper and what may seem worse to some of the readers, we do not know when we will get out. But we will start in easy this time, with an A-B-C-D method, as shown in Fig. 219. This is for a butt joint hopper. The pitch may be anything desired, from 0 to 90 degrees. When the board is lying flat on the base line, it represents "0" degrees and the cut would simply be a square cut and when the four sides are put together, would simply be a frame, as shown by the sectional corner in Fig. 220. But when one edge of the board is raised, the incline represents the pitch; and the more it is raised, the steeper the pitch, till it stands on its edge. It is then vertical and represents "90" degrees and the cut would again be square as in the former illustration, but this time when the four pieces are put together, they form the sides of a vertical box, as shown in the sectional corner at Fig. 221. This represents the beginning and the ending, and is clear enough. Anybody can see that, but how to find the cut between these points is the question.

Now, let us go back to Fig. 219. The pitch, as we said before, can be anything from nothing to straight up. In this, we have chosen 14 inches rise to the foot run. C-B is parallel to the base line. A-B represents the thickness of the board. Now draw the line C-D at right angles from C-B and the line A-D will represent the angle for the butt joint across the square edge of the board, or the same result may be found by simply beveling the corner of the board to the line C-B. Then the angle across the top would again be square and the intersection of this line at the edges gives the starting points for the side angles which are found in the same manner as for a hopper with the miter joint as before shown and described in our last article, at Fig. 214.

In the above we have shown how the angles may be found without the use of the steel square. We will now take the same example, as shown in Fig. 219 and illustrate how the same results may be obtained with the steel square. Along with same, are also shown two ways for finding the figures to use for the miter joints and one way for the angle for the cut across the face of the board to give the desired flare or pitch.

Referring to Fig. 222, the pitch is represented by 12 and 14 as will be seen by the board, which for illustration is made to occupy the full length of the angle though not necessarily so, as the board could be of any width. The edge of the board being square, the complement pitch rests at 90 degrees from the given pitch. Now, it is the length of the complement pitch (21½ inches) transferred to the blade, and the figures 12 and 21½ will give the butt joint cut. To prove this, suppose the tongue is pivoted at 12. Now raise the blade. See the dotted circle line over which the 21½ mark travels, till it rests at the parallel line from the tongue in its original position and it will be seen that the tongue stands in the same position to the edge of the board as at A-D in Fig. 219. Therefore these figures will give the angle for the butt joint cut when the pitch is 14 inch rise to the foot. 12 and 9½ will give the miter joint for the same
pitch. Note the dotted circle from the heel to the intersection of the pitch and this point carried across to the blade rests at 9%. The radius of this circle is 1908 inches, because that represents the full scale for a one foot run. Then 12 on the tongue and 9½ on the blade will give the miter, the blade giving the angle. Or the rise (14) taken on the tongue, and the length of the pitch (18 5-12) taken on the blade, will give the same thing, but the tongue in this case gives the cut. For proof of this, see Fig. 223.

For the angle across the face of the board, it is 12 on the tongue and the length of the pitch (18 5-12) on the blade; the tongue will give the angle.

The dotted lines and circles shown in Fig. 222 are to illustrate the different proportions and their line of movements over which they pass in the transferring operation to get the proportions on the steel square.

The apprentice should study this diagram because all of the points are clearly illustrated as to their relation to one another. Remember that 12 is a fixed point on the tongue, because it represents the run for any pitch, while the figures on the blade are changeable because they are governed by the pitch which is changeable.

Caught a Tartar

The following vivid pen picture is taken from the editorial columns of an Iowa journal: "There was a blow. Somebody fell. We got up. Turning upon our antagonist, we succeeded in winding his arms around our waist, and by a quick maneuver threw him on top of us, bringing our back at the same time in contact with the solid bed of the printing press. Then, inserting our nose between his teeth and cleverly entangling his hands in our hair, we had him."
AS MODERN buildings supersede the old style frame buildings it often becomes a question how to remodel them. An effort to imitate the new is seldom successful, but if the old buildings are improved in their own way the results may be very good. Designs of this sort have been lacking because the new students in art give no attention to the work of the old timers in their own localities.

The accompanying design was made for a typical front in the old style of carpentry work. The ceilings of the main story were very high. The basement was a full story. An outside flight of steps led to the front door on the second floor level.

The new entrance was to be brought down to within a few feet of the grade. A half flight of stairs was to lead from the vestibule down to the dining room, and another half flight up to the parlor floor.

Heavy moldings around the windows, of course, had to be removed. It was also necessary to see that foundations were good and the walls and jams plumb.

The design chosen for the remodeling calls for a veneer of glazed or enameled tile. Such a front would lead the fashion for a long time to come. The designer introduced a number of years ago enameled tile on exteriors, since which time it has become very popular. It is durable, always clean and cheerfully light, besides being elegant in appearance. This makes it well worth the expense.

The dimensions of the diagrams are suitable also for Roman brick, flatwise, so that that material can be used with terra cotta moldings. These moldings are so constructed that a thin veneer may be used.

The veneering may also be of cast concrete blocks of the same sizes. It is this choice of materials and adjustability of the same forms to different dimensions, that makes the design economically practical.

The V shaped vertical members of terra cotta stiffen the veneer at the corners and windows. These are anchored to the wall and overlap the wall covering, holding it in place. This also covers the ragged joint where the tile has to be clipped. This is shown in the section of the first and second story wall.

The basement is in Richardson courses, only in place. This also shows the ragged joint where the tile has to be clipped. This is shown in the section.

The basement is in Richardson courses, only in stead of stone the brick is laid alternately flat and edgewise. The vacant space is filled with concrete, as shown in the section.

It is not enough to drive spikes into the wall for anchors. They must hook firmly around the sheathing or another spike at right angles. The window head requires a small angle as shown on the diagram. It must be bolted to the framework.

The space between the veneer and the siding should be not less than an inch and well filled with cement mortar.

The frieze can be made of plain veneer or con-
The carving can be quickly modeled from a sketch. It is not necessary to have all the details correspond exactly if the symmetrical outline is preserved. Fine detail should be avoided.

The long curves should be made at a single sweep.
The shaping of the leaves should be done with a single characteristic touch; the high relief to be pushed up in the same manner. Where there is a series of forms they should all be done with a similar movement of the muscles. As the work is above the eye sharp edges should be on the under side while the upper side should be made to slope the water off.

Anything like cast carving should be avoided. The classic style is also impractical in this mode. The former is characteristic of the Romanesque, the latter of Greek art, examples of which are among our recent title headings. But something like the Gothic might be faintly impressed with pleasing effect. The design represented is called an "all over" pattern.

A tendency to pull down old buildings that are substantial, for building up new ones, depreciates the value of building improvements, for it increases the expense in the long run, enormously. Owners hesitate when such a probability presents itself in considering new work. There is the owner's waste of time, inconvenience and, most of all, the neglect of other affairs to be considered. Hence the most desirable mode of building is one which can be easily kept in repair and improved from time to time.

Methods of Rapid Estimating

In MANY places it is fast becoming the custom to provide bills-of-quantities for all works, large and small. There is however a very considerable section of the building trade with whom the provision of quantities is rather the exception than the rule. It is to that section that this article is particularly addressed, and it is intended to be an assistance to those who are compelled—owing to the absence of quantities—to arrive at an estimate the best way they can in the time at their disposal. In some places the time allowed as a general rule entirely precludes any attempt on the builder's part to take off the quantities himself, however roughly. The writer knows one town where the custom is for one builder to have a set of plans from 10 a.m. to 6 p.m., and then pass them on to another tradesman, who has them from 6 p.m. to 10 a.m. next day. The impossibility of quantities under such circumstances is obvious. In such a case, experience—both general and particular—alone can help the contractor, and he has to arrive at his price by one of the several methods that will be touched upon later.

Very often, also, it is desirable and important to be able to give a quick but fairly accurate estimate on some proposed piece of work for which nothing but rough "idea" sketches are provided. To assist the contractor to this end, particulars of work already carried out by him are of the utmost importance, and a table like the following is recommended:

|----|---------------|---------------------------------------------------------------|-----------------|------------------------------------------|----------------------|--------------------------------------|-----------------|-----------------|----------------------|---------------------|-----------------|

As it is usually only in buildings of small size that contractors are called upon to tender without quantities, these and the following remarks apply to such buildings. In dealing with No. 3 of the annexed table, the number of cubic feet is arrived at by multiplying the length of the building by the breadth, and height from bottom of footings to half-way up roof, disregarding buttresses, chimney stacks, dormers, etc. The ordinary cubing is assumed to include drainage of average extent and character and average-priced grates, mantels, and finishings. But as the price per cube foot is of small value unless one knows the character of the buildings, the contractor, in the space left for remarks, should insert particulars of finishings, materials, and any unusual features there may be. Boundary walling, entrance gates, and such like should be excluded, and the price of them stated in the remarks. Other elements which affect the price per cube foot are very small or very large rooms, the utilization of the roof space for rooms, etc. Small buildings cost more than large ones, the finishings being of similar character.

No. 4 of the table is a very useful item, and may be arrived at either by squaring each floor, including walls, or by measuring each room, also areas of passages and stairs, and adding to the total 1-5 of the whole for walls and waste. In a house of considerable size, it is as well that the family and servants' departments be kept separate, but in an average-sized
house, this is not necessary, nor desirable.

In No. 6, the brickwork is all reduced to the super yard 9-in. thick, including ½ brick partitions, but a note should be made as to whether there is much stud partitioning, and whether the openings are particularly large or numerous.

Having the particulars before him, the contractor is in a position to arrive at least at a very approximate value of the building of average size, character, and finish, and may adopt either of the four following methods: (A) At so much per cubic foot. (B) So much per square. (C) So much per room. (D) So much per yard of brickwork.

Of these methods, (A), column 3, is perhaps the most common, the measurements being taken from the bottom footings to half-way up roof. Yet in some respects it is the least satisfactory, chiefly on the ground that the figures dealt with are large, and any miscalculation must necessarily result in a mistake of some magnitude.

For instance—apart from an actual error in the figures— in the case of a pair of semidetached houses of 40,000 cub. ft. the pair, the difference between 11c and 12c per cubic foot would be $400, which is too large a margin to play with. Given the information of the afore-mentioned table, the most satisfactory method on the whole is (B), column 5. The pair of houses of 40,000 cub. ft. would contain eight squares on each floor in each house, a total of 32 for the pair, which at the price of $4800 the pair is $150 a square. It is clear that by this method a mistake has not so serious results as by method (A). In the case of a contractor pricing at either $145 or $155 a square, the result does not mean a severe loss on one side, nor destroy his chance of the job on the other. Furthermore there is a better opportunity of adjustment of price by adding to or deducting from the price per square.

In dealing with out buildings of one story, it is best to cube these, reckoning the main building only by the square. Boundary walls, fencing, entrance gates must be, of course, kept separate in each case, and as these are usually simple and easily measured, there is no difficulty about this.

Sometimes it is the case that the house for the erection of which the builder is tendering is, on the whole, of ordinary materials and finish; but has in connection with it one or two troublesome or expensive particulars—perhaps a dining or drawing-room, done out with somewhat costly fittings, or with carved wood. The simplest way is undoubtedly to treat the whole by the square, and add a sum for the particular items.

Method (C), column 7, cannot be considered so satisfactory as the price per square method just given. It is obvious that the size of the rooms is of the first importance. The writer, however, knew one contractor who always arrived at his price by means of this method, and he was guided almost exclusively by the size of the ground floor rooms. Having a certain price for these rooms, of average size and height, he varied his price per room, according as they differed from his standard. He contended that the size of the upper rooms was necessarily governed by that of the lower rooms. The particulars essential for tendering by this method are the same as those for tendering by the square, and the same remarks apply generally.

The last method, column 9, is very simple and very useful; and given, as already stated, similar materials and finish, there is a very close connection between the price and the number of yards of brickwork. The only thing to be noted is whether the amount of stud partition is unusually large. It might be argued that the number of yards of brickwork would be no guide in the case of the house shown in the sketch; that if the house was made square—as indicated by the dotted lines—the brickwork, at least in the external walls, would be the same in both cases; yet in that of the square house the space enclosed would be larger, with more floor area, and therefore of greater cost.

In answer to that, there are these considerations: For its size, the house with the irregular outline, has a larger proportion of external walling and external facing; the roof would be likely to be more expensive in labor, more cutting of brickwork and roofing would be required; all of which would compensate for the extra floor space, etc.; and the balance would thus be restored.

These various methods that have been touched upon can only be used for the purpose of arriving at an approximate price; though it may be, and one may say usually is very approximate to the value of the work. Of course they cannot be said to compare for reliability with the proper and correct taking off by the builder of the quantities of the materials and labor required. Still, whether they are not preferable to the often scanty and incorrect particulars called quantities, upon which some contractors have to base their prices, is a question the reader must decide for himself.

An Innovation

The young preacher officiating at his first funeral wished to give friends an opportunity to view the remains, and not liking the use of hackneyed phrases, announced: “The congregation will now pass ‘round the bier!”

We would never learn the truth about certain folks if they didn’t quarrel occasionally.
A Good Tool Chest

THE ordinary carpenter usually builds himself a tool chest and so is on the lookout for new ideas. I recently built a chest which has some unusual features and believing that a description will interest the readers, am submitting the same. It is intended for use rather than ornament. The lumber was 7/8 inch thick, 4 1/2 inches wide. The chest measures 30 by 18 inches inside and is 8 inches deep. I cut the pieces 38 by 20 inches long so as to make lock joints at the corners. The lower piece at each end was 2 inches wide. The side pieces had the corners removed so as to lock over these. The corners of the next end pieces were removed and so on, building the chest up in log cabin style.

The inside and ends for the lids were 2 inches wide, halved at the corners. The tongues and grooves were oiled before putting the work together and screws were used for fastening. The usual handles, hinges and locks were used. To help hold the lid in place when the chest is shipped on the train, holes were bored in both chest and lid and dowel pins were inserted so that when the lid is shut down, it is securely held against shoving or chucking. As a further precaution, hasps and staples were put on the front so that two small padlocks may be used to supplement the lock. Wooden buttons were arranged in the lid to hold two squares. A piece 3 1/2 inches wide was put across each end to hold a sliding tray. These pieces help to strengthen the chest, since both bottom and sides are fastened to it, also the handles. The sliding tray occupies one-half the width of the chest and comes up close against the lid when the latter is down. In one corner of the sliding tray, a box is fastened. This has a sliding cover and there is a button to hold the cover shut. This box is for pencils, chalk and several small articles. The other half of the chest contains the loose till, or till box, which is also the saw rack. This box is 36 by 8 by 9 inches outside. It has a place for four saws, a level and other articles.

The handle is a leather strap, which drops down out of the way when put in the chest. This chest is just about the right size to hold all of the tools ordinarily needed on a job.

Mechanical Problems of the Skyscraper

The advent of the six-hundred-foot building has called for an important readjustment of the mechanical transit problem for skyscrapers. The result is a new type of elevator called "the traction," with power machinery located above the shaft instead of in its accustomed place in the cellar. To create ample safety devices for the cars of such a system is a serious problem. The possible precipitation of a carload of passengers from a six-hundred-foot height is not a pleasant thing to contemplate. It is only fair to say, however, that the number of passengers carried in them daily is not large, and also it may be asserted that contractors supplying such installations are of the highest reliability.

Another development which has been brought about in building construction by the very tall building is a scientific treatment of foundations. The execution of this branch of building construction now proceeds from a corps of specialists with adequate equipment to construct as well as design foundations to support the most gigantic superstructures. Fortunately, rock-bottom is not beyond human reach and the stability of the building is biblically assured. And if our present development continues we shall have to go still higher to gratify our ambitions, outreaching the Tower of Babel, but without its disastrous consequences.

A newly-imported wood, used for high-class cabinet and piano work, is the Tasmanian myrtle. It is of a rich pink color, hard and very close-grained.
Handicraft Furniture for the Bedroom

WE PRESENT to the readers of the Home Workshop some straight-line pieces of furniture especially suited to the cottage bedroom.

Of all the places in a house, the sleeping apartment—the place where, more than any other part of the house, the most of one's life is spent—should be simply but adequately equipped.

Every piece here described is well within the ability of any worker in wood. Though much time and drudgery would be saved were it possible for the worker to make use of the circular or band saw, the planer or jointer, the sander, mortiser, etc., etc., yet there is nothing in the construction of any of these pieces that can not be prepared by means of the ordinary hand tools found in every journeyman carpenter's box.

In Fig. 1. is shown a cottage dressing table. The size over all is, length forty-four inches, depth twenty-four inches and height sixty-three inches. The mirror is twenty-four by thirty inches. This mirror may appropriately be of either plain or bevel plate glass.

The upper part of the dresser should be made detachable so that the mirror may be properly wrapped and packed should it ever become necessary to ship it. The importance of making such pieces in two parts is recognized by all furniture manufacturers. Two cleats on the back, fastened by means of screws to
the two parts, will suffice to hold the parts together. Knobs for the five drawers may be purchased at most any hardware store, simple round brass ones will look well.

A rather heavy top should be used—an inch and an eighth is none too thick. The whole design can be made to assume lighter proportions than are shown in the sketch by making the drawers shallower.

Special fasteners may be had for fastening the mirror to the supports so that it can swing freely. It may not be out of place to remind the inexperienced that these fasteners must be placed quite a little above the middle of the mirror, otherwise the top will swing forward. A very pretty effect is produced by using wooden pins with enlarged heads instead of the metal fasteners. Holes are bored through the supports into the edges of the mirror frame and the pins inserted.

In Fig. 1 is also shown a very pretty round top table especially appropriate for holding flower vases, which when filled with bright flowers add so much to the cheerfulness of a rest room. It may also provide a convenient place to lay the occasional book that one may happen to be reading.

The top of the table is eighteen inches in diameter. The lower shelf is round like the top. The frame is formed by mortising the four top rails into the four square legs. Gains are cut in the legs to receive the lower shelf, dowels and glue being used to fasten the parts.

If we may digress we would call attention to the candle stick holder upon the wall. This is made of brass or copper and in this form is called a sconce. Such little pieces add much to the appearance of a room and are quite easily made. They give a touch of individuality to the whole, especially when the design of the decoration or ornamentation is original with the owner or maker. In some future number of the Home Workshop we shall give directions for making some of these light arts and crafts metal pieces. The equipment required is extremely simple and it is quite possible the “weaker sex” members in the family of the home craftsman may find peculiar pleasure in assisting in the furnishing of the home or in the production of articles which shall bring a monetary return. Many interesting and useful pieces can be made of metal, such as trays, sconces, candle stick holders, sundials, umbrella stands, etc., etc.

To return to the woodwork, Fig. 2 is a sketch of a table that can be utilized to advantage in most any part of the house, but which is especially fitting for the bedroom. Good proportions would be top twenty inches wide by twenty-seven inches long. The height should be about thirty inches. The design calls for a double top. There is nothing unusual in the general construction.

In Fig. 3 is shown a cottage somno. In out of town places where it is not customary to have a bathroom and appurtenances connected with each bed-room, the somno is not only a convenience but a necessity. The accompanying design is an excellent counterpiece to the table of Fig. 2 and to the other pieces described herein.

The drawer of the somno provides a place for linen and the top a place for washing utensils. The lower compartment is to be made so as to form a tight enclosure, the sides and back being paneled with rails securely mortised into the legs. Knobs for the paneled door and for the drawer should be got that will harmonize with those of the other pieces of the room—the round brass ones that were specified above would look well, or wrought iron fixtures would be appropriate.
The size of the somno is, top sixteen by twenty inches, height thirty inches.

In Fig. 4 are two other essential pieces for the sleeping apartment—the bed and mirror. The design of the bed illustrated is what is known as twin beds. Undoubtedly the most satisfactory arrangement of beds where two people are to occupy the same room, is to have individual beds. In this case the beds need to be about three feet wide each. This permits of separate bedding and thus obviates the disagreeable features of the double bed with one piece cover.

In many homes, however, especially in the cottage, the lack of room in which to place separate single beds and the added expense of keeping up separate bedding makes it advisable for the householder to make use of the old style double bed. To many such people, the desirability for the single beds is still recognized. They may find a compromise in which the head and foot parts of the two single beds are combined into one piece each, the middle post suggesting what they recognize as desirable, while the construction admits of

The supporting frame must be firmly fastened together. The curves of the feet may be cut with the turning saw and firmly fastened to the uprights. The weight of mirror will demand that metal fastenings be used as swing pivots. These can be got with ornamental heads. They must be placed above the center of weight, somewhat.

The builder of these pieces of furniture must decide what wood he wants to use in making them. Probably no wood is more easily obtained or gives more pleasing results when fashioned into furniture than oak. It is a low priced wood too, when compared with mahogany and other similar woods. Quarter-sawed white oak is preferable for furniture, though plain sawed is very appropriate for this style of furniture.

All the pieces which are built for the same room should be made from the same kind of wood.

The side rails are to be made with fasteners at the ends such that they can be easily detached from the foot and head. Tradition tells of an amateur who once made a bed, mortised and framed all of its parts together in his shop and otherwise completed it only to find he could not get it out of the shop door.

The necessity for the mirror, Fig. 4, will undoubt-edly appeal to the ladies rather than to the men. As in the dresser, plain plate or beveled plate may be used for the glass. Eighteen by forty or fifty inches is a good size for the glass.
We are showing this month the plans of a bungalow built by I. P. Hicks of Omaha, Neb., which, for convenience, style of architecture and genuine beauty of design, stands very high. It has large rooms, large closets, large pantry, large bath room, large reception hall, good wide porches, in fact it is a model plan for a bungalow. The main part of a bungalow is the first floor arrangement, not much in a general way being expected on the second floor. In this design, however, we have secured three large sleeping rooms with ample closet room on the second floor.

There is a grade entrance to the cellar under the main stair landing, so that it is not necessary to go through any part of the house to get in and out of the cellar while disposing of ashes from the heating plant or in stocking up with vegetables for winter use. This entrance leads also to the main hall, so that one may enter the house that way if so desired. There is another entrance provided to the cellar from the kitchen, just to make it handy and convenient for the people who work in the kitchen and pantry, and who, incidentally, may have the heating plant to look after a part of the time.

The pantry is very large, with a corner in it for the ice box or refrigerator, and is provided with an outside door so that the ice man can fill the box without going into the kitchen. The pantry shelving is enclosed with glass doors and fitted up in fine shape. The chamber on the first floor is exceptionally large and roomy, provided with an immense closet with a window for light and air, something essential for a real good closet.

The bath room is of a very good size, and is nicely located for convenience. The second story hall is

Artistic Bungalow, Having Three Rooms "Under the Roof"—Cost $3,350, at Omaha

large and well lighted by the window in the stair landing, the large well hole and the double dormer in front of roof. With transoms in the doors leading to the chambers it makes it possible to get a very good ventilation in these second story rooms. There is a cellar or basement under the entire house divided up into boiler room, coal bins, vegetable cellar, basement toilet and a fine laundry room.

In a brief way now, without going into all the de-
tails, we will give the cost to build this house, showing how the figures are obtained.

The reception hall, parlor and dining room are finished in plain red oak, balance of house in yellow pine.

**The Estimate**

- Excavating, 260 yards at 25c.............. $ 65.00
- 13,000 brick laid in foundation, $12........ 156.00
- 2 Chimneys .................................. 80.00
- Cellar cementing .............................. 55.00
- Basement partitions ......................... 35.00
- Doors in basement ............................ 30.00
- Windows in basement ......................... 25.00

15 squares first floor oak finish all complete

@ $16 ........................................... 240.00
5 squares first floor yellow pine finish @ $10... 50.00

15 squares second floor yellow pine finish @ $10 ........................................... 150.00
20 squares outside walls @ $9.............. 180.00
25 squares roof @ $11......................... 275.00
25 squares partitions @ $4................... 100.00
Work on front porch and gable ............... 50.00
Main cornice 170 feet @ 40c................. 68.00
Rear porch ..................................... 15.00
Front door complete ........................... 26.00
Frame and side lights ........................... 12.00
9 window frames with sash and casings all complete @ 11................................. 99.00
3 outside door frames, doors and casings @ $12 ........................................... 36.00
6 window frames, sash and casings .......... $9 ........................................... 54.00
3 dormer frames with sash and casings .. $10 ........................................... 30.00
1 cased opening with columns and pedestals .. 40.00
1 cased opening ................................. 10.00
5 inside doors, oak finish @ $12 ............ 60.00
9 inside doors, pine finish @ $9 ............. 81.00
Work in pantry .................................. 40.00
In connection with this we are showing the photo, floor plans and details of construction of a neat, nine-room house, designed by Mr. J. E. Hammons, of Gary, Ind., and intended for use as a small boarding and rooming house.

