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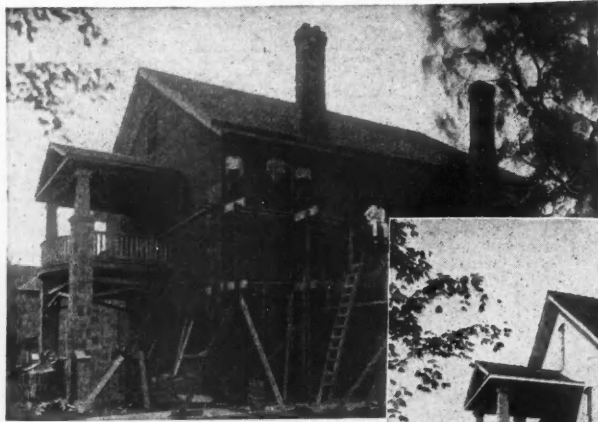
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Showing a weather-beaten old brick house in Lancaster, Ohio, before and after treatment with Kragstone.



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KRAGSTONE
The STUCCO BEAUTIFUL

Short Talks by the Editor



Distorted Viewpoints

IN the houses of freaks at the amusement parks, one of the best mirth-provoking features is the curved mirrors which give people looking into them distorted features and figures. In one, a person is short and stout, in another long and thin; in some his head is abnormally large, in others his feet encompass the landscape. In all the person looking into them gets a distorted picture.

Exactly the same result happens when many people look into the mirror reflecting conditions in the building industry. If located in a large city their view sees only that which is transpiring in their immediate locality. So if strikes, lockouts and other troubles have temporarily paralyzed building operations in a few large cities they are inclined to believe the same is true in the industry in general. However, such is not always the case. Chicago by no means reflects the situation in Rest Haven, Iowa, or Turtle Lake, Nebraska, nor thousands of other small towns and rural communities where labor troubles are unknown.

There Mr. Jones will build his new home just as if there was no war—Mr. Scott will order a new dairy barn and some hog houses without reading the latest dispatches from Chicago or New York. To him the building problem is a local one and as long as there is material and labor available why should he worry about some troubles in the large cities.

So we had better stop looking into the mirrors which give us a twisted slant at conditions. There is considerable building going on in the small cities and towns of this country and will continue to go on whether or not the same is true in metropolitan centers.



Build in Haste, Repent at Leisure

BUILDING a house is very much like getting married. It calls for much serious consideration before the deed is actually done. If not, there is liable to be some very keen regrets in after years.

At the present time there is real danger that, in the haste to make up for lost time and relieve the acute housing condition many buildings will be put up in slipstick style, serving in the emergency but doomed to an early demise because of poor workmanship. It is better to build slowly and carefully than waste time and money on a hurry-up proposition that will only

cause regrets in a few years. No matter what kind of a home is being built, it should be constructed to last and thought should be given to its future maintenance.

We do not want a prolific crop of slums within the next few years. This will only mean a new housing problem. While we are about this building, "t were well, if 't is done, that it be done quickly," but right. Some thought should also be given to the architectural planning of the city and town to prevent incongruous sights which are now the bane of every American community. Careful zoning and city planning will be wonderful aids to future "city beautiful" development. Plan the new homes for the future, not just for the present emergency.



Eliminate Waste

"THE great waste today is half-heartedness. Half-hearted architects and builders and tens of thousands of half-hearted members of the building trades are wasting their lives worrying about their rights while neglecting their duties."

These words coming from a prominent architect before a meeting of all elements of the building industry in Philadelphia struck into the heart of the problem, brushing aside all the camouflage and sophistry that has been built up about the subject.

We are wasting our time thinking about what we are entitled to instead of going out after it.

"The negligent members of the building profession can be singled out by the disorderliness and lack of care with which they conduct their building operations while conversely it is undeniable that the happy, orderly, successful architects, builders and workers are those who eliminate waste. It is because of a consciousness that they are superior men taking a genuine delight in doing things in a clean whole-hearted manner and thereby learning something of the beauty and dignity of rearing buildings that satisfy."



"IT is not an exaggerated statement to say from \$10,000,000,000 to \$20,000,000,000 is necessary to provide the structural facilities which would have now been in use had not the war occurred. Until this construction has taken place the nation must do without conveniences to which it was formerly accustomed."—From Report of Senate Committee on Reconstruction.

Homes for the June Bride

SOME PLEASING DESIGNS FOR SMALL BUNGALOWS THAT WILL BRING IN BUSINESS

ARE you good at fractions? Figure this problem. For every newly married couple in New York City last year there was one-sixteenth of an apartment built. In other words at this rate each apartment would have to house sixteen couples if everyone was to be taken care of. Can it be done?

Perhaps the builder never thought of himself in the light of a good Samaritan, but that is a role he must assume. Here is a real problem, hundreds of young couples looking for homes! What can he suggest? It is no use pointing out the beauties of this and that—what he must do is show them how they can own a home of their own.

Only the other day a well known Chicago jurist who had presided over a crowded divorce court for two months decried the growing divorce evil. "I find the greatest number of cases come from the homes of the wealthy and from the rooming houses."

Rooming houses—they are crowded with young couples who are unable to pay the exorbitant rents. There is no home life, none of the comforts of the family hearth, none of the little joys and conveniences that a home "be it ever so humble" will afford. There is none of those little tasks that delight the woman's heart, no kitchen for the home-cooked meals. After a hard day's work the husband returns to a cheerless, depressing room. No wonder the domestic ship winds up on the rocks. The whole atmosphere is against happy married life.

Yet, if these same people only stopped to think they could have a home of their own, with a wonderful little kitchen where the housewife could prepare meals, and a cozy living room where they can spend the

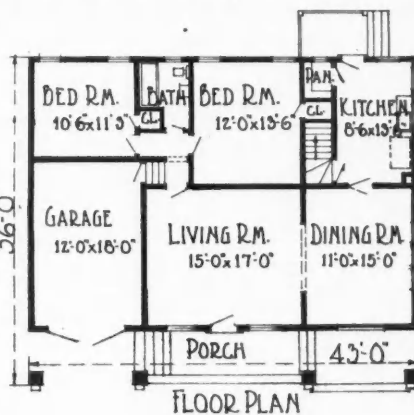
evenings in peace and comfort without fear of landlords. Their future happiness is the responsibility of the builder in so far as convincing them of the value of owning their own home.

To help him in this work especially at this time when so many young people are preparing to establish homes of their own, the AMERICAN BUILDER has prepared a gallery of small homes. This will be a small home year—that is, many people will build a home within their means and only large enough for the needs of small families which seem the rule rather than the exception. To the builder who shows the most attractive line of small bungalows and homes will come the business.

The homes shown on this and following pages are designed for the man of moderate means and are most economical in cost. Yet they are very attractive and complete from the standpoint of convenience.

There is something so indefinably romantic about the bungalow that we unconsciously associate them with June brides.

In Home No. 1 are found several unique features that will make a strong bid for the favor of the new Mrs. Suppose they have a runabout just for two but are afraid of



Home No. 1. Charming Five-Room Bungalow with Garage Included in Building. The Novelty and Convenience of This Arrangement Is Pleasing. Floor Plan Above.

the extra expense that the building of a garage will entail. Why not build the garage right into the house? And lo! it is done!

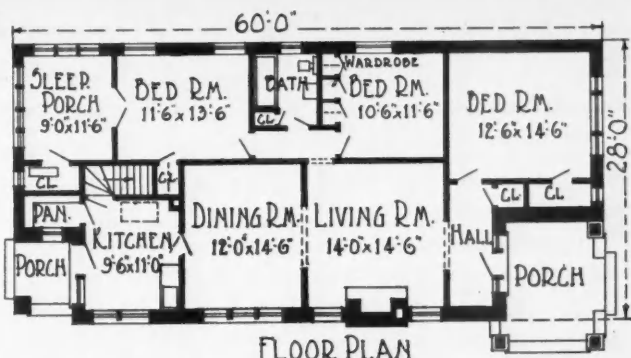
There is a certain symmetry about this bungalow home that is pleasing. On one side is the entrance to the house proper. On the other is the entrance to the garage. Preserving the balance between is the

small covered porch in the center of which is the door opening into the house. The balustrade and columns on the porch are stucco while the structure itself is frame siding arranged in a distinctive style.

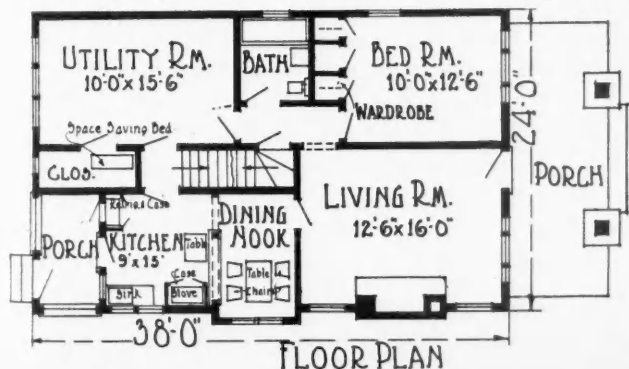
The floor plan calls for five rooms: living room,



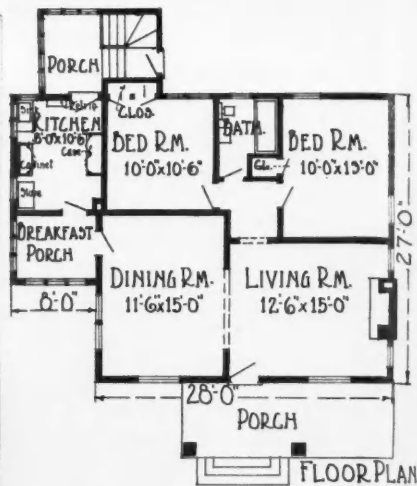
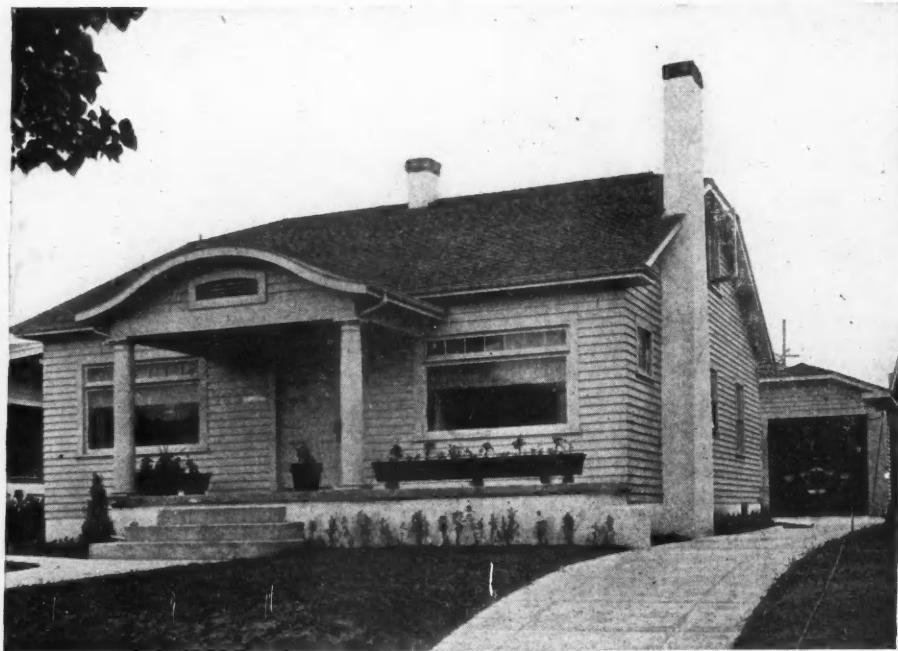
Home No. 2. Cozy Brick Bungalow of Six Rooms with Sleeping Porch. Floor Plan is shown at Right.



15 by 17 feet; dining room, two bedrooms and kitchen, and garage, which is 12 by 18 feet. The house is 43 by 36 feet.



Home No. 3. Pleasing Cottage Bungalow Built on Economical Lines. Several Space-Saving Features Have Been Used to Cut Cost. Floor Plan in Upper Left Hand Corner.



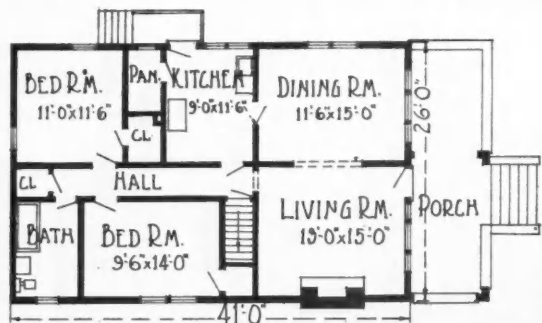
Home No. 4. Western Bungalow of Pleasing Design. This Dwelling Contains Five Cozy Rooms and Is 28 by 27 Feet. Floor Plan at Right,

In Home No. 2 is presented a delightfully cozy brick bungalow of five rooms with half-timber stucco effect above the windows. Low gables and pergola porch make it quite inviting and appealing to young people. Thruout the construction is substantial and permanent and because of this will appeal to many as an economical and worth-while investment. The rooms are very

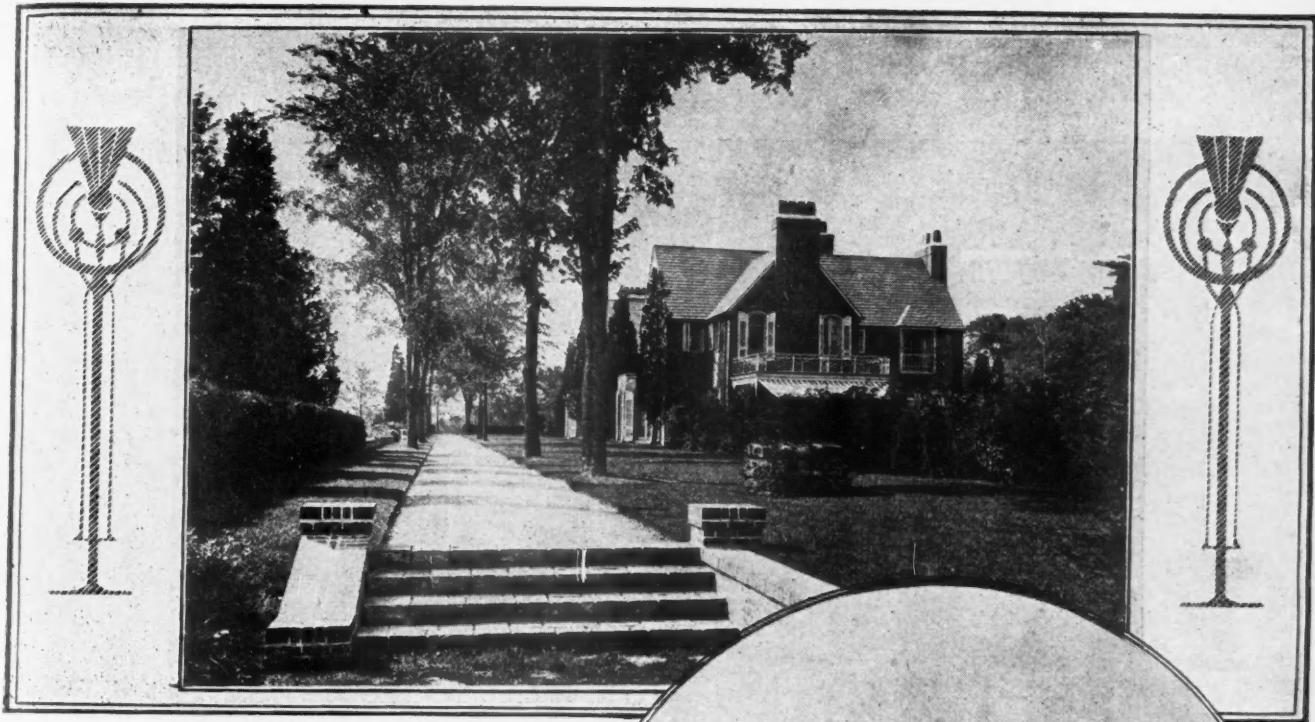
conveniently arranged and bedrooms are equipped with space-saving closets. A sleeping porch in the rear is an added feature of value. This home is 28 feet wide and 60 feet long.

For those preferring the cottage type of bungalow, Home No. 3 will be quite popular. It represents economy, good design and comfort. This home includes several space-saving features that have helped to lower the costs of building. These features are, special kitchen units and space-saving garment carriers. Instead of the usual dining room, this house has a dining nook, and a utility room that can be used as a bedroom (it is equipped with wall bed), library, den, nursery and large dining room. This arrangement will no doubt prove unusually attractive to the young newlyweds who have just been married, for it gives them the benefits of a larger house without extra expense. It also provides for future contin-

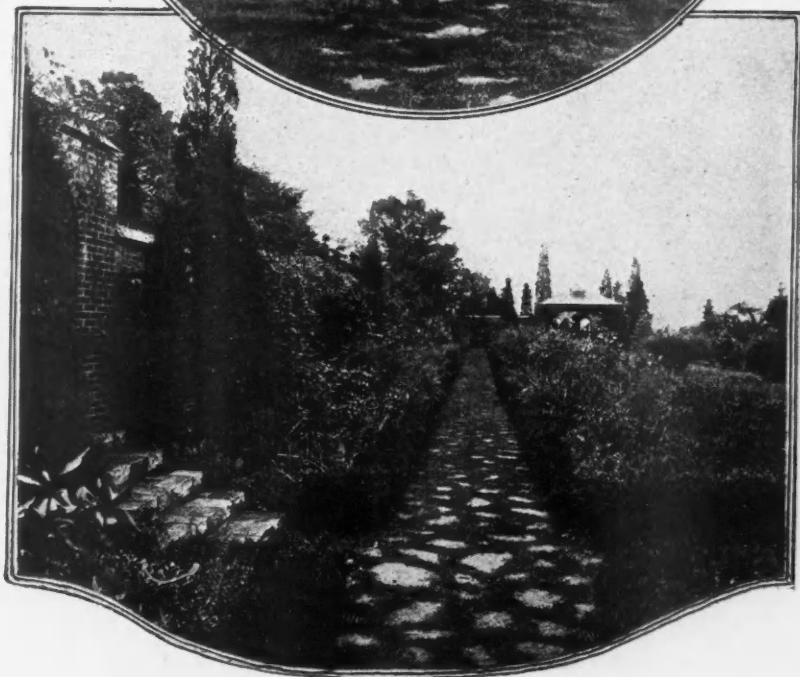
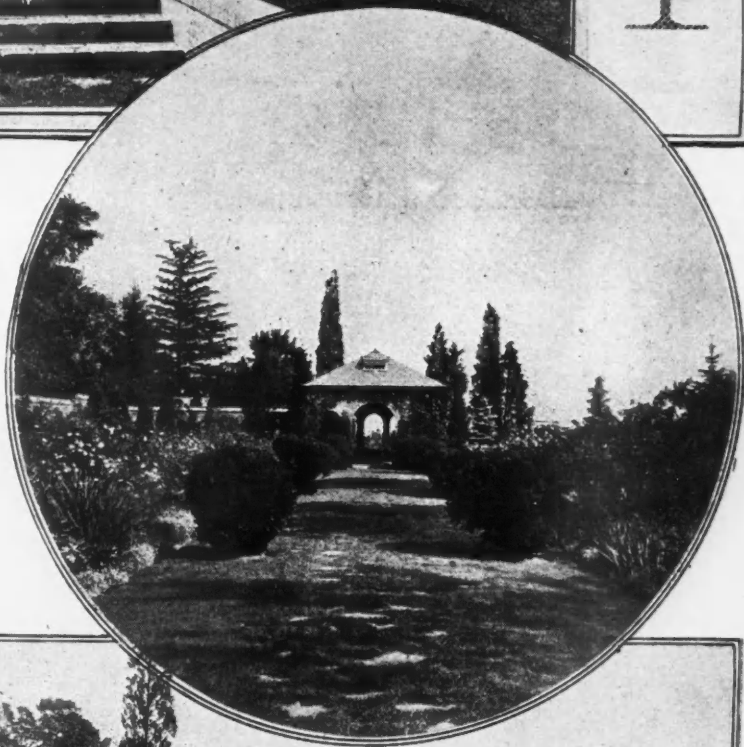
(Continued to page 83.)



Home No. 5. Stucco and Concrete Block Help to Make This Five-Room Bungalow Attractive. It Is Substantially Built and Very Comfortable. Floor Plan Above.



LANDSCAPE GARDENING OR ARCHITECTURE, as it is often called, is an important adjunct of the science of building beautiful homes. This is eloquently demonstrated in this beautiful home and estate shown here. It is one of the finest old English gardens in the East and is found on Grahampton estate, owned by Harry W. Croft, Greenwich, Conn. It comprises about 300 acres. The home was designed by Bruno Jansen, architect, Pittsburgh, Pa., and built by W. Nye, New York. The landscape layout was designed by Jas. L. Greenleaf, New York, landscape architect.

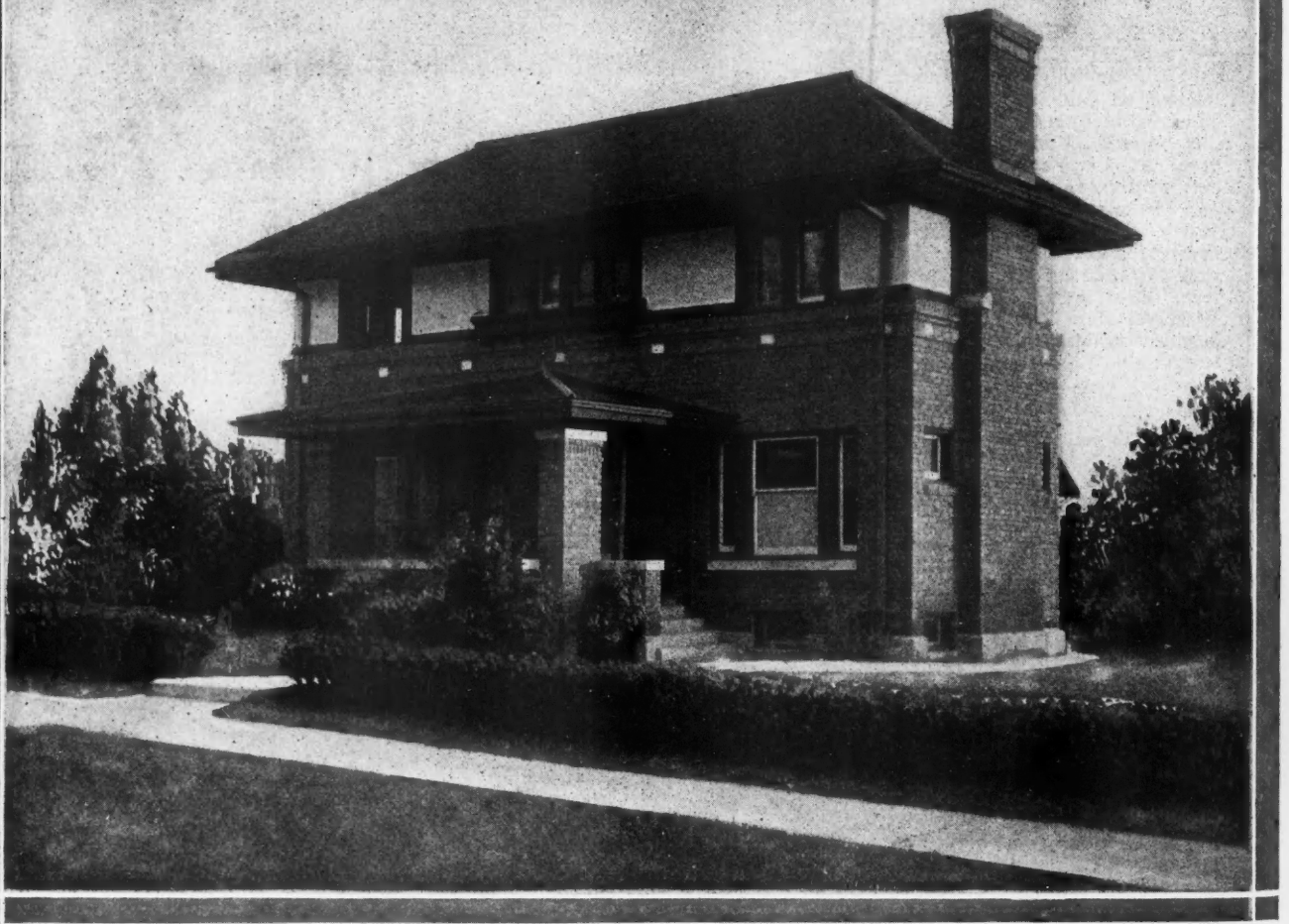
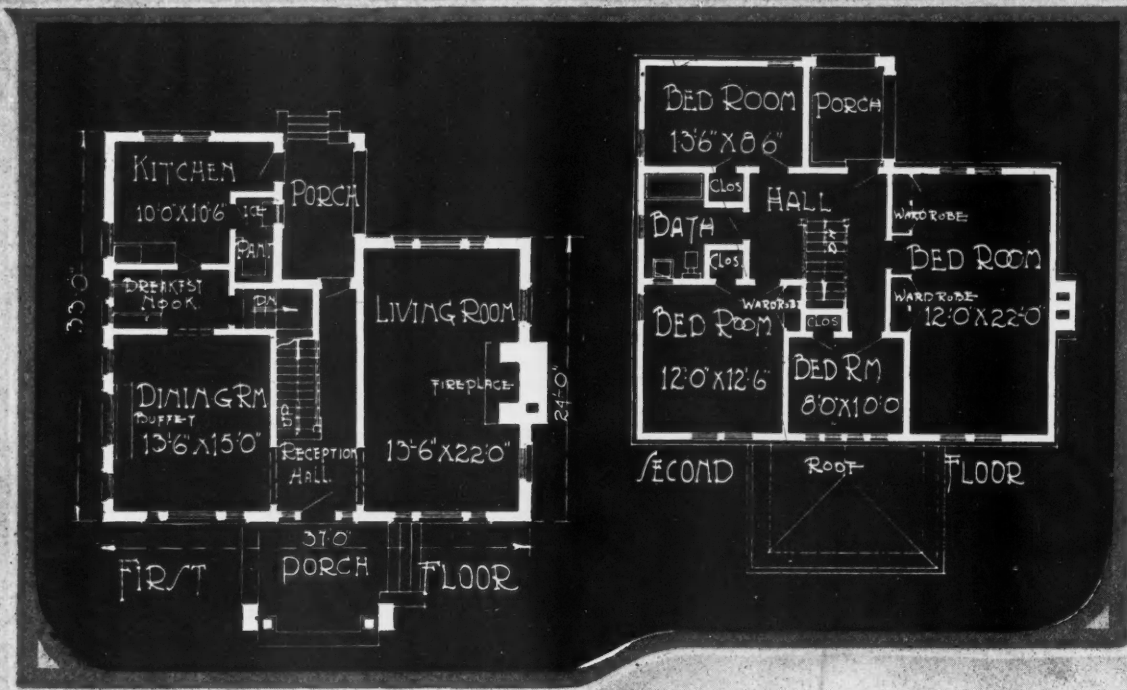


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ARTISTICALLY DESIGNED HOME OF SUBSTANTIAL PROPORTIONS. One cannot but feel impressed upon seeing a beautiful home like the one shown above. There is something distinctive about its ruggedness, strong walls of brick with stucco top story, narrow window casings, casement windows, massive chimney and hip roof. In the interior this atmosphere of substantial and lasting comfort is emphasized in the large living room, 13 feet 6 inches by 22 feet, with a great fireplace, ample window space; dining room, breakfast nook and kitchen which has outdoor icing facilities and complete equipment. Each of these rooms is as complete as modern building science can make it. On the second floor are the bedrooms, four in number, and bathroom. The master bedroom is equipped with special wardrobes. Size of house, 37 by 24 feet.

Ornamental Gate Posts

SOME DESIGNS AND APPROVED DIRECTIONS FOR MIXING

By A. J. R. Curtis

THE decorative value of well designed gate posts is so well recognized that they are desired many places where there is no thought of using them for the original purpose of enclosure. Almost every driveway and many residential and garden walks could be greatly beautified by the ornamentation of a simple pair of posts. Concrete gate posts are probably more commonly used than any other kind, because they are permanent as well as cheap and easy to construct.

Accompanying designs, prepared with driveway posts in mind, will give a good idea of the size and proportions of gate posts used for that purpose. It will be noticed that the base measurements for these posts vary from 14 inches square to 28 inches square, and the heights from 5 feet to 8 feet above grade. The smaller posts are more suitable for the narrower drives with less formal treatment. For walks and pathways these dimensions may be scaled down almost proportionately, except for the dimensions under $\frac{1}{2}$ inch, used for the beads, panels and ornamental figures. All of the post designs shown are so heavy that the ordinary workman will more easily cast them in place than precast and erect them. Where quite a number of posts are to be made so that the expense of an erecting derrick is justified, some of the lighter designs may be made in the factory and hauled to the ground.

The first essential in constructing the posts is to

provide adequate footing. The excavation should always be carried below the line of possible frost penetration. It should be constructed of 1:3:5 concrete—that is, one part cement to three parts sand and five parts pebbles or stone. Concrete for the footing should be mixed wet enough to be quaky, at which consistency water will flush to the surface under light tamping. The footing should be approximately the same dimensions as the shaft at grade line, and if

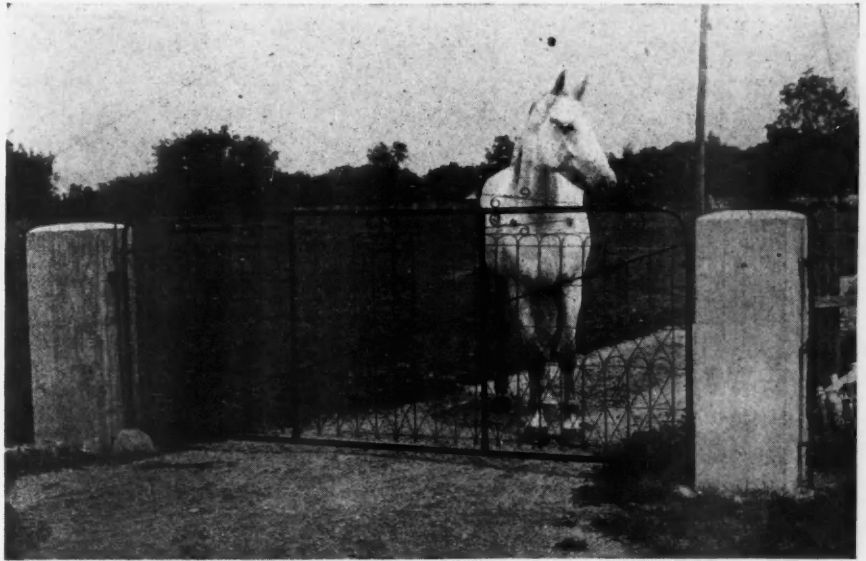


Figure 2. Simple But Substantial and Pleasing Gate Posts on a Stock Farm. For Farm Uses Excessive Ornamentation Shows Poor Taste. These Posts Are 18 Inches Square in Section, with Corners Slightly Beveled. Four $\frac{1}{2}$ -Inch Square Rods, Placed One Inch Back From Each Corner, Were Used.

the soil is reasonably firm no form is required other than a box 6 inches deep to form a straight, true neck on which the shaft forms will be set. The four corner reinforcing rods which are to extend the entire length of the posts must be firmly imbedded in the

footing to a depth of 12 inches below grade. They are placed as near as possible to each corner, and in practice the best results have been obtained by getting the rods 1 inch in from the corners and paralleling the principal lines of the post (which are not perpendicular in all cases). The top of the footing should be left rough and approximately level, and should be covered, if necessary, to keep clean until the concrete is placed in the forms for the shaft above.

The forms may be made of 1-inch selected dressed pine, ribbed and braced with 2 by 2-inch or 2 by 4-inch material. All interior corners should be filleted and panel plates and similar pieces given plenty of



Figure 1. Plain Square Posts with Surfaces Mortar-Filled and Painted with Creamy Mixture of Ordinary Cement and Water.

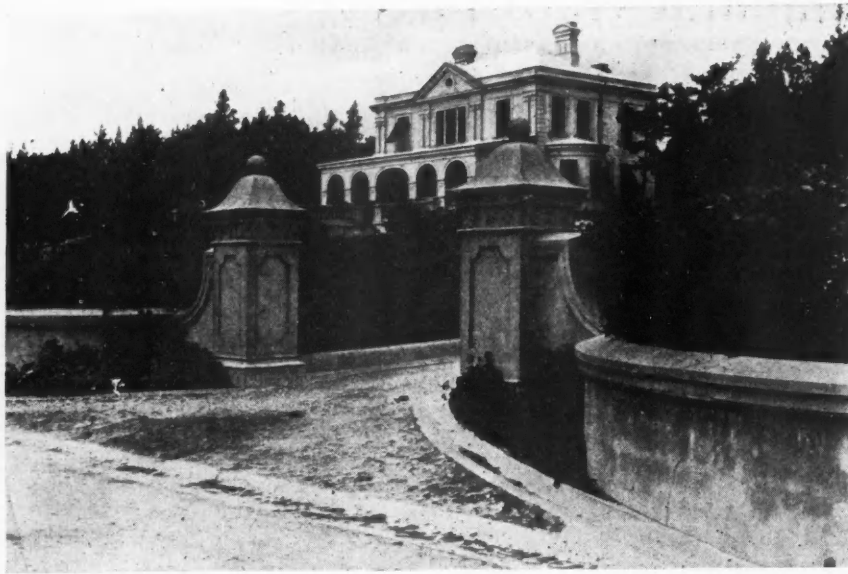


Figure 3. The Charm of Ornamental Gate Posts on the Country Estate Is Genuine. Good Design and Good Construction Are Equally Important for the Entrance Must Be Good Looking to Be of Any Value Whatsoever.

draft for easy removal without injury to the green concrete. The forms may be cleated together and held in position by ordinary metal carpenter clamps or by mitering the form ribs at the corners and joining them firmly by means of large wood screws. All form surfaces which will be exposed to the wet concrete should be coated with one or two coats of crude or almost any kind of oil with sufficient penetrative powers and enough body to seal the surface against the ingress of moisture. Particular care is necessary to secure the forms rigidly in place, after setting them to perpendicular and proper level. The work of removing forms is very much simplified if attended to within a few hours or just as soon as possible without injury to the post; the sooner the forms are out of the way so that surface finish methods can be applied, the easier and more satisfactory will be the latter.

Concrete in the post should be mixed with one part cement to 2½ parts sand and from 3 to 4 parts of pebbles or broken stone, with water enough to make a jelly-like mass. The wet concrete must be thoroly spaded next to the forms, working the coarser particles back and allowing the finer ones to flow to the surface. This will serve to prevent blemishes due to pockets of coarse materials, air and water bubbles. If the consistency is maintained as directed above and the spading carefully attended to, a certain proportion of particles as large as 3 or 4 inches in diameter may be used. The rein-

forcing should consist of four ¾-inch round or square rods extending the entire length of the shaft. In order that these reinforcing rods may be amply protected against moisture (which might cause them to rust and swell with possible serious consequences), the concrete must be very dense and as a further protection, the rods must be placed 1 inch in from the surface. Never place reinforcing in the center of the post. Electric lighting conduit or flexible duct may easily be placed in the post by cutting out the form to fit and securing the conduit in the center until the concrete has been placed.

There are a number of acceptable methods of surface finish. The commonest is to merely patch and paint the surface as soon as the forms are removed. In such case the forms must be carefully taken off while the concrete is still green and preferably just as soon as possible without injury to the surface. Any small blemishes appearing are then slicked over, using a slick or small trowel (patches are made of the identical surface mixture), fins are brushed off and a coat of cement and water wash of the consistency of thick cream is applied. The post is then protected against rapid drying out of the surface, which would reduce the wash to chalky scales or flakes, soon to be washed off by exposure to the weather. The finish just described is recommended for farm and other ordinary work.

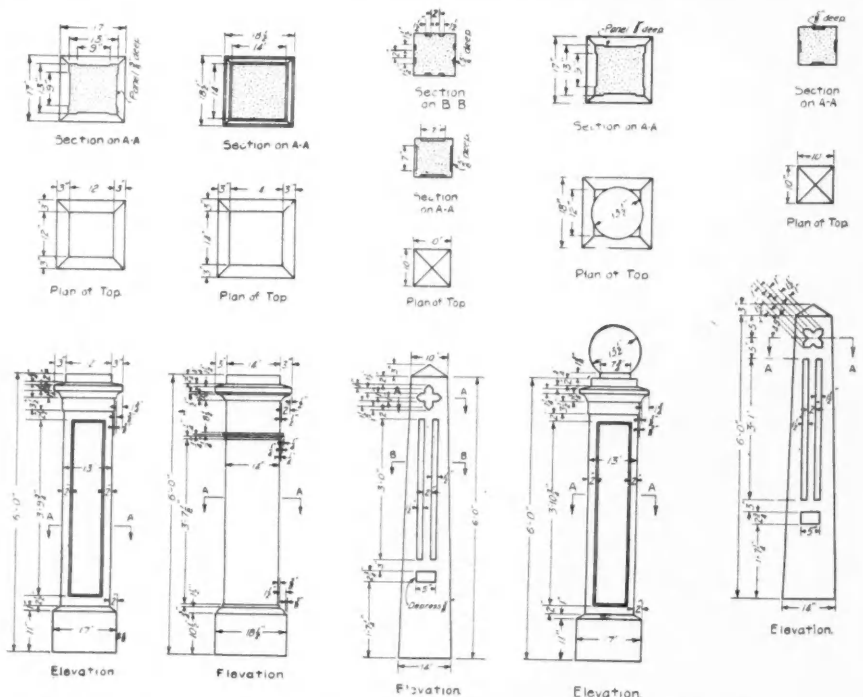


Plate 1. Five Attractive Designs for Concrete Gate Posts. The Second Design from the Right May Be Capped with Either Concrete Ball or Glass Light Globe, as Desired.

Very much more attractive surfaces can be secured by the use of scrubbed or acid treated finishes with special mixtures of selected sand and stone. The fine aggregate in such mixtures usually consists of quartz sand or white marble graded in sand sizes. The large aggregate may consist of selected colored pebbles, marble, granite (in one or more colors) or a mixture of these. A wide range of effects is possible by using certain selected sizes of one material of a given color with a different stone or different sizing of the same stone in the same or some other shade. The rougher surfaces are obtained usually by omitting certain size particles from the facing mixture and mixing to a comparatively dry—not wetter than a pastry—consistency. Sizes between one-twenty-fifth and one-eighth of an inch or between one-twenty-fifth and one-quarter of an inch are frequently omitted.

For the smoother surface effects an effort is made to get as good grading as possible, from fine to coarse, and the mixture is made wet enough to be quaky as placed in the mold. Any exposed surfaces must not be touched with the steel trowel except in the most sparing manner, in order to avoid hair cracks. The wooden float may be safely used in preference to the trowel. As soon as the surface is hard enough to scrub safely, the form may be removed and the surface treated with a stiff fiber or fine wire brush and water. If the desired effect is not obtained, by scrubbing with water, the effect can be intensified at any time later by repeating the treatment using a fiber brush and a 1:3 solution of hydrochloric acid. After the acid has eaten to the desired depth, the surface is thoroly scrubbed in several changes of clean water to remove the acid.



Figure 4. City and Suburban Homes Are Made More Attractive by Simple Gate Posts of Dignified Design and Elegant Surface Texture. The Shaft Shown in this Illustration Has a Coarse Colored Aggregate Surface, Acid Washed.

It is seldom economical to use the surface mixture back more than an inch or two from the forms, and any thickness of the surfacing over $\frac{1}{2}$ inch may be considered satisfactory. If the posts are erected in warm or windy weather, the concrete must be carefully protected from drying out, both before and after removal of the forms. A canvas or tarpaulin will be found suitable for this purpose.

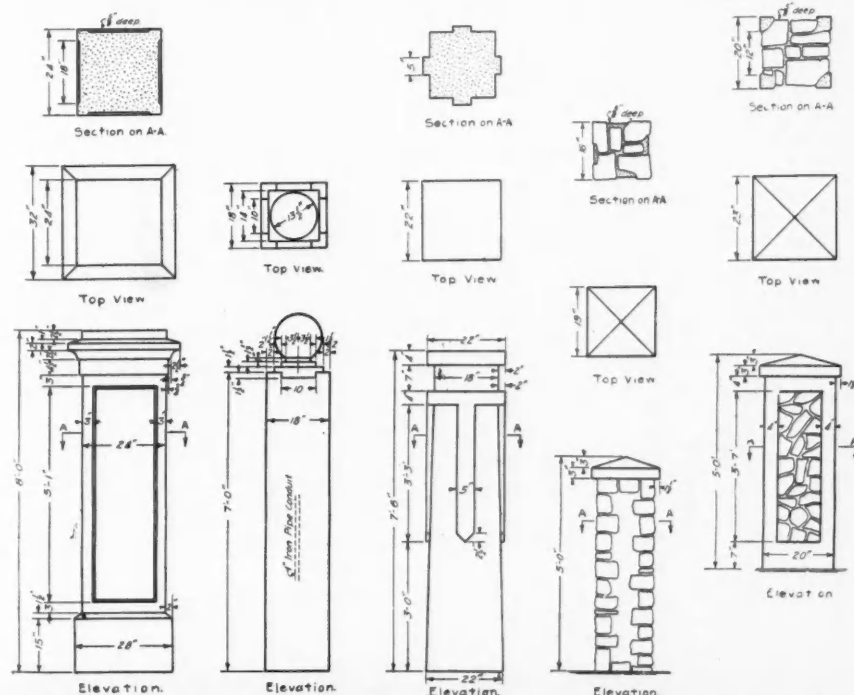


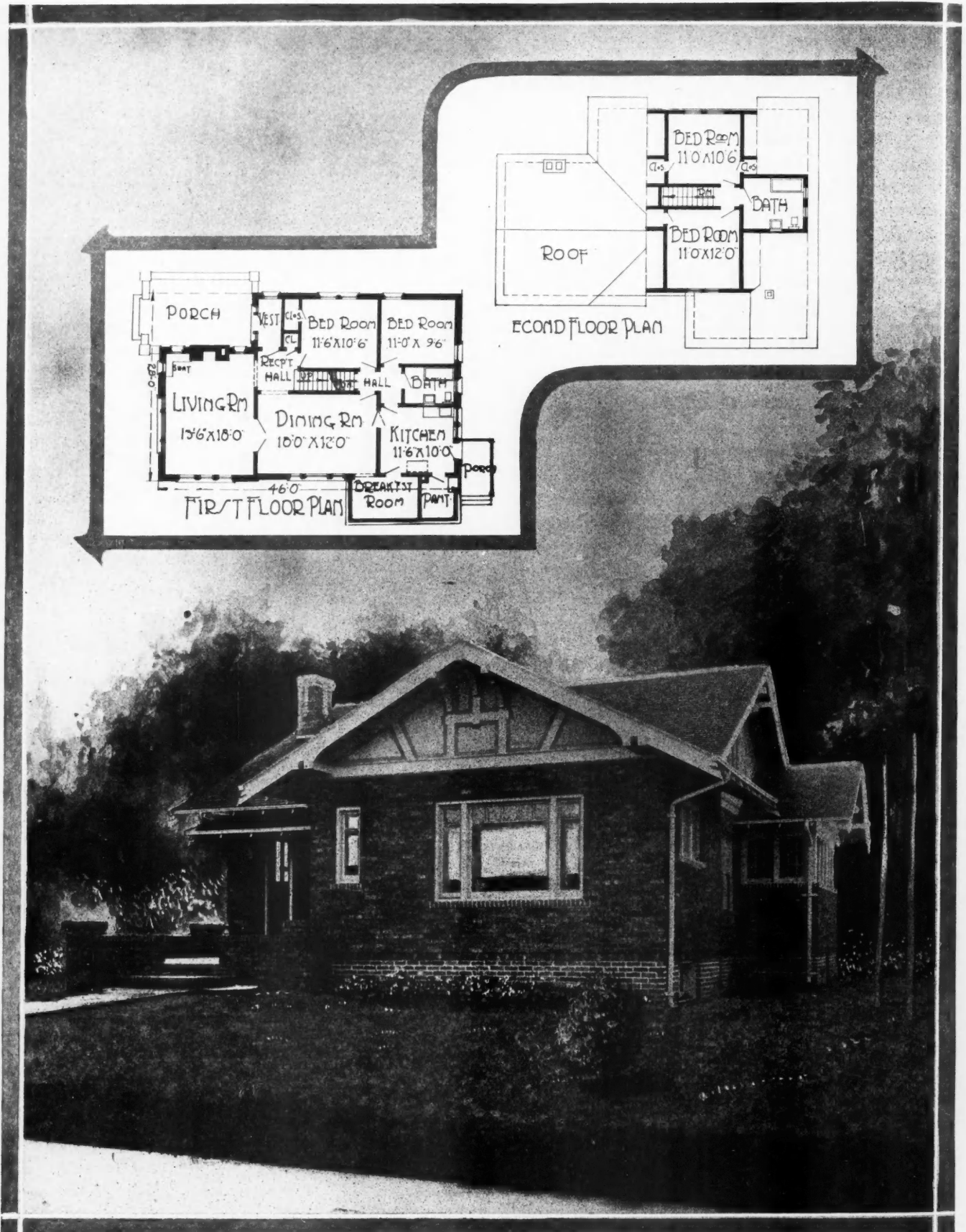
Plate 2. The Design at the Right Is Produced by Setting Up Split Field Stone Within the Forms, Pointing Up Mortar Beds Between them and Scrubbing Surfaces, After Removal of the Forms. The Second Design from the Right Is Produced Similarly with Granite or Limestone Laid Up in Cement Mortar.

