AMERICAN CARPENTER AND BUILDER

THE WORLD'S GREATEST BUILDING PAPER

SPRING BUILDING NUMBER

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It's a fact that Atkins Silver Steel is better steel than you'll find in most of the high grade razors. No such steel was ever used in any other make of saw, the world over. Made for over fifty years under the Atkins secret formula and gas-tempered by the Atkins secret process.

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The Easiest Running Machine on Earth.
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Contractor and Builder
Dayton, Ohio, Feb., 5, 1910

Shullsburg, Wis., Jan., 31, 1911

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Manufactured by TRIPLE "A" MACHINE COMPANY, 112 Clark Street, Chicago

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The screw will never wear out or weaken the bar.

Quick adjustment. No steel bars to spring. Clamping range unlimited. No notches to weaken the bar. Heads always square with the work. Send for circular giving full description.

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The clamp is durable and cheap. Its construction is such that the weight of the door serves to throw the clamping jaws toward each other to hold the door firmly. Every downward pressure upon the door, instead of moving it from the clamp, causes the clamping jaws to grip the door more tightly.

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And you save two dollars instead of one

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THIS HIGH- GRADE MACHINE

Shipped on Approval at Our Expense
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Will do more and better work with less labor than any other scraper made

It is the only one having such a wide range of adjustments that it can be readily adapted to any bind or condition of floor, hard or soft wood, old or new. The handle may be adjusted to the height of the operator. The blade may be adjusted to any vertical or lateral degree. Adjustment of weight over blade anywhere from 15 to 30 pounds. Adjusted weight over blade is permanent, not governed by pressure upon the handle, insuring a uniform cut.

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

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Portable Combination Woodworker

GAS, GASOLINE or ELECTRIC POWER

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We Furnish Machine, Engine and Tools Complete.

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A practical machine for every contracting builder, jobbing shop, cabinet maker, etc., combining nine machines, so assembled that they do not conflict. Large table surface. The power, 4-H. P. Engine, is rigid in the frame and machine can be used in the shop or on the job.

Send today for circular fully describing the best combination woodworker ever built.

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

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8x18, 8x15 and 8x12 in. Roller.

Edge Roller easily adjusted to either side.

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But is as handy to a carpenter as horns are to an ox.

Has Double
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Cannot Tip
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Samples can be had on receipt of ten cents.

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You cannot afford to use any but the
Grand Rapids All-Steel Sash Pulleys

and the Grand Rapids Mortising Bit. Bores mortise at one punch. Used in common boring machines. We make boring machines too. Write for sample pulleys and prices.

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Say! For Metal Ceilings Write
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We Furnish and Apply them

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This hook bolt can be inserted or removed through a one-inch hole bored in the sheathing. It hooks around the studding. Where it is desired to plaster inside before scaffold is down, a piece of 2" x 4" turned flatwise may be used to fill in.

Absolutely Safe — It requires only one man to put them up and take them down. Reversible — can be used with the short arm supporting the platform.

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

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Everybody using a saw has need of the improved "Buckeye" foot power saw set. Formerly the "Foote" Hammer Saw Set. This Saw Set is guaranteed to set any saw from the finest tool to the two man cross cut saw perfectly, and with great speed, as it is operated by foot power, leaving both hands free to handle the saw. Requires very little space in the tool chest. Weighs 25 lbs., retails for $1.50. Ask your dealer for it, or will send one to any address prepaid on receipt of $1.50. Write for special propositions to agents. We also manufacturer a full line of Saw Vises, Chain Drills, Hollow Augers, etc. Catalog to dealers upon request.

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Make a Complete and Economical Operating Mill for Carpenters and Contractors. Take our No. 410 for instance—bevel a 10 x 50 x 700 board with a back saw 4 inches wide with little power. We deliver on short notice. Prices and Catalogue on Request.


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Saw compound as well as plain mitres any width with a back saw 4 inches wide

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A unique and important feature of the IDEAL is that it will not fill with snow and ice. When it snows, the small opening (about one-eighth inch) is quickly closed. This prevents the bursting of the trough, also of the down spout. When it thaws the ice melts, and the entrance opens automatically before the water from the roof reaches it.

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Never Break
Because they are made of very heavy gauge metal and perfectly constructed.

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Made in two sizes and all furnished by
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GoDEll Mitre Box
Made of Steel - Cannot Break

First in Quality and Improvements
Automatic Stops for holding up saw.
Corrugated Backs. Graduated.
Gauge for duplicate cuts and many other features.

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It's a Langdon Acme and is made in three sizes put up with varying lengths of saws.

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Makes a perfect mortise without break and hit or shib. The only mortiser of its kind in the world. Worth its weight in gold to the swaying engineer and carpenter. You cannot afford to bet without it. Automatic, ball bearing. Pat. May 10, 1899. Sizes: $15.00 per doz. PERFECTION MFG. COMPANY
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Cutting 4-32, 6-32, and 8-32 Holes

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It contains many fine designs of modern Grilles Columns and Consols.

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**Standard Shutter Worker**

Opens and closes the blinds without raising the window.

Automatically locks the blinds in any position desired.

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MALLORY MANUFACTURING CO.

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**DON’T PUT SASH WEIGHTS IN YOUR WINDOWS—THEY ARE OUT OF DATE**

The “AUTOMATIC” SASH HOLDER

The “Automatic” Sash Holder is the new, modern, up-to-date device that dispenses with cumbersome sash weights, kinking cords or ribbons, useless weight pockets, misfit pulleys and reluctant balances, and saves all the time, labor and expense of fitting them in place.

Prevent rattling and permit the window to be moved up and down with ease. Hold it safely at any point desired.

A sample set of four sent, postpaid, for $1.20.

Ask your dealer, or write to us direct.

Automatic Sash Holder Company

277 Broadway, New York City.
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Wood-Working Machinery

For Working Wood in Any Manner

Complete Outfits

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

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

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

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"DEFIANCE" WOOD-WORKING MACHINERY

For Manufacturing

Automobile Wheels and Bodies,
Carriage and Wagon Hubs, Spokes, Rims and Wheels,
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Balusters, Table Legs, Oval Wood Dishes and for
General Woodwork.

Invented and Built By

The Defiance Machine Works
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HAND DRILLS

No tool kit is complete without a Hand Drill.

We make them in a variety
of styles and sizes. Prominent
dealers everywhere sell our make
of tools, which are unapproach-
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Ask for catalogue, illustrating
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MILLERS FALLS COMPANY, 28 Warren Street, NEW YORK, N. Y.
You Can Save Time and Money
With a Crescent Variety Wood Worker

Every carpenter and builder should invest in one of these machines. No inconveniences, no worry, no bills from local mills to pay. By doing your own millwork you can place yourself in a position to estimate below your competitor. You will therefore have more work and a larger profit.

The Crescent Variety Wood Worker

fills a long felt want in those shops that have a varied but limited use for wood-working machinery. It combines a jointer, borer, shaper, pole rounder and tool grinder. The "Crescent" is built to stand hard usage, all the parts are made of the best material obtainable for the purpose. The machine is strong, durable and will stand the most severe tests.

This machine is especially valuable to carpenters and contractors, as it can be taken out on a job, or can be used in the shop with equal satisfaction. Can be driven with electric motor or gasoline engine.

Get our 1909 Catalogue and find out all about this splendid tool and our elegant line of band saws, disk grinders, planers, planer and matcher, jointers, shapers, saw tables, etc.

The Crescent Machine Co.,

224 Main St.,
LEETONIA, OHIO

"SEAVEY"
MITRE BOX

Meets Every Requirement

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

Portable — Can be carried in the Tool Kit

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SMITH'S Original Single End

Tenoning Machines were patented in 1852, since which time many improvements have been made, the annexed engraving representing the latest and best type.

The Design is unique with a track for holding all the wrenches.
The Carriage is fitted with Roller Bearings so as to move easily and true across the ways. Made with double heads, copes and saws.

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BRANCHES: New York, Chicago, Atlanta, Memphis.
GEO. H. BISHOP & CO.,
Makers of
Fine Hand Made Hand Saws

The Purest of Quality Our
"GREYHOUND" Hand Saw

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

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

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

In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical. If this saw cannot be found in the Hardware Store and they will not order it for you, write to us. Price for 26 in. saw, $8.00 delivered. We make anything in Carpenters' Saws.

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. MILLIK.

Comfort!\nEconomy!\nConvenience!

PHOENIX SLIDING BLIND CO.
BRIDGE & CANAL STS.
PHOENIX, N. Y.

There Are Other Variety Machines

But Did You Ever See One Capable of Doing Such a Wide Range of Ornamental Work as This?

These samples were all made on our Universal Turning and Variety Machine. The Machine that has earned for itself the reputation of being the "best-set and most profitable tool in the shop."

Wouldn't it inform you to know more about what this machine will do for you if your shop?

We will gladly send you large circular fully describing it. Now is the time to look into it and it doesn't cost anything to get posted.

C. MATTISON MACHINE WORKS,
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Carpenter's Gauge

On the Shelby Ball-Bearing Double Acting Spring Hinge actually assists the carpenter in hanging a door. A small notch is made in the hinge and it is only necessary to place these notches in the order of the desired design to complete the ornamental hinge. The door will fit exactly without any further cutting, or fitting.

Ask your dealer about them or write to us for our printed matter for the asking.

The Shelby Spring Hinge Company
Shelby, Ohio

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There Are Sound Arguments

There are plenty of reasons why every carpenter should have GOODELL-PRATT TOOLS in his kit.

Every one of our tools represents a triumph; first in designing, then selection of proper materials for each part, followed by careful and painstaking workmanship and a handsome, enduring finish.

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

SAMSON SPOT SASH CORD

Be sure that the cord you buy has SAMSON AND THE LION on the label, and that the braid is marked with the COLORED SPOT. You may be sure you'll get the best.

WE'RE GLAD TO SEND SAMPLES AND FULL INFORMATION.
SAMSON CORDAGE WORKS, BOSTON, MASS.

COMPO-BOARD

A substitute for Lath and Plaster.
Can be put on by any Carpenter.
It is Warmer, more Durable,
Quicker and more Easily Applied.
Manufactured all 4 ft. wide, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 ft. long.
For Sample, Price and full Description, Write
Northwestern Compo-Board Co.
4800 Lyndale MINNEAPOLIS, MINN.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
"A Bit Of Utility"

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

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

Unequaled for Delicate Work

Supersedes chisels, gauges, scroll-saws, or lath tools combined, for all kinds of delicate work.
Cabinet and pattern makers and carpenters are enthusiastic because they do more work than
other bits and cost no more.
We can offer something special in the
matter of price on sets packed in a sensible
box. Send today for particulars and catalog.

The Progressive Mfg. Co.
Torrington, Conn.

"THE PORTER" Wood Turning Lathes
for wood turners and pattern makers. Furnished com-
plete with countershaft, rests, steps, bolts, center and face
plate. A high grade machine at a reasonable price. We also
make Hand Jointers, Shapers, Swing Cut-off Saws, Pony
Planers and Post Boring Machines. Better get our Catalog.

FOREST CITY BIT AND TOOL CO.
Manufacturing Hollow Mortising and Wood Boring Bits and Tools

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

FOREST CITY BIT AND TOOL CO., Factory and Office, Rockford, Ill.

BLAKE QUICK ACTING VISE
For Cabinet Makers and Wood Workers. Simplest—Strongest
—Cheapest—Best
Send for Catalogues of all kinds of Vises
PRENTISS VISE COMPANY, MAKERS
44 Barclay Street, New York, N. Y.

THE NEW SASGEN CIRCLE SWING DERRICK
Light in weight,
speedy in opera-
tion, all malleable
 castings; weight
250 lbs., capacity
1000 to 1500 lbs.
Fully equipped. Ready for
F. O. B. Chicago
$35.00
Sold on trial to all reliable contrac-
tors. Catalogue FREE.
Manufactured by
SASGEN BROS.,
2744 Lincoln Avenue
CHICAGO, ILL.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
The lathe that is positively different to anything else made; different because it combines more good features.

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

We make two kinds—Sykes Expanded Cup Lath, and Sykes Trough Lath. Both are supreme for their own purpose. The top illustration shows Trough Lath, bottom cut depicts Cup Lath.

NO PICKLED LATH
Sykes Lath is absolutely guaranteed not to have been pickled in an acid bath. This means that the weight and thickness is not reduced and is less susceptible to rust. Requires no furring out from studs because it is self furring. It has been approved by U. S. Government and by leading architects, carpenters and builders throughout the country. In fact, when we say it is the best ever made we are simply stating a proven fact.

Samples and prices mailed upon request.

Sykes Metal Lath & Roofing Co.
NILES, OHIO

Silent Screen Door
Avoid the nerve-racking slam of the screen door. Stop its banging and jarring—by using "Dime" Screen Door Check
At your hardware or house furnishing store, or mailed if 12 cts. in stamps by
Caldwell Mfg. Co., 15 Frank St., Rochester, 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 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 needed 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. The longitudinal recess which is shown in cut is well worth the low price of the instrument.
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, P. O. Box 35, Railroad, Pa.

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

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

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
If You Want A Free Copy Of Our Builders' Sheet Metal Guide,

We want you to have one. Just tell us where to send it, that's all. It contains 80 interesting pages, crowded full of illustrations, ideas and suggestions of the greatest value to any one who wants to take advantage of the latest money-saving appliances. The cost will be one minute of your time and the stamp on your letter.

If you are in the market for anything whatever in our line, it will pay you to get our figures.

The LEADING SHEET METAL PLANT OF THE WEST
SAINT PAUL, U. S. A.

You Can't Buy A Better One At Any Price
Strong, Durable Simple, Cheap
CHAS. MORRILL
283 Broadway
NEW YORK

The MARSH AYER MITER BOX
is the strongest, simplest, most convenient and practical box ever gotten out.
Have your dealer show you one. You'll be surprised and pleased with its many excellent features.

IT'S NICKEL PLATED
Circular Upon Request
H. C. MARSH CO. ROCKFORD, ILL.
Do You Paint?

Do YOU paint? If you live in the city or a town of any magnitude the chances are you don’t. You do carpentry work and leave the painting to someone else; or probably you and some painter work together. You throw work in his way and he helps you out, and you find it a pretty good arrangement.

In some of the country districts, however, the carpenter frequently has to be painter, brick mason, plumber, and everything else. In short, many a country carpenter is supposed to take all the raw material necessary to complete a home, put it in shape, and do all the work. In some country districts, there are painters and carpenters who keep in touch with each other the same as if they were in the city and probably this is the better way.

There is no relation between carpentering and painting in the use of tools or the manual requirements; but the two are frequently so closely associated in work that the carpenter is called on to do quite a lot of painting. It may be in country districts he is called on to paint the house that he builds, or, whether in the city or in the country, he may do considerable cabinet work in the shop. This he must finish, paint and varnish himself, or else go out and hunt someone to do it for him. Naturally under such conditions the carpenter is inclined to do his own painting and varnishing. In this connection there is room for an exchange of experiences in finishing different kinds of cabinet work that should be worth while to all. Also there is room for discussion in the matter of painting houses, that is, as to when the carpenter ought to do it and when he ought to insist on someone else doing it. What do you think about it and to what extent do you paint or varnish in the course of your work through the year?

Copyright for Architecture

It seems possible that lovers of the unusual in architecture may soon be able to live in a house of their own design in the confidence that no one may reproduce it without rendering himself liable to penalties. The English committee on the law of copyright recommend in their recent report that architecture be accepted as matter to be protected under the law of copyright, both in order to bring about uniformity with the revised International Copyright Convention signed at Berlin on Nov. 13, 1908, and “because it deserves to be protected and presents no difference in principle from that applicable to the sister arts.”

The committee add that they refer only to works of original and artistic character, and not works of common type which have been frequently produced on previous occasions.
SOMETIMES a song, a bit of scenery, or a way-side house can call up such alluring memories that the less happy present ceases to be. Whenever I see a Swiss chalet in America, street cars and crowded humanity fade away and I am in the snowy Alps once more, or it is spring along the Axenstrasse. In Switzerland the chalet is not only a thing of beautiful suggestion, but it is beautiful in itself. What could be lovelier in tone than the soft browns and reds of the unfinished woods! The carved brackets and the far protecting eaves add to its picturesqueness. From numerous cheery little windows, the light streaming
across the snow brings the heart of the wanderer a sense of peace and of home.

When the chalet ceases to be home-like and simple—when its imitators strive for a palatial effect—the result is rarely artistic. For the keynote of the chalet is simplicity and use. This type of architecture had a very humble beginning. The name was applied originally to the herdsman's hut. The shepherds who went to the high Alps with their flocks in summer, constructed from the rough timbers the most primitive of cabins which were known as chalets. Then, since the industrious Swiss must keep occupied, he began to improve upon his little structure and decorate the brackets with carving. The herdsman went back to his summer home season after season. He found that the heavy winter snows had slipped from the sloping roof and left it uninjured. The water trickled from the far projecting eaves and left the walls dry and clean. Because of the strong and enduring lines upon which this type of house was built, and because of its inexpensiveness and economy of room it became gradually the popular style of Swiss home.

In some regions where stone is more plentiful, as in the fashionable St. Moritz country, the chalet is rarer, or where it does occur the style of the house is quite different. The lower part is stone and the upper stories are of timber rather carefully finished. On the hillsides, however, where heavy lumber is plentiful, there are chalets innumerable. These little groups of pointed-roof houses do not seem the work of man, but a part of the scenery, so admirably do they fit in with their mountain background.

One of the photographs is of such a group of chalets with the barren mountainside behind dotted with the smaller huts of the herdsmen. Sometimes it is literally true, as Mark Twain writes—that in Switzerland, if a man happens to fall out of his front garden he may tumble a thousand feet before he can find anything to stay his descent.

With the chalet the building of the roof is a matter for serious consideration. It must have just the inclination that will admit of the upper story being utilized most effectively. Then there must be slope enough so that the heavy winter snows will loosen and fall to the ground of their own weight. Most important of all, the roof must be securely enough fastened so that the sharp winds that rush through the valleys may not lift it bodily and carry it away. If one studies this group of Swiss houses carefully, a great pile of stones may be seen on the shingles—a weight just heavy enough to defy the tugging winds and cutting blasts.

If the roomy attic is broad enough to hold the winter's supplies, so also is the broad basement of like generous proportions. Here the goats and cattle in Switzerland often find a friendly home until there is pasturage on the hillsides.

Some most exquisite vine-covered chalets are seen...
at Brienzsee and Interlaken. The old timbers and boards of rough unfinished wood have taken on the soft reds and browns that come from weathering. The purples and greens of the clambering grape vines add to the warmth of the coloring. The chalet hotels, as the one at Treib, have often extra adornments, such as a dormer window or a frieze of carved wood.

At Maloja is a modern rather pretentious sort of a
Two Chalets at Maloja—More Pretentious than most Alpine Lodges

chalet—the type one sees very effectively copied in America, especially in California, where there is every variety of house that can cover its inexpensiveness (?) with a fanciful name, there are chalets not a few. The chalet is not in general so well adapted to the California landscape as the bungalow, or the red tiled Mission type. But occasionally along some rough roadway one meets a real rustic chalet with rough stone foundation and simple heavy timbering which, with the bare mountain beyond, makes one feel that beyond the turn in the road lies Switzerland.

Along the sides of Mt. Wilson, whose white summit is plainly visible from Pasadena, are some charming chalets, beautifully in harmony with Alpine scenery, whether the background is the soft green slopes of early spring, the bare brown of late autumn, or the silent snows of winter.

The chalets built along a level road, or crowded in by other houses, are seldom very successful. As one sees them along the California driveways, shaded by tall palms, they seem ill at ease and out of harmony with their environment. The chalet cannot be transplanted with success except into rough and rugged locations resembling in part the mountains where the style originated. There, however, no style is more beautiful and appropriate.
Suggestions for Home Builders

WE ARE offering a number of attractive, medium-size and medium-cost residence designs herewith, each one of which embodies some feature or features of distinct worth, making them worth while for study. Our idea and purpose in this is that the prospective home builders may get from them some good ideas that can be incorporated in their own building plans—to the possible improvement of the same and the lasting convenience and satisfaction of the house keepers. The carpenters and builders can also get suggestions from these plans and pictures that will help them considerably. The art of small house

Straight-Line Brick and Planter House Being Built for Mr. Wm. F. Waller at Berwyn, Ill.; G. W. Ashby, Architect

First Floor Plan

Second Floor Plan
designing has developed in a wonderful way in the last two or three years; these houses are the work of some of the leading men of all parts of the country, who have made this matter a special study. They will show the very latest methods of arrangement and uses of material. The builder who is on the lookout for new features that he can introduce into his own work is the one who gets the most business and his business pays him the best. It is the little extra things in home building that make well-pleased customers; the little extra conveniences that can be put in just as well as not—and often with very little extra expense—if only the builder knows of them and plans for them in time.

