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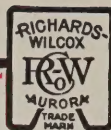
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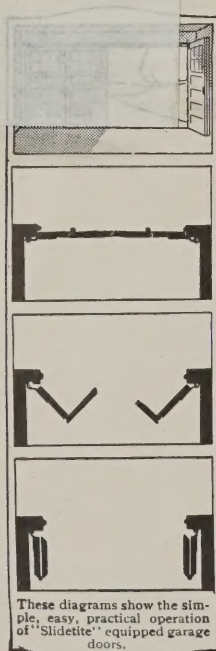
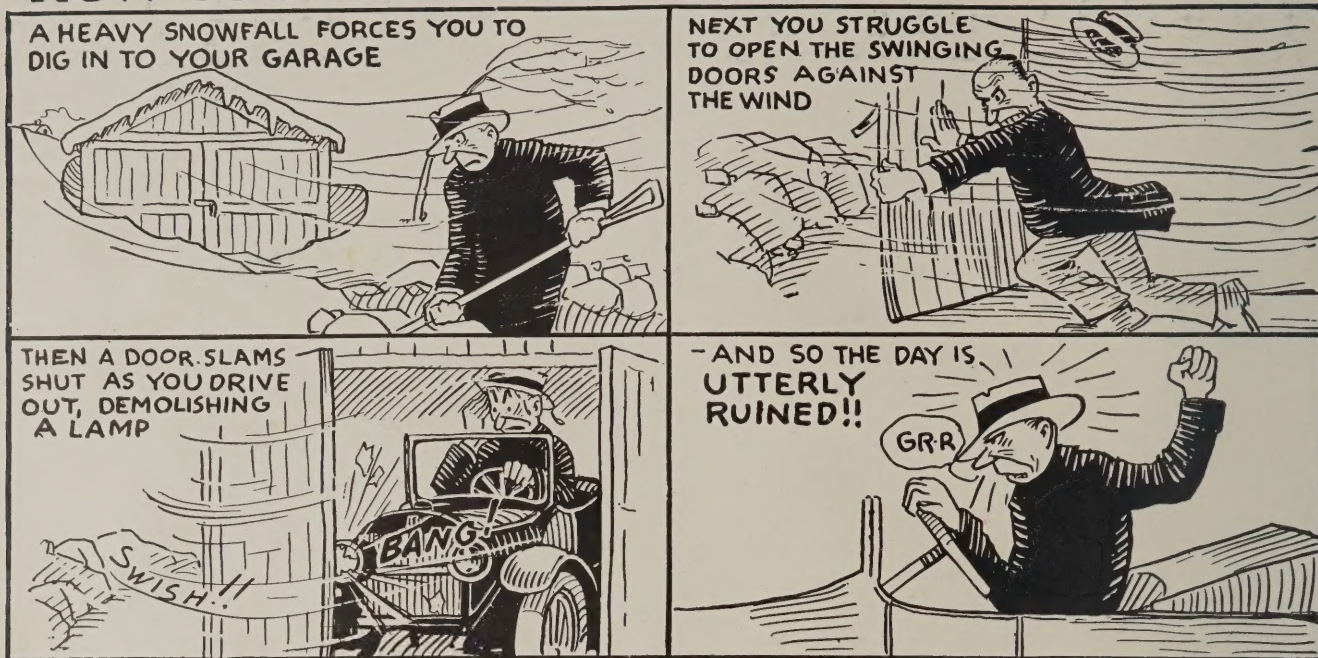
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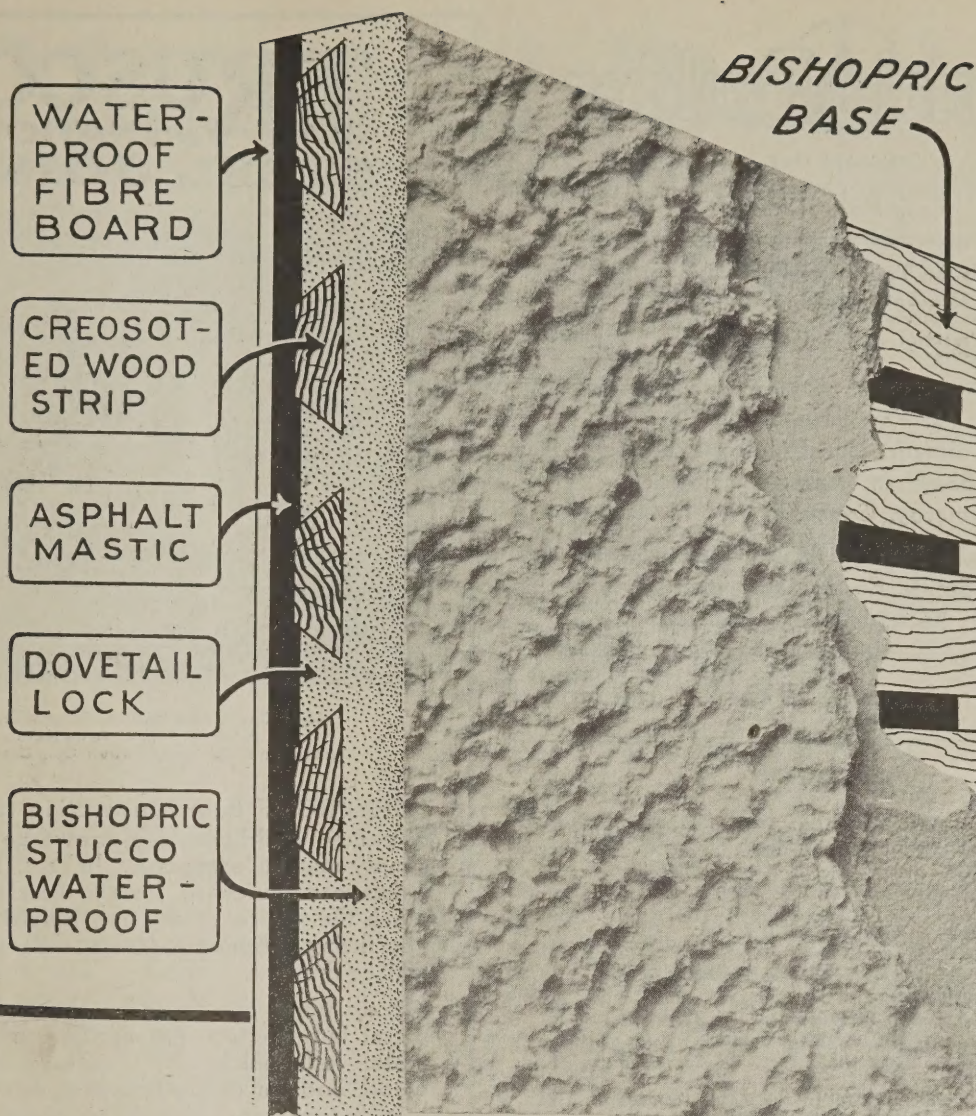


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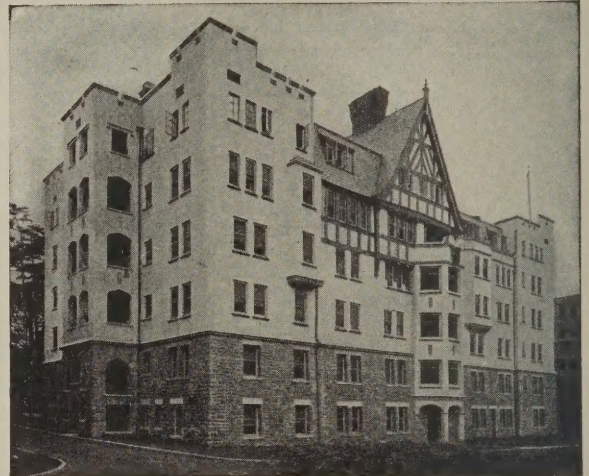
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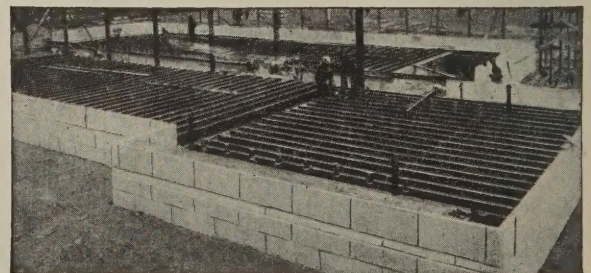
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Organization—Hotel—Thatched Effect Roofs

THESE are some of the subjects which will be discussed in the February NATIONAL BUILDER. There are two young men in a certain Illinois town who have certainly put themselves on the map as contractors and builders. Their fame and their building activities have spread considerably outside their local city. They have achieved their present enviable position in a very short time and have done it by efficient *organization*. The story of what they have done, and how they did it, will be of practical interest to every reader of NATIONAL BUILDER.

FOR a long time the Editors of NATIONAL BUILDER have been looking for a good hotel to present to the readers of this journal—something out of the ordinary both in plan and design. It has at last been found, and the February NATIONAL BUILDER will tell the complete story of a hotel of 104 rooms in a town of 10,000 people. The tremendous increase in travel made possible by the automobile is making it incumbent upon

every town, irrespective of size, to have up-to-date, comfortable accommodations for transient guests, and a hotel article is particularly timely.

WHO does not admire the domestic quality of the thatched roof house? No doubt there would be a great many thatched roofs in this country if they were practical. Some attractive thatched effects can, however, be obtained by the use of wooden shingles. An article in the February NATIONAL BUILDER goes into details concerning construction of such roofs. Some time you may be called upon to build a thatched effect roof, and this article will prepare you for the task because of the information it contains.

