AMERICAN CARPENTER AND BUILDER

THE WORLD'S GREATEST BUILDING PAPER

Why Feel Like This At Night?

We claim that every man who is earning his living by his own physical labor is entitled to use tools which will lessen his work. The Capitalist surrounds himself with comforts that make life easier. Why should not a working man relieve himself as much as possible ?

One of the great secrets of the success of our business has been the fact that we have been able to supply Saws which lighten the work of a carpenter.

Atkins **Silver Steel** Saws actually reduce physical labor and that is why so many of the best mechanics use them and why more and more of them are coming to realize the fact that Atkins **Silver Steel** Saws save a vast amount of unnecessary labor.

NOW DON'T YOU THINK

you ought to buy a Saw that does not require too frequent filing and setting? Don't you think you ought to use a Saw that runs fastest and easiest with the least effort on your part, even if it does cost a little more than the other kind. Don't you think you ought to save your strength all that you possibly can, because you know you only have one life to live.

Now, Atkins **Silver Steel** Saws will do these things simply because they are the most scientifically constructed Saws in the world.

SILVER STEEL.

This is the finest and most expensive steel that has ever been used in Saw Blades. It files easily, yet will hold its edge longer than any other. It is as fine as the steel which is used in most first-class razors. It is tempered by a secret gas process which makes the blade uniformly hard. There are no soft spots. Yet it is tough and the teeth do not drop off or break easily.

TAPER GROUND.

All Atkins **Silver Steel** Saw Blades are ground with a taper. They are not just a thin **back**—they are not dubbed off for an inch or two on the back—to fool you. They are **Taper Ground** on an **actual taper** extending from the tooth edge throughout the **entire** blade towards the point on the back. You will never realize how much this means to you until you use an Atkins **Silver Steel** Saw.

You will never appreciate how much effort you can save yourself until you try our Saws. That's what the best mechanics are telling us every day.

THE HANDLE.

And then the Perfection Handle **really does** save your Saw arm. You may not like it at first, because you are not used to it, but if you'll try it a few days—you'll notice the difference all right. It is scientifically correct. But we don't insist on the Perfection Handle—**we make the old style** if you prefer it. We merely recommend the Perfection as being the most scientifically constructed Handle now in use.

HOW TO GET THEM.

It may be possible that **your** Dealer does not sell Atkins **Silver Steel** Saws regularly. But if you will ask him to do so, he will order for you from his wholesale house. You owe it to your Dealer to patronize him and if you will give him the chance, he will be glad to sell you. Should you, however, have any difficulty in securing the particular Saw that you wish, simply let us know and we will see that you are promptly supplied, also give us the name of your Dealer.

OUR GUARANTEE.

Cut out this advertisement and take it to your Dealer and tell him that you want to buy an Atkins **Silver Steel** Saw with the positive understanding that if it does not **run easier, cut faster** and **hold its edge longer** than any Saw that you have ever used before, that you will return it to him and get your money back. We stand back of this guarantee and are ready to protect any carpenter or Dealer providing our Saws are not as represented.

OUR FREE OFFER.

We want the names of the foremost carpenters throughout the United States and Canada and if you will write us, enclosing ten cents in currency or stamps to pay postage, we will send you by return mail a High-Grade Carpenters' Nail Apron also a monthly time book, our book of information on the purchase and care of Saws, together with a great deal of useful information in regard to High-Grade Saws. Write today, you'll get your money's worth.

E. C. ATKINS & CO., Inc.

The Silver Steel Saw People

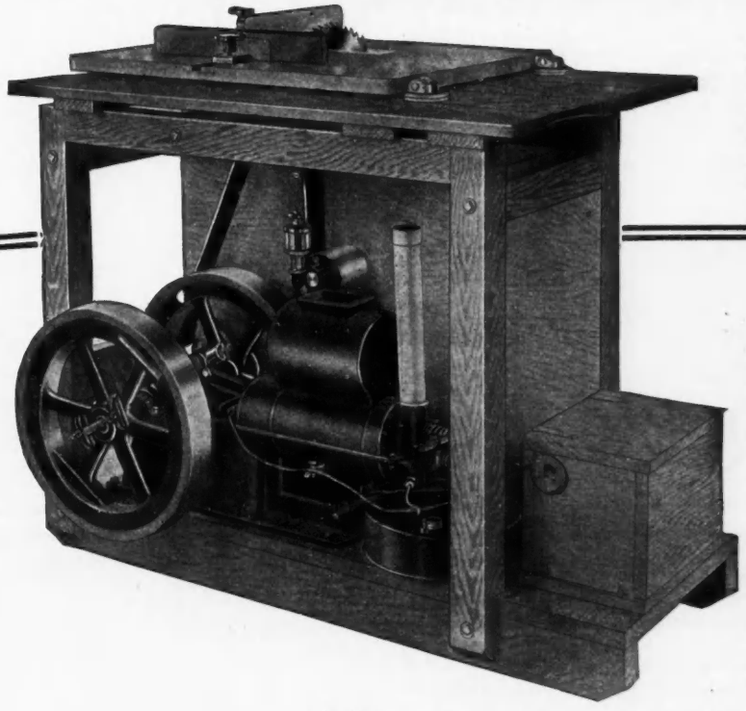
INDIANAPOLIS, - - - - INDIANA

TO BE INDEPENDENT

is every contractor's ambition. To be delayed with your mill work is costly and at the same time makes you feel like taking a kick at your mill-man. Why not purchase one of these complete Portable Saw Rigs and do your own work? This outfit on the job or in the shop will prove itself a big time and money saver, not forgetting to mention the worry you will overcome in depending on your mill-man to fill your order promptly. This rig is a complete and economical operating mill, which requires no line shafts or large amount of floor space. Can be moved from job to job and will do the work of five men. This outfit complete, ready to run when it reaches you, weighs 550 pounds.

SPECIFICATIONS

3 H. P. engine runs 550 revolutions per minute driving saw with 3″ width of belt. Frame built of No. 1 Maple strongly bolted. Rip guide set in dove tail groove. Iron table accurately planed is strong and rigid 22″ wide by 30″ long, can be raised or lowered for depth of dado cut. Cut off gauge is adjustable from square to mitre in either direction. 8″ saw will rip 2″ lumber. No saw dust can fall on engine as it runs outside of partition. Belt tightener takes up slack; no relacing of belt every few days. Gasoline tank holds one gallon and will run the engine eight hours without refilling. Insurance laws allow one gallon on the job.



With the Outfit is Included:

Eight-Inch Rip Saw
Eight-Inch Cross-cut Saw
Ten-Inch Cross-cut Saw
Two-Inch Jointer Head
One-Half-Inch Dado Head
Emery Wheel
Oil Can and Wrench
Extra Spark Plug

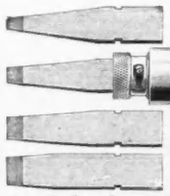
Write for Attractive Price

GEORGE D. SMITH

Contractors' and Builders' Machinery

414 Fisher Building -:- -:- **CHICAGO, ILL.**

Christmas Gifts for Practical Men "YANKEE" TOOLS



POCKET DRIVER No. 60

65 cents
Postpaid

Steel-nickel plated and polished—very attractive. Four blades carried in the handle. Handy as a pocket knife, fits hand, fits the pocket, fits the screws. "Strong and Durable."
An acceptable little gift fit for any man.

RATCHET DRIVER No. 65

Fits any screw from No. 2 to 14. Fits the pocket. Blades carried in handle. Strong and durable. Saves the price of several tools.
Fine driver for box or bench. Sure to please.

95c
Postpaid

No. 545
2-Jaw Chuck

—

No. 1545
3-Jaw Chuck

This little Shifter converts it into a plain drill: a left hand ratchet for removing taps, etc. A right hand ratchet or an automatic right and left hand ratchet, the bits turning continually to the ratchet regardless of the motion of the crank. A great advantage at close quarters where only a short throw of the crank can be obtained.

"YANKEE" Hand Drill
with the Famous
DOUBLE RATCHET
BALL BEARINGS
CUT GEARS

Something Unique. Differs from all others in what it does and how it does it. Must be seen to be fully appreciated.

Price $4.75

Our "Yankee" Tool Book is full of valuable suggestions for substantial gifts for anyone who ever has occasion to use tools. There is nothing more acceptable to a mechanic than a high class labor-saving tool like the "Yankee." He derives years of service from it and the giver is remembered as long as the tool lasts. Put "Yankee" Tools on your Christmas List. Get the Tool Book. A postal brings it.

Your Dealer sells "YANKEE" TOOLS

North Bros. Mfg. Co.

Dept. A. PHILADELPHIA, PA.

Ornamental Theatres

Plaster Relief Decorations

Theatres Designed Everywhere

Write for illustrated Theatre Catalog. Send us Sizes of Theatre for Special Designs.

—The—
Decorators Supply Co.
2525 Archer Ave., CHICAGO, ILL.

Do You Use Your

Strong right arm in mortising window frames for the sash pulleys? Just consider boring $\frac{13}{16}$-inch holes $\frac{5}{8}$-inch centers and set the pulley in—i. e. the **Grands Rapids No. 12.** No cutting—no fitting—no counterboring—no breaking—no swearing—no nails—no screws.

These **Grand Rapids** pulleys save more time than they cost *in money.* If we are telling the truth you *cannot afford* to use ordinary pulleys if you get them for nothing. We can prove it too.

WRITE FOR FREE SAMPLE

Say what pulleys you are using and how many you buy

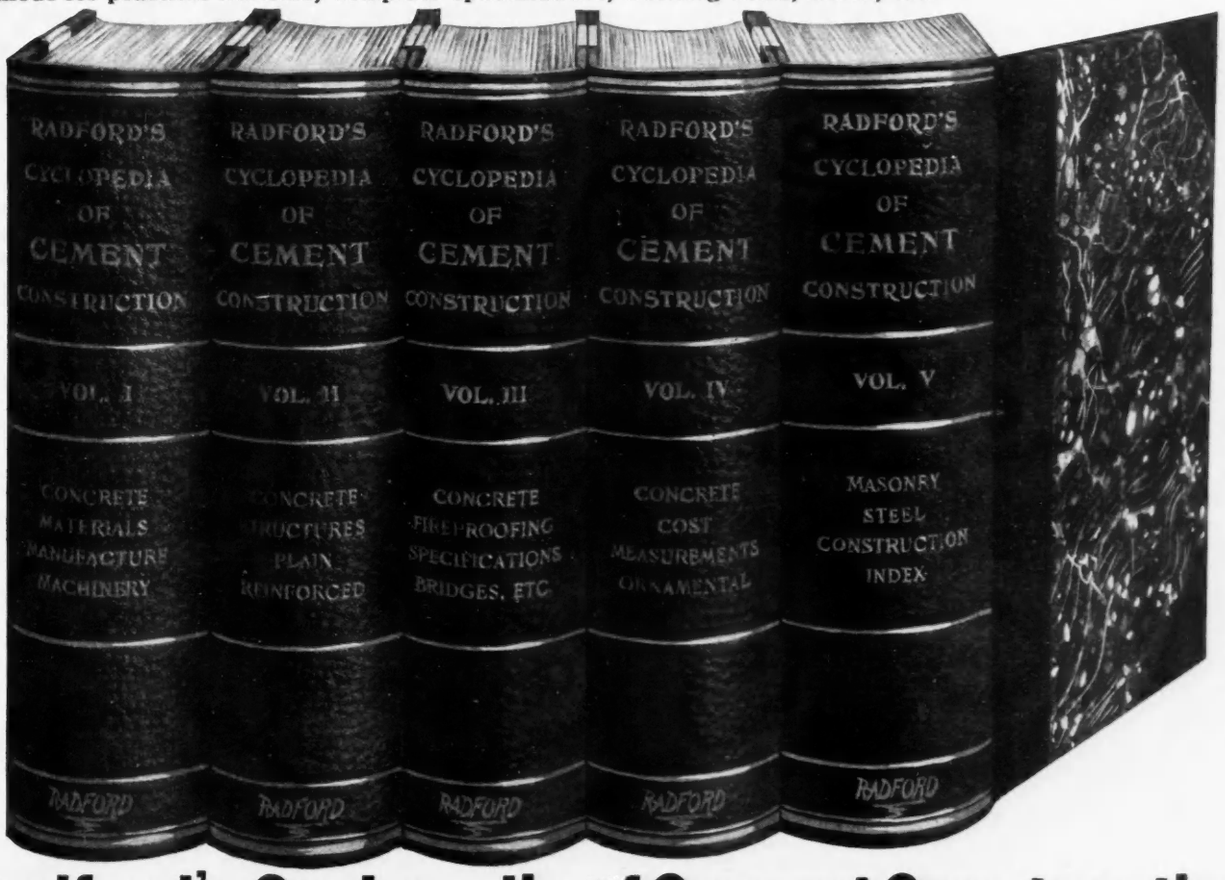
Grand Rapids Hardware Co.

36 Pearl Street
GRAND RAPIDS, MICH.

Sent Anywhere on Approval

Greatest Offer of the Year!

New books that cost a fortune to compile—Covering a new field completely for the first time—The whole story of Cement, its practical uses and possibilities, told in simple English, profusely illustrated—Up-to-date methods for practical workers; complete specifications, working rules, tables, etc.



Radford's Cyclopedia of Cement Construction

A Practical Working Guide to the Intelligent Use of Cement, Concrete, and Structural Steel

(2,250 pages; 1,500 illustrations; completely indexed). As necessary to the Carpenter and Builder as to the Stone or Brick Mason or the Cement Man; to the Home Owner and Builder as to the Architect or Engineer; to the Farmer as to the City Craftsman of the Building Trades in general.

Concrete is now used everywhere, for all sorts of construction work—from large residences to small cottages or bungalows; from office buildings and factories to barns, silos and water-tanks; from bridges and culverts to sidewalks and curbs and fence-posts; from breakwaters and dry-docks to hens' nests, feeding troughs and garbage cans. It has triumphantly risen above prejudice and doubt to an assured place as one of the most important building factors of this great age of progress. Any failures in the past have always been due to ignorance or carelessness. Concrete has already worked a revolution in building methods, and is

TEACHING THE WORLD A NEW LESSON

As an ambitious craftsman or engineer, or even as a progressive citizen, you owe it to yourself to be posted on this great vital subject—the different kinds of cement and concreting materials, the proper methods of proportioning and mixing concrete, and the latest approved methods of using it in various forms of construction. You should be able to build a concrete foundation or wall, lay a concrete sidewalk, etc., and be able to tell good from bad in concrete work. These books dispel all mystery about it. Concrete **need be no longer a monopoly in the hands of a few well-posted men.** With the help of Radford's Cyclopedia of Cement Construction, you can do all the ordinary work of the Concrete Engineer or Cement Man, and without any deep mathematical calculations.

Sent on Five Days' Approval for Examination. This Introductory Advance Offer Limited to First 1,000 Sets

Order at our risk, no risk to you—Absolutely no expense to you unless you keep the books—Books sent express charges prepaid, and, if not satisfactory, may be returned at our expense—No follow-up agents to bother you if you should decide not to keep the books.

THE RADFORD ARCHITECTURAL COMPANY, Entire 11th Floor, Medinah Bldg., Chicago, Ill.

SIGN AND MAIL COUPON TO-DAY

(OVER)

From its pages drop t
20th Century Achiev

Partial Table of Contents

To fully realize their immense scope, you must see the books.

Origin of Portland Cement
Ancient and Modern Concrete
Advantages of Concrete
Development of Cement Industry
Dictionary of Terms

Materials and Manufacture of Concrete
Common and Hydraulic Lime
Cements (Portland, Natural, etc.)
Aggregates (Sand, Gravel, Crushed Stone, etc.)
Proportions for Mixing
Mixing by Hand and Machine
Strength of Concrete
Cement Testing
Cost of Concrete
General Working Rules
Depositing Concrete (in Air, under Water)
Bonding Old and New Concrete
Precautions against Freezing
Concrete Troubles and Remedies
Expansion, Contraction, Hair Cracks, etc.

Waterproofing Concrete
Integral Mixtures
Surface Treatments
Asphalt Waterproofing
Waterproof Paints

Concrete Blocks and Brick
Cement Mortar
Stucco and Plaster
Hollow Tile

Concreting Machinery and Tools
Crushers and Grinders
Separators and Screens

Concrete Mixers
Automatic Measuring
Hand Tools
Engines, Hoists, etc.

Concrete Block Machines
Kinds of Blocks (Hollow, Two-Piece, etc.)
Number of Blocks Required
Mixing, Moulding and Curing
Cost of Blocks
Brick Machines
Tile, Pipe and Shingle Machines

Plain Concrete Construction
Forms (Wood, Metal)
Form Construction

Cement Houses
Poured, Block, Brick, etc.
The Edison Poured House
Plaster and Stucco
Foundations
Floors and Walls
Stairs and Steps
Roofs and Chimneys
Porches, Water-Table
Sills and Lintels

Fireproof Construction
Hollow-Tile Walls
Metal Lath and Furring
Mineral Wool
Insurance Rates

Concrete Sidewalks
Curbs and Gutters
Pavements and Driveways

Artistic and Ornamental Use of Concrete
Coloring Concrete
Surface Finishes
Art Tile and Mosaics
Terrazzo Floors
Classic Mouldings
Ornamental Shapes
Keene's Cement
Landscape Adornment (Fountains, Urns, Sun Dials, Garden Seats, etc.)

Radford's Cyclopedia of Cement Constru

The Only Authoritative Work Published—Completely Covering this Big N

Not a collection of pretty pictures or tales of fiction, but five great big volumes full of the soundest kind of in livest subject in the world today—**the uses of cement and the application of concrete to modern building construction.** Not a pa theoretical discussion. The work is **practical** throughout. Only the best authorities on cement and the most expert concrete and structural work were asked to contribute to it. It thus represents the best fruits of the highest skill, and very cream of the world's latest information on this great subject. The work represents an investment of over $100,000 in money and several years of the most painstaking labor.

Order at Our Risk

Free on Five Days' Approval—No Risk to You—No Obligation—No Expense

We take a great risk in making an offer of this sort. We are so confident, however, of the practical value of this set of books that **we are willing to assume all the risk.** We know that when you have examined the books and ordered them on the exceptionally liberal terms of our offer, you will be so entirely satisfied that you will not hesitate to recommend the set to any friend, and you will always have a good word to say about the Cyclopedia whenever it is mentioned. This set of books was written for the **practical man**—the **man on the job.** Everything is put in simple, non-technical English. It tells the "how" and "why" of everything pertaining to concrete construction **without difficult mathematics.** There is not a line of text, an illustration, a drawing in the entire set which the average school boy cannot thoroughly understand without going to anybody for further explanation. Read the terms over again. You lose nothing whether you buy or not; but by cutting the coupon on the back page of this circular and mailing it today, you get this great big work which appeals so particularly to *you* and your means of earning a living, **absolutely without risking a cent.** Then, if you finally decide to buy it, you save yourself $25 20 on the purchase price, and not only that, but you get a full year's subscription to the Cement World, the greatest cement paper published; also a year's Free Consultation Privilege in Radford's Expert Service, giving you, for the asking, the best expert advice on construction problems.

Why delay, why hesitate, when we take all the risk? Read the "No Risk" coupon carefully, sign it and send it in before you lose the circular.

First 1,000 Sets at less than 1-3 Price

$12.80 instead of $38.00
Sent for only $1.00

Free on Five Days' Approval
No risk, no obligation, no expense to you

Every page i
modern Bu

op the wonders of hievements

Construction
ering this Big New Field

e soundest kind of instruction on the
g construction. Not a page is wasted on
and the most expert engineers in
f the highest skill, and embodies the
investment of

5 MASSIVE VOLUMES

Over 2,200 pages, 1,500 illustrations, diagrams, charts, plans and working drawings to demonstrate **by picture** every example given in the text—supplemented by over 200 full-page half-tone plates, showing representative concrete and steel structures of every type, and illustrating every detail of construction. These plates are an education in themselves. **Indexed for immediate reference.** Handsomely and durably bound in three-quarter Morocco leather with full Persian library covers. Without magazine, $1.00 less.

Absolutely Brand New

Not a collection of separate papers bound together in book form, but a masterly work built from the bottom up, according to a definite plan. Compiled at a cost of many thousands of dollars and embodying the accumulated experience of the world's best known practical cement experts, architects, structural and civil engineers. There is not one line of useless information in the entire set. It is designed **for practical use,** and every page of every volume teems with the most vital kind of instruction to the concrete or steel worker. It covers everything thoroughly, from the history of cement through the various ages, down to its latest applications—from the laying of cement sidewalks to the construction of the largest bridges or buildings of reinforced concrete.

Yours for only $1.00

Special Advance Sale

Our reason for making this unprecedented offer of the first 1,000 sets of this great work at a **great reduction below actual cost,** is found in the **advertising value** we will receive through placing these sets in the hands of **representative** men in the cement and concrete industry in different parts of the country. If we did not expect to sell many thousand sets we could not afford to make any such offer as this.

What Our Offer Includes:

Radford's Cyclopedia of Cement Construction—Five Massive Volumes—the only Cyclopedia in existence covering this important new field.

The Cement World - A full year's subscription to this biggest and best cement paper, published in the interest of the cement industry. A constant source of practical, up-to-date information, keeping its readers in familiar touch with the latest progress. Profusely illustrated and in every way a high-class standard publication.

Free Consultation Privilege - Expert Advice on Construction Problems - A certificate, entitling the subscriber, for one year, to free consultation privilege in Radford's Expert Service. On account of its comparative novelty, concrete presents to the builder of today many problems of more or less difficulty, e. g., in design of reinforced work. On all such matters the subscriber has the benefit of free expert advice from a special corps of Engineers and Architects.

The Coupon Brings Them All **Sign It and Mail Today** **(Over)**

Partial Table of Contents

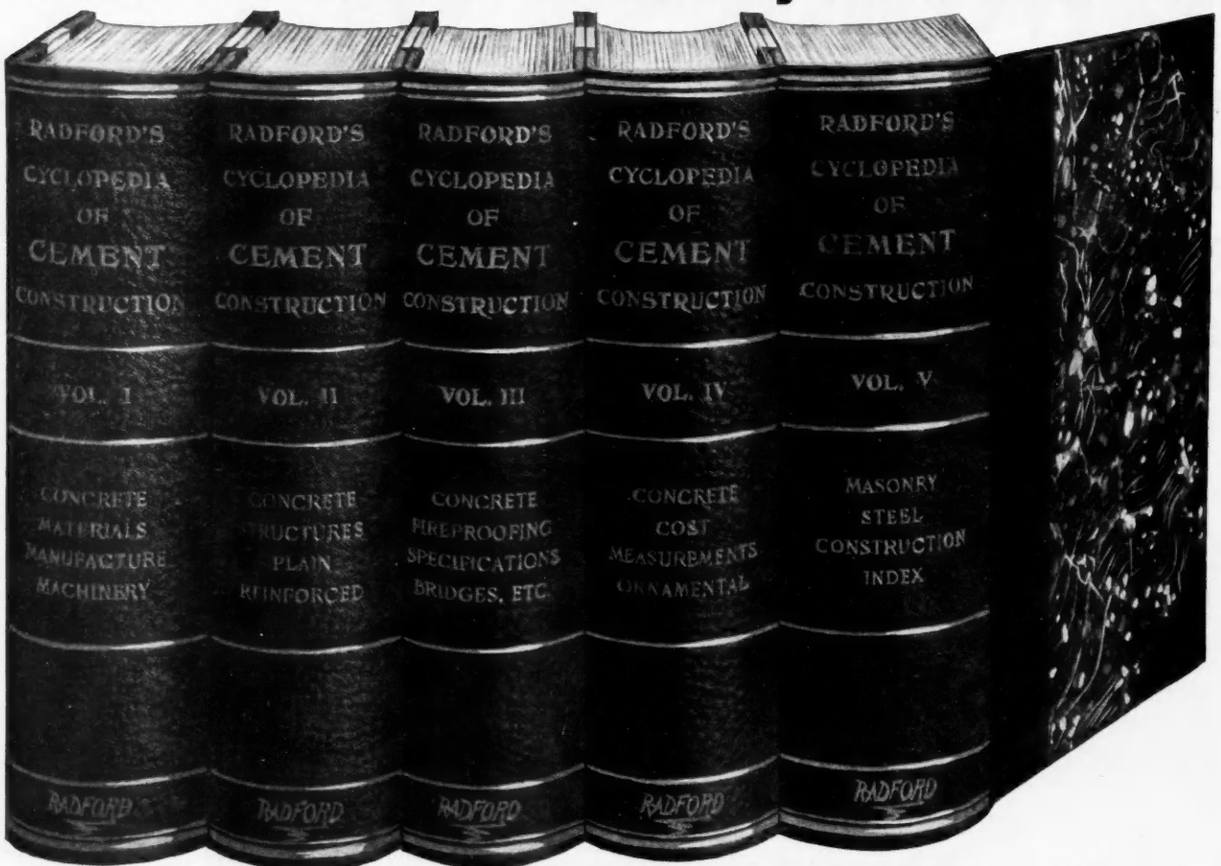
(Concluded)

To fully realize their immense scope, you must see the books.

ge is a revelation in n Building Methods

SENT FOR ONLY ONE DOLLAR

Five Massive Volumes—Beautifully Bound in Morocco



For Concrete Workers; Steel Workers; Carpenters and Builders: Contractors; Architects; Civil, Structural, and Sanitary Engineers; Draftsmen; Masons; Stonecutters; Plasterers; Sidewalk Men; Pavers; Roofers; Waterworks, Sewer, and Tunnel Constructors; Bridge Builders; Home Owners; and the Building Trades in General; also Schools, Colleges, and Universities.

Absolutely only 1,000 Sets will be sold under this Free Trial Introductory Offer. No matter what your work may be, this set of books will improve your conditions, either as an employer or as a worker, giving you a broader knowledge of modern building material and methods, and fitting you for greater responsibilities and better pay. There is no place else to go to for this information. This Cyclopedia is **alone in its field.**

Free Consultation Privilege

Now and then, because of its comparative novelty, concrete may present problems of more or less difficulty, for example, in design of reinforced concrete beams, columns, etc.

Ask Any Question You Like

on any construction problem confronting you, and you will receive, absolutely free of cost, the written expert advice of the corps of special Engineers and Architects in Radford's Expert Service. This privilege alone may save you many times the cost of the Cyclopedia in consulting fees.

Study the Special Advance Offer Again

Five Big Volumes—free on approval—2,250 pages, 1,500 illustrations, over 200 full-page half-tone plates.

No Risk **No Obligation** **No Expense To You**

$12.80 instead of $38.00 if you decide to keep the books.

Cement World—one full year's subscription.

Free Consultation Privilege for one year—special expert advice of a trained corps of Engineers and Architects.

SENT FOR ONLY $1

Radford Architectural Company

Entire 11th Floor, Medinah Bldg. CHICAGO, ILL.

PIN A DOLLAR BILL TO THIS COUPON AND MAIL IT AT OUR RISK TO-DAY

NO RISK-GUARANTEE COUPON

A.C.B.
11-10
Radford Architectural Company
11th Floor, Medinah Bldg.,
CHICAGO

Please send me, express prepaid, one set of your 5-volume Cyclopedia of Cement Construction, for 5 days' free examination under the terms of your **Introductory Advance Offer.** I inclose $1 deposit, which you agree to return if I decide not to keep the books after examination. If I keep the books I will pay $2 a month until the special price, $12.80, is paid; otherwise I will notify you within five days after receipt of books. In addition to the Cyclopedia, your offer includes one full year's subscription to the *Cement World;* also a certificate entitling me, for term of one year, to free privilege of **Consultation in Radford's Expert Service.**

Name _____

Town _____ **State** _____

Street _____

AMERICAN CARPENTER AND BUILDER

American Carpenter and Builder

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

Published on the first day of each month by

AMERICAN CARPENTER AND BUILDER COMPANY
185 JACKSON BOULEVARD, CHICAGO

NEW YORK OFFICE, 178 FULTON STREET

EDITORIAL DEPARTMENT

WILLIAM A. RADFORD, EDITOR-IN-CHIEF
BERNARD L. JOHNSON, B. S., EDITOR
WILLIAM REUTHER . . . } ASSOCIATE
CHAS. D. WARNER . . } EDITORS
ALFRED W. WOODS . . . }
ALFRED S. JOHNSON, M. A., PH. D. }

BUSINESS DEPARTMENT

WM. A. RADFORD, PRESIDENT AND TREASURER
CHAS. W. RADFORD, VICE-PRESIDENT
H. M. RADFORD, SECRETARY
E. L. HATFIELD, BUSINESS MANAGER
H. W. WALKER, ADVERTISING MANAGER
E. B WOLFROM, EASTERN REPRESENTATIVE

VOL. X DECEMBER 1910 No. 3

SUBSCRIPTION RATES

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

ADVERTISING RATES

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

Enthusiasm

ENTHUSIASM is the greatest business asset in the world. It beats money, and power, and influence. Single-handed, the enthusiast convinces and dominates where the wealth accumulated by a small army of workers would scarcely raise a tremor of interest. Enthusiasm tramples over prejudice and opposition, spurns inaction, storms the citadel of its object, and, like an avalanche, overwhelms and engulfs all obstacles. Enthusiasm is nothing more or less than faith in action. Faith and initiative, rightly combined, remove mountainous barriers and achieve the unheard of and miraculous. Set the germ of enthusiasm afloat in your shop; carry it in your attitude and manner; it spreads like contagion and influences every fibre of your industry before you realize it; it begets and inspires effects you did not dream of; it means increase in production and decrease in costs; it means joy and pleasure and satisfaction to your workers; it means life, real and virile; it means spontaneous bed-rock results—the vital things that pay dividends.—*Selected.*

Protection of Workmen on Buildings

IT HAS been but a few years that the safety of employees on buildings has received legislative attention, but the list of States having laws on this subject has attained considerable length, three—Louisiana, Montana and Oklahoma—being added thereto within the period covered by a review of this matter in a bulletin of the Bureau of Labor. The act of the Louisiana legislature calls for the installation of such devices as will protect workmen below from falling objects and requires safety rails to be placed on scaffolds, elevator shafts to be guarded, the adoption of signals for hoists, the construction of secondary scaffolds and protective floors, and the determination and observance of the loading capacity of joists during the construction of buildings. The law is restricted in its application to cities having a population of 30,000 and over. A Montana law on this subject requires scaffolds to be safe and so built as to prevent material falling therefrom, protective shields to be erected above scaffolds if work is being carried on overhead, and that stairs and elevator ways be guarded. The Oklahoma statute relates to scaffolds, hoists, cranes and stays, which shall be "safe and suitable;" and directs the construction of protective floors during the course of the erection of the building if the permanent floors are not laid before the erection of the succeeding story. The violation of this act incurs specific personal liability as well as a penalty.

The law of California on this subject is amended by a provision requiring protective floors to be laid when necessary for the safety of employees during the construction of buildings more than three stories in height, and the use of means to prevent objects from falling from scaffolds, etc.

A Remodeled Stable

AN EXTREMELY INTERESTING ACCOUNT TELLING HOW AN UNUSED BARN WAS REMODELED AND MADE INTO A VERY ATTRACTIVE LITTLE RESIDENCE

WHAT careful planning will accomplish in the way of remodelling an unused barn into a commodious dwelling is clearly shown by the attractive house illustrated herewith. It is the property of Mr. F. L. Milliken of Kenberma, Massachusetts, and the work of reconstruction was under the direction of Mr. J. Lovell Little, Jr., Architect, of Boston, Mass.

Old Shingled Barn at the Rear of the Lot

The original building stood at the rear of a good-sized plot of land, but in order to secure a better setting for the new dwelling, it was removed to the front portion of the site New windows corresponding in design to the old ones were inserted to give the interior better light, and the old barn door was closed up and converted into window spaces.

The side of the barn was turned around in the process of moving so as to face the front, and here at one end the entrance door was arranged. The roof at this point and at the adjoining end was extended to form a hooded covering, and the deep overhang is as attractive as it is unusual. A wide uncovered veranda was built along a portion of the entrance front and part way round the connecting end, and a broad covered veranda, supported by pretty latticed posts, was constructed along the opposite side. A spacious extension was added at the rear for the location of additional apartments. In its transformed state, the barn is most interesting.

The exterior finish is of shingles stained pearl gray, with white painted trim. The interior is entirely plastered and finished in hard pine stained a soft brown, and the walls of the first floor are covered with burlap of a corresponding tone. The floors throughout are of hard pine, stained and polished.

The entrance door gives upon a long, rather narrow hallway, from the end of which the staircase ascends to the second floor apartments.

At the left opens the living-room, characterized by a handsome fireplace of dark red brick, with hearth of rough red tiles, twelve inches square. Deep built-in closets flank it on either side, and a broad built-in settle is arranged at the right wall space. A wide window-seat, cushioned in golden brown extends the

Barn Moved Forward and Converted into an Attractive Residence

Comfortable and Homelike Living Room in the Remodeled Barn

length of the four front windows, and beneath it is convenient storage space. Curtains in tones of brown and white shade the windows, and rugs of harmonious coloring partly cover the floor. The furniture is principally of wicker, roomy and comfortable, and the seat cushions harmonize with the general color scheme of the apartment.

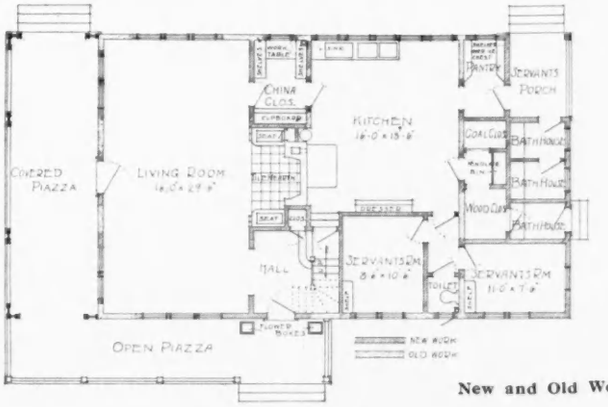
From the end next the fireplace opens the dining-room, separated from the main room by doorway spaces partly enclosed with a lattice work arrangement. Dutch hangings of the same mtaerial as that used in the living-room shade the triple windows, and a rug of harmonious tints is laid upon the polished floor.

Beyond here is the well-arranged china closet opening into the pantry, which connects with the large kitchen located just back of the hallway.

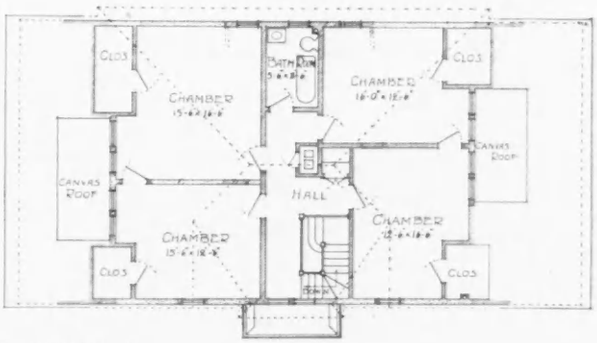
In the new extension are located a well-arranged servant's room, coal and wood closets, and rear porch, as well as three good-sized bath houses, approached from the exterior by a separate entrance.

On the second floor are four chambers, each nicely finished and provided with excellent closet accommodations, a large bath room, equipped with the best open plumbing, and a good-sized linen closet.

The house is lighted throughout with electricity, and the total cost of the remodeling was three thousand dollars, the various items running about as follows: masonry, $450; carpentry, $650; lumber, $725; plastering, $350; plumbing, $375; painting, $250; electric wiring, $80; hardware, $70; tin and metal work, $50.



First Floor Plan



Second Floor Plan

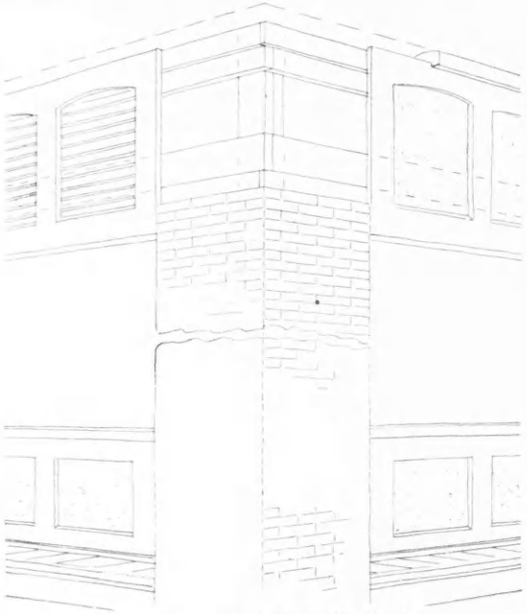
New and Old Work as Indicated

Observed and Sketched "On the Job"

HOW MODERN CARPENTRY WORK SHOULD BE DONE AND HOW IT IS OFTEN DONE AS NOTED BY OUR BUILDER-ARTIST-PHILOSOPHER WHILE INSPECTING RECENT WORK

By Conrad H. B. Schaefer

WHEN a workman comes upon a problem he can depend upon it that he is not the only one to be confronted with the same difficulties. There are sure to be others working and studying in a similar way. If difficulties seem too trying to be met single handed, it should be recollected that there are others—that many more are trying to overcome the same troubles and that each person's best efforts are necessary to the final success of all.



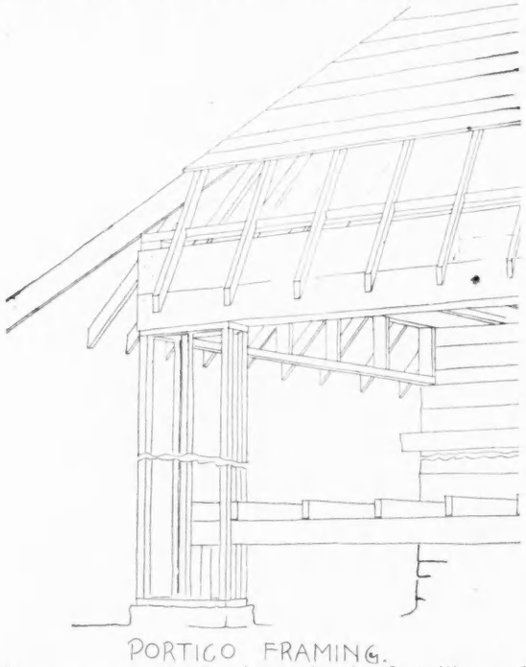
TWO STORY PORCH.

One can only *work* his way into the class of goods workmen. Poor workmen need all kinds of schemes to bolster themselves up. It is more economical to be a good workman. As such one makes more and spends less, and besides enjoys the best fraternal relations as a result. The good workman finds himself welcome in many directions. The heedless workman needs a crow bar with which to pry his way through society.

While looking for good work among the buildings of the day one can not help coming across much poor work. Some plain men may be doing splendidly, others, whose education makes them feel above work, may be devoting their comfortable time to devising schemes that look well on paper but turn out to be very poor in practice

The conclusion is, we all need something besides education to make us successful and infallible. That which is needed is strength of character. Character, like muscle, is built up by exercise, by overcoming trouble in the right way.

Some people would not believe it, but we have seen men pick up their tools when they have come upon some trivial difficulty—pick up their tools and go out hunting for another job. They may have lacked perseverance. The flaw was in themselves and not in their work. They carry the trouble around with them in the very hour when they think they are leaving it behind them. If such only knew it, all they need is a friendly "brace up" by way of encouragement.



PORTICO FRAMING.

The two-story porch, shown in the first illustration, was found among some city work. There were brick piers supporting a plank frame work. This, in turn,

supported cement plaster panels in open timber style. The panel wood work is furred out to allow the cement to bind behind the lathing. The furring consisted of 1 by 4 inch pieces in long lengths.

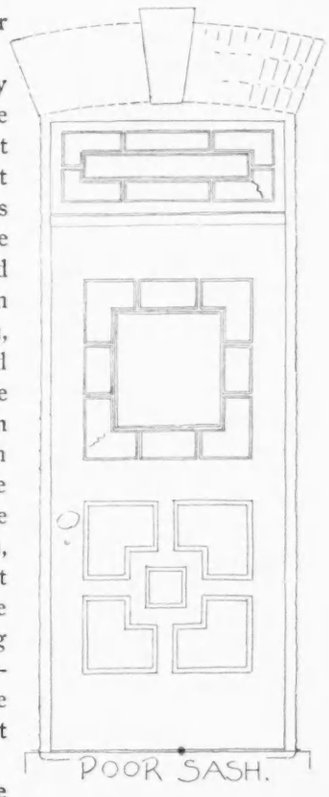
Some men sling in any old thing for furring: blocks,

SOME CIRCULAR WORK.

chips and small pieces. Don't! It makes a bad mess of a job and a bad job of one's character. Circumstances always favor a reliable workman. He has earned it by persevering in the right way and those who do not understand call him lucky. The only way to compete with a lucky man of this sort is to renew the good resolutions that were made last New Year's. It is worth while.

In the sketch of the portico framing the main roof is brought down over the porch with a good projection—more than three feet. It is for one of those open air rooms that can be inclosed with screens or sash.

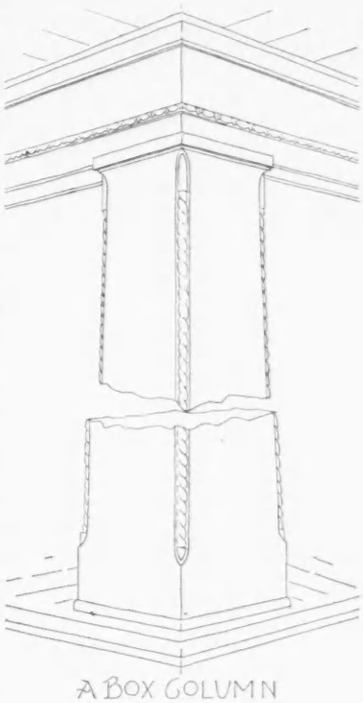
The test of every man's skill seems to be in circular work. Yet the difficulties are not very great if one goes about it right. The mouldings for this round roofed dormer, shown in the third illustration, were, of course, turned out in the mill and the rafters sawed out in double thickness with the grain crossing. The ridge is undoubtedly one piece the whole length, with the rafters set against it on opposite sides. The sheathing would have to be in narrow strips, and the whole roofed with sheet metal.



POOR SASH.

If there is any feature in a house which has drawn upon the four corners of the earth for novelties in pattern, it is the front door. It is quite right to display a little more taste in a part of the work like this; but in looking over some public buildings, the style we illustrate was found. Any one can see it is a very poor way to cut glass as necessitated by the sash in the corner panes of the door and transom lights.

Every window around the entire building had transoms in which were these "steel-square" shaped corner panes. Although the building was comparatively new, many of these panes were broken, as one might expect—"broke of itself." The cracks were from the inside corners of the glass, of course.