On the first floor is, first a square reception hall, off of which to the left is the large well-lighted dining room. The kitchen is large, well equipped and conveniently located.

The second story is divided into four large bed rooms, each with closet. The bath room is centrally located. The striking feature of this design, adapting it to the purpose for which it was intended, is the outside stairway leading to the landing and the second floor. This landing is reached also from the kitchen.

Something New

Plants have recently been made for a country dwelling near New York, which will have disappearing partitions on the ground floor. The partitions will be operated by electricity, lowering them into the basements, thus giving an unobstructed floor space of the entire area. If this proves practical and architects and builders find the idea at all feasible, it may be quite an innovation to home builders.

The modern house with the ground floor practically unpartitioned, except with hangings, has its disadvan-
tages. The dining room opening into the parlor is not always desirable at meal time. It is almost impossible to make a business engagement or have a private interview with an outsider at home. Even if the family consents to repair to the upper story an untimely caller puts an end to further discussion. The old fashioned plan of chopping the ground floor into innumerable little halls and rooms was unsightly and unlivable. If a moderately priced home can be constructed which will be suited to the needs of entertaining, afford a comfortable dwelling place, and give the desired privacy at required terms, it will be a boon to the community at large. It is therefore, with a great deal of interest that this new experiment is being watched.

A Luminous Clock

The Eiffel Tower in Paris is now being used for another practical purpose. On the sides of the second section, hundreds of feet above the ground, a luminous clock warns the gay Parisian of the passing span of life. The apparatus flashes forth every minute in huge figures visible a great distance. This system was found the only practical one, as the ordinary clock dial would be indistinguishable at such a height.

A Mrs. Leggett ripped her sheath gown while running for a train in Pennsylvania. Any woman of that name should know more than to wear a dress built on the architectural plan of the directoire.
Cement Bungalow for Two

PRACTICAL DESIGN FOR A COZY LITTLE DWELLING OF REMARKABLE CHARM AND CONVENIENCE—ARRANGEMENT TO SECURE PRIVACY ON A CORNER LOT

By John Lawrence Heaton

The bungalow seems to be the favorite type of dwelling with those people who have money to spend upon whatsoever their fancy dictates. This type appeals to many undoubtedly because it has a reputation of being the "latest," just a little out of the ordinary. There are certain conditions, however, when the bungalow type serves its owners better than the usual two storied type of dwelling.

In connection with this is shown a floor plan that is especially suited to a young couple whose family needs require but one bedroom aside from the usual guest chamber. The rooms being all on one floor make it possible for the young wife to care for the house without the need of those unsatisfactory adjuncts, servants. In this day of simple living, or the desire for simple living, the fewer persons outside of the family there are, the better. There are no dreaded stairs to climb many times each day. Everything is at hand so that a few steps on the same level brings them within reach. This arrangement ought also to appeal to the elderly couple who desire a cozy place in which to spend the remainder of their days after the children have left and the old home with its numberless rooms is no longer needed or desired.

The setting of this bungalow is rather unusual. Frequently, one finds himself possessed of a corner lot which has desirable frontage on each street. He does not wish to offend neighbors in either direction. This setting solves the problem, both streets being treated alike, the building having easy access from either. Privacy is obtained by means of two wings which extend from either side of the building almost to the street line. Along the walks are walls of shrubbery. Cement walks lead to the front entrance. In front of this entrance and screening it from the public view is a bed of shrubbery. The edge of this bed is a low
cement curb. The rear walk of cement, like the front one is readily accessible from either street; there is no unnecessary walking, no matter from which street one may approach.

The floor of this bungalow is but one step removed from the ground, the object, as in the other arrangements, being to make for easy living.

The broad cement step is flanked on either side by massive pedestals. Upon these are vases that are filled in the summer time with bright flowers, green foliage and trailing vines. The roof hangs low; the eaves extend far and cover the cement platform which, banked by flowering vases on either side and shrub-

bery in front, forms a most inviting retreat as well as an entrance.

The walls of the building are of cement on wood lath. This cement is finished by rough troweling. The trimmings are of undressed lumber creosoted a deep brown. The roof is shingled. Such a design might well be made monolithic and fireproof. The floor could be reinforced and the partitions built of hollow tile. The roof could be of soft green tiling that would harmonize with the rest of the exterior. It might have its walls constructed of concrete blocks made without facings. The whole could be afterward plastered with cement so as to produce the effect shown in the photograph.

The entrance to the living-room is direct. The upper part of the door is of leaded plate with just a touch of color. The lines of this, as in all the other art glass, are horizontal or vertical, depending entirely upon the spacing for effect.

The fire-place is centrally placed and is intended for use. It is the main feature of the living-room. The chimney shows above the roof low and massive and has three flues, one each for the fire-place, the kitchen range and the furnace.

The dining room is really a part of the living-room, the partition between being merely a suggestion of one to give to the interior a symmetrical arrangement. Below, it is paneled to correspond with the other walls of the living room. Above the paneling is an arched effect partly filled with art panels.

The bed-room arrangement is such as to permit of greater privacy than is usual in one floor plans. Entrance to the bath is private yet readily accessible from either bed-room or the living-room. Should any door be left open, as frequently happens, callers sitting in
Modern Builders' Hardware

ITS DEVELOPMENT IN MECHANISM AND DESIGN—IMPORTANCE OF HARDWARE IN MODERN BUILDING—

METHOD OF "TAking OFF" HARDWARE FROM PLANS

"NEVERTHELESS it does move," said Galileo, referring to the earth; and if that old Italian should step today into a well-equipped hardware establishment, and should examine the line of modern builders’ hardware—comparing it with the offerings of former times—he would surely have to repeat, "Yes, she certainly does move!" The writer (without presuming to claim identity, nor even relationship, with that famous astronomer) noted the remarkable development and improvement, himself, not long ago, when, at the invitation of the Stebbins Hardware Company, of Chicago, he was enabled to examine the complete line of builders' hardware put out by the P. and F. Corbin Company.

The most striking feature, to the layman, the non-builder, was the display of some old sixteenth century hand-forged iron door locks, brought from Heeswijk Castle, in North Holland; these, placed beside the newest improved bronze Unit lock, having the keyhole in the knob, made an interesting basis for comparison, and showed forcibly the development from the old to the new.

The contractor and architect, however, were vitally interested in all the modern builders’ hardware, of and for itself, because of the very important place it has come to occupy in modern building. There was a time when builders’ hardware was of so little importance that practically no thought was given the subject at all; a small sum was lumped on at the end of a contract to cover “locks, hasps, hinges and necessary hardware fixtures, all to be of substantial quality and of design approved by the owner;” then—spoiled when capped off by incongruous fixtures; on the other hand, door knob and escutcheon, cabinet hinges and fastenings, and various other metal work, if properly chosen, add just the touch of richness needed to complete the effect.

Realizing this, the manufacturers have spared no pains to design builders’ hardware to harmonize with all the schools of ornament in architecture, ancient and modern; they range from the severely plain Colonial and classic Greek to the flambuoyst exaggeration of the last stages of the Rococo. Grecian, Roman, Moorish, Flemish, Gothic and Elizabethan ornament, art of the Renaissance and L'Art Nouveau have been drawn upon.

What Finish to Choose

The selection of proper finishes of hardware to best suit the various kinds of woodwork has become a perplexing problem. As in everything else where ornament and color are involved, the selection is purely a matter of individual taste, there being no set of rules to govern a choice except the generally recognized rules of harmony and contrast. It is always safe in selecting the finish of hardware, to adopt that which is near the color of the woodwork as possible, or directly opposite. For instance, with the light domestic woods, such as oak, ash or pine, if used in their natural state, the plain brass or bronze hardware without any surface finish.
is most appropriate, although the lighter shades of oxidized brass may be used to good effect.

With oak, treated in what is generally known as red oak, antique oak or Flemish oak, the writer would advocate the use of the light or dark finishes of oxidized brass or plain natural bronze; or, to produce a contrast, the black iron finish is good.

With dark imported woods, such as mahogany, three finishes have been used—gold, light silver and plain natural bronze. A new departure, which is really a revival from Colonial days, is the use of cut glass for door knobs; this makes a beautiful effect with mahogany or walnut. For enameled woods, whether in white, gray or pearl, gold or light silver finishes are most used; and are certainly in most excellent taste.

Occasionally now the architect states very carefully in plans and specifications just what all the hardware is to be; very often, at the request of the owner, its selection is left to the contractor. If you would produce a satisfactory piece of work—even though some economy is necessary—do not economize on the hardware items. And do not be content with the same old patterns and fixtures you have been using for a dozen years; there are new designs now, adapted to every finish and to every style of building construction.

**System of “Taking Off” Hardware**

Although the architect may have specified all the hardware very carefully, it still remains for the contractor to figure the cost—if he would be on the safe side of the contract—and then be prepared to furnish the goods. To do this he should make out an itemized schedule, guided by the plans and specifications. The following is that part of the prize winning article—in a contest recently held by the P. & F. Corbin Company—which tells how to make schedules of hardware from plans and specifications of buildings:

The schedule should be compiled from the plans and specifications for the building. Make an accurate copy of hardware specifications, and read carefully the carpenter specifications, making note of such items as concern the hardware.

The drawings should be carefully studied until you are familiar with the building, its general lay-out, the arrangement of the rooms and for what they are intended.

Begin with the basement, and take off each floor in succession, ending with the attic. Take off the exterior doors first, making note of those having transoms, commencing with front and working to the right until all are taken. Take off the exterior doors, making note of those having transoms, commencing at a certain point on the front and working to the right until all are taken.

Take off the number of closets and rooms requiring coat and hat hooks.

Take off the cabinets, commencing at a certain point in front and working to the right as before.

Take off the exterior windows, commencing on front and working to right as before. Take off interior windows, if any. Take off skylights and scuttles. Take off stair rail brackets.

In taking off hardware the following details should be noted:

**Single Hinged Doors.**—Thickness and hand, and size of butts necessary to clear trim.

**Double Hinged Doors.**—Thickness and hand, height, and if doors are rabbeted, bevel or flat, and size of butts necessary to clear finish. In taking off hinged doors, care should be taken that they be scheduled to show into which room the door swings. As for example, a door between bath and bedroom and swinging into bath room, should be scheduled as “door, bedroom to bath.”

A door requiring a split trim should have butts and lock front to match finish of room into which the door swings. As for example, a door between bath and bedroom and swinging into bath room, should be scheduled as “door, bedroom to bath.”

**Sliding Doors.**—Single or double, width of opening, thickness, width of stile, and if doors require flat or astragal locks.

**Double Acting Doors.**—Thickness and width of stile, and size of bottom rail when kick plates are to be used.
Transoms.—Thickness, height from floor to center of transom. State if hinged top or bottom, or hung on centers. See details and note if special arms are required.

Cabinets.—Get complete details and note the following: In case of doors, slate thickness and hand, width of stile, and if flat or rabbeted locks are required, double or single, and size butts necessary to clear finish. In case of drawers, state width and thickness and drop required for locks.

French Windows and Casement Windows.—Get complete details and state thickness, hand, height, width and form of stiles, kind of lock front required, and whether the windows swing in or out.

Windows in Box Frames.—Thickness, width of bottom rail, and note detail of meeting rails.

Miscellaneous.—Such items as coat and hat hooks, base knobs, window pulleys, window-stop adjusters, rail brackets, etc., should be scheduled as miscellaneous.

When plans or specifications are not understood, where openings are not provided for, or details not clear, or when plans and specifications conflict, you should make note of same as you proceed with the work, and when you have finished taking off the plan, submit these items to the architect for his decision.

Village Bank and Store Building

Perspective and Floor Plans of a Modern Well-Designed Combination Bank and Store Building with Flats Above

It HAS been said that the prosperity of the nation is dependent on, and is indicated by, the prosperity of the farmer. In olden times, the farmer's prosperity was gauged by the number of his cattle and by the size and condition of his barns. In recent times, however, he has emerged into the real financial world as a money saver and owner, and so has become a mighty factor in banking circles. With this development, naturally, the village bank has grown in importance and in number.

The design by G. W. Ashby, architect, which we present herewith, is one that is especially well adapted to the needs of a banking building for town or hustling village. It combines on the first floor a modern banking establishment and a large well-lighted store; while above, on the second floor, two nice five-room flats are provided. The whole makes a trim little building, at once attractive and dignified.

The material of the exterior is buff pressed brick with trimmings of Bedford stone. The floor plans,
which are here produced, show the good features of modern, convenient arrangement. They need little explanation, being clearly drawn to scale.

**Skyscrapers May be Too Tall**

A building expert well known throughout the country in a recent paper read before the Institute of Architects states that New York will never have an office building one mile high in spite of all the talk to that effect. Under the present building code the limit of height of any building is absolutely fixed at 2,000 feet. This is fixed by the present outcry against the latest freak buildings; it would seem that investors will not hastily put money into much larger buildings than the present ones until it has been demonstrated that they can be made profitable.

Geologists state that there is one sufficient reason why New York will never have any of the mile-high buildings that are predicted for the next century as the city does not rest on a too firm basis. Beyond a certain point it will be absolutely impossible to rest additional weight on account of the danger of the lower strata, which composes the island of Manhattan, from sinking into the sea.

The limit of this weight it has just been figured out amounts to a foundation pressure of enormous amount of fifteen tons to the square foot. On a building lot 200 feet square, which is about the limit in the already crowded downtown district, this will mean a maximum height of 2,000 feet. Beyond this the very nature of the city’s base will call a halt. Other factors, however, are likely to step in before such a limit is reached, for on a 200 square foot plot this 2,000 foot high edifice would cost $60,000,000. It would weigh, according to present estimate, 316,000 tons or more than twice the tonnage of the present navy. Moreover, the wind pressure on any one of its walls would be more than 6,000 tons. Altogether, such a monstrosity is made almost impossible by its physical limitations and it hardly seems probable that any New York skyscraper will ever exceed 1,000 feet, provided, of course, that the present building laws are not so restricted as to make the toothpick office building out of the question.

**Advertising**

Does advertising pay? Well, I should say it does! Last week a Bement, Illinois, merchant advertised fresh dairy butter for sale. The compositor substituted an “h” for a “d” and the ad read “Fresh Hairy Butter for Sale.” A smart barber called up the grocer and offered to shave the butter at standard rates. The grocer got mad and licked the barber, breaking his nose and otherwise disfiguring him so that he was compelled to call upon the doctor, who charged him a tenner for the services rendered. The next day the barber met the editor on the street and threw a brick at him, giving him a close shave. In his effort to get away the pen pusher fell down, tearing his trousers on the west side so badly that he was necessitated to buy a new pair; also the editorial shears, which were in his hip pocket, penetrated his anatomy so that the services of a surgeon were required. And all the result of one little ad. Who asked, “Does it pay to advertise?”
The science, if such it may be called, of heating and ventilating engineering, is one that is founded almost completely upon the laws of thermodynamics. It is not what one might call an exact science; but, in its rational design and application, the engineer may work with a reasonable degree of exactness. Most of the points of interest in the subject may be theoretically developed; yet, as in all branches of engineering design, some parts require theory modified by good judgment and the personal equation of the designer. In such cases experimental data, found by tests upon similar apparatus, are not only good things to apply as checks, but at times are absolutely necessary because of the lack of any rational information on that part of the subject. Fortunately, such cases are the exception rather than the rule, for with the properly applied principles of thermodynamics there is scarcely any part of the subject which it not possible of rational solution.

Because of the fact, however, that some features of the work are as yet experimental and not as definitely understood as they should be, this is no reason why those who install heating and ventilating apparatus should disregard all laws and feel justified in installing a job that is empirical in all its parts, and one which shows scarcely any of the earmarks of theoretical investigation. The time has surely come when it may be demanded of all men who install such apparatus that they follow closely to fundamental principles and be prepared to furnish proof for any step taken in their work.

The Letting of Contracts

Contracts for heating and ventilating apparatus usually are let in one of the four following ways: (a) Some person, called for convenience the dealer contractor, draws up a rough layout of the work, guarantees to install satisfactory apparatus for a stated amount of money, buys his apparatus from the manufacturer, installs it according to his own personal ideas, or according to the plans laid down by the manufacturers, and in a general way guarantees it to give good service; (b) a manufacturing firm draws up a plan and contracts to install, for a stated amount of money, satisfactory apparatus, usually made by the same company, guaranteeing its successful operation; (c) a responsible engineer is retained, who draws up plans and specifications for the work, and, upon competitive bids, the successful contractor installs the apparatus in accordance with these plans and specifications, the engineer being the judge of the quality of the work and materials; (d) a responsible engineer designs the system and assumes all the responsibility in its erection, looking toward a certain required output or result. Materials are purchased in the open market and installed to his satisfaction, and after completion, if the final tests are acceptable, the purchaser pays the bills and takes charge of the completed plant. The last method is not much used in heating and ventilating installation as yet, being confined largely to power and manufacturing plants where a certain definite output of finished material is desired, and will not be further discussed; methods (a) and (b) being applicable to small installations and (c) to larger and more important ones.

Residence Heating by Furnace

Of all the uncertain and rule-of-thumb installations, probably the furnace heating of residences can claim the greatest share. Competition among the furnace manufacturers has been so great that we have the country flooded with furnaces ranging in quality from good to positively bad. In order to place the furnaces, it has been the desire, and this is a legitimate one, to simplify construction, to remove features not absolutely necessary, to cheapen manufacture, and in many cases so to rate the furnace that the claims could be realized only under the best conditions of installation, such as would be expected under test conditions and not under conditions as found in average service. Of the above-mentioned points, the last one should not obtain in any case, since a furnace should be so rated as to realize its claim even under somewhat unfavorable conditions and the other points should hold good only in so far as not to develop an inferior type of furnace.

In addition to what has been said about the furnace, it is also true that the furnace manufacturer has been so busy cheapening his product and placing orders which he has been selling to Smith, Jones and Brown to install according to their own notions of engineering work, that he has not had time to investigate the engineering reputation of Smith, Jones and Brown to see if they would probably bring credit to his firm, nor has he had time to keep his own finger upon the pulse of the job to see if the plant is working well after it is installed. This apparent indifference of the manufacturer to the final results is probably the greatest source of trouble, and is that which gives color to the public mind and decides the buyer against furnace heat, because, as he has some right to argue, "Furnace plants are usually installed so as to make them inferior and defective, consequently the system is in itself defective. It is fast becoming a fact that the correct furnace job is the exception rather than the rule, and some remedy should be applied very soon. The fault is not in the
system. Furnace heating, if properly installed, is healthful, cheap and scientific. Neither can it be said that the fault all rests with the manufacturer. The purchaser is to a certain degree to blame, in that he is willing to let the contract to any one who cuts to the lowest price regardless of the quality of the man who takes the contract or of the apparatus which he represents. In certain localities it has become almost impossible for a man of reputation and integrity to obtain a contract, because he expects to live up to the “full intent and meaning” of the contract, and proposes to stay with his work until it is fully satisfactory, regardless of cost. Such a man usually presents an estimate that is sometimes considered high when compared to some others, but when the expense of changes and repairs is taken into account it would in many cases be the cheaper proposition.

It does seem unfortunate that there are men in the business who are in it exclusively for the dollars, and care little as to the results. If such men were held strictly to the satisfactory fulfillment of the contract, even though it were to the substitution of an entirely new system, there would be less careless and haphazard bidding, and part of the troubles at least would be remedied.

Relation of Heating Contractor to Architect

Another phase of the heating business which is a frequent source of annoyance and error is the relation of the heating engineer or the contractor installing such work to the architect. The house plans are usually made without the consideration of heating; the heating plans are then supposed to be made to fit the house plans. Now what the average architect does not know about the heating business would fill many books, but his own private opinion of his own worth in such matters is highly satisfactory, and consequently there is set up a different viewpoint between the designer of the building and the designer of the heating apparatus, much to the discomfort of the latter and to the detriment of his work in many cases. To be just to both, the system of heat should be selected first and then allowances should be made in the building plans for its installation. This is no hardship to the architect, since many slight changes, any one of which would possibly be in favor of the heating engineer, may be made in his plans without causing any trouble. Some of these points may be mentioned as follows: The size and location of the chimney; the running of the cellar partition walls to accommodate the location of the furnace and the coal bin; the height of the basement ceiling to allow sufficient inclination of the leader pipes; the construction of the partition walls between the rooms to allow for riser pipes of sufficient size to heat large upstairs rooms; the planning of the walls to avoid horizontal runs of heat ducts in the second floor to reach a room otherwise inaccessible; and other points.

All heating engineers know that the range of location of a furnace relative to the house plan is very limited, and that in many cases it is an absolute necessity, after the house plan is completed, to set the furnace out of this desired location, thus compromising the efficiency of the system; also, that the basement ceiling in many cases is so low that the leaders require to be run nearly horizontal, thus reducing the draft in them; also, that a 6 inch studded wall in many cases could easily have been substituted for the 4 inch, with little additional cost, and have improved the system immensely; also, that certain walls absolutely prohibit the running of stacks to the desired spot in the room, and that with a slight change, this could have been arranged without in any way injuring the architect’s plans. Such in brief are some of the troubles that the conscientious heating engineer or contractor faces when he proposes to do his work after the building plans have received the O. K. of the architect.

The Owner Interferes

Finally, however, the purchaser himself occasionally offers objections to the proper design of the system because of the desire to economize, although false economy it may prove to be in the end. Occasionally one hears the advice, “Don’t heat the chamber rooms on the second floor very warm, because I like a cold sleeping room”—advice which, if heeded, would be good nine times in ten, but the tenth time when it is needed, it is needed badly, and the system and the man who installed it are both censured. How much better to have made the job right at first and permit the owner to regulate the damper to suit his needs, even to closing it entirely. The only word that could be spoken against this way of doing things is because of the very small increase in first cost; on the other hand, the favorable comment would be: “A system that is correct and one that will heat if you want it to.” Good advice to all men installing residence heating systems is, “Heat every room as though it were to be used as a living room, and let the owner regulate to suit his needs.”

Residence Heating by Hot Water and Steam

Not so much can be said about the failures in hot water and steam systems, because, as a rule, they are planned with greater care and by men better qualified to do the work. However, of all the difficulties experienced in both systems, by far the greater part can be charged to the hot water work. This is to be expected, when one remembers how very small is the motive force causing circulation in the water and how easily this may be counteracted by small pipes, many short turns or improper laying. Short cut rules for proportioning radiation are, also, in too frequent use even by those well grounded in the subject, and from whom could be demanded a more rational course. Residence heating by hot water and steam is fairly well standardized, and if designed from fundamental
laws and principles, and installed with care and good judgment, should in every case give good results. Some of the points wherein these systems give trouble are as follows: Chimneys too small; heater or boiler too small; heater or boiler too far from chimney; heater or boiler set too high, thus giving too little pitch to the main piping; mains too small, thus killing the flow of the water and steam, also bringing the water line of the boiler too near the level of the lowest radiation; radiation too small and improperly placed, and other minor points.

