JUNE 1916

AMERICAN CARPENTER AND BUILDER

THE WORLD'S GREATEST BUILDING PAPER

SUMMER COTTAGES
IDEAS, PLANS, DETAILS, CONSTRUCTION

Also in this issue
Auto Trailers
Modern Corncribs
Wallboard Shacks
And 20 Others

Price 20 Cents
Recollections of Olden Days

Of course he smiles when he thinks of the days he wasted in hard, backbreaking, eye straining, unnecessary filing and refitting. He now uses saws which not only cut true to the line and run more easily but that hold their sharp cutting edges longer than any other Saw.

Atkins Saws

For all purposes. Made of SILVER STEEL. Require less fitting because they are more scientifically made. Then there is no risk in buying an ATKINS SAW because they are covered by a Money Back Guarantee should they fail to give perfect satisfaction. MADE WITH EITHER THE OLD STYLE STRAIGHT ACROSS HANDLE OR ATKINS EXCLUSIVE PERFECTION HANDLE, EMBOSSED.

OUR FREE OFFER: Send us ten cents for our 32-page Carpenter's Catalog, called "SAW SENSE." Tells all about the complete line of Saws, Saw Tools and Specialties. Also our Time Book with wage scale and a free gold plated Hand Saw Watch Charm.

E. C. ATKINS & COMPANY, Inc.
Indianapolis, Ind.
A Line of Business Worth Encouraging

We were talking with a granary elevator man not long ago, and remarked that if the proposition of the high corn crib equipped with power elevator was to make the progress it should, considerable educational work would have to be done among the country carpenters and builders.

“You have an outfit here, for instance,” we said, “that works best and most economically when installed in a crib of certain standard dimensions. The cupola should be built in just a certain place, and should be just large enough to accommodate the distributing head of the elevator. What happens if Mr. Carpenter doesn’t know about your outfit and what it requires, until he has the crib practically finished?”

“That’s our biggest problem,” he replied. “You have rucked it. Almost every week we have to send out a special man to rebuild a cupola before our cup elevator can be installed before it will work as it should. I don’t mean, you understand, that the corn crib or granary is not substantially built—simply that it doesn’t fit our equipment. The country builders have been so accustomed to building the old style, low corn crib—the hand-shoveling type, that they don’t realize the importance of working out ahead of time all the building requirements for the cup elevator. We have corn crib and granary plans that give all of the important dimensions and details of construction, and we wish that every rural carpenter or builder would write us for a set of these so that he could study them out and get these buildings just right from the start.”

“What is the outlook for building business along this line,” we inquired.

“Extremely bright. The farmers all thru the corn belt are getting interested. A great many have already put up the high cribs, and a great many more will get to it this summer. You know farm labor is too scarce, and too expensive to depend on hand-shoveling at the busiest time in the fall. With the high crib and power elevator to put in the corn, the farmer’s troubles are over in this respect. He handles his grain two or three cents a bushel cheaper and much more quickly.

“If the country builders only realized it, there is a good chance for them for corn crib building business. There are hundreds of farmers who can easily be persuaded to put up a new high corn crib equipped with power elevator who never would think of repairing their old cribs, or building more like them. Your publication has a lot of influence. Why don’t you suggest to your enterprising barn builders to get busy on modern corn cribs and granaries?”

Along this line we are pleased to call attention to the model high corn crib and granary design presented in this issue. This is the time of the year to go after this line of business. It can be made a big thing by those who will take an interest in it.

Very sincerely yours,

Editor American Carpenter and Builder.

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A SUGGESTION

Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?

Chicago "Triplex" Spring Butts offer this advantage to you. The appearance, durability and finish of this article are unsurpassed, and in consideration of prices that are conservative in respect to value, the up-to-date builder cannot afford to risk his reputation for goods that are unsatisfactory.

Send for Catalogue C 32. It illustrates and describes the most complete line of Spring Hinges manufactured.

Chicago Spring Butt Company,

CHICAGO NEW YORK

BOMMER

Floor Surface Spring Hinge
For Double-Acting and Single-Acting Doors
Release and Holdback Ball Bearing Alignment Device

Every moving part of this hinge can be oiled from a single hole on outside of side-plate.

The most durable hinge of its type; holds the door open when swung to 90 degrees at either side. The spring-action can also be entirely released as long as desired so that the door will swing free, without spring-action, in either direction, by inserting a wire nail (when the door is open) into a hole provided in the side plates for that purpose. The spring-action can be restored by withdrawing the nail.

Your Hardware Merchant Can Supply Them

Bommer Bros., Manufacturers Brooklyn, N.Y.

STOP

Right here, Mr. Reader. Something has drawn your attention to this ad. Do you know what it is? Wait a minute and we will tell you. Read the above picture carefully. It tells the story. It shows just what contractors all over the country are doing every day. Surface your floors the "American Universal" Way

Saves Time — Saves Money — Saves Worry — Does Better Work—Operated by Electric Motor

Let us tell you more about this wonderful machine and of our special Five Day Trial proposition. Mail coupon today to

American Floor Surfacing Machine Co.,
355 S. St. Clair St.
TOLEDO, OHIO

You Can Pick Out the houses that have been stained with Cabot's Creosote Shingle Stains

The colors are so soft and rich and lasting that all other stains look cheap and tawdry in comparison. They go farther, last longer, preserve the wood better and are vastly more artistic—and every gallon is guaranteed. Imitation stains smell of lacquer or benzine and are dangerously inflammable. Cabot's Stains are the genuine Creosote, wood-preserving stains, and they make the wood less inflammable.

CABOT'S QUILT

A scientific heat insulator and sound-deadener that makes houses warmer in winter and cooler in summer and deadens sound in floors and partitions. Not a mere felt or paper, but non-conducting mat which is about thirty times warmer than common papers.

You can get Cabot's Stains and Quitl all over the country. Send for samples and names of nearest agents.

SAMUEL CABOT, Inc., Mfg. Chemists
BOSTON, MASS.
1133 Broadway, N. Y.
24 W. Kinzie St., Chicago
Water in the Cellar

P REVENTION is better than cure. If you are building a new cellar it is not generally a difficult matter to build it so that you will not be troubled with water in it. You can make a concrete wall and use some kind of waterproofing material either as a paint for the surface of the wall or mix it with the cement. Or you can build a good stone wall, using cement mortar and plastering the wall both inside and outside.

In case you care to paint or plaster the outside of the wall you will need to excavate at least 2 feet larger all around than the wall is to occupy. It is always well to dig out from 8 to 12 inches outside the wall and then after the wall is built fill this space with clay well rammed and puddled with water. Of course you will want a cement floor in the cellar. This can be made waterproof by using some of the preparations sold for this purpose.

In case you have a cellar already built and are troubled with water, there are several courses which may be taken. You can dig out the dirt all around the wall for a distance of 2 feet and down to a foot below the bottom of the cellar, at the outside of the excavation and slanting toward the wall. In the bottom of this trench place tile such as is used for draining land or make a drain of stones. This drain should have an outlet toward which it should have slight fall.

The outside of the wall can be pointed and plastered over with good cement mortar to the top of the ground or all the way to the sills. If you desire you can set up some stakes or 2 by 4’s, some 5 or 6 inches from the wall. Put board or plank on the sides next the wall and fill the 4-inch space with concrete. This can go part or all the way up and the top should be slanted down at the outside.

The trench around the wall may be partly filled with

(Continued to page 75.)
THERE are two absolutely necessary parts to the successful summer cottage. It can lack most everything else, but it must have a roof that doesn't leak, and plenty of well-screened windows.

By summer cottages we do not mean the fifty-thousand-dollar palaces at the fashionable resorts, but rather the homely little one-room to five or six-room shacks that cost only a few dollars, yet mean so much summer joy and health to thousands of the everyday sort of folks—the families that love to fish and loaf, and get away from the city to lake, mountain, shore, or stream.

The summer cottage or shack, as already mentioned, should be dry and airy. A good water-tight roof it must have, and the popular cottage these days has a generous supply of windows and then a great big screened porch all along one side. Sometimes there is a screened porch also at the rear.

We have designed the accompanying four cottages.
Summer Cottages

Perspective Sketches of Four Practical Summer Cottages Designed by Our Architectural Department. They range in size from three rooms to six rooms, in addition to the big screened porch which is the feature of each. Satisfactory sanitation is provided, and wall board is recommended for the inside finish. For arrangement of space see floor plan diagrams below and on page opposite.

in order to work out some of our pet notions regarding real comfort and convenience in summer cottages. There is nothing expensive or fancy about them. We hope a good many of our readers will find them serviceable.

Construction Using Wall Board

A method of wall board construction has been worked out, and is recommended for building these cottages or for any other summer cottage design which is very economical, and makes a really superior inside finish. The method is illustrated in the working drawing shown on page 40.

In this method the wall board is nailed to the outside of the studding, not to the inside. Over this, drop siding or 1 by 10-inch boards are nailed in clapboard fashion, the siding being nailed through the wall board to the studding. No sheathing paper is used. Dressed studding is used, and stained a harmonious summer color, such as grass green. Viewed from the inside,

Arrangement of Six-Room Cottage No. 6819. Illustrated Above. Each of the Four Bedrooms has Cross Ventilation.

Arrangement of Three-Room Cottage No. 6830. Illustrated Above. An Ideal Small Cottage.
Details of Construction and Inside Finish Using Wall Board. The Wall Board is Nailed to the Outside of the Studs which are Dressed Four Sides, Stained, and Serve as Panel Strips. Making a Very Attractive Camp Interior. Drop Siding or Rough Inch Boards are Nailed on Over the Wall Board for the Exterior Siding. Inside Partitions Constructed of Wall Board and Light Panel Strips.

these studs serve as panel strips for the wall board. The wall board can be painted or left in its natural color; in fact, any variety of artistic color schemes can be worked out.

To carry out the attractive scheme of having exposed studding on all four sides of the living room, the inside partitions should have wall board on one side only of the studding.

Wall board has come to be a very popular material for finishing summer cottages. The several photographs illustrated herewith show some of the ways it is used. At small expense, one can get a really smooth, clean interior by nailing on wall board over studs and rafters. Some old cottages have been remodeled and fixed up in this way.

A Wall Board Camp

One of the most interesting examples of all wall board construction we have seen, is the Michigan lake
A Michigan Camp Built Entirely of Wall Board, Size 32 Feet Front, by 13 Feet 4 Inches Deep; Cost Complete, $110. Has Been in Use for Four Seasons with Great Satisfaction.

Four Views of Interior of Wall Board Camp Pictured Above. Waterproofed Wall Board Nailed to Rather Heavy Battens Forms All Walls and Partitions. The Roof is Made of Composition Roll Roofing Laid Over Matched Boards.
A Popular Summer Cottage Idea is the High Ceilinged Living Room, with Free Space Clear Up to the Rafters. A Finish of Wall Board Panels for this Type of Room is a Decided Advantage.

camp illustrated on page 41. This little cottage costing only $140 has been in use for four summers—a constant source of satisfaction and comfort. The saving on one summer’s rent, paid the total amount invested in this cottage. The lower part of the walls is simply a series of heavy waterproofed wall board panels. The upper part of the walls is screened. Canvas awnings shield from the sun and beating rain.

Summer Cottage Sanitation

One of the trying problems of most summer cottage locations is that of sanitation. In each of the four plans illustrated at the beginning of this article you will notice provision for a chemical closet opening off the back porch. This can be either of the built-in or the commode type of closet fixture. The investment is small in either case, and the convenience and safety resulting is certainly worth the investment. The chemical closet manufacturers recommend having a separate small room with...
good ventilation as provided for in these plans.

HINTS ON FINISHING WOODWORK

LARGE part of the pleasure and satisfaction of woodworking is in finishing the articles which one has made. A well made article should have a good finish and those which are not quite so good will be helped by it. Apply water stains with a sponge. If the work is smooth at the beginning it is easy to keep it so. Wipe off a stain as soon as possible after it is applied; there is less chance of raising the grain of the wood. It is not best to guess at weights and quantities; better use scales and measures.

When the pores of the wood are well filled there is a good foundation for a successful finish. You will not get this if the filler is too heavy; better make it quite thin. Two thin coats of filler, twelve hours apart, are better than one heavy coat.

The filler may be coated over after twenty-four hours, but if more time is allowed the results will be better. The best time to sand off the whiskers is after the filling; they will break off easily then, being stiff.

Use several thin coats of shellac; let each dry at least twelve hours, then sandpaper. The work can be polished with half sweet oil and half alcohol, rubbed on with a piece of cotton.

If preferred, one may use a hard wax polish, such as is used for floors and furniture.

JOHN UPTON, La Fargeville, N. Y.
Putting Your Auto to Work

How Carpenters and Builders Are Using Trailers for Light, Quick Deliveries.

"There is the best little accessory for my car I ever invested in," a Kalamazoo, Mich., builder remarked to the Editor a short time ago. "My work is pretty well spread out over town—usually have two or three contracts going at once, and with my car I can keep right in touch with all of them. Now, by hitching on this trailer I make my car do double duty by hauling light gear from one job to another, as it is needed, or for hustling out with supplies or materials needed in a hurry."

Hundreds of builders in other localities are having the same experience as our Kalamazoo friend. The automobile trailer has arrived and is making good in actual everyday work on the job.

Many automobile owners have been really spoiling their cars by turning them into delivery wagons—loading up the back seat with heavy boxes, implements and tools, all of which spoils the looks of a car, scratching the enamel and tearing the upholstery. The builder's automobile has been for practical use, and he hasn't hesitated to misuse it on occasion.

But now the trailer solves this problem in the most economical way. You can haul more than you can carry and do it much more safely and easily. To put a ton load on a light car will soon make it ready for the junk heap, but load a ton on a trailer and the light car will draw it with ease.

We have never heard that the auto trailer was invented and developed especially for builders, but it might well have been; it meets their requirements so exactly. Several types are available, so one can pick exactly what best suits one's needs. For attaching to light runabouts and touring cars there are two-wheel trailers and light four-wheel trailers. Then for attaching behind motor trucks there are heavily built trailers up to three, five and even ten-ton capacity.

The underlying fact, however, that makes the trailer an economical proposition is the same in all. It is the
fact that a bigger load can be drawn than can be carried. Load a truck or a car to its full capacity and it still has an effective draw bar pull of approximately one-half that rated capacity, which it can use for pulling a trailer. Thus a thousand pound truck full loaded will easily pull five hundred pounds more loaded on a trailer. Truck operators know that it doesn’t do to overload a truck. Three tons hauled on a two-ton truck will soon put it into the repair shop; but haul the

extra ton on a trailer behind and no harm will be done. The extra ton will be hauled for about 15 per cent additional cost for gasoline.

Users testify that they haul a loaded trailer without appreciable extra effort or strain on the car. Here is a letter on this point from a Pennsylvania furnace contracting concern. August 25, 1916.

"I have been using the trailer that I purchased from you now about six weeks, and it has already paid for itself in saving my dray bills.

"For example: This morning I loaded about fifteen hundred pounds on it and drove to Fairview in forty minutes, using one and a half gallons of gasoline, and making the trip without shifting the gears but once, and that was owing to being blocked in the middle of a hill by another machine."
Auto Trailers for Builders

"Had I shipped the load by freight it would have taken my two men one hour to make the trip, and then at least two hours to get a dray to deliver the load to the job, making a saving in time of two hours and forty minutes at forty miles an hour, and with apparently as much ease as tho we had nothing attached to the car.

"THE FULLERTON FURNACE CO.

"Per

R. L. FULLERTON.

The automobile trailers are being constructed on automobile lines rather than following carriage or wagon standards. They have to be built for speed as well as strength. Rubber-tired artillery type wheels are provided and the steering gears are so arranged that the trailer wheels track exactly with the hind wheels of the automobile. The method of attaching the trailer to the car is taken care of in several ingenious ways. Motion both sideways and up and down has to be provided for. Attachments are made to the rear frame, to the springs and, in some instances, to the rear axle. On many trailers there is a coil spring coupling to absorb the shock in starting and stopping.

Folks are getting accustomed to seeing trailers. There is no longer any danger of starting a riot by hitching a trailer to your inspection car, loading it with building materials and starting up the street. It is getting to look like the sensible business rig for builders. They don't cost much. Carpenters and builders are using them more and more.
Attractive Bungalow with Broad Gable Roof

The beautiful home shown here appeals to everyone as a real bungalow that is true to type. Its attractive character is due to the fact that the close-to-the-ground effect has been retained to a remarkable degree and at the same time a modern home is secured with a good basement suitable for a heating plant and other conveniences. The broad flat gables with their heavy overhang are the most important factors in bringing about this result. The house is also built wide across the front which gives the roof an opportunity to be most effective. If the house were narrower the flat roof would not be so apparent.

The exterior walls of this bungalow are finished with dark stained shingles and this contrasts pleasingly with the white window frames and the stone porch.

This bungalow is placed well above the ground so that sufficient headroom is assured for any kind of heating plant that may be desired. The stairs to the basement are reached thru the back entry so that it is not necessary to go thru the kitchen from outside to reach the basement.

Six rooms are provided in the floor plan. The dining room and the living room are placed along the front of the house, with the entrance directly into the living room. A cased opening connects the two rooms.

A hall leads back from the living room to the back of the house which makes all the rooms easily accessible and at the same time the privacy of these rooms is assured.

Two bedrooms with a bath between occupy the back part of the house.

Floor Plan of Bungalow.
Size 39 Feet 6 Inches by 40 Feet.
Artistic Family House of Generous Proportions

The accompanying perspective shows a large family home of unusually attractive design. The attention to the various architectural details forms an exterior that will attract more than passing attention anywhere. The projecting beams with their carved ends, the stucco porch pillars, and the smaller columns in the front window are all examples of the care that has been taken in handling the many smaller features of this design.

The stucco of the first story and the shingles of the second make an attractive combination. The porch, also, with its heavy white pillars and unusual roof construction, gives a suggestion of what may be expected after entering the front door.

This is a typical house as constructed in our smaller cities in all parts of the country. It is handled in a more artistic way than most of them, but the general plan of construction is the same.

The foundation walls are generally of concrete and are carried down to footings at the level of the basement floor. The basement floor should also be of concrete as this material has been found by experience to be the best material for this purpose. The house is set about two feet above grade, which is sufficient to allow for windows to light the basement.

The first floor contains five rooms and there are three bedrooms and a bath on the second. On this floor there is also a small sewing room. A large amount of closet space is provided on the second floor.

The front part of the house on the first floor is occupied by two living rooms and a hall. The larger of the living rooms has a fireplace along one wall opposite the front hall where it will appear most comfortable and cozy during the cold weather. In back of this room is a sun parlor that will be of the most used parts of the house during all kinds of weather. During the summer the sash are generally removed and screens are inserted in their place.

The three bedrooms on the second floor are all of good size.

Beautiful home of nine rooms. Size 41 feet 6 inches by 30 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only $10.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6796.
Guaranteed Building Plans

Comfortable Five-room Home. Size 37 feet by 37 feet 6 inches. We can furnish complete set of blueprint working plans and typewritten specifications for only $6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections, and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6801.

Simply Constructed Cottage Bungalow

Cozy simplicity is the keynote of the beautiful little cottage of the bungalow type that is shown here. It is a home that is designed to give the greatest amount of pleasure to the occupants. The size and arrangement of all the rooms, the large and convenient basement, and the numerous windows combine to create a home of the maximum amount of comfort and usefulness.

Many people prefer a rather quiet, simple design for a home rather than the extravagant types that are often built. This design, No. 6801, will particularly appeal to them.

The roof and the walls are finished in shingles that are stained a dark color. This provides a pleasing contrast with the white trim of the windows and the roof. There are so many windows with their white frames and sashes that there are no flat expanses of wall surface to cause a monotonous appearance.

The house is built well above ground in a fashion that is well known in the cooler parts of this country. In addition to providing a large basement, the house is insulated against the cold and dampness of the ground which may be a most important feature in certain climates.

As the house is almost square and of good size, a basement can be secured that will be a valuable part of the house in many ways. In a one-story house, such as this one, the basement is much more important than it is in a house of two or more stories. The basement can be divided into sections so as to secure the maximum value out of this most important part of the house. Cold storage room, furnace room, and laundry can be provided and very often a small work room with a bench will be found useful.

The entrance to this house is into a reception hall that continues back thru the house and which leads to the various rooms. A cased opening is placed on either side of the reception hall, one leading to the dining room and the other to the living room.

Six windows placed on two sides of the living room assure a room that is bright and cheerful. There is a large enough area of wall space so that some well-chosen furniture can be placed to advantage in this room.

The dining room is also as well lighted as the living room and because of the wide opening between the two thru the reception hall they should be finished in somewhat the same style.

The kitchen contains many features that will recommend it to the housewife. The convenient little pantry with its cupboard and the refrigerator that is iced from the rear porch are particular parts of this kitchen that are worthy of notice.

The porch of this cottage is handled in a very interesting way. It is set back under the main roof and the soffit has fancy exposed rafter ends projecting above.

Arrangement of Cottage. Size 37 Feet by 37 Feet 6 Inches.
Distinctive summer cottage design. Size, 42 by 26 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only $6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6809.

Summer Cottage with Special Living Room

The floor plan and perspective shown here, as Design No. 6809, illustrate a handsome little cottage that is suited particularly for a summer cottage and is also well enough made so that it can be used the year round if desired.

A large basement is shown in the illustration but if the house is to be used as a summer cottage only, the basement would probably not be built. The cottage should, however, be placed about as far above grade as shown here in either case. The protection against dampness will make this type of construction more than worth the cost.

A most striking feature of the exterior is the porch with its pergola roof and latticed sides. The floor and the steps are made of dark vitrified brick which is serviceable and easy to keep clean and at the same time is very attractive in appearance. The porch is a most important part of a summer cottage and an effort should be made to get a distinctive design that will appeal to everyone. There are always many visitors and an attractive porch arrangement will give the cottage a fine appearance.

A large, roomy living room is also most important in a summer cottage and is a special feature of this plan. It extends back thru the center of the house and is 14 by 25 feet. The living room seems even bigger than it is because of the large fireplace set in one of the back corners. A large living room is appreciated in nearly any house but especially so in a summer cottage. It gives the impression of comfort and carries the idea that the house was made to live in. Large living rooms are much more restful than a series of smaller rooms. A badly cut up floor arrangement always gives the idea of confusion.

The living room occupies the entire central part of the house with two bedrooms on one side and a dining room and kitchen on the other.

If a kitchen is not arranged for the maximum amount of convenience and comfort it is particularly unpleasant in the summer time. It is generally warmer in the kitchen naturally and if the arrangement is such that unnecessary steps are required for carrying on the work, the preparing of meals will be a most distasteful occupation.

A compact, convenient kitchen will be appreciated by everyone and a study of this plan will show the care that has been exercised in arranging this room. The kitchen is only 8 feet 6 inches by 10 feet 6 inches. The sink is placed under the window, where it will receive the maximum amount of light. Along the wall near the door to the dining room is a handy cupboard.

The dining room is also large and attractive. The window seat is a pleasing feature.
Guaranteed Building Plans

Modern Two-Flat Building an Ideal Investment

The 2-flat is considered by many the ideal home investment for the family of moderate means. "Live in one and rent the other" has been the slogan of the 2-flat proposition. The income from one apartment pays all the running expenses of the building, including interest on the investment, and the entire amount one would pay as rent can go to pay off the principle. Accordingly with this type of building the owner can pay out his obligation much sooner than would otherwise be possible.

It is estimated that at the present time there are over ninety-five thousand 2-flat buildings in the city of Chicago alone, which shows something of the popularity of this style residence both as an investment and as a dwelling.

The accompanying design is handled in the most up-to-date manner. There are five large, well-lighted, nicely arranged rooms in each of the two apartments. The large living room, the private porch, the generous closet space, are all pleasing features of this design.

The exterior is face brick trimmed with stone or terra cotta. If built on a wide lot where the sides would be exposed, good looking brick should be used all around; if on a narrow lot common brick can be used on the sides without objection.

A friend had given Pat a "parrot" which in reality was a baby owl. Several days after, Mike happened by.

"Is the parrot spakin' yet?" asked Mike.

"Niver a word," answered Pat. "But th' little divil is doin' a lot of thinkin', he is."

City flat building suitable for narrow lot. Size, 24 feet by 56 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only $15.00 per set. When ordering, ask for Design No. 6807.
Six Room Story-and-a-Half House

A close study of the floor plans and exterior of this little home shows many features that will appeal to home-lovers. Its attractive appearance and convenient arrangement combine to make a real home that will be a source of enjoyment to the owner and the object of much admiration on the part of visitors.

The little porch possesses the good features that are peculiar to detached porches. In hot weather the detached porch takes advantage of any breezes that happen to be blowing and is nearly always comfortably cool even in the hottest weather. It also breaks up the straight lines of the house and adds considerably to its appearance from an artistic standpoint. Comfort and beauty to the largest degree are provided in the porch shown in this design. The low roof is an inviting feature.

A study of the floor plan will bring out the attractive character of the living room and its value for a house that is intended as a home. It is placed along the front of the house and is not entered directly from the front porch, but from a reception hall that opens into the end of the room thru a wide cased opening. The room is rather long, so the fireplace is located on the side which makes the room seem wider than it really is. The seat in the bay window at the end balances up well with the fireplace.

The arrangement of the living room and dining room results in two rooms that are detached from each other rather more completely than usual. This is a good feature, as the living room is large enough so that it does not need another room to join to it to secure the large open floor space that is desired in all homes.

The second floor is occupied by three bedrooms and a bath.
Cement stucco house with attractive sun porch. Size, 24 by 28 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only $8.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6810.

Five-Room House with Sun Parlor Porch

Any house that has a porch like the one shown here would be a delight to anyone. In the cold weather it is entirely enclosed with glass and in the warm weather screens can be substituted for the sash. Sun parlors are becoming more frequent in house designs just as are sleeping porches. The value of plenty of fresh air and sunshine is being appreciated more and more all the time.

This porch is 24 by 8 feet, which makes it large enough so that it really adds another room to the house. During all kinds of weather this room will probably be in use more than any other in the house. The porch and the living room make an attractive combination for living purposes.

The living room extends across the entire width of the house and is 12 feet wide. A set of book cases is built into one end of the room and the fireplace is located in the other. Three wide windows open to the front porch.

The dining room and kitchen with their connecting pantry present an efficient arrangement. The pantry is built in the back part of the house and will open to either the dining room or the kitchen. There is also another direct door from the dining room to the kitchen. The dining room is made bright and cheerful by the three wide windows on the side. The built-in buffet also adds to the convenience of the dining room arrangement. The stairs to the second floor are reached thru the dining room.

The second floor plan calls for two bedrooms and a bath with a connecting hall. The ample closet room will be a source of pleasure to the housewife in this home.

The exterior of this house is finished in cement stucco of a dark color. This contrasts pleasantly with the white trim of the windows and doors. The projecting dormer breaks up the flat character of the roof in very good style.

Cement stucco makes an ideal exterior wall for this little dwelling; applied on metal lath or stucco board and properly waterproofed, it is durable and pretty.
"You Can't Buy a Reputation for Square Dealing. You've Got to Earn it"

—The Man From the Lumber Yard

"As ye sow, so shall ye reap" is as true today as when spoken on the hills of Palestine. It is

Will never forget when I first heard the expression, "Come clean."

You may remember my mentioning in a previous letter a contractor by the name of Carl Anderson who was so careful in keeping his equipment in prime shape. He was generally very careful in every agreement he made, because he knew that he would always toe the mark. One day an acquaintance asked him to name his price for putting up a five-room house where the material would be furnished all ready cut. Anderson had never put up a ready cut house and, wanting the experience, named a price that would clear him if everything came as per specification. His proposition was accepted at once as the car containing the material had already been shipped.

The Unexpected Happened

Things might have gone better if it hadn't rained the day the car arrived. It rained that day, and the next, and for several days after that—in fact, it was a typical "spring" wet time. Of course, the car had to be unloaded and the problem was what to do with the complete bill of lumber and millwork for that house.

There was no extra space on the building site for putting up a temporary storage shed. So Anderson finally arranged to tuck part of the millwork away in a neighboring barn; part went into another neighbor's cellar; and part he hauled across the town to his own shop storeroom.

At last he was able to get to work on the job, and began hauling in the lumber as he needed it.

Editor.

I am an old time lumber yard man and calculate to know how big a load of dimension it takes to frame a five-room house. I could have told Anderson when he loaded up that there would be either one of two things on that ready-cut job—either shoddy spacing of timbers or a shortage.

And sure enough it was a shortage of more items than one, for Anderson is a builder who simply won't tolerate shoddy construction. The working drawings sent with the job showed main roof rafters spaced six inches too far apart. "We'll need ten more rafter pieces, said Anderson.

No doubling of studs around openings or at corners was provided for. "None of that for mine," said our contractor friend, remembering his reputation for good work.

And so on thru many other items of framing, outside finish and inside trim it went. "Perhaps this way of building goes some places," mused Anderson; "but I'm not going to introduce it around here, even if this present customer of mine probably would be satisfied with it."

Come Clean

Several days after the house had been completed I stepped into Anderson's shop and found him wearing a disgusted expression as he looked over some figuring. His dour expression changed as he saw me and said: "That ready-cut job lost me seventy dollars, but I came clean." There was an expression on his face that I believe would have taken him past St. Peter if he had been knocking at the pearly gates. Ever since that time when the temptation had been strong to fudge, I say to myself, "Come clean, old boy." Virtue is not its only reward. Anderson's "coming clean" got him several good contracts that more than paid his loss on the erection of the ready-cut house.

Did you ever consider that all of some men's pay isn't in their envelopes? Some cut so close to the line that the shavings come off of the other fellow. Such a chap can never understand Carl Anderson's
feeling when he said, "but I came clean." I imagine that such a feeling would be as great a surprise to some people as the first drink of ice water was to the native of Manilla when Dewey was Uncle Sam's man in Man-illa.

I would like every penny pincher to know that the best work in the world is not done for money. Devoted mothers, conscientious politicians, teachers and many other self-sacrificing people who work for a principle or an ideal give much more to the race than is covered by their pay check. It is frequently the case that money depends on luck. Happiness, content and real success do not. And above all, a good reputation must come from deserving.