**Straight-Line Brick and Plaster House**

The house shown in the accompanying drawing, page 744, is being built for Mr. Wm. F. Waller, at Berwyn, Ill. The construction is of frame, veneered to the second story window sills with dark red paving brick. Above this the walls are plastered with cream tinted cement, the window casings and corner boards being stained dark brown. The low overhanging roof is of shingles stained green. The pleasing exterior features combined with a well-planned interior go to make this a very attractive home at a comparatively small cost.

The special features of this house that should be mentioned are the long, well-lighted living-room, the screened porch off the dining-room and the large, screened, sleeping porch on the second floor.

**A Western Bungalow**

The popularity of the bungalow style of architecture for small and medium size houses seems to have diminished not at all. In fact in the smaller towns and rural districts it is just coming into its own. This is well too; for the bungalow to be a real success, must have
plenty of room to spread out in, with good unobstructed light on all sides. This, of course, is the condition in the smaller towns where building lots are large.

The bungalow illustrated on page 745, contains five rooms and bath. The arrangement gives great convenience and spaciousness, yet at the same time there is a good deal of privacy—for a bungalow. That's the most frequent objection to these little houses where

Dining Room in Gambrel Roof House

Living Room Looking Toward Dining Room
all the rooms are on one floor, just as it is the objection to the majority of city flats. Yet both the bungalow and the city apartment can be arranged properly.

This house has concrete cellar, steam heat, hardwood floors and open plumbing. It is wired for electricity and piped for gas combination fixtures.

The living-room is very large with three wide windows and a fireplace. Wide openings to hall and dining-room are hung with portieres.

Notice how the kitchen is isolated from remainder of house by two doors at each entrance. This keeps all cooking odors from other rooms. There is a large entry with place for refrigerator.

The outside is finished entirely with shingles, left to weather. Trimings are painted a cream white. The long wide porch in front makes a pleasant lounging place in warm weather.

Chambers are all full height rooms, space under eaves being utilized for large and spacious closets. Linen closet off hall second floors is fitted with shelves and drawers. Seat on stairs makes a nice place for plants.

The six-room house on page 748 is intended as practically fireproof. This matter of substantial building and especially of fireproofing as nearly as possible is one of great importance. In England they do not think of building with transient and easily destructible
materials, but have come to use masonry entirely. The result is that England’s annual fire loss per capita is about one-fifth what ours is. Those, building homes out where fire protection is uncertain, if not entirely lacking, should give this matter thought.

This brick and stucco house was designed on substantial lines; yet the cost was not excessive.

**Square House with Spaced Siding**

The residence with accompanying floor plans shown on page 749 is just about a model of its kind. It is an

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*Square House with Spaced Siding Built at Lincoln, Neb.; Fisk and Dielman, Architects*
eight-room house admirably arranged with all of the modern conveniences, making it up to date and that too, at a moderate cost.

The exterior of this house, while being purposely plain, is so proportioned as to give it a dignified appearance of solidity and comfort for those who dwell therein.

After all, that is what an architect is for—to plan to the best advantage, all things being considered. How often good material is worse than wasted by builders
who work on the order of plan as they build and trust to luck for the architectural effect at the finish. It pays to have plans and specifications prepared in advance for even a two room cottage. The owner can see in advance what he is going to have in the completed building and the builder can know what is expected of him and can figure intelligently. In short, it furnishes a basis for all of the different craftsmen on the job, to work, so that the work may be divided up and yet when assembled every part will fit to its respective place.

All this is made possible by the investment of a very small per cent of the cost of the building in having plans prepared by one that makes the business a special study. In short, the money invested in a good set of
plans is the best investment in the building. The house shown on pages 750 and 751 is a modern adaption of the Colonial. The severe lines of the gambrel roof are broken by the introduction of numerous dormer windows, which, in addition to being attractive, help render the interior bright and cheery. The exterior finish is of shingle, stained gray, with white trim, and dark green blinds.
The front porch, distinctly Colonial in design, is covered with a peaked roof, supported by four columns, with trellis work arranged between to afford a foundation for vines. The entrance opens into a vestibule, lighted by side lights and this in turn connects with the central hall, from the farther end of which a staircase rises by low, broad treads to a landing, lighted by a great window, from which another flight of steps ascends to the upper hallway.

To the right of the hallway is the living-room, finished in pine with white enamel finish. Its walls are hung with paper of a striped pattern in tones of gray, pink and white, and its floor is of hard pine, polished. A large fireplace, constructed of pressed brick laid in white mortar, occupies a prominent place at one side.

Opposite the living-room is the dining-room, also finished in pine, but stained to represent old oak. A high wainscot extends around the sides of the room to a height of 8 feet where it is met with a frieze of field daisies, finished at the top with a cornice of oak-stained pine. A feature of this room is the large built-in china closet at one end, which possesses the advantage of being decorative as well as useful.

**Five-Room Shingled Cottage**

The five-room cottage (four down stairs and one in the attic) was erected at Brockton, Mass., last spring at a contract price of $1,800, which included everything to make the house complete, ready to occupy. The floors are of hardwood stained and oiled. The finish in the living-rooms is cypress stained. Kitchen, entry and bath have North Carolina pine finished natural; the chambers, white wood painted. The exterior is covered entirely with clear cedar shingles stained a warm brown on walls and moss green on roofs. Trimmings are painted a light cream.

The vestibule at front entrance keeps out the cold from living-room and the alcove with arched beam and seats with fancy ends make a cozy feature to the living-room. Book case and china closet have leaded glass doors with shelf and drawers under.

Neat Shingled Cottage Built at Brockton, Mass., for $2000; W. F. Barlow, Jr., Architect
Problems of Roof Framing Solved
THIRD ARTICLE—THE BACKING OF THE HIP AND VALLEY AND THE EFFECT IT HAS IN THE FRAMING UNDER VARIOUS CONDITIONS

WE COME now to the next step of our work. In the previous illustration, we show how the lengths of the common and hip rafters are determined by the aid of the common steel square. Of course, there are other ways of getting the lengths with the square, but whatever figures are taken, they must be to the ratio of the full scale for one foot run of the common rafter, as shown in Fig 3. In that illustration, the hip is shown in connection with the common rafter. The same principle by which its length is determined, also applies to the valley rafter because it rests in the same position relative to the common rafters. Therefore, its length is the same as that of the hip.

Hark! Didn’t we hear some one say, that isn’t so? But it is so, as will be proven when the backing is taken into consideration and the length and cuts of the rafter are taken at the proper place. This is a vexing little problem; ’tis true it does not amount to much, there is not one job in a hundred where the carpenter takes the pains to back his hips and valleys. Whether he does or not, allowance should be made in the depth of the seat cut; that is where they get off without his knowing it and after they are cut and ready to set up in place, then he finds that something is wrong and they are either blocked or cut down as the case may be. Now isn’t that so?

Have you not seen blocks or shingles under the seat cut to raise the rafter up in plane with that of the
common rafter? Where they happen to be too high, the proof is lost because they were cut down by the rule o’ thumb!

Now, Mr. Carpenter, haven’t you done that very thing yourself?

The trouble lies in not knowing just where to place the square on the side of the rafter, so as to make the measurement come right on the measurement line along the center of its back. If there was no pitch at all, then the whole surface would be one plane or a common level; but as the roof begins to rise the different sides are represented by their portion of the roof in a plane of its own. The dividing lines are at the center of the backs of the hips and valleys, which when strictly adhered to requires the edges of the hip to be beveled off and the back of the valley to be beveled into the center, making its back a V-shape; thus the measurement line, when the valley rafter is to be backed, is actually in the wood, making the problem all the more complicated to arrive at.

The vertical dotted line at B represents the corner in either case, the measurement point being directly above that point. The sections 1-2-3-4 represent the position of the rafters under the following conditions:

No. 1, the hip when not backed; No. 2, the hip when backed; No. 3, the valley when not backed; No. 4, the valley when backed.

From this it will be seen that No. 1 sits lower than the others. By tracing the bottom line of the sections down to the seat thence up to the second elevation, you will see just how deep the seat-cut should be for each rafter. No. 1 cuts into the C vertical line from the plan, which would make it stand at the right height above the edge of the plate; but in order to make the seat-cut clear the corner of the plate, it is necessary to cut into the vertical line as at B. No. 2 cuts into the same points as No. 1, but owing to its being backed, the seat cut drops accordingly.

No. 3 cuts into the vertical line at B and in order to clear the edges of the plate, must cut out at the sides to the A vertical line.

No. 4 cuts in the same as the latter, but as much lower than No. 3 as No. 2 is below No. 1.

The distance apart of the outer vertical lines A and C from the plan represents the width of the rafter. Therefore, if the rafter be two inches thick, the lines A-B-C would be 1 inch apart and 1 inch set off along the seat cut or a line parallel with it will give the gauge point on the side of the rafter. To make this clearer, see Fig 5. 17 and 9 give the seat-cut. Now measure back along this line 1 inch from the edge of the rafter which will represent one-half the hip’s thickness; this will locate the gauge point for the line from which to remove the wood back to the center line of the hip. The distance E-D shows how far apart the parallel or seat lines should be under the above conditions. This applies to any pitch given the roof, so long as the pitches are regular.

The backing of the hip can be reckoned from the miter of the corner on which the hip rests, because it partakes of the same proportion as used on the steel square for obtaining the miter and is as follows:

For the square corner, 12 and 12 give the miter, which everybody knows. Now let one of the twelfths represent one-half of the thickness of the hip and set off a like amount along the seat cut line, as before described in Fig 5.

For the octagon 5 and 12 give the miter; then set off 5/12 of half its thickness.

7 and 12 give the hexagon miter (approximately) and 7/12 will be the amount to set off. These figures remain the same regardless of the pitch given the roof, provided it is regular.

Going back to the square cornered roof, let us illustrate this point another way. Suppose the seat-cut is a square cut, then the hip would stand straight up like a corner post, yet the figures as given above would be the proper amount to set off to make the backing conform to the angle of the corner on which the post rests. It is the swing of the seat cut toward the upper edge of the rafter that governs the gauge line on the side of the rafter; and as the pitch is lowered, the nearer the seat line approaches the back or edge of the rafter; and finally when the rafter is clear down, the seat line has disappeared. There are other ways of arriving at the above results, most of which we have illustrated in former articles, but it matters not what figures or diagrams are used, they are all based on circular measurement, or the divisions of the circle.

**Gimcracks**

Giles—My wife can drive nails like lightning.

Miles—You don’t mean it!

Giles—Sure I do. Lightning, you know, seldom strikes twice in the same place.—Chicago News.
Joints in Heavy Timber Framing

Second of a Series of Articles on Timber Joints—The Securing and Strengthening of King Post, Queen Post and Rafter Joints

By T. B. Kidner

In addition to the several forms of iron straps and other fastenings shown in the last article for use in holding the raking members and vertical posts of roofs in their positions on the tie-beam, face-straps of iron are employed at other points of wooden roofs in heavy work.

The medieval carpenters who framed the wonderful open-timbered roofs of Europe, which remain today in perfect condition after the lapse of four or five hundred years, made large use of straps in their framing. The writer has examined and studied several of the finest and most famous examples of ancient wooden roofs in existence at the present day, and in every case the aid of the smith had been enlisted by the carpenter in every important joint.

One of the commonest examples of the use of iron face-straps is found in the head of a king-post truss, such as is shown in the accompanying sketch, Fig. 14. The dotted lines indicate stub tenons, which serve to hold the joints in position while the members are being assembled, and also, of course, prevent lateral motion. The strap is, however, the chief thing to be relied on for strength and should be carefully forged of wrought iron to follow the rake of the timbers. The iron should be not less than \( \frac{3}{4} \) by 2 inches for the ordinary king-post truss, which is not used for greater spans than 28 or 30 feet.

For spans of 30 to 40 feet a queen-post truss is usually employed. Fig. 15 shows the joint at the head of the queen-post; the raking member being tenoned and shouldered very much as in the king-post truss, and the collar beam supported on a cleat let into the side of the post. Stub tenons are used for the purposes described above, and three-way straps, following the lines of the members, are used to hold and strengthen the joint.

Some roof framers prefer to support the collar beam...
as in Fig. 16, where it is shown notched into the post with a raking shoulder. This weakens the queen-post at the neck and therefore the cleat shown in Fig. 15 is generally preferred. It should be said, in this connection, that the actual tensile (pulling) stress in a queen-post, set up by the weight of the tie-beam and the load transmitted by the raking strut, could often be carried by a smaller piece of stuff than is usually employed. It is necessary, however, to use a piece large enough to form the joints at the head and foot of the queen-post, where the abutments for the other members of the truss have to be provided.

The joint at the meeting of a raking strut and the principal rafter or raking member of a truss is usually simply notched in and fitted with a stub tenon as in Fig. 17, but occasionally an architect of a first-class job will require that straps be used, as shown in Fig. 18.

Fig. 18 shows the purlin resting on the back of the principal rafter, just over the head of the strut.

Fig. 19

The joint between the purlin and principal rafter may be a simple notch, as in Fig. 19, a cleat being fastened on the lower side to resist the tendency of the purlin to overturn from the thrust of the common rafters which it supports.

A better method than the simple notch is the old-fashioned “cogged” joint, shown in Fig. 20. By its means a good bearing is secured without materially weakening either piece, and a much stiffer joint results, although it may take a little longer to make than the simple notch.

Fig. 20

A third method is sometimes used in seating the purlin on the back of the truss; namely, the double notch, shown in Fig. 21. While this is better than the simple notch in which one piece only is cut out to receive the other, it is not nearly as good as the cogging.

It is seldom that one sees any form of joint for the bearing of a rafter on a wall plate other than the two well-known varieties of the bird’s-mouth joint shown in Fig. 22. The writer has before him a detail drawing, made by a leading architect, providing for a rather elaborate substitute for the bird’s-mouth. The draw-
ing is here reproduced (Fig. 23), more as a curiosity than because of any belief in its practical value. It should be noted, though, that carpenters often make the mistake of cutting the bird’s-mouth too deep in the case of important bearing timbers, such as stair carriages, etc. A serious and fatal collapse of a crowded stand at a race track some years ago was found to have been caused wholly by the supports being so deeply bird’s-mouthed that they split up as in Fig. 24.

“Sound-Killing” Wall

New York, Feb. 19.—The “sound-killing” wall between 50 and 54 East 59th street, which was built to protect the ears of the occupants of No. 54, has proved to be a success. The plans for the wall are the only plans for this type of construction ever filed with the New York City Building Department. They have been the object of great interest to the city’s architects and builders, and it is thought that this “anti-noise” device may be adopted in other cities.

The second and third floors of No. 50 contain large printing presses. The upper floors of No. 54 are occupied by apartments. The roar of the printing machinery proved so disturbing to the flat-dwellers that they appealed to their landlord for relief.

The landlord called upon an architect, and the architect designed the wall. It is made of hollow terra cotta blocks stuffed with mineral wood. The blocks are of the kind used in fireproof floors and partitions. They have been known as good absorbers of sound waves, but this is the first test of them purely for that purpose. The mineral wool, in the hollow spaces, serves as a muffler. The wall also keeps the odor of printers’ ink out of the apartments in No. 54.
Importance of a Plan in Home Decoration

By Clyde E. Horton

No undertaking ever met with success without having a definite plan. Whether in business, in society or in the home, a plan must first be conceived and executed with care before complete satisfaction is obtained. This truth is realized more frequently in business affairs that in those of the household, but it is nevertheless a fact in every case. It applies particularly to such an undertaking as the decorating of one's home. How many of us ever have a carefully prepared plan of decoration? In nine cases out of ten the home builder finds himself in the midst of his decorative details before he realizes it and without a plan at that, and furthermore so confused regarding woodwork, wall and floor color treatments, that he hardly knows which way to turn. The first question can be answered, therefore, by the two words, "Not many."

How many builders realize what can be accomplished by such a plan? This question can be answered by the same two words. The fact is that all those who have lived through the building of a home have realized to their sorrow just what more careful planning and careful buying might have accomplished. These questions apply to the entire building, but particularly to the interior decorating, the subject with which we wish to deal.

The importance of a general plan for interior decorating is first realized when one finds himself face to face with a desire for a mahogany finish on oak woodwork to match valuable furniture, or some such unsurmountable obstacle. Then it is too late to go back and start over. It is too late to make the discovery that white enamel woodwork is better, for some one of the chambers, or that the green rug does not harmonize satisfactorily with the color effects applied to the dining room walls.

So work out a plan and then plan out the work—know just what kind of furniture, hangings, rugs, etc., are to be used in every room before the architect specifies the kind of wood for the woodwork, the color of brick for the fireplace, or, in fact, any of the details which bear directly or indirectly upon the final decorative effect. Know just how these various surfaces are to be treated, how many coats of stain or varnish are to be used on woodwork and floors—the exact color for walls and woodwork before your painting contract is signed.

There are many details, many pitfalls of this kind which might be mentioned in this connection, any one of which, when neglected, has caused many a pang of disappointment to the home-builder—all of which might have been eliminated.

Such a plan of action is not a difficult undertaking. It must naturally be based entirely on the style of architecture chosen for the house, and with this important point decided upon, the plan is built up around it. Very few of us are able to start with a clean slate, but rather it is necessary to use many pieces of old furni-

Living Room Showing Good Effect of Simplicity in Decoration
tecture, some of them rare old pieces—heirlooms, possibly—the dining room table and buffet are comparatively new and their style is satisfactory; then, again, much of the chamber furnishing cannot possibly be changed, nor would be changed if possible. Let the plan of interior decoration start right here. Decide upon such furnishings as will be permanent, taking one room after another. Consider the relation of furniture to woodwork. If mahogany furniture has the manufacturers have studied their products from an artistic standpoint—many of them are prepared to tell you just the kind and color to select under the conditions you are confronted with. The mantel manufacturer can give you suggestions for the style of your fireplace. The furniture manufacturer will assist you, as well as the paint and varnish manufacturer, who can tell just how to treat your woodwork, walls, floors, etc., in order to obtain the most artistic effect.

In our progress from one room to another, working out a plan for each, building the schemes up around the satisfactory furnishings we already have, it is of vital importance that the relation of one room to another be considered. Avoid harsh contrasts between rooms just as much as between parts of one room. Let one scheme lead up to another like the notes of musical harmony. Don't lose heart if the first year doesn't bring complete satisfaction throughout the entire house. Little by little the undesirable pieces of furniture and inharmonious hangings will disappear and behold! a wonderful change has been wrought. All by means of the plan and without any extra expense.

She Guessed Right

Mrs. Brooklyn—The idea of an educated man like Mr. Curious looking for a gas leak with a lighted candle. It is the last thing I would ever think of doing.

Mr. Brooklyn—The coroner says it was the last thing that Curious thought of doing.
We Want This Department to Be Very Valuable to Our Readers. If There Is Any Style of
Finish, or Any Piece of Special Construction You Want to See Fully Detailed
and Explained, Let Us Know. (These Drawings Are All Made to
Scale; They Can Be Easily “Taken Off” for Practical Use)

We HAVE devoted all of our space this month to the planning and detailing of a typical kitchen and pantry and their furnishings. A separate room for cooking purposes has long been recognized as an essential feature of every well-planned house, and is, except in some farm houses and dwellings of very low cost, a universal provision. The kitchen, its place in the house plan, its arrangement and general requirements, have received far less attention at the hands of house designers than their importance deserves; and even now, a great many kitchens are entirely unsuited for convenient use.

To properly plan a kitchen and its connecting rooms, an architect should necessarily know the scale of the work to be performed in it, and whether it is to be done with or without servants. The kitchen shown herewith is so planned that the work may be done conveniently by the mistress of the house alone, or with the aid of one servant. In large houses additional space for serving and many other subsidiary rooms and cases are required, which the more modest housekeeper must dispense with.

The kitchen must be well placed to secure proper light and air, and direct sunlight if possible, and should be a convenient and thoroughly comfortable room. Its furnishings must be sufficient and complete and so placed as to help, rather than retard the work, and its finish and equipment should be of a sanitary nature.