The architect is responsible for the location and capacity of the chimney; and, in a degree, to the location of the heater or boiler, for, as he plans the basement, the heating apparatus must be located to suit. Many chimneys are poorly located and are of improper size, and when the heater or boiler does not fire well the responsibility of the architect in the matter is seldom thought of, and the censure is placed upon the shoulders of the man who installed the heating apparatus. This feature of the work is where the heating engineer can do some missionary work in the line of architectural design. The other points mentioned are directly chargeable to the man who designs the heating system, and there is little excuse for his mistakes. All should know that the surface of mains and branches should be counted as radiation surface, and that the efficiency of the heater or boiler is somewhat reduced after having been in service for a time. Because of this latter point, a selection would be made having a capacity about 25 per cent greater than the total radiation found. When such a generator is properly set, all pipes in the system will have a satisfactory fall, the minimum height of circuit will be sufficient to cause a good circulation, and the pipes will be so proportioned and attached as to avoid short circuiting or water hammer. Too small mains on a steam system have a tendency to force the water on the return end back into the radiators and cause "flooding." All of the above points, and still others that might be named, will stand as a credit or discredit to the designer.

The Heating Engineer and the Contractor

In installations calling for a large expenditure of money, the heating engineer is usually called in to draw up the plans and specifications, and the contract for purchasing and installing the same is usually given to a separate party. This has the advantage of obtaining the complete layout of the plant with the apparatus specified by a party who is in a position to give an unbiased opinion, and also the advantage of obtaining a low estimate on installation because of the competitive bids. This system seems to be a very satisfactory one, all things considered, and probably gives the best results to the purchaser. It is not, however, entirely free from abuses. It is assumed that the party retained to do the engineering work will do his work conscientiously and scientifically, and that when done each part will correlate to the other parts and all will work in harmony and without loss of efficiency. This means that the designer himself should understand his subject and should be able at any time to give facts and figures on every part of the work. He should also have his plans and specifications complete in all parts and stated in plain and definite language, so that the contractor will understand every part and not be compelled to assume conditions which in the end may be erroneous.

Uncertainty of Plans and Specifications

No uncertainty should enter into any part of the contractor's work, either as to quality and make of materials, or as to the way in which such materials are to be installed. Of course, there are many features of the work which may be left open to the discretion of the contractor, and these should not be arbitrarily stated. Such parts as the smaller details of the piping system, for example, where the cutting of the various parts may not in the least affect the efficiency of the plant, and where purposely omitting the same in the specifications and plans will give some latitude and satisfaction to the contractor in his work. These and other minor points are best not specified. The great trouble, however, with plans and specifications is not as to their exactness even to every little unnecessary detail, but as to the lack of exactness concerning important points. When the contractor may reasonably make more than one interpretation of any certain part, it is naturally to his interest to take such view of the case as will carry out the letter of the contract at the least possible expense. This may not be to the best interest of the purchaser, but such procedure should not be wholly charged to the contractor.

Know What You Are Doing

The final word of caution that this paper wishes to extend probably does not apply to any member of this organization, but it does apply in many cases to men in like occupations with yourself. The keynote is struck in the preceding paragraph and may be paraphrased in the following: "The engineer attacking any important problem should first become thoroughly familiar with the principles involved in its solution, and should afterwards check his results wherever possible." This point was emphasized to the writer in a test recently run upon a heating and ventilating plant in a certain building used for auditorium purposes. The trouble in this plant seemed to be not the one usually found—i.e., cutting the parts to a minimum size and capacity—but rather the reverse; this will be seen by only one item out of a number which might be used for the benefit of illustration.

The auditorium, which was exposed on two sides, contained 225,692 cubic feet of volume, and was designed to accommodate 1,350 persons, thus requiring, we may say, a total of 2,430,000 cubic feet of fresh air per hour. Allowing the outside temperature to
be zero and the temperature of the auditorium air to be 65 degrees F., the total heat loss, including that thrown away with the air, was found by calculation to be 3,072,875 B. t. u. per hour, which gave by calculation 2,375 square feet or 7,125 lineal feet of one inch coil surface in the indirect heater. When the coil surface was measured after the test, it was found to contain 14,612 lineal feet, or a little more than twice the calculated amount! One reason for the test was the fact that a large part of the coil surface had been shut off soon after installation and never used afterward; and it was supposed the system was not well proportioned. Other parts of the plant also seemed to show the same lack of rational design.

What has just been stated concerning this one plant is true of too many plants about the country. If the business we represent is to rank high among other lines of engineering work, it is the duty of every man to discourage such methods, and insist upon a higher standard.

‡

Second Annual Cement Show

The result of the recent letter ballot upon the question of the most suitable time for holding the Second Annual Cement Show in Chicago was as follows:

21.2 per cent favored December.
13.6 per cent favored January.
44 per cent favored February.
21.2 per cent favored March.

Practically all the exhibitors at the First Annual Cement Show sent in votes and a large number of others interested in the exhibition submitted their ballots. In accordance with the expressed wishes of the largest number, the management of the show has chosen the date in February, having leased the Coliseum for February 18-24.

The date chosen, it is believed, will prove very satisfactory coming as it does just prior to the opening of the cement season. Although application blanks and diagrams of the floor space have not yet been prepared, applications for reservations of space from prospective exhibitors are being sent in in large numbers.

The show last year was the first effort of the Cement Products Exhibition Co. at holding a show and it came at a period when the business outlook was so positively disheartening that many concerns were extremely loath to give the enterprise their support. But in spite of this the exhibition was far more satisfactory both to the exhibitors and spectators than any previously held. The show was conducted along business lines and the manner in which the arrangements were carried out met with the uniform approval of all concerned. The show was widely advertised and no effort or expense was spared by those behind the undertaking.

For the coming show unusually elaborate and comprehensive preparations are being made to interest not only those directly connected with the cement trade, but the general public as well. The future of the industry depends to a very large extent upon public opinion; and not until people generally can be educated to favor and to use concrete, will the cement industry occupy the place which it should properly hold.

The underlying idea of the Chicago show is to teach those who know something about cement construction more, and to teach those who know nothing about cement something. A cement show should not be conducted entirely for the purpose of bringing direct business to the exhibitors but it should be an industrial demonstration that will create universal interest in cement and its innumerable uses.

‡

Largest Contract for Cement

The Atlas Portland Cement Company has been awarded the contract to furnish 4,500,000 barrels of cement to the Isthmian Canal Commission, at a cost of about $5,500,000, the largest single contract ever given out in the Portland cement business in its entire history. The cement is to be used on the Panama canal, for which this company has already furnished upward of 100,000 barrels in the course of its construction to date.

The Atlas Company was the lowest bidder throughout, American and foreign mills alike being underbid, and the award of the contract came as no surprise. The award of this contract marks a new era for the Portland cement industry. Had this order been given ten years ago, no mill or combination of mills could have filled the order. The industry has grown during the last few years at such a remarkable rate that the total amount required for this work is only a fraction of the yearly output of the successful bidder.

The contract provides that delivery shall begin in December, the shipments at a minimum rate of 2,000 barrels a day and a maximum of 10,000 barrels.

‡

Gosh Dern

Out in Missouri Johnny Gosh and Jenny Dern were married a few days ago. The local editor, in his account of the wedding, could not resist the temptation to head it "Gosh-Dern!" but he has been hiding out in the desert and living on cactus and sand ever since in preference to facing the blustering bride and the irate husband.

‡

Out of Place

Mrs. McSwat—Billinger, how did you like the decorations at the church this morning?"

Mr. McSwat—All the decoration I could see, Lobella, were worn by the young woman in front of me. I liked the grand sweep of the brim, the floral display and the general arrangement of the ribbons, but I thought the dead bird looked out of place."
An Eight-Room School

Perspective and floor plans of an attractive, nicely arranged school building—good features pointed out.

The eight-room school building here presented was designed by G. W. Ashby, architect, for erection in a southern city. It embodies a number of desirable features which make for economy of construction and convenience in use.

In outward appearance it is plain, without fussy fancy work; yet the proportions are such that the effect is pleasing. The material is red brick with gray stone trimmings. Above there is a wide bracketed cornice and a cupola bell tower.

The class rooms are all 23 by 32 feet, each with ample wardrobe. All the rooms open to the large square hall at the center, from which three flights of steps descend to exits on three sides of the building, making a very safe arrangement in case of panic or fire. The floor plans are given on the next page.

The One-Room “Folding” Flat

There is a novelty in building construction, introduced into some of our western cities, that is arousing a good deal of interest and that seems to possess much merit. This is the so-called “one-room flat.” By means of specially built furniture it makes its one room serve for the purposes that usually take several. The apartment houses containing them shelter as many as 28 families. Some of them are called “residence hotels,” and offer the tenants the choice of taking their meals in the public dining room or
using the domestic facilities attached to their own room.

Of course, the flat has in reality more than one room. There is an entrance hall, a bathroom, and a narrow apartment adjoining the main room which serves for the operation of the furniture, which swings on a pivot. The plan of these flats shows one large room, a kitchenette, a bathroom, and a curious room about three feet deep running parallel with the main living room. One end of this is closet room, while the other provides the space for the furniture to swing about in.

When the one-room flat is serving as a drawing room there is a small center table visible, a combination desk and bookcase, and a sideboard which stands in its place, whether the room is to be used as a sitting or dining room. It disappears only when the time for slumber has arrived. It is then that the sideboard turns around, and on the other side of the board partition back of it there swings into view a brass bed. This is folded up against the board, but it is so arranged that the bedclothes, attached to hooks in the head of the bed, are allowed to swing free and are aired all day.

The library table, merely by swinging its edge around, doubles its size and is capable of seating four persons. When bedtime is at hand the bookcase, which stands next the sideboard, also does its turn, and, in its place, there appears a dressing table. Of course, the same chairs must serve, and they must be selected with appropriateness for the varied uses of the room.

The great merit claimed for these one-room flats is the saving of space, the freedom from the greater cares of housekeeping and the possibility of housing so many families in one building. Of course, the patented furniture made for them is the indispensable element of the scheme, and without it such dwelling places would not be possible. So it is naturally the company that manufactures the furniture which is putting up the houses, selling stock in them and otherwise promoting them as they would any other building project. In not every case is the house supplied with a hotel dining room. In some there are only the small kitchens.

**Fashions in Brick Changing**

Observers of the characteristics of American architecture, and those familiar with the building industry, are discovering that fashion plays a considerable part in the use of face brick for exterior construction, and that the fashion changes from year to year, with the production of new colorings and shape. A few years ago the finest fronts were constructed of red pressed brick, carefully gauged to size, and shaded to an even color, laid with as narrow a mortar joint as possible, usually of a shade matching the brick, the idea being to produce the appearance of a painted and ruled wall.

This conventional style has been gradually changed to give place to other colorings, and, recently, to a variance in size and shape of the brick. Simultaneously, rapid developments have been made in the thickness, color and texture of the mortar joint and in the style of bonding the face brick to the supporting wall, so that the construction of a brick facade today is a highly artistic piece of work, capable of the best results only in the hands of a skilled architect. A brick wall, to be attractive, should have "life" and "texture," and this can be best obtained by the use of brick varying considerably in color, and laid with a wide mortar joint, preferably with header brick forming a true bond into the main wall.

It is the patient plodder who is always the brilliant young fellow's landlord.
Expansion of Concrete

A RECORD OF SOME INTERESTING EXPERIMENTS SHOWING THAT CONCRETE, PLAIN OR REINFORCED, IS GREATLY AFFECTED BY MOISTURE—ALLOWANCE RULES FOR WORK

By Fred W. Hagloch

There are two distinct conditions or circumstances that cause concrete to expand, rise of temperature above 80 degrees, or a drop of temperature below 28 degrees, and moisture.

That concrete expands .0004 of its own length for every degree of temperature above 80 degrees has been known for years; it is also well known that a similar expansion occurs when the mercury falls below 28 degrees; but that moisture causes a still greater expansion, and that dryness causes contraction, few are willing to concede, though all admit it may have a very slight effect.

I have carried out a series of tests which I believe will answer this question conclusively; I shall first give a few known occurrences that prove the theory if not the correctness of my tests.

A sidewalk made of concrete blocks 6 feet long and 6 inches thick, in a Pittsburg park, in 1896, remained in perfect condition until May, 1908, when it bulged and heaved at several places. This stretch of walk, 85 feet long, has withstood temperature changes from 8 degrees below zero to 93 degrees above, or 101 degrees variation, without the least injury. Nevertheless, it expanded and cracked last May, when the temperature did not vary more than 30 degrees in 24 hours, and when freezing was entirely out of the question. Upon investigation, it was found that the excessive rains had caused the drains under the walk to become clogged, hence expansion by moisture was the sole cause of the trouble.

Another example is of two walks, 4 feet wide and 164 feet long, made of concrete slabs 4 feet square and 3 inches thick. These walks were laid on 4 inches of cinder footing on clay soil; the concrete was not kept moist and received no rains for three weeks after the work was finished in August, 1907. The expansion joints, made of No. 16 gauge sheet steel, were about one-sixteenth of an inch thick, which was found sufficient to protect same during the low winter temperatures, but the rainy season last May caused the upheavals shown in the illustrations. The walk on the higher side of street has raised the ridge four and one-fourth inches above the walk grade; while in the walk most subject to moisture, the ridge is seven and seven-eighths inches above the grade. The change of temperature during this period was slight.

The above are examples showing that plain concrete was uninjured by freezing, but was greatly affected by moisture.

After a number of such observations and tests, I have concluded that expansion by moisture is more important than that by extremes of temperature. My former rule of allowing one inch in fifty feet for reinforced concrete, while proving in many instances sufficient, will be changed to one and three-quarters inches per fifty feet. In plain concrete (not reinforced) I add a half more to the above allowance. The more dense concrete is made, the less will it expand by moisture, but the greater it is affected by extremes and changes of temperature.
The Woodworker's Dry Kiln

THE USE AND NEED OF ARTIFICIAL DRYING IN CONNECTION WITH WOODWORKING SHOPS—HOW EXHAUST HEAT MAY BE UTILIZED

AN IMPORTANT factor of not only every planning mill, but practically every woodworking institution is something separate and apart from the mill so far as mechanical equipment is concerned; it is the dry kiln. While it does not come into consideration under the head of the mechanics proper, of woodworking machinery, yet the work of the machines and the general results depends considerably on the efficiency of the kilns. So every good woodworking institution should have a good dry kiln equipment. It doesn't matter, either, if lumber is bought that is presumably dry, if a high grade of cabinet work is being done, it is essential to re-dry the stock. The question of how to equip to do it is one that is probably puzzling many a man in the business. One reader at least has asked specifically for information on this subject in the following letter:

To the Editor: Pittsburg, Pa.

"Will you kindly advise me through your paper with an article on 'Dry Kilns' which is the best and most economical way to construct one, what material is best suited, etc. We intend to use exhaust heat from our 50 horsepower gas engine. Do you think that is practical? Vincent F. Erpen."

When the question of erecting a dry kiln comes up there are more different things offered and more things to be taken into consideration than any man has any idea of until he tackles the subject once and goes into it thoroughly. Also, in the present instance, there is a new element brought up in the question of whether or not the heat from a gas engine, exhaust, may be utilized in this work.

To dispose of this last point first, because of its peculiarity, it is in order to say that almost any heat can be utilized in drying lumber; in this case it is more a question of whether or not there is sufficient heat than anything else. The writer does not recall ever having seen the exhaust of a gas engine used for this purpose; consequently, he is a little in the dark as to suggestions of ways and means to utilize it to the best advantage. That is, whether to water cool the exhaust and thus produce hot water and use hot water for the kiln or to utilize the heat by means of an exhaust fan.

What Material to Use

In the building of a dry kiln, leaving aside for the present entirely the question of dimensions and drying methods, and considering more particularly the materials entering into construction and the manner of their use, there are three classes of material used for construction. They are wood, brick, and cement or concrete. The majority of kilns among the mills are of wooden construction and the method of construction varies more or less. Generally, however, the kilns are framed and have at least two walls, one inside and one outside the framing. Generally, too, what is known as standard inch flooring is used in this work and sometimes on the outside there is also a covering of tar or composition roofing paper as a sort of extra protection against air getting in or out. In some styles of kilns these walls are used with dead air space between, in others the spaces between the framing are used to form vents or draft flues; and in some, where no vent is wanted through the wall, the space between the walls is filled with sawdust. It is generally conceded, however, that, as a non-conductor of heat, the air space is as good as an extra filling of sawdust, and it is much cleaner. Some vary this method a little by using flooring to ceiling the inside with and put a drop side on the outside, either tongue and groove or shiplap together. Some put a rough sheathing on the outside and then a tar building paper covering all with bevel siding or something of that kind. These are details that change considerably to suit the material and the ideas of the men doing the work.

Fire Proof Kilns

Where it is desired to have permanent kilns and a better degree of safety in case of fire the dry kilns are constructed either of brick or of concrete blocks. Brick construction is so well known as to need but little elaboration as it is a mere building of brick walls; if flues or vents are wanted up through the walls they can be built in like flues, up through the walls in ordinary house construction.

Since the rise in popularity of concrete blocks there has been quite a lot of experimenting with them in dry kiln work, and some who have used them claim to be well pleased with the results. In this work, in the building of the concrete block walls, it is pretty
much the same as house building, except that sometimes the blocks are so laid as to make flues or vents up through the wall out of the hollow spaces in the blocks.

Whether this is done or not depends on whether such a system of ventilation is used, or whether there are to be flues or some other form of draft.

As to which of these methods it is best to follow and the material that is most economical, depends considerably on the location and the availability of the different materials entering into the dry kiln construction. There is no doubt but that for a permanent kiln, it is better either to use concrete or brick if it can be had at reasonable cost, even though the first cost is more than for lumber. Also, if one pays insurance, there is a saving on insurance; because either brick or concrete walls, although they won't save the material in the dry kiln from burning in case a fire starts inside the kiln, still they will prevent the fire from spreading or the kiln taking fire readily from some outside fire.

Some Peculiar Kilns

This question of furnishing heat from the gas engine, while it is different, calls to mind an independently heated kiln of peculiar construction. This kiln is for drying lumber for a parquetry flooring plant working about 5,000 feet a day. The plant is driven by electricity; consequently, there is no waste heat about the plant to be utilized. So the heat for the kiln had to be produced independently. To this end a small boiler was purchased, about 20 horsepower, and was set, not on top of the ground, but in a brick structure that was bedded down into the ground like a basement, so that the top of the boiler is below the surface of the ground. The boiler room is made just large enough to hold the boiler and a reasonable amount of fuel. The dry kiln was fitted with return coil steam pipes pretty much as the regulation kiln, and the return or condensation from the kiln was piped back to the boiler. The object in this was to economize both in water and in heat; for, by this means, the boiler only required a little additional water now and then to make up for the loss through leaks, the water from the condensed steam being turned right into the boiler all the time. Only a few pounds of steam were necessary, just enough to get the heat. The whole thing reminds one considerably of the steam heating plant for a dwelling. In fact, it is more on that order than anything else. This system ought to suggest a good idea for those who are using electricity or gasoline engines for their motive power, as it makes a nice self-contained dry kiln system that is simple; and its cost, of course, depends on the magnitude of the requirements. If they are small, the heating equipment need not be more expensive than that for an ordinary house.

One might, on the same idea, varied somewhat, use a hot air furnace in which could be burned waste accumulation and heat the dry kiln with hot blast. In fact, this idea suggests itself as being one of the best for shops of small dry kiln requirements. It is capable of lots of changes and expansion in one way and another, and might even be extended to embrace the use of heat from the exhaust of a gas engine.

Natural Gas for Drying

This gas engine recalls one of the most peculiar dry kilns the writer ever saw, a kiln for drying slack cooperage stock in the gas belt of Indiana. This kiln was operated by gas, that is, by burning gas underneath much on the same plan as in the old smoker kilns that burned a fire underneath to generate heat. Of course, there was quite a lot of basement room and the gas jets were probably six feet below the bottom of the material that was drying, but they burned freely and brightly and looked mighty dangerous. The gentleman who was operating them, however, contended that they were not half so dangerous as they looked, and not nearly so likely to cause fire as the old smoker kiln in which the blaze was kept down as low as practical. His explanation of this was that the gas burners didn't throw out any sparks to go up through the stock, and that there was no blaze except right at the burner, with nothing but heat going up to dry the material. He was evidently right about it, too, for he had used it for a number of years and had not had a fire. Still, it was a dangerous looking proposition and it would probably be condemned by the board of underwriters of any city as too hazardous to be in operation.

Another peculiar type of dry kiln or drying room once examined was probably the simplest type going. It was a drying room for drying hickory handles in connection with a handle factory. It consisted merely of a box wall, strips nailed over the cracks, small windows which could be opened to get air to alter the temperature when desired, and a floor laid with common boards with cracks between the boards about an inch or a little more. Underneath the floor were runs of steam pipe here and there to furnish heat. The stuff was piled right in the room on the floor and either live or exhaust steam used, depending on the circumstances. The room was heated to temperatures ranging from 80 to 110 degrees. In this case high heat was never used, because it was not desired to dry out the stock too rapidly; and, while it took longer, the drying was probably better done than if more heat had been used.

Temperature to Use

This point of temperature is one that is getting quite a lot of attention these days, and there seems to be a tendency to use a lower temperature than formerly, keeping stuff in the kiln longer. The high temperature kilns are both dangerous and calculated to cause checking because of the excessive heat. The idea, today, seems to be to let the temperature down to
150 or 110 degrees instead of going above 200 as in some of the older kilns. It is a matter that depends considerably on what is being dried, and the condition it is in. Generally, the stock the average woodworker has to dry is some that was either partially air-dried or possibly had been through a kiln already, so the main purpose of the dry kiln is to do what is called re-drying, to insure getting the stock thoroughly dry; and it is more a matter of careful piling and proper handling of vents, given time enough, than it is a matter of seeing how rapidly it can be dried.

Curious House

In Lehigh county, Penn., lives a farmer by the name of Tilghman Fogel, and he has erected one of the most novel houses ever conceived. It’s the only one of its kind in the world, its walls being constructed of cement in which are imbedded thousands of souvenirs collected in all parts of the globe. These souvenirs consists of all kinds of stones, pebbles, wood, shells, medicine bottles, glassware of every description, plain colored and fancy; chinaware, plain and fancy; some whole, some otherwise. For instance, he’d take a glass pitcher and stick it into the soft cement so that only the handle protruded. Then he would take another pitcher, whether of glass or china, and stick it in sidewise. He’d do the same with cups and saucers. He would take a pitcher or cup and insert it sidewise, so that half would be in the cement and the other half would project. A handful of bits of colored glass would be stuck into the cement in varying designs, the whole making a phantasmagoria almost delirious in its effect.

On the north and south sides of the house there are huge squares of cement filled in with all kinds of rock, some of them three times the size of a man’s head. Some of them are the ordinary cobbles you find in a field, others are of iron ore, flint, limestone and a peculiar specimen of rock which he brought all the way from Kansas. Other specimens came from other western States. He says those souvenirs in the cement blocks represent practically every State in the Union. The borders around the windows at the kitchen are composed of alternate layers of brick and soda water bottles with the bottom outward. First there is a brick, then a bottle, then another brick and so on. Among them are some of the old-fashioned glass knobs from bureau drawers. The pillars of the porch are of bluestone, hand-carved, and each pillar represents a different kind of wood. The interior of the house is neat and tasteful and without any oddity of any kind.

Substitute for Wood

Harold L. Holister of Hopkins, Minn., one time publisher of The Morristown Press, has invented and patented a substitute for wood which promises to work wonders in the erection of buildings. The material is composed of straw and a by-product of coal oil. Seventy-five per cent straw is used and this is cemented together with the coal oil material with other chemicals making a substance that it is claimed will take the place of wood in any line of building. It is superior to wood in that it is fire-proof, water-proof and will not decay. Saws, planes, augers, etc., will work it as readily as wood and there is no grain to split. Nails can be driven close to the edge and will hold firmer than wood as the friction of driving the nail partially warms up the tarry substance which again hardens holding the nail firmly.

The straw is chopped and mixed with the oil or cement and all is put into a pot where it is melted; then it is turned into a mold and heavy pressure applied which forms into the desired thickness, shapes, lengths, etc. This substitute weighs about the same as oak and is declared to be as strong as a piece of ordinary lumber of the same dimensions. Straw, slough grass, or hay can be used in the manufacture and the finished product is expected to cost about half the price of lumber.