You can't buy a reputation for square dealing. You've got to earn it.

The big prizes in money, the kind that pay income taxes may go to the lucky, but the real prizes of living always will go, as they always have gone, to those who work conscientiously, who don't kick at hard knocks and who live with a smile.

Introducing Old Grin

One of the assets of our lumber yard that was never taken down at inventory time was Old Grin. He had three and a half legs, a coat of hair always worn by a mongrel, a stomach that was never overloaded, but a disposition and smile that entitled him to a golden harp in the dog heaven.

I really believe that Old Grin taught me to smile. Since those days I have had some bumps, have been crowded up in the corner until I could feel my bones crack. The first aid has always been a smile. The next time you are up against a hard proposition and feel that life is not worth living, SMILE. Don't work off one of those sickly, "I want to be an angel" smiles nor one of those nasty grimaces that some people call a smile. I mean the kind you have when you are real hungry and find a big dinner of chicken and mashed potatoes ready for you.

These lines give the idea:

"The thing that goes the farthest towards making life worth while.

That costs the least, and does the most, is just a pleasant smile."

These lines show the cause and effect:

"The smile that bubbles from a heart that loves its fellowmen, looked small after I had been up to the top of the Masonic Temple Building in Chicago. For years it stood in my mind for height. After I had looked down from the top of the Woolworth Building in New York the Chicago structure has been a midget.

Sometime when I feel stinking mean I am going to write about that greatest of kill-joys, the Knocker. But I don't want anyone to read it. It will leave a bad taste in one's mouth.

Made in Milwaukee

I chanced to be in Milwaukee early in May. Which Milwaukee? The one that is famous. What has made Milwaukee famous? Her beautiful shore line. wonderful buildings, progressive population, fine climate, and fifty-seven other good things. She is the queen of a wonderful state. She has excellent newspapers. It was thru one of her newspapers that I got acquainted with Wm. G. Williams. I like Williams. I don't know whether he is short or tall, lean or fat, whether he eats limberger or rare roast beef. I never saw him, but I like him.

Read his ad. that I clipped from the Milwaukee paper and have had reproduced. Read it and you will like him. I don't care if his bookkeeper or some other hired man wrote that ad.—it must still be like Williams.

He could have used type that would have made the ad. stick out more plainly, but it is a good ad. Can
any of you beat it for telling the story in a concise way? He gives all the data. Any one wanting his services can telephone, telegraph, write or call. Notice that second line, how inclusive it is.

I don't know if Williams is a big financial success. He may have some weak spot in his system, some leak in his business that has kept him from making big money. But his ad. is good.

We always have and always will use the dollar mark largely in spelling success. But the man of fifty who has kept his eyes open has different ideas from the one of twenty.

I have known many folk of midget intellect who wore No. 9 shoes, and people of grand souls that lived in tiny homes. It isn't the environment that makes the man, but something inside. You must be careful of what you say. You must be doubly care-

ful of what you write because you can't put a smile behind your words. How much more careful must you be when you address thousands of people. I am not a so-called ad. expert. Some ad. experts are good, they get into the true heart of things. But the great big majority put no more individuality into an ad. than an automatic machine would.

I do know human nature and do know when an ad. would "listen good" to the casual reader.

I am very much interested in knowing what our readers are doing in the way of advertising, and I want to be of any possible assistance at any time you feel like spending a postage stamp in writing me. You can count that I will spend a stamp and my time in replying with the best I have.

Sincerely yours,

THE MAN FROM THE LUMBER YARD.

A Southern Farmhouse for a Small Family

DESIGNED FOR THE OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING, UNITED STATES DEPARTMENT OF AGRICULTURE

By M. C. Betts, Architect

A SOUTHERN farmhouse for a small family is shown on the accompanying plan, prepared in the Office of Public Roads and Rural Engineering of the department. The plan was developed after extensive surveys in the South to determine the house- hold needs of families with reference to local agriculture, climate, and domestic help. The aim primarily is to provide: (a) A cool and convenient kitchen and dining room for the housewife; (b) bedrooms and living room with the best exposure; (c) facilities for outdoor sleeping; and (d) an easily heated house, cool in summer and yet with sunny rooms in winter.

The arrangement of dining room and kitchen constitutes the chief feature of the plan. The china closet, opening into both rooms, saves a great many steps between the kitchen and the dining room. The clearing up after meals can be accomplished with a very few steps, dishes being passed thru on the wide countershelf, washed at the sink, drained, and returned to the china closet, where they are available from either side.

The kitchen is small, well lighted, conveniently arranged, and cool, by reason of the facts that the range is in a separate room and the windows on opposite sides permit of cross draft. The distance from the range to the other fixtures is no greater than in most farm kitchens; and if it were, the extra step or two would not offset the marked advantage of coolness of the workroom where the greater part of the kitchen

Sketch of Six-Room Farm House Designed for Comfort, Convenience and Coolness.
Details of Construction of Southern Farm House as Recommended by U. S. Dept. of Agriculture.

work is done. This is a matter of considerable moment, since so many farm wives in the South are now doing their own housework.

The cookroom ceiling has a large opening which permits the heat and cooking odors to escape thru a ventilator in the gable. Near the stove, to give light and air, is a double-casement window. A grated opening near the floor, in the wall between the cookroom and the kitchen closet, draws air from below the floor and promotes circulation from the floor upward and helps to keep the lower part of the room cool. In winter, if it is desired to keep the heat in the house, the door between the cookroom and kitchen can be kept open and the ventilator and grating closed when not needed to carry off odors. The separate and well-ventilated cookroom will insure a dining room which is cool and free from odors.

The fuel room, filled from outside, is right at hand, obviating the necessity of carrying in fuel every day.

The bathroom is readily accessible from all parts of the house, and can be used for washing up by the men of the family coming from barn or fields without going thru other doors. The closet on the rear gallery is intended for boots, rubber coats, etc.

**Heating System**

Instead of open fireplaces for heating purposes, the drawings for this house provide for a hot-air furnace installed in a pit beneath the bathroom. The cost of installation would not greatly exceed that of the two chimneys, with two open fireplaces each, which would be necessary to heat all the rooms. The upkeep would be less and the efficiency and comfort far in excess of that afforded by open fireplaces. If the situation is low, with water near the surface, the house can be raised higher from the ground, the pit and cellar walls being carried down but 3 feet or so. They should be built of concrete and made waterproof. Space for fuel storage is provided under the rear gallery, and there is a vegetable cellar under the kitchen.

**Gallery and Sleeping Porch**

There is less front gallery to this house than in most southern farmhouses. The reason for this is that while galleries add to the coolness of a house in summer they keep the winter sun out, making the house damp, cold, and cheerless. Extensive galleries add to the housekeeper's work. If a house has wide eaves and good roof ventilation and is placed so that it is partly shaded by trees, the same beneficial effect afforded by galleries is had in the summer time, while in winter the sun will penetrate each room at some time of the day.

The summer temperature within a house is largely influenced by the presence of near-by trees, which, even if they do not shade the building, prevent or lessen radiation from the ground. The plan, however, does provide a comfortable front gallery, and the sleeping porch can also be used as an outside sitting room.

Two sleeping compartments can be provided on this porch by using a movable partition or screen.

Complete working drawings for this house may be obtained by those contemplating building, on application to the Office of Public Roads and Rural Engineering, United States Department of Agriculture, Washington, D. C.
Possibilities of the Steel Square

EXEMPLIFYING THE RELATIONSHIP BETWEEN CIRCULAR AND STANDARD MEASURE IN CONNEC-TION WITH THE STEEL SQUARE FOR OBTAINING MITERS

We have been asked to exemplify circular measure and what relation it has to the steel square in roof framing in general. This is the theory that we have been working on in practically all of our writing in the past twenty years; and in the course of our writing for this Magazine have given the fundamental rule from which the calculations are based. But as new readers are constantly being added to the "A. C. & B." family, we feel justified in giving it again, tho in somewhat different form and, we believe, in a more simplified manner.

Without waste of words, we will assume that all understand that in circular measure the circle is divided into 360 parts, called degrees, and these parts again divided into 60 parts, called minutes, and these parts again divided into 60 parts, called seconds. However, for our purpose, we will drop the minutes and seconds and consider only the degree divisions of the circle. By referring to the illustration in Fig. 3, it will be seen that the circle is divided into 8 equal parts, and one of these parts is divided into 45 equal parts. These divisions represent degrees, and by continuing the division lines to the tangent line (blade), will give all that is needed to catch any angle with the aid of the square. This may seem a little strange to the casual observer, but it is a fact, as will be proven when applied to standard measure, as follows:

Suppose the radius of the circle to be 12 inches and we apply the square with the figure 12 on the tongue at the center of the circle. Then the figures shown at the right of the blade represent the length of the tangent for the corresponding division on the tangent line.

It will be seen that the tangent for the 45 degree line is 12 inches and, as we said before, there is no need of going beyond this point to catch any angle obtainable with the aid of the square, because the figures on the tangent line above this point (not given)

Fig. 1. Illustrating the Tangents for 30 and 60 Degrees.

Fig. 2. Thirty and Sixty Degrees Showing Same Angles as Proven by Straight Edge.
Use of the Steel Square

would represent the co-tangents and are therefore simply a repetition of what may be obtained below 12 on the blade.

Then again, the co-tangents increase in length very rapidly and pass beyond the length of the blade at a fraction above 89 degrees, and if continued on up to 89 degrees, the co-tangent would be 57' 3⅛" long. In other words, it would require a square with a blade 57' 3⅛" long to represent the co-tangent for 89 degrees.

The question then naturally arises, how can the angle for 89 degrees be obtained below 12 on the blade? Simply by taking its complement, which is 1 (90 — 89 = 1) and the tangent for this is shown to be .21". Then 12" on the tongue and .21" on the blade will give the angle for 1 degree and also for 89 degrees; the blade giving it for the former and the tongue for the latter. In other words, these proportions give the same result for 89 degrees as the square would be with the 57' 3⅛" blade. The only difference is, in one the tangents and co-tangents are reckoned as being on one side of the square, while in the other the tangents are reckoned on the blade, while 12 on the tongue is made to represent the co- or complement tangent.

Thus, for 88 degrees it is reckoned in the same way as for 2 degrees, 45 degrees being at the half way place between the reckoning points is naturally equal on the square as 12 and 12; consequently either side of the square gives the same results. But if the angle for 46 degrees is desired, then we must look to its complement, 44, which is shown in the table to be 12 and 11.58, but the angle sought will be on the tongue.

Fig. 3. Table of Tangents in Connection with Steel Square.
side of the square instead of the blade, as in the case of the latter.

To illustrate this point further, we will take 30 and 60 degrees. These represent the angles to take on the square for the hexagon and triangle respectively, and in Fig. 1, both the tangent and co-tangent are shown and, as it happens in this case, that the degree and its complement both represent angles that give the miter for regular polygons, either square will give the angle for the miter for either the hexagon or triangle by simply reversing the cuts on the square.

In Fig. 2 is shown a proof of this by applying the squares to a straight line, and it will be seen that the blade and tongue coincide with each other.

Now, we are aware that some may wonder what all this has to do with roof framing in general and what good is it anyway. To such, will say that it has all to do with it, and that when the principle is once mastered, the whole subject of obtaining angles with the aid of the steel square is mastered. But we shall not go further at this time.

Next month we will take up where we leave off now. So far we have only laid the foundation upon which to build. We leave it to the student reader to think about it until we come again.

Note.—In our last article, we sought to correct an oversight on our part in a previous article, where we carelessly omitted the figure 1 in front of 63 7/11, but when it came out in the last number, the printer’s devil, or someone else made it read 167 7/11. We regret to call attention to this again, but feel that it is due all concerned to make correction as far as possible.

Valuable Discoveries Made by Forest Laboratory

The experimental work carried on at the Forest Products Laboratory, maintained by the Forest Service of the U. S. Department of Agriculture in co-operation with the University of Wisconsin, at Madison, Wis., gave results during the past year which, like the results of previous years, have a direct interest for the various industries which depend upon wood in some form for their raw material. To benefit both these industries and the consumers of their products by bringing about a better and more economical use of wood in all its forms is the object of the Laboratory’s experiments.

A New Classification for Southern Pines

As one result of the Laboratory’s tests on American woods, more than 130,000 of which have been made on 113 species, a classification of the southern pines, based upon the density of the wood, was developed by the Laboratory, and has proved a very good criterion of quality. Aside from the matter of defects, the strength of timber is proportional to the dry weight of the wood, that is, the heavier the wood, the greater its strength, stiffness, toughness, etc. In the southern pines the relative dry weight of various pieces may be judged by comparing the proportion of summer-wood—the darker, hard portion of the annual rings—in their cross sections; and it is this which serves as the basis for the density classification. This density classification has been adopted by the American Society for Testing Materials as part of their standard specifications for yellow pine bridge timbers, and, combined with specifications as to defects also based on results of Laboratory tests, has been put in use by the Southern Pine Association to define a special grade of timbers known as “select structural.” General rules embodying the same principles were incorporated in the building code recommended by the National Board of Fire Underwriters as standard practice.

Dry Kiln Experiments

Several years ago a humidity-regulated kiln, in which a number of the more refractory woods can be dried successfully, was patented by a member of the Laboratory staff, and the patent dedicated to the public. During the year just past the work in connection with this experimental kiln aimed chiefly toward a reduction of the time required for drying, particularly in the case of wood green from the saw. White fir, Alaska cedar, incense cedar, and Douglas fir were the woods used. Green white fir was successfully kiln-dried in 43 hours.

An unusual and uneven shrinkage in certain western woods, red cedar among others, was found to be due to collapse or breaking down of the cells during drying. After this discovery it was possible to apply a remedy which entirely overcomes the trouble. For red cedar the solution of the problem is to keep the temperature below 135° or 140° so long as the cell walls are wet. Redwood exhibits a similar tendency to collapse in drying, and it is probable that this occurs in a lesser degree in nearly all woods.

Improvements which simplify its construction and increase its efficiency were made in the Forest Service kiln. The year saw kilns of this type constructed by one of the eastern railroads and by two lumber companies.

The cause of casehardening and the condition of casehardened wood were studied.

Microscopic Structure of Commercial Woods

A method in advance of any previously used for distinguishing the woods of longleaf, shortleaf, and loblolly pine was developed by the Laboratory. Differences in size of the pith and of the second annual ring of growth in the three woods form the chief basis for the method of identification.

The Laboratory’s collection of photomicrographs was increased by 75 views. The great demand for these prints has exceeded the Laboratory’s ability to furnish them.
Sap Stain

The loss to lumber manufacturers caused by sap stain is estimated to be $7,000,000 annually. The Laboratory has discovered that in treating lumber to prevent sap stain, sodium fluoride gives results far superior to those obtained by the soda dipping process. Tests made in co-operation with lumber companies showed that in solutions of equal strength sodium fluoride is at least twice as effective as sodium bicarbonate. Besides preventing stain, sodium fluoride tends to protect the wood against decay-producing fungi.

Creosoted Wood in Silos

Investigation by the Laboratory has shown that creosoted wood can be used in silos without contaminating the ensilage. This fact is important to lumber manufacturers, since silos furnish a promising field for the utilization of certain kinds of timber.

Fireproofing Tests

An experimental fire house was built at the Laboratory, in which it is possible to duplicate conditions existing in modern offices. Several test fires were made in this house and the results promise to yield valuable data regarding the extent to which wood constitutes a fire hazard in modern buildings. Fire tests were made of 18 commercial paints designed for exterior use, of which only 5 proved to have fire-retarding properties. Unpainted test pieces used for comparison resisted ignition 43 seconds, while the 5 pieces just referred to resisted for periods varying from 1 minute 3 seconds to 2 minutes 10 seconds. Four interior paints tested gave good results in comparison with untreated wood. Patents were applied for, to be dedicated to the public, on a new fireproofing compound developed by the Laboratory.

Relative Resistance on Untreated Wood to Decay

About 70 species of hardwoods and 40 species of conifers were tested to determine their relative resistance to decay. Tests were made both in a specially constructed fungus pit and in culture jars. The pit tests are not yet completed, but the jar tests showed that the sapwood of all conifers, except western red cedar, western juniper, California juniper, and arborvitae, lost 60 per cent or more in weight during 12 months. Eastern arborvitae proved the most durable of the conifers, losing only 7.7 per cent of weight. The hardwood of all spruces, hemlocks, firs, and lodgepole pine also lost more than 60 per cent in weight. The resinous hard pines varied widely, the loss in weight ranging from 17 to 58 per cent. Eastern arborvitae, western red cedar, western juniper, Port Orford cedar, and California bigtree proved highly durable, the junipers and arborvitaes particularly so.

Investigations to determine the effect of resin in wood upon its durability made definite progress, and indications are that the results will conflict with prevailing opinions.

Fungicidal Properties of Wood Preservatives

About 1,900 tests on the toxic properties of wood preservatives were made during the year. The majority of substances tested were coal tar and water-gas-tar distillates. Considerable variation was found to exist between different samples of the same substance, showing the need for standardization of the products.

Studies of the ability of fungi gradually to increase their resistance to toxic agents yielded some interesting results. It was found that a one per cent concentration of a certain wood preservative is sufficient to kill Fomes annosus when the fungus is taken from a culture grown on a preservative-free media; but that when grown through four generations on gradually increasing concentrations of the preservative, a 3 per cent concentration is required to kill it.

Lumber Yard Sanitation

Further field studies were made of conditions in lumber yards to determine the extent and cause of the decay existing in stored timber and the relation of this to outbreaks of rot in buildings. These studies show that an exceedingly bad condition exists in many lumber yards in respect to the sanitary handling of timber. The majority of dealers do not realize the full danger in supplying infected stock to the building trades, and take few precautions to maintain their material in sound condition. The "house fungus" (Merulius lachrymas) of Europe was found widely distributed in lumber yards in the eastern United States. Since the same fungus is often found in buildings in the same localities, it is probable that it is introduced in infected building material. It is hoped that through these investigations of the Laboratory the lumber dealers of the United States will give greater attention to keeping their yards in sanitary condition.

Production of Low Grades and Waste

A great amount of information showing the extent to which low grade lumber and wood waste are produced in the United States, and the extent to which they are being utilized, was collected by the Laboratory for incorporation in a report on the lumber industry to be made by the Forest Service. For the same report there was compiled the most comprehensive data yet secured on the extent to which substitutes for woods are being employed.

Value of Lumber from Turpentine Trees

Mill scale studies to determine the effect of two years' turpentining by the cup and gutter system on the quantity and quality of lumber produced by the cupped trees were completed. These tests, involving an exhaustive study of 164,000 board feet of lumber, show that turpentined trees produce lumber ranging only from one-half of one per cent to one per cent less in value than that of unbled trees—an insignificant depreciation. No difference was found in the quantity of lumber produced.
Removing a Brick Smoke Stack

CHAPTER FIVE OF MOVING METHODS SERIES—HANDLING SAFELY A TYPE OF CONTRACT THAT OFTEN PRESENTS ITSELF.

In this article I will deal with the wrecking of a brick smoke stack. A great many contractors throughout the country every once in a while have this problem come up before them. Some of these stacks are left after a fire has destroyed a building and the stack is condemned and must be wrecked.

There are a good many ways in which to go after this particular work, but I am going to describe a specific way in which I went after this particular job.

This brick smoke stack was at the Quaker Oats plant. The building caught on fire and was very badly damaged and the stack was condemned. It had to be removed and the only way it could be thrown was on a straight line or path on account of hoisting engines, and the streets being within 100 feet—and also a row of houses being within 100 feet adjoining the street.

The five-story brick building was built up and adjoining the stack; and it was necessary to cut loose from this before making the throw.

The stack had three-foot brick walls at the base; the base diameter was 90 feet, and the height of stack was 165 feet.

On account of the limited space in which to throw the side away from which I wished to throw, the same to throw it on the right spot without any damage to adjacent property and machinery.

I first cut out one-third of the stack at the base, on the side away from which I wished to throw, the same as a wood chopper cuts a tree. The cut out I filled with jacks, so that I did not lose any strain and held
same so that it would not shear.

Figure 1 shows a good, clear-cut view of the stack and the condition in which I had to throw it. Figure 2 shows the jacks that I set at the rear side of the stack. Before we started to pull we wound up on these jacks a little bit to get a strain on the off side. Figure 3 shows the side to which the stack fell, where I had cut out bricks and also shored up between near the line of break with jacks and timbers.

It was necessary to oscillate or tip the stack at a certain angle so that the fall would be correct. I put in steel beams crosswise at the base of the stack, where I cut in to carry the weight of the stack while oscillating to throw it in the proper direction. I took two fir timbers 14 by 16, 60 foot long, and battered them up on each side of the stack, cutting a hole in the stack about 50 feet above the ground level so as to brace these timbers. The reason I did this was to steady the stack and make it fall absolutely in the direction in which I wished it to go. The timbers were held out about 14 feet at the base to give them plenty of leverage.

I then sent a man to the top of the stack and had him attach a wire cable, which was then brought down from that point to within 50 feet of the top in four separate hitches. Then we took these lines that were down at the ground and connected them up with the portable capstan about 800 feet away.

There was a New York and also Chicago engineer on the job, working for the Quaker Oats Company, at the time I wrecked this stack; and they made a bet with me that the stack would double up, and that I would not be able to throw it over 150 feet from the base. We made the bet, and I bet that I could throw it at least 155 feet from the base. After the stack was thrown it measured exactly 158 feet—this was all due to the fact that the throw and the cantilever were positive and got the full benefit of the entire falling of the stack, with the exception of a few feet.

Figure 4 shows the stack falling. The dark mass at the top is the soot and part of the top plates of the chimney falling, but the main part, you will note, is going over in nice shape.

There is another and easier way of handling this job of wrecking a chimney, where the ground and the space are not quite so limited. That is to cut in at the base of the stack, on the side to which you wish to throw same, and crib it up good with blocking, keying up just as fast as you cut out, using 12 by 12-inch blocking and tapering same with oak wedges with steel plates above them; and after all is in and everything is keyed up and one-half of the stack is cut out, you will have a solid mass of blocking. Then pour kerosene on the blocking, touch a match to it, and in a surprising short space of time the blocking will all be burned out and then the chimney will topple over. The blocking burns very fast on account of the draught of the flue. It only takes a matter of five or ten minutes until this blocking is all burned out and the chimney falls. This makes a very cheap way of handling a deal of this sort, and will certainly throw a chimney in quick order.

In my next article I will deal with the shoring of an ell-shaped building, under which the owner wished to place a foundation and cellar. This problem is a real one from a man located at St. Louis. It is a problem that comes up every once in a while, and I am sure that the answer and drawings will be of interest to the readers.
THE day of the store show, that is, of the small movie located in a re-modeled store space, is practically past. The moving picture business has out-grown that. It is requiring much larger seating capacities to hold the ever-growing number of moving picture fans.

This being the case, we find a rather active and urgent building situation in connection with the design and construction of moving picture theaters. The managers have learned that the people prefer to go to the new, brightly lighted and well ventilated places, and that such seldom lack for patronage.

The design illustrated herewith is for a combination moving picture and vaudeville theater to seat 511 in opera chairs. The building has a frontage of 40 feet and runs back from the street 126 feet. The front is architecturally pleasing, a strong contrasty effect that attracts attention and brings business. It is a front that would be a real addition to any business street. Dark colored face brick, white terra cotta trim, and a liberal amount of plate glass are the materials used.

The operator's room is located above the lobby. It is of fireproof construction, having floor and ceiling of reinforced concrete and walls of 6-inch terra cotta tile. Fireproof steel doors shut it off from two storage rooms which are also located on this mezzanine floor.
A Modern Small Theatre

A slope of 5 feet in 87 is given to the auditorium floor so that the line of sight of every spectator is unobstructed.

Ventilation is very important in a moving picture theater, more so than in any other type of amusement hall or public building. This building has three galvanized iron roof ventilators which carry off the warm bad air as it rises through the eight grille openings in the ceiling.

Since this building is planned for both moving pictures and vaudeville, there is a commodious stage with a dressing room at each side. Where the vaudeville feature is not desired, the building could be cut off just back of the orchestra pit and finished with a plaster screen.

Note that four exits are provided in addition to the two main entrance doors. All of these doors, of course, swing out.

Motor Trucks Cover More Ground

"Not only in the large cities but in the small towns motor truck delivery is accomplishing wonders through its ability to cover more ground than horses," says Sales Manager G. C. Frey of the Kissel Motor Car Company.

"The Hudson Doughty Lumber Co., of Newton, Kan., says that truck haulage has increased its zone of trade 15 miles in each direction.

"Henry C. Snowden, hardware dealer of Media, Pa., states he is covering with his truck 50 per cent more territory than when he used horses. Frank E. Merrill, a box manufacturer of Turner, Me., often makes forty mile cross-country deliveries where he formerly used the railroads. Dozens of similar cases could be cited where trucks are not merely replacing horses but performing entirely new duties."

Courage Warmers Needed

A girl was complaining to her chum of the way her "young man" was treating her.

"Speaking of presents, why don't you give him the mitten?" the friend asked.

"It isn't a mitten he needs, it's a pair of woolen socks; he's got cold feet."
A Modern Small Theatre

Details of Construction of One-Story Theatre, Design No. 6816, Illustrated on Page 64. An Up-to-Date Business Attracting Front is Provided and the Operator's Room is of Fireproof Construction.
Noon Hour Talks by the Boss Carpenter

Talk No. 47. Cantilever Beams

New Series No. 4

The beams that we have been handling in the last three talks,” said the Boss, “were freely supported at each end and could move on the supports if necessary. Later we will consider the same kind of beams with the ends fastened down at the supports in such a manner that they cannot tip up as in the illustrations of the previous cases.

“Today, I am going to show you a beam which is supported at one end only. This type of beam is usually referred to as a cantilever, or cantilever beam. Not only are beams of this kind used as shown in the illustrations of this talk, but also in connection with other parts of a structural member. For instance, if a long loaded beam is supported at two points not located at the extreme ends, that part of the length of the member which projects beyond the supports is in the same condition as the cases shown here. Simple cases of cantilevers are met where short beams project from a wall and support a balcony, or are used for hoisting purposes. If slanting braces are used extending between the end of the cantilever and the supporting wall, these cases do not apply, since the brace forms a support for the free end of the cantilever.

“With cantilevers, as with simple beams, calculations should be made on the basis of strength in bending, horizontal shear, and for the maximum deflection. We will consider each of these conditions in the problems which follow.

“The loading will be taken as uniformly distributed in the case of a projecting balcony supporting a floor, or as concentrated at the end, as in the case of a member used to support a post or load at the end, as in hoisting. A combination of the two cases will be shown to illustrate the general principle of design.

“In the calculation for strength we will use the general beam formula \( M = \frac{pl}{e} \), which we considered in Talk No. 44. The value of \( M \) at the wall will vary with the loading in this case, as in previous cases. If the cantilever bears a uniformly distributed load, the maximum \( M \) will equal \( \frac{1}{2}WL \), where \( W \) is the total load on the cantilever in pounds, and \( L \) is the length of the member in inches. The value of \( W \) may be found by multiplying the length of the cantilever in feet by the load per foot of length, or if the member is one of a number equally spaced along a wall, each cantilever will carry a weight equal to that on the floor area supported by that cantilever. This area is found by multiplying the length of the cantilever in feet by the distance between centers of cantilevers in feet. The area in square feet multiplied by the load on the floor in pounds per square foot will give the total load on the member, or \( W \). If it is desired to take into account the weight of the floor and beam, an allowance can be made by slightly increasing the floor load.

“If a single load is supported at the end of the member, the value of \( M \) will be \( PL \), where \( P \) is the single load in pounds and \( L \) is the length of the cantilever in inches.

“A uniformly distributed load and a single...
load at the end will give a value of the maximum $M$ equal to the sum of the two values given above, or

$$\frac{Wl}{2} + Pl.$$ 

We will take a case similar to Fig. 4A, in which a series of timber cantilevers 4 feet long and spaced 6 feet on centers support a floor. Assume that a unit bending stress of 1,200 pounds per square inch is to be used for the strength of the timber, and find the amount of uniformly distributed load that could be held by this platform with safety. We will assume that the timbers are 6 inches by 8 inches, and that they run full size. Since the unit loading is the unknown quantity in this case, we will have to use our value of $M = \frac{1}{2}Wl$, with only the value of $l$ expressed as a number. We know that $p = 1,200$ from the problem; also that

$$I = \frac{1}{12}bd^3 = \frac{1}{12} \times 6 \times 8 \times 8 \times 8$$

$8 \times 8$ from our previous talks. The value of $e$ will be 4 inches, as explained in Talk No. 44.

"Filling these values into our general beam formula,

$$\frac{pl}{e} = M,$$ 

we have $4$ 

$$\frac{1,200 \times 1/12 \times 6 \times 8 \times 8 \times 8}{4} = 3,200$$ 

Solving, $W = 3,200$ pounds.

Since each of these cantilevers will have to support an area of 6 by 4, or 24 square feet, of floor, the allowable load per square foot of floor will be $\frac{3,200}{24}$, or 133 pounds.

"To examine this cantilever for safety in regard to horizontal shear, we will use formula (3a) of Talk No. 46. In the problem above, $S$ will be equal to the entire load on the cantilever, since it has but one wall support. The other values needed to solve formula (3a) will be as described in Talk No. 46. Filling in formula (3a), we have

$$s = \frac{3,200}{1/12 \times 6 \times 8 \times 8 \times 8 \times 6} = 100 \text{ lbs. per sq. in.}$$

By an inspection of the table given in Talk No. 46, it will be seen that this value is within the limits of safety for any of the species of timber given there.

"To find the maximum deflection in one of these cantilevers, we must use the formula
Cantilever Beams

\[
D = \frac{Wp}{EI} \quad (4a)
\]

The letters in this formula have the same meaning as explained in connection with the formulas for deflection given in Talk No. 45. If the material used is long-leaf yellow pine, Table II gives a value of \( E \) equal to 1,500,000 pounds per square inch.