Homes for June Brides

(Continued from page 78.)

gencies. This bungalow is 24 feet wide and 38 feet long.

Home No. 4 is a charming little bungalow of distinctly Western type, a home that will appeal to most young people because of its inherent coziness, individuality and neat arrangement. It is built of frame set on a substantial concrete foundation and contains five comfortable, cheerful rooms. The living room is a delightful room, well lighted by windows in front and one side. The well designed kitchen is equipped with many conveniences.



COZY SEVEN-ROOM BRICK BUNGALOW. This is a well-designed, pleasing home that contains many attractive features. The exterior is quite appealing, the brick being enhanced by a stucco half-timber effect under the eaves. The front porch is built in the form of terrace with brick balustrates. On the first floor are five rooms—living room, dining room, kitchen and two bedrooms. The front door opens into a small vestibule which in turn leads into a large reception hall with clothes closet. From this hall there is an open doorway into the dining room, a large well-lighted room, 18 by 12 feet. French doors connect the dining room with the large living room, which has the advantage of light from triple windows on two sides and smaller windows on the side facing the porch. A breakfast room off the kitchen adds to the coziness of the house. Two bedrooms and bath are located on the second floor. This bungalow is 28 by 46 feet.

STREET OF BEAUTIFUL HOMES

HOME NUMBER FOUR



ART INSERT HOME

IN our leisurely ramble down the Street of Beautiful Homes we have, so far, seen three very attractive houses, in fact it would be difficult to make a choice. This month, as we reach the fourth house in this picturesque row, we find no cause for disappointment.

The June Art Insert Home in colors is a delightfully modest frame bungalow of the familiar story-and-a-half type with roomy porch extending across the front. This house adds considerably to the pleasing variety in design which makes this charming street so inviting.

If every one was cast from the same mold, the building problem would be greatly simplified—there would be little need for architects because all designs would be alike. But as it so fortunately happens each individual is constituted differently and has different tastes. Consequently the demand for variety in dress, food, comforts and homes. The Street of Beautiful Homes has been designed to satisfy all manner of preference, and as the picture is gradually unfolded from month to month, each one will find eventually just what they have been dreaming about.

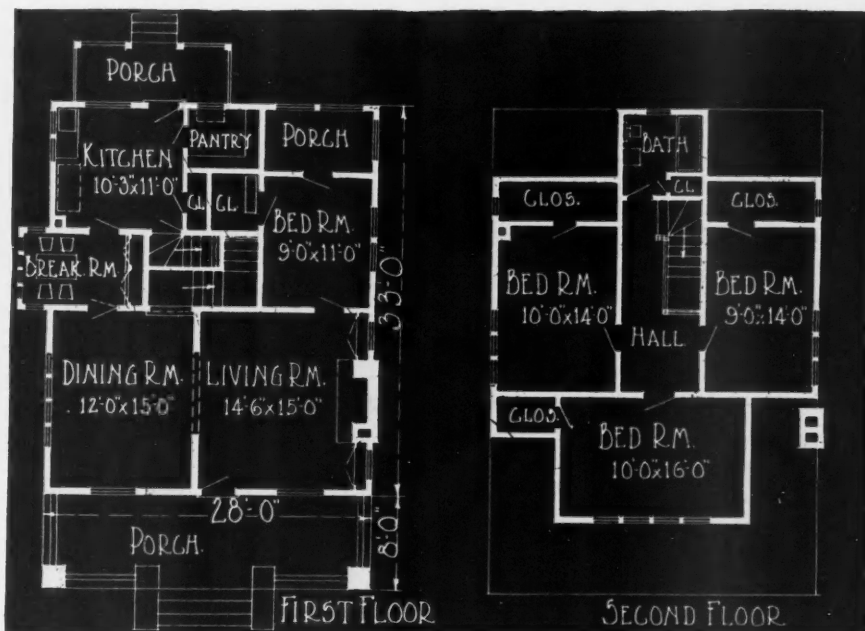
In this bungalow there are seven well-appointed rooms, four on the first floor and three above. Opening the artistic front door one finds himself in a good-sized living room with open fireplace, flanked on each side by wall bookcases. Light is furnished by a large window facing the porch and two small windows above each bookcase.

Thru a double open doorway the dining room can be seen, another comfortable room, 12 by 15 feet, lighted by a large window facing the front porch similar to the one in the living room, and, in addition, by a triple window on the side.

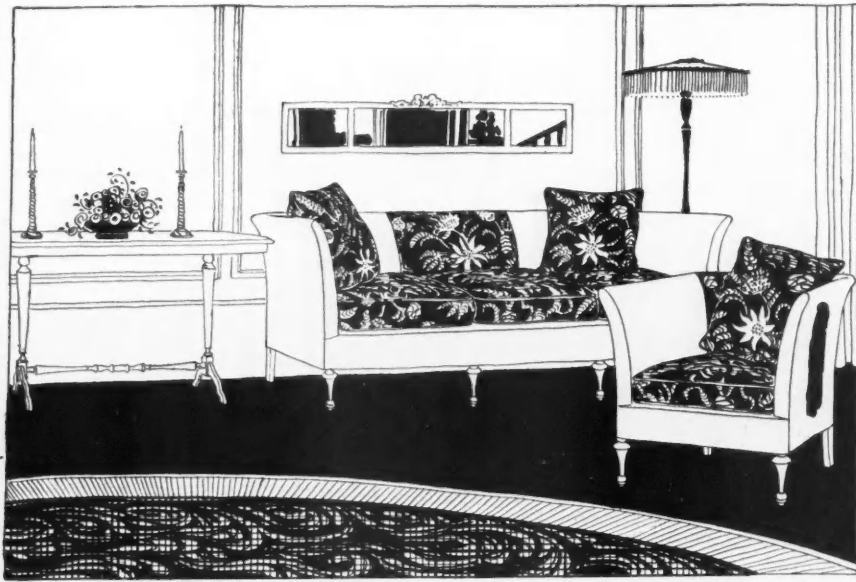
In case a large room is not desired for light meals or for the immediate family, the housewife can make excellent use of the breakfast nook which has been built into an adjacent bay. It is between the kitchen and dining room and when used means a considerable saving of work and time for the woman of the household. Permanent built-in furniture has been installed in this room, altho it is optional with the builder. In case this type of furnishing is not wanted, substitutes are suggested in the article on interior furnishing which follows.

A swinging door opens the way to the small efficient kitchen, only 10 feet 3 inches by 11 feet, but sufficient for the requirements of the family which will occupy this home. Plenty of light is furnished by a large back window and a pair of smaller windows over the sink. A small pantry is also provided.

On the other side of the house leading back from the living room is a small bedroom and sleeping porch. Upstairs are found three more bedrooms and bath



Floor Plan Arrangement of Art Insert Home. There Are Seven Rooms, Breakfast Porch and Sleeping Porch. The House is 28 Feet Wide and 33 Feet Long, Frame Construction.



In This Living Room the Woodwork and Floor Are Stained a Rich Walnut; Draperies Soften the Hard Lines and a Few Pieces of Furniture Well Chosen Make It a Real Family Center.

grouped about a central hall. These rooms are well-lighted by dormer windows and have ample closet space. Details of the furnishing and interior decorating of this home follow.



Suggestions for Furnishing the Art Insert Home

By MARY M. FARLEY

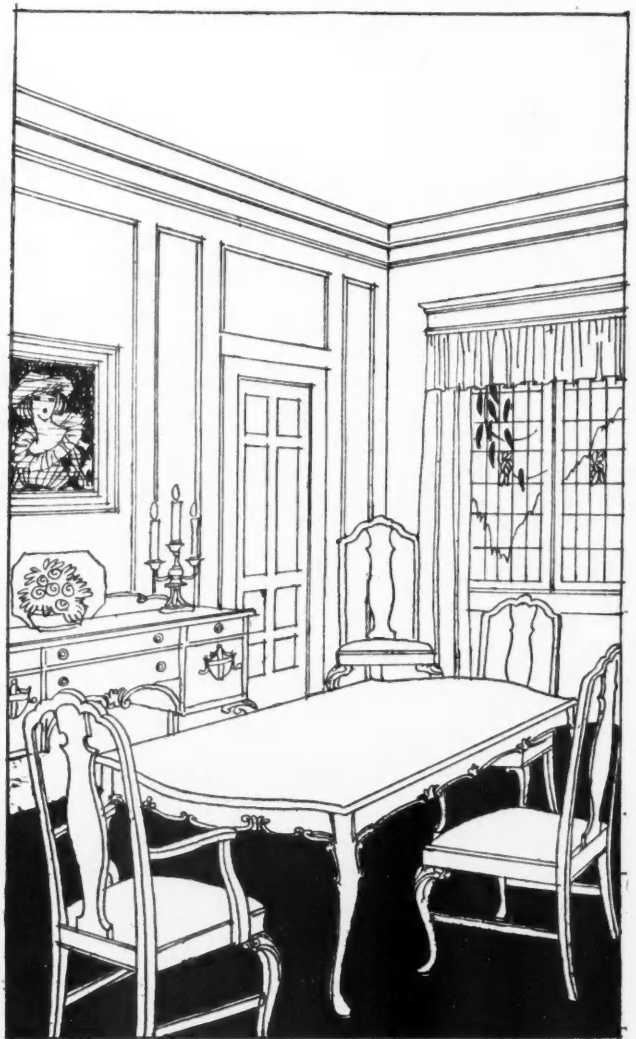
IN furnishing this home one of the first things to consider is naturalness. So much has been written and said of late about interior decoration that many people have become overly conscious in selecting and arranging the furnishings for their houses—affectedness is as undesirable here as in one's speech or dress. One of the commonest errors is made in affected simplicity—plain walls, rugs, mission furniture. All of these leave no room for a creative faculty and no play for the imagination. Spotty patterns are fatiguing, but well designed coverings have a certain personality about them and an air of friendliness. To the other extreme also are the heavy hangings and carved furniture which appear stuffy in a small house or cottage. One should have in mind a general scheme considering the size of the rooms, and the window and door spacing as well as the arrangement of the rooms in relation to each other; then adopt a color scheme lest the result seem a hodge-podge of impossible combinations. In a small house it is wise to use a similar color on the walls of the various rooms on the same floor, varying the tones where desirable. Of course, the kitchen, pantry and bathroom may always be kept in white or gray. Above all, have your rooms natural and restful at the same time expressing life and individuality.

The Living Room

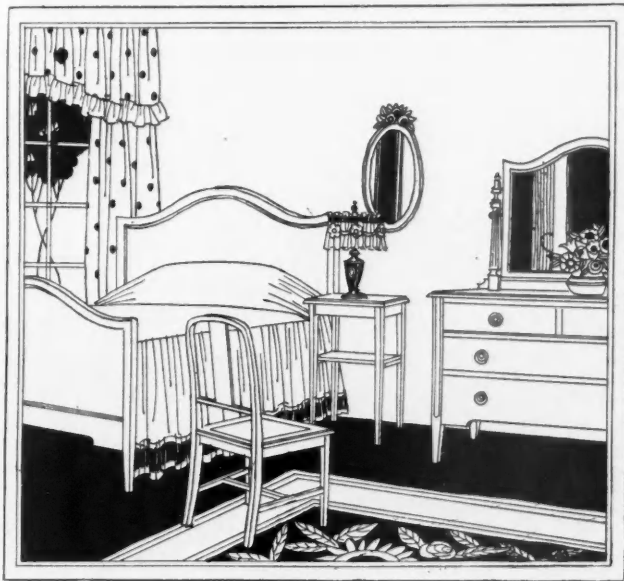
The greatest consideration should be used in furnishing the living room—the center of the household

and the place for the family hearth, from earliest times the symbol of home and around which has centered many a rich memory in every family history. One authority on color tells how he went into the living room of a friend of his one evening to talk over a personal matter—the man had confided to him that he was not getting on well with his wife. Upon looking about the room the color chemist said, "Man, you don't need a new wife, you need a new color scheme in your home here. Do away with these atrocious rugs and get some quiet paper on your walls!" In the living room shown here, the woodwork and floor are stained a rich walnut; for the walls there is a choice between blue and old gold

grasscloth and taupe paper, or if one prefers a flat paint which is always good. Kalsomine is less expensive and does very well for a temporary finish.



Chairs with Seats of Leather or Cane Are Preferable for the Dining Room. Keep This Room Light and Gay, But Simple.



Mulberry and Grey Are Delightful Colors for the Bedroom. A Bedside Lamp and Side Lights Are Very Convenient.

The rug is a plain taupe wilton and extends within 18 inches of the baseboard. Cream voile or pongee silk with overdraperies of plain velour or blue silk rep may be used for curtains. Remember that with the draperies, if carefully chosen, they soften hard lines and break otherwise monstrously flat surfaces. Double faced window shades should be used with a ball or tassel for handling. The lambrequin of plain rep or velour with side curtains of striped or figured material are very attractive. The lambrequin should be widest at the sides and is hung on a separate rod over the side curtains. Either tapestry in a pattern of dull blues and green on a black background, or figured velour may be used for upholstery. The furniture selected is of walnut or mahogany, and either Jacobean or William and Mary would be good. If the less expensive draperies and wall covering are chosen, oak would be in good taste. A dull brass finish is used for the lighting fixtures with small silk shades on the side lights. The floor lamp has a wrought iron base and a parchment shade. The book cases on either side of the fireplace have open shelves which should be at least 12 inches apart, but preferably 14. After the necessary pieces of furniture are placed be careful not to have too much bric-a-brac about; let each piece pass the test of being either beautiful or useful. As to pictures, prints are very attractive, and not so expensive; good etchings are always in perfect taste. A wall mirror with burlled inlays and hand fluted columns is hung either over the mantel or the console table. A ticking clock in the living room is likely to make your guests nervous, and so most people prefer candlesticks and an attractive colored bowl for flowers for the mantel. Flowers of painted tin that bloom perpetually in a metal pot make a bright spot in the room.

Dining Room

The woodwork and floor in the dining room is

finished in walnut also, and there is the same choice of covering for the walls. The rug is either Chinese or a plain wilton of deep amaranth color with a darker border. For the portieres use velour in plain color. The furniture should be walnut and may very well be of William and Mary style. Select chairs with seats of leather, haircloth or cane; upholstered seats become soiled and spotted easily. The curtains are cream filet net shirred on a 3/8-inch brass rod and hung a little over the sill. The overdrapery may be a chintz of pleasing design and carry out amaranth as a dominant color. Parchment shades are used on the fixtures and always give a soft light. Some pretty colored china would look well in the corner cabinet and is much more desirable than cut glass. Keep the dining room light and gay but simple—a becoming background for the hostess.

Breakfast Room

If one does not select built-in furniture for the breakfast room, there are many attractive ways of furnishing it, and inexpensively, too. On the floor a black and blue linoleum in tile pattern with a blue Scotch wool or a linen rug looks very attractive. A Chinese paper of a quaint design with figures and birds and twisty trees in soft blues and green on an ivory background covers the walls; and the woodwork and ceiling is old ivory. There are draw curtains of deep cream with blue rep draperies. Painted ivory furniture with bands of blue or black laquer pieces would be most pleasing.

Bedrooms

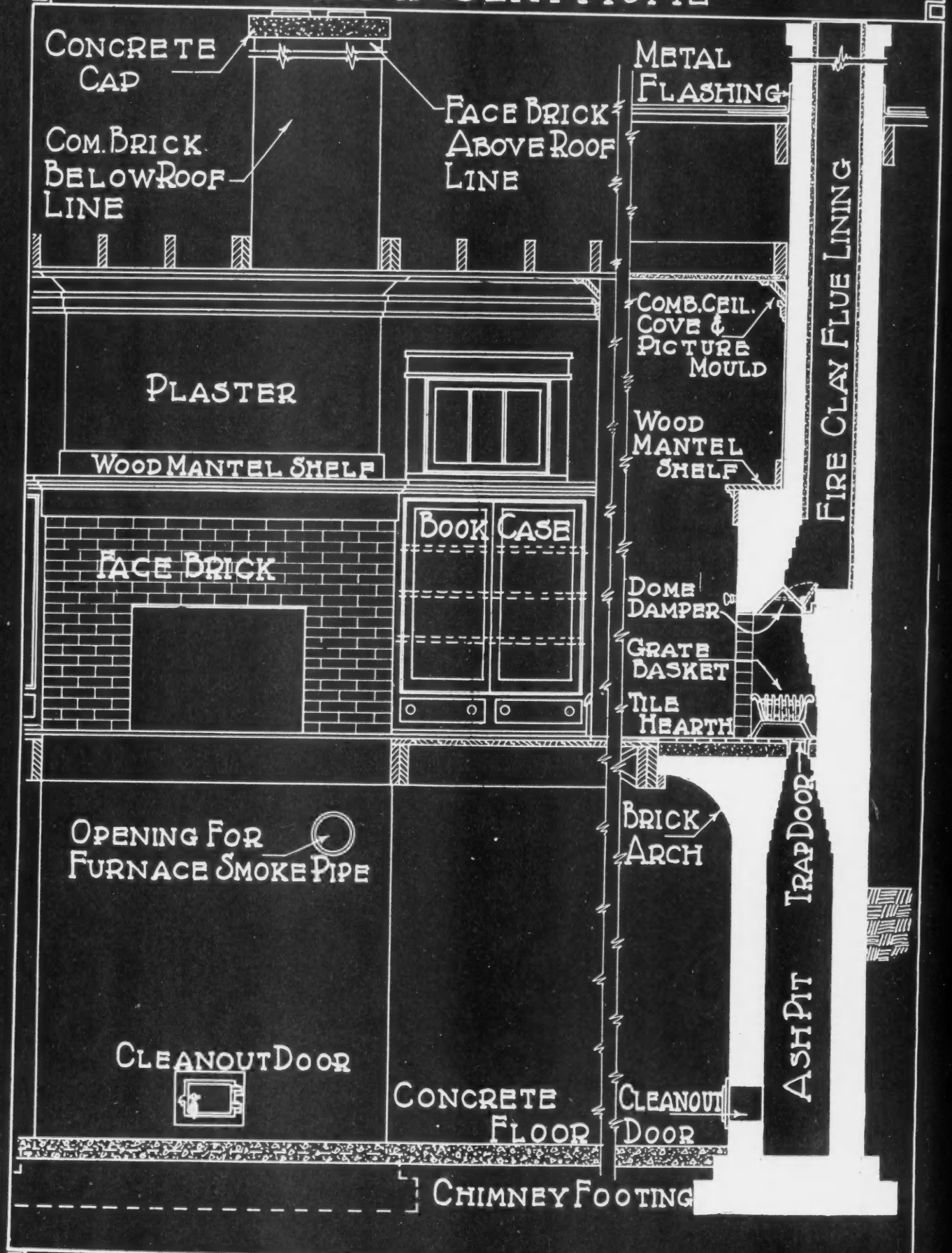
The bedroom on the first floor is furnished in mulberry and grey. There is a large grey linen rug

(Continued to page 111.)



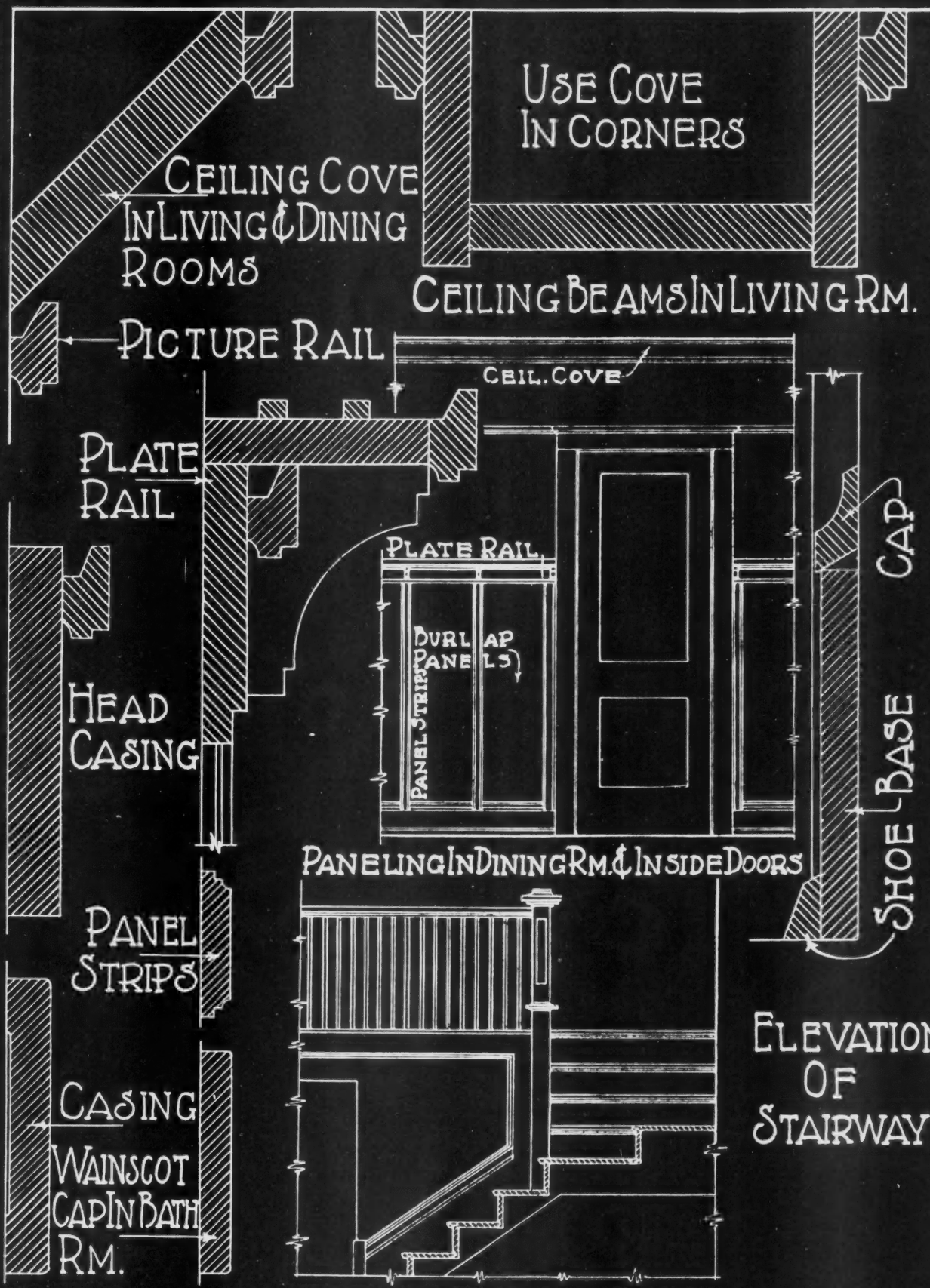
Soft Tones of Yellow Are Excellent for the Back Bedrooms with Northern Exposure. Blue and Grey for Those of Western or Southern Exposure.

ART INSERT HOME

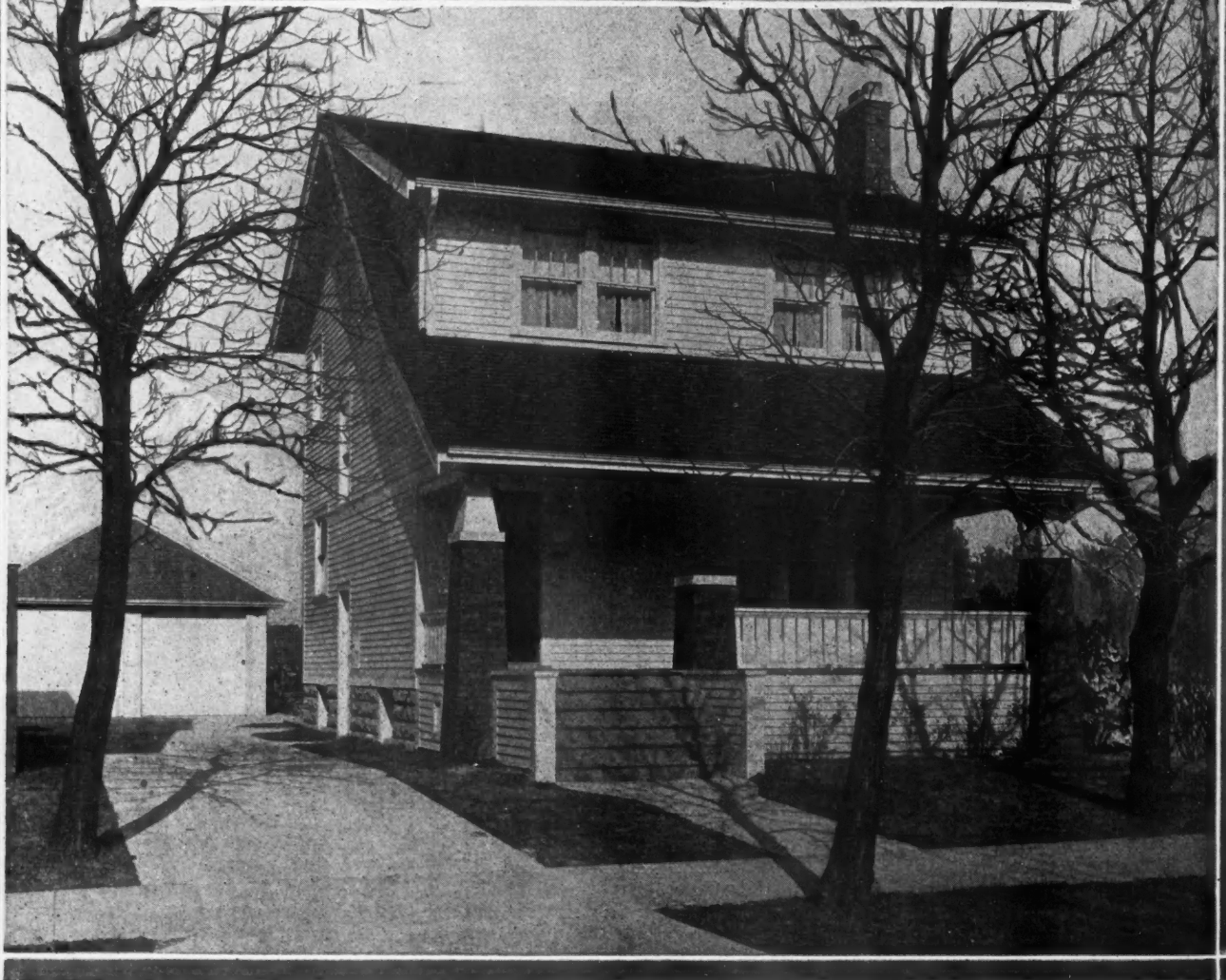
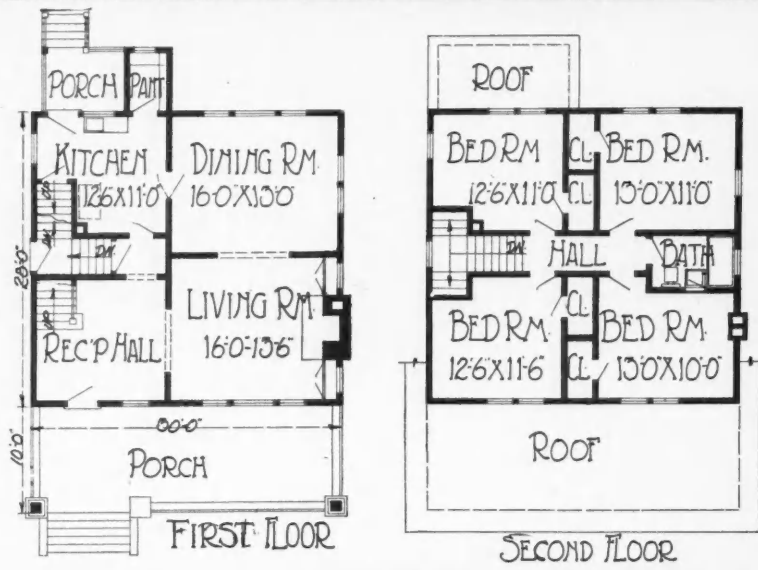


DETAILS OF SEVEN ROOM RESIDENCE

ART INSERT HOME



DETAILS OF SEVEN ROOM RESIDENCE



MODEST, ATTRACTIVE HOME OF COMFORTABLE DESIGN. Set upon a foundation of concrete block, this well-built frame dwelling has been constructed to meet the needs of a fair-sized family who are more interested in substantial comfort than ornate decorations. The exterior is quite attractive with broad front porch, brick columns and long sweeping gable roof with large dormer extending across the front of the house. This home contains seven rooms, three on the lower floor and four on the second floor. The living room and dining room are practically the same size and adjoin each other. In the living room is a fireplace with wall book cases on each side. The kitchen is small. Upstairs are four bedrooms and bath. This house is 30 feet wide and 28 feet long. The porch is 10 feet deep, making the length overall 38 feet.

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Gradually Taking Form. This Stadium Will Hold 60,000 People When Completed. It Requires 2,000,000 Feet of Lumber and 13 Tons of Nails.

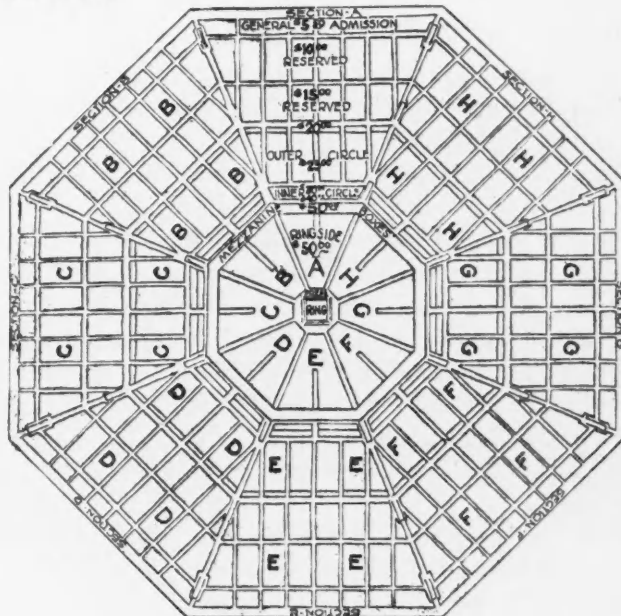
Break Building Records on Fight Stadium

USE OF POWER SAWRIGS AND MACHINERY ON JOB ENABLE CONTRACTOR TO FINISH BIG PROJECT IN EIGHT WEEKS

ON July 2 the eyes of all nations will be focused on a little spot in Jersey City where two men will fight for the pugilistic supremacy of the world. Little will all these people realize the Herculean efforts that were put forth by a few people to make this affair possible. And to the builder belongs a lion's share of credit.

In less than eight weeks, he will have transformed a 30-acre swamp into a gigantic stadium holding 60,000 wild fighting fans. And it is no easy job. Montgomery Park, Jersey City, where the fight will be held, is not a park by any means, but a 30-acre plot of land which required considerable filling and leveling before it was ready for the structure. Five steam shovels and 110 trucks and teams completed the grading and filling in nine days.

The first carpenter work started on May 9. C. S. Edwards, the contractor, was built for speed and he



Here It Is! Pick Your Seat. Plat Showing Arrangement of Seats at Dempsey-Carpenter Stadium.




Power Saw Rig Is Called Into Action to Speed Up Building of Monster Stadium for World's Championship Fight at Jersey City, July 2. This Structure Is to Be Built in Eight Weeks.

instilled plenty of it into the work. He put several power sawrigs into action right at the start so as to lose no time and when the time comes his work will be ready. Over 2,000,000 feet of lumber are required and 13 tons of nails. When it is completed it will hold 60,000 people.

Two hundred and fifty carpenters started on the job and now there are about 600 busy working two shifts a day.

The stadium is the exact duplicate of the one built at Toledo two years ago for the Dempsey-Willard fight. A plat is shown on this page.



Woman and the Home

How Shall I Light My Home?

SIMPLICITY IS KEYNOTE OF FURNISHINGS AND FIXTURES OF COMFORTABLE HOME—LIGHTING IS GIVEN MORE ATTENTION BY ARCHITECTS AND BUILDERS

By Grace T. Hadley

Society for Electrical Development

ONE OF the first requirements of a good home is that it be comfortable.

This may mean the installation of costly decoration and household equipment, or it may mean the attainment of that simple charm which comes from a few things happily chosen. A comfortable home is within the reach of all, provided one has the good taste to know what is comfortable. Comfort being the first requisite, economy is the second and beauty is the third. In this comfortable home the furniture and the decorations are home-like and serviceable, the heating plant is practical, the household equipment selected for its fitness to reduce hard work, while the lighting fixtures provide plenty of light as needed, and the whole effect is pleasing and harmonious.

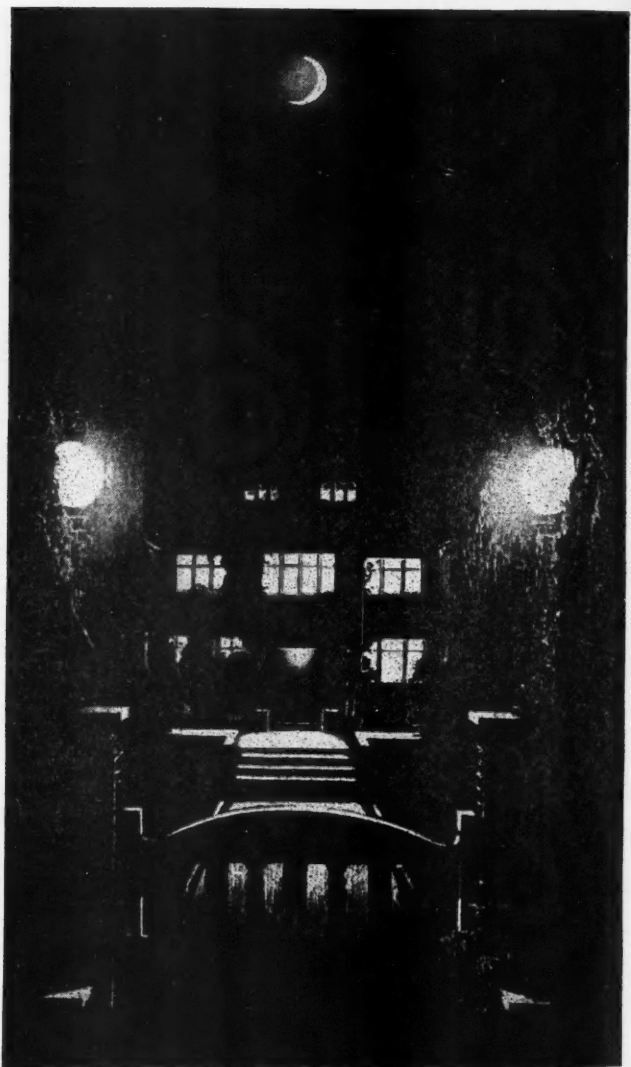
In the home that is being built or the home that is being remodeled, arises a question of great importance: "How shall I light my home?" Yet often the home-maker and the builder give it scarcely a passing thought. Formerly two per cent of the total investment in the home and furnishings was considered sufficient for the lighting fixtures, but authorities now concede that four or five per cent is little enough for the lighting of the modern home. Good lighting adds very materially to the esthetic enjoyment of the modern home.

Importance of Good Lighting

Bad lighting can make a room very uncomfortable. Try to visualize a livingroom with a bright, glaring lamp hanging low from the center of the ceiling. This is an extreme case of glare due to a bright light source within the range of vision and such lighting would cause the greatest eye discomfort. As a rule such lamps are shaded, but in other rooms bare lamps are often used and there seems to be an idea that if the lamps are lifted out of the range of vision, glare has been abolished, but such is not the case.

The lighting of the home is not one of the so-called exact sciences, but the lighting experts have made it

far more scientific for the average home of today. Here is one hopeful note that has been struck: fixtures of the future are going to be flexible to a degree undreamed of in the past. Heretofore they have been fastened permanently to walls and ceilings and there



Like a Sentinel in the Night, the Well-Lighted Home Is Not Only a Pleasure and Comfort But Infinitely Valuable Asset for the Community. It Radiates Hospitality and Good Cheer.

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Bad Lighting Can Make an Otherwise Attractive Room Uncomfortable. Artistically Shaded and Well Placed Lights Keep Away the Glare and Throw Out the Beauties of the Interior Arrangement in Sharp Relief.

they remained defying the march of time and the change in style.

This flexibility has been made possible by the invention of a new method of connecting wires and fixtures. Flush with the surface of walls and ceilings little receptacles are placed which resemble the ordinary push plug sockets. From the base of the wall brackets project two curved arms like the claws of a hammer. To attach the fixture to any of the wall receptacles, the claws are merely inserted into the slots and the fixture is brought up to horizontal.

For ceiling fixtures, the plugs serve a dual purpose of electrical contact-making and weight bearing. They differ from the wall plugs, however, in that each consists of two S-shaped pivoted claws, which, after they have been inserted and moved toward each other serve as a toggle bolt to sustain the weight of any heavy fixture, such as a chandelier.

Simplicity the Keynote

Simplicity is the keynote of furnishings, decoration and fixtures for this average comfortable home and the little rule of William Morris is a right good guide: "Have nothing in your home that you do not know to be useful or believe to be beautiful."

Simple lines and graceful curves contribute much to decorative charm combined with an esthetic lighting system. The rooms of a house, large or small, can be classified into two groups: the comfort group and the service group. The former includes living-room, diningroom and bedrooms, while the latter in-

cludes the kitchen, pantry, laundry, basement or cellar.

Consider first the comfort group of which the living-room is most important. In the illustration, general illumination is secured thru the use of side-wall brackets, while portable lamps afford local illumination as desired. The man of the house has his own reading lamp beside his easy chair. It is a floor lamp with antique standard and parchment shade over the lamp within. On the library table is a large reading lamp for general use, equipped with a 50-watt milk white mazda lamp, the silken shade diffusing the light downward upon the table where it is needed. In the far corner of this livingroom is a beautiful writing desk with an exquisite Tiffany lamp for local illumination while another corner holds a miniature grand piano with a handsome floor lamp beside it. A console table with electric candle lamp and a card table of unique design with lamp beside it are some of the methods used to make this livingroom interesting and comfortable beyond the ordinary.

"Simplicity in backgrounds is the foundation of decorative possibility," declares Mrs. Hill Griffith, who planned and decorated this livingroom. "I have not tried to illuminate the room as an engineer might do it, but I planned the general lighting from sconces or side-wall brackets in the wall panels, with plenty of portable lamps, both large and small, so that it is possible for a person to slip into almost any easy chair, pull a chain and have the right kind of a light in the right place."



Simplicity in Lighting as in Furnishing Will Add to the Beauty of the Home. In Bedrooms a Semi-Indirect Unit Controlled by Wall Switch with Bracket Lamps at the Dresser Is Most Effective.

Lighting the Dining Room

In the dining room effective illumination should be provided over the table, the most important object in the room. The dome has been hung over many a table lighting the table brightly and leaving the rest of the room in comparative darkness except when relieved by wall brackets. This dome, if not protected by a piece of sheer silk underneath the lights, permitted light rays to shine directly into the eyes of the diners. Another method of lighting the table was by a shower fixture. With a large family gathered about the table, in order to get a wide spread of light, the dome would have to be hung so high that the lamps within would be visible and unless protected by an underpiece of silk, the light would be glaring and very uncomfortable.

There is a new fixture or electrolier available now that has good general distribution of light without glare. Most of the rays from a powerful lamp within are reflected upward to the ceiling, which should be light in tint, while some of the light is transmitted downward thru a glass diffusing disc which protects the eyes of those below and eliminates all glare. A simple type of this electrolier with a pretty shade that harmonizes with the general decoration of the room will make it very comfortable and most pleasing.

In bedrooms there is more opportunity than in any part of the house to select the silk, parchment or glass shades which are harmonious. An effective arrangement of bedroom lighting is a central semi-indirect unit controlled by a wall switch, bracket lamps beside the dresser with some auxiliary dressing table lamps. A special reading lamp beside an easy chair is also

demanding in modern bedrooms.

The lighting of the bathroom should insure strong light on the face from both sides of the mirror for convenience when the man of the house shaves. There should be several outlets provided in the base-board so that a small luminous radiator, a massage vibrator, or a hot water cup can be quickly connected.

Large closets for coats, linens and the lavatories should be provided with a lamp placed directly over the door in a horizontal position and controlled by a door switch. It is always desirable to have closet lamps with a pull chain socket so in case the closet door is to be left open any length of time, as in airing the rooms, the light can be extinguished.

Kitchen and Other Service Rooms

The number of lights which should be provided in the kitchen will depend entirely upon the size of the room. One ceiling fixture operated by a wall switch is usually of service for general lighting, but sidewall fixtures should be installed at stove or sink where there is special work to be done. It is in the kitchen that electricity offers its most helpful applications and provision should be made for water urn, waffle iron, plate warmer, electric range, if there is suitable rate for it, or perhaps a kitchenette range, or portable oven and an electric fireless cooker.

Light in the laundry should be arranged so that it can be concentrated over washer or ironing board and shed some illumination into closets where the irons and other materials are stored. It is best to install a substantial washing machine when the house is built and the electric iron should have its permanent place and special heating outlet and there should be a suspension arm for holding the cord out of the way.

The cellar should have enough light to make it safe in every part. The important places will be proper lighting before the furnace, in the store-room and work-bench. The cellar lights should all be controlled from the head of the cellar stairs and a small red lamp of about two candlepower should be wired in to burn as a beacon light and insure the cellar circuit being turned off when not in use.

Every veranda should be well lighted. In the first place a light burning there will do much to keep away trespassers. In the second place, arriving and departing guests should be insured against dangers and inconveniences of dark steps. Table lamps of wicker ware with 25-watt Mazda lamps harmonize well with the veranda furniture.

Law for the Builder

MAY CONTRACTOR INCLUDE OVERHEAD EXPENSES IN COMPUTING HIS COMPENSATION UNDER A "COST PLUS" CONTRACT?