Mr. Holister is receiving substantial support from many prominent business men of the state and all who have seen the material or its manufacture and investigated its usefulness anticipate great things. Special machinery for its manufacture is now being built and it will be but a short time before the manufacture for general use will commence.

Concrete a Sanitary Building Material

Among the many claims made for the superiority of concrete as a building material is that of its sanitary qualities. The Board of Health of Detroit, Mich., at a recent meeting was given evidence on this point which would seem to be conclusive. In that city it was found that the wooden floors of an old meat market had become saturated with filth, and that rats and other vermin held high carnival among the rotten boards and beams. The Board of Health ordered the old floors removed and concrete substituted for the wood, the executive officer stating that the vermin would be forced to look for other boarding houses after the mandate had been executed.

The wood in the old stalls of the Chicago stockyards, which had become soaked with animal matter, has been largely replaced by concrete since the recent sensational developments made in the packing industry. Concrete has the right to be considered as an agent of health, as well as the cheapest, most easily handled and strongest building material developed in modern times.

When He Stammered

Employer (engaging clerk)—But do you always stammer like that?
Applicant—N-n-n-no, sir; only w-w-when I t-t-talk.
A Gauge for Spacing Shingles

To the Editor: New Era, Ore.

The accompanying illustration shows a device which I use to hold and space the straight edge in laying shingles.

It is made from a 2 by 2 inch piece about 5½ feet long. For laying shingles 5 inches to the weather, the hooks, or notches should be made 5 inches apart, etc. The small board nailed across the top of the under side raises the hooks the proper distance from the sheathing and through it the nails are partly driven into the sheathing to retain it in place. It requires two of these gauges, one at each end of the straight edge, which should be kept level. In sliding the straight edge up, a notch regulates the spacing and keeps the courses straight with the roof. 

ELMER VETETO.

House of Brick Veneer Construction Being Erected By C. G. Burkett at Warriorsmark, Pa.

Brick Veneer

To the Editor: Warriorsmark, Pa.

The enclosed is a picture of a roomy, well designed house of brick veneer construction which I am putting up in this place for A. W. Hyskell, Esq. Some features of it may be interesting to the readers of the AMERICAN CARPENTER AND BUILDER.

C. G. Burkett.
Suggestions Requested

To the Editor: Aurora, N. Y.

I am a merchant, keep a general store; but am also something of a mason and builder and am very much interested in your magazine. I am also anxious to have your new book "Cement Houses and How to Build Them."

Now I would like for you or some of the readers to give me some ideas about remodeling my store. You will see from the picture that we have a new front, bottom and top; and I want to put a cement plaster finish between the windows and up to the galvanized cornice. I am sure that I can do the work if some of you can tell me the best way.

I would also like to know what I can put in the show windows which will be cheaper than tile and can be cleaned.

M. Maloney, Jr.

Satisfactory Squirrel Cage

To the Editor: Centerville, S. D.

In answer to J. E. Donaho's question in regard to squirrel house, I would suggest that he build it 5 feet square, roofed same as a gable house, having one side of house ½ inch mesh sand screen, also line the whole house with the screen, so the squirrels can climb all over the interior, as the wire gives them a hold so they will not slip. Procure a branching, small tree top and plant firmly near center of house. Also if possible get a natural squirrel tree—that is, a hollow log—about 12 in. through, cutting to length to reach from floor to ceiling and place in one of the back corners of the house. Have a branch of small tree project toward hollow tree, but leave space so they will have to jump, and you will be surprised at the hours they will race up one tree and down the other. Place squirrel wheel where convenient, and feed door the same. Could you not procure a hollow tree, you can get one with good rough bark and place a box at top.

H. I. Holcomb.

Puzzle Answered

To the Editor: Milwaukee, Wis.

Mr. H. E. Graham of Condon, Ala., has given a problem in the July number of your valuable magazine for your readers, and wants to know how far from the top end a timber must be cut which is 30 feet long, 10 inches square at top and 12 inches square at bottom, so that the top piece will contain as many feet of lumber as the bottom piece.

The whole timber contains 302.4 feet of lumber and must be cut 16.36 feet from the top end to contain as many feet of lumber as the bottom piece, that is, 151.2 feet of lumber.

Your readers are still waiting for the solution of the wonderful puzzle given by Mr. Pinus Strobus in the May number, consisting of a piece of mahogany with a mortise through the center and a hammer-headed key of white pine through it, as shown in sketch No. 4 on page 231. Each piece is absolutely solid and was never cut apart or glued up in the making. Mr. Strobus being perhaps the only one to know how it is done, would do us a great favor to tell us the secret.

JACOB GEREND.

Answer: I can assure Mr. Gerend that I am by no means the sole repository of the secret of the joint shown in the May number of this magazine. It is very simple. Boil or steam the white pine key until it is quite soft; squeeze one end in a powerful iron vise until it is compressed sufficiently to pass through the mortise in the piece of mahogany. As the pine swells very rapidly one has to "step lively" to get it through before it is too large to pass the mortise. When the key is dry, a rub with sandpaper easily removes all traces of the steaming and compression, and leaves the most deceiving wood puzzle known to the writer.

Of course, the reason that this puzzle proved baffling to my fellow correspondents was that it was clearly stated that the key was absolutely solid. If that condition had been absent, many of the readers of this journal would have remembered a puzzle of similar outward appearance, in which the key is glued up as shown in the accompanying sketch.

Pinus Strobus.

To Draw Spiral with Compass and Square

To the Editor: Montreal, Can.

Will you please ask Mr. Woods to show how to draw a spiral with a compass and the steel square? I was told that he has a way of doing it and thought it would be interesting to many others, as well as myself.

John Erikson.

Answer: To draw a spiral with the aid of a common compass is a very simple matter and any one that can at all handle the instrument, can do it after a moment's study, as
the spiral is composed of four parts of quarter circles and is therefore made from four centers.

In the illustration are shown four squares and the centers are at the heel of each square and it will be seen that the spiral lines pass at equal distances from the heels of the respective squares, thus proving that it is made up of true quarter circles. In the illustration, the spiral starts out from a true circle with its center at the heel of square No. 1 and the centers for the beginning of the spiral is at the heel of No. 2 and the changing point is at the blade of the respective square from the heel from which that part of the circle is turned. Then without changing the pencil point, set the needle point back to the heel of the next square and so on to the end. The distance between the spiral lines is governed by the distance around the square formed by the steel square as shown at the center of the illustration. If it is desired to have the spiral lines two inches apart, the square would only be one-half inch each way, just as though the heels were shoved by each other that amount. A. W. Woos.

Quick Estimating

To the Editor:

I have been a charter subscriber to your journal since its first number was published. I have been hoping that some contractor would some time give some rule for a quick estimate on buildings—brick buildings, such as stores, school houses, churches, halls, etc. I would like to ask for such information through the columns of the AMERICAN CARPENTER AND BUILDER.

A. J. Brooks.

Top Cuts for Bridge Truss

To the Editor:

I have been a subscriber to your valuable paper since its first issue, would like to have room to answer Mr. A. D. Woodson's question in the June, 1908, number, how to get the top cuts of his truss. Take run of brace, plus one-half of gain of brace on blade, one-half of rise on tongue, tongue gives cut.

J. L. Breth.

Curved Crown Molds

To the Editor:

I would like to ask a question through the columns of your journal. Enclosed you will find a sketch for a curved crown mold. Now it is this. Is there a rule for developing this mold out of one inch stuff? Note that this is for a concave roof and not going around a circle.

Geo. Schlumersdorf.

From a Home Workshop

To the Editor:

The photo inclosed may be of interest to some of the readers of the AMERICAN CARPENTER AND BUILDER, especially those interested in hand-made furniture, as it shows a piece of such work of rather peculiar design—a very large combination table and fireplace seat, which I was called upon to construct some time ago.

The intention was to make it very solid and comfortable, the chief piece of furniture in the large living room of a bungalow being built near here. The photo shows it in place before the broad hearth, where it adds much to the homelike comfort of the room.

In construction it is of the simplest kind, being built of two-inch surfaced maple stock, fastened together with old-fashioned wrought iron spikes. The finish is the dull wax in natural grain.

John Lyman.
To the Editor: Wahkon, Minn.

Perhaps the readers of this magazine will be interested in seeing present day examples of the work of what might be called the original American carpenters and builders,—the bark huts of the Chippewa Indians of Northern Minnesota. These are located on the shore of that beautiful inland sea, Mille Lacs Lake, near the new summer resort town of Wahkon, about midway between St. Paul and Duluth.

Most of their houses and huts are made of birch bark and rush matting over a frame work of wattles and poles, not a single nail being used. You will see clearly from the pictures that not all the modern improvements have been incorporated in the design. Still there is no sign of “race suicide!”

The Indians here are now at work also on several birch bark canoes. Their kit of tools for this, as for their other building work, is made up of a knife and a large awl like a scratch awl.

Best wishes to the world's greatest building paper and to all the big family. T. R. McCormic.
AMERICAN CARPENTER AND BUILDER

PRACTICAL TRADE APPLIANCES

Book Review

We are in receipt of a copy of the 17th annual 1908 edition of Hendricks' Commercial Register of the United States for Buyers and Sellers, published in New York City. By comparing the present with past editions we find it still continues to improve and increases with each new issue.

The 16th annual 1907 edition required 76 pages to index its contents while the present edition requires 82 pages. As each page contains 412 classifications, the six additional pages contain 2,472 additional trade classifications, making for the eighty-two pages a grand total of 33,684 headings each one of which represents the manufacturers, etc., of some machine, tool, apparatus, specialty or material.

The first edition was issued in 1891 and contained about five hundred pages, while the present numbers over 1300 pages and contains upward of 350,000 names and addresses classified under 33,684 trade headings.

The first edition required only eight pages to index its contents with 206 classifications on each page or a total of 1,648, and it was devoted solely to the building industries of the country, while the present edition covers not only that, but also the engineering, mechanical, railroad, electrical, mining, iron, steel, export and kindred industries. The difference between it and the present edition will give you some idea of the growth of the publication and the appreciation with which it has been received. It is the only publication ever issued that is so classified that it can be used for either purchasing or mailing purposes.

The Hendricks' Company makes no charge for fully classifying any firms' business, consequently, they have the material for making the most complete buyers reference issued. As an illustration of the system used, we might mention "machinists and founders;" all firms who have a machine shop or a foundry are classified under that heading for mailing purposes, then each firm is sub-classified under headings that cover every variety of its product. This makes the work very complete for both buying and selling.

Beaver Boards

The illustration on this page is made from a photograph of the dining room in the residence of the noted author, Anna Katherine Green at Buffalo, N. Y. It is of special interest to carpenters and builders because the walls and ceiling are made of Beaver boards—no lath or plaster being used; but also the engineering, mechanical, railroad, electrical, mining, iron, steel, export and kindred industries. The difference between it and the present edition will give you some idea of the growth of the publication and the appreciation with which it has been received. It is the only publication ever issued that is so classified that it can be used for either purchasing or mailing purposes.

The Hendricks' Company makes no charge for fully classifying any firms' business, consequently, they have the material for making the most complete buyers reference issued. As an illustration of the system used, we might mention "machinists and founders;" all firms who have a machine shop or a foundry are classified under that heading for mailing purposes, then each firm is sub-classified under headings that cover every variety of its product. This makes the work very complete for both buying and selling.

Beaver Boards

The illustration on this page is made from a photograph of the dining room in the residence of the noted author, Anna Katherine Green at Buffalo, N. Y. It is of special interest to carpenters and builders because the walls and ceiling are made of Beaver boards—no lath or plaster being used; it gives some idea of the attractive interior finish thus ob-

Good Evidence

The following letter is received from a "Burt" user who at three different times has come back for more "Burts" for use in his factory:

June 12, 1908, Knoxville, Tenn.

Gentlemen:—We have your letter of the 10th inst. with reference to the 8-30" Glass Top and 6-48" Metal Top Burt Ventilators sold us, and beg to advise that we are finding these ventilators satisfactory.

Yours truly,

THE WM. J. OLIVER MFG. CO.

Burt Ventilators

always prove their worth and their superiority wherever they are installed. The Burt construction is unusually thorough from the selection of the raw material down through the finishing of the last rivet.

The features of Burt Ventilators are unusual. They have the patented adjustable sliding sleeve damper. They are storm and dust proof whether open or closed. They can be opened to any degree by a simple pull of the adjusting cord and are made with glass tops, thus making a combination skylight and ventilator.

Send for our new 92-page catalog giving fine illustrations of mills, shops, factories, and residences where Burt Ventilators are in successful use.

The Burt Mfg. Company, 500 Main St., Akron, O.

Largest manufacturers of Oil Filters and Exhaust Heads in the world.


WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Our Crow Has Spurs Behind It

From first to last we know every ounce of the material entering into the manufacture of our roofing products. This roofing has behind it Forty Years of Success under our own individual process of manufacture. Like our Rooster it is "thoroughbred" throughout. Our special process of making this roofing involves extreme heat and great pressure and absolutely the purest asphalt, coating and highest grade wool-felt the world affords. The result is an elastic, mineral quality that no extreme of weather or temperature can effect.

WARNING This roofing cannot be bought of "mail-order" or "catalogue-houses" and the public are warned against cheap imitations sold under names closely resembling our brand.

Send for our Booklet on Roofing. All Our Products Satisfy

Our "Quality" Crown

"Quality", backed with positive guarantees, is the key note of everything we claim for Ford's Galvanized Rubber Roofing. There's no "ifs" or "ands" about our protecting contractors, owners and dealers who buy or sell this roofing. That word "Galvanized" means something. It distinguishes the special manufacturing process briefly referred to above. For your own and our protection insist on having Ford's Galvanized Rubber Roofing for all buildings.

The Guarantees We Give

The guarantees named below are positive and are Based on Actual Time Tests in all climates and under all conditions.

- **On 3-Ply**
  - We give guarantee through dealers direct to consumer or contractor for 15 years on Three Ply.

- **On 2-Ply**
  - We give guarantee through dealers direct to consumer or contractor for 10 years on Two Ply.

- **On 1-Ply**
  - We give guarantee through dealers direct to consumer or contractor for 5 years on One Ply.

Send for Free Samples and Specify Ford's Galvanized Rubber Roofing

FORD MAN'FG CO. 161 W. Wash. St. CHICAGO
taineable. Beaver boards are a new wall and ceiling material which are rapidly growing in popularity wherever they have been introduced. These boards are made of wood fibre, chemically treated and pressed into sheets about 3/16 inch thick, and varying in size from 24 by 24 inches to 48 by 78 inches. The edges are straight, and the corners square. These boards are firm and rigid; do not split, crack or chip; are nailed direct to studding, and can be frescoed or tinted any shade, producing a specially artistic effect when beading is used to make a panelled wall. It is claimed that these boards are non-conductors of heat and cold, that their use make the house warmer in winter and cooler in summer. The manufacturer reports that they are being used particularly in the construction of the better class of buildings, such as brown stone fronts, etc. Among the advantages claimed is the fact that their use hastens construction, no waiting for plaster to dry; obviates the danger from falling plaster and the dirt incident to repairing same. Beaver boards are made in six kinds to meet various requirements. The variety includes an indurated, waterproof board to cover old and cracked plaster walls and such as are to be papered; also Beaver veneering which is a perfect reproduction of several kinds of rare woods for interior use, and Beaver siding for exterior use. Beaver boards are used extensively for bungalows, summer cottages and partitions in office buildings. We suggest that carpenters and builders might find it to their interest to induce property owners to have their attics and top floors lined with these boards as it would make the houses warmer and save fuel. They could thus keep their force employed during the dull fall and winter months. These boards are manufactured by the Beaver Manufacturing Company, Buffalo, N. Y. We advise our readers to send for the free samples of all six kinds of Beaver boards and the descriptive literature, and judge for themselves as to the real merit of this much-talked-of product.

**Luxfer Prism Daylighting**

It seems paradoxical almost, that daylight, which is free to all in bounteous supply, is oftentimes so hard to secure. The problem, however, is familiar to everyone. Land, in progressive centers, is expensive; buildings of several stories are therefore built in close proximity, and the tenants are shut off by high abutting walls from the light of the sun. There is plenty of daylight, but it is above or to one side of the point where the occupant of the store, the office or the factory can benefit from it. This, briefly, is the work performed by the Luxfer system—to bend or divert the rays of light coming from above or either side that they shine into darkened rooms, and flood them with Nature's own illuminant—daylight.

Luxfer system creates nothing, but simply utilizes the inexhaustible and constant supply of daylight. After installation, Luxfer costs nothing. It makes a light, cheerful place of a dark, gloomy one. It makes people healthier, happier and capable of more and better work. It saves its cost in artificial lighting bills alone.

The operation of Luxfer, like most scientific successes, is extremely simple. The rays of light, coming from the bright outside world, are bent by means of prism angles, and so are projected to any desired point. This is not a matter of guess work, but experts in daylight illumination work out the problems and angles in each case.

Luxfer prisms are produced to meet all possible needs and conditions of building. There are pressed tile prisms for transom work, prism canopies for narrow streets and courts, pressed prism skylights, floor prisms, plain sidewalk lights and Luxfer sidewalk prisms. We recommend, unreservedly, any and all of these to the contractors and builders of the American Carpenter and Builder family.

There are three classes of people who cannot afford delay in installing Luxfer; merchants whose stores (large or small) are not flooded with daylight; manufacturers of all classes; owners or lessees of basements which are not utilized to their greatest advantage. To all these, Luxfer daylighting means an immediate-return, ready-money proposition.

No problem is too small or large to command the expert attention of this company. They are as much interested in equipping the 30 foot store as the million dollar business block, and execute a contract for either with the same promptness and fidelity, in any part of the U. S.

The home office or any local representative will tell you all about Luxfer as applied to your problem without delay and at no cost or without obligating you in any way.

They have special detailed literature upon all forms of Luxfer we have mentioned herein. Tell them about your particular problem and they will supply you with full information. The illustration herewith shows the front cover of an interesting booklet, which is sent free to all who write either the main office, 1600 Heyworth building, Chicago, or to the following branch offices: 46 Federal street, Boston; 32 Builders' Exchange, Baltimore, Md.; 1022 Garfield building, Cleveland, O; 21 Thoms building, Cin-
**LUMBER AND BUILDING MATERIAL**

Special Offer To Contractors And Builders

**Buy From Us At**

**CHICAGO HOUSE WRECKING CO.**

An Opportunity To Save 25 TO 50 PER CENT

**IMPORTANT!** Send Us Your Lumber and Building List for Our Estimate

---

**Brand New Lumber for Sale**

The Chicago House Wrecking Company is the largest concern on earth devoted to the sale of Second Story Lumber. We are also the largest concern on earth devoted to the sale of Second Story Lumber. We are also the largest concern on earth devoted to the sale of Second Story Lumber.

**IMPORTANT! Send Us Your Lumber and Building List for Our Estimate**

**1908**

**FREE 500-PAGE CATALOG NO. 742**

**BARGAINS IN DOORS**

<table>
<thead>
<tr>
<th>Door Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire Doors</td>
<td>$1.25</td>
</tr>
<tr>
<td>Exterior Doors</td>
<td>$1.25</td>
</tr>
<tr>
<td>Interior Doors</td>
<td>$1.25</td>
</tr>
<tr>
<td>Storm Doors</td>
<td>$1.25</td>
</tr>
</tbody>
</table>

**Rubberized Galvo Roofing**

<table>
<thead>
<tr>
<th>Roofing Material</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galvo Roofing</td>
<td>$1.25 per 108 square</td>
</tr>
</tbody>
</table>

**BARGAINS IN WINDOWS**

<table>
<thead>
<tr>
<th>Window Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>$6.00 for 5000 windows from various wrecking operations at prices ranging from 29¢ up.</td>
</tr>
</tbody>
</table>

**Our Free Publications**

- **Building News:** We publish regularly a pamphlet devoted entirely to building materials. It contains summaries of thousands of buildings erected by us in the past year. We will send you a copy of this pamphlet absolutely free. Also available is a complete catalog of our lumber and building materials. These catalogs are useful to builders and architects.

**Our Free Catalog**

- **Building News:** We publish regularly a pamphlet devoted entirely to building materials. It contains summaries of thousands of buildings erected by us in the past year. We will send you a copy of this pamphlet absolutely free. Also available is a complete catalog of our lumber and building materials. These catalogs are useful to builders and architects. 

**FREE 500-PAGE CATALOG NO. 742**

**When Writing Advertisers Please Mention The American Carpenter and Builder**
New Ideas For New Floors

There's a satisfaction in using Johnson's Wood Dyes on new floors that no stain mixed by yourself or any so-called "stain" already prepared can give you or your customer. You have probably discovered that the "stains" you have used are simply surface coverings. Johnson's Wood Dyes are Dyes, not stains. They penetrate the pores, dyeing the wood the exact shade you desire, bringing out the beauty of the wood and accentuating it.

We have spent more than $50,000 in research and experiment, to insure your perfect satisfaction with Johnson's Wood Dyes as a substitute for old-style methods and materials in wood finishing.

Johnson's Wood Dyes are made in fourteen shades, ready for use, thus saving you annoyance and mistakes in mixing.

These Are the Shades

<table>
<thead>
<tr>
<th>Shade Number</th>
<th>Shade Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 131</td>
<td>Brown Weathered Oak</td>
</tr>
<tr>
<td>No. 172</td>
<td>Flemish Oak</td>
</tr>
<tr>
<td>No. 126</td>
<td>Light Oak</td>
</tr>
<tr>
<td>No. 123</td>
<td>Dark Oak</td>
</tr>
<tr>
<td>No. 121</td>
<td>Moss Green</td>
</tr>
<tr>
<td>No. 178</td>
<td>Brown Flemish Oak</td>
</tr>
<tr>
<td>No. 132</td>
<td>Green Weathered Oak</td>
</tr>
<tr>
<td>No. 129</td>
<td>Dark Mahogany</td>
</tr>
<tr>
<td>No. 140</td>
<td>Manila Oak</td>
</tr>
<tr>
<td>No. 110</td>
<td>Bog Oak</td>
</tr>
<tr>
<td>No. 128</td>
<td>Light Mahogany</td>
</tr>
<tr>
<td>No. 125</td>
<td>Mission Oak</td>
</tr>
<tr>
<td>No. 130</td>
<td>Weathered Oak</td>
</tr>
<tr>
<td>No. 122</td>
<td>Forest Green</td>
</tr>
</tbody>
</table>

Johnson's Wood Dye, any desired Shade, is sold by the best paint dealers. Insist on getting the genuine, don't take a substitute.

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Half-Pints</td>
<td>$0.30</td>
</tr>
<tr>
<td>Pints</td>
<td>$0.50</td>
</tr>
<tr>
<td>Quarts</td>
<td>$0.85</td>
</tr>
<tr>
<td>Gallons</td>
<td>$3.00</td>
</tr>
</tbody>
</table>

It's not an easy thing to remove paint and varnish from wood and leave the surface just right for refinishing. Most paint and varnish removers contain a large percentage of paraffin which prevents a new finish from drying properly.

Johnson's Electric Solvo is the first requisite in refinishing old work. It is made by a special process which requires only one-fourth the usual amount of paraffin. It won't—it can't—injure the new finish. It is "Electric" in the rapidity with which it does its work. It is free from offensive odor, will not soften the glue in joints and will not injure the hands or the finest fabrics.

The final touch to any job of wood finishing is given by Johnson's Prepared Wax, which imparts to wood a beautiful, soft tone and a finish that will not crack, peel or scratch or show heel prints, under the hardest kind of service.

**FREE TRIAL OFFER**

If you fill out the coupon we will send you absolutely free of charge—two cans of Johnson's Wood Dyes, your choice of shades, one can of Johnson's Electric Solvo, and our handsome 48-page Text Book, "The Proper Treatment for Floors, Woodwork and Furniture." Write us today. Address:

S. C. Johnson & Son
Racine, Wis.

"The Wood Finishing Authorities"

*WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER*
THE mixing of wood stains to secure the precise color you want is a puzzling job for any workman.