"Filling in formula (4a), we have

\[
D = \frac{3,200 \times 4 \times 12 \times 4 \times 12 \times 4 \times 12}{1,500,000 \times 1/12 \times 6 \times 8 \times 8 \times 8} = .12 \text{ inch.}
\]

Since this value is less than \( 3/8 \)-inch, the deflection would not be a serious matter.

"For the next problem, we will find the amount of load that could be carried at the end of a 6-inch by 6-inch timber projecting 3 feet from the wall of a building. We will assume that the allowable unit bending stress for this timber is 1,000 lbs. per sq. in. The value of \( M \) to be used in the general beam formula for this case will be \( pl \), and we will solve for the load \( P \) as in the previous case.

"Filling in the general beam formula, we have in this instance

\[
1,000 \times 1/12 \times 6 \times 6 \times 6 \times 6 = P \times 3 \times 12
\]

Solving, \( P = 1,000 \) lbs.

"Testing this cantilever for the unit stress in horizontal shear, we find from formula (36),

\[
s = \frac{1,000}{1/12 \times 6 \times 6 \times 6 \times 6} \times 18 \times 1\frac{1}{2}
\]

= 42 lbs. sq. in. (nearly).

This value is seen to be safe by the values given in the table of shearing strengths in Talk No. 46.

"The maximum deflection in this case will be found by the formula,

\[
D = \frac{Pp}{EI}
\]

Putting the proper values in this formula and solving, with \( E = 1,200,000, \)

\[
D = \frac{1,000 \times 3 \times 12 \times 3 \times 12 \times 3 \times 12}{1,200,000 \times 1/12 \times 6 \times 6 \times 6 \times 6} = .12 \text{ inch.}
\]

By chance, this value of the deflection is the same as in the problem above, but there is no relation between the two cases. This value is also so small that there will be no trouble from the deflection.

"As a third problem, we will find the depth needed for a timber cantilever 8 inches wide and 5 feet long in order that it may carry a uniformly distributed load of 3,000 pounds, and a single load of 2,000 pounds on a post located at the end of the cantilever. We will assume that this member projects from a solid wall of sufficient strength to hold it, and that the timber is long-leaf yellow pine having an allowable unit bending strength of 1,200 pounds per square inch.

"As stated above, the value of \( M \) in this case will be \( \frac{Wl}{2} + pl \). From the general beam formula, we find,

\[
\frac{pl}{e} = \frac{Wl}{2} + pl, \text{ or,}
\]

\[
\frac{1,200 \times 1/12 \times 8 \times d \times d \times d}{3,000 \times 5 \times 12} = \frac{d}{2}
\]

\[
+ \frac{2,000 \times 5 \times 12}{2,000 \times 5 \times 12}.
\]

Solving for \( d \times d \), we find that

\[
d \times d = 131.
\]

The value of \( d \) which corresponds to the nearest commercial size of timber will be 12 inches, since \( 12 \times 12 = 144 \), instead of 131. Therefore, we will use an 8-inch by 12-inch timber.

"If we test this cantilever for unit horizontal shear, using the sum of the two loads, or 5,000 pounds, as the value of \( S \), we find

\[
s = \frac{5,000}{1/2 \times 8 \times 12 \times 12 \times 12 \times 8 \times 48 \times 3} = 78 \text{ lbs. per sq. in. (nearly).}
\]

This value is within the limits of safety.

"The total deflection in this cantilever will be equal to the sum of the deflections due to each of the loads, or

\[
D = \frac{3000 \times 5 \times 12 \times 5 \times 12 \times 5 \times 12}{1,500,000 \times 1/12 \times 8 \times 12 \times 12 \times 12 \times 12} + \frac{2,000 \times 5 \times 12 \times 5 \times 12 \times 5 \times 12}{1,200 \times 1/12 \times 8 \times 12 \times 12 \times 12 \times 12} + \frac{.05 + .08}{.13} = .13 \text{ inch.}
\]

Again, it is seen that the deflection is a very small quantity.

"Next time," said the Boss, "we will see how to figure the size of the posts or columns used to hold beams in place in a structure."

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Early Morning Sounds

Suburban Resident—"It's simply fine to wake up in the morning and hear the leaves whispering outside your window."

City Man—"It's all right to hear the leaves whisper, but I never could stand hearing the grass mown."

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Double Hung Windows in Brick Veneer Walls

In general, the details of a box frame for windows in a brick veneer wall are the same or at least similar to those for windows in frame walls. The differences are not so much in the shape or size of the several members as in their connection to the wood frame and brick work. These differences are clearly shown in the details opposite as compared to those shown in the plate published in the May issue.

In planning a residence there is hardly any other single detail that has more to do with giving character and individuality to the building than the fenestration. Not only should the shape and size of the window openings be carefully studied to bring them into suitable proportion and harmony to the wall surface about them, but the frames and sash that fill the openings should be given equal care in design that the horizontal and vertical lines of the sash and mullions may be accented as conditions and taste require.

Where the window opening is broad and a heavy mullion is desired, the weights from the two windows may well be contained in the mullion. In that case, Sections B and D show details of the head and sill. Section B also shows the use of brick for the outside masonry sill, while Section D shows a stone slip sill.

In the head of Section D, note that the face of the yoke is 2 inches from the brick jamb. The outside casing is cut short to fit snug up against the iron lintle, as is also the outside stop, which is 1 3/4 by 1 3/8 inches. For the jamb, the lintle would be omitted and the outside casing would extend back equal to the ground casing as indicated by the dotted lines, the first stud being omitted, which would leave 2 1/2 inches for the box. The outside stop would then extend up to the brick work, making it 1 3/4 by 2 inches, or the face of the pulley stile would be set 1 3/8 inches from the brick jamb.

Where the window opening is too narrow to allow a box mullion, Sections A and C show details whereby the sash are hung from weights confined in the two side boxes which then permits of a narrow mullion, Section H. This detail will require overhead pulleys, which are readily obtained from different manufacturers of hardware. The head section of C makes allowance for these overhead pulleys by framing out a space equal to that allowed in the box for the weights. In other respects, the details for both types of windows are the same.

The sill section of C shows a stone lug sill and the best method of fastening the wood sill to it to insure a weather-tight joint. Into the stone sill 1 inch back from the outer edge of the wood sill a groove is cut 3/4 inch deep by about 3/8 inch wide at the top tapering to 3/16 inch at the bottom. Into this groove a galvanized iron spline 3/8 by 1 inch is securely cemented and let into the wood sill 3/8 inch. This gives a very satisfactory sill construction and with the drips cut in the lower sash and the stone sill all chance of water getting into the frame is minimized.

Section H shows one way of forming a narrow mullion to go with the details of Sections A and C. The frame proper is made from 1 3/4-inch material, which should be thoroly seasoned and kiln dried or there will be serious danger of it warping and causing the sash to bind. If the design will permit, the mullion may be widened 3/8 inch and instead of being made in one piece, be built up of three pieces each 3/8 inch. In that case the frame of Section H would be divided and a 3/8-inch piece or core inserted. This would give a very stiff construction and lessen any chance of its warping out of shape.

CORRECTION—I would like to call attention to an error in the last article. The last line of the fourth paragraph reads that the sash are but 3/8 inch thick. This should have been 1 1/8 inch.

E. T. Huddleston, Architect.

Durham, N. H.

No Danger

She was very much in love with him, and one evening, while they were alone, she asked:

"Frank, tell me truly; you have kissed other girls, haven't you?"

"Yes," replied the young man, "but no one you know."
Details of Double Hung Windows in Brick Veneer Walls as Designed by E. T. Huddleston, Architect. Description and Explanation are on Page Opposite.
Beef Cattle Feeding Shed

A shed and windbreak, designed for the northwest corner of a barnyard, is shown here.

It is intended as a shelter and feeding shed for beef cattle, preferably connected with the silo and storage barn by means of a feed carrier arranged conveniently to save labor.

There is to be a low down manger all around the shed placed against the back wall, which is intended for the feeding of silage and grain.

There is a concrete foundation wall under the shed, and there are concrete piers to support the posts. Besides the concrete wall, the floor of the shed and the square of the barnyard in front of the shed is laid with concrete the same as a sidewalk is built by making the concrete in blocks five feet square.

Portable feed racks are placed on this concrete floor, which are filled with roughage from the storage barn by means of overhead feed carrier.

Some farmers build feed racks between the posts, skipping a space here and there to permit the cattle to enter and leave the shed. A good deal depends on the nature of the cattle. If they have no horns, and if they have been handled and are tame, there may be no objection to blocking up part of the front of the building, but on general principles separate feed racks are better. At the time of hauling manure it is a great satisfaction to drive in and out between the supporting posts without any unnecessary obstruction.

A good deal depends on whether large numbers of cattle are kept, or the farmer simply raises a few calves each year and feeds them during the winter for growth.

Drainage is made toward the south or east. Always the high side of a cattle-feeding yard should be towards the west or north.

A Corner stock feeding shed, Design No. A323, each side measuring 44 x 16 feet. Such a shed gives the animals extra protection.
**Economy Farm Barn**

A combination farm barn and dairy stable is shown in Design A312. It was built for a farmer on a twenty acre farm near a good sized town. He keeps a herd of 16 pure bred and high grade Brown Swiss cows and has some young stock which is cared for in other buildings.

This particular barn was wanted for the cows giving milk and it is his intention to confine the actual milking force to the 16 stalls shown in the floor plan. Dry cows and other cattle have no place in the dairy proper. He wanted stabling in one end of the barn for work horses, which accounts for the two single stalls and one double stall in the horse end of the barn.

This double stall, by the way, is intended for a box stall when necessary, for either horses or cows. The two doors make it very convenient to use either way. The little girl claims this box stall for the use of her riding pony when it is not in use accommodating large horses or cows that the older people consider more important.

Careful work was done in the dairy end of this stable to provide the best accommodation possible for the milch cows. The cement floor, together with the mangers, gutters, etc., was very carefully laid with a high grade mixture to make a permanent floor.

The cow stalls are 3 feet 3 inches in width, and 4 feet 8 inches in length from the manger curb to the gutter, which is large enough, because the stalls were measured to fit.

Good work also was done in building the silo and the feed room which connects the silo with the dairy stable feed alley. The silo chute and the hay chute both deliver into this little feed room between the silo and the stable, so that silage and hay are both handled in the most economical manner and without dumping directly into the stable.

Builders of modern dairy stables make a strong feature of separating the feed room to keep out dust at feeding time from the stable proper to prevent the introduction of objectionable bacteria thru the medium of floating dust.

The inside of the cow stable is carefully finished to facilitate cleanliness. Every feature in the careful production of high grade milk and cream was considered in laying out the plant and in following up the details of construction with a view of carrying on a high grade dairy business.

The owner of these Brown Swiss has a select line of customers, who understand that he is particular, because he admits it in his advertisements. He says out loud that he is a crank on cleanliness, so that his customers are satisfied to pay him 2 cents a quart above the regular going price to get such a rich, high grade dairy product.

The ventilating system is part of the dairy equipment and an important part it is. The stable is built practically air tight. All the air that enters comes in thru the intake flues. Practically all the air that escapes goes out thru the ventilating flues, so that the intake and outtake of air means health to the cows, as well as cleanliness in every branch of the work. It is impossible to keep a stable clean when it is filled with foul, nasty air.

**Floor Plan of Barn No. A312.**

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Economy farm barn to house 16 cows and 4 horses. Big Gambrel Roof Hay Mow and Silo give plenty of feed storage space. We can furnish complete set of blueprinted working plans and typewritten specifications for only $8.00 per set. When ordering, ask for Design No. A312.
Doubling the height of a double corn crib increases its capacity three times; because this rule doubles the size of the two corn cribs and adds grain bins between overhead.

The same foundation supports the building and the same roof covers it, and it is easier filled because the shoveling is done by proxy (gas engine or horse power).

The new corn crib elevators will elevate a wagon load of small grain or ear corn from the elevator feeder or hopper to the storage bins overhead, or into either crib, in less than five minutes. And it is not necessary for the driver of the load to wait that long; for he can pull the tailboard, dump his load into the elevator hop-
way for a feeding floor after the harvesting, husking and threshing is done. It may be desirable in that case to make a smooth floor without a pit and to use a boot leg elevator with a hoisting jack to lift the front axle of the loaded wagon so the load will dump quickly.

The hoisting takes two minutes and it takes one minute to lower away. It would be necessary to make the driveway 12 feet high when the front end of the wagon is to be raised high enough to dump the grain into a bootleg. But the floor may be used all winter as a clean, sanitary feeding floor with feed handy on both sides as well as overhead.

There are jaw clutches and friction clutches, speed jacks and worm screws to run fast or go slow so that any kind of adjustment may be made to any kind of elevator, to handle all sorts of grains in large or small quantities, and the outfit is permanent for use year after year.

So it has come to pass that the most popular new style farm building is the two-story corn crib with grain bins upstairs. When one such building is built in a neighborhood others are sure to follow because farmers are quick to adopt labor-saving buildings and quick-acting machinery. In this case it is a double saving because modern grain elevating machinery made these two-story corn cribs profitable by doing the shoveling for almost nothing, thereby saving nearly a cent a bushel on corn and practically the same amount on other grains. The saving on ratage is greater.

Our modern corn crib and granary, as shown by these illustrations, is rightly proportioned and constructed to store safely both ear corn and small grains to the best possible advantage in the least expensive way.

The building is 26 feet in width by 36 feet in length and it is 16 feet high to the plates. The corn cribs are 8 feet wide and because of the roof slopes they average about 22 feet in depth and they extend the whole length of both sides of the building. They hold about 4,300 bushels of corn.

The cribs are well ventilated by using corn wire mesh inside of the studding and the corn is protected from storms by nailing 1 by 6-inch crib siding on the outside. These strips are spaced 1 inch apart. The driveway thru the center of the building is 10 feet wide and 12 feet high. Over the driveway there are three grain bins 10 feet in width, sided up to the rafters. These bins hold 3,800 bushels of oats weighing about 121,600 pounds, or say 48 pounds on each square foot of bin floor surface. This weight is supported by 2 by 10-inch studding placed 12 inches apart on centers. The studs reach up from the wall sockets in the concrete foundation to the purlin plates, except in the center of the building where they extend on up to form the ends of the cupola.

The cupola is made large enough to accommodate the largest elevator head, and the height is sufficient to chute the ear corn, or small grains, to the furthest corners of the bins and cribs.

Water in Cellar

(Continued from page 37.)

There should be eave-troughs on the house so that all water from the roof will be carried away from the wall unless it is run into a cistern. It is this water from the roof which works down thru the wall and into the cellar.

In addition to the work on the outside of the cellar you may dig a trench around on the inside of the wall and perhaps one thru the middle. These should be filled with stones or have tile in them and should be connected with the drain outside.

You need a good cement floor, slanting toward some one point where there is a tile thru the wall to carry off any water which might get on top of the floor.

John Upton, La Fargeville, N. Y.
EVER since the Collingwood, Ohio, school fire catastrophe, there has been a growing tendency in public school planning toward the ground floor. The old style four-story and high three-story building is practically a thing of the past, being supplanted now by the two-story and high basement type, and in some districts by the one-story school.

The new high school building just now approaching completion at Antioch, Ill., is an example of the one-story type. It was designed by the well-known schoolhouse authority, Mr. G. W. Ashby, of the Chicago architectural firm of Ashby, Ashby & Schulze. The accompanying photograph gives a good idea of the exterior appearance and a glance at the floor plan diagram will show several interesting features of the interior.

You will notice that there are no stairs for the pupils to climb; no danger of panic or accident in case of fire. In fact, the fire hazard is small, since the boiler room is entirely outside the building proper.

Antioch is a town of some 2,000 people. This building will serve both as a high school and community center. The study rooms are planned to accommodate 100 pupils. Every class room is arranged so that the light comes to the pupils from the left side. In the rooms were pupils sit more than 20 feet from the windows skylights are provided. In fact, it is thru the liberal use of roof lighting that this one-story type of building has gained such headway.

The auditorium in this building—used also as gymnasium—is especially interesting. It is on the vestibule level six steps lower than the corridors and school rooms. Accordingly the corridors serve as balconies to the auditorium, so that the auditorium capacity is fully 50 per cent larger than would otherwise be provided.

Plies a Dangerous Trade

"Well, Dinah, I hear you are married."
"Yassum," said the former cook. "I'se done got me a man now."
"Is he a good provider?"
"Yassum, he's a mighty good pervided, but I'se powerful skeered he's gwine to get kotchd at it."
What Constitutes Good Plumbing in Your Home?

IN TWO CHAPTERS—CHAPTER TWO

By C. F. Herington
Sanitary Engineer

(Continued from the April Issue.)

Piping

Now a word about the piping which is to be used in the plumbing system, as there are a number of kinds with a use for each, such as galvanized iron, black wrought iron, brass, lead and cast iron soil pipe. For the sewers and drainage lines in the house, cast iron extra heavy soil pipe should be used; this pipe comes in 5-foot lengths with a hub on one end and a bead on the other, the bead fits into the hub end and is packed tight with oakum and filled with hot lead, which is hammered or caulked into the joint, making a joint which is impervious to air or water. The drainage lines outside the house may be of tile with cemented joints all the way to the sewer in the street, or to the sewage disposal system, if there is one. Standard weight or coated pipes should not be used, as the coating is apt to hide such defects as sand holes and thin spots in the pipe, which will cause lots of trouble later on. For all underground work use extra heavy cast iron soil pipe, as it has been found that wrought iron pipe will rust and deteriorate very rapidly.

For the hot water lines it has been the experience of architects, plumbers and others that brass pipe is the best to use and will last a great deal longer than galvanized iron pipe, which is steel or iron pipe coated or galvanized with zinc to protect the body of the pipe from rusting from the action of the water. For with hot water the pipe expands and contracts with the heat, and brass will take up this expansion very readily, while the galvanized iron coating cracks and peels from this cause, and soon becomes useless as the water discolors and rust forms inside of the pipe. It has been found necessary to remove galvanized iron pipe where used for hot water lines in less than five years; while brass pipe has been in service for over twenty years and longer. Of course, brass pipe is much more expensive than the galvanized iron, but it is without a doubt the cheapest to buy in the long run.

For cold water lines, galvanized iron pipe is satisfactory.

Lead pipe is claimed by the manufacturers to be very good both for hot and cold water lines, for several reasons; first, because lead pipe comes in lengths of sixty to eighty feet, necessitating but few joints, which are made by beveling one end of the pipe and expanding the other end, then wiping the joint with solder, thus practically fusing the two pieces of pipe together and making one continuous line of pipe, while in the iron pipe threads have to be cut, leaving rough edges to obstruct the flow of water. It is also claimed that iron pipe rusts badly enough when in constant use, but when it is turned off and drained and then turned on again it is much worse, as rust forms in scales and is pushed along the pipe until it accumulates at some bend or other fitting and will in time close up the pipe.

For vent pipes, ordinary black wrought iron pipe is all that is required.

At some places there is used for drainage lines genuine wrought iron pipe, with screwed cast iron fittings; this kind of pipe is used largely for high buildings and other places of like character, as the pipe is furnished in longer lengths than soil pipe and is also more quickly erected in place, as the pipe can be measured and cut to length in the shop and goes together on the job like steel work.

Fixtures

When it comes to selecting the fixtures to be purchased for your home, do not stint yourself; but select the best that money will buy, for it shows very poor judgment and poor economy to save money in the first cost and pay out the difference in plumbing bills for repairs every year. It is also much better to have only a few fixtures and have them constantly in use, than to have a number of fixtures for show and not used, for fixtures not in use are a menace to health from unflushed overflow pipes and evaporated traps.

In selecting a water closet, you can choose a washout closet which consists of a basin and trap built in such a manner that there is a small body of water in the basin which is separate from the trap. This is a cheap closet and sanitary in every way, but is inclined to be very noisy in operation. A siphon closet is one in which the contents are removed by siphonage, and these closets are almost noiseless in operation, and
there is at the present time a siphon-jet closet on the market which the manufacturers claimed to be absolutely noiseless in operation which will appeal to a number of people. There is a choice of a low or high tank for the closet, which is a matter largely of taste, as there is practically no difference in their manner of flushing. A closet tank usually contains about eight gallons of water, which is used in one flushing, and bear in mind that in no case should your water pipe be directly connected to the closet except thru this flushing tank or a flush valve, so as to be sure and prevent any danger of odors backing up into the water mains.

For the bath tub there are but practically two styles or shapes to choose from, the “Roman,” which slopes at both ends, and the “French,” which slopes at one end. As bath tubs are not subjected to hard usage, there are a number of materials, such as enameled iron ware, porcelain enameled and vitreous ware, which are all satisfactory. One of the best arrangements in placing a bath tub is to have what is known as the built-in bath. This bath is placed in the corner and as the base reaches the floor, there are no corners or legs to collect the dust; also it makes a very nice appearing bath. Do not, by any means, use a copper or tin-lined bath and built in with wood, as they have been condemned as unsanitary.

For the lavatory there are so many styles and kinds that it is simply a matter of taste for the beautiful, except that all the fixtures in a bathroom should harmonize one with the other and with the tiling, for it is best to have the walls and floor tiled, not only for its appearance but for its utility.

In the kitchen no money should be spared for show, but all spent for utility, as the kitchen requires the most durable fixtures in the house, for they receive almost constant and hard usage. Provide a sink either of enameled iron or of porcelain ware, the latter is claimed to be the most durable, and is of course the most expensive; see that there are drain boards on each side of the sink, and last of all, have good faucets placed on the fixture, for faucets are the cause of many annoyances to the lady of the house, and as there are so many faucets on the market that are utterly worthless, it pays to get the best.

A pantry sink is considered by some as a luxury, and perhaps they are, as a good pantry sink in German silver or white metal will cost about $200.00 to install, but for washing glasses and fine china they are indispensable.

For wash trays the best material to use on account of the hard usage to which they are subjected is the solid porcelain ware, as it will not crack or break if the wringer falls into the trays, while the enameled ware and soapstone will in all probability, thereby leaving a crack and an opportunity for rust and germs to collect and ruin the clothes.
Better Buildings in Rhode Island

Perryville, R. I.

To the Editor:

I am truly glad that we brethren can have some space in the American Carpenter and Builder columns. I have been in the family some time and greatly enjoy the magazine. I have noted with interest accounts of how to work fast and the frequent expression at the close of letters, "Yours for Better Building."

One man said recently that competition was so strong that better building was out of it. Indeed, many jobs are carried with a rush that does not admit very nice joint fitting. The price is cut so fine that frequently material is not the handsomest, in fact, not quite up to specifications.

I am sending photograph of a residence frame in Peace Dale, R. I., which, though plain in design, will be when complete, as good as anything on High Street in that town. I want to give different sketches of this house in two or three issues of the paper, so will go thru as the work progresses.

The frame is of as straight spruce and well seasoned as I have ever used in my many years of experience. Every part is

cut to fit in all respects, and spiked and nailed without slighting. When the frame was up it had much less vibration than many structures of heavier timbering. Our under floors, first and second story are cypress, of almost clear quality. The cellar wall is of broken block stone, 22 inches thick at base of wall and 18 inches at sill line. I won't take too much space this time, but I want to give my brother readers in a few issues some idea of what the old man does in certain cases along the line of better building.

W. R. CARD, Contractor and Builder.

A Good Drawing Table

To the Editor: Martinsville, Me.

I enclose check for $2.00 to renew my subscription to your valuable paper, which has become a very close friend of mine. To say that I enjoy its monthly visits is expressing it altogether too mildly. I am beginning to feel that I can't get along without it, as each month it seems to grow better and better, and I feel that I must congratulate you on the good things you are putting into our hands each month.

I have noticed in nearly every issue that some brother carpenter has contributed something, and so I am sending a photo of a drawing table which I have just completed and which I find very convenient, and if you have space to spare, you may use it.

Wishing you unlimited success in your labors for us carpenters, I am.

G. N. BACHELDER.

A Help to Young Builders

To the Editor: Wellsville, N. Y.

It is with pleasure that I enclose my renewal to your magazine, also the names of two new subscribers.

I highly appreciate the benefit I have derived from the pages of the AMERICAN CARPENTER AND BUILDER, and heartily recommend it to any one wishing to become more familiar with the building business. It made possible my undertaking work at a much earlier date than I could have done without the instruction so gained, having built the two houses aggregating about $5,000, the summer I was 21 years old. I enjoy each and every magazine, and intend to take it as long as I am in any way interested in the building trade.

C. P. LUDDEN, Carpenter and Builder.

Real Ventilation Assistance Offered

To the Editor: Owatonna, Minn.

In looking thru your May issue, on page 110, we find a question asked by one of your subscribers, Why does it sweat? This is in regard to a corrugated iron garage, and we can very easily answer this question and can also offer a solution.

He says that he has tried ventilators, but he did not say whether he had tried ventilation. There is all the difference in the world between ventilators and ventilation. A ventilator is absolutely nothing but a piece of metal with a hole in it, and air can only go through this ventilator as it is allowed to enter at some other point.

In other words, the ventilator on the building means absolutely nothing unless you get a circulation. This building can be kept from the condition in which it is, provided he will make arrangements to have the air brought in at certain points so that the ventilator can have a chance to work.

If this party will send us a sketch of his problem, we will be glad to offer a solution for it.

KING VENTILATING CO.

A Simple Gambrel Method

To the Editor: Yorkshire, Ohio.

As you urge the subscribers to use the Correspondence Department, would like to show a diagram the way I proportion a gambrel roof. It differs a little from the way Mr. Woods explains to Mr. M. P., of Tyndall, N. Dak., in December number.

I always set purlin in from outside wall one-sixth the width of building and have the purlin post the length of one-third the width of building. This makes a nice-looking roof and an easy rule to remember.

ALVIN L. OEHRTMAN, Contractor and Builder.

Resents Slight at English Bricklayers

To the Editor: Toronto, Ont., Canada.

I am a regular reader and take the AMERICAN CARPENTER AND BUILDER, and I hardly think the article "Educating the Hand" in the January number is a fair one on the English bricklayer, as I have worked in the states of Michigan, Pennsylvania, New York, Massachusetts, Maine, New Hampshire and Rhode Island, also in different parts of Canada, and with nearly every nationality that can lay bricks, but still fail to see the man that has anything on the English bricklayer.

Then about going to England to make a record time. I think the contractors would, or could if they wanted to, find just as good or quick men there. Suppose he paid his men 60 cents per hour. Now, say, the wages there were 10 pence, or 20 cents per hour, he could have put three men on and I think the other man would have to go some to keep up to the three, as he could not expect them to work as hard as the man at 60 cents would. Also, several contractors told me personally that the best and swiftest workmen they had in the States today were Englishmen.
Correspondence Department

Now as regards the trowel. I think the article is quite wrong altogether. Not that I favor the English trowel, for I have and would use no other than a "Rose" trowel, but they would be no use for the old country, as the bricks there are much harder and they would not stand the use a "Brades" trowel does. Now, a long trowel is no use at all for buttering. You must have a short trowel for it. And then, a long trowel does not mean speed. How about the New England States where they use tubs instead of boards for mortar, and use the put and dip style in laying bricks—that is, just enough mortar for one brick? There you have to use an 8-inch trowel and still lay as many, if not more, bricks per day as anywhere in the States.

I think if you could give me the space, I could convince you that it is the same the world over, there is good and bad everywhere, and as regards the trowel, this puts me in mind of the time when I was in the old country. I was at a band contest, and they were talking about cornets of different makes, when a well-known player in the States said: "It was only fifteen years old then. The architect came and stood by, and now knowing me personally said: "Now, Will, my boy, write your name on it." I guess you will know what that means. I tried, and at the age of seventeen years I carried a job thru with twelve million bricks, and had sole control of the job. I have been on this side of the Atlantic nine years, and have never run out of a job, and could have dozens if I could fill them, and I am an Englishman and am proud of it, too.

Now, the reason I write like this is, I don't think things ought to be said to hurt anyone, whatever nationality, as some of the young ones when they read it take it for granted and throw it out on the jobs that the English are slow. That might be, but he is sure. But one thing which is sure is, the job is done by a bricklayer from England, when he comes here, only has to learn that anything will do so long as it is up; but if one does not and they would not stand the use a "Brades" trowel, for I have and would use no other than a "Rose" trowel, but they would be no use for the old country, as the bricks there are much harder and they would not stand the use a "Brades" trowel does. Now, a long trowel is no use at all for buttering. You must have a short trowel for it. And then, a long trowel does not mean speed. How about the New England States where they use tubs instead of boards for mortar, and use the put and dip style in laying bricks—that is, just enough mortar for one brick? There you have to use an 8-inch trowel and still lay as many, if not more, bricks per day as anywhere in the States.

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William A. Pugh.

Two Plastering Questions

To the Editor: Ashton Ia.

Would some of my carpenter friends give their best opinion as to the following questions?

1. Is it best when plastering over lath to let the first coat set long enough so the lath will get a chance to absorb the moisture from the plaster? Will it give the lath a chance to swell enough to prevent the second coat from cracking?

2. How to Enlarge a Pulley

To the Editor: Carnduff, Sask.

I have a 12 by 15-in. face diameter, iron clutch pulley on an engine, belonging to one of my customers, and he wants me to have it larger in diameter.

Can some of the brethren give me an idea how to do this, so as to fix it onto pulley to make a job that will stand up?

W. H. COTTIS, Building Contractor.

Editor—In order to lag an iron pulley in a manner that will hold, while the pulley diameter is increased several inches, you must have some soft, yet firm wood—cypress is excellent—and you must have enough to cover the circumference of the pulley to a depth which will increase the diameter to the figure required.

Fig. 1 shows one of the lags, which may be planed out, in order that the finished lags may be accurate in shape and fit the pulley closely.

To fasten the lags upon the pulley, drill holes for wood screws, coach (lag) screws or for machine bolts or cap-screws, accordingly as the lagging is thin or thick, and the screws can be thrust thru from inside the pulley rim. If the lags are thick, use coach or lag screws. If the fastenings cannot be put thru from the inside, or as in case with a clutch pulley, the bolt holes cannot be drilled entirely thru the pulley rim, then use tap bolts which are let into the lags, holes being bored therein large enough to admit the heads of the bolts with washers underneath and with a socket wrench outside of the bolt heads.