A BOX COLUMN

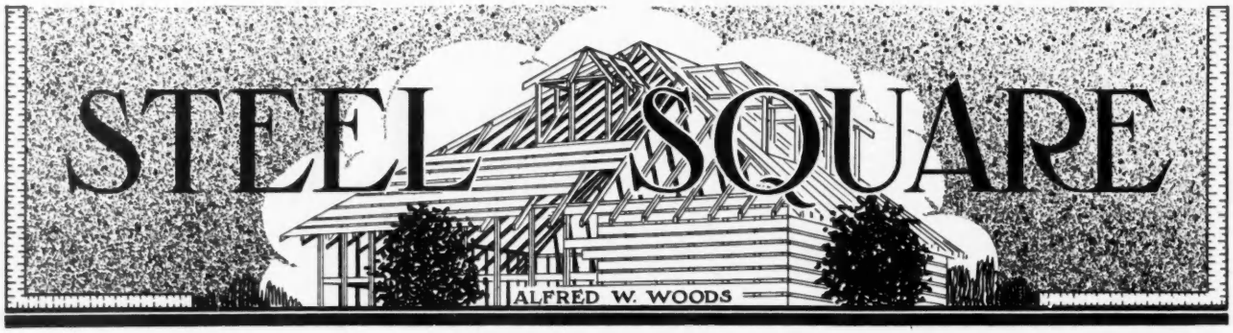
Such a design is a school boy imitation of Greek art. Door panels are sometimes made that way—which is no additional reason for cutting window glass that shape also. Such weak and unsuitable details show inexperience in those who make them, usually at great expense to the public and business.

Cracks in the concrete work of this public building also showed ignorance of the expansion and shrinkage of materials.

A great variety of tasty columns can be made in square box work. If the joints open they can be driven tightly together when being repainted. The one sketched had rope mouldings on the corners. Any bead moulding will do. It should be a little more than half a section and the chamfer should be a little wider then the bead. The cone at the top probably had a very small fillet or offset at the bottom, thus giving that continuous effect.

Some of the recent work omits the nosing moulding which is usually mitered across the ends of porch floorings. This nosing piece comes off in a few years. Frost, water and dust pry the joint open. It certainly will not last long if the nails are driven into the ends of the flooring. The nosing should be wide enough to nail down into the riser, solid. The cove moulding underneath only holds itself. Some of the front porch flooring is only 7/8-inch thick, which is too thin and the butt ends make a poor finish projecting over the sides.

Workmen largely control the tendency of such changes as take place in their occupations. They control it in their habits while at work. It is best to aim at the best one can do and give lasting satisfaction.



Problems of Roof Framing Solved

TWELFTH ARTICLE—A SIMPLE "DIAGRAM" METHOD BY WHICH THE SIDE CUTS OF RAFTERS MAY BE OBTAINED FOR ANY SHAPE BUILDING

IT HAS been the aim in all of our writing on the subject of the steel square, to discuss it as a general framing tool that may be intelligently applied to framing the roof for any building of any conceivable shape. There are many ways of illustrating the different angles; yet after all, there is but the one rule that applies to all alike and it is this we have tried to make clear. The articles we have contributed since the first of this year practically cover the whole subject of roof framing. This may seem like a broad statement to make, yet nevertheless it is true. It is true that we did not go into all of the irregularities that a carpenter is liable to run up against in framing, but we have shown rules that apply to any shaped building, and when mastered they can be readily applied to fit any condition that the carpenter is liable to run up against.

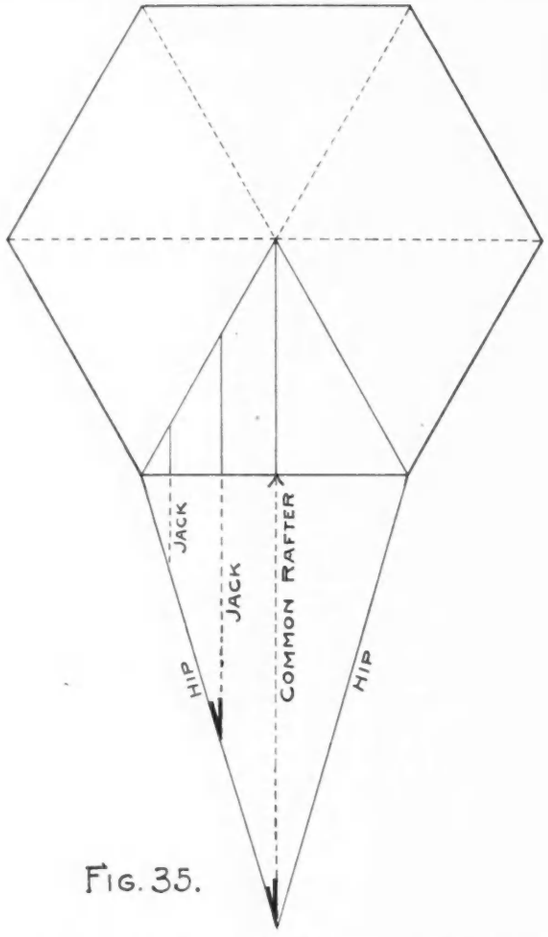


FIG. 35.

We will now, for the time being, call the reader's attention to another method of finding the length and cuts of the rafter. However, we wish to say that this is not given as a method to be recommended, but it is a method so simple that any one can grasp it at a single glance and remember it. It cannot be considered as a strictly steel square method; and furthermore, the man who knows how to reckon with the steel square would not waste time in preparing a carefully scaled diagram—which it must be, to insure accuracy in the work. Yet, from the diagram the cuts may be obtained with the aid of the steel square and that too without the knowledge of the parts of the roof to take on the square to obtain the proper angle. Simply lay the square on the diagram and note the figures that rest on the lines which form the angle for desired cut; then place it on the timber at the same figures as before noted and scribe the line for the cut.

Most carpenters use a bevel square for this purpose, which they set to the angle, as indicated in the illustrations.

Fig. 35 shows the lay-out for a hexagonal building. This illustration is for a roof with 16-inch rise to the foot, or 2/3 pitch. The length of the common rafter in this case is 16 feet 8 inches. This being found, a like amount is laid off at right angles with the out edge of the plate, as shown and from its extreme end draw a line to the corner of the plate on either side. These lines will represent the length of the hip and are all that is necessary to lay out, as the sides are all alike.

These angles as here shown only give the side cuts; the seat and plumb cuts are obtained by the run and rise, as in the case of any other building; but it should be remembered that to obtain the side cut of the hip

by the above method, the hip should be first backed; and the bevel square, after being set to the angle in the diagram, should be applied to the backing, as the backing must lie in the same plane as the roof; and the backing of the hip is necessary to get the proper angle on its back. This being done, it will be found that the same bevel, set for the side cut of the jack, also answers for the side cut of the hip.

section of the roof lines. This diagram is laid out for the one-half pitch. The length of the common rafter in all cases governs the distance out the farthest point should be.

In presenting this, we do not, as said before, claim that it presents anything new in the art of framing, for it has been published many years ago, in fact before the steel square was recognized as a general

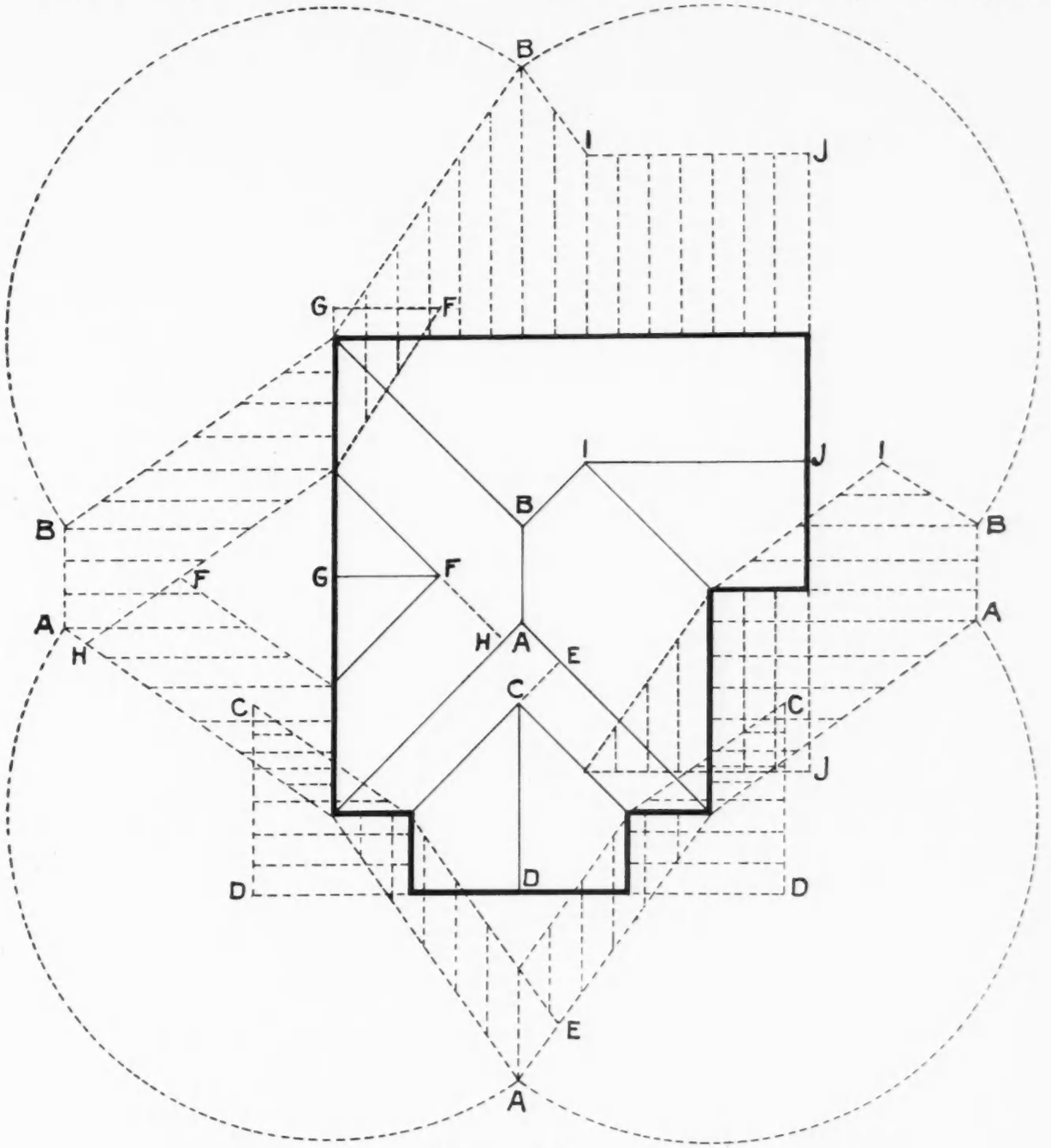
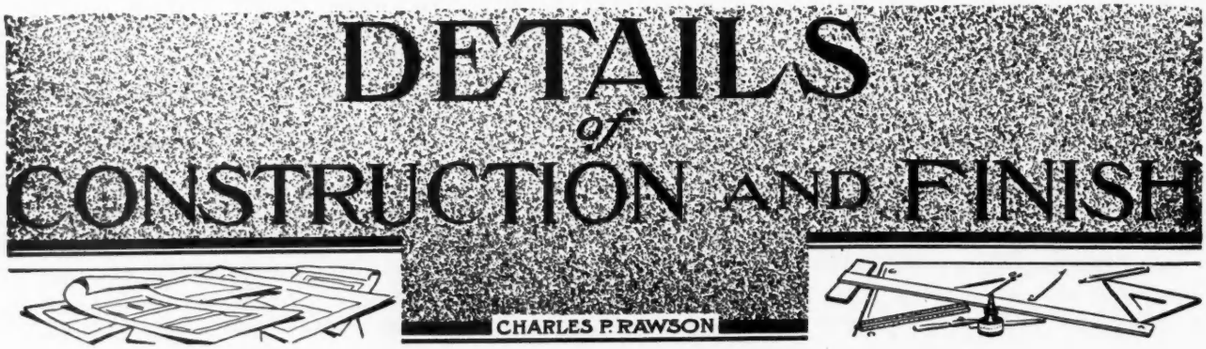


FIG. 36.

Now, we will show the same formula applied to a hip roof with gables as shown in Fig. 36. In this are shown all of the rafters for the different sides. When set in place in the roof—that is if we could fold over these sides directly above the plan—like letters will come together and show as but one letter at the inter-

framing tool. The steel square has little to do with this method, aside from laying out a true diagram but we think it possesses enough merit to give it a place along with this series of articles.

In our next, we will take up and illustrate framing by a graphic method.



Four Dormer Windows

CLEARLY DRAWN WORKING DRAWINGS TO SCALE SHOWING THE DESIGN AND CONSTRUCTION OF FOUR DIFFERENT ROOF DORMERS

IT OFTEN happens that the carpenter is called upon to build a dormer on the roof of an old house which is being remodeled and where no architect is employed, and we show, therefore, this month several types of dormers which may be of assistance in work of this kind. They are offered merely as suggestions and are not necessarily intended to be built exactly as shown.

There are so many different styles of dormers and so many different ways of roofing and finishing them that it is impossible to show more than a few types or much more than to allude to them in this article. As a rule, the eaves and roof are made to correspond with those of the building except that where the eaves overhang the main roof there is no necessity of a gutter. However, dormers with gables are often built on hip roofs and hip roof dormers are many times put on houses where the main roofs are gabled.

There are two principal kinds of dormers—those built entirely on the roof, as shown in the illustrations and those which are formed by a continuation upward of the main wall. On isolated or suburban residences the former are more common, although on a story and a half houses the latter are often used. Dormers of the latter kind are very common on the fronts of city residence and of public buildings, but they are usually built either of masonry or metal and often with elaborated gables, pilasters, etc.

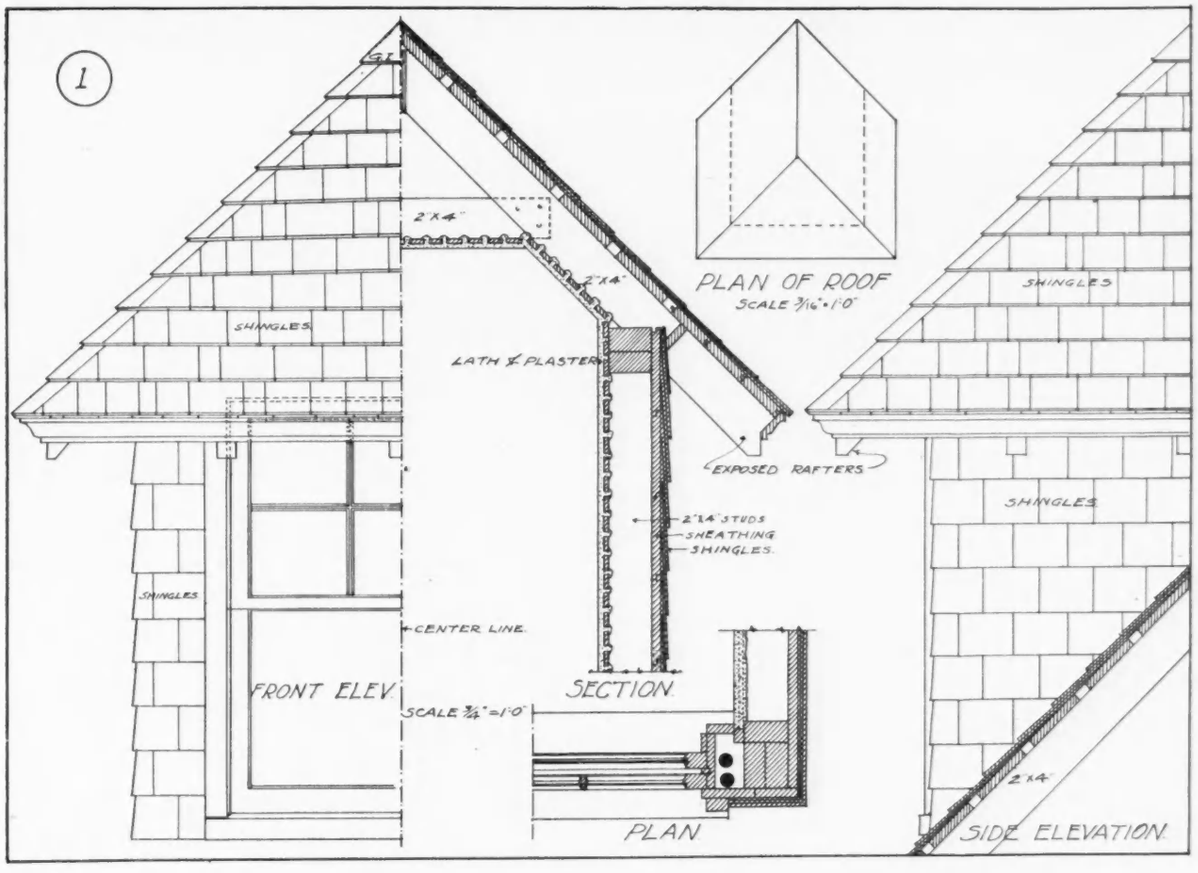
To be of practical utility the sill of the window or windows in a dormer should be not more than three feet, nor the top of the same less than five and one-half feet, above the floor. This rule does not necessarily hold good in attics which are to remain unfinished or which are to be used for storage purposes only.

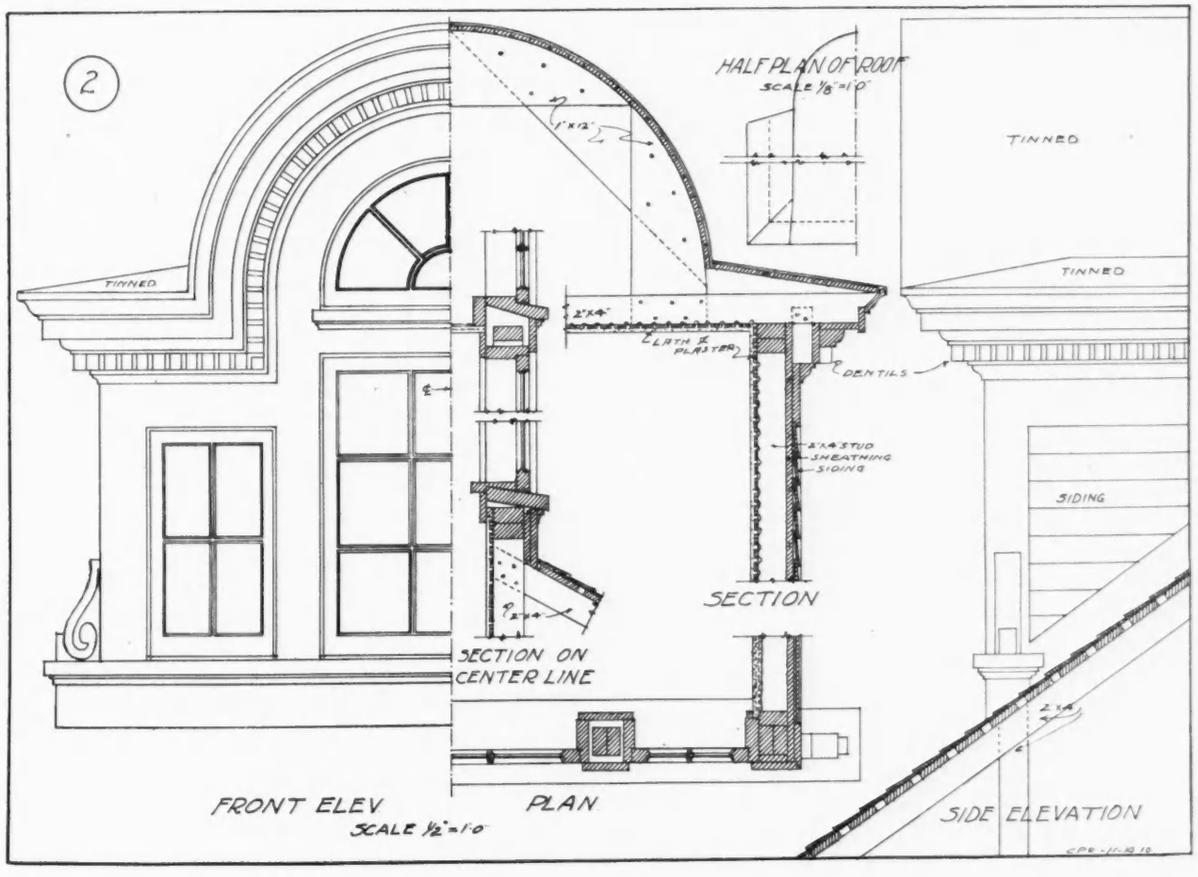
A few examples of common types of dormers are shown in the two plates of details accompanying this article. A great number of variations in them can be made to suit the conditions in which they are employed. The simplest method of roofing a dormer and the simplest kind of a dormer itself, when the main roof rises high enough to allow its use, is that shown in Fig. 3. The roof of the dormer should have a pitch of at least 30 degrees, and it is better to have the outer edge provided with a gutter and conductor, although they are rarely provided. The roofs shown in this drawing are covered with tin laid with standing seams and the side walls with plaster. Any other covering materials may be, of course, substituted if desired. Elevations, plans and sections are given at the scale of three-quarters of an inch equals one foot.

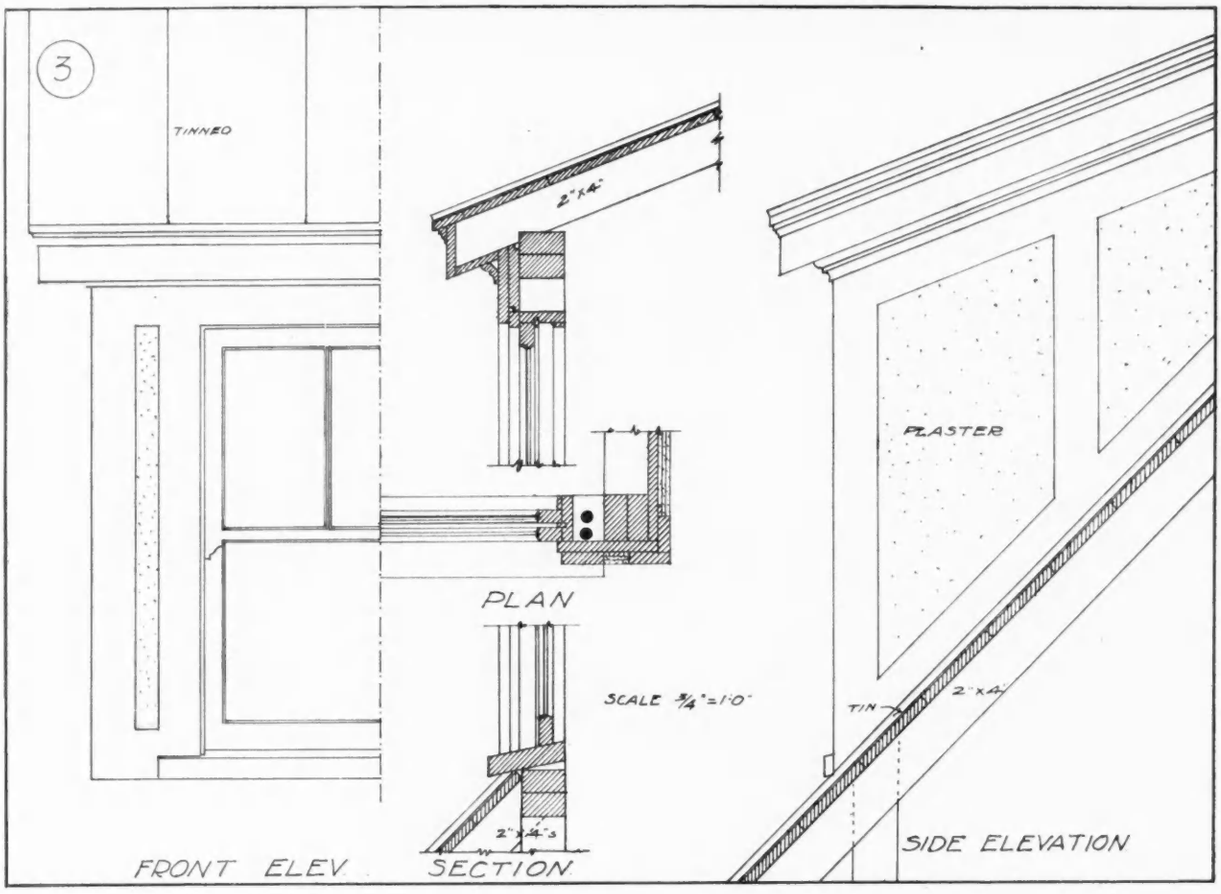
For dormers placed on the roof a gable or hip roof has generally the best appearance, and for these a style of finish similar to that shown in Figs. 1 and 4 is about the cheapest and most common. Fig. 1 shows a type of dormer often used on shingled houses; these admit of a great variety of treatment. That shown on the drawing has exposed rafters and a hip roof. Scale of plans, elevations and section is three-quarters of an inch equals one foot and of the small roof plan is three sixteenths inch equals one foot. A style of shingled valleys that has become quite common on this kind of building is to have the valleys, instead of being formed in the usual way, rounded so that the courses of shingles may be made continuous from the main roof to the dormer. The juncture of the sides of the dormers with the main roof are also sometimes shingled in a similar manner. In shingling hips the author suggests the use of tin shingles, one used over each course of shingles as they are laid, and as shown in the drawing.

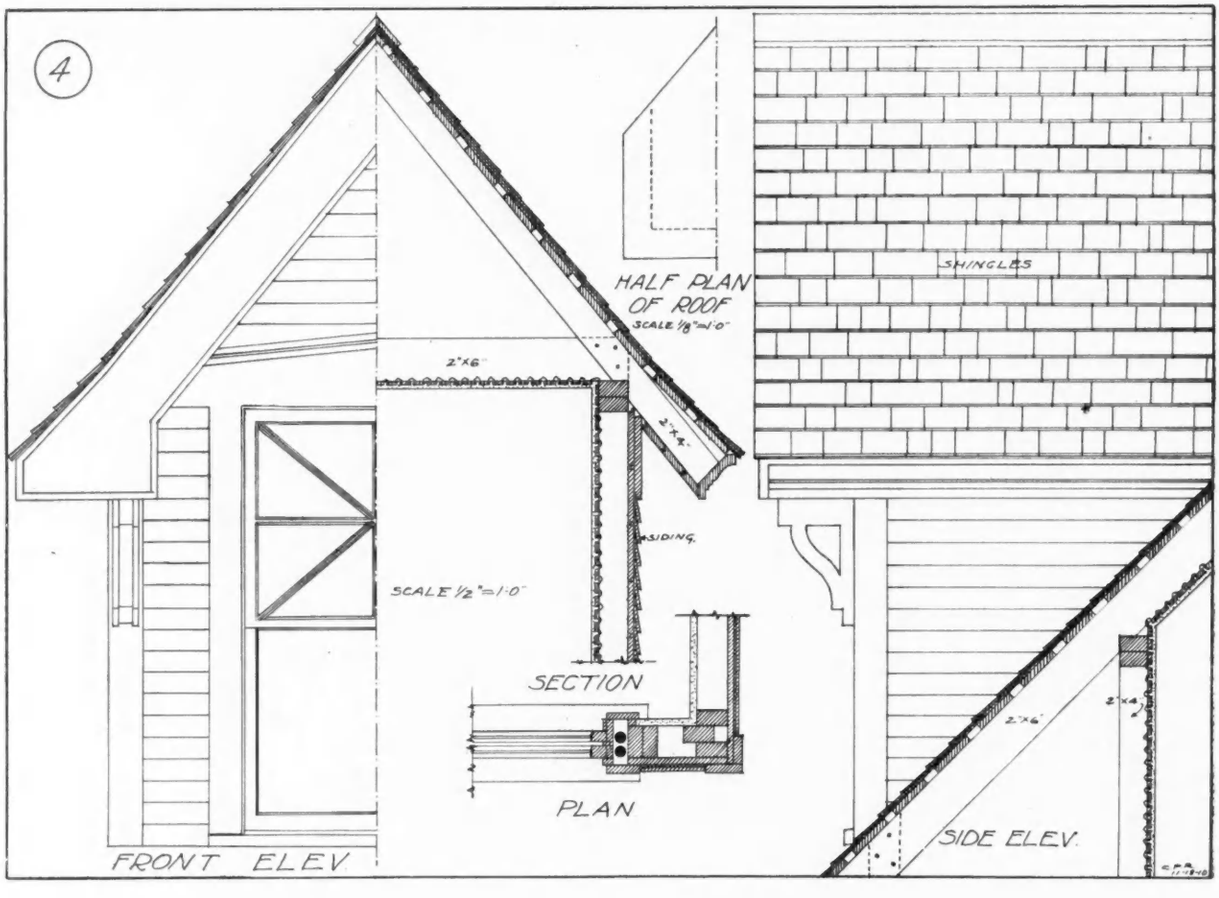
Fig. 4 shows a gabled dormer which will look well on a steep-roofed building. The roof is covered with shingles and the sides of the dormer with lap siding. The scale of the plans, elevations and sections is one-half inch equals one foot and of the small roof plan one-eighth inch equals one foot.

On houses of the colonial type dormers similar to that shown in Fig. 2 with a semi-circular and gable are often used. This type may be constructed by having the gable cornice project only above the flat roof of the dormer and be covered on the top and back with tin or copper. The author prefers the style of construction as shown in Fig. 2, however. Sides of dormers of this kind are preferably covered with lap siding. Scale of the plans, elevations and sections shown is one-half inch equals one foot and of the small roof plan one-eighth inch equals one foot.

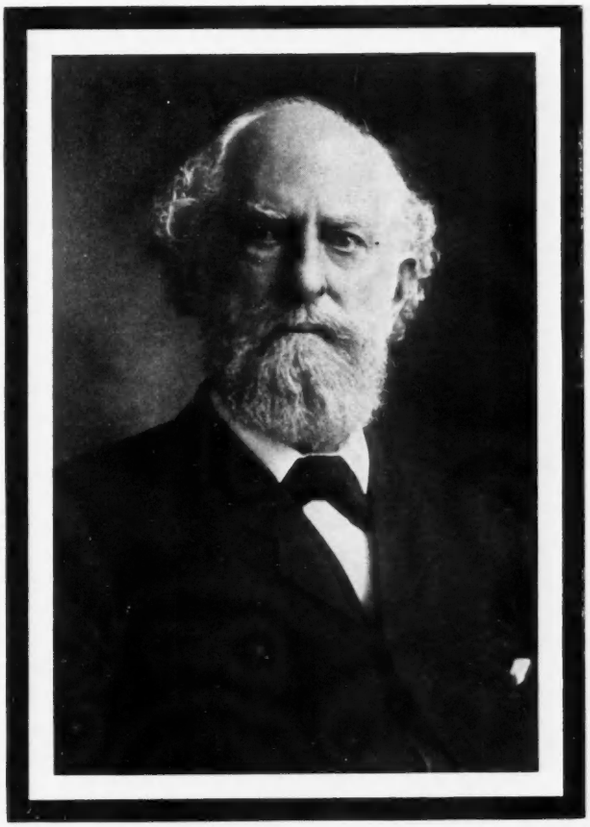

1
2"X4"
2"X4"
SHINGLES
LATH & PLASTER
EXPOSED RAFTERS
2"X4" STUDS
SHEATHING
SHINGLES
SHINGLES
CENTER LINE
FRONT ELEV.
SCALE 3/4"=1'0"
SECTION
PLAN
PLAN OF ROOF
SCALE 3/16"=1'0"
SHINGLES
SHINGLES
2"X4"
SIDE ELEVATION


2
HALF PLAN OF ROOF
SCALE 1/8"=1'0"
1"X12"
TINNED
TINNED
TINNED
2"X4"
LATH & PLASTER
DENTILS
2"X4" STUD
SHEATHING
SIDING
SIDING
SECTION
SECTION ON
CENTER LINE
2"X4"
FRONT ELEV.
SCALE 1/2"=1'0"
PLAN
SIDE ELEVATION


3
TINNED
2"X4"
PLAN
SCALE 3/4"=1'0"
2"X4"'s
FRONT ELEV.
SECTION
PLASTER
TIN
2"X4"
SIDE ELEVATION


4
HALF PLAN
OF ROOF
SCALE 1/8"=1'0"
SHINGLES
2"X6"
2"X4"
SIDING
SCALE 1/2"=1'0"
SECTION
PLAN
FRONT ELEV.
2"X6"
2"X4"
SIDE ELEV.

Philip Corbin



PHILIP CORBIN, President of the American Hardware Corporation and founder of P. & F. Corbin, died at his home in New Britain, Conn., on Thursday, November 3, 1910, aged 86 years.

He was a native of Connecticut. His father was a farmer, and Philip's early years were those of a healthy, industrious boy upon a farm. He attended district school and helped his father, and occasionally worked for other farmers in the neighborhood. His education ended when he had completed a term and a half at the West Hartford Academy.

On March 18, 1844, he followed the example of other young men of his acquaintance who had found employment in factories of New Britain, and entered the shop of Matteson, Russell & Co., afterwards the Russell & Erwin Mfg. Co. Later he worked for a lock contractor in the shops of North and Stanley. Being eager to learn he spent his evenings with a contractor in another department, and in return for his labor was taught to make locks. In sixty days he was a competent lock maker, and the following spring he secured a contract to make plate locks, thus becoming at 20 a contractor and an employer of labor.

In the summer of 1848, Mr. Corbin and his brother Frank, together with a brass founder named Edward Doen, formed a copartnership under the name of Doen, Corbin & Co., to manufacture hardware. Each of the three young men contributed three hundred dollars to the capital. Six hundred dollars were expended for land and a building; a horse and tread mill were installed to supply the power to the two lathes, grindstone and emery wheel which composed the equipment. In May of 1849, work was begun and the first shipment of goods—brass ox balls—was made on July 4th, 1849. Mr. Corbin usually began work at daylight and often as early as three o'clock in the morning, and performed in each day work which it would have cost from six to seven dollars to hire done at the prevailing rate of wages of $1.50 per day. He also kept the books and conducted the correspondence. His tireless energy and great vitality enabled him to perform herculean tasks without impairment of health, and it is worthy of note that despite the hardships and overwork of the early years of his career he survived every one of the men with whom he did business at that time.

On September 1st, 1849, Mr. Henry W. Whiting, Mrs. Corbin's father, bought Mr. Doen's interest. In the fall of 1851, Mr. Whiting sold his share to the two brothers, and the firm became P. & F. Corbin, the name under which the business is done today.

In 1851, American manufacture was in its infancy, and nearly all the hardware was imported. Mr. Corbin avoided domestic competition by confining his product to articles made abroad, and as they were better made than the imported goods he found a ready market. It was at this time that he formed his policy of making goods of a superior quality and a complete assortment in any line he adopted. He was thus able to meet all demands in any field he entered.

The creation of the American Hardware Corporation was a striking indication of the popular appreciation of Mr. Philip Corbin's business ability and judgment. The economies and other advantages to be gained by a union of the businesses of P. & F. Corbin and the Russell & Erwin Manufacturing Co. were apparent, but before a basis of consolidation could be found there were many differences to adjust. Difficulties which another man would have found unsurmountable, disappeared before the influence of Mr. Corbin's prestige, and the holders of every share of stock in the two companies assented to the change when the American Hardware Corporation was formed on March 13th, 1902, with Philip Corbin as President. While other honors and successes had come to him more or less directly as a result of his ability and reputation, the American Hardware Corporation, made possible only by the universal recognition of Mr. Corbin's sterling qualities, stands peculiarly as a tribute to his genius and high personal worth.

Mr. Corbin's business career is unique in that it covered a period of sixty-six years of active life. Sixty-one years were spent in the management and development of a single enterprise engaged in the manufacture of hardware. The capital invested has

grown from nine hundred dollars to ten million dollars, and the number of persons employed from three only to ten thousand.

To the nation at large, Mr. Corbin is known as a great industrial leader. To his townspeople and others who came to know him personally there is added a warm appreciation of his individuality, which was in many ways unusual, even in New England, where the stern struggle for existence aided in the developmnt of the character of the people of Mr. Corbin's time. He was dignifid, with the dignity that came from a self-respect that exacted more from himself than it required from others. Approachable, the door to his office was open to every employe of his companies. Living a simple, natural life governed by the healthful and helpful impulses of an existence spent in good work, he avoided ostentation and resisted any attempts to force him into undue prominence.

One of the sources of Mr. Corbin's strength was the simple directness of his dealings, both with men and business problems, which enabled him to avoid complications and reach conclusions based upon the main points of issue alone. Values were created before expenditures were authorized, and the institutions which he made, having grown from their own earnings, are the legitimate fruits of industry and business foresight. No man and no institution ever suffered because of oppressive methods or injustice on the part of the Corbin interests.

In Mr. Corbin's death, the world has sustained a loss, but it is richer because of his life, and the benefits have not ceased with the withdrawal of his visible presence. Omnipotence only can tell all places where his influence has been a blessing, or when the circles in the sea of events radiating from him shall have reached the farther shore.

Oak Flooring and the Carpenter

SPECIALIZATION IN CARPENTRY WORK AND THE OPPORTUNITIES FOR HARD WOOD FLOORING SPECIALISTS—THIN OAK FLOORING OVER OLD FLOORS—VARNISHING AND WAXING

IT HAS been said that this is an age of specialization. Knowledge has progressed so far that it is no longer possible for a single mind to master all that can be learned about an entire trade or line of work. There are too many intimate details to be mastered, and too high a degree of skill is today required for a man to presume to call himself an *expert* in all the branches of a profession or trade. Whether it is business, law, medicine, engineering or craftsmanship the same thing is true: the man to be successful must *specialize*.

A general knowledge of the whole field is required first as a foundation; and then the man who is to be most successful picks out some smaller, definite part and makes himself an expert in that.

Modern carpentry is an example of this. There are, it is true, still many old-line, "general-purpose" carpenters; but more and more the trade is developing specializing experts. We have the stair builders and the interior finishers, the barn builders and the roof framers—each being a class of expert workmen engaged pretty largely in the one special kind of work and receiving a special high rate of wages in proportion to their skill.

A new specializing line that has been coming strongly to the front during the last few years is that having to do with hard wood flooring. Not every carpenter likes to tackle a real nice job of oak floor laying and dressing. This is not so much because of the natural difficulty of the work, either; for properly understood the laying and finishing of the modern mill-wrought hard wood flooring is a comparatively simple matter; but for easy work something in the way of special equipment is needed. Of all the laborous and irksome tasks that the carpenter is ever called on to perform, scraping a hard oak floor by hand is about the worst. So the machine floor dressers have come into use, and have been perfected to such an extent that now the machine finishing has largely supplanted the old laborous hand scraping. A number of carpenters in every locality who have been willing to make the small investment necessary to fit themselves up with such a machine are taking over practically all of this work. They are *flooring specialists;* and their extra earnings are in proportion to their special knowledge and skill.

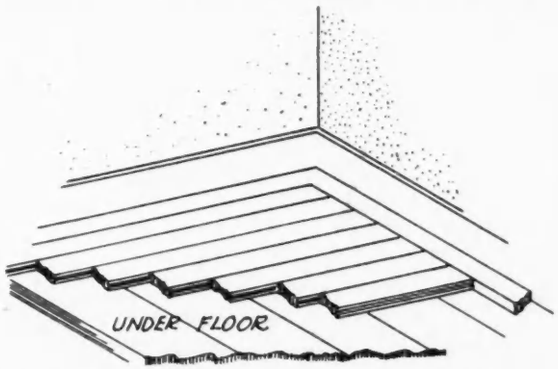
With the growing appreciation of the beauty and economy of fine hardwood flooring this field is constantly becoming larger and more attractive. For new work, whether residences, halls or public buildings, there is no longer any question of the superior advantages of oak flooring over the soft woods used previously. The hard wood flooring is specified and used; and the owner considers that the slight extra cost is more than made up for by the great beauty of the finished floor, its great wearing qualities, and the saving in cost for carpets, cleaning, etc.

Thin Oak Flooring over Old Floors

There are also great opportunities for carpenters, who care to go into this flooring specialty, in laying the thin ⅜-inch oak flooring over the soft wood floors in old houses. A little soliciting will line up a great many such jobs, and these can be done during the winter season while other work is slack. The accompanying sketch shows the best way of laying such a floor, the thin oak flooring running the opposite way from the boards in the old floor. It is not necessary to disturb the interior trim in any way, except the shoe mould.

It has been stated that the ordinary home builder is often misled in regard to oak flooring prices. Oak flooring is cheaper than carpets. A yard of carpet is 27 inches wide by 3 feet in length; thus a carpet yard contains 6¾ square feet. Carpet sells at from $2.00 to $9.00 per yard. A fair average of good quality of carpet would be about $3.00 per yard. Clear quartered oak flooring ⅜ inch thick by 1½ or 2 inch faces can be bought, laid and polishes for $1.00 per carpet yard. This is about one-third the price of good carpet. Oak flooring beautifies any house, and exhibits more taste and a greater degree of elegance than any carpet that was ever made.

The living, renting and selling values of any building are vastly increased by oak flooring. A parlor, library, hall or dining-room is half furnished when it is laid with handsome oak flooring. It gives an



Showing How Thin Oak Flooring is Laid Over Old Floors

air of refinement and elegance to a home, is rich in color, and if given some attention will never wear out.

Thirteen-sixteenths inch thickness makes a much more substantial floor than the thin flooring; and can be used with or without a sub-floor. The ⅜-inch thickness when laid has all the appearance of heavy flooring. Oak flooring is hygienic and is very easily and economically cared for after being laid.

Varnish and Wax Finishing

As to the finishing of oak flooring it is a feature which, while most important, is one on which authorities differ; but the question simply resolves itself into a matter of taste as to the tone, color and brilliancy of finish desired. Primarily, the floor should be treated with a paste or liquid filler. A paste filler is recommended by a good many authorities inasmuch as it can be worked into the wood more thoroughly, closing the pores and crevices and producing a dense body for the final finish. A variety of tones quite as attractive as the natural wood can be obtained by incorporating coloring matter with the paste filler before it is used, or by the employment of prepared colored fillers.

The final finish consists of a coat of fine oil varnish. This should be allowed forty-eight hours or more to set, and then be rubbed down with rotten stone and oil, or with very fine sandpaper. A second coat is then applied which is also given forty-eight hours or more to set. After the second coat, if a glossy or shiny surface is not wanted, this can be again rubbed to a dull finish. This finish, if done with high-grade materials, is lasting and durable and does not show scratches readily.

Another authority suggests that, after the wood is filled, a coat of pure white shellac be employed. After allowing twelve hours to set, a second coat is employed, and when dry the surface is gone over with No. 0 sandpaper. After this is done, a heavy coat of good floor wax is applied, spread evenly, and rubbed well into all parts of the floor. The wax should be permitted to set for twenty to thirty minutes, and then with a weighted brush the floor is rubbed both across and with the grain of the wood until a good polish is effected. To further increase the luster, a piece of Brussels carpet placed under the weighted brush when rubbing the floor is very effective.

Another good method of finishing a floor after the use of the paste filler is to apply a heavy coat of good floor wax, and then with the aid of a weighted brush the surface may be rubbed to a velvety gloss. This is a popular and economical finish.