Even when it's done right, it takes time and time costs money—your money.

When it's done wrong—when the mixture is off-color, it's mighty expensive.

You can't afford to pass off the mistake on your customer, so the stains must be mixed again. Then there's more time and more material to be paid for.

To avoid such experiences use Johnson's Wood Dyes, which are better than any other stains on the market. They require no mixing and do away with all the difficulties and mistakes of shading.

They save you time and money and please your customers.

Johnson's Wood Dyes are Prepared in All Shades—Ready for the Workman

We import the colors used in them, because we cannot find their equal in this country.

The rich, luxurious finish you get with our Dyes cannot be obtained with any of the stains you mix yourself, or with the so-called "stains" you buy already mixed, which are simply wood coverings.

Johnson's Wood Dyes are Dyes. They penetrate the wood without raising the grain, thereby accentuating the high lights and developing all the beauty of the wood.

FREE TRIAL OFFER

Send us your name and address and name of your dealer on the coupon and we will send you absolutely free of charge two cans of Johnson's Wood Dyes, your choice of shades, a can of Johnson's Electric Solvo for removing paint and varnish, and our handsome 48-page Text Book on "The Proper Treatment for Floors, Woodwork and Furniture." Write us today. Address

S. C. Johnson & Son, Racine, Wis.

"The Wood Finishing Authorities"

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Tiffin Art Metal

It is a pleasure to recommend to our readers a line of goods which we know will "make good," and more, to every good thing we may say about them. For this reason the products of the Tiffin Art Metal Company, Tiffin, Ohio, are recommended unreservedly and with peculiar pleasure by us to special attention on your part.

These products comprise two general classes: The Art Metal ceiling and side walls, designed with the well-known double bead lap which produced the perfect joint—absolutely dust proof and invisible; and the "Never Leak" shingles, made of Apollo Vandegrift galvanized iron in the most modern scientific way. It has been fully demonstrated that a roof fitted with these shingles cannot leak. The interlocking principle is so complete that for water to get through the shingles it would have to run up hill (against the laws of Nature), and a long way up too. These shingles cannot warp, rot, split or absorb water and remain damp. Of course they are fireproof. Sun and frost do not affect them.

Doubtless a very large number of the readers of the AMERICAN CARPENTER AND BUILDER are already familiar with these Tiffin Art Metal Company products from actual experience, and the use of them in first-class, up-to-date building.

Following are the different modes:

Principles of Heating

There are few subjects which appeal so thoroughly to the property owner or householder who is obliged to obtain some mode of protection from the rigors and discomforts of cold weather, as the practical consideration of heating and ventilating as applied to efficient warming and ventilation.

Following are the different modes:

* Heating by Stoves.—This is a method which in many localities is no longer tolerated. The stove takes much more fuel to heat by a stove than with a good hot air furnace. There must be a stove in each room to be warmed. Each stove wastes as much heat into the chimney as would a furnace. There are also serious objections and disadvantages to
We are Responsible For It!

Mr. Contractor—
Mr. Owner—

As the result of our enterprise and immense facilities the very best ready roofing—backed by a Ten-year-roof-Insurance "Guarantee" is now being sold at the lowest prices ever quoted.

From this time on ready roofing will be sold and priced as

A STAPLE

VS

A HIGH PRICED SPECIALTY

"Compo-Rubber" and "Weatherproof" Rubber Roofing are the World's Best in Quality

"Compo Rubber" Roofing and Weatherproof "Roofing will not crack, break, melt, rot or leak. They possess the longest durability and the shortest cost of any other prepared roofing on the market.

We own our own asphalt mine—the only one in the United States producing asphalt that is 99% pure Bitumen. We manufacture our own wool felt and saturate it with our own compounds and apply our own coatings. In fact we produce everything from beginning to end that is used in making our roofings.

Our "Ten-Year-Roof-Insurance" Guarantee

Knowing that we are making the most durable and lasting roofing fabric that can be produced we back this knowledge with a legal document form of "Ten-Year-Roof-Insurance" Guarantee which can be obtained from any dealer.

Send to-day for Information as to our "Ten-Year-Roof-Insurance" Policy and FREE SAMPLES of these roofings.

We Manufacture at our New Mill

"Compo-Rubber" Roofing  Asphalt Roofing
"Weather Proof Roofing  Building Paper
Flint Coated Roofing  Tarred Felts
Gravel Surface Roofing  Deafening Felts

heating by steam or by hot water. These objections marked up against the other systems can not be placed against heating by hot air. With it the entire apparatus is in the cellar and requires no extra space whatever in the living apartments. It forces ventilation, which is absolutely essential to health and comfort, a feature that alone makes hot air heating superior to any of the others. The heat can be regulated to conform to the outdoor temperature; therefore there is no overheating in moderate weather. This system is easily managed. With a properly constructed hot air furnace almost any twelve-year-old child can take care of it the entire season. It is inexpensive to install and keep in repair, and for economy in maintenance it rivals all others. We are conscious of the fact that many failures have been scored against this method, but we venture the assertion that every failure can be traced directly to one or more of the following causes:

1. The furnace selected, a light steel construction, which rusted or burned out.
2. If a tubular furnace, with an unequal expansion and numerous joints, which either crack or open up and leak smoke and deadly gas.
3. If a poorly constructed, cheap apparatus, with almost a direct draft that allows the greater part of the heat to go up the chimney.
4. If a good apparatus, the one selected was too small to do the work required.
5. If none of the errors stated above are made, then the furnace was not properly located. Hot air pipes or cold air duct were of insufficient capacity, or some method or device which an expert on the ground would readily discover. Every one who will investigate the various methods and decide the matter solely on its merits must, we believe, conclude with us that if the system is properly installed, the results obtained will come nearer perfection than any of the other systems.

Having proved the superiority of heating by hot air, to decide upon the best hot air furnace is not hard. The Niagara furnace, made by the Forest City Foundry and Manufacturing Company, of Cleveland, Ohio, is so far ahead of all competition that to choose it is only reasonable. We would heartily urge all members of the American Carpenter and Builder family to write this company for full information on the important subject of heating.

Successful Draftsmanship

Often a contractor or builder is called upon to submit a plain sketch or a complete business-like looking set of plans, for which he could charge a good price or in return receive a good fat contract, but is unable to do so on account of not having the ability which he would have, if he had taken a course of thorough practical training along this line.

Mr. F. V. Dobe, M. E., and chief draftsman of the Engineer's Equipment Company, 99 Washington street, Chicago, has for many years been giving personal and individual instruction in complete architectural drawing and building design, and is meeting with remarkable results and success in qualifying the most inexperienced man with ability, in a short time, to make A-1 drawings, designs and all details.

Many a contractor and builder is wasting a lot of time in
"NATIONAL" MEANS Hinge Excellence

THE WAY to tell good butts and hinges is to look for the name. If it's "National" that's all you need to know. If it isn't "National" look again.

Of course you've heard about the superiority! The simplicity that cuts cost of hanging doors down to one half:—the slot in the lower tip for a screw driver, making it easy to remove pin:—the durability that is obtained by subjecting screws to a shearing strain:—and then—the individuality of every design.

"National" Ornamental Butts and Hinges are made 'right'. We supply them in all sizes from 1\(\frac{1}{2}\) to 4\(\frac{1}{2}\) inches inclusive, in steel, brass or bronze—in all standard finishes or we can match any special finish on short notice. Beautiful exclusive and unique designs that impart a finish to every door.

UNIVERSALLY USED

In all kinds of public buildings and private residences—in America and Canada. "National" Butts and hinges are giving incomparable satisfaction.

It will pay you to become interested in these products. Send for the booklet "Ornamental Ideas". It is well illustrated with new suggestions for door ornamentation and contains useful pointers for carpenters and contractors. We send it free on request—but just mention your dealer's name when writing.

Sterling, Illinois

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
UNTIL Amatite was put on the market a few years ago, practically everybody who used ready roofings had to paint them regularly. Some of the roofings required a coat every year, others every two or three years.

In all cases a good deal of expense and trouble was involved. The popularity of Amatite is largely owing to the fact that its use does away with all such trouble and expense. This is due to its real mineral surface which is far more durable than any paint.

Used on the outside of houses for trim, porches, etc., on wood, iron, concrete or any other material, for it is impervious to water—fresh or salt. It is not affected by weather andwill last indefinitely. It is not affected by weather and will last indefinitely.

Amatite works easily, does not pull, has no runs, laps or brush marks; covers remarkably; does not crack, peel or lose its gloss; wears a great number of years without turning yellow; keeps its beauty whether in glass or rubbed finish; may be tinted for special decorative purposes.

New York Chicago Philadelphia Boston Cleveland Cincinnati

A Sample Free. Write to nearest office to-day.

Amatite
MINERAL SURFACED
NEEDS NO PAINTING

Cheery, Fast Colors

LINDURO Highest Grade of Enamel
FOR OUTDOOR AND INDOOR WORK

Recommended by every architect and painter who has used it.

Linduro works easily, does not pull, has no runs, laps or brush marks; covers remarkably; does not crack, peel or lose its gloss; wears a great number of years without turning yellow; keeps its beauty whether in glass or rubbed finish; may be tinted for special decorative purposes.

Used on the outside of houses for trim, porches, etc., on wood, iron, concrete or any other material, for it is impervious to water—fresh or salt.

Used on the inside of houses, on any surface—wood, plaster, brick, porcelain, glass, tile, etc., because it is water proof and soap proof—may be scrubbed clean without injury. It adds beauty to tile, brick or pine work, bringing out the soft effects of relief and giving a re- Blue Flag mMarkably hard ivory effect to the surface. It carries the "Little Blue Flag"—Your Protection.

Samples and sample panels on application.

THE LOWE BROTHERS COMPANY
Paintmakers Varnishmakers
450-452 E. Third Street, Dayton, Ohio
New York Chicago Kansas City

AMERICAN CARPENTER AND BUILDER

[October]
Asbestos "Century" Shingles

"The Roof that Outlives the Building"

When a houseowner's roof rusts, or rots, or cracks, or needs painting, or does anything else that annoys him or costs him money, he blames the architect or builder—not his own desire to "save" on first cost.

Asbestos "Century" Shingles preserve good feeling all around. Their first cost is no higher than any other roofing regarded as first-class, and there is no cost of upkeep—no painting or repairs. They cannot decay. They are proof against fire.

Asbestos "Century" Shingles are shingles—like sheets of asbestos-fibre cement, formed and made dense and elastic by tremendous hydraulic pressure. Applied like any shingle or slate. Made in three colors—Newport Gray (silver gray), Slate (blue black), and Indian Red in many shapes and several sizes. Five cents per square foot (and upwards) at Ambler, Pennsylvania. Write for Booklet "Roofing 1908."

The Keasbey & Mattison Company
Factors - - - - - Ambler, Pennsylvania

We Want to Show You Why

Can you afford to figure a job of Metal Ceiling unless you are sure the cost of erecting will not exceed your estimate? Your success is our necessity because you will not buy our ceilings unless there is profit in them for you and satisfaction for your customers. Most of your success depends upon the fit.

We Have Solved the Problem

Our Double Bead Lap produces a thoroughly dustproof and invisible joint. It is simplicity itself. Easy to fit, therefore cheapest to erect. This means profit and satisfied customers to you.

Another Secret

The great variety and high character of our Art Metal Ceiling and Sidewall Designs insure the customer's preference when shown our Catalogue. Send us plans with all measurements and we will prepare drawings of appropriate ceilings, without charge, and name you low price on all material, F. O. B. your station. Get our catalog right away.

The "Never Leak" Shingle

Made on a modern scientific principle, of Apollo Vandegrift Galvanized Iron, this latest and most remarkable roofing supersedes anything made. Rather a sweeping statement—but read the reasons on which it is based.

Unique Features of a Unique Roofing

First: A roof fitted with this shingle cannot leak. The interlocking principle is so complete that for water to get through the shingles is against the laws of nature. Water cannot run uphill, yet that's the only way it could enter a roof of "Never Leak" Shingles. Then they positively cannot warp, rot, split or absorb water and remain damp. And of course they're fireproof. Sun doesn't affect them. Neither do the severest climate conditions.

Cost Compared with Wood

Figure up what wood shingles have cost you for the last ten years. Consider the repair bills, inconvenience and all around disadvantages, and compare the cost with everlasting "Never Leak" shingles that remain as good as new as long as the building lasts. We tell you "Never Leak" shingles are cheaper. Send for literature and be convinced.

THE TIFFIN ART METAL CO., Tiffin, O.
39 Broad St.
Its construction is such that you can change from a 16 to 1 to a 2 to 1 proportion in five short seconds. Very little chain is used on the machine. There are no feeders to clog up, no matter what the material may be, even wet and sticky; it will handle the materials and proportion them with absolute accuracy and give a thoroughly even and uniform mix of the same, in the dry state. All parts liable to wear are made interchangeable.

Special care has been taken in the design of the Grand. It has been built to give the most possible service for the least amount of effort, and people who are at present using the Grand are the ones who sing its praises. It is very easily cleaned and very easily kept clean; mixing is open to view at all times and water is under perfect control.

Your name and address on a post card or in a letter mentioning this paper will bring you further particulars. It will pay you to investigate it.

The Hickman Memorial Hall

By the erection of the above building at Graniteville, Ga., the Graniteville Manufacturing Co. have not only raised a splendid monument to the memory of their deceased president, Mr. H. H. Hickman, whose name it bears, and in whose honor it was erected, but they have shown a broad minded policy toward their employees that is bound to win their approval and further stimulate their co-operation, which has been such a factor in the upbuilding of the concern.

The building was designed by Messrs. Macmurphy and Story, architects of Augusta, Ga., and consists of three stories. In the basement there is a large swimming pool, shower baths with hot and cold water, two bowling alleys, toilet rooms, etc. On the floor above is situated the library containing over one thousand volumes, an office, amusement rooms for both sexes, large hall, waiting room and toilet rooms with all necessary accessories.

A Target & Arrow Old Style Tin Roof

A Target & Arrow Old Style Tin has been selected to replace the shingles on the main building of the Hickman Memorial Hall at Graniteville, Ga. The selection of the material—the principal feature considered—led to their selection being the wear; the manufacturers claim that they will last as long as the building itself, and if composed of Cortright metal shingles, the embossed design of which is very pleasing to the eye and serves to attract attention to the building, although this had no consideration in the selection of the material—the principal feature considered that led to their selection being the wear; the manufacturers claim that they will last as long as the building itself, and if
STEP OUT of the Dinner-Pail Class

This applies to YOU. Whether you carry a dinner pail or not, if you are poorly paid and dissatisfied you are the man we wish to reach. Here's your chance to step out of the dinner-pail class forever—a chance to move to a higher position—to become an expert—to succeed in life. Mark and mail the coupon as directed and the I. C. S. will, free of all charge, send advice of great value to you since it has been gained from 17 years' experience in enabling hundreds of thousands of men to better their positions and salaries. Men who were no better situated than you; men with little schooling; men in dollar-a-day positions; men with no hope of anything better—thousands of such men have through the help of the I. C. S. training doubled, tripled, and quadrupled their earnings. BUT THEY MADE THEIR START BY MARKING A COUPON LIKE THE ATTACHED. Make your start today. You need not leave your present work; only a small part of your spare time is required; and everything is arranged to meet your personal needs and circumstances. In gaining any kind of success INITIATIVE WINS—send the coupon NOW.

International Correspondence Schools
Box 910, Scranton, Pa.

Please explain, without further obligation on my part, how I can qualify for a larger salary and advancement to the position to which I have marked X.

Name
Street and No.
City State

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
this is the case the employees of the Graniteville Manufacturing Co. have not only a building that they can point to with pride, but one that will perpetuate the memory of the man in whose honor it was erected for many decades to come.

Two Ingenious Brackets

The Taylor Steel Scaffold Bracket is made of the best quality 1½ by 1½ by 3/16 inch angle steel; brace notched into the top and sides in addition to being riveted. A single pair will carry a full ton load without even springing. The holding bolt is a special feature; it looks around straddling instead of going through it. This steel scaffold bracket is made in two sizes, 48 and 60 inch.

Another bracket of great value to builders, constructed on much the same principle, is the steel roof bracket made by the James L. Taylor Company. It is adjustable to any pitch roof. When using it, the shingles are laid right over the bracket, which is afterward easily removed without leaving nail holes exposed. This bracket, like the other, is made entirely of steel. It folds up when not in use. The strength of this bracket was recently demonstrated: A single bracket held 6 men, balanced on a hemlock plank—total weight, 1002 pounds.

All builders should write the James L. Taylor Company, Bloomfield, N. J., for full particulars in regard to these improved scaffold and roofing brackets. They are cheaper, stronger and more durable than the old wooden kind.

New Plant

One of the most progressive sheet metal manufacturers in the country is The Kanneberg Roofing & Ceiling Co., of Canton, O. The quality of their product has won for them such an enormous trade that it was necessary for them to have larger quarters. The illustration shows their new plant, which is equipped throughout with new and up-to-date machinery, which enables them to execute orders promptly, with the best material that skilled labor can produce.

While they make everything in sheet metal, they make a specialty of art metal ceilings and sidewalks of classified designs suitable for all classes of the trade. One of the particular points claimed for the ceiling plates is that after being stamped they are resheared on all sides, which makes them accurately straight and regular so that they are interchangeable, close fitting and water and dust proof in the joints, so that no labor or expense is entailed in puttying.

That the metal ceilings they manufacture are becoming more popular is indicated by a statement made by the company that their business not only in ceilings but all lines, has been good notwithstanding general adverse conditions, so good in fact that they have been compelled to work nights for some time.

They issue two catalogues, catalogue D relating to metal-
What's the difference?

Genasco is as different from other roofings as wool is from shoddy, or gold from pyrites.

You can't always tell from the looks, but the difference soon shows in the wear.

**Genasco Ready Roofing**

is made of Trinidad Lake Asphalt—Nature's everlasting Waterproofer. Other roofings are made of—who can tell?

Ask your dealer for Genaso. Insist on getting it. Look for the trade-mark. Mineral or smooth service. Write for samples and Book 76.

THE BARBER ASPHALT PAVING COMPANY

Largest producers of asphalt, and largest manufacturers of ready roofing in the world.

PHILADELPHIA

New York San Francisco Chicago

If you are going to open a Concrete Block Plant, don't handicap yourself by starting wrong. Get a reliable machine—one with a reputation back of it.

**HERCULES CONCRETE BLOCK MACHINES**

ARE NOT EXPERIMENTS

They have the reputation of years behind them: the world's best engineers endorse them, because

They are Unlimited as to Production
They are Simple in Construction
Easy to Operate

Send to-day for beautifully illustrated catalogue, showing our complete line of Concrete Machines. IT WILL PAY YOU.

CENTURY CEMENT MACHINE CO

273 Main St. West,
ROCHESTER, N. Y.
PEARSON'S IMPROVED NAILER

A Hand Nailing Tool!

Especially adapted for driving shingle nails. Its weight is about two pounds and can be used with gloves or mittens on in any season. It can be used on a roof of any pitch as well as on a level surface. It is safe as well as a money maker and a great advantage over old way of driving nails.

Ask your dealer for it or write.

Pearson Mfg. Co.
Robbinsdale, Minn.

EVERYBODY USES CLIMAX VERIBEST ROOFING

YOU CAN LAY IT YOURSELF

It Costs So Little. Costs one-fourth as much as shingles, and lasts twice as long. We are manufacturers. Our prices lowest. We pay the freight. We guarantee safe delivery—making good any damage or shortage of R. R. Co.

So Quickly Done. We ship from the nearest Branch Warehouse same day order is received. Roofing is in Rolls 100 sq. ft. each. Covers 100 sq. ft. of surface. All materials furnished. Anybody can lay it who can drive nails. Can be laid over old shingles.

So Durable. Long fibre felt—every thread thoroughly saturated with pure Asphalt. No coal tar. Covered with pure Asphalt. Light—strong—elastic—can't crack, chip, buckle, or shrink. Will not melt or get sticky in hottest weather. Cannot dry out, rot or rust. Soft and pliable like a sheet of rubber—clings close and snug to any roof. Snow, rain, wind and sun can't affect it.

Fire-Resisting. Contains no tar or other inflammable material. Spark and fire-brand proof. Insurance companies make same rate as on tin and iron roofs.

Guaranteed. If goods are not exactly as claimed, return them and we will refund your money. Is that plain? Your own judgment tells you we must make and sell you the best roofing to stand that plain guarantee.

Free Book and Samples. Write today for our Roofing Book, Samples and Prices.

McHenry-Millhouse Manufacturing Co.
STA. D, SOUTH BEND, IND.

ceilings and sidewalks, catalogue G to roofing, cornices, skylights, etc. Either one of these catalogues together with interesting prices will be mailed upon application.

Ventrilators That Ventilate

Ventilating the modern residential or office building is one of the greatest questions that today confronts the architect or builder. Many devices are now on the market, some of which have merit while others—well—the least said, the better.

The Harris Sash Ventilator solves this problem. This ventilator is installed directly in the window-sash—either lower, upper, or both—the best results being obtained by the use of a ventilator in either sash. It consists of an inside plate with a shutter or door operated by a thumb plate and controlled by a locking bar provided with stops, which hold the shutter in any position, until released by a slight pressure on the locking bar, which extends slightly through the inside plate. On the outside of the sash there is placed a plate of the same size as the inner plate, but provided only with a fine brass screen.

The points of merit claimed for this ventilator are as follows: 1st. Ventilation is secured with the sash in its proper position and fastened, so that whether the house, building or room is occupied or unoccupied, proper ventilation can be secured without danger from burglars or other intruders, and with no fear of damage caused by wind or rain storms, as the plates are so placed that no storms can affect either ventilators or interior of the building. 2nd. It is a night and day ventilator. 3rd. It is not dust catching, for it has a fine screen which keeps out dust as well as mosquitoes, flies, etc., either large or small. 4th. It is not bulky and unsightly, but neat, effective, and ornamental. 5th. The Harris ventilator is confined closely within the rail and does not interfere with shades or shutter, outside screens or storm sash, neither does it interfere with the raising or lowering of the windows. For the sick room and sleeping room these are an invaluable asset, this being proved by their use in many large hospitals throughout the country.

These ventilators be it understood are equally valuable, in the construction of almost any kind of building—the modest bungalow—or the sky-scraping office building—and in the larger buildings where large ventilators are placed on the roof or where ventilating systems are installed, the Harris Ventilator augments the system already in use.

This device is of such practical merit that we are pleased to refer you to their advertisement on another page, in this issue.

Frost Proof Windows

To say that the merchant is "annoyed," "wretched" or "hot-under-the-collar," when his plate glass store-front—which he had just put in at large expense—clouds over with mist and frost on the first cold day, is indeed putting it mildly.

If he should choose to go to the infernal regions for his vocabulary, when speaking of the contractor and his work, we could not blame him; for there is absolutely no excuse now for putting in anything but a perfectly frost proof win-
CANTON MANUFACTURING CO.

We can save you money on Cornice, Skylights, Ventilators, Metal Ceilings, Roofings, Sidings, Eave Trough, Conductor Pipe

STANDARD—Lock Joint—METAL SHINGLES
Ornamental, Easily Applied Guaranteed Weather Proof

1320 E. 2d Street
CANTON OHIO

Remember this Name

when specifying store front constructions. It stands for the system that has given the best satisfaction. It has been selected by hundreds of contractors after rigid comparison and investigation, because it offers superior strength, artistic design and finish, economy of room, and ease of installation. Glass sets from outside.

You can see these advantages for yourself, by writing for our booklet "Modern Store Fronts", sent free.

DETOUR SHOW CASE COMPANY
SOLE MAKERS
491 West Fort Street DETROIT, MICH.

For sale by Pittsburgh Plate Glass Co., at all branches.