By Leslie Childs

WHILE the "cost plus" method of contracting carries with it some drawbacks, yet, under certain cases it also has its advantages, and in many cases proves of profit to both the contractor and his employer. However, in entering into contracts of this kind, great care should be taken to fix definitely the expenditures upon which the contractor is to base his percentage of compensation.

In particular does this apply to the payment of the "cost plus" commissions upon the contractor's overhead expenses in performing the work. For frequently this is an important item, including office and supervising overhead, and one which the employer is likely to dispute, unless its payment is especially provided for in the contract.

The law books contain a number of cases involving disputes of this kind. And as these decisions are not entirely uniform, some of them holding the contractor may collect, others that he cannot, it is obvious that the only safe plan to follow is to have the agreement, relative to what expenditures the commission is to be based upon, clearly set forth.

As an illustration of the reasoning followed in cases where it is held that, unless especially contracted for, the contractor cannot collect his commissions upon his overhead, the recent case of *Shaw vs. Beaumont Co.*, 88 N. J. Eq. 333, 102 At. 151, 2 A. L. R. 122, is of interest.

"Cost Plus" Contract for Erection of Apartment House Entered Into

The G. B. Beaumont Company contracted to erect an apartment house for Eleanor P. Shaw in Jersey City, N. J. Among other things the contract provided that the Beaumont Company should receive for its entire compensation in erecting the building, "a sum equal to 10 per cent of the entire cost of such building."

The contract also provided that the lands should be conveyed to the Beaumont Company, also certain moneys paid, and that after completion of the building the property should be reconveyed to Shaw. It also provided that after completion the cost should be ascertained by an accounting by the Beaumont Company.

Pursuant to this contract the Beaumont Company entered upon and completed the apartment house.

Thereafter a dispute arose between the parties which culminated in Shaw bringing an action against the Beaumont Company for an accounting and reconveyance of the lands. Upon this action the question, among many others, arose as to what expenditures the Beaumont Company were entitled to compute their commission of 10 per cent of the cost of the building.

The Beaumont Company contended, among other things, that it should be allowed a proportion of the salaries it paid to its officers and office employees. It also contended that certain sums spent for telephone calls, car fare, stationery, postage, tools, etc., should be included in the sum upon which its compensation was based.

In the lower court the matter was referred to a master in chancery who disallowed the items noted above as overhead. On appeal, to the Court of Errors and Appeals, in part, said:

Supervising Expenses Properly Excluded

"The reasoning of the master is quite satisfactory in the memorandum filed by him in the court below, excluding these various items. The contract provides for no independent supervision. The defendant [Beaumont Company] cannot charge the complainant [Shaw, the owner] with a proportion of the salaries that it pays its officers for supervising or superintending the building. The de-

endant is the contracting party; it had a right to employ whosoever it chose to superintend the building on its part, the work of the laborers employed by it. So, with the other items enumerated above, such as telephone calls, not allowed by the master, they were office charges of the defendant corporation; they were not costs and expenses of the building. So, the tools used in the construction of the building, they were a part of the equipment of the contractor; a contractor, when he agrees to build, must, in the absence of a contrary agreement, furnish all the tools and necessary appliances for the work contracted to be done. * * *

The Court of Errors and Appeals thereupon affirmed the decree of the lower court. Holding, among other things, as outlined above, that the contracting company was not entitled to receive, in addition to its stipulated sum equal to 10 per cent of the cost of the building, a proportion of its overhead expense in supervising the work.



Builder: "Make Proper Provision for Overhead Expense in that Contract. That Includes Office Expense."



Our Front Cover HOME DESIGN

Charming Home of Substantial Comfort

FRAME DWELLING CONTAINS SIX PLEASANT, WELL-LIGHTED AND WELL-ARRANGED ROOMS

SIMPLICITY in design, quiet charm, and substantial economical construction are the outstanding features of the front cover home this month. Its appeal lies in its freedom from ostentation of any kind and general hominess. It is evident that this home is comfortable, roomy, and complete.

In the exterior design the noticeable and predominant feature is the abundance of window space insuring plenty of natural light and thoro ventilation in all rooms. The more ventilation, the healthier the home and its occupants. Emphasizing the general atmosphere of comfort and spaciousness is the broad open front porch with sloping roof supported by four stout wooden columns. There is place here for ten children, family and guests to rest and visit. In the broad eaves with wooden arches we have an added touch that does not detract from the attractive appearance. The gable roof looks friendly.

Because there is plenty of use for it, the house has a high basement. The home needs storage rooms for vegetables, fruit, etc., and a large heating plant with auxiliary fuel rooms, workshop and laundry.

Six rooms are called for in the plans, three on each floor. On the first floor is the living room that well deserves its name, one of those great rooms with inviting fireplace; an ideal room for the center of family activity—a real place to rest. It is 15 feet 3 inches by 23 feet, which gives over 300 square feet of floor

space. Double windows on each side of the front door, a large single window on the left side and a double window on the other side insure plenty of real sunshine and ventilation. The fireplace is located in the corner of the room. At the other side is a small doorway opening into a hall which leads the way to the stairway going upstairs. There is a small closet off this hall for outdoor wraps, rubbers, etc.

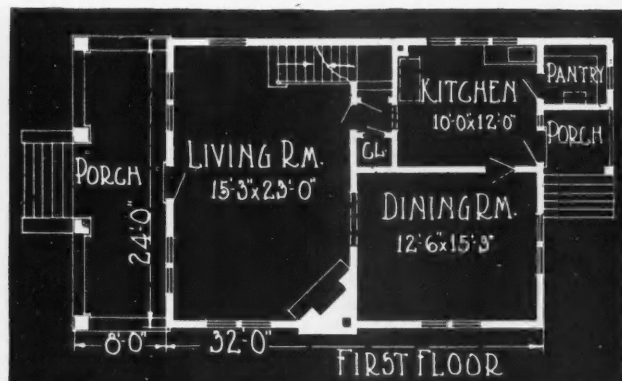
Opposite the door leading from the living room is a doorway opening into the kitchen, 10 by 12 feet. A large triple window furnishes plenty of light and is supplemented by another small window facing the back porch.

Alongside the kitchen and in rear of the living room is the dining room, 13 feet 6 inches by 15 feet 3 inches, a good sized, well lighted room.

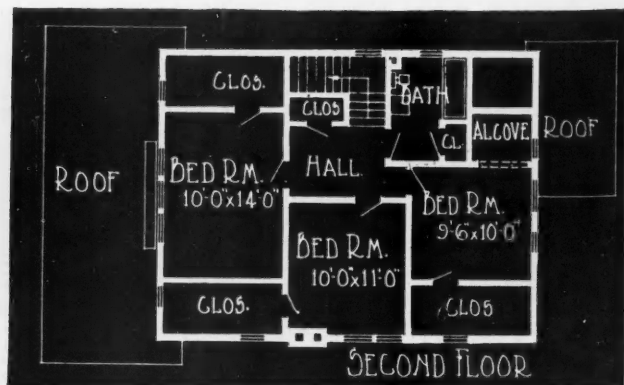
The house is 24 feet wide and 32 feet long, exclusive of the front porch which is 8 feet long.

On the second floor are located three bedrooms of different size, the front one being the largest, 10 by 14 feet. As the second story is more or less a half story, because of the sloping gables, the outside space is used for clothes closets which appear large on the floor plan but are not very high. In one corner is a small alcove that can be used for sewing room or reading. These rooms are all grouped about a central hall.

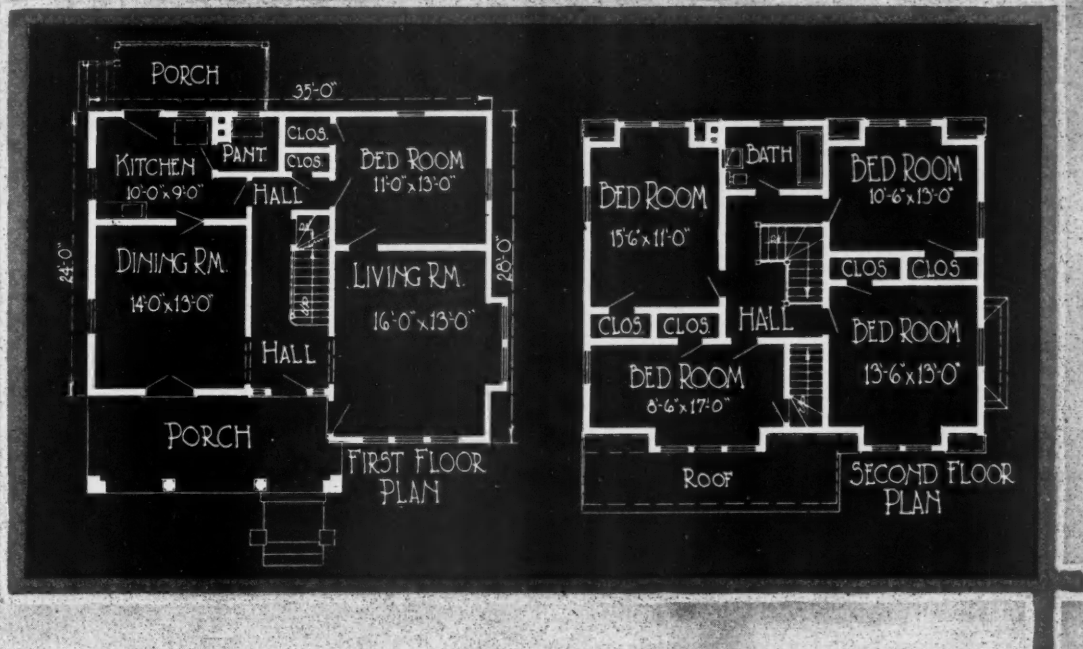
The main purpose of this home is obviously comfort with no effort made to save space.



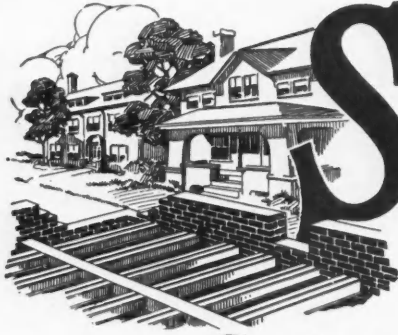
First Floor Plan of Front Cover Home. Note the Large Living Room and Abundance of Window Space.



Second Floor Arrangement of Front Cover Home. Three Bedrooms, Bath and Alcove Are Located on This Floor.



CHARMING EIGHT-ROOM HOUSE OF SEMI-COLONIAL DESIGN. Those acquainted with the delightful Colonial designs that are so popular will recognize the influence of that architecture on this spacious and comfortable house. The wide white clapboard siding columns at the entrance and nicely spaced small-pane windows are reminiscent of the Colonial. There are eight rooms in this dwelling—four on each floor. A variation in the usual design is shown in the French doors opening from the porch into the dining room. The main entrance opens into a reception hall between the two main rooms. One bedroom is provided for in the first floor plan and four more are located upstairs. There is no attempt made to conserve space to the inconvenience of the occupants—rooms are ample in number and size. The house is 35 feet frontage and 24 feet long.



STEEL LUMBER Construction

Cost and Strength in Construction

TWO IMPORTANT FACTORS THAT INTEREST EVERY CONTRACTOR WHEN FIGURING ON JOB—USED EXTENSIVELY IN SCHOOL BUILDINGS

By Gilbert Canterbury

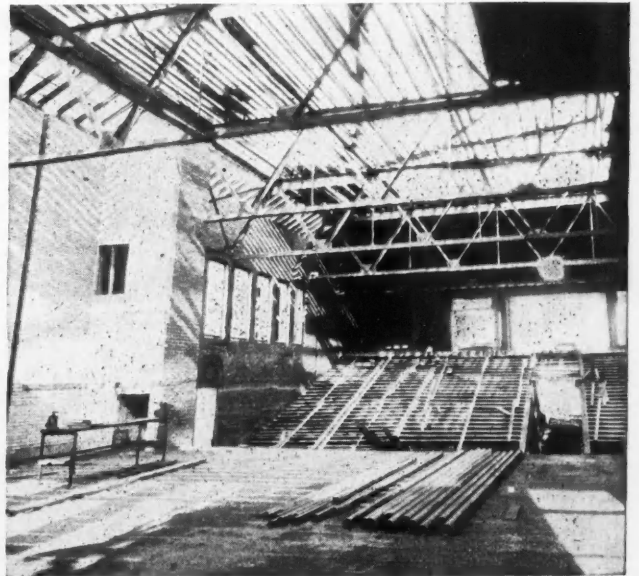
EDITOR'S NOTE—This is the sixth article of a series on the use of steel lumber in modern construction. Readers are invited to ask questions pertaining to this subject. Answers to all inquiries of general interest will appear each month in this department. Write in your problems now.

THE most frequent question that is asked in regard to steel lumber is, "How does it compare with wood in price?" In answering such a question it is necessary to deal with it in a general way since prices of steel lumber, like other commodities, vary in different localities.

Four grade school buildings were opened for bids in a medium city of Pennsylvania last month and bids on both wood and steel lumber were submitted. When the bids were opened it was found that steel lumber construction ran just four per cent more than wood. To build one of these schools with brick walls and wood joist floors and wood rafter roof

would have cost about \$128,000, as I remember the figures. To build with brick walls and steel lumber floors, thus making the building fireproof, figured \$134,000.

On a seven-room residence job in Illinois late in May, the plans called for common brick foundation

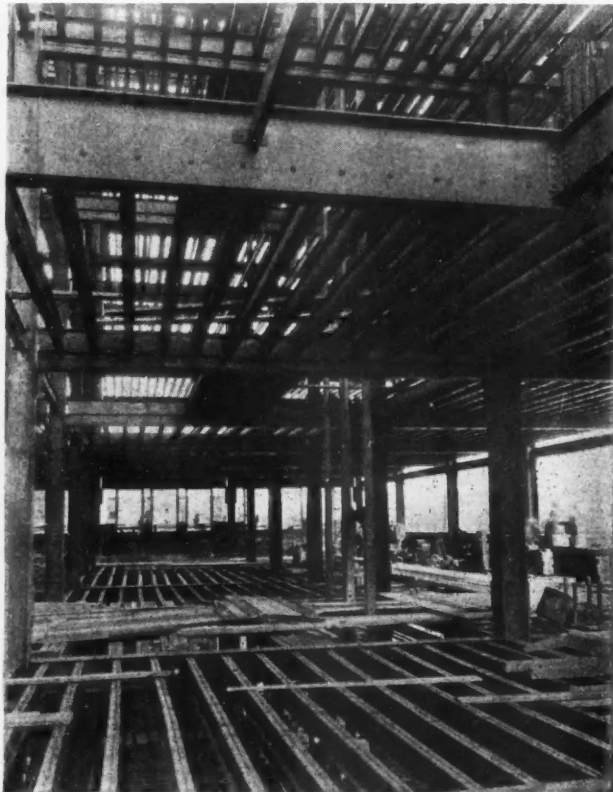


Auditorium of Ohio School Building Showing Steel Lumber Floors and Steel Joist Roof Supported on Structural Steel Trusses.

and clay tile walls faced with face brick and wood joist first and second floors. An alternate bid on a firesafe floor built with steel lumber joists and metal lath added one and one-half per cent to the cost of the building.

A sixteen-story hotel in New York State designed for structural steel frame and flat-arch concrete floors was also bid in May on an alternate for steel lumber fireproof floors. The steel lumber bids showed a saving of \$300,000 over the other construction.

Another question that has been frequently asked of this department is, "How is steel lumber different from I-beams?" This question comes, it is true, from those contractors who have heard about steel lumber but have not as yet used the material. Were they to see a steel lumber joist section they would quickly note its vast difference from a structural steel I-beam.



Ohio Office Building Eight Stories High Built With Steel Lumber Floor Joists. This Is One of the Largest Buildings in Which This Construction Has Been Used.

Equal difference would be noted between steel lumber channel sections and structural steel channels.

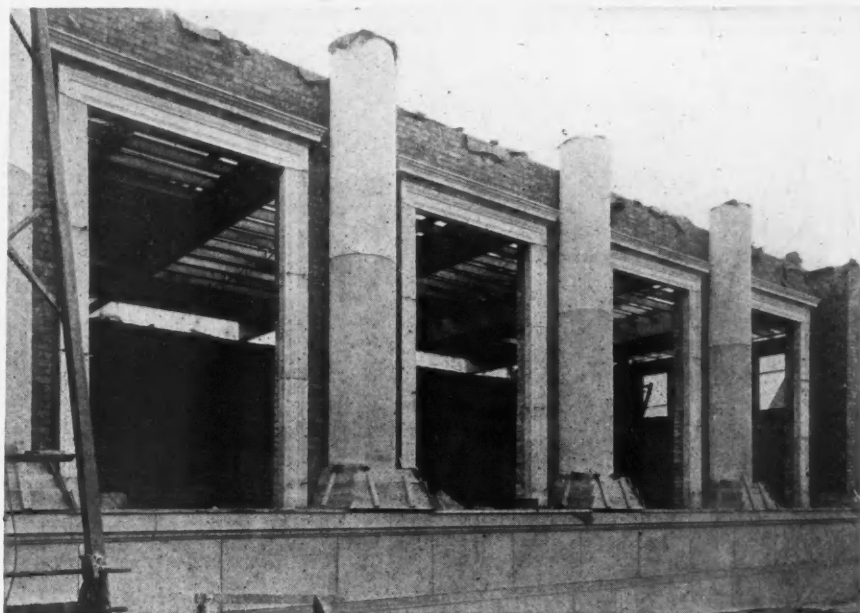
Sections Are Light

Steel lumber sections, both channels and I-joists, are formed from flat strip-steel. Structural steel I-beams and channels are hot-rolled in much the same way that T-rails are rolled. A 10-inch steel lumber joist weighs 8.7 pounds per linear foot. A 10-inch standard I-beam comes in four weights, 25.0, 30.0, 35.0 and 40.0 pounds per linear foot. A 4-inch steel lumber channel weight 1.85 pounds per linear foot. A 4-inch structural steel channel comes in three weights, 5.25, 6.25 and 7.25 pounds per linear foot. Structural steel then is very much heavier than steel lumber and, of

course, has a far greater carrying capacity in the same sizes. The two materials in association will take care of the floor framing problem of every sort of building and do it economically excepting where excessive live loads are encountered.

One of the accompanying pictures shows an excellent example of this association of heavy rolled structural steel and the light steel lumber floor joists. The example is an eight-story office building completed this spring in Ohio. A structural steel frame supports masonry and steel lumber joist fireproof floors, rendering the structure entirely incombustible and fireproof.

Another photo showing a bank building in Milwaukee, Wis., is an example of brick bearing walls spanned by structural steel I-beams and the light steel lumber joists used in the span between the beams. The floors in this bank were built in con-



American Exchange Bank Building, Milwaukee, Wis., Under Way. Note the Steel Lumber Joists Supported on I-Beams. This Building Was Designed by Kirchhoff and Rose, Architects.

formity with the full fireproof construction requirements of the Wisconsin state building code.

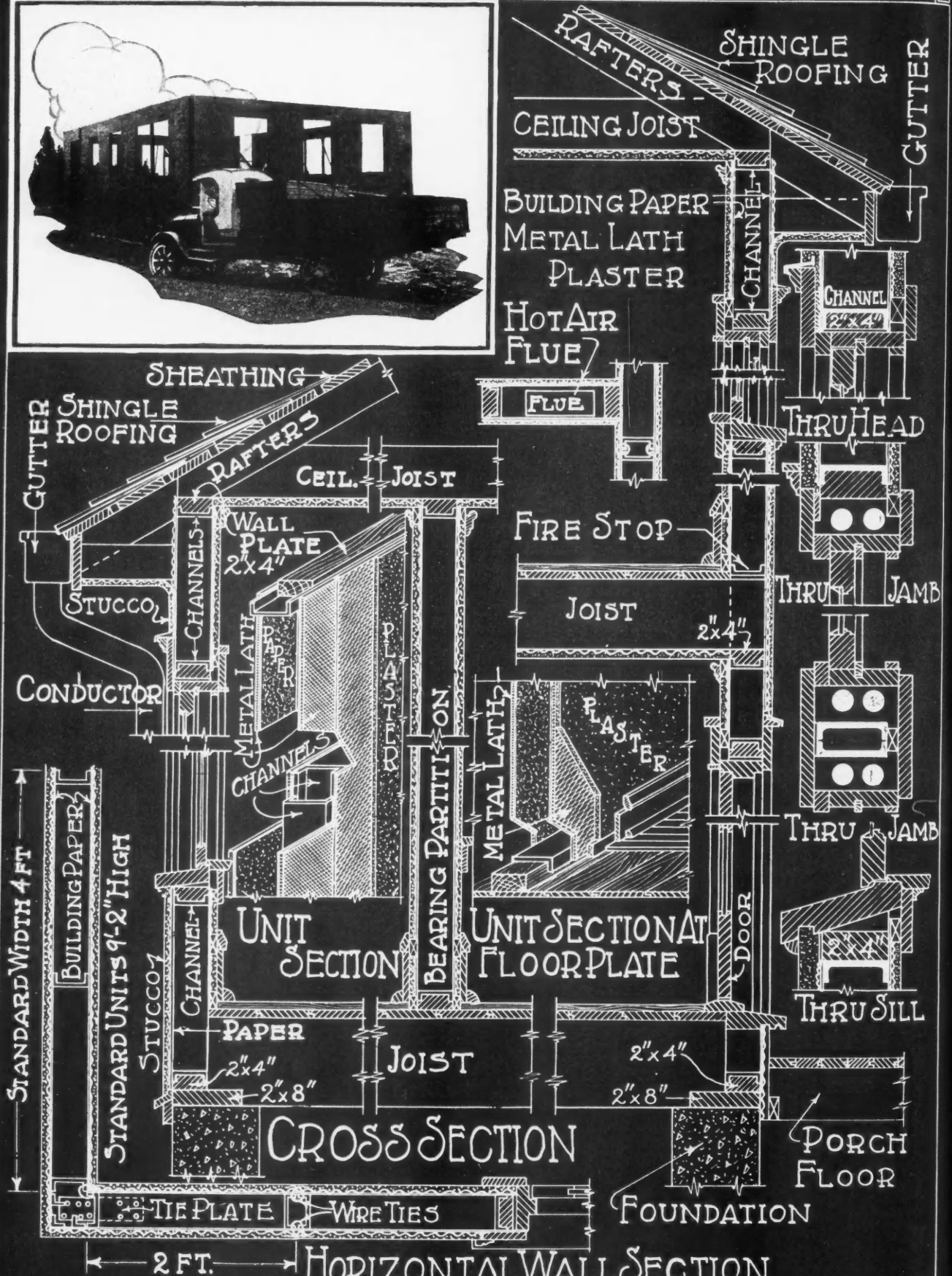
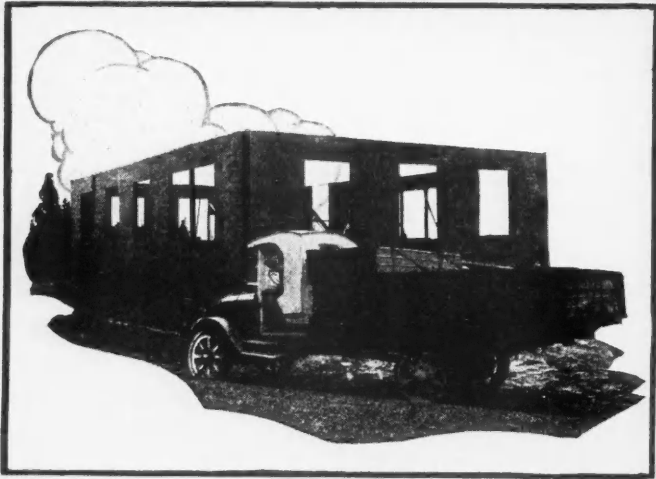
The use of steel lumber joists and structural steel to accomplish the long clear span of an auditorium in an Ohio public school building is shown in one of the pictures accompanying this article. Light steel trusses shop-fabricated from angles and plates, span from wall to wall. Steel lumber joists are also used in all floors including the sloping floor for terraced seats.

Still another question asked in a number of letters is, "What tradesmen are required to handle steel lumber?" The answer is that no special skill is required to set steel lumber joists. On small jobs like residences, stores, garages, etc., the work is usually done by carpenters. On big office buildings and similar jobs the work is usually handled by the same workmen that erect the structural steel.



Steel Lumber Joists Were Used In This High School Building at Sidney, Neb. They Are Supported on Brick Bearing Walls.

RECOMMENDED CONSTRUCTION



CROSS SECTION
HORIZONTAL WALL SECTION
METAL LATH WALL UNITS

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New Method of Construction Reduces Costs

BUILDING MATERIAL IN UNIT FORM FOR STUCCO EXTERIOR PUT UP QUICKLY BY FEW MEN—DETAILS ON OPPOSITE PAGE

THERE is a real need for a building material or type of construction that will reduce the labor time on a job and make that expense item more definite. A new form of construction has been introduced which tends to accomplish this result in a very satisfactory manner and a description of it will be of interest to all builders.

This construction, primarily, is unit in form, yet when assembled into the completed house stands forth undistinguishable in any manner from a house built according to regular rules of construction. This is possible because these units are assembled and combined with other building materials in such a way as to form reinforced concrete hollow walls.

To begin with, these units are made by electrically welding metal lath on both sides of a pressed steel channel frame with a supporting steel channel rib running down thru the center to make the unit stronger. The welding of the lath on this frame insures a strong steel unit. The metal lath on each side of the panel is backed up on the inside by heavy waterproofing paper which provides a firm backing for the stucco on the outside metal lath and the plaster which is applied on inside lath. Between these two layers of waterproofing material is a 4-inch dead air space absolutely insulated, which gives the house protection against changes in temperature. Moreover, this backing of paper on the inside of each wall of metal lath prevents plaster from falling down inside when being applied against the lath.

These wall units are made in two regular sizes, 4 by 9 feet 2 inches and 2 by 9 feet 2 inches and also in two-story sizes, which are twice the length of the regular units. In the two-story units a box to hold the second floor joist ends is formed by steel channel headers, the inside lath being omitted at this point. The central steel rib in the panel does not extend thru at this point. In drawing up plans for houses in which this material is to be used, the architect or builder can specify any size that is a multiple of the two standard widths, 2 and 4 feet.

These wall units are put in place and fastened together by wire ties and the alignment is preserved by a 2 by 4, which is laid across the tops of the panels.

When the stucco is applied to the outside metal lath and the plaster coat to the inside, the completed wall is about 6 inches thick. These

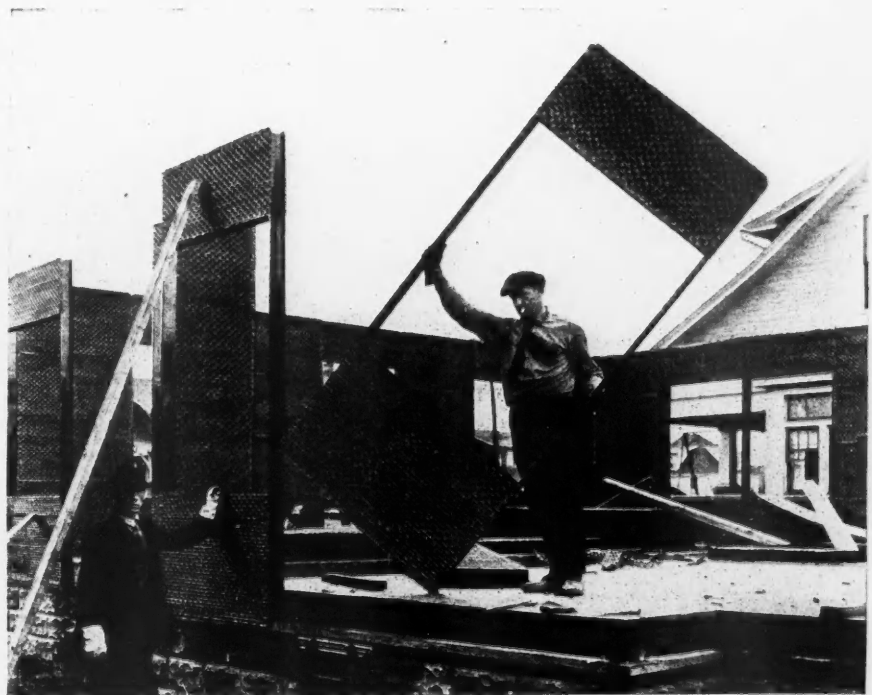
wall units are made in three different types, the solid wall panel, the door panel, in which a steel frame is left for the door, and the window panel, which makes provision for a window opening. In all of these units the metal lath is welded to the channels.

In taking care of the gable ends or any other irregular parts of the house, which cannot be built up of the standard size panels, the builder can erect a frame work and cover it with metal lath.

A special steel roof truss is also manufactured to be used with this unit type of construction and can be used on many jobs with satisfaction. These steel panels are also used for interior partitions. Because of the special backing for the metal lath these partitions are sound proof.

One of the most attractive and interesting features of this new unit form of construction is the ease and speed with which it can be assembled. Naturally this reduces the actual labor time on the job. One motor truck can practically carry the entire requirements for a single house. As this material is held in stock at the yards, there is no delay in delivering, once the plans are drawn and the foundation laid. To cite an actual illustration, a truck load of this material arrived on the job at 10 a. m. and by noon the side walls were in position ready for exterior stucco coat.

In the blueprint detail sheet on the opposite page are shown the several details of this new type of construction.



Placing Window Unit in Position. These Units Are Made of Steel Channels Covered with Metal Lath. They Are Made in Two Sizes, 4 by 9 Feet 2 Inches, and 2 Feet by 9 Feet 2 Inches. They Are Shipped from the Lumber Yard to the Job.

Unique Community Building Project

LUMBER COMPANY PLANS TO ERECT FIFTEEN SUBSTANTIAL HOMES IN GROUPS OF FIVE, FACING A CENTRAL COURT

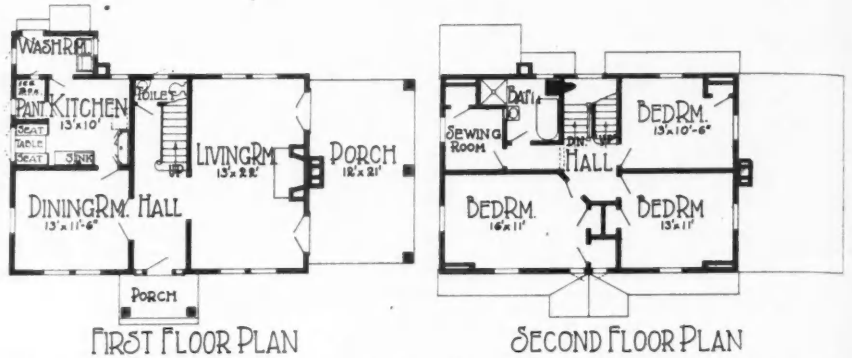
ONE of the most unique community developments of homes ever planned has been started by the T. S. Goslin Lumber Co., Wildwood, N. J. While this project will include only summer seashore homes, it will furnish inspiration for similar projects in cities where housing has become a critical problem.

As the bird's-eye view shows, the homes will be artistically and handsomely arranged in community groups of five, placed around and facing a beautiful central courtyard. The homes will be substantially and carefully built, providing delightful living and home comforts both winter and summer.

Clyde S. Adams, of Philadelphia, has designed all of the homes, and the landscape features that are to be incorporated in the project.

The homes are each to have an individual garage made complete with electric lights and running water. Each home will have a large enclosed porch, splendid living room with fireplace, dining room, kitchen with breakfast nook, enclosed rear porch with laundry, lavatory and toilet on first floor. The second floor

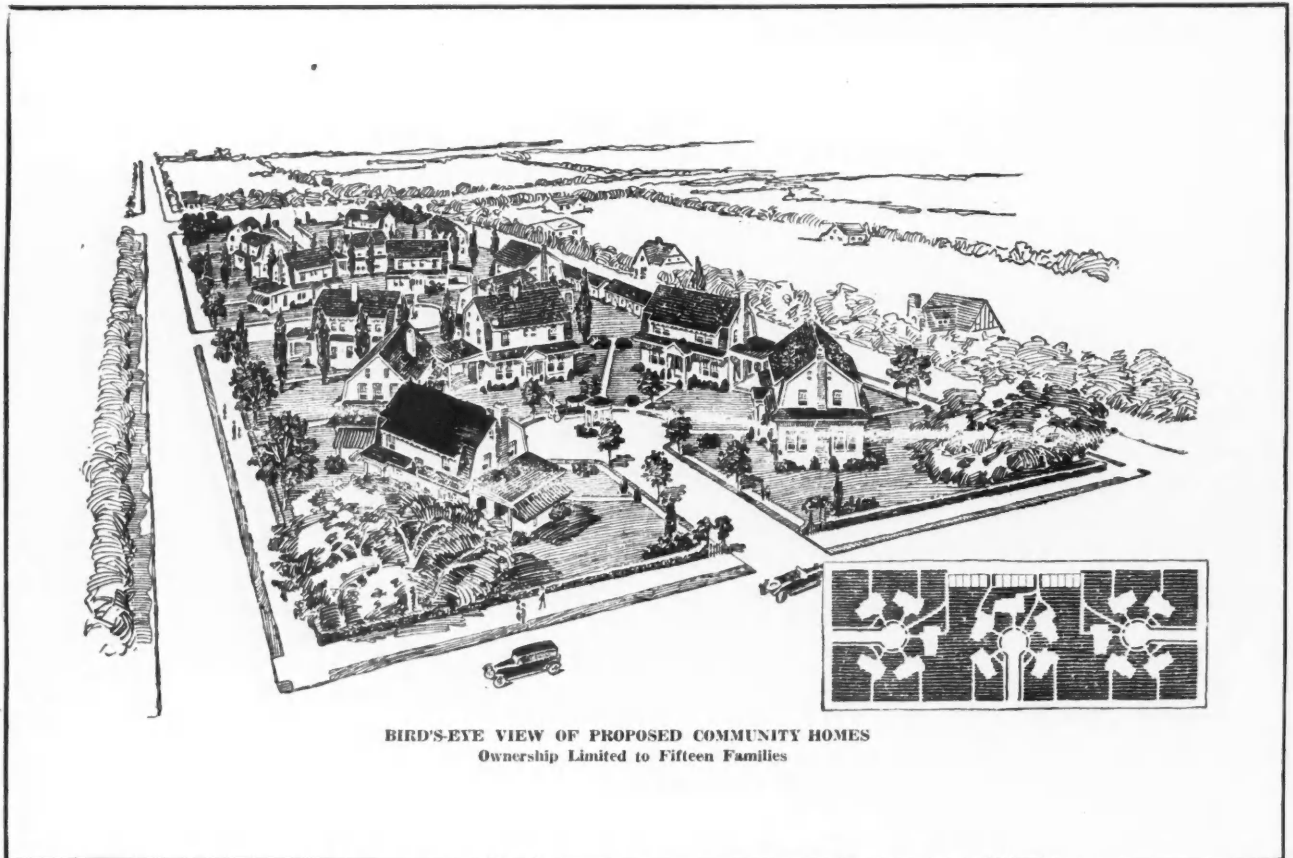
will be all that could be desired for comfortable living, with three large bedrooms, sewing room, tile bath room with separate shower stall. On the third floor



Typical Floor Plans of Houses That Will Be Built in Community Project. They Contain Six Rooms Each.

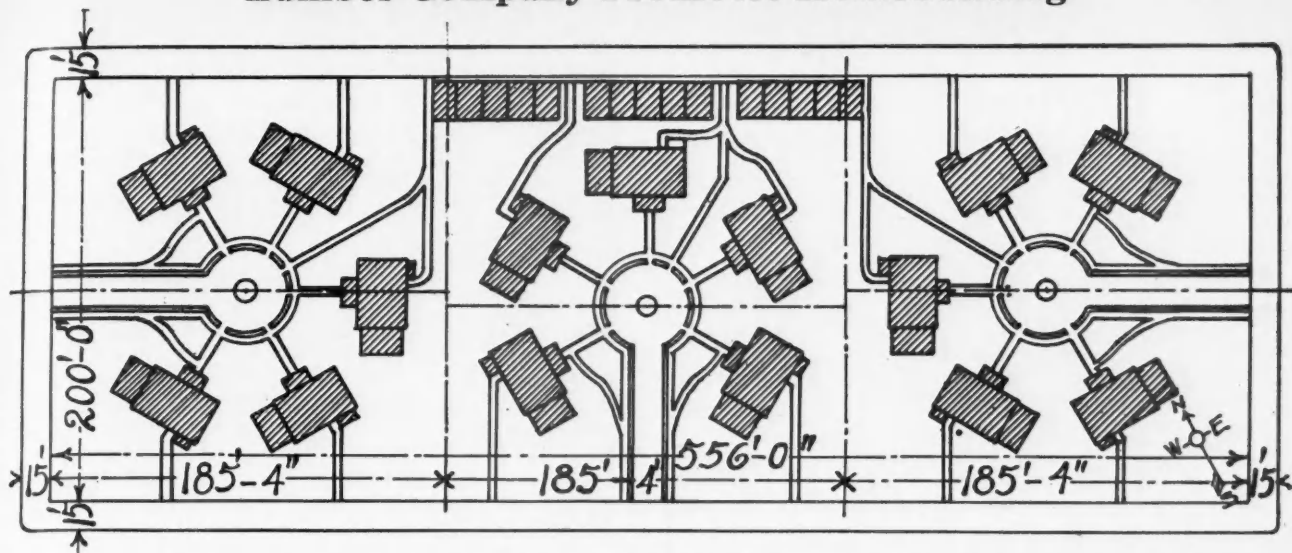
there will be a maid's room with separate lavatory and toilet. Typical floor plans are shown here.

One of the most desirable features of each of the new homes will be the separate installation of a garbage incinerator that is guaranteed to take care of all wet and dry garbage. There will be large closets with electric lights in all rooms. The lighting fixtures and plumbing will be modern and of the finest quality. All outside wiring in the block will be taken care of



BIRD'S-EYE VIEW OF PROPOSED COMMUNITY HOMES
Ownership Limited to Fifteen Families

Fostering the Home Ownership Spirit Is the Main Object of This Community of Beautiful Colonial Homes, Devised and Built by T. S. Goslin Co., Progressive Lumber Dealers in Wildwood-by-the-Sea, N. J. These Homes Will Be Arranged in Groups of Five Facing a Central Courtyard.



Plot Plan of Community Project Showing Position of Fifteen Homes and Garages at One Side. Each Group Site Is 200 by 185 Feet 4 Inches, the Entire Plot Being 556 Feet Long.

by underground conduits, insuring safety for the home owners and the absence of detrimental overhead wiring.

Each home will be thoroly heated by a modern hot water heating system that will guarantee the comfort of the owner during the winter months, should he desire to stay in Wildwood.

After the homes are sold it is the intention of the T. S. Goslin Lumber Co. to ask for competitive bids on the building contracts, as it is their plan to handle this operation only in a supervisory manner.

Each home will be turned over to its owner as a finished unit, with the lawns completely landscaped, drives and sidewalks completed, hedges, trees and shrubbery artistically placed.

The price of the homes is to be \$12,000, and \$5,000 of this amount will be required in cash—\$1,000 when the work is started and four payments of \$1,000 each at different stages of the work. The lumber company will assist in arranging a mortgage for the balance if desired.



Magnitude of the Lumber Industry

THE manufacture of lumber has attained the rank of the second largest manufacturing industry in America, because forest products—wood in all its countless forms—are absolutely essential to our daily life. Wood for shelter, wood for fuel, wood for furniture, wood for vehicles of transportation on land and water—every moment of our lives, we are using necessities or conveniences of wood. From lead pencils to dwellings, from matches to railroad trestles, from toothpicks to giant factories, from shoe-pegs to ships, wood is constantly ministering to our needs.

It is impossible for the human mind to comprehend the magnitude of the lumber industry today. Only a vague understanding is conveyed by the statement that the total production of lumber in this country amounts to nearly 40,000,000,000 board feet annually—approximately 1,600,000 capacity carloads. Of this stupen-

dous quantity of lumber, something like 15,000,000,000 board feet, or 660,000 carloads, is of one variety alone—Southern Pine, a most useful and most adaptable of woods. One-third of the total population of the South is directly or indirectly employed in the production and merchandising of Southern Pine lumber, and 5,400 sawmills were engaged in manufacturing that material last year. In addition to some 30,000 sawmills in the United States engaged in converting the raw material—sawlogs—into various forms, there are more than 75,000 kindred industries employed in converting sawmill products into more highly manufactured articles for innumerable uses.—From Tree to Trade.

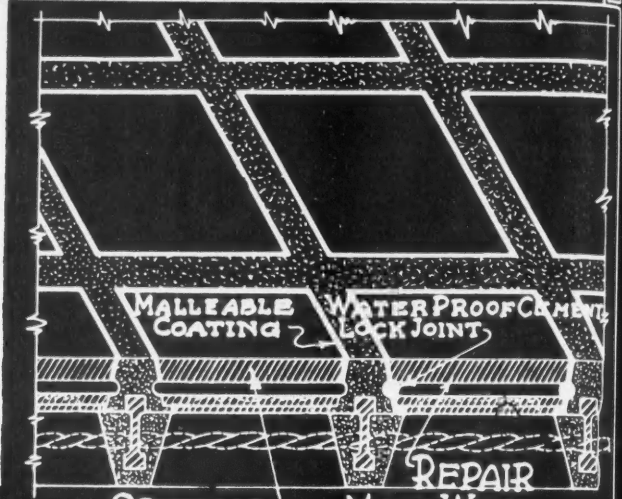
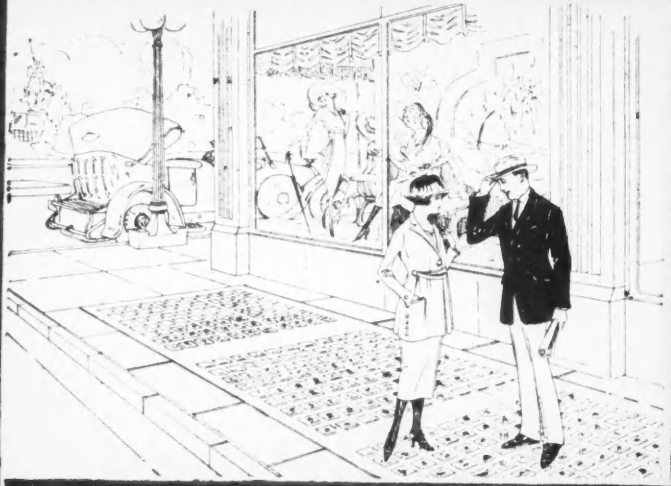


"COM'ON, BOYS, LET'S CUT HIM DOWN!"



Orr in Chicago Tribune.