♦

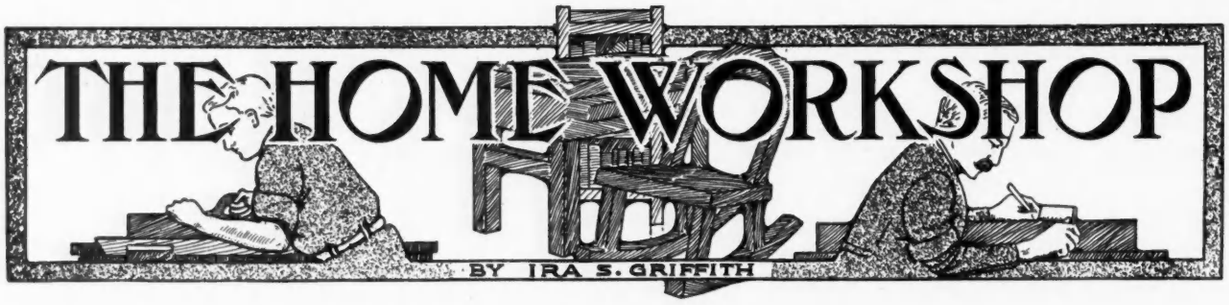
Charging for Work "By the Day"

The question of proper method of making up charges for building work done "by the day" has recently been discussed by the Master Builder's Association of Boston, and the following suggestion has been made: First make up the actual amount paid to workmen employed; add to this a proper percentage for "supervision and use of tools" (this percentage should comprehend office and shop maintenance and liability insurance); then add actual cost of materials used; this will give the total sum upon which the contractor is entitled to a percentage "for profit," which percentage will necessarily be variable on account of varying conditions under which work is executed as well as variable on account of amount of work involved. For especially difficult work it is plain that a larger "profit-percentage" should be charged than on simple, straightforward work, and a larger "profit-percentage" would be proper where the work is very limited in amount than on work involving a considerable amount.

♣

Persia Prohibits Aniline Dyes in Rugs

The Persian Government has modified its decision of January 9 last, and has postponed until June, 1912, the date upon which, in accordance with the customs regulations, the exportation of carpets and rugs dyed with aniline colors or colors in the composition of which aniline enters shall be rigorously prohibited. Some exports to the United States had been held up on this account. Ordinarily these dyes may be detected by wetting and rubbing with a white cloth. They come away upon the cloth or spread in the wet place. Silk rugs of Tabriz seem to be frequently thus dyed.



Hall Set of Good Design

COMPLETE INSTRUCTIONS WITH WORKING DRAWINGS FOR MAKING AN ATTRACTIVE UMBRELLA STAND AND ITS COMPANION PIECE, THE HALL MIRROR WITH HAT RACK

THE hall rack and the umbrella stand, pictures of which are shown this month, are companion pieces. They are not very difficult to make, the accompanying photographs being taken from pieces made by an eighth grade boy in manual training.

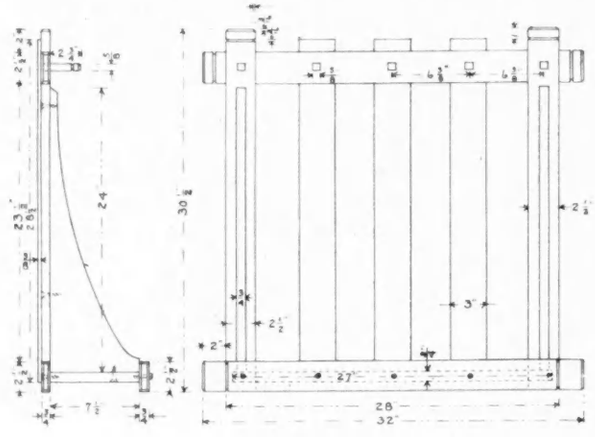
For the hall rack there will be needed the following stock:

Horizontals, 2 pieces, ¾ by 2½ by 33 inches, S-4-S.
Verticals, 2 pieces, ¾ by 2½ by 21 inches, S-4-S.
Backing for mirror, 3 pieces, ¼ by 8 by 12½ inches, S-4-S.

The main frame may be made of any kind of wood that will take a good finish. Quarter sawed white oak, plain sawed red oak, chestnut, ash, walnut, mahogany, etc., are suitable. Soft woods, such as cypress or pine are not so desirable but can be made to look well by the application of the new oil stains that paint manufacturers are putting out.

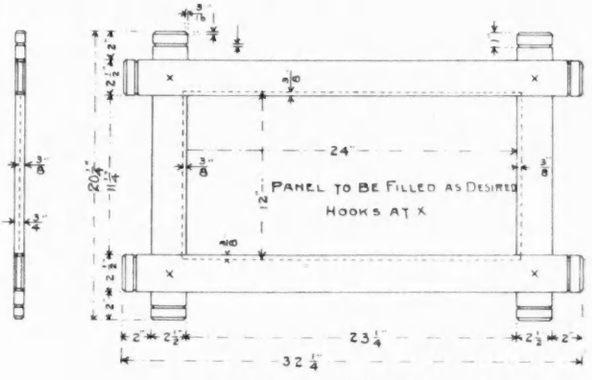
The stock, it will be noted, is ordered mill-planed on the four surfaces. In this case all that is necessary to get the pieces ready for the joint making is to remove the millmarks. This is to be done by means of the cabinet scraper. If the grain is not curled or crossed it may be well to make use of the smooth plane first.

The joint used is what is known as the cross-lap and is laid out as follows: Square the two ends of each



UMBRELLA STAND

piece. Place the members on the bench with face edges up and measure from the end of one of them the distance of the joint from this end. Even the four ends and square knife lines across all four face edges. Separate the pieces and carry these lines across the face sides of the two verticals but across the back sides of the horizontals. The reason for this lies in the fact that the face sides of all four pieces are to be on the same side of the frame when it is completed. The halving will, therefore, necessitate laying out the grooves on the face sides of two of the pieces and the back side of the other two.



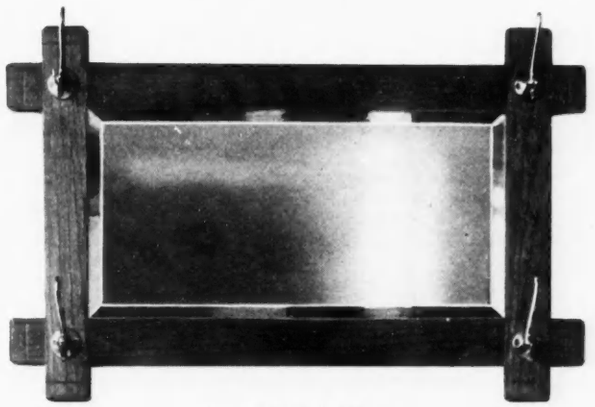
HALL RACK.

By laying one piece upon the other, locate the position of the knife lines that represent the second side of the joints. With the trysquare mark lines across these surfaces and on the two edges. Gauge for depth, making sure to keep the gauge head against the face surfaces. Do so even when the groove is to be cut on the back side. There is a reason. Saw accurately to the knife lines. Chisel out the grooves and fit the parts together, marking the bottoms of corresponding parts to the joints with Roman numerals so that they may ever after be kept in the order in which they were fitted. Next lay out and chisel the rebate into which the glass is to rest. Having done this, thoroughly glue the parts together, using good hot glue. Use cabinet makers hand clamps to fasten them while the glue is setting.

After the glue has hardened, remove the clamps and surface the face sides. The little ornamental grooves are merely suggestive. They should be cut before the parts are put together.

The finish should be applied before the glass is set. In setting the glass put a light cushion of putty in the

rebate. This levels up any little irregularities made in chiseling the rebate and will keep the glass from rattling. Press the glass upon this putty firmly, then place over the back of the mirror a few layers of paper.



Hat Rack with Mirror

On this place the backing of ¼ inch boards and fasten them by means of small brads driven toeing.

Brass hooks are to be placed at the places marked with crosses. They may be got at any hardware store.

How to Make the Umbrella Stand

The umbrella stand should be made out of the same kind of wood and finished the same as the hall rack, providing both are to be made. It is a little different from the ordinary design and for this reason will appeal to many. It really is a more satisfactory design than the ordinary enclosed kind. In this design the dripping umbrella is merely pointed toward the copper pan in the bottom and leaned between the wooden pegs which keep it from falling over. It is not necessary to push other umbrellas about in order to find a place. The dimensions given make a stand that will accommodate about a dozen umbrellas. The stock bill follows:

Stock Bill for Umbrella Stand.

Back, verticals, 2 pieces, ¾ by 2½ by 31 inches, S-4-S.
Horizontals, 2 pieces, ¾ by 2½ by 32½ inches, S-4-S.
Slats, 3 pieces, ⅜ by 3 by 29 inches, S-4-S.
Sides, 1 piece, ¾ by 8 by 27 inches, S-2-S.
Bottom, 1 piece, ¾ by 7½ by 27½ inches, S-4-S.
Front, 1 piece, ¾ by 2½ by 28½ inches, S-4-S.
Pegs, 5 pieces, ⅝ by ⅝ by 4 inches, S-4-S.

Begin work by making and assembling with glue and clamps the back frame. The ends of the different pieces will need to be squared and the surfaces made smooth. The manner of making the cross lap joints is the same as was described for the hall rack above.

While the glue is hardening on this frame the other parts may be prepared.

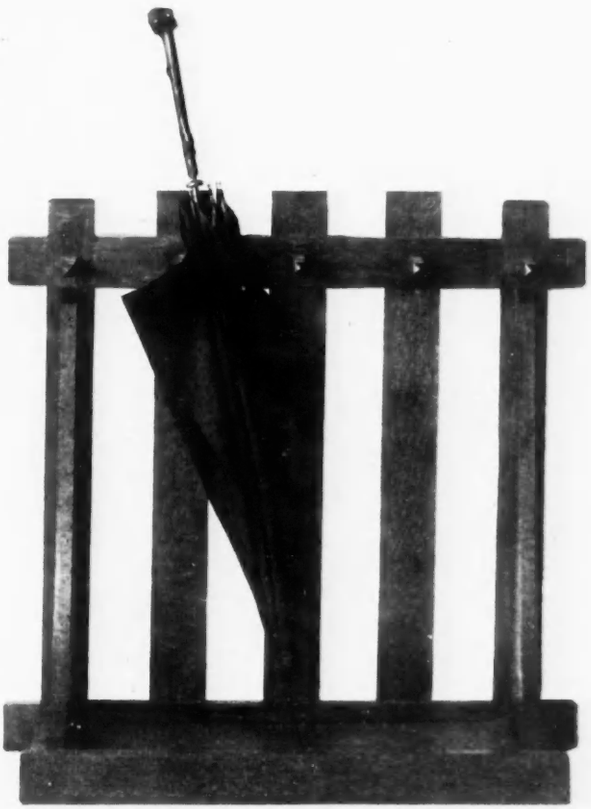
In making the ends draw the curve free-hand for one of them and work this piece to size and shape. After this, using this end as a templet or pattern, work the other end out of the remaining stock. The two end pieces are to be got from the same piece of stock.

Surface up the back frame and put on the bottom, ends and front using screws to fasten as shown in the drawing. The pegs are to be glued and "let in" to the frame work. The slats are to be fastened to the frame by means of brads.

Method of Finishing

A good finish for these pieces is obtained as follows: If a close grained wood has been used, such as birch, maple, pine or cypress, apply a coat of stain—cherry, mahogany or whatever color is desired. Allow this to dry, then sand lightly, using No. oo paper and apply a coat of orange shellac. Allow this to harden, then sand it lightly and follow with two or three coats of some good rubbing varnish. The first coats should be rubbed with curled hair and the last with pulverized pumice stone and raw or crude linseed oil.

If the wood is coarse grained such as chestnut, oak, walnut or cherry the pores will need to be filled before putting on the varnish. In this case stain the wood the color wanted then apply a very thin coat of shellac after having sanded the surface smooth. The stain raises the grain. Sand this shellac lightly and apply a coat of filler colored to correspond with the stain. Directions for filling will be found upon the can in which the filler is purchased. Upon this filler put a coat of orange shellac, unless the wood



Hand-Craft Umbrella Stand for the Hall

is to be finished light or natural. In this latter case use white shellac.

Upon the shellac apply two or three coats of varnish. Rub the first coats with curled hair or hair cloth and the last with pulverized pumice stone and raw linseed oil or crude oil. This will produce the popular dull finish luster.

The copper tray to catch the drip from the umbrellas need not to be made from very heavy gauge copper. It is supported on all four sides and on the bottom. It is not necessary to have any soldering done on the corners, they can be so folded as to be made water tight. The tray should have its sides reach almost to the top of the front and back pieces.

Stencil Work for Christmas

HOW THIS EASY AND INTERESTING WORK IS DONE—HOW TO PREPARE THE STENCILS AND USE THEM FOR DECORATING WALLS, FABRICS, ETC.

By Ira S. Griffith

HAVE you some spare time these winter days that you don't know what to do with? Do you feel the necessity of preparing Christmas gifts for the members of your family? Here is a suggestion that may help some of you: Work up some stencils for home use. They may be used by the women of the house for decorating window or door hangings, etc., or you may make use of them yourself in decorating the walls of the home.

For a Stenciled Border

Work! you say. Yes, but you will feel better and be better if you do a little light work while you are resting from your long summer's work.

We knew a "fellow" once who had a wife and two children who long had begged for wall decorations. The little girls wanted a frieze of animal forms in their bed room. The wife wanted the dining-room stenciled. Since the material cost is so small he found it an easy way to gratify their desires.

As most all houses now-a-days have their ceilings and side walls done in calcimine as far as the picture moulding, it is an easy matter to prepare the walls. With a large sponge and plenty of clear water, wash off the calcimine. Before the walls were calcimined the plaster was given a coat of hard oil or varnish to kill the suction. All that remains in order to prepare for the body color is to putty up any cracks that may have formed in the wall and cover this putty with a thin coat of varnish. Plaster of paris makes a suitable putty for this purpose.

Graceful Flower Stencil Designed by a School Girl

Now put on in succession, allowing time to dry, two or three coats of color paint. Either buy a good lead paint—flat color—or mix your own lead and color. Use only turpentine for thinning, for linseed oil will produce a gloss and spoil the effect.

Do not use brilliant colors. Tone them down to an agreeable softness by adding a small amount of lampblack.

Sea-bird Border Designed and Cut by An Amateur

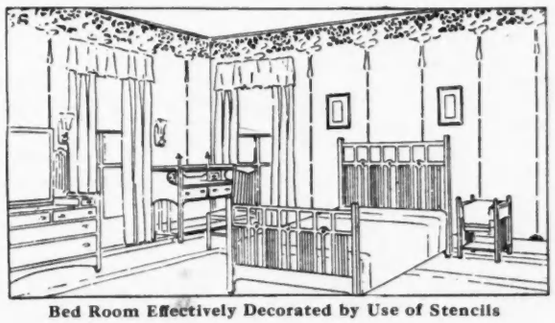
While the last coat is drying the stencil may be made. Secure a piece of good, rather stiff, close-grained paper and sketch a suitable design thereon. If not familiar with sketching, practice upon a piece of ordinary drawing paper and then transfer this to the heavier paper. The accompanying illustrations offer suggestions. Part of them are reproductions of designs by the Sherwin-Williams Company and the room illustrated shows the effect gained by the use of their stencils. Two of them were designed and made by 12 and 13-year-old pupils of the Whittier School, Oak Park, Ill. In these days of drawing teaching in the schools it is quite possible your children can be of assistance should you find it troublesome to make your design. Whatever the design, see that the ties that bind the parts together are so placed as to become an integral part of the finished work.

With a sharp knife cut out the shapes. Having done this, give the paper three or more coats of shellac. If the stencil is to be used much, five coats or even more are not too many. Shellac makes it possible for the paper to withstand the liquid of the stenciling material.

After the shellac has hardened the stencil is ready

for use. For a stenciling color use one that will harmonize with the body or wall color. A dominant harmony, or two shades of the same color, will always be found safe. Light and dark blue are illustrations.

Many valuable suggestions may be gleaned from the color cards of the paint manufacturers. One will have to exercise judgment, however, for it is only within very recent years that paint firms have been offering the soft color effects so much desired by people of good taste. The stencil designs, too, only recently have



Bed Room Effectively Decorated by Use of Stencils

taken on the simplicity which soft colors and good taste dictate. The intricate curly-me-cue designs are being displaced, but one will have to look over a lot of the old stock before he will find the later designs, unless he knows just where the newer stuff is sold.

The Japanese probably lead the world in the making and use of stencils; but for the amateur the one color, home made stencil, if of good design and color, will produce a very pleasing effect.

Where an exceptional piece of wall finish is desired, the plaster should be covered over with canvas, pasted as is wall paper. This will give a surface of uniform texture and free from the irregularities of plaster upon which to paint. Rough sand finish plaster takes color well and produces an artistic effect not obtainble on the smooth plaster of paris finish.

Border Decoration for a Child's Room

Stencil colors will want to be put on with a rather stiff brush—"daubed" on.

On burlap, such as pillow covers or panels of dining-rooms, the stencil color is to be quite thick. The same is true for stenciling other cloths.

✤

Not Best to Use "Nosing" Strip

Never have any step, or the deck of the piazza where the steps start, faced with a strip of wood called the "nosing." Such a strip is nailed on, and soon becomes loose. A far better plan is to round the edge of the step plank or piazza flooring. Then there is no danger of any loosening, as is sure to happen with the "nosing." I find, however, says a correspondent, that the "nosing" is largely used, which seems to indicate that its faults are not generally known.

COURT DECISIONS AFFECTING BUILDERS

Rights Under Unsigned Contract

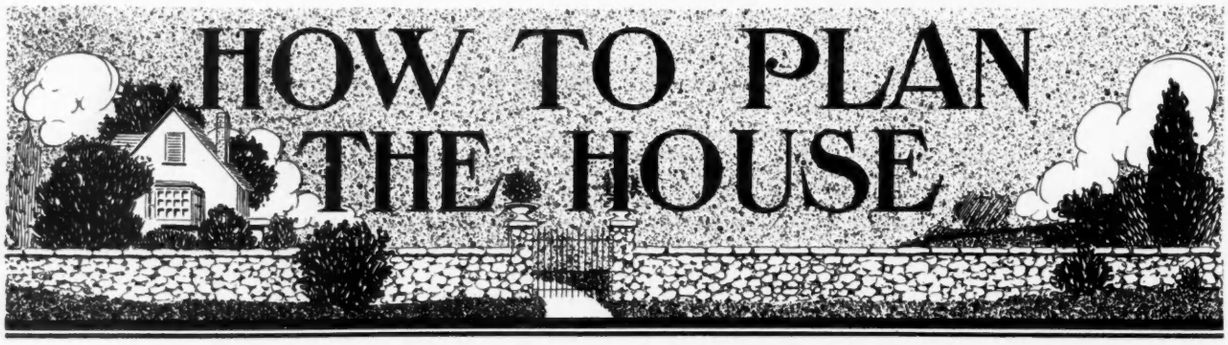
When both parties intended that a building contract should be in writing, and the contractor submitted plans and specifications, accompanied by a formal contract in writing, signed by himself and to be signed by the owner, and also by some one as surety for the contractor, and the owner never signed the instrument. held, that the contract was inchoate and incomplete, and that either party had the right to recant before the instrument was executed.—*Barrelli v. Wehrli*, 46 *So.* (*La.*) 620.

Recovery for Personal Injuries

Plaintiff was about 28 years old, a carpenter, with an earning capacity of $3.50 a day. By an accident in a planing mill he lost the entire little finger of his left hand, the middle finger above the knuckle, and the end of the index finger was cut off diagonally without injuring the bone; the ring finger having been cut off in childhood. The injured fingers were very sensitive to touch and cold, and plaintiff could not take up material or tools with the injured hand, and is greatly hampered in climbing ladders, etc. Held that a verdict for $3,008 was not excessive.—*Rood vs. Seattle Electric Company, Washington Supreme Court*, 104 *Pacific Reporter*, 249.

Compensation for Extra Work

A contract was made for the remodeling of a building, the specifications of which stated that the architects had been unable to locate the horizontal runs of soil pipe, and provided that the contractor should locate the old pipes, and connect the new soil and rainwater pipes thereto, and that all drains, soil and rainwater pipes condemned by the plumbing inspector must be removed and replaced by new pipes. The contract price for the entire plumbing job was $11,000, and it appeared that the replacing of a new sewer system was alone worth $5,000. After the old system had been uncovered, many lateral connections were found, some coming from buildings owned by others. The system was condemned by the building inspector, and the owner was ordered to install a new one. The plumbing contractor refused to do this under his contract. The owner's general manager directed him to proceed, and he would be paid for the work. In an action by the contractor it was held that there was no intention to make him install a new sewer system as part of his contract and that he was entitled to charge for the installation thereof as extra work.—*Mahoney vs. Hartford Investment Corporation, Connecticut Supreme Court of Errors*, 73 *Atlantic Reporter*, 766.



Three Interesting Designs

A "BLOCK HOUSE" OR CHALET OFFERED AS THE TRUE AMERICAN STYLE—CEMENT PLASTER HOUSE OF MODERN DESIGN—ATTRACTIVE CITY HOUSE OF BRICK

THE question is often asked, "Why do not Americans cultivate a distinctive style of residence architecture"? We have the old Colonial type to be sure, and the well-known mansions of the "carpenter renaisance," as built twenty years ago, also the more recent "picture" houses. But the Colonial represents the plantation mansion and the cozy cottage constantly gives way before the changes in building fashions.

When it is remembered what a hold the log cabin has on the hearts and imaginations of the public, we may be sure of a successful basis for a really American type of cottage. The thing to do is to get our American ideas together and keep bringing them up to date.

We, like other nationalities, are naturally inclined to the ideas we inherit; and these would play the main part in our work if we were not flooded with such an abundance of foreign ideas. If the builder does not find many suggestions in the simple log cabin,

A Vinland Cottage—Design Derived from the Norse Block Houses—Offered as the True American Style

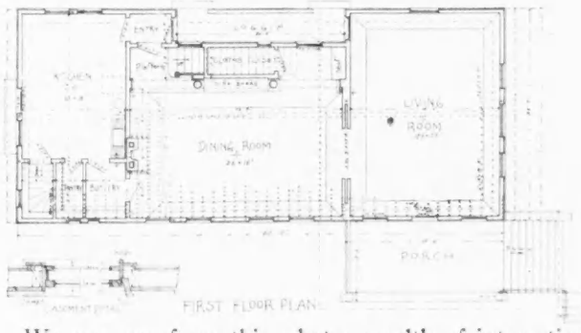
it is because its source is neglected.

Where did the pioneers learn to build their block houses?

The first carpenters in this country were of necessity—ship carpenters and sailors. They belonged to the same guild that designed the Scandinavian block houses in the old country.

One of the main features of the pioneer block houses was the projecting upper story. This proved convenient for defence but was not originally built for warlike purposes.

The ship carpenters had learned to project the sterns and prows of their ships over the water and they carried this method into the building of houses.



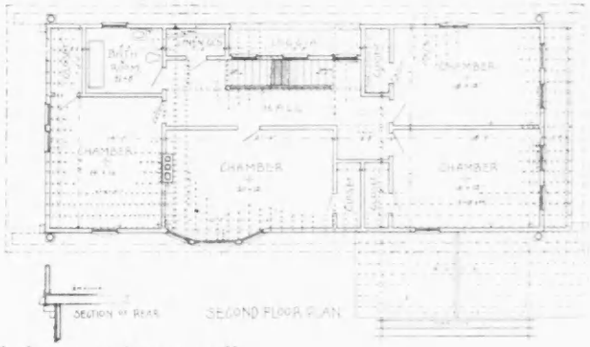
We may see from this what a wealth of interesting details are available in our own field.

So much for the source of our ideas and our right to them. They are the basis for this first design herewith, the work of C. Bryant Schaefer.

The attractive features of this cottage lie in the construction. The entire house might be built in the rough and still look very much the same. It only needs the usual mill work and hard wood finish to refine it.

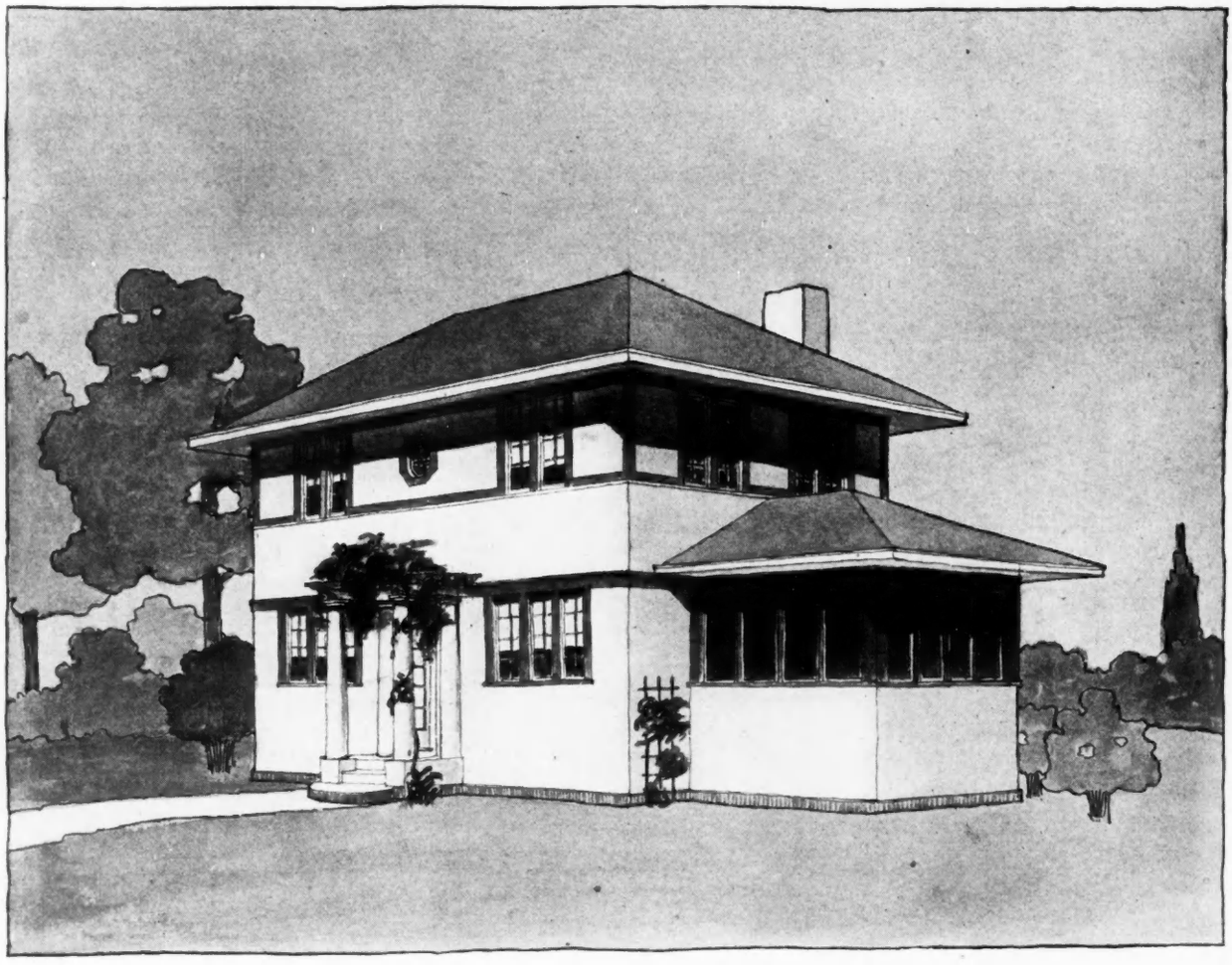
The cellar and main walls are on the square. The dotted lines show how the framing is planned for. The joist are of standard sizes, laid on to support the upper projecting walls. This is done in the strongest manner without any special cutting and fitting. The basement rubble walls are shown cemented on the outside above the ground. Some of the larger stone should be selected for the corners. One side of the porch rail is of concrete.

The first-story siding has a rib that stands out boldly as may be seen by reference to the section. Three top courses are swelled on the surface like a log. This forms a belt course around the house. There also project bracket-like timbers in support of the front balcony and rear wall.



The second story has casement windows and the walls are shingled. The joist are heavy on account of the long span.

The gable ends project upon a long frieze. The latter terminates in brackets supported by turned column at the corners. A group of deeply arched windows is built in the gable, the sash being on line with the walls below. The outside surface is plaster cast.



Modern Suburban House of Six Rooms and Screened Porch

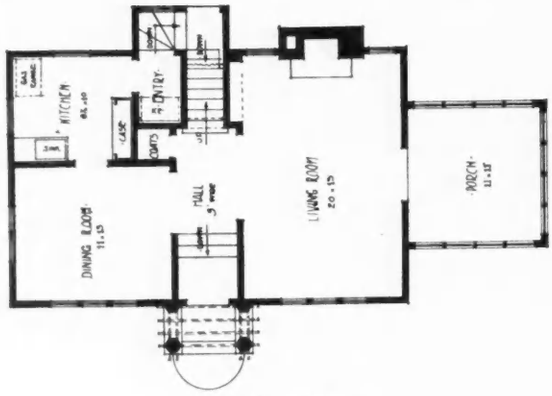
In the dining room the long second floor joist are supported by a lintel which extends over the side board. This is shown on the elevation. The stairway is in connection with this feature and with a raised platform and nook forms an attractive part of the house.

It should be especially noted how inconspicuously the stairs may be used from the kitchen entry. This practically saves an additional flight for back stairs.

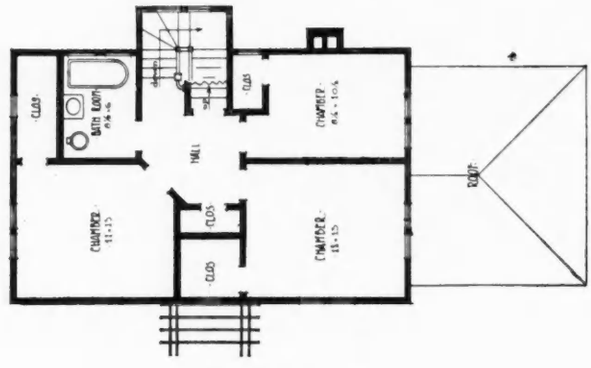
The few rooms are large enough to furnish a place for all the members of the household. This is a cottage, which, set among hills, would form a delightful place to live after the true American fashion.

Cement Plaster House of Modern Design

A very attractive little house is shown in connection with this, designed especially for publication in the



First Floor Plan



Second Floor Plan

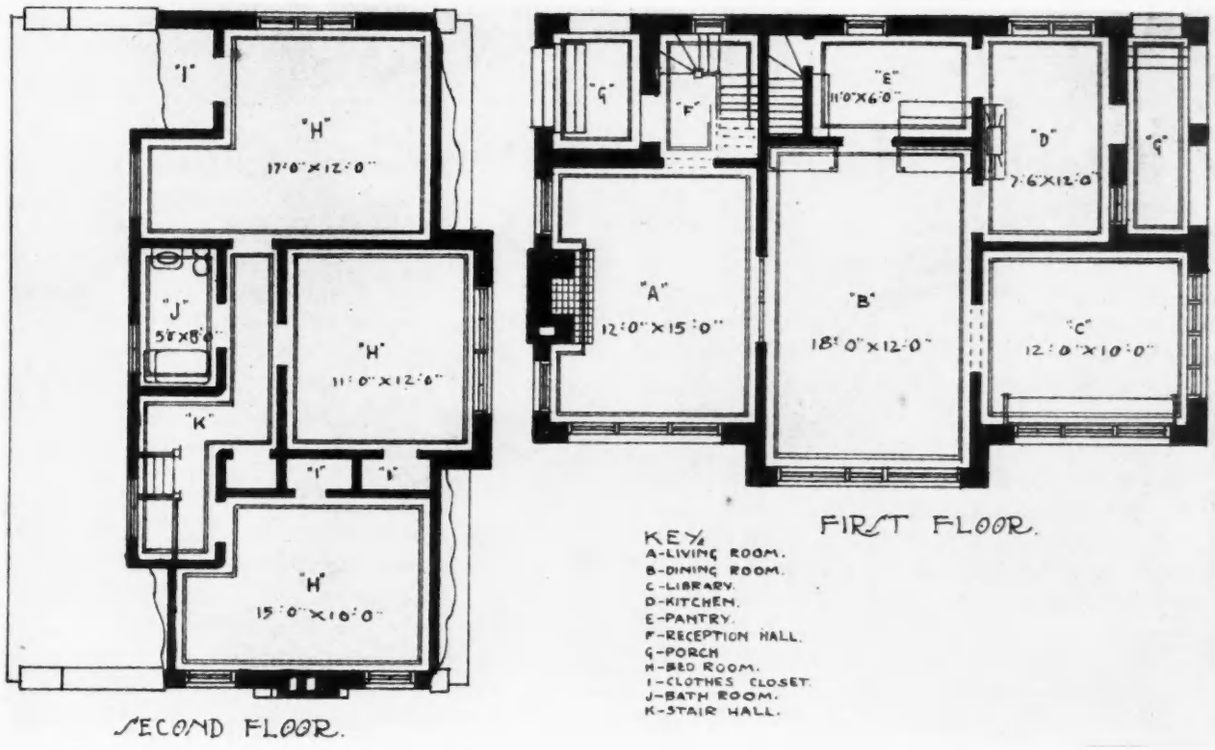
AMERICAN CARPENTER AND BUILDER. It is a hip roof house of the style so popular at the present time; plain and without ornamentation, yet architecturally

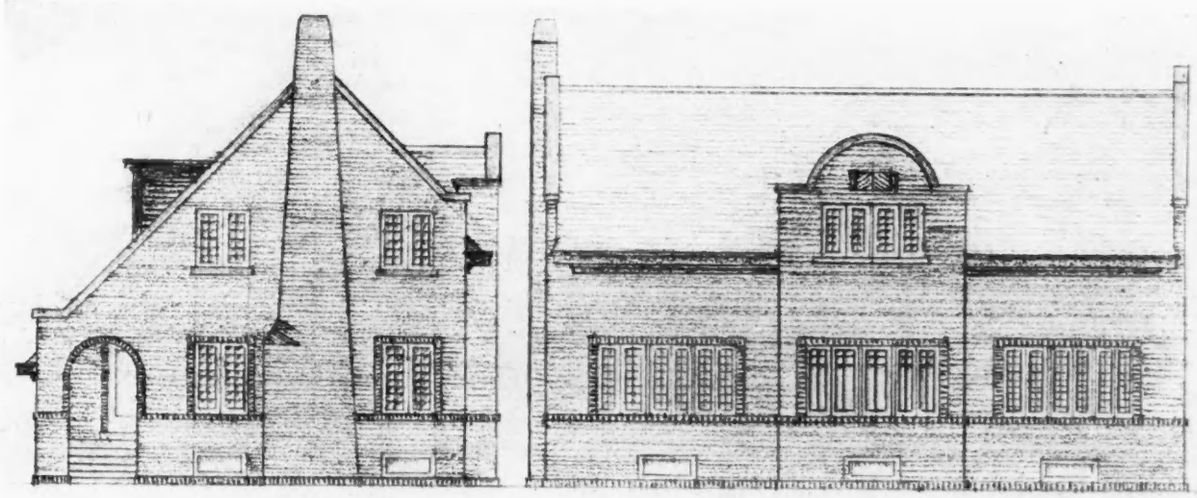
it is good because of its fine proportions.

The interior of this house shows some very good features. There are three attractive rooms on the first floor besides the large screened-in living porch; the living room, 20 by 13 feet in size, being especially well arranged for home-like comfort. The hallway arrangement is also very good. The vestibule is three steps below the first floor level making a desirable feature. On the second floor there are three good sized chambers with an abundance of closet space. The bath room is conveniently located and is also placed economically, directly above the plumbing fixtures in the kitchen on the first floor.

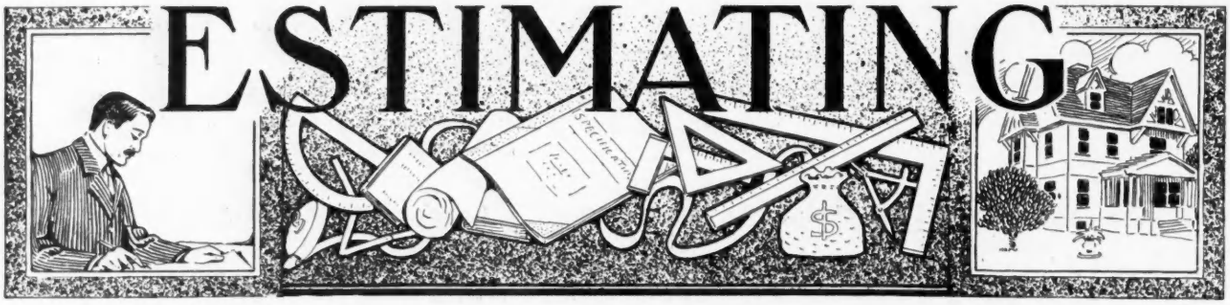
Neat City Residence of Brick

The sketches shown on this page have been drawn up to illustrate what can be done toward the satisfactory arrangement of a comfortable home on a narrow lot and under the restricted building conditions prevailing in most cities. It will be noticed that the entrance is reduced to the smallest space possible and that the window space, especially on the first floor, is made as large as possible. City dwellers have found that they have to be exceedingly generous with their provisions for lighting; and they have learned by experience that the city home should be as compact and self-contained as can be designed.





Popular Type of City Residence Built of Brick



Satisfactory Methods of Taking-off Quantities

PRACTICAL POINTERS ON THIS MOST IMPORTANT SUBJECT AS PRESENTED IN A RECENT PAPER BEFORE THE CARPENTER CONTRACTORS' ASSOCIATION OF CLEVELAND

SOME useful hints as to taking off quantities from plans were given recently by Mr. James Young in an address before the Carpenter Contractors' Association, of Cleveland. The system followed by Mr. Young is of much interest and is worthy of the consideration of our readers. The address was in part as follows:

The first thing I do when figuring a job, is to give a general glance over the plans, elevations and specifications. Then I turn to the basement plan and take off the number of feet lineal of girder and its size, whatever it may be, posts, if any, and these follow the date, name of architect and owner, as my first entries. Then turning to the first floor plan, I take the amount of sill in lineal feet, making an entry of that and how the sill is composed. I take that measurement accurately, measuring the plan at its longest and widest square projection, thus, should the length be 58 feet and the width 42 feet, we have 116 feet and 84 feet, making the girth 200 feet. If there are any bays, I add 3 feet for each bay.

We have now not only the lineal measurement for sill, but also for studding, sheathing, etc. Then I take the superficial area of the first floor for joisting making the entry at whatever it may measure. For instance, first floor "1950, 2 by 10 by 16 by 19," thus indicating the number of square feet to be joisted, the size of the joist, the spacing and the average length.

I then turn to the second floor and do the same, making the same kind of entry, usually with some additions; for instance, there may be some bays or projections, which are only one story high, with girders running across at these openings. I take the amount of such girders and the size of bays or projections which stop at first floor, because if they are not covered by the second story joists they must have ceiling joists. Then there may be one or more projections thrown out on the second floor which are packed with mineral wool or otherwise treated. In addition, then, to the mere entry of joists for the second floor, I may have entries like these: "36 feet 6 by 10 girder, 115 ceiling joists, 130 feet 4 inches wool." The fact of the entry of wool carries with it the furring and sub-floors necessitated by its introduction. There may still remain other features on the second floor to be taken care of. The first floor may have a large living room, over which the joists are 2 inches wider than the balance of the house and set at 12-inch centers. I take the size of that room and make an entry like this: "extra on 24 by 32, 2 by 12, 12," indicating that a portion of the second floor will have joist 2 by 12 set at 12-inch centers and 24 feet long.

Figuring Roofs

Having thus taken care of the second floor, I then turn to the third floor or attic, and take the measurement of it. From the attic floor I take the measurement of the roof and ceiling joists or collar beams. Unless it is an absolutely plain, straight roof I never measure it off the elevations, because I think I can measure a roof that is pretty well cut up much more accurately from the roof plan, and that in one fraction of the time required to measure each and every section or portion of roof as shown on the elevations. In the former case I know that I have got full quantity of roof, while I might be doubtful if using the latter method. No matter at what pitch a roof is it must bear some definite relation to the amount of plan area to be covered. The only thing necessary, then, is to find the various proportional relations that different pitches bear per square to the plan per square to be covered. Having determined that, you decide it not only for one roof but for all time; you have then before you the simplest of propositions, and one that can be absolutely relied upon. But this does not dismiss the matter of roof. For instance, the measurement of your attic floor for joist does not go beyond your plate line, and your roof does. Then again, there may be a deck 16 feet by 20 feet. I believe it is better to make the entry "16 by 20 feet" than "deck 320," because the former entry gives not only the area of the deck, but also the amount of deck plate, and I think that it is particularly important to get a correct amount of the material that goes in a deck, because I question if the material in any other portion of a building costs as much to put in place.

Having a deck, then, 16 feet by 20 feet, take 320 feet off from the measurement of your roof plan, and you have the amount on which to apply your propor-

tional relation. I count the number of dormers in a roof and allow so much additional per dormer, determining that amount at the time according to the kind of roof the dormers may have. One-half of the roof plan will give the amount of space required for collar beams, I belive, as accurately as it may be obtained in any other way, and there can surely be no method quicker.

I then measure the cornices. The same cornice I measure from the attic plan, as it can be measured as accurately there, and more quickly, than by taking it from four elevations. I usually make a price per foot on the cornice at that time, embracing that portion of roof which it takes to cover it. The gable cornice I measure from the elevations, also making a price per foot on it. Then I take the amount of dormer cornice. I also take the number of feet of hip for cant boards or hip shingles, as the case may be.

Walls and Floors

I then turn to the walls. I already have the girth of the first floor. I take the girth of the second floor, and taking the mean between the two gives the girth for the total height. My entry would be thus: "200 feet of 2 by 5 by 22 stud and sheathing." I then take the final covering, whatever it may be, siding, shingles, or timber work. If siding is used I run my eye over the number of corners on the first and second floors, add them together, multiply by half the height and I have the number of feet of corner boards, or mitered corner, as the case may be. I then measure the gables and dormers. I usually put higher price on gables and dormers than I do on the walls, because there is more waste and the work is slower.

I then take water table belting, if any, brackets, etc. I think it is well to put a price on these at the time, because it is difficult to make a note of them in such a way as to indicate their value. At this stage I go back to the attic plan, making the entry "attic." If a sub-floor is used, I simply make the entry "sub," if it is laid straight; I follow the word "sub" by the abbreviation "Diag." if the floor is laid diagonally.

I then measure the amount of finished floor, which is usually considerably less than the floor surface of the building, because the attic is usually studded in from the plate line. Then I take the number of feet of partition lineally; the number of feet of base; the number of doors, height, style and thickness; the number of windows to be cased, the number of closets and how treated; the number of feet of cupboards, and whatever else appears on the first floor plan.