Pick Just the Mantel You Want

Here is one of many Lorenzen Mantels. You can take your choice of hundreds of others—Colonial, Craftsman, Early English and period styles in all woods and finishes. You know how much a mantel adds to a room—particularly

LORENZEN MANTELS

They have a distinction of design and workmanship not possessed by any others. Our well-equipped factory, skilled workmen, large stock of air-seasoned lumber of every description, and years of experience making mantels, are a strong guarantee to you of quality and reliability. As for our prices—our immense output enables us to sell close and distance all competition.

Free Catalog—Let us send you the largest and finest catalog of wood mantels ever issued. Each copy costs us nearly $1. But we send it free to any carpenter or builder. If you don't find what you want in it give us specifications and we will make to your order. Write for the catalog today.

Tiles and Mosaics—We furnish and set all kinds of Tile and Ceramic Mosaic work and will be pleased to submit designs and estimates on application.

Chas. F. Lorenzen & Co.
305 No. ASHLAND AVE., CHICAGO.
The "Universal" sash bar is radically different from other makes; it works in harmony with natural laws. The edge of the glass is set in a dead air space—not in wood or putty. This air space keeps the edge of the glass at one temperature, rendering it absolutely frost proof. The "Universal" sash bar holds the glass in a grip of iron, yet with a touch of velvet. The fact is that no wood or putty being inside the sash, the glass has ample room to expand. It is also perfectly rigid. It is durable—will last as long as the building. The voltz free catalogue tells all about it.

The Hold all Chuck

The constantly increasing use among wood workers of twist drills having both straight and bit stock shanks, has created a necessity for a moderate priced chuck that will hold all varieties of shanks securely and with a reasonable degree of accuracy. The Millers Falls Company has, after a great deal of experimenting, evolved the "Holdall Chuck" which seems to be nearer perfection than any brace chuck ever produced. Simonds Saws are Made of Simonds Steel and as a result are superior to other saws. This high grade saw steel will hold a point through hard and continuous service. Buy Simonds Saws if you want the best. You will get the best steel, the best hanging saw, the best value for the money.

When you need saws of any kind let us know and we will send you a free copy of an interesting booklet, "Simonds Carpenter Guide," also the name of Hardware Dealers near you handling our saws.

SIMONDS MFG. CO.
Fitchburg, Mass.

Look for this trade mark etched on every saw.

When writing advertisers please mention the American Carpenter and Builder.
Every reason for Cortright superiority is a reason you can understand—and appreciate.

The most important point about roofing is the material.

After that comes the principle of manufacture. Then the way it is applied to roofs.

Cortright Metal Shingles are made of tin, the material that roofing specialists have unanimously approved the best in the world for roof use.

But we don't stop there. Each shingle is either painted by dipping with a specially prepared paint, made from our own formula, or galvanized—dipped into a bath of melted zinc, which increases the durability by 100%.

**Best Results Follow the Cortright Methods**

Reason for manufacturing it in shingles or slates is because it gives results that no other method could possibly give. Directions followed in the beginning gives a roof that will outlast the building and, beyond a coat of paint every five years or so, will never need attention.

It's utterly impossible for Cortright roofing to come off. It's impossible for Cortright roofs to leak. The system of joining and over-lapping prevents both. Every joint and every nail is covered.

On every genuine Cortright Metal Shingle is stamped the words "Cortright" Reg. U. S. Pat. Off. Contractors and consumers should look for this, because it is the quality mark of perfect roofing.

Easy to lay, easy to maintain, high quality, low cost, and dozens of other features all making for perfect satisfaction.

**IMPORTANT LITERATURE**

*free on request*

Cortright Metal Roofing Co.
Philadelphia  Chicago

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Whether you want a ceiling to be fireproof, artistic, sanitary, modern, durable or inexpensive, you cannot possibly do better than use Eller's Stamped Metal Ceilings because every one of the above features are embodied.

Every room fitted with this most modern ceiling looks good. Doesn't matter what the shape is. Nook and crook look as good, and are practically as easy to arrange, as a perfectly square ceiling.

In Eller's Ceilings the modeler's skill has produced patterns that please the eye and harmonize with the classical arts and make lasting beauty. After the modeler has done his part, the experienced mechanic steps in and brings the manufacturing end to mechanical perfection. The combination produces a ceiling incomparably beautiful, of wonderful durability, and one that is easily fitted.

Eller Steel Ceilings
Are the Most Modern, Sanitary and Inexpensive. They Practically Last Forever

Let us figure on your requirements. Give us dimensions and we will give you an estimate on any job in contemplation.

Large splendidly illustrated ceiling catalog sent free.

THE ELLER MANUFACTURING CO.
CANTON, OHIO, U. S. A.
A Guarantee Bond

with Every Roll of

Congo

"Never-Leak" Roofing

"The surety Bond Guarantee back of Congo makes it the most attractive roofing proposition on the market."

We have claimed right along that 3-ply Congo was an unexcelled Ready Roofing at the price, and we now back it by the National Surety Company's Guarantee Bond.

This Bond covers a period of 10 years. It is broad, liberal protection to the purchaser. It means we have faith in Congo. It protects you absolutely!

A good many roofings carry guarantees of different characters, but not a single one of them gives the purchaser a Surety Bond. That's the only kind of guarantee worth having!

We know Congo is the surest protection against weather, climatic changes, heat and cold, for it is absolutely not affected by any of these. It never dries out, cracks or melts, and so perfect a roof protection does it make that it is aptly called the "Never-Leak" Roof. If we were not sure of these facts we wouldn't dare give a Surety Bond with every roll.

Send for a sample and further information to-day.

SPECIAL NOTICE—If any Congo rolls that you purchase do not contain Guarantee Bonds, write us at once, telling us where and from whom they were purchased, and we will at once mail you the missing bonds.

United Roofing & Manufacturing Co.
Successor to BUCHAHAN-FOSTER CO.

555 West End Trust Building, PHILADELPHIA
CHICAGO and SAN FRANCISCO

IN addition to being highly ornamental and attractive, metal ceilings and side walls possess many characteristics of a decidedly utilitarian nature which would seem quite sufficient to justify their slight increase in cost over lath and plaster. Closely joined so as to make them easy and economical to install, they present an almost air tight surface, and being incombustible they tend to greatly protect floors and woodwork in case of fire, and have many times by preventing the spread of flames until the arrival of the fire department, saved buildings from destruction. Being of light weight, they reduce to a minimum the strain upon trusses and joists. They neither crack nor fall, as plaster does, nor shrink and dry out, like wood.

Catalog "A" sent free to those in the market

THE EDWARDS MANUFACTURING CO.

THE SHEET METAL FOLKS

Main Office and Works, 401 to 417 Eggleston Ave., CINCINNATI, U. S. A.

Universal Store Front Construction

The Standard Store Front Construction of the World

The edge of the glass is set in a dead air space—not in wood or putty. This air space keeps the edge of the glass at one temperature and therefore renders it absolutely frost proof. The "Universal" sash bar holds the glass in a grip of iron yet with a touch of velvet. Fact is, no wood or putty being inside the sash, the glass has ample room to expand. Of course it is held perfectly rigid—just as much in the center as at the ends.

Glass Held Perfectly Rigid

Suitable for any angle while it easily supersedes other makes when used for circles or domes. Sash for the last two are not forged but rolled and are guaranteed true to any given radius. Durable? They will last as long as the building.

You are told everything in our catalog. It's Free.

Voltz Manufacturing Co.,
1101-1103 S. 8th
ST. JOSEPH, MO.

WRITE to us for preliminary opinions on all legal matters. No charge unless retained.

Associates throughout Continental Europe, Great Britain, the Colonies, South America and Canada enable us to investigate and prosecute foreign interests with dispatch. Our Pamphlet for the Asking.

THE INDUSTRIAL LAW LEAGUE, Inc., 170 Broadway, New York City, New York

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
The WINTHROP Asphalt Shingle

A SOLID TAPERED Asphalt Shingle

All the durability of asphalt, the appearance of slate, the light weight and low cost of wood shingles.

COOL, GRAY, SLATE COLOR

Indestructible as an Asphalt Pavement

Not another roofing in existence can show such real advantage. None can offer such material—such wearing qualities at such a price.

Winthrop Asphalt Shingles have the appearance and durability of slate, are lighter in weight, less trouble to lay, cost much less and never require painting. Never leak, crack, break, or fall off.

No Cement or Dope Required to Lay These Shingles

CONTRACTORS! BUILDERS! OWNERS!

This is a Residence Roofing, Can be Applied on a Building at about the Cost of Wood Shingles.

Winthrop Asphalt Shingles are laid with regular shingle nails the same as wood shingles, they are fire-resisting, weather proof, wind and sun proof and are the best substitute for slate, wood or metal.

SPECIAL INDUCEMENTS OFFERED FOR APPLYING FIRST ROOF OF THESE SHINGLES IN EACH TOWN. Write to-day for Free Booklet

WINTHROP ASPHALT SHINGLE CO. 1102 Women's Temple CHICAGO.

and have become so well and favorably known to the trade, and builders in general, that they stand a better chance of keeping busy during dull times than some of their younger competitors. Again, this firm is placing a larger variety of designs on the market than anyone else. This, together with the exceptional merits of the shingles themselves, as demonstrated in the past, has undoubtedly enabled the manufacturers to reap the present harvest, while so many are complaining.

Low Priced Roofs

Some ready roofings have so little protective quality of their own that they require painting every year, although there are better grades which can be left as long as three years without this protection.

The cheapest way out of the difficulty is to buy a roofing which needs no painting whatever. Such a roofing is Amatite, which our readers will find frequently advertised in these columns.

The mineral surface of this material scorns the protection of paint and faces the weather boldly. Rain, snow and wind have no effect whatever upon it, and it will give good service year after year in the most extreme exposures without any care or attention.

A sample of Amatite can be obtained by requesting same on a postal card addressed to the nearest office of the Barrett Manufacturing Company, New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans.

Profit by Experience of Others

Experience is wisdom, but we usually pay for the teaching. Why not profit by the experience of others and thereby save all unnecessary expense as well as investigation. The opinions of disinterested persons have more weight than the statements of a manufacturer, for it is but natural that the latter should praise his own productions, while the former only do so when circumstances warrant it.

Unsolicited testimonials such as in the possession of Jos. Miotke regarding his Acme floor scraping outfit are worthy of consideration, for they are the candid expressions of satisfied users and not “paid for” letters such as sometimes appear in advertising Circulars.

The Acme floor scraping outfit is sold strictly on its merit and this company is ready to ship the same to any responsible party on a week’s free trial. They make this offer so that every carpenter or contractor can fully satisfy himself as to what the machines are and what the; will do, before he spends his money.

Are you willing to investigate? Jos. Miotke is ready to ship the outfit at once, so send in your trial order now to 247 Lake street, Milwaukee, Wis.

Slaters’ Tools

Every contractor should have a set of Belden’s handy, practical slaters’ tools. Their reputation for increasing the efficiency of their users, and for saving time and money, is international. Unquestioned superiority lies in the fact that they are made on advanced principles from the very best quality of materials. A “special analysis” steel is used in their manufacture, adopted after years of experience and experimenting.

The set is composed of a hammer, ripper, stake and punch. The hammer, which is also a combination punch, dresser and claw, is drop forged throughout, finished and tempered by skilled and experienced workmen. It is provided with an indestructible leather handle that will not slip from the fingers, neither will it wear blisters on the hand of the user.

Rippers and stakes are strong, practical and durable, and are made entirely of drop forged steel. For years they have
**FLOOR FINISH**

is a TRiumph OF THE VARNISH MAKING ART

No other Floor Varnish or Floor Finish of a varnish nature is so tough, so elastic or so durable. It produces a smooth, handsome gloss finish unaffected by water or atmospheric conditions. It will not crack, chip or mark white.

If you are interested in a high-class article for floor work—a finish that is made to walk on and to stand the severe wear to which floors are subjected, write us for further information.

Our New Catalogue "D" listing our complete lines of "Nice" Varnishes, Fillers, Paints, Stains, Enamels, Colors, etc., will be ready very soon.

We wish to send it to every reader of this paper who will write for it.

---

**Get A**

**Fox Trimmer**

**FOR**

**Interior Finish**

Its expensive business to have a high priced interior finisher whittling with a block plane, testing with a square or bevel protractor, and whittling some more, when one stroke with a Fox Trimmer is all that is needed.

---

**Stowell Mfg. Co., Jersey City, N.J.**

Philadelphia  Chicago  Kansas City

**Fox Machine Company**

756-776 N. Front St.  GRAND RAPIDS, MICH.

---

**Monarch**

Means **Modern Heating**

We want to show you exactly what the Niagara Furnace really is. We want to explain just what it has done—what methods have been adopted—what economy features are embodied—its superiority over any other heating method.

For the Niagara Furnace is all that the name implies—the king among furnaces. No other can give such excellent results because no other combines such exclusive features that make for a decrease in cost of upkeep and an increase in amount of heat obtained.

To learn thoroughly about the details of the best furnace proposition of the day, you should send for the latest literature, which, not only tells which is the best heating system but tells why it's the best and how you benefit.

A postal is sufficient.

---

**The Forest City Fdy. & Manufacturing Co.,**

Centre St.  Cleveland, Ohio

---

**THE NICE ON THE CAN**

**MARK**

is a TRIUMPH OF THE VARNISH MAKING ART

No other Floor Varnish or Floor Finish of a varnish nature is so tough, so elastic or so durable. It produces a smooth, handsome gloss finish unaffected by water or atmospheric conditions. It will not crack, chip or mark white.

If you are interested in a high-class article for floor work—a finish that is made to walk on and to stand the severe wear to which floors are subjected, write us for further information.

Our New Catalogue "D" listing our complete lines of "Nice" Varnishes, Fillers, Paints, Stains, Enamels, Colors, etc., will be ready very soon.

We wish to send it to every reader of this paper who will write for it.

---

**Here’s the Roofing You Ought to Use**

Just as ready roofing has demonstrated its superiority over shingle, slate and tin roofs, so has MONARCH Asphalt Roofing conclusively proven its superiority over the usual ready roofing.

Genuine asphalt is acknowledged to be the most satisfactory roofing saturation and coating so far known. We use genuine Pitch Lake Trinidad Asphalt and all wool felt in the manufacture of MONARCH, and our method of applying the asphalt saturation, coating and mineral surfacing makes MONARCH a solid and perfectly combined whole—impervious to water and proof against flying fire-brands.

Know what you are buying—there is no substitute for genuine asphalt roofing. Send for Sample Set M-2.

Carpenters and Builders—We know Monarch will justify our claims. You cannot find a better Roofing at any price. We earnestly desire you to give it a trial. If your dealer does not carry Monarch we will see that you are supplied direct.

---

**EUGENE E. NICE**

272-274 No. 2nd St.  201-3-5-7 Spruce St.

PHILADELPHIA
CLASSIFIED DEPARTMENT

Do You Want Help?
Do You Want a Situation?
Have You Anything for Sale?
Do You Want Machinery or Supplies?

An advertisement in the "Classified Department" of the American Carpenter and Builder will be the least expensive and the most thorough way of letting your desires be known.

Rates: 5 cents a word each insertion.

CASH MUST ALWAYS ACCOMPANY ORDER

For Sale.

SOUTHERN COLONIAL HOMES—Starting in our September number, "Southern Colonial Homes," full page pictures illustrating the finest types of architecture of that period, the most complete collection in existence will appear, to run a year or more. September issue free to architects. Write today. Southern Architect, Box 846, Atlanta, Ga.

TO MANUFACTURERS—We can market any specialty required in building operations. Make us an offer. Mill Work Specialty Co., Milwaukee Wis.

FURNACES—Furnaces only $15.00 before approval, $125.00 outfit $67.00. Book free. 1900 Furnace Co., Youngstown, Ohio.

Patents.


Agents Wanted

Ashley Sewage Disposal System
6226 Normal Blvd., Chicago

"Creola" "Elowah" "Cherokee" "Kennesaw"

Georgia Marble
THE GEORGIA MARBLE CO., - - TATE, GA.

WANTED:

To manufacture special machinery models, dies and patent specialties and novelties in metal of all kinds. NATIONAL STAMPING & ELECTRIC WORKS, 153-159 S. Jefferson St., Chicago, Ill.

DO YOU WANT SLATE?

Roofing Slate for Houses, Barns, Sheds and Railroad Stations. Clean and ornamental, rain, wind and fireproof. Blackboards for Schools, Colleges, etc., are being used all over the World, need no better commendation, "it is just the thing." Structural and Electrical Stock, Steps, Sink Tops, Wash Tubs, Window Sills, etc., specially made to order to all other stone for such purposes. Slaters' Supplies, Hand-made Slaters' Tools, Snow Guards, Slaters' Cement, Nails, Rope, Slate Punching and Cutting Machines, etc. Write for prices and I will tell you all about Slate. D. McKenna, Harlington, Pa. U. S. A.

SLATE WE HAVE WHAT YOU WANT

In Roofing Slate, Slate Blackboards Structural and Plumbers' Slate

SATISFACTION GUARANTEED IN QUALITY AND PRICE

ASK FOR DELIVERED PRICES

J. K. HOWER, Station C, Slattington, Pa.

H. J. KICHLINE, Sales Agent

FURNACE AND FITTINGS

$55.00

OUR SPECIAL OFFER

Absolutely a first class furnace, either upright or horizontal, capacity to heat 8,000 to 12,000 cubic ft. with pipe, registers and fittings, $35.00. A 40-inch furnace, capacity to heat 12,000 to 16,000 ft., $65.00. Larger furnaces at corresponding low prices.

Send for FREE CATALOGUE.

Bovee Grinder & Furnace Works
50 W. EIGHT ST., WATERLOO, IOWA

The Hanger which will Last a Life Time

The LAWRENCE Steel Trolley

Barn Door Hanger—No. 30

Runs on roller bearings, noiseless and without friction. Has a SCREW ADJUSTMENT which adjusts the door close to the building. Swings the door out at right angles.

No Sticking, Binding or Scraping in the Track

BIRDS CANNOT NEST IN THE TRACK NOR CAN IT BE CLOGGED BY SLEET OR SNOW. A post card will bring our booklet "TROLLEY PROGRESS," which explains it fully. LAWRENCE BROTHERS, Sterling, Ill.

SLATE YOU WANT

In Roofing Slate, Slate Blackboards Structural and Plumbers' Slate

Satisfaction guaranteed in quality and price

Ask for delivered prices

J. K. HOWER, Station C, Slattington, Pa.

H. J. KICHLINE, Sales Agent

FREE ANDREWS HEATING CO.

Send us two or more names of persons who are interested in or want to buy Hot Water Heating Plants and we will send this Sample. Back issues are divided into 1, 10, 15, 16, 20 and 40 parts. Also free catalogue on request. See our two-page ad in American Carpenter and Builder for January, 1907.

ANDREWS HEATING CO. 978 LaSalle Bldg., Minneapolis.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
been ahead of anything on the market. The punch is made of Jessop steel.

Each tool is guaranteed to be without defect. The prices are low. Order through your dealer, or if he is unable to supply you, order direct from the Belden Machine Company, New Haven, Conn.

**Difficult Upset Work**

The Progressive Manufacturing Company whose ad. appears in another part of this magazine are doing an interesting class of work,—one that doubtless will often be very serviceable to many of our readers. They do the most difficult upset work in a highly satisfactory manner, by their process making at a less cost, from brass, copper, steel and other metals, many articles which have heretofore been made only on a screw machine.

They carry none of these goods in stock, making them to order only.

They confine their efforts exclusively to the manufacture of specialties in metal goods.

They make a study of your requirements, and all their goods are strictly high grade and made by experienced workmen.

**“Stanley” Quality**

The name “Stanley” on rule, square and level has come, after years of care and painstaking workmanship, to mean, to carpenters and to craftsmen generally, absolute accuracy and tool reliability. Now in addition to these lines, the Stanley Rule and Level Co., New Britain, Conn, have on the market, among other things, a line of gauges, spoke staves, sleeve braces and planes which it does a real mechanic’s heart good to examine. The line of planes, especially, is notable; general planes and planes for every conceivable special purpose are included—but all stamped with the quality that has made the name of “Stanley” famous.

---

**Heppes NO-TAR ROOFING is Easy to Lay**

—Because it is as flexible as rubber, tough as leather and hard as flint.
—Because it lays smooth and skin-tight.
—Because we furnish simple instructions free in every roll.
—Because we supply a complete Roofing Book, with photographs, showing how to measure roofs and make chimney and wall flashings, well finished eaves, valleys, and gutters;
—How to cut the roofing to fit corners, angles, and odd spaces, without waste;
—Where to nail; how to cement laps;
—How to secure contracts, and how to make good money easily in the roofing business.

**FREE SAMPLES FOR EXAMINATION AND TEST**

Learn all about the roofing that is made of genuine asphalt without a trace of tar. Examine the coatings of mica and felt. Note the extreme toughness of the long-fibre wool felt. Get the facts about our wonderful process of waterproofing under intense heat and tremendous pressure. Read everything about this popular roofing in our free Roof Book. Send today.

THE HEPPE CO. 644 S. 45th Ave. CHICAGO

---

**The Wall Between**

LACK OF TRAINING

There's a high stone wall between the untrained worker and the man of special training; between the daily bread wages and a good salary; between being "one of the hands" and "one of the heads" of a business.

Don't let that wall stop you. There's a way over it—LEARN MORE!

You must have training now-a-days. You can't afford to guess—you must know. Special training fits you for big things gives you the best chances, insures you a lifetime hold on a big, well-paid job.

**Carpenters—Learn More**

The American School of Correspondence, Chicago, is constantly preparing ambitious carpenters, contractors, etc., for advancement by giving them practical information which ordinarily could be acquired only after many years of experience. We teach Estimating, Planning, Strength of Materials, Framing, etc., How to Read Drawings, and make Sketches for Clients—all of which are invaluable to the progressive carpenter, contractor and builder.

The information on reinforced concrete will be found especially complete and up-to-date. In the architectural courses the student is taught the theory of the design of trusses, girders, beams, columns and framing. Building materials, building construction and detail—especially steel construction as applied to work in reinforced concrete—sheet metal work, fire-proofing, wiring, piping, heating and ventilating systems, building superstendence, specifications and contracts, building laws and permits, and general office practice, are thoroughly taught.

- Spare time study will give you that training at home, add to your practical knowledge, fit you to earn more and more salary—to be your best and do your best.

The American School of Correspondence has helped 80,000 men to better positions. Its instructors are practical men. Its courses are the most thorough and down-to-earth. Its students are the most successful.

The help, suggestions and advice of the American School of Correspondence—free and freely given—will show you how to get a climbing hold on that wall.

Simply send us the coupon—and do it today. No obligation on your part. We employ no agents.

American School of Correspondence

CHICAGO

**FREE INFORMATION COUPON**

Fill in, clip and mail today.

American School of Correspondence:

Please send me FREE illustrated 200-page handbook of information. I am interested in the Course marked "X".

- Carpenters' Course Heating, Ventilating and Plumbing Course
- Contractors' and Builders' Course
- Reinforced Concrete Course
- Structural Engineering Course
- Steel Construction Course
- Tinsmithing Course
- Complete Architecture Course
- Mechanical Engineering Course
- Civil Engineering Course
- Mechanical Drawing Course
- Electrical Engineering Course
- Architectural Drawing Course
- Mathematical Course
- Architectural Engineering Course
- College Preparatory Course

---

American School of Correspondence

** WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER**
BURRITT Mantels
are gaining new friends every day among CARPENTERS and BUILDERS because of excellent design, perfectly seasoned stock, thorough workmanship and beautiful finish. Write today for Catalogue “A.” We are prepared to furnish Mantels in special sizes and woods or build same from Architect's sketches. Let us hear from you.

TILES AND FIRE PLACE GOODS

The A. W. Burritt Co.
349-473 Knowlton St.
"THE MANTEL FOLKS"
Bridgeport, Conn.

Don't Waste Any Time Getting
in on this—there's big money in it for you—

The SHRP-SHAVR
SAFETY RAZOR

25c

is the fastest selling proposition and the biggest business-pull you’ve ever had in your store.