IF you are a subscriber for NATIONAL BUILDER, watch for the February number; if you are not, write the circulation department to bill you for a year or two of "The Only Journal Devoted Exclusively to the Contractor, Architect and Builder."

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Irregular blocks of Indiana limestone, with an arch of brick, trim the doorway to "The House of the Month." The terrace porch is of unpolished Colorado black marble flagging



The House of the Month



THIS is the home of Mr. Donald O. Weese, director of the Mountain Division of The Architects' Small House Service Bureau, in Denver, Colorado. The plans for it have been incorporated into the Bureau's regular service as Design No. 5B25. It shows a most successful treatment of the very small house with a square plan.

The style is a French adaptation to the bungalow type of house and suggests the interesting possibilities for attractive effects in the one-story dwelling. The most distinctive feature, apart from the entrance, is the trowelled finish stucco on the walls and the shingle roof of variegated colors. The color scheme is striking: tan for the walls and chimney; grays, browns and greens predominating in the roof; the cornice work and the window frames painted a light tan with the casement sash painted a light green.

The construction is of hollow tile on a concrete foundation. The basement is fully excavated.

There is an informal dining room which supplements the space of the large living room by serving as a library most of the time. It has a built-in bookcase in one wall and three casements light it from the side. A wide cased opening leads to the living room.

Both bedrooms have cross-corner ventilation and easy access to the bath, which is secluded off the hall between them.

Providing for Earning Power During Construction

How the Edward Radding Construction Company of Providence, Rhode Island, Added Three Stories to a Large Garage Building Without Interfering with Business

TO paraphrase an old, familiar saying, "Carpenters may come and bricklayers may go, but the interest goes on forever." That is a little item often overlooked by a contractor, but one of prime importance to the owner.

The proposition is this: During construc-

a new and more modern structure, the time during construction, when the building is untenanted, represents a loss to the owner equal to the value of the rental of the building for that period. Again, the interest on the loan, which generally begins as soon as work is started, also represents a loss

tion, thus cutting down the owner's losses by making the building earn money while work is under way.

This story which treats with the remodeling of the Narragansett garage at Providence, Rhode Island, by the Edward Radding Construction Company of that city, is a

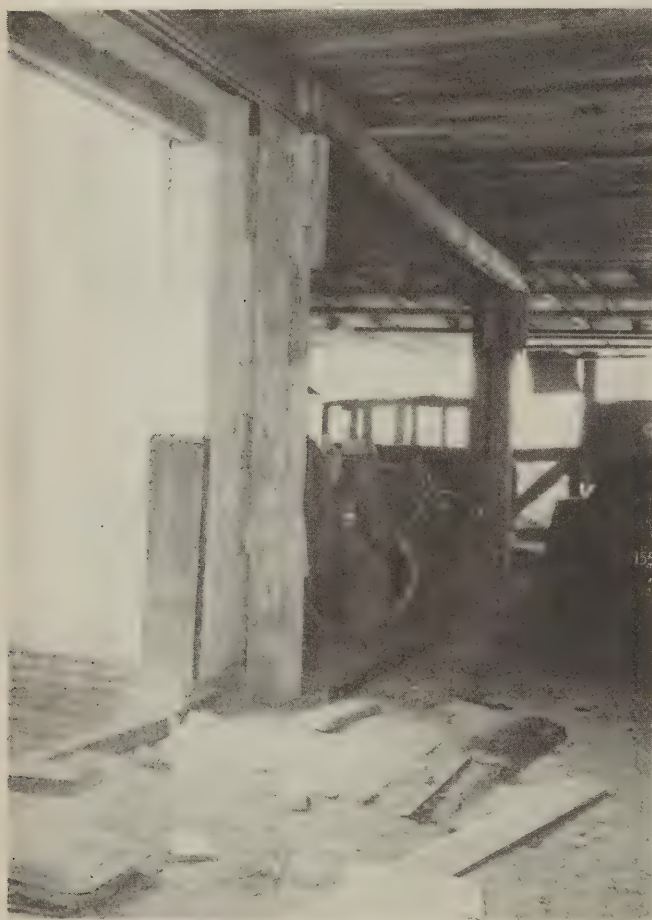


Fig. 1—View of interior of garage showing roof girders supported by wood shores



Fig. 2—View of interior showing wood shore removed and roof girders held in suspended seat

tion there are certain items which go to increase the cost of a building without adding to its value. The first, and most important of these, is the earning power of the ground lost during the period of construction, the second is the interest on the building loan. Thus, if an old building, whose earnings in rentals may have been considerable, is wrecked to make way for

since no rentals are coming in to pay the interest.

It is therefore up to the owner to see that his building is completed as soon as possible in order to avoid these "overhead" losses, and it is sometimes possible for the contractor to co-operate with him by providing accommodations which permit using a certain part of the building during erec-

good example of how a contractor went ahead with his work without interfering with the tenant who occupied the building. The garage was originally a one-story structure, but increased patronage made it advantageous to increase the capacity of the building by three additional stories. How to keep the lower story so that it could be used for parking space presented quite a

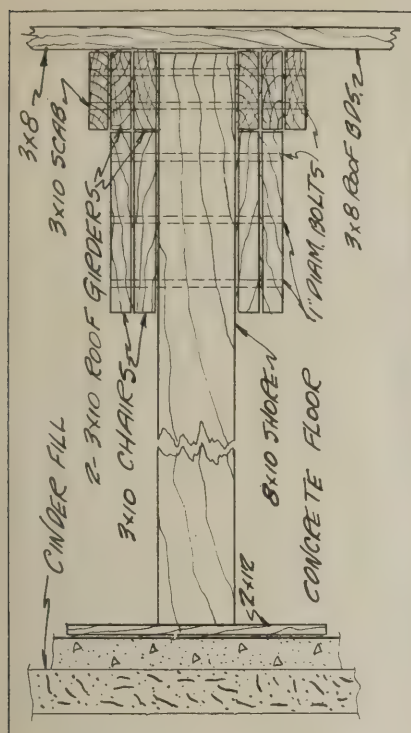


Fig. 3—Details of wood shore support.
Section taken across girders

problem and the way this problem was solved should prove interesting to many NATIONAL BUILDER readers.

A false roof, supported on heavy wood shores, was erected as shown in Figs. 1 and 3. This roof was built of heavy 3x8 mill-flooring partly because the span between joists was great, and partly because of the additional factor of fire protection afforded by the slow-burning qualities of the heavy 3x8s as compared with ordinary 1-inch roofing boards. A composition roofing was used to keep out the rain. Since this roof was to be only temporary, the roofing was not as heavy as ordinarily used, but was designed to last only as long as it was necessary to keep the temporary roof. Details showing the method of holding the roof by means of the shores are shown in Fig. 3.

As construction progressed the steel columns which were used to carry the steel-work in the building were set, and these together with the wood shores used to support the temporary roof made an obstruction which greatly hindered the moving of motor cars on the garage floor. In order to provide a floor which would contain fewer obstacles to the moving of cars, the load of the roof was taken off the wood shores by suspending the roof girders from the permanent steel beams which were now in place, and supported by the permanent steel columns. Details showing how the load was transferred from the shores to the beams are shown in Figs. 5 and 6. As soon as the roof load was thrown on the steel beams above the roof, the temporary shores were sawn off as shown in Fig. 2 and removed, thus leaving the garage floor free except

for the permanent steel columns which were spaced far enough apart so that they did not interfere with the movement of the machines.

The temporary wood roof-girders, which were set on each side of the wood shores



Fig. 4—Photographic illustration of steel-rod loop above roof

as shown in Fig. 3, were carried in a seat suspended from the I-beam as shown in Fig. 6. One-inch diameter rods bent into a U shape and stiffened with a brace and strut carried the seat, and a metal plate was used as a washer to keep the bolts from pulling through the wood. Fig. 4 shows

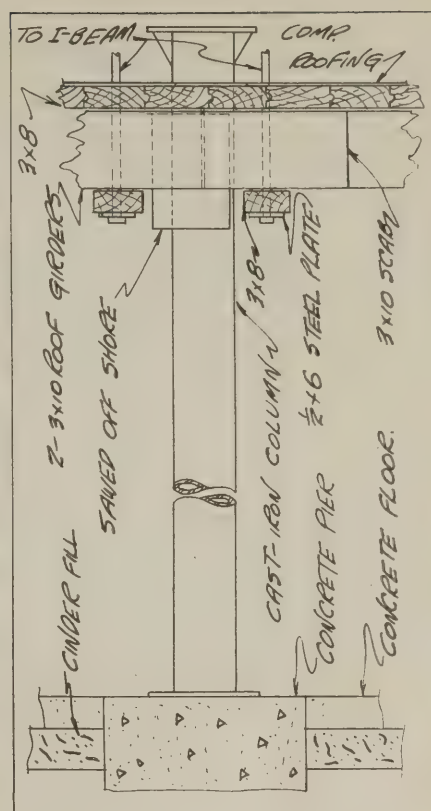


Fig. 5—Details of support with shore removed. Section taken along girders

the arrangement above the roof and Fig. 2 shows how the girders were held in the seat.

This method of hanging a temporary roof from beams is quite ingenious and a credit to the designer, D. D. Sullivan, superintendent of construction for the contractor.