I then take the second floor in much the same way, the sub-floor, the finished floor, paper, furring, wool, if any of these are called for. If bathrooms are marked "tile," I make an entry of so many feet of tile extra, because it costs considerably more to cut in floor between joists, fitting around pipes, than it does to lay it on top.

In measuring partitions I always measure those running one way of the building first, then measure those running the opposite way. I think one is more apt to get a correct measurement by so doing than if he tries to measure them irrespective of the way they run.

Interior Finish

Then I take the number of doors, window sides, closets plain, closets with drawers, the number of feet of cupboard, the number of mantels, medicine cases, towel closets, and whatever else may appear on the second floor plan.

If there is a room in hardwood, I take that by itself. If the hall is hardwood I will have an entry "extra on 8 veneered doors, hall"; that implies that there must be jambs with hardwood edges and hardwood finish on one side; and then so many feet of hardwood base. I usually measure the hall by itself, in any case, because not infrequently it has a wood cornice, and you may not know whether it has or not until you are studying the three-quarter scale drawings.

The first floor I treat somewhat differently. One very serious drawbacks to taking off quantities of interior work of the first floor is due to the fact that in many cases there is only one set of three-quarter scale interior drawings, and they are kept in the office, so that it is impossible to take off the work of any room intelligently.

For a number of years, unless the three-quarter scale drawings accompany the plans, I have adopted the following method: After taking the partitions and floors I take each room by itself, because the style of finish may differ very materially in the different rooms. An opening in one room may be cased for three or four dollars, while that of another may be worth ten dollars or more.

My entries for these rooms, then, are as follows: "Living room, birch, 3 door sides, 5 window sides, 70 feet base or wainscot, 110 feet picture mould or cornice, 10 feet of alcove beam, 2 corner pilasters, mantel." I take off each of the rooms and halls in this way, leaving two or three blank lines in my book between each room for the insertion of anything that appears on the interior drawings, but not shown on the plans.

Kitchens, pantries, store rooms, servants' dining room and rear halls I group the same as on the second floor, as invariably these are all of some one style. Then I take the number of feet of cupboards and any other incidentals that may appear to be called for.

I then take off the stairs. Rear stairs from basement to attic, I usually put a value upon as I look at them on the plans. The main stairs I usually make a diagram of as to position of the newel, the start of the rail, the shape of the first two or three risers, the width of the stair, number of landing posts, the number of feet of level rail, which, of course, includes the well-hole casing. The raking rail will run about a foot to the tread. I make the price after seeing the style on which the stairs are built. I rarely ever

lump a main stairs at so much. I figure a stair itself at so much per step, according to its design and the wood of which it is built; so much for the newel and each of the landing posts; so much per foot of rail, and so much additional for each ramp or casing.

After taking off the doors on the first floor and whatever work there is in the basement, I am done with the plans, so far as the interior work is concerned, I then turn to the elevations and take off the window frames. While I already have the number, that does not enable me to make a price upon them, as their value may vary materially. This is my method, taking each elevation consecutively; I put down on my pad the number of common double hung windows and then look at those which are special, and on them I put a value. The entry in my book then will be like this: "40 common windows, specials, $215." The only thing that is now left is porches and roofs and cornices of bays and balconies.

Porches I take by the square foot—so many feet of floor and ceiling, so many feet of roof, so many lineal of beams and cornice, so many posts, so many feet of rail, so many feet of lattice. Bay roofs and cornice I measure in with porch roofs and cornice, as they generally are of the same style and value. Balconies I take off as they may appear.

Having now completed taking off my quantities, my one object is to get the amount of surface I have to cover on the exterior and the nature of that covering, and in the interior to get the quantity and kind of the various items that go to make the complete whole. After having done this I read over the specifications carefully to see whether or not there may be something which I have overlooked in the more general reading at the first.

I have described the taking off of quantities of a frame residence; taking off the quantities of a brick residence does not vary materially, although there is not so much to take off. There is one item which I always make an entry of on a brick residence which I do not make on a frame residence, that is scaffolding.

Old Receipt for Preserving Wood Posts

A writer in an old building magazine says: "I discovered many years ago that wood could be made to last longer than iron in the ground, but thought the process so simple that it was not well to make a stir about it. I would as soon have poplar, basswood or ash, as any other kind of timber for fence posts. I have taken out basswood posts after they have been set for seven years and found them as sound when taken out as when first put in the ground. Time and weather seemed to have no effect on them. The posts can be prepared for a cent or two each. This is the recipe: 'Take boiled linseed oil and stir in pulverized coal to the consistency of paint.'"

"Brown Stone Front" Successfully Remodeled

The problem of remodeling the typical old four-story and basement brownstone front into a modern bachelor apartment or commercial building is always one of interest to New York property owners, particularly those who own property in that section which is gradually being given over to business. One of the most interesting alterations of this kind is that which was recently completed at 43 West Thirty-eighth street, for Burton S. Castles.

The facade, as will be seen by accompanying illustration, is in the old English style, a type most unusual for New York City. The architects have apparently taken this opportunity to prove that it is possible to design a picturesque building and one which may be architecturally good yet still meet the practical requirements of New York City.

Not the least important factor which tends to the success of this design is the color effect. The brick work is laid in full flemish bond with rich red stretchers and dark red headers, the joints being in black mortar, well raked out. The gable is of weathered oak, half timber work with rough cast panels, and the roofs of gable, mansard, and canopy over first floor entrances are covered with a moss green shingle tile. All the windows are English casements glazed with leaded glass in small diamond panes. The flower box at fourth floor level is of moss green terra cotta and will be planted with hanging ivy and geraniums.

That this style of building, although neither so pretentious nor as costly as the usual improvement of this kind carried out in stone, or brick and cut stone, is appreciated by the public is evidenced by the fact that several other property owners have already consulted with their architects in regard to similar improvements.

Figuring Cast Iron Columns

THE METHOD SIMPLY EXPLAINED FOR DETERMINING THE SAFE WORKING STRENGTH OF CAST IRON COLUMNS BOTH ROUND AND SQUARE

By Paul T. Lesher

A GOOD rule to observe in figuring cast iron columns is to have the thickness of the metal in the body of the column not under ⅝ of an inch in thickness, because air bubbles and blowholes are a common and dangerous source of weakness in cast iron.

The following formula is a conservative one for the figuring of round and square cast iron columns:

$$Sc = \frac{u}{1+\left(\frac{l^2}{3600\times r^2}\right)}$$

Sc is the ultimate breaking value per square inch of cross section of the column. For working values for cast iron in compression, use 1/6 of the ultimate value of *Sc*.

u is the ultimate compressive value per square inch for cast iron, which is 81,000 pounds. (See Table of Compressive Strength, February number.)

l^2 is the square of the length of the column in inches.

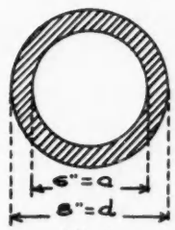


Fig. 1

r^2 is the square of the radius of gyration of the section of the column perpendicular to the load. r^2 is the expression of certain value of any section, and is one of the factors in the principal volumn formula for determining the strength of columns. The r^2 value of round and square cast iron column sections can be obtained very easily, as shown by the following:

The r^2 value of a round cast iron column section is $\frac{(d\times d)+(a\times a)}{16}$ For example: Suppose we desired to find the r^2 value of the section shown in Fig. 1, we would first multiply 8″ × 8″ and get 64 square inches for an answer. Then multiply 6″ × 6″, which is 36 square inches, now add 64 and 36 and obtain a sum of 100. We divide this by 16 and get an r^2 value of 6.25. This value is then ready to insert in our column formula.

The r^2 value of a square cast iron column equals $\frac{(d\times d)+(a\times a)}{12}$ For example: Suppose we desired to find the r^2 value of the section shown in Fig. 2. First multiply 10″ × 10″ which is 100 square inches, and then multiply 8″ × 8″ or 64 square inches; adding 100 + 64, we get a sum of 164, and dividing this by 12 we receive an r^2 value of 13.7.

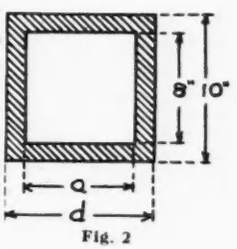


Fig. 2

Problem: What would be the safe load on a round cast iron column 20 ft. long; 10 inches diameter, with metal 1 inch thick? (See Fig. 3.)

Solution:. This "u" value, or the ultimate compressive value of cast iron equals 81,000 pounds per square inch. Our formula for cast iron columns is:

$$Sc = \frac{u}{1+\left(\frac{l^2}{3600\times r^2}\right)}$$

l^2 is the length of the column in inches multiplied by itself, which equals 240″ × 240″ or 57,600 square inches. Now we must find our r^2 value, and our formula for a round section is $\frac{(d\times d)+(a\times a)}{16}$ in which in our case "d" equals 10 inches and "a" 8 inches. The equation will then be $\frac{(10\times 10)+(8\times 8)}{16}$ which gives for an answer a r^2 value of 10.25.

Substituting the above values in the column formula we get:

$$Sc = \frac{81{,}000}{1+\left(\frac{57{,}600}{3600\times 10.25}\right)} = \frac{81{,}000}{1+1.56} = 31640$$

The above equation is worked out as follows: We first multiply 3600 × 10.25 and get an answer of 36,900. Then divide 57,600 by 36,900 and we obtain a quotient of 1.56. Add this to 1 which gives us a sum of 2.56 and divide this into 81,000, which equals 31,640, the ultimate breaking value in pounds per square inch of cross section of the column, and equals our "Sc" value. By using a factor of safety of six for our column, to find the safe load per square inch of section, we divide 31,640 pounds by six and obtain 5,273, the number of pounds per square inch of cross section the column can safely support. We must find the number of square inches contained in the cross section of our column. The area of a circle equals the diameter square and then multiplied by the constant .7854. We will then find the area of a 10-inch circle, which equals 10″ × 10″ × .7854 or 78.54 square inches. The area of a 8-inch circle equals 8″ × 8″ × .7854 or 50.26 square inches. Subtracting 50.26 square inches from 78.54 square inches, we get a remainder of 28.28 square inches, which is the area of the cross section

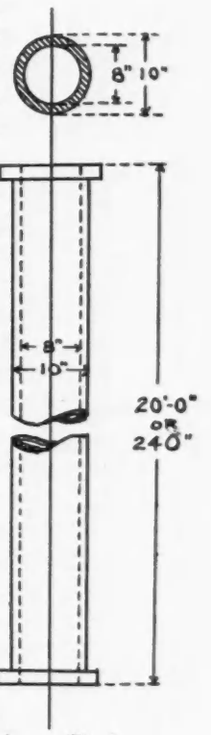


Fig. 3

of our column. One square inch can safely support 5,273 pounds, therefore 28.28 square inches can safely support 28.28 times 5,273, or 149,120, the number of pounds the column can safely support.

A square cast iron column is figured the same way as the round cast iron column, except in the method of obtaining the r^2 value.

If it is desired to find the size of a column required to support a given load, it is necessary to assume a certain cross section of column that is thought necessary to safely support the load and then solve by means of the column formula. If the column figures out too light or too heavy, make another assumption of cross section and figure again. After a little practice it is generally possible to judge the right section the first or second time trying.

Ready-to-Lay Roofing

THE CHOOSING OF A ROOF—PREPARED OR READY-TO-LAY ROOFINGS AND THEIR QUALIFICATIONS FOR MANY USES—HOW THEY SHOULD BE LAID

SOME roofing materials are chosen for their artistic appearance, some for their durability, some for their fire resisting qualities and some for reasons of economy. The *ideal* roofing would, of course, possess all four of these points of recommendation, and there would be no discussion then at all as to what roofing to use. This wonderful paragon of roofings (if there could be such a one) would sweep the boards and would have absolutely no competition. Being artistic it would have the call for residences, being durable it would always be used for business blocks and public buildings, being fireproof it would be specified for factory buildings, and being low of price it would recommend itself for the roofing of all kinds of temporary or semi-temporary structures.

Unfortunately, however, such a wonderful all-to-the good roofing does not exist. The fireproof roof covering is apt to be heavy and expensive, the artistic roofing is usually short lived, and the low cost material ordinarily makes anything but a good appearance. So it becomes necessary for the builder to size up the needs of each job in turn, considering its most important requirements and picking the roofing accordingly.

Thus come competition and business growth; for *de gustibus non disputandum,* which means (freely) that one man likes creosoted shingles and another clay tiles.

But be that as it may, when we come to the matter of ready-to-lay roofings we find a rather surprising number of qualifications recommending their use for all buildings where utility and economy are more important than looks. This applies, of course, only to the reputable and substantial brands whose makers are sincere in their efforts to put out a first-class product that will give the service claimed for it. No defense is made, nor can any be made, for the ultra-cheap, soaked paper, "snide" roofings which on occasions have been offered. But it is just as unfair to judge ready-to-lay roofings, as a class, by such *mistakes* as it would be to condemn all clothing just because some suits are made of shoddy!

The first qualification usually urged in favor of the prepared roofings is their economy. This applies to the first cost of the material, the ease with which it is laid, and—if the work is properly done—to the net cost of the service rendered, including upkeep and repairs throughout an extended period of years. And their second qualification is the measure of protection furnished the buildings covered. Ready roofing is applied in long continuous sheets; leakage through the "side joints" is therefore impossible. And by selecting the proper weight of roofing for any exposd portions of the roof any extra extreme service can be easily provided for.

These qualifications have made the ready-to-lay roofings exceedingly popular, with the owners, for stores and business blocks, and for apartment buildings—in fact for all structures having semi-flat, concealed roofs. And in the same way these prepared roofings have found a very free use for factory buildings and ware houses; also for barns and other buildings about the farm. In a word, all buildings on which the roof does not have a strong architectural prominence, where service is more important than looks, have been found most satisfactorily roofed with these composition roofings.

Just a word in regard to the structure of the ready roofings and the materials that enter into their manufacture will be of interest. Of course, no two are exactly alike; the different brands put out by the various factories all have their distinctive compositions, the exact processes employed being guarded as trade secrets. But, in general, the materials are of three kinds; the basic felt, composed of digested woolen rags; the water proofing saturant, usually an asphalt or coal tar product; and the top coat or weathering surface, which in the different brands of roofing is smooth-vulcanized, sanded, mica coated, covered with fine gravel, with slate chips, with flint chips, etc. These weathering surfaces serve the double purpose of protecting the body of the roofing, and at the same time of presenting a surface of attractive appearance. In a great many roofings there is also a fourth element added, the burlap backing or other reinforcing fabric to give the roofing strength.

So successful from an artistic standpoint have some of these mineral coated roofings been made that they are now used in a number of instances for both roofs and side walls of garages, summer cottages and similar buildings.

The preparation of the roof for ready roofing is very

simple; and anyone can do the work of laying. Prepare the roof surface by sheathing with good ordinary tongue and grooved sheathing boards, six to eight inches wide, which will prove the most satisfactory and economical sheathing in the long run. Sheathing should be surface nailed. If tongue and grooved sheathing can not be secured conveniently, use good dry boards surfaced on one side that can be fitted closely to make a tight and comparatively smooth surface. In all cases see that the sheathing is thoroughly dry. If you use green, wet sheathing, you are likely to have future trouble, no matter what kind of roofing you may use. The sheathing is recommended to run lengthwise of the building, though this may not be in all cases essential. Sweep the sheathing clean; remove all nail heads, knots, etc., projecting from the surface.

A common cause of leaks with ready roofings as well as in built-up roofs is faulty construction of the flashings. One good method where there are fire walls, is to have the roofing lapped well up onto the wall and secured at the top edge with a wooden cleat, nailed to the brick work; a triangular cant strip to be applied in the corner to prevent cracking. A better way is that there be shown on the plans, and included in the sheet metal contractor's specifications, a metal counter-flashing to lap down over this wood cleat. A wood batten for nailing may in that case be built in the brick wall by the mason. The joint in the brick wall immediately above the wood batten is to be raked out by the sheet metal contractor, and the metal flashing securely embedded in cement.

The most secure results can be obtained by constructing a series of metal flashings and counter flashings. The prepared roofing is turned up as before against the walls, but is not secured. A metal flashing is then placed against the walls, and extended out on the composition roofing not less than 4 inches. A counter-flashing of metal is then applied in the usual manner. In cheaper work these flashing pieces may be strips of the composition roofing instead of metal.

✤

Rail Fences for Pencils

The old-fashioned red cedar rail fences of middle Tennessee now furnish the world's main supply of cedar pencils, according to information received from big pencil-makers who have mills in the Tennessee cedar district. Statistics at hand also indicate that these fences are the sole remaining source from which to make the best grade of smooth whittling cedar pencil so well known to every schoolboy. Descendants of the rail splitting farmers of Abraham Lincoln's time are selling their cedar fences for what their forefathers would have considered fabulous sums. The selling price of such a fence will build four up-to-date wire fences of equal length.

AN automobile does not prove that a man has money, but that he did have.

Like a Man

"Did Hardluck bear his misfortune like a man?"

"Exactly like one. He blamed it all on his wife."—*Judge.*

OPPORTUNITY is the only knocker that can't draw a crowd.

Dyspeptic Moses

Percy—Miss Jane, did Moses have the same after-dinner complaint my papa's got?

Miss Jane—Gracious me, Percy! Whatever do you mean my dear?

Percy—Well, it says here the Lord gave Moses two tablets.—*Lippincott's.*

THE first thing to do if you have not done it already, is to fall in love with your work.

Nothing New to Him!

An Irishman desired to become naturalized, and after the papers were signed the judge turned to him. "Now Dennis," he said, "you can vote."

"Will this ceremony," inquired the new citizen, "hilp me t' do ut anny betther than Oi have been votin' for th' lasht tin years?"

YOU cannot dream yourself into a character; you must hammer and forge yourself one.—*James Anthony Froude.*

Or a Good Guesser

A Tipperary man hailed a fellow-laborer with: "So ye've got a baby at yer house. What is it, a boy or a girl?"

"Guess."

"It's a boy."

"No."

"Well, then, it's a girl."

"Faith," said the delighted father, "somebody's bin tellin' ye!"

GETTING business is just like courting a girl. You must offer the right kind of goods and keep right on calling.

Reads His Bible

"Would you like the floors in mosaic?" asked the architect. The Springfield man looked dubious.

"Would you like the floors in mosaic patterns?"

"I don't know so much about that," he finally said. "I ain't got any prejudice against Moses as a man, and maybe he knew a lot about the law. As regards laying floors, though, I kinder think I'd rather have them unsectarian."

FARM BUILDINGS

Wing's Joist Frame Barn

PRACTICAL IDEAS AND SUGGESTIONS ON BARN BUILDING—COMPLETE DETAILED INSTRUCTIONS FOR FRAMING THE SELF-SUPPORTING "JOIST FRAME" BARNS

THE method of framing a barn according to the "Wing" system, is very clearly shown in the accompanying photograph, which is of a large tobacco barn near Lebanon, Ky. This photo, together with the very helpful and practical suggestions on barn building which follow, are published here by courtesy of *The Breeder's Gazette* of Chicago, whose staff correspondent, Joseph E. Wing, originated this "joist frame" construction.

It is said that the farmer who plans to build should first ask himself a few questions:

Have you any definite idea of what sort of a barn you want? Have you carefully considered first your means, then your needs, then the needs of years to come? Is it your idea to build a small, cheap barn that will hold a few tons of hay, the grain, a few cows, the working horse, a colt or two, the farm machinery, the chickens and ducks? If that is your idea think whether it is economy to shelter farming tools on the barn floor, which means that they are endlessly in the way and that their shed (the barn) costs ten times what one would cost designed especially for such a purpose. No farmer can afford to build a barn with such a small storage capacity for forage that he will be compelled to fill it in summer and then refill it again and again during the winter and spring, drawing hay from the stacks, damaged in quality and at double the expense of putting it directly where it is to be used.

Is it not cheaper to make shingles shelter a depth of 20 or 25 feet of hay then a depth of 5 to 15 feet? Consider whether it is real economy to combine into one barn all the shelter and storage room needed on the farm. There is fire to be considered and convenience in handling stock. Do you wish the colts or cows to run in the yard with the pregnant ewes? Do you wish to mix breeding sows with small lambs?

The barn must fit the farm and the needs of the farmer. It is folly to insist that any one type of building is of universal suitability. There is this thought to consider when building a barn: building is one of the great events that come far apart. After a new barn is built it is not likely that one can afford to add to it or build another for many years. Build, then, of sufficient size and capacity to allow for a reasonable growth and expansion of not merely the farm crops but the farm animals. Especially provide ample room for the storage of forage. Sheds may be cheaply constructed to surround the barn and these sheds will shelter the stock, and may be added at any time, but the storage room of the mow is a fixed quantity when the rafters are put on.

Notwithstanding the fact that barns must always vary in shape, size and arrangement, it is true that they will have certain things in common if they are modern and up to date.

Beginning at the foundation the modern barn has no sills under it. The basement posts rest directly upon stones, which are bedded well in the ground and should reach below the frost line. Sills near the ground are not merely unnecessary but a nuisance from every standpoint. They decay, harbor rats, and obstruct. The modern barn has an earthen floor, preferably hard clay, or cement where necessary. The latter is cheaper than the wooden floor and has several points of advantage. It conserves warmth, no cold drafts come under it, does not shelter rats, manures do not leach through it and it does not decay. Yet where sheep are to be sheltered or calves or cattle run loose no other floor is needed than the natural earth well bedded. Even horses prefer to stand on the ground and many of the most successful horsemen insist that their horses shall have earth floors in their stalls.

The modern barn has a basement or lower story beneath its entire area used for sheltering farm animals. The reason for this is that it is in the line of economy. Moreover, it is a great convenience to be able to drive through to clean out manure or for other purposes. There is also a free circulation of air through the basement when the windows are open on opposite sides, there being no wall or mow of hay to oppose the air currents. Modern hay-lifting machinery makes it as easy to lift the hay above the basement as to drop it on the ground level.

In designating this lower story a basement it is not meant that it should be under ground. Where the ground is inclined and level positions are not easy to be had, the old-fashioned bank barn may be considered.

yet in adopting this type it should be constantly borne in mind that stone walls are apt to be productive of disease germs, especially of tuberculosis, which thrive in a dark and poorly ventilated barn basement. However, the advantages of a bank barn may be had without sacrificing light or ventilation. Let the earth be heaped against the wall not more than 4 or five feet and above this provide numerous windows, all arranged to open wide. The ventilation of the basement must be carefully thought out according to climatic conditions and the kind of stock to be sheltered. This is a point against sheltering all kinds of animals together. Ventilation that is desirable for the sheep barn may be very undesirable for dairy cows.

The lighting of the basement is an important matter. Sunshine is a great purifier and destroyer of microbes and germs. It adds to the comfort of calves, lambs, and pigs as it comes through the generous south windows during cold winter days. Glass is fortunately almost as cheap as siding. It will pay for itself many times over if used to let the sun in the barn basement. This also is true of the poultry-house. It is a commentary of the ignorance of a man that so often the farm animals will go almost anywhere rather than into the quarters he has provided for them. If the barn is built right and managed right the animals will need to be shut away from it rather than driven into it.

An important consideration is that the barn shall store an abundance of provender that may be easily and cheaply put in. To this end the building must have depth of hay mow without cross-ties through the middle to obstruct the free working of the hay-carrier and fork or the use of slings. For the ordinary barn of about 40 feet length the height from the level of the mow floors to eaves should be 20 feet and the best width is between 30 and 50 feet. The chief consideration is carrying the hay back from the center to the sides when filling the mow. The track on which the carrier runs should be directly in the center of the roof and the hay dropping below it will not easily be carried back more than 25 feet and, on the whole, a width of 40 or 45 feet is preferable.

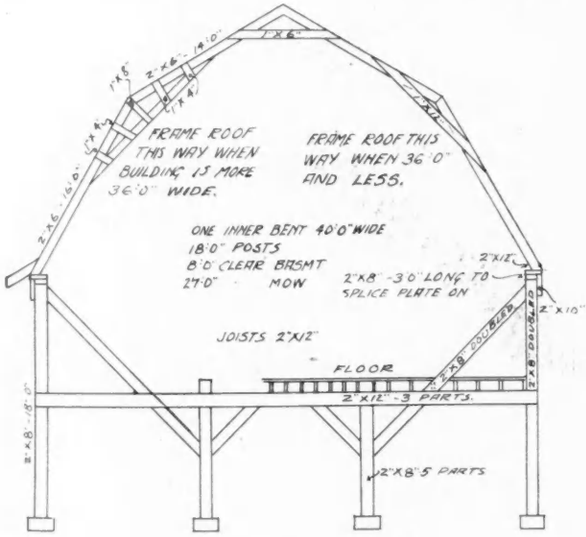
New Tobacco Barn On Farm of Wm. L. Rankin, Marion Co., Ky.—40x60 Feet, "Wing" Joist Frame Construction

The roof should be what is termed a half pitch; that is, the rafters inclined at an angle of 45 degrees, or the curb roof of two angles. The roofing material should be slate, good shingles or galvanized iron.

Painted iron roofing is not very satisfactory. Tin is used considerably on flat roofs and makes a good job if kept in repair and well painted.

Wing's Joist Frame

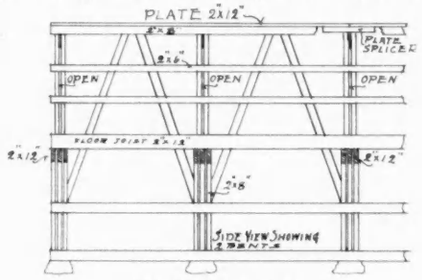
Joseph E. Wing thus describes the joist frame: I have for many years studied the question of barn frames and designed a good many types. A barn frame should have great strength to uphold weight, resist wind pressure and withstand the pressure of rafters when weighted with snow. My progress has been a steady evolution towards the simple frame of two stories or more, with curb roof and purlin posts, in which every stick has a purpose and is so placed that it exerts its utmost power in the line of its greatest strength. The frame is an adaptation, and I have not hesitated to adopt other men's ideas. The roof was invented many years ago and used in New York and New England. It has stood the test of 40 years or more in the heavy snows of that region and I have



Framing of Inner Bents

never seen or heard of one crushing. Built in the form of an arch it supports itself. The side walls need not be extremely high; from 18 to 20 feet with this roof gives great storage capacity. They are prevented from spreading by the long brace which will withstand ten times the pull that the thrust of rafters may ever put over it. For very wide barns purlin posts should be used, but up to 50 feet this roof is safe when rightly framed with the supplemental truss beneath the angle, and when so framed there is yet a saving in material and convenience over the old style roof supported by pudlin posts. (See accompanying diagrams.)

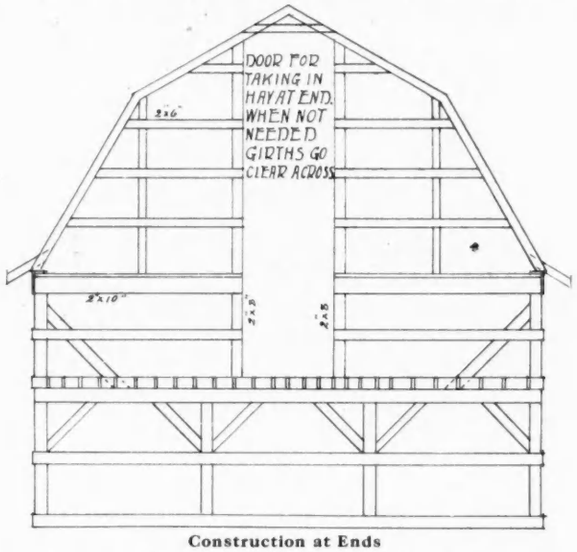
There is no solid timber at all in the frame and few sticks need be of unusual length. There should be full-length posts; apart from these ties, joist-bearers, plates, nail girts and all may be spliced wherever convenience indicates, and by always splicing a piece 2 foot long behind the splice, and spiking well, the whole is made as though of one piece. But one difficulty may confront the builder: the building of hay chutes. It is not desirable to have permanent hay chutes, for with the mow unobstructed by cross-ties hay is taken in by sling carriers that grip the rope and hold the draft at any height, thus swinging it in as soon as it clears the level of the hay in the mow or the mow floor, and hay chutes are very often needed in the middle of the barn. To make this come right have the hay chutes made in sections about 6 feet in height, building them 3½ or 4 feet square, and in this man-



Side Wall Framing

ner build two panels of solid boarding, like doors, say 3½ by 6 feet, and hinge together at the edges so that they collapse and lie flat. Provide hooks on one end and staples on the other. Take two of these pairs and, opening them, hook together and set over the opening in the floor and we have a section of 6 feet of the hay chute. Fill the mow that high or a little higher and set up another section, and so on till the mow is filled. When taking out hay these sections are folded up and hung on pegs in the side of the mow until needed again next season. This hay chute costs no more and it is as easy to build as any. A light ladder may be fastened to one side of each section for entrance to the mow.

A great many of these frames have been erected, some in very windy and some in snowy locations, since



Construction at Ends

the plan was first presented and not one has given trouble to erect or in use, so far as I have learned. Siding on this barn is better put on vertically. If matched siding is desired it works as well vertically as horizontally. The building may, however, be studded and siding put on horizontally.

In building the joist frame barn the following directions may be of value:

Pile up joists six or eight high and square, mark and cut off; pile each sort out by itself so you can get hold of it quickly and surely. Never make splices without breaking joints and use a block 2 feet long at the splice. Spike together well at splices and everywhere. Use spikes 6 inches long and drive in a plenty; they are cheap. Put bents together on the ground, though you may finish spiking together after raising, as spikes should be driven from each side. Raise the bents and brace up temporarily until you have two standing, then put on box plate, plumb very carefully and put in long side braces and one or two pieces of nail girts. That will make the frame very rigid. You can now continue to raise the bents one at a time and continue putting on plates and braces as fast as they are raised.

It will take four men two days to frame a barn 40 by 60 feet and if convenient they should have four others to help raise, which will take another day. After the frame is up as far as the square, complete that part and put on the siding before erecting the rafters. A scaffold at the level of the plates is convenient, though some have erected the rafters without it. If you wish to change the proportions of timber used, do so, but make it heavier rather than lighter. A saving of $10 in material might make you many times that much trouble. The frame as it is saves a great amount of timber. Frame together the rafters and most thoroughly nail them together before raising. Discard any weak or uncertain sticks. Use good inch boards 5 feet long. A trifle of expense here gives you a rigid roof. Tie together the rafters with 1 by 4 inch sheeting across all the angles before raising. Leave this sheeting on until you must have it for laying on the roof. Put two nails in sheeting instead of one at each intersection of rafter. Raise the first set of rafters at the gable and very carefully stay them and spike the bases to the plates. Begin raising rafters in the morning so you can get them all safe before night. Select good 2 by 8 inch long stuff; run diagonal braces under the rafters from the corners of the building clear to the center of the roof, two spikes in each intersecting rafter. This will make the roof very rigid. Get these braces up as soon as three sets of rafters are raised. If hay is to be taken in at the end, throw out two sets of diverging rafters to hold the end of the track and shelter the hay door. Their feet may be spiked against the outer long rafters and their points thrown out, each pair 2 feet.

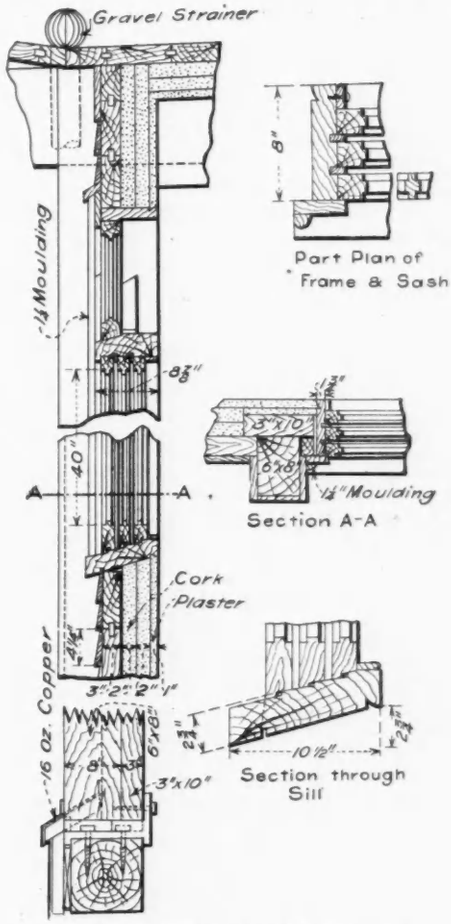
Brace the gable well. Hay doors should be 8 to 12 feet wide. They may be double and their upper ends fold down to admit of swinging under the roof. Turn these doors away from direction of wind. Roof projection should be 2 feet at gables and generous at eaves. It is best added at eaves by spiking on sides of rafters short pieces of 2 by 4, giving the same slope as the top part of the roof. Shingle this clear up. Do not attempt to bend the shingles. Use galvanized shingle nails. Do not leave out any braces. Put 2 inch blocks on stones under end of posts. When they decay they can be replaced and no injury to posts result.

✦

Wall Insulation of a Cooling Room

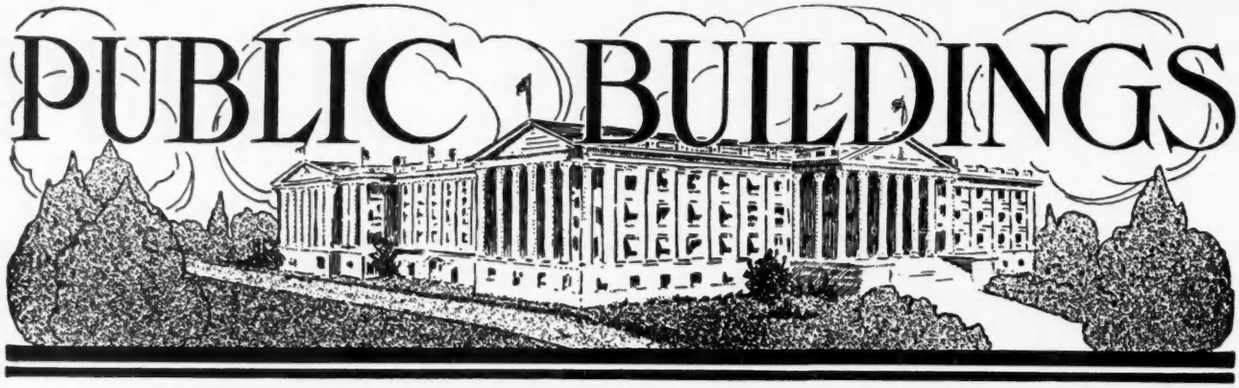
The accompanying cut shows the details of the wall and sash construction of a cooling room recently built at the Walter Baker Chocolate Factory in Dorchester, Mass., from plans by F. W. Dean, engineer, of Boston.

As the building is supported on steel trusses over the Neponset river, it was designed as light as possible at the same time being very thoroughly insulated. The walls and roof are sheathed with three-inch tongue and grooved plank which is lagged on the inside with a



Good Construction For Cold Storage

double layer of sheet cork, each layer two inches thick. The walls and ceiling are then plastered with one inch of hard white cement plaster. There are three sash tightly fitted in each frame, with 1-inch by ½-inch stops rabbetted into the side rails between each sash. The sills are cut with a ¼-inch offset under each sash and the bottom rail of the sash is rabbeted to fit over this offset, leaving a small space which is stuffed with felt. The top rail of the frame is rabbetted ¼ inch and the sash fits tightly against this. The outside is shingled and all metal work is of 16-ounce copper.



Design for Modern School House

THE LATEST IDEAS IN SAFE AND CONVENIENT SCHOOL HOUSE PLANNING AS EMBODIED IN THIS DESIGN FOR AN EIGHT-ROOM CITY SCHOOL

A SCHOOL building designed to meet the exacting requirements of present-day city school needs is shown herewith, the design being by G. W. Ashby, Architect, of Chicago. While it is planned along the lines of economy and sound practicality—the comfort, convenience and health of teachers and pupils being placed ahead of ornamentation or architectural display—still the building is of imposing appearance and well proportioned.

A glance at the floor plans will show how thoroughly the important matters of light, fresh air, warmth, etc., have been provided for in this design. How vitally important these features are in school work is sometimes overlooked.

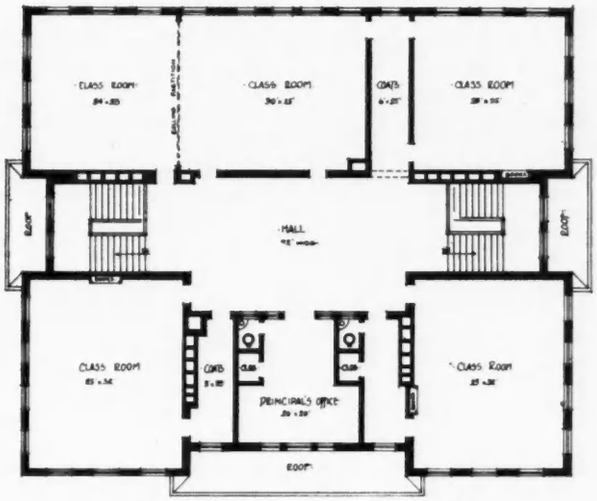
Dr. Caswell A. Ellis, of the University of Texas, who has been retained by the School Board to supervise plans and specifications for school buildings in that state, as an authority on school architecture and essentials, in commenting on the requisites of school house construction, says:

"The heating and lighting problems of a school building are much more delicate and complex than they are in the homes and the stores because in them you must provide for every child, that he gets just enough of both and not too much of either. In my home, if I have too much light or am too cold I can move my seat so I will be more comfortable, but I can not do that in the school room. Facing the

Eight-Room City School Building of Modern Design—G. W. Ashby, Architect

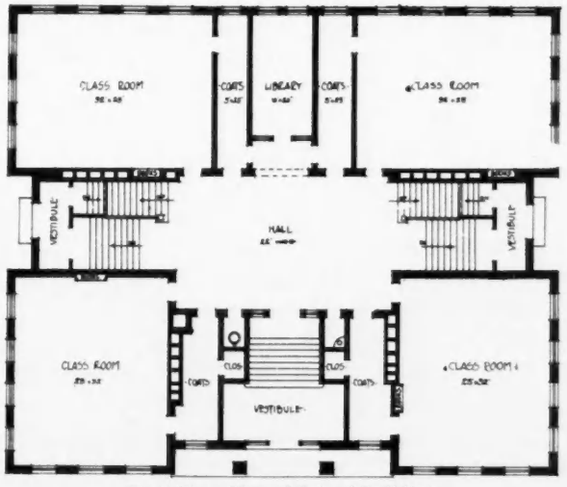
windows where the light comes in hour after hour puts out the eyes of the children in the room, while writing or using the eyes in light that comes from the right and in the shadow of the body is injurious.

"The most important thing, however, is ventilation.



Second Floor Plan of School Building

Man can do without food or water for days, but he must have fresh air. The chalk dust in the air must be swept out. Forty pupils in a room use 80,000 cubic feet of air per hour and that must be supplied without causing a draught on anyone in the room. Poor air cuts down the working ability of the child 25 per cent, while a difference of ten degrees of temperature in the room cuts down his ability 30 per cent. Automatic heating and indirect ventilating systems should be put in all school buildings, the first keeping the room at the right temperature, the latter, sup-



First Floor Plan of School Building

plying pure, fresh air that has been warmed before entering the room.

"All buildings should be erected with a view of future additions. You should also build them as carefully and make them as easily cleaned as a hospital. Rift saw pine floors finished with oil and parafin and with corners of the rooms filled in so no dirt can lodge there are the only safe ones.

Cement Concrete Vats and Tanks

By ALBERT MOYER, Assoc. Am. Soc. C. E.

Impervious, odorless, tasteless and sanitary vats and tanks for butter-milk, wine, oil, pickles, sauerkraut, etc., can be constructed of reinforced concrete, the reinforcing to be designed by a competent engineer, provided the interior surfaces are treated as follows:

After the forms are removed, grind off with a carborundum stone any projections due to the concrete seeping through the joints between the boards. Keep the surface damp for two weeks from the placing of the concrete. Wash the surface thoroughly and allow to dry. Mix up a solution of 1 part water glass (sodium silicate) 40° Baume, with 4 to 6 parts water, total 5 to 7 parts, according to the density of the concrete surface treated. The denser the surface the weaker should be the solution.

Apply the water glass solution with a brush. After four hours and within 24 hours, wash off the surface with clear water. Again allow the surface to dry. When dry apply another coat of the water glass solution. After 4 hours and within 24 hours, again wash off the surface with clear water and allow to dry. Repeat this process for 3 or 4 coats, which should be sufficient to close up all the pores.

The water glass (sodium silicate) which has penetrated the pores, has come in contact with the alkalies in the cement and concrete and formed into an insoluble hard material, causing the surface to become very hard to a depth of ⅛ to ½ inch, according to the density of the concrete. The excess sodium silicate which has remained on the surface not having come in contact with the alkalies is soluble, therefore easily washed off with water. The reason for washing off the surface between each coat and allowing the surface to dry, is to obtain a more thorough penetration of the sodium silicate.

It is obvious that concrete surfaces so treated, if hard, impervious and insoluble, have been made impervious, tasteless, odorless and sanitary.

✤

Some Housebuilding Hints

Never place a window high up in the kitchen, and also do not have all of the windows on one side of the room, writes a correspondent to *Country Life in America*. Windows should be on at least two sides (if possible opposite sides) so that a draft may be obtained in the summer time, and the kitchen kept cool.

Do not place the ice chest in the kitchen. A far better place is the back hall or butler's pantry. If it stands in a cool place the bill for ice will be less. Some people, however, do not think of this but only consider having it near at hand, but if the hall and butler's pantry are near the kitchen it can easily be reached, and it will also be found of great convenience in the butler's pantry, for many things used on the dining-room table are kept there.

MACHINE WOODWORKING

How to Care for the Band Saw

PART II—HOW TO BRAZE BROKEN SAWS—PROPER SPEEDS AND STRAINS FOR BEST RESULTS—PRACTICAL ADVICE AS TO THE CARE AND OPERATION OF BAND SAWS

IN THE article last month we were discussing the fitting and operation of band saws, covering the subjects of tensioning, swage setting, leveling, etc. Continuing the study, we come to the matter of brazing broken band saws and the proper speed, strains etc., for best results in sawing.