When bolts of this kind are used, there will be trouble in boring the holes in the lags so the bolts will fit fair in the tapered holes in pulley rim. It will probably be necessary to mark the angle of each bolt on the ends of the lags, then tack on a light stick to act as a sight guide for the bit when boring the holes.

The lags must be fitted by means of a plane, when put in place, and made to bear fair against the pulley rim also against adjacent lags, but they should not be glued together. Tap each lag lightly with a hammer, as it is screwed in place and if any lag be too narrow, glue on paper or cardboard to secure the necessary width, but glue the paper to one lag only. The bolts should be about 3/4 or 7/16 in. in diameter for lags up to 3 in. thick, and 3/8 in. in diameter for lags 4 to 5 in. thick. If the lags are not all of the same width, place lags of the same width on opposite sides of the pulley. Lay out the holes in pulley rim after the lags have been fitted. Put two screws or bolts in each lag.

After the lags are all in place, turn the pulley by revolving it at a very low speed and use a very narrow chisel or a pointed tool to remove the excess material. The face may be further smoothed with an iron plane and then with sand paper.

After the lags have been dressed to suit, protect them from the weather by filling them with shellac, applying several coats, giving the ends of the lags all the shellac they will take up. Apply with a rag or a brush while the pulley is revolving slowly.

James F. Hobart, Indianapolis, Ind.
Says to Include a Study Room to Every House

To the Editor: Zion City, Ill.

Some houses are built without much planning. I think in planning a house the object ought to be to make it as useful, convenient and comfortable as possible for the whole family that is to occupy it. I believe that an up-to-date residence for a family should have one room to be used exclusively for a study and school room.

This study room should be fitted up with a blackboard, hanging maps, a drawing table for mechanical and architectural drawing, shelves and drawers for technical books and drawing material. The study room should be properly heated, ventilated and lighted; north windows are good for school rooms. There is so much studying for the school children to do at home with the present school system that they need a convenient room to study in. The parents of the family can also make good use of the room, for they have studying and reading, and accounts to keep if they are to keep up-to-date with their line of business, whatever it may be. We carpenters need a drawing table and instruments for making plans and details of some of the work that we have to do. I think everyone ought to have some knowledge of drawing, it is needed so much in any kind of work. So much for house planning; it isn't much, but every little helps.

I have my own study room at our house, and I draw plans for some houses that I build, and I have my little boys do some drawing, too. I make small T squares for them to use, and make their drawing-boards of wall board.

C. E. Holcombe.

Fast Shingling with Gloves on

To the Editor: Buffalo, Wyo.

I have received and read my last issue of the AMERICAN CARPENTER AND BUILDER. I have not been a member of this family of readers for more than two years, but I hope I will never miss a number in the future.

I wish to say that I live in the best inland town in the United States, Buffalo, Wyoming, which is thirty-five miles from a railroad—but the railroad is coming.

Now I would not dare dispute a man at his own game—not the shingler.

Mr. Friend, Mr. Butler, who is a reader and charter member of the AMERICAN CARPENTER AND BUILDER, and myself did a little shingling this winter. On January 7, 1916, Mr. Butler and I laid, to straight edge and two or more nails to each shingle, 16,225 shingles in 7½ hours—our roof was 86 feet long. And January 21, the same number on another barn in 7 hours. January has been a very cold month here, and we had to work with gloves on. I used a Pearson Shingle Nailer to do the nailing, while Mr. Butler did the laying, and I think in warmer weather we could cut the time (if any of the boys in our class want to go a little faster). We are not shinglers by trade. We just commence from the foundation and do it all.

A. F. Fish.

Well Framed Barn

To the Editor: Gettysburg, Ohio.

Enclosed find check for $2 for my subscription for another year.

Also I am sending you two pictures of a straw barn I put up near Bradford, O. It is 40 feet wide, 50 feet long, 18 feet

Trussed Frame Straw Barn Built Near Bradford, Ohio, by W. R. Inman. Tie Rods are Used Extending from the Plate to the Girders to Prevent Spreading. Each Rafter Forms a Complete Truss and Spans the 40 Feet Without a Purlin Plate.
Another View of Large Straw Barn Near Bradford, Ohio. It is 18 Feet from the Sill to the Eaves and There is 30 Feet High of Unobstructed Space in the Loft.

to the square and 20 feet from the square to the comb. It is 10 feet from the loft to the square or 30 feet to the comb without any timber in it.

As you will see in the picture, I use rods from the plate down to the girders under floor to prevent spreading, and each rafter forms a truss of its own and spans the 40 feet without a purline plate.

W. R. INMAN
Contractor and Builder

To Relieve Stool-Bound Sash

To the Editor: Crookston, Minn.
I herewith enclosing a little contribution to the Correspondence Department for the benefit of my fellow tradesmen, it speaks for itself and needs but little explanation.

All know how vexing it is to have the sash stool-bound. When this construction, the moment you lift on the sash, the stool separates; and yet when closed, it makes a tight, snug fit.

Amel Ness, General Contractor and Builder.

Wants Ideas for Fruit Evaporating Plant

To the Editor: Imbler, Oregon.

As I live in a great apple country, I would appreciate it very much if any of my brothers could give me an idea on a small fruit evaporating plant, which would save a lot of our fruit.

I have taken the "American Carpenter and Builder" for two years, and I find it a great help. I can scarcely wait till they come each month, as I devour every word. I have obtained many valuable ideas from this magazine, which has helped me in my shop this winter. I also have your 12 Volume "Cyclopedia of Construction," which I find is great.

I have just finished reading Bro. G. A. Daw's letter on fast shingling, and I think it is great, for I know that there are many men that can lay their 1,000 per hour, as I have done the same and lifted that sum; I laid 7,750 in 7½ hours in La Grande, Oregon, and laid them right, and I can pick out four or five different men in this part of the country that can lay over 6,000 in eight hours.

Also, I can vouch for Mr. Pierce, as I know what a shingler can do, for I was one before I started contracting and building.

I think we would all be better off if we would break away from the old-fashioned straight edge, and buy a good hatchet and gauge, one of the Underhill style, and a pair of rubber sole shoes, and make a roof jack which can be made in five minutes with shingle nails. With this complete outfit you can increase your work one-third, and make a far better roof.

H. K. LARSEN
Contractor and Builder.

Wants Two Family House Design

To the Editor: Manchester, N. H.

There is no need to tell you what a valuable book the American Carpenter and Builder is. The only suggestion that I could make is that I would like to see some plans for two-family houses.

R. A. GARLAND
AMERICAN CARPENTER AND BUILDER [June, 1916

TRADE NOTES AND ITEMS OF INTEREST

THRU this department the Editors aim to keep builders, contractors, carpenters and architects in touch with what their friends, the manufacturers, are doing for them in new or improved tools and machinery, methods and materials—pertaining to building. These items are offered here as interesting information for our readers; they are not advertising. Take full advantage of the Bargains offered. Write for catalogs and booklets, and become thoroly familiar with these Improvements and New Goods.

A Vise Adjustable to All Positions

Have you ever considered what it would mean to the woodworker if it were possible for him to hold his work just right, so that he could work naturally without undue twisting of his body and with the light shining on his working line instead of in his eyes, and with his work solid and secure so that he might direct his efforts right from the shoulder? This ideal condition is now at your command. You are now offered a tool that stands for real efficiency, truer and better work and a greater output, with less labor. This is known as the "Carpenter Vise." It is so flexible in its action, so powerful in its grip that no position could be desired but that the workman may hold his work there in the best position for convenient working, which means greatest speed with the least labor.

The vise is light enough to be carried in the regular kit of tools yet strong enough to meet the most severe service required by the wood worker.

The weight of the vise complete is fifteen pounds; the body and base are made of semi-steel. Screw, handle and nut are made of carlson steel. Every part is made to a standard gauge so that all parts are interchangeable, and the vises are machine-ground to a fine polish and nicely painted. These vises are guaranteed not to break.

The various photos will give a general idea of some of the many positions in which the vise can be used, but the tool cannot be fully appreciated without being tried out under actual working conditions.

The "Carpenter Vise" is carried in stock by the leading hardware dealers, but if your dealer cannot show you a vise, write the Will-Burt Co., Orrville, Ohio, and they will send you one direct from the factory with the understanding that if, at the end of thirty days you do not find it a big money-maker and you are not perfectly satisfied in every way, you may send it back at their expense; they will ask no questions but will return every penny of your money.

"Carpenter Vise" in Two Positions for Edge Planing and for End Boring.

Jaws Wide Open for Planing.

Set at an Angle for Mitre S awing.

A Firm Hold and Rest for Chiseling.

(Trade Notes Department continued on page 88.)
Residence of Mr. Jas. A. Bonham, Walworth, Wisconsin, kept damp-proof by Medusa Waterproofing.

Cement Products Construction Co., Builders

Make Your Concrete Jobs *Watertight*

If you want your block buildings, concrete floors, side walls, etc., to be absolutely damp-proof you can't afford to take chances in the choice of waterproofing. That's why you should use the kind which has stood the test—and that's why architects, contractors and engineers everywhere are specifying

**Medusa Waterproofing**

the *original* Concrete Waterproofing that has come through every test without a failure. We have scores of letters from contractors testifying to the worth of Medusa Waterproofing as the real means for making concrete absolutely damp-proof. And what's more it keeps the water out *permanently*—not merely for a year or two.

It only requires 2% of Medusa Waterproofing in the mix. We are also making **MEDUSA WATERPROOFED CEMENT**—a combination of the old reliable Medusa Cement and Medusa Waterproofing mixed in the proper proportions at our own factory.

Write today for our booklet "Medusa Waterproofing." It tells you of the great success other contractors have had with Medusa Waterproofing and Medusa Waterproofed Cement.

If there is no Medusa supply house in your town—send us your dealer's name.

**The Sandusky Cement Company**

*Waterproofing Dept.*

*Cleveland, Ohio*
IN 17 PARTS, PART 5. (SEE FEBRUARY, MARCH, APRIL AND MAY ISSUES FOR OTHER DETAILS)

NOTE: Mr. Plym desires this Department to be of greatest practical benefit to contractors and builders. He will gladly answer letters of inquiry, giving any special store front information desired. He has also prepared a very instructive illustrated booklet on modern store fronts which he will mail free of charge to any architect, contractor or builder desiring a copy. Under this heading is appearing a series of 17 typical store front designs, also a series of 17 plates of half size details of Kawneer store front construction.

For a business like the clothing business, where a number of different lines are carried, the ideal front is one which provides display space for each line.

With a front like the above the jogs form natural divisions so that every line can be shown to the best advantage every day.

Neckwear, shirts, shoes, hats, suits, etc., can each be displayed in the proper relation to the others.

The plan provides for two entrances to a corner store, so as to attract the traffic on both streets. It is so arranged that the display is equally visible from either side, and is absolutely symmetrical in design.

The touch of distinctiveness is had by the incorporation in the transom glass of the art glass lettering, and by the use of the contrasting color of the 6 x 6 tile in the entrance.

The up-to-date clothing merchant, doing business behind such a front, need have little fear of competition.

The Kawneer Manufacturing Company will show "up-to-date" KAWNEER STORE FRONT designs, for various other types of business, Groceries, Hardware, Millinery, etc.

The details on the opposite page, drawn half full size, show some of the members which constitute KAWNEER STORE FRONTS. Readers are invited to cut these out, as they will prove to be a valuable reference asset in the future.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Church Buildings Use Keezon Lath

Two new important structures recently put up in St. Louis are the new institutional building for the Kingshighway Presbyterian Church and an addition to the Sacred Heart Convent. In both these operations Keezon Cellular Lath was used, and it is interesting to note the comments of the contractors upon this particular form of construction.

Mr. George F. Bergfeld, President of the Bergfeld Realty Co., which handled the contract, said:

"Yes, we used Keezon Lath and found it so satisfactory in every way that we take great pleasure in commending it."

Mr. P. Rowan, plastering contractor, who did the plastering, even more emphatically lauds the Keezon advantages. He said he had made tests of Keezon Lath extending over a period of a year and a half. He had tried it on walls, ceilings, solid wood columns, beams and channel iron partitions, finding it to be a most practical lath. He said further that if he were building for himself he wouldn't think of using any other than Keezon Cellular Lath.

It is quite obvious that a lath receiving such praise from builders and contractors of this character warrants both investigation and consideration by all.

What the Cellular Lath Company is emphasizing, in its advertising is not so much the economies effected by Keezon this particular form of construction, but..."
A New Belt Sander That Brings New Business

The growing demand for a finer wood finish has greatly increased sanding costs. Don't try to cope with the situation by investing in an expensive sander that can handle flat stock only. Don't lose time and trade by trying to reduce the amount of your expensive hand sanding. Investigate

The Yates Flexible Belt Sander

It eliminates four-fifths of your hand sanding, and adds the expense thus saved to your bank account. Its cost is so reasonable that the savings soon cover the initial expense—after that it's all "clean velvet". Its economy will enable you to include in your bids items your competitors can't afford. The low cost of its high quality finish opens a new field of trade among those who will buy the best as soon as it is put within their financial reach.

Send for Folder No. 427 describing this machine and showing what it will do—free to you without expense or obligation in any way.

P. B. Yates Machine Co.

BELOIT, WISCONSIN, U. S. A.

Successors to The Berlin Machine Works—Canadian Plant, Hamilton, Ont.
Seven rooms, bath and basement, to cost about $3,600.00.
Our new Home Builder’s Book shows the plan.
Ask for it.

Whether you are designing a small house for the man of moderate means, or one along more pretentious lines

ARKANSAS
SOFT PINE

Will appeal strongly to either client because of its invariably pleasing appearance, durability and moderate cost.

Affording as it does a wide choice in the matter of figure and at the same time lending itself successfully to any desired decorative treatment, it is indeed a finishing material of all round merit.

Arkansas Soft Pine is a non-resinous wood possessing a tough fibre, fine grain and soft, lustrous texture, all of which make for well-balanced absorbing qualities. Stains or flat white are applied direct to the wood without the necessity of any preparatory filler or shellac, so that a uniform, even absorption of the color or white lead is assured.

Due to the definite non-resinous character of the wood, it positively will not discolor the white enamel from underneath, nor dim the luster of waxed or varnished finishes.

Our finished samples will bear out the foregoing statement. We’ll send them on request. Address Dept. D.

Arkansas Soft Pine is trade marked and sold by dealers. See that yours supplies it. He can.

Arkansas Soft Pine Bureau
Little Rock, Arkansas

in use and Automatic Sash Holders go even a little further. They absolutely prevent the window from falling, eliminating broken cords, repair bills and injured hands—they also prevent windows from rattling.

Besides, they have been sold all over the world and are giving complete satisfaction wherever installed. They are not only cheaper than sash weights, cord and pulleys, but take less time to install and are not unsightly nor annoying.

Automatic Sash Holder Mfg. Co., 52 Church St., New York, will forward circulars on request. Ask them, too, about their nickel plated advertising set.

Bommer Door Holder

It is desirable at times, particularly during the summer months to have doors standing partly or entirely open, and for this purpose attention is directed to the door holder made by Bommer Brothers of Brooklyn, N. Y., which is a popular and satisfactory door holder of this type. The door can be held open at any desired angle by simply pressing the foot-plate with the foot. To avoid marring the door the foot-plate moves with the plunger rod which is set away from the door. The plunger rod being U-shaped cannot turn in the casing which is a distinctive feature. The casing is formed from a single piece of sheet metal. The plunger rod has a rubber tip to prevent marring or slipping on the floor. Can be furnished in all the standard hardware finishes. It is an efficient article, and finished in the same high class manner characteristic of the well known standard line of Bommer Spring Hinges.

Statement of the Ownership, Management, Circulation, etc., Required by the Act of August 24, 1912

of AMERICAN CARPENTER AND BUILDER, published monthly at Chicago, Illinois, for April 1, 1916.

Editor—Wm. A. Radford, 5341 Hyde Park Boul., Chicago, Ill.
Managing Editor—Bernard L. Johnson 6716 Ridgeland Ave., Chicago, Ill.
Business Manager—Edmund L. Hatfield, 1321 Hood Ave., Chicago, Ill.
Publisher—American Carpenter & Builder Company, 1827 Prairie Ave., Chicago, Ill.

Owners (if a corporation, give its name and the names and addresses of stockholders holding 1 per cent or more of total amount of stock. If not a corporation, give names and addresses of individual owners):

Wm. A. Radford, 5341 Hyde Park Boul., Chicago, Ill.
H. M. Radford, 5341 Hyde Park Boul., Chicago Ill.
Roland D. Radford, 5341 Hyde Park Boul., Chicago, Ill.
Wm. A. Radford, Jr., 5341 Hyde Park Boul., Chicago, Ill.
Geo. W. Ashby, Berwyn, Ill.
E. L. Hatfield, 1321 Hood Ave., Chicago, Ill.

Known bondholders, mortgagees, and other security holders, holding 1 per cent or more of total amount of bonds, mortgages, or other securities (if there are none so state):

There are no bonds, mortgages, or other outstanding indebtedness against the American Carpenter & Builder Company. E. L. Hatfield, Business Manager.

Sworn to and subscribed before me this 17th day of March, 1916. JEANETTE A. NICHOES, Notary Public.
FOR A LIFETIME
or for a Century

RITE-GRADE RED CEDAR SHINGLES

YOU CAN IF YOU WILL!
AND WHY NOT?

— in RITE-GRADE you have the imperishable cedar shingle. Now lay it right, that's all! Acknowledge to yourself that it's worth while, that you can, in fact, build a shingle roof good for a century. It can be done. These are days of calculated efficiency! So now get nails the equal of the shingle, good, durable, wholesome, "worth while" nails, nails that will last. And never blue steel nails. Don't ruin a good cedar shingle with lath nails! Our books tell you lots of valuable things about shingles and nailing.

FOUR BOOKS: "Bungalow Homes Book," with plans; "Distinctive American Homes," with plans; "Farm Buildings" and "Boy's Builder." Two cent stamp to defray mailing each book. And read what we say about real, workmanlike, lasting, "worth while" RITE-GRADE Red Cedar Shingle Roofs and Walls.

SHINGLE BRANCH WEST COAST LUMBERMEN'S ASSOCIATION
1022 WHITE BUILDING, SEATTLE, WASH.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Keep Down Investment — Brings Up Profit

Builders of investment property desire the lowest possible cost because cost determines the profit on the investment.

Yet, at the same time, they must not sacrifice either quality or appearance. Give them what they want! Recommend the one wood that best serves their purpose—

North Carolina Pine

"The Wood Universal"

No wood at the price can equal it, whether used for interior or exterior work.

It possesses a rare beauty of grain; is splendidly responsive to paints, varnishes, wax, stains or enamels; is strong and durable and easy to work. And it is exceptionally low in cost.

Send for Free Reference Book

We have prepared a most instructive reference book on North Carolina Pine. It is not merely a compendium on North Carolina Pine but a most profitable help to every contractor and builder. Ask for Book A.

North Carolina Pine Association
Norfolk, Va.

Simonds Pension System

Among the large industrial concerns which early saw the wisdom of the pension system as applied to its employees, was the Simonds Manufacturing Company, of Fitchburg, Mass., which first made known the conditions under which its employees might receive pensions, January 1, 1908. Since that time the pension system has been in force with much success, in the saw, knife, and file plants maintained by the company. Under the Simonds pension plan the company bears all the expense on account of old age or disability due to accident while in the employ of the company. An employee, who has served 20 years and has reached an age which is considered a minimum may be retired on half pay.

In maintaining its pension system the Simonds Manufacturing Company believes that greater good will result for both parties interested. Good service requires expertness which can only come from experience acquired thru continuity in position. It requires efficient system and method, enforced and carried out. It requires not the servile, but the respectful and implicit subordination of the employee to the system and the method. Therefore in the conduct of its big plants the company endeavors to secure the most efficient help possible and to make conditions such that the employee is anxious to remain in the company's service. Continuous service in the employ of this company eventually means a pension for the workman and adequate provision for the remainder of his life.

Another feature which is conducive to the welfare of the employee of the Simonds Manufacturing Company, is the old established Aid and Benefit Association which is maintained by the employees of the company. This association was established September 12, 1887, and was originally intended to dispense with the practice of taking up collections for the relief of sickness or accident among the employees of the factory in Fitchburg. The association is open to all employees and beside paying a death benefit also provides sick benefits ranging from $3 a week to as high as $15 a week.

New Officers for L. & I. J. White Co.

The L. & I. J. White Co., of Buffalo, N. Y., one of the oldest edge tool and machine knife manufacturers in the United States, has very recently changed its management; Mr. Walter S. Walls, for the past ten years Superintendent of this company, has been elected President and General Manager; Mr. R. R. Thompson, who has been handling the advertising, was elected Treasurer, and continues to take care of the advertising. Mr. John W. VanAllen as Vice-President and Mr. Frank H. Hamilton as Secretary were continued in office.

The new President having been connected with the firm for so many years, and thoroly familiar with the requirements of the trade, was unanimously selected by the Directors to succeed the former President.

Investigate the Kalamazoo Pipeless

The Kalamazoo Stove Company, whose slogan "A Kalamazoo Direct to You" is said to be one of the best known trade marks in America, are enthusiastic in their boosting the one register or pipeless furnace proposition. Their illustrated catalog No. 947 is one of the worth-while books on this subject very one of our readers ought to have a copy of it, and there is no reason why they should not have this book for reference, as the Kalamazoo Stove Company will gladly mail it free to any of our readers.

Their offer to builders permits you to get this famous furnace at the manufacturers' wholesale price. The Kalamazoo pipeless furnace as well as the pipeless furnace proposition in general merits the careful attention of every builder.
"The Carpenter could do more with it, and with less effort, than with any other wood."

United States Government report on

No experienced carpenter need be told that the report from which the above quotation was taken was on

**WHITE PINE**

White Pine has always been the preferred wood with carpenters because it works easier, and lasts longer and "stays put" better in the exposed covering of a house, than any other wood.

**A FREE MAGAZINE FOR CONTRACTORS**

We are now publishing a bi-monthly architectural magazine, every issue of which is full of valuable and helpful information for contractors and builders. If you would like this magazine, write us and we will be pleased to place your name on our mailing list.

*Address, WHITE PINE BUREAU,*
1035 Merchants Bank Building, St. Paul, Minn.

**Representing**
American Sash Trimmer Now Sold by Mann Corporation

Our readers will be interested to learn that the Mann Corporation, Kankakee, Ill., have taken over the complete manufacture and sale of the American Sash Trimmer from the Heald Machine Company, Worcester, Mass. There has been a constantly increasing demand from sash manufacturers for a machine that would joint diamond light and fancy sash with rapidity and accuracy; and it was to supply this demand that the American Sash Trimmer was presented to the trade. The hearty response with which the sale of this machine has been met over the entire world is significant of the fact that the American Sash Trimmer was a success from the start. This machine is guaranteed by its manufacturers, the Mann Corporation, to net the user a positive saving of at least 75 per cent in the labor cost of fitting up any diamond light or fancy sash over the old method of doing this work by hand. Since the original investment required in the American Sash Trimmer is small, this machine will earn its cost in from one to two months consistent usage. The quality of work turned out by the American Sash Trimmer is much more accurate and satisfactory in every respect than the old-fashioned hand-made product and one man can turn out from three to five times as much finished work in a given time according to the size and quality of the sash sticking. These claims are all covered by the manufacturer’s guarantee and purchasers are offered a very liberal arrangement whereby these machines are shipped subject to approval.

The machine consists of a base casting with column upon which is mounted the face plate and swinging tables supporting the sash bars.

The column and base are of the best possible design to secure rigidity and strength. The base casting rests on three points, giving it a solid bearing on the floor, however rough and uneven, and is made heavy enough to stand firm without being screwed down.

The face plate is of special design and carries swinging tables which can be clamped at any desired angle in relation to the cutters by hand wheels at the back side of the plate.

The face plate is accurately machined and contains grooves to receive a set of stops, engaging with the "spring pins" in the ends of the tables which enable you to set to different angles and afterwards return to the same position without any delay in resetting.

This plate is also graduated on each edge to locate the tables instantly at the angles of 30, 45, 60 and 90 degrees.

On the tables are wooden bed pieces made of selected close grained hardwood, which are grooved out to fit the sash bar perfectly and prevent any splintering of the work when cutting at any angle.

The face plate also carries two special stops for use in fitting up curved work and these can be set to support the curved pieces at exactly the right angle to make perfect joints.

The tables can be swung below the center, if necessary, to cut the right way of the grain, and pieces can be fitted in a moment that would otherwise require lots of time.

(Continued to page 96.)
—and now the Wedge Dowel

Manufactured under U.S. Patent No. 1,060,543

The Latest Evidence of Morgan Leadership

In addition to the features of construction which have always made Morgan supreme in the veneered door field, Morgan Doors will in the future be built exclusively with the Wedge Dowel Construction. That means additional insurance against any possible annoyance or trouble. It means

Doors That Can Never Come Apart

The Wedge Dowel made of hard wood is slit obliquely at each end as shown in illustration above. When clamped into place, the wedge formed by the slits is driven into the dowel, expanding the sharp ends and driving them into the soft White Pine core, locking stiles and rails together in a vise-like grip.

No pockets are left to gather glue at the ends of these wedge dowels. Instead the glue is forced along the dowel, thus making a perfect bond between dowel and core.

Morgan Doors are the only hard wood doors made with Wedge Dowel Construction.

Think what this improvement means to

Morgan facilities assure prompt deliveries

MORGAN SASH AND DOOR COMPANY
Dept. A-23, CHICAGO, ILL.

Displays: 6 E. 39th St., New York; 209 Palmer Building, Detroit.

May We Send the FREE? MORGAN Millwork Handbook

Every contractor, carpenter and builder can profit by the helpful information in this instructive book of up-to-date designs. Write for it today.

If your Dealer hasn't Morgan Doors, write us

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
If you've heard complaints about Wall Board—

READ THIS STORY:

A FEW weeks ago, Carpenter in a New York State town was planning the cutting of a handsome residence.

A friend had sent him a sample of Upson Board Panels, and telephoned to the nearest lumber yard for more boards. Instead of Upson Board they sent him another wall board.

The boss carpenter considered for a while and then said to his men: "It'll be an easy job for you.—suppose we take a chance on this board. They did.

The men bore one panel in the cutting, because the panels were so soft they could not be cut to trim. Then they nailed the other panels just as they had been nailing the Upson Board. They could not help but drive the nails entirely through the panels. When they started with the panels against, they found the board under the nails was so soft they could not be put to use. The nails pulled the panel apart.

"It's no use,—pull down these panels," ordered the boss. "We'll have to wait for Upson Board, to get a satisfactory job."

PROVE IT FOR YOURSELF

Let us send you samples of Upson Processed Board. Visit them in every possible way. You will see why Upson Board is called "Dependable wall board."

That's UPSON BOARD

The Most Dependable Board Made in America

This record is unequalled, we believe, by any other wall board. In the record on which hundreds and hundreds of carpenters have built up a fine paying trade is keeping them busy every month in the year and has given a steady boost to their incomes. IT'S YOUR opportunity.

Ripper: Upson Processed Board is different from all other brands of wall board. It is backed up by a system of guarantees that makes it easy to handle. The guarantee is: A board will stand examination. The guarantee means that if the board is not as good as guaranteed, we will make good, for you.

Write for samples and complete information. Address

THE UPSON COMPANY
15 Upson Point
Lockport, N. Y.

The cutter head is accurately machined, holds the cutters in correct position and is adjustable for wear.

It is operated by a foot treadle and provided with a strong spring of proper length to insure uniform tension the entire length of the stroke.

This foot treadle is made amply strong for all work and has two holes at the rear end where it is pivoted, so that the pin can be changed to give double the leverage, if you desire it, when cutting hardwood bars with wide cutters.

We now come to the most vital part of the whole machine, the cutters, which are mounted in the machine like sides of the letter "A," with the cutting edge at the lower ends, formed to suit the requirements of the customer's sawing sticking. They can furnish special cutters formed in such a way as to cope the bars and leave a short tenon on the end, if desired, for use in work that is mortised together. These cutters can be sharpened many, many times without changing the form of the cutter.

This machine enables the user to turn out as much work in one hour as in nearly half a day in the old way, which means to him the difference between doing this work at a profit or a loss; and sending out a nicely finished job, in place of one that is unsatisfactory to his customer.

If you are interested in an efficient labor saving machine of this type, write the Mann Corporation, Kankakee, Ill., for further particulars.

The Delco Announces a New Product

The Dayton Engineering Laboratories Company, of Dayton, Ohio, better known as the Delco, has just recently put on the market an outfit composed of a gasoline engine and electric plant, for use in farm, village and suburban homes.

Owing to the fact that their present business of starting, lighting and ignition equipments for automobiles is so very large, they have decided to establish a separate organization to handle the new product. The new company is known as The Domestic Engineering Co., and has its headquarters at present in the Delco plant, while an extensive new factory is being built. It was incorporated recently for $800,000. The officers of the new company are:

A. E. Deeds, President; C. F. Kettering, Vice-President; R. D. Funkhouser, Secretary and Treasurer, and R. H. Grant, General Manager.

The Delco Company is well known in the automobile industry, being the leading makers of high grade electrical equipment for automobiles. Last year's output was more than 125,000 complete systems of starting, lighting and ignition, and the prospects are for enormously increased business.

It is believed by the officers of the Delco that electricity on the farm is one of the greatest needs of the country. Having been reared in the country, they appreciate that many things now done on the farm at considerable cost of time and labor could be much more easily and cheaply done by electricity and they have set about to make this possible for the countryside.

The Delco-Light is built to go out on the farm and furnish electric light for the house and barn and all other buildings, besides furnishing electric current for light power purposes. Much of their product, too, will find its way into small towns and villages where electricity is not now available. It will be found in stores, churches and other public buildings.