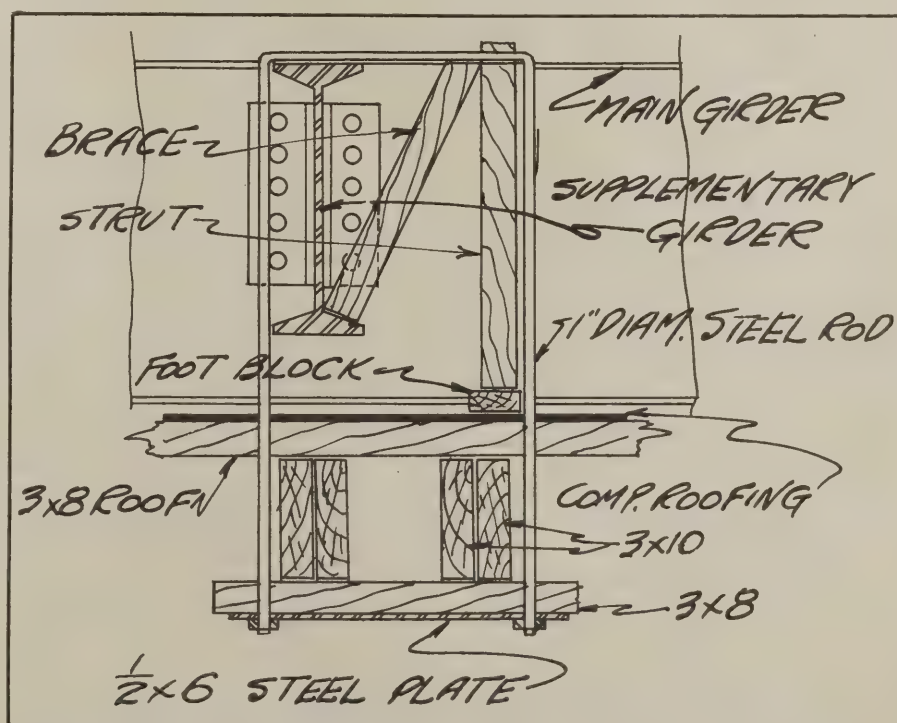


Fig. 6—Details of support for roof girder showing method of stiffening the steel-rod loop. A steel plate is used to prevent the rods pulling through the wood seat

ing "SIDE CUT" give the side cut of jacks against the hip or valley rafters as 9-9½ for 1/6 pitch 10-13 for 5/12 pitch, etc. In laying out side cuts on the jack rafter the first figure represents the inch-graduation mark on the body, and the second indicates the inch-graduation mark on the tongue. The side cut is laid out as shown in Fig. 3 for a 1/6 pitch roof, and the mark is made on the 9½ side. The jack top and bottom cuts (or plumb and heel cuts) are the same as for the common rafter.

Following the heading for the above column of figures is the heading "HIP," with the word "SIDE CUT" at right angles to it (A, Fig. 2). The set of figures to the left of the heading "SIDE

Along the line for 1/6 pitch and under the inch-graduation mark 12, on the outside edge of the body (Fig. 1), find 17-5-3, which is 17 feet 5 3/12 inches, the required length of the hip or valley rafter. For a building 22 feet wide (11 feet run of common rafter) and a roof of 1/3 pitch (8 inches rise per foot), the length of the hip rafter would be 17 feet 2 5/12 inches.

In Fig. 6 are shown the hip and valley, and jack rafter tables for another make of square, which is read in an entirely different manner from the one previously described.

This square carries six horizontal lines of figures on the face of the body, as shown in Fig. 6, and each row is lettered at the end indicating its use. The inch-graduation

mark is 10. This figure refers to the inch-graduation mark on the outside edge of the body. Put this mark on the edge of the jack rafter and the 12-inch-graduation mark on the tongue on the same edge, and mark the tongue for the side cut of the jack. Hip and valley rafter side cuts are marked by using the last figure in the table. The marks "V" and "X" on the outside edge inch-graduation marks serve to identify the inch-graduations to be used.

Fig. 7 shows the face of the body of a square which carries a special line of figures for obtaining the cuts for sheathing in valleys or on hips.

Suppose it is required to cut sheathing or shingles in a valley or on a hip with a 10-inch rise per foot (5/12 pitch). The figure

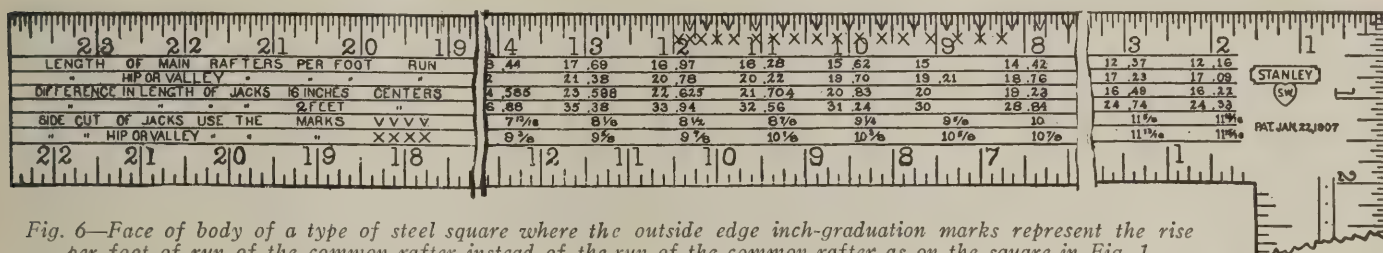


Fig. 6—Face of body of a type of steel square where the outside edge inch-graduation marks represent the rise per foot of run of the common rafter instead of the run of the common rafter as on the square in Fig. 1

CUT" gives the side cut of the hip and valley rafter against the ridge board or deck as 7-7¼ for 1/6 pitch, 11-16 for ¾ pitch, etc. The mark should be made as shown in Fig. 4 for a roof of 1/6 pitch. To get the cut of sheathing and shingles, reverse the figures given above, thus 7-7¼ becomes 7¼-7.

As explained in the preceding article, the ratio of the length of the hip rafter to the length of the common rafter is as 17 is to 12. Thus for top and bottom cuts of hip rafters take 17 on the body of the square, and on the tongue take the figure which represents the rise per foot of the roof.

The top and bottom cuts for hip rafters

marks on the outside edge of the square represent the rise of the roof. Under these inch-graduation marks will be found columns of figures which give lengths of common rafters, length of hip rafters, etc., as noted in the headings at the end of the body. All values are given in inches, for a run of 1 foot.

As an example, take 8 inches rise to the foot (1/3 pitch) under the figure 8, in the outside edge inch-graduation marks. For length of common rafters take the first figure in the column, which is 14.42 inches, or the length of a common rafter with a 1 foot run. To get the total length of the rafter, multiply the figure obtained in the table by the run of the rafter. Thus, for a 1/3 pitch

10, the inch-graduation mark on the outside edge of the square represents the rise per foot in inches (Fig. 7). To the right of this figure, on the last horizontal line, marked "SHEATHING IN VALLEY OR HIP SHOWING CUT," find 1310. Place the square on the stock so that the 13-inch-graduation cuts the stock on the body, and the 10-inch-graduation cuts it on the tongue. Marking on the 10 side will give the required cut.

It will be seen from the foregoing that there are different arrangements of rafter tables on different squares, although, by checking one square against another, the reader will find that the values are the same for rafters on roofs having the same rise

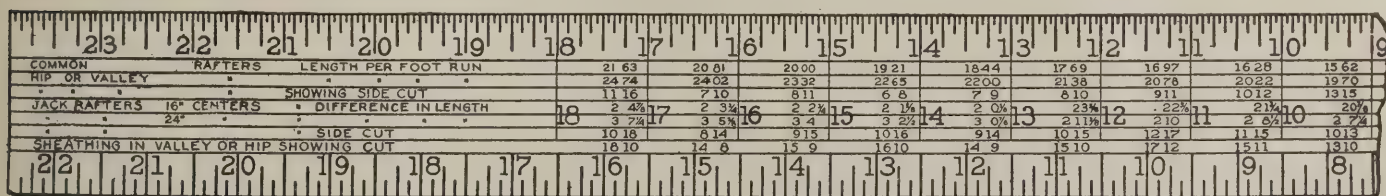


Fig. 7—Face of body of a type of steel square which carries a special set of figures for cuts for sheathing in valleys or on hips. Notice that these figures are just the reverse of those given for side cuts of jack rafters

for a 1/6 pitch roof are made as shown in Fig. 5.

Referring to Fig. 1, and reading from the end of the body toward the heel, we find the heading "LENGTH HIP AND VALLEY RAFTER TO RUN OF COMMON RAFTER." This table gives for each pitch the length of hip or valley rafter to run of common rafter. Thus for a roof of 1/6 pitch which has a common rafter run of 12 feet (half the width of the building) the length of the hip rafter is found as follows:

roof (8 inches rise to the foot) the length of the common rafter for a run of 10 feet would be 10 times 14.42 inches, or 120.1 feet. For lengths of hip and valley rafters use the second figure in the table, 18.76 inches, multiply the run, which is 10 feet, and the length of the hip or valley rafter is found to be 187.6 inches, or 15.63 feet.

For side cuts on jack rafters, use the fifth figure in the table. For a 1/3 pitch roof (8 inches rise per foot of run) the figure found under the 8-inch-graduation

and run. With the steel square, as with almost everything else, practice makes perfect and it takes but a short time for one to become familiar with the different steel square tables.

From the values for lengths of rafters given in this article there are certain deductions to be made where the rafter meets the ridge, or another rafter. These deductions, as well as an introduction to the "adjustable fence," will be treated in the next article.