For great convenience in doing both the kitchen and dining-room work and to facilitate the serving of meals, the pantry should be placed between these rooms, which arrangement at once brings them into immediate relationship and yet gives them a necessary separation. The kitchen should be no larger than the scale of work, for which it is intended, absolutely requires.

The accompanying plan shows a good arrangement. The pantry contains a cupboard for dishes, “D,” with movable shelves and with lower drawers for linen; a cupboard for supplies, “C,” with a lower case for utensils and an upper case for storage of rarely used articles. Provision is made near the dining-room door for table leaves. A serving or work table, “B,” is also provided close to the refrigerator, which is arranged for outside icing. A broom closet and clothes chute to the laundry are placed in a position convenient to both kitchen and dining-room.

The kitchen contains a cabinet, “A,” with provision for necessary supplies and utensils used in cooking. Sliding shelves, can racks, etc., add to its effectiveness. The top is covered with sheet aluminum, which is easy to keep clean and bright, does not tarnish or corrode like zinc, chip like glass, or stain like marble, and is therefore the best material known for table covering.

The drawers marked “Y” should contain a movable tin box with air tight cover, opening when drawer is half open. These are for the storage of flour, sugar, bread or cake.

The kitchen and pantry should be plastered to the height of 4 feet with cement, marked with a vertical bead every 12 inches, and finished at the top with a chair rail and at the bottom with a low base. This wainscoting should be enameled either in white or some suitable tint. The walls above and ceilings should be painted in lead and oil of not too dark a shade and stippled. All woodwork should be of close-grained wood and finished natural and without polish. The floors should either be of white maple, oiled, or of pine covered with inlaid linoleum. Tiled floors are not advisable, but a plastic composition, laid on a wood lining and of various colors, is coming into use and makes a very desirable floor.

Fire-Resisting Paints for Woodwork

In discussing the question as to what sort of a paint is best adapted for use upon interior woodwork in order to render it as fire-resisting as possible, a recent issue of The Painters’ Magazine presents the following: Experience has shown that paints consisting mainly of linseed oil, driers and pigment are not fire-resisting, let alone fireproof. However, repeated coating of water glass (silicate of soda) will serve the purpose. Apply to the wood three coats of silicate of soda, 33 deg. Beaumé, and before the last coat has set hard, apply a thin lime wash, which unites with the silicate of soda, forming silicate of lime, which is an insoluble substance.
Details of Pantry and Kitchen Cupboards.

Details of Wooden Panel Doors
Scale: One Half Full Size

Details of Glass Panel Doors
Scale: One Half Full Size

Plan of Cupboard "C"

Detail of End of Fixed Shelves

Section of "C"
Scale: 1/8 = 1'-0"
Pen Sketching Simplified

THE FIRST OF A SERIES OF THREE LESSONS TEACHING THE ART OF SKETCHING IN SUCH A WAY THAT EVERYONE CAN PROFIT BY IT

By Conrad B. Schaefer

DRAWING and sketching as a useful accomplishment may easily be made of greater benefit than usually supposed. Besides its value in connection with any line of constructive work, it enables one to comprehend or explain a great many problems with greater ease than could be done in any other way. Sketching is the "shorthand" of art.

I. PRACTICE REPEATEDLY.

Details in building and mechanical trades have to be sketched out in order to be considered.
Perspective views of exteriors and interiors of buildings are necessary in determining the various features and proportions before the building is erected. Decoration and ornament also require a trained eye as well as a practiced hand to develop. Fine and delicate work enables one to make pleasing drawings and cations to suit the difference in the materials employed.

The practice of a fine art is superior in that it makes physical as well as mental training necessary. In entering upon a course of drawing one therefore has to exercise the muscles until they become skillful in action, as well as also to learn how drawings are made. Next in order is the value of one's subject and the pleasing manner in which it is rendered. The result will then be a sketch in good taste.

A common fine-pointed writing pen and plain, smooth-surfcaced paper will do to begin with. Paper having a grain surface should be used for pencil practice and egg-shell paper for wash drawings with a brush.

I. Place the drawing paper squarely in front of you and draw a set of parallel lines. Then make other sets in different directions. Notice what movements are the hardest to make, and practice them repeatedly until ease is acquired. Do this carefully and deliberately. Be guided by the first copy plate.

II. STRAIGHT LINES FIRST

PROPORTIONS.
represent refined ideas. Above all, an artist must have a definite knowledge of his subject in order to make a good sketch.

Those who make a beginning in freehand drawing will easily find the direction in which it is best to develop their study and practice.
The directions for pen and ink work may be applied to the use of pencil and brush with very slight modifi-
round in shape, as in Fig. II, first indicate the proportions by straight lines lightly made. Then all the articles will be accurately placed and a guide secured for correctly drawing the curves.

III. In regard to distances, the side farthest from one is always a little shorter, the lines running away from the point of view approaching a perspective point in the distance. This latter point may be in the middle of the picture or there may be two points on either side.

Lines level with the eye are horizontal. Lines above this horizon line vanish downward, those below converge upward. The latter view is illustrated in the plate, Fig. III. The book is below the eye. It is necessary to observe these rules carefully, for in drawing small objects one is apt to get these proportions reversed. It helps to hold the pen or pencil horizontally before the eyes and compare it with the object which is being drawn.

IV. One can apply these lessons to the making of an easy mechanical sketch in outline. Begin with some small object. After a little practice one will be able to sketch out details as it is desired to make them, like the window box shown in Fig. IV.

V. In order to draw an object so it will look solid it is necessary to show the shading, dividing the shadows into light and dark. These, if possible, should be made to show the shape of the article represented, as in Fig. V. Flat surface patterns may be made interesting in this way.

VI. In drawing the outlines of a view, the pen lines should follow the shadows, omitting the lines on the light sides. The different forms of various materials can be made quite plain in this way and the result is artistic in appearance. Fig. VI. is a good example of this method of rendering.

VII. The pen drawing, Fig. VII, from an old-time market arcade, embodies all the principles of this lesson. It also shows how much may be gained by choosing an artistic subject. The massive timber, the ornamented construction and the faces peering out from under the warehouse—dogs, stevedores, merchants; young and old, watching for the coming ships—are from life of the olden times.

The lines are clearly drawn. The perspective and the shadows behind the light, the construction and the nature of the materials, are all carefully represented.

It takes practice to be truthful. One must strive to be accurate, first in a general way and then in regard to details. In a broad front view there is little perspective work, but in an end view a great length may be shown on a very narrow piece of paper. This is called foreshortening. The shadow should be natural. However indefinite a sketch looks, the artist must have mastered all these points.

+ Solid Zinc Nails

Zinc shingle nails cut from the solid zinc is one of the new articles offered as indestructible so far as rusting is concerned and as affording extended life to a roof of zinc shingles or slats. The only wear on the nail arises from contraction and expansion caused by changes in the weather.

The nails are said to cost about three times as much as the iron commodity on a weight basis, but owing to the fact that zinc is not so heavy as iron the ratio of relative cost is less. The life of iron nails is placed at six years, while that of zinc is said to be indefinite.

It is thought that zinc shingle nails will have a large field in wood shingle roofing.
Hand-Made Furnishings for the Library

HOW TO MAKE A ROUND TOP LIBRARY TABLE, A COMBINED PICTURE FRAME AND PLATE SHELF AND A MISSION CANDLESTICK

The picture frame shown in the illustration may, if desired, be used as a plate rail also. For this purpose there will need to be one or two small grooves cut along the top near the front edge. In this day of cheap but artistic reproductions of the masterpieces of the past there is no reason why even the humblest home should be without beautiful pictures on the walls. The prints shown in the photograph cost but one cent apiece.

For the frame there will be needed the following material:

**MILL BILL—PICTURE FRAME WITH SHELF**

- Top, 1 piece, 1/2 by 3 1/2 by 26 inches, S-4-S.
- Stiles, 2 pieces, 1/2 by 3 by 11 inches, S-4-S.
- Mounting, 1 piece, 1 1/4 by 1 1/2 by 7 inches, S-4-S.
- Rails, 2 pieces, 1/2 by 2 by 18 inches, S-4-S.
- Brackets, 2 pieces, 1/2 by 1 by 5 1/2 inches, S-4-S.
- Brackets, 2 pieces, 1/2 by 2 1/2 by 5 1/2 inches, S-4-S.

This stock is specified exact as to width and thickness. To the length, however, there has been added one-half an inch extra. Secure quartersawed white oak if possible. Make certain that it is well seasoned.

Begin work by squaring the stiles to length. Next prepare the rails and the mounting. Lay out and cut the tenons on the rails and the mortises in the stiles and rails. Now rabbet the rails their full length on the inner edges. This can best be done by means of the rabbet plane. The rabbets of the stiles cannot be cut their full length. Because of their short length they may as well be cut with the chisel, being gauged first. It must be remembered in cutting the tenons of the mounting that the plowing of the rabbet on the rails will necessitate the cutting of the shoulders on one side, the back side, longer than on the other. After this has been done the mounting should be plowed. Scrape and sandpaper these parts thoroughly and with good hot glue put the parts together and clamp them. While the glue is hardening square the top to length and put on the bevel.

Square up the ends of the brackets and shape their curves, using a small coping saw to cut them out and the scraper to smooth them.

When the glue is hard put on the top and place the brackets. Very small brads are to be used and the heads set and covered with putty colored to match the finish.

Pieces of heavy cardboard should be used to "back" the pictures, a piece of strong paper pasted over the back of all so as to exclude dust.

How to Make the Round Top Table

The table may also be made of quartersawed white oak. The pieces, like those of the preceding article,
are specified exact as to thickness and width. There will be needed the following pieces:

**MILL BILL FOR ROUND TOP TABLE**

- Top, 1 piece, 1 by 16 inch radius, S-2-S.
- Legs, 4 pieces, 2½ by 2½ by 29½ inches, S-4-S.
- Bottom stretchers, 2 pieces, 1 by 3 by 26 inches, S-4-S.
- Top stretchers, 2 pieces, 1 by 1½ by 24 inches, S-4-S.
- Side rails, 4 pieces, 1 by 1½ by 24 inches, S-4-S.

If possible get the top glued and in one piece at the mill, this will be more satisfactory than to try to do it at home. The gluing with the necessary jointing of the edges is not so much to be avoided but the surface smoothing after the gluing can be done so much easier and with such great saving in time that one should have it glued at the mill if at all possible.

If a band saw is at hand, the way to cut the circular top is to fix a center at a distance from the saw equal to the desired radius of the top. By revolving the top on this point the wood will be fed to the saw in such a way as to make the circle desired. Scrape and thoroughly sandpaper the top after having taken off the sharpness of the arrises.

Prepare the four legs next, cutting them to length and squaring the ends. The lower ends should be chamfered a good sixteenth of an inch to prevent splintering.

The top and bottom stretchers should be cut to size and the necessary joints laid out and cut. It will be noted on the drawing that the tenons on the lower rails or stretchers are to be shouldered on the four sides. On the top rails, however, they are to be shouldered on three sides only. The tenons in the lower stretcher might be made 5½ by 2½ by 1 inch long. Those on the top stretcher may be of the same thickness and length but with a width of 1 inch, gauged from the under side.

Lay off and cut the mortises in the legs. The gains which are to receive the ends of the curved rails that form the facing under the top are best cut after the rails are shaped.

These rails may be formed in two ways; they may be 1-inch stock steamed and bent to shape over forms previously prepared or they may be made by veneering a piece of thin quartersawed oak over pieces of pine.
cut to the desired curvature from solid pieces. The second method is probably as easy and satisfactory for the beginner. The veneer should be cut long enough to let into the posts with the pine. Threesixteenths-inch veneer should be used.

The table shown in the photograph has lower stretchers straight on both edges with a width of 3 of inches throughout. The drawing shows a variation that will serve to lighten the effect should one so desire.

The Mission candlestick shown in the photograph is easily made, a drawing is hardly necessary. The base should be made 3/4 inch thick by 5/2 inches square. The vertical should be 1 1/2 inches square by 4 1/2 inches high. The top is to be 3/6 inch thick by 2 inches square. The handle, 3/4 of an inch thick with a 1-inch hole in it. The hole in the top for the candle is to be 3/8 of an inch. A thin piece of brass fastened over the top will keep the tallow off the wood.

A very appropriate finish for the picture frame, and for the other pieces, too, is obtained as follows: After having removed all the surplus glue and having scraped and sandpapered all the parts thoroughly, apply a coat of Dutch Brown water stain. Allow this to stand over night, then sand it smoothly, using number 00 paper held on the finger tips, to remove the grain raised by the water in the stain. Again apply a coat of the same stain diluted with an equal volume of water. Again sand lightly when dry and put on a thin coat of shellac. This is to keep the coloring matter in the filler from disclosing the highlights of the wood. Upon this put a coat filler. Use light filler and mix it in the proportion of 12 ounces burnt umber, 4 ounces Venetian red and 20 pounds filler. When the filler has hardened apply a thin coat of shellac. Sand the shellac when it has hardened. Two methods of proceeding from this point are possible. The easier is to apply a coat of floor wax and rub to a polish, following the directions that will be found upon every can of wax. Two or three coats of wax should be applied, each coat being allowed to harden over night.

The second method requires more care and experience as it necessitates the use of copal varnish. Upon the shellac coat apply a coat of good varnish. When this has dried hard, rub with hair cloth or curled hair. In like manner put on one or two more coats. The last coat should be rubbed with pulverized pumice and crude oil or raw linseed oil. This gives an eggshell gloss. If a polished finish is desired, rub the last coat with pulverized pumice stone and water and then with rotten stone and water.

HINT ON PIPE FITTING

"In screwing pipe fittings together spread a thick mixture of graphite and oil on the threads. This will help make the joints steam on water tight. White lead is used when the pipe is not to be taken apart again. It hardens, while the graphite does not, and makes it almost impossible to unscrew the pipe fittings when they have been connected for a long time."

PERSONAL INJURY THROUGH DEFECTIVE SCAFFOLD.—That an employee on a scaffold used a beam thereon for a purpose not contemplated by the parties, and was injured by its breaking, is not evidence that the platform was unsafe, under New York Labor Laws (Laws 1897, p. 467, c. 415), Section 18, forbidding unsafe scaffolding.—Connolly vs. Peterson, New York Supreme Court, Appellate Term, 116 New York Supplement 11.

CONTRACTORS' LIABILITY FOR INJURY TO THIRD PERSONS.—A contractor, making excavations for the laying of a walk to a side door of a dwelling, entered by steps nearly 3 ft. high, removed the steps and excavated there. The dwelling was occupied by a tenant, who was away the day the work was done. It was not shown that the contractor had any reason to believe that the tenant was away that day, or that she was ignorant of the removal of the steps, and had the tenant remained at home she could not have failed to see the conditions. Held that the contractor was not negligent in failing to prevent persons from opening the side door from within, stepping out, and he was not liable for injuries to the tenant opening the door from within and falling to the ground. Where work is done by an independent contractor, who is proprietor of the business he is conducting, he alone is responsible for the care in doing it.—Carey and Baxter, Massachusetts Supreme Judicial Court, 87 Northeastern Reporter 901.

A CONTRACTOR CANNOT RECOVER FOR PERSONAL INJURY.—For several years before being injured in a railroad accident, plaintiff was a carpenter and building contractor, and took entire contracts, though sometimes he furnished labor only. At other times he furnished material only, and sometimes both labor and material. He had a horse and employed men. Held that his income before the accident must be regarded as uncertain business profits proceeding from invested capital, which could not be considered in ascertaining the loss caused by the injury.—Gombert vs. New York Central & Hudson River Railroad Company. 88 Northwestern 382.

PUBLIC BUILDINGS NOT SUBJECT TO MECHANIC'S LIEN.—A public school building, title to which is vested in a Board of Trustees, is not subject to a mechanic's lien for material furnished for its construction; the statute not showing an intention to extend the lien to public property.

Morgantown Hardware Company v. Morgantown Graded School. Supreme Court of North Carolina. 64 Southeastern 764.
How to Get a Good Job of Painting

IMPORTANCE OF DEFINITE SPECIFICATIONS FOR HOUSE PAINTING—SPECIFY GOOD MATERIALS AND SEE THAT THEY ARE FURNISHED—TEST THE LEAD

By R. I. Cuyler

WHEN an outside painting job goes wrong these days, we often hear house owners unreasonably exclaim: "Good painters are scarce and paint is not as good as it used to be."

Now, as a matter of fact, the real trouble is not because of a shortage of either good paint or competent painters. Trouble and dissatisfaction of this sort can usually be traced to lack of attention to the important details of choosing the paint and the painter. The property owner, himself, is largely to blame for these conditions.

It is true that a decade or two ago a poor painting job was the exception, while good painting was the rule. Those days, pure white lead and pure linseed oil were applied straight, by practical mechanics. That was before mixtures of chalk, clay, barytes, benzine and water began to pose as paint—before the "Every man his own painter" idea. Property owners were not compelled to be so careful then as at present. If you wish, however, it is still possible to secure a satisfactory and durable painting job, but you must exercise more care and reason in choosing your paint and your painter. These days the markets are flooded with cheap, shoddy and adulterated paint mixtures, while "the woods are full" of incompetent daubers, who know nothing about paint or painting.

How the Ordinary Job Is Arranged for

How does the average man go about having his house painted? Let us consider, for example, the man who is building a new house—a home to shelter himself and family. He engages an architect to draw up the plans and specifications and leaves all details to the architect.

Now, many architects, for fear they will be accused of being unduly influenced by manufacturers, have gotten into the habit of merely specifying "best paint." Some may go so far as to specify "best white lead," but either phrase is useless. They mean nothing.

The specifications are turned over to several painters and bids are requested. As no particular brand of paint is specified, one painter may make an honest estimate, figuring on using the best standard brand of pure white lead and pure linseed oil, the paint to be properly mixed and applied. Another painter has a different idea of "best paint," and submits a low figure, determined to secure the work at any price. The proper application of paint is given no consideration whatever.

Relies Too Much on the Architect

The property owner takes it for granted that an estimate based on the architect's specifications will assure him a satisfactory painting job, and the lowest bid, nine times out of ten, is accepted. The paint may look all right at first—chances are it will. In a few months' time, however, when this so-called "best paint" begins to crack, scale and fade, the house owner realizes that something is wrong, and when he investigates the matter, he will be given a dozen or more excuses. The architect will blame the painter and the painter will get behind the specifications. No one will assume the responsibility, and the house owner is soon confronted with the bother and expense of burning and scraping off the old paint; and applying a new coat.

Had the architect specified a standard brand of pure white lead by name, to be mixed with pure linseed oil and the desired colors at time of painting, and made it clear that each coat should be thoroughly brushed out and plenty of time be given between coats, for thorough drying; had reason been exercised in choosing a competent painter, the house owner would have been ahead considerable money and would have been saved a lot of trouble and dissatisfaction.

What the Sensible Man Will Do

Next consider the man who has decided to have his house repainted. What does he do? Four men out of five will ask several painters for bids and accept the lowest figure. The fifth man will be sensible enough to inquire of the painter who submits the lowest bid what paint material he will use. Then he may further investigate the painter's record and ascertain where he has worked before, and look into his reputation for good results.

Having satisfied himself that the painter will use a standard brand of pure white lead, pure linseed oil and colors, that he is capable of properly mixing and applying paint, and has a reputation for good work, he then executes a contract in writing, which alike pro-
ects the painter and himself. This is the logical and reasonable way of proceeding.

The property owner who goes no further into the painting subject than the color scheme very often pays for paint which he does not get. When the paint goes wrong, he then blames the painter and says, "There is no more good paint." This is not only unreasonable, but unjust—unfair alike to good painters and good materials.

To be certain of satisfactory painting, you should proceed as follows: When building a new house, be sure that your architect specifies a standard brand of strictly pure white lead, to be mixed with pure linseed oil, pure turpentine and pure colors at time of painting. Then, when it comes to letting your contract for painting the new house, or repainting the old one, let only painters of known ability and integrity do the work. Do not accept any bid until satisfied the painter can properly mix and apply pure white lead. Next, make it your business to see that the brand of pure white lead, the pure linseed oil and other materials, as specified, are used.

Do not compel your painter to unduly rush the work. Having engaged a good painter, and being sure of his using the best materials, then give the painter an opportunity to properly apply the paint. Plenty of time should be allowed between coats to insure perfect drying and hardening of the paint film. Some surfaces require more care than others. The competent painter knows how to mix and apply paint to fit the conditions of different surfaces. Give your painter a chance—do not rush the work.