This is a big undertaking that the Domestic Engineering Company has on its hands. Its growth in this line will be watched with interest, and everyone who is acquainted with the brilliant success the Delco has achieved in the field of electric equipment for automobiles will appreciate that now, at last, the Delco slogan, "Electricity For Every Farm," is going to be realized in the near future. Write them for literature on electric lighting plants.
FEATURES: Fiberlic exclusive features—a wall board made from root fibre, chemically treated to remove from the fibres all the starch matter that might harbor mold growth, all the resinous matter, thus making it more fire-resisting. It is the only patented, chemically treated, long-fibred wall board on the market.

ECONOMY: Fiberlic is not merely a substitute, but a new principle in building, providing as it does a wall or ceiling which will not deteriorate. More economical than lath and plaster, facilitates quick construction and has stood the test of time.

USES: Fiberlic effectually contributes to good taste in the development of fine interiors. From the viewpoint of utility it serves with equal facility the peculiar needs of Hospitals, Doctors' Offices, Stores, Theatres, and Office Buildings.

FINISHES: Fiberlic Paints permit the use of soap and water and scrubbing brush in the removal of stains and dust, thus insuring a permanently clean surface. Fiberlic is susceptible to a variety of finishes and is not restricted to the use of our finishes where something else is preferred.

Data and Samples will serve you advantageously in connection with your future buildings.

THE FIBERLIC COMPANY, Camden, N. J.

Group Insurance Adopted by Chain Belt Company

The Chain Belt Company recently sent this letter to every employee of their institution. The main idea is that all employees who have been in the service of the Chain Belt Company for two years will be given an insurance policy of $1,000 and those who have been in the employe for one year will receive a policy of $500.

"In order to show our appreciation of loyal and efficient service, I have been instructed by the Board of Directors to announce that Chain Belt Company has contracted with the Equitable Life Assurance Society to insure the lives of those between the ages of 21 and 65 who had been in our employ continuously for one year or more on April 20, 1916, for the sum of $500.00 each and those who have been in our employ continuously for two years on April 20, 1916, for the sum of $1,000.00 each. In the case of the employe who has been with the company for one year, a substitute certificate for $1,000.00 will be given her or him when the term of continuous employment will have reached the two year period. All new employes over 21 years of age will receive a certificate for $500.00 upon completing one year's service. In the event of an employe leaving the company's employ, of course, expires automatically.

"This is term insurance and is given without charge, and in the event of death while the policy is in force the beneficiary named will be paid the amount of the policy by the insurance company. It will be issued for the year ending April 20, 1917, but it is our intention to renew from year to year unless in the judgment of the Board of Directors it shall prove unsatisfactory or experience suggests amendment. The insurance company is now preparing the policy and making out individual certificates of insurance, which will be delivered in a few days.

"The officers of this company are not only interested in you and the women and men in our employ, but also in the welfare of those dependent on you, and feel that in this manner they can show that interest to be real and substantial. "We sincerely hope the cordial interests existing between us will long be continued.

"CHAIN BELT COMPANY, "W. C. Frye, President."
$350 and a Ford makes a guaranteed One-Ton Truck
A New Era in Motor Truck Service

For all forms of contracting and building which require speedy and economical moving of loads up to one ton.

Smith Form-a-Truck

The Smith Form-a-Truck is doing work every day, in the service of contractors and builders, that cannot be satisfactorily done by any other form of motor truck. It is covering the same trips and doing the same work as heavier trucks of greater capacity at much lower cost and greater efficiency.

A nine foot loading space back of the driver's seat allows for the use of any standard or special type of body, including mechanically operated steel dumping bodies.
THE STRONG, STURDY MECHANICAL CONSTRUCTION of the Smith Form-a-Truck appeals to contractors and builders who appreciate real engineering design.

THE FOUR-INCH FRAME WITH EXTRA WIDE WEB and gusset plates at the rear, and the three cross members to reinforce the frame make possible a mechanical design that will do the hardest work.

THE DOUBLE CHAIN DRIVE, with the rear axle of the Ford used as a jack shaft, is the most dependable—most efficient driving system for a motor truck.

The sturdy rear axle that carries 90% of the load is real motor truck construction.

YOU WILL READILY APPRECIATE the ease with which two men can attach the Smith Form-a-Truck to any Ford chassis in a few hours. The Smith Form-a-Truck frame fits over the Ford frame and reinforces it throughout the entire length.

The Ford chassis itself is used only to carry the power plant.

THE FRONT WHEELS ARE CARRYING LESS LOAD when the Smith Form-a-Truck is loaded to full capacity when the Ford is used as a touring car with five passengers. You get such real strength in construction that the Smith Form-a-Truck is practically everlasting.

SPEEDY ECONOMICAL SERVICE PROVED TO tractors and builders who deal in actual figures. You will find the records of service kept by Smith Form-a-Truck users show the lowest hauling cost in the world.

TIRES LAST FROM SIX TO EIGHT THOUSAND MILES and because they are not big expensive tires, tire cost is a small item.

GASOLINE CONSUMPTION AVERAGES from fifteen miles per gallon. This is the highest mileage obtained from any motor truck of one ton capacity.

REPAIRS AND REPLACEMENT CHARGES are exceedingly negligible. The Smith Form-a-Truck is simple in construction—so sturdy and so strong that it does the work with minimum of attention.

THE INVESTMENT WHICH YOU MUST CHARGE to your hauling department is low. $350 and the price of the Ford chassis, with a small added amount for the body, total amount involved.

YOU CAN WRITE OFF THE ENTIRE COST of Smith Form-a-Truck equipment in one year and still leave a charge for hauling less than if you used heavier, more expensive trucks.
Standards of Economy

World for Contractors

Biggest to the Smallest

materials which we use, also our men, and get on
in good shape, which is not possible with our
trucks. The operation and upkeep cost has been
satisfactory, and we are glad to give our heartiest
endorsement to the Smith Form-a-Truck.

The Smith Form-a-Truck will be in excellent condition,
ready to go year in and year out.

We have to figure a certain portion of
our cost on each job you bid on. The difference in
cost if you use Smith Form-a-Trucks, may be the de-
decider in getting the contract for you.

A FLEET READY FOR IMMEDIATE DE-
ployment. You will be ready to go at any time.

YOU HAVE TO FIGURE A CERTAIN PORTION of
our cost on each job you bid on. The difference in
cost if you use Smith Form-a-Trucks, may be the de-
decider in getting the contract for you.

A FLEET READY FOR IMMEDIATE DE-
ployment. You will be ready to go at any time.

THE SMITH FORM-A-TRUCK ITSELF
is light weight—can be driven over
soft ground where heavier trucks would
get stuck. You can go anywhere you can
drive horses, and many places where horses
cannot be used.
WE ARE DEVOTING THE MONTH OF JUNE TO CONTRACTORS and builders all over the country. Special tests are being made, special reports are being secured, and special attention is being paid to the adaptability of the Smith Form-a-Truck to your individual requirements.

Smith Form-a-Truck dealers all over the country are talking to contractors and builders. Thousands of Smith Form-a-Trucks will be sold to do work on jobs similar to those which will constitute your summer's work.

And the contractor who gets the Smith Form-a-Truck equipment first will be enjoying a big advantage—he will be enjoying a money saving in hauling cost—he will be enjoying the advantage of low charge for hauling equipment—and he will be enjoying perfect service from his trucks.

**Smith Form-a-Truck Co.**
934 Smith Form-a-Truck Building
1470 Michigan Boulevard, Chicago, Ill.

Send for our Booklet—

"It Solves Your Delivery Problem"

If you are interested in economical transportation—if you want to save real money in your hauling department—if you want to get the benefit of the experiences of others—send for our booklet,

"It Solves Your Delivery Problem"

It contains information of real value, and we will be glad to send it to you without any obligation on your part.

Gentlemen: Please send me your booklet, "It Solves Your Delivery Problem" and specific information regarding the adaptability of the Smith Form-a-Truck to my business.

I am located in a town of __________ population, and at present maintain ______________ horses ______________ motor trucks in my contracting work.

The radius of delivery covered is approximately ______________ miles. The average load carried is ______________ pounds. I roughly estimate my two-mile hauling cost at present at ______________. If you can demonstrate to me that your Smith Form-a-Truck provides the lowest possible hauling cost for my business, I am interested. Please understand that I incur no obligation by making this request.

Name
Town or City
I suggest as a good Smith Form-a-Truck dealer for this territory

Date

This Coupon to be filled out by use.
This ROOFING CATALOG
(The Largest and Most Complete Ever Printed)

WILL HELP YOU

The Rex Products catalog contains 112 pages and more than 180 pictures and illustrations. Besides complete instructions for laying all styles of asphalt shingles and prepared roofings, you will find in it a full description of each one of the 27 different Rex Products which we manufacture. You will also find much helpful information about slate, tile, asbestos shingles, tin and corrugated steel roofings.

We will send you this splendid catalog and a set of samples without cost or obligation to you.

Write—

Flintkote Manufacturing Co.
90 Pearl St., Boston, Mass.
659 Peoples Gas Bldg., Chicago, III.
1102 Equitable Bldg., New York, N. Y.
Hennen Bldg., New Orleans, La.

REX STRIP SHINGLES

Will not blow up in the wind because the spaces between the shingles do not extend under the shingles in the course above, and so there is no opening for the wind to get under them and lift them. This is why Rex Strip Shingles make a tighter roof than any individual shingles.
A Roof of Fireproof Shingles

Take a look around and see the wood shingle roofs that are rotten, curled and warped. See the slate and tile roofs that are broken, split and need replacing.

There are lots of men in your town who don’t realize how this roofing problem can be solved. Why don’t you tell them?

You can make a sale with real satisfaction behind it by specifying a roof that will bring everlasting protection against fire and weather and never cost a cent for maintenance.

Tell your customers about

**J-M Transite Asbestos Shingles**

—the roofing that takes the base rate of insurance—the roofing that is artistic, and the cheapest on the market, for its first cost is its last cost—the roofing that is backed to the limit by Johns-Manville Responsibility.

And at the same time you can land the contract for putting on the shingles. Here are two profits in one:

Write the nearest branch today for samples.

J-M Transite Asbestos Shingles are examined, approved, classified and labeled by the Underwriters’ Laboratories, Inc., under the direction of the National Board of Fire Underwriters.

**H. W. JOHNS—MANVILLE CO.**

Boston Cleveland Philadelphia St. Louis Seattle Chicago New York Pittsburgh San Francisco Toronto

Executive Offices: 296 Madison Ave., New York

---

**Blue Ribbon Trailers**

A thoroughly practical business rig for carpenters and builders is the “Blue Ribbon” trailer made by the Durant-Dort Carriage Company, Flint, Mich. It is a rubber tired 2-wheel trailer with contractor’s type body measuring 40 by 72 inches, 10 inches deep. Bottom boards are strapped with iron. The cross sills and spring bars are made of heavy hardwood; end gate drops.

The springs of the “Blue Ribbon” trailer are semi-elliptic 3¼ by 42 inch, 6 plate. This is a special trailer spring with shock absorbing attachment. Thirty-four inch wheels are provided. Tires 1½ by ¾ inch steel riveted to the rims, or 1½ inch runner tires furnished as an extra. The axles are 1¼ inch friction spindle or Liggett Ball Bearing.

A practical hitch is furnished, the draft being through a hardwood pole heavily ironed.

The price of this trailer is very reasonable. Any of our readers who are interested in trailers should write the Durant-Dort Carriage Company, Flint, Mich.

**A New Use for an Overland**

Overland cars have been used for pleasure, for business of all kinds, even for the grim pursuit of war, but it remained for the Overland dealer at Tulsa, Okla., to pull off an entirely new feat with an Overland touring car. A big house was being moved in that city. The horses were finding it quite a difficult task to pull the big residence. Ned Joyce, retail sales manager of the Carhart Motor Company, happened to be passing in an Overland “Six.” Deeming that his car, with its 45-horse power motor would be stronger than the team of horses that were tugging at the ropes, he had his machine hitched to the house. The “juice” was turned on and soon the house began to move.

Observe the resigned attitude of the horses. They hardly know whether to get peved, because of their relegation in favor of the modern motor, or to feel relieved at the chance to take a well-earned rest.

**Work Done By the Austin Cube Mixer**

Many good ideas can be secured from pictures of machinery of any kind actually in operation, especially if the work that is shown is some well known proposition that required a large amount of machinery placed as economically as possible.

Such information is contained to a large degree in the catalog of the Municipal Engineering & Contracting Company. This catalog describes the various sizes and styles of Austin cube mixers and shows an unusually interesting series of photographs of these mixers in operation on work of unusual size or of unusual difficulty where high grade concrete had to be secured.

For instance there is one illustration with a description

(Continued on page 106.)
Vulcanite

Ornamental Roofing and Shingles

For permanency, durability, beauty, economy, fire and weather protection, they have no equal.

Heretofore, lack of something better has necessitated the use of wooden shingles, in spite of the fact that they crack, warp, draw the nails, and burn up like tinder.

But now, Vulcanite Roofing furnishes a material that perfectly combines the qualities of safety, comfort and beauty at so low an initial cost as to prohibit such a flimsy, highly combustible and temporary covering as a wood shingle roof. Vulcanite roofing outlives wood shingles, two to one. Twenty years' service is a reasonable expectancy.

And you can obtain a most pleasing variety of effects in colors and designs. Vulcanite comes in rolls and shingles in several patterns that can be worked into any number of artistic finishes. The colors will withstand sun and rain for any length of time. They are as permanent as the granite itself from which they are made.

We would like to send you our catalogs and samples; and show how you can use Vulcanite to boost your business, and increase your profits.

Patent Vulcanite Roofing Company

CHICAGO, ILL.
showing one of the Austin cube mixers at work on the Los Angeles viaduct. As stated in the description, this work comprised six storage reservoirs and 217 miles of conduit. A special cement mill was built for manufacturing more than one million barrels of cement that were used. The description states that all the concrete on this enormous job was mixed by Austin cube mixers. Over 100 were used all together.

There are also several pictures of these mixers in service at the Panama Canal.

They were used in mixing the concrete at the Detroit River tunnel where 101,900 cubic yards of concrete were deposited under water and where the hazard of placing the concrete demanded the very highest quality of mixture under inspection that was very severe and exacting.

The specifications for the various sizes of Austin cube mixers will also be of interest to the contractor and builder. Copies of this catalog can be secured from the Municipal Engineering & Contracting Co., Railway Exchange Bldg., Chicago, Ill.

**Economy in Corn Crops**

The economy in corn cribs should be considered both with regard to the construction and the operation of the elevator after the construction is completed. The cost of construction will depend on many of the smaller features of the crib and also on the simplicity of the elevator with its effect on the time and cost of installation. The operating cost will depend on the amount of power needed and the cost of upkeep of the elevating machinery.

Several reasons are given by the Portable Elevator Mfg. Co. for the low cost that is secured by planning for and operating a "National Giant" inside cup elevator.

With a crib 28 by 40 feet or less with a half pitch roof, the makers say that no cupola is necessary, which will reduce the cost. A small cupola is needed for sizes larger than this or for flatter roofs. No pit is needed which is a feature tending to reduce expenses.

The makers say that a very small amount of power is required to operate their elevator because of the few parts and consequently low friction.

The illustration shows the installation of one of their elevators. The Portable Elevator Mfg. Co., Bloomington, Ill., also have a book of granary plans that contain many suggestions that will be of value to the builder. Copies of this and also of their catalog showing the styles of elevators handled can be secured on request.

**New Office for the "Standard"**

A sales office for "The Standard" low charging concrete mixers and equipment has been opened at Detroit, Mich., by the Michigan Scale & Supply Co., 82 Woodbridge St., who will be direct representatives of The Standard Scale & Supply Co., in the sale of scales, concrete mixers, hoists and equipment for the contractors.
"This is a good shingle to hang around; yes, sir."

"It may not be a desirable article to spank Horace with, but that's the only thing the wood shingle has on it.

"It is making me prosperous; my life is just one Neponset Roof after another. Every customer becomes my salesman; that's why there is in this town, an increasing number of handsome red, gray and green roofs of

**NEPONSET SHINGLES**

"They cost no more when laid, than good wood shingles, yet they possess the durability, and appearance of slate—they are spark and ember proof.

"You should try to become the Neponset Man in your town. Send the coupon for Free Samples, booklet, prices and full particulars."

Bird & Son
(Established 1795)
East Walpole, Mass.
CHICAGO
1434 Monadnock Building
Canadian Office and Plant
Hamilton, Ont.

Please send me free samples of Neponset Shingles and Neponset Wall Board with booklets, particulars, etc. Also a copy of your book, "Repairing and Building." This request does not obligate me in any way.

Name ........................................................................................................
Address .....................................................................................................
MAIN STREET'S BRIGHT SPOT

Bright surroundings make people feel gay.

Gayety is what playgoers are looking for.

Attract the crowds by trimming the theatre you intend building with cheery Midland enamel terra cotta.

MIDLAND TERRA COTTA COMPANY
1515 LUMBER EXCH.
CHICAGO, ILLINOIS

SANITARY CALF PENS

In order for a contractor to get barn building work he must have definite information concerning the many different kinds of fixtures that are needed to make a complete plant. If a man is considering building a dairy barn he will give the work to the builder who has a good knowledge of the construction, installation, and use of the many types of fixtures that go into a barn to make it most useful for dairy purposes.

Calf pens, for instance, are most necessary in equipping the modern dairy barn. A builder should have just as definite ideas concerning their construction and the use of the devices that go with them as he has of stanchions and the other better known features of barns.

The accompanying illustration shows a type of calf pen that has many features that will recommend it to men who are considering the construction of dairy barns. It is a product of the Glor Bros. & Willis Mfg. Co., East Main St., Attica, N. Y.

The cast iron tilting manger, that is shown in the first stall, is a feature of their pens. When the manger is not in use it can be tilted out into the alley where it will keep clean. When feeding, it can be tipped back into the pen where it locks automatically so that it can not be turned over by the animal.

The ring shown in the first pen for holding the pail is (Continued to page 110.)
Reasons Why You Should Install

BERGER'S

Classik

STEEL CEILINGS

Beauty—They give an attractive, decorative, embossed finish that compares favorably with expensively moulded plaster. Hundreds of beautiful designs that harmonize with any type of architecture.

Safety—They are fire-retardant and, unlike plaster ceilings, cannot crack, chip or fall down.

Adaptability—They are suitable for any interior—store, home, church, theatre, garage, office, public building, etc.

Ease of Application—They are quickly and easily erected, due to our improved bead and button construction, which eliminates tamping and calking. This saves you 25% to 40% on every job.

Perfect Construction—The dies, from which these ceilings are made, are reproductions of skilfully moulded plaster originals, while the stamping done on our special machines brings out the beauty of design sharp, clear and true. Each unit is rigidly inspected and guaranteed against defects.

Reasonable in Cost—Their first cost, which is moderate, is the only one, as they last as long as the building itself.

Profitable—Each installation means a good profit for you, and at the same time is a perpetual recommendation for future business and profits.

With all these good points in mind, write for full particulars and copy of "Classik" Catalog D. A. B., showing hundreds of designs and many installations. This catalog will help you close many sales.

THE BERGER MFG. CO., Canton, O.

BRANCHES: Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco

EXPORT DEPARTMENT: Berger Building, New York City, U. S. A.
another convenience. When it is not holding the pail it folds
down against the side of the pen out of the way.
The catalog of the Glore Bros. & Willis Mfg. Co. contains
more complete descriptions of this and other features of their
line. A copy will be sent on request.

**“Did’s Money-Back-if-You-Want-It
Floor Finisher”**

“Did’s Money-Back-if-You-Want-It Floor Finisher”—that is
the new name for what in the past has been known as the
Adjustable Floor Finisher. The manufacturer, Mr. H. P.
Didriksen, of 1826 Summit Street, Columbus, Ohio, says the
change came about in this way: For several years he had
been in the habit of shipping it subject to ten days’ free trial,
and the fact that in
every case where the
machine had been
given a fair chance to
speak for itself it had
been invariably kept
and very cheerfully
paid for by the pros-
tective buyer, led Mr.
Didriksen to the be-
lief that the machine
was worthy of a broad
and liberal guaranty.
In consequence he
advertised it under this remarkable guaranty: “If at any
time or for any reason thru fault of the machine you
are not well pleased, you may have your money back if
you want it.” Of course no ordinary machine of any
kind would justify so broad a guaranty as that, but Mr.

Didriksen had the utmost confidence in his machine, knew
that it had unusual merit and felt that it would stand up
under the most exacting tests and still make good under
that guaranty.

That he was correct in his judgment is shown by the fact
that out of all the thousands of these which he
has shipped subject to that guaranty, there has been but
one case where a refund has been asked and in that case the
owner had no further use for such a machine.

So Mr. Didriksen now feels that the name of the machine
should convey some definite idea of the guaranty under which
the machine is sold, and it will hereafter be known as “Did’s
Money-Back-if-You-Want-It Floor Finisher.”

---

**Get This Book!**

Be a **Waterproofing Contractor**

Contractors who are prepared to do waterproof-
ing and floor hardener work make BIG MONEY.

This fine, new catalog, just off the press, tells
the When, What and How of Waterproofing,
Damp-proofing and Floor Hardener work for all
classes of construction.

Every contractor should have a copy of this val-
able reference book. Sent free on request—
write today!

**Ceresit Waterproofing Company**

910 Westminster Bldg.  CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Why Your Choice Should Be Kuhn Patent Tongue and Groove Flooring

In figuring material you can't afford to slight the hardwood floors. The satisfaction which goes with the smooth, even surface and the long-continued wear of every Kuhn Patent Tongue and Groove hardwood floor you lay brings the home-owner's commendation and more business for the contractor. And there is a greater profit for you in every job laid with Kuhn Patent Flooring.

Easiest to Lay

Notice the difference between the Kuhn Patent Tongue and Groove and the common kind. The Kuhn Tongue is longer and stronger and reinforced on the underside which prevents it from breaking off when nailing. At the same time the bevel makes the flooring draw up more tightly than the ordinary kind and prevents upper lip from breaking. Your men can lay more of it in a day. Adds to your profit.

Long Lengths

Eighty per cent of Kuhn Flooring is in lengths of eight feet or over. There's not a single strip shorter than four feet, and the average of the twenty per cent between four and eight feet is well above six feet.

You, who have probably often paid for the extra labor of finishing floors of short lengths, know what an added profit our long length flooring will give you.

No. 15, 1½ in. C. C. flooring brads are used in laying.

Face Surface Measurements

When you buy ¾-inch flooring with a 2-inch face, you pay for 2½-inch width of flooring—25% added for the tongue which is lost in laying. When you select Kuhn Patent Tongue and Groove Flooring, you pay only for actual width of the face of the strip.

This saving is another addition to your profits.

Face Absolutely Free From Defects

Every strip of Kuhn Patent Flooring is critically inspected for defects of any kind; all sap, knots or streaks are discarded. Kuhn Flooring is also most carefully sorted for color and only the even colored strips are included. Every inch of Kuhn Flooring can be used—no waste. Still more profit for you.

Accurate Membering

The Kuhn Patent tongue and groove are cut on special flooring machines, which insure accurate membering of pieces. It always fits. Frequent micrometer tests keep the thickness always at exactly three-eighths of an inch and the width of the face at two inches.

Free Flooring Book

full of information about hardwood floors, the making, laying, finishing and care. Suggestions of value even to the most expert builder, contractor, or home-owner. Get your copy now.

THE INTERIOR HARDWOOD CO.
1313 Beecher Street
Indianapolis, Ind.

Send me without obligation, your free Flooring Book and information about Kuhn Patent Tongue and Groove Flooring.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
New Sales Offices of the Kohler Co.
The Kohler Co., manufacturers of Enamed Plumbi:
ware, has recently opened new sales offices in the following
cities:

Philadelphia, 404 Morris Bldg.—H. J. Hanna, Jr., Manager
Atlanta, 1410 Candler Bldg.—R. G. Dobson, Manager
Pittsburgh, 3005 Jenkins Arcade Bldg.—Harry E. Clark
Manager.
St. Paul—725-726 Merchants National Bank Building, Chas.
A. McKenzie, manager.
Detroit—1148-1152 David Whitney Building, Bart Downey
manager.
Seattle—306-309 Pantages Building, W. B. Lambert, man-
ger.

This company, whose factory and general office are located
at Kohler, Wis., has for a number of years had branches
in Chicago, London, New York, Boston and San Francisco, with
warehouses in the last three cities. Rapid growth of the
business and the widespread demand for Kohler products
has made the establishment of these additional branches
necessary.

“Just As Good” As G. & B.

PEARL Wire Cloth

THE wonderful durability of G. & B. PEARL
Wire Cloth as well as its beauty is due to
its metallic coating. The composition of and
method of applying this coating is exclusive
with us and used only on genuine PEARL.
So—when a dealer offers you something “just
as good as PEARL”—he is mistaken. It isn’t
so. There can be no “just as good.”

We’ve thousands of dealers—there’s one in
your vicinity. Let us give you the name of
the hardware merchant who can supply you
with genuine G. & B. PEARL. He is worth
getting acquainted with.

The Gilbert & Bennett Manufacturing Co.

Rev. Permanently
Screening
Doors, Win-
dows and
Porches

Write for Free Samples and Booklet
Address our nearest office

A. F. Meyer Corn Crib Equipment.

from the field, which makes it possible to cut down the num-
ber of men and teams needed and also the time that is needed
to get the crop in. All these savings in men, teams, labor,
and time indirectly mean a saving in money.

The arrangement of the dump in “Meyer” inside cup el-
 elevators is a convenient feature. The wagon is merely driven
on to the dump and a lever is pulled. The weight of the
wagon does the rest. The grain goes into the boot and is
taken to the cribs or bins by the steel buckets.

The type shown in the accompanying illustration has the
carriers placed on each side of the driveway. The A. F.
Meyer Mfg. Co. also make styles with the carriers built to-
gether on one side of the driveway. A style can thus be
chosen that will suit the prospective owner.

This company is offering a fine opportunity to men with
protected territory. We would suggest that our readers who
are interested in granaries write to them for their crib plans,
catalog, and description of their offer. Address the A. F.
Pyrolin

Fire-resisting
Pure Linseed
Oil Paints

Pyrolin is of immense importance to the contractor. It not only means the protection of his buildings against fire, but it also means the reinstating of wood as the primary building material.

Only Building Left Saved by PYROLIN

Mr. E. L. Cavanaugh, Clare, Iowa, writes the following letter:

"In 1906 we had our implement building at this place painted with the PYROLIN Fire Proof Paint, which gave satisfactory results so far as appearance, covering capacity and durability are concerned.

"We had no test of its fire-resisting qualities until December 11th, 1911, when almost the entire business portion of the town of Clare was destroyed by a severe conflagration. Our implement building was just eight feet from the nearest building in the direct path of the flames, which beat against the side of our building. The fire was so hot that it did not seem possible it could be saved. The woodwork charred and blackened but the flames did not carry, and the building was saved and the fire was stopped. We are using the building every day."

And his experience is only a repetition of daily tests to which Pyrolin is subjected.

Send for our Booklet. It will explain to you the tests of the U. S. Government, the advantages of Pyrolin as a paint, and the money and peace of mind it will save you at a fire-resistant. Write today for your copy.

PYROLIN PRODUCTS CO. FORT DODGE IOWA

Exclusivo Western Agents for
McCLOSKEY VARNISH CO.'S SUPERIOR VARNISHES

The Varnish of satisfaction. Get our prices before buying. Our Waterproof Varnish is the finest in the world.

Pyrolin Products Company, Fort Dodge, Ia.

Gentlemen:
Kindly send me your Pyrolin catalogs.

Name: ____________________________
Address: ____________________________

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Waterproofing on the Farm

Concrete has obtained an enviable position in construction work on the farm. Troughs, tanks, cisterns, barn floors, feeding floors, cellars, foundations of all kinds, and many other parts of buildings and also complete buildings are being constructed of concrete. There is so much of this work going on that it will pay contractors and builders to get all the information they can in order to insure the highest quality of work.

One of the phases of concrete work on which the builder has little information, as a rule, is waterproofing. A most complete booklet on this can be secured from the Sandusky Cement Company, entitled "Waterproofing on the Farm."

Many good photographs show the application of concrete to all kinds of farm construction and there are also short descriptions of the use of waterproofing in the different kinds of concrete work. The illustrations are large enough and clear enough so that many good ideas can be obtained concerning the arrangement and construction of the different buildings, floors, troughs, etc., that are needed on a modern barn.

All this valuable information is arranged in a pleasing way and the appearance of the booklet is shown in the illustration. A copy of it should be in the files of every builder that is interested in farm construction of any kind.

A copy will be sent to any of our readers by the Waterproofing Department of the Sandusky Cement Company, Cleveland, Ohio.

New Address of The American Saw Mill Machinery Co.

Believing that they will be in better touch with the markets of the world, both in selling and purchasing, the American Saw Mill Machinery Company has removed their sales and purchasing departments from Hackettstown, N. J., to 50 Church St., New York City, N. Y.

All communications should be sent to this address to insure prompt attention. The American Saw Mill Machinery Co. have had an office at the above address for a number of years, handling their eastern and foreign business. Adjoining space has been secured and all thrown into a fine suite of offices especially arranged for handling their business.

Customers visiting New York City are cordially invited to make these offices their headquarters while in the city.

The address: American Saw Mill Machinery Co., 50 Church St., New York City, N. Y., is one of the easiest to reach in the city, as it is located in the Hudson Terminal Building reached by all Hudson River Tubes and convenient to all elevateds and subways.

"Trouble-Saver" Scaffolds

Pay for themselves from the money saved on the first two jobs. Did you ever figure up the money you lose in building old wooden scaffolding; the nails and lumber wasted, and your men's time lost (a half day in most cases).

Compare this expensive method with the sling ing of the "Trouble-Saver" Scaffolds.

No nails to drive—no bothering with bolts or screws. The "Trouble-Saver" is simply hooked around a studding. Ten minutes' work. And the "Trouble-Saver" won't break; can't slip; stays absolutely rigid until taken down.

We are offering a 30-day Free Trial to carpenters just to prove that these Scaffolds are really an investment.

Write for our proposition and see how much you can save.

Steel Scaffolding Co.
Evansville, Ind.
Where lies the Danger in Setting Large Glass?