Brazing

The process of joining the ends of a band saw is called "brazing." Square the ends of the saw carefully and file or grind the outside of the lap with the run of the saw, as is done with belting. Finish the lap by filing lengthwise of the blade, as file marks crosswise of the blade have a tendency to start cracks. Care must be taken to scarf the ends so that the thickness of the lap shall be the same as that of the blade. For a 6-inch blade the lap should be ⅜-inch long and for an 8-inch blade should be ½-inch long. Make the lap about midway between the points of the teeth. After the ends have been properly scarfed, place one end of the saw in the brazing clamp with the back edge firmly against the ledge at the back and end at the center. Place the other end in the same manner, being careful to get the back edge straight and the points of the teeth at the braze the same distance apart as they are in the other parts of the blade. Cut a strip of solder a little longer and wider than the face of the laps. See that your irons are smooth and straight. Place the irons in the fire so that you will get a long heat; bank your fire and allow the irons to remain therein while you clean the lap and strip of solder with C. P. muriatic acid; raise the top portion of the lap and dust powdered borax carefully and evenly over the under part of the lap; dust the borax also over the strip of solder on top; raise the top side of the lap carefully and insert the strip of solder in such a manner that there will be solder between all portions of the lap and a layer of borax on both top and bottom of the solder strip. Be sure your borax is fresh.

Now bring your irons to a bright cherry red and be sure to have them heated evenly the full width of the saw blade. Knock off the scales and slip in the bottom iron first, having previously adjusted the bottom block so that the iron is flush with the saw. Apply the top iron and screw the clamp down hard. Release the side screws to allow for expansion of the saw blade.

When the irons have turned from red to black, remove them, pour machine oil over the braze and saw to cool it. The braze will then be of about the same temper as the rest of the blade. Or, the irons can be left on until cold before removing and the braze will then be soft. The success of the brazing operation depends largely upon the irons being applied and clamped quickly. It will require some practice to get the correct temper, but with a little patience the result will be satisfactory.

Clean off the braze with a file. It will be found that the process of brazing has produced a lumpy condition of the saw at the braze and that it is without tension. The tension should be rolled in the same as the rest of the saw, and then leveled down. This will require extra care, but the operation of tensioning and leveling is exactly the same as for any other portion of the blade.

Speed of Band-Saw Blades

After years of careful observation in the working of band resaws under various conditions and with all kinds of wood, we have come to the conclusion that the best speed to operate a band resaw for different classes of work is as follows: For pine of all kinds, spruce, fir and, in fact, all soft-grained or fibrous woods, from 9,000 to 10,000 feet per minute. American hardwoods, such as oak, maple, and birch, 8,000 to 9,000 feet per minute. Mahogany and woods of that nature, 7,000 to 8,000 feet per minute. Primavera, teakwood and lignum-vitæ, 6,000 to 7,000 feet per minute.

Proper Strain

We have had a great many inquiries regarding the amount of strain that should be placed upon the blade.

Our experience has been that saws will work better, stand up longer, and wear better, if strained 8

to 10 pounds for each inch in width and each 1/1000 inch in thickness. For example, to find the correct strain for a 6-inch, 19-gauge saw, multiply 6 (the inches in width) by 42 (the thousandths of an inch in thickness) and that by 10, which gives approximately 2,500 pounds. This is sufficient for ordinary work. When the cut is light, multiply by 8 instead of 10, which gives approximately 2,000 pounds We give below a table showing the thickness in thousandths of an inch of saw blades from 14 to 23 gauge:

Gauge.	Thickness.
14	83/1000
15	72/1000
16	65/1000
17	58/1000
18	49/1000
19	42/1000
20	35/1000
21	32/1000
22	28/1000
23	25/1000

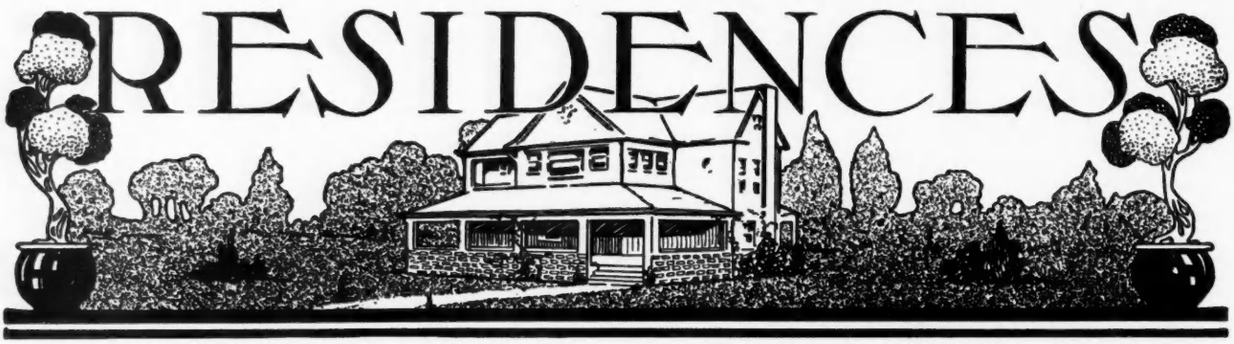
In the use of band saws the four most important points to be considered are: (1) to saw straight lines; (2) to remove as little sawdust as possible; (3) to obtain large capacity; and (4) to keep down the cost of operation.

The natural tendency of a saw blade is to saw an absolutely straight line. When it does not do so the cause is sure to be found either in the blade itself or in the machine. We think we are safe in saying that in nine cases out of ten the cause will be found in the blade. Probably the most prevalent cause of saws making crooks is uneven tension. A fault of this kind may be easily found by means of the tension gauge. When the tension gauge fits the saw throughout its entire length the blade may still be slightly "dished," but so little that it can not be detected by means of the gauge. The easiest way to determine whether this is the trouble is to have the wheels absolutely clean and in perfect alignment, remove the saw guides so that they do not touch the blade, place the strain on the blade and examine both sides carefully with the short straight-edge. If the tension is exactly alike on both sides the straight-edge will fit perfectly across the blade. In case it is found that the blade is slightly dished the best remedy is to level it carefully from the convex side. After the saw has been leveled in this manner it should be put on the wheels and tested as before, when the straight-edge will probably fit both sides perfectly. If it does not, further treatment of the same kind is necessary. This simple test makes it easy to locate a trouble which would otherwise be very hard to find. There are other causes of saws making crooks in the lumber, such as dished blades, teeth not having square points, weakened by having too much hook or being too deep.

The amount of sawdust removed depends entirely upon the thickness of the blade and the amount of swage carried. The thicker the blade the more feed it will stand, but at the present price of lumber, it is often desirable and sometimes absolutely necessary to sacrifice capacity to saving in kerf. When it is desired to make the amount of kerf very small, thin blades must be used. The thinner the blade, the more care is required to make it stand up and do good work. The teeth in thin saws are naturally delicate and hence are more liable to bend sidewise and follow the grain of the lumber than are the teeth in thick blades. As stated before, only sufficient swage is required to prevent friction on the side of the blade. This is more important on thin than on thick blades.

There is also another reason why as little swage as possible should be used. If the points of the teeth are too wide, the sawdust will leave the gullet of the tooth, pass between the blade and the side of the board, and thus be plastered on the side of the board and left in the cut This tends to cause friction on the blade, which must be avoided. Of course, this lodging of sawdust in the cut cannot be entirely prevented by reducing the amount of swage, but it can be materially decreased. By preventing the lodging of sawdust in the cut it is possible to obtain maximum capacity with minimum kerf. Capacity, of course, depends to a great extent upon the machine itself. If the wheels are so constructed that they are absolutely true on the face (this is positively necessary on all band sawing machines); if they are kept free from all accumulations of gum and pitch; if they have absolutely no vibration sidewise; if the device for placing strain on the saw blades is so sensitive that it will easily and quickly compensate for strain to which the blade is subjected on account of the difference in the nature of the wood, hard knots and the like; if the lumber is properly presented to the blade by the feed rolls—if the machine has all these requisites, only then can the greatest possible capacity be attained. With a machine constructed in this manner and properly adjusted, the capacity depends entirely upon the manner in which the saw blades are fitted.

We know many capable saw-filers who can put a saw in as fine condition as it is possible for anyone to make it, but who are not successful. The fault, therefore, is not in the fitting, but it is due to the fact that they let a saw run just as long as it can be made to do the work. Then they take it off, point it only and run it again without examining it for tension, to see whether it is level or whether the back is straight. The result is that when it becomes absolutely necessary to fit the blade carefully, the filer has a hard task. While he is fitting this blade all the others are being run down in the same manner, and most of his saws are therefore doing poor work a great part of the time. On the other hand, we know a great many filers who have not the nicety of touch to put a saw in the best possible condition, but who are quite successful for the simple reason that every time they take a saw off the wheels they examine it carefully and touch up the few spots which require attention. It takes them only a few minutes to do this and the time is well spent.

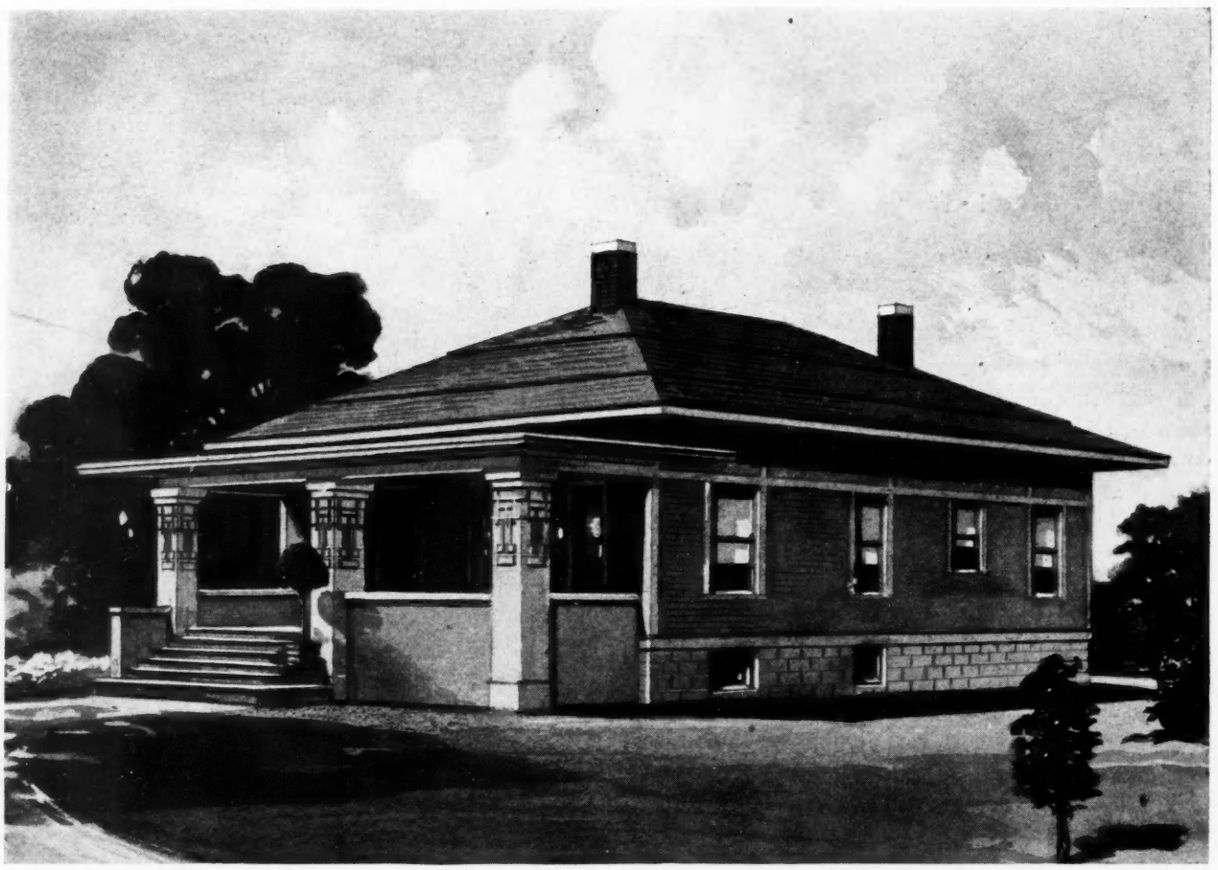


Complete Plans for Attractive Bungalow

ARCHITECT'S SCALE DRAWINGS WITH DETAILS SHOWING HOW THIS CHARMING LITTLE COTTAGE IS BUILT—BRIEF DESCRIPTION

THE architect's drawings reproduced on the following pages may be easily worked from by the carpenter to produce the very attractive and artistic little bungalow illustrated on this page. The popularity of this style of house is on the increase. The housewives appreciate the ease with which they can do their work in such a dwelling and there is a home-like atmosphere which seems naturally to surround a house of this kind which impresses the prospective builder as something very desirable. Such a house meets with a very ready sale.

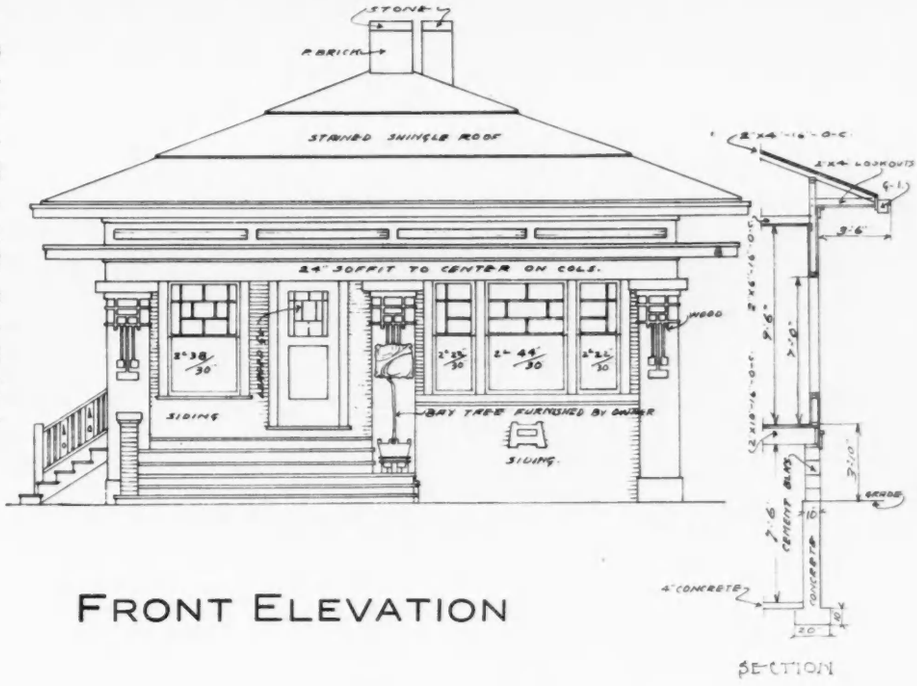
A glance at the drawings will show this bungalow or cottage to consist of six rooms. The living room space, extending clear across the front of the house, is divided through the middle by a cased opening, giving the effect of two rooms. The dining room is separated from the sitting room by wide sliding doors which makes it possible to throw together a very large space in the front part of the house. There are two bedrooms, well placed. The bathroom is



Artistic Six-Room Cottage Estimated to Cost $2500

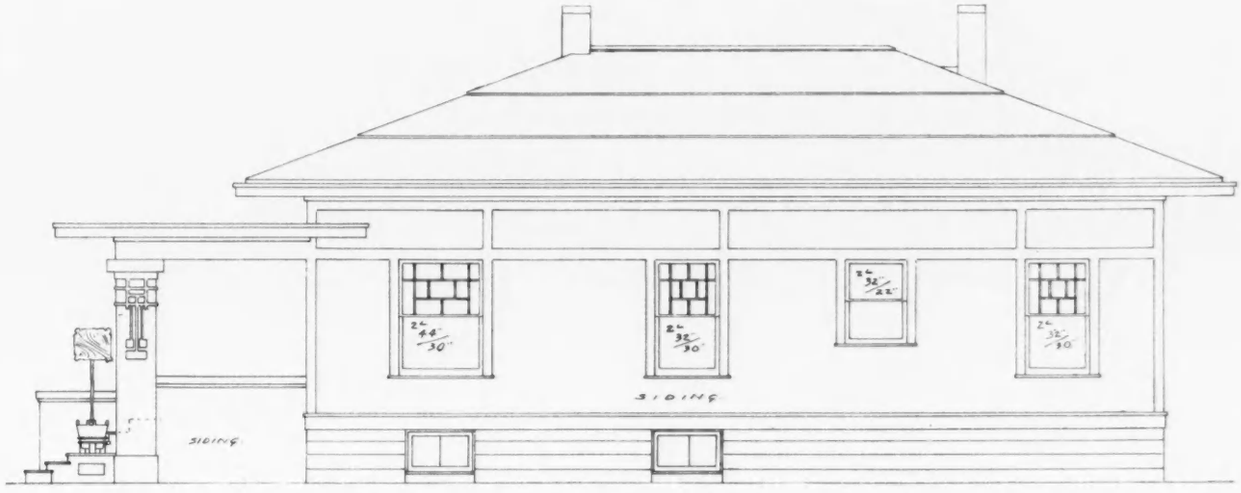
located between them.

The exterior of this bungalow is artistic without being in any way fussy. The roof is given a distinctive air by being lined off with two strong horizontal lines. This is done by putting in a strip of beveled siding under the shingles. The upper window sash are of unusual design. They correspond with the porch pillar ornaments.

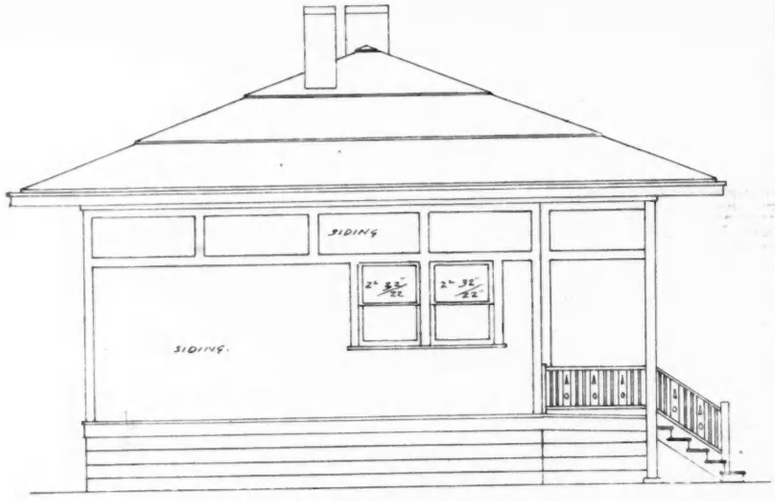


FRONT ELEVATION

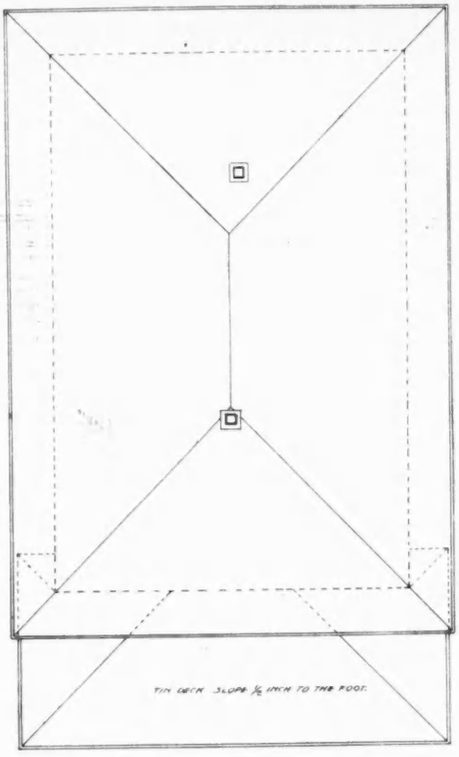
LEFT SIDE ELEVATION



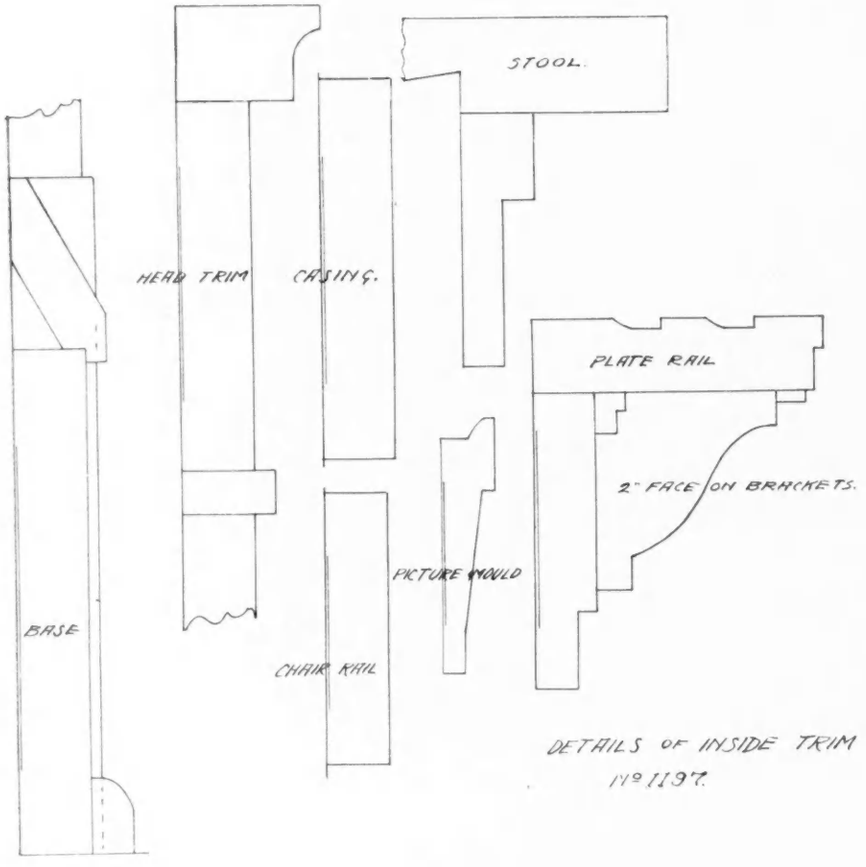
RIGHT SIDE ELEVATION—BUNGALOW ON OPPOSITE PAGE



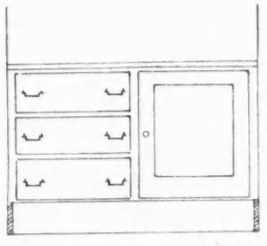
REAR ELEVATION



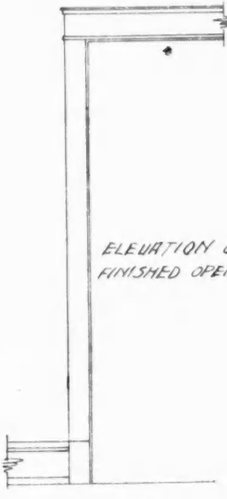
ROOF PLAN



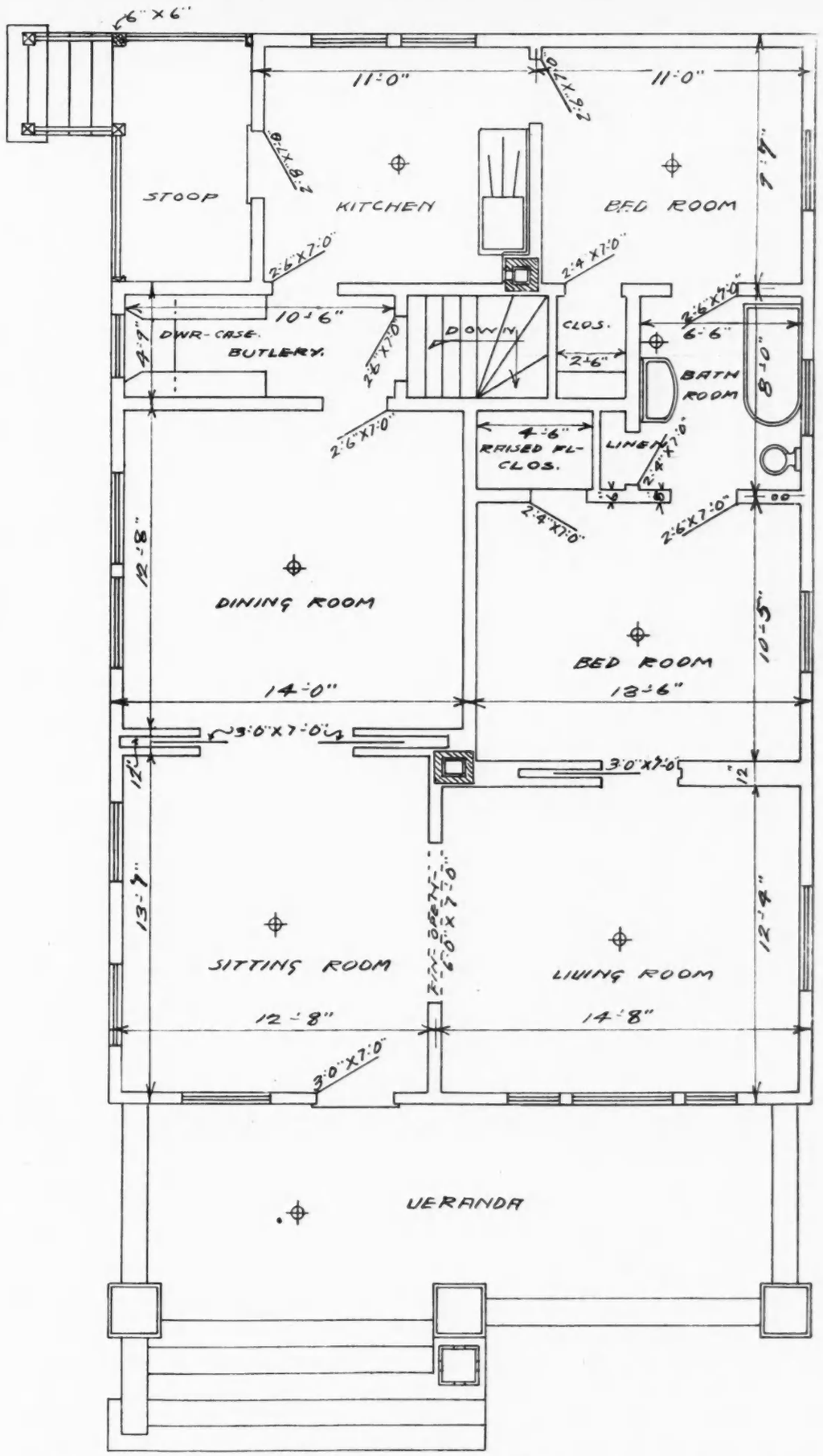
DETAILS OF INSIDE TRIM
No 1197.



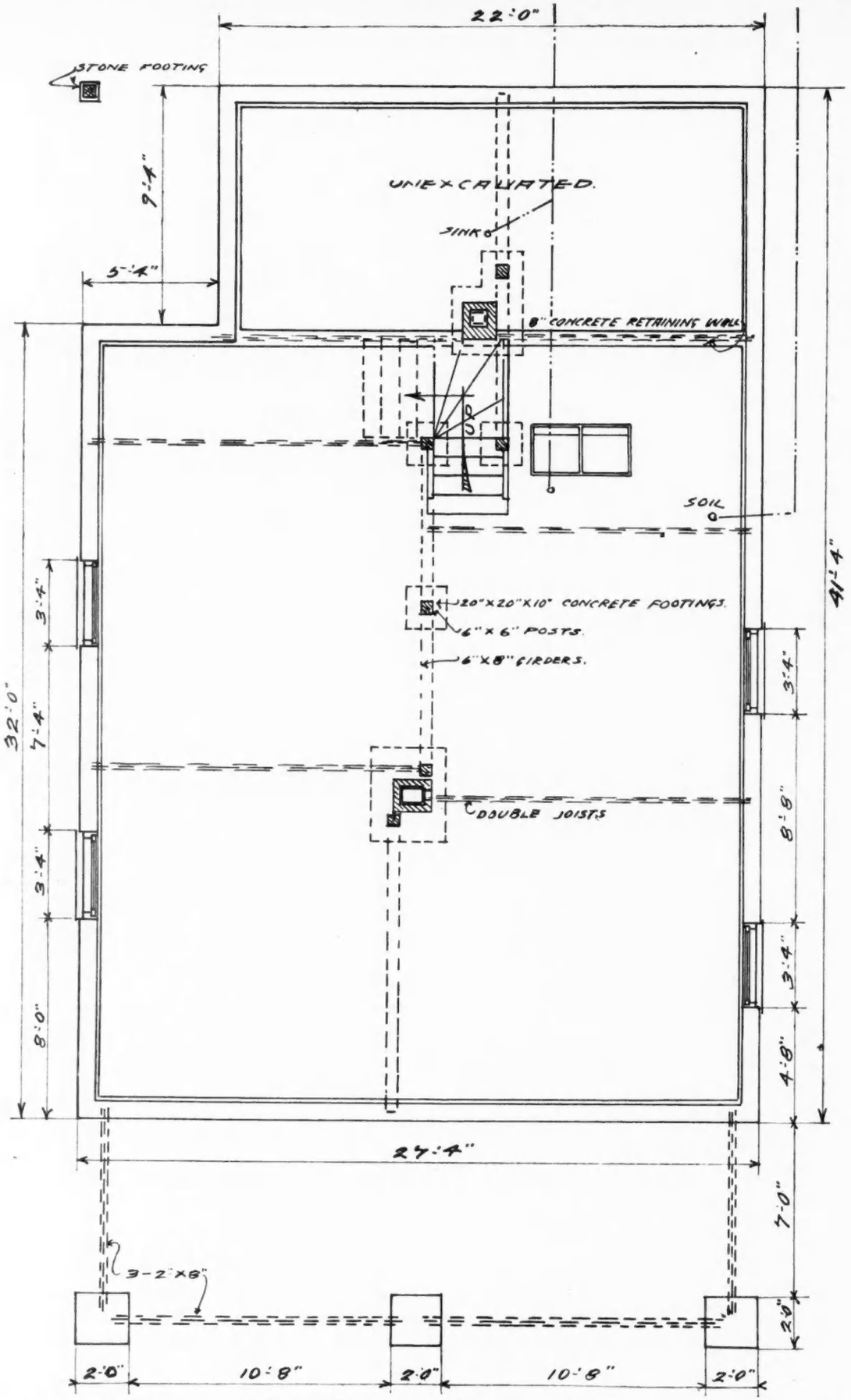
ELEVATION OF DRAWER CASE IN PANTRY



DETAILS OF INTERIOR—BUNGALOW PAGE 58



FIRST FLOOR PLAN—BUNGALOW, PAGE 58



FOUNDATION AND BASEMENT PLAN—BUNGALOW, PAGE 58

Index Card to Aid Fire Fighters

A SUGGESTION WHICH MAY BE OF GREAT PRACTICAL WORTH—DETAILS OF A PLAN BEING ADVOCATED FOR MONTREAL

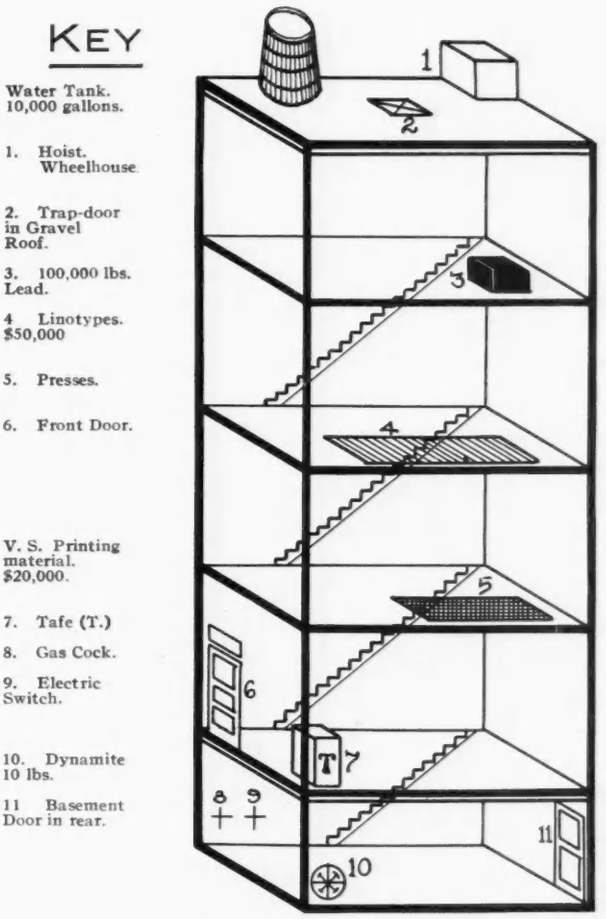
THE enormous loss to the world of life and property as a result of conflagrations suggests that more attention be given to all matters pertaining to fire prevention and fire fighting. Anything that will add to the effectiveness of a city fire's brigade is worth almost anything it might cost. The suggestion was recently made by the Montreal *Daily Witness* that there be created a card index which with simple and conventional diagram and signs, would indicate at a glance the nature of a building and its contents, and particularly the location of dangerous features, such as excessive weights on upper floors, explosives, or basement from which there are no exits, and so forth; that would indicate the position of stairs, elevators, fire escapes and other exits; and that would show the precise position of the main gas cock and electric light switch so that these might be immediately shut off on the arrival of the firemen.

The diagram or chart would also show in simple way the position of machinery or valuable stock, for the guidance of the salvage department. The diagram might also show in conventional fashion the kind of roof, the nature of the walls, showing also any internal unprotected connection with adjoining buildings.

Figures at the upper right hand corners of each plot would indicate the number of employees and immediately under them other figures would indicate the value and approximate weight of the contents. Light machinery might be indicated by a series of light crosses, heavy machinery by heavy crosses, and the underscoring of anything would show that it was, comparatively speaking, of special value. The letters "VS" might show the location of particularly valuable stock, and a circle with a heavy "T" in it the position of treasure, not only such as specie and jewelry, but such, for instance as special dies and tools which are sometimes as valuable if not more so than jewelry itself. Any explosive material might be indicated by a sun with an "X" in the center, while a dangerous weight on an upper floor would be indicated by a black block. The position of sprinkler valves would, of course, also be shown to advantage, so that the sprinklers might be stopped as soon as a fire is extinguished..

It often occurs that a building on fire is so thick with smoke that a fireman's lantern enables him to see but a few feet in front of him and a voyage of discovery is out of the question. But he would be practically at home in a building simply charted as suggested. Four copies of the card should be made for each building one to be placed conspicuously near the main entrance, one to be sent to the fire Department, one to the building inspector, and one to the factory inspector. It is suggested that before the card finds itself placed in the index of the fire chief, his inspector will make a visit to the building and see that the card has been properly prepared. The building and factory inspectors will also visé their copies of the card, and the facts therein given may lead to a more particular inspection of the building if there is evidence of overloading or liability to excessve vibration from the machinery it contains.

It is further suggested that this index be revised at least every six months and at other times when there are considerable alterations in the building or in



Index Card Showing at a Glance All the Features of a Building

the disposition or weight of its contents. The placing of the plan at the main entrance in a little glazed frame, with the date of its preparation upon it, would render it open to the inspection of the police force who would report any delinquency in the semi-annual renewal of the plan; it would also be open to complaints from employees who felt the facts were not correctly shown, and last but not least would be accessible on the arrival of the brigade.

The home of the fire department's card index might very well be in drawers in the vehicles of the district

captains, so that when the captain arrived at a fire while his men were raising ladders and connecting hose to the hydrants, he would have thirty seconds in which to pick out and survery the card in case he did not find it at the entrance of the burning building. As the face of these cards would have simply the diagram with its conventional signs as regulated by the department, and marginal notes of the simplest, he would get all the main facts at a moment's glance.

Very large buildings might require large cards folded, however, to the adopted index size. With such information before him, a fire chief could marshal his men to the best advantage in their fight with the flames and in their salvage of life and property, and at the same time could avoid the accidents which so often befall firemen in the exercise of their duties through the falling of heavy weights from upper floors, by asphyxiation by gas, by explosion, or by electrocution.

The accompanying sketch illustrates in simple form a diagram such as is here suggested. Such a diagram must be simple or it will be too complicated to be of any use whatever in face of a burning building.

Wrong Method of Hot Water Piping

I have seen a number of hot water heating plants where the application, in my judgment, is wrong and expensive. The return lines, for instance, instead of being carried on the basement ceiling, providing there is no basement radiation, are sometimes carried down below the floor and thence back to the boiler. My experience and judgment is that this is a wrong application of hot water heating design and is bound to work against the system. If the return main is placed on the ceiling you will have the benefit of it, whereas if you place it below the boiler, you will have to force the water back to the boiler, and there is not only the increased expense of running the piping there, but the unsatisfactory operation of the apparatus. In two buildings that I know of, the return mains were taken out of the trenches and hung from the ceiling with satisfactory improvements in the operation of the system.

In my earlier work, I had a job where there were some basement returns and I conceived the idea of connecting the returns from the upper stories to the basement radiation, but I found it interfered with the whole system. While the basement radiation had to have the returns under the floor, the returns from the upper stories were placed on the basement ceiling and the system worked well.—W. M. MACKAY *before the Heating Engineers' Society.*

Collapse of a Sprinkler Tank

At 6 a. m., July 18, 1910, without any warning, the 5,000-gallon sprinkler tank of the West End Theater, New York, elevated twelve feet above roof of stage portion, collapsed, and staves and contents of tank fell on roof over stage, on auditorium roof, on roof of adjoining flat house and on to street. The rush of water across stage roof carried four staves over the three-foot parapet wall and down to sidewalk of Hancock place, together with a six-foot length of two and one-half by sixteen-inch marble coping. Fortunately no one was passing at the time, as this is a drop of seventy-five feet. A large quantity of water entered the skylight and fell to the center of the stage.

The tank was of cedar, installed in 1902, and constituted the only water supply for the sprinkler equipment over the stage portion. There were nine ordinary flat hoops on the tank, the bursting of one of which must have caused all remaining hoops to give way simultaneously.

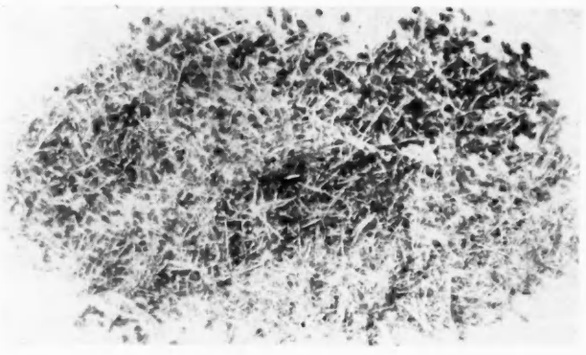
An examination of hoops after accident shows that they were as thin as paper in many places, and it is remarkable that a collapse did not occur long before this. The attention of the occupants had been called to the conditions of these hoops as far back as June, 1906, but they did not feel disposed to make any change.—*Quarterly of the N. F. P. A.*, October, 1910.

A Queer Woodworking Machine

A rather unusual woodworking machine is used for making the wood fibre in a certain wall plaster. The cutting member is the gang of thick small saws, spaced but little apart. A round block of wood about 2 feet long, is placed between centers similar to those of a lathe. This block is revolved by the wheel and worm at the right, and simultaneously fed toward the saws.

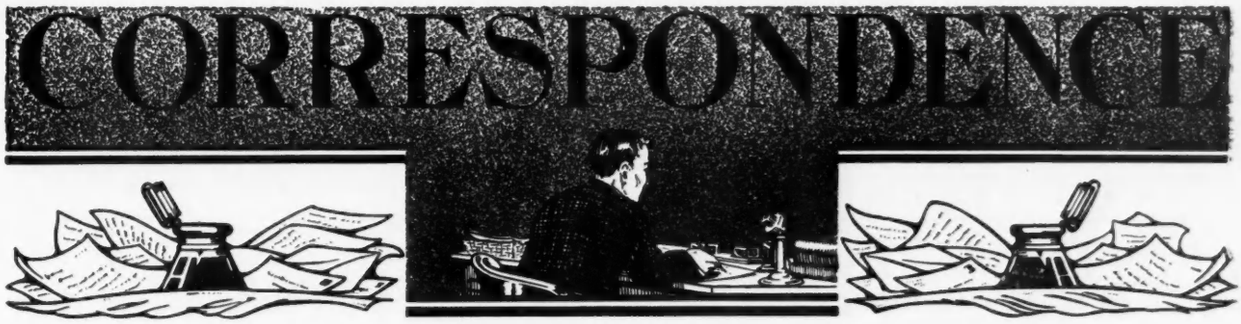
The result is a fibrous mass, shown in the illustration, which is nicely adapted for mixing with the gypsum which constitutes the mineral portion of the plaster.

A fire test to which the writer saw this plaster submitted suggests an idea which may be of some value. It would seem that sawdust, wet with a solution of salt and soda, similar to that used in fire extinguish-



Fibrous Mass Produced

ers, and mixed with a comparatively small proportion of gypsum or lime, ought to make a desirable mixture for wall filling. It would certainly be an excellent nonconductor of heat, vermin-proof, would stop all cracks and stiffen the wall, while it would not only resist fire but tend to extinguish it. Why not?



How Shall We Judge a Carpenter?

To the Editor: Chesterland, Ohio.

I would be much interested and pleased to read in your paper a discussion by one of your number of the question: "What constitutes a *good* carpenter"?

How are we to judge what class a man belongs in, as to whether he is a poor, good, first-class, or A No. 1 carpenter?

Are we to judge by speed, accuracy, long service, extensive experience, or in what particular way can we best judge a man?

Speeders are often found to slight the work; accurate workmen are often said to be slow; the man who has put in the most years don't always produce the best work; and the one who has had the most experience seldom has opportunity to use it in the ordinary line of work.

Please print some information on this subject in an early issue. O. H. Albaugh.

A Good Drawing Board Without Cleats

To the Editor: Missoula, Mont.

The heavy cleats generally used on drawing boards are sometimes objectionable on account of their weight and bulk; and always prohibit the use of both sides of the board. These cleats may be omitted, making a neater and less cumbersome board with both sides available for use, by using the following method.

Select sufficient pieces of soft, dry, pine boards, "quarter sawed," i. e., with the annual growth rings running as shown in Fig. 1, rather than as in Fig 2. This selection is important, for having the edge grain show on the face of the board not only gives a much better surface to push thumb tacks into, but is a very practical and effectual safeguard

Fig. 1

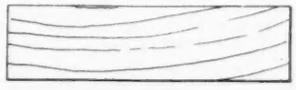


Fig. 2

against warping. If you cannot find two pieces of sufficient width to make the board glue up strips till you have two, each of half the required width. Next take some dowel rods of a diameter equal to about half the thickness of the board and cut them two inches shorter than the desired width. Having carefully jointed the edges which are intended to go together bore holes in them to fit the dowels, just as you would bore for any job of doweling except that the holes extend to within half an inch of what is intended for the finished edge of the board. Mark the centers of your dowels and, with a piece of sandpaper, work off all but about two inches of the center till it fits the holes only "hand taut." Drive them into the holes in one of the pieces without glue, as far as the center mark, or till the ends lack half an inch of reaching the bottoms of the holes. Drive a small finish nail through each, as shown at d. d. in Fig. 3, to hold it in position. Push the other piece onto the rods till the two halves are about an inch apart; then, having your clamps all ready, spread glue on the edges and the inch of dowel and immediately clamp together.