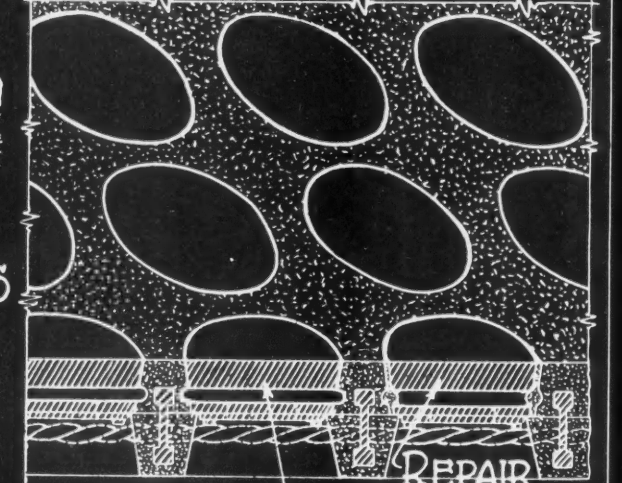
RECOMMENDED CONSTRUCTION



ORIGINAL GLASS

MADE WITH REPLACEABLE GLASS

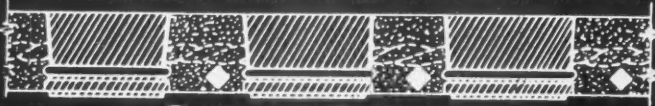
SQUARE GLASS SIDEWALK LIGHTS



ORIGINAL GLASS

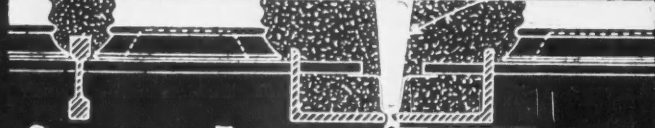
MADE WITH REPLACEABLE GLASS

ROUND GLASS SIDEWALK LIGHTS



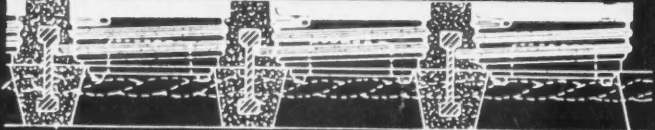
PLAIN GLASS

CAULKED EXPANSION JOINT

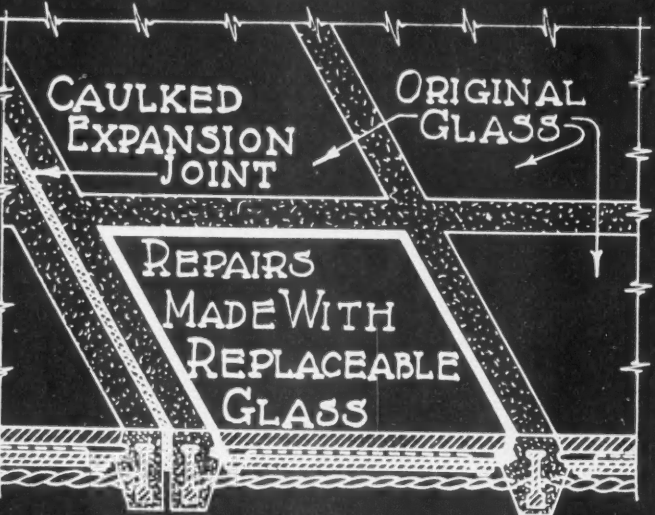


COPPERED EXPANSION JOINT

INTERLOCKING SIDEWALK LIGHTS



REPLACEABLE SCREW GLASS

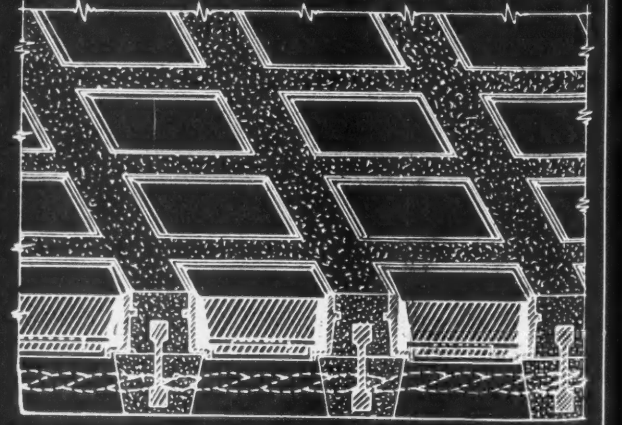


CAULKED EXPANSION JOINT

ORIGINAL GLASS

REPAIRS MADE WITH REPLACEABLE GLASS

SKYLIGHT GLASS



COUNTERSUNK GLASS

SIDEWALK LIGHTS

Installing Satisfactory Sidewalk Lights

POINTS THAT A CONTRACTOR SHOULD FOLLOW TO INSURE A JOB THAT THEY CAN SAFELY GUARANTEE. DETAILS ON OPOSITE PAGE.

FOLLOWING our article in the January issue of AMERICAN BUILDER about sidewalk lights and vault lights we have had many inquiries from contractors and especially sidewalk men asking about ways and means of putting in satisfactory installations. It appears, from the bulk of the correspondence, that many men have had a great deal of trouble in the past. This has been of three kinds; the glass has broken easily, the cement has chipped and the entire installation has become leaky, both around the glass and around the slabs.

For these reasons many owners have refrained from putting in sidewalk lights where they were anxious to do so on account of the big extra daylight space they would thus get. As one man said it is rather discouraging to get a nice display of merchandise laid out below the sidewalk lights and then have a rainstorm come in thru the holes and spill dirty water all over the goods.

Therefore, it develops that this work must be done right—with the proper materials and by men who understand the work.

That our readers may have the very latest data about these points and the newest discoveries and developments in this difficult field we have interviewed the general manager of the company who are probably the largest producers of this material in the country. Let us tell the story in his own words.

"From the time that sidewalk and vault lights were made of a slab of cast iron with holes in it for the bull's-eye lenses, there has been a constant growth. The demand has been for more and more glass and less solid material.

"This led to the substitution of reinforced concrete for the iron slab, but it also introduced the question of expansion and contraction and its effect on the glass. With the adoption of the concrete constructions it seemed as tho every cement man in the country thought that he could install sidewalk lights and he tried it with disastrous results. The glass chipped and shaled and the cement cracked and broke up. In many cases the installation was of insufficient strength to hold up the traffic load. In others the expansion caused the sidewalk light slabs to buckle up and warp out of shape, loosening the joints and breaking the glass.

"After studying this matter for years we have found this solution lies entirely in the materials used, rather than in the method of handling.

"Of course it is advisable for contractors who have small installations to buy the factory made, ready-to-set slabs so that all they have to do is slip them into place and caulk the joints, but some of the bigger men may want to do their own work, or to

specify the material which will give them the service they demand.

"The first thing is the glass.

"After considerable experiment a glass mixture was introduced that produced glass of tough body yet with a surface so hardened that it did not scratch easily. But the big thing about this glass was the fact that every piece was polariscoped before it left the factory.

"Just a word of explanation about the polariscope test. As it is described to be, when the sidewalk glasses are completed the annealing of the surface is such that, in cooling, there are formed in the glass hidden stress and strains that cannot be seen by the naked eye. These are very liable to develop into cracks and shaling of the glass.

"The polariscope is a set of mirrors so arranged that they throw a beam of light in a series of different angles. When a piece of sidewalk light glass is placed in the polariscope the light rays are so thrown against it that as they strike one of these faults in the glass it shows up as a dark spot or as a "rainbow." In this special glass all the glasses showing faults are thrown back into the pot for re-making. Thus only perfect lenses are secured.

"The other big factor in the breaking of sidewalk lights is the kind of cement used. No sidewalk lights should be laid with anything but the best of reground cement, even tho the cost may be greater than the standard brands.

"Here is the reason that the engineers give for the use of reground cement in sidewalk lights. In ordinary cements there is a portion—sometimes as much

(Continued to page 111.)



Get Yourself a Hammer!
—Harry Murphy in Chicago Herald-Examiner.

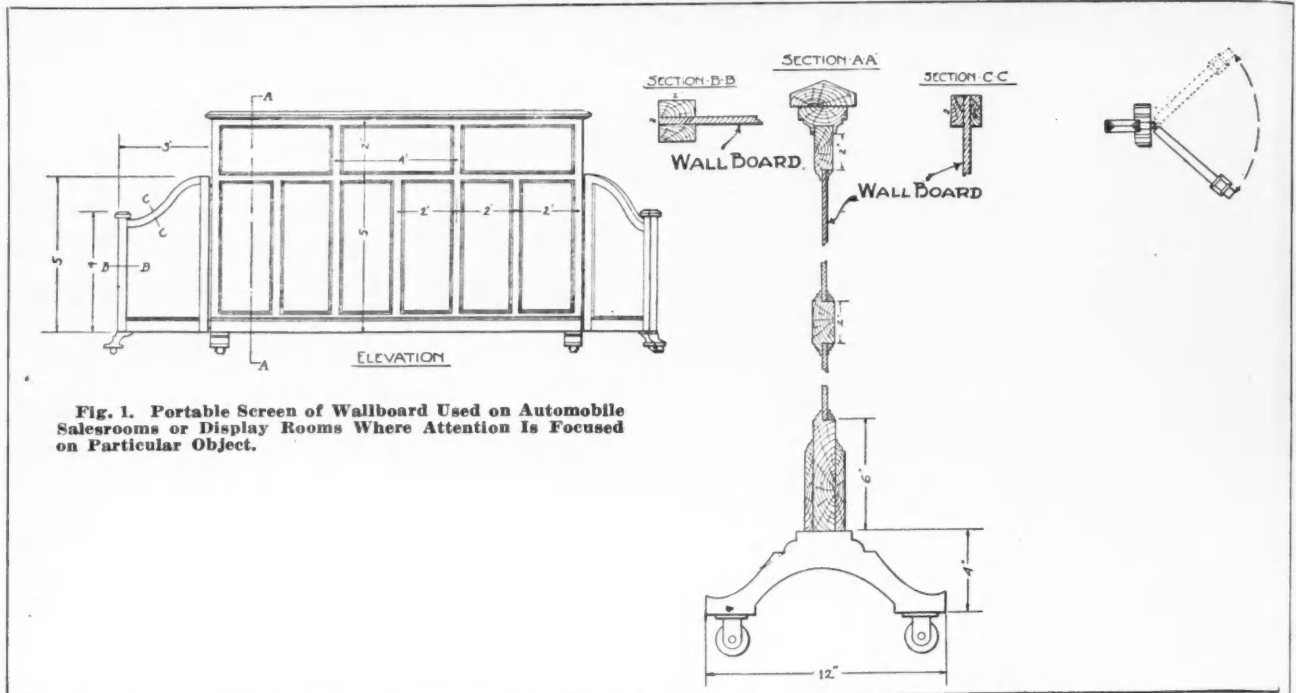


Fig. 1. Portable Screen of Wallboard Used on Automobile Salesrooms or Display Rooms Where Attention Is Focused on Particular Object.

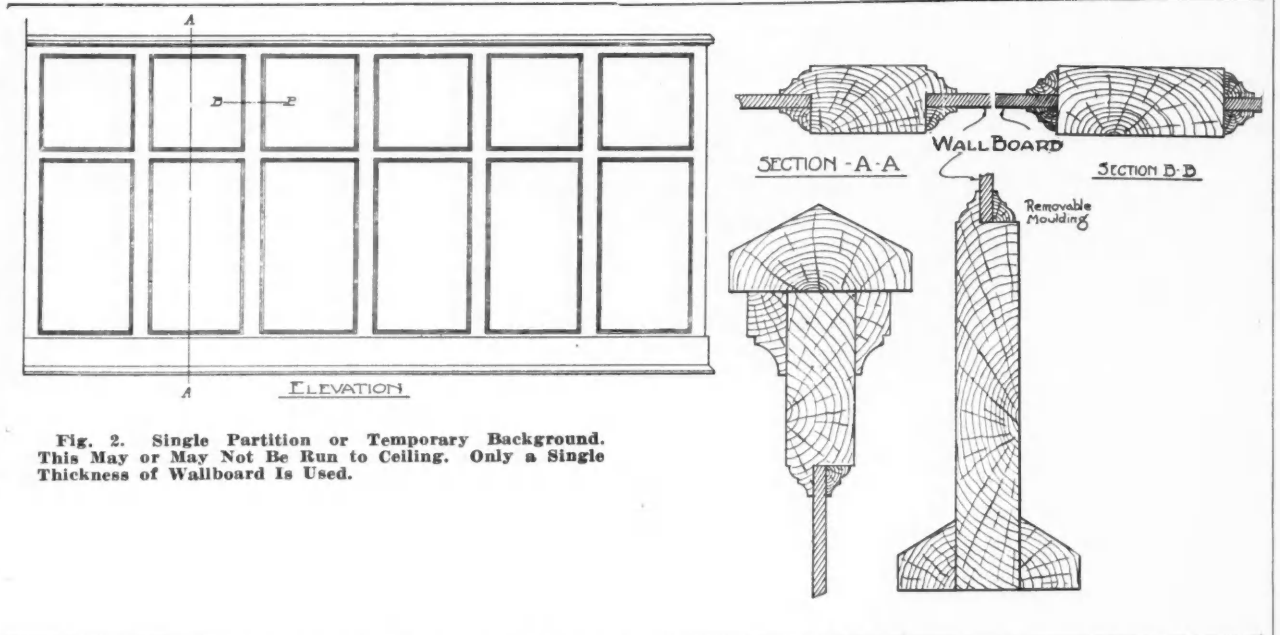


Fig. 2. Single Partition or Temporary Background. This May or May Not Be Run to Ceiling. Only a Single Thickness of Wallboard Is Used.

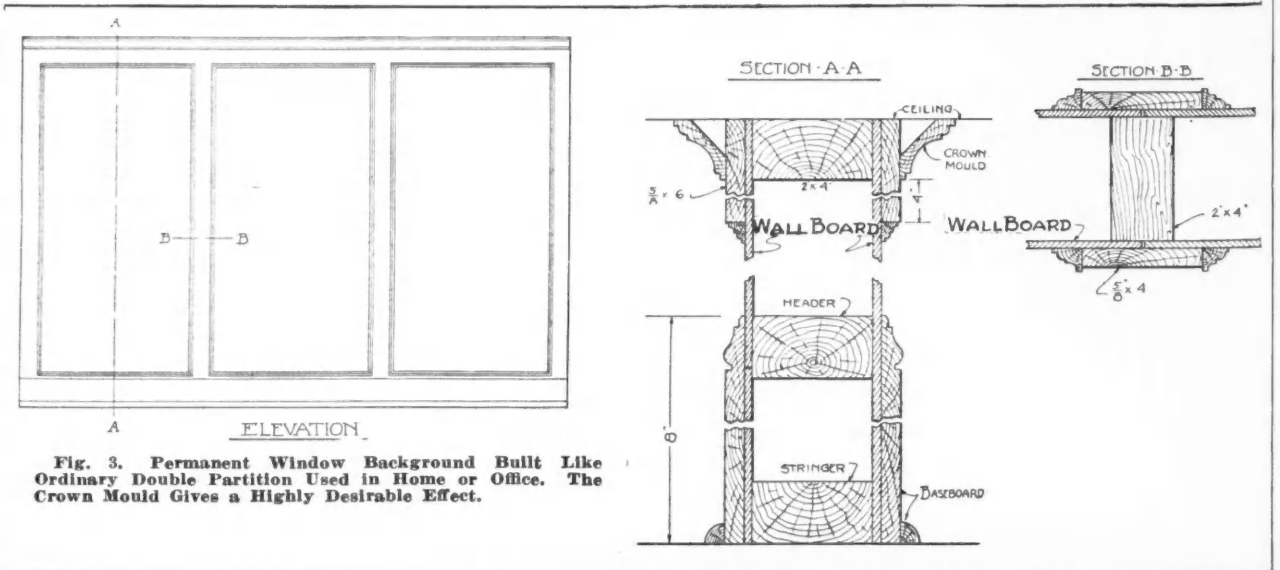
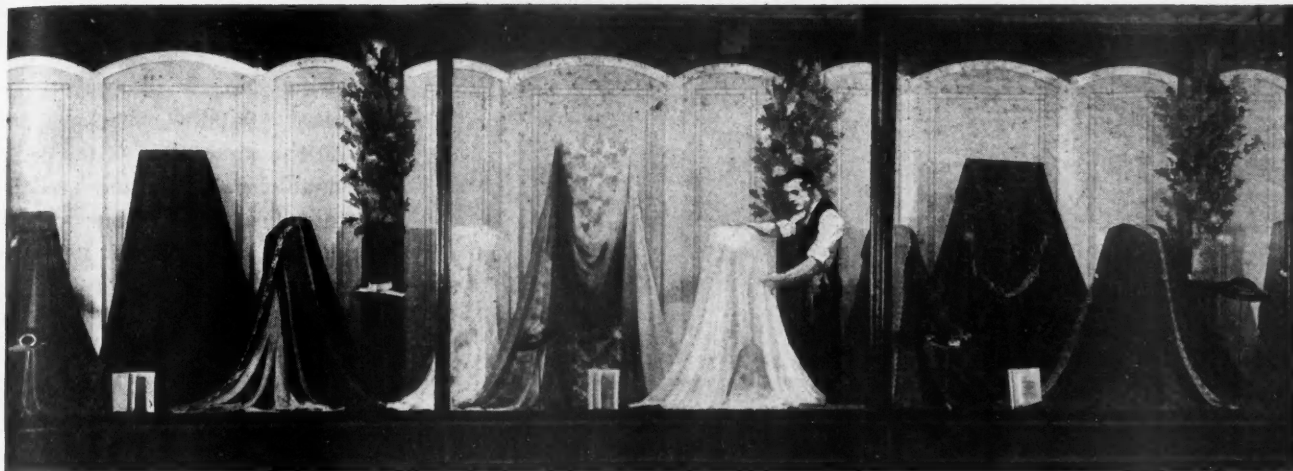


Fig. 3. Permanent Window Background Built Like Ordinary Double Partition Used in Home or Office. The Crown Mould Gives a Highly Desirable Effect.



A Wallboard Background that Can Be Removed When the Storekeeper Desires.

Profitable Work for Carpenter Contractors

BUILDING ATTRACTIVE WINDOW DISPLAY FEATURE OUT OF WALLBOARD

By S. P. Irwin

WHEN new building is slow and remodeling work is slack it is often easy for the alert carpenter contractor to walk down the outlying business street and in a few hours pick up profitable jobs that will fill idle time for several days.

How do you do it? Well, the plan is simple. Next time you are walking down a business street glance in at the display windows of the small stores. See how many of the store windows could easily be fixed up with a more attractive business getting appearance. Then drop in on the store owner and point out to him how much more business better windows would bring.

He'll probably agree with you, but he'll assure you that better windows mean more money than he can afford to spend.

Right there is your opportunity. Show him that with a few feet of wallboard and a small labor charge he can readily build attractive backgrounds, cutouts and display features that will increase the drawing power of his windows many times. With something definite such as this to present to him, you'll find him much more ready to accept your suggestions.

The detailed plans given here show how to build these wallboard features with the minimum of labor

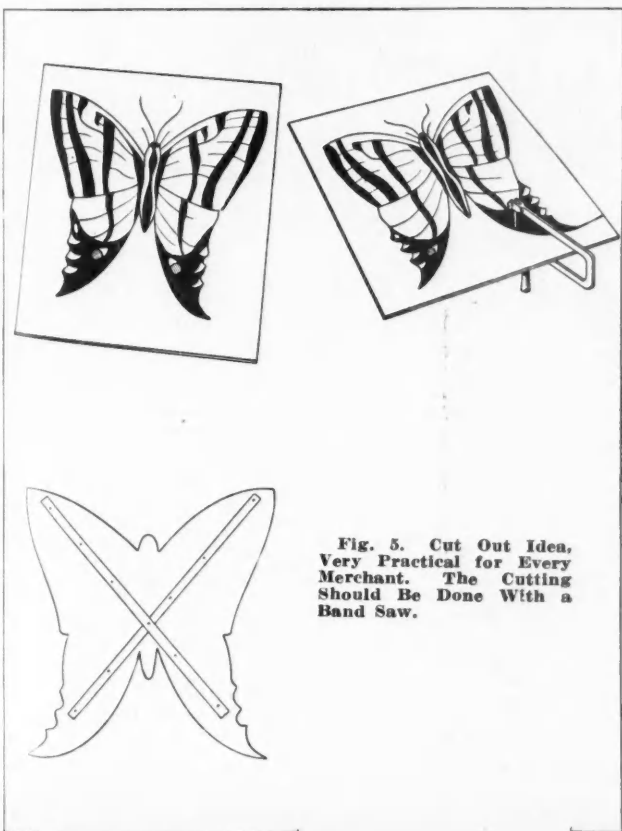


Fig. 5. Cut Out Idea, Very Practical for Every Merchant. The Cutting Should Be Done With a Band Saw.

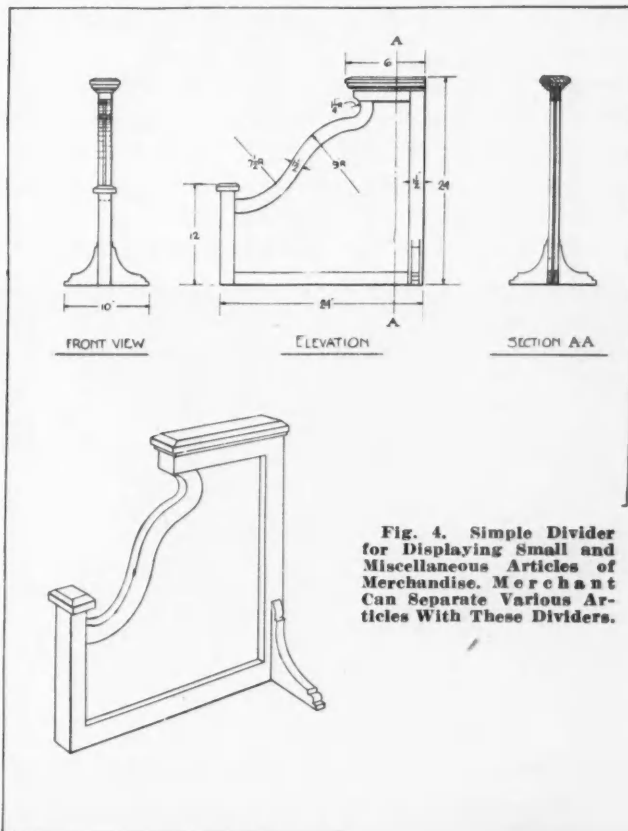
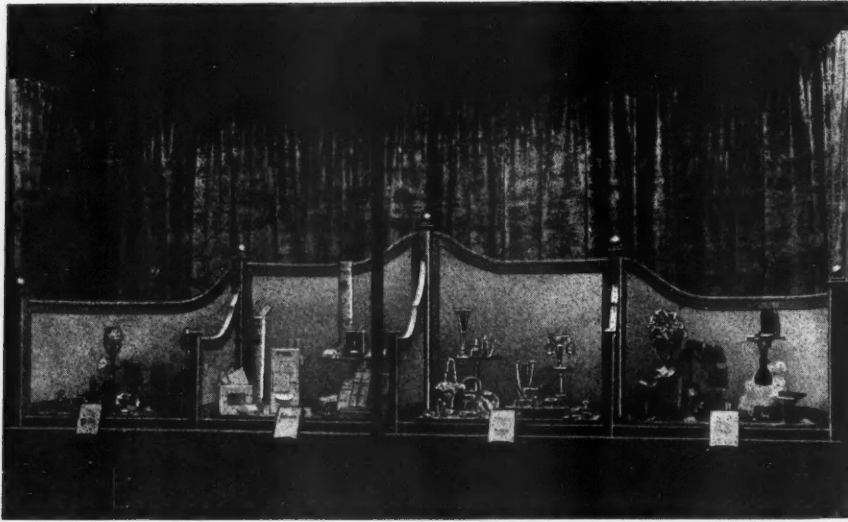


Fig. 4. Simple Divider for Displaying Small and Miscellaneous Articles of Merchandise. Merchant Can Separate Various Articles With These Dividers.



Another Example of the Clear, Attractive Appearance Which the Wallboard Gives the Ordinary Store Window.

charge and the pictures illustrate some of the results you can get with them.

The first plan shown, or Drawing No. 1, is particularly intended for the automobile sales room, or other display rooms where it is desirable to set machines or instruments apart from other articles that might distract the prospective buyer's attention. This device is called a portable screen and is really nothing more than a single partition on wheels. With one side of the screen painted a cool gray and the other a warm buff this screen may be wheeled about and placed into a position where it makes a striking background for the car or other article that is to be displayed. It is easy to build and the plan shown here saves much valuable time and troublesome experiments.

Drawing No. 2 illustrates the single partition or temporary background. This may or may not run to the ceiling, and the storekeeper will quickly appreciate what size is especially adapted to his needs. Note that in this construction only a single thickness of wallboard is used, and the panels are framed as the sectional views indicate. After the size is determined, you can easily take the detailed drawings here and

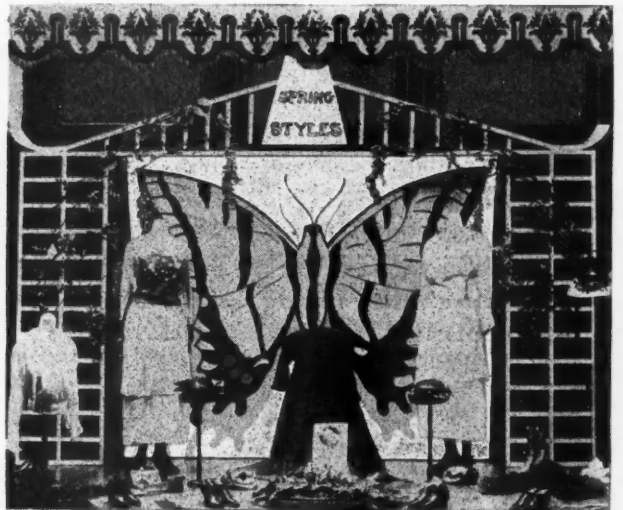


Window with Wallboard Dividers and Background Installed. The Wallboard Brings Out the Small Articles Prominently and Helped the Merchant Move His Stock.

build the single partition without further experience.

Drawing No. 3 illustrates the permanent window background, built on the same plan as the ordinary double wall partition used in home or office. This is fine for the storekeeper who wants a background for continuous use, with only occasional redecorating, and is built by first placing studding on 16-inch centers across the back of the window space, leaving openings for doors as required. Headers are then inserted between the studs to provide a nailing surface for all the edges of the wallboard panels. Either 32 or 48-inch panels are then

nailed to the framework and a suitable moulding is next nailed over the panel intersections as indicated on the drawings. The crown mould is used between the walls and the ceilings, giving the background a highly



The Butterfly in the Center of This Window Is a Cut-Out Made From Wallboard and Contributes Largely to the Inviting Appearance of the Display.

desirable substantial effect.

In Drawing No. 4, page 107, the simple divider, so often used for displaying small and miscellaneous articles of merchandise is shown. This is exceptionally good for the merchant who has a small shop with many kinds of goods to show—for instance, the small newsstand and stationery store, or the outlying 5c and 10c store. With these dividers for his windows the merchant can separate the different things he has to sell, and in that way can get better attention for each individual article.

DESIGN OF SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

Roof Construction

ARTICLE EIGHTEEN OF AN EXTENSIVE SERIES ON STRENGTH OF MATERIALS.

ROOFs of buildings are carried by rafters, rafters and purlins or by rafters, purlins and trusses depending on the types of buildings and loads. Fig. 1 shows a typical case of the latter type. The distance between the centers of bearing areas A and B is called the span l . The perpendicular distance from the bottom of the lower chord AB to the apex or highest point of the truss is called the height H of the truss. The quotient $\frac{h}{l}$ is called the pitch of the roof.

For example, with a span $l = 20$ feet and $h = 5$ feet the pitch is $5 \div 20 = \frac{1}{4}$, etc.

The following table gives the angles that the upper chords of the truss or the rafters make with the horizontal:

TABLE 1. PITCH OF ROOFS AND ANGLES MADE BY THE RAFTERS

Pitch . . .	1/6	1/5	1/4	1/3	1/2	2/3	3/4	1	1.73
Angle . . .	9°	11° 20'	14°	16° 45'	26° 35'	33° 45'	37°	4	60°

Before a roof can be designed, the loads to be carried must be determined. They consist of (a) dead load, which is made up of roof coverings, purlins, rafters, weight of truss, and in some cases of ceiling loads; (b) snow loads; (c) wind loads.

The maximum snow load depends upon the locality and the pitch of the roof. If the pitch is 60 degrees or more authorities such as Merriman and Jacoby agree that the snow load may be neglected. The following table from Kidder's Architect's and Builder's Pocket Book gives values to use for snow loads:

TABLE 2. ALLOWANCE FOR SNOW IN POUNDS PER SQUARE FOOT OF ROOF SURFACE

Location	Pitch of Roof				
	1/2	1/3	1/4	1/5	1/6 or less
Southern States and Pacific Slope	* †	* †	* †	5	5
	0-5	0-5	0-5		
Central States	0-5	7-10	15-20	22	30
Rocky Mountain States . . .	0-10	10-15	20-25	27	35
New England States	0-10	10-15	20-25	35	40
Northwestern States	0-12	12-18	25-30	37	45

Columns headed by an asterial (*) are for slate, tile or metal. Those headed by a dagger (†) are for shingle roof.

In the case of wind loads the maximum pressure on the roof depends on the pitch. Experiments have shown that a horizontal wind with a velocity of 15 miles per hour will produce a pressure of 1 pound per square foot on a vertical surface, 5 pounds for a 30-mile wind, 18 pounds for a 60-mile wind and probably a pressure as high as 50 pounds per square foot for a hurricane at a velocity of 100 miles per hour. For roof construction engineers usually use a maximum of 40 pounds. Now, when the wind strikes a roof inclined to the vertical, not all of the force is exerted on the roof. Only the component perpendicular to the slope is used in finding the wind load.

Many formulas are used for determining the normal component of the wind load, but the straight-line formula is the only one that will be given here because of its simplicity and ease of application. It is

$$P_n = \frac{PA}{45} \dots \dots \dots (1)$$

Where P_n is the value of the wind pressure normal to the roof to use in figuring the wind load, P is the maximum wind pressure on a vertical surface, and is taken as 40 pounds in this article, and A is the number of degrees in the slope of the roof. If $A = 30$ degrees and $P = 40$ pounds, then

$$P_n = \frac{40 \times 30}{45} = 27 \text{ pounds, approximately}$$

The following table gives values of P_n for slopes every 5 degrees:

TABLE 3

Slope in Degrees	5	10	15	20	25	30	35	40	45	50
P_n in Pounds.	4.5	9	13.3	18	22.5	27	31.5	36	40	45

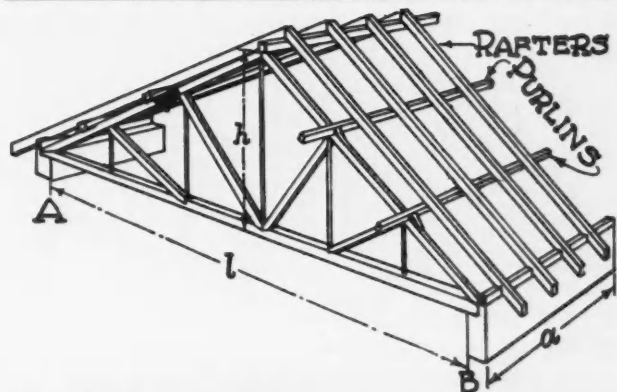


Fig. 1. Roof Supported by Trusses, Purlins and Rafters.

Table 4 shows the result of a series of experiments made by Hutton and found in Merriman and Jacoby, Part 1.

TABLE 4

Slope in Degrees	5	10	15	20	25	30	35	40	45	50	55	60
P _n in Pounds	5.1	9.6	14.2	18.4	22.6	26.5	30.1	33.3	36.38	38.1	39.4	44.0

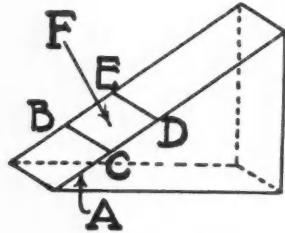


Fig. 2. Showing the Normal Component of the Wind Pressure on a Square Foot of Roof Surface of Slope A.

If the slope is more than 60 degrees, the maximum value of 40 pounds is used in all cases. A comparison of Tables 3 and 4 show that the results of 3 are near enough for practical purposes.

If the slope is one-half, Table 1 shows the angle to be 26 degrees 35 minutes.

From Formula 1:

$$P_n = \frac{40 \times 26.6}{45} = 23.7 \text{ pounds}$$

From Table 4 the value is found as follows: The pressure increased 26.5 - 22.6 = 3.9 pounds, while the angle changed from 25 to 30 degrees, or a change of 5 degrees. Then a change of 26.6 - 25 = 1.6 would make a change in the pressure of

$$\frac{1.6}{5} \times 3.9 = 1.24 \text{ pounds}$$

Then P_n = 22.6 + 1.24 = 23.84 pounds, showing that the results agree quite closely. The reader may then use the table or the formula, whichever is most convenient.

If the pressure of 40 pounds is considered too high or too low, the normal pressure may be found as follows:

Suppose P = 30 pounds is considered a high enough stress for a vertical surface. Then the values of P_n for the various pitches are found by taking $\frac{30}{40}$ of the results in Table 4, or by putting P_n = 30 in Formula 1.

In figuring the weight of dead loads the following table is taken from Kidder's Hand Book for Architects:

TABLE 5. APPROXIMATE WEIGHTS OF DRY LUMBER PER 1,000 FEET, BOARD MEASURE

	Pounds
Hemlock	2,500
Oak	4,800
Pine, Norway	3,000
Pine, white	2,500
Pine, yellow	4,000
Spruce	2,500

For roof covering the approximate weights are taken from Malcolm's Graphic Statics:

	Pounds Per Square Foot
Slate, without sheathing	8 to 10
Tiles, flat	15 to 20
Tiles, corrugated	8 to 10
Tar and gravel without sheathing	8 to 10
Tin without sheathing	1 to 1.5
Wooden shingles without sheathing	2 to 3
Corrugated steel without sheathing	1 to 3
Sheathing 1 inch thick	3 to 4
Wooden purlins	1.5 to 3
Steel purlins	1.5 to 4
Rafters	1.5 to 3
Sheathing 1 inch thick	3 to 4

The weight of the bracing is a variable quantity, depending upon the stiffness of the structure, and as a preliminary assumption may be taken from 1/2 to 1 pound per square foot of roof surface. The above values are understood to be per square foot of roof surface.

The values on weights of materials in the roof are only preliminary to the design. After the design is completed, the results should then be checked over for the strength of the truss in terms of the actual weights.

For the average roof truss the total dead load for roof covering will vary from 5 to 35 pounds per square foot of roof surface.

The methods for figuring the separate parts of the dead load on a roof have been given and the reader can determine the load in any structure. But many people prefer to use a maximum load per square foot of roof surface to cover the combined dead, snow and wind loads and avoid the detailed figuring. Carnegie Hand Book gives the following values:

ROOF COVERING	Roof Load in Pounds Per Square Foot Roof Surface
Gravel or composition roofing—	
On board, slope one-sixth or less	50
On board, slope more than one-sixth	45
On 3-inch flat tiles or cinder concrete	60

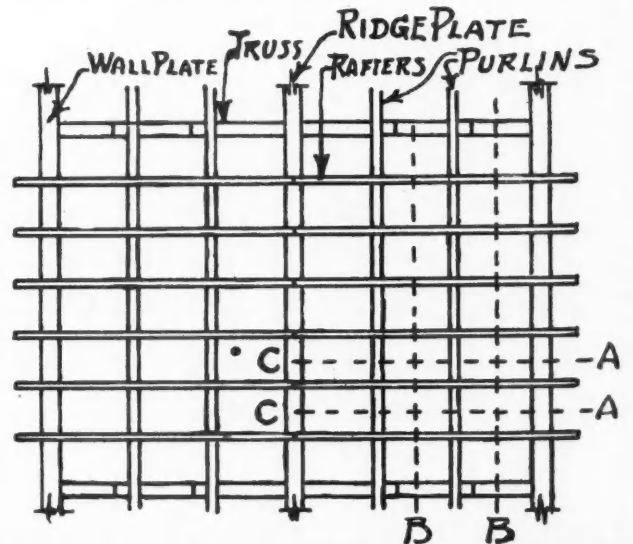


Fig. 3. Plan of Roof Showing Load Areas Carried by Rafters and Purlins.

Corrugated sheeting on boards or purlins.....	40
Slate, on boards or purlins.....	50
Slate, on 3-inch flat tiles or cinder concrete....	65
Tile on steel purlins.....	55
Glass	45

In Southern climates or localities where no snow is likely, reduce the loads by 60 pounds per square foot, except in cases where it would be below 40 pounds. This is considered a minimum load.

For example in Fig. 3, suppose that AA = 18 inches and AC = 16 feet. Then each rafter carries a roof area of $\frac{18}{12} \times 16 = 24$ square feet. Then if a gravel

roof covering is used on a roof of one-sixth pitch, the load that each rafter must carry is $50 \times 24 = 1,200$ pounds. This is a uniformly distributed load on the rafter acting vertically.

The load that each purlin will carry is found by multiplying the width BB of roof by the length of purlin, and this result by the corresponding weight per foot from the above table.

It is my plan to follow this introduction to roof loads by a series of articles on the designing and spacing of rafters and purlins, stresses, the members of the various types of roof trusses, etc.



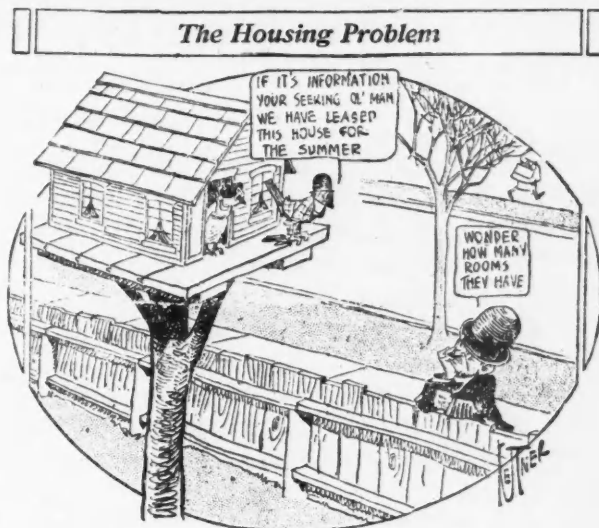
Furnishing the Art Insert Home

(Continued from page 87.)

on the floor. Ruffled swiss curtains with straight panels of cretonne in mulberry and green and lambrequins of mulberry rep or of silk dress the windows. An easy chair is of uncut mohair velvet and two small chairs are covered with cretonne. On the chaise lounge there are pillows of mulberry rep. A bedside lamp and side lights are covered with changeable silk of blue and mulberry. On the walls there are some old-fashioned prints in color. The furniture is preferably mahogany. For the woodwork a silver grey stain is used, and wall paper has a soft satin grey stripe.

The large front bedroom on the second floor—a sort of upstairs sitting room full of sunshine is done in rose and ivory. On the floor there is a two-toned grey rug with several braided rag rugs having plain centers and wide borders of color with a black band. Casement curtains are of cream net with overdrapery of chintz or cretonne in soft rose and greens. Shades for the table lamp and side lights are rose silk with small French flowers. A large easy chair is of ivory wicker and for the other pieces of furniture there is a choice of mahogany or enameled ivory. A day bed or couch is almost essential in the bedroom where the busy housewife who retires for her few winks in the afternoon may rest.

One of the back bedrooms is furnished in soft tones of yellow—always good for a northern exposure. There are three small domestic rugs on the floor to fit the spaces between the furniture. The walls are



—Kettner in Columbus, Neb., Tribune.

covered with satin striped paper in two tones of yellow; the woodwork has an ivory finish. Cream marquisette with overdrapery of cretonne in yellow and green is used at the windows. Braid in tones of yellow and green is used to finish off the overcurtains. The large chair is covered with duplex damask of yellow.



Installing Satisfactory Sidewalk Lights

(Continued from page 105.)

as 18 per cent that is so coarse that it does not get saturated in the first mix. When this is put in the sidewalk the moisture of rain and snow gradually penetrates the surface of the top coat and "slake" these raw granules so that they start the chemical action of setting with its consequent expansion. Remember that this expansion goes on inside of the concrete and so causes cracks and puts a terrific pressure on the glass.

"With reground cement, however, only about one and one-half to 2 per cent is so coarse that it will not go thru a 200 mesh screen. This is the part that is slow in getting saturated. And as the proportion is so small there is practically no internal expansion with its glass breaking pressures.

"Now that you have given me this opportunity of 'breaking into print' let me suggest to your readers that they get their sidewalk lights ready made or half made. The factory is in position to produce these in better shape than any contractor; and both the ready-to-set slabs and the performed slabs—which are to be finished on the job—are made of the materials we have described above.

"Do not overlook the fact that after the slabs are in place the joints, which must be at least one-half inch wide to allow for heat expansion, should be caulked with some non-drying caulking compound. This will make the entire installation watertight and give years of satisfactory service to the owner, with practically no upkeep."

Banishing the "Business Blues"

ARRANGEMENT AND DECORATION OF SOME OFFICES MAKE WORKERS NERVOUS AND IRRITABLE; OTHERS CHEER AND STIMULATE EMPLOYEES TO INCREASE THE QUANTITY AND QUALITY OF OUTPUT

By J. E. Durst

NOT so very long ago, one of the country's busiest business men suddenly realized that he was developing a case of "nerves." Business details that he formerly dispatched after a few minutes of concentration, were beginning to worry him; and some of them began to accompany him home at night.

In speaking about his trouble to a friend, who happened to be a well-known interior decorator, the latter asked, "What are you doing—taking treatments of any kind?"

"Yes, and no," said the business man. "I'm not taking medicine or massage, but when my nerves seem to reach the breaking point I drive out into the country and walk down a little country lane I discovered one day last summer. It seems that when I get there I attune with nature and not only become calm, but in that environment find it is very easy to solve the problems that worry me to distraction at the office."

"If that is the case," said the artistic friend, "why not take that country lane and bring it into your office?" The nerve-racked one looked at him blankly.

"I mean," continued the decorator, "to match those restful colorings of nature and bring them indoors so that you will be constantly in the atmosphere of the open. I'll make a little bet that inside of a short time you'll be your old normal self again."

"The idea sounds pretty good," said his nervous friend. "But I wouldn't care to try it out at the office. Suppose you see what you can do with it in my library at home."

So the artist set to work. The first thing he did was to do over the library furniture and the oak woodwork in the velvety gray tones of the tree-bark. The glass panes in the bookcases were etched so that the multi-colored books showing thru resembled leaves in their fall shadings.

The walls and ceiling were done in a light sky-blue tint, and the carpet of brownish green, matching the earth, completed the color scheme.

You can picture the restfulness of such a room. The owner was so well pleased with the results that he immediately decided to make the library his permanent office; and to date he has never experienced a return of "business blues."

While it might be impractical to attempt this treatment in the average office, the idea will be found highly profitable wherever worked out.

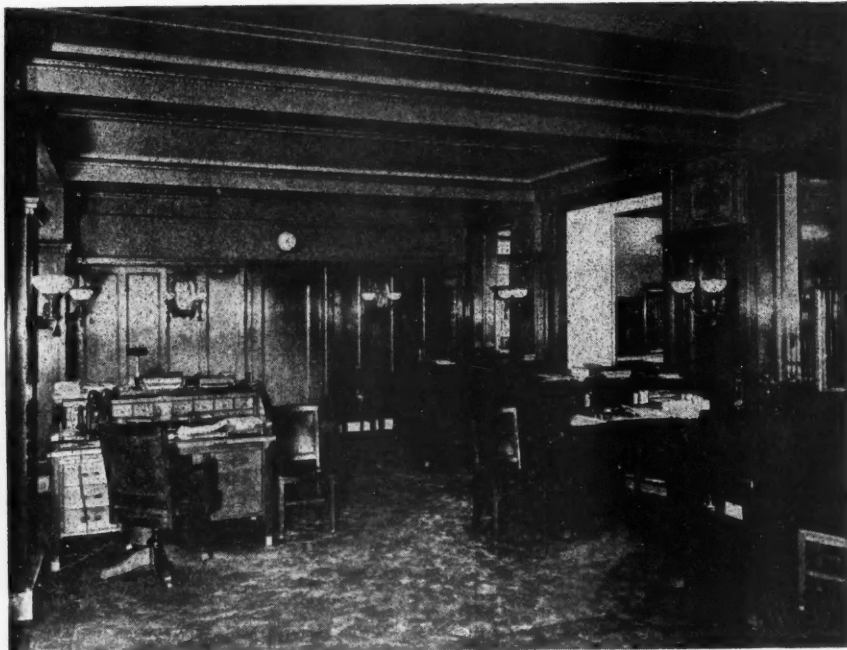
It is an undisputable fact that more and better work can be done by employes who are established in a cheery, attractive office. Flowers and phonographs have been installed by many concerns thruout their offices, in addition to many other home-like attractions, the result being that the efficiency of the whole force is greatly increased.