YOUR Client—a haberdasher, say—has a big plate of window-glass, say, 10x15 feet or over, for his new store window. The glaziers lift it, by means of straps, onto two blocks, in position for setting. These blocks are placed about fourteen inches from either end of the plate of glass.

The glass, when set on the blocks, must be kept away from the rabbet far enough to allow withdrawal of the straps.

The glaziers then use chisels to pry the heavy glass into contact with the rabbet, at the points where it sets on the blocks. When the glass is extra heavy, or when the glaziers are in a hurry, the glass is not easily lined up against the rabbet. Then, when the men get busy with their screwdrivers in the outside moulding, the glass at the ends and middle is forced home against the rabbet, while the part immediately above setting blocks is not. It sticks to the blocks. The result is the kind of distortion shown in the vertical cut to the right—see (a) and (b).

Though this distortion may not crack the glass at the time, it puts it under a dangerous tension which may start a crack whenever a little added stress occurs, such as wind-pressure or vibration.

The Murnane Self-Adjusting Block does Away with Danger of Distortion

The Murnane Self-adjusting Setting Block does away with this danger. The glaziers set the plate of glass on the Murnane Blocks in the usual way, and withdraw their straps. This Setting Block consists of two members. The main support (c) is a rigid piece of metal. Resting on this is a sheet of metal, so constructed as to form an anti-friction bearing, which will move inwardly with the slightest pressure. On top of this bronze sheet is riveted a leather cushion. The glass rests on this cushion. This construction makes it so easy to slide the heaviest plate of glass against the rabbet that perfect, uniform contact is secured the entire length of the glass.
Roof Protectors

PUT absolute certainty of roof protection into every shingle roofing job. The new Flex-A-Tile Diamond Point Slabs will bear the burden of wear and weather splendidly and help you guarantee a satisfactory job every time.

DIAMOND POINT SLABS

These new patented Flex-A-Tiles are practically four shingles in one. Their unique shape allows you to secure beautiful artistic effects and combinations hitherto unobtainable.

Save 50% in Labor
-38% in Nails—
35% in Freight

No time is wasted in chalk-lining—Diamond Point Slabs automatically space and gauge themselves; only five nails are needed for every four shingles; their shape means less weight and consequently cheaper freight.

Flex-A-Tile Quality

The same thorough, painstaking manufacturing process, the same high quality felts and asphalts, the same natural red and green slate surfacings that always have distinguished Flex-A-Tiles also distinguish Flex-A-Tile Diamond Point Slabs.

Write Us for Details

Liberal sample, prices and complete particulars gladly sent. Just say you want to know all about the new Flex-A-Tile Diamond Point Slabs.

THE HEPPES COMPANY
Dept. F, 1010 Kilbourne Ave., Chicago, Ill.
Flex-A-Tile Roll Shingle
No-Tar Asphalt Paint
Utility Board
Other Guaranteed Heppes Products

Stucco Board for Holyoke Canoe Club

The new club house for the Holyoke Canoe Club, now under construction at Smith's Ferry, Mass., is constructed in the following substantial manner: Bishopric Creosoted Stucco Board is nailed direct to the studding—no sheathing being used—and upon this the cement plaster work is laid. All of the columns also are made out of the Bishopric Stucco Board. The interior surface of the outside walls is likewise Stucco Board plastered, and the inside partitions are of the same construction. The accompanying illustration gives a good idea of what this building is.

The special problem in connection with this club house was dampness. Penetrating fogs and mists had to be ex-


A Complete Line of Grain Elevators

The conditions to be met by elevating equipment in granaries vary considerably. For one reason the type of crop the farmer raises and the amount that is to be handled will affect the selection of the elevator and also the design of the crib.

For this reason the contractor or builder should have a good idea of the different types of cribs and also of the different types of elevating machines that are suited to the cribs. Many times a farmer knows the kind of a crib that is best suited to his needs, but he may then buy an elevator that will be entirely unsuited or inadequate for the use that it was intended for. Problems like this should be handled by the builder. He can suggest small changes in the crib so that the elevating machine will operate successfully or he can suggest a type of machine that will fit the plan.

The information that he will need to give this advice is
Better Roofs

The wood shingles on these roofs and the Zinclad Nails they are fastened with make the strongest roof combination known. Get Zinclads for every shingling job from your local lumber dealer when buying shingles. Sold only in trade-marked five pound cartons.

W. H. Maze Co.
PERU, ILLINOIS
shown to good advantage in the crib plans and catalogs of the Meadows Mfg. Co., Pontiac, Ill. The catalog gives sketches and illustrations showing different types of cribs with different types of elevating machinery installed. The crib plan sheets give several different types of cribs and also have much general information that applies to the construction of all kinds of cribs.

The boot of an elevator has to stand more wear than perhaps any other part. The Meadows Company have taken care of this in good style in their elevator and have made this part particularly strong. As the boot supports the entire weight of the elevator, it is made very heavy with cast iron sides and a steel bottom.

The inner boot is made of galvanized steel that is reinforced so as to be indestructible. The buckets travel between the inner and outer boots in such a manner that there is always one between the boots. The grain cannot therefore cause clogging by getting back of the buckets.

Builders and contractors can get copies of the Meadows crib plans and also the Meadows elevators from the Meadows Mfg. Co., Pontiac, Ill. We suggest that our readers avail themselves of this opportunity to get some authoritative information on the subject of granaries and the equipment needed to operate them.

The Eureka for Service

The engineers and officials of the Eureka Machine Company, Inc., Lansing, Mich., state that they have designed and built the 5-6 Eureka Batch Mixer as a thoroughly good machine, not as a cheap mixer. And it is a strong endorsement of the superior manufacturing facilities of this organization that the cost of this mixer comes out so modest.

Service is one of the great factors in the concrete mixer (Continued on page 120.)

Your Business Needs This Kissel Truck

Most of the trade requires haulage capacities of about a ton.

Here is a truck that measures up to this requirement and is economical in carrying loads.

It is the most modern truck on the market—the newest design with worm drive rear axle.

The value of this truck at this price is apparent—Its solid construction is in evidence at every point. Five other sizes. Chassis Prices $950 to $4350.

KISSEL KAR TRUCKS

Its Kissel-built motor and many other exclusive units are quality features that make the price $1250 more surprising. Let us tell you more about it. Ask for big truck portfolio.

KISSEL MOTOR CAR CO., 546 Kissel Ave., Hartford, Wis.
AGENCIES AT LEADING POINTS
"Speed Up" your work with this
Light Economical Overland

This light and speedy Overland is always ready, day or night, for rush work and emergencies.
In construction work of all kinds it gets men, tools and material on the job quickly.
The light weight screen body affords over 78 cubic feet of loading space. Storm curtains all round protect both driver and load in bad weather.
Cantilever rear springs and 4 inch tires reduce road shocks to a minimum.
The efficient long stroke motor gives an abundance of power with a surprisingly light fuel consumption.

Electric starter, electric lights, electric horn, speedometer, ammeter, electrical control buttons on the steering column—all these conveniences and many more, come with the car. There are no extras to buy. And the price is only $595.

No other delivery car at anywhere near this price gives you anywhere near these advantages.
The Overland is cheaper to operate than a horse and wagon and much more satisfactory.
Our dealer will gladly arrange a practical demonstration.

We also supply the Overland Model 83-B—35 Horsepower Panel Body Delivery Car for $695, f. o. b. Toledo.

Catalog on request. Please address Dept. 669

The Willys-Overland Co., Toledo, Ohio

"Made in U. S. A."
DELCO-LIGHT

Electricity for every Farm, Village and Suburban Home

When you are called upon to plan or build a farm or suburban home—no matter where it is located—he sure to include wiring for electric light. Delco-Light makes electricity available anywhere and at such small cost that there is no excuse for anyone being without this greatest of all conveniences.

Delco-Light is a complete electric plant—gas engine and generator in one compact unit. It will furnish 40 to 50 lights and also furnish power for small machines such as churns, cream separators, etc.

Delco-Light will light the average home for less than 5 cents a day and is so extremely simple a child can care for it.

The turning of a switch starts it—and it stops automatically when batteries are full. Nothing to get out of order or cause trouble.

Delco-Light is manufactured and guaranteed by the same company that has made Delco Cranking, Lighting and Ignition for Motor Cars the standard of the world.

Cost complete with batteries ready to run, $250

The Domestic Engineering Co.
DAYTON, OHIO

OFFICES IN ALL PRINCIPAL CITIES

market today just as it is in the automobile market. We favor the car produced by the old established organization and one we can feel assured is going to continue in business and continue to stand back of their product in the way of service, and renewing of parts when required. The same principle applies in buying a concrete mixer. The fact that the Eureka Machine Company have for ten years been engaged in the manufacture of high-grade mixers, is the contractor’s assurance that they will remain in business, and give Eureka owners the service to which they are entitled.

The foundation and frame of the 5-6 Eureka Mixes shows a very strong, well-balanced, compact construction. It is heavy enough to be rigid under the severest strains. A strong foundation for the drum and power plant is of vital importance. Five inch steel channels, strongly riveted are used for sides, ends, and cross bracing. A heavy plate of steel is riveted to the frame to form the engine floor. The engine is bolted securely to the cross channels.

The mixing drum is constructed of boiler plate steel provided with gear drive. It is a cone-shaped drum provided with comparatively few blades and buckets, and these are of heavy steel construction. A special feature of the drum is the discharge chute which extends into the drum past the center, and makes for very rapid discharge.

In the limited space at our disposal here, we are not able to even mention the numerous other interesting features of this mixer. The manufacturers, however, have recently produced a new illustrated circular giving full specifications of this machine, and this they will gladly mail to any one of our readers who is interested. Address the Eureka Machine Company, Inc., 103 Handy S., Lansing, Mich.

The Mixer that is Making Good for Hundreds of Contractors

There are two big demands on a concrete mixer: first, it must be able to mix a uniform, even batch of concrete no matter what the proportions. Second, the machine must be convenient to use, that is, it must be easy to load, easy to move and dependable at all times under all conditions.

The descriptions of the No. 1 Archer Special, contained in the recently issued catalog, show how the Archer fulfills these demands and why it has been making good for hundreds of contractors.

A feature of the Archer that has been found to be of great advantage by many contractors is the end discharge. The makers of this machine say that nine times out of ten the concrete can be placed directly in the forms because of this arrangement. The illustrations bear the manufacturers out in this and show various kinds of work with the Archer mixer spouting the concrete directly into the forms.

This feature makes it possible to cut the costs in placing the concrete. Any special design of a mixer which will do this is of interest to contractors and builders.

Some of the illustrations show how easily the Archer mixer can be moved from place to place on the job or to new jobs.

Copies of this catalog will be of interest to all contractors and we suggest that our readers write in for a copy. The address is the Archer Iron Works, 2430 W. 34th Place, Chicago, Ill.
How to Buy Haulage

EVERY man in the building trades business must buy haulage—he must buy it as cheaply as he can if he wishes to stay in business and make money. First, he has to decide between horse and motor-truck haulage. That won't take long, if he investigates the real cost of using horses for hauling. Then he must decide between various types of trucks. That, too, is easy if he keeps in mind the one important thing—when he buys a motor truck he is not merely buying a machine—he is buying haulage at so much a ton or a mile.

This means that he must consider not only the cost of the truck, but what it costs to operate the truck. He must consider not only how much the truck costs to get, but what it costs to keep year after year. He must consider not only what the truck can do in good weather on good roads, but what it can do in any weather on any road. If he starts out to investigate these things he will end by buying the Jeffery Quad just as many other concerns have done.

The Quad is the world-famous truck which drives, brakes and steers on all four wheels—built according to the specifications of army engineers to stand up consistently day after day, under the most exacting requirements ever demanded of road vehicles—the task of keeping up with an army under actual field service conditions. The duplex governor—the "automatic chauffeur" regulates the power to meet changing road resistance and so conserves the gasoline consumption. The M & S Locking Differentials give a positive drive to all four wheels and put the power of the motor into the wheel or wheels that can get traction when the other fail to obtain a grip on the road. The power-on-all-four-wheels principle of the Quad makes it go through hub-deep mud, through sand and snow, over seemingly impassable grades and trails where no rear-drive truck could go.

Many building supply dealers and builders are increasing their business with the Jeffery Quad; it enables them to undertud competitors because of lower haulage costs. Others are increasing their business with it because it enables them to go where no loaded rear-drive trucks can go. Still others are enthusiastic because they never have to suspend work on account of impassable roads when they use the Quad. All of them are enthusiastic because the Quad gives them more and better service at lower cost.

Wherever the Quad is making an unequaled record—just as it established a new world's record for 2-ton trucks when 3500 Quads were sold in less than two years. For further particulars about the Quad—or about the complete Jeffery line which includes light-duty rear-drive trucks, address The Thomas B. Jeffery Company, Dept. AC8, Kenosha, Wis.
A most interesting and instructive book dealing with the uses and advantages of pressed steel construction has recently been completed by the Trussed Concrete Steel Company.

The illustrations are numerous and remarkably good and show the application of pressed steel I-beams to all kinds of construction. This type of construction seems to fit in with nearly all conditions. The illustrations show the beams supported by masonry walls, concrete walls, and structural steel. From the letters that are quoted all these conditions have been met with marked success in this construction.

The hollow air spaces of Kahn pressed steel construction in floors and partitions serve as excellent insulators which is a most necessary feature in apartment houses, hotels, office buildings, schools, etc.

A feature that is of special interest to the contractor, builder, or architect is the development of standard connections for the different types of work. These connections make for speed and the minimum amount of labor and difficulty in erecting buildings of this material.

Our readers should be familiar with pressed steel construction as its use will enable them to increase the amount of work they are handling. Copies of this booklet can be secured from the Trussed Concrete Steel Co., Dept. H44, Youngstown, Ohio.

**Metal Ceilings Make Handsome Rooms**

Metal ceilings were formerly used in churches, stores, halls, theatres, and buildings of this type, but their use has been very largely extended to private residences lately. This is due to the developments that have been made in furnishing styles that are suitable for this work. The result is that the field open to the man in the metal ceiling business has been increased to a very large extent.

The new catalog of Edwards metal ceilings shows the opportunities of this field in a striking way. The many designs and types of installations shown give a general idea of the scope of this field.

(Continued to page 124.)

---

**Topping's Folding Garage Door Hanger**

Can be used in single or double sets, and its simple design, combined with ease of operation and ability to withstand rough usage, make it a practical outfit.

You do not have to purchase a garage holder with this outfit, for its movable stop and lock permit of the doors being held full open, half open or any set position the operator desires without further attention on his part. There is an easily operated adjustment on the hanger to care for any sag which may come in the doors after years of use.

**Simple, Practical, Durable.** Write for trade prices now or ask your dealer.

**SAFETY DOOR HANGER COMPANY, Ashland, Ohio**

"We make nothing else but Door Hangers"
The Cost of a Man—
and a
Commerce Truck

is no more than the cost of a man and a truck that does half the work. The COMMERCE TRUCK means ECONOMY when buying, means ECONOMY in up-keep, means ECONOMY in service, means a PROSPEROUS showing.

Let the COMMERCE truck talk for you as your deliveries are being made—GET your material on the job in time—INCREASE the productiveness of your men.

The COMMERCE is built to stand hard usage—to climb hills—to give long service, and over 8,000 satisfied users in the U. S. testify to its productive value. Your material is fully protected by dropping the curtains. Loading space is 84 inches by 44 inches by 54½ inches. Made in three other types.

The interest on the investment in this truck is less than 20 cents per day—the PROFIT on this investment will cover the cost many times.

FULL INFORMATION for the asking.
Write for catalog or come in and see us.

Commerce Motor Truck Co. of Illinois
2015 South Michigan Avenue, Chicago, Ill.
For the Best Buildings—
Whether it is a fine residence, hotel, restaurant or public institution where the most efficient refrigeration is demanded, McCray Refrigerators are usually selected. The McCray Patented System gives them unquestioned superiority.

McCray Refrigerators
You can select from a large variety of ready built sizes to meet any need or you can have special sizes built to order to fulfill any requirement. In the better homes McCray Refrigerators are built into the kitchen or pantry with outside icing arrangement and conform to floor plan and interior trim.

Plan Service Free
We maintain a special draughting department where we cooperate with architects and builders and furnish ideas and suggestions for any type of refrigerator equipment.

Get These Catalogs and Complete Your Files
No. 92—Regular Sizes for Residences No. 61—For Meat Markets No. 50—For Hotels, Clubs, Institutions No. 70—For Grocers No. 74—For Florists

McCRAY REFRIGERATOR CO., 660 Lake St., Kendallville, Ind.
Agencies in all Principal Cities

The Edwards Manufacturing Company claim several advantages for metal ceilings and side walls. They are economical, as the first cost is small, and, if proper care is taken, there will be no subsequent expense for repairs. They are very easily kept clean and are fire, moisture, and vermin proof. Being of light weight, they reduce to a minimum the strain on joists and other parts of the house frame.

This company have an agency proposition that should interest many of our readers. Details of it can be secured by writing the Edwards Mfg. Co., 401-417 Engleston Ave., Cincinnati, Ohio.

Here is an opportunity for wide-awake men to get some of the extra business in their territories. The metal ceiling and wall business is one of the coming features of construction of all kinds in all parts of the country.

Stanley Garage Door Holder
The owner of an automobile knows the danger of having the wind suddenly bang the open garage door shut, smashing lamps or causing other damage. A door holder on the garage serves as inexpensive automobile insurance, saves time in getting the car in and out, and adds greatly to convenience while working in and about the building.

The Stanley No. 1774 garage door holder is a mechanical footman that never gets tired and never forgets. It is universal in application, is easy to put on, and can be used for either right or left hand door without any change whatsoever. Remarkably strong and simple in construction, it has but few parts. There is a rigid arm of U-shaped steel with attaching plates of heavy gauge and large size, applied at sufficient distance from the hinge joint so as to develop the maximum of holding power. The garage door holder is packed one pair to the box, with holding screws carefully selected to be of the proper strength. The length of this device is 30 inches and the net weight per pair is 8 lbs. Of interest to many is the fact that this door holder can easily be adapted for curve top doors.

The Stanley Works, being the largest organization in the world devoted to the manufacture of wrought steel hardware, special factory advantages are available in the manufacturing of these products.

A copy of the new Stanley Garage Hardware Catalog, which
Free Plans

Don't figure on any crib or granary without consulting our Free Plans. They will show you how to get greatest capacity at least expense by installing MEADOWS INSIDE STATIONARY CUP ELEVATORS.

The picture at the bottom shows a 40-ft. crib. The Meadows Elevator angles off and follows the rafters, thus allowing full capacity of the building. The cupola need not be as large as shown in picture; and cribs 36 ft. or less in length with half-pitch roofs require no cupola.

No pit is necessary for dumping grain. Just a hole 16 inches deep into which boot of elevator is set. The elevator is confined to one side of the driveway, and the wagon jack is entirely overhead, fastened to the joists.

The time has come when every crib or barn means an elevator; and to every contractor an elevator should mean a "MEADOWS." Our trade-mark is a positive assurance of best material, skilled workmanship, and the incorporation of only those ideas which years of experience have proved practical.

With our plans, you will be able to show the farmer how he can save at least forty dollars a year on his corn crop alone; how the Meadows Elevator will pay for itself in less than two years' time.

You will be able to figure more definitely as to space, foundations and lumber.

Write today for these plans.

The Meadows Mfg. Co.
Pontiac, Illinois
is unusually complete, will be sent free to any builder addressing the Service Department of the Stanley Works, New Britain, Conn.

**The Wall Ties Rusted Out**

We were talking of accidents and building failures the other day. "Did you hear what happened over on that Stewart residence job?" the Architect asked. "No, tell us about it," said the Boss Carpenter. "Yes, do," the Editor urged.

"Well, you know its a big brick veneered house—well built, as I supposed—at any rate a swell looker of the up-to-date sort. Been completed just about a year when the other day during that rain storm all of a sudden—crack—swish—down slumped that brick veneering in a heap. The wall ties had rusted out—must have been cheap scrap stuff—and the first little extra strain on the wall brought the whole thing tumbling down. Luckily no one was hurt and the building itself stands there as good as ever, but they are having to re-lay the brick veneering entirely."

"I'll bet this time that contractor will look after his wall ties with considerable more care," the Boss Carpenter remarked. "A four-inch brick veneer wall hasn't very much stability of its own; it needs to be well supported—well tied to the wood framework and sheathing of the house. I have noticed that a good many builders seem to think that any old scrap metal will do for wall ties. This failure over at the Stewart residence certainly proved different. For my part, when I superintend the laying up of a wall, I want it done in a way that I can rest easy about it afterwards."

"I have a letter here right along line," the Editor interrupted. "It is from the Allegheny Steel Band Company, and it about their Whale Bone wall ties. These are made of the best quality galvanized sheet steel, No. 22 gauge or heavier.

All of their efforts, so they state, have been directed at quality without regard to price; yet strangely enough, the cost of using these superior quality wall ties would run only about 50 cents more, for an ordinary house job, than for cheap ties. I wish that both the building owners and contractors could realize that they are endangering their brick construction by using thin scrap ties, and are only saving 50 cents on the entire job by doing so.

"The Whale Bone wall tie comes packed one thousand to a box, weighing fifty pounds to the thousand, no variation whatever in weight, true amount guaranteed. Each tie measures 7x1/2 inches. These ties are handled by all the principal jobbers, and can be obtained in most localities from the builders' supply dealers. The Allegheny Steel Band Company, 886 Progress St., Pittsburgh, Pa., are offering to send a sample to any builder interested. They guarantee these goods absolutely, stating that for any style of brick construction, whether solid or veneer, wide joint or buttered joint of brick, these Whale Bone wall ties are a permanent fixture when once placed."

**THE HERO PIPELESS FURNACE**

HEAVY CAST IRON Good for 20 Years

Let us help you with your Heating and Ventilating

We make a complete line of warm air furnaces and room heaters.

Good commissions paid to Contractors and Builders.

CHAS. SMITH COMPANY
180 N. Dearborn St. Chicago, Ill.
You can safely install the “Mueller” Pipeless in modern homes

The Pipeless Furnace is no longer a novelty or an experiment. Nor is it simply a “poor man’s” heating outfit, suitable only for one or two rooms. Thanks to “Mueller”—a leader in the house heating field since 1857—the Pipeless Furnace has now come into its own as an eminently practical and efficient method of heating not only the humble cottage, but the larger modern home as well. The Mueller Pipeless Furnace, in every feature of its service, is as superior to the stove as the electric light is to the oil lamp, or the vacuum cleaner to the broom.

Get In On This Profitable Pipeless Furnace Business

There are hundreds of families in your community using stoves or inferior furnaces, who would gladly discard them for the Mueller “Pipeless” once they knew about its greater efficiency, economy and all round satisfaction. There is money, as well as satisfaction, for yourself and your customers installing the “Mueller” Pipeless in new and old houses in your locality. Write for our special proposition, and capture the cream of this coming business.

The Mueller Pipeless Furnace is dominating the “single register” heating field by the sheer force of its superior construction and accomplishments, as have Mueller “quality” products in the Hot Air, Hot Water, Steam and Vapor Heating fields for nearly 60 years. Unlike many pipeless furnaces, the “Mueller” is not a stove or fire box, but a real heater, conforming to the most approved heating engineering practices, and possessing the unequaled heating efficiency and fuel economy of the nationally known Mueller Furnaces and Heating boilers.

A Mueller Pipeless Furnace for Every Requirement

There is a Mueller “Pipeless” for various sizes and arrangements of homes, various climatic conditions, etc. This insures heating efficiency and satisfaction in all its installations. Don’t recommend, or install, ordinary “stock” furnaces in homes they are unsuited for, and risk failure and disappointment. Install the “Mueller”—scientific, practical, powerful “Pipeless” furnace and be sure of giving solid comfort to the larger modern house, old or new, as well as to the ordinary cottage.

Easy to Install

Absurdly easy to install the Mueller in old or new houses; simply insert register in floor above heater, and connect heater to chimney. Insures constant warm air circulation and ventilation throughout entire house, and without overheating in basement or at register.

Send at once for descriptive catalog of this remarkable furnace, and special proposition to contractors and carpenters.

L. J. Mueller Furnace Co.
218 Reed Street
Milwaukee, Wis.
WOLVERINE FURNACES
and the WOLVERINE SYSTEM of Heating and Ventilating are something you want to investigate.
You buy direct from our factory at manufacturers' prices—furnaces, registers, cold air faces, pipe and fixtures already cut and ready to put together. We send our own mechanics to install complete if you are in our local territory. If not we send complete plans and specifications that any good mechanic can follow.

It costs you nothing to get our plans for your building and receive our written proposal.

Wolverine Furnaces are constructed on scientific principles which makes them durable and economical in fuel. Easy to clean and operate and sold under the most liberal guarantee ever given with heating apparatus. Write for large 32-page illustrated catalog that describes and shows these furnaces. It is FREE, a postal card will fetch it. Ask for catalog No. 63.

MARSHALL FURNACE COMPANY

THE MONOPIPE
ALL STEEL FURNACE
Built to deliver a large volume of warm air free of dust and gases.
Sold with that guarantee.

Marshalltown Furnace Co.
MARSHALLTOWN IOWA

Goodell-Pratt High Speed Hand Drills
These tools are particularly useful for wood finishers, floor layers or anyone else who must drill a large number of small holes very rapidly.
They are absolutely new and the makers say that there are no other similar hand drills on the market with a speed of 7 revolutions of the spindle to one turn of the crank.
The gears of these drills are protected from dirt and breakage by aluminum casings, and are packed in grease to insure easy running and proper lubrication.
The large end handles, long cranks, and big knob side handle make the drills very convenient to use. The aluminum casings make them very light.
The spindles run in ball bearings.
The chucks hold round shank drills of all sizes up to 7/8 inch in diameter.
No. 385 is shown here.
The tools are very finely finished, making them fitting companions for the 15 other Goodell-Pratt Hand Drills.
They are manufactured by Goodell-Pratt Company, Toolsmiths, Greenfield, Mass., U. S. A.

Auto Trailer as an Investment
Every contractor or builder who owns a passenger car or truck can make a most economical addition to his cartage equipment by adding an inexpensive auto trailer. The capacity of a three-quarter-ton truck can be doubled by this addition, which does not add to the cost of the operation.
The greatest saving, however, is to the contractor who owns a pleasure car and who is continually using that pleasure car in going from one job to another. The trailer in this case effects an enormous saving, because with no additional expense the contractor may change the location of his equipment, or change from one job to another with very little loss of time. He takes his men in the pleasure car and loads his tools in the trailer, and it's a matter of perhaps fifteen minutes before the men are working on the job, while with the old method this same transfer may have required an hour or two.
This trailer permits the appearance and passenger capacity of the pleasure car to remain intact, and at the same time doubles its efficiency by the addition of a truck.
Two features necessary for the satisfactory operation of an auto trailer are the adjustable draw bar and the "All-Way" coupling. The adjustable draw bar permits the trailer body to ride level, regardless of height of the automobile frame, which is an important feature on a two-wheel job, where the load is liable to shift to front or rear over rough roads.
The "All-Way" coupling takes care of every possible motion between car and trailer. The side motion, as in turning corners, and the up and down motion occasioned by going over cross walks and the like, as well as the most severe twist. Two springs forming a part of the construction of this coupling take up all shocks in starting or stopping. The trailer may be attached to any car in less than half a minute.

(Continued to page 130.)
Empire Pipeless
The One Register Wonder
Adaptable to Houses with High or Low Cellars
Burns Hard or Soft Coal, Wood or Natural Gas

Shipped complete with casings, including square and round pipe to Register, smoke pipe tee with check damper complete, combination duplex register, water pan, 10-lb. can asbestos furnace cement, and chain and pulleys.

Quick, Easy and Inexpensive to Install
because it does away with all extra cutting through floors, walls and partitions. No expert needed to do the work.

Fixtures and Equipment
Ash Pit—Unusually deep and roomy.
Joints—Deep cup joints, thoroughly cemented and gas tight.
Grates—Triangular pattern. Easily removed. No bolts used.
Fire Pot—Heavy and ribbed. One-piece or two-piece, as desired.
Radiators—Cast iron or steel.
Feed Door—Opening larger than in ordinary furnaces.

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Feed Door—Opening larger than in ordinary furnaces.
A variety of models of the "Jackson" trailer in capacity ranging from a thousand pounds to three-quarters of a ton, will meet practically every requirement. All models are equipped with high duty ball bearings, rubber tires, and long, easy riding springs. The construction is after the latest methods in truck building. More complete details with prices upon this entire line may be had by addressing the manufacturers, The Miles Manufacturing Co., 309 E. Franklin St., Jackson, Michigan.

**"Simplex" Automobile and Truck Trailer**

A "Simplex" trailer follows absolutely in the tracks of the rear wheels of the automobile or truck. This is accomplished by means of a patented short turn construction underneath the reach of the trailer. Both axles of the trailer are pivoted.

A trailer that does not track is dangerous for the reason that when it is turning a corner it cuts in, and any person waiting at the corner for the automobile to pass is liable to be hit by the trailer if it cuts in.

The "Simplex" automobile trailer can be attached or detached in thirty seconds.

A contractor can use his car for pleasure or inspection trips; then when he has supplies or material to deliver, can attach the trailer to his car in thirty seconds and have a three-quarter-ton truck. The Model A trailer is equipped with 30 by 3 pneumatic tires; model B is equipped with 1½-inch solid rubber tires.

The wheels of the "Simplex" trailer are exactly the same as the front wheels of Ford cars, and are interchangeable. On account of their being ball bearing, the friction is reduced to a minimum and a heavy load rides very easily.

With a load of one thousand pounds in the trailer the gas consumption is increased only 5 per cent, it is said.

For full particulars about this "Simplex" trailer write the Simplex Short Turn Trailer Co., 1200 Meridian St., Anderson, Ind.

---

**A Main Electric Plant**

will light the home safely and economically, and operate the Washing Machine, Water Pump, etc.

Complete line, from 7 light (16-C. P.) at $76.95, and 12, 37, 50, 75; 100, 150 light sizes up.