A guaranteed Safety Razor that sells for a quarter—a razor that every man who shaves can easily afford to buy—an article that brings the great mass of new buyers right up to your counter, first for the razor itself, then regularly thereafter for extra blades and other shaving accessories.

Look for our advertisements in the Saturday Evening Post and Associated Sunday Magazines. We advertise the SHRP-SHAVR for you—all you have to do is to supply your customers and take your profit.

The SHRP-SHAVR is new and it's a big hit. Display the free advertising matter we send you, give it a window display and it will keep your staff hustling to supply the demand. Get in on this NOW.

SHRP-SHAVR RAZOR CO.
106-110 Duane St., NEW YORK

Hand-Power Elevators

We furnish the iron work complete with plans and instructions for building the platform and overhead frame; your carpenter can do the rest.

YOU SAVE ONE-THIRD

Our data sheet, sent on request, helps you tell us what you want.

We also manufacture Electric and Power elevators for any service.

Estimates cheerfully furnished.

HOLLISTER-WHITNEY CO., QUINCY, ILLINOIS

The E. J. JOHNSON CO.
Producers of Slate Blackboards
Large Stocks Prompt Shipments Correspondence Solicited

THE E. J. JOHNSON CO.
38 PARK ROW
New York
Branch Office
626 Park Building, Pittsburg, Pa.

SKY LIGHTS
All kinds of Rooflings, Steel Ceilings, Corinas, and Sheet Metal Work
ST. JOHN & BARQUIST CO.
420 8th Street
Write for quotations DES MOINES, IOWA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
EVERYTHING

for Furnace Work

The HESS METHOD of warming and ventilating for Houses, Churches, Schools and Stores is far superior to steam, hot water or other systems and costs much less to install and maintain. We guarantee this in every case. You take no risk.

The responsibility for what we sell you and how it works is all on us. You pay us nothing unless everything you buy of us is satisfactory and does exactly what we claim. We can satisfy any owner, builder or contractor that the Hess Furnaces and Furnace Supplies are what they want. Just give us the opportunity to show what we can do and are doing.

Our No. 45 “Leader” Steel Furnace Heats 7 or 8 Rooms

The Hess Steel Furnace and everything for Furnace Work is sold direct from our factory to owners, builders or any one, at one small profit.

We Supply Everything—Everything pertaining to Furnace Work is supplied direct by us. A full line of Furnace Pipes, Stacks, Fittings, Registers—everything in fact for furnace jobs—are carried at our warehouse, and each one is guaranteed to give best results where used with the Hess Furnace. Our supplementary catalog, just out, illustrating each article, giving net prices, free on request.

No Dealer Can Equal Our Prices on These Goods

Price of this Furnace . . $4900
Delivered to any Station East of Omaha and North of the Ohio River

FREE HEATING PLANS

In order to demonstrate that we know our business and are willing to make good, WE WILL SEND FREE, heating plans, prepared in detail, for any building. Our plans are prepared by our own furnace and heating experts. This we will do whether you buy of us or not. By making no charge for the heating plans or estimates, and giving the manufacturer’s best price for the full equipment, we have met success beyond our expectations. It means money saved to anyone erecting new or repairing old buildings.

INFORMATION WANTED

Send us a rough sketch of the house, church, school or other building you want to heat. This sketch need not be drawn to scale, but must clearly indicate the location and size of rooms, measuring inside from wall to wall. Show the partitions by single lines; the doors by spaces in the lines; the chimney by a square; stairs by parallel lines; mark folding or sliding doors, if any. Make a separate sketch for each floor and mark the size of each room in figures. Tell whether the upper story is a full story or half story. Give width of stairways—mark on plan. State thickness of floors. In the cellar plan indicate the piers, posts and beams, the location of chimneys, fuel supply, and the cellar stairs or entrance. Show the direction of the joists by an arrow, thus: <—>

Write Now, Today. Our Catalogs are Free

Hess Warming and Ventilating Co.
920 Tacoma Building, CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
SKY-LIGHTS

for any purpose. Our complete illustrated catalogue is ready
for distribution

THE CANTON ART METAL COMPANY
CANTON, OHIO

STEEL BEAMS &
Lintels

Caldwell & Drake Iron Works
Columbus, Indiana

Cast-Iron
Columns
Sidewalk Lights

SUCCESS!

If yours, Mr. Contractor, if you can estimate accurately.
The up-to-date builders are adopting The Lightning Esti-
mator as the standard for estimating residence work.
Why? Because it teaches easy, rapid and accurate meth-
ods, all based upon actual cost of labor and material. Largest
endorsement and sale of any book of its kind now on the
market.

Lessens the risk of errors and omissions which often cause
loss. Based on actual experience, not theories. Treats resi-
dence work from start to finish exclusive of plumbing and
heating. While it is a book particularly for the carpenter, it
includes masonry and concrete work, as required on residence
work. It is brief and to the point, each subject being easily
found and understood. Put your business on a better basis
by sending a one dollar money order today for a copy of the
new fifth edition.

Bradt Publishing Co.
1200 Michigan Avenue, Jackson, Mich.

ALFRED W. WOODS'
KEY TO THE STEEL SQUARE.

This is it.
The Key,
Book of
Instruction
and
Morocco
Case.

Full Size
4x5 inches.

It tells the whole story of how to use the com-
mon steel square for all kinds of framing.

Price $1.50, Postpaid

American Carpenter and Builder
185 Jackson Boulevard, CHICAGO

The COULSON
Patent Store Front Construction

is complete, practical, the glass is set in from the
outside, saving time, expense and decreasing risk.
Broken glass can be replaced without removing
the window fixtures or decorations. Gives greatest
strength with least obstruction of light. Catalogue
"D-800" sent upon request.

J. W. COULSON & CO.
Main Office:
234 N. Third Street
Columbus, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Build Your Future on a Solid Foundation

TAKE LESSON FROM THE MODERN SKYSCRAPER. ‘More expert knowledge and engineering ability is required to properly construct the foundation than to build the whole superstructure. ‘Build your future on a solid foundation.” See to it that every brick of knowledge, every stone of experience is fully selected and laid. Keep the blue print of life constantly in mind, that you may know how to estimate cost of frame or reinforced concrete construction. Complete instruction on sanitary installation of plumbing and ventilation. Also hundreds of useful furnace, steam and hot water heating hints. It’s an ever-ready reference and guide.

FREE 5-DAY OFFER AT LESS THAN 1/2 PRICE

We will send a set to you without one penny deposit—prepaid express. Keep the books 5 days; examine them carefully; show them to your friends. If you do not wish to keep them, notify us to send for them at your expense. If you keep the books, send us $2.00 and $2.00 every 30 days until the special half-price of $24.00 is paid.

As a special inducement to place your order promptly, we will in- clude FREE with each set, a year’s subscription to the TECHNICAL WORLD MAGAZINE. A regular $1.50 magazine—full of the latest technical topics.

A FEW OF THE MANY SUBJECTS

Reinforced Concrete—Cement Testing, Mixing, Frost Effects, Finishing, Construction Forms, Elasticity, Resistance, Retaining Walls, etc.; Structural Steel Buildings; Practical Problems in Construction; Estimating, Superintendence; Contracts and Specifications; The Law of Building Contracts; Materials; Masonry; Foundations; Carpentry; Stair-Building; Framing; Steel Square; Plastering; Hardware; Painting and Glazing; Heating—Furnace, Steam, Hot Water; Plumbing; Ventilation; Electric Wiring—Hulls, Lights, Burial Advertisers PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

Sample Expansion Bolts are made in all sizes (1/2" to 2" diam.). They are universally used in all modern construction work. Don’t fail to investigate. Catalog and samples free.

AMERICAN SCHOOL OF CORRESPONDENCE

FREE 5-DAY OFFER-Cignon
Fill in, clip and mail today.

AMERICAN SCHOOL OF CORRESPONDENCE

Please send one set Cyclopedia Architecture, Carpentry and Building for five days' free examination, also T. W. for one year. I will send you $2 within 5 days and $2 a month until I have paid $24.00, if I keep the books; otherwise I will notify you to send for them. Title not to pass until fully paid.

Address
Occupation
Employer.
METAL COVERED MOULDINGS

CONTRACTORS on the lookout for superior Metal Covered Mouldings—the different kind—should investigate the merit of "Chicago" mouldings. At our own modern factory is manufactured the finest line of metal covered wood mouldings in the country.

We constantly keep in stock and in wonderful variety a large selection of mouldings covered with Polished German Silver, Brass, Copper, Oxidized copper, etc. Let us hear from you by return mail. Let us estimate on whatever you want in any quantity. Write for Catalogue No. 15—Our prices are right.

Chicago Metal Covering Company
68-71 North Green Street
CHICAGO

The Interior

of your home is where you live and derive the most comfort, and a well designed mantel contributes more to the interior appearance of the home and comfort of its occupant than any other article of furniture or decoration.

CENTRAL MANTELS

are distinctive in character, workmanship and finish. Twenty years' experience catering to the wants of the home builder enables us to know and meet their wants. Our factory being equipped with all of the most modern labor saving devices and keeping on hand constantly an enormous stock of raw materials, places us in a position to sell better mantels cheaper than it is possible for you to buy elsewhere.

We can furnish any style from Colonial to Mission, and in any wood or finish at prices ranging from $10.00 and up.

The above is one of the many designs shown in our 112 page catalog, which is the finest, most complete and expensive mantel catalog ever issued. Catalog sent free on request to Carpenters, Builders or anyone building a home.

CENTRAL MANTEL COMPANY
No. 1247 Olive Street - - - St. Louis, Mo.
"Reputation and Quality Count"

Power for Your Shop

Write for our Special Proposition on 3 H. P. and 6 H. P. Engines to Carpenters and Woodworkers Backed by Five Years' Guarantee

Weber Gas and Gasoline Engines

Built on the Experience of 25 years of good Engine Building Write for Illustrated Catalogue

WEBER GAS ENGINE CO
Box 609
Kansas City, Missouri

Makes Screen Hanging Easy

Because of the Patent Guide Flanges on the Gossett Hinges, screen hanging is simplified by fully a hundred per cent.

No need to cut holes in storm window frames for ventilation purposes. Gossett Hinges make screen and storm sash interchangeable; the set of parts attached to building answers for both.

Easily Applied — Easily Removed

Special fasteners lock screens securely—opened or closed. No trouble to affix or remove. Just hook them on or off. Full length screens can be hung with same fittings.

A Gossett Hinge consists of two pieces. One is attached to screen, other piece to window casing. No loose parts to get lost—nothing that can possibly wear out.

Send for explanatory booklet—or order a complete set for a thorough test.

F. D. Kees Mfg. Co., Box 523, Beatrice, Neb.
AMERICAN CARPENTER AND BUILDER'S GREAT COMBINATION BOOK OFFERS

The AMERICAN CARPENTER AND BUILDER takes pleasure in giving its readers the opportunity to obtain the valuable books described below at greatly reduced prices. A number of combination offers are given on the following page. Subscribers are given a wide latitude of choice in the ten combination offers presented. No carpenter or building contractor should be without any of the following books:

"BUNGALOWS"  The largest, best and most up-to-date book of Bungalows ever published. There are 208 pages of large size, showing perspectives and floor plans of the best types of these cozy, comfortable and popular houses. This book is the result of a year's work and travel of one of our representatives, who was sent to California for the sole purpose of getting photos from which to make this book. There is every type of Bungalow shown. The book is printed from fine half-tones on the best quality of enameled paper, is handsomely bound and excels any book of its kind ever before printed.

"CEMENT HOUSES and HOW TO BUILD THEM"  The first and only book of its kind ever published. Complete in every detail. Fully illustrated details of construction and information of every kind for the cement user and prospective home builder, including standard specifications for cement, concrete blocks, waterproofing, coloring, reinforcing, foundations, walls, steps, sewer pipe, etc., together with perspective views and floor plans of seventy-seven cement plaster and concrete block houses. All houses illustrated with fine half-tones printed on enameled paper.

"STEEL SQUARE AND ITS USES"  Two volumes. A complete cyclopedia on the practical uses of the Steel Square. This very valuable and practical work is up to the minute and is written in simple, plain, everyday language. It is filled with a vast amount of new practical information. Each volume consists of over 300 pages, 6x9, being the largest books on the Steel Square ever published. Bound in cloth.

This work is absolutely new. It is for the beginner as well as the more advanced artisan. Special chapters deal with building construction, taking the carpenter from foundation to roof, with complete illustrations of each detail. There are special chapters about all kinds of framing, faulty and good construction and a vast quantity of other valuable information. Both volumes are bound handsomely, printed on good paper from large type and illustrated with many detail drawings.

SEE NEXT PAGE FOR DETAILS OF OFFER
AMERICAN CARPENTER AND BUILDER'S

GREAT COMBINATION BOOK OFFERS

THE AMERICAN CARPENTER AND BUILDER gives its subscribers a choice of the following ten combination offers. In two of the combinations subscribers can get the books named without paying a cent more than the regular subscription price of the AMERICAN CARPENTER AND BUILDER alone. In the other combinations the books are at cost price. This offer is limited to a short time and advantage of it should be taken at once, as it may not appear again. In all cases cash in full to cover the combination given, must accompany the order. Subscribers whose time has not yet expired will be given credit from the date of the expiration of their present subscriptions.

SEND YOUR ORDER TO-DAY, GIVING COMBINATION NUMBER.

<table>
<thead>
<tr>
<th>COMBINATION</th>
<th>Books Included</th>
<th>Regular Price</th>
<th>Combination Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. ONE</td>
<td>American Carpenter and Builder, 1 year, &quot;Bungalows&quot; 200 Designs</td>
<td>$2.00</td>
<td>$2.00</td>
</tr>
<tr>
<td>No. TWO</td>
<td>American Carpenter and Builder, 1 year, &quot;Cement Houses and How to Build Them&quot;</td>
<td>$2.00</td>
<td>$2.00</td>
</tr>
<tr>
<td>No. THREE</td>
<td>American Carpenter and Builder, 1 year, &quot;Bungalows&quot;, &quot;Cement Houses and How to Build Them&quot;</td>
<td>$2.00</td>
<td>$2.50</td>
</tr>
<tr>
<td>No. FOUR</td>
<td>American Carpenter and Builder, 1 year, &quot;Steel Square,&quot; Vol. 1</td>
<td>$2.00</td>
<td>$2.50</td>
</tr>
<tr>
<td>No. FIVE</td>
<td>American Carpenter and Builder, 1 year, &quot;Steel Square and Its Uses,&quot; two volumes</td>
<td>$2.00</td>
<td>$3.00</td>
</tr>
<tr>
<td>No. SIX</td>
<td>American Carpenter and Builder, 1 year, &quot;Practical Carpentry,&quot; one volume</td>
<td>$2.00</td>
<td>$2.50</td>
</tr>
<tr>
<td>No. SEVEN</td>
<td>American Carpenter and Builder, 1 year, &quot;Practical Carpentry,&quot; two volumes</td>
<td>$2.00</td>
<td>$3.00</td>
</tr>
<tr>
<td>No. EIGHT</td>
<td>American Carpenter and Builder, 1 year, &quot;Steel Square and Its Uses,&quot; two volumes, &quot;Practical Carpentry,&quot; two volumes</td>
<td>$2.00</td>
<td>$4.00</td>
</tr>
<tr>
<td>No. NINE</td>
<td>American Carpenter and Builder, 1 year, &quot;Cement Houses and How to Build Them&quot;</td>
<td>$2.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>No. TEN</td>
<td>American Carpenter and Builder, 1 year, Cement World, 1 year</td>
<td>$2.00</td>
<td>$2.50</td>
</tr>
</tbody>
</table>

USE THIS COUPON—CUT OUT ALONG THIS LINE—SEND IT TO US TO-DAY.

AMERICAN CARPENTER AND BUILDER, 185 Jackson Boul., Chicago, Ill.

Gentlemen: Enclosed please find $...... in payment for Combination Offer No....... advertised in your October 1908, Number.

In Payment For: Combination Offer: Name.

Number: Post Office: State.
Has Stood the Time Test for Sixty Years

For sixty years Vulcanite Ready Roofing has reigned supreme among roofing materials. For sixty years we have been improving and developing Vulcanite and today—as ever—it is the "Roofing of Ultimate Saving."

Incomparable Quality

No question about the quality. Not only as 'pliable as rubber,' but actually is rubber—mined exclusively by us and costing $100.00 per ton—the most expensive material used to manufacture ready-to-lay roofing. It cost you no more.

Unusual Weather Resisting Efficiency

Vulcanite is effective in all climates, in all regions, from the Arctic to the Tropics in midwinter or midsummer. Positively cannot freeze or crack in cold weather—crumble in dry weather—leak in wet weather. A weather resisting material unequaled.

Passes all tests. Convinces the most skeptical.

We Guarantee Vulcanite

Vulcanite is positively guaranteed for many years. Dealers and contractors are authorized to guarantee Vulcanite.

Users can obtain guarantee from the dealer, the contractor, or from us. If your dealer does not carry "Vulcanite," write us for samples and free booklet. See "Vulcanite" before you buy other roofings.

Free Booklet of Valuable Information. Get the free booklet which tells all about Vulcanite—how it is made and what it is used for. And don't forget to ask for samples.

Send for free samples and book of roof information.

Patent Vulcanite Roofing Co.
625 Campbell Ave., Chicago
AMERICAN CARPENTER AND BUILDER

Here's Fire Protection—Sure

Experience and various exhibitions have proven mortar is the best fire retardent for the inside of buildings. Applied right it is far superior to steel and other covering.

Hitherto the trouble has been in applying it. With the Voss Wire Lathing the problem is solved. Being made of a special high drawn carbon wire, enormous durability is assured. This wire, in fact, cannot break; every foot of the finished lath being able to carry a weight of 2,500 pounds.

Can be used for applying on walls, ceilings, around columns, joists, etc. Under enormous heat even the heaviest steel would bend or melt. Protected with Voss Wire Lathing it would not be the least bit affected.

The claims made for this lathing are pertinent and impossible to misconstrue. It is positively fireproof, prevents mortar becoming detached from lath; is easily and cheaply applied; ceilings, walls, etc. cannot chip or crack; stands the test of time better than any lath known.

Send for booklet showing full details and names of well known users.

Frederick Voss, 617-21 Austin Ave.

Chicago

In that New Building Use BERGER'S "CLASSIK" STEEL CEILINGS

Berger's "Classik" is not only the largest line of artistic steel ceiling material in existence, but it covers the field so completely you can get just what is required for any class of room, whether something elaborate is demanded or something simple and low priced. Easily erected. Handsome. Harmonious.

You should be posted about Berger's "Classik."

Write Us TODAY for Catalog D-55 and Details

THE BERGER MFG. CO.
CANTON, O.

New York Philadelphia Boston Chicago St. Louis
Minneapolis Atlanta San Francisco

Bangor Roofing Slate will last from seventy-five years to a century, and we do not know how much longer—and retain its qualities to the end.

Fire proof and weather proof, neat appearing and ornamental, it is the expert's choice throughout the country.

Full literature on request.

The East Bangor Consolidated Slate Co.
East Bangor, Pa.

RELIABLE ROUND TRACK DOOR HANGERS

Impossible to Derail Easy Running, Great Strength

FOR BARN, WAREHOUSE and FIRE DOORS

Send for Catalog "A"

ALLITH MANUFACTURING CO.
CHICAGO, ILL.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Luxfer Prism Daylighting

Brings the light of the sky to all dark places.

Best for all Buildings

Luxfer System of Prism Lighting

For Transoms, Canopies, Skylights, Floors and Sidewalks.

Read article on another page in this magazine. Send for free catalogue.

American Luxfer Prism Co.
1600 Heyworth Building
Chicago

The modern home is not complete without a Fire-Place which is its most attractive feature

You will be interested in our line of Patented Grates. They are guaranteed to heat from 8,000 to 10,000 cubic feet of space in zero weather. Request descriptive circular or send 7 cents to cover postage on large, handsomely illustrated catalogue of Artistic Wood Mantels.

We pay the freight. Contractors, kindly send your business card and we shall quote interesting prices. Estimates furnished promptly on Tile Floors and Wainscoting, etc.

Heitland Grate & Mantel Company
No. 124 South Fifth Street
QUINCY, ILLINOIS, U. S. A.
The Distinctive Features of This Building

are the various Chenaux and the Horoscope with eagle complete on the cupola all executed by us in sheet copper. The fidelity of the ornamental detail, the skillful workmanship, and the strength and durability of the material, make

Mullins Art Sheet Metal Work and Statuary

most desirable for buildings of any character and size. We have furnished this class of work for some of the most prominent buildings in the country, and are prepared to carry out architectural designs and motifs of the simplest as well as the most intricate nature.

Avail yourself of the opportunity to get full information. Our progress in this art will surprise you. Please specify whether you wish us to send our 120-page catalog of Art Architectural Metal Work, or our fine illustrated catalog of Statuary.

The W. H. Mullins Company, 214 Franklin Street, Salem, Ohio.
ECONOMICS OF MILLWORK BUYING

Every important economic movement, marking the progress of commerce during the past twenty-five years has been centered upon one bull's eye—the elimination of the middleman. This has been and is true the world over.

Competition, in solving the problem of marketing manufactured products, has naturally sought the avenue that does away with paying somebody an unnecessary profit between the producer and consumer.

Realizing the opportunity that existed for establishing the business of selling high-grade or "Quality" millwork—"From the manufacturer direct"—the Chicago Millwork Supply Co. was established as the pioneer concern of its class, that took for its foundation "Quality" at a price that means no middleman's profit paid by the consumer.

In this day and age the Economics of Millwork Buying mean that every owner, prospective owner, contractor, builder and jobbing carpenter should thoroughly investigate the possibilities and advantages of buying their construction material direct from the manufacturer.

TO THE OWNER

To the owner buying direct this means immense saving and that means Interest earned in advance on any building investment. It means better and guaranteed qualities in all the material because the manufacturer is directly responsible to the owner for what he sells and ships.

TO THE CONTRACTOR

Every contractor and jobbing carpenter owes it to himself, as a shrewd business man, to make his iron clad policy to buy direct whenever possible. It not only saves you middleman's profit but it enables you, under our system, to expand your business without investing greater additional capital and helps you estimate on a basis that means more and bigger contracts, executed with more satisfaction to yourselves and customers.

Our Catalogue No. 20 is free but we appreciate 10 Cents in Stamps to cover cost of Mailing.

OUR SPECIAL EQUIPMENT

The equipment of the Chicago Millwork Supply Co. consists of our immense warehouse located at Chicago, "The Great Eastern Market" supplemented by two large factories at the base of supply. We carry immense stocks, fill orders for all stock stuff without delay and offer you superior service and best qualities at lowest prices. We, as manufacturers, have to keep ahead of the times and constantly on the alert in producing what we sell, and you get the benefit.

Chicago Millwork Supply Co. 236-242 W. 29th St. Chicago

Write for our catalog No. 20 today
There's Always Big Inducements on Our Slate

We are Specialists in Our Particular Line

Send for our New Catalog No. 17 — 112 Pages.

CHICAGO EMBOSSED MOULDING CO.

ART METAL CEILINGS

Let us figure with you
We make prompt shipments

The Kanneberg Roofing & Ceiling Co.
CANTON, OHIO.

Manufacturers of Everything in Sheet Metal

ARE YOU GOING TO BUILD?

GET THIS 800 PAGE BOOK FREE

If you intend building or making alterations of any kind you should not fail to get this great book.

Send ten 2-cent stamps to pay postage and we will mail you at once our 800-page official book, with plans, photographs, plates and 8,000 designs of everything entering into the construction of any building. It covers every department: stairs, interior finish, mantels, grilles, woodwork, sash, doors, blinds, art glass, columns, porch work, hardware, etc., etc. Send today for book No. 2.

THE FOSTER-MUNGER CO.
20th and Sangamon Sta., Chicago.
DON'T PAY CASH
FOR MILLWORK

YOU NEED THIS BOOK
It Will Be a Big Help to
You in Your Business—
Its 208 Pages are Brimful of the
Newest, Brightest, and Most
Up-to-Date Designs

AND IT QUOTES
THE VERY LOWEST PRICES

Write Today for Your Copy
Just Fill Out the Coupon Below and Mail
It To Us

SCHALLER-HOERR CO
- CHICAGO -
116 Douglas Station

SEE OUR BOOK
FOR CREDIT PLAN

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
BUY DIRECT

AMERICAN CARPENTER AND BUILDER

Colonial Columns
DIRECT FROM FACTORY TO CONTRACTOR
HERE ARE TWO REAL BARGAINS

OUR COLUMNS ARE THE BEST ON THE MARKET. WE SELL DIRECT TO CONTRACTORS, CARPENTERS, BUILDERS AND HOME OWNERS ALL OVER THE UNITED STATES AT FACTORY PRICES, POSITIVELY SAVING YOU 50 PER CENT OR MORE INCLUDING THE FREIGHT. WE SHIP EVERYWHERE AND GUARANTEE SAFE DELIVERY. OUR CATALOG CONTAINS HUNDREDS OF BARGAINS ON GLAZED SASH, DOORS, INTERIOR FINISH, MOULDINGS, STAIR WORK, PORCH WORK, GRILLES, ETC. SATISFACTION AND SUPERIOR GOODS ALWAYS GUARANTEED

WRITE TODAY FOR OUR MILLWORK CATALOGUE

Bayer Bros. Sash & Door Co.
Dept. C., ST. LOUIS, U. S. A.

FOR STORE FRONT S
Is architecturally pleasing to the eye. The finishes employed are handsome and attract the shopper. The glass is set from the outside and hence the installation is easy. . . . . But above all a KAWNEER FRONT is long lived, has a low cost of up-keep and is a sales maker for you. . . . .

It stays and pays.

KAWNEER MFG. CO.
121 Factory St.
NILES, MICH.

Missouri

If you live in any one of these states, it will pay you to write us for our prices and our SPECIAL OFFER on "Wearforever Roofing ("It's Guaranteed")

You will also be surprised at the savings made possible by our low prices on Lumber, Sash and Doors And all Other Building Material

Send us your estimates
Do it today—now!

House Wrecking Salvage and Lumber Company
2001 Walnut Street, KANSAS CITY, MISSOURI

Nebraska

Oklahoma
Ventilation Without Risk

IVES PATENT VENTILATING LOCK

A safeguard for ventilating rooms, allowing windows to be left open at the top, the bottom, or both top and bottom with entire security against intrusion, a permanent fixture easily applied and quickly operated, affording three times more protection to the window than the ordinary sash fastener.

THE H. B. IVES COMPANY
NEW HAVEN, CONN., U. S. A.

88-page Catalogue Hardware Specialties mailed free

Art Leaded Glass


The FLANAGAN & BIEDENWEG COMPANY
57 to 63 Illinois St. CHICAGO, ILL.
Telephones North 218

"EASTLAKE" Metal Shingles

For roofing all buildings with one-quarter pitch or more.

NEVER LEAK

They reduce the fire risk, and cost of insurance. Superior and cheaper than wood shingles. Any good carpenter or mechanic can lay our shingles.

Tools Required—Hammer and Shears

THE W. J. BURTON CO.
Detriot - - - - MICHIGAN

C. H. SHULTZ, Manufacturer, St. Joseph, Mo., U. S. A.

ALL-STEEL BURGLAR-PROOF COAL CHUTE

The Neatest, Strongest and Most Convenient Coal Chute Made. Prices also Lowest. No modern residence complete without it. Always rusted. Can be opened from inside, saving a lot of work.

IRON LINTELS

Beams, Angles, Anchors, Hangers, Ornamental Cast Iron Fronts and Stairways.

MONTROSS METAL SHINGLES

Carpenters—MONTROSS METAL SHINGLES will keep the roofing business in your hands, even if you have been entirely on the Wooden Side. They are suitable for any pitched roof, handsome, durable, quickly laid with hammer and nails. No cutting—no soldering—big profits. Write for free catalog.
**HAYDEN THE STANDARD OF MERIT**

The only Block Machine on the Market strong enough to withstand, year after year, the heavy strain of Power Tamping.

**THE HAYDEN AUTOMATIC BLOCK MACHINE COMPANY**

Manufacturers of

**HIGH GRADE CONCRETE BLOCK MACHINES, MIXERS, PORCH COLUMN MOULDS, TROWELS, ETC.**

112 West Broad Street

COLUMBUS, OHIO

---

**The U. S. Standard Concrete Mixer CLA**

1. To mix as well as the best.
2. To divide the different ingredients more reliably into any desired proportion.
3. To measure the ingredients more accurately than any known mixer.

The U. S. Standard Cement Block Machine Claims Superiority

1. For accuracy and perfection in construction.
2. For adaptability to an almost endless variety of blocks.
3. For strength and beauty of blocks.
4. For speed.
5. For moderation in price.

Manufactured by

**THE ASHLAND STEEL RANGE & MFG. CO.**

Ashland, Ohio

Government and Foreign Sales Department, 227, Produce Exchange, New York, U. S. A.

Catalogue A sent free upon application.

---

**“TRUS-CON”**

**JOIST HANGERS**

Strongest

as shown by University Tests.

Made from OPEN HEARTH STEEL.

SAVES cutting and weakening of timber.

SAVES labor in installation.

LOWEST FIRST COST.

All styles and sizes for Brick and Concrete Walls, Steel and Wooden Beams.

WRITE TODAY FOR PRICES

To SPECIALTY DEPT.

TRUSSED CONCRETE STEEL CO.

624 Trussed Concrete Bldg., DETROIT, MICH.

---

**“BRADFORD PRESSED BRICK”**

**“BRADFORD REDS”**

Trade-Mark—Sept. 12, 1905—July 15, 1907

Positively Unequalled for Richness of Color

Perfection of Shading and Uniformity of Size

MANUFACTURED EXCLUSIVELY BY

Bradford Pressed Brick Company

BRADFORD, PA.

Standards, Romans, Moulded and Ornamentals

Selected Brick for Mantels

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
**FLINT-COAT ROOFING**

*The Best Roofing On Earth*

That's All We Claim

Every Roll Guaranteed

Perfect

You Will Save 25 to 50 Per Cent

- 1-ply Flint Coat Roofing: $1.25
- 2-ply Flint Coat Roofing: $1.80
- 3-ply Flint Coat Roofing: $1.75
- 4-ply Flint Coat Roofing: $1.75

IMPEVIOUS BURLAP, ASPHALT, READY ROCK ROOFING, $2.75

Above prices are for one roll of 108 square feet, F. O. B. Chicago, all ready to lay. Can be laid by anyone. Special prices quoted west of Mississippi River. Nails and Cement with each roll. Our roofing costs less than shingles; lasts longer: can't rust like iron or steel. Water, Wind, Hail, and Fire Proof. Recommended by leading architects, largest railroad companies and corporations in Northwest. Samples and Booklets FREE.

ROCK ASPHALT ROOFING CO., Room 1105 Y. M. C. A. Building, CHICAGO

---

**Send 48c for a 4 lb. Sample Package of R. O. U. WATERPROOFING**

If, after you have tried it, you do not agree with us that this is the most important new development in the great concrete industry, and that you are not satisfied with results, we will refund the amount paid.

Efflorescence and the damp appearance on the outside after rain is now the last objection that the most captious critic can make against concrete block and brick buildings. R. O. U. absolutely prevents both. Do not take our word for it. Try it yourself. Unless you are convinced and satisfied the loss is ours.

Let us send you report of the test of R. O. U. made by the Engineering Department of Iowa State College at Ames, Iowa.

We are getting repeat orders wherever R. O. U. is tried. Here is one man that tried it:

**50 LBS. FOR TRIAL**

LEMMON, S. D., JUNE 12, 1908.

MIRACLE PRESSED STONE CO.

Gentlemen: Please ship us 1-50 lb. sack R. O. U. Waterproofing.

Lemmon Pressed Stone Co.

**1000 LBS. A MONTH LATER**

LEMMON, S. D., JULY 15, 1908.

Gentlemen: Please ship us 1000 lbs. R. O. U. Waterproofing.

Lemmon Pressed Stone Co.

It is a great advantage to the concrete worker, and even more to the concrete building owner.

---

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
THE OLD RELIABLE

Zimmerman’s Anti-Sag Strap Hinge

HIGHEST AWARD JAMESTOWN EXPOSITION

Cannot sag or twist—easily attached to Wood, Brick, Stone or Cement by standard bolt or lag screw.

For use on Heavy Barn Doors, Gates, Fire Doors, Fire Shutters—every place where a perfect hinge is desired to carry a heavy load without sagging or breaking down.

Made in 22 sizes, from six inches up to six feet. The strongest hinge ever offered to the trade—stays where put. Far superior to hinge made by blacksmith and at one-half the expense.

ASK YOUR JOBBER OR WRITE US

HARRY ZIMMERMAN & CO., Patentees, 25 Wood Street, Fremont, Ohio

Eastern Selling Agents, G. F. S. ZIMMERMAN & CO., 4 Arch Street, Frederick, Md.

"SOMERS"

PRESSURE

Block Machines

Chief Features are

The enormous pressure of 30 tons which creates a Dense, Compact Block and

Our Guarantee

That 3 men can make two perfect blocks per minute on this machine, and by adding two molds its capacity can be doubled.

Write for Illustrated Catalog.

SOMERS BROS., Mfrs.
URBANA, ILLINOIS

“I Think the Coltrin is the Best Mixer I Have Seen”

Beloit, Kan., May 24, 1908.

The Knickerbocker Co., Jackson, Mich.

Gentlemen: I am well pleased with your No. 6 Coltrin Mixer you shipped me April 7th, and if you have any prospective buyer in this part of Kansas that you cannot deal with unless he sees the mixer work, you just send him to me. If I cannot make a sale for you, then the man does not want a mixer, for I think the Coltrin is the best mixer that I have seen.

Yours truly,

J. W. TRON.

The Coltrin Concrete Mixer
Manufactured By
The Knickerbocker Company

Jackson • • • Michigan

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Don't!

WHY?

WHEN

Tamp Your Life Away

"Money"

Make 100 Strokes to produce a block
Make 100 Blocks a day

You can produce a block with one stroke
You can make 2000 Blocks a day on
a machine that don't cost any more.

We could not show cut of Multiplex here and do it justice. But our catalog "R" illustrates and explains it in every detail.

You can make all styles and sizes as well as chimney block on the one machine.

These statements are not advertising statements, we can prove it. Write for catalog "R" and you will readily see the reason. Our chimney block is the only one of its kind.

THE MULTIPLEX
CONCRETE MACHINE CO.

744 Ohio Building
TOLEDO, OHIO.

CONCRETE ORNAMENTS

The greatest opportunity in the concrete business is right here. With Medina Molds contractors can make a great variety of always-in-demand ornaments, that sell for profitable prices.

Letters from hundreds of pleased users prove every claim we make. "Good sellers with good profits," "Vases sell as fast as I can make them," "Vases sell at first sight," are examples of what users are continually saying.

Cost of outfit is very low. Send for catalog showing full line.

Medina Concrete Company
30 Court Street, - Medina, Ohio

$12.—COMPLETE 8x8x16 BLOCK OUTFIT

We meet all competition with our X-L-ALL ornament tools with our years of experience together with our well equipped factory and up-to-date methods of manufacturing. We are able to meet the impossible with ease. Our Multiflex machine can make it be a small order house, a manufacturer or a timber. We can fill your wants at a better price with equal goods. Now, understand we can furnish you a complete machine to make 8x8x16 rock and plain face blocks, half blocks and gable blocks for the net sum of $12.00.

Note cut of block that was made with this machine. We can also furnish you a block machine at a higher price, but it will be in accordance with the price.

We guarantee all our tools, give five days trial, money back if they are not what we claim for them. Can anyone do any more? We could not do this if our tools were not "A-No 1" and backed by our statements. Write for catalog No 5-D today! This year's catalog will soon be all gone.

BURRELL MFG. CO., 100 Grove St., Bradley, Ill.

Union Fibre Co., 72 Fibre Ave., Winona, Minn.

Dear Sirs: Send Samples and Specifications (for sheathing and sound-deadener) of the new linen building felt—LINOFELT—"38 times as effective as BUILDING Paper."

(Let us prove it to you.)

LINOFELT is Made by the Makers of "LITH"—the Cold Storage and Refrigerator Insulation

EUGENE DIETZGEN CO.

NEW YORK
SAN FRANCISCO

181 Monroe Street, CHICAGO

NEW ORLEANS
TORONTO

DRAWING MATERIAL

Drawing Instruments, Drawing Paper, Blue Print Paper, Tracing Cloth, Builders' Levels, Everything for Drafting and Surveying. Send for catalogue A

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Standard Concrete Machinery

THE STANDARD CONCRETE MIXER
Handles wet or dry mix; requires little power to operate; mixes bath perfectly in one minute; self-cleaning; easily charged and dumped; 3 sizes.

THE STANDARD PORTABLE MIXER and ENGINE
Are mounted on suitable truck; well designed; convenient to operate.

WRITE FOR CATALOGUE AND PRICES

Made in 4 sizes—5, 10, 20 and 40.

THE STANDARD CEMENT BRICK MACHINE
Is the fastest Hand Brick Machine on the Market; will make plain, veneered and ornamental face and shape; all perfect, smooth brick, true to size and design.

THE STANDARD GAS and GASOLINE ENGINE
Is made in all sizes. Especially adapted to running concrete machinery.

South Bend Machine Mfg. Co.,

Price
$40.00
No Chipped Edges. No Cracked Blocks. A perfect crystallization, owing to the wet mixture used, producing a hard, dense and non-absorbent block.

This machine makes profits—builds a substantial business—makes satisfied customers for you.

THE DUNN COMBINATION CEMENT BLOCK MACHINE
is built to give all these results, and the hundreds of cement block manufacturers using the Dunn Combination Cement Block Machine prove it.

It makes Face Down, Side Face Two-Piece Wall and Veneer construction. The efficiency of the machine is increased more than three times by these interchangeable features. There is no limit to size, number of shapes or variety of designs. Wood pallets are used. But you don’t have to take our word for it before you buy it. You can prove these facts to yourself on the machine in your own house town. The machine will stand on its own merits. That’s probably the way you would like to buy a machine. That’s the way we are willing to sell it to you.

Send for our illustrated catalog. It shows what the machine is and just how it works.


Wet Process Concrete Blocks

By the Pettyjohn System

The manufacturing of Concrete Blocks is rapidly nearing perfection, but the up-to-date manufacturer must use modern machinery and employ improved methods. Three features are important in perfect block making:

WET PROCESS
FACE DOWN
DAMP CURING

These splendid features are combined in the new Pettyjohn Invincible Machine, and no other. Made in three lengths, 16-inch, 24-inch and 40-inch. Tandem Invincible makes two blocks at once. Price $65 and up. Sold on trial always guaranteed to give satisfaction or money refunded.

With our TRIPLE TIER RACKING SYSTEM green blocks can be stacked three high direct from machine with inexpensive home-made rigging. This economizes space, reduces off-bearing distance, and above all insures slow, even, damp, perfect curing and bleaching. Plans and blue prints free to customers.

Send for our latest edition of “Stone Making” (just published), a book of valuable data for the block maker—FREE.

THE PETTYJOHN COMPANY, 634 No. Sixth St., Terre Haute, Ind.
AMERICAN CARPENTER AND BUILDER

Classified List of Advertisers
For Index See Next Page

AMATITE READY ROOFING
Barrett Manufacturing Co.

BARRETT SPECIFICATION ROOFING MATERIALS
Barrett Manufacturing Co.

BLACKBOARDS
Johnson & Co., E. J.
East Bangor Cons. Slate Co.

BLINDS
Phoenix Sliding Blind Co.

BOOKS
Bradf Publishing Co.
Industrial Publication Co.

BRASS WORK
Hungerford Mfg. Co., U. T.

BRICK MANUFACTURERS
Bradford Pressed Brick Co.

BUILDERS’ HARDWARE AND SPECIALTIES
Adjustable Hanger Co.
Allith Manufacturing Co.
Automatic Sash Holder Co.
Beaver Mfg. Co.
Bergen Iron Works.
Branch & Co.
Bergen Iron Works.
Chicago Metal Covering Co.
Champion Safety Lock Co.
Chicago Metal Covering Co.
Chicago Spring Butt Co.
Grand Rapids Hardware Co.

BRICK MANUFACTURERS
Bradford Pressed Brick Co.

BUILDING STONE
Georgia Marble Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT BLOCK MACHINES
Ashland Steel Range & Mfg. Co.
Burrell Mfg. Co.
Century Cement Machine Co.
Dietrick, D. F.
Dunn & Co., W. E.
Hayden Automatic Block Machine Co.

CEMENT WORK
Hungerford Mfg. Co., U. T.

COLUMNS
Hartman-Sanders Co.

CONCRETE MIXERS
Hayden Automatic Block Machine Co.
Knickerbocker Co., The.

CORNICES
Eller Manufacturing Co.

DRAWING MATERIALS
Andrews Heating Co.
Dietzen, Eugene.
Engineers Equipment Co.
Izard-Warren Co.

ELEVATORS
Eaton & Prince Co.
Hollister-Whitney Co.

ENGRAVERS
Dearborn Engraving Co.

FLOOR SURFACES
Ackermann & Co., John H.
American Floor Surfacing Machine Co.

GLASS
American Luxfer Prism Co.
American B-Way Prism Co.
Anderson & Co., Geo. H.
McNally & Miles Mfg. Co.

GRILLES
Chicago Grille Wks.

HEATERS
Andrews Heating Co.
Horse Grider & Furnace Works.
Hess, W. H.

HOUSES
Hotel Reford.
Hotel Windsor.

INSTRUCTION
Engineers Equipment Co.

IRON WORK
Calwell & Drake Iron Works.

LEVELS AND GUIDE FINDERS
Am. Comb. Level & Gr. Finder.

LINOLEFELT
Union Fibre Co.

MANTELs
Barrett Co., The A. W.
Central Mantel Co.
Hollidau Granite & Mantle Co.
Lorenzen & Co., L. & F.

METAL CEILINGS
Beger Manufacturing Co.
Canton Mfg. Co.

METAL SHINGLES
Burton Co., The W. J.
Cortighan Metal Roofing Co.
Edwards Manufacturing Co.
Montrose Metal Shingle Co.

METAL WORK
American Rolling Mill Co.
Burt Manufacturing Co.

PAINTS, VARNISHES, ETC.
Lowe Bros. Co., The.

PAVEMENT FILLER
Barrett Manufacturing Co.

PLASTER BOARD
Northwestern Compo-Board Co.

PLUMBERS SUPPLIES
Central Machinery & Supply Co.

PUMPS, TANKS, ETC.
Myers & Bro., F. E.

RAZORS
Shrp-Shvr. Razor Co.

REINFORCING MATERIALS
Barrett Manufacturing Co.
Barber Asphalt Roofing Co.
Ford Manufacturing Co.

RHEATERS
Andrews Heating Co.
Horse Grider & Furnace Works.

SHEATHING PAPERS
Barrett Manufacturing Co.

SKYLIGHTS
Burt Manufacturing Co.
Canton Art Metal Co.

SLATE ROOFING, ETC.
East Bangor Consolidated Slate Co.

STORE FRONT CONSTRUCTION
Conlin & Co., J. W.

TOOLS
Am. Combined Level & Grade Finder.

VENTILATORS
Burt Manufacturing Co.

WIRE SCREENS
Philips Co., The A. J.
Chicago Machinery Exchange.

WOODWORKING MACHINERY
Barnes Co., W. F. & Jno.
Crescent Machine Co.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
INDIA OILSTONES

Mr. Carpenter—

We want you to know the India as we know it. We know that when you are convinced that it will sharpen your tools quicker, set a better edge, wear longer, and is in every way more efficient than other oilstones—you will use it and no other. Let us prove these statements to you. We unconditionally guarantee the India to do what we claim for it.

We Take the Risk—You Get Results

No Matter What the Tool, There is an India to Sharpen It.

If your dealer does not have the size and grit you want, send to us. We recommend our Medium India No. 1 3/4x2x1 inch, for $1.00 postpaid—or our Combination of same size for $1.25 postpaid. The Combination Stone has one side coarse for fast rough work and the other medium to set a nice working edge.

Send for complete illustrated price list.

Pike Manufacturing Co.

PIKE, N. H. Dept. 6.


SYKES METAL LATH

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.

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.

Sykes Metal Lath & Roofing Co.

NILES, OHIO

ROENIUS WOOD and COAL CHUTES

10,000 in use

Have stood the test, because they are of good, common sense construction. They do the work and stand the abuse. Coal Chutes are intended for. No adjustable parts, easily opened, easily locked. Notice long anchorage and long spout on both Chutes. Write for agency and prices.

Grand Rapids Foundry Co.

Grand Rapids, Wisconsin

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Our Cut-Price Buzz Saw has made another deep cut in Millwork and Lumber prices. You will find these prices in the new 1908-9 Catalog, now ready for mailing to Carpenters and Contractors. Write for it.

New Cut Prices Supersede All Previous Quotations

Figure all estimates on the new Cut-Price basis. Increase your margin of profit on every item of Building Material you use. Our prices will enable you to secure more contracts, without sacrificing your legitimate profits. Hundreds of contractors are taking advantage of the saving—why not you? The quality of Gordon-Van Tine Millwork is up to the highest standard of the Sash, Door & Blind Manufacturers' Associations. Gordon-Van Tine Lumber is guaranteed to conform strictly to the standard grading rules. If goods are not found as represented, we refund the full purchase price and pay both freights.

EVERY CARPENTER AND CONTRACTOR SHOULD WRITE FOR NEW

Lumber and Millwork Cut-Price Catalog—FREE

5,000 BARGAINS—50% TO 75% BELOW RETAIL DEALERS' PRICES

MILL WORK We undersell everybody on all classes of Millwork, including Doors of every description, all sizes and styles of Windows, Mouldings, Inside Finish, Flooring, Stair Work, Porch Work, Grille Work, Storm Doors, Storm Sash, Screens, Hot Bed Sash, Ladders, etc., etc. We carry the largest stock of Millwork in America. All made by the most highly skilled workmen, of the best material that money can buy. Our Millwork is the best because all lumber is first air-seasoned and then scientifically dried. Joints are made with heavy hardwood dowel pins, glued with imported glue, pressed together with heavy steam-power press. Good, strong Pine Doors as low as 77 cents (retail dealers' price, $2.00). Check rail windows as low as 60 cents (retail dealers' price, $1.75). Corner Blocks, 2 cents each (retail dealers' price, 10 cents). Everything else at similar reductions. It pays to buy from the Grand Free Millwork Catalog.

LUMBER We are selling millions of feet of the highest grade of lumber at 50% to 80% per cent below retail dealers' prices. You can get lumber from us cheaper than anywhere else on earth. Our vast Stock of Lumber includes JOISTS, STUDDING, RAFTERS, SHEATHING, SHINGLES, DIMENSION, TIMBERS, LATH, BARN BOARDS, SIDING, FLOORING, EVERYTHING!

On car lots of 8,000 feet or more, we save you from $100 to $300, freight included. Orders filled within 48 hours—no delays, no disappointments. Every shipment is guaranteed. The lumber is absolutely new, bright, good, clean stock—no warped, black, dirty looking retail grades. Send list of lumber needed for Free Estimate.

ORDER STORM DOORS AND WINDOWS NOW

We are headquarters for Storm Goods. Order early, at bargain prices. We can save you at least half on every item. Our Painted and Grained Storm Doors are well manufactured. Prices, $1.29 up. Blizzard-Proof. Our Storm Sash are furnished with or without ventilators.

Get the Catalog and make up an order for these goods. Don't wait for zero weather.

Gordon-Van Tine Company
435 Federal Street, Davenport, Iowa

Largest Independent Lumber and Millwork Plant in America