Examine the Brand, Test the Lead

It will be well to examine the brand on the lead keg. You trust the bank cashier, who cashes your check, but you count the money just the same, and he takes no offense. Neither will a good painter resent your checking him up—if he does honest work, and uses high-grade materials he will welcome the closest scrutiny.

It will do no harm to test the white lead for purity. The test is very simple, as follows:

Take a small piece of lead from a keg—about the size of a pinhead. Place this lead on a match, about 1 inch from the head, and light the match. With one or two other lighted matches held directly underneath the lead, sufficient heat is obtained to reduce the white lead, if pure, to its original metallic state. You will note a number of very small globules of metallic lead formed. Necessarily they must be small because the quantity of lead tested is small, but they are easily discerned. Lead that is adulterated will not reduce in this manner or in any other way and is unfit for use.

There are no good reasons why you should not be certain of a first-class and durable job of painting, even in this day of adulteration and of cheap, flimsy paints, if you will simply use care and reason in choosing your paint and painter.

Board Lock or Clamp

Mr. H. H. Seeley, of Webb City, Mo., sends to the editor a description of a simple device for stiffening board partitions, which is worthy of consideration. He says it is the invention of the Hon. L. W. Motley, of Prosperity, Mo., who is now past the seventieth milestone in life's fitful journey and who desires to submit this little device to his fellow workmen, through the columns of the AMERICAN CARPENTER AND BUILDER, so that it may have the widest publicity possible, believing that it possesses real merit. Mr. Seeley's description is as follows:

The device may be used in a number of ways as the clamp tends to reinforce and strengthen anything where its use is desired, as for partitions or side walls where square-edged boards are used. The clamp is of 3⁄4-inch hoop iron cut in 3½-inch lengths with small holes punched near the ends to start the nails or tacks for holding same.

The accompanying sketch will give an idea of how they are applied. First, shows the iron inserted; sec-

Such Profanity

"The engineers find Gatun dam safe," read Mr. Jones from his newspaper headlines to grandma, knitting at the other side of the table.

"Well," she said, looking up over her glasses in pained surprise, "I don't know anything about the safety of Gatun, but I think a family newspaper oughtn't to use such language in print."—Emporia Gazette.

Tell the truth and your customers will rise up and bless you.
Plans for Modern Brick House

COMPLETE SET OF ARCHITECT’S DRAWINGS FOR A SUBSTANTIAL, WELL-DESIGNED BRICK HOUSE OF LIBERAL DIMENSIONS—ADVANTAGES MENTIONED.

The eight-room brick house, full working drawings for which are presented herewith, was designed recently for Mr. H. W. Griggs and is to be built this spring at Pleasantville, Ohio.

In construction, this house is standard brick masonry; 13-inch wall on a 17-inch foundation. First and second floor joists are 2 by 10 inches, set 16 inches on centers. Foundation walls are concrete, made waterproof with an application of hot tar on the outside and a quarter-inch neat cement finishing coat on the inside. A slate roof tops this house off in a substantial and appropriate way.

The floor plans show four large well arranged rooms on the main floor and three bedrooms, bath, dressing or sewing room, and an abundance of closets on the second.

Points on Warm-Air Heating

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 go to anyone who cuts to the lowest price regardless of the quality of the man who takes the contract or of the apparatus which he represents. Another frequent source of annoyance and error is the relation of the heating expert or contractor to the architect. To be just to both, the system of heat should be first selected and allowances made in the
plans for its installation. Some of the chief points to
be considered are: First, the size and location of the
chimney; the running of the cellar partition walls to
accommodate the location of the furnace and the coal
the planning of the walls to avoid horizontal runs of
heat ducts in the second floor to reach a room other-
wise inaccessible; and other points not necessary to
mention.

SECOND FLOOR PLAN OF HOUSE—PAGE 771

bin; the height of the basement ceiling to allow suffi-
cient 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;

All heating engineers know that the range of loca-
tion of a furnace relative to the house plan is very
limited, and that in many cases it is an absolute neces-
sity, after the house plan is completed, to set the fur-
nace 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.

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 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.

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.”
DETAIL OF MAIN STAIR HALL

DETAILS OF INTERIOR FINISH—HOUSE, PAGE 771
A Fireproof City School Building

Perspective and Floor Plans of a City School Building Designed to Meet the Requirements of the Ohio State Law

The accompanying plans should prove interesting to everyone connected in any way with the construction or designing of public school buildings; since they embody the very strict regulations imposed by the Ohio state law concerning fireproofing arrangements to prevent panic, etc. The provisions of this law were adopted soon after the terrible Collingwood fire disaster and are calculated to prevent another horror of that kind in future. It would be well if all the other states would pass laws equally as strict for the protection of their school children.

If space permitted we would reprint this building code in full. It can be obtained however in pamphlet form from the State Department of Building Inspection.

From the plans the required arrangement for stairs, halls, and doors will be seen. The width of door openings and the width of halls and stairs is fixed by the number of persons to use them, and every room must have exits into more than one hall.
Artistic Rendering of Drawings

It is surprising what a number of architectural drawings—especially perspectives—are spoiled for want of artistic treatment, by bad judgment in the management of light and shade, figures drawn badly and out of scale, impossible trees and general accessories all wrong, says a writer in a recent issue of the London Studio. Some architects, whose work is otherwise splendid, will put in absurd little figures, apparently with an idea to enhance the height of their buildings. And when the building is completed, one often notices a chance natural effect of light and shade, whereas, had the perspective been drawn by an artist familiar with these effects, a fine result would have been obtained, as well as a drawing worth keeping as a work of art.

Special “features” of a building often require prominence, and this can only be done by keeping the surroundings quiet; but only an artist will understand how to do this. One has only to see the exhibition of architectural drawings at the Academy any year to see how insipid and wanting in artistic treatment most of the perspectives appear. The general average is “stodgy,” with what is known as the “Academy treatment.” There are a few architects who treat drawings very finely, but they are the rare exceptions. It seems a pity that many excellent designs are spoiled or fail to have justice done to them for want of artistic management. Architects generally suppose that an artist would spoil their details, but this is not so where proper judgment is considered and an artist of proved ability given the work to do. It is to be hoped that the subject will receive the careful attention which its merits would seem to deserve to the end that better results will be reached.
Two Horse Barns—Round and Oblong

Two designs presented, one the ordinary gable barn, the other a circular barn. Each arranged for thirty-two horses—a comparison

We have received numerous requests of late for suggestions, advice, etc., concerning round barns, their design, arrangement and construction. One reader has asked specifically in regard to a circular barn to stable 32 horses. We have made this the basis of the accompanying designs, though they may serve equally as well for other barns of similar nature.

Round barns have been urged during the past few years by the experiment stations and others and have attained considerable popularity for large dairy stables, the idea being that the silo is built at the center, a place equally near to all the feeding racks. This reduces to a minimum the labor of carrying feed. It is also claimed that the cost of the round barn is less than that of the rectangular containing the same amount of...
space, due to its less amount of wall surface. It is doubtful, however, if the extra labor and trouble of getting out the curved framing timbers, laying the shingles on the curved roof, etc., will not more than make up for this saving.

In a horse barn, moreover, the argument concerning the silo is no longer of any value. Horses do not eat ensilage. In this round design eight stalls are provided at the center, the horses facing in; twenty-four stalls are arranged along the outside wall, horses facing out.

A grain bin occupies the very center. This disposes of all the space, but it is doubtful if it is thoroughly practical and economical for this kind of a stable. The varying widths of the stalls seem to cause the greatest trouble.
Framing for Door with Side Lights

To the Editor: Grand Ridge, Ill.

Would like your expert advice in regard to the following:

Have some windows, single sash, opening 30 by 25 inches, mitre cut glass, to be hinged at the bottom and to act with weights and chains. I would like to know the best method of frame construction and sash fitting for such a place.

Also have a front door 3 by 7 feet with side lights 14 inches by 7 feet. Is it best to make individual frames or all three frames solid together. What is the best construction for side light frames?

My "Cyclopedia" is worth many times the price paid. It gives me great satisfaction. R. M. Crossy.

Answer: It would not be possible to balance on weights a window hinged at the bottom. As the window opened out, the center of gravity of the same would, of course, move farther from the point of support and the weight of the window would be increased in a proportionate ratio. A window of this kind should be hinged at the top rather than at the bottom and should not be balanced at all, but provided with transom lift or other adjuster.

The accompanying drawing is a detail made for your front door with side lights. The entire frame should be made in one piece rather than three separate frames. Jambs should be rabbetted for doors and sash, and stops inserted to secure the sash.

Editor.

Which Wood Is Best?

To the Editor: Milwaukee, Wis.

In your magazine I have never found an article recommending and discouraging the use of different kinds of wood for the different parts of frame dwellings, stating reasons for using or avoiding each.

This would certainly be a valuable and interesting subject for discussion, and I would like to hear from the experienced men of the craft concerning it.

L. S. Edison.

Corner Post Framing

To the Editor: Blandinsville, Ill.

In the December number I took special notice of Mr. Geo. H. Rieveley's article, "Good Corner Post for Houses." To this I have an objection. The method shown in this figure will apply only when two of the studs being placed together flatwise will give a combined thickness equal to the width of one of the studs. Now of all the stock that I have ever handled, practically none of it will do this.

For example, take what we call 2 by 4 stock. Now this material ranges from 1½ to 1¾ inches in thickness and from 3¼ to 3¾ inches in width. This makes a difference of from 1½ to ¾ inches between the combined thickness of two of them placed together flatwise and the width of one of them.

The method of making a corner post that I prefer is that of taking what we call a 4 by 6 and spiking what we call a 2 by 4 against one side of it.

Roscoe F. Metcalfe.

A Leveling Device

To the Editor: Donaldsonville, La.

I desire to present to the readers of the AMERICAN CARPENTER AND BUILDER a device for leveling without the use of a level. Construct a plumb bob on a straight-edge, 8 feet long, and form a triangle with a 6-foot base and a 10-foot hypothe-

nuse, as shown. This may seem like a foolish suggestion, but I think some of the readers will appreciate it, especially when a level is not at hand.

Jas. W. Montecino.

Details for Private Green House

To the Editor: St. Marys, Pa.

We are enclosing a blue print for a conservatory and as you are giving much valuable information pertaining to the building and construction business of all kinds we would ask you to advise how we can construct this work of wood, and what dimensions of wood will be required? How can we con-
struct the roof from wood and provide a ventilator on each side as shown?

We would also like to have you explain how you would frame for the ventilators in sides so as to open, also how would you fasten the sides together; the roof will be glazed with ribbed skylight glass and the sides with P. P. glass.

This is our first work of this kind, and all the information you will give us will be greatly appreciated.


ARRANGEMENT FOR PRIVATE GREEN HOUSE

Answer: The accompanying detail drawings show the proper sizes of all the various parts and their best arrangement for good construction. Cypress is to be recommended for all work of this kind.

EDITOR.

To Stop the Creosote

To the Editor: Fowlersville, Mich.

Tell W. E. S. of West Concord, Minn., to leave the draft
at the top of stove near the bottom of pipe open night and day. It may take a little more wood, but I think it will help the creosote.

We have a round oak and it has three 7-inch holes in the top of stove at bottom of pipe which we leave open all the time. If you should close the damper in pipe the draft should be closed. This winter we have not used the damper in pipe.

I have no remedy for the range unless it would be a brick chimney.

C. H. Hill.

Wants House Moving Outfit

To the Editor: Farley, Iowa.

I am sending you a sketch of a house-moving truck on which I want some information. I would be pleased to have this referred to the readers of the American Carpenter and Builder. The sketch will show what I have in mind and would like to know whether there is a better plan.

W. W. Glew.

Transparent Tracing Paper

To the Editor: Oneonta, N. Y.

In your issue of February, 1910, appears an article showing the construction of a blue-printing frame, together with a short description of the method of making ordinary blue prints. We have used a much simpler method of making blue prints, which was suggested to us by a friendly architect.

Make pencil drawings on Imperial linen ledger paper, size 17 by 22 inches. Ink them in with India ink, and when you wish to make the blue prints, moisten a cloth with kerosene oil and rub over your drawing while the same is still on the board. This will make it transparent and as nice a blue print can be made as if tracing cloth were used.

N. H. Briggs & Son.

Sheathing on the Inside

To the Editor: Crawford, Neb.

Recently I saw a house under construction and the sheathing was being put on the inside of the studs, for the purpose, I was told, of making it warmer. The boards were stripped up and down with lath and then lathed and plastered. Kindly tell me the advantage, if any.

A. J. Herbert.

Answer: Forty to fifty years ago, it was not the custom to sheath the building at all. The people were content to have clapboard siding on the outside and lath and plaster on the inside, which is largely the case with the cheaper class of buildings today. As time went on and a better class of houses were in demand, they began to sheath on the inside and some on both sides and then building paper came into general use. As this could be used more effectively, and more easily applied, on the outside, custom has, we believe, about settled down to placing the sheathing on the outside. True there are localities where the sheathing is preferred on the inside, but it can be no better, in fact, not as good, because the bracing is not as effective, and besides it takes more work to put it on. Some claim that the dead air space formed by the stripping has its advantages, but unless the strips are at least an inch thick, so as to leave a clear space back of the mortar clinches, it does not amount to much and even then in most cases, the lost space caused by the stripping would hardly justify it.

Several years ago we were called on to furnish plans for several residences in a distant city. It was the fad then to sheath on the outside and also sheath on the inside with a grooved sheathing (called Byrket's lath) which made a good solid job, but it was a fad. They wanted it because "Pa's house was built that way," and so long as it was all right, we wanted them to have it as they wanted it. See!

A. W. Woods.

A Well-Built House

To the Editor: Vineland, N. J.

The accompanying is a picture of the residence of Mr. D. W. Sigafoo, erected in this place. It was designed by Mr. H. T. Heaton. It is 32 feet wide and 40 feet long; the cellar is 7 feet deep with concrete foundation. The first story is 9 feet in the clear; the second story is 8 feet 6 inches. This house has white-oak floors on first story and comb-grained yellow pine on second floor, and is finished in cypress throughout. The outside walls are, first story Winslow buff brick, and second story asbestos shingles; the roof is tin. The first floor rooms are: reception hall, 12 feet 6 inches by 15 feet 6 inches; parlors 11 feet 6 inches by 13 feet 6 inches; living-room 14 feet by 17 feet 3 inches; dining-room 12 feet by 12 feet 6 inches; kitchen 11 feet 6 inches by 13 feet; pantry 5 feet 6 inches by 6 feet 6 inches. The second story has six rooms. The building has a hot water heating plant, gas and electric lights.

P. P. Achenbach.
Thinks it Contains too Much Red Tape
To the Editor: Upton, Wyo.
What figures on the square give the cuts for the valley rafter when the two pitches are, say one cut on 12 and 10, and the other on 12 and 12 and level at the corner (cornice). Think the answer in the November number contains too much red tape.
B. A. Booru.
Answer: In referring to the above number of the magazine, we fail to find a problem of this kind pertaining to unequal pitches, though the same rule or principle applies in even pitches of which there is an illustration. The joining of unequal pitches is the more difficult, however, because the run of the valleys does not rest at 45 degrees, thereby requiring more care in arriving at the point of intersection of the gable ridge and the main roof. This is more easily found by a diagram, as shown in the illustration.

The upper part of the diagram shows the elevation of the two pitches. Squaring over from the rise of the lower pitch to the intersection of the steeper pitch, as at A, gives the intersection of the ridge and the steeper pitch. A-B will represent the horizontal distance from the intersection to the gable ridge and main roof. This is more easily found by a diagram, as shown in the illustration.

The run and rise of either of these rafters will give the seat and plumb cuts. For the side cut to fit against the ridge board, take the length of the valley C-G and D-I on the square and the cut will be found on the side of the square representing the length. The run of the valley to rest against the long valley where the pitches are of the same incline is simply a square cut across the back; but in this case one of the pitches being steeper than the other, the cut will not be square across the back. The parts to take on the square are C-H and E-F and the cut will be on the latter.

This explanation may fail to eliminate the red tape complained of, but as Mr. Booth asks for the figures to use, we have endeavored to give it that way along with the reason why they give the results.

Another point we wish to call attention to is that this calls for an equal projection of the cornice with a level plancher. To do this, it is necessary that the plate for the steeper pitch be higher than that for the lower pitch, the difference being governed by the difference in the rise in the two pitches and in the width of the cornice. Also as the valleys must run to the intersection of the cornice, they will not rest directly over the internal corner of the plate but veer to one side, as shown in the plan.

A. W. Woods.

A Waterproof Glue Wanted
To the Editor: Stevenson, Ala.
I write to ask you how to make a water-proof glue. I have a violin that does not seem to want to stay no matter what kind of glue I try on it. I would appreciate it if some of the brothers can give me the information.

H. A. Crawford.

Uphill Rolling Illusion
To the Editor: New York, N. Y.
In a recent number of one of the popular magazines I noticed an entertaining little illusion, or trick, that can easily be made by anyone having access to a wood-turning lathe. A solid, similar to two cones placed base to base, is accurately turned in a lathe, the sides sloping to an angle of 45 degrees. The spindle can be turned out of the solid at the same time as the cone; or, after turning the cone, drive an iron or wood shaft through the center, making a tight fit.

The boards for the track are made with a sloping edge, on which the cone is to roll. This slope will depend on the diameter of the cone, which can be any size from 3 to 12 inches. The slope should not be too flat, or the cone will not roll, and it should be such that the one end will be higher than the other by a little less than half the diameter of the cone. Thus it will be seen that the diameter of the cone determines the length of the slope of the tracks. A notch should be cut in the tracks, as indicated, for the shaft to drop into at the end of the course.

The lower end of the tracks are closed until the high edge of the cone rests upon the inside edges of the tracks and the high ends spread sufficiently to take the full width of the cone and to allow the shaft to fall into the notches. When the cone and tracks are viewed from the broad side the deception will be more perfect, and will not be discovered until the construction of the model is seen from all sides.

John Knox.
As They Build 'Em In Kansas

To the Editor: Hamilton, Kan.
I send under separate-cover picture of barn frame, as they are built in Greenwood county, Kansas. The picture is of frame 30 by 34 feet. It is the smallest barn I have built in 2 years—a total of 12 barns.

M. F. Brashar.

Do timbers placed in walls of stone work, brick or concrete have a tendency to rot from the effects of the mortar?

Answer: We do not believe that the little dampness resulting from contact with mortar would have any effect upon the timber. There is a possibility that in ordinary masonry work the timbers placed in such a manner might be occasionally subjected to dampness through the absorption of moisture by the brick work or masonry during a heavy rain. This condition has been known to result in some cases. A precaution which it would be well to take in such construction where direct connection to the outside face of the wall is obtained would be to place timbers which rest upon the masonry work on a suitable plate of cast iron, leaving a slight air space all around on other sides of the timber.

Rafter Lengths by Figures

To the Editor: Barkerville, N. Y.
After wishing all a merry Christmas, you ask us to be friendly and write occasionally. Although a charter member I have never written before; but I can say I think this the best paper published for the carpenter. I advise all who do not take it to subscribe at once. They can learn something from every issue.

In the correspondence of January, Mr. Robt. F. Hoffpauir asks how to find the length of a common rafter of 1/3 pitch by figures. By your permission I will give the rule.

To the square of the run add the square of the rise and the square root of their sum will be the length sought. To square a number is to multiply it by itself. Extracting the square root is a simple problem of arithmetic. Nevertheless the practical worker very seldom takes the trouble to figure it out. All the "hand books" contain tables of squares and cubes which he uses instead.

This rule applies to any pitch or odd run, if there is a fraction of a foot in run or rise reduce all to inches.

Edward M. Barton.

What Is Best Way to Raise a Barn?

To the Editor: Varna, Ill.
I am a reader of your valuable building paper and am very much interested in same. I am sure that it is a great help to all that read it. No one who wants to be a practical mechanic should be without the American Carpenter and Builder.

Now if you will allow me a little space, I would like to have someone answer the following questions through the columns of the correspondence department. Which is the best and most practical way to raise heavy timber-framed barns; a frame made out of 8 by 8's for instance? What kind of a derrick or pin pole should be used if one wants to use a team with block and tackle in raising? How heavy rope is required for 8 by 8 frame?