The dowels, being secured only in the middle and lacking half an inch of touching the bottoms of the holes, as shown Fig. 4, will offer practically no resistance to the shrinking and swelling of the board, but will serve to keep it from warping or splitting. Of course the holes will have to be very

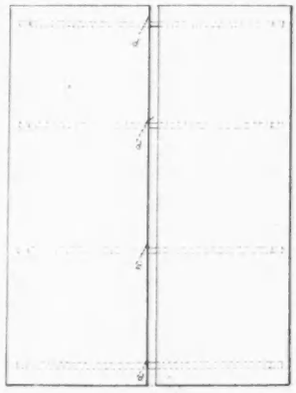


Fig. 3

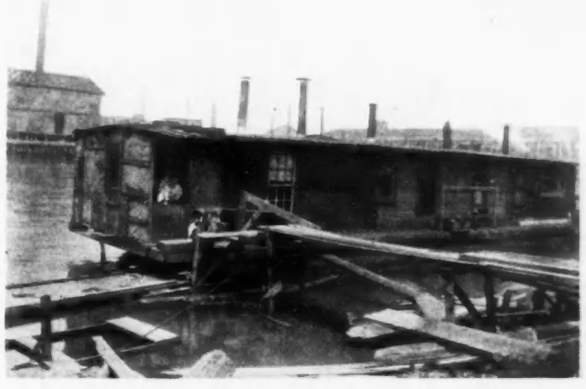
Fig. 4

accurately bored, and there should be more than two of them. If the boards are carefully selected as to grain, and the rods are spaced not more than four or five inches apart, the completed job will be as secure as if cleated. W. D. Graves.

A Carpenter's Home

To the Editor: Chicago, Ill.

This picture shows how I get out of paying both rent and taxes even though living in my own home in Chicago. This house-boat cost me only $500 to build and I and my family have lived in it for twelve years. It rides at anchor in the Chicago river near Paulina street, which being federal territory charges me nothing for taxes.



House Boat on the Chicago River

This house-boat is 15 feet wide by 70 feet long and contains four very comfortable rooms. We find that this kind of a house, though a little out of the ordinary, is alright.

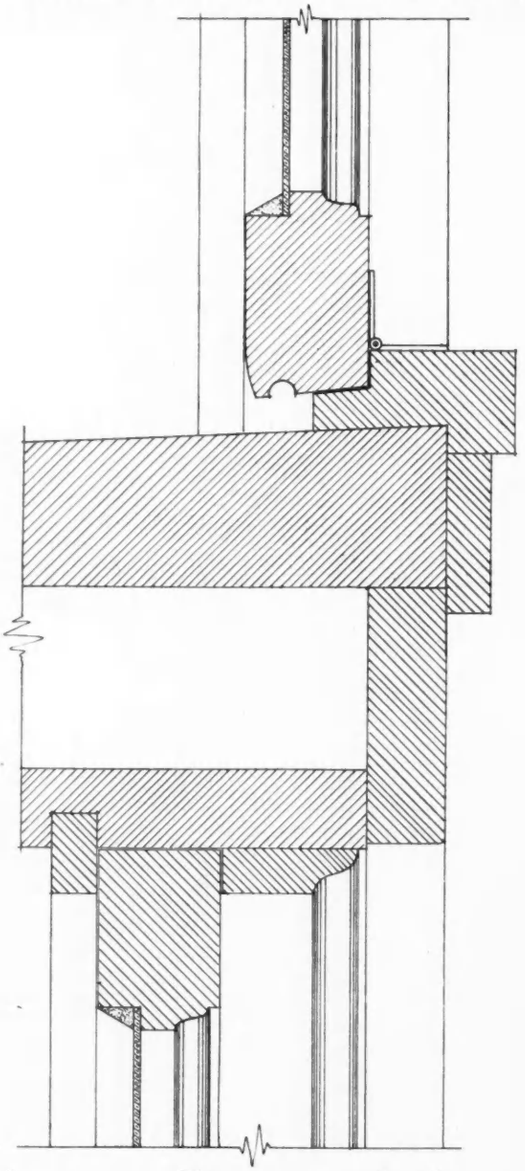
I am a carpenter and have been one for a good many years. From the place where I live you might almost say that I am a ship-carpenter. If any of the brothers want to get the upper hand of the "high cost of living" by cutting out both rent and taxes I recommend to them a good house-boat as a home. You will find it clean, cool and comfortable, with all the modern conveniences and some to spare.

C. O. VAN DUZEE.

Triple Windows with Transoms

To the Editor: Wards, S. D.

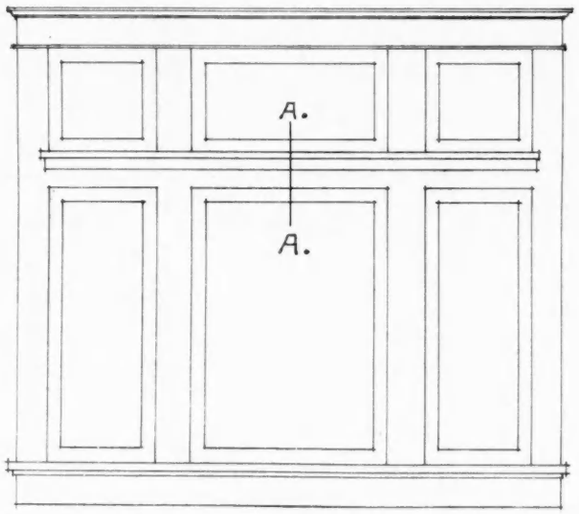
As a subscriber to the AMERICAN CARPENTER AND BUILDER, I very much desire some advice as to the best way to trim the inside of a triple window as per accompanying sketch.



SECTION THROUGH A.-A.

The bottom sash are to be of plain glass and the upper sash of colored glass 4½ inch yellow pine is to be used with cap and fillet on the head casing. The sash are all to be stationary unless I can arrange to hinge the top sash so as to swing down inside.

The sticker with me is how to arrange the casing between the top and bottom sash. The sill for top frame opening is ⅞-inch wider than the jamb and the space between top and bottom opening provides for a 4 ⅝-inch casing inside, same to come flush. How should the casing be arranged on the inside and how should the sill for top sash be placed to



INSIDE ELEVATION OF TRIPLE WINDOW

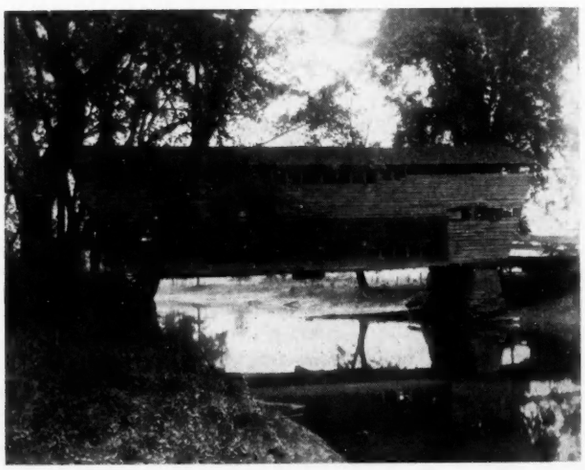
keep out the rain and look well? Should it project over the horizontal casing or come even? H. J. KIECHSEE.

Answer: The accompanying detail shows a section through the dividing rail between the upper and lower sash and shows clearly the arrangement of parts to make a water-tight and well appearing job. The inside elevation of this triple window is drawn up following the dimensions of your sketch. These dimensions could be varied considerably without in any way effecting the construction or the general arrangement of such a window. EDITOR.

One of The Last Survivors

To the Editor: Kinsman, Ohio.

You may be interested in this picture of an old time covered bridge that is still doing good service near here. These covered bridges used to be the delight and joy of the small boys, who could always find a good swimming hole nearby. They also gave good protection to travelers in times of rain storms, and in the past road agents or hold-up men



Old Covered Bridge in Ohio

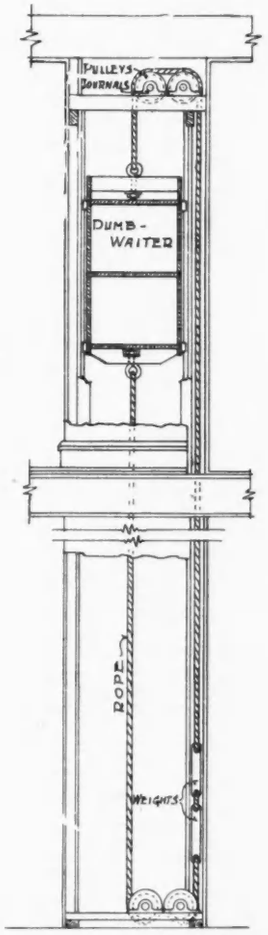
were wont to make use of their shelter. In these days, however, this kind of bridge has gone out of style and there are only a few of them left. C. B. McCURDY.

Dumb-Waiters

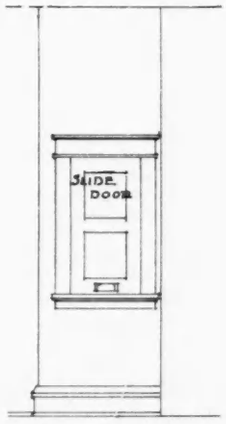
To the Editor: Prince Albert, Sask.

I will be greatly obliged to you if you will give in an early number of your valuable paper, a working drawing sketch of a dinner lift to operate by hand. The size of the opening in the floors, trimmed, is 1 foot 6 inches by 2 feet 4 inches as per sketch; the dumb waiter to be installed in a building of three stories and basement. H. H. LUKE.

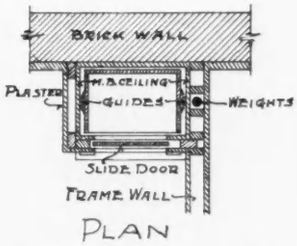
Answer: Hand elevators or dumb waiters are of various



UPPER AND LOWER PARTS OF DUMB-WAITER



ELEVATION



PLAN

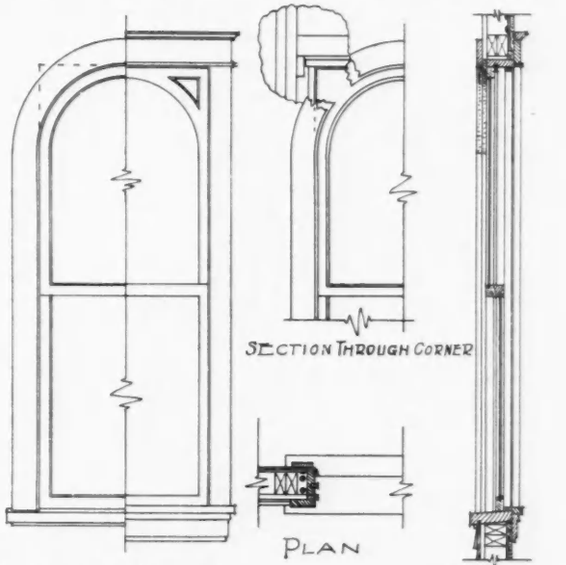
patterns or designs according to the special patents of the companies manufacturing these goods. Yet in general the idea is the same in all and practically the same problems of finishing the elevator shafting, arranging the sliding doors, etc., are present no matter what special lift is used. The accompanying sketches will show in a general way how these hand elevators work and how the partitions should be arranged to provide for them. Before going ahead with a job of this kind it is always well to consult the advertising pages and to see what the companies, making a specialty of appliances of this kind, have to offer. Very often it is cheaper—and it is pretty sure to be more satisfactory—to buy these things already made than to attempt a home-made affair. EDITOR.

Arrangement for Circle-head Window

To the Editor: Bronxville, N. Y.

I will be very thankful to the man who will give me a drawing of an arched or circle-head window, 2 feet 8 inches by 6 feet in size. I would like to have a section and plan view and a sketch showing the window with a circle-head on the outside and square head trim within. A. KAHN.

Answer: We will be one to come forward and volunteer these drawings requested. If there are other arrangements



EXTERIOR AND INTERIOR VIEW OF CIRCULAR WINDOW

that the brothers want to suggest for such a job we will be very glad to publish them in these columns, both for the benefit of Mr. Kahn and others. EDITOR.

A Better Silvering Method

To the Editor: Winona, Wash.

I read in one of your magazines how to resilver a mirror by the use of mercury and tin foil. I followed directions with extreme care but it failed to work though I tried the experiment two different times.

Will you please tell me what the trouble is or advise a more simple way? The mirror is a large plate glass one. OSCAR JAMES.

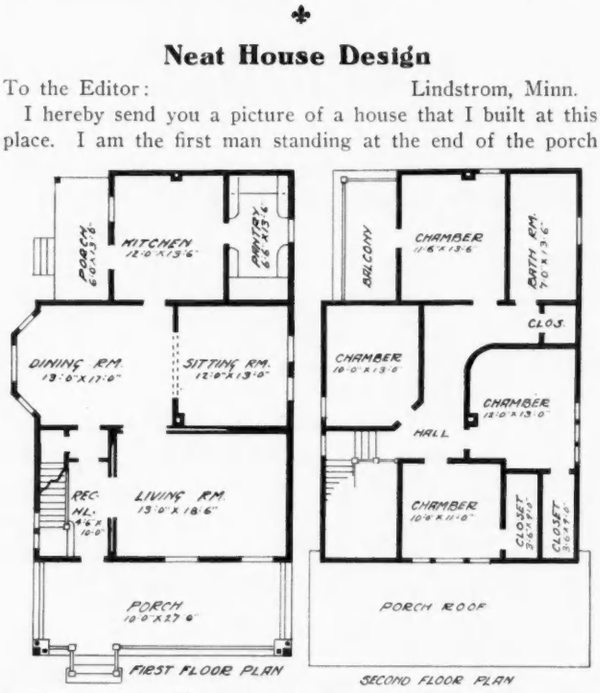
Answer: Mirror silvering is a delicate operation and it is quite doubtful if any of the methods will produce really good results for the amateur, at least with the facilities that are ordinarily to be had. At the furniture factories where such work is done, special appliances are used and the work is done by experts who have made a long study of the problems. Even then the work is not always of a No. 1 quality.

A recent number of the *"Furniture Journal,"* of Grand Rapids, describes the method of silvering mirrors used in some of the factories there. The same processes could be carried out in a small way by the amateur and might prove successful. It is stated that when the plate glass reaches the silverers it is first placed on the washing tables and is

thoroughly washed with putty powder and water. It is then thoroughly rinsed with distilled water to remove all impurities, as the chemicals in ordinary water would injure the silvering. While still wet the glass is placed on the silvering tables which have steam heating coils underneath which gently heat the glass, the heat being essential to good results with the compound used. The glass is laid front, or face side down on a woolen blanket and the back or reversed side is ready for the silvering solution.

The basic principle of all successful silvering formula is the dissolving of silver nitrate with ammonia to reduce it to a liquid state; and then an acid solution of Rochelle salts, or tartaric acid is added to precipitate the silver in metal form out of the solution and onto the glass. The solution when ready for use looks very much like water, but the effects of the acid and the heat after it has been poured onto the glass gradually change its color until one can see the metal silver slowly begin to form and spread in the shape of a thin film of metal over the surface of the glass. The fine art of silvering mirrors is in the mixing of the various materials that go into the solution and the ability of the silverer to judge the chemical action after the silver is on the glass. The working of the solution must be watched with the same care used in developing a photographic negative. After the solution has been poured onto the glass it requires from one-half to one hour's time for the silver to form in good shape. As soon as this occurs the plate is taken up and the superfluous solution is allowed to run off. The coating of silver is then carefully wiped dry with chamois skin, the plate being handled very carefully as the silver is so sensitive that the touch of a finger would leave a mark.

After the actual silvering is completed the plate is treated with a coat of shellac and a coat of paint as a protection for the silver. For the shellac, the finest grade of orange-gum shellac, cut down with alcohol is used. This is applied directly over the silver with a fine camel's hair brush. When this is dry a coat of paint is applied over the shellac. The paint used is a special one for the purpose and must be entirely free from oils and acids that would have a detrimental effect on the silver. When painted, the mirror is placed in a drying room until the paint is thoroughly dried. It is then thoroughly cleaned and polished with a cloth and dry pumice stone and is then ready for use. EDITOR.



Neat House Design

To the Editor: Lindstrom, Minn.

I hereby send you a picture of a house that I built at this place. I am the first man standing at the end of the porch on the ground. The rest make up my crew. The man on the porch next to wall is the owner of the house.

I am also sending you the floor plans of this house.

The porch is trussed up in center in place by having posts with two ¾-inch rods inside of cornice box.

J. V. HOLMQUIST.

TRADE NOTES AND ITEMS OF INTEREST

Novelties in Furniture

The fad for "period" furniture—that is to have all the furnishings of a certain room correspond exactly with those of some past period of history, as for instance, Directoire, Louis XV, Jacobean, etc.—has lead its devotees into harboring some queer household goods. Many of these periods are characterized by pieces of utility and of beautiful design. Would that as much could be said for all of them. Many

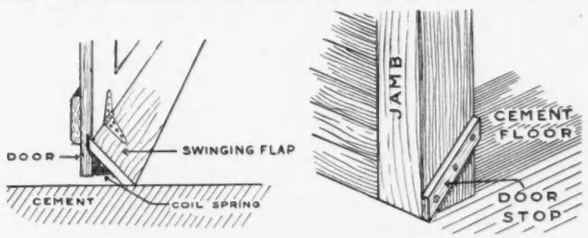
THE "CAT" CHAIR

of such pieces of furniture are elaborately beautiful without being in any way useful. Many are better suited for exhibition in some museum than for use in a self-respecting home.

The "cat" chair shown in the accompanying illustration may be taken as something of a freak. It is for a Cleopatra "period" room and is the product of one of the very elite furniture producers of New York. Leopard skin is used for the "back," while the legs and head are of rare wood beautifully carved and inlaid.

Snow-Proof Garage Door

A reader of *Suburban Life* offers a good suggestion for making the wide swinging doors for garages snow proof. The door is rabbited out about two inches from the bottom



Slanting Pieces on the Door Jambs Hold the Flap Down Tight to the Floor

to receive the swinging flap which is held tightly down when the door is closed by strips nailed to each jamb. The floor needs no threshold, being perfectly level. When the door is opened, the coilsprings behind the flap raise the flap one-half inch from the floor, making it swing clear. The door stop is cut out to receive the flap when the door comes to and the flap, entering this cut in the door-stop, is forced down tight against the cement, making the door snow-proof. It is a tight, neat and good arrangement. The flap should be about three inches wide, and so hung that when the door is closed it will stand at an angle of 45 degrees with the door and floor.

To Employ Your Spare Time

The inlaid table top shown in the photograph is interesting in more ways than one. The design for it appeared in the London *Master Builder* as long ago as November 15, 1889. In March, 1895, one of their readers, Mr. F. Hunnell, of Seaford, started to inlay a table top to that design. The work made extraordinary demands on his patience and industry. It occupied the greater part of his spare time for thirteen years, a fact which will not be surprising when it is stated that the table top contains over 20,000 pieces of wood. We do not know whether Mr. Hunnell has followed

Inlaid Table Top, Containing 20,000 Pieces of Wood

exactly the suggestions given with the original design. If he has, the woods used are ebony, holly, rosewood, tulip, mahogany, walnut, yew, maple, oak and acacia. In any case the effect as shown by the photograph, must be very fine in its way, though perhaps a design of somewhat less elaboration would have been not less effective.

Rustic Garden Furniture

A branch of carpentry that is usually considered difficult and within the range of the "specialist" only is rustic work.

In reality, however, it is quite simple since the joints do not call for any great amount of care or skill. The material is usually oak or similar wood with the bark removed, or straight fir saplings. These are best adapted for the design in Fig. 1, as nearly all the members are in straight lengths. The dimensions of Fig. 1 are about 7 feet for length of seat, by 1 foot 6 inches wide and 1 foot 4 inches from the ground. The

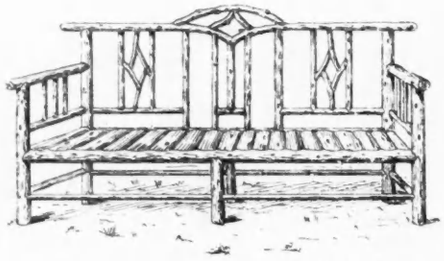


FIG. 1. RUSTIC GARDEN SETTEE (7 ft. long).

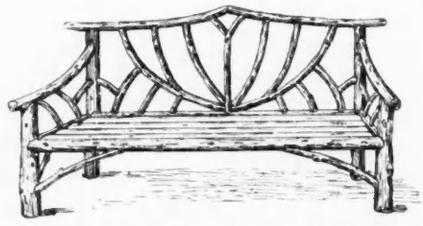


FIG. 5. OAK GARDEN SEAT (5 ft. 6 ins. long).

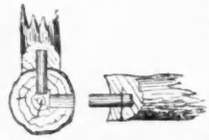


FIG. 2. JOINTS FOR SEAT RAILS TO POSTS.

FIG. 3. JOINTS OF BACK RAIL TO POST.

FIG. 4. RINGS PARED TO FIT POSTS.

FIG. 6. RUSTIC TABLE.

legs or posts are about 3 inches in diameter. The front post is 2 feet 3 inches high, while the back one is 3 feet. The seat rails are 2½ inches diameter, and the smaller members, forming panels, rungs, etc., 2 inches. The rail ends are roughly hollowed to fit the posts, and bored for oak or elm inserted dowells, as shown at Fig. 2. The post terminals are hollowed to suit the diameter of arm rests and back top rail, and then nailed as shown at Fig. 3, while the rungs below the seat are simply pared off taper and driven in bored holes in the legs and then secured with nails. (See Fig. 4.)

The seat in Fig. 5 is better adapted for the uneven growth of the oak, as curved pieces form the main decorative feature. There are, of course, no arbitrary sizes about rustic work, but in this case, as there is no center leg, the seat should not exceed 5 feet 6 inches long; other dimensions are as given in Fig. 1. The central joint of the top rail should be halved and the center upright dowelled and nailed to the back rail of the seat.

A rustic tea-table is illustrated at Fig. 6. The top is 2 feet 6 inches long by 1 foot 6 inches wide and the side brackets 1 foot square. The top is made from three lengths of grooved and tongued 1 inch floor board. Battens are fixed underneath, into which the legs are driven and nailed or wedged. The holes are, of course, bored at a slight angle for the legs to splay outwards in both directions; the table top and brackets are covered with split stuff, arranged in a simple pattern and shaped to fit and then nailed. When nailing up rustic work it invariably pays to bore holes for the nails; this will prevent the wood from splitting.

Further, it is also wise to hold a weight against the portion to be nailed, as this will relieve the jar of hammering on parts already connected.

Properties of Triangles

Among the most important properties of plane triangles we have the following:

The sum of the angles in any triangle is equal to two right angles. That is to say, if we add the degrees of all the angles, the sum will be 180 degrees.

The side opposite the greatest angle of a triangle is greater than either of the other sides; the side opposite the smallest angle is smaller than either of the other sides; and if two sides are equal, the angles opposite to these sides will be equal. If all the sides are equal in length, all the angles will be equal, and the triangle is said to be equiangular. In this case each angle contains 60 degrees.

The length of any side of a triangle is less than the sum of the lengths of the other two sides, and is greater than their difference.

A line drawn parallel to the base of any triangle will divide the two other sides proportionately, and the triangle cut off is similar to the whole triangle.

The line which bisects the vertical angle of a triangle divides the base into two segments which are proportional to the adjacent sides.

The lines which bisect the three angles of a triangle intersect in a common point; this point is the center of the inscribed circle.

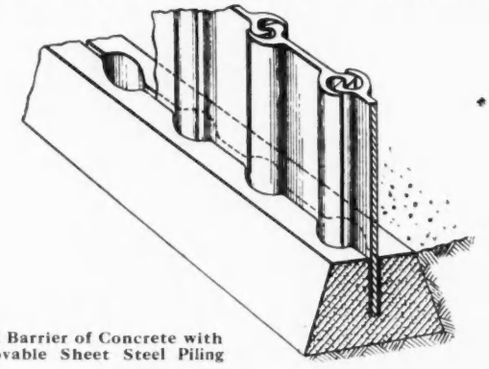
The lines drawn from the center of each side, and perpendicular to them, meet in a common point; this point is the center of the circumscribed circle.

Lines drawn from the vertices of the angles of a triangle to the centers of the opposite sides intersect in a common point; this point is the center of gravity.

An Adjustable Barrier Against Floods

Since the floods in Paris last spring, efforts have been made to work out some plan for the use of steel sheet piling as a protection against such disasters. Mr. Thomas C. Clarke, who is thoroughly familiar with steel sheet piling, has recently patented a system of construction which, it is claimed, overcomes the objections necessarily attaching to any form of permanent barrier as a flood protection measure.

A base, usually of concrete, is made of such width and depth as to resist the overturning tendency of the water acting against the piling to be later installed. In this base is a slot so shaped as to allow the piling to be inserted and to fit snugly. The top of the base is preferably built at, or below, ground level and follows the contour of the ground, the slot, when



Flood Barrier of Concrete with Removable Sheet Steel Piling

not in use, being capped by a wood or metal cap to prevent its filling with dirt. The foundation is permanent and may run across streets and bridges, offering no obstruction to travel.

When threatened by flood, the piling is inserted in the slot, beginning at the lowest point of the contour lines and as the water rises the practically watertight piling wall is built up ahead until the highest point to be protected is reached.

It is stated that a 10-foot high protection of this type would cost about $30,000 per mile, which is small compared to the cost of a retaining wall or other type of barrier permanently in place.

Dynamite Helps Fast Bridge Work

A unique use of dynamite is illustrated in these photographs, the work being the replacing of the wooden trestle bridge across Dry Creek, between Stockton and Merced, on the Santa Fe Railway. A steel girder bridge of 80 to 100-

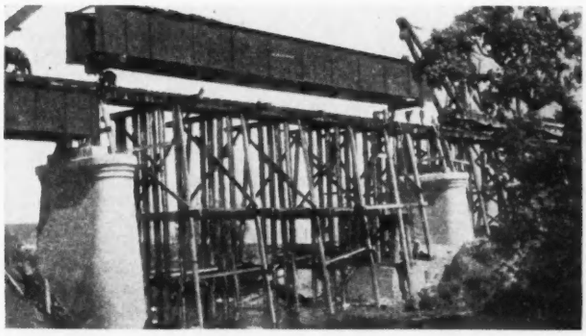


Fig. 1. Steel Girder and Wooden Trestle before the Explosion

foot spans had to be put in and the longest permissible time for changing one span was four hours, that being the schedule time between trains.

The engineer in charge of the work, writing to the *Pacific Architect and Engineer*, states that to accomplish this work the girders were assembled in pairs and riveted together at the

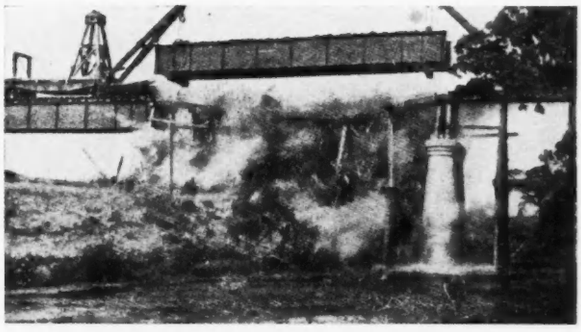


Fig. 2. Dynamiting the Old Trestle to Make Way for the Girder

nearest siding, and as soon as the girders were ready for placing, two derrick cars were employed to carry them from the siding to their permanent place, the 100-foot girders with ties complete weighing ninety-two and one-half tons.

The trestle-work being a very substantial and permanent affair, there being six piles in each bent, could not be removed by ordinary means in the required length of time.

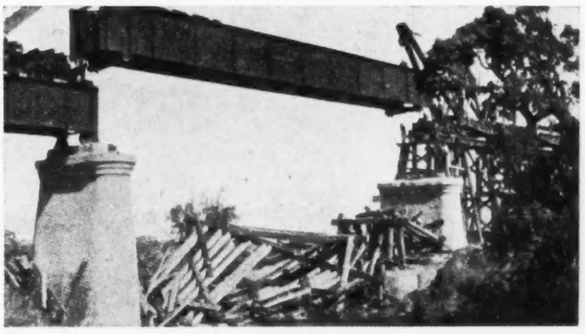


Fig. 3. Two Minutes After the Explosion

Dynamite was therefore used to break off the lower fifteen feet of each post in the trestle. The upper portion of the post was left intact, as may be seen in the photograph, marked Fig. 3.

The whole proceeding averaged two hours and forty minutes from the time the last train passed until the track was ready for the next train.

We believe that this is the first time that this method of placing girders, riveted together and with deck complete, has been employed in the United States or anywhere else; and it is quite certain that the dynamiting of the old structure of this kind was never attempted heretofore.

Berry Brothers Toy Wagon Grown Up

The accompanying cut shows a new auto power wagon recently made by the Grabowsky Power Wagon Company for Berry Brothers, Limited, the well-known varnish manufacturers of Detroit. This wagon is a replica of the now famous toy wagon introduced by this firm many years ago, and which has brought joy to the hearts of youngsters in every quarter of the globe.

The body of the auto truck is constructed of handsome quartered oak, well finished with Berry Brothers' varnish, and has a capacity of two tons.

The lettering on the truck and its general characteristics are in exact imitation of its small prototype, and the truck excites much comment, especially from the young folks who instantly recognize the giant cousin of their toy wagon.

An interesting item in connection with Berry Brothers' toy wagon is the shipping of a load of varnish overland packed in toy wagons from Berry Brothers' factory to their New York warehouse at 262 Pearl street.

The vehicle transporting this unique load is one of the new Grabowsky auto trucks, and the trip with its heavy load will be practical exhibition of the good qualities of the Grabowsky power wagon.

Upon request Messrs. Berry Brothers, Limited, Detroit, Mich., will send a card printed in colors showing their auto truck illustrated above.

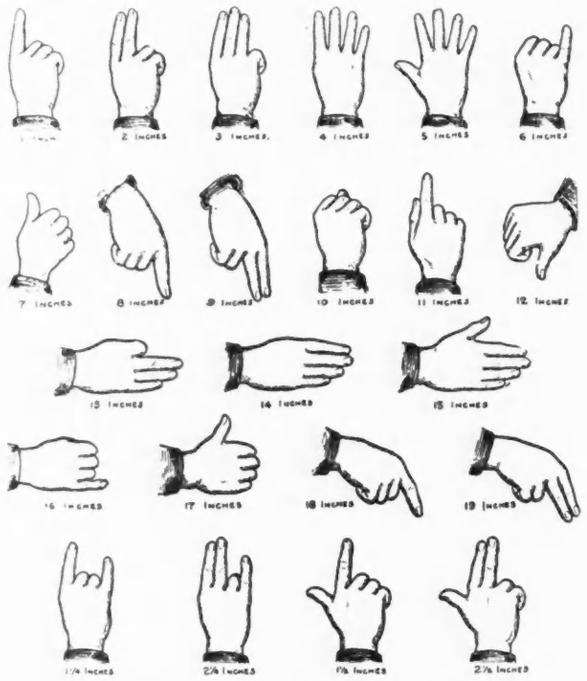
How a Bell is Tuned

"What a beautiful tone that bell has!" is often heard. There are few, however, who know how a bell receives its joyful or solemn tones. All bells after they are cast and finished must go through a process of tuning, says the *Scientific American*, the same as any other musical instrument before they respond with a clear, true tone. Every bell sounds five notes, which must blend together in order to produce perfect harmony. The tuning of a bell is done by means of shaving thin bits from various parts of the metal. It is as easy for an expert bell tuner to put a bell in tune as it is for a piano tuner to adjust his instrument to perfect chords. At first thought it would seem that a bell would be ruined should the tuner shave off too much at the

last tuning, or the fifth sound, but such is not the case. He would, however, be obliged to begin over, starting again with the first tone, and shaving the bell till it gave forth its harmonious sound at the fifth tone.

Silent Language of the Saw Mills

The accompanying set of illustrations, showing some of the silent signs used in the mills in the United States, which are generally understood by mill men, is reproduced from the *West Coast Lumberman*. In addition to these signs, there are others used which, on account of being a combination or being given by motion, cannot be well illustrated.



Signal Code Between Sawyers and Setters

The signs, up to and including twelve, are given simply by raising the hand, as indicated. From 13 to 19, inclusive, they are given by placing the hand in position as indicated, and then drawing the same across the body from left to right.

The illustrations showing the fractions are given as examples of how the signs are combined. In some cases it is not possible to give these signs, where there are combinations, in one movement. For instance, 3¼ cannot be given at one time, as the three first fingers represent three, and the little finger a quarter, so, given at the same time, it would be four; it is given, therefore, by first giving the sign of three, then closing the three fingers and raising the little finger for the quarter. Three-quarters following any unit is given by first giving the sign of three, then following with little finger.

The same thing pertains to a half, the thumb representing the half. For example, 4½ cannot be given with one motion, as a combination of the four fingers and thumb make five; it is given, therefore, by first raising the four fingers, with thumb closed, then closing the four fingers and raising thumb.

In giving the sign for an eighth, the sign for eight, index finger down, is used. Take 7⅜ as an example; hand closed with thumb up for 7, followed by three fingers up, then index finger down for ⅜.

Instructions to turn the log are given by raising open hand with palm out, then dropping same to side.

The order to set log for cutting off slab is by raising closed fist and holding same up until the log has been set at proper place, then dropping fist to side.

In cutting lumber of special thickness, there is an understanding between the sawyer and setter. Each mill has some special signs along these lines, which are local, and which are not of general use.

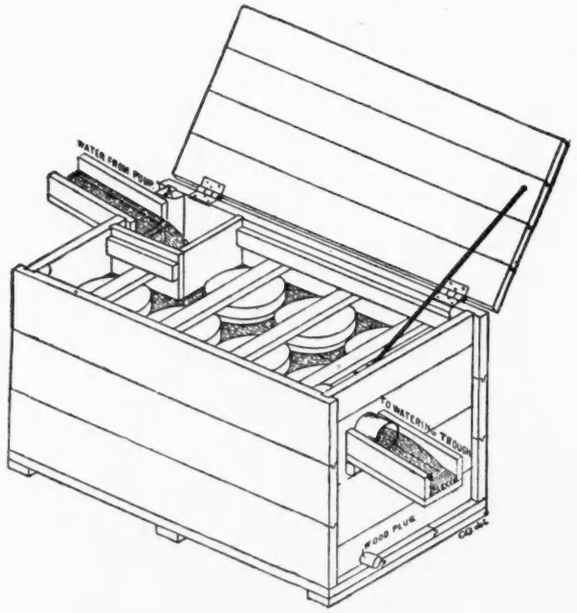
This language is quite necessary, and is of great value, saving much time and lung power, and, our contemporary adds, it is the only noiseless thing in the mill.

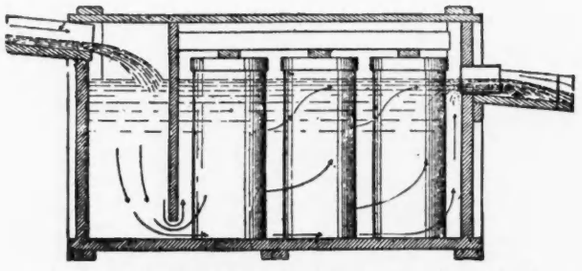
Cooling Box for Cream

One of the large creamery companies, in the effort to improve the quality of the butter produced, has designed a simple yet efficient cooling box which it is urging all dairy farmers to adopt. It is stated that by taking proper care of the separator cream during the period between shipments a much higher price may be obtained.

The main purpose of such a box is to cool the cream to a low temperature immediately after it comes from the separator and so keep the souring "germs" from developing.

The box is arranged as shown in the drawings. It should be placed between the stock tank and the well, so that all water that goes to the stock tank must pass through the cream box. The tall, narrow, shot-gun can, which is about eight





Cooler Installed Between Pump and Watering Trough

inches in diameter and twenty inches high, is to be recommended for this purpose, as cooling will take place much more rapidly in such a can.

The box can be constructed of tongued and grooved yellow pine, one inch and a half in thickness. A little cotton and white lead should be placed in all joints before boards are fastened together, as this will do away with any possibility of leaking after the box has once become water-soaked. Similar packing should also be placed on the flat sides of the

one-quarter round pieces before they are nailed in the corners. Such a cooling box could also be constructed of cement. The size of this box will depend on the supply of cream. Note the arrangement which holds the cans down in the water. The box should be well covered.

With this arrangement each separation of cream is placed in a different can, at least until the fresh cream has become cooled to as low a temperature as is possible. The practice of mixing warm fresh cream with the cream of previous skimmings, which has been cooled, is one of the greatest causes of poor quality of hand-separator cream. When the day for shipping arrives, stir the cream thoroughly and pour it into the shipping can. Rinse the cooling cans with warm skim-milk.

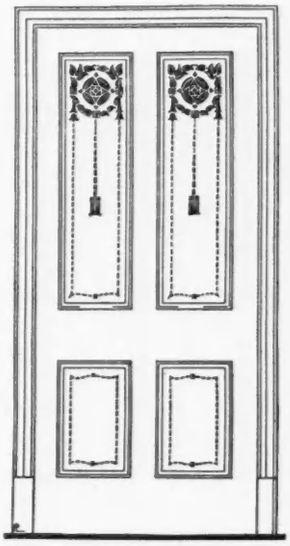
Moist Air Saves Fuel

Dryness of the air tempts to overheating of the living-rooms, for dry air increases the evaporation of perspiration from the skin, thereby increasing the sensation of chilliness. Dry air at seventy-five degrees will feel about as chilly as moist air at sixty-five degrees. Stoves, coils and furnaces should always have open vessels of water exposed to evaporation for the purpose of properly moistening the air. This moistening of the air will prove a saving of both coal bills and doctor's bills.

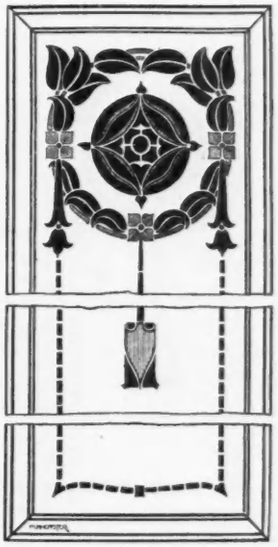
Stenciled Decorations for Doors

A simple but effective design for the decoration of a door by stenciling is shown herewith. It is taken from the *Building World* of London, and it is stated that there—and in fact throughout Europe—stenciled decorations on doors are quite popular. The figure on the left hand shows the complete door, while that on the right is a detail of one of the panels. The idea has been to design a scheme quite suitable for the door of an ordinary room—a scheme that can be applied by the decorator just as it is, or can be adapted to suit particular requirements. The door is painted white with a gloss finish, and the leaves are stenciled in soft greens. Varying shades of purple are employed for the stems, center ornaments, etc. These are the colors which the designer suggests, but there are doubtless many alternatives which can be left to the decorator to discover.

Stenciling is being largely used in house decoration for putting patterns round friezes, cornices, etc., and upon ceilings, doors, etc. The design is cut out of some thin material, such as paper or zinc—the stencil—a pigment is brushed over the plate with short, stiff brushes made expressly for this purpose, and the color passing through the stencil plate on the surface of the work leaves an impression.



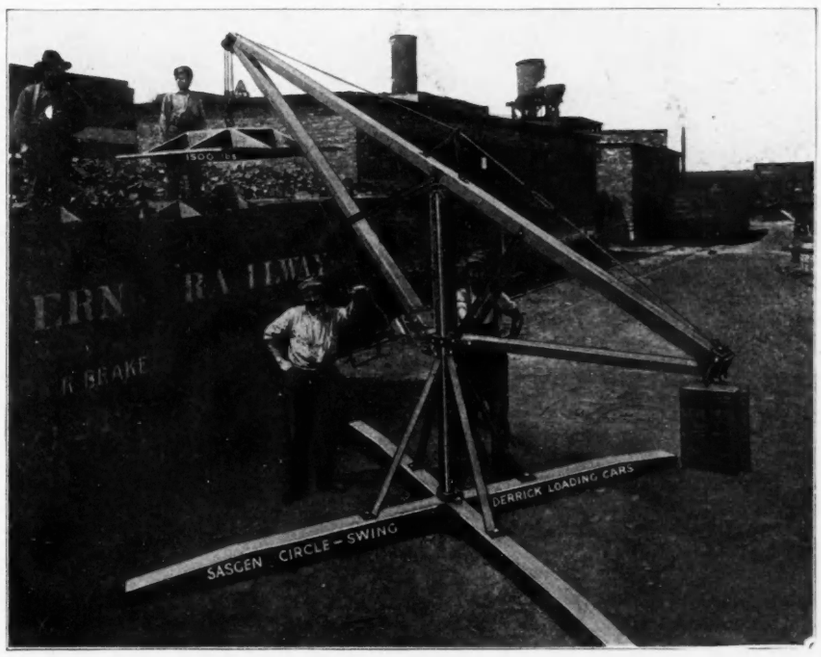
DOOR WITH STENCIL ORNAMENTATION.



ENLARGED DETAIL OF PANELS.

Sasgen's Circle Swing Derrick

The Sasgen circle swing derrick for loading and unloading cars and wagons has just been placed on the market. This derrick can be used for various purposes. It is especially handy around foundries or yards where heavy castings, iron pipe, beams and bars or timber, etc., is to be loaded or unloaded from cars or wagons, and for handling boats on docks or platforms in and out of the water. Also used for building and excavating. The machine can be used portable or stationary. When used portable for heavy work can be counterbalanced so that it will always have a full circle swing and carry the load without fastening the derrick which is a great advantage where the derrick is used on different places. It has a height of 14 feet, a circle swing of 18 feet, weight about 450 pounds, and a capacity of 2,000 pounds, with cable and block ready for use.



Sasgen's Circle Swing Derrick Handling Heavy Castings

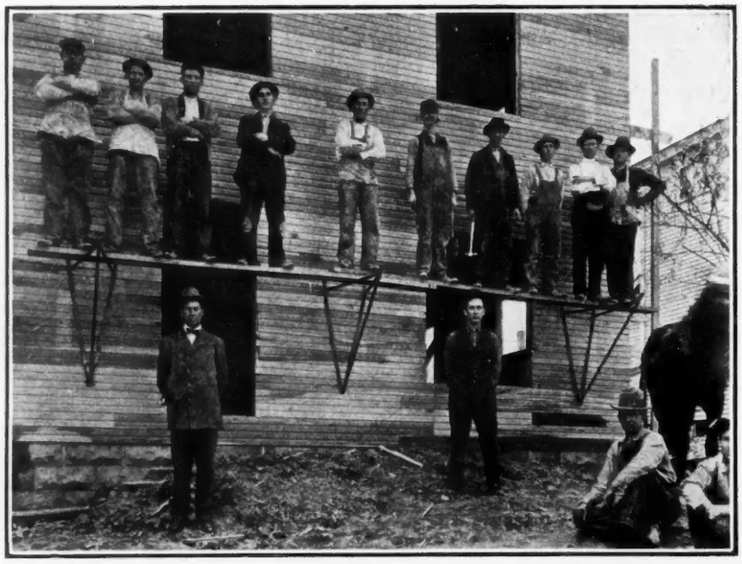
The photo herewith was taken at the plant of the Illinois Malleable Iron Company of Chicago, loading cars with heavy castings. These people state that they are able to load a car of these castings in an hour and ten to thirty minutes where it formerly took them a half a day to load a car with another style of derrick which did not have a circle swing.