Occasionally we see a photograph of the New York or Chicago sales office of a large company, which looks more like the reception or drawing room in a Fifth Avenue mansion with its rich tapestries and rugs, Turkish lamps and fine period furniture.

Office Decorations

Perhaps of greater importance than the proper arrangement of the furniture and equipment is the color scheme of the office. It is not necessary to have mahogany furniture, hand-painted walls and oriental rugs, but it is of the utmost importance that the colorings used be restful to the eyes, and at the same time diffuse as much light as possible.

If your office walls are painted in dark brown, brilliant red, dull gray or other dark colors, your employes will be inclined to nervousness and the inability to concentrate. On the other hand, they will be cheered up and stimulated to greater activity if the walls are done in light tints of orange, yellow or green. These three in pale tints reflect the greatest amount of light, next to pure white. The latter, of course, should never be used because of the strain produced on the eyes.



There Is Something Quiet and Restful About This Office. Delicate Light Tints, Artistic Woodwork, Sanitary Furniture, Happy Color Schemes All Contribute to Make the Office an Efficient Workshop. This Is Occupied by the Standard Oil Co. of Ohio, Cleveland, Ohio.



When the Office Was Dingy and Dirty, the Editorials Were Fault-Finding, Calamity-Predicting and Pessimistic. Everyone Had a Grouch.



A Fresh Coat of Paint Will Work Wonders. The New Office Was Bright and Well Painted. It so Reacted on the Editorial Force That in a Few Weeks Everyone Became a Booster. The Change was Unconsciously Brought About by the Lighter, Brighter Offices.

Only recently there came to my attention the experience of a newspaper publisher whose paper was a supporter of the most radical views. The offices were dingy and dirty, and the windows had not been washed for months. It was only natural, then, that the editorials emanating from such a place should be mostly of the fault-finding, calamity-predicting and pessimistic variety.

At the expiration of his lease, the publisher was forced to secure other quarters. The new location was in a better neighborhood, the building was well-preserved, the inside walls were newly painted, and the windows were bright and clean. The change in environment so reacted on the editorial force that in a few weeks the policy of the paper was completely reversed, and its editorials began to boost the various civic enterprises which formerly had been disparaged. Officials who had been reviled, were now praised for their achievements.

The change came about almost unconsciously; almost without a realization on the part of the editorial force that it was due to the lighter, brighter offices.

Painting Pointers

There are hundreds of brands of wall paints on the market today, but all are divided into two groups; those that present a dull, rich, velvety appearance, known as flat paints; and those which dry with a hard finish, in a cheery, satiny sheen.

One finds advantages in the use of each, as both are restored to their original newness by washing with soap and water. The flat paints are more artistic, perhaps, and it has been said that they aid in the even distribution of heat. The glossy paints are better diffusers of light, and being almost as hard as porcelain, they are stainless. Even dry ink spots may be removed from them with soap and water. These paints usually come in light color tints—mere suggestions of green, buff and tan, which are eye-resting as well as representative of the greater sanitation.

In selecting the wall color, one should take into consideration the exposure of the room. For instance, if the office faces due north, it receives an abundance of cold, blue, glaring light that must be softened to some extent. In such an office, the walls should be treated to a warm color, containing a suggestion of orange or tan. The office with a due southern ex-

posure receives an abundance of warm, soft light, and its walls should be given one of the cooler shades, such as light blue, green, yellow or gray.

It should be borne in mind that only light tints (not shades) should be put on any office wall. This, because the four walls will reflect the color back to each other, and in the case of pronounced colors the room will appear much darker.

The ceiling should never be painted in pure white, but should be covered with a mixture of two parts of white to one of the wall color. Then the true values will be maintained at all times.

Artificial Lighting

No discussion on the subject of artificial lighting is necessary, as it has been definitely proven that the best form of illumination for the office is the indirect bowl, lighted by one or more tungsten lamps, which give a white light. The bulbs with the blue glass, giving the daylight effect, are to be preferred. In this way the true color values are preserved at night or on dark days when artificial light is necessary.

Many rooms present an entirely different appearance under artificial light, especially when bulbs giving yellow rays are used. A yellow light is the same as laying a coat of yellow over the entire room. For example, if a room is painted in blue, the yellow bulbs will make the walls green in appearance, because blue and yellow produce green.

Common Sense Should Guide

Naturally, the rugs and curtains, if any, should be selected with the same idea of harmony prevailing thruout, and it can be seen that in the extra arrangement of the office harmony can be obtained if common sense is followed at each step. The obvious thing is usually the right thing to do, but it is too often overlooked.

It stands to reason that workers in a dark, dilapidated and ill-kept office will produce slovenly work—in keeping with the surroundings. In a lighter office, yet with improper arrangement and decorations, there is bound to be an undertone of nervousness that will be reflected in careless and inaccurate work.

In the cheery, harmoniously arranged and decorated office, however, all will do better work.

Charming Little Bungalow Home

VERY ECONOMICAL IN COST AND EFFICIENTLY DESIGNED SO AS TO PROVIDE MAXIMUM COMFORT

By Charles Alma Byers

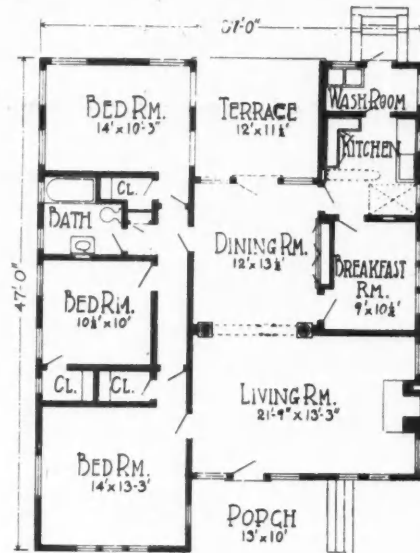
THE little bungalow shown here comprises an especially charming little home, graceful in structural lines, attractive in detail work, and convenient and practical in interior arrangement and finish. Note particularly the delightful porch, with its lattice work and pergola approach, on the front, and also the enhancing window boxes at the two front window groups. And referring to the plan, it will further be observed that there is a most inviting terrace or court, of the real secluded kind, off the rear of the dining room.

The outside walls of the house are of narrow re-sawed siding, which, including all finishing material, is painted white, and the roof is shingled and painted grayish-green, while the chimney and the foundation of the front porch are of red brick. Both the entrance porch and the rear terrace are floored with gray cement.

In addition to the other usual divisions, the plan includes three bedrooms, the rear one of which may, of course, be regarded as a sort of sleeping porch, since it has windows in three walls. The connections are conveniently planned, and there are some excellent built-in features—such, for instance, as a china-cup-board that serves for both dining room and breakfast room, good cupboards in the kitchen, linen cabinets in the bathroom, and also one in the hall. Each sleeping room also contains a roomy closet.

Pine woodwork is used for the interior finish thruout, which in the living room, dining room, breakfast room and front bedroom is in old ivory, and

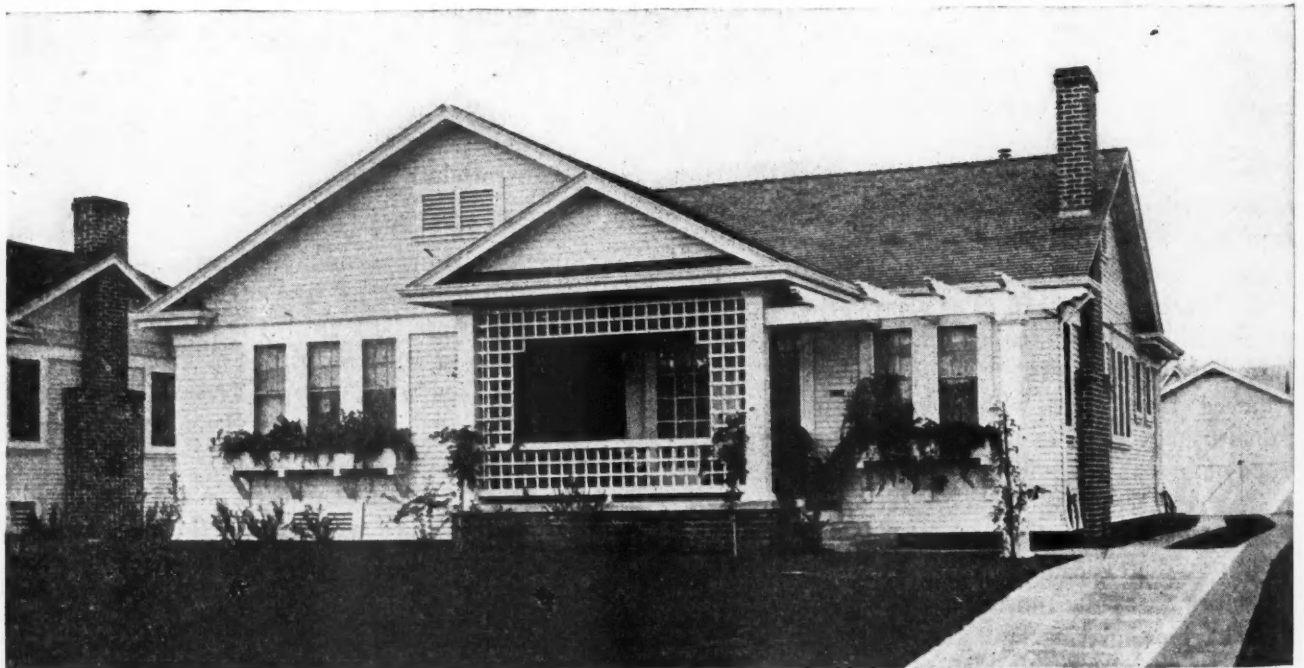
elsewhere in white. The walls of the four rooms just



FIRST FLOOR PLAN

named are papered, and those of the bathroom and kitchen are finished to the top of the windows and doors with a smooth, hard plaster coat, which is enameled like the woodwork, while the walls in the other divisions are tinted. Hardwood floors prevail in living room, dining room, front bedroom, breakfast

room and hall, and tile in the bathroom, while the kitchen sink is also tiled. The living room fireplace is of handmade tile, with wood mantel-shelf. The bungalow has no basement or cellar, altho one or the other might easily have been provided, and the heat is supplied from built-in gas radiators. It is located in Los Angeles, Cal., and was designed by John R. Avery, of that city. The present building cost is estimated at approximately \$5,000, complete, including garage.



Very Attractive Bungalow Home at Los Angeles, Calif., Designed by J. R. Avery, Architect, and Built for About \$5,000.00.

How Building Costs Have Actually Decreased

MESSAGE IS GIVEN TO PEOPLE IN COMPLETE FASHION BY PROGRESSIVE DENVER LUMBER COMPANY

By John Y. Beaty

NO doubt you have failed to understand why announcements in the newspapers in your town have not made folks realize that building materials have slumped in price.

The owners of the Hallack & Howard Lumber Co. of Denver, Colo., could not understand why this should be. They had made just as emphatic announcements as possible that lumber prices were lower, but buying was not stimulated.

In casting the situation over in his mind, one of the members of the firm happened to think of two little frame cottages built out near Rocky Mountain Lake, by two Denver girls, Miss Elsie Deteau and Miss Ruth Chaplain. He realized that the price would stand in the way of a good many. But as he began to figure, he also realized that most folks did not understand that prices are so much lower now that a small house would not be beyond the means of a great many.

If he were to quote a price on a completed home, that would give those ambitious to own their own home, a better idea as to the new values. But even then, there probably would be a good many that would not have the money to invest in a permanent home at once.

The result of the planning was a small bungalow, which was finally given a name, and which could be built for a total of \$425, including the labor.

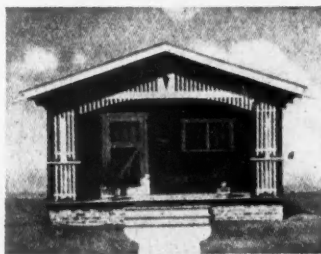
This bungalow consisted of nothing but a living room, 17x13 feet, a kitchen, 10x10 feet, a closet 7x4 feet, and a bathroom 7x5 feet 8 inches. A porch, 17x6 feet, gave opportunity for an artistic front.

But how many folks would want to live in a home of that sort? Some of them would consider it a lark to live in such a house for a while, but would not want to think of living in such a small place the rest of their lives. So it was decided to offer this as a "garage-bungalow." That is, after the permanent bungalow could be built, the garage-bungalow would be slightly changed so that it might be used for a car. The living room provided plenty of space for two cars, and the other space could be used for shop and tool rooms.

It was advertised as "The H. & H. Bide-a-Wee Garage Bungalow." A rather long name, but an expressive one. Pictures of it were published as well as the floor plan, and, in fact, one of the bungalows was constructed at the yards of the company and folks were invited to come and see it for themselves.

The building was done largely by small contractors who had found difficulty in paying their bills to the Hallack & Howard Lumber Co. This served as a means of giving them work so that they could settle up.

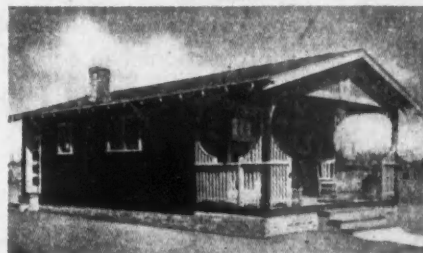
The big result, however, was that building operations were thus started, and almost everyone in the community forgot that building costs had been high.



FRONT

\$425

Will Buy all the Material to Build the



SIDE

H & H Bide-a-Wee Garage Bungalow

Think it over Seriously

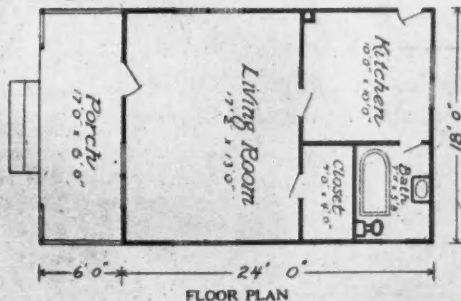


You are paying for this little H&H Bide-a-Wee GARAGE BUNGALOW every day in rent.

It only takes a week to build one of these cozy little homes.

Why not get located in time to start your garden with early spring.

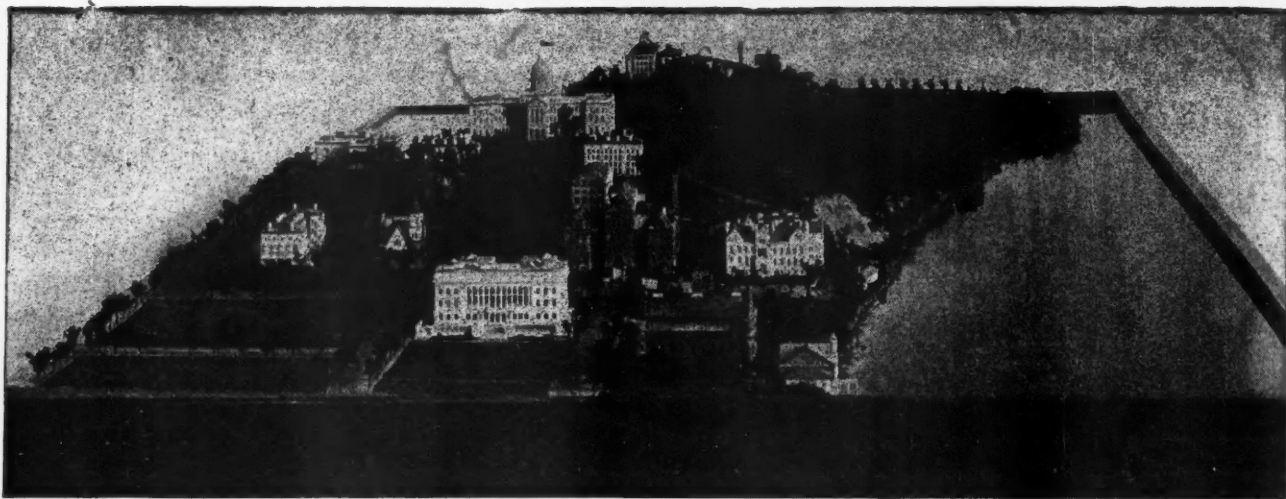
Phone Main 25



FLOOR PLAN

HALLACK & HOWARD LUMBER CO. Seventh and Larimer Sts. DENVER, COLORADO

Type of Advertising Put Out by Enterprising Lumber Company in Denver, Colo. They Have Devised a Small House Which Will Serve the Purpose of a Large One Until Sufficient Funds Can Be Raised to Build a Real Home. Then this Little Structure Can Be Used as a Garage.



How the Model Idea Was Used in the Construction of a Large University. This Shows in Miniature Form the University of Wisconsin at Madison. Architects Are Beginning to Accept Models as Valuable Aids in their Work.

Model-Making and Architects

STRUCTURES IN MINIATURE ARE USED EXTENSIVELY BY ARCHITECTS TO CORRECT FAULTS BEFORE ACTUAL WORK IS STARTED

By Robert H. Moulton

HAVING discovered models at last, America is taking very kindly to them. In view of their usefulness, the popularity of models is not surprising, but considering their expensiveness it is, for a fine model may cost as much as a comfortable house.

"Model" being a word comprehending such a great variety of things, it should be explained that the particular kinds of models herein referred to are the reproductions in miniature of structures designed by architects. In any case these scale models, so-called from their being proportioned in some exact ratio to the real structure, serve the same purpose that the sculptor's clay study does; that is, they embody ideas in concrete form, thus revealing faults which may the more readily be corrected before work on the actual structure is undertaken.

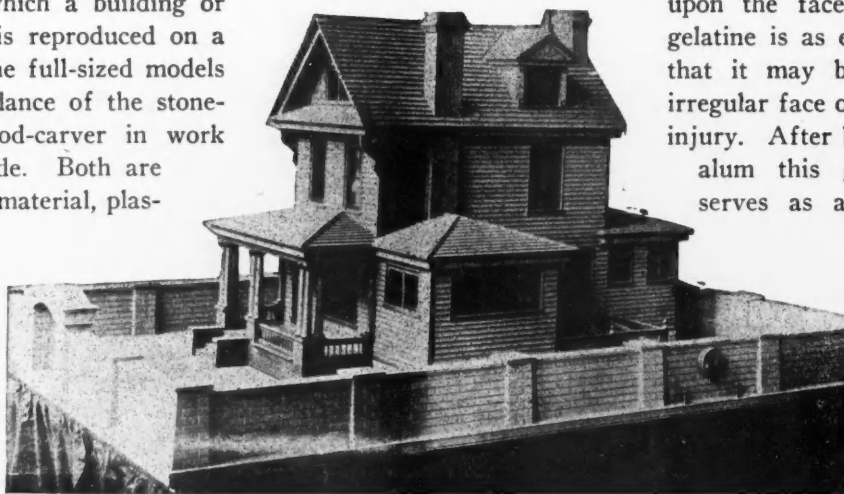
Of architectural models there are two kinds; the scale models in which a building or any part thereof is reproduced on a small scale, and the full-sized models made for the guidance of the stone-cutter or the wood-carver in work of the higher grade. Both are made of the same material, plaster of paris, direct from the architect's drawings.

The biggest job of architectural modeling on record was that in connection with the building of the New York

Public Library, now completed. Modelers were at work on this great task for a period of several years, sometimes as many as twenty of them being engaged at once. Altogether \$125,000 was spent on models for this ten-million-dollar structure.

The architectural model-maker first works out the architect's ideas in clay, using his fingers to daub the clay upon a board. By patting, pinching and pulling he works the clay into a shape, occasionally using a few carving tools or a loop of wire to finish off with. Usually his instructions are to make a rather free interpretation of the ornamental features, and even of some other details, for the original drawings are likely to be more suggestive than specific.

After the clay has been approved by the architect it is treated to a coat of shellac, then to a light coat of grease. It is then encased in a rough plaster form so that a melted preparation of gelatine may be poured upon the face. When cold this gelatine is as elastic as rubber, so that it may be pulled from the irregular face of the model without injury. After being hardened with alum this gelatine impression serves as a mold into which plaster of paris is poured. Burlap or jute fiber is scattered over the wet plaster to hold the brittle stuff together, after which another coating of plaster is poured on.

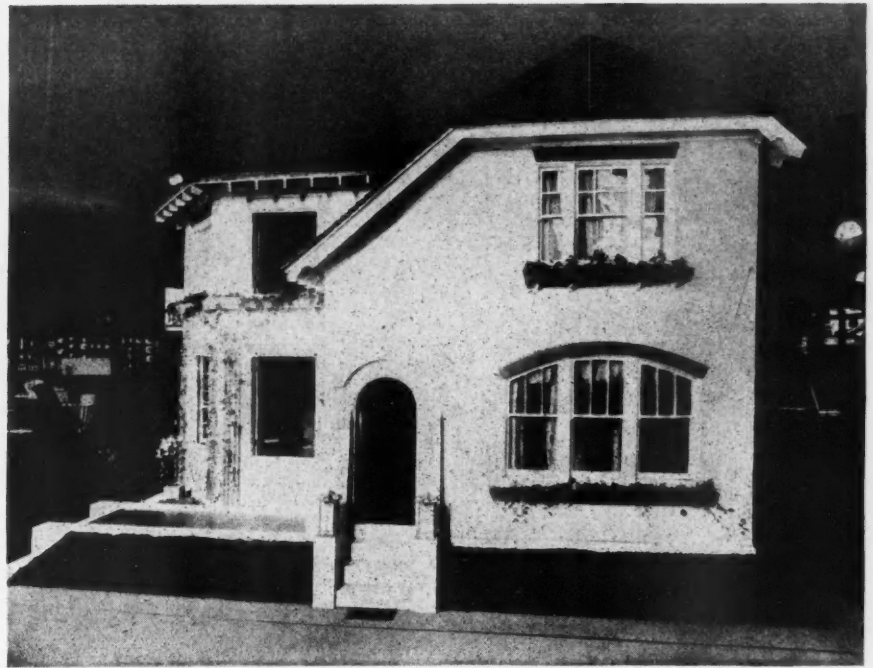


Complete Model of Smaller Home. These Models Reveal Faults Which May Be More Readily Corrected Before Actual Work on the Building Is Started.

In making scale models wires or strips of metal may be used as reinforcement. Whenever a detail, such as a column, or a capital or a window or a decorative detail is repeated the modeler makes a mold for a single unit and then casts as many pieces as are required. These are then assembled and cemented in place with fresh plaster. Finally the sections are assembled and the model is finished by "pointing up" or dressing down the rough parts and filling up imperfections.

Another important use for models is in the building of ships. Lest anyone should underestimate the importance of the marine model it should be explained that they perform many useful services. For one thing, marine models have played an important part in making England mistress of the seas. Marine museums, the principal features of which are models of ships, are numerous in England. A marine model may be of any dimensions required from life-size down. Visitors at the Chicago World's Fair in 1893 will recall the life-size model of the battleship "Illinois," done in wood and staff, in one of the lagoons in Jackson Park.

Altho architects on land and sea are the principal users of models they by no means exhaust the list. A recently developed use for models, which is rapidly extending, is in selling goods. Some manufacturers of special machinery employ no salesmen. When an inquiry for a machine is received a working model is sent. This tells its own story more convincingly than the most eloquent words. The inquirer returns the



Model of Stucco Home Showing Exterior Detail. These Are Valuable to Contractors and Real Estate Men in Promoting Sales.

model with his order, whereupon it goes to the next prospective customer. Express charges on the "silent salesman" are cheaper than railroad fares for the more loquacious kind, and there are no hotel bills to be paid.

Real estate salesmen not infrequently use models of properties to effect sales. This is too expensive a method, however, to be generally used, unless the model represents a standard type of building or dwelling which can be erected anywhere. In the case of one American real estate man a model showing both the interior and exterior, the top being removable, was used. Enterprising manufacturers who support city salesrooms have models of their plants made for exhibition in show windows.



Largest Work of Architectural Modelling Ever Carried Out in the United States. This Is Model of the New York Library, Now Completed. Over \$125,000 Were Spent on Models for This Monumental Building Which Cost About \$10,000,000.



Front View of Cozy Little Cottage Bungalow. Can Be Used as Summer Cottage or Permanent Home. It Contains Seven Rooms and Is 26 by 44 Feet.

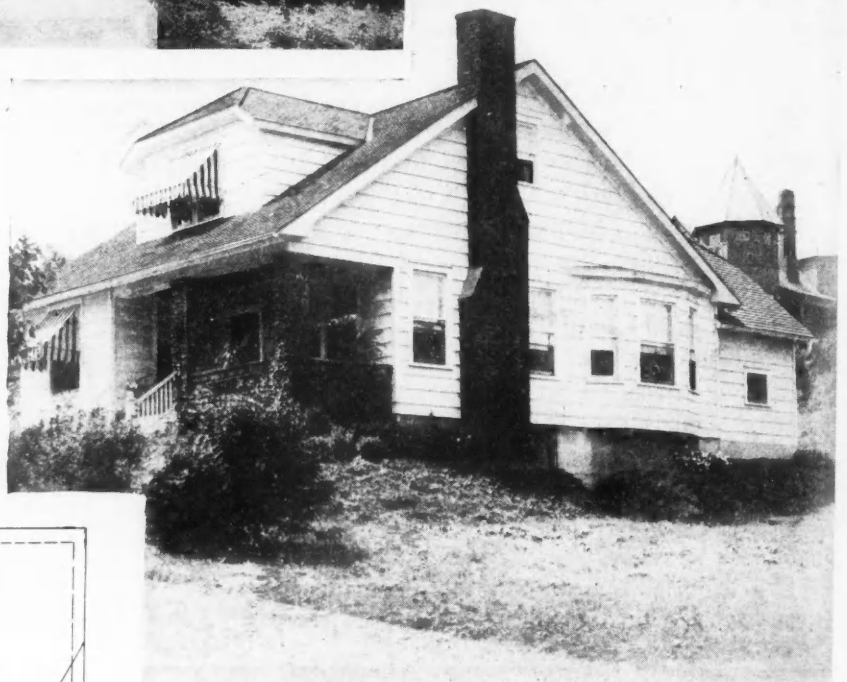
Charming Cottage Home
CONTAINS SEVEN COMFORTABLE ROOMS

FOR the man who wants a home of his own, one that possesses individuality, as well as a large yard with plenty of green grass and a vegetable plot where he can grow some of his own foodstuffs, the home pictured here is admirably appropriate. It gives an

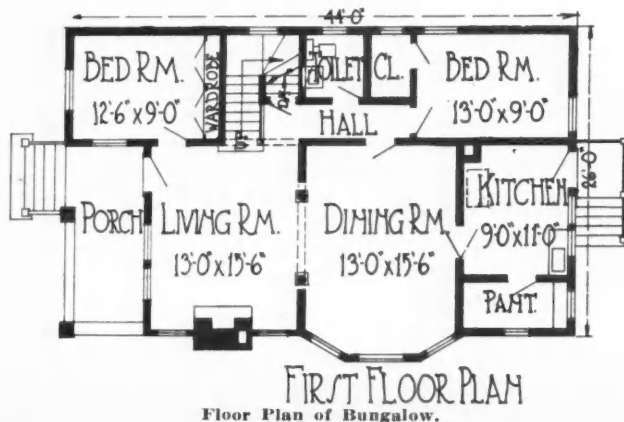
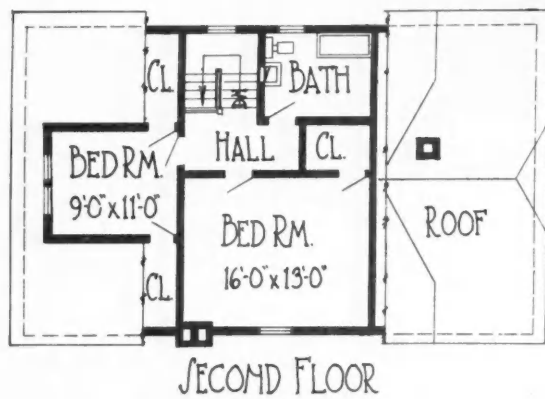
impression of a summer cottage, altho more substantial, but reflects an air of freedom and solid comfort.

On warm sultry days the family can rest to their heart's content on the cool wide front porch with its inviting rockers, chairs and swing. A broad concrete walk leads up the terrace to the house.

On the first floor are five rooms, living room, dining room, two bedrooms and kitchen. These rooms are all well provided with lighting facilities, while in the living room is the homey fireplace always avail-



Side View of Same Dwelling. There Are Five Rooms on the Lower Floor and Two Upstairs.



able on chilly days to take the place of the heating plant, or on cold nights to lure the happy family to the fireside. The rooms are all well-sized, especially the delightfully small but efficient kitchen.

Upstairs are two additional bedrooms, one a large room, 16x13 feet, and bath.

There is nothing pretentious about this attractive little home, a fact that will recommend it to many small homeseekers who want a dwelling but do not have the means to build an expensive one. This home gives the comfort which after all determines whether or not a building is successful and gives it at a very economical outlay. This year promises to be one in which the demand for small homes will be greater than for any other type of building. Small homes can be made just as alluring, just as comfortable and just as satisfactory for the average family as one of more frills and display.



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SMALL JOBS FOR RURAL BUILDERS

Concrete Roof for Silo

SIMPLE METHOD OF BUILDING STRONG ROOF THAT IS ATTRACTIVE AND PROTECTIVE

By Ivan D. Wood

MOST of any silo worth building at all is worth roofing. A well constructed roof improves the appearance of the structure and protects the contents against freezing and drifting of snow. It also prevents the rapid drying out of ensilage on the surface. Most every stock raiser will agree that a silo should be covered but a round roof is not easy to frame.

A masonry silo is not complete without a masonry roof. When thus equipped the structure should last years without repair.

The first step in the building of the concrete roof is the placing of the false work or centering. This centering is lightly nailed to 2 by 4-inch rafters framed after the manner used on any conical structure. The rafters are spaced two foot six inches at the bottom and one header is used. The lower end of the rafter rests upon a piece of one-half inch strap iron held in place by means of a block placed in the concrete as shown at "A" in Fig. 2. These blocks can be knocked out and the false work removed when the concrete has set. The lumber used in the centering need not be heavier than 1 inch by 10 inch and Fig. 1 shows how these boards are cut for the greatest economy.

The reinforcing for silos up to 16 feet in diameter need not be heavier than one-fourth inch square deformed bars spaced 1 foot apart as shown in the drawing. The rod shown at "D" Fig. 1 should be a one-half inch square deformed bar. These bars should be well lapped where the ends meet and wired together where they cross. The placing of these vertical and horizontal bars is shown in Fig. 1. The bars are raised up one and one-quarter inches from the centering on blocks before the concrete is placed. This

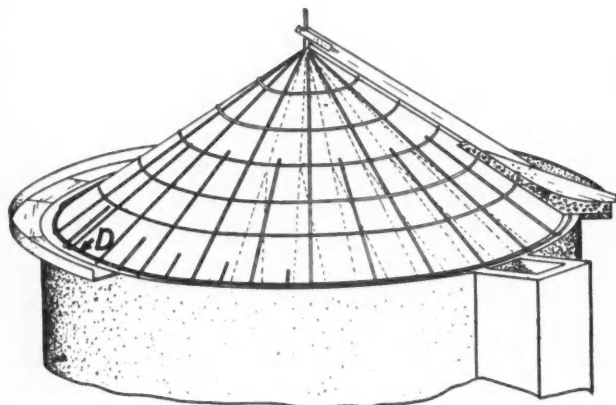


Fig. 1. Sketch Showing How Boards Are Cut for Greatest Economy in Building Roof for Silo. This Drawing Also Shows the Placing of the Reinforcing Rods for Concrete.

puts the reinforcing one and one-quarter inches from the bottom of the slab.

If a cornice is desired, it can be built by cutting segments from 2 by 10-inch plank supported on the end of the same block which holds the centering rafter, see Fig. 2. A strip of heavy gauge galvanized iron is nailed around the edge of these planks to hold the concrete, see at "C" Fig. 2.

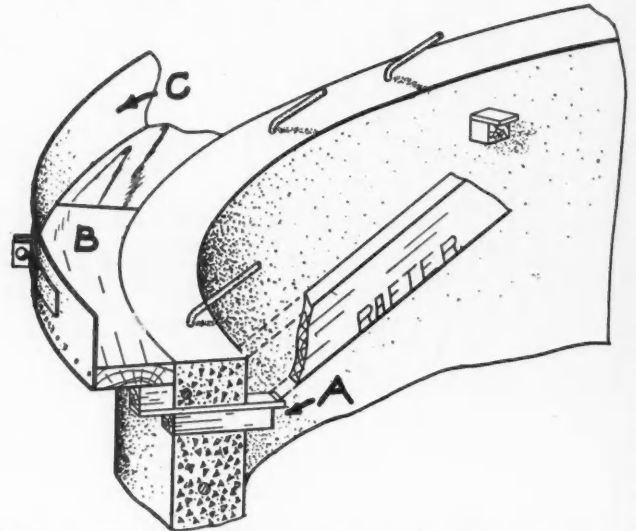


Fig. 2. Sketch Showing Position of Rafters in False Work Just Before Concrete Is Poured.

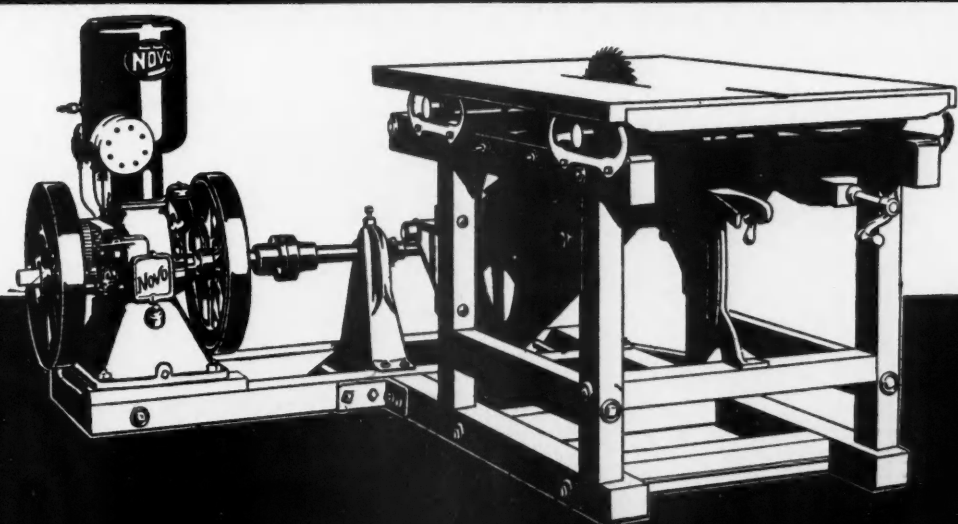
Figure 1 shows a sweep attached to a pin at the top of the roof. The concrete is placed upon the centering and swept to a proper shape and thickness. A thickness of 4½ inches at the bottom and 3 inches at the top will be sufficient for the average silo or water tank. The freshly laid concrete is apt to dry out too rapidly unless covered with a canvas. If possible the centering should be left in position for at least a week to give the concrete plenty of time to set.



Painting Farm Buildings by Machinery

THERE are many odd jobs around the farm that will keep the rural contractor busy if he only goes out after them. It has been shown how he can build manure pits for his clients and save them real money as well as bring in a profit for himself; likewise, he can make money building small buildings, such as hog wallows, feed racks, etc. Another possibility for profitable work reveals itself in the painting end.

Many rural contractors have availed themselves of the opportunities for making extra money by using air painting machines. They have brought one of these devices and take contracts from farmers in the surrounding country who want their buildings painted to preserve them. In the picture an enterprising rural contractor who owns one of these air painting machines is busily engaged in painting a silo. Well-painted farm structures will stand up against the severe



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With the Novo-Beach, only one operator is required for even the longest timbers. Little effort is needed to move the table to the

saw. The momentum of the table forces the material against the cutting edge of the saw.

The Double Arbor carries both cut-off and rip saw. Change from rip saw to cut-off saw, or vice versa, can be made without stopping saw. Engine is placed at side of saw rig, direct connected. No power loss; out of the way of operator; no dust or dirt can get into working parts of engine.

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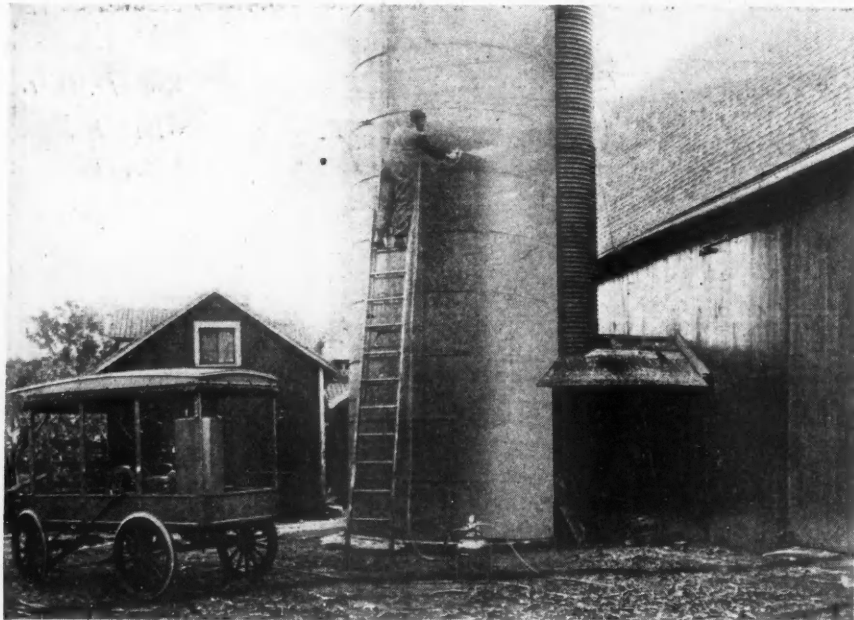
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Painting Farm Buildings by Machinery. Here the Contractor Is Giving the Silo a New Coat to Protect It Against Wear and Make It Look Attractive.

weather, and by showing his clients how the paint saves the surface this contractor has worked up a very remunerative business. He makes the rounds with his machine mounted on a trailer. He attaches this to his automobile and in this way is able to cover a large territory. These machines are easily obtained and soon earn their initial cost.



Building Labor-Saving Corn Crib

IN OUR talks with farmer clients have you ever pointed out to him the advantages and economy of a modern rat-proof corn crib with cup elevator? This

is one of the important smaller buildings on the farm and if constructed right will save the owner considerable money in a year. Some country builders have made a reputation for doing just this kind of work.

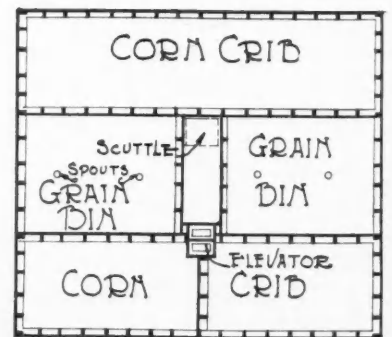
A corn crib and granary of the type shown in the illustration has been found very efficient under all kinds of conditions and a very effective labor-saver because of its efficient arrangement and mechanical loading equipment. As you can see in the floor plans, the driveway has been built to run thru the center of the crib. The foundation and floor is solid concrete, while the superstructure is frame siding with proper air spaces, needed for the proper storage of grain.

In this driveway is located the elevator pit into which the load of corn or grain, as it may happen to be, is dumped. The cup elevator, driven by a gas engine and running on an endless chain, scoops up the grain and carries it from the pit up to the gravity chute in the cupola above, from which it pours into any bin desired. The large corn cribs are on either side of the drive extending up to the roof. In the section on the upper floor above the driveway are the grain bins. This building is 28 by 32 feet.

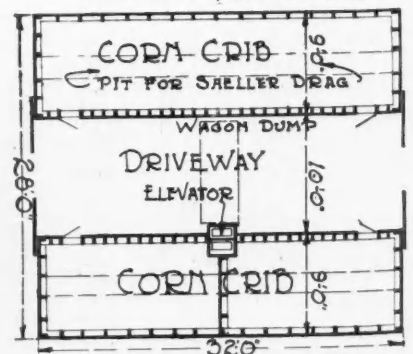
There is a real need for modern corn cribs and the live builder will get his share by going after it.



Substantial Frame Corn Crib and Granary of Type Popular in Corn Belt. It Is Equipped with Inside Cup Elevator and Rat-Proof Concrete Floor. Bins for Grain in Addition to the Corn Cribs Are Provided.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

Floor Plan of Corn Crib and Granary Showing Location of Elevator and Wagon Dump in Driveway.

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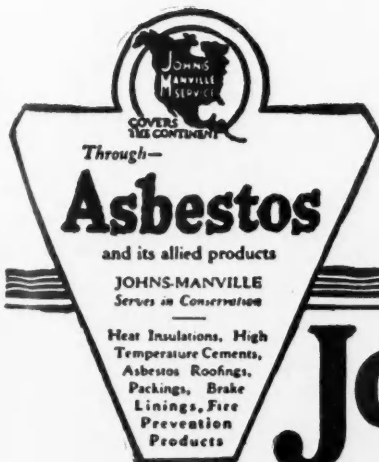
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JOHNS-MANVILLE Asbestos Roofing

New Brick Wall Meets Severe Test

BUILDING COMMISSIONERS IN CONVENTION ASSEMBLE TO SEE NEW CONSTRUCTION SUBJECTED TO HEAVY PRESSURE

DURING the recent national conference of the building officials of the United States, held at Cleveland, a practical test of the Ideal brick wall was made. Building commissioners representing cities all the way from Boston to Portland, Ore., witnessed this test and the new wall was the subject of active and most favorable discussion during the conference.

The accompanying picture shows how this new method of laying brick was tested, both as to its compression strength and its lateral strength.

Two parallel 8-inch walls were erected 12 feet apart. Each wall was 9 feet high by 12 feet long, with a short perpendicular wall at each end. On top of the walls was placed a floor and about this was built a wall 4 feet high of the 12-inch Ideal wall. The enclosure was then loaded with sand to overflowing. The age of the wall at time of loading was nine days.

In the supporting walls there were four types of Ideal construction. One-half of one wall was 8-inch all-rowlock, with alternate headers and stretchers. The other half of the same wall omitted 50 per cent of the thru

headers, using bats to replace them. The other wall was one-half rowlock backing, headers every third course, and the other half rowlock backing, headers every sixth course. The mortar was 1:1:6, and ordinary run of kiln common brick were used.

The weight of the load upon the base of the walls was 82 tons, which the engineers estimated to demonstrate a factor of safety of three over a normal residence load. The walls showed not the slightest indication of stress and according to V. D. Allen, former building commissioner of Cleveland, who designed the test, they would have carried four or five times this load with safety.