Write for 80 page catalog and particulars.

Main Electric Manufacturing Co.

Dept. A.

PITTSBURGH, PA.
THE GREAT BELL
The Original PIPELESS FURNACE — Father of Them All

We have thousands in use. Sizes, styles and prices to suit all. $38.00 to $94.00

Made for the building where a furnace is needed, but where the cost has been prohibitive.

The GREAT BELL PIPELESS FURNACE will heat any one or two-story building in the most efficient manner with the least effort, and the lowest relative cost. While Cost is secondary to Service in this furnace, our methods of production and sales have reduced the cost so low that no builder can afford to overlook our proposition.

And we guarantee our furnaces to be and do all we claim for them in both catalog and correspondence.

Write for our catalogs, describing the various styles, prices and specifications of the Great Bell Furnaces. You will need them on file for future use.

American Bell & Foundry Co.
Northville, Michigan

Jet the Manufacturer's Price

Make Big Profits Installing This Kalamazoo Pipeless Furnace

Big profits because you get the complete furnace at manufacturer's wholesale price. Shipped to you direct from the Kalamazoo factory. Quality of the very highest sort. Castings made from highest quality pig iron. Big fire-pot—grate operates on ball bearings. Easy to take care of—big radiation surface. Satisfied users everywhere. Let us refer you to some near you.

WRITE US Get our prices on this furnace in different sizes. We pay freight and ship without delay. Also allow full year approval test. Our guarantee protects you and your customer, and $100,000 Bank Bond backs our guarantee. But, write us. This opportunity is too big to miss. An unexcelled quality at a low factory price. There's money in it for you—bigger pleased customers—better contracts and better prices for the homes you build. Write today.

KALAMAZOO STOVE CO., Manufacturers KALAMAZOO, MICHIGAN

WE ALSO MAKE PIPE FURNACES, WITH HEATING PLANS FREE

200,000 families using Kalamazoo Stoves, Ranges, Gas Stoves, Furnaces, White Enamel Metal Kitchen Kabinets and Tables. We have four catalogs. If interested in other lines, please say which you want.
The Ideal Engine Co.

R. E. Olds, Chairman
Formerly The Original Gas Engine Co.
630 E. Kalamazoo Street Lansing, Mich.
The Man Who Was Building $1,000 Cottages

met the man who was building skyscrapers, at the exit of the Building Material Exhibit. "Hello, Tom," said the skyscraper man, his broad smile deepening to a chuckle. "Have YOU discovered this place, too?"

"Have I?" Tom waved a sheaf of papers triumphantly. "Why I've just found where I can save 12% on plumbing, 10% on interior trim and 25% on roofing material! After this, when I want a figure on anything, I'll come here FIRST. And the best thing about it is, you learn all the newest and best building methods here—the short cuts, economies and new materials that cut construction costs. It's a regular Clearing House of Building Information."

BUILDING MATERIAL EXHIBIT

Get into the habit of visiting the Building Material Exhibit whenever you are in Chicago. You will find it a big aid in estimating, in securing the lowest figures and the best materials.

200 intensely interesting exhibits by America's leading manufacturers of building material and equipment. If distance prevents coming, write and secure estimates on any material without charge or obligation.

BUILDING MATERIAL EXHIBIT
Entire Second Floor, Insurance Exchange Building

CHICAGO
Suggestions on Applying Varnish

The following material is taken from one of the booklets of the F. W. Devoe & C. T. Raymonds Company, New York, and is an indication of the value of the information that can be found in their booklets. Copies can be secured on request.

"The three most important points to be remembered in applying varnish are:

1st. Keep the temperature as near 70 degrees Fahrenheit as possible.

2nd. Keep all dampness away during varnishing and during drying.

3rd. Be certain that each coat is thoroughly dry before applying the next.

"The drying of varnish is retarded by both cold weather and hot weather. For this reason varnish should be applied at a temperature as near 70 degrees Fahrenheit as possible.

"Damp, muggy weather also retards the drying of varnish. Plenty of cool, dry air is necessary to make a varnish dry properly. Therefore, after doing inside work, open the windows an inch or two, top and bottom, so as to give the room plenty of good ventilation and light. It is a mistake to shut a room up tight after it has been varnished. "If varnishing is done in cold weather the building should be properly heated during the work.

"It is also important that the varnish itself should be as near 70 degrees Fahrenheit as possible. A chilled varnish should never be used. A can of varnish is liable to become chilled in a cold shop, or in a cold room, or even in carrying it from the shop to the job in cold weather. In this case it should be warmed up near a stove before commencing to use it. If the varnish is warmed up too much it may become a little frothy. This does no harm, as the bubbles are easily worked out with the brush."

A New and Better Method for Finishing Building Trim and Cabinet Work

A great improvement over hand methods in finishing all kinds of exterior and interior trim has been devised. This announcement will greatly interest contractors and builders all over the country.

A wide demand for better wood finish has grown up in recent years. Owners are demanding that the native beauty of the wood trim in buildings be fully brought out. This cannot be done unless the trim receives a most careful finishing before the stain, or varnish, is applied. In addition, owners are requiring this high quality finish in places that formerly received secondary attention, stair treads, second story trim, etc. The contractor has been compelled to comply with the demand. The only way he could do it heretofore was by putting on the necessary finish by hand sanding—a disagreeable and expensive job.

There are few workmen who like to sand trim by hand.

(Continued to page 136.)

An Improved Sander for Finishing Wood

A New and Better Method for Finishing Building Trim and Cabinet Work

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There are few workmen who like to sand trim by hand.

(Continued to page 136.)

Roberds

IDEAL Wall Board

Ideal in Cost, Service, and Appearance

Installed at just about one-half the cost of plaster and lath; and in comparison with other wall boards is from ten to twenty per cent lower in prices, and fifty per cent more satisfactory.

Embody all the "proof" qualities. It's grained appearance presents the most pleasing effect. Or it can be papered, painted, tinted or paneled to good advantage.

Our catalog is full of helpful suggestions on the use of wall board.

THE ROBERDS MFG. CO.
100 Spencer Ave. - Marion Indiana
Outclasses Copper Roofings

Particularly at this time of soaring metal prices it will be to your and your clients' advantage to recall the superiority maintained over Copper Roofings, tar and other prepared roof coverings by BAYONNE.

Economy The laying requires less time and less labor, because it is so much simpler. It is tacked only on the edges—without wet setting—and requires but one coat of paint for ordinary purposes. BAYONNE'S economy is fully explained by its remarkable durability. Unlike copper and other metal roofings, BAYONNE is not affected by heat or cold—it therefore never warps, bulges or cracks as copper roofs do. Nor does it blister, crumble and corrode like other prepared cloths and tar coverings. Once laid, it stays flat.

Cleanliness BAYONNE is impervious to water. It never leaks. Therefore it is the easiest to keep clean by simply putting the hose on it.

Write for Sample Book "N" giving prices and laying instructions. See Sweet's, page 426.

JOHN BOYLE & COMPANY, Inc.
112-114 Duane St.
NEW YORK CITY
70-72 Reade St.
Branch House: 202-204 Market St., St. Louis

Don't Lay Another Roof Until We Send You a Winthrop Tapered Asphalt Shingle

Just ask for a sample shingle. See how tough, how pliable and how durable it is. See how it is made like a wooden shingle—thick at the but and thin at the top. See how easy to lay it is. See what a beautiful roof it will make—red, green, or slate-black. Then you will understand why owners want the Winthrop when they know about it.

The BEAVER BOARD COMPANIES
564 Beaver Road - - Buffalo, N. Y.
Branches in Principal Cities

BEAVER BOARD

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
you owe it to yourself to investigate.

Particularly if you are going to do some stucco work get Keezon art 3 For, for this class of work, Keezon is not even approa d

Every Architect, Contractor and Builder should know about his really wonderful lath. Every time it is used the remark is alw 3 mat cde. This lath is going to revolutionize the lath industr) And it's a fact, it is

In a test made to demonstrate the holding strength of the t

Keezon key, water ( ) the depth of two inches was po ured on ti of a Keezon ceiling and allowed to remain for twenty-four hours. At ne end of that time most of the water h a coheed through the plaster without causing the slightest loosening or Sagging. plaster clings with greater tenacity than it will to any other known form of construction

in the unique position of combining every advantage of every other lath (wood, composition or metal) and yet, in addition, of being very reasonable in price.

Keezon Lath is fire-resisting and may be specified in slow-burning construction. Keezon Lath can't rust. Its use guarantees a saving in material and labor in the finished wall of at least 30%.

It is unequaled for strewo work. It can be applied to flat surfaces without furring and it can't warp, buckle, expand or contract.

Keezon cellular construction forms a key to which plaster adheres with greater tenacity than it will to any other known form of construction.

Get Full Particulars

Every Architect, Contractor and Builder should know about this really wonderful lath. Every time it is used the remark is always made—"This lath is going to revolutionize the lath industry!"—And it's a fact, it is.

Particularly if you are going to do some stucco work get Keezon particulars. For, for this class of work, Keezon is not even approached.

You owe it to yourself to investigate.

The Greatest Improvement

Ever Made in

Lath Construction, Places

Keezon

Lath

Keezon cellular construction forms a key to which plaster adheres with greater tenacity than it will to any other known form of construction.

Get Full Particulars

Every Architect, Contractor and Builder should know about this really wonderful lath. Every time it is used the remark is always made—"This lath is going to revolutionize the lath industry!"—And it's a fact, it is.

Particularly if you are going to do some stucco work get Keezon particulars. For, for this class of work, Keezon is not even approached.

You owe it to yourself to investigate.

Cellular Lath Company

417 La Salle Bldg. St. Louis, Mo.

Factory: 5126 N. 2nd St.

Cellular Lath Company, 417 Wainwright Bldg., St. Louis, Mo.

Please send full particulars.

My dealer is ________________________

Name ______________________________

Address ____________________________

City ____________________________ State ____________________________

(Continued to page 138.)
Composite Metal Lath

contains all the features desired in a lath, with a positive saving over any lath in original cost, in labor, in time and in material.

Made of iron, brick and wire, baked together by special process, which makes adhesion positive, and provides an absolute key for the material which is applied.

It is fireproof, porous, self-furring and the only metal lath with "suction."

But let us send you a sample, together with a description of the immense saving effected by this lath. Will be glad to do it upon receipt of your card.

Composite Metal Lath Co.
128 Broadway, New York

Sykes Expanded Cup
METAL LATH—Self Furring

This Metal Lath is heavier than others, therefore more rigid, more durable. Its peculiar formation allows it to reinforce the wall more surely—for this lath is imbedded in the mortar one-fourth inch. Note this cut:

Ordinary Metal Lath

The point of weakness is over the stud where the mortar gets no "grip." Less mortar is required when you use Sykes, because—all grounds being measured from face of stud, not from face of lath—the key mortar in Sykes Lath is largely in the wall.

For an Honest, Durable Job Use the Lath that Makes a Real Backbone of Lathing Strength—Sykes Expanded Cup Metal Lath

Approved by U. S. Government for Post Office Work.
Indorsed by Architects and Contractors.

Free Booklet—Metal Lath Specifications—and free sample of Sykes Metal Lath on request

SYKES METAL LATH AND ROOFING COMPANY
504 River Road, WARREN, OHIO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Finishing Stiles and Rails of a Door with the Yates Flexible Belt Sander.

The announcement concerning this machine, appearing on another page of this issue, is worth your careful attention.

SLATE WE HAVE WHAT YOU WANT

In Roofing Slate, Slate Blackboards Structural and Plumbers' Slate
SATISFACTION GUARANTEED in QUALITY and PRICE
Ask for Delivered Prices

J. K. HOWER Station C Danielsville, Pa.
R. J. KICHLINE, Sales Agent

ROOF SLATES E. J. JOHNSON
STRUCTURAL SLATE BLACKBOARDS

38 Park Row New York
Quarry Operator
BLACK, GREEN, PURPLE, RED

Booklet, Samples and Prices on Application

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
WRITE for convincing reasons why you can save labor, time and needless expense by using Curtis 1866 Woodwork and Built-in Permanent Furniture.

Any reputable lumber dealer can supply Curtis products. Go with the owner and look over Curtis designs. Both of you will be better satisfied. Let us prove it. Write today to Service Bureau.

THE CURTIS COMPANIES
Clinton, Iowa

Genuine Franklin Tunnel Roofing Slate
For Real Roof Protection
How can artificial roofing protect your building from the elements of the weather? The only coatings that can protect the roof must be protected and keep away in any play so please me it before being placed on the roof.

G. E. T. Slate

UNFADING ROOFING SLATE
and Slate Blackboards
Best to be had and made in
Slatington — Buy from us
Slatington-Bangor Slate Syndicate, Inc.
Slatington, Penna.

Mottled Roofs are in Fashion Now
That variety of surface texture so much sought for is now obtainable in the
Mottled Hudson Asphalt Shingles

A postal will bring our new book "Roofing Facts and Figures". Send for it NOW. It's interesting and will help you save money.

William L. Barrell & Co., 8 Thomas St., New York City
Chicago Distributors:—Geo. B. Carpenter & Co., 430-40 Wells St.
California :— Warehouse & Price Co., Los Angeles
Distributors:—The Pacific Building Material Co., San Francisco

When writing advertisers please mention the American Carpenter and Builder
The Page Trailer

There is no need to buy a truck or wagon to do your hauling if you have an automobile. The cheapest truck to carry from 600 to 1,200 pounds costs anywhere from $600 to $1,000, and with it you have only a truck. An auto trailer on the other hand, serves the purpose, carries as much as a truck, does the work at less expense for tires and fuel, and at the same time you have both a truck and a pleasure vehicle.

Many contractors and builders are realizing this and they are looking into the Page trailer as one of the most practical rigs on the market. Some contractors are even finding it profitable to invest in two or more trailers so that one can be loaded or unloaded while the other is running, thereby keeping the auto constantly employed.

One of the distinctive features of the Page trailer is its attachment or hitch. This is illustrated in the accompanying photograph. This hitch combines a universal joint and shock absorber which takes up the shock of either starting or stopping the load. It is a simple, practical device that simply can't get out of order, and is strong enough to stand the racket.

A steel yoke bolts to the frame of the car, not to the rear axle. The Page people say never attach a trailer to the automobile axle, as no axle is made to stand this strain. They recommend attaching to the back frame, and so provide this wrought iron yoke. When in place, this is practically all under the body of the car projecting only about two inches. The trailer is attached or detached easily by simply dropping in or lifting out the coupling pin.

A useful feature of this coupler is a standard for holding the trailer level when not attached to auto.

Our readers will be interested to investigate this trailer proposition. Write the Page Bros. Buggy Company, Marshall, Mich., for full particulars. They are an old established concern, founded in 1869. Yet they do not hesitate to keep up with the times, as is evident by the way they are developing this newest idea in the transportation field, the auto trailer.

+ Plumbing and Heating Supplies

A great many of our readers will no doubt be glad to have a copy of the new Catalog "H" of B. Karol, 800 So. Kedzie Ave., Chicago. It illustrates a complete line of plumbing and heating supplies, including both piping and fixtures. All

(Continued to page 142.)

BLUE RIBBON TRAILERS

This shows the adaptability of Trailers to the use of the contractor for doing hasty errands and making quick moves. It saves time; time is money; so it saves money. Full description and price on application.

Durant-Dort Carriage Co.
Flint, Mich.
This hitch is a real car while you are at it.

The Rochester Trailercar is built like an automobile. It is not like many of the so-called trailers—simply a box on four wheels with a draw bar. It is designed and built by experienced motor car engineers of world-wide experience who have studied the delivery and light haulage problems from every angle. The Rochester Trailercar is built exceptionally low, making it easy to load and unload.

Illustrated folder, showing details of construction and a variety of uses mailed upon request.

The Rochester Trailer Company, 122 Main St., East Rochester, N.Y.

Illustrated folder, showing details of construction and a variety of uses mailed upon request.
necessary tools for plumbing and steam heating work are also featured.

It is a 200-page catalog of handy pocket size, printed on good paper, and nicely illustrated. Copies may be had on request.

Farmer's Friend Cup Elevators

In emptying the grain from the buckets into the spout hopper, it is very important that the buckets be turned so that all the grain that is being carried will be poured into the spout hopper. If the result is not secured there will be choking at the boot and the best conditions will not be attained.

The accompanying illustration shows the "Farmer's Friend" elevator in which the design is carefully handled to prevent any of the grain from being carried over and clogging the boot. The spout hopper is large so as to catch all the grain, and the buckets are turned completely upside down while traveling over it. This insures the best possible results.

The cups traveling up the front side of the elevator pick up the grain from the feeder as fast as it is carried to them. The buckets do not scoop the grain up, but it is thrown directly into them, which cuts down the amount of shelling to the minimum and also prevents the bending of the cups or jerking.

All the parts that enter into the construction of this elevator are specially tested to see that they are strong enough for the work intended. An H14 pinned chain is used, and in tests this has been shown to be able to handle three times the maximum load of the elevator.

The elevator fits against the inside wall and only takes up 20 inches of space in the driveway. The feeder folds against the elevator when not in use. The elevator can be placed inside the crib wall if desired. The sheet iron covering prevents any grain from being spilled in the driveway.

LINWAX—THE FLOOR INDESTRUCTIBLE

Linwax Floors are restful. The vertical fibres of the wood provide a resilient and comfortable resting place for hoof and limb. In this respect Linwax Floors are the nearest approach to natural turf.

It is the Permanent Floor for Dairy Barns Horse Stables Bull Pens Hog Houses Garages Carriage Houses Wash Rooms Work Shop Floors

Linwax Sanitary Floors are the cheapest of all floors in the long run. Full information free for the asking.

LINWAX MANUFACTURING CO., Indianapolis, Ind.
CONTRACTORS—

Are you going to secure your share of the barn contracts to be awarded in the near future? You will agree with us that this work is of a profitable nature, and especially so in view of the assistance we offer.

Our Free Service Bureau is maintained for the benefit of all those interested in better barn construction and equipment. Plans are submitted without expense or obligation, and any additional information is promptly furnished upon application.

PORTER STEEL STALLS, COW STANCHIONS, LITTER CARRIERS, BARN DOOR HANGERS, HAY CARRIERS, FORKS, HAY SLINGS AND OTHER TOOLS ARE ACKNOWLEDGED LEADERS EVERYWHERE

Investigate and determine the prospective barn builders in the community; then call on us for any assistance relative to interior arrangement, construction, ventilation, etc., and see to what extent Porter Service serves.

New Barn Plan Booklet and Complete Catalog furnished upon receipt of your letter containing the names of parties who expect to build or remodel barns.

Write today and learn more about modern barns and equipment.

J. E. PORTER COMPANY, 620 Fremont Street, Ottawa, Illinois

Building Loans

During the wonderful progress in American city building in the last quarter century, the most successful methods for financing business buildings have come to be recognized.

The builder who must use borrowed capital will do well to consult those who thoroughly understand these methods.

As one closely in touch with construction work you should write for our Booklet "L," explaining the Straus Plan of financing real estate improvements.

S. W. STRAUS & CO.

Established 1882 Incorporated

Straus Building, CHICAGO

"Uncle Si" Says

"When a tool is the result of 84 straight years' experience, you can depend on it that it's a good tool."

Our experience in making saws dates back to 1832—84 years spent in perfecting saws that are guaranteed in temper, quality and durability. Made throughout, to be as perfect goods as human skill, best material and a knowledge of manipulating steel can produce.

S. W. STRAUS & CO.

Established 1882 Incorporated

Straus Building, CHICAGO


Have that easy "hang" that pleases the carpenter who wants to do careful work.

At your dealers or a highest grade 24 or 26-inch saw sent prepaid for $2.50

Simonds Mfg. Co.

Fitchburg, Mass.
Beach Sawing Machinery

All contractors and builders are interested in the question of cost reduction and profit increase. The most important step toward the attainment of this end is the utilization of power and machinery and efficient equipment of all kinds.

Your problems can be solved only by machines that are designed and built by experts to fit the conditions that have to be met by the contractor. The Beach Manufacturing Company, Montrose, Pa., offer unusual facilities to the builder in employing machinery that is suited to his needs.

They are issuing a little circular that shows some of the many machines in their line that are of value to contractors under various conditions. The completeness of this line of machines and the many ways in which they are equipped make possible for the contractor to secure the type of machine that is particularly suited to the work that he is generally engaged in.

The illustration shows a double arbor rip and cut-off saw with extension. It is one of the styles that has been very popular with builders.

The catalog of this concern shows many of these machines also and the Beach Manufacturing Company will be very glad to make suggestions as to the type best suited to conditions.

“Art-Kraft” Building Corners

Improvement is the order of the day. One of the newest devices for the improvement of residence construction and for the convenience of the carpenter trade, brought out in recent years, is the “Art-Kraft” line of metal building corners manufactured by the Canton Metal Ceiling Company at Canton, Ohio.

These are for use with lapped or drop siding and the manufacturer claims their employment not only results in more attractive and permanent corners, but a great saving in cost is accomplished. Their use dispenses entirely with the tedious and expensive job of mitering the siding by hand, and there is no possibility of the corners opening up owing to the action of the elements.

These “Art-Kraft” corners are made of galvanized iron in three sizes, both plain and embossed patterns, for inside as well as outside corners. They are exceedingly popular in localities where lap siding is used. Manufacturer will be glad to mail literature and prices, as well as samples to interested parties.

Half a Million Dollars Being Spent to Make Business Square Architecturally Attractive

Lake Forest’s new business section, now nearly completed, is the most unique of its kind in America, the general scheme being an adaptation from old English and German towns.

Behind the curtain of old business fronts, buildings have grown and are growing. When in a few months the curtain (Continued to page 146.)
Here's a Remarkably Fine Screw Driver

No. 111
Automatic Screw Driver
$1.50

Mr. Carpenter
You Can Make a Lot More Money

An Agency for the METAL SHELTER CO., Inc., will bring you more business, more profits, more customers, better and quicker results along the line, and it will be

A REAL BUSINESS OF YOUR OWN

Don't wait until someone else gets the agency for our garages, cottages, bungalows, stores, etc., etc.

It is easy to sell them and easy to set them up—a building a day. An investigation will cost you nothing. Write NOW for our descriptive circulars and proposition.

Metal Shelter Co., Inc.
Whitehall Bldg. New York City

Here's the Weatherproof Cannon Ball Barn Door Hanger—

Here's the hanger that appeals to every consumer who sees it. It is a big step in advance and is setting a new sales mark.

The tandem and flexible hanger is modified from the old reliable Cannon Ball Hanger only that the stirrup is shaped to conform to the Track.

The track is our latest design, is V-shaped and adapted to the Cannon Ball Hanger wheel. The head of the wheel runs in a groove and the wheel has an even bearing on each side. This track is made of heavy steel provided with heavy steel splices, making it just as strong at the splices as at any other point.

The cover is the same identical cover used on Covered Cannon Ball Track construction and is the only perfect track cover obtainable, since it not only completely encloses the Hanger and Track but also extends down below the top of the door and makes a tight closure.

We also call attention to the fact that Weatherproof Cannon Ball Hangers are equipped with a Track Cleaning device which automatically removes obstructions of any kind from the groove of the Track, making it self-cleaning.

HUNT, HELM, FERRIS & CO., 304 Hunt St., Harvard, Ill.
is torn away, the new section will stand revealed in all its symmetry and beauty.

The buildings, directly west of the Chicago & Northwestern railroad station, are grouped about a court, which will open at the east end in front of the railroad station. Thru the middle of the court runs a park, which has been dedicated to the city. At the entrance to the park will be an ornamental stone fountain. At the opposite end is the white colonnade of the west building, while on either side are the lines of symmetrical brick and stucco store buildings.

The outstanding feature of the group is the two towers following the style of the old towers of Munich and Nuremberg. The sun dial tower, forming a part of the north building, rises to a height of 90 feet. The clock tower opposite it, in the south building, is twenty feet lower.

There are twenty-eight stores in this block, the interiors of which are in harmony with the architectural artistry of the exteriors. Berger's "Classik" Steel Ceilings are used in all these stores because of their beauty and safety.

---

**The Farmer's Friend**

**CUP ELEVATOR**

_differs from all Others_

_Does not dip the corn up, but throws it direct into the cups so there is no chance of shelling any corn or bending up the cups or jerking._

And no matter how slow the power is geared, or how fast the horses walk, it will not carry any corn over; but delivers everything in the hopper so there is never any choking down at the boot. Farmers can unload over sixty bushels of oats in one minute's time, and ear corn in proportion.

You select the elevator that goes in your building, but you also get the blame if the elevator isn't what it ought to be, and fails in service. On your selection depend future business. You can't afford to overlook the Farmer's Friend.

We have a special agent's proposition for readers of A.C. & B. Let us tell you how you can make extra profits on your future corn crib and granary jobs.

Write today for catalog and special Builders' offer

Mr. Carpenter, get one of our free catalogs and acquaint yourself with the merits and advantages of our machines. We furnish the boot and head assembled as near as consistent, sections bored, etc., making the elevator nice and easy to install.

Write today for Free Crib Plans

Dept. 301  
MORTON, ILL.

Don't Order Wall Ties—Order  
Whalebone Wall Ties  
The Quality Tie with the Bull Dog Grip

If your dealer cannot supply "Whalebone," wire at our expense the following:  
(Name of dealer) can’t supply Whalebone.  
(Quantity) (number) boxes. (Your name.)

We will ship same day from our factory or from the nearest dealer handling. Samples mailed upon request.

Allegheny Steel Band Co.  
886-888 Progress St.  
N. S. Pittsburgh, Pa.

Get FREE Plans of this Modern Crib with the Famous National Giant Inside Elevator

Carpenter-Contractors drop us a postal, please, and we'll be glad to tell you how to make big extra profits by recommending and installing our National Giant Bucket Elevators in your crib jobs.

The "National Giant" has more desirable features for you to base your recommendation upon and more sensible features for the FARMER than can be found on any other make of inside grain elevator. Why? Because on cribs 2500 ft. or less, with half pitch roof, it is not necessary to have a cupola. Saves the farmer money. When cupola is necessary, we can save the farmer from $15 to $20 with the National Giant. As we why, please. We also save the farmer the cost of digging a pit, and on the length of elevator required. The "National Giant" leaves the corn on the cob, where it belongs; more money in the farmer's pocket.

Get Full Details of Proposition to Carpenter-Contractors

Ours is a good proposition for you and the farmer. It will pay you to look into it. It will bring in more business, greater profits for you. One satisfied customer will bring you many more crib jobs.

Write us today—we will give you full details and assist you in any way with plans, specifications, etc. Write now for full details.

Portable Elevator Mfg. Co., 854 East Grove St.  
BLOOMINGTON, ILL.

OLMSTED'S IMPROVED MITRE BOXES
Wood and iron, with adjustable saw guides. Suitable for any cross cut or back saw. Ensures perfect mitres. Carefully made, several styles. Prices very reasonable. Write for circular.

L. H. OLSTED'S SON  
As for further particulars.

OLMSTED'S TOOL GRINDER and Sharpener  
No foot power required. Guides rests for tools, etc. Requires no skill for operating—does rapid work.  
Hasbrouck Heights, N. J.

The Caldwell Auger Bit is an Efficient Tool
To the ordinary user, all bits are much alike until they are put into use. When this is done the superiority of The Caldwell is evident. This is because of the exclusive mechanical features in its construction. The construction, as shown in detail in illustration, enables The Caldwell to work several times faster and with less friction than any other known bit.

Regular 4 5 6 7 8 9 10 11-12 13-14 15-16—16ths  
Prices $3.50 3.50 3.50 4.00 4.50 5.00 5.50 6.00 6.50—cents  
COMPLETE SET of 13 BITS, $6.00

Until your dealer is supplied, remit direct to us. We will deliver without further cost to you. Send for Catalog.

The CALDWELL AUGER BIT CO., Lebanon, N. H.
Don't Pull the Cat Across the Carpet by the Tail

"I mind, one winter's night, the old woman says, 'Tim,' says she, 'be sure to put the old cat out before you come to bed.' Old Tab was a layin' on the carpet in front o' me an' I reached down an' ketched a holt of her by the tail, bein' about the most convenient part o' her to git a holt of, and started to take her out to th' back door, but she stuck all o' her claws into th' carpet and squaled and spit, an' the ol' woman says, says she, 'Tim, you brute, what you doin' to that poor dumb beast,' an' finally I jest had to take the cat by the neck an' pick her up to get her out a-tall.

"An' I says to myself, 'Tim,' says I, 'let that be a lesson to you; go at things right and don't never try to pull the cat across the carpet by the tail.'

"An' it was just the same way with a contractor I worked for once. He went an' bought a lot o' things that was said to be wheelbarrows, just becuz they was a little cheaper 'n STERLINGS, an' before he'd had 'em a week they wuz screechin' an' squallin' an' breakin' down an' wearin' out the men that wuz a pushin' 'em, an' he never did have no luck 'till he sold 'em to a junk man an' got a lot of STERLINGS.

"An' that's jest the way with everything. It's a whole lot better an' cheaper in the long run to do things right while ye'r a doin'.

TIM TRUNDLE."

Sterling

Barrows are right.

Oil-impregnated fiber bushings for wheel bearings make STERLING BARROWS self-lubricating. No squeaking; no oiling nuisance to gather dust, sand and dirt and grind out the bearings. STERLING BARROWS run easier, last longer, carry heavier loads, yet they are not expensive after all.

Send for Our Catalog No. 19

STERLING WHEELBARROW COMPANY
6207 Shenners Ave. West Allis, Wis.

Makers of Patented Ribbed Channel Steel Foundry Flasks, Snap Flasks, Wheelbarrows and Carts, 600 000 sq. ft.

Wall Board Successfully Duplicates Natural Wood Paneling

Perhaps with but one exception there is no new use for wood fibres that have made such rapid development in the United States in the past ten years as its use for wall boards. It is stated from what is considered good authority that the consummation of wall board in the United States for the year 1915 was probably in excess of 480,000,000 sq. ft.