This derrick is manufactured by Sasgen Bros., 2053-57 Racine avenue, Chicago, who are also manufacturers of the lightweight champion in builders' derricks. Reading matter will be mailed by the Sasgen Bros., by asking for circular A.

A full line of derricks will be exhibited by Sasgen Bros., at the New York Cement Show, Madison Square Garden, December 14 to 20, also at the Chicago Cement Show, Coliseum, February 17 to 23.

Ashland Folding Scaffold Bracket

The Ashland Folding Scaffold Company are offering a new metal scaffold bracket which they claim is the best and most



practical bracket made. It is especially adapted to the use of carpenters in putting on siding as it can be used on any kind of siding and does not damage it in the least. These brackets are also being used by painters, tinners and brick masons to the entire satisfaction of all. Used for chimney scaffolding on the roof they are just the thing, and are equally as good for tinners on cornice work, gutter and also in putting on steel siding. They fasten onto frame buildings anywhere with four-10d nails.

This company states that they have received the second order from most of their customers—which indicates that the bracket is all they claim for it. Anyone trying a set of the brackets will never be without them, as they save more than the cost on two jobs in the way of time and material. That they are perfectly and instantly adjustable without the use of pins or bolts makes them the most economical bracket made in the way of time. Also they are perfectly rigid without the use of any kind of a brace. Those who use them are not afraid to go to the top of the building and work on them. They feel as safe as far as the scaffold is concerned as they would on the ground.

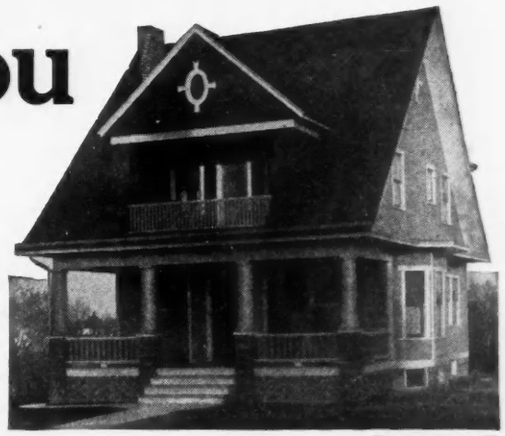
For price and other information, address Ashland Folding Scaffold Company, Ashland, Ohio.

The Reason for It

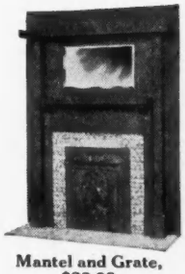
When a duck lays an egg she just waddles off as if nothing had happened. When a hen lays an egg there's a h—l of a noise.

The hen advertises. Hence the demand for hen's eggs instead of duck's.—O. U. Bell, in *Judicious Advertising*.

Let Us Ship You a HOUSE!



We Save You 50% on Building Material and *Guarantee* the *Quality!*



Mantel and Grate, $23.93

The great 1910 Millwork Catalog of Building Material Bargains puts you in a position to buy everything needed to build Houses, Cottages, Bungalows, Barns, etc., **50 per cent** lower than the prices of local dealers.

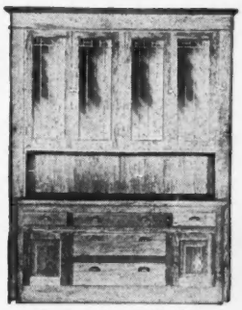
Over 5,000 items in high-grade guaranteed Building Material accurately described, illustrated and priced in plain figures. Everything in the latest styles, approved by best architects. Made in America's Model Millwork Plant, the largest in the world. We ship wherever railroads go, and do a business of over a million dollars a year.

$1,057

Buys Lumber and Millwork for this Fine House, including architect's plans, blue prints and complete specifications.

$2,614 builds it. Remarkably comfortable and roomy, considering outside dimensions.

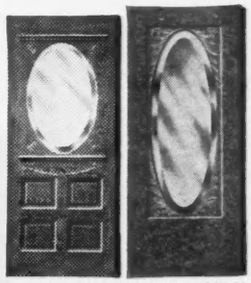
3x7 Craftsman $10.50



Dining Room Buffet Costing $25.92 and $28.82

Make Gordon-Van Tine's FREE Catalog Your Silent Partner!

With this great Catalog at your elbow you can figure on any job and be absolutely sure of the saving, for these prices are guaranteed to hold good until our next catalog is issued. With this catalog as your **silent partner** you can undersell "the other fellow" every time, and make a handsome profit.



Front Door, $4.50 Plate Glass, $14.25

5,000 GREAT BIG BARGAINS In Guaranteed Millwork and Lumber Will Help to Swell Your Profits!

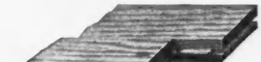
Mantel and Grate, $40.12

Our immense reserve stock insures prompt shipment. The variety of our millwork styles exceeds that of any local dealer's stock and admit of unlimited variations in architectural detail.

Our stock sizes fit every requirement of the modern builder.

Oak Beamed Ceiling, 13c per foot

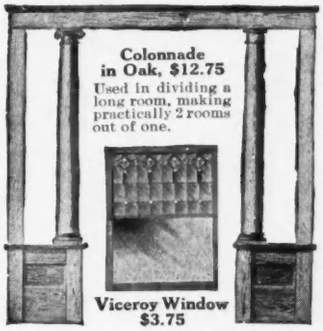
Oak Stairs, complete, $23.33



Oak Flooring, 100 lineal feet, 52c

Every Dollar Refunded if Goods Are Not Absolutely Right

We have a paid-up capital of $250,000, and our responsibility is vouched for by three prominent banks. Money promptly refunded and freight paid both ways if goods are not found exactly as represented and absolutely satisfactory.



Book of Plans FREE

54 Complete Plans, including beautiful, practical Houses, Cottages, Bungalows, Summer Houses, Ranch Houses; also Barns, Garages and various outbuildings for city or country. Send 10 cents for postage and mailing.

In addition to the regular Catalogs of our various Departments, we will put your name on our Free Mailing List for extra Bulletins, giving you the benefit of special bargains and latest information on the building material situation. Don't fail to send the Coupon NOW!

Get Your Name on Our FREE MAILING LIST!

Send "Silent Partner" Grand Free Catalog to

Name _____

Town _____

Street _____ *State* _____

Mail this Coupon direct to (35)

Gordon-Van Tine Co.

550 Federal Street, Davenport, Iowa

Plastic Ornaments and Figures

The motion picture show places have become a fixed institution in this country, they have found a permanent place as American enterprises, and are here to stay. As pointed out by Mr. Lytle, in his interesting article last month on this subject, there are great opportunities for carpenters and builders along this line—both for remodeling and for new work. The Decorator Supply Company of Chicago, recognizing this fact, have gotten out a beautiful catalog showing the beautiful effects obtained by using their ornamentation for the enrichment of exteriors and interiors of said theatres. Of the many hundreds of places that they have furnished the ornamental work for in different cities, this catalog shows a few characteristic ones.

The prospective theatre builder should realize the fact that only through the medium of this class of ornamentation can

Decorations Designed and Executed by the Decorator's Supply Co. of Chicago

he hope to fit up a paying enterprise. The time is past when a cheaply fixed up place will pay. You must make a strong effort to get a fine show place to make money.

The prices inserted in this catalog will convince you that you can well afford a nice, ornamental front for a reasonable price. Pick out the illustration you desire and write to them, giving the measurements and conditions existing at present at your place. The Decorators Supply Company will make you a correct design showing what can be done with your theatre with their ornaments. They will also make the working drawings for the carpenter, plasterer and electrician, in conjunction with showing the ornaments, so that you can make all changes at the building from drawings furnished. Satisfactory arangements can also be made with this company to send one of their competent men to your place, in any city, to make designs and prices on the spot for you.

All readers of the American Carpenter and Builder should get into touch with this company and ask for their catalogs. They are worth having.

Coal and Wood Chutes

The coal chutes manufactured by the Majestic Furnace and Foundry Company, Huntington, Ind., have come to be con-

Guaranteed Excellence

WHEN we put our factory brand on any one of these tools for Carpenters, it means that we are willing to accept full responsibility for the quality.

The MARK of the MAKER

on a P. S. & W. Samson Brace, stands for the ball-bearing chuck, the steel-clad head, the alligator jaw, and the most careful selection of materials and testing of every part.

When you see it on a P. S. & W. Chisel, it means that chisel is in every respect the standard of the most complete and perfectly finished line of chisels on the market.

The same Guaranteed Excellence goes with P. S. & W. Augur-bits, Gouges, Drawing-Knives, Squares, Calipers, Hammers, Hatchets and other Carpenter's Tools

Look for The MARK of the MAKER on every item in our four large lines of Guaranteed Hand Tools for Carpenters, Machinists, Electricians, and Tinsmiths.

Write today for your free copy of the "Mechanics Handy List", shown above. It contains 35 pages of valuable shop-information and a catalog of over 200 tools.

The Peck, Stow & Wilcox Co.

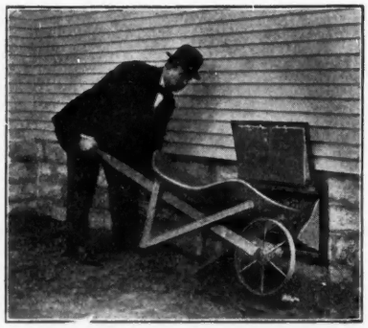
MANUF'RS of the Largest Line of Mechanics' Hand Tools Offered by Any Maker

Established 1819 Five Large Factories

Address Correspondence to

22 Murray Street, New York City

sidered the standard of the building trades for equipment of that kind. Their "Majestic" coal and wood chute is designed to be placed in the cellar wall the same as a window, for depositing coal, wood or vegetables into the cellar. No modern building is now complete without a heating system that requires the storage of fuel in the basement, and an ordinary cellar window, if used for putting in fuel, soon becomes badly disfigured if not totally demolished. The building is always soiled where the fuel is thrown in, and unless some other provision is made, will soon become soiled and disfigured, until newly painted, and as soon as the window is used again the same soiled effect appears.



With the "Majestic" chute the hopper is easily removed if desiring to put in very coarse coal or wood, or if a wagon chute is used. It swings back into the chute and allows the door to close. The body of the chute is made of heavy steel, thoroughly painted, and the door and frame of the best quality of grey cast iron.

The door is made to lock when opened upward, and protects the building above the opening.

This company also makes the "Model" coal or wood chute which fills a demand for a fuel chute which not only furnishes ample protection to both building and lawn, but acts as a window also; "Rubber glass" is used for light. The "rubber glass" is a translucent, flexible, wear-resisting composition, giving entire satisfaction. It will stand all climatic and atmospheric conditions, and will admit of ample light to the basement. These chutes are constructed so that during the heated term the "rubber glass" can be removed and a screen inserted in its stead, allowing pure ventilation.

All readers of the American Carpenter and Builder should write at once for full information and prices.

Money in Power Floor Surfacing

With reference to the article appearing in another part of this issue. "Oak Flooring and the Carpenter," the American Floor Surfacing Machine Company, Toledo, Ohio, desires to point out that the average carpenter can build up a fine paying business along the lines suggested if he uses a power machine for surfacing the floors. They state that their machine is built so well and does its work so perfectly—and rapidly too—that they have never been called upon to make good on a single machine of the great number they have put out, fully guaranteed.

Two Great Cement Shows

To those who have not traveled during the summer, the special rates to New York during the Cement Show and the cement gatherings, offer a special inducement at this time.

Railroads are averse to giving special rates, but the magnitude of this gathering has made it possible to obtain some special concessions.

While the New York show is the first to be held in the East, its success is assured. The space on the first floor is entirely contracted for. The space in the galleries is fast going. Concrete construction is as important in the East as it is in the Middle West. Three shows have been an entire success in Chicago. The one in New York promises to eclipse the former records.

The New York show is held in Madison Square Garden, December 14-20, and the Chicago show in the Coliseum, February 17-23.

The Most Important Part of the Building

Too often the most important part of a house is looked upon as a matter of the least concern. The roof is, and always has been, the most important factor in the protection from the elements. It is not a question whether it is needed, but whether you will make a wise selection in the covering for your building. The roof should not only be a protection, but ought to be ornamental and add to the beauty of the building, as an unsightly roof may defeat the object for which it was intended and cause a loss to the owner of more than the price of a first-class roof.

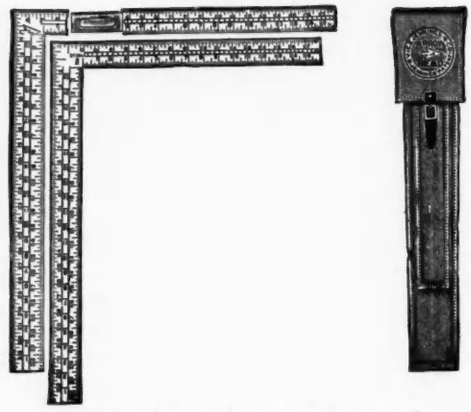
The advantages of sheet metal for a roof covering are obvious. The "Canton" shingle is light in weight, fire and lightning proof and cannot crack, break or fall out. It has less joints, reducing the danger from leakage. In applying, it does not require skilled labor, and the cost of erecting is reduced, as it comes to you ready to lay, requiring no cutting nor punching. Each sheet contains an area equal to nine slates, which, when laid, covers a space 19½ by 26¾ inches. It will not rattle, as each sheet is firmly anchored to the sheeting. Expansion and contraction are provided for in the lock seams and all nails are covered, so there is no danger from leaks from these sources. There is no loss from breakage.

Side Lock Construction

Full information may be had by addressing the Canton Art Metal Company, Canton, Ohio.

A Take-Down Steel Square

A new square, known as the Jennings patent "Arrow Head" take-down steel square, has recently been placed on the market by C. E. Jennings & Co., 42 Murray street, New York.



Arrow Head Take-Down Steel Square and Canvas, Two-Compartment Case for Same

The illustrations show the tool as used and the method of separating the parts for greater convenience in carrying, and

FREE INFORMATION FOR BUYERS

THE AMERICAN CARPENTER AND BUILDER has an Information Bureau for the benefit of its readers. It places those in need of appliances, machinery, tools, building materials and supplies of every description directly in communication with reliable manufacturers and dealers in those lines.

NO CHARGE IS MADE FOR THIS SERVICE

Immediately upon receipt of a request for information, the name of the intending purchaser and the article he intends buying is sent to a large number of manufacturers who can supply him.

HOW IT WORKS

If you want to buy anything, fill out the coupon below, send it to the AMERICAN CARPENTER AND BUILDER, and you will at once be placed in touch with manufacturers and dealers that will furnish you just what you want and at the right prices.

If you need anything that is not advertised in the AMERICAN CARPENTER AND BUILDER, or if you want more information about any article that is advertised, do not hesitate to write. We will be pleased to help you in any way.

HELP FOR THE BENEFIT OF OUR SUBSCRIBERS

If you want to know where to buy anything in the construction line or get expert service on any problem of building, paving, engineering, or want information of any kind whatever use the coupon below and we'll answer to the best of our ability.

If you want to be advised about work that is new or unusual or that you do not understand, state such particulars as will help us to make an intelligent answer to your questions.

FREE INFORMATION BUREAU

AMERICAN CARPENTER AND BUILDER,
185 Jackson Blvd., Chicago, Ill.

Gentlemen: We are in the market for the following items specified below. Please put us in touch with manufacturers whom you know to be reliable and can furnish their goods promptly

Yours very truly

ITEMS: _____

_____

_____

Name _____

Street and No. _____

Post Office _____ *State* _____

Free

WE WANT you to test Johnson's Wood Dye and Under-Lac at our expense. A single trial will convince you of their merits.

Johnson's Wood Dye

is not a mere stain—it is a real deep-seated Dye that penetrates the wood, giving a rich and permanent color. It will not raise the grain in the slightest. Johnson's Wood Dye is made in fourteen standard shades as follows:

No. 126—Light Oak
No. 123—Dark Oak
No. 125—Mission Oak
No. 140—Manila Oak
No. 110—Bog Oak
No. 128—Light Mahogany
No. 129—Dark Mahogany
No. 130—Weathered Oak
No. 131—Brown Weathered Oak
No. 132—Green Weathered Oak
No. 121—Moss Green
No. 122—Forest Green
No. 172—Flemish Oak
No. 178—Brown Flemish Oak

Half Gallons—$1.50 Each.

Johnson's Under-Lac

is a spirit varnish which will not chip, mar or scratch. It is better than shellac or varnish as it can be easily applied and does not raise the grain. Neither is it thick and sticky like varnish—it dries in a half hour.

Gallons—$2.50 each.

Use the attached coupon for sample of Johnson's Under-Lac and Dye. Be careful to state number of shade wanted. We will also send you a copy of our booklet, "The Proper Treatment for Floors, Woodwork and Furniture," showing all shades of Dye.

S. C. JOHNSON & SON

"The Wood Finishing Authorities"

RracINE, WISCONSIN, U. S. A.

Please send FREE samples of Johnson's Under-Lac and Wood Dye No. Also booklet. "The Proper Treatment for Floors, Woodwork and Furniture." I agree to test the samples, and if they are satisfactory will use and recommend them in my work.

Name.....

Address.....

.....

A. C. B.-12.....

the canvas case in which the parts are kept. The manufacturers warrant the accuracy of this tool and make the following claims for its superiority: Convenient to carry; no screws to get loose; spring takes up play; solid shoulder insures accuracy; canvas case to protect square from rust and damage; instantly put together; will go in a space 4 by 24 inches.

In order to insure a perfectly true joint, the tongue and groove are accurately milled to fit tight. The spring on the under side of the tongue is intended to take up any wear that may develop through continuous use and the long bearing in the grooves and on the tongues, combined with the square shoulders of the parts, insure an accurate fit.

The square can easily be taken apart by placing it on the floor on the lower edge of the long arm; then, holding it with the foot, a steady pull upward on the short arm will cause the parts to separate.

C. E. Jennings & Co. manufacture a line of carpenters' and builders' tools that should interest all those engaged in this line of work. The company will be glad to send catalogs and prices on request.

Electric Action of Two Metals

When two metals are in contact and a liquid finds its way to them, one is sure to cause the corrosion of the other. Copper in contact with zinc or iron causes rapid corrosion of the latter when they are moistened with ordinary water. Pure water is not so injurious, but then we have no pure water. The remedy is to have both metals well protected with paint. They should not be soldered together, and if riveted they should be painted before riveting.

A Cow Worth Owning

Some cows may give better milk, but no cow in the world gives so much of it as Josephine, an eight-year-old Holstein-Fresian, the queen of the herd of the Missouri State College. of Agriculture, says *Technical World.* Just now Josephine is undergoing a test to determine how much milk she will give in a year. Having already broken all the other lacteal records it is a pretty safe bet that Josephine will establish a clear title to the heavy-weight milk producing championship and hold it safe for some time.

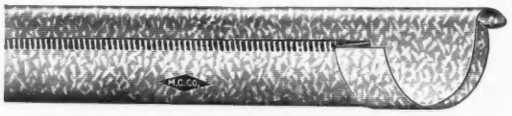
Colanthe 4th Johanna, owned in Rosendale, Wisconsin, used to be the prize cow, but Josephine has beaten every one of her records. In the first six months of the present test Josephine produced 16,834 pounds of milk against 15,541 pounds for Colanthe. In one day Josephine produced 110.2 pounds of milk against Colanthe's 106; in one month Josephine produced 2,960 pounds against the Wisconsin cow's 2,783 and she has beaten the Wisconsin cow's average for two, three, four, five and six months.

The average farmer is satisfied if his cows give ten quarts of milk a day, but Josephine gives enough to fill fifty-four quart bottles. Giving the average person two-thirds of a pint of milk a day she could supply a hotel with 165 boarders. The butter from her milk would be enough to supply forty boarders three times a day. Naturally with such a high production, the milk given by Josephine is inferior to that given by the average dairy cow, although it meets and exceeds the legal requirements of butter fat. It is estimated that her milk will produce a revenue of $1,200 to $1,500 a year.

Something New in Eaves Trough

A distinct improvement in connection with eaves trough has been introduced by the Milwaukee Corrugating Company, of Milwaukee, Wis., and Kansas City, Mo., in their "Crimp-edge" trough. The new feature is clearly indicated by the

name "Crimpedge" and consists of a continuous crimp running along the unbeaded side of each section of trough, producing strength and rigidity which are added to that portion



Patent Applied For

which is weakest in the old style of trough. Another advantage claimed is that hangers obtain a firmer and more secure grip, preventing the trough from slipping and at the same time holding it in the original position at the eaves.

"Crimpedge" trough is made in lap and slip joint and is perfect in shape. The slip joint is formed in a manner which permits an easy and accurately fitting connection. As the cost is no greater than that of the old style, it becomes apparent that the manufacturers will have an immense demand for the new article.

Seasonable Advice for Concrete Men

The prospects for concrete construction were never better than now. All indications point to even greater activity along this line next year. You will need additional equipment if you are to receive your share of this business. Better arange for it now. The Marsh Company, 975 Old Colony building, Chicago, makers of the well-known Marsh-Miracle line of machinery and molds, are advising contractors that their factory will be rushed when the Spring building season opens, as everyone will be in a hurry then. Avoid trouble and worry by ordering now.

Make a note of the machinery or molds you will need and write for full information and prices.

Imitating a Good Thing

The value of asphalt as a' roofing has become so well known and the demand for it is increasing so rapidly, that the market has become flooded with imitations.

It is amusing, says the Barber Asphalt Paving Co., to note the various terms and twisted expressions resorted to in naming and advertising these goods, in order to give dealers and consumers the impression that the roofings are composed of natural asphalt.

Many of these so-called asphalt roofings are really made from residual pitches known as California and Texas asphalts, which do not resemble the genuine Trinidad Lake asphalt any more than a Montana diamond resembles the genuine article.

There are certain qualities and natural properties peculiar to Trinidad Lake asphalt which, so it is claimed, cannot be put into substitutes. It is these natural qualifications of genuine asphalt which makes it so valuable as a roofing. Just as the natural hardness of iron, the ductility of gold, the non-corrosive properties of aluminum and the heat resisting properties of platinum, make them each valuable for different purposes.

There should be nothing mysterious about roofing material. Certain definite requirements are needed in a good roofing and certain materials possess one, all, or some of these requirements. It is merely a question of whether the roofing honestly contains what it is supposed to contain.

The Barber Asphalt Paving Co., Philadelphia, were the first to recognize the immense commercial value of Trinidad Lake asphalt and for years have been using it to make the well known Genasco Ready Roofing.

Contractors and buliders should be careful to specify Genasco and insist that they get it. The Hemisphere trademark

will be found on the outside of every roll of genuine Genasco.

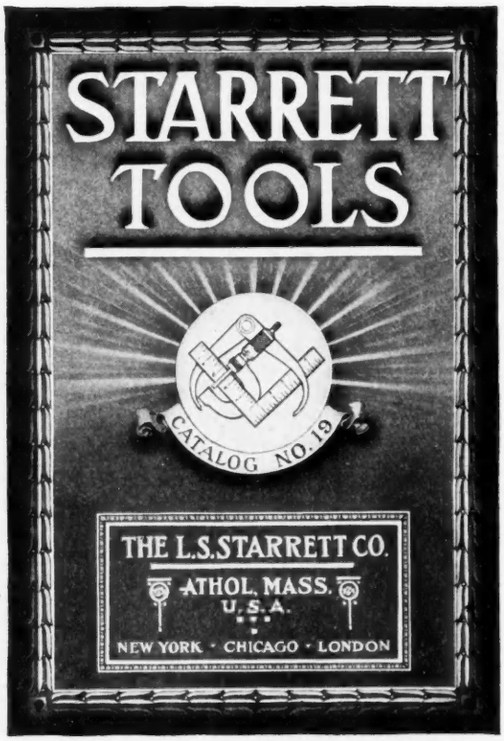
Coal tar, stearin pitch and other just-as goods, crack, dry out and pulverize. They give good enough service temporarily until exposure begins to get in its effects, and then the roof leaks.

Genasco Ready Roofing is claimed to be absolutely dependable. It pays the dealer to handle Genasco not only because of the good profits and quick sales, but also because it gives his customers lasting satisfaction.

Those who are not already familiar with the advantages of Genasco should write to the Barber Asphalt Paving Co., Philadelphia, for their comprehensive booklet—called "Good Roof Guide Book," which contains some very valuable and interesting information concerning roofing.

New Catalogue of Starrett Tools

We have just received from the L. S. Starrett Company, Athol, Mass., their new catalogue No. 19, showing the entire line of fine mechanical tools made by this well known company. It is a book of convenient reference size, made up of 274 pages. There are clearly drawn illustrations of all the tools in the very complete Starrett line. The price is given in each case and many valuable little points of information concerning the use of calipers, gauges, protractors, etc., are given. It is very evident that a serious effort has been made to make this catalogue worthy of the line of tools it represents.

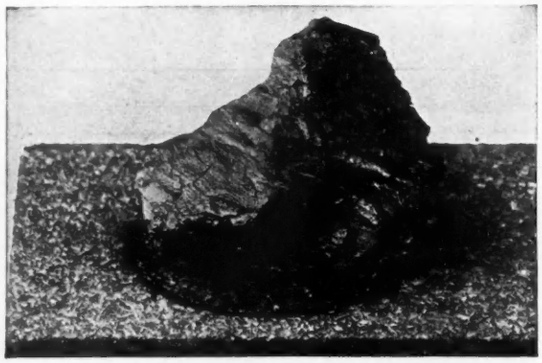


It is affirmed that Starrett tools are made by skilled mechanics in modern factories, clean, well lighted, well ventilated and equipped with every up-to-date machine and appliance for the production of the highest grade of tools and instruments of precision. The parts of tools are carefully tested at every stage of their manufacture and each completed tool is rigidly inspected before shipment. Starrett tools have long been recognized as the standard for accuracy, workmanship, design and finish. They are preferred by skilled mechanics with whom accuracy is a matter of pride as well as livelihood.

A Slate-Surfaced Ready Roofing

Builders will be interested at once in the new "ready-to-lay" roofing that has been perfected by the Bermingham & Seaman Company of Chicago. This is a slate surfaced roofing of high quality, that will fill the long felt want for a prepared roofing of attractive color, a roofing that can be used on good work and can be recommended with the certainty that it will give lasting satisfaction.

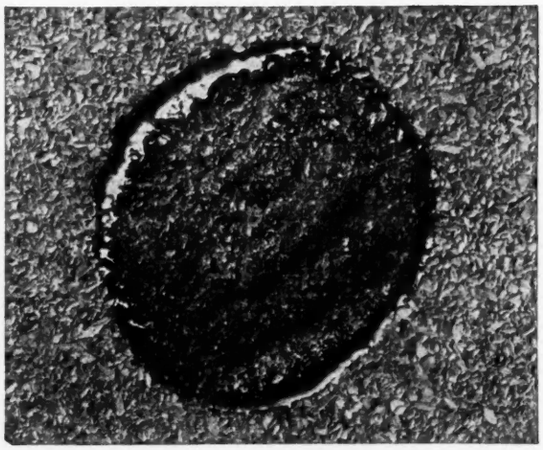
Builders will appreciate at once the advantages of this new slate-coated weathering surface as employed in this new Burmite roofing. Natural slate of unfading quality is used, the fine slate chips being embedded solidly in the base and presenting a smooth, even, mineral surface. In this way the



Slate-Surfaced Roofing Tested with Live Coal

well-known imperviousness and weather-resisting properties of slate are retained and secured for this "ready-to-lay" roofing.

The Bermingham & Seaman Company have been working and experimenting for a long time in an effort to produce a roofing that they could guarantee to the building material dealers for a long period of service and which would require no attention either in the way of painting or repairs, after being laid. In this new slate-surfaced roofing they feel that



How the Slate-Surfaced Roofing Stood the Test

they have attained complete success; so much so in fact that they are putting it out under an absolute guarantee for ten years.

The slate-surfaced roofing is now being made in two colors, slate-green and slate-red, the natural unfading slate of these two colors being used for the surface covering. (The base is the well-known heavy built-up Burmite base in which only pure asphalt is used.) This roofing is sure to find a wide use among the farmers and in the field of general building. Its attractive coloring, its cleanliness, and its rich appearance will

HESS MEDICINE SANITARY CABINET LOCKER

the only

Sanitary Steel Medicine Cabinet

Solid steel enameled throughout with ever lasting snow white baked enamel; germ and dustproof; easily cleaned. Nickel plated brass hinges and turn catch. Fine imported plate glass beveled edge mirror in door. Enameled steel adjustable shelves, or polished plate glass shelves if preferred.

Handsomer Than Wood—Costs Less

Should be in every bath room. We guarantee complete satisfaction and will permit the return of any locker if not satisfactory, we paying freight charges both ways and refunding all money paid.

We guarantee also, safe arrival, without damage, and will make good without expense to the purchaser, any damage received in transportation.

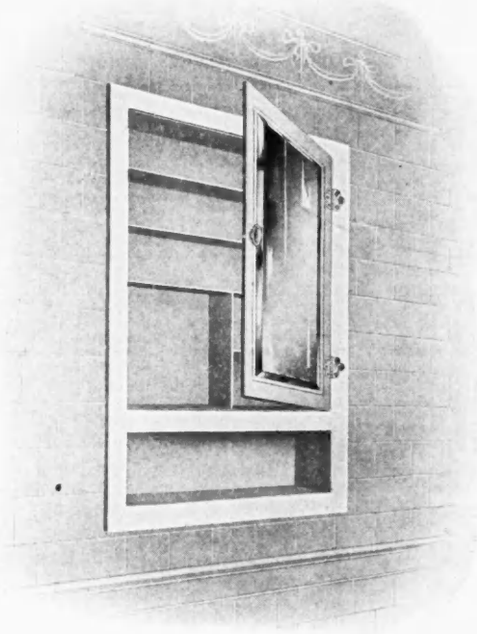
PRICES (F. O. B. CHICAGO) AND SIZES

No.	Extreme Outside dimensions Inches	Size of Mirror Inches	Inside dimensions Inches	Size of Open Shelf Inches	Framed Opening Required 4¼ in. deep	Price with Enameled Shelves	With Polished plate glass Shelves add	Plain door with't Mirror deduct	Shipping weight lbs.
STYLE E: To recess in wall, with open shelf below									
20	21½x33½	14x18	18¾x21	5¾ deepx17½	19x30	$10.00	$2.50	$2.00	68
21	23½x35½	16x20	20¾x23	5¾ deepx19½	21x32	12.00	2.75	2.50	77
22	25½x37½	18x22	22¾x25	5¾ deepx21½	23x34	16.00	3.00	3.00	85
23	27½x39½	20x24	24¾x27	5¾ deepx23½	25x36	18.00	3.50	3.50	100
STYLE F: To recess without open shelf below									
30	21½x25½	14x18	18¾x21		19x22	$ 8.00	$2.50	$2.00	59
31	23½x27½	16x20	20¾x23		21x24	10.00	2.75	2.50	68
32	25½x29½	18x22	22¾x25		23x26	14.00	3.00	3.00	75
33	27½x31½	20x24	24¾x27		25x28	16.00	3.50	3.50	90
STYLE G: To screw to face of wall, with open shelf below									
40	21½x32	14x18	20½x23	5½ deepx20½		$ 8.50	$2.75	$2.00	70
41	23½x34	16x20	22½x25	5½ deepx22½		10.50	3.00	2.50	79
STYLE H: To screw to face of wall, without open shelf below									
50	21½x24½	14x18	20½x23			$ 7.00	$2.75	$2.00	62
51	23½x26½	16x20	22½x25			9.00	3.00	2.50	71

All Lockers listed are right hand. Left hand Lockers, or Cabinets with lock and key will be supplied at a slight additional charge.

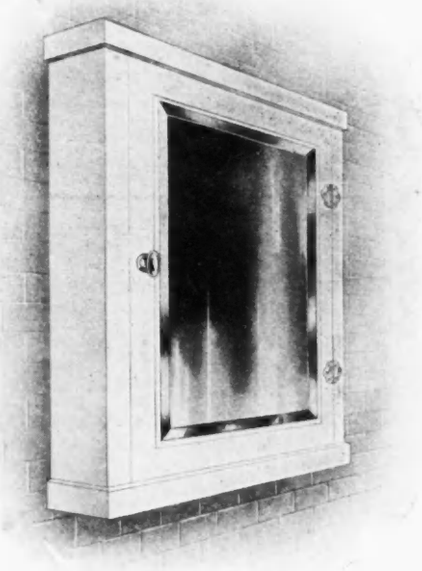
HESS WARMING & VENTILATING COMPANY

920 B. Tacoma Building, CHICAGO



Style E. Style F is similar, with open shelf below

Yes! We make the Hess Steel Furnaces



Style H Cabinet not recessed. Style G is similar, with open shelf below

recommend it to builders for use on high class residences and summer cottages, and on garages and other out-buildings. It will be used not only for the roofs, but for the side walls as well. Many exceedingly artistic effects can be gained in this way by using the "rolled slate" of the two colors, the green, for instance, for the roof and the red for the walls.

The mineral (slate) surface is absolutely permanent and non-fading, and will never need painting. Its remarkable fire-resisting properties have been demonstrated and are shown in the accompanying photographs of a test recently made. With such qualities—backed up with the ten-year guarantee, builders will easily see the economy of using this Burmite product.

The Birmingham & Seaman Company, Tribune Building, Chicago, sell only through the building material dealers. They ask you to write for samples and to inquire of your local dealer concerning this improved roofing.

Catalogue of Woodworking Machinery

We have received from the J. A. Fay & Egan Co., 545-565 W. Front St., Cincinnati, Ohio, a copy of "Catalogue No. 84," just issued from the press, and illustrating and describing a very extensive line of standard woodworking machinery which the company makes in such variety as to meet a wide demand. The catalogue consists of 384 pages and measures 5⅜ by 7¾ inches in size. It is profusely illustrated, the engravings being for the most part direct reproductions from photographs of the machine, and these are accompanied by such descriptive particulars as will enable the woodworker to readily comprehend the salient features of the machine in question. The work is in effect an unabridged, condensed form of the company's general catalogue, which we understand will be sent, charges prepaid, to any address on application. The company points out that it makes a specialty of every class of machine illustrated and described in the catalogue, and that it supplies single machines or complete outfits for every kind of woodworking plant as may be required. The large catalogue referred to contains about 500 pages, consisting of 24 sections dividing the company's tools and appliances into groups, each group containing only machines of similar designs and purposes. The "Catalogue No. 84," at present under review, will be found of special interest and value to the woodworker, whether his operations be conducted upon a small or a large scale, as it will prove an excellent work of reference in his line.

Cement Manufacturers to Meet

We are advised that the next meeting of the Association of American Portland Cement Manufacturers will be held in the Hotel Astor, New York, on December 12th, 13th and 14th.

The Executive Committee meeting will be held on Monday evening, December 12th. The business meeting of the Association will be held on Tuesday, December 13th and on Wednesday, December 14th, an opening meeting will be held, at which papers of interest to manufacturers and users of cement will be presented.

Practical Lightweight Roofing of Reinforced Concrete

Every member of the cement trade will be interested in a letter recently received by the Keasbey & Mattison Company, Ambler, Pa., from the William Rockefeller estate at Tarrytown, N. Y., concerning the service of asbestos "Century" shingles. The letter is doubly interesting, because it shows the attitude of large property owners towards these shingles, and points the way to the securing of profitable business.

Some two years ago, states the Rockefeller letter, a barn on

the estate was burned to the ground—the fire started on the roof, where such a large proportion of all fires originate. When the barn was rebuilt, the Rockefeller estate made exhaustive inquiries into all kinds of roofing materials and at last selected asbestos "Century" shingles, because of their fireproof construction, backed up by their long record of resistance to fires.

In their letter these clients of the Keasbey & Mattison Company state that their two years' experience with asbestos "Century" shingles has been more than satisfactory and that they feel confident that the original barn would still be standing if it had been roofed with them.

These concrete shingles, reinforced with interlacing asbestos fibres, are the first example of the use of a reinforcing material as impervious to fire as the concrete itself is known to be. The composition of the shingles is such that they not only are proof against catching fire, but under the influence of fire within the building they contract and expand evenly with the changes in the temperature caused by the fire and do not crack or flake when a stream of water is thrown on them during the fire's progress.

Asbestos "Century" shingles are perfectly homogeneous. The asbestos fibres interlace in every direction—not only through length and breadth of the shingles but through thickness as well. In the hydration and consequent crystallization of the cement, it is crystallized not only on, but in and through the asbestos fibres so that the bond between concrete and the reinforcement is much more intimate than it could be with a bar or web of metal. It is owing to this special form of reinforcing that the shingles expand and contract evenly all over and do not buckle or crack.

Asbestos "Century" shingles are made very compact by the tremendous hydraulic pressure used in the manufacture, and are entirely impervious to moisture. Exhaustive tests prove that water on the surface for any period of time does not even moisten the under side of the shingles. The effect of the water is to hasten the crystallization of the cement so that it is impossible for the water to penetrate it.

Another interesting fact in regard to combining asbestos and cement as they are in asbestos "Century" shingles, is that both are non-conductors of heat and consequently form a roofing that helps to make a building cool in summer and warm in winter.

A point that should not be overlooked is that no roofing could be more admirably suited to concrete buildings. Made in the fine natural gray of the concrete, asbestos "Century" shingles carry out the color schemes very attractively and harmoniously. The shingles are also made in slate blue and a fine Indian red.

They can be obtained in a wide variety of patterns, adapted to all sorts of architectural schemes. They are uniform in size and shape and are easily fitted and laid. In fact, they are laid like ordinary slates or shingles.

Asbestos "Century" shingles are continually gaining in favor. Their many advantages have resulted in their being used on thousands of buildings in this country and Europe. Among recent orders is one for several carloads to be used on the Pennsylvania State South Mountain Sanitorium for Tuberculosis. Orders in hand for further operations in other

sections of Pennsylvania will require twenty carloads. Other recent orders received by the Keasbey & Mattison Company include the government buildings at West Bingham, Mass., which require several carloads; the Atlantic City Pumping station, Absedon, N. J.; the Hartman Stock Farm, Columbus, Ohio, and the Pabst Stock Farm, Oconomowoc, Wis.

"Richmond" Business Extended

The McCrum-Howell Co. state that in order to extend their sales organization to provide for the vacuum cleaning business, which promises to assume enormous proportions, and at the same time better serve the trade with boilers and radiators, they have taken over the business of the Model Heating Company, Philadelphia and New York; the Cameron-Schroth-Cameron Company, Chicago; The American Air Cleaning Company, Milwaukee, Wis.; the Vacuum Cleaner Company, New York, and the Sanitary Devices Mfg. Co., San Francisco.

With the increased selling organization, they will be able to serve the trade in better manner than was heretofore possible with each separate company; and will also be able to quickly acquaint the entire heating and plumbing trade as well as the public with the possibilities and advantages of vacuum cleaning.

There will be no change in policy, and with all products in their own plants they should be able to give even better service than in the past.

Fourth Edition of Kahn System Standards

The 1910 edition of "Kahn System Standards" has just been received. It contains a number of additions and revisions so as to include the best and most modern ideas on reinforced concrete designing and estimating, waterproofing, etc. The subject of "Waterproofing" has been completely rewritten and entire new sets of tables for Hooped Columns and Footings added. This publication also contains data on the various Kahn System products for reinforced concrete, steel lath, fireproofing, steel windows, etc.

Kahn System Standards will be furnished free to practicing architects, engineers, contractors and builders. A charge of fifty cents is made to others.

The Merits of Slate

This little article, from the pen of the manager of the East Bangor Consolidated Slate Co., deserves the careful attention of every builder.

"A great deal has been said in the past concerning roofing material. From the very first that buildings were erected the owners gave thought as to what roof should be used in order to protect the building. Roofing slate has been used for centuries in England and Wales and a large amount of the slate now on the roofs have been there for years without any repairs, paints, or anything else to protect it. In the Bangor Slate region, quarries have been opened and operated between fifty and sixty years, and many roofs are to be seen that present a very beautiful appearance and are apparently as good as the day they were put on; and this notwithstanding the fact that people who advertise composition roofing and metal shingles say that they will crack and break when ever anyone gets on them. The Bangor Roofing slate is well known and invariably gives the best satisfaction. In a great many regions where they are introduced they take the place of all other roofing.

"We have noticed it advertised that slate has been used because it was better than wood, but now that composition roofing has taken its place, the composition roofing is better than the real slate itself. No one credits this.

"As to making a roof water-tight, there is no reason at all why the slate well laid cannot be made perfectly water tight.

The weight of slate is often objected to by people, even architects and owners, who are not thoroughly familiar with the weight of slate. It requires a certain amount of skill to lay a good roof just as it requires a good mechanic to do certain other work. Slate always protects the building and the building never need protect the slate. Once put on they are there to stay, and, with any reasonable use made of the roof, they will stand up, whereas with many roofs made of other material, the weight of anything on them causes the material to bend; and when a snow storm or wind storm comes the roof leaks.

"We have never heard of any owner who has used genuine Bangor roofing slate for covering buildings regret its use, because they need no repairs, such as painting, etc. It may be a little more expensive in the first cost, but in the long run roofing slate is the cheapest article that can be used for the covering of any building. The manufacturers of roofing slate in times past have been depending on the slate to advertise themselves, for the trade in general use same and are pleased with them. Frequently, however, many owners of buildings who are not acquainted with slate, permit the contractor to use cheap composition roofing and in a few years they are very much disappointed because of a leaking roof.

"Slate is not being manufactured exclusively for roofing, but is well adapted for structural purposes also; and the demand for structural slate is growing all the while, notwithstanding the fact that cement has been adapted for many purposes intending to take the place of slate. But these last few years have demonstrated that slate stands in a class by itself not only for roofing slate but for structural purposes also."

Graphite Products for the Railroads

A new booklet has just been issued by the Joseph Dixon Crucible Company of Jersey City, N. J., under the above title. This, as its name implies, covers the Dixon line of products that are widely used in railroad service.

The object of the book is to bring under one cover all the various products in the Dixon line that are of interest to the various mechanical departments of railroads. These include various graphite lubricants, protective paint, crucibles, facings, etc., all of which have been found by actual service to give satisfactory results.

The booklet runs to 40 pages, and is quite attractively illustrated by means of photographs showing different views of railroad stations and yards, different types of locomotives, stretches of tract, signals, bridges, etc.

If you are interested in the use of any graphite products about the railroad, you should write for copy of this booklet, which will be sent free to those desiring it.