An Office Building Unique in Plan and Design

General Offices of the American Lime and Stone Company,
Bellefonte, Pennsylvania

MANY an old residence has been converted into an office building as commercial interests have encroached upon residential sections, but here is an office building that was planned and designed especially to embody homelike features. In this building are located the general offices of the American Lime and Stone Company, at Bellefonte, Pennsylvania. The building, in its basement and three floors, is laid out especially to accommodate the requirements of the office force of this company, but it has many features which are adaptable also to the uses of other manufacturers and commercial organizations. The architects are Brown and Whiteside, Wilmington, Delaware.

From the exterior the building looks like a large Colonial house. Small pane windows are used and the casings of the window frames are painted dark in contrast with the wide white siding which covers the walls. The roof is of asphalt shingles and the foundation is concrete. A cement floor is also used for the small front porch,



The main office building of the American Lime and Stone Company, at Bellefonte, Pennsylvania

which protects the entrance to the building.

The entrance contains a six-panel Colonial door. It opens directly upon a large central hallway which extends the depth of the building. Rooms "A" and "C" are open directly to this hall-way. The switchboard operator stands guard over rooms "C" and "D" and the office on the floors above. Visitors find accommodations in the waiting room, "A." Room "C" is used by the accounting department. The large open space and the cross-corner ventilation make it a pleasant and well-lighted work room. Room "B" is a private office isolated from the hall and accounting department. It also has windows on adjacent sides. Another similar office is found in room "E," whose occupant supervises the operations in room

"D." A janitor's closet with slop sink is in the rear, lighted and ventilated by its own window and conveniently situated with regard to the basement.

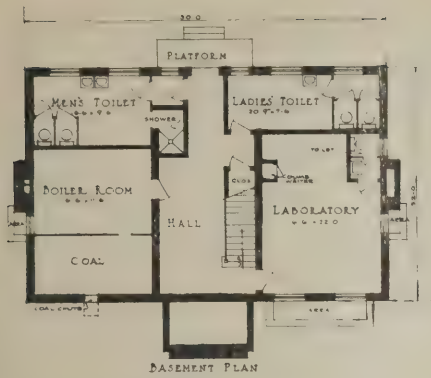
In addition to the usual boiler room the basement also contains the toilet rooms, with a shower for the men, and a laboratory in which the American Lime and Stone Company have considerable equipment for analyzing their various products. This laboratory is connected by a dumb waiter directly with room "D" on the first floor, situated in the basement and lighted and ventilated by windows on two sides. Fumes and odors do not permeate the offices. It will be noticed from the photograph of the exterior that this building is situated on a site that slopes to the rear, allowing full-



Showing stairway and telephone exchange



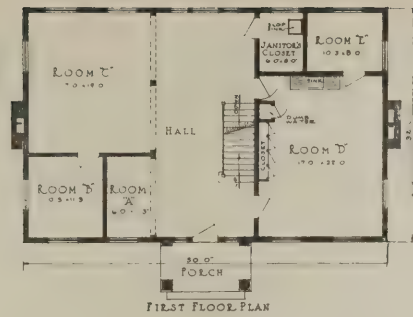
The chemical laboratory in the basement



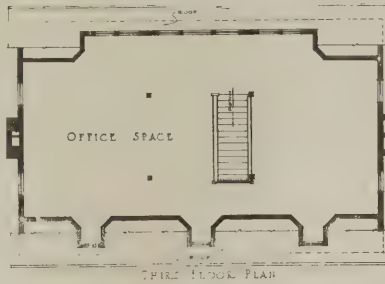
The windows in the rear wall of the basement are full length, an advantage afforded by the site

sized windows in the rear wall of the basement.

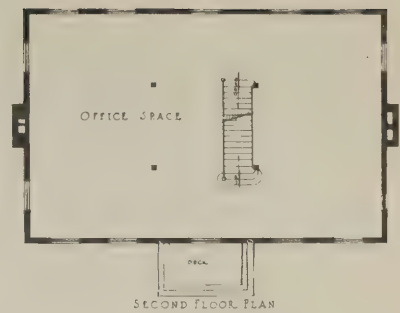
The second floor is entirely open for office space and can be divided up by partitions to suit the temporary or special requirements of the office force. This is also true of the third floor, which is lighted and ventilated not only by dormer windows but by two windows on each end of the building. The third floor space is particu-



The private offices in the front left and rear right corners are well placed for quiet and seclusion and they are handy to the adjacent rooms



The attic or third floor provides storage space for office supplies and equipment. This floor has windows on all four sides for light and ventilation



The office space on the second floor can be partitioned to suit the temporary or special needs of the organization

larly serviceable as storage space for office supplies and equipment.

Just as big concerns in the larger cities are taking up the construction of skyscraper office buildings as advertisements for their business, so are many corporations in the smaller centers paying more attention to their offices. Attractive buildings are good advertisements in all localities for those who own and occupy them. Who would not have a good impression of the American Lime and Stone Company after having seen the office building here described?



The accounting department



The general sales office



The general manager's office



The general superintendent's office

Notes for the Man Who Uses Sheet Metal

Some Information About Prolonging the Life of Sheet Metal and a Few Sheet-Metal Roof Details

THERE are very few buildings erected to-day in which steel sheet metal is not used. Gutters and down-spouts, flashing, siding, roofing and any number of other items make sheet metal an almost indis-

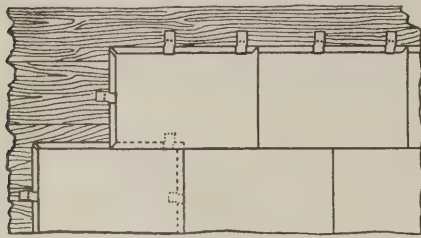


Fig. 1—Flat seam roofing plates held by cleats

pensable product for the builder. Some contractors, however, are unfamiliar with the proper use of sheet-metal and it is hoped that the information contained in this article will assist them to a better understanding of this material.

The greatest enemy of iron and steel is corrosion, or, as it is more commonly called, rust. No article made of iron or steel can last forever. Given an opportunity, iron

and the oxygen in the air will unite, and the result of the union will be rust, a composition similar to the natural ore from which the iron was obtained. No better summing up of the subject of corrosion can be made than that by the late Robert Skemp, a man who had spent most of his life in the sheet-metal industry: "It is a rather grewsome parody, but it may be said of all iron and steel, 'Rust thou wert, and unto rust shalt thou return.' It is all a question of time. In the uneven conflict, man strives for delay. . . ."

In the "striving for delay" two successful methods for the retardation of corrosion of steel sheets have been developed; first, protective coverings, such as zinc galvanizing, a coating of tin and lead, painting, etc., and second, alloying the steel with some other metal.

The results of considerable research work over a period of years seems to indicate that if the metal which goes into an ordinary black steel sheet is alloyed with about two-tenths of one per cent (0.2%) of copper, the sheet will be considerably more durable than a similar sheet made without the copper alloy. Just why the addition of a small percentage of copper to the steel in its

molten state should retard corrosion is not easy to say, but it is the opinion of men who have done considerable experimenting along this line that the addition of copper tends to control the sulphur which is pres-

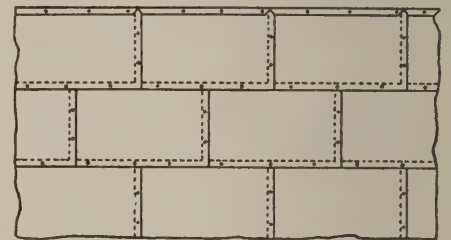


Fig. 2—Flat seam roofing plates held by nails

ent in all steels and which tends to assist corrosion.

The use of a lasting base metal for covered sheets means longer life for the sheet since, if a slight imperfection in the protective covering exists, the metal beneath the covering will rust at this point and rapid disintegration will take place unless the base metal itself is able to withstand the effects of corrosion.