I have raised several, and went at it in several different ways, none of which has been quite satisfactory to me, and I know I can learn some better way through this paper. Will someone kindly give the necessary information?

Oliver B. Extrom.
Floor Deadening and Roof Bracing
To the Editor: Rochester, N. Y.
I send a rough sketch of floor showing my way of deadening a floor, by not plastering on the floor timbers. There is no connection between the floor and the ceiling plaster. I also send a sketch showing my way of staying up a roof.

To Retard Setting of Plaster
To the Editor: Malad City, Idaho.
Will you kindly send me receipt for formula to keep cement plaster from setting too quickly while being put upon the walls? J. H. Evans.

Answer: Mix as wet as possible to handle; but cracks are liable to occur with too wet a mixture. The addition of a little lime paste will retard setting somewhat, but weakens the strength of the mortar. The addition of salt in the amount of about 10 per cent the weight of water used, will not only prevent mortar from freezing, but will cause it to set more slowly. Another method sometimes used is to allow the mortar to stand in the box for a couple of hours and then use. This form of mixing will cause the setting to be slower, but the adhesive strength is lessened.

J. H. EVANS.

To the Editor:
I am liable to be called on to do all the above that I have mentioned.

In writing on the subject, it should be well illustrated with scale drawings. This would be of interest to your readers; and it would be well if the readers would help out on the subjects.

D. J. DABRILL.
How to Lay Out the Stairs

To the Editor: Des Moines, Ia.

Will you please republish the method you presented about two years ago explaining how to lay out a common flight of stairs, giving head room and the horizontal stretch required for the stairs.

Answer: Stair building is a branch of carpentry that is well-nigh in a class to itself. In the larger cities there are men who make a specialty of stair building, from the plain, straight run to the more complicated platform and winding stairs. It is the latter class of work that taxes the ingenuity of the men to work out the railings, newels, etc., so as to rest in the proper planes with the pitch given the stairs. To successfully do this, requires one well up in detail drafting and with a practical knowledge in geometry to lay out the turns and easements on the rough timbers, so as to be able to work them out in the finished product.

However, we take it that it was not the intention of the questioner to enter, into the winding stair problems, and we are glad to steer clear of such work, because the old-fashioned winding stairs, with their ever winding rail, is no longer considered as an architectural standpoint to lend to the beauty of the interior of the house, saying nothing of the added expense that must necessarily follow in the construction of circular stair work. Of course, there are times when winding stairs conform to certain space better than those with square turns, but even then in most cases it would be better to allow the room for a good easy stair with square turns and make the rooms and hallways conform to it.

How often have we seen, and in fact it is a common mistake, crowded stairways, unevenness in the width of treads and the height of risers, low head room, etc., all because of a lack of proper calculation in laying out the frame work. Oftentimes, the work is allowed to progress to a point where it is hard to make changes to allow for ample space. Especially is this true in making the allowance for the proper head room—the house practically finished, even to the plastering. The finished stairs are usually left until the last, and then it is found that there is not sufficient head room. In many cases it is allowed to go, to be forever regretted. We have known cases where it was absolutely necessary to make a change, and usually an expensive one, because it meant the taking out of partitions, and the cutting of principal joist, which necessarily weakens the structure, since others could not be substituted in as substantial a way without removing floors and plaster. Naturally this resulted in a patched job at the best.

The question asked is how to lay out the necessary room for a comfortable and convenient stair:

Lay out the stairs first, allowing ample space, and plan the rooms accordingly. The accompanying illustration shows a straight run of stairs, and is the simplest of any to build. Here the starting point to the level of the floors above is 10 feet 3 inches or 123 inches; and as there are 17 risers, this makes 7 4/17 inches to each rise. Now as the treads are one less than the risers, we multiply 16 in this case, by the desired width of the tread (9'4 inches) and we have 152 inches, or 12 feet 8 inches in the run of the stairs.

The next thing to consider is the proper length of the opening to leave in the second floor, so as to give ample head room, not only for the more than average tall person, but a generous allowance should be made for free passage of furniture, and the carrying of a trunk on the shoulder of a careless drayman, who cares not for jamming into the plastering, so much as he does for the dimes for his services. So it is better to give plenty of room and save the unsightly marks and dents. The head room should be at least a little higher than usually given to the room doors, say 7 feet 6 inches or 8 feet. It is better to allow plenty of room in the framing, as it is an easy matter to fur out the trimmer if it is afterwards found desirable to reduce the space. The length of the opening will be the combined runs of the steps whose combined
rises make up the desired head room. In this example all but two steps are so used, so we deduct the height of two risers, which is practically 1 foot 2½ inches, from 9 feet and ½ inch, the room height, leaves 7 feet 10 inches, or safe head room, above the second riser. It is safe then to place the trimmer above, a little further forward, as shown in the illustration. It must be remembered when the well-hole is lathed and plastered it still reduces the height accordingly.

Many workmen prefer to use a pole on which they mark the heights from floor to floor and then divide this into as many equal spaces as there are to be risers. The pole can also be used to advantage where the total run is desired to come inside a given space, as it obviates the necessity of a mathematical problem that usually runs into fractions which are hard to figure.

But for general use in calculating the layout for stairs the accompanying table will be found very handy and useful as a time saver. The first row of figures running down the left hand side, represents the number of risers, while the first row running across the top represents either the rise or the width of rise or run for the number of risers shown in the opposite hand side, represents the number of risers, while the first row running across the top represents either rise or the width of rise or run for the number of risers shown in the opposite hand side. For example: Suppose we wish to find the number of risers required in a stairway that is 10 feet 5% inches from floor to floor and we desire to keep the risers as near 7½ inches as possible.

<table>
<thead>
<tr>
<th>Number of Riser</th>
<th>Rise or Run</th>
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<td>2</td>
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<td>4</td>
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<td>26</td>
<td>10'0</td>
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<td>27</td>
<td>10'0</td>
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</tbody>
</table>

Mathematical problem that usually runs into fractions which are hard to figure. But for general use in calculating the layout for stairs the accompanying table will be found very handy and useful as a time saver. The first row of figures running down the left hand side, represents the number of risers, while the first row running across the top represents either the rise or the width of rise or run for the number of risers shown in the opposite hand side. For example: Suppose we wish to find the number of risers required in a stairway that is 10 feet 5% inches from floor to floor and we desire to keep the risers as near 7½ inches as possible. Operation: Take 7½ inches as the rise from floor to floor. Therefore, a few inches in the run, that is, it is not confined to a certain space so on for any desired width of tread. Usually there is some leeway in the run, that is, it is not confined to a certain space like the rise from floor to floor. Therefore, a few inches in the run of a straight flight of stairs does not usually make any difference, making it possible to leave it to the builder to select the width of tread desired. When this cannot be done, then the allotted space must be arrived at in the same manner as that given in the above for the risers. But after all, it should be remembered that while the measurements can be accurately found by the aid of this table, its greatest utility is as a quick reckoner, as we said before, in laying out the space and proper openings for the finished stair work. In that case it is not necessary to calculate down to the minuteness required in the actual building of the stairs.

A. W. Woos.
How to Frame Hewn Timbers

To the Editor: Highland, Mich.

I have been a reader of the AMERICAN CARPENTER AND BUILDER for about three years and have read therein many good things pertaining to nearly all branches of carpentry, but as yet I have not seen anything about marking or laying face side of the stick, unless it is being worked from lines, in which case there may be boxing on both sides.

Fig. 2 shows my method of laying out the framing on square timbers, the witness marks showing the parts to be cut away.

Fig. 3 shows the framing done and also the way to mark the tenon for draw boring. Timber framing is interesting work out timbers for framing. I think there must be lots of carpenters who have not had experience in timber framing and would like to learn something about it.

Before sawmills became general, timbers for heavy frames were hewn, and because of their rough and uneven condition, it was not possible to mark them for the framing until they were "taken out of wind" and lined. Taking a stick out of wind was done by placing a square on each end, as in Fig. 1, and sighting across the tops of them from one to the other. If they were not in line, they were made so by furring up one end of a square with a chip, or by adzing off the ends of the stick a little. Next after the two squares were lined up, marks were made at 2 inches on the inside of both the blade and tongue of each square, then with dividers set off 2 inches on the other two sides of the stick were marked from the inside of the squares (see Fig. 1). Lines were then struck from the marks on one end to the corresponding marks on the other, and all the laying out was done from these lines. With square and square-sawed timbers it is not necessary to go to all this trouble, but it often happens that we are obliged to use a crooked or twisted stick, and in order to get the framing straight and square, we "take it out of wind." As rough timbers are not exactly uniform in size we have to box them down, and this boxing, or sizing, is always opposite the and I have wondered why some of the able writers have not given us more along this line, as I am sure it would be instructive to a good many carpenters. ALBERT GONNE.
WORKING PLANS OF SMALL GRAND STAND
Valuable Table for Right Triangles

To the Editor:

Although I am not a house carpenter, nor am I on your subscription list, yet I get the AMERICAN CARPENTER AND BUILDER regularly from a local dealer, and enjoy reading the articles it contains and derive much benefit from it: Handspike, etc.

I do woodwork, however; am a templet maker. In your September number I have seen that Mr. H. E. Clare inquires concerning length of hypothenuse of right-angle triangles.

I enclose a table which might interest him, containing length of hypothenuse and rise; for bevels from 14° to 12 inches, on one foot as a base.

Using any length base, multiply by figures in second column to get rise.

Or multiply by figures in fourth column to get the hypothenuse (of course using the figures corresponding to the given bevel).

The third column contains degrees and minutes equivalent to the corresponding bevels in the first column. This part is supplementary to your article on the steel square in your October number.

To the Editor:

I have seen and read several articles in AMERICAN CARPENTER AND BUILDER on estimating cost of house construction but I have never seen anything on the estimating of heavy timber barn framing and building. Will you or some of the readers of AMERICAN CARPENTER AND BUILDER give us some practical way of estimating such work?

C. C. Lyle.

How to Fix the Floor

To the Editor:

I have been a reader of your magazine for some time. It is all right. With your permission I will say a word in answer to the inquiry of Louis H. Doyle in the January number regarding the warping of floor in the school building of which he speaks.

The trouble with the floor is quite common under similar circumstances, and you will never be able to put it in good condition, though it can be made, by considerable hard work, so that it can be used.

You find your floor in its present condition, of course. Now for the cause, as no conditions exists without a cause. The cause of your floor curling, as it is called among some of the older of us belonging to the craft, is this:

Your concrete floor is built upon the ground, with joists imbedded to lay a wood floor upon. These joists are brought even or nearly so with the top of the concrete floor, with scarcely any air space between the wood floor and the top of the concrete, with no provision for ventilation whatever.

Now, as every man of experience with concrete and wood floors in basements knows, the concrete constantly absorbs dampness from the earth below, and the wood floor absorbs dampness from the concrete, which causes the boards to expand on the under side and curl up at the joints, leaving unsightly cracks and a very uneven floor. Your flooring, to begin with, is entirely too wide, 4 inches you say. It should not have been over 2-inch face at most and 1½-inch face would have been much better. You may ask what difference that could make. Well, the difference is this. In laying 1½ or 2-inch flooring you are able to get from 2 to 4 times as many nails in as you can get in 4-inch flooring, and in building floors of the kind you speak of your joists should be at least 2½-inch face and not over 16 inches on centers, and double nailed in every joist. Then, if your flooring is very narrow you will have a much better chance of holding it down.

However, upon the whole, a basement floor built in this way is very unsatisfactory, as the constant absorption of dampness soon rots the wood floor and joists. I know one in this city that did not last 3 years, and there are others that will fall in about the same length of time. Concrete and wooden combination floors are all right for first or second floors, but no good for basements, and not very good for first floors unless there is furnaces or other heating apparatus in the basement.

Now, how to fix your floor, lest I forget to tell you how I would do it. Plane your floor down to as good a surface as possible. Fill the cracks with some good crack filler. Then scrape and sandpaper to make a surface. This is all that you can do with it, but it will not last long at best, as it will soon rot.

J. R. Richtlioger.
Cuts for Gambrel Roof Rafters

To the Editor: Mandan, N. D.

I have a book on the "Steel Square" but I find nothing in it pertaining to what we call elbow rafters, or a rafter with two pitches. Can you give me the correct and proper way to lay them off with the square. If so, let me hear from you. 

CHARLES CESSNA.

The kind of roof referred to is what is known among builders as a gambrel roof, and the length of the rafters is found exactly in the same way as if the two pitches were reckoned individually, as for separate roofs. The only thing unusual is the cut at the junction or joining of the two rafters. This should be at the bisecting line of the angle, and is more easily found by laying out a diagram than by trying to reckon it on the square alone.

As to the shape of the roof, that is largely a matter of taste. Probably as good a proportion as any is shown in the accompanying illustration. In this, the pitches are 60 and 30 degrees and the knuckle is at the halfway place. The pitches can be had with one set of figures on the square, as 12 and 20 19/24 or 12 and 6 15/16. Either of these will give the seat and plumb cuts. The angle of the cut at the knuckle is at 75 degrees, which is the same as 12 and 3 1/4 on the square; the cut being on the latter.

A roof of this proportion can very easily be laid out with the compass alone, as shown by the bisecting arcs and the lengths and cuts may be found by scale and bevel.

A. W. Woobs.

How to Shingle a Bell Roof

To the Editor: Plymouth, Wis.

I am a charter member to the AMERICAN CARPENTER AND BUILDER and read it with great interest, especially the correspondence department. In your December number, the question of how to lay out a hip for a bell roof is asked and the answer is correct as far as laying out the rafters. But how is a bell roof shingled? I have a plan before me now which has a bell roof dormer. The detail shows the cornice with several courses of shingles in the hollow of the roof. But when you get up to where the curve turns the other way, how is it possible to make a shingle lie down? All the bell roofs I ever had anything to do with before were tinned, and so I am at a loss with the shingle proposition on bell roofs.

Answer: We know of no effective way of shingling the ovol of the bell without nailing through the exposed part of the shingles near their butts to keep them from gaping. This of course injures the life of the roof, but if zinc nails are used for the exposed parts and the shingles are dipped in hot linseed oil before putting on, and then given a good coat of paint, their lasting qualities may be quite as long if not longer than those not so treated for an even plane roof. A. W. Woobs.

Estimating Terms Explained

To the Editor: Burlington, Vt

In a new book on estimating that I have there are several terms used that I do not understand, although they seem to be in common use. They are "lump sum," "unit price," "cost plus a fixed sum" and "cost plus a percentage." Now what is a unit price and what are these unit quantities?

Answer: A unit is simply the fundamental quantity or dimension on which an estimate of cost is calculated. It may be a cubic yard, a square foot, a bushel, a gallon, a pound, a ton, or any other single definite quantity, and the unit price is simply the price per unit. For example, if a man contracts to do the excavation work of a basement 10 yards wide, 20 yards long, 4 yards deep, the number of cubic yards that he would have to remove would be 10 times 20 times 4, equals 800 cubic yards; and in this case, if he agreed to do the work at so much per cubic yard, then the cubic yard would be the unit, and the price at which he would excavate one cubic yard would be the unit price. But, if on the other hand, he should say: “I will do the whole job for a certain figure,” then the contract would not be a unit price contract but a lump sum contract, the parties naming an amount to be paid for the job as a whole. But again the man might say: “I will go ahead and do this work for you and charge you just $100 in addition to the actual cost.” In that case you would have a cost plus a fixed sum contract. And again, if he should say: “I will charge you for the job only 15 per cent above its actual cost to me,” you would then have a cost plus percentage form of contract.
One Machine

The cut below shows the Universal Wood Worker being operated as the Disc Sander. With this arrangement you can do all kinds of circle or odd sanding which cannot be done with the sand drum. This Disc Sander fits right on the spindle on the boring attachment, and can be put on and taken off without any trouble whatever. It is so arranged that the user can recover same with very little trouble.

The cut below shows our new Resawing Attachment arranged so you can resaw boards up to twelve inches wide. This is a great saving in lumber, and the attachment can be taken off and placed on the machine very easily.

The same cut shows the Universal Wood Worker being operated as the felloe or rim rounder. This attachment sets right on the boring attachment shaft, and can be put on and taken off within a half minute's time. You can round felloes or rims of all sizes and any circle.

The "Famous" Universal Woodworker combines the following twelve woodworking machines in one:

1. A 12-inch Jointer
2. Saw Table with Saw Arbor that may be raised and lowered
3. Two-side Power Feed Molder and Edger
4. Band Saw
5. Complete Single Spindle Shaper
6. Pony Planer
7. Power Feed Sander
8. Boring Machine
9. Hollow Chisel Mortiser
10. Standard Single End Tenoner
11. Emery Grinder
12. Disc Sander

Herewith are shown seven different illustrations photographed direct from one and the same machine—the "Famous" Universal Woodworker. The pictures show the machine as equipped for various operations.

After years of experience and experimental work, we have finally been able to produce a machine which will do all the above-mentioned work perfectly without the inconvenience of making the changes that are necessary on any of the other so-called universal woodworkers on the market.

The saw table is arranged with a wooden throat which can be taken out when you wish to use wide dado or grooving heads. Cut-off gauge on the saw table is adjustable for cutting all the different mitres. The ripping gauge is also arranged for doing mitre ripping, and can be swung entirely out of the way when you wish to use the table for cutting off. Please understand that it is not necessary to remove the saw table when using any of the other attachments on machine.

Single End Tenoner

The above cut shows the Universal Wood Worker being operated as the Single End Tenoner. It is not necessary to make any changes of any consequence in order to use this tenoner. You need not take off any table, but merely set the tenoning attachment on the regular table, place on the tenoning head, and you are ready for work. With this attachment you can do all kinds of tenoning, either large or small, and will do it perfectly.

When writing advertisers please mention the American Carpenter and Builder.
The cut below shows the Universal Wood Worker being operated as a Pole, Tongue and Shaft Rounder. With this attachment you can round any kind of stock and it is especially convenient for making porch or stair railings, tongues, shafts and porch columns. This attachment is set right on top of the table, and can be taken off and put on easily.

The "Famous" Universal Wood Worker is a machine of real durability. Every inch of every part is built right. It will not require tinkering or repairing after a few years of service. Each machine can be equipped with every attachment necessary and can be quickly and almost instantly changed to perform the woodworking operations described.

In the April issue of the American Carpenter and Builder we will show a number of other attachments of this wonderful machine. Look for them.

The "Famous" Universal Wood Worker is a machine of real durability, unequalled in durability, economy, convenience and quality of the work produced.

TWO SPECIAL FEATURES.—Two very important and special features about this machine are: First—The Saw Table has raising and lowering arbor and carries a 14-inch blade, which can be lowered entirely out of the way of the operator when the saw is not in use or wanted. Second—The Special Boring Spindle that we furnish on this woodworker enables the operator to do all kinds of boring, routing and hollow chisel work without running the complete machine, as this spindle is driven separately from the other attachment.

The day you install a "Famous" Universal Woodworker you discount competition and will be able to make profits you cannot earn without one.

A strong statement that, but a true one. Why? Because the earning capacity of you and your help is vastly increased by a saving of from 25 to 50 per cent. in the time (real money) required on every job, and in addition your reputation for quality work will be quickly advanced. The last is an asset you can't measure in actual money. The purchase of one of these machines does not mean a big investment in machinery and additional shop space.

The claims we make are not merely extravagant statements, set forth to induce you to buy. We stand ready to prove every claim and back each sale with a good guarantee. All we ask you to do is to send now for additional information and get our special premium, good only for sixty days. (Use the coupon.)

The "Famous" Universal Wood Worker is a machine of real durability. Pole, Tongue and Shaft Rounder

Every inch of every part is built right. It will not require tinkering or repairing after a few years of service. Each machine can be equipped with every attachment necessary and can be quickly and almost instantly changed to perform the woodworking operations described.

In the April issue of the American Carpenter and Builder we will show a number of other attachments of this wonderful machine. Look for them.

Special Premium

Sidney Tool Co.,
Sidney, O.

Please send full details and information regarding the Special Premium you are making, good for sixty days, on the "Famous" Universal Woodworker.

Name
Town
State

Drum Sander

Mail This Coupon

Knife Grinder

The above cut shows the Universal Wood Worker being operated as the Knife Grinder. With this attachment you can grind all of your own knives, and in this way save this expense, and at the same time keep your knives in perfect shape. With the same attachment there can be a straight emery wheel put on for all miscellaneous grinding. This is one of the most essential attachments on this famous machine.