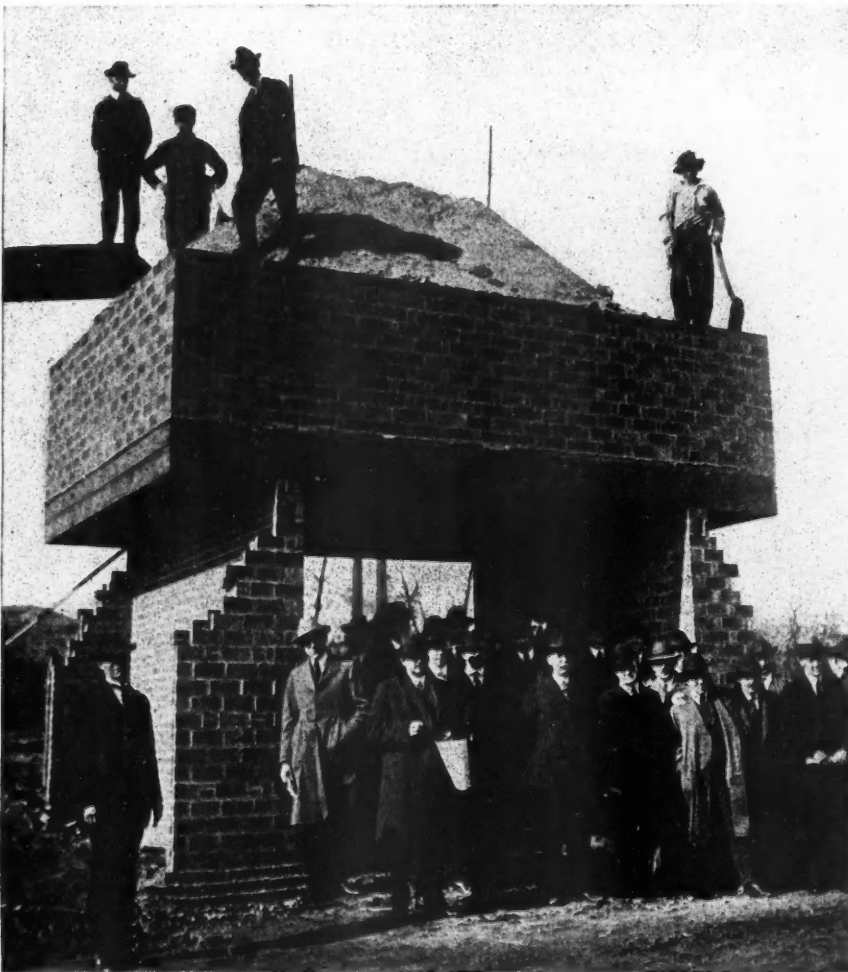
The parapet wall on top was 12-inch all-rowlock, which is recommended for foundation construction, and this was subjected to a severe test by the pressure of the tons of sand on the inside of the wall. There were no bracing or supporting rods of any kind, the wall itself bearing the load without defect.

The test was conducted by the Common Brick Manufacturers' Association of America, which has its headquarters at Cleveland.

A number of cities have already accepted this Ideal wall in their codes for residence construction, and this new way of laying brick is gaining in favor rapidly thruout the country. In comparison with the solid brick wall, it saves one-third the brick, one-half the mortar, one-fourth the labor, and removes the necessity for furring and lathing, since the wall is absolutely dry when plastered directly on the brick.

Engineering tests and fire tests of the wall are now being made by the United States Bureau of Standards at both the Washington and Pittsburgh laboratories.

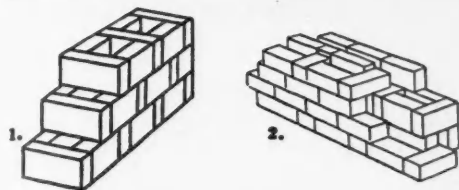
Many of the building commissioners at the conference expressed themselves as believing that the new wall will revolutionize home building in America, due to its great economy and its peculiar qualifications for keeping out moisture, cold and heat. It accomplishes, by using ordinary standard size brick, what inventors have attempted by odd and unscientific shapes in clay ware, because it makes an absolute break in the mortar joint thru the wall.



Ideal Brick Wall Construction Subjected to Severe Test. The Weight of the Load Upon the Base of the Wall Is 82 Tons. The Walls Withstood the Test Successfully.

IDEAL

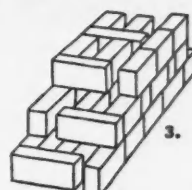
Cuts Cost of



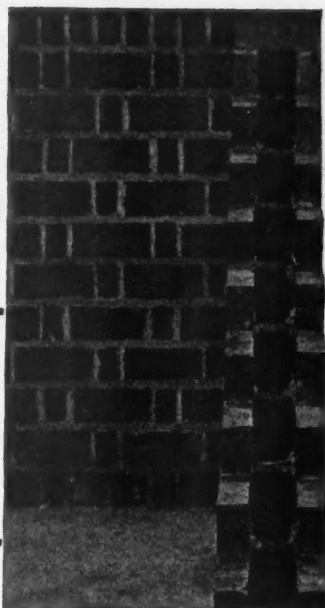
1. 8 inch Ideal All-Rolok Wall.
2. 12 1/2-inch Ideal Wall, Rolok backing. Headers every third course.

WALL

Brickwork $\frac{1}{3}$



3. 12 1/2-inch Ideal All-Rolok Wall. Double air spaced.



Ideal Wall Puts Brick Home Within Reach of the Average Man



The Ideal Wall may be built in 8-inch and 12-inch and 16-inch thickness.

Uses any standard Brick—Common or Face—or combinations of the two.

Meets every engineering requirement.

Particularly adapted to residence construction, garages, and small buildings.

Completely dry—an air current constantly courses through it.

A BUILDER needn't be a star salesman to sell attractive, fire-safe Brick homes at the cost of Frame. Nor need he endure long waits between sales—the new Ideal Wall changes all that!

The Ideal Brick Hollow Wall doubles your market. 95 people out of 100 prefer a Brick home to any other and they will buy now that the cost of wall construction has been cut one-third. Two renters can be converted into home owners for every one converted before.

Build Brick Homes with Ideal Walls. Any standard Brick, any wall thickness, bond or pattern. Save brick, mortar, labor, furring. Get speedier construction.



Permits many variations in the width, color and treatment of mortar joint—any bond or pattern.

It saves brick, mortar, labor, time.

Gives permanent, fire-safe construction at cost of frame.

Simple to erect—bricklayers lay a greater area of wall per day.

One or more air spaces.

Drop us a post card today, or obtain detailed information regarding Ideal Walls from your nearest Brick Manufacturer.

THE COMMON BRICK INDUSTRY OF AMERICA
1306 SCHOFIELD BUILDING
CLEVELAND, OHIO



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



One Explanation for Saw Projection

To the Editor:

Maplewood, Wis.

I think I can answer the question that Brother E. A. Wooster asks in the April number of the AMERICAN BUILDER. The projection in the upper edge of hand saws which Mr. Wooster has reference to is merely left there for the purpose of testing a saw as to its hardness. If you try to bend this little projection with a pair of pliers or some other tool, and find that it breaks off like glass, it is then too hard a blade; on the other hand if it bends so that you can bend it one way and then back again without breaking it is then too soft a blade. This is the explanation my father, an old mechanic, gave me, and I have tried the same myself.

GEORGE KOHLBECK.



Advice on Buying Material

To the Editor:

Albion, Neb.

This idea may help some contractor. I always have my lumber, mason, mill, and hardware bills itemized; then if I need any extra I pay the agreed price, and if I have any material to return, I know what I am to get. This leaves the contractor independent. He is not at the mercy of the dealer at the final settlement.

ED. S. BECKWITH.



Who Asked for Gothic Roof Hog House?

To the Editor:

Hardy, Iowa.

In the April issue of the AMERICAN BUILDER Mr. W. M. Egelston of Poole, Neb., asked for pictures of Gothic roofed hog houses. I am sending one I built last season for Mr. A. N. Clancy of this place.



In April W. M. Egelston Asked for Pictures of Gothic Roof Hog Houses. S. C. Townswick, Hardy, Ia., Has Obligated by Sending in this Picture. The House is 285 by 80 Feet. Some Hog House, We'd Say.

The building is 285x80 feet. The walls of this building are built of Denison load-bearing tile. In the back of the building there is a grain bin six feet wide extending clear to the roof. The rest of the space is used for straw and storage of feeds.



S. C. TOWNSWICK.

Is This Truss Strong Enough?

To the Editor:

Avoca, Pa.

Will you let me know if this truss is strong enough for a garage? The trusses are to be placed 7 feet on center. Can it be built lighter?

JOS. B. BEVENDEGE.

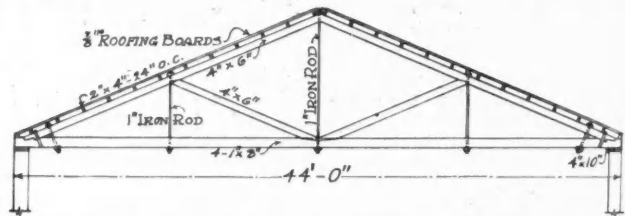


Diagram of Truss Which Jos. B. Bevendge, Avoca, Pa., Intends to Use in a New Garage He Is Building. He Wants to Know if It's Strong Enough.



How Should He Build Tank?

To the Editor:

Maple Creek, Sask.

I wish some brother readers would give me some information on how to build a water tank with 2-inch plank to hold 3,000 gallons. The water is not for drinking purposes and tank will be built outside exposed to the weather. Kindly give working drawing if possible.

WM. S. WATSON.



How Can He Test Brick Strength?

To the Editor:

Stewart, Ohio.

I am superintending the construction of a \$30,000 school house and we had some trouble with some very soft brick. I condemned some of them. The brick company said that they were all right. They told me to test the brick, and if they were not good, not to use them. The walls are 12-inch walls, the height is 33 feet, size 85 by 105 feet.

Can you give me some rule to test those brick? They require a good strength.

GEO. L. BOLES.



Put His Name on List

To the Editor:

Gladstone, Mich.

Give my name to any firm that is sending out catalogs or pamphlets pertaining to building material or general contracting.

H. P. RAICHE.



Mr. Reese—Attention!

To the Editor:

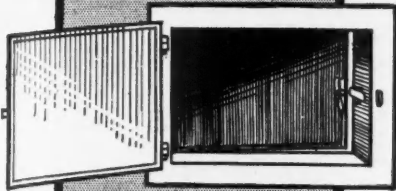
Homer, Neb.

Referring to Mr. Elmer Reese's problem or question on hog house ventilation in the March issue of the AMERICAN BUILDER, I suggest that he put the fresh air intake in the side of the building instead of in the end. The way he has it now, there is no circulation, hence the foul air remains.

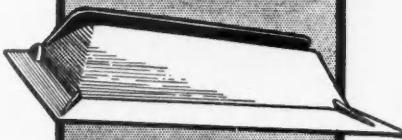
D. R. PETKER.

DONLEY DEVICES

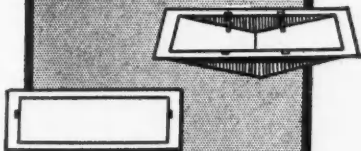
Modernize the Home



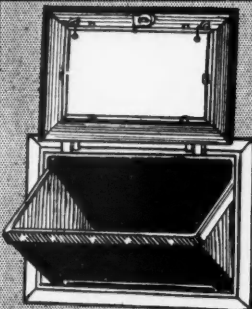
Package Receiver



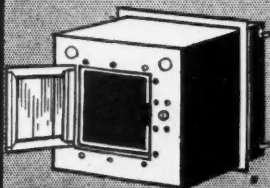
Fireplace Damper



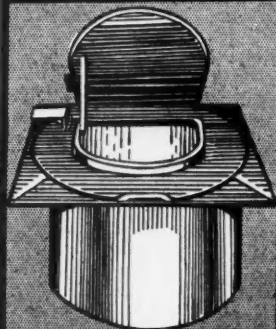
Ash Dumps



Coal Chute



Meter Box



Garbage Receiver



Make this Dream Come True

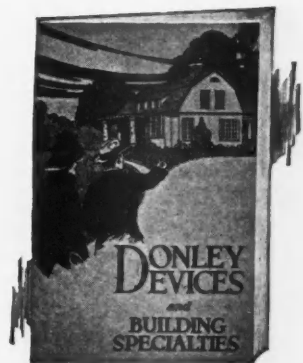
TO the pair who will call it home, every new house is a dream before it is a reality. The Builder's job is to take the air-drawn fragments of this vision and weave them into something practical, substantial, liveable.

Donley Devices, all of them, belong to every new home. The time to get them in is when the house is planned. The man to get them into the plans is the man who knows about them, the Builder.

Just to tell your customer about them; to point out the place and the uses of each, establishes you in their good graces as a man who knows his business right up to the minute.

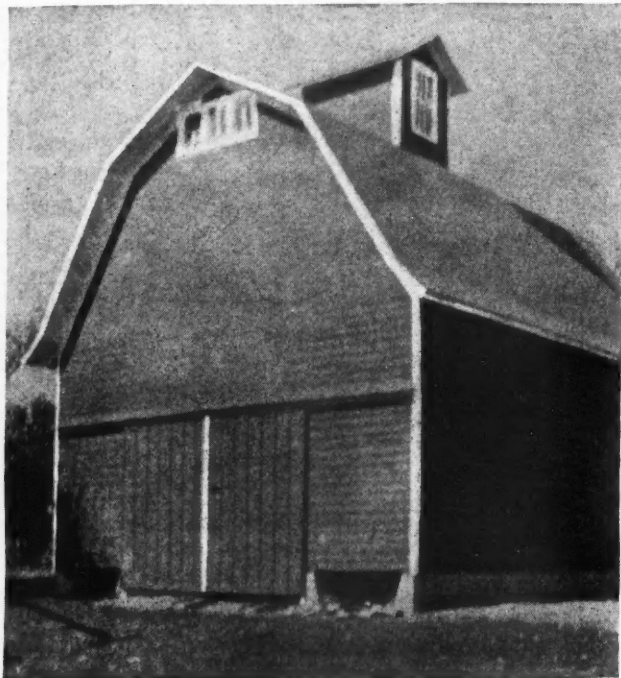
And when the home is finished and occupied, it is so convenient, so clean, so safe from unnecessary intrusion, so *genuine* in its comfort that the Builder will get the credit for years to come.

Keep the Donley Catalog at hand for quick reference as to the Devices shown and many other building specialties. Your supply dealer will be glad to carry the Donley Line, if he does not already. You build your own business on a secure foundation when you rely on Donley Devices for the important operating details of the home.



WRITE FOR THIS

The **DONLEY BROTHERS** Co.
 BUILDING SPECIALTIES  7400 AETNARD CLEVELAND



Modern Corn Crib and Granary Built by Fred Flick, Manhattan, Ill. It Is 32 Feet Long, 28 Feet Wide and 14 Feet High with an Oats Granary Above 16 Feet High. It Is Equipped with a Cup Elevator.

Build Modern Corn Crib and Granary

To the Editor: Manhattan, Ill.
I see you would like to get some pictures of farm buildings so I am enclosing a picture of a modern corn crib which I recently built. This crib is 32 feet long, 28 feet wide, and 14 feet high on sides, and has an oats granary overhead which is 32 feet long, 14 feet wide and 16 feet high. The purlin posts are 24 feet long. It has been filled with grain and is built very strong, having 3 by 12's 10 inches on center underneath the oats bin.

FRED FLICK.

Wants Design of Patio

To the Editor: Dallas, Texas.
I would like to have information on a patio as used in California. Plan with brief description. The location is in Eastern Texas and the climate will have to be considered.

ERNEST UNGEHEUER.

Keeps Busy Remodeling Homes

To the Editor: Peru, Ill.
I am sending you some views of a house I recently remodeled in Peru. The photographs show it as it appeared before and after remodeling. This is only one of the many jobs of this kind that I have done around here. We make a specialty of this work for people who wish to modernize their old homes without changing location.

There is plenty of this work to do in any town if the builder will only go out after it and show his neighbors how they can remodel their old homes to advantage. If any brother readers want any advice on this work, I shall be pleased to offer what I have.

HENRY VOGT,
Contractor and Builder.



Down in Peru (Not South America, But Illinois), Henry Vogt, Builder, Has Worked Up a Successful Business Remodeling Homes. This Is Only One of His Many Jobs Showing the House Before and After the Magic Wand Had Been Applied.

How to Repair Blackboard

To the Editor: Auburn, Calif.
Replying to Samuel Morris, Middletown, Ill., regarding his blackboard trouble, if he will use a casein glue he will have no trouble from water softening it. He can boil it if he wants to. What I am using, and I use it every day, is sold under the trade name of "Monite." It is mixed with cold water and used in any temperature above freezing. It has holding qualities equal to first class hide glue.

But if it was my job, I would cut out the hole and inlay a piece of slate. I think that would make a much better looking patch.

J. C. MANNING.

Why Hog House Is Not Healthy

To the Editor: Newburgh, N. Y.
Referring to article on page 132 of your March issue, we would like to ask if the contractor expected to build that hog house with a wagon load of lumber?

If so, then by all means he should expect that his little skimpy vent shafts should ventilate the building.

His vent shafts for a building of that size are about like handing a hungry man one cracker for a meal.

There is nothing to cause those vents to take the air out except the difference in weight between the air inside and outside and this difference in weight must at the same time offset the friction of the movement of the air to the vents and out thru the same.

It is therefore doubtful if the velocity of the air in these vent shafts will exceed 50 feet per minute on the average.

This would remove then 50 cubic feet per minute so that if all the air within the building could be moved it would require 256 minutes to make one change of air if the average height of the building is 8 feet.

If the height is for an average of 8 feet the cubic contents are 20 feet by 80 feet by 8 feet, or 12,800 cubic feet. On this basis the air would be changed theoretically once in 4 hours and 16 minutes.

It is therefore no wonder that his pigs get sick and die.

If in building pig pens and barns, reasonable and sensible attention were given to ventilation, reasonable results could be obtained but too little so-called vent shafts, like those mentioned, are inefficient. The vent shafts should be of metal so that they will be airtight, because leakage of air reduces the draft and therefore reduces the efficiency.

H. A. DANIEL.

All Depends on Man

To the Editor: Breda, Iowa.
I would like to know how many shingles one man can lay in one day of 10 hours.

HENRY K. HEINRICHS.

Bostwick

means more than

"TRUSS-LOOP"

It means a complete line of Wall Specialties — from foundation up to eaves.

THE name BOSTWICK signifies the utmost in building materials—the trade's *standard*, no less. And that applies to the complete Bostwick line.

Owing to the fact that it was the first metal lath ("born" in 1891) and to the "wholly different" features of "TRUSS-LOOP"—its distinctive trussed arches, its remarkable strength and stiffness and its multiple time, labor and material saving qualities—BOSTWICK has become associated in the trade most prominently with "Truss-Loop" Metal Lath. But the other specialties in the Bostwick line are equally as good.

Bostwick Expanded Metal Lath

Bostwick "Truss-V-Rib"

Bostwick Corner Bead

Bostwick Base Bead

Bostwick Wall Plugs

Bostwick Wall Ties

Bostwick Channel Iron

Bostwick Heavy Expanded Metal

Bostwick Light Concrete re-enforcements

Our new Catalog, just out, gives full details and specifications about the above specialties as well as Bostwick "TRUSS-LOOP" itself. We are reserving you a copy. A word from you will bring it.

Service? The usual Bostwick 24-hour shipment now prevails.

The Bostwick Steel Lath Company
NILES, OHIO

Bostwick

BUILDING MATERIAL

**Stuko-Steel Houses—Fire-Proof—Everlasting
Built in a Jiffy—Cost Less Than
Other Fire-Proof Material**



STEEL and stucco combined—steel frame-work and lath with stucco finish—make houses, garages, business buildings of greater durability than brick. Four times the strength of lumber—warm in the winter and cool in the summer—with the appealing beauty of stucco finish.

Showing Stuko-Steel Solid-Door and Window Units

**Eliminates Costly Upkeep
Guaranteed 50 Years—Lasts a Century**

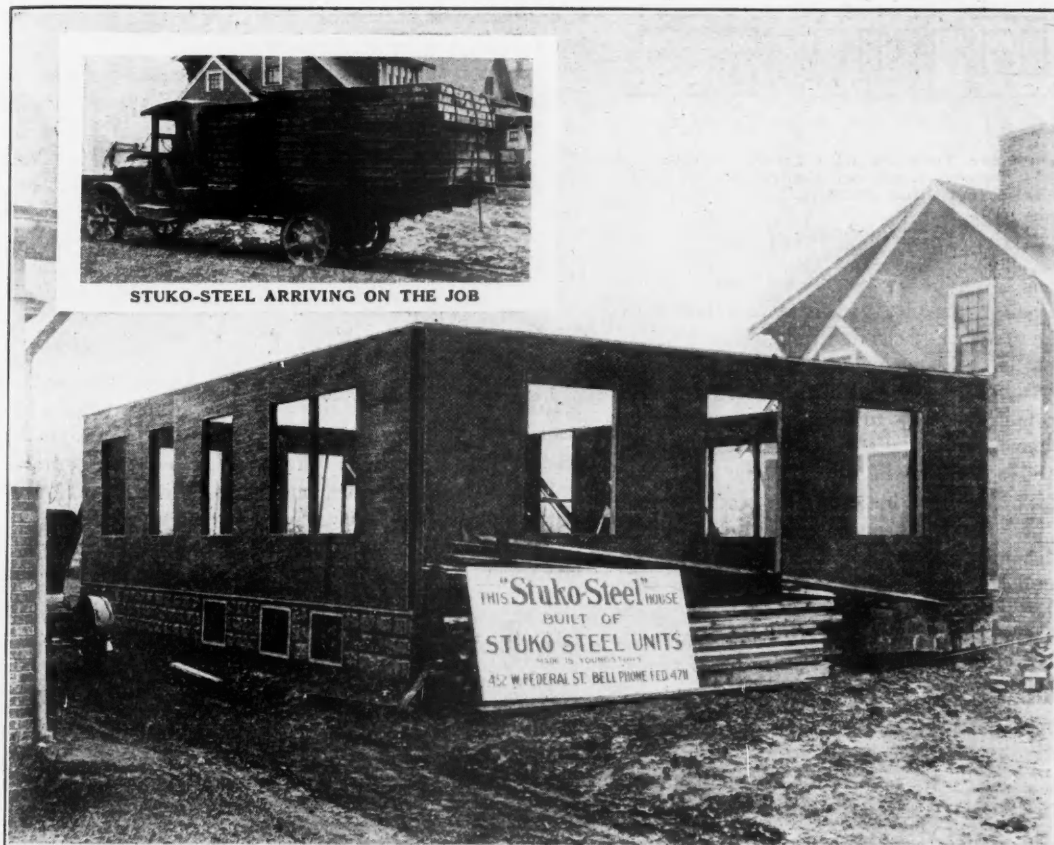
STUKO-STEEL built houses stand untouched by the elements Fifty years after being built. There is nothing to decay. Four workmen can erect the Stuko-Steel framework, partitions, and roof trusses of an ordinary house in less than three days—needs no painting—deterioration and upkeep are eliminated entirely. The only practical construction whether you build to sell, to rent, or to own.

The **Stuko-Steel Co.**
Youngstown, O.

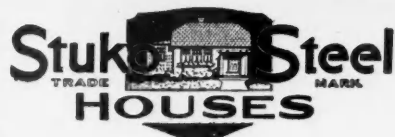
446 West Federal Street

SEND FOR ILLUSTRATED LITERATURE NOW

Patents Applied for on all STUKO-STEEL FEATURES



STUKO-STEEL ARRIVING ON THE JOB



**At 10:00 A.M. Stuko-Steel Units Arrived—
At 12:00 Noon the Side Walls Were Completed**

A TRUCK load of Stuko-Steel units arrived on the job at 10:00 A. M. Two hours later the side walls were ready for the stucco and plaster. That is the brief history of the construction of a seven room modern house with Stuko-Steel. No other material builds a house as beautiful; no other construction is as fire-proof, as long lasting, and as comfortable. That is why Stuko-Steel has revolutionized the building industry—why home owners, builders and real estate men use it for residences, garages, store buildings, and apartment houses.

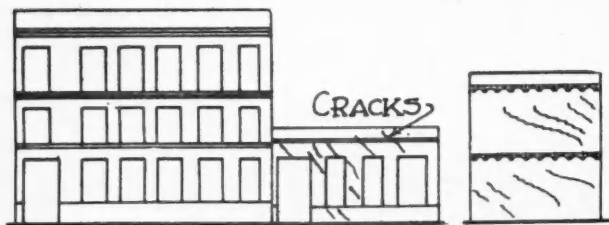
It Means Economy From Every Angle

A lower first cost, the elimination of painting and repairing; the great saving in labor and a more desirable house—all of this is accomplished by the combination of the sturdy all-steel frame-work of the skyscraper with the lasting finish of stucco. Write today for illustrated literature describing Stuko-Steel in detail. It's the very material you've been waiting for. Our architectural department will make recommendations without charge when blue prints are enclosed. If you cannot send blue-prints describe your requirements in detail.

The Stuko-Steel Co.
Youngstown, O.

ASK FOR STUKO-STEEL ILLUSTRATED LITERATURE TODAY

446 West Federal Street



Down in Mexico They Are Troubled with Cracks in Concrete Work as Shown in this Sketch. J. Segura, Contractor, Wants to Get Advice on this Work From Other Builders.

Question from Mexico

To the Editor: Santa Teresa, Mexico.

Mexico's subsoil is the product of the accumulation of sedimentary material that is not strong enough for foundation of great weight. In it movements are observed, although many years after a building has been finished. No engineer and contractor can find the way to avoid these cracks in buildings a short time after he puts it in the hands of the owner. Figure No. 1 will show in a clear way how these cracks are presented. The little building has cracks on the facade. The large building has been erected after the little one. With the earth movements cracks in near house appeared. How can it be avoided? Figure No. 2 shows a wall with cracks which appeared a year after it had been erected. How can these be avoided and what is the best way to make a strong arrangement? All these building foundations are made of base enlargements of stone.

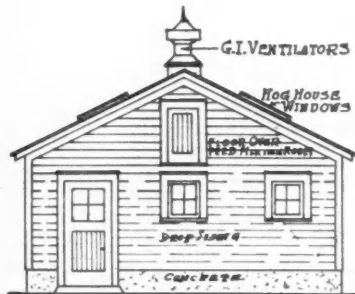
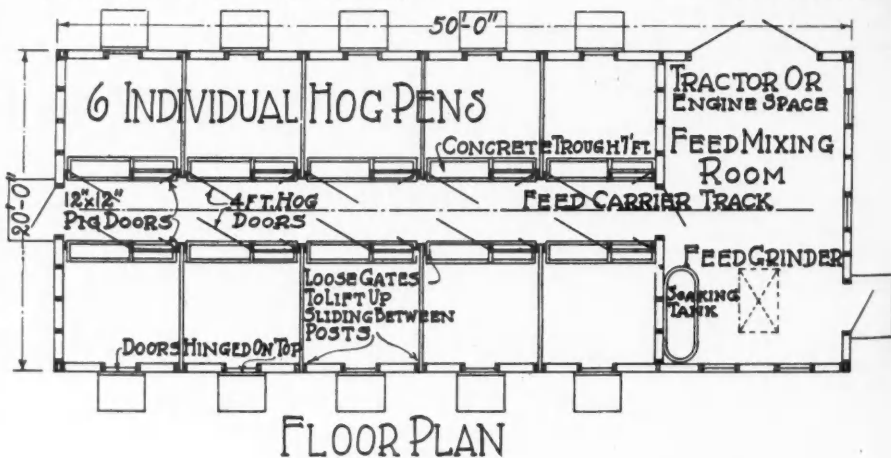
JOAQUIN SEGURA, JR., Contractor.

Some Suggestions on Hog House Construction

To the Editor:

I have seen many types of hog houses illustrated in the AMERICAN BUILDER, but I fail to see any which embody my idea, so I am submitting a sketch to give the workers a clew. Every 8 feet on the wall, as well as along the central feed alley, are two 2 by 4's, set 2 inches apart to support and act as guides for the pen partitions, which are loose gates, and can be raised up and shoved across the feed alley or taken out altogether in case a large feed room is wanted. The alley gates are the same and hinged at opposite sides, so, by swinging across the two opposite bins will

Clement, N. Dak.



END ELEVATION



SIDE ELEVATION

Sketches Showing Ben Johnson's Idea of Building Hog Houses. He Has Built Several of this Type in His Locality, Clement, N. Dak. and Found Them Very Successful. Thanks, Mr. Johnson, for Your Interest and Helps to Brother Builders.

be joined. These gates swing over the feed troughs which are fastened to the floor, and are three-fourths on the inside and one-fourth in alley to allow feeding from the alley and are 7 feet long. Each bin is arranged with a 12 by 12-inch door at the end of each trough to let the small pigs out into the alley, if desired. The outside bin doors are hinged on top, swinging out and up, and by fastening a 2 by 4, 3 feet long across the door bottom, furred out so as to clear the door jamb by 3 inches. This serves as the hog's door latch. If the doors are blocked so as to stay about half way open, forcing the hog to push it up to get in or out a few times, he will soon see what the projecting 2 by 4 is for. The block can now be taken away and the hog will open and close the door every time he goes in or out. The 2 by 4 also acts as a weight to keep the door closed.

BEN JOHNSON.



Answers Mr. Hovis Problems

To the Editor: Portland, Ind.

In answer to Mr. Hovis questions on page 136, May AMERICAN BUILDER, a good mortar for your job can be made of five parts clean sharp sand to one part hydrated lime and one part portland cement. You should have all carpenter and cement work on the garage you mention for seventy dollars, counting fifty cents per hour for foreman and forty cents for helpers.

EVERETT MCFADDEN.



What About This — Brother Carpenters?

To the Editor: Barrow, Alta., Can.

I have a job to panel a den with fir veneer. Some of my client's neighbors tell her she should have it finished on top with a plate rail, others say it is not usual to have a plate rail in a den. I said it was not usual to have it; she still wanted to have some more advice, so I told her I would write the AMERICAN BUILDER, and she would be sure of getting it right.

GEO. MURDOCH.

Edwards "Queen Anne" Metal Shingles



RESIDENCE SENATOR GEO. S. NIXON, RENO, NEVADA. EDWARDS METAL SPANISH TILE USED ON THIS BUILDING

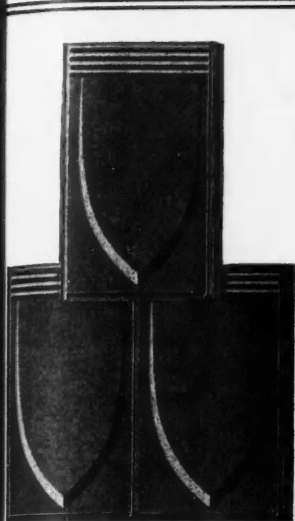
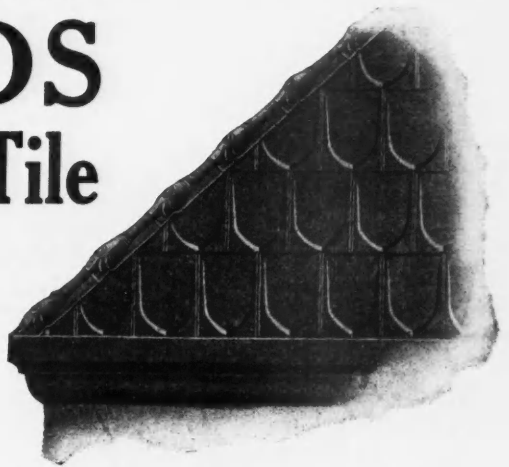


Fig. 157

Note the construction of patent Interlocking Device used on Edwards Metal Shingles and Spanish Tile.

EDWARDS Metal Spanish Tile

It is wonderful what a remarkable transformation takes place when an "Edwards" Metal roof is properly applied to a house—all of the charm of the Old Spanish Terra Cotta Roofing Tile is preserved, even to the color.



The house takes on a new lease of life. It seems a better place to live in. It helps put the stamp of progressiveness and thrift on a community. An Edwards Metal or Tile Roof is a real commercial asset and will bring a better return in rent or sale.

Edwards Metal Roofings made in various styles, to have the appearance of wood shingles, tile, slate, or any other roofing effect, and none of these fine artistic effects will cost any more than a plain, commonplace roof.

All Edwards Metal Roofing is easy to lay—no big expense for skilled labor—storms and winds will not wrench it loose or make it a rattle-trap. It is lightning-proof and fire-proof—reduces Insurance Rates.

When an Edwards Roof is laid, it is there to stay.

Send for our literature—it explains.

The Edwards Mfg. Co.

401-417 Eggleston Ave., Cincinnati, Ohio

The World's Largest Manufacturers of Metal Roofing, Metal Ceilings, Metal Garages, Portable Buildings, Rolling Steel Doors, etc.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

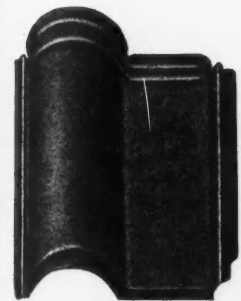
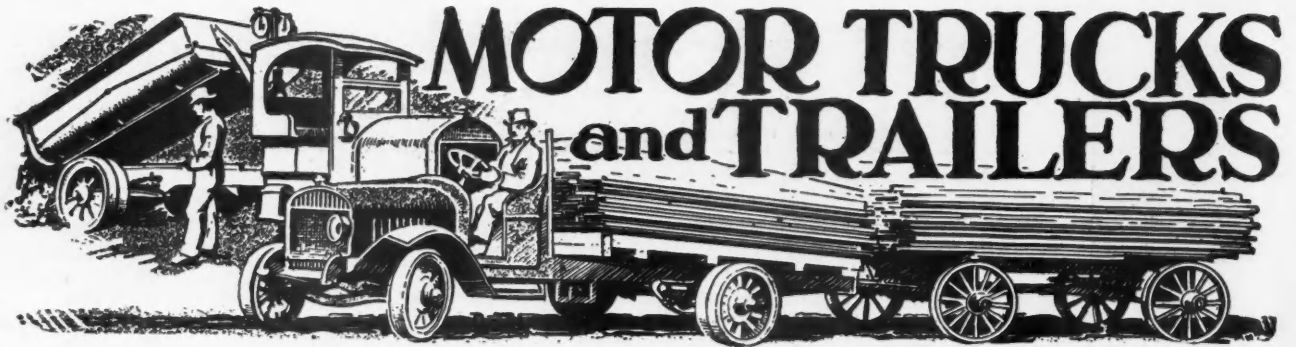


Fig. 367

Metal Spanish Tile for main part of roof.



MOTOR TRUCKS and TRAILERS

Combines Contracting and Motor Trucking

ENTERPRISING NEW YORK CONTRACTOR KEEPS TRUCKS BUSY ALL YEAR ROUND

By P. L. Sniffin

KEEPING every single unit in a fleet of ten heavy duty motor trucks busy the year round is the profitable accomplishment of L. Ferger, a New York City contractor, with headquarters at Astoria, L. I.

A contracting business that has expanded in scope and volume more than three times thru the systematic and judicious use of motor trucks and an exceedingly profitable return from his truck investment testifies to the success of Mr. Ferger's theories on the proper way to operate a fleet of trucks.

"The keynote of success in operating a truck fleet in the contracting business," says Mr. Ferger, "is, first, to buy only quality equipment; second, to give every unit its full quota of real hard work to do; and, third, to take care of them accordingly." His reasons for each of these fundamentals and his experience in working them out are especially interesting.

The trucks must be of the very best quality, regardless of first cost, principally because the prime requisite of a truck used in contracting work is its ability to stand up under excessive strains. In loading with steam-shovels, a one-ton mass of dirt and rock is frequently dropped on the truck from a height of several

feet. In discharging the load, the truck is usually run forward and then backed sharply against an obstruction several times. Such procedure produces a terrific



Excavation Work Is One of the Test Jobs for a Motor Truck. This Giant "Mack" Is Taking on a Load. Mr. Ferger Keeps His Trucks Going Day and Night on Work of This Kind.

shock on the body, springs and chassis, but speed in loading and unloading is the determining factor of profit on such work.

"It is all very well to say that a truck should not be subjected to such treatment and to avoid it where possible," says Mr. Ferger, "but nevertheless it is done, and forewarned is forearmed. That is why I believe the contractor who invests in a cheap truck is making a big mistake."

Every truck in Mr. Ferger's fleet is busy all the time, often night and day. Of course, it is impossible to provide enough work for this in the contracting line, so he is always on the lookout for opportunities to do outside hauling when there is a possibility of a slack season. This necessarily requires considerable effort



Keeping the Trucks Busy the Year 'Round Is the Secret of the Contracting Business According to L. Ferger, a New York Contractor. When the Building Business Is Slack He Does a General Hauling Business and Thus Keeps a Fleet Going at Top Speed.



General Motors Trucks

Contractors have found GMC Trucks will deliver the greatest ton mileage at the lowest cost. Here are some firms who have found GMC Trucks good investments:

- | | | |
|------------------------------|---------|----------------------|
| Otis Cement Construction Co. | - - - | Detroit, Mich. |
| A. R. Young Construction Co. | - - - | Clarksville, Ark. |
| Southern Construction Co. | - - - - | Dallas, Texas |
| Gordon Construction Co. | - - - - | Casper, Wyo. |
| Triangle Construction Co. | - - - - | Ritzville, Wash. |
| Mississippi Sand Co. | - - - - | Alton, Ill. |
| Mesaba Construction Co. | - - - - | Bovey, Minn. |
| Thompson-Starrett Co. | - - - - | Detroit, Mich. |
| Austin & Murphy | - - - - | Pasadena, Calif. |
| Tracy Bros. Co. | - - - - | Waterbury, Conn. |
| Hose Construction Co. | - - - - | Boone, Iowa |
| Geo. A. Marshall | - - - - | Haverhill, Mass. |
| Paul Benedict | - - - - | Oklahoma City, Okla. |
| Paul Bros. Co. | - - - - | Cleveland, Ohio |

GENERAL MOTORS TRUCK COMPANY
PONTIAC, MICHIGAN

(798)



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

in soliciting outside work, but he is of the firm opinion that it pays.

"The contractor is especially liable to have dull seasons in which a tremendous investment in truck equipment is apt to be unproductive over a considerable period," Mr. Ferger adds. "If he is to have the necessary equipment when business is good, he must provide enough work to keep it busy when business is poor."

To prove that he takes his own advice, Mr. Ferger cites an instance in which he anticipated a dull season and made arrangements whereby five of his trucks worked practically twenty-four hours a day for four months. They hauled coal continually all of this time, during the night, for a large New York coal company and during the day for the Interborough Rapid Transit Company. Contracts of this kind are common occurrences for him.

An interesting and important principle is involved in Mr. Ferger's experience. It is a fact that during slack seasons, hauling requirements are often as low as 50 per cent of those during the best months. It hardly seems wise for a contractor to have a 100 per cent equipment a large part of the year for a 50 per cent business. Many contractors have solved this problem by purchasing only a 50 per cent equipment and when the busy season comes along, or when any temporary rush period develops, extra trucks are rented. These operators figure that while the cost of rented vehicles is greater than the cost of their own, a much greater cost would be entailed if 25 or 50 per cent of their trucks were idle most of the year.

Other contractors in similar situations have purchased a 70 per cent equipment or even an 85 per cent equipment and during the 100 per cent months, they overload the trucks, rush the drivers and manage to handle the increased requirements without greater truck capacity. Thus, during idle months, about 25 per cent of the truck capacity is not used.

It may be said that Mr. Ferger is especially fortunate in having access to opportunities whereby he can safely maintain a 100 per cent outfit. In many cases, depending upon conditions, it is very possible that one of the other methods would be more suitable. It is interesting to note, however, how Mr. Ferger has successfully combined the contracting business with the motor trucking business, and undeniably there are substantial possibilities in this plan.

As far as taking care of the trucks is concerned, Mr. Ferger places extreme emphasis on the importance of checking small troubles before they develop into large ones. "Nightly inspections and careful lubrication are vital requisites," he says.

All of his trucks average about 25,000 miles each per year. The oldest has been in service five years, three are three years old, three two years old, and three one year old. As a result of careful maintenance, none of them have ever missed a day on account of repairs.



CUBA has about 367 varieties of excellent hardwoods. Besides mahogany and cedar, there are about 30 species of palm. The royal palm is probably the most useful tree on the island, every part from leaves to roots being utilized by natives.



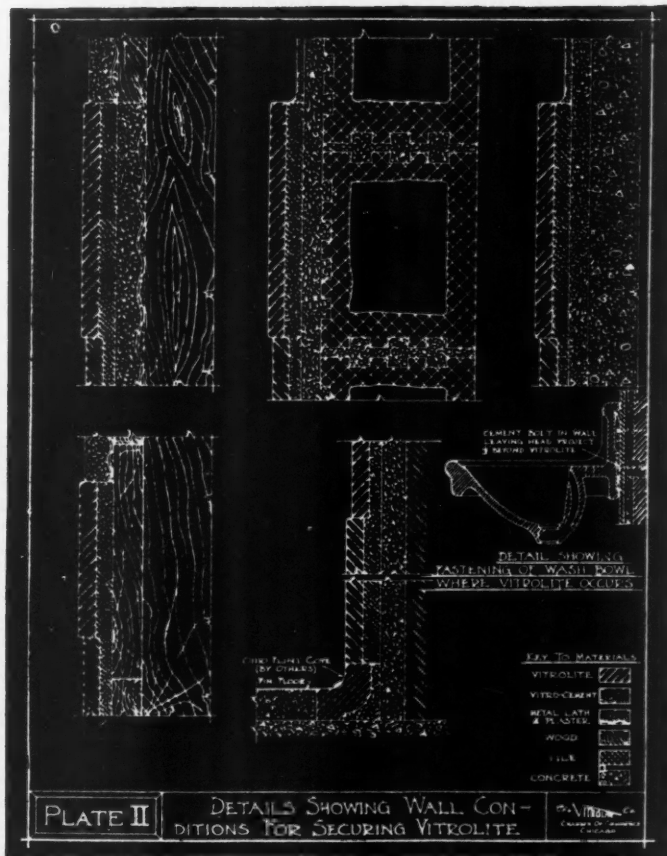
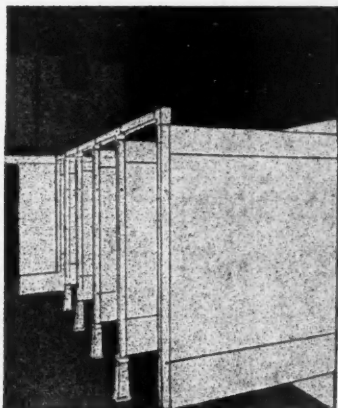
Getting Supplies to the Job in Time Is the Big Function of This "Service" Truck. The Fischer Building Supply Co. Find It Keeps Their Customers Satisfied Because They Are Not Held Up Waiting for Material.

VITROLITE—pure white, homogeneous, non-absorbent slabs for walls and partitions—sets in a patented *elastic cement*, that allows for shrinkage and settling and permits of removal for remodeling, etc.

And the setting is done by local agents, who furnish drawings, make installation and guarantee unreservedly this sparkling, ideal material for walls and partitions where abiding cleanliness is a requirement.

The Vitrolite Company, Chamber of Commerce Bldg., Chicago

Vitrolite has an envied reputation as ideal material for toilet partitions and showers. To this the Vitrolite patented self-locking, "boltless, screwless" jointing system has contributed a great deal. Note the size of the Vitrolite slabs. Slabs for wall use are furnished in sizes from 30 x 84 to 36 x 84.



SET IN *ELASTIC CEMENT*

Write for samples, specifications, list of users and detailed information on Vitrolite. Furnished in any quantity, any place, any time.