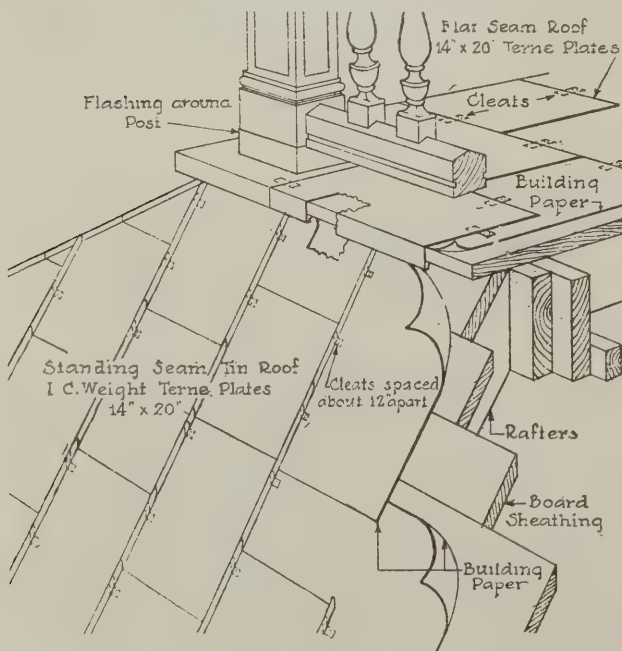


Fig. 3—Construction details for a standing seam sheet-metal roof

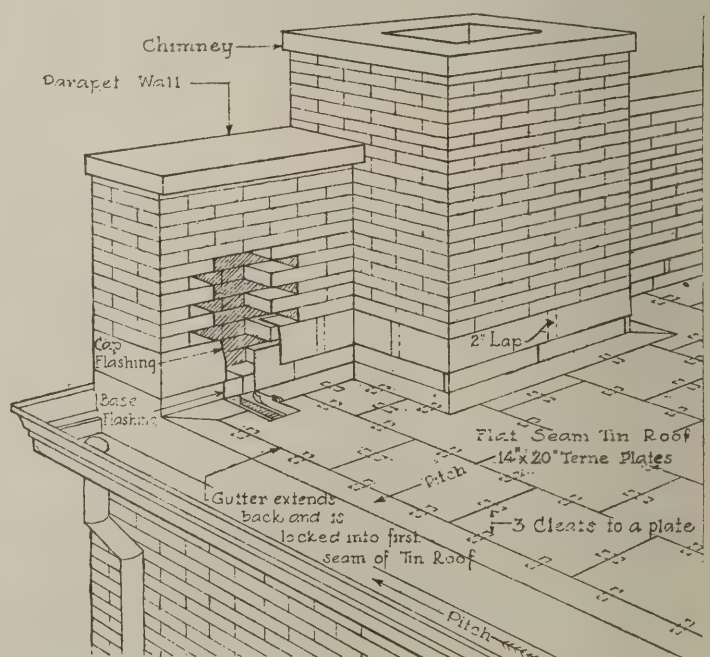


Fig. 4—Construction details for a flat seam sheet-metal roof

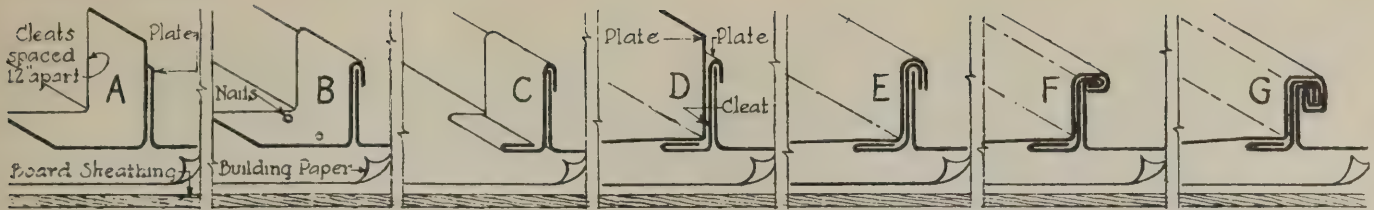


Fig. 5—Various steps in laying a standing seam sheet-metal roof. (A) Lay cleat and plate with edges turned up. (B) Nail cleats to sheathing 8 inches apart. (C) Turn cleat over nails. (D) Lay adjoining plate in place. (E) Turn top edges of plate starting lock. (F) Turn lock again. (G) Completed lock seam

Probably the greatest protection against corrosion is obtained by galvanizing, or coating the sheet with a layer of zinc. It should be remembered, however, that the zinc coating must not be broken on any part of the sheet. A zinc covered sheet is proof against corrosion only as long as the zinc coating remains intact. If the coating is broken or cracked the life of the sheet is then only as long as the life of the base metal.

Terne coating, another form of protective covering, is an alloy of tin and lead, applied to the sheet to protect it from the destructive elements. Terne plates, the name generally given to this kind of covered sheet, are generally packed in boxes of 112 sheets each and the size of the sheet is 20x28 inches. The plates are graded according to the number of pounds of coating per box. Thus a 40-pound plate would be a plate 20x28 inches, 112 of which would carry 40 pounds of Terne coating.

Another method of protection is painting. In painting unprotected sheets it is recommended that the first coat should be red lead, ground in pure linseed oil. The second coat may be carbon black, or some other inert pigment, and the third, any good moisture excluder, such as graphite. After this last coat the work may be painted with

any color to harmonize with the general scheme. In painting new galvanized sheets it is important that the surface be slightly roughened before the paint is applied lest the paint peel off. This roughening may be best accomplished by exposing the sheet

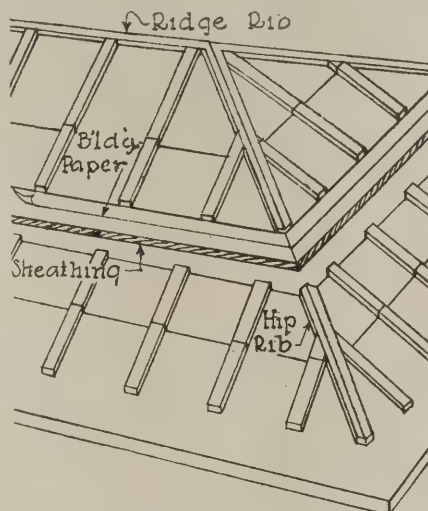


Fig. 6—Detail of ribs on a hip roof

to natural weather conditions for six-months or more before the paint is applied. If this is not possible the sheet-metal work should be painted with a solution of 4 ounces of copper sulphate dissolved in one gallon of water. This solution should be applied with a brush, allowed to dry and then brushed lightly before the first coat of paint is applied.

An important use for sheet-metal is roofing, and the metal roofing details shown here illustrate the best modern practice in this line. Terne plates have proved more satisfactory for this purpose than galvanized sheets since a zinc coated sheet is liable to be damaged when the sharp-angle bends, necessary for seams, are made. Although terne plates are made in weights ranging from 8 to 40 pounds per box, it is inadvisable to use anything less than a 20-pound plate for roofing purposes.

For roofs constructed with a low pitch it is recommended that 14x20-inch sheets be used rather than the 20x28-inch size, and that the sheets be joined with flat seams. The smaller size plates require a larger number of seams, and these seams tend to stiffen the roof surface and to prevent buckling and rattling in stormy weather. Although flat seam roofs are best held by the means of cleats, as shown in Fig. 1, some

roofers prefer to use one-inch barbed and tinned roofing nails. Where nails are used, they should be driven about 6 inches apart, well under the edge and covered up by pounding the seams down over the edge, as shown in Fig. 2. Nails in sheet-metal roofs must never be exposed. The various steps required in laying a flat seam roof are shown in Fig. 7.

Where the roof pitch is steep, a standing seam and 20x28-inch plates are recommended, and where standing seams are used the roof pitch should be not less than 2 inches per foot. Details for laying standing seam roof are shown in Fig. 5. The seams should be finished about 1 inch high.

Another type of sheet-metal roof is the ribbed roof, details for which are shown in Figs. 6 and 8. These roofs may be made with the various seams shown in Fig. 8.

In laying sheet metal roofs no roofing paper containing acid of any kind should be used, as the acid may work damage to the roofing. As a further means of prolonging the life of the roof, the under side of the plates should be painted before they are set in place.

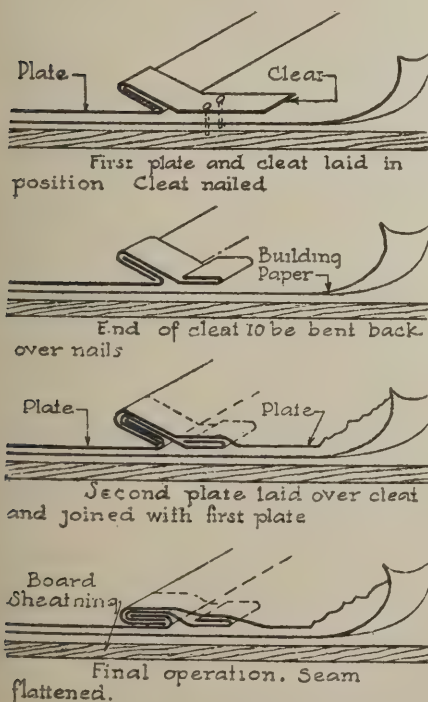


Fig. 7—Various steps in laying a flat seam sheet-metal roof

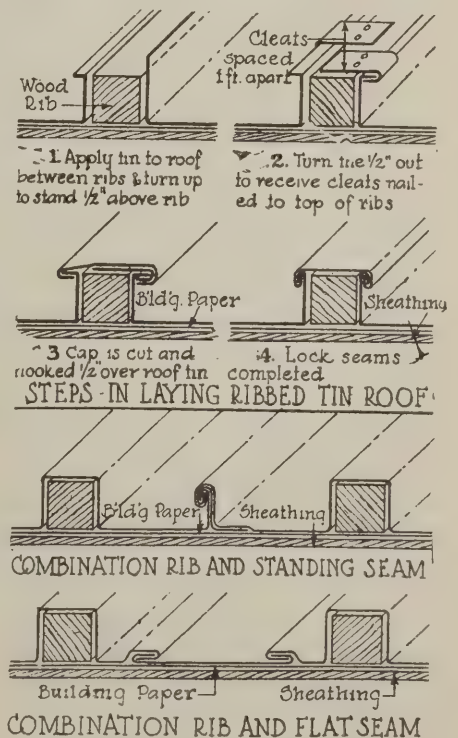


Fig. 8—Various steps in laying ribbed and combination rib-and-flat-seam sheet-metal roof



Due to the attractive appearance of this little store building, it elicits much favorable attention from passers-by, and hence helps to draw patronage for its occupants

Small Shop Building of English Style

By Charles Alma Byers

THE small shop building, it would seem, is usually designed merely to serve its primary purpose—to afford a maximum amount of store space for a minimum outlay of money. The result, generally, is that it is either a box-like structure of quite stereotyped style or an extremely cheap affair of out-and-out unsightliness. That it can, however, be made to possess real architectural attractiveness and character, and at the same time entail no very great additional cost, is well exemplified in the little shop building illustrated herewith.