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A Gentle Hint

We desire to call our readers' attention to the special premium offer which The Sidney Tool Company, Sidney, Ohio, are making in this issue, exclusively to the readers of the AMERICAN CARPENTER AND BUILDER. We are not at liberty to state what this is, as we understand it is the intention of the above company to spring a little surprise upon our readers. However, we are taking this opportunity of passing along a gentle hint, that it will be well for our readers to investigate this opportunity. You will find their advertisement on pages 796-797 of the AMERICAN CARPENTER AND BUILDER.

Money and Success in Correct Estimating

The Bradt Publishing Company emphasize this month in their ad. that only accurate estimating can bring success, and they offer a few pointed suggestions on this subject of vital interest to every builder. They point out the importance of simple, reliable, practical, systematic methods, together with rapidity in their use. The builder who does an average amount of business must sacrifice a great deal of time from his work if he employs the old tedious methods of estimating, or else he must utilize all his time after the regular day's work is over. The question is, "Can he afford to do it?"

Keep The Business Growing

Give your client a new attractive Trade Winning Store Front

It Stays and Pays

You can feel assured that in specifying a "Kawneer System" store front construction, you render your client not only valuable service as an Architect but show that business foresight which he may not himself possess. A brief investigation on the part of the Architect reveals all the superior qualities of Kawneer System products.

The "Kawneer Principle," the high architectural standard attained in its development and the practical application of this principle throughout the entire construction renders the "Kawneer System" thoroughly adaptable to your own originality of design. Merchants large and small recognize good store front construction as the shortest road to increased sales and profits. The "Kawneer System" of ventilation and drainage reduces to the minimum the provisions for expansion and contraction of glass and the cushion friction spring grip gives the lowest rate of plate glass insurance. The compact and incomparable yet light and durable parts create the all glass effect without sacrificing a single advantage to be found in all metal construction. So good, so superior that more than one million four hundred thousand linear feet were installed in 1909. To specify the "Kawneer System" construction is to render your client a most profitable service.

Kawneer Manufacturing Co. Home Office
Nilges, Mich.

Book of Details No. 2 is ready for distribution. Address nearest office for prompt response.

Kawneer System

Branch Offices

CHICAGO NEW YORK KANSAS CITY SAN FRANCISCO
MINNEAPOLIS ST. LOUIS PORTLAND PHILADELPHIA
SEATTLE ATLANTA PITTSBURG OFFTROY
MILWAUKEE SALT LAKE CITY CINCINNATI VANCOURVER, B. C.
INDIANAPOLIS DENVER LONDON, ONT. LINCOLN, NEBR.
LOS ANGELES HOUSTON SIOUX CITY, IA.
SALT LAKE CITY DES MOINES, IA.

SEE SWEET'S INDEX.
Get Good Results in the Finishing and Decorating of Your Buildings

You are looking for products to use in the finishing and decorating of your buildings which will give satisfactory results at an economical cost. S-W Products have been marketed for over forty years and include a finish for every surface. With the experience gained through all these years, we are in a position to help you in your interior and exterior decorating.

Sherwin-Williams Paints and Varnishes

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

Let us Solve Your Problems for You

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

Put a check against the surfaces which you want to finish and the grade of work specified, and sign your name. We will send you complete specifications covering just the proper finishes for those particular surfaces corresponding to the grade of work indicated.

Of course, this places you under no obligation whatever; we simply wish to demonstrate our ability to be of assistance.

S-W Specialties for the Contractor and Master Carpenter. Send for Color Card.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
A Plain Talk to Concrete Block Men

During the last decade the manufacture of concrete blocks has grown to such an extent that to-day the progressive man has been compelled, owing to the universal demand, to equip himself with the machinery for their manufacture. A good many builders, not having thoroughly looked into the situation or through misrepresentation, have been induced to install machines that are entirely inadequate to produce good blocks. Through these misrepresentations, a good many have become discouraged. Then again, owing to the very keenest of competition, many have been compelled to go out of business.

What the builder of today needs is a machine that will build blocks at a reasonable cost,—an unlimited machine,—one that makes all styles of blocks,—a machine with just the equipment that you require to start and a machine that you can add to as the occasion demands; a machine that gives a variety of designs, sizes and lengths; one that is simple, practical, strong and quick to operate; a machine with a reputation back of it, made by a reputable firm.

It is a fact that the best concrete blocks are made with a mixture of crushed stone or coarse gravel, sand and Portland cement mixed with plenty of water. Concrete blocks made after these specifications will not crack or crumble, are impervious to water and will withstand the heaviest crushing strain.

The photograph above shows a block made on a face-down machine with a vertically movable core. At a glance, one can see that there is no possibility of the block breaking, no matter how wet the mixture may have been. In fact, the photograph shows a block made with an extremely wet mix; it was taken while the machine was in operation.

Many types of machines are offered for the making of concrete building blocks, but few of them are so designed as to allow for the use of a coarse wet aggregate. Purchasers of such machines are therefore handicapped at the very start. They cannot make a concrete block because their machines are not correctly designed. As a result, they produce sand-cement blocks which they endeavor to sell as concrete blocks in competition with some real concrete block maker, and the result is failure.

In purchasing a machine, the future must be considered as well as the present. As your business seneceeds and grows, you will find it necessary to add to your equipment new sizes, designs, etc. You cannot do this unless the manufacturer of your machine is still in business. Therefore, when you buy, profit by the experiences of others and get a machine built along correct lines—a machine that will make a concrete block—a machine that will make all heights, widths, lengths and designs—a machine that expands as your business grows—a machine built by a reliable firm.

All parties interested in the making of good concrete blocks should address Century Cement Machine Company, 279-289 St. Paul street, Rochester, N. Y. They will send complete information.

African Scented Mahogany

Have any of our readers every purchased any of this wood? It has a scent remarkably like that of cedar, the texture being not dissimilar, though, generally speaking, it is harder. We have lately seen some very handsome veneers cut from this wood, and understand that it shows up very well under polish, one merchant having sold quite a number of logs cut into knife-cut veneer lately.

It is astonishing how much uncertainty still attaches to the botany of the trees that are sold in England as mahogany and cedar. This African scented mahogany would seem to stand midway between the true mahoganies and the scented cedars, and it is worthy of note that the diffusion of this kind of tree is restricted to each side of the South Atlantic ocean. We believe it is still an unsettled problem of geology and botany whether these species are so old as to have been in existence when South Africa and South America were either joined together or approximated more nearly to one another than they do at present, or whether the seeds have been carried the many thousand miles across the waters of the South Atlantic ocean now separating the two continents.—London Cabinet Maker.

Hammer Holds Nails

Who has not pounded his thumb in place of a nail while trying to hammer the latter into some place difficult to reach or some corner where it was hard to get both hand and hammer? A North Dakota man has gotten around this difficulty with an ingenious invention of an attachment for the heads of hammers which holds the nail just beneath the head and drives it into place without difficulty.

The attachment consists of a loop of metal and a slight groove and recess under the hammer head. The nail fits in this, and all that need be done is to give one blow as if the nail were held in position with the fingers.

This blow will suffice to fix the nail in place, and the hammer can then be withdrawn, the loop in the head being large enough to permit of the passage of the head of the nail, and the nail can be pounded all the way in with no trouble at all. In this way the thumb and fingers of the carpenter are in no danger.
There's Money In Making GOOD CONCRETE BLOCKS
Because they are coming into universal use

Hercules CONCRETE BLOCK MACHINES

are used by the most successful and reliable manufacturers of concrete blocks because

A superior quality of stone is produced.
Blocks can be made more rapidly.
Blocks can be made cheaper and better.
Blocks are made with unlimited variety of sizes and designs.
HERCULES BLOCKS are made FACE DOWN with a Vertically Movable Core.

This method allows the use of a really wet mix, combined with a fine facing for front of block and a coarse aggregate composed of gravel or crushed stone for the back, resulting in block having perfect finish on face and strength and durability throughout.

It is the ONE machine without limitations. It is the ONLY machine that expands to meet every requirement of the user

Send for our catalog today

Century Cement Machinery Co.
Improved Barn Door Hanger

The Wagner Manufacturing Company, Cedar Falls, Iowa, are offering the building world what they claim is the latest idea in door hanger construction: the Wagner "Leader" barn door hanger and track, illustrated here-with. One of these cuts shows the general arrangement, the other the adjustable and flexible features, the adjusting of the door to or from the building being accomplished with only a screw driver.

The claim is made for this hanger that there is no needless weight in wheels, and no waste tread surface on wheels running over slot in track, all desirable features being combined in this hanger.

The tubular track seems to be bird proof and weather proof.

The "Celebrated" Scaffold Bracket

The Celebrated scaffold bracket is offered by A. W. Guthat and Son, Chicago, Ill., as being a perfectly safe and reliable appliance for scaffolding frame buildings. These are the first and most important points every contractor must consider in scaffolding. In the construction of this bracket great care has been taken as to the angle at which it rests to the building, so shifting the weight that a thousand pounds is easily carried at the extreme outward end of the bracket, making a scaffold as safe for the carpenter to work on as though he were upon the ground.

The bracket is built of the best grade of yellow pine and hangs on the sheathing by a 3/4 by 1 1/2 inch tested steel hook, impossible to bend or break. This hook is notched, making it possible to use the bracket in repairing old buildings or for putting on rustic siding by hanging the bracket by the notched hook on a lag-screw turned into the studding. The self-locking device is made of malleable iron so that it is positively unbreakable. One light tap of the hammer upon the lock folds this bracket into a very compact bundle of 15 pounds, 4 by 6 inches by 4 feet in dimensions. Whether you figure on handling, cartage or storage, the fact that "it folds" will mean much to every carpenter contractor. A small safety lug is placed at the extreme end of the arm to keep scaffold planks and material from being pushed out over the end of the bracket. This small feature will give you an idea of how everything tends toward making this the safest possible scaffold.

The points of advantage over building ordinary scaffolding are many: You save eighty per cent on material and labor. There are positively no nails to contend with in scaffold lumber. There is no interference with lathing and plastering, leveling of lots or delivering and carrying of material about the building. There is no swing or sway to the scaffold. The entire bracket is given a good coat of paint before being assembled, the parts of wood being brown, while all the steel and iron parts are finished in a dead black, not only protecting the bracket from the weather but giving it a finished appearance, an essential found in every good tool a carpenter uses. Full information concerning the Celebrated scaffold bracket may be had from A. W. Guthat and Son, 1536 West Adams street, Chicago.

Caldwell Vertical Door Holder

The Caldwell Manufacturing Company, Rochester, N. Y., have added a new article to their extensive line of hardware specialties, the new Caldwell vertical door holder.

This appears to have great merit; and it possesses one feature which is original—distinguishing it from all other vertical door holders. It has no side ears and only one screw is visible. A bracket affixes the holder immovably to the door, and gives symmetry, simplicity and beauty to its lines.

The Caldwell holder is made in two sizes. The small size is furnished in grey iron and bronze metal. These are for use on all ordinary doors, which open out over horizontal floors. The special large size with 4 1/4-inch drop is furnished only in bronze or brass metal, and is for use upon parquet doors, which open out over floors laid at an angle.

The rubber cushion is hollow in the center, which construction tends to create a suction and holds better than a flat surface. Accordingly this vertical holder is warranted to hold any door on the smoothest floor.

An Improved Pipe

Many of our readers who are lovers of the pipe will be interested in a new invention—a pipe claimed by the maker to be absolutely sanitary and free from the objections of ordinary pipes.

The bowl is made with the inner walls vertical and the bottom flat—like a pan, so to speak. The shape of the bowl prevents the tobacco from becoming packed solidly. Consequently, there is a free circulation of air through all parts of the tobacco when smoking. That is what makes a fine cigar.
PROFITS are already beginning to pour in, big, on the *bit business*, of dealers who are ready with full stocks of

Dealers order from your Jobbers quickly now, to get full profits on our enormous 1910 Advertising Campaign to the consumer everywhere, already started in leading National Magazines and Newspapers.

*If your Jobber won't supply you, write at once to*

**THE IRWIN AUGER BIT COMPANY**

(Largest in the World) WILMINGTON, OHIO
FREE Sample Package of Johnson's Plasto-Filler

Let Us Mail to You—Absolutely Free—Postage Paid—This Working Sample and Text Book

WRITE today for your free package of Johnson's Plasto-Filler. Thousands of other Painters and Decorators have accepted our offer and are now saving money and time, doing better work, more completely satisfying their trade. Let us start you right.

Johnson's Plasto-Filler is a perfect non-shrinking, non-cracking, adhesive filler, ready for use by mixing with a little water, and dries rock hard in two hours. Made in two shades, light and dark. Applied with a putty knife.

Far superior to putty, plaster of paris and all other preparations for cracks in floors or walls, nail holes, crevices, etc. Used by prominent decorators for preparing surfaces for Johnson's Wood Dye, Johnson's Under-Lac, and Johnson's Prepared Wax.

Johnson's Plasto-Filler goes twice as far as ordinary crack fillers. Put up in one and two-pound packages, at 20c a pound. Also in bulk at 15c a pound. But try it at our expense. We'll gladly send you a free package — also our valuable text book —


Cut out coupon now to remind you. Or write us a postal if more convenient.

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

"The Wood Finishing Authorities."
FREE Working Sample of Johnson's Under-Lac

Every Painter and Decorator Is Asked To Accept This Free Offer—Mail Coupon or Postal Now

EVERY man who now uses Varnish and Shellac can better his work, better his profits, better his reputation, by using Johnson’s Under-Lac. Because Under-Lac is better than Shellac or Varnish. We want to prove this to you beyond the shadow of a doubt, so we ask you to try it at our expense.

Johnson’s Under-Lac
gives “that hand rubbed finish” — brilliant and lasting. It dries hard in half an hour, forms a hard, thin, elastic, protecting surface that will not scratch or show heel prints. It can be used wherever shellac or varnish can be used with much finer, more permanent results.

Learn for yourself that it dries in just the right length of time—not like shellac which dries so quickly that a novice cannot apply it, because it laps, pulls and crawls. Not like varnish either which dries too slowly.

As First Coater or Finish
Under-Lac has no equal for use either over bare wood, over worn, scratched varnish, or new finishes. It never spots white under water or becomes slippery. It is the only preparation which gives satisfactory results as a preservative and beautifier of linoleums, oil cloths, etc.

Send for Sample and Text Book—FREE
Mail coupon, or postal if more convenient. Make the test at our expense. Read our valuable book—“The Proper Treatment for Floors, Woodwork and Furniture”—Edition A. C. B. 3. Book printed in colors, illustrated from life, full of helpful suggestions. Just send your name and address to

S. C. JOHNSON & SON, - Racine, Wis.
“The Wood Finishing Authorities.”
smoke so pleasantly.

Then again, the bottom of the bowl has a series of holes angling through solid Vienna meerschaum to a point at the apex of the bowl. The construction assists in the free circulation of the air through the tobacco. The result is a very pleasant, cool smoke, equal to that of a fine cigar.

The bowl of this new pipe is said never to get wet or soggy, as other pipes do. This is altogether reasonable owing to the air chambers in the briar part of the pipe between the stem and the meerschaum bowl.

Persons who desire one of these pipes can obtain same by addressing The Acme Pipe Company, Station M, Cincinnati, Ohio. See their advertisement on page 832.

**The Miles Simplex Mixer**

The Miles Simplex continuous concrete mixer might rightfully be termed a continuous-batch mixer, because the feed is continuous and the mix is had in the large drum which revolves.

Continuous mixers are now preferred by all contractors for the reason that with them their men can work to best advantage and with most economical results. This is evident from the fact that batch mixers are being made as near continuous as it is possible to make them. Often objections have been raised regarding continuous mixers, due to the unreliability of many, both as to feed and mix.

Profiting by the experience of others, the Miles Manufacturing Company, Inc., Jackson, Mich., have developed the Simplex mixer. The principle is very simple, yet it is absolutely positive. They claim to have eliminated all complicated attachments. In construction, the best grade of iron and steel are used, which insure strength and durability. The large revolving drum is of heavy boiler iron. Skilled labor is employed and all work done in a thorough workmanlike manner. The charging hoppers are at a very convenient height and the materials may be discharged nicely into wheelbarrows. The construction is such that only a small amount of power is necessary; gearing is fully protected with steel aprons. Three-compartment hopper feed is employed. Cement enters through the center and sand, crushed rock or gravel from either or both sides. A constant stream of materials is fed simultaneously into the mixing drum, thereby insuring a steady, uniform mix. Any desired proportion may be had, and the adjustment for the same made quickly and positively.

The feed is controlled by individual gearing and may be stopped or started regardless of the rest of the machine. Often for various reasons, the shovelers stop for a minute or two. In such cases the feed is thrown out of gear by a small lever.

The mixing drum revolves about 20 times per minute. And as there are attached to the same in the forward end a set of blades which run parallel to the drum, the materials are carried well up the side, then roll back. This method insures the covering of every particle with cement, especially, too, as the drum is set on an angle, thereby giving a gravity mix at the same time. After thus being thoroughly mixed and carried by gravity towards the rear of the drum, the materials strike a set of agitators, which revolve in the opposite direction to the drum and at a higher rate of speed. At this point water is added in any quantity desired and thoroughly incorporated.

To insure the agitators against clogging, the shaft to which they are attached is hung in a slot, thus allowing it to raise and lower. The materials are in full view at all times.

As to the capacity of the Miles mixer, seven yards per hour may be turned out. For some concrete block plants and other work where this output may not be required, the machine can easily be adjusted for any intermediate output.

For work where it is not necessary to operate the machine to its fullest capacity, a 1½ H. P. engine is sufficient. Otherwise, we recommend a 2½ H. P., which insures an abundance of power.

The weight of this machine complete on trucks without power is 1,600 pounds; complete with 1½ H. P. gasoline engine, 1,800 pounds; complete with 2½ H. P. gasoline engine 1,950 pounds.

The progressive concrete worker or contractor cannot afford to be without a mixer. Certainly to mix by hand is very expensive and slow. Get a mixer, have one of some kind. It means larger profits, better concrete and more satisfied customers.

Simplex mixers are especially desirable for paving, sidewalks, concrete block and general contract work. Their weight is a desirable feature, allowing for their being moved readily from one job to another.

**A New Lock Mortiser**

A new low-cost yet practical door mortising machine, one that will do the business and will not get out of order, is now obtainable from the Sax-Nicholls-Cohn Company, Inc., Fairfield, Iowa, sole manufacturers of the Nicholls lock-mortising machine. This, we are informed, will mortise hard, soft veneered, cross-grained or end wood perfectly, with slight exertion. It requires very little care, being easily understood.
The Ball-bearing Chuck is found only on the P. S. & W. SAMSON BRACE. It can be tightened with the bare hand to a firmer grip than any other chuck with a vise. The weakest wrist can release it.

The Steel-clad Head with dust-proof ball-bearings is another strong feature of the SAMSON.

It pays to buy good tools

When you buy a brace, you ought to know how it is made and who made it. The large line of high-grade P. S. & W. Braces is backed by the Trade-mark that stands for quality and ninety years of business ability, experience and progress. Look for

The MARK of the MAKER on every P. S. & W. SAMSON BRACE

It's one of the top-notchers among hundreds of P. S. & W. Guaranteed Tools for Carpenters.

Send for this 165-page book
SECOND EDITION NOW READY FOR DISTRIBUTION

Our "Mechanics' Handy List," shown at the left, contains over 30 pages of tables and valuable information, and a catalog of over 200 tools for Carpenters, Machinists, Electricians and Tinsmiths.

The Peck, Stow & Wilcox Co.
MANUFACTURERS of the Largest Line of Mechanics' Hand-Tools Offered by Any Maker
Address Correspondence to 22 Murray Street
NEW YORK CITY

Established 1819
Five Large Factories
and operated by apprentices, and cannot get out of order. It will take any thickness door—cuts any length—will stand strain. A new feature in this clamp makes it absolutely im-
possible to scratch, mar or split a door. It cuts true and is
simple to operate. Is made of malleable iron and is very
light, taking up little room in chest. Stands use, and even
abuse, for a lifetime.

With this clamp it is stated that there is absolutely no ex-
 pense for future repairs. It requires no oiling and is always
ready for instant use. It is the cheapest mortiser on the
market.