—Specify

VITROLITE



EDITOR'S NOTE: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

Heavy Paver for Handling Dry Mix

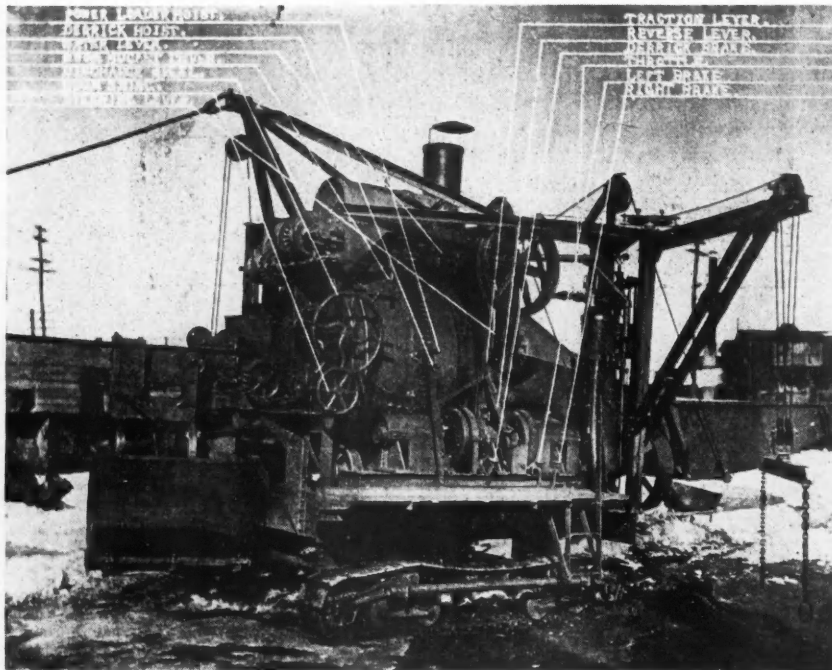
IN THE illustration shown here is a new heavy paving mixer combining unusual speed with one-man operation. It will discharge dry mix in from 10 to 15 seconds, with an average time of 12 seconds.

The control levers are arranged so that without moving, the men running the machine can continuously carry on all required operations, such as: lifting batch boxes from an industrial truck, raising the skip, admitting the water, swinging the boom, dumping the mixer, running the bucket out on the boom, dumping the bucket and returning the bucket to the mixer.

All operations of the crawler tractor are controlled by a clutch lever, reversing lever, steering lever, and two foot brakes. To simplify operation the machine follows the direction in which the operating levers are moved.

To pass low bridges the super-frame is hinged to the supporting frame so that the former can be easily swung down out of the way. The smoke stack and the two brackets carrying the top sheave wheels are also hinged.

The loading derrick is designed to be placed on either side of the machine, and can be shifted from one side to the other.



New Heavy Paver Designed Especially for Handling Dry Mix. Its Average Discharging Time Is 12 Seconds. It Has a Crawler Traction and Can Be Operated by Gas, Steam or Electric Motor.

The power loader bucket is of the open end type, wide enough at the bottom to permit motor trucks to dump direct, or for two wheelers to dump at a time. When fully raised, the bucket has a 48 degree slope.

The mixer can be equipped with either steam power, gasoline or electric motor drive. Where steam power is desired, a 14-H. P. engine is used. With gasoline drive a heavy duty tractor type engine rated at 25-H. P., 900 R. P. M., and for electric drive a 20-H. P. electric motor is used.



Convert Waste Product of Sugar Cane Into Wallboard

THERE are several opportunities for builders, architects, contractors and building material dealers to solve in an economical way many of the building problems now facing



Fiber from Which New Building Material Is Made. This New Discovery Enables the Factory to Use a Former Refuse.

every community, large and small, in the United States.

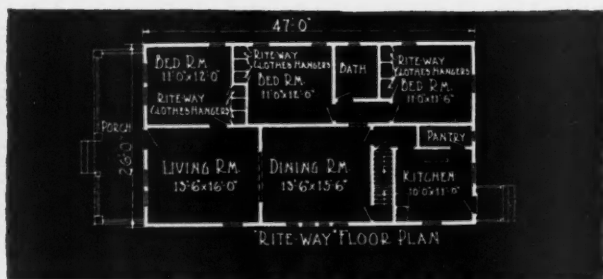
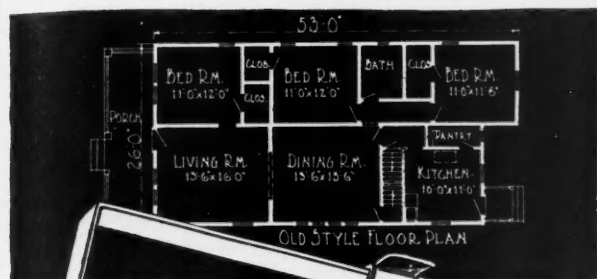
One opportunity is presented to the building trades by the perfection and manufacture of a new building material similar in make-up to wallboard, and made from bagasse, a sugarcane waste product, or refuse, formerly used as a low grade fuel.

This "lumber" possesses durability, strength, lightness and resilience and is adaptable for both interior and exterior construction and finish. As an economical building material it is of interest to builders in every community.

It can be painted in the same manner as ordinary lumber. It can be used as a wallboard, a wall lining, or for sheathing homes, schools, summer cottages and other buildings. It can be used without lath as a plaster base, forming a perfect bond with plaster, or as a base for magnesite stucco.

Up to the present time, bagasse—a waste product of the sugar cane industry—has been used only as a low grade fuel in the sugar houses.

This new material is manufactured in board length 9 to 12 feet long, in ¼-inch and ½-inch thickness, and 36 to 48 inches wide. These boards may be sawed like ordinary lumber and because of their tex-



Rite-Way three-door wardrobe
Hangers on either side—Shelves in center
2' doors—center one a mirror

The Rite-Way Saved \$168 In Building This House

INSTEAD of the old-fashioned deep closets, dark and inaccessible, the plans were changed to the modern space-saving arrangement made possible by the use of Rite-Way Garment Fixtures. With no change whatever in the size of the rooms, the length of the house was **cut down 6 feet**. The saving in material and labor on this small bungalow amounted to \$168.00. On a large apartment or hotel it would run into the thousands.

You Can Make a Saving Like This on your next building. Let us send you the detailed figures on this bungalow and show you how. Bungalow or skyscraper, the larger the building, the greater the saving.

At the same time that you make this saving, both of space and money, you provide **more room** for clothes. They are kept in perfect condition and a touch brings the whole wardrobe out into light and air. No dark places

for moths to gather. The carrier works on noiseless fibre rollers that will not rust or stick. Positive spacing of the hangers keeps garments at even distances from each other, making it easy to hang and remove them. No chance of mussing or tearing.

Save Half Your Closet Space

Equip your buildings with these sensibly planned closets. You will be surprised at the economy in construction costs. Your clients will be enthusiastic over the compact and convenient arrangement.

We have taken over from the Barney Moore Co., the manufacturer and sale of Rite-Way Garment Fixtures. They will continue to be made with the same excellence of design and construction that you now know **you can depend upon in Lawson Spring Hinges.**

Use the Rite-Way on your next job. It is an easy way to please your clients, and once you have used it you will never go back to the old style closets.

Write Today For Full Information

Ask us to send you the plan and detailed figures on this bungalow. Let us show you how you can take advantage of this new idea in closet construction. This is something worth while looking into Write today to

LAWSON MANUFACTURING COMPANY

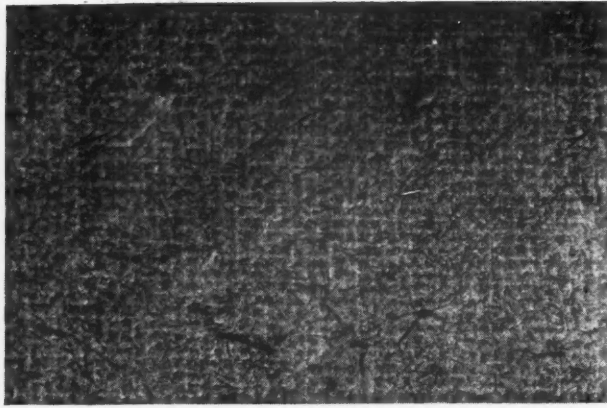
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LAWSON RITE-WAY GARMENT FIXTURE

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

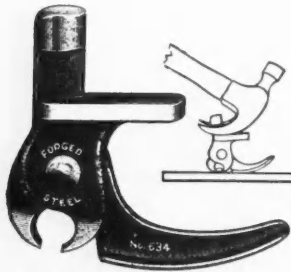


Section of "Lumber" Made From the Refuse of Sugar Cane. It Is Like Wallboard and Can Be Used in Building Work of All Kinds.

ture, they will not split when nails are driven thru them. As a building material it is adapted for insulation sound-proof ceilings, walls and partitions, exterior base for stucco, drop siding, office cabinets, telephone booths, display booths and store window backgrounds.

Pocket Nail Puller

THIS tool will be popular with carpenters and householders on account of its simple construction, compactness and strength. It is small enough to be dropped into the pocket.



Pocket Nail Puller—Can Be Carried Around in Vest Pocket.

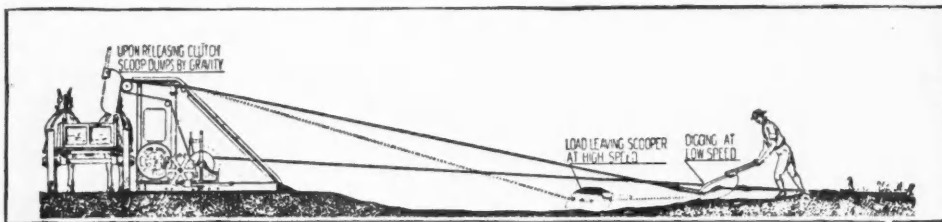
To use this pocket nail puller, opens jaws and place them over the nail head. Drive in the jaws by pounding on the head of the puller with a hammer. When the jaws have engaged the nail head insert the claws of the hammer under the head of the puller and the compound leverage enables any nail to be pulled with ease. It will pull cement coated nails out of knots without difficulty.

Digging Machine Cuts Labor Costs

ROAD contractors, builders and anyone interested in excavation work will be interested in the device shown in the illustration. It is a combination digging and loading machine designed to cut the labor costs on the job. It may be driven by either gasoline engine, electric motor or steam engine.

The machine consists of a double drum winding and hauling machine mounted within a heavy structural frame which constitutes the tram or dumpway for the scoop. The heavy wire cable operated by the two winding drums carries a drag scoop or scraper which does the digging.

This is a two-speed machine, the lower speed being used for loading scraper and offording the excess power required



Digging Apparatus Designed to Cut Cost of Excavation Work. Two Men Can Do All the Work, One Handling the Digger, the Other Operating the Machine and Hoist.

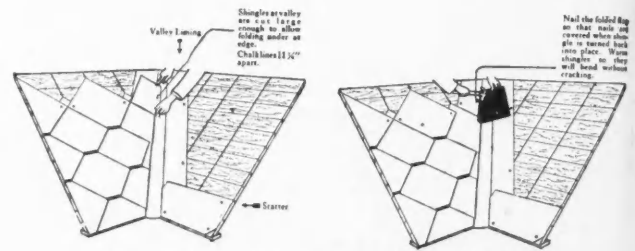
in the digging operations. The high speed is used for transporting the load quickly to the point of dump, automatically dumping it and returning the scraper for a new digging or loading operation. In operation the drag scraper attached by wire rope to the winding drum under the inclined tramway, is drawn toward the machine. The handles on the scoop are slightly raised by the operator until it digs and gathers a load. The high speed clutch is then thrown in and the loaded scraper rapidly drawn up the inclined tramway to a roller dumper which turns the scraper completely over, dumping the material into the car or vehicle below.

After dumping a clutch engages the reverse drum, the scraper is then returned to its starting point and the cycle of operations repeated. Two men are required, one handling the digger, the other operating the machine.

New Asphalt Shingle Locks on the Roof

FOR many years asphalt shingles have been gaining in favor. The crushed slate surface furnished in two natural unfading slate colors, either red or green, lend an attractive appearance to the home and the shingles themselves are not only easily applied, but fire-resisting and extremely durable.

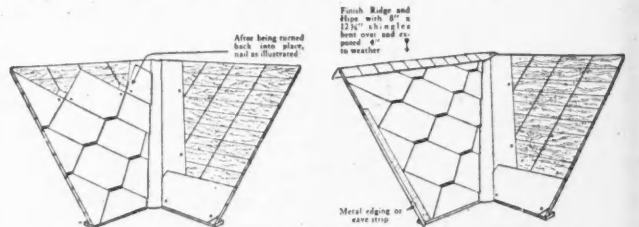
Manufacturers of asphalt shingles are constantly making improvements and making the shingles more beautiful and economical.



Various Steps in Laying Asphalt Shingles.

One of the most recent advances in the manufacture of asphalt shingles is the introduction of a shingle that actually locks on the roof.

This new shingle measures 8 by 12 3/4 inches, and is applied on the roof in a diamond shape, contrary to the practice of most asphalt shingle application. One corner of the new



The New Lock Eliminates Use of Several Hundred Nails Per Square.

shingle is doubled under, making a double thickness butt. Pierced thru this corner is a piece of copper wire which projects slightly beyond the edge of the shingle itself. This innovation makes possible the interlocking of each shingle to the other as the piece of wire and the doubled under butt hook into the space between shingles as illustrated in the accompanying picture. This feature not only locks the shingles in place, but also acts as an automatic spacer, insuring the accurate placing of the shingles on the roof. The interlocking device makes curl-

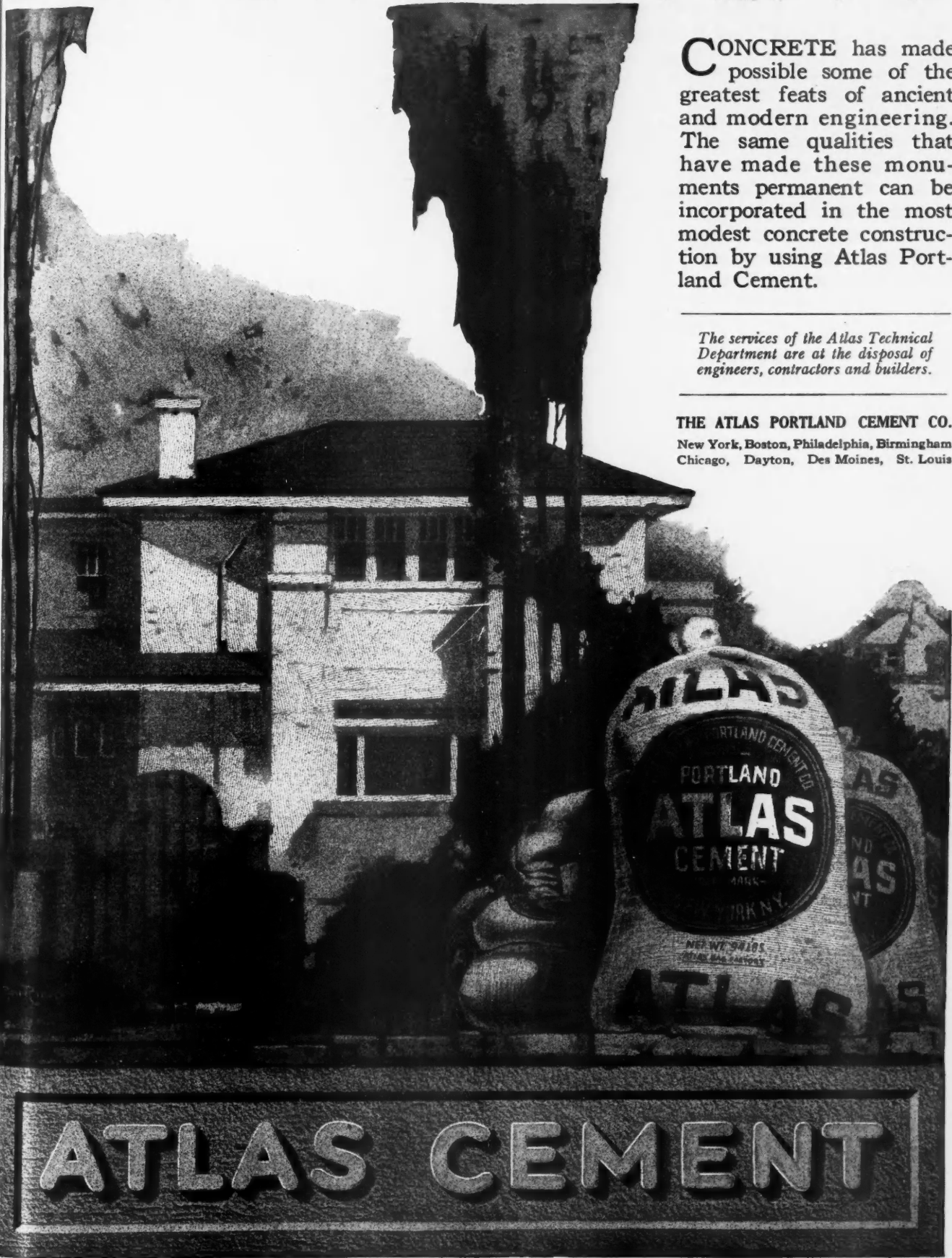
(Continued to page 154.)

DEPENDABILITY

CONCRETE has made possible some of the greatest feats of ancient and modern engineering. The same qualities that have made these monuments permanent can be incorporated in the most modest concrete construction by using Atlas Portland Cement.

The services of the Atlas Technical Department are at the disposal of engineers, contractors and builders.

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New Idea In Church Construction

BENTON HARBOR, MICH., HAS UNIQUE PEACE TEMPLE THAT IS DIFFERENT FROM USUAL STRUCTURE

"THERE is nothing new under the sun," growls the cynic. "Yes, there is," says the Rev. Christopher Jeffares McCombe, pastor of the Methodist Episcopal Peace Temple in Benton Harbor, Mich. Then he proceeded to demonstrate it by building a church that stands as a radical departure from anything heretofore attempted in church construction. It is a church, robbed of the cold, severe, antiquated appearance and atmosphere.

To make it even more unique and distinctive he has not called it a church but a Peace Temple. Celebrating the close of the great world war he conceived the idea of erecting a living, vibrant, virile, memorial community institution which would give Christianity a fair fighting chance to express itself to the whole of life in the whole of the community all the time.

On the first anniversary of the signing of the armistice the Governor and Lieutenant-Governor of Michigan laid the corner stone in the presence of the world war veterans. Dr. McCombe says: "This character factory is a seven-day-in-the-week-workshop for the production of men morally fit, physically courageous, social and spiritual giants, for the development of the

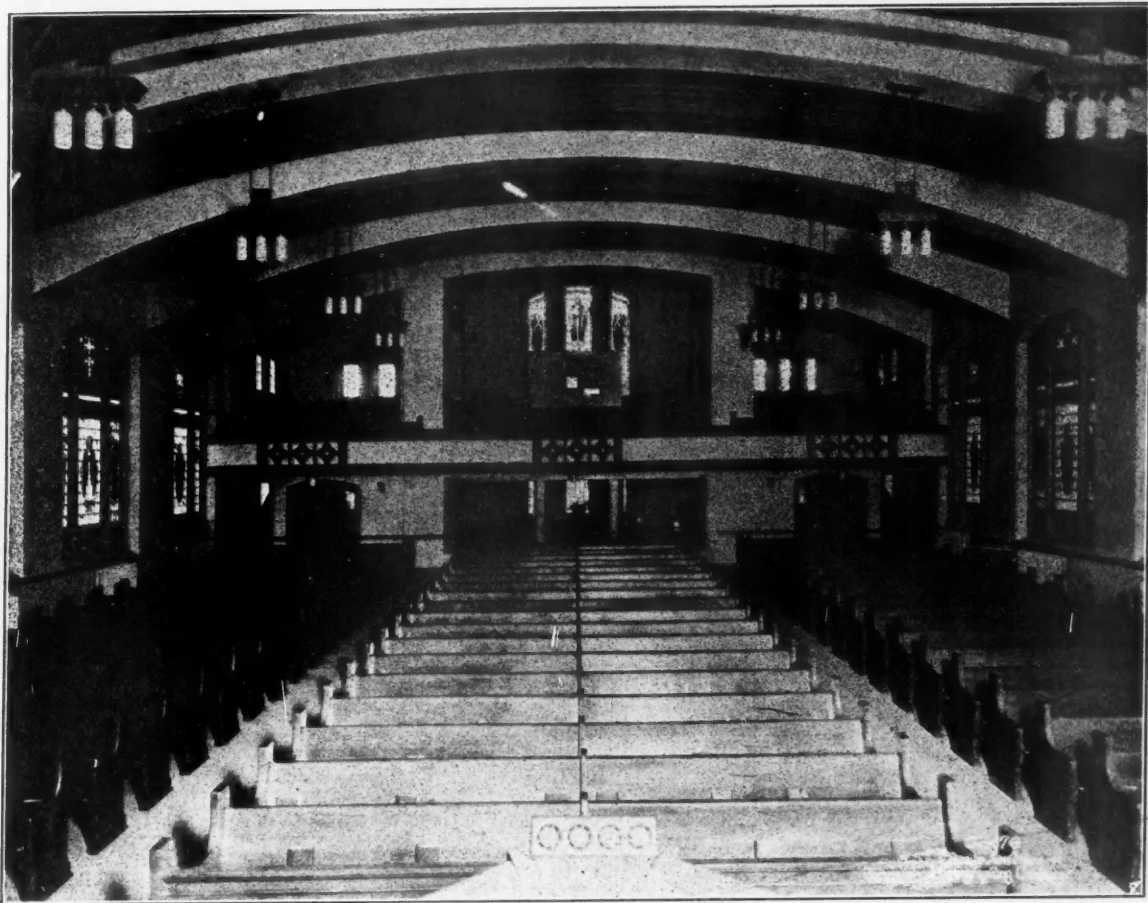
fourfold physical, social, intellectual and spiritual man." This he maintains is the primary work of the church and nation.

The building is constructed of brick with an attractive stone trim. The church proper occupies the front of the site while the community or social building is housed in the rear section or wing. The facade is special-faced brick made doubly attractive by artistic bond panels and courses. The foundation is monolithic concrete. Another feature which has been added in the exterior design is the section of tile used in the wall above the upper windows in the main church. The roof is ornate green clay tile.

Particularly attractive and unique in arrangement is the large auditorium with its comfortable pews seating 1,200 without any crowding. In the rear of the church is a large spacious balcony with a perfect moving picture projection room (thoroly fire-proof and designed to furnish some of the high class entertainment and educational work outlined by the pastor. The motion picture wall screen is immediately behind the choir loft. Except when in use it is hidden from view by a rich dossal velour draping. These



New Methodist Episcopal Peace Temple Recently Completed at Benton Harbor, Mich., at Cost of \$225,000. It Embodies Several New Ideas in Church Construction Including in Its Plans a Very Modern Community House. Tallmadge & Watson, Chicago, Were the Architects.



AUDITORIUM - - - METHODIST PEACE TEMPLE
BENTON HARBOR, MICHIGAN. TALLMADGE & WATSON, ARCHITECTS.

The ARCHITECT, CONTRACTOR, BUILDING COMMITTEE AND PASTOR, decided that nothing but the best should enter into the erection of this beautiful edifice.

In choosing the church seating, infinite varieties of wood, workmanship and design were carefully investigated. We were awarded the contract.

We invite you to write us and will gladly figure with you on any church work wherever located.

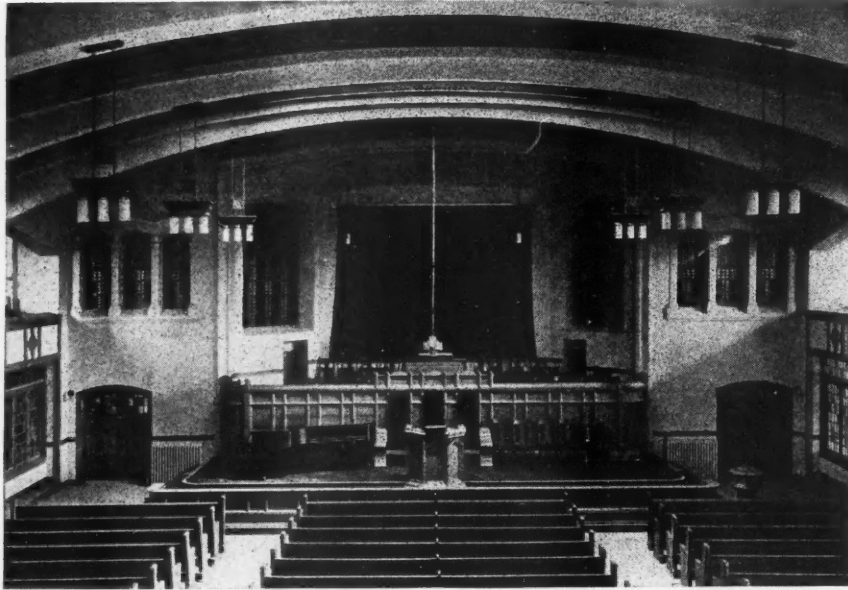
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CHURCH PEWS, ALTARS, PULPITS AND SPECIAL ECCLESIASTICAL FURNITURE



Interior of Main Auditorium Looking Toward Pulpit. On Either Side of This Room Are Supplemental Lecture Rooms with Balconies Above. The Large Velour Curtain in Back of the Pulpit Covers a Moving Picture Screen.

drapings are a very unusual church furnishing and add tremendously to the beauty and warmth of the building.

On either side of the choir loft are the organ chambers which contain the mechanism of the massive three manualed organ which has been installed at a cost of \$15,000. The echo and chimes are situated in the tower.

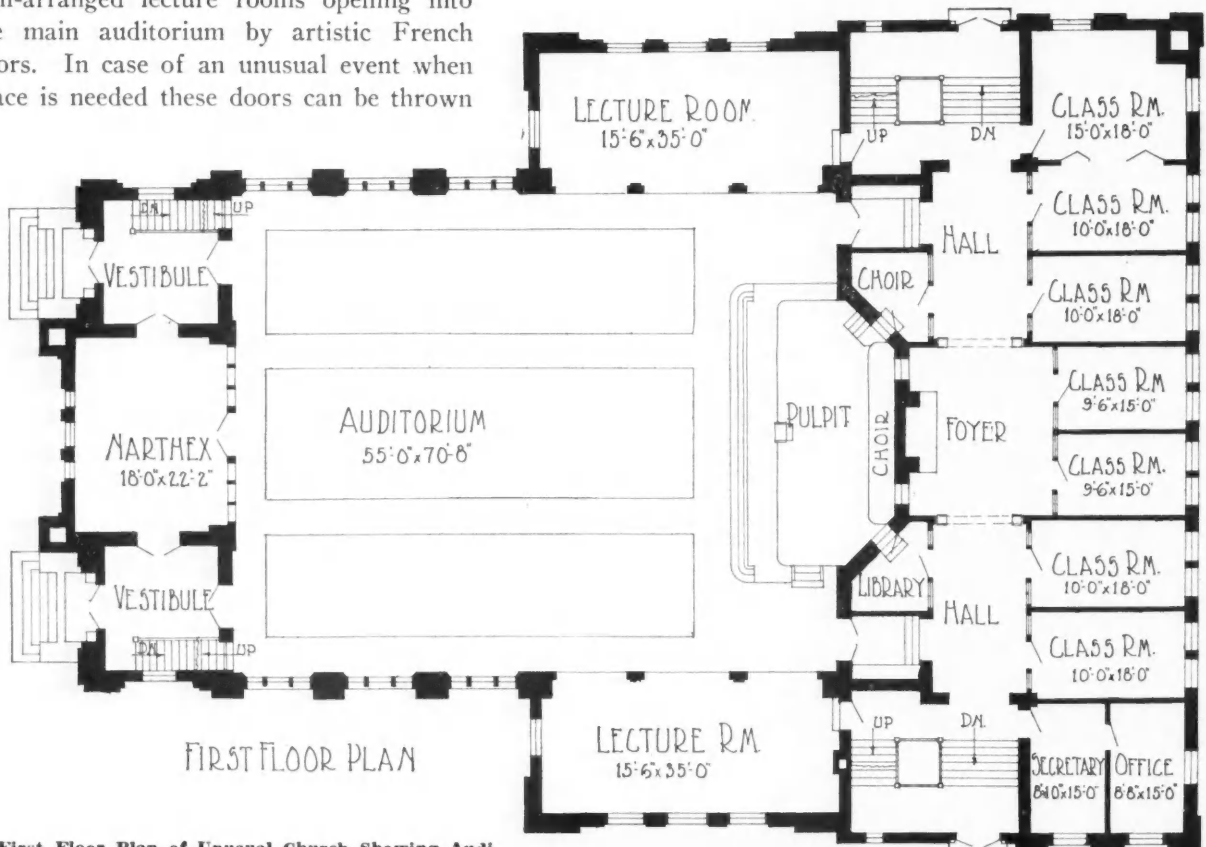
On either side of the auditorium are two well-arranged lecture rooms opening into the main auditorium by artistic French doors. In case of an unusual event when space is needed these doors can be thrown

open and the lecture rooms called into service. People sitting in them will be able to see what is going on in the vicinity of the pulpit. On either side of the entrance to these supplemental rooms are leaded windows. Just above are balconies with a very artistic but simple balcony rail.

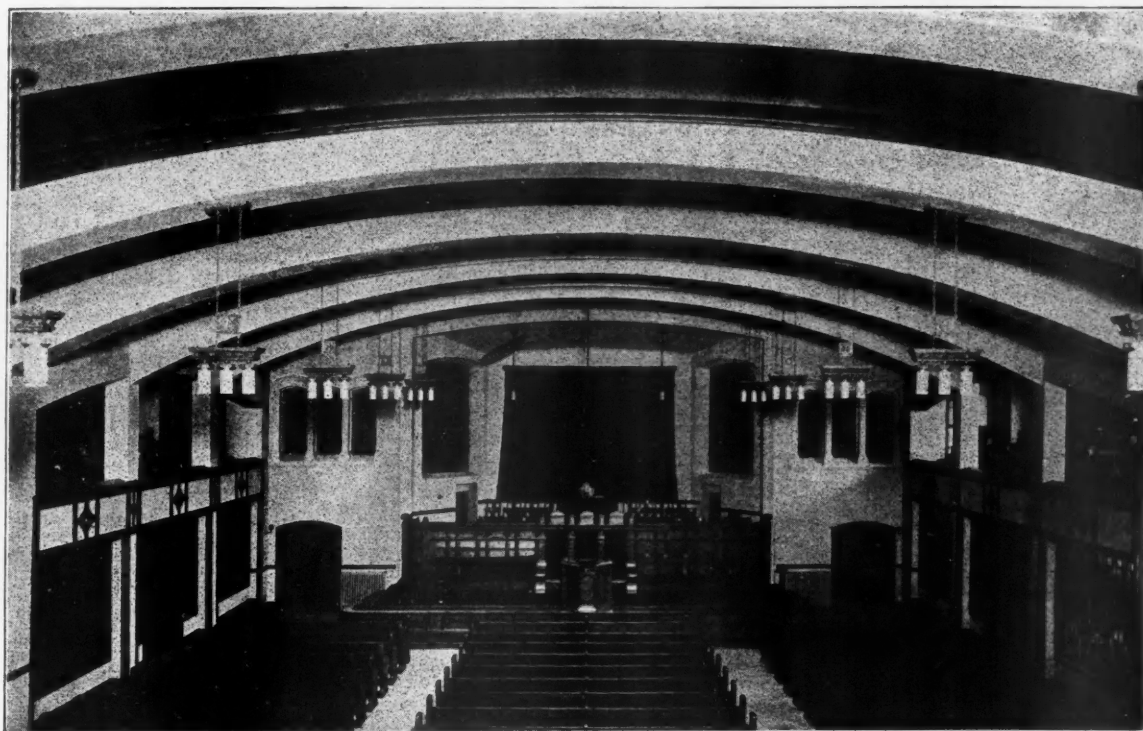
But the pride of the pastor and the congregation are the three large windows on each side of the church, six in all, made of art glass and depicting the apostles in their great work. These windows are very tall and wide and shed their luster over the entire interior of the auditorium. The major window occupies the commanding position in the front of the building. It is a magnificent representation of the

“Prince of Peace.” This window is automatically illuminated every evening so that weary pedestrians may receive its message.

Leaving the church we come to the unique features of this Peace Temple, the community building or Temple Court as it is called. Here are centered the social, intellectual, and physical activities of the plant. The reception hall which runs the full breadth of the



First Floor Plan of Unusual Church Showing Auditorium and Class Rooms in Temple Court.



PEACE TEMPLE, BENTON HARBOR, MICH.

E-COD FABRIC was specified and used exclusively as the plastering base throughout this entire Temple and, also, as the base for the exterior stucco on the Parsonage.

E-COD FABRIC was selected because of its economy—affording a saving in every operation; because of the quality of the work assured—its permanency—its freedom from cracking and discoloration. The fire-resistive quality of E-COD FABRIC was also a deciding factor.

The plastering of the Peace Temple was particularly difficult owing to the length of span of the plaster arch beams. E-COD FABRIC, thoroughly reinforced as it is by heavy galvanized wire, solved all difficulties.

The felt backing of E-COD FABRIC rendered another service, i. e., it helped to produce the wonderful acoustic condition of this remarkable temple, making the voice audible in every corner of the large auditorium.

For real economy in building, specify and use E-COD FABRIC.

WRITE US FOR FURTHER PARTICULARS

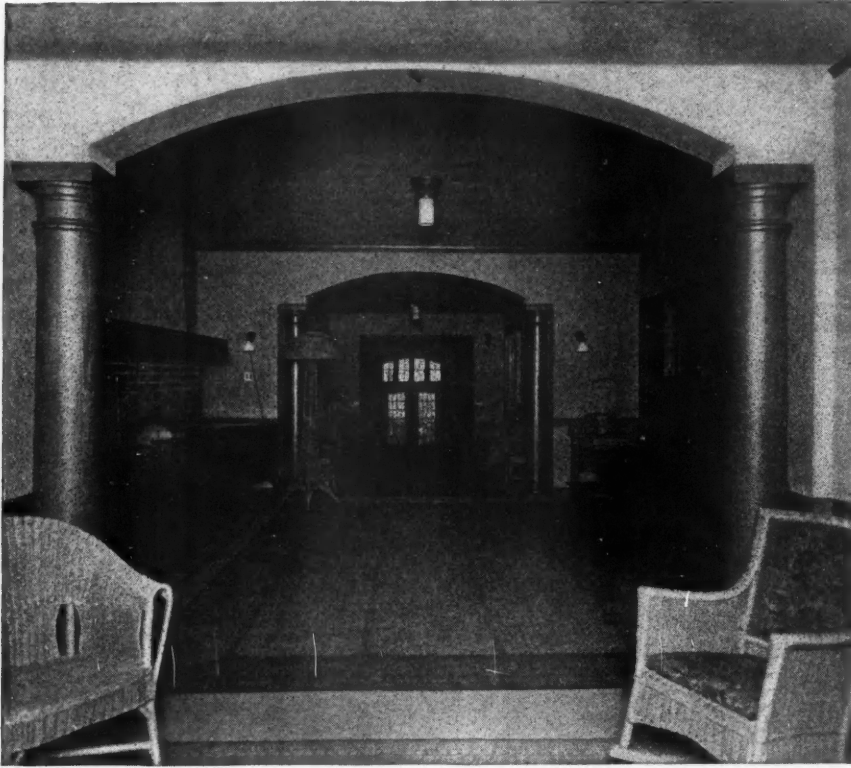


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View of Lobby in Temple Court, the Community Section in the Rear of the New Building. In This Section Are Lounging and Class Rooms, Recreation Parlors and Gymnasium.

building separating and yet uniting the main auditorium and the various classrooms is a distinctly new feature. Over the cork carpet are massive handsome

modern restaurant. Two double service doors make simple the work of those who wait upon a large audience.

rugs. Furnished with fiber furniture writing desk, magazine stands, floor lamps, piano, phonograph and other things to create the home-like atmosphere. In the center of the hall is a large foyer surrounding a massive fireplace completely equipped with fire irons.

The pastor's study and office is at the main entrance to the Temple Court. Alongside it and above it are the individual class rooms.

In the basement there are several rooms devoted to entertainment and recreation. There is a large social room, known as Temple Hall, with a seating capacity of 600. Here the community will enjoy pageants presented on its stage. On either side of which there are dressing rooms. At the rear of the hall is to be found a motion picture machine and booth. Five hundred can be accommodated at the banquet tables. The kitchen equipment is as complete as that of any



Two of the Beautiful Windows Installed in the Church. There Are Six in All of Art Glass, Three on Each Side. In Front of the Building Is a Large Art Glass Window Which Is Automatically Illuminated Each Evening.

Stained Glass Windows—Lighting Fixtures—Draperies

WE WERE commissioned to provide all of the Memorial Windows, Lighting Fixtures and Draperies for the Methodist Peace Temple at Benton Harbor, Mich.

We are pleased to announce we have done so to the entire satisfaction of the architect, the building committee and the congregation. See editorial pages for photographs.

Permit us to demonstrate how we can serve you.

THE LINDEN COMPANY

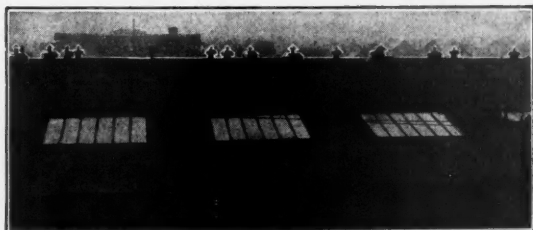


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Two Acres of Ventilation



TWENTY-FOUR of these 36-inch "Konical" Ventilators furnish proper ventilation for Two Acres of floor space. The work in this building is accompanied by smoke and fumes, but in spite of this, a good constant supply of fresh air is assured by this battery of Ventilators.

"Konical" Ventilators are simple in construction and require no attention whatever. There are no mechanical devices to catch or get out of order.

Equip your buildings with Eller's "Konical" Ventilators and your troubles of ventilation will be forgotten. Made in any desired size.

Write for particulars and prices

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1500 12th St., S. W., Canton, Ohio

"Quick Shippers. Anything in Sheet Metal"

NORTON Door Closer

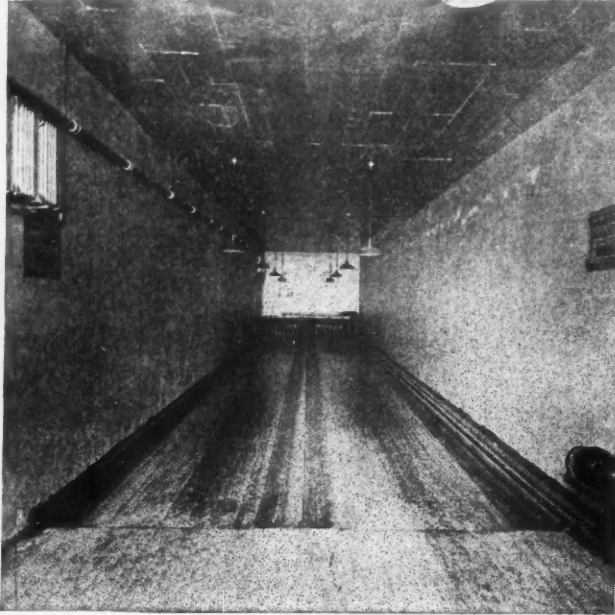
Dr. McCombe, minister of the Methodist Peace Temple at Benton Harbor, Mich., said nothing but the best should go into their new church. So when it came to the Door Closer the Norton Door Closer with Hold Open Arm was installed throughout the building.

Norton Door Closer Co.
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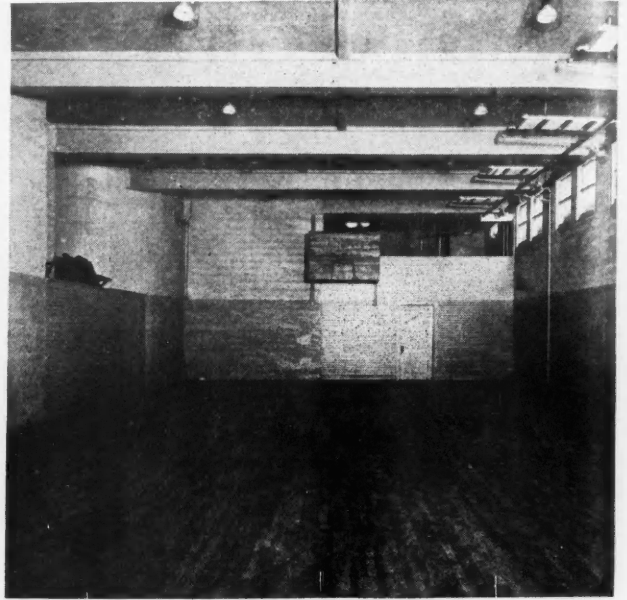


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Bowling Alleys Are Built Out Under the Side Driveway to Prevent the Noise from Disturbing Other Parts of Temple Court.



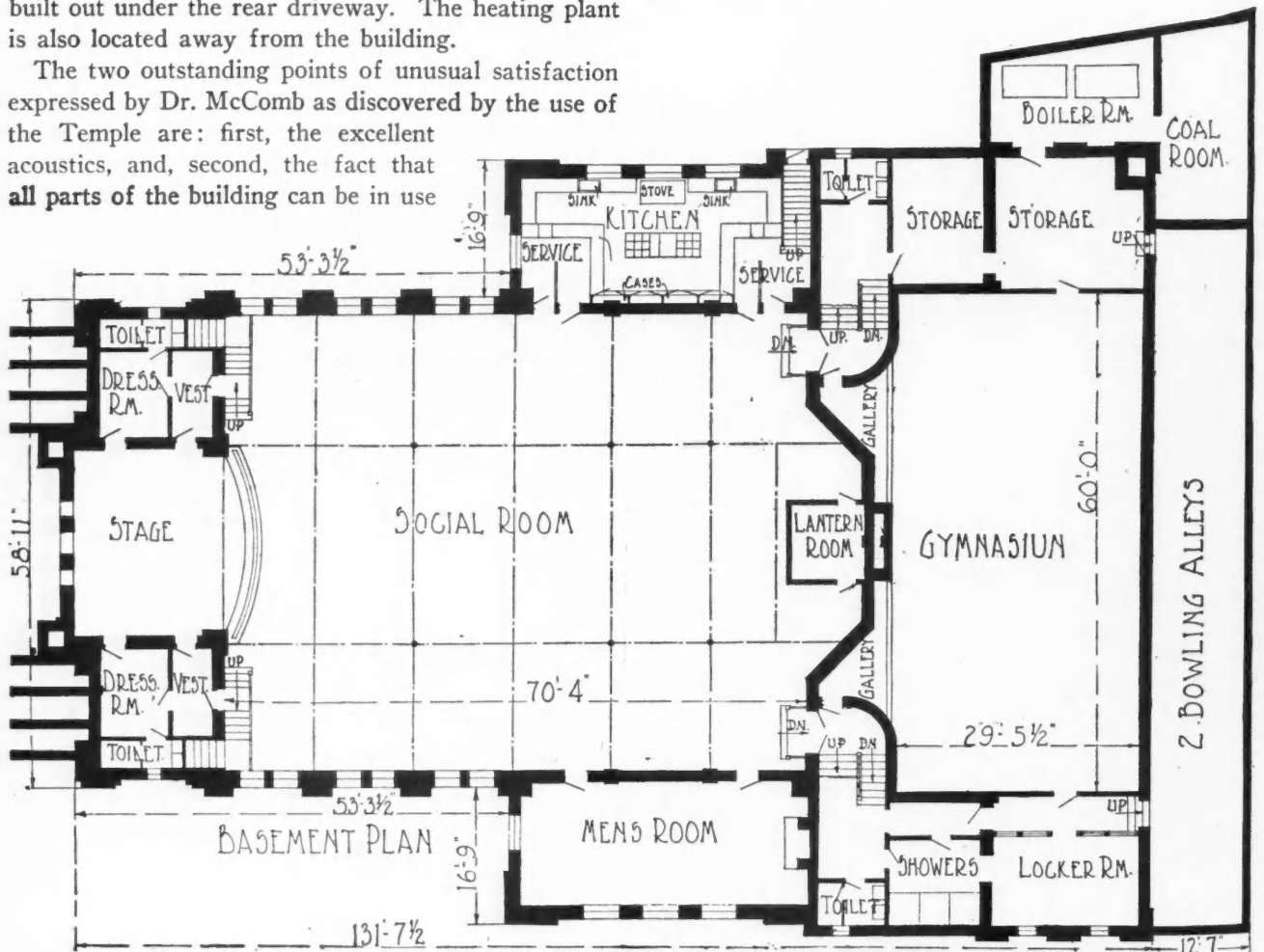
Gymnasium with Modern Equipment and Side Gallery for Spectators. Showers Have Also Been Provided.