The use of wall boards for interior work in place of laths and plaster would almost appear to be a new principle in building, and to a certain extent it is. At the same time we find that the Japanese have employed a board for partitions for perhaps hundreds of years. The Japanese made their boards from a very strong fibre which they obtained from the tough inner bark of six species of deciduous trees, this inner bark having long, tough, fibre cells. The bark most in use by the Japanese is taken from the mulberry tree. In order to obtain the fibres the bark is boiled in hot water to separate the outer bark from the inner bark. The inner bark is then dried and bundled and shipped to the board maker. The method employed by the Japanese for reducing the inner bark to the pulp form is very primitive. They employed a crude mallet with which they beat the bark against a flat surface like a flat stone until it is reduced to a pulp. It is then subjected to further beating in water to thoroughly separate the fibres, after which the usual methods of making board by hand are employed. This process was introduced into Japan, G10 A. D., from Korea.

During the development of wall boards in the United States the principal raw material used has been mechanically ground wood pulp, and old papers. It is, therefore, in line with progress that improvement should develop both in the raw material used and in the method of construction; and it is interesting to note that one of the most recent developments in wall board, known as "Fiberlic," which appeared on the market some two and one-half years ago, has followed to a certain extent the raw material employed by the Japanese. In place, however, of the fibre obtained from the inner bark, this modern process uses the fibre obtained from the root of the tree. The process of reducing the root is distinctly modern, for in place of the crude method employed by the Japanese the modern method employs chemicals. And through a process that removes all the pit starch matter, and all other vegetable matter natural to the fibres, leaving what might be termed a commercially pure cellulose; that is, as one authority states, the plant structure.

At a recent convention an exhibition prepared by one of the largest varnish and stain manufacturers in the world showing what can be accomplished with this new synthetic wood made from root fibre attracted the attention and comments of all, and the fact that panels 10 to 12 feet in length could be made to reproduce the old English and Dutch panels of one to two hundreds years ago proved that the effects so much desired by the architect, interior decorator, and builder were available. The many possibilities for this new product is evident. It is well adapted for use in churches, theaters, and public houses for both walls and the ceilings for commercial houses where wood panel effects for the office and windows are desired, and last and most important, the home builder will well appreciate what this all means when he realizes that the wood panel effects so much desired are now available at prices that vary from 66½ cent to 150 per cent less than the cost of the wood veneer panels, and in widths and lengths that were only available many years ago when large trees were the rule and not the exception.

For further information address the Fiberlic Co., Camden, N. J.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
LEAD PAINT
Dovetailed On

PURE white lead is metal lead in another form. Under a blow-pipe flame, it returns to the metallic state.

A building painted with strictly pure white lead and pure linseed oil, like

Dutch Boy White Lead

and Dutch Boy linseed oil, is sheathed in a solid coating which, while not lead, is derived from this durable metal and has many of its characteristics.

This lead-like sheet, instead of being nailed on, might be said to be dovetailed fast, for it is held by thousands of tiny tentacles of the coating material itself. It is only as thin as paper but plenty thick to withstand the extreme changes of wet and dry weather and of burning heat and biting cold.

Folders
Our handy, general painting specifications and useful chart of color combinations should be in your catalogue file. Write nearest branch for FREE Folders "A".

NATIONAL LEAD COMPANY

New York Boston Buffalo San Francisco
Chicago Cincinnati Cleveland St. Louis
John T. Lewis & Bros. Co., Philadelphia
National Lead & Oil Co., Pittsburgh

$2 a Box SPECIAL OFFER—BY MAIL ONLY
3 DURO Guaranteed Shirts sent post-paid on receipt of $2. Name and address of friends. You save your pocketbook, a trial of these famous box of shirts guaranteed not to shrink, fade or rip & months’ wear or new shirts free. Made of fine white percale with three stripes of blue, black and lavender. One shirt of each color size alike to the box. Cut in the popular coo style. Cuffs attached, hand laundered and very fashionable. Sizes 14 to 17. If not satisfactory on arrival we will gladly refund your money. Highest Bank References.

GOODELL & COMPANY, Room 222, 158 East 34th St., NEW YORK

In every summer cottage you build
—you can install, at a profit, a Ro-San Indoor Closet

Every building—home, cottage, store or office—that has no sewerage needs one. A boon to sick people. Can be placed anywhere in house.

Comfort Indoor Closet
Odoless Sanitary Germ-Proof
Every home without sewerage needs one. Put a warm Comfort Toilet in your house. A guarantee of healthy, sanitary conditions. A boon to sick people. Can be placed anywhere in house.

Fly Breeding Can Be Destroyed
Help "Swat the Fly"—Have City Conveniences. Germ-life killed by chemicals in retort. Emptied once a month—no trouble. Needs no other attention. Boards of Health endorse it. Write now for literature, prices, etc.

Agents Wanted—Exclusive Territory.

COMFORT CHEMICAL CLOSET CO., 106 Factory Bidgs.
Toledo, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
New Roll Shingles Will Boom Roofing Business

There are a number of home owners who never heretofore would think of using roll roofings to cover their homes because they felt that the artistic value of a roll roofing was practically negligible. It is of uncommon interest then to this class of roofing users to know that a truly beautiful, dependably made roll roofing is now obtainable in the new Flex-a-Tile Roll Shingle patented and exclusively manufactured by the Heppes Company, Chicago.

This new Flex-a-Tile Roll Shingle is really a regular full size 32-inch wide roll of individual asphalt shingles. It is said to give all the beautiful appearance of a high-grade asphalt shingle roof, combined with the economy of roll roofing inasmuch as the asphalt shingle effect is obtained with no greater cost than with roll roofing.

It is unusually advantageous to the industry in general that this new Flex-a-Tile Roll Shingle has been put on the market just at this time when the roofing season is opening in earnest, and thousands of new jobs are being let. The roofing contractor or dealer has only to describe this new Flex-a-Tile Roll Shingle to his customers, in order for them to recognize its advantages and to place orders for its use.

Anyone interested in obtaining more complete information about this new Flex-a-Tile Roll Shingle, together with prices and samples, can secure all the details by simply addressing the Heppes Company, 1010 Kilbourne Ave., Chicago.

What Do You Know About Saws

Do you know how a saw is made, or why it cuts? Have you ever given it any thought?

Being so universally and extensively used for many years, the saw has become such a well known object that its very familiarity seems to have dulled the sense of its true value and importance.

This Enlarged View of Crosscut Teeth Plainly Shows Their Actual Shape, and the Illustration on Page 152 Seemingly Appears to be Another Style. It is a Photographic Enlargement of the Same Crosscut Teeth From Another Viewpoint—Looking on the Cutting Edge at an Angle of About 45 Degrees, which Brings Out in Pronounced Manner the "Set" of the Points on Each Side.

As a matter of fact, the saw has ever been one of man's greatest helpers in the march of civilization, his most powerful and efficient assistant in the making of progress, in providing comfort and conveniences. It is the agency by which the scope of achievement has been immeasurably widened, enabling the accomplishment of greater and more difficult tasks with a corresponding lessening of human effort and toil.

(Continued to page 152.)

We have at last a Vise that is good enough for the House Carpenter

The Carpenter Vise swings perfectly free on its base in any of its many positions. The workman places his work in the vise in the best position for working to get the best light, with his body in a natural position so that he can work direct from the shoulder. The vise locks automatically in any position. This means greater efficiency for the workman, increased output, better and truer work with less labor. This tool is a profit booster for the contractor, a labor saver for the workman. If your hardware dealer cannot show you a vise in action send for full information direct.

THE WILL-BURT COMPANY, Orrville, Ohio
Builders Need a Trailer THAT WILL TRAIL

Auto filled with passengers—trailer loaded to capacity—rush job ahead. Quick, short turns out the gate—around corners like a flash, over rough, muddy roads until the journey is ended. Your mind on the road ahead—no thought of the trailer behind—if it was a

SIMPLEX SHORT TURN TRAILER

—the only popular priced trailer constructed with the famous SHORT TURN GEAR—the only trailer scientifically made to follow the trail—no matter where that trail goes. Therefore it is the only trailer that actually does “trail” under all conditions.

SIMPLEX SHORT TURN TRAILER CO.
1200 Meridian St., Anderson, Ind.

Waterproof Moistureproof Stucco

There is only one way by which you can be absolutely assured that rain or moisture will not percolate through cracks in the stucco, make the stucco fall off, penetrate the wall and ruin the interior, as occurs in cement, lime and other exterior coatings, and that is by using the one water-proof, moisture-proof stucco,

KELLASTONE

In the first place, Kellastone does not crack or shrink from window and door casings, and is not subject to the great expansion and contraction which causes other stuccos to crack, allowing water to enter. Add to this its remarkable impermeability to water and moisture, and resistance to heat and cold, and you have the one practically indestructible seal, the one perfect exterior coating for any home or building. Kellastone will “give” to stresses and to the normal settling of walls. It adheres with extraordinary tenacity to wood, brick, tile or stone. It is proof against the results of extreme changes in temperature, and it is fire-proof. It is the only dependable stucco. Used by the U. S. Government, railroads, hospitals and homes everywhere, and for renovating and overcoating old buildings.

Kellastone Composition Flooring solves the flooring question for schools, hospitals, factories and homes, being superior to concrete, tile, wood or rubber-tile, because it has no seams, joints or cracks, deadens sound and is practically indestructible.

Send for illustrated proven facts today.

The National Kellastone Co.
504 Association Bldg., Chicago, Ill.

TYPEWRITER SENSATION!

Free Trial—Use as You Pay

Send Me Only $2.00 a Month Until the Low Total Price of $34.15 is Paid, and the Machine is Yours

This is absolutely the most generous typewriter offer ever made. Do not rent a machine when you can pay $2.00 a month and own one. Think of it—Buying a $100.00 Typewriter for $34.15. Cash price, $32.30. Never before has anything like this been attempted.

Perfect machines, Standard Size, Keyboard of Standard Universal arrangement, 42 keys writing 84 characters—universally used in teaching the touch system. The entire line of writing completely visible at all times, has the Corrector tabulator, the two-color ribbon, with automatic reverse, the back spacer, hall bearing carriage action, in fact every late style feature and modern operating convenience. Comes to you with everything complete, tools, rover, operating book and instructions, ribbon, practice paper—nothing extra to buy. You cannot imagine the perfection of this beautiful typewriter until you have seen it. I have a thousand of these perfect late style Model No. 4 typewriters at this bargain price, and each purchaser fortunate enough to secure one of these beautiful machines must try it out in his own home or office before deciding to buy. I will send it to you F. O. B. Chicago for five days' free trial. It will sell itself, but if you are not satisfied that this is the greatest typewriter bargain you ever saw, you can return it at my expense. You won't want to return it after you try it—you cannot equal this wonderful value anywhere.

You Take No Risk—Put in Your Order Now

When the typewriter arrives deposit with the express agent $6.15 and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw keep it and send me $2.00 a month until your balance of $34.15 is paid. If you don't want it, return it to the express agent, receive your $6.15 and return the machine to me. I will pay the return express charges. This machine is guaranteed just as if you paid $100.00 for it. It is standard. Thousands and thousands of people own and use these typewriters and think them the best ever manufactured.

The supply at this price is very limited, the price will probably be raised when my next advertisement appears, so don't delay. Fill in the coupon today—mail to me—the typewriter will be shipped promptly. There is no red tape. I employ no solicitors—no collector—no chattel mortgage. It is simply understood that I retain title to the machine until the full $34.15 is paid. You cannot lose. It is the greatest typewriter opportunity you will ever have. Do not send me one cent. Get this coupon in the mails today—sure.

HARRY A. SMITH, Room 721, 231 N. Fifth Ave., Chicago

--------- Tear Out—Mail Today ---------

H. A. SMITH, Room 721, 231 N. Fifth Ave., Chicago, III.

Ship me your Model No. 4 typewriter F. O. B. Chicago, as described in this advertisement. I will pay you the $26.00 balance of the SPECIAL $24.15 purchase price at the rate of $2.00 per month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee.

Name

Address

The results of its work are seen on every hand, wherever you may go. Think of what the conditions would have been without the aid of the saw, an dthen, only then, will you begin to realize some degree of its real importance and the wonderful part it has played in the world's up-building.

Tho a handsaw consists of but few parts, and its making appears to be a simple matter, yet this latter is far from the actual fact.

A full understanding and appreciation of the work involved in its manufacture can be gained only by a personal trip thru the works, where, step by step, in gradual development from crude, raw material, changed and refined in fiery furnaces, transformed under monster rolls, shaped and formed by an army of expert mechanics of long experience aided by a multitude of machines, there finally emerges a beautifully finished, efficient article of utility, its evolution bearing high tribute to the handicraft of man and creating a lasting impression.

So that some conception may be had and to obtain proper recognition of the true value of the saw, the principal operations are explained at length in a booklet, entitled "How a Disston Handsaw is Made," and in a recent production, a finely printed twelve-page pamphlet, on "Why a Saw Cuts," this particular subject is specially illustrated and described, demonstrating that the cutting action of a saw is based on scientific principles, bringing out new and astonishing facts which few ever before realized.

Both the above publications, well worth reading, will be sent free on request, by Henry Disston & Sons, Incorporated, Keystone Saw, Tool, Steel & File Works, Philadelphia, Pa.

NEW CORNELL CIRCULAR

A handsome color folder illustrating the uses of Cornell-Wood-Board, an excellent material, has just been issued by the Cornell Wood Products Company of Chicago and Cornell, Wis.

The folder is unusually attractive and contains information on the finishing of walls and ceilings. All of the illustrations in the booklet are reproduced from actual photographs. They comprise a variety of interiors, showing the practical and decorative advantages of the board. Each view carries explanatory notes, etc. A sample of Cornell-Wood-Board is enclosed with folder.

If you would like to receive this write the Cornell Wood Products Company, Insurance Exchange Building, Chicago, Ill.
For every one who wants the best drawing pencil

**Venus**

**SMOOTHNESS and ease of writing, an entire absence of scratchiness, a standard uniformity, a strong non-breaking lead, long life, these are but a few of the qualities that distinguish the famous

**Venus 10¢ PENCIL**

If you want a heavy soft lead, it's ready. If you want a thin delicate line you can have it. The 17 degrees of Venus, from 6B softest to 9H hardest satisfy every need. Insist on Venus, with the distinctive Venus water mark finish. At all dealers.

FREE—Box of Venus Samples for Test. WRITE FOR IT

American Lead Pencil Co.
212 Fifth Avenue, NEW YORK
and Clapton, London, England

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**The Finger-Cling Patented Bond Anchor for Brick Walls**

The Finger-Cling bonds every course, including the outside course, to the joists and frame of the building. It fits flat between courses. Note how the fingers cling to the heart of the wall. Mortar hardens in the loops, making the bond part of the wall. The Finger-Cling bond is light, and easily handled, but has enormous tensile strength, being made of fine steel. Made flat and with right angle twist, so that they may be used on the top or sides of joists.

Much cheaper than any other bond, and more effective, because they bond every course. Specified by leading architects; used by best builders. Write for list of users, prices, and terms.

**Steel Security Bond Anchor Co.**
712 Broadway, Gary, Ind.
Chance to Sell Household Necessity

Many carpenters and builders have found that it is very profitable to handle various kinds of specialties that are of value in a house. In their work they have an unusually good opportunity to sell such articles without wasting time, and at a nice profit for themselves. The possibilities in such a line with a specialty that has good features depend entirely on the man’s energy who is handling it.

An unusually good opportunity is offered in handling the “Easy-Wringer” mop that is made by the U. S. Mop Company, 673 Main St., Toledo, Ohio. It has many features that will recommend it to the housewife. That its usefulness is appreciated is shown by the records that have been made by some of their agents. The company claim that it is not necessary to develop a selling talk for the product as its unique and labor-saving features will sell it on sight.

The particular part of the mop that attracts attention first is the wringing device. The mop does not have to be touched with the hands at any time. There is a crank extending out over the handle of the mop that is connected to the mop thru beveled gears and a hook. The turning of this crank twists the mop and effectually wrings it.

The U. S. Mop Company are offering exclusive territory to our readers which will protect them if they wish to handle this proposition. More complete details and information can be secured from this company. Request should be directed to the address given above.

For the Walls of Summer Cottages, Camps and Bungalows

On account of its not requiring any painting or further decorating of any kind Neponset Wall Board has always been advertised extensively by Bird & Son as an ideal material for finishing off the walls and ceilings of summer camps, where economy is an important consideration.

The surfaces of Neponset Wall Board have been water-proofed so that from a strictly practical point of view no sizing or painting is necessary. The board is then finished in two styles, quartered oak and cream white. Every sheet that leaves the mill is therefore all ready for use without any further expense on the part of the user.

Note the following from a leaflet:

“It is in camps, cottages and bungalows that a large use has been found for Neponset Wall Board. In buildings of this sort economy is usually a chief consideration, also case of application, as it is often put up by the owner.

“Neponset Wall Board fills both of these requirements. It eliminates the cost of papering or painting, but it should be remembered that the surface of the cream white finish is especially suited to take paint and can be decorated in any way desired.”

“And if it is painted, again there is an economy, because the waterproofed surfaces of Neponset Wall Board require

(Continued to page 156.)

SANT-LITE

THE SANITARY COMPOSITION FLOOR CO.
166 PLUM STREET SYRACUSE, N. Y.

Easy to Lay

BERGER’S Pressed Steel Cores, for both light and heavy long-span construction, are extensively and effectively used for concrete floors. They are designed to give the greatest strength and displacement for the least amount of weight and cost, at the same time making a great saving in concrete reinforcing steel, centering and labor—also materially reducing the dead floor load.

Made from sheet metal, formed from one piece and corrugated, making them very rigid and stiff. We make both permanent and removable cores in several sizes, depths and gauges. They can be used in any type of steel frame or reinforced concrete construction.

Write for full particulars and copy of Handbook L. A. R.

THE BERGER MFG. CO., Canton, O.
BRANCHES: Boston, New York, Philadelphia.
Chicago, St. Louis, Minneapolis, San Francisco
Export Dept.—Berger Bldg., New York City, U. S. A.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
**Try This Scraper on Your Floors at Our Expense**

Here's a Scraper that scrapes clean and smooth, in the corners, close up to the walls, and scrapes without those wavy lines so often caused by "shatcher". Our knives with double edge wear twice as long as any other Scraper knives. Our adjustable handle, rubber tires and the way the weight is thrown on the knife are all exclusive features of the Stearns No. 10.

We don't ask you to "beware of other Scrapers", but we do ask you to accept this machine on a fifteen day FREE TRIAL OFFER, so you may "compare it with other Scrapers," for by test the Stearns is best.

There are fifteen days in which you can test its easy running, smooth shaving and sturdy qualities at our expense. Write us about it. We shall be glad to furnish you full particulars.

E. C. STEARNS & CO.
500 Oneida St. Syracuse, N. Y., U. S. A.

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**THIS IS THE HAMMER WITH THE PEDIGREE**

Expert workmen the country round know and use this hammer. The finest possible quality in material, design and workmanship. Octagon shaped handle of second growth hickory, ideal hardness, and a claw that will grip all size nails with a grip that holds. Positively the only hammer for the workman who wants the B.E.S.T. Three sizes, Nos. 745, 11 oz., 746, 16 oz., 747, 20 oz., at $1.00 each.

**Germantown Tool Works**
PHILADELPHIA, PA.
Branch: 62 East Lake Street, Chicago

---

**Stanley Garage Hardware**

It is carefully illustrated and describes hardware suitable for all types of garages: wood, stone, concrete, etc. We particularly want you to know about the Stanley Garage Door Holder No. 1774, featured in illustration above.

*Note how the Stanley Garage Door Holder does its duty: holding the door open against the strongest gusts of wind: yet a slight pull at the chain leaves it free to close.*

**HERE'S** an interesting book telling you about the hardware to be used on garages you build—whether they be simple or elaborate. Ask for your copy. It is called

**Stanley Garage Hardware**

New Britain, Conn., U. S. A.

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**WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER**
only one or two coats of paint at the most. It does not soak up paint as an untreated board would do.

"The ease of application as compared to plastering is obvious to any one."

Circulars giving more details of Nessonite uses and construction can be secured from Bird & Son, Department C, East Wakefield, Mass.

The Honeycombed Mitre Box

One of the most important features of a mitre box is rigidity. It must not warp out of shape because its value will be reduced to a large extent if all the surfaces are not absolutely straight.

The frame of the "Honeycomb" mitre box is made of malleable steel and can be made thick and rigid without excessive weight due to the honeycomb construction. The backs are fitted separately to the frame, which is claimed to be a further protection against warping. Also if the back is accidentally broken, the whole box will not be wasted, but a new back can be secured.

The makers of this mitre box, the Rockford Mitre Box Company, also make a mitre box saw that requires no setting. It is ground from a plate of steel equal in thickness at the teeth to the set of the mitre box saw, and back of that is reduced to standard gauge. Along the top edge is a heavy stiffening piece. This construction stiffens the saw and makes a smooth cut.

Descriptive literature describing this mitre box and mitre box saw can be secured from the Rockford Mitre Box Company, 252 Mill St., Rockford, Ill.

Real Nails and Nailing Demanded for the "Forty-Year or Century" Red Cedar Shingle Roof

If the cedar shingle is the warp and woof of a roof, then surely the shingle nail is the wood. And the cloth is only as good as its poorest thread. So the roof is only as good as its weakest part. Then why not nails as good as the imperishable cedar of the single? And why not workmanship the equal of both?

To some extent even your most practical and conscientious mechanic has overlooked the values that he may put in his red cedar shingle roof, and there are too many examples of indifference to the fine points of material and workmanship which should really have been embodied in the finished product—the high quality red cedar shingle roof. It is time to recognize that the roof that is laid in these days of calculated efficiency is different from the roof of "Shingling Bee" nails.

Here is a fine piece of cedar, a perfect gem of a shingle, say just 8 inches or 9 inches wide, a "Perfect," a 5/2s, inspected, not a sign of sap, a good vertical grain shingle, a shingle the great cedar forests of the Pacific could be proud of.

Now does it not seem a shame, and absolutely wrong, to attempt to hold that shingle to its sheathing with a couple of "blue steel" nails?

That fine shingle is good for a century; in fact, truly it will last that long, exposed to the weather, and this without

(Continued to page 158.)
Note This Superior Construction

This Wonder-Worker "Sultan" Portable Saw Rig is built entirely of best grade steel. Frame is very strong, rigid—yet comparatively flexible. The base plate is made of cement iron cast- ing, heavily ribbed underneath. The machine consists of inside rip saw, 14-inch Cross-Cut Saw, 5-inch Emery Wheel, 6-inch Smooth Plane Head—cutting 7/8 to 14-inch, Sorded attachment complete—Sultan cylindrical Jointer Head, 10-inch Banding Wheel, etc. With few prices and at low cost you get superior construction power in excess of that required by hardest "pulls."

Send Catalog of Sultan Contractor's Equipment.

WHITMAN A. CO.
7303 So. Broadway
ST. LOUIS, MO.

Carpenters & Builders

You Can Make

$250
Per Month

With This New Machine

Many are doing $3,000 a year and better with this new machine. You can, too. You need no experience. We teach you FREE in one simple lesson. Start right at home. Everybody thinks of money and big cash profits waiting for ambitious men. Just the thing to bring in the money between jobs, until you get the business started.

This is the Business for You

A business of your own. Requires little capital and grows fast into a real factory—a real manufacturer. Open a Tire Repair Shop with Haywood Equipment. Let the money roll in. Auto tires need mending constantly. There is your profit. Owners eager to give you their business. It means a saving of money to them, and big cash returns for you. If you own a shop now, put in one of these machines and double your profits.

Just Mail the Coupon for this FREE Book

A valuable guide to power and wealth. It gives the complete story to success. Tells all about your opportunity. Shows how easy the work can be done, how big the profit to be made, how profitable to your pocketbook, how much easier the work can be done. Gentlemen—Please send me your book as you promised to do. This of course does not obligate me in any way.

HAYWOOD TIRE AND EQUIPMENT COMPANY
695 Capitol Ave.
INDIANAPOLIS, INDIANA

Estate of

J. G. Hetzel
65 Maine Street, Newark, N. J.
a preservative of any kind. And it is a fact that with the right kind of nails, and the right kind of workmanship in driving those nails, this tim shingle would actually be doing good service for a hundred years. Now a hundred years sounds high-pitched, impractical, flamboyant. Yet we can point to slate roofs that have been up for two centuries, and never disturbed—hundreds of slate roofs have stood a longer test. And why should not red cedar shingles be regarded as great as architects (who think in terms of great durability), have regarded slate, copper, and lead?

It is time to think this over. Red cedar is as lasting almost as copper. Pure iron, the old-fashioned kind, is as durable as time itself, depending on its purity. There is a statue near Delhi, India, made of pure soft iron, that has stood for 2,800 years. There is a bridge at Newburyport, Mass., which has not deteriorated in over a hundred years, made of iron in the old-fashioned way. And pure iron nails can be had today for shingling at a very low cost. Pure iron withstands the chemical action of time, of the atmosphere. Pure iron has had the impurities developed out of it in the making processes, and very largely today pure iron metal lath or its equivalent has replaced steel lath.

Then there is the pure zinc nail, and the galvanized nail, all modern products, made to give to the cedar shingle world a nail of real value. These nails are practical, long-life nails, and give the red cedar shingle its due. If a roof of highest possible type is wanted, then copper nails are good, and not too good for a good red cedar shingle for a permanent structure. For a high-class residence an architect of reputation would specify copper shingle nails and require the requisite patient labor to drive them—copper nails for fast work are not so practical, being too soft for direct driving.

But assume that we use a zinc-clad nail, or other 10-cent nail, or other real quality shingle nail. There are actually needed in a square of shingle roof, shingled 4½ in. in the weather, about 1,000 nails. It is a very heavy nail that goes 333 to the pound, and as an average it may be said that 3 lbs. of nails to the square make a fair base for calculation. Say 30 cents per square for nails that will provide the “woof” for the red cedar shingle “warp.” If 7 cents per square is the cost for the cheapest “blue steel” nails, then we have here an extra expenditure of only about 25 cents per high-class nails, of quality to guarantee a “forty-year” or even a “century” roof. When it is further considered that the average residence roof does not exceed twenty squares is it not worth while? Is it not worth investing five dollars more in material?

What happens when the “blue steel” nails are used? They are so thin they have little holding power, very little friction hold. The nail head must not be driven into a shingle—that is bad practice. The old-fashioned cut nails and nails of the shape of these take a sound, proper hold of shingles and sheathing. The slender blue steel nails also, being made of steel, in course of time rust away. A shingle lying awry on a roof is a shingle poorly nailed, with poor nails, the roof suffering. Slight rusting of the head rusted off and the thin stem partly gone, too, and valueless. The weakest nail goes first. Cut nails, zinc nail head is a protection to the heavy stem of the nail below it.

These points have been given attention in the booklets of the “Rite-Grade” Red Cedar Shingle interests in their campaign for the “forty-year” or a “century” roof, their literature going into detail on the subject of workmanship and nailing. The points are well taken, and are bound to stir up a lot of new interest and ideas on the subject of “Roof Making.”

The “Rite-Grade” Cedar Shingle Mills number forty, all in the Pacific Northwest. United States and Canada, associated together for the furtherance of interest in Red Cedar Shingles, standardizing their product under the brand “Rite-Grade,” all shingles sold under this name being inspected for quality, no sap, etc., and also a principal purpose of their organization being to educate the building world and stimulate it to a better understanding or appreciation of cedar shingles and methods of applying—for, in a word a more accepted practice and determination to build the “forty-year or century” Red Cedar Shingle roof.
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**Fenestra Sash in Use in Coal Breakers**

The picture shown herewith is one of the new Loomis coal breakers of the D. L. & W. Railroad. It is located at Scranton, Pa., and embodies the last word in up-to-dateness in buildings of this type. It is a mammoth among structures of its kind. Its capacity is 7,500 tons per day, which is greater than that of any other. Working 250 days, it can handle 1,875,000 tons of coal in a year. No other breaker has been built with such large ideas in mind, and there is no precedent for some of the things done, but there is a large experience behind them.

The first thing that one would notice is that the entire breaker above the pockets is glazed and there is no blind wall. The whole breaker is inclosed with Fenestra steel sash, which holds 22,000 panes of wire glass 13×24 in. in size and ½ in. thick. There have been other “daylight breakers,” but none so completely opened to light as this. Glass covers 93.5 per cent of the surface. Artificial lighting will be needed only for short periods on some winter days. Increased carefulness is anticipated, as well as higher speed.

The building is of concrete up to the tops of the pockets, and the concrete work is unusually good. Above this it is of steel. There are in the building something over 2,000,000 lbs. of structural steel. Wood is not entirely eliminated, but it is used only for picking floors and chutes. There is almost no possibility of fire, but sprinklers will be installed. The floors are of concrete.

Get Into the Procession

“There have been more than enough automobiles built since January 1st to supply every participant and every observer of the recent New York preparedness parade—the longest in the history of America,” says H. P. Branstetter, of the Kissel Kar.

“It needs comparison of this sort to fully drive home the enormity of the present production of cars. You think of 120,000 people walking twenty abreast and occupying thirteen hours to pass a given point, as a wonderful mass. But how about more than three times as many machines? Enough to stagger the imagination, isn’t it?”

“And yet there is a ready market for more than the number of cars made. Dealers everywhere are clamoring for them and June promises to smash to smithereens the sales record of any month since the automobile was born. The Kissel factory is well prepared to take care of its share of this June business, its scheduled output being on the basis of continuous night and day work in nearly every department.”

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*By J. M. Hamilton.*

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The Interior Hardwood Company state the following with regard to Kuhn flooring. It is made from carefully selected hardwood lumber, and 80 per cent comes in lengths of 8 feet or over. No strip is shorter than 4 feet and the 20 per cent average between 4 and 8 feet is well above 6 feet. There is an added profit for the builder in using long-length flooring.

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Kuhn patent flooring is made in quarter sawed oak, plain sawed white oak, plain sawed red oak, hard white maple, dark mahogany, black walnut, dark cherry, and dark oak. The makers of this flooring also manufacture a complete line of beautiful parquet floors, borders, and wood carpet—all of Kuhn quality.

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