Combination Planer and Borer

A new machine is the Defiance Machine Works 12-inch Combination Hand Feed Planing and Boring Machine, which will be found a very useful tool for wood workers in general, as it can be used for straight planing, squaring up, taking out of wind, cornering, beveling, making glue jointings and general boring.

The frame, of neat design, is cast in one piece, with cored center, making it strong and durable to properly support the working parts, and with a broad floor base to stand firm.

The tables are 62 inches long over all, 12 inches wide, and they are fitted to the frame in angle ways with adjustment for wear, and adjustable up or down by a convenient hand wheel at each end of the machine to regulate the depth of cut. The throat at the end of the tables around the cutter head always keeps outside the radius of the cutting line of the knives.

The cutter head, of forged steel, carries two knives 12

inches long, and it is accurately balanced, with its journals ground perfectly true, and they rotate in long genuine babbitt metal self-lubricating bearings, which are enclosed to prevent the admission of dust or dirt.

12-Inch Combination Hand Feed Planing & Boring Machine.

The beveling fence can be quickly adjusted over the face of the table or to any angle and quickly locked in position by a single handle lever.

The shavings from the cylinder are discharged through a cored opening in the frame to the rear of the machine and not scattered over the floor promiscuously. A blower pipe can be attached to the opening if desired.

The boring attachment is adjustable vertically by hand screw for different thicknesses of material and has a sliding horizontal movement of 8 inches to or from the boring bit. The table, of iron, planed true is fitted with an adjustable gauge that can be set to any angle desired for angle boring.

The counter is furnished as follows: Shaft, 44 inches by 1 11-16; two No. 1 Adjustable Drop Hangers; one driving pulley, 20 inches by 3½ inches; one pair of tight and loose pulleys, 10 inches by 5 inches; speed, 960 rotations per minute. The loose pulley is fitted with bronze bearings and is self-lubricating.

Horse power to drive, 3; floor space occupied, 65 inches by 48 inches.

For further information address The Defiance Machine Works, Defiance, Ohio.

Safeguard for Ink Bottles

A very cheap and effective way of preventing ink bottles from being upset on the drawing table is to simply cut a piece of card-board about 3 or 4 inches round or square, spread a thin coat of any good mucilage or liquid glue on the bottom of the bottle and set it in the center of the card-board.

Turbine Locomotive

There has just been completed at Glasgow, Scotland, the first steam turbine-electric locomotive. The electricity which actuates the motors is generated by a dynamo driven by a turbine engine. Superheated steam is furnished by a boiler situated in the rear. The turbine makes 3,000 revolutions per minute and develops 1,000 horse-power. The essence of this innovation is the securing of increased efficiency and consequent economy and otherwise by adding a condenser and substituting the continuous rotary motion of the turbine and dynamo for the reciprocating action of the present wasteful engine.

Soda Treatment for Lumber

From time to time inquiries have been received as to the proper formula to be used in administering the bicarbonate of soda treatment to lumber to prevent sap stain. The formula used by a New York concern is as follows:

Four and one-half pounds of bicarbonate of soda to 10 gallons of water. This they claim to be correct one, although some parties use a stronger solution.

A thoroughly saturated solution of bicarbonate of soda, which, of course, is not required, would be 9 pounds of soda to 10 gallons of water and this 4½ pounds to 10 gallons therefore is a 50 per cent solution.

Compo Ornaments

A recipe for making the composition used for ornamenting picture frames is as follows:

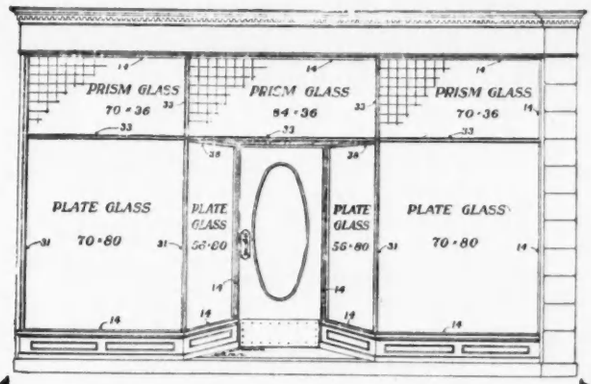
Take 3 lbs. of resin in 3 pints of raw linseed oil, put in a pan and melt over a slow fire. Boil 7 lbs. of good glue size in 4 pints of water, and when all are well dissolved put them into a larger vessel over a slow fire, and while simmering stir in whitening slowly until the mixture assumes the consistency of dough. The whitening should be finely powdered and quite free from lumps before adding it to the oily compound. Some operators use parchment size and others Scotch glue in place of the glue size. The moulds are oiled and the compo, while still hot, is pressed into them. On cooling the castings dry quite hard, but they require warming before a fire (when they assume the consistency of dough) before they can be fixed to the frame. The compo will keep any length of time, and is warmed up when required for use.

Cement for Celluloid

Dissolve 2 parts shellac and 1 part gum camphor in 4 parts of alcohol of 95 per cent. Warm the article and also the cement before applying the latter and keep the broken parts firmly together until the cement has thoroughly dried. If the celluloid article be white the shellac should be bleached, and if it be colored the cement should be colored to match.

To Protect Brass from Tarnishing

To keep brass from tarnishing, after thoroughly cleaning and removing the last traces of grease by the use of potash and water, the preservative varnish may be shellac much diluted with alcohol. The brass should be first warmed, and the varnish put on with a brush in as thin a coat as possible. The proportion of shellac to alcohol is about 2 ounces of the former to 9 ounces of the latter. Sometimes gamboge is used for coloring matter to make the varnish more yellow, and sometimes dragon's blood.



Never a Break

In the years that Petz bars have been used, we have yet to hear of one broken plate glass except from extraneous causes.

That's why insurance companies endorse it—that's why you should insist upon the use of Petz Bars for your store front. Not only is it more reliable, but it is handsomer, gives more display space, and is much easier to install.

Our booklet gives illustrations and descriptions of the various Petz Bars. Let us send you a copy. Write today.

DETROIT SHOW CASE CO.,

Sole Makers,

491 West Fort St., Detroit, Mich.

If You Have Any Pride

In keeping up the appearance of your premises as well as your motor car you cannot possibly afford to overlook the sanitary, clean and practical annular Ball Bearing.

PITLESS TURNTABLE

Can be installed in thirty minutes by an ordinary workman without the slightest marring or as much as a nail scratch in any public or private garage. Out of doors or in basement, on wood or concrete floors. There can only be one first cost on a PITLESS TURNTABLE because they are guaranteed FOREVER, and besides, this first cost is decidedly less than the installation expense of the hazardous, filth and danger traps of the old style turntables requiring a Pit or Building Alteration.

To concrete your yard in front of garage for purpose of washing and backing car around is not only to make an otherwise beautiful lawn into a very unsightly eyesore but the expense of such concrete work alone will buy several Pitless Turntables.

The cheapest accident insurance ever offered the Motorists is an investment in a PITLESS TURNTABLE—because it is not only wrong to back your car continually but extremely dangerous to life, limb and car, irrespective of how expert you may be in handling an automobile. The expense of one accident to car will pay for several turntables.

Write today for our ART CATALOG
Giving full particulars, weights, dimensions, etc.

PITLESS AUTO TURNTABLE CO.

FULLY PROTECTED BY PATENTS — KANSAS CITY MISSOURI — FULLY PROTECTED BY PATENTS

We Want Every Ambitious Carpenter and Builder

To Examine This Great Work—Free!

TEN BIG COMPLETE VOLUMES

4,670 Pages, 3,000 Illustrations, Plates, Etc.

This great cyclopedia is a complete review of architecture carpentry and building. No work so practical, so complete, so reliable, has ever before been placed on the market. Every problem likely to confront you in your daily work is solved, and the solution placed before you in such a clear manner that you cannot fail to understand and profit by it.

If you have a building contract in hand, you need this great

Cyclopedia of Architecture, Carpentry and Building

at your elbow to show you the most economical and practical method of handling the job and the proper way to estimate the amount of material required, with the least possible waste.

For the practical carpenter and student, its value as a Home Study Instructor cannot be estimated.

Just examine the "Partial List of Contents" below and you will at once realize how broad is the field covered by this work—how thoroughly it covers every branch of the building trades.

The books are illustrated with hundreds of full-page plates; plans for homes and buildings; views of jobs completed and in the course of construction. Securely bound in half red morocco leather; titles stamped in 23-carat gold. **Read our free examination offer.**

Sent Free for Examination

To prove our absolute confidence in the superiority of this work over all others, we make this liberal offer: Upon receipt of the coupon below we will place the entire cyclopedia of ten volumes in your home or office—you keep the books five days—examine them thoroughly, critically—subject every formula and problem to a severe test. If you are satisfied, send $2.00 after examination and $2.00 every month until you have paid the special $24.00 price. The regular list price is $50.00. As a further guarantee, we will remove the books at our expense if you are not satisfied. We pay all express charges.

PARTIAL LIST OF CONTENTS

Carpentry—Building—Estimating—Stair Building—The Steel Square—Building Superintendence—Contracts and Specifications—Building Law—Building Material—Roof Trusses—Masonry—Reinforced Concrete—Concrete Blocks—Steel Construction—Mill Building—Fireproof Construction—Cornices—Skylights—Roofing—Hardware—Plastering Painting—Electric Wiring and Lighting—Heating—Ventilation—Steam Fitting—Plumbing—Architectural Drawing—Freehand and Perspective Drawing—Orders of Architecture.

For a short time we will include as a monthly supplement, for one year, the TECHNICAL WORLD MAGAZINE. This is a regular $1.50 monthly, full of Twentieth Century Scientific facts, written in popular form. Also contains the latest discussions on timely topics in invention, discovery, industry, etc.

AMERICAN SCHOOL OF CORRESPONDENCE

CHICAGO, U: S: A:

Free Examination Coupon

American School of Correspondence, Chicago, U. S. A.

Please send set Cyclopedia of Architecture, Carpentry and Building for five days' free examination; also Technical World for 1 year. I will send $2.00 within five days and $2.00 a month until I have paid $24.00 or notify you and hold the books subject to your order. Title not to pass until fully paid.

NAME .....

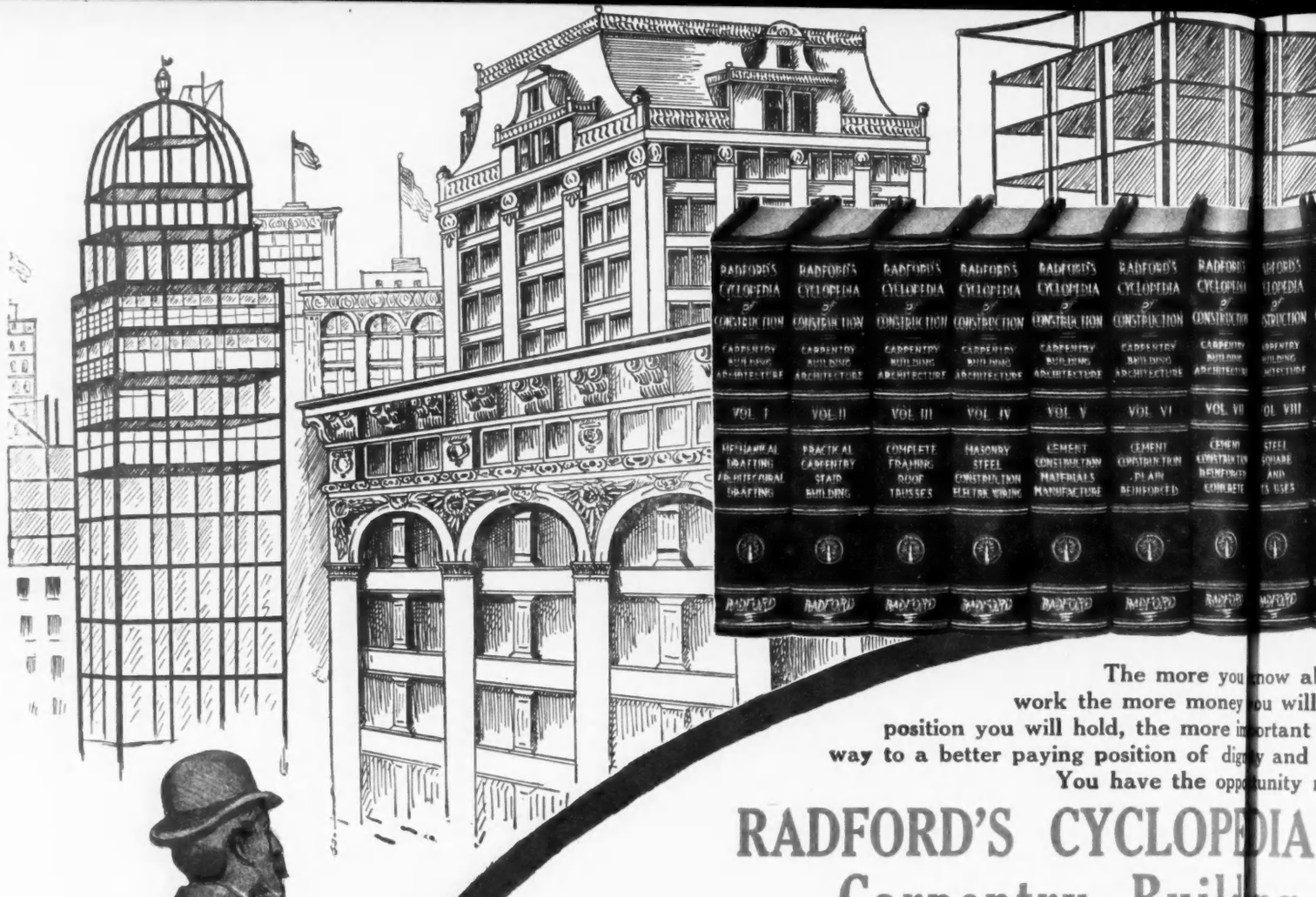
ADDRESS .....

OCCUPATION .....

EMPLOYER .....

Amer.Carp.& Bldr. 12-10

Sow the seed for higher wages and larger contracts



The more you know a
work the more money you will
position you will hold, the more important
way to a better paying position of dignity and
You have the opportunity

RADFORD'S CYCLOPEDIA
Carpentry, Building,

TWELVE GREAT BIG MASSIVE VOLUMES and One Extra Large Volume of over 300 actual plans of houses, barns, bungalows, flats and stores, banks, garages, churches, public buildings, cement houses, etc., drawn by foremost architects. Selected for their excellence, economy of design and popularity among the building classes. This Cyclopedia contains over 5000 pages, 3200 specially drawn illustrations, diagrams, charts, working drawings, besides

Sent for only $1.00 —Less Than 1/4 Price

Examine Books at our Expense—Not Yours

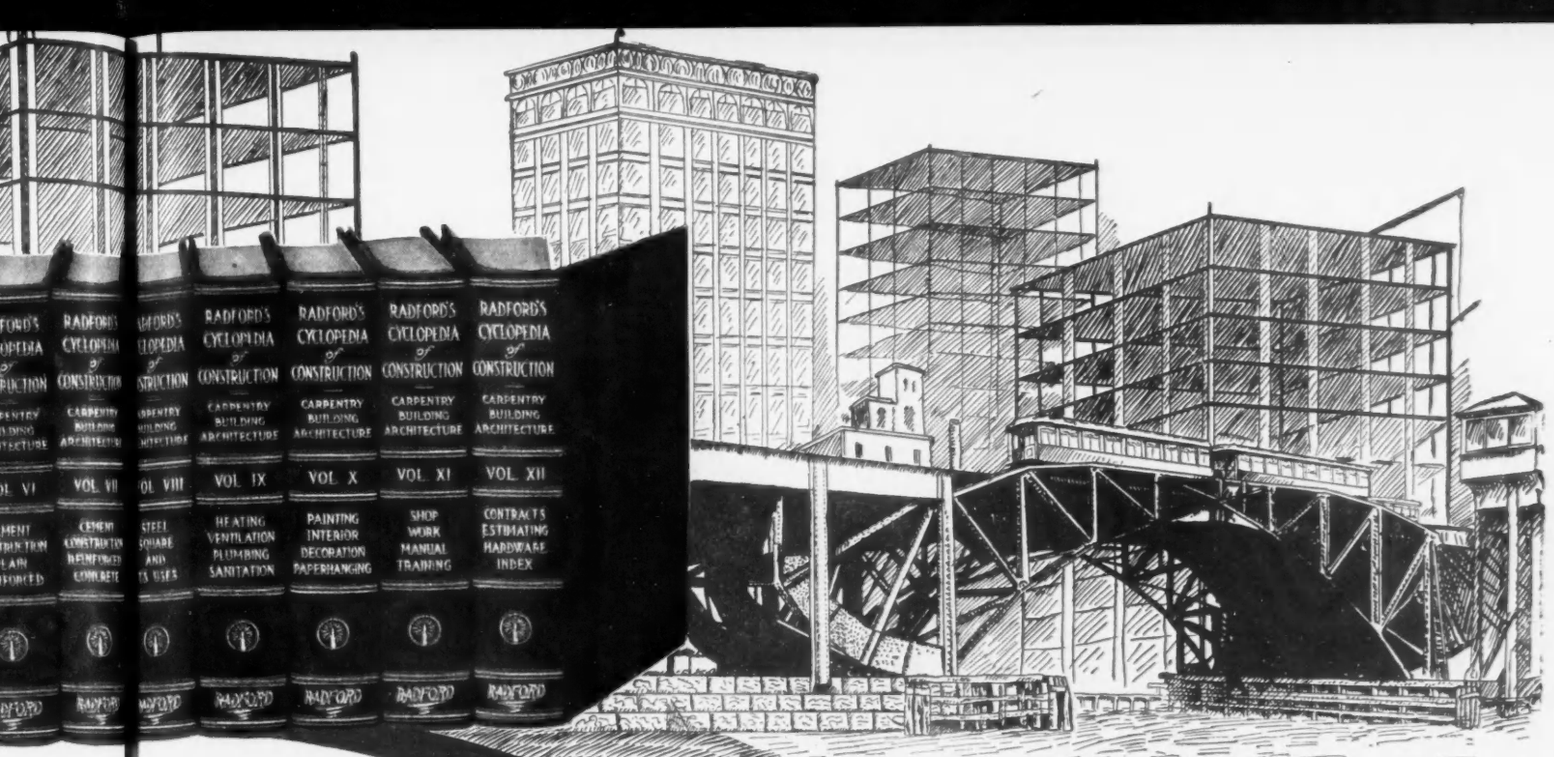
All you have to do is to write your name and address plainly on the coupon on the last page of this circular. Pin a dollar bill to it and mail to us. When we receive this coupon we don't go through any red tape of looking you up, of making inquiries from your employer or friends, but we simply trust you as a member of the building trade and send you the entire set of books immediately. We prepay all express charges and thus it does not cost you one penny for examination. When you get the books they are yours for five days to examine them just as leisurely and as carefully as you please. You have the privilege of calling in your family, your friends, your employer, your fellow workers to help you to make a decision. After you have had the chance to go through them page by page, if you should decide that you do not want to keep the books, all that you have to do is to drop us a postal telling us so. We will immediately send back to you the payment of $1.00 which you sent us with the order blank. We do this without any argument, without any red tape and without any haggling whatever. Furthermore, we will remove the set of books without cost to you at once. Therefore, you are nothing out on the deal, you have not spent a cent, you have lost nothing whatever.

FREE Christmas Premiums.

On this limited Christmas offer we give you absolutely free a great big portfolio of over 300 plans of all kinds of buildings, houses flat buildings, store buildings, banks, garages, barns, bungalows, etc. This book in itself, is of immense benefit to any man in the building trade. We also include with this offer a full year's subscription to that great big paper, the American Carpenter & Builder, conceded the biggest and best magazine for the contractor carpenter and builder. And even that is not all. You have the privilege of going through the big portfolio of plans and if there is a house design that you can use in any way to your own advantage, we will furnish you free without cost a complete set of blue printed working plans together with complete type-written specifications. You know as well as we do that these plans and specifications could not be purchased in any other way for less than $50.00 to $75.00.

If we were to stop here this would be the best offer that has ever been made in the history of the publishing business, but in view of the fact that we are publishers of the American Carpenter & Builder and the Cement World, and that the Radford Architectural Company is the largest architectural company in the world, we are so peculiarly situated that we are able to offer you a great deal more and as a final inducement to make this proposition of such great value, to make the terms so conclusive, so strong that you cannot resist. We have cut the price from $79.00 to $23.80—just ¼ price and you pay at the rate of $2.00 a month.

Which Way Ar
Forward o



e more you now about your
nore money you will earn, the bigger the
the more important you will be in your trade. The
tion of dignity and importance is through knowledge.
ve the opportunity now through

CLOPEDIA of CONSTRUCTION
Building, Architecture

One Extra
lows, flats
uses, etc.,
of design
over 5000
gs, besides

hundreds of full-page halftones and zinc etchings. Printed on specially made paper, antique eggshell finish; soft and pleasing to the eye. Halftone plates on super-tone quality enameled (glazed) paper. Binding in ¾ red Morocco leather, gold straps and titles. Sides Persian library binding done in the richest of red marbling. **A De Luxe Edition in Every Particular.**

1/4 Price for Christmas— Sent for only $1.00

No Risk to You—No Obligation—No Expense

PARTIAL LIST OF AUTHORS:

WILLIAM A. RADFORD, Editor-in-Chief, President of the Radford Architectural Company, Chicago, Ill. Editor-in-Chief of the "American Carpenter and Builder," and the "Cement World."

ALFRED SIDNEY JOHNSON, A. M. PH. D. Editor in Charge. Author of "The Materials and Manufacture of Concrete," etc. Formerly Editor of "Current History." Associate Editor of Numerous Standard Works of Reference.

JOHN P. BROOKS, M. S., Associate Professor of Civil Engineering, and Acting Head of Department of Civil Engineering, University of Illinois.

FRANK O. DUFOUR, C. E., Assistant Professor of Structural Engineering University of Illinois. Author of "Bridge Engineering," "Roofs, Trusses," etc.

DAVID P. MORETON, B. S., Associate Professor of Electrical Engineering, Armour Institute of Technology.

ALFRED G. KING, Consulting Engineer on Heating and Ventilating. Author of "Practical Steam and Hot-Water Heating and Ventilation," "Steam and Hot-Water Heating Charts," "Practical Heating Illustrated," etc.

ERVIN FENISON, S. B., Assistant Professor of Mechanical Drawing and Descriptive Geometry, Massachusetts Institute of Technology. Author of a Practical Textbook of Mechanical Drawing.

LORING H. PROVINE, B. S., Instructor in Architectural Engineering. Department of Architecture, University of Illinois.

THOMAS TAIT, C. E., Consulting Heating, Ventilating and Sanitary Engineer. Member American Society of Inspectors of Plumbing and Sanitary Engineers, Member American Society of Heating and Ventilating Engineers.

CHARLES W. RADFORD, Treasurer, The Radford Architectural Company, Chicago, Ill.

CHARLES D. WARNER, Editor, "Cement World" and "Dealers' Record."

BERNARD L. JOHNSON, B. S., Editor, "American Carpenter and Builder" and "Woodworkers' Review."

E. L. HATFIELD, General Manager, Cement World Company, Chicago, Ill.

IRA S. GRIFFITH, A. B., Supervisor of Manual Training, Oak Park, Ill. Member Editorial Board Western Drawing and Manual Training Association, Formerly Professor of Mathematics, Eureka College. Author of Essentials of Woodworking.

CHARLES EDWARD PAUL, S. B., Associate Professor of Mechanics, Armour Institute of Technology. Member American Society of Mechanical Engineers. Member American Society for Testing Materials.

EDWIN O. GRIEFENHAGEN, B. S., C. E. Office Engineer, Bridge and Building Department, Chicago, Milwaukee & St. Paul Railway.

ALFRED W. WOOD, Architect inventor of "Wood's Key to the Steel Square." Joint Author of "The Steel Square and Its Uses."

T. B. KIDNER, Director of Manual Training and Household Science, Department of Education, Province of New Brunswick. Fellow of the British Institute of Carpentry.

P. W. RATHBUN, B. S., Consulting Engineer, Member American Society of Heating and Ventilating Engineers.

CHARLES P. RAWSON, Chief Draftsman, The Radford Architectural Company, Chicago, Ill.

L. P. HICKS, Architect and Contractor.

GEORGE W. ASHBY, Architect. Vice-President, The Radford Architectural Company, Chicago, Ill.

12 BIG Volumes SENT FOR Only $1.00

Are You Going or Backward?

Write For This Catalog

If Interested In Hardwood Flooring

It's

FREE

See Coupon Below

We have just published our new illustrated Catalog of Ornamental and Plain Hardwood Floors. It is the most elaborate and complete catalog of its kind ever issued and should be in the hands of every Carpenter and Builder. We will gladly send it FREE to any interested person who will write for it—(see coupon below).

This catalog contains interesting information about the different kinds of floors—Ornamental, Plain and Parquetry and about the various kinds of woods.

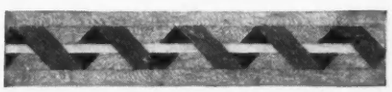
We have been making fine hardwood floors for over twenty years and are in position to give you the best value and prompt service for your money. We are located where we can obtain all the different hard woods to good advantages. We employ skilled workmen only—nearly all our men have been with us for years.

We ship our floors anywhere. Any good carpenter can easily lay our floors over old floors. When you want good hardwood floors get

JOHNSON'S ORNAMENTAL HARDWOOD FLOORS

"The World's Standard of Excellence"

Here are two beautiful designs with prices. We have hundreds of others.



Border No. 707—8-inch. Oak, Maple, Cherry and Dark Oak. 28c. lineal foot. Corners 35c. each.

Border No. 836—10-inch. Oak and Dark Oak. 40c. lineal foot. Corners 60c. each.

In this age of keen competition quality is often sacrificed for price. This is particularly disastrous in our line, for if a floor is not made of wood carefully selected and cured and extreme caution used in every detail of manufacture, the floor, instead of being one of the most beautiful and satisfactory features of the home, will be a source of constant care, annoyance and expense. The fact that we have been in business for so long, and have built it up until our trade extends all over the world, is evidence that our goods are satisfactory and our methods right.

Don't forget—send coupon today for this catalog. It will interest you and it's absolutely FREE.

S. C. JOHNSON & SON, Racine, Wis.

"The Wood-Finishing Authorities"

CUT OFF ALONG THIS LINE

S. C. Johnson & Son Racine, Wis.

Please send me FREE your illustrated catalog of Ornamental and Plain Hardwood Floors. I understand there is no obligation incurred on my part.

Name.....

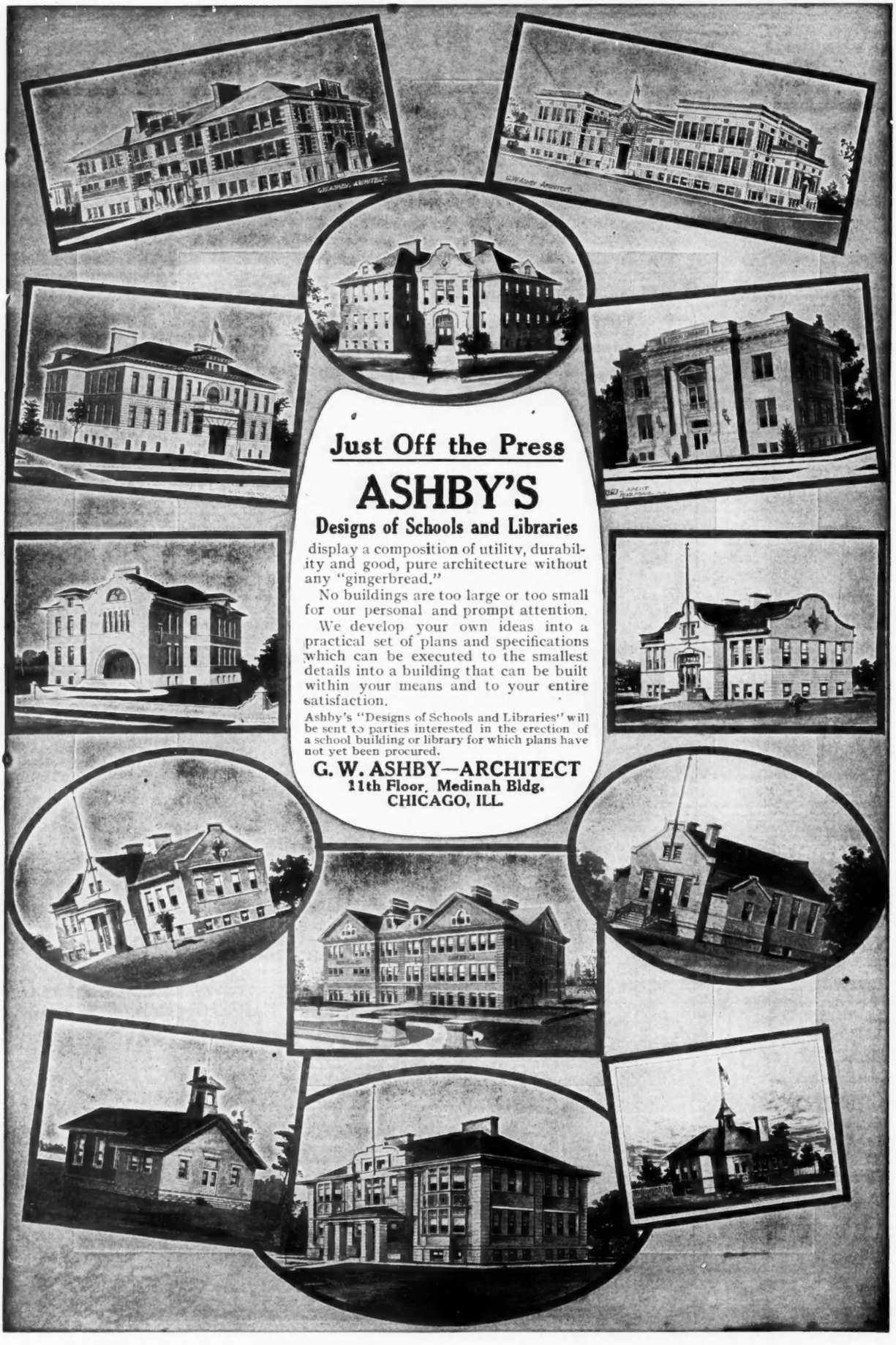
.....

Town.....

.....

State.....

A. C. B. 12


Just Off the Press
ASHBY'S
Designs of Schools and Libraries
display a composition of utility, durability and good, pure architecture without any "gingerbread."
No buildings are too large or too small for our personal and prompt attention.
We develop your own ideas into a practical set of plans and specifications which can be executed to the smallest details into a building that can be built within your means and to your entire satisfaction.
Ashby's "Designs of Schools and Libraries" will be sent to parties interested in the erection of a school building or library for which plans have not yet been procured.
G. W. ASHBY—ARCHITECT
11th Floor, Medinah Bldg.
CHICAGO, ILL.

CONTENTS FOR DECEMBER, 1910

INDEX TO ADVERTISEMENTS, DECEMBER, 1910

NOTICE TO ADVERTISERS

Forms for the January number of the American Carpenter and Builder will close promptly on December 20. New Copy, changes and orders for omissions of advertisements must reach our business office, 185 Jackson Boulevard, Chicago, not later than the above date to insure attention.

AMERICAN CARPENTER & BUILDER Co.

BISHOPRIC WALL BOARD AND SHEATHING

IF 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 (3/8 inch), which are easily and quickly nailed to studding, ready for immediate application of wall paper, paint, burlap or other decorations.

Applied Dry, Winter or Summer

It is applied dry; is guaranteed not to swell, shrink, warp crack, flake or blister; is clean, sanitary and odorless; is proof against moisture, cold, heat, and vermin; saves fuel in winter and keeps out summer heat; also deadens sound. Is suitable for dwellings, factories, new partitions in old buildings, finishing attics, porches, laundries, cellar ceilings, garages, etc.

Wall Board Easily Applied

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

Bishopric Sheathing is made of same materials as Wall Board, but finish is not necessarily so fine, and therefore costs less. It is of uniform thickness, insuring a perfectly even surface when applied. It is nailed to studs, with lath and asphalt side exposed. Over laths weatherboards are nailed or cement is applied.

Bishopric Sheathing makes a more solid and substantial wall than lumber. There are no gaping joints; no widening cracks due to shrinkage; no knot holes. The Asphalt Mastic in Sheathing is a non-conductor; keeps the building cooler in summer and warmer in winter. Moisture cannot penetrate it; is proof against vermim. The pests cannot bore through the tough, gummy Asphalt Mastic. In applying weather boards over the laths, dead air spaces are left between the laths, forming splendid insulation. Bishopric Sheathing does away with the expense of building paper and cost of its application. One wagon load of sheathing covers an area from six to ten times as great as one load of lumber—a tremendous saving in hauling. The cost of applying ordinary wood sheathing is from $5 to $10 per 1000 feet, whereas the cost of applying Bishopric Sheathing is but $2.50 per 1000 feet —**A saving of about 75%.** Furthermore, 1,000 square feet of wood sheathing covers but 750 feet of surface, 20% less being due to tongue and groove. In Bishopric Sheathing 1000 square feet covers 1000 feet of space. In applying ordinary lumber, heavier scaffolding, more tools and greater scaffold floor-space are required. In applying Bishopric Sheathing one man drives a few nails in each sheet; a common laborer or boy can finish the nailing. As soon as the building is closed in with Bishopric Sheathing, the men may work in comfort on the inside during bad weather, finishing the outside on suitable days. This insures continuous work without loss of time.

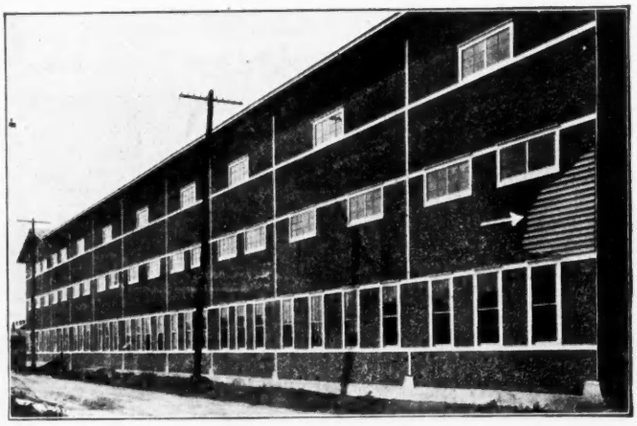
Weather Boards over Sheathing

Bishopric Sheathing Construction

Bishopric Sheathing is used with splendid results under flooring and roofing boards. Under floors it serves as a sound deadener and keeps out dampness; under the shingles it keeps out summer heat.

Illustration to right shows Bishopric Sheathing nailed to outside of studding and exposed lath and Asphalt Mastic coated with cement. The artist has indicated with arrow exposed lath. This form of cement construction is most durable as well as economical; is fire-proof, moisture-proof, wind proof as well as proof against heat and cold. The cement firmly adheres to the laths, making a solid, smooth exterior. Spaces between parts of laths not fully imbedded in Asphalt Mastic form an excellent key for firmly holding the cement. For factory or residence this form of cement or stucco construction is the cheapest and best known.

PRICE AND SHIPMENT: Crate of 16 sheets, covering 256 sq. ft. of surface, $5.22, or $2 per square of 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, Ohio, or Alma, Mich. We ship from nearest point.



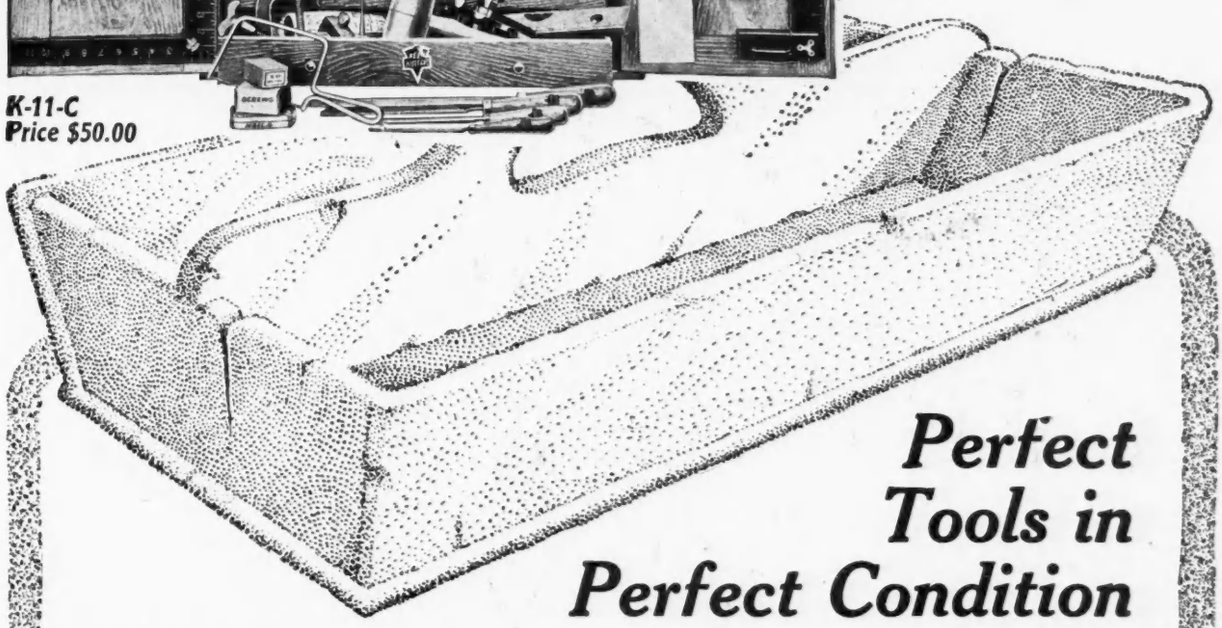
Bishopric Sheathing and Cement Construction

Write for descriptive booklet and samples of Bishopric Wall Board, Sheathing and Roofing—ALL SENT FREE.

The Mastic Wall Board & Roofing Mfg. Co., 24 E. Third St., Cincinnati, O.

E. C. SIMMONS
KEEN KUTTER
TRADE ST. LOUIS MARK
U.S.A.

K-11-C
Price $50.00



Perfect Tools in Perfect Condition

YOU know how easy it is for tools to get misplaced—how quickly they get rusty and lose their sharpness—when you try to keep them in the old time tool box. It is almost impossible, no matter how hard you try. For these reasons you should be particularly interested in

KEEN KUTTER
Tool Cabinets

Every tool, from the smallest gimlet to the largest saw, has a place of its own. When you want a tool you just naturally reach up and get it. They never touch each other, so they can't get dull that way. They don't get rusty, for the air-tight doors keep out dirt and moisture.

Every tool is the best of its kind—the Keen Kutter trademark is your guarantee. It has stood for highest quality in tools for over 40 years.

Keen Kutter Tool Cabinets are the only tool cabinets made containing a complete set of tools under one trademark and guarantee, and this guarantee is the fairest ever made—if a tool proves unsatisfactory in any way return it and get your money back.

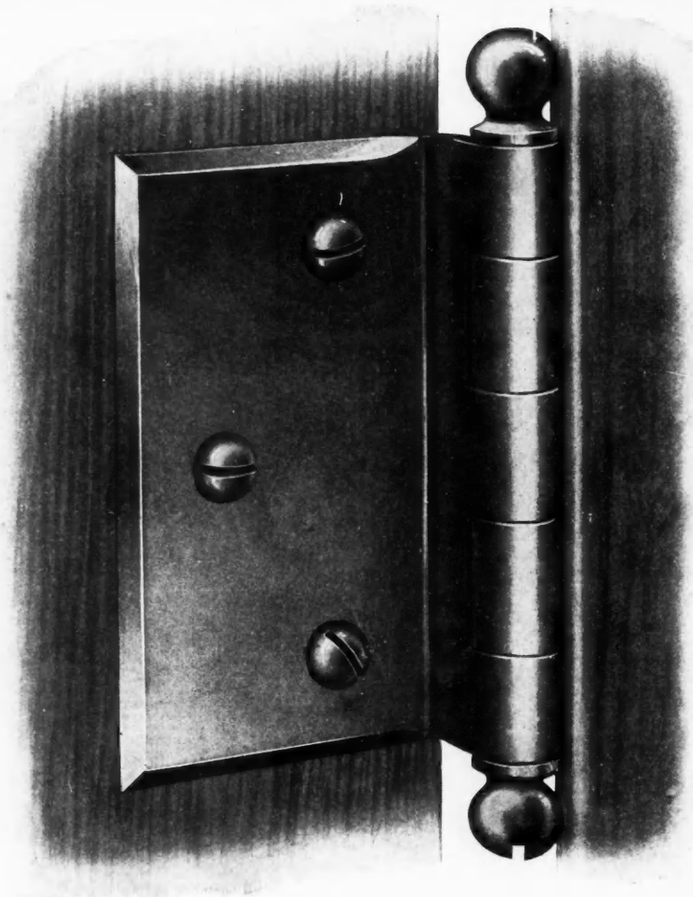
Keen Kutter Tool Cabinets vary in price from $8.50 to $125.00, depending on the number and kinds of tools selected. All cabinets contain such accessories as sandpaper, glue, nails, oilstones, etc.

Take a look at your size to-day. If not at your dealer's, write us.

"The Recollection of Quality Remains Long After the Price is Forgotten."
Trade Mark Registered. —E. C. SIMMONS.

SIMMONS HARDWARE COMPANY (Inc.), St. Louis and New York, U. S. A.

WE INITIATE — NEVER IMITATE
"National" Tips



"NATIONAL" Butts are now supplied with ball tips in all the usual sizes on both Common and Ornamental Butts.

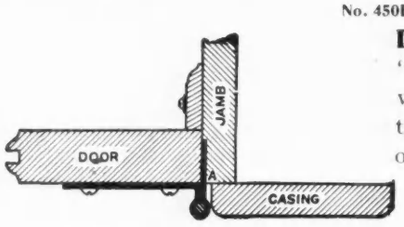
¶ The new false tip is threaded and screws into the butt. The ***Slot*** for a screw driver is also an exclusive feature. It makes it easy to remove the pin and shows also which is the bottom of the butt.

Style No. 450B

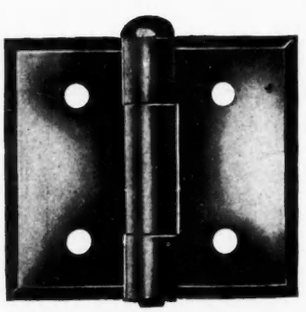
here illustrated, is the latest design, and a beauty. It has beveled edges, is highly polished and double plated. All sizes from 1½-inch to 4-inch, inclusive. Any finish desired.

Ask for "Ornamental Ideas," and give us your dealer's name

No. 450B



Directions—Attach butt part "A" to jamb first, then set and wedge door into position and attach Ornamental Leaf to surface of the door. Simple, isn't it?



Trade Mark

Be sure to look for the flag—it's stamped on all "National" Butts—It stands for quality.

National Manufacturing Co.
STERLING, ILL.