To the right of this social room is a large gymnasium thoroly equipped with showers, lockers and dressing rooms. Another distinctive feature in this section of this unusual building is the bowling alley, a part of the building yet not of it for this section is built out under the rear driveway. The heating plant is also located away from the building.

The two outstanding points of unusual satisfaction expressed by Dr. McComb as discovered by the use of the Temple are: first, the excellent acoustics, and, second, the fact that all parts of the building can be in use

at the same time without disturbing each other.

This unique \$225,000 structure was designed by Tallmadge and Watson, architects, Chicago, and built by Geo. W. Edgcombe Co., contractors, Benton Harbor, Mich.



Basement Floor Plan Showing Social Rooms, Gymnasium and Bowling Alleys.

There is More Profit in Sheetrock on New Construction

Hundreds of carpenter contractors have proved that Sheetrock, the fireproof wallboard, brings them more profit on new construction as well as on all remodeling and repair work. For the amount of profit on a job is governed by the amount of work that can be carried continuously by one class of labor—Sheetrock is entirely a carpentering job.

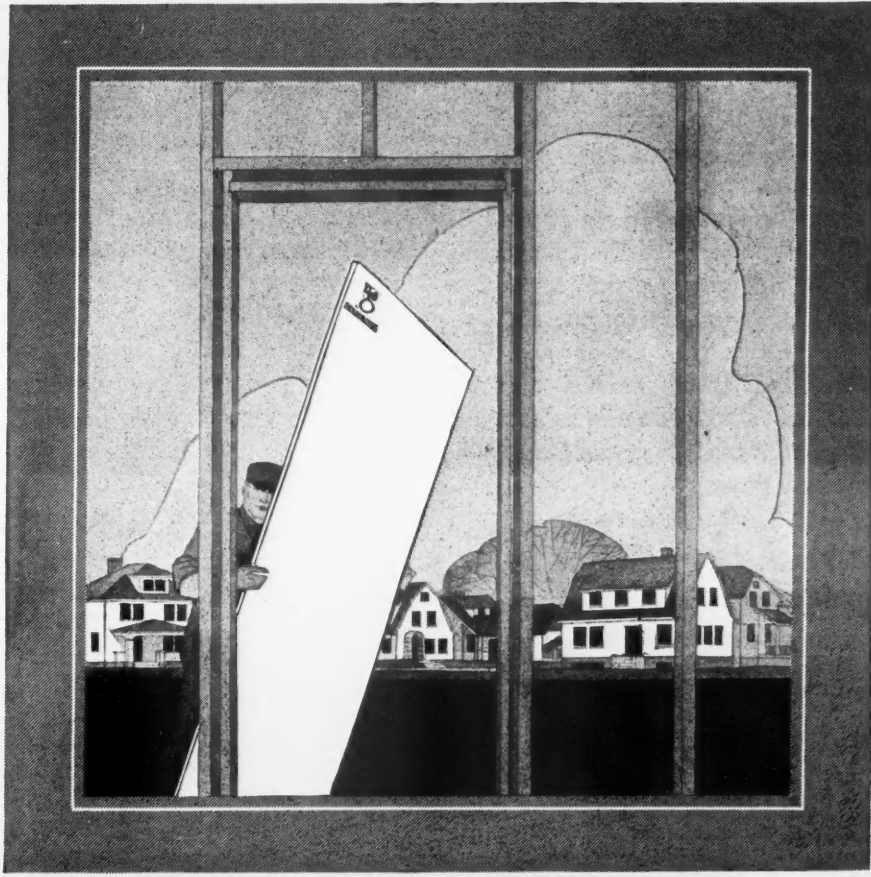
Sheetrock comes all ready for use, in broad, ceiling-high sections that can be sawed and fitted to form, and nailed

directly to the joists or studding. Its square, true edge makes smooth, tight joints. It takes perfectly any decoration, paper, paint or panels, as soon as it is up.

Made from rock, Sheetrock cannot warp, shrink or buckle. It is rigid, permanent, fireproof. As soon as the Sheetrock is in, the building is ready for occupancy.

Let us send you a sample and full information about how to get more Sheetrock jobs in your town.

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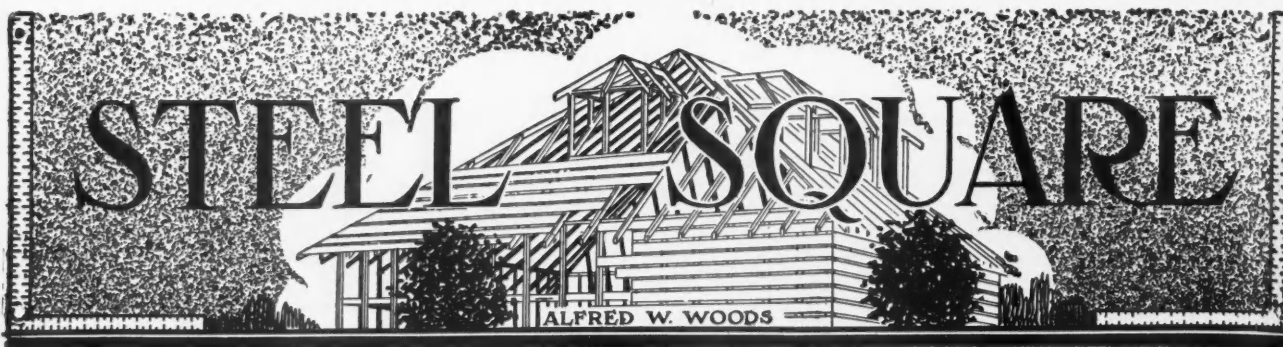
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How to Use the Steel Square

DETERMINING LENGTH OF COMMON RAFTERS, ALSO CUTS AND BEVELS

TAKING up the subject where we left off in the last number, we will refer to the table in our last illustration for finding the lengths of rafters for odd runs, such as feet, inches and fractions of an inch in the run, as the figures stand for either feet, inches or fractions of an inch. The fractions being expressed in the same denominations (twelfths) permits of a sliding scale as follows: for an example, suppose the run is six feet and one-half inches with a one-third pitch. In the intersecting square opposite the rise and run, we find seven feet two and six-twelfths which answers for the six feet. For the six inches in the run, read the above figures as so many inches and twelfths of an inch, and for the half inch read the above figures again as so many twelfths and fractions of a twelfth of an inch. The whole may be expressed thus:

For the six feet7 feet 2 and 6-12 inches
 For the six inches7 and 2-12 inches
 For the six-twelfths7-12 inch 2 6

Answer7 feet 10 and 3-12 inches 8 6

Then 7 feet 10 3/12 inches is the correct length. The last two figures (8 and 6) are dropped because they represent too small a denomination to be retained. Remember these figures represent twelfths (not tenths) and we only carry to the next column when the sum exceeds twelve, otherwise the operation is just the same as in simple addition. If the run was, say 5 feet 7 and 9/12 of an inch, the figures would be expressed thus:

For the 5 feet6 feet and 1-12 inches
 For the 7 inches8 and 4-12 inches 11
 For the 9-12 inch10-12 inch 9 10

Answer6 feet 9 and 4-12 inches 8 10

Then 6 feet 9 and 4/12 inches would be the correct length of the common rafter. This may seem like getting the lengths and cuts down to a small point. So it is. To many it may seem useless. In this, we have been accused of splitting hairs but we would rather see split hairs than to see rafters wedged up with a "dutchman" and with gaping joints at the bearings, for what is the use of using good material and leave yawning joints with the bearings oftentimes

at the tip ends of the rafters where the wood is thin and this cut to pieces with nails in vain effort to make it "good enough?" If we make poor joints why not use poor lumber? Sorry to say we are forced sometimes to use poor lumber, but there is no occasion for poor joints. Make the cuts to get the full bearings and thus save all the strength there is in the material in bracing power. This table refers only to the rise and length of the common rafter. It could be so enlarged as to include the corresponding octagon hip and common hip or valley, thus making a very handy table for ready reckoning purposes. We have the data now ready and the preparation of such a chart under way, but we must pass on. In Fig. 1 we show how all of the lengths, cut and bevels may be obtained from the triangle, bounded by A-B-C, formed by the runs of the common and hip rafters and tangent, as shown at No. 1, as follows: From the run of the common rafter, erect the desired rise

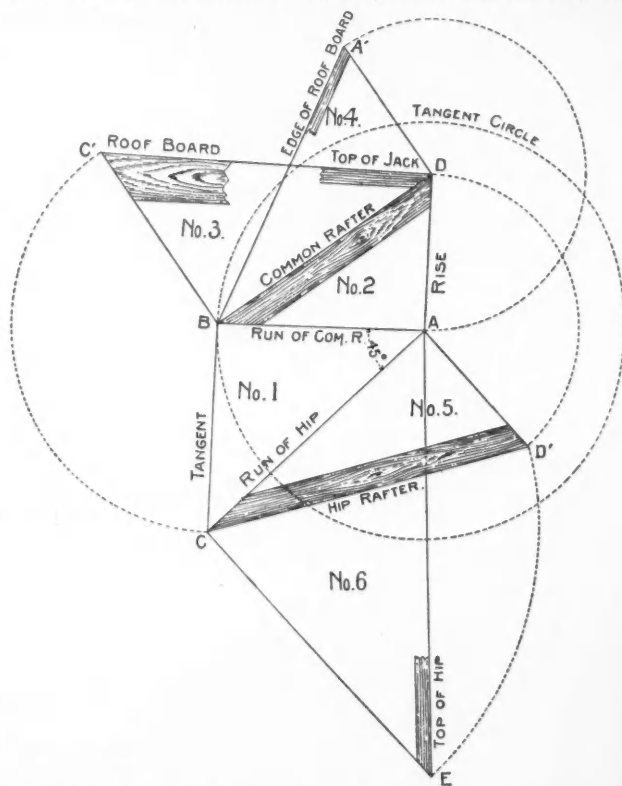
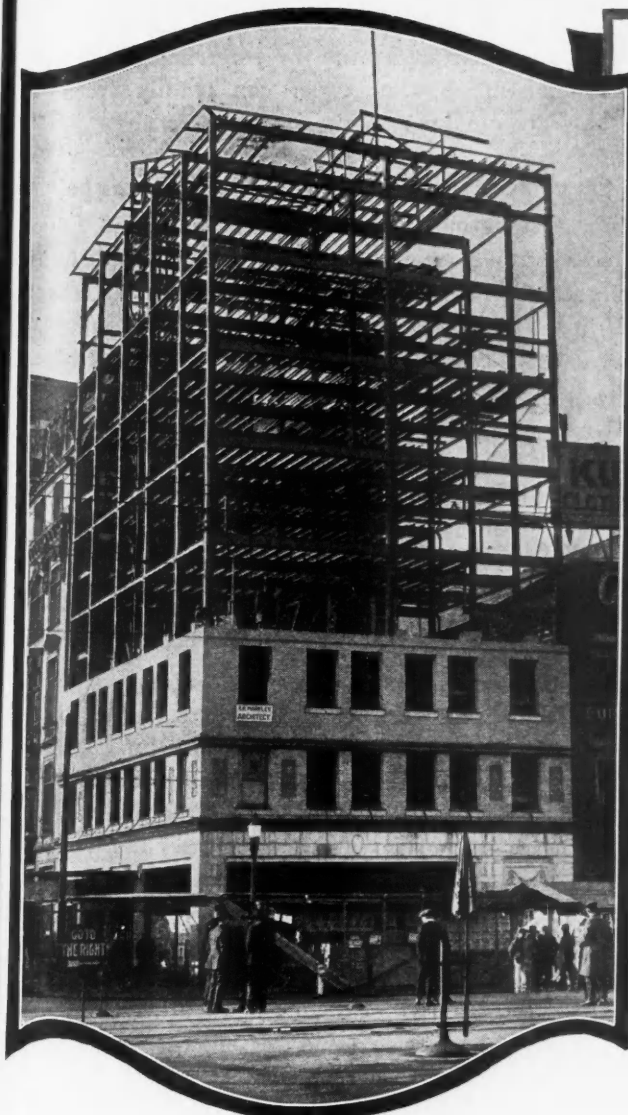
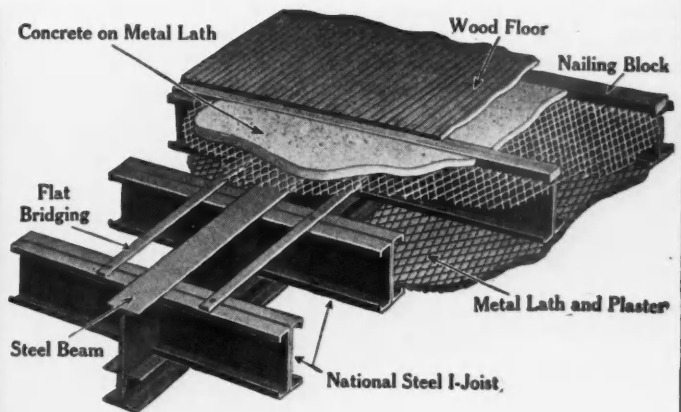


Fig. 1. Diagram Showing How All Lengths, Cuts and Bevels May Be Obtained From Triangle Formed by Runs of Common and Hip Rafters and Tangent.



Yoffe Building, Harrisburg, Penn.
R. R. Markley, Architect
 Built with Structural Steel and National Steel Lumber. Furnished and Erected by The Bethlehem Construction Company, Bethlehem, Pennsylvania



Cut Building Costs With Steel Lumber Floors

THE revival of building activity is dependent on lower costs. You help that revival to a far greater extent than you may imagine when you embody Steel Lumber floors in your plans.

For such floors have a dead weight of about half that of any other type of recognized fire-proof floor construction. The result is half the weight in floor materials to buy, handle, erect and on which freight must be paid. Of equal importance is the reduced cost of footings, columns and supporting members.

Send for a copy of our cloth-bound handbook giving many tables and valuable engineering data. Contains many detail drawings. Address nearest office.

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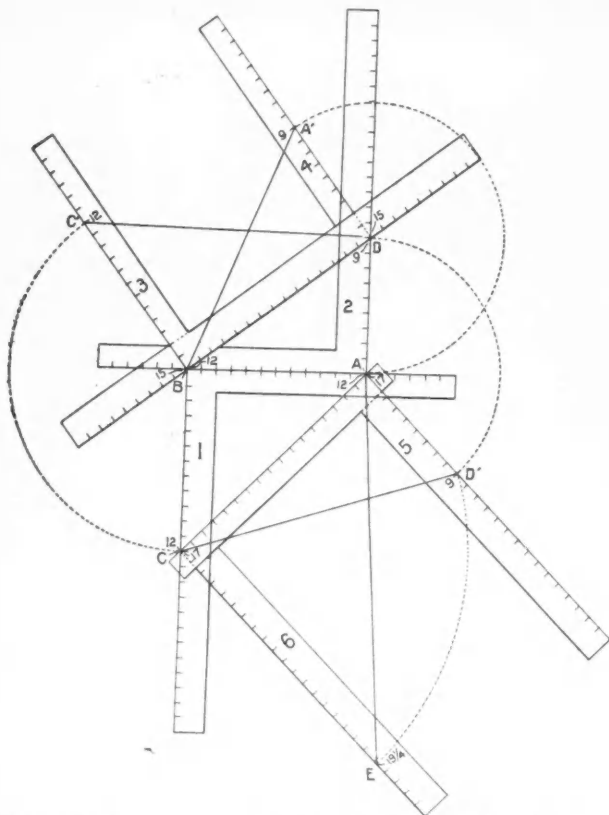


Fig. 2. Diagram Showing Angles Formed by Steel Squares.

as at A-D and connect D-B. This forms the second triangle and contains the length, seat and plumb cuts of the common rafter, as shown in No. 2. At right angles from the common rafter draw a line equal to the tangent at B-C' and connect D-C'. This forms the third triangle, as shown in No. 3. In this are shown the face cut of the roof boards to fit in the valley or over the hip. This angle also gives the cut across the back of the jack to fit against the hip or valley, commonly called side cut of the jack. At right angles from the common rafter draw a line equal to the rise as D-A' and connect B-A'. This forms the fourth triangle, as shown in No. 4. In this is shown the edge or miter cut of the roof boards to fit in the valley or over the hip. In other words, this is the same as the miter for a hopper. Now then, we will work from the other side of triangle No. 1. From the run of the hip draw a line at right angles from A-C equal to the rise, as at A-D' and connect C-D'. This forms triangle No. 5 and contains the length, seat and plumb cuts of the hip. From hip rafter and at right angles to A-C draw a line equal to C-D' as C-E and connect A-E. This forms triangle No. 6 and in it is contained the top or, commonly called, the side cut of the hip. This illustration is for the $\frac{3}{8}$ pitch or 9 inches rise to one foot run of the common rafter. For an octagon roof the angle at No. 1 would be $22\frac{1}{2}$ degrees. For a hexagon roof it would be at 30 degrees, and otherwise proceed as in the above.

In Fig. 2 are shown all of the above angles formed by as many steel squares, with the corresponding

numbers placed on same that help to form two of the sides of each angle, and, by referring to the preceding illustration, the reader can readily see how the cuts are obtained on the steel square.



Oxy-Acetylene Breaks Up Concrete

IN a building under construction in Cleveland, Ohio, considerable concrete work was put in thru an architect's error. It was found necessary to remove the misplaced structure, and a crew of laborers assigned to the task attacked the concrete with sledges and drills. At the end of three days the progress made was so small that other and more rapid means of removal became imperative.

In the emergency a practical gas welder was called in to determine what could be done with the oxy-acetylene torch. A demonstration proved the feasibility of speeding up the work with the torch and the job was thereafter turned over to a local welding firm.

The method employed consisted of heating along the line of the desired fracture with an ordinary welding torch, using a long bushy flame. The concrete was not raised to a great heat, as measured in terms of oxy-acetylene, but the heat was confined as much as possible along the proposed line of fracture. When so heated the concrete yielded to a heavy blow of the sledge, breaking off in the predetermined form and bulk.

This is not a new application of the oxy-acetylene torch, but, as it is a bit outside of its ordinary field, which is essentially the welding and cutting of metals, it is well to keep it in mind for emergency cases of the type noted.



Too Much Advertising

"I see Old Foggy has failed in business," remarked the Grouch. "How did it happen?"

"Too much advertising," replied the Wise Guy.

"But he never advertised," protested the Grouch.

"No, but his competitors did," replied the Wise Guy. —Novo Power.



PARTLY completed tile walls should be covered at night particularly during bad weather to protect the newly completed work against damage from rain, frost, etc.



Kellastone to Establish Western Plant

PLANS are being made by the National Kellastone Co., Chicago, to build a branch manufacturing plant at Los Angeles, Cal., to take care of its newly acquired interests in that region. Recently Mr. Stanley Barrows, president, acquired the mines and property of the Porterville Magnesite Co., Cal., and the calcining and crushing plant of the American Magnesite Co., Los Angeles. In December, 1920, Mr. Barrows incorporated the Sierra Magnesite Co. of Wilmington, Del., to take over his extensive holdings. This company has since acquired the Tulare Mining Co., Tulare, Cal., and several other properties in that vicinity, and will produce plastic magnesite on a greatly enlarged scale.

Put the Strength of Ancient Masonry Into Your Work

Put time-defying strength and endurance into the buildings you construct—build into them the secret durability of ancient masonry which Science has revealed with the discovery of today's invincible building material—

KELLASTONE IMPERISHABLE STUCCO

KELLASTONE sets up with the strength of granite and the beauty of marble. Provides exterior walls of modern stone as lasting as the pyramids and impervious to the ravages of heat, cold, fire and weather.

There is no lime, gypsum, portland cement or similar ingredients in KELLASTONE. It is the original all mineral magnesite stucco, scientifically balanced, and bonds with a lasting grip to any building surface. Applied in summer or freezing weather, will not crack under ordinary settling strains. Used as an overcoating, it adds years to the life of old, time-worn buildings. Ask for our book—

"The Story of Kellastone"

National Kellastone Company

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155 E. Superior Street Chicago, Illinois

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GENUINE
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LOOK FOR THE
NAME ON
EVERY SACK



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At home—in your spare time—you can get instruction by mail from the experts of Chicago Technical College. You can learn all the higher branches of your trade and soon know as much or even a good deal more than the man who is bossing you now. If you are a workman, you can train for a foreman's or superintendent's job or you can look ahead to being a contractor in business for yourself. This training doesn't cost much and you can pay on easy terms. Look into this now. Just send the coupon below and get catalogs and full information.

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Plan Reading. How to read a building plan. Use and meaning of different lines. How to read dimensions. Detail drawings. How to lay out work from plans. Tracings and blue prints—how they are made. Practice in reading complete plans from basement to roof, etc., etc., etc.

Construction Brickwork. Footings and foundation walls of brick concrete and stone. Brick laying complete. Brick and stone arches. Use of different kinds of stone. Carpentry. Kinds and uses of woods, corners, interior details, framing, roof construction, bridging, miter joints, butt joints, etc. Plans and specifications for all kinds of buildings.

Estimating. Practical rules. Problems worked out from the plans. Brickwork and carpentry. Re-inforced concrete. Estimates of labor and material for all classes of construction. Fire proofing, tile flooring, arches, partitions, furring, terra cotta, etc. Lumber and timber; figuring board feet. Estimating posts, girders, sills, joints, studs, bridging, rafters, roofs, floors, siding, cornices, etc. Estimating mill work. Lathing and plastering, sheet metal work, marble jointing and decorating, glazing, plumbing, heating, wiring, etc.

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New Asphalt Shingle Locks

(Continued from page 140)

ing and warping impossible and holds the roof intact despite the most severe wind and rain storms.

Another feature of the doubled butt is that it gives added texture to the roof as a whole and gives to it the much sought after "shadow line," which, in turn, lends real architectural beauty to the roof, eliminating the more or less flat appearance of the average asphalt shingle roof.

Viewed from the standpoint of economy and ease of application, this new asphalt shingle can be applied with fewer nails than any other type of asphalt shingle, either strip (four in one) or individual.

The ordinary strip or combination shingle requires 560 nails to lay one square. The new shingles require only 160 nails to cover the same area. This represents a saving of 400 nails for every 100 square feet of roof.

The ordinary individual asphalt shingles requires 848 nails to lay one square, or 688 more nails than the new shingle.

Added to these advantages the new asphalt shingles can be laid more quickly and with fewer men than the ordinary asphalt shingles due to the automatic spacing of the shingles and the interlocking device.

Before being widely distributed the new type asphalt shingles were thoroly tried out and they are now giving satisfactory service on hundreds of houses and garages and have been, in some cases, for ten years.

IN laying up vertical cell tile the masons or bricklayers should be instructed to butter the vertical joint surfaces of tile about 2½ to 3 inches in from the inner and outer faces leaving the center free of mortar, so that when laid in the wall thru vertical mortar joints will be avoided as far as possible.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of American Builder, published monthly at Chicago, Ill., for April 1, 1921; State of Illinois, County of Cook, ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared E. L. Hatfield, who, having been duly sworn according to law, deposes and says that he is the business manager of the American Builder and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers are: Publisher, American Carpenter and Builder Co., Chicago, Ill.; editor, Wm. A. Radford, Chicago, Ill.; managing editor, Bernard L. Johnson, Chicago, Ill.; business manager E. L. Hatfield, Chicago, Ill.

2. That the owners are (give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock): Wm. A. Radford, Chicago, Ill.; H. M. Radford, Chicago, Ill.; Roland D. Radford, Chicago, Ill.; Wm. A. Radford, Jr., Chicago, Ill.; G. W. Ashby, Berwyn, Ill.; E. L. Hatfield, Chicago, Ill.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are (if there are none, so state): None.

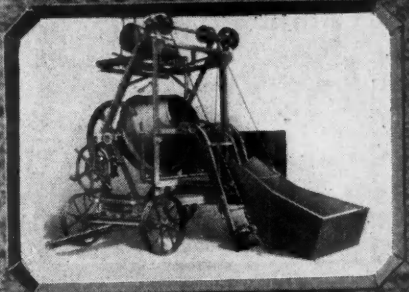
4. That the two paragraphs next above, giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (this information is required from daily publications only).

E. L. HATFIELD,
(Signature of business manager.)

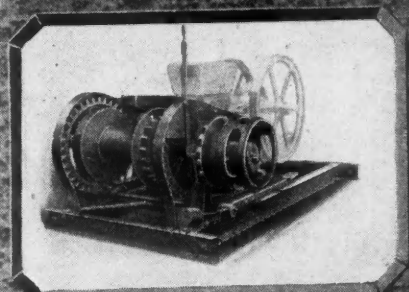
Sworn to and subscribed before me this 1st day of April, 1921.
(SEAL) ANDREW JOHN NAUMANN.
(My commission expires June 23, 1921.)

The WONDER LINE



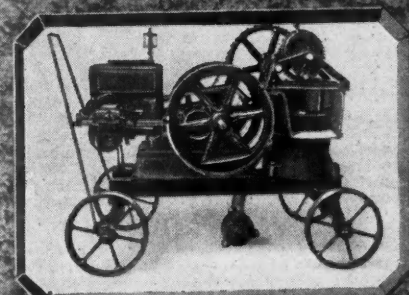
WONDER MIXERS

Here are mixers especially favored by experienced men who demand the utmost in reliability, speed, all around efficiency and economy. Four sizes—WONDERS 3, 4, 5 and 7 (their numbers indicate their batch capacities of mixed concrete). WONDERS 4, 5 and 7 are furnished with or without side loader, water measuring tank, rotary pump, auxiliary hoist and with gasoline or electric power. Note, too, that the prices on all WONDER MIXERS have been radically reduced.



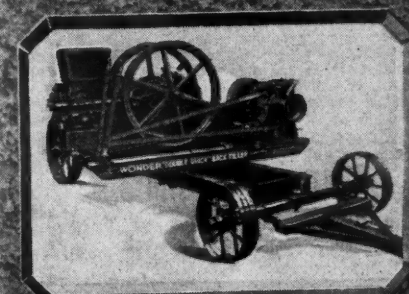
WONDER HOISTS

These hoists are furnished in varying capacities and in single drum reversible and non-reversible and double drum non-reversible models. They are especially adapted for the economical handling of a wide range of hoisting operations.



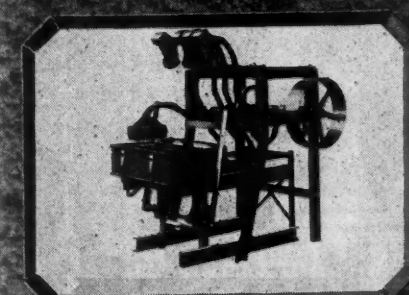
WONDER BACKFILLERS

Are general utility units and are adaptable to many uses in addition to their special functions as backfillers. They are furnished in either traction or non-traction models and take the place of slow-moving animal power where contractors need a handy, easily-operated, speedy and economical power unit.



WONDER POWER TAMPERS AND BLOCK AND BRICK MACHINES

These are the most rapid, most easily operated and most economical concrete block and brick outfits on the market. Very moderately priced.



WONDER DIAPHRAGM PUMPS

Especially adapted for cellar work, footings, coffer dams and trenches. Capacities of from 3500 to 8000 gallons per hour.

WONDER SERVICE

The WONDER organization is nation-wide. We have distributors with large stocks of machines and repair parts in New York, Washington, El Paso, Kansas City, San Francisco, Boston, Winnipeg, Miami, Denver, Greensboro, Seattle, Philadelphia, New Orleans, Minneapolis, Salt Lake City, Los Angeles and eighteen other cities. You are never more than a few hours away from a complete and well kept WONDER stock and a WONDER representative who is anxious to see that you get the kind of service that keeps you thoroughly satisfied all the time.

Write for the new WONDER catalog today!

CONSTRUCTION MACHINERY COMPANY
 FORMERLY WATERLOO CEMENT MACHINERY CORPORATION
 103 VINTON ST. WATERLOO IOWA

Death of T. L. Smith

THOMAS L. SMITH, founder, director and chief stockholder of the T. L. Smith Company, died Friday, April 29, 1921, at his home in Milwaukee.

Mr. Smith brought out a number of successful inventions during his life, the best known being the line of Smith tilting mixers.

Born in England, June 6, 1855, he came to this country with his parents at the age of four, and while still a boy moved to Watertown, Wis., where his father had established

a machine shop and foundry. In his father's shop he learned the machinist trade.

In 1873 he entered Iowa State College at Ames, Iowa. Altho he had no high school education, he graduated in 1877 with the highest marks ever awarded an Ames student up to that time, including fifteen perfect grades for full terms.

After his graduation he was appointed instructor of the college in mathematics and bookkeeping. Later

he went to Boston, where he completed his engineering education in the Massachusetts Institute of Technology.

In 1920, Iowa State College conferred upon him the Honorary Degree of Doctor of Engineering.

T. L. Smith's interest in concrete mixers developed in 1898 and 1899, when he was conducting a school of engineering and mechanical drawing in Milwaukee. D. W. Cutter, a large contractor, had impressed him with the need for a successful mixer. In 1899 Mr. Smith's invention of the Smith tilting mixer took definite form and the first machine was manufactured in 1900.

That machine was the beginning of the success of Mr. T. L. Smith as a manufacturer. He took out patents and built additional machines. With assets of only \$500 in 1900, the business grew so rapidly that in 1905 Mr. Smith organized the T. L. Smith Company, which today has assets of \$1,200,000.



T. L. Smith, Well Known Inventor and Manufacturer Who Recently Died.

Bishopric Opens Eastern Office

The Bishopric Manufacturing Co., Cincinnati, Ohio, has established an office in New York City at 2848 Grand Central Terminal with A. D. Howard in charge as eastern manager. Mr. Howard formerly had his headquarters in Boston.



Nickel Company Moves

THE International Nickel Company have moved their offices to 67 Wall street, New York City.



Hero Furnace Company Opens New Plant

THE Hero Furnace Company have moved their general offices, formerly located at 57 West Lake Street, Chicago, to their new factory at Sycamore, Ill.



Stained with Cabot's Creosote Stain
C. M. Hari, Architect, Bay Shore, N. Y.

Stained Shingles

The Warmest, Most Artistic and Most Economical of all House Finishes

Wood shingles are two or three times warmer than the gummed paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft, moss-greens, bungalow-browns, tile-reds and silver-grays of

Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them with best results at least expense.

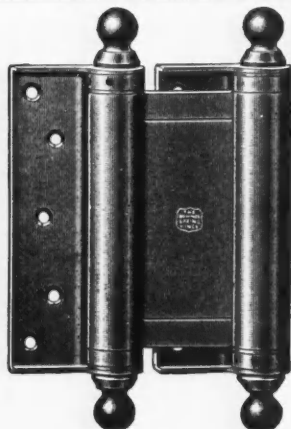
Cabot's "Quilt"

makes floors and partitions sound-proof by breaking up the sound-waves and absorbing them. It makes walls and roof cold- and heat-proof by a cushion of minute dead air spaces that prevents the conduction of heat. From 28 to 50 times as efficient as cheap building paper.

*You can get Cabot goods all over the country
Write for samples and name of nearest agent.*

SAMUEL CABOT, Inc.

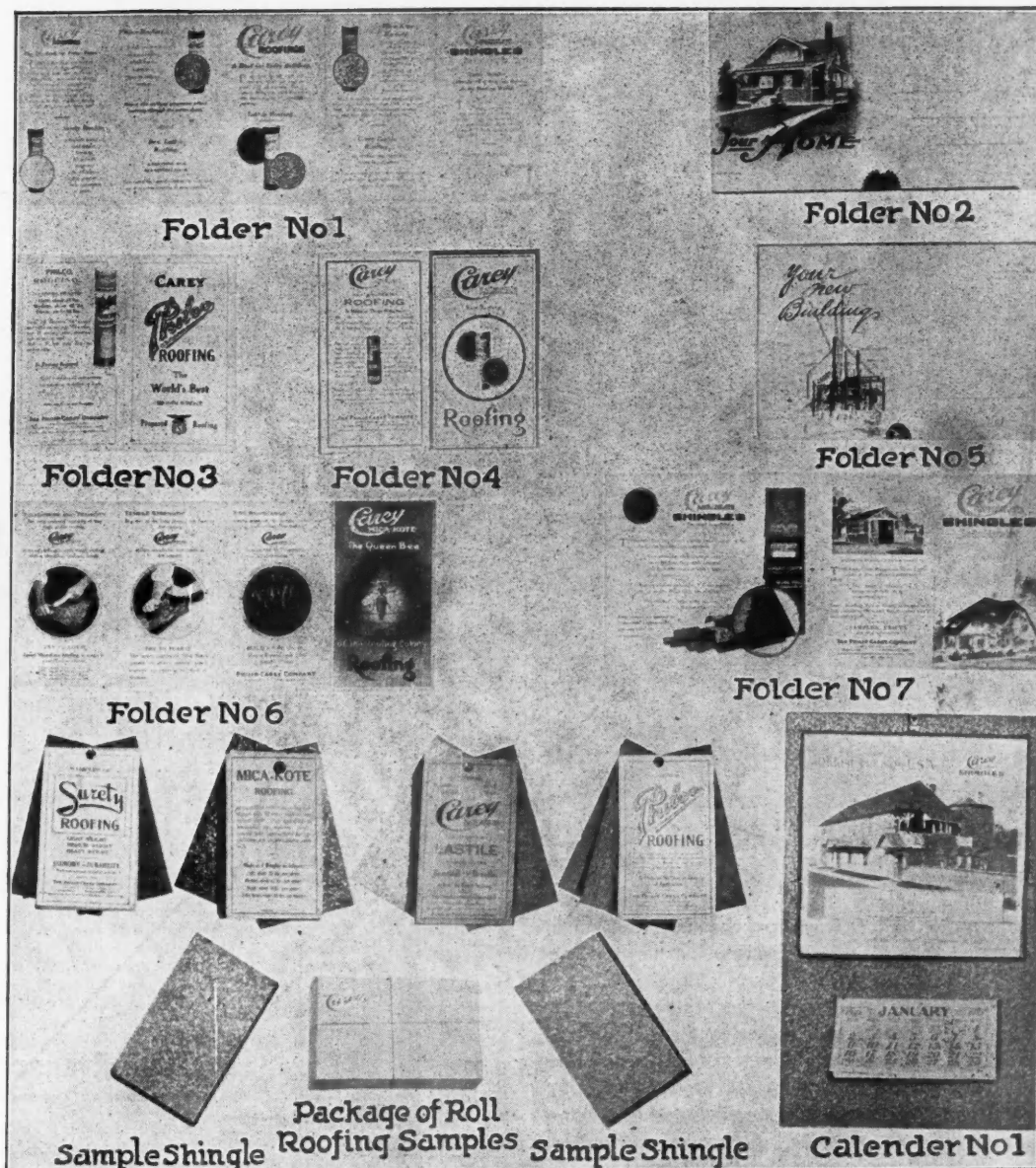
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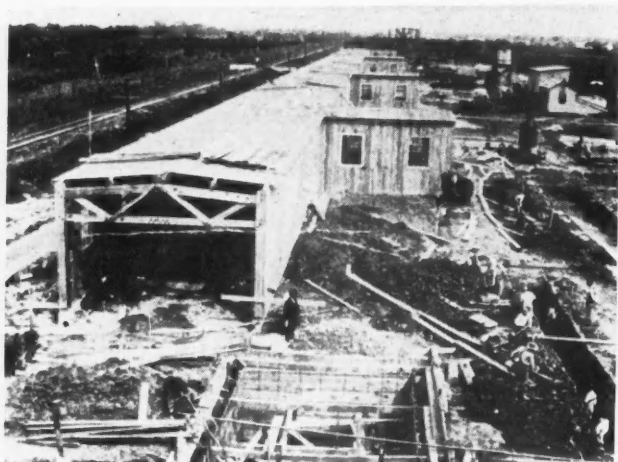
Street.....City.....

This new plant is complete in every detail, from foundry to paint shop, and all of the work now is to be under the direct supervision of the officers. The general and sales offices are to be moved to the factory.

The Hero Line comprises pipeless furnaces, pipe furnaces and the room heaters. ❖

New Celotex Plant Under Way

THE initial million dollars plant of the Celotex Products Company is located on a 44-acre tract in the industrial suburbs of New Orleans and will convert approximately 12,000



New Plant of Celotex Products Co., New Orleans, Under Construction.

tons of bagasse into 26,000,000 square feet of wallboard each year. Plans are now under way for the construction of additional plants in several of the leading cane-producing sections of the South.

The manufacture of this new building material is under the direction of a group of men of wide experience in the production of by-products. Mr. B. G. Dahlberg, a prominent figure in the pulp and paper industry, vice-president of the Minnesota and Ontario Paper Company, is president. J. K. Shaw, vice-president and director of sales, is general manager of the International Insulation Company. ❖

New Mill Doubles Cornell's Capacity

THE Cornell Wood Products Company has just completed a second mill adjoining its original plant at Cornell, Wis. This addition gives the Cornell company a capacity about 80 per cent greater than last year, when the old plant reached its peak production. Cornell is a town of about 1,500 population, located a few miles above Chippewa, Wis. The pro-

duction of Cornell Wood-Board is the principal industry. To solve the housing problem for its labor the company has erected a large number of modern dwellings on the high ground above the mill where the town is located.

The new structure is built of solid concrete. It is 703 feet in length, two stories high, and includes a new machine and beating room 319 feet by 44 feet, and a finishing and shipping unit directly in front of it which occupies 384 feet by 88 feet.

The new finishing and shipping building is of reinforced concrete and glass, 88 feet wide. It houses Cornell's new specially designed pasting machine.

The Cornell plant is operated by water power obtained by a concrete dam across the Chippewa River, 513 feet long, with twelve enormous gates and eleven water wheels. It has six miles of flowage lands, and develops 20,000 horsepower.

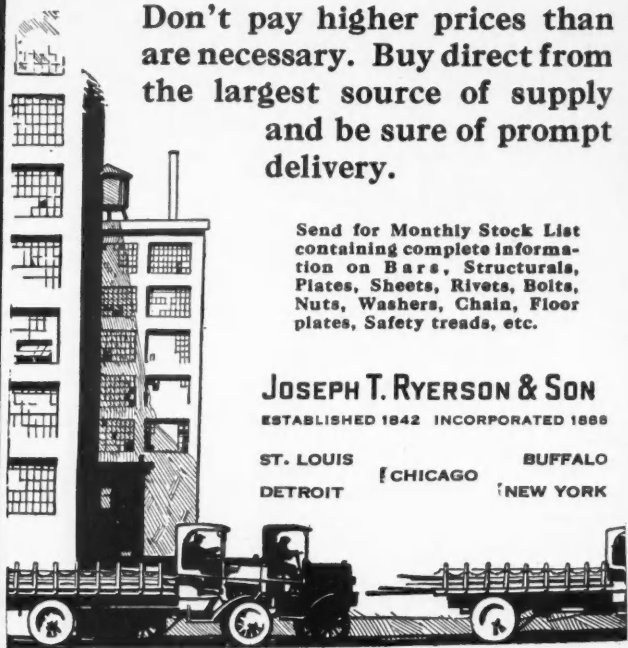
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A Bungalow That Will Make Your Reputation

A WELL BUILT, attractive house is your best means of bringing in new business. Here's a bungalow you can't go wrong on—an example of the adaptability of Red Cedar Shingles. Its moderate size and cost will appeal to the average family; the simple design and the air of hominess of its shingled walls make it decidedly attractive, and its sturdy, value giving qualities will cause favorable comment everywhere.

Red Cedar Shingles more than measure up to the important essentials for home building. Every house into which you put this wonderful roofing and siding material will be a lasting testimonial to your judgment and ability as a builder.

When buying shingles, specify "Rite-Grade inspected." All shingles so trade-marked have been association inspected—they are guaranteed to be up-to-grade as to thickness, grain, selection and covering capacity.

Shingle Branch, West Coast Lumbermen's Association, Henry Bldg., Seattle, Wash.; or, The Shingle Manufacturers Assn. of British Columbia, Metropolitan Building, Vancouver, B. C.



Books, Catalogs and Bulletins Received

"The Building Estimator's Reference Handbook for 1921," edited by Frank R. Walker, has just come from the press of Frank R. Walker Co., Chicago, Ill. This book contains over 2,100 pages of information and material on estimating, cost data and construction, and includes in its chapters such subjects as general conditions, overhead expense, excavating and back-filling, caissons, wood and concrete piles, foundations, water and damp proofing, cement construction, reinforced concrete construction, brick masonry, hollow tile, stone work, terra cotta, carpentry, wallboard construction, plastering, roofing, etc. Price, \$10.00.

"The Right Angle" is the name of a new house organ issued monthly by the General Fireproofing Co., Youngstown, O. It is designed to stimulate dealers to better efforts and give them the right slant on business dealings.

Brascolite Bulletin No. 1 of the architectural series being published by the Luminous Unit Co., Division of the St. Louis Brass Manufacturing Co., St. Louis, Mo., deals with lighting in hospitals. This bulletin contains exterior and interior views of hospital buildings that have been equipped with Brascolite fixtures.

The Univent System of Heating is explained in a booklet issued by Moline Heat, Moline, Ill. This booklet of thirty-two pages contains many color plates illustrating the types of Univent which are manufactured.

"**Caloric Pipeless Furnaces**" is the subject of a color booklet distributed by the Monitor Stove Co., Cincinnati, Ohio. The illustrations show various farm homes in which pipeless furnaces have been installed and have produced comfort and warmth in them. A small primer on the care of this furnace has also been printed.

"**Living-Stone,**" the non-acid method of bonding cement

and hardening concrete floors, manufactured by the Living-Stone Co., Baltimore, Md., is the subject of an illustrated booklet. This book contains pictures of buildings of all types in which Living-Stone has been used and accompanying these photographs are testimonials from the owners.

"**Technical Pamphlet No. 8**" is the title of a new booklet on waterproofing cement issued by the Truscon Steel Co., Detroit, Mich. It contains a discussion of why concrete requires waterproofing, specifications for waterproofing mass concrete by the integral method and by the plaster coat.

Orsco screens and other products are completely described in a booklet which has been prepared by the Orange Screen Co., Maplewood, N. J. The Orsco line of hardware and metal weatherstrip is also illustrated.

"**Concrete, Its Manufacture and Use**" is the title of a 207-page book devoted to concreting operations, being distributed in limited numbers by the Koehring Co., Milwaukee, Wis. This book is intended primarily for use as a text book in engineering schools. It covers the complete story of concrete.

"**Various Woods Finished with Johnson's Artistic Wood Finishes**" is a unique booklet issued by the S. C. Johnson & Son Co., Racine, Wis. This book contains a sample of various kinds of woods finished in a variety of ways by special finishes.

"**A Happy Solution,**" or the answer to various and sundry heating problems as best met by Burnham Boiler Corp., Irvington, N. Y., is contained in an attractive booklet just issued by that company. It contains complete descriptions of heating systems for garages, greenhouses and homes. The process of the manufacture of the Burnham boiler is also illustrated and described.

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No. 40
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Stop in at your dealer's and ask him to show you a NEY Adjustable Hanger No. 40. It will save you time and money.

Here is a low cost product that you can hang any door with in a jiffy no matter what type of door is wanted. It is adjustable to all conditions!

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