The construction of this lock mortiser is extremely simple,
as may be seen in the illustrations; the arrangement consists
of a screw-clamp, having two metal guide rods on which
slides a bushing. The workman places his auger bit (of the
proper size for the width of the mortise) into this bushing,
which holds the bit absolutely square with the work and true
to the gauge lines. The mortise is thus quickly and easily
bored out. Extra bushings of various sizes are furnished
with the clamp.

Every carpenter and building contractor should investigate
this machine.

“National” Ornamental Butts

A few years ago the National Manufacturing Company,
Sterling, Ill., placed the “National” ornamental butts on
the market, predicting that they would eventually displace the
old style or common butts.

Present conditions indicate that this prediction is coming
ture. We are in-
formed that contrac-
tors, who at first re-
garded them skep-
tically, have since given them a trial and will now use nothing

Have you seen the new

CARBORUNDUM
SHARPENING STONES?

Made especially for carpenters and workers in wood.

Note the shape, it is round—You use the whole surface, 12 square
inches and sharpen the tool evenly and quickly—

It is a combination stone, coarse on one side, fine on the other—
And it’s made of carborundum, the greatest sharpening agent in
the world—

Ask your Hardware Dealer
or send $1.00 to

THE CARBORUNDUM COMPANY
NIAGARA FALLS, N. Y.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Cheaper and Better Than Lath and Plaster

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

Importance of Lath

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

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

BISHOPRIC SHEATHING

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

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

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

BISHOPRIC ROOFING

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

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

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

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

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

The Mastic Wall Board & Roofing Mfg. Co., 24 E. Third St., Cincinnati, O.
A Few Points on Estimating

Upon estimating the cost correctly depends your success. If you guess, nine times in ten you are too high or too low. If you sit down and take off every item separately it takes too much time. It means a great risk of omissions on account of interruptions or overlooking something because you have so many items and figures to handle. The need of a system in taking off quantities is one cause of omissions also. Do you neglect your business many times because you have a job to figure? Do you worry and lie awake nights? Most builders bid too low for fear of losing the job. If they knew just what the job was worth they would not want it for any less. If you want to adopt a system that is easy, simple, accurate, reliable and practical, the NEW SIXTH EDITION of The Lightning Estimator will teach you.

You Need the Lightning Estimator

This method shows you the actual time and material involved in each part of your work, but so cleverly combined and systematized that a large job may be estimated in a very short time and omissions are almost impossible. Shows you how to dissect and analyze unfamiliar work in order to get at the cost. By showing time and material required as well as prices you may adjust this method to any scale of prices in any part of the country. Written by a successful builder from actual experience, not theory. Valuable hints for the concrete block maker and setter. The carpenter builder who sublets everything but the carpenter work can learn how to estimate the walls, brickwork, concrete work, chimneys, plastering, etc., so that he can handle this work by the day himself and save the subcontractors' profits.

Now is the Time to Become a Master Builder

If you are a journeyman here is your opportunity to become a master builder and if an old timer, a chance to get new ideas and become more proficient; if you know it all, pass it along. This edition is bound in cloth and is amply illustrated, a feature that has been overlooked in most books on this subject. Can you afford to hesitate? Will you do yourself justice and send one dollar today and get on the road to success?

BRADT PUBLISHING COMPANY
1260 Michigan Avenue JACkSON, MICH.

Unbreakable LIGNINE (WOOD) CARVINGS Unbreakable SAVE YOU MONEY
We prove this—Send for free sample and catalogue of Capitals, Plaster Capitals, Heads, Shields, Scrolls, etc.

ORNAMENTAL PRODUCTS CO., West Fort St., DETROIT, MICH.
**Beaver Board** Walls and Ceilings—a New Field for the Carpenter

Beaver Board takes the place of lath, plaster and wall-paper for the walls and ceilings of every type of building, new or remodeled.

It is already well established by years of successful usage, and is coming more into favor every day. A big field is open to the carpenter who knows what it is and how to put it up. One Beaver Board job, well done, leads quickly to another.

Read what follows. It tells how Beaver Board is used, and how it can become a source of good steady work for the carpenter, summer and winter.

How Beaver Board is Used

Beaver Board is used for walls and ceilings of all kinds of buildings as well as for remodeling single rooms.

A big business can be done by a smart workman in finishing up attics, dividing cellars into rooms, etc.

Old out-buildings can be fixed up for children's playhouses, billiard-rooms, garages, etc.

Beaver Board is used for making many useful or ornamental household articles. Our free booklet gives plans and specifications with cost. Send for it.

One Good Job Means Another

When a man sees a good piece of Beaver Board work, he's pretty apt to want another like it. Then his friends catch on, and every one wants to know who put it up.

We can tell you experiences of this sort that would open your eyes. Just write us for the Beaver Board Booklets. Sent free if you give your dealer's name.

Beaver Board is sold by hardware, lumber, paint, wall-paper and builders' supply dealers and decorators everywhere. For your protection, every panel is stamped on the back with the Beaver Board Trade-mark. Look for it.

These three pictures show how fine-looking a good piece of Beaver Board work is in an office, club-house or bedroom. The best of it is, it's all clean, inside work, isn't hard, and is sure to give satisfaction and bring steady work to the man that can put it up right. If you want more information about this proposition, drop us a line on a postal card.

**The Beaver Company**

**Mills and Factory**

Beaver Falls, N. Y.

**Canadian Factory**

Beaver Falls, N. Y.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
See Here!
Mr. Carpenter,

That trademark is something for you to remember, for every good live man wants and will have first-class tools, and experience has proved that the Simonds is the world's best hand saw.

If you're more than an average man, you're looking for the best saw. Every hustler wants a saw with an edge that holds, and that's the Simonds and you'll always know it by the trademark.

That trademark means that this saw is

**MADE OF SIMONDS STEEL**

made especially for the Simonds Saw in Simonds Mills.

By our patented process, we get the most evenly and correctly tempered saw on the market. No one else can quite make it, they don't know how. We are advertising, so you won't forget the Simonds trademark.

If you will only try the Simonds Saw, you will agree with us, and the hundreds of Carpenters already using them, that

**Simonds Saws are The Best,**

**And They ARE The Best.**

Each Simonds Saw comes packed in a separate case. Remember the trademark when you buy. Every saw absolutely guaranteed free from imperfections in workmanship or material.

When you need a saw buy a Simonds. Let us know the kind and size you want and we will tell you the name of our nearest dealer and will also send you a free copy of "Simonds Carpenter Guide," a useful and instructive booklet.

**Simonds Mfg. Co.**
Fitchburg, Mass.

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**Lignine Unbreakable Carvings**

The Ornamental Products Company of Detroit, Mich., manufacturers of Lignine (wood) carvings, have just moved into their new and modern factory.

We do not hesitate to speak a good word for Lignine (wood) carvings, as they are a meritorious and wonderful product. They are made in three woods: oak, mahogany and walnut.

We are informed that the Ornamental Products Company are not only enjoying a fine business in this country, but are also shipping their goods to all parts of the world. A postal card will bring you their complete catalogue and sample of this product.

**“Union Dandy” Builders’ Derrick**

In the building world at the present time it is necessary to make use of the most modern methods and processes for handling the work on an economical and profitable basis. Quickness and ease of handling material is a vital element, and so there is an increasing demand for builders' derricks that will do the work that was formerly done by laborious and costly hand work. In this connection we would direct
"RICHMOND" Efficiency

That element which distinguishes the
RICHMOND Heating System from all
others is the efficiency with which all
parts, from boiler to radiator, faultlessly
perform the work for which they are in-
tended. The specification of RICHMOND:
fixtures precludes any suggestion of an
error in your judgment.

And, after installation, you will under-
stand why the owners and users of
RICHMOND goods join with us in pro-
claiming that RICHMOND means super-
iority.

"RICHMOND"

Steam and Hot Water Boilers
Radiators

"RICHMOND" Boilers, in every detail, embody the requirements of the perfect house-heating boiler. The heating surface is so placed that both the flame and heated gases strike it at right angles, thereby utilizing the maximum amount of heat. In the interior surface all parts are so arranged that they are easily accessible for cleaning, thus securing the highest efficiency of the heating surface. Every inch of fire surface in "RICHMOND" Boilers is so backed by water that it readily absorbs the full heat and circulates it through the hollow double walls of the boiler and on through the piping to every part of the system. Because water surrounds every portion of the surfaces with which fire or heated gases come in contact, and because the construction is such that the greatest amount of surface is so placed as to be in contact with the fire or heated gases, the "RICHMOND" Boiler is the most economical on the market in fuel consumption, easiest to operate, and of the highest heating efficiency. It is also practically indestructible.

Send for Catalogue BR

THE McCRUM-HOWELL CO.

Park Ave. and 41st St., New York City

Address in the West Cameron Schroth Cameron Co. 189 Michigan St., Chicago, Ill.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
The Best Training School FOR Carpenters and Builders

The pictures shown above represent the more important buildings of the International Correspondence Schools, of Scranton, Pa. They are the best training schools in the world for carpenters and builders because: (1) The I. C. S. Courses are first prepared by practical men and then rewritten by experts to suit the particular needs of the man having to get his technical training in odds and ends of time. (2) Each Course is prepared to qualify students for a particular branch of work; students study only what is necessary to equip them for the work they want to follow. (3) The I. C. S. Courses are easy to learn, easy to remember, and easy to apply.

The International Correspondence Schools are teaching carpenters and builders in every part of the world—helping them to advance to higher and better-paid positions in their work. Not a month goes by in which the Schools do not receive upward of 300 voluntary letters telling of positions bettered and earnings increased through study of the I. C. S. Courses. During December the number was 400.

In a single year the increase in salary reported by students of the Schools have amounted to more than Two Million Two Hundred Thirty Thousand Dollars.

The I. C. S. can better your position, increase your pay, brighten your future. To find out all about it will cost you nothing and place you under absolutely no obligation whatever. Just mark and mail the attached coupon. Don't wait until tomorrow. Mail the coupon NOW.

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United Steel Sash

One of the most attractive steel sashes recently placed on the market is the United Steel sash, manufactured by the Trussed Concrete Steel Company of Detroit.

This sash consists of special rolled steel sections, so designed as to give the greatest strength and maximum light. The joints are so formed as to avoid the cutting away or punching of any of the metal with the consequent weakening of frame.

The United Steel sash is machine-built, which assures absolute accuracy and particularly attractive finished appearance. All joints are perfectly tight, shutting out draft and rain. The double contact surfaces around the ventilator make all openings thoroughly weather-proof.

The glass is held in place by a special spring-steel clip and the putty retained securely by the continuous ledge extending along the length of the steel section.

The United Steel sashes are particularly suited for the construction of windows in factories, warehouses, industrial
THE quality of the New Rambler is rare in that it manifests itself in unexpected ways, giving to every little detail of the car the mark of careful workmanship and added efficiency.

This individuality is the product of broad Rambler experience intelligently applied by skilled Rambler workmen.

To this is due the development of those distinctive Rambler features—the Offset Crank-Shaft, Straight-Line Drive, Spare Wheel and new Expanding Clutch.

Rambler automobiles, $1,800 to $2,500

Thomas B. Jeffery & Company
Main Office and Factory: Kenosha, Wis.

Branches: Chicago, Milwaukee, Boston, Cleveland, San Francisco
buildings and fireproof structures of all kinds. Complete information, estimates, etc., will be furnished by the Trussed Concrete Steel Company, Detroit.

Wood Finishing Book Free
The tenth edition of booklet, "The Proper Treatment for Floors, Woodwork and Furniture," issued by S. C. Johnson and Son, Racine, Wis., "the wood-finishing authorities," is now ready for distribution. It is profusely illustrated in color and the entire subject is very fully treated. This booklet gives full instructions for finishing and re-finishing all kinds of wood —natural or in color—and gives many suggestions for finishing inexpensive soft woods so they are almost as beautiful as the hard wood. It also gives many particulars regarding the care and treatment of highly polished woodwork and floors.

S. C. Johnson and Son have made a specialty of wood finishing for the past twenty-three years. Their line is entirely different from anything else on the market. Their announcement will be found on another page of this issue. Among the articles they are advertising are:

Johnson's Prepared Wax, a complete finish and polish for furniture, woodwork and floors, Johnson's Kleen Floor, for cleaning floors and woodwork and keeping them in perfect condition; Johnson's Wood Dye (made in fourteen shades), for the artistic coloring of wood; Johnson's Under-lac, better than shellac or varnish, used wherever a high glossed finish is desired; Johnson's Plasto-filler, for filling cracks and crevices in walls and floors; Johnson's Electric Solvo, the best paint and varnish remover on the market.

Samples of any or all of these preparations and copy of the new booklet will be sent upon request to readers of AMERICAN CARPENTER AND BUILDER.

Architectural Sheet Metal Work
We have received Catalogue No. 11 of the St. Paul Roofing, Cornice and Ornamental Company, Inc., St. Paul, Minn. It is a beautifully gotten up book and is arranged in a way to be particularly valuable to carpenters, building contractors, architects, etc. It shows the complete line of this company in cornices, skylights, ventilators, ridgings, crestings, pediments, hip shingles, finials, vanes, conductor heads, columns, capitals, brick bonds, door and window caps, shutters, etc.

We understand that in addition to this general catalogue special catalogues are issued on steel ceilings, stamped and spun ornaments, store fronts, roofings and sidings, tanks, eaves, trough and conductor pipe. All those interested will do well to get in touch with this progressive architectural sheet metal concern.

Gasoline Engines on Approval
"Your Word Is Good With Us," heads the new advertisement from Gade Bros. Manufacturing Company. Special emphasis is put upon the fact that the Gade gasoline engine is sold under more liberal trial than most other engines. There are no strings tied to the free trial of the Gade. You are not asked to sign any contract blanks or specially worded order blank. All
If You are Tired Being
—— a Hard Working ——
Carpenter or Builder
then Make Yourself the
Highest Grade and Highest
Priced Man in Your Place

To do this you must be a good Draftsman, not one of those "would be" ones, no, but a first-class man, with actual, practical drafting room experience.

It will pay you well to learn this right from a practical man with twenty years' experience who will instruct you personally —individually on high-class architectural drawing, complete building designing and detailing in all branches;

Who will qualify you at home in a few months to double your earning capacity

Don't waste time and money trying to learn from books or printed lessons made for all alike, the same as patent medicine; you can only learn this right on practical work from a practical man.

Free This Month A high-grade Complete Drawing Outfit, including a $13.85 Set of German Silver Tools.

If you want to be the "BEST MAN" write me to-day. Address—

Chief Draftsman

Div. 17 Eng's Equip't Co. (Inc.) Chicago
This great pier was roofed nine years ago with Granite Roofing. At the present time it shows no signs of wear, and is expected to give excellent satisfaction, without attention or repairs, for at least ten years longer. Unlike the ordinary ready roofing, which is adapted only for temporary buildings and sheds, Granite Roofing may be economically used on all kinds of structures. Its unusual weight, 140 lbs. to the roll, give to this roofing unparalleled durability. It can be laid by anyone who can handle a hammer. Granite Roofing has a surface of sea-grit, thoroughly imbedded into its composition, which makes it fireproof and takes the place of the paint or coating.

Send for free Sample and Booklet, and learn about this best of all roofings.

EASTERN GRANITE ROOFING CO.
1 Hudson St., NEW YORK	CHICAGO	ST. LOUIS

**HESS SANITARY LOCKER**

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

FOR YOUR BATHROOM

Costs less than wood and is better. Should be in every bathroom. Is dust, germ and vermin proof and easily cleaned with warm water. Made in four styles and three sizes. Price $7.00 and up. Send for illustrated circular.

HESS, 920L, Tacoma Bldg., Chicago

**HANDY LAMP**

Gasoline Lighting System

**GIVES A 300 CANDLE POWER SHADOWLESS LIGHT**

The instant you move the lever. Turns up or down like gas, burns dim when not in use, or can be simmered up instantly when more light is needed. "It rescued a 30-foot space with a brilliancy like daylight." For cheaper than gas, kerosene or electricity, and so simple that anyone can use it. One lamp can supply 16 lights. You can depend on it for years, for any purpose demanding a big, strong light. Catalogue shows the uses why. Send for it now.

BRILLIANT GAS LAMP CO.
Dept. 30, 42 State Street
Chicago, Ill.

**Phillips Screens**

The custom made fly screens of A. J. Phillips & Company, Fenton, Mich., are made in a large, finely equipped factory, open all the year, by mechanics of long experience. A large stock of well seasoned, selected lumber, wire cloth and materials are carried at all times. These facilities and extensive product enable them to produce excellent work, claimed to be much better in pattern and finish than that of the ordinary shop or planing mill. They can deliver the goods at your railroad station at very reasonable prices, which they will gladly quote to AMERICAN CARPENTER AND BUILDER readers. They will make complete estimates, if lists and sizes of openings are submitted.

Two general grades or types of screens are made by them; the "Suburban," the highest grade, and the "Apartment House," a cheaper grade. In the "Suburban" the top and side rails are regularly 14 by 13/16; bottom rail 21/4 by 13/16. Rails extend full width of frame. Frames "O. G." and cope construction. Water-proof coping joints, with vertical hardwood dowels. The screen frame slides up and down on oiled hardwood guides reaching to the top of the window. The guides are bored for nailing to the window stops, and the nails are furnished. The screen is held in place by flat steel springs in the groove at the edge. These are brass plated to prevent rust. Pushing the screen to one side, it is easily removed from the guide strips. The springs also hold the screen at any desired elevation. Bronze flush lifts are furnished on all "Suburban" sliding screens. Each screen has a brass disc bearing its number in black, and a duplicate is furnished for attaching to the window sill. Each screen of this grade also bears a tiny bronze plate with the manufacturer's name. The wire cloth is fastened to top and bottom rails by the "Welt" or "Spline" process. The moulding covering the wire cloth edges is sunk level with the face of the frame, is carefully mitred at the corners and secured by brass nails. The frames may be re-wired if necessary. The frames are waterproofed by dipping in a linseed oil filler which penetrates and protects the wood, the joints and grooves, and gives a hard foundation for the paint, enamel or varnish. Outside screens are usually made from clear kiln dried Michigan white pine, finished similar to the outside of a Pullman car. Inside screens are made from various woods to match interior finish.

The apartment window screen is plainly but smoothly and well made from the very best materials—the same that is used in the highest grade work. By making these screens in large quantities and omitting some of the details of the highest grade of finish, they claim to be able to make the lowest price ever made on a durable first class screen.

The frames are of white pine, weatherproofed in linseed oil dip and painted one coat of dark green, best lead and oil paint. Best twelve mesh black wire cloth, edges covered with flat, round edge mouldings, mitered at the corners, is used. Hand hole lifts, brass plated flat steel springs, frame numbers and brass numbered tacks for sills are furnished.

**Metal Frames for Cellar Windows**

One of the great objections to a wooden cellar-window

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Asbestos "Century" Shingles are dense and elastic shingle-like sheets, made of hydraulic cement—reinforced in every direction with interlacing asbestos fibers.

Dampness—rain and snow—freezing and thawing—hasten the maturing of the cement. Make the Shingles tougher and harder.

Asbestos "Century" Shingles protect the building and need neither painting nor repairs. They cannot rust like tin—or decay like wooden shingles—or crack and split like slate—or hold moisture and rot the roof timbers like tiles.

Made in three colors, numerous shapes and several sizes. Ask your Roofer for new quotations. Write for Booklet "Everlasting 1910."

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania
frame is that not being able to secure them firmly, they often become loose and get out of place and the sill very often becomes rotten and has to be replaced. This emphatically is not the case with the "Sectional" metal window-frame made by the Majestic Furnace and Foundry Company, Huntington, Ind. This window frame is urged especially for the window used for putting fuel into the cellar.

Mr. W. D. Smith, the inventor and patentee of the "Sectional" metal window frame, has been a building contractor for years, and being thoroughly familiar with the many disadvantages found in common wooden cellar window frames, was inspired to invent, design, and patent this now famous "Sectional" metal window frame, of which we shall give a brief description.

The frames are made in four sections and bolt together at the corners, using two bolts at each corner. The bolts are furnished with the frames. When the frame is placed in the foundation the bolts are entirely concealed, and nothing but the clean, smooth surface of the frame appears. Both outside and inside edges of the frames are rounding and smooth. The material used in the construction of these frames is the best quality of No. 1 gray cast iron. They are 5/16 inches in thickness and 7 inches wide.

One of the principal features is that the sides being made in a curved shape leaves a hollow space between the outside edges and the foundation proper, which space gives the mason an opportunity to fill in with mortar or cement, and when the masonry hardens the frame becomes a part of the foundation itself, and cannot possibly get loose or out of place as is the case with the wooden frame; neither can it shrink away from the foundation and allow the wind and cold to find its way into the cellar.