This building, which, it will be seen is of English style in architecture and particularly attractive, is 49 feet 10 inches in over-all width and exactly the same in depth, its foundation forming a perfect square. It is but a single story in height and its interior is partitioned into three separate stores.

The building, in the main, is of frame and stucco construction. The foundation is comprised of concrete, and the building is floored throughout with cement. All concrete is a 1:3:4 mixture.

The stucco consists of two coats of good grade cement plaster, applied over wooden lath and woven wire reinforcing. It is tinted in light greenish gray, and in the gables is decorated with brown paint in simulation of a half-timbered effect. On the front, beneath the windows, the walls are finished with a veneer of rough,

dark-red brick, and over the three front entrances are inlaid squares, in transom effect, of hand-made tile, in soft green and grayish buff shades. All wood trimming is painted in dark brown. The front is naturally given over very largely to glass, the windows being comprised of the comparatively small panes characteristic of English domestic architecture.

The roof is comprised of wooden shingles over the front portion of the building and of composition roofing over the back

part. The composition section is, of course, flat, and contains a skylight for each of the stores. The shingles used for the pitched front part of the roof are laid in irregular fashion, and are stained in a variegation of colors—dull green, brown, dark red, and so forth.

The interior arrangement is shown by the accompanying floor plan. Each division has its own separate back outlet, as well as its front entrance, and is equipped with a sink and toilet. The studio portion is also permanently partitioned into various subdivisions, including a small reception room and an office in the front, two small closets and a stock room immediately back of them, and a large studio in the rear. The other two stores are temporarily separated by head-high partitions into front and rear rooms each.

The inside walls are plastered and tinted and the woodwork is painted in dark brown. The partitions in the studio division are, however, of wallboard, painted in pearl gray, to match the tinting of plastered walls. The ceiling height is 11 feet throughout, while the floors, as previously stated, are of cement, marked off into 12-inch squares.

This building is located in Los Angeles, California, in a small outlying business district, and was designed by R. J. Kieffer, architect, of that city.



The plan is square, although from the exterior appearance of the building you would not think it

National Home Builder

WITH this issue the "NATIONAL BUILDER Style Sheet" is expanded to twice its former size and given a new name, the "*National Home Builder*." In addition to presenting photographs and sketches of the plans of many attractive small houses, the *National Home Builder* will also contain one complete set of working drawings on a $\frac{1}{8}$ -inch scale of an original small house designed especially for NATIONAL BUILDER by The Architects' Small House Service Bureau.

THE *National Home Builder* will concentrate into one section of the journal most of the material relating to houses and present it in such a manner as to be useful to the contractor, architect or builder in laying before his customers suggestions for attractive and well planned homes.

THIS is the only selling tool of its kind offered the professional builder, and NATIONAL BUILDER is the one builders' journal which is presenting its readers houses of good design only, or designs that have some architectural merit which make them worthy of consideration. This journal feels that it would be recreant to its duty if it published any other kind of material, for builders who see the trend of the times as visible in the better residential sections in all parts of the country must cater to and encourage the higher standards of taste which the public is rapidly acquiring.

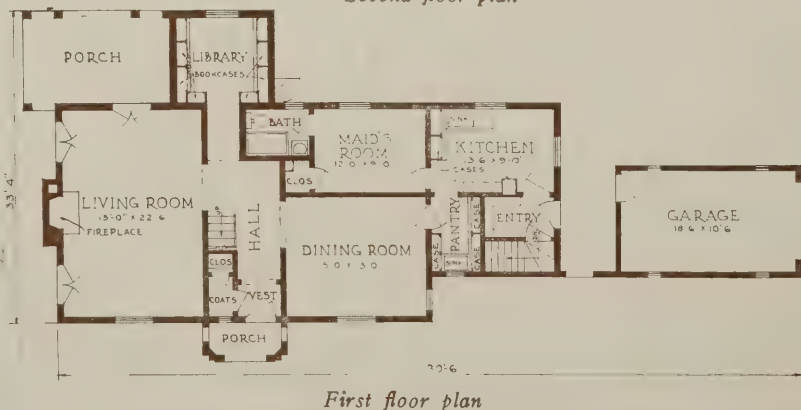
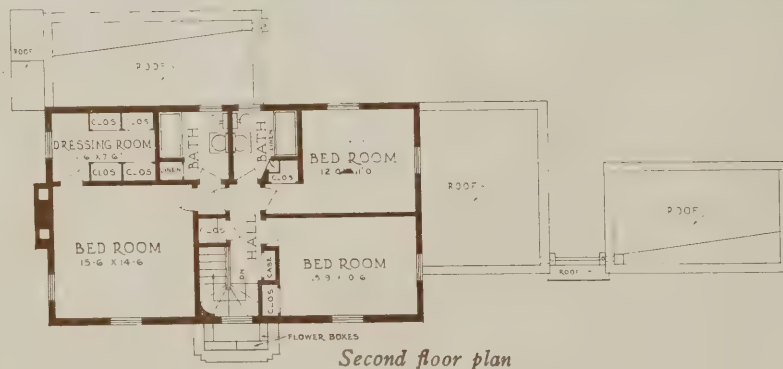
IN the *National Home Builder* you will find photographs and plans of houses from all over the United States. A wide variety of architectural styles and a wide variety of materials are represented, reflecting the tastes and satisfying the requirements of many different people.

NATIONAL BUILDER takes this occasion to express a word of appreciation to the various architects, builders and owners whose work is shown on the following pages and who have been of assistance in gathering this material together and in furnishing the plans with permission to publish them.

READERS desiring further information about any of these houses should write directly to the architect mentioned in each case, for NATIONAL BUILDER does not sell plans nor does this journal render any architectural service.



Two Houses of Unusual Charm, in Winnetka, Illinois



WHY the house with wide cornice is so popular can be understood from a study of this attractive design. Not all wide cornices, however, are treated with such restraint and fine feeling for proportions as this one. The house was originally designed in the Italian style for a tile roof. The walls are stucco with a troweled finish, and the chimney is of common brick laid very roughly.

The porch and library, reached only through the hall, form an addition in the rear. The maid's room and bath are entered only from the kitchen. The location of the garage permits its being heated by the heating plant for the house.

There are two bathrooms for the three bedrooms on the second floor and a commodious dressing room for the principal bedroom. Two hall closets provide abundant space for linen.

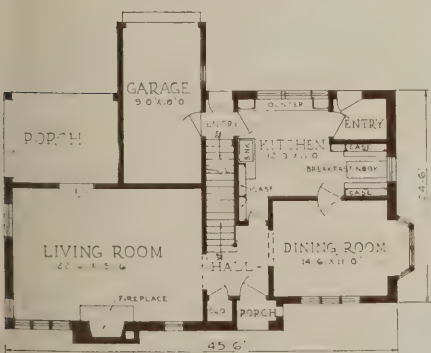
This house is the home of Mr. Charles Maxwell in Winnetka, Illinois. Russell S. Walcott, 11 East Huron Street, Chicago, was the architect, and C. H. C. Neilsen, the contractor.



Built of Common Brick, with Rough Mortar Joints



Second floor plan



First floor plan

SOME very attractive effects can be obtained at little expense by the use of common brick, and many of the fine homes are employing this material with considerable success. In this house common brick have been used and the mortar between the joints left untouched by the mason's trowel as it exuded from the wall when fresh. The result is a rough texture which adds interest to the walls by producing lights and shadows not found on smoother surfaces.

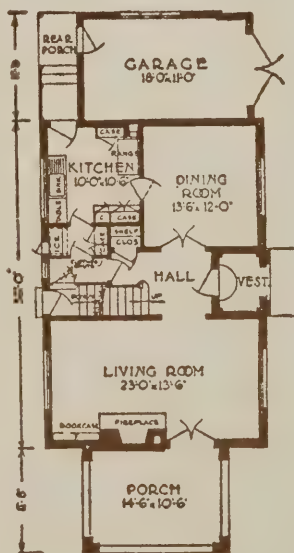
The plan is unique. It has a large living room with open porch adjacent, but a comparatively small dining room, though a very usable one because of the bay window. The hall provides direct access from the kitchen to the front entrance, and by way of kitchen and rear entry to the garage, which is mostly within the main walls of the house itself, and is therefore easily heated and within easy reach.

There are four bedrooms in this house and a large sleeping porch. There are two bathrooms, one with a shower and the other with a tub. The hall arrangement permits shutting off the bath with the shower for the exclusive use of the occupants of the main bedroom. The two large closets off the hall also belong to this chamber.

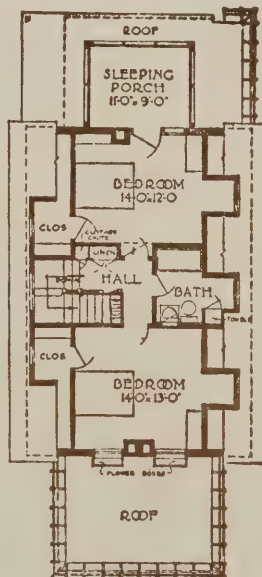
This house was planned and designed by Russell S. Walcott, architect, 11 East Huron Street, Chicago, and it is the home of Mr. William B. Moulton in Winnetka, Illinois.



Face Brick and Stained Shingles Are Effectively Combined in This Little House in Iowa City, Iowa



First floor plan



Second floor plan

THE plans and designs for this house originally appeared in one of the plan books published by the American Face Brick Association, 130 North Wells Street, Chicago, as Design No. 529. The house was built for F. Lorenz, in Iowa City, Iowa, by J. H. Huntzinger & Company, contractors. It is of face brick construction, the colors being dark tones of red, and the woodwork is painted white to contrast. A feature of the house, its tall steep roof, is made attractive by the use of stained shingles. As Mr. Lorenz built the house the porch was enclosed, and made into a sun parlor and the garage and sleeping porch were left off, the garage being built separately on the rear of the lot. The house is built with the wide side to the street, though its plan and design permit its being built on a narrow lot with the shorter side to the street. As shown, however, the attractive arched entrance is visible to the passerby, and the dining room as well as the living room has a more advantageous position. The plan is a compact arrangement of three major rooms on the first floor with two bedrooms and a bath above. The steep roof permits fine large closets for both bedrooms. Downstairs there is a big closet for coats in the hall. The basement stairs are equally handy to the outside and inside of the house.



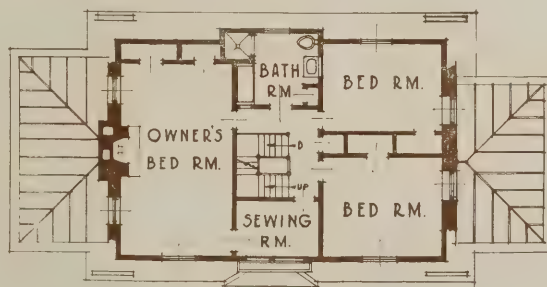
Stone Walls and Slate Shingles Add to the Attractiveness of This Gambrel Roof House in Trenton, New Jersey

NATIVE stone laid with proper emphasis on the long horizontal lines and with wide white mortar joints are employed in the construction of this house in Trenton, New Jersey. The roof is of slate, a very appropriate material for a stone house. The large dormer and the sun parlor addition are covered with wide wooden siding painted white. Thus the three materials are harmoniously arranged.

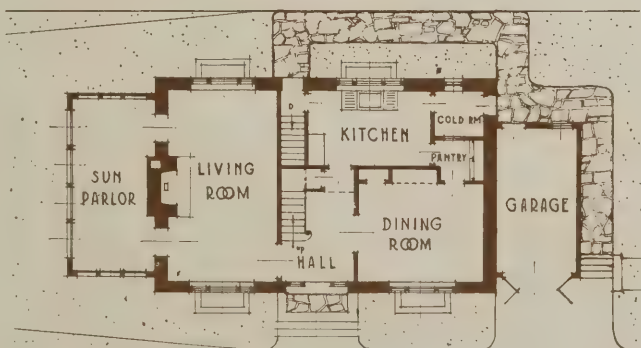
The garage on one end balances the sun parlor on the other and provides a convenient place for the car where it can be easily reached and the garage heated.

The plan is of the central hall type, with the hall permitting direct access from the kitchen to the front door. The dining room is reached from the kitchen through a pantry, another good arrangement. There are a closet and built-in buffet in the dining room. Note the placing of the refrigerator where it is handy for both iceman and kitchen worker and protected from the heat of both the kitchen and the sun.

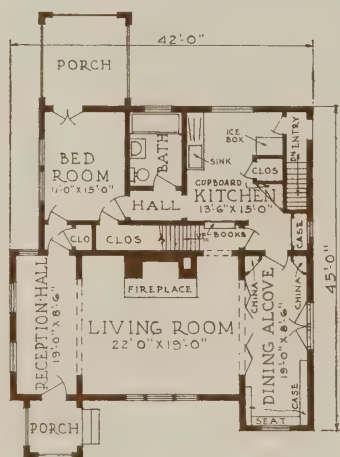
This house was designed and built for his own home by Lewis S. Kaplan, architect, First National Bank Building, Trenton, New Jersey. It had just been completed at the time the photograph was taken.



Second floor plan



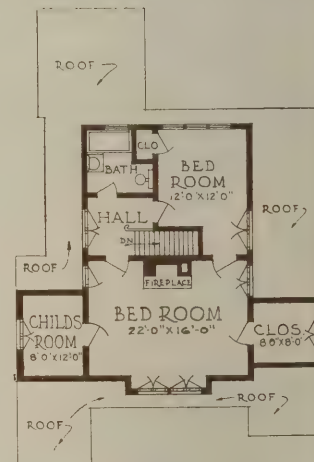
First floor plan



First floor plan

Study the Unique Plan of This Bungalow in Kankakee, Illinois

MR. R. H. CAMPBELL, Kankakee, Illinois, designed planned and built this home for his own family. The plan provides a large living room which can be made still larger on occasions by throwing the reception hall and dining alcove open to it. Notice the downstairs bedroom and bath. Upstairs there are two more bedrooms and another bath. The larger bedroom has a child's room adjacent. It enjoys cross ventilation from three sides. The fireplace in this big bedroom is a desirable feature.



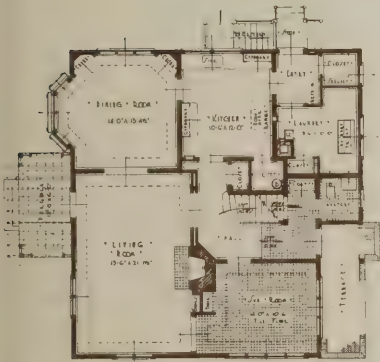
Second floor plan





An Interesting House and Garage in Portland, Oregon

PICTURES of both house and garage are shown here, because the two buildings go so well together, as the house and garage always should. This is the home of Mr. H. M. Nesbit, in Portland, Oregon. O. M. Akers, Couch Building, Portland, was the architect, and Oscar Carlton, the builder. The house is of striking design, and its plan worth careful study. Note the down-stairs lavatory reached from the stair hall, and the large laundry in addition to the usual rooms. One of the upstairs bedrooms has not only a dressing room with wardrobe and closet, but also a fireplace.



First floor plan



Second floor plan





Three Bedrooms and Two Baths, with Numerous Closets, Are Desirable Features of This House in Knoxville, Tennessee

HERE is a house in the English style showing almost total absence of symmetry, yet with a very pleasant feeling and with a plan that is carefully worked out. The living room is unusually large and in addition to the fireplace has the stairway as one of its architectural features. A small hall permits access to the basement stair and to the kitchen. The dining room has windows on two sides and is reached from the kitchen across a corner of

the pantry. Upstairs the three bedrooms are conveniently reached from the well lighted main hall. The front bedroom has a private bath and the situation of the other bathroom between the two other bedrooms is most convenient. There are many closets on both floors of this house, a feature which is hard to overdo. This house is the residence of Mr. F. W. Chamberlain, Knoxville, Tennessee. R. F. Graf & Sons, architects.



First floor plan



Second floor plan

Complete Working Drawings and Details

A Six-Room House in the "Tudorbethan" Style

*House No. 6A64, designed especially for National
Builder by The Architects' Small House Service Bureau*

© 1924 by N. B. and A. S. H. S. B.

HERE is a house so individual in its arrangement and character that it occupies a niche all by itself. While the arrangement of the rooms is of a very special character, yet it combines all the elements that contribute to comfort with simplicity of construction, and hence economy in construction. It is true that a more simple type of arrangement and exterior would give a plan that could be built from at less expense, and for this reason design 6A64 is perhaps more suitable for the man for whom there is not the usual lapse between desires and pocketbook.

One enters the house from brick steps and a cement floored stoop through a beautifully designed archway, which may be trimmed in native stone, if it is easily obtainable, or in brick, if the expense of construction must be reduced. The entrance door opens directly into a hallway from which one may go immediately upstairs or turning to the left arrive in the living room. There is a cloak closet in the hall and another closet beyond a door from this hallway into an entry that goes to the kitchen.

A beautiful fireplace with a bookcase at one side marks one end of the living room. A gorgeous bay window faithful to the style of the English builders gives such additional character to the living room that it stands as one of the most interesting rooms we have designed.

From the living room one may enter upon an open porch or into the dining room. The latter room is well lighted, with three large windows looking out upon the garden, and an entrance on the porch. Between the dining room and kitchen there is a breakfast alcove with built-in seats and a cupboard.

The kitchen is a scientific marvel and saves many steps for the housewife. There are two entrances to

the basement. One of them is from the kitchen. The other is from the outside. The outside stairway is reached from a kitchen porch. It is covered with a hinged door.

In the basement there are the usual furnace room, fuel room, laundry, and spaces for storage of fruit and vegetables.

On the second story there are three bedrooms—one about 16x11 feet, another about 12x13 feet, and a third about 11 feet 6 inches by 9 feet. The main bedroom has a large bay window. Each bedroom has a large closet. There are also a linen closet, storage space, and a clothes chute, which add to the convenience of the second story.

The style of this house is as English as John Bull himself. Architects have sometimes called it Tudorbethan, meaning that it is an adaptation of the Tudor and Elizabethan styles as they were worked out in England.

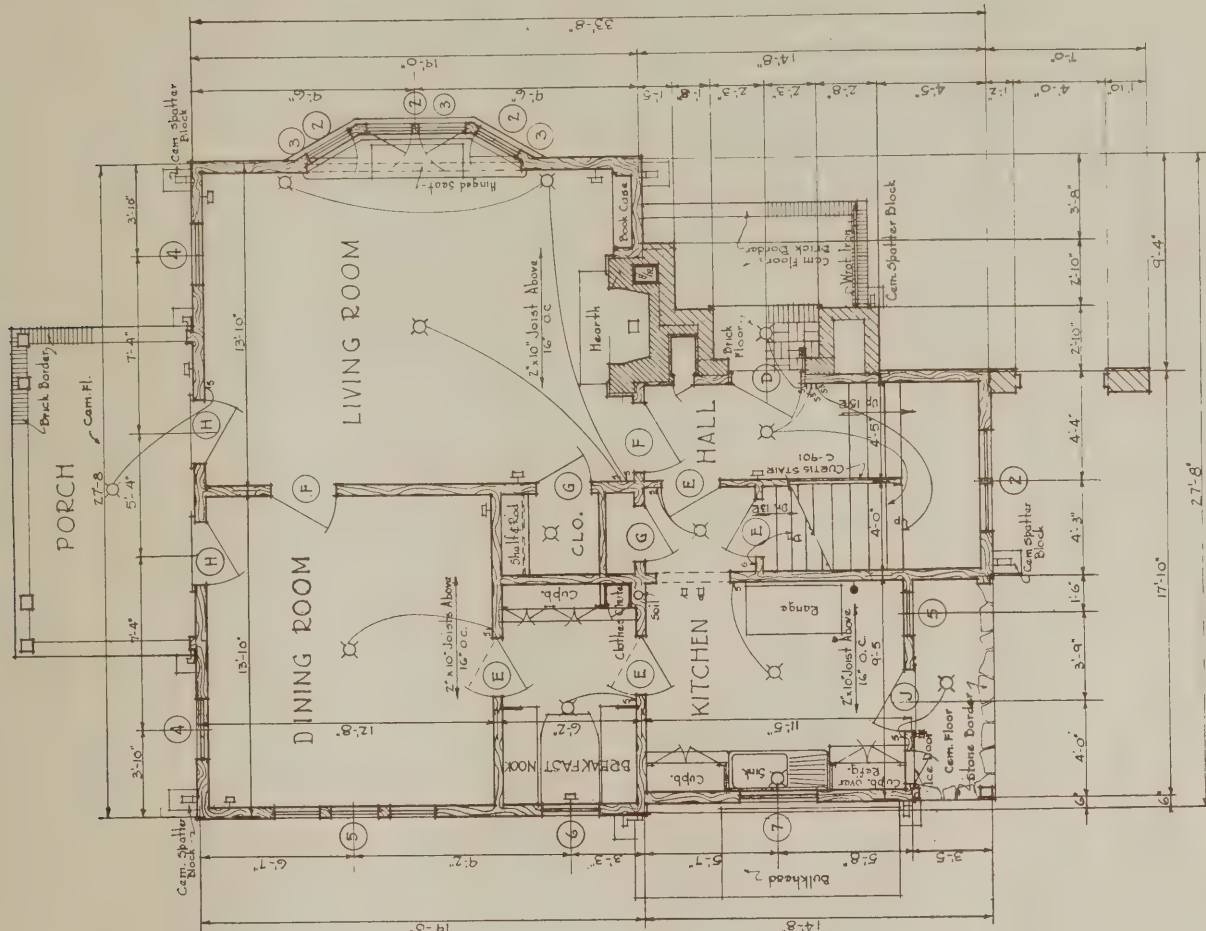
The house can face west or north, and should be reversed if it must be faced in other directions. Its over all breadth, including the porch and garden entrance is about 48 feet. Its depth including the bulkhead and bay window is about 33 feet. It should be placed on a lot not narrower than 60 feet in width, but if lot space is restricted, the side porch could be omitted or placed at the rear. In this case a 50-foot lot would suffice. The little hooded gate may also be omitted to save breadth. If it is omitted, together with the porch, the over all breadth would be 34 feet, and the house could be accommodated on a correspondingly narrow lot. The architecture would still be very fine without these two elements.

The regular price of this plan is \$30.50. (To NATIONAL BUILDER subscribers \$15.50.)

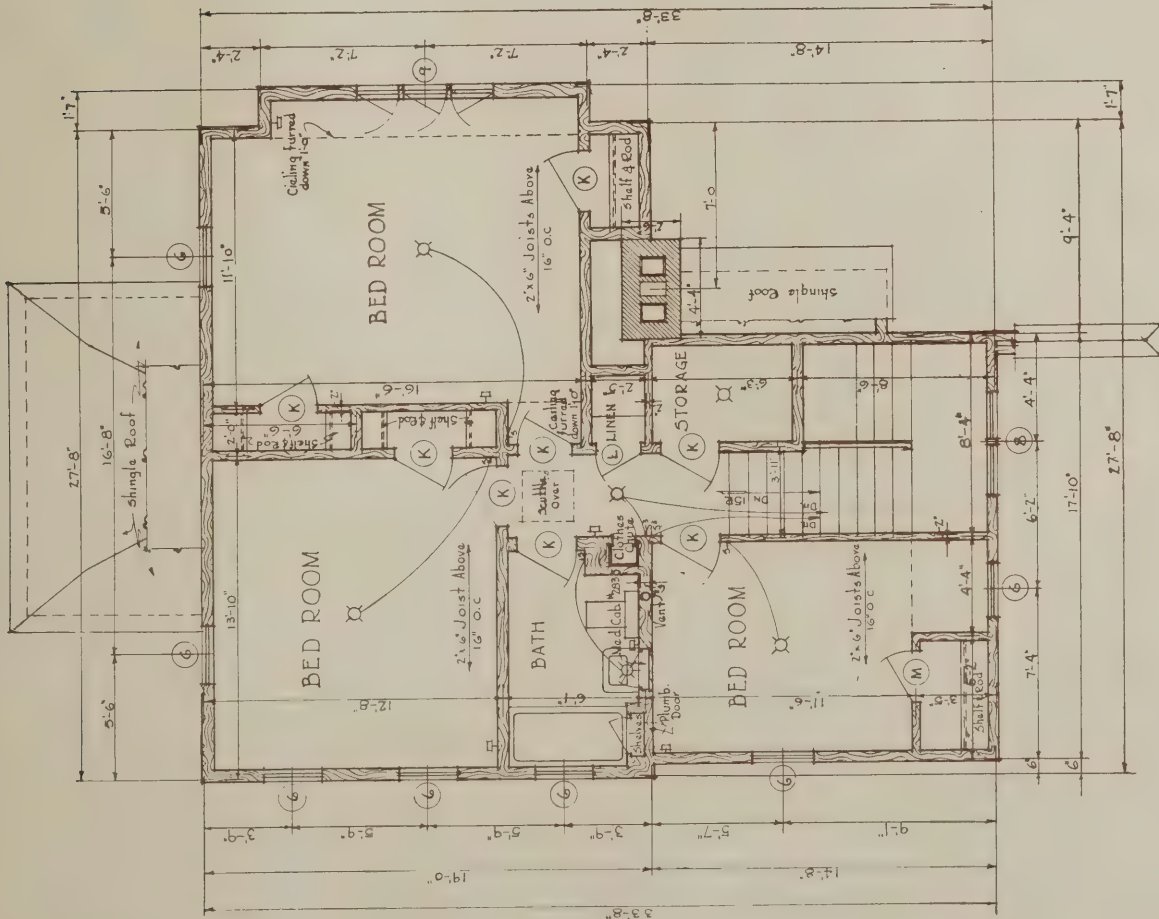
ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 49 and 50. These drawings are on a scale of $\frac{1}{8}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau, subscribers for "National Builder" desiring blue prints of the original of these plans, which are drawn on the scale of $\frac{1}{4}$ inch to the foot, are entitled to a 50 per cent discount off the Bureau's standard price, as stated in the last paragraph above. Orders should be addressed to "National Builder" for authenticating the purchaser as a bona fide subscriber, but checks should be made out to The Architects' Small House Service Bureau. Duplicate sets of blue prints are \$3.00 each; specifications are \$2.50 a set, and extra quantity surveys are \$3.00 a set.



The style of this house is as English as John Bull himself. Architects have sometimes called it "Tudorbethan," meaning that it is an adaptation of the Tudor and Elizabethan styles as they were worked out in England



FIRST FLOOR PLAN



SECOND FLOOR PLAN

HOME PLAN FOR National Builder, January 1924

PLAN No. GAG 4

SHEET No. 2

THE ARCHITECTS SMALL HOUSE SERVICE BUREAU

NORTHWESTERN DESIGN, INC.

CHICAGO, ILL.

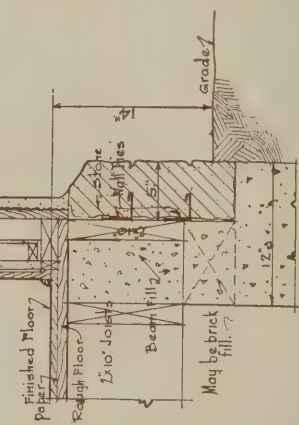
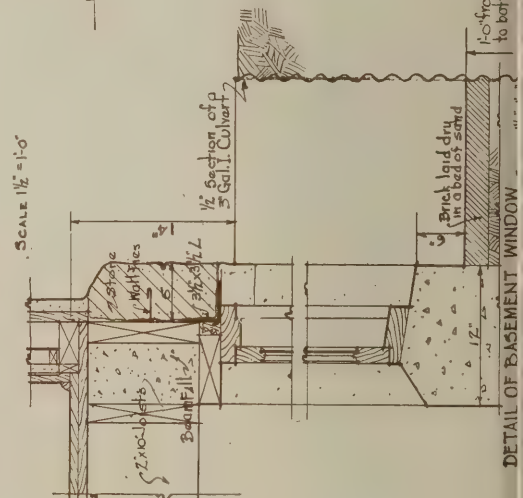