Draw Good Plans and Draw Good Money

There are hundreds of good things which would bring profit and pleasure to us if we only knew how to get them. The carpenter and builder looks with envy at the draftsman and architect who is able to earn thousands a year instead of hundreds.

Perhaps you are a steady hard working fellow with good brain matter and ambition to be above the average—and if a person is not ambitious nowadays in many ways, there are others who will be, and this kind will get the best jobs sooner or later. However, one can become absolutely perfect in this line of trade or business within a very short time. There are quick ways of getting such a fine start in a short time which will insure unusual success for those who will devote themselves to bettering their condition.

Opportunities offered today for ambitious, wide-awake progressive men capable of making from $24 to $75 per week as architectural draftsmen, for instance, or for carpenters, contractors, or builders with draftsman's knowledge and training.

“Model” Window Chute

COMPLETE WITH RUBBER GLASS

Rubber Glass is a non-breakable, translucent substitute for glass, giving perfect satisfaction. Every "Model" Chute is shipped complete with the rubber glass.

Absolute Protection to Building and Lawn

The door locking open protects the building. The hopper, with ample extension, protects the lawn.

Our Chutes are built to withstand the abuse of the strongest and most careless coal shoveler. A HEAVY GRAVITY LOCK secures the door from the inside. Size of wall opening. 27 inches long, 16 inches high, and 13 inches deep.

No Modern Building Is Complete without a Coal Chute

Our new illustrated Catalog, just off the press, shows our full line of Coal Chutes. Write for one.

MAJESTIC FOUNDRY CO.

770 E. Market St., HUNTINGTON, IND.

BRANCHES

1102 Monadnock Block, CHICAGO
S. M. Consaul, DENVER, COL.
Down Draft Furnace Co., GALT, ONT.
J. E. Loesser Wire & Iron Works, KANSAS CITY, MO.
Fowler & Pay, MINNEAPOLIS, MINN.
Abendroth Brothers, NEW YORK

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
This picture shows how the MAN WHO IS BACKED BY KNOWLEDGE CONTINUES TO DIRECT long after the TRAINED HAND has lost its skill.

You can almost hear the man at the desk say: "Kelly, this job has got to be done right. I haven't anyone else to send and you will have to do. If you had ever studied that set of books there you would know how to do this work now. But there is no time now to find out; do the best you can and let this be a lesson to you to learn more about your own work. Why, man, I am finding out new things every day: finding them out through these books. It is the way I have built up my business—THAT'S MY TOOL CHEST."

RADFORD'S CYCLOPEDIA of CONSTRUCTION
Carpentry, Building and Architecture

WHAT YOU GET: Twelve Great Big Massive Volumes, over 5,000 pages, 3,200 specially drawn illustrations, charts, diagrams, working drawings, besides hundreds of full-page half-tone plates and zinc etchings; one portfolio-size volume of over 300 plans of all kinds of buildings; one complete set of working blueprints and complete typewritten specifications—you own choice: and a full year's subscription to that great, big paper, The American Carpenter and Builder.

HONEST WORDS OF PRAISE

Your "Cyclopedia of Construction" is more than you advertised. I am satisfied that they are the very best books in their line.
H. L. LEET, Castile, N. Y.

I find "Radford's Cyclopedia of Construction" to be excellent and think the books will help me considerably in my future work.
G. HILMAN WAILEE, Washburn, Wis.

I am very well pleased with "Radford's Cyclopedia of Construction." It is much better than I expected.
NEWTON OSBORNE, Moore, Montana.

I have received the "Cyclopedia of Construction" several days ago and have taken plenty of time to look every volume through quite closely...I am convinced that it is the greatest book on construction that has ever been published. It is one of the very top-notch of thoroughness and accuracy...and most highly recommend the "Cyclopedia," not only to my fellow workers in the building line, but to all who wish to improve their talent or ability.
T. W. LAUPHER, Logan, Iowa.

"Radford's Cyclopedia of Construction" is all O. K. and I am very much pleased with the set. A man can get ideas from any one of the twelve volumes that are worth more than the cost of the entire set.
H. F. BABITT, New Boston, Ill.

I am very much pleased with "Radford's Cyclopedia of Construction, Carpentry, Building and Architecture." The books are far better than I expected.
H. H. NEWHOLN, Milwaukie, Mass.

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CINCINNATI FLOOR CO.
228 West 4th Street
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PROFIT FOR THE CONTRACTOR

PUT A HEATING plant in that house and make a little more profit on the job. You can do it. You know how much better satisfied most people are when they get a house "ready to move in." They will pay more additional for the house than the cost of the heating plant. Other contractors are putting in the Andrews Hot Water Systems, which any carpenter or handy man can erect and screw together. We furnish everything complete: Andrews Steel Boiler, radiators, pipes (cut, reamed and threaded), all fittings, even including gold (or silver), bronze, fire tools and flue cleaner.

Send us plans (or sketch) and we will make you an estimate and also send you our 64-page book, "Home Heating," which tells everything.

You can guarantee the Andrews System, because we furnish a 360 Days' Free Trial Guaranty Bond—full satisfaction or money back.

Let us make an Estimate for you—we take all the risk.

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Throw Away that Wet, Soggy, Wheezy Pipe And Get One that Smokes as Pleasantly as a Fine Cigar

Notice the shape and construction of the Acme bowl, made of the finest Vienna Meerschaum with vertical walls and flat bottom like a pan. The tobacco cannot pack solidly, like in other pipes. There is a free circulation of air throughout all parts of the tobacco which is the secret of the cool, pleasant smoke of a fine cigar. Then the air chambers in the briar part of the pipe make it impossible for the saliva to get into the bowl. The bowl of the Acme is guaranteed never to get wet.

Cut this ad out and wrap a dollar bill in it and forward to us and you will receive promptly the best pipe you have ever smoked.

THE ACME PIPE CO. CINCINNATI, O.

A Detail Drawing Of The Only Practicable Double Gutter Ever Made

Ask your dealer or write to us for the detail sheet showing our eight styles of this gutter and a complete line of sheet metal roof trimmings. Every architect should have this detail sheet to specify from.

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Pioneer Roofing has stood the test of time. Beginning in a small way, the Company manufactured ready roofings and sold them locally. The business extended, until today Pioneer "Rubber Sanded" and Pioneer "Rubber Flaxine" Roofings cover the coast—from Mexico City to Alaska, and are rapidly gaining headway east of the Rocky Mountains.

Write for Booklet "A"—samples of roofing—and name of your nearest agent.

REFINERS OF ASPHALT

The Pioneer Roll Paper Company are refiners of Asphalt, and manufacturers of Asphalt Paint—which they supply direct from their factory in Los Angeles.

California Agents for Northwestern Compo-Board Company.

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BIGGEST BARGAIN EVER OFFERED
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The Cyclopedia of
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Introductory Offer: We want every carpenter and contractor to examine this great work—to prove its superiority over all other books—to prove its value as a home study instructor and reference work. To do this, we offer the books at $12.80, about one-half the regular price. Terms: $2.00 after examination and $2.00 a month until paid for.

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Metal Ceilings and Side Walls  
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THE WINTHROP SOLID TAPERED ASPHALT SHINGLES  
ARE OF A COOL, GRAY SLATE COLOR  
And have all the Durability of Asphalt—the Fine Appearance of Slate and the Light Weight and Low Cost of Wood Shingles. Laid with regular Shingle Nails, the same as Wood Shingles. NEVER REQUIRE PAINTING.  

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Winthrop Asphalt Shingles are Fire-resisting, Weather-proof, Wind- and Sun-proof, and never Crack, Break or Fall Off.  

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and BUILDERS  
THIS WILL INTEREST YOU  

A furnace for small houses, cottages and bungalows, at a small price.  
NO PIPES—NO LOST HEAT  

Write us for particulars about the Great Bell Furnace.  

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Your Orders Will Have Our Prompt Attention  

UNION ELEVATOR & MACHINE CO.  
215-217 W. Ontario St., Chicago

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Send for Our New Furnace Book

No matter what you think about the furnace question, you ought to have a copy of our new catalog of JAHANT DOWN DRAFT FURNACES. You ought to know how we make them, and how "WE SELL THEM DIRECT" saving you all of the dealer's profit and giving you a built-to-order heating plant at a small advance over factory cost. The "JAHANT DOWN DRAFT" is the most efficient furnace ever built. Gets more heat out of the fuel and is easier to regulate because it has the patented "down draft" feature. Burns wood, hard or soft coal, and consumes every particle, leaving no cinders or clinkers. Saves at least \( \frac{3}{4} \) to \( \frac{1}{2} \) on coal bills. We design complete outfit for your house, ship it prepaid to your freight station and let you pay for it $10 DOWN AND $10 A MONTH.

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Write for Catalog today and learn all the facts about this unique furnace proposition.

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(Until recently sold at $100) All fully explained in our new 128-page book on concrete. Sent for 24c in stamps, but to readers of The American Carpenter and Builder FREE if you will mention the name of this paper. Ask also for Latest Discount Sheet. Don't put this aside; act now. This is the time to look into the Concrete Industry.

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World's Largest Concrete Machinery Makers

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Won't Rot Like Wood
Won't Crack Like Slate

1883—1910

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We only absolutely protected or covered leak.
No chance here for the leak to flood and leak.

No Leak. Never Need Repair. Made in Painted Tin, Galvanized Tin and Copper.

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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.

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AN AUTOMATIC MODERN, INDIVIDUAL GAS LIGHTING AND COOKING PLANT FOR COUNTRY AND SUBURBAN HOMES

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Makers of Hess Sanitary Steel Lockers or Medicine Cabinets for Bath Rooms. Illustrated circular free.

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Bargains for March 1910

Never before have we been able to offer greater inducements in brand new building material to contractors, carpenters and builders than at the present time, and if you are now ready to buy, here is an opportunity to save 30 to 50 per cent on clean, fresh, new stocks.

From Receivers, Sheriffs and Manufacturers Sales.

Mail Orders accepted for any of the following items.

We guarantee absolute satisfaction on any of the following items, and will ship same C. O. D. upon receipt of a 25 per cent deposit, and you can pay the balance when the goods arrive at your railroad station, and if not found satisfactory we will return your deposit and pay freight both ways. Certainly this is a fair offer and you should send us a trial order.

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All brand new, guaranteed graded according to U. S. Manufacturers' standard and ready for immediate shipment from our Chicago stock. We guarantee full count and absolute satisfaction.

Mill Work Bargains

Every piece of Mill Work absolutely guaranteed brand new, highest grade and satisfactory to you.

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Lot 10 A-100. Every piece complete, outside casing 1x4x4, main sill 1x11x11, Jambs including stile and stop $1.75 each.

Price does not include labor or rail freight.

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Lot 10 A-99. Complete door frame, everything complete, outside casing 1x4x4, oak sill, 1x7x7; panelled jambs, 1-3/4x4-1/2. Price complete in the K. D. $1.85 each.

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All brand new perfect goods, quality will suit the most exacting owner or architect. Illustration shows the popular Wilmette design.

"WILMETTE" INSIDE DOOR SETS.

Lot 4 A-1662. Made of wrought steel, antique copper finish. Complete in every way. $1.50 each.

LOT 6 A-1499. Japanese iron case, 4x4, each 100. $1.00 each.

Lot 4 A-700. 3%4x7% inch Oak Door Stools. Each 60. Per dozen $5.00.

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Lot 4 A-215. Polished steel, complete with screws, antique copper finish, each 10c $1.00 each.

BULK LOT 10 A-8. 3%4x4 hole. Price each 5c. Per dozen $5.00.

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Lot 4 A-754. Antique copper finish. Price each 5c. Per dozen 50c.

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Lot 4 A-763. Wrought steel, complete with screws, antique copper finish, each 15c. Made of selected long fibre cotton.

BRUSH COTTON SASH CORD.

Lot 4 A-1682. 50 ft. wide, 7-32 in. diameter. Per 100 ft. 50c. Made of selected long fibre cotton. Per 100,000 squares of new Steel Roofing which we are selling at the following prices, freight prepaid to any point in U. S.

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The greatest bargain in the Fire, hail and weatherproof. Not affected by heat or cold. Used in many of the finest public buildings. Made from pure rawhide. A strictly high-grade lasting covering recommended by fire underwriters. 100 sq. ft. to a roll, with large lead nails included. Roofs and canvas for barns, garages, etc. does not cause rotting, etc. Free.

Paid for by fire insurance companies.

Send us your LUMBER BILL for our estimate.

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Mullins Metal Tile Roofing

is simple in construction—secure—durable—absolutely storm and water tight. As expansion and contraction are provided for, it is guaranteed, when put on according to directions, to remain perfect for years.

This handsome metal tile roofing is used on many of the finest buildings in the United States.

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are made with the idea of turning fire. They are entirely of metal, lock-seamed throughout with no soldered joints in frame, sill or sash. Heat does not affect them in any way, and a Mullins was never known to warp, buckle, contract or expand. Mullins Windows are famous for durability, and will outwear any other feature of the building.

Mullins Fire Proof Windows are manufactured under supervision of Underwriters’ Laboratories, Inc., according to the latest specifications of the National Board of Fire Underwriters, and every window is inspected, approved and labeled with their official label.

We have catalogues showing our various lines of product. Please specify the particular class of sheet metal work you are interested in and we will send you the proper catalog for same.

W. H. Mullins Company

214 Franklin Street, Salem, Ohio.

A PROFITABLE WINTER BUSINESS FOR A CONTRACTOR OR BUILDER

We want you to get Metal Ceiling orders for us.

The building season is about closed as far as outside work is concerned for the contractor and builder, so we want to ask you to look after inside work this winter.

We have made plain in our new catalogue the measuring and erection of metal ceilings and explain in special drawings just how you shall do it. This puts you into a position to go after metal ceiling business in your town this winter.

Send us a postal card or letter for our complete catalogues on metal ceilings and other sheet metal building material. We want a man in every town. We make expanded metal lath and Spanish tile roofing. Write us a card to-day.

The Kanneberg Roofing and Ceiling Co., Canton, Ohio

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(Incorporated)
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Large Facilities, Prompt Deliveries

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**We Ship from Our Own Mill at Mansfield, La., Directly to You**

You pay the freight the same as your local lumber dealer does. The freight amounts to very little compared to what we save you. We will be glad to quote you a price delivered to your station if you request it.

Do not order a dollar's worth of lumber without first getting our Wholesale Lumber Price List, giving you wholesale prices on 175 different sizes and kinds of the very best factory grades of lumber, one grade higher than is sold by the average dealer.

**Here are a few items picked at random from our Wholesale Lumber Price List.** Compare these prices with the prices asked by your local dealer and see how easy it is to save $100.00 on an average carload of lumber.

<table>
<thead>
<tr>
<th>Size</th>
<th>Price per 1,000 feet board measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x 4—6 feet long, No. 1 grade Pine</td>
<td>6c</td>
</tr>
<tr>
<td>2x 4—12 feet long, No. 1 grade Pine</td>
<td>12c</td>
</tr>
<tr>
<td>2x 4—16 feet long, No. 1 grade Pine</td>
<td>15c</td>
</tr>
<tr>
<td>1x 6—10 feet long, No. 2 grade Pine</td>
<td>6c</td>
</tr>
<tr>
<td>1x 12—10 feet long, No. 1 grade Pine</td>
<td>171/2c</td>
</tr>
<tr>
<td>1x 12—10 feet long, No. 2 grade Pine</td>
<td>131/2c</td>
</tr>
<tr>
<td>1x 6—No. 3 Sheathing</td>
<td>8.80</td>
</tr>
</tbody>
</table>

No. 1 lath, 3/8 inch by 1 5/8 inches, 4 feet. Price, per bundle of fifty pieces... .09

*These prices guaranteed until March 25, 1910.*

**WRITE TODAY.** Simply say, “Mail me your Wholesale Lumber Price List No. 69C23,” and we will send it by return mail.

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Superb Bath Room Outfit. None better. Laundry Tub at any price. ....... $35.00 and up all styles and sizes.

Low door and high combination Gents and Ladies guaranteed to be equal to the best in the market. Use d in the most palatial homes. $11.50 $65.00 and up

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Send for Catalog A, Dept. 13

THE DRUM
that does the
Business

Protect your reputation by the excellency and the permanency of your work.

The Polygon Concrete Mixer is your insurance. It mixes more thoroughly, more quickly, less wastefully than any other concrete mixer.

The Polygon possesses the good points of all other mixers. Its distinguishing feature lies in the shape and movement of the drum. It combines every mixing motion and makes the one perfect, unassailable mixture—either concrete or mortar.

The Polygon is the mixer of quickest action, biggest earning power, smallest maintenance and is most simple in construction.

Portable—durable—incomparable. Approved—authorized—used in government works. It’s the drum that does the business.

Send for descriptive catalogue and prices

Waterloo Cement Machinery Corp.
WATERLOO, IOWA

30 Tons’ Pressure GUARANTEED
UNIFORMITY OF PRODUCT
THE SOMERS uses the “wettest” mix of any block machine on the market.

The Somers Makes Money
We can prove it

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THE “LEADER”
The simplest, most compact, most practical and economical brick machine made. Makes plain and ornamental bricks. Requires no experience—Easy and speedy.

$28.00 Starts you in business making concrete building materials. The “Leader” brick machine is the fastest on the market. One man can successfully operate the machine and make from 2,500 to 3,000 brick per day.

We also manufacture larger machines. Write for our general catalog describing our entire line of concrete machinery.

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LACROSSE WISCONSIN

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with a Record
Genuine Franklin Tunnel

Uniformity and Durability Unexcelled
Write for Price List No. 25
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SLATINGTON PENNA.

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UNIFORMITY OF PRODUCT
THE SOMERS

2 Blocks Per Minute FASTEST MACHINE MANUFACTURED
The machine does the work, not the man

It makes an absolutely damp-proof wall

We can prove it You can guarantee it

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“Promises may get friends. But it’s performance that keeps them.”

A man expects all he pays for—he has a right to. If he gets more than he bargained for—he’s got no kick coming.
Time tests the bargain. Likewise the sincerity of the promise.

Send for our FREE 56-page book, “Rightly Roofed Buildings”

Cortright Metal Roofing Company - Philadelphia and Chicago

CORTRIGHT
Metal Shingles

were first handled by contractors twenty-four years ago.
We promised to stand back of those contractors. The roofs are performing their work as well today as when put on, and have never needed repairs.
Have we made good?
Our promises are still the same. Likewise our roofs.
Like to look at them?

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Wet Process is Right.
Face down is Right.
Three blocks at a time is Right.
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Damp Curing is Right.

The Mogul Invincible Block Machine
COMBINES ALL THESE

IT IS RIGHT
It is 48 inches long and will make three 16” or two 24” blocks at one operation. It makes sills, caps, copings, rails and steps, faster and better than a special sill machine. It has every adjustment that any other machine has and many that no other machine has.

PRICE—Machine and Outfit, $75.00
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By the use of our Practical Books which fully explain how to lay out and erect work and also tells you the reason why it is done. These principles and practices are given in our

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Consisting of six of our practical home study manuals entitled:

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In Roofing Slate, Slate Blackboards
Structural and Plumbers' Slate
Satisfaction Guaranteed in Quality and Price
Ask for Delivered Prices
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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.
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Structural Supplies, Hand-made Slaters' Tools, Snow Guards, Slaters' Supplies, Granite, Pink Slate Punching and Cutting Machines, etc.
Write for price and I will mail you all about Slate.
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22,000 Sheldon Steel Rack Vises
Sold on approval, an unconditional money back guarantee.

Wood Bar Clamp Fixtures Per Set 50c.

Steel Rack Clamp Fixtures

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Some of its special features are: underground gasoline reservoir for main gasoline supply; gasoline pump; pumping supply to engine; surplus returning to reservoir; electric governor—heavy and rigid construction (see cut)—a perfect control governed by which the operator can change speed instantly—all parts easy of access and guaranteed interchangeable.
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Is the new tip with which “National” Butts are now equipped, both common and ornamental.

The Tip is threaded and screws into the butt in both the Japanned and Plated finishes.

It is also Slotted for a screw driver, making it easy to remove the tip and affords ready access to the pin.

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These are exclusive “National” features.

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Ask for Booklet, “Ornamental Ideas,” and give us your dealer’s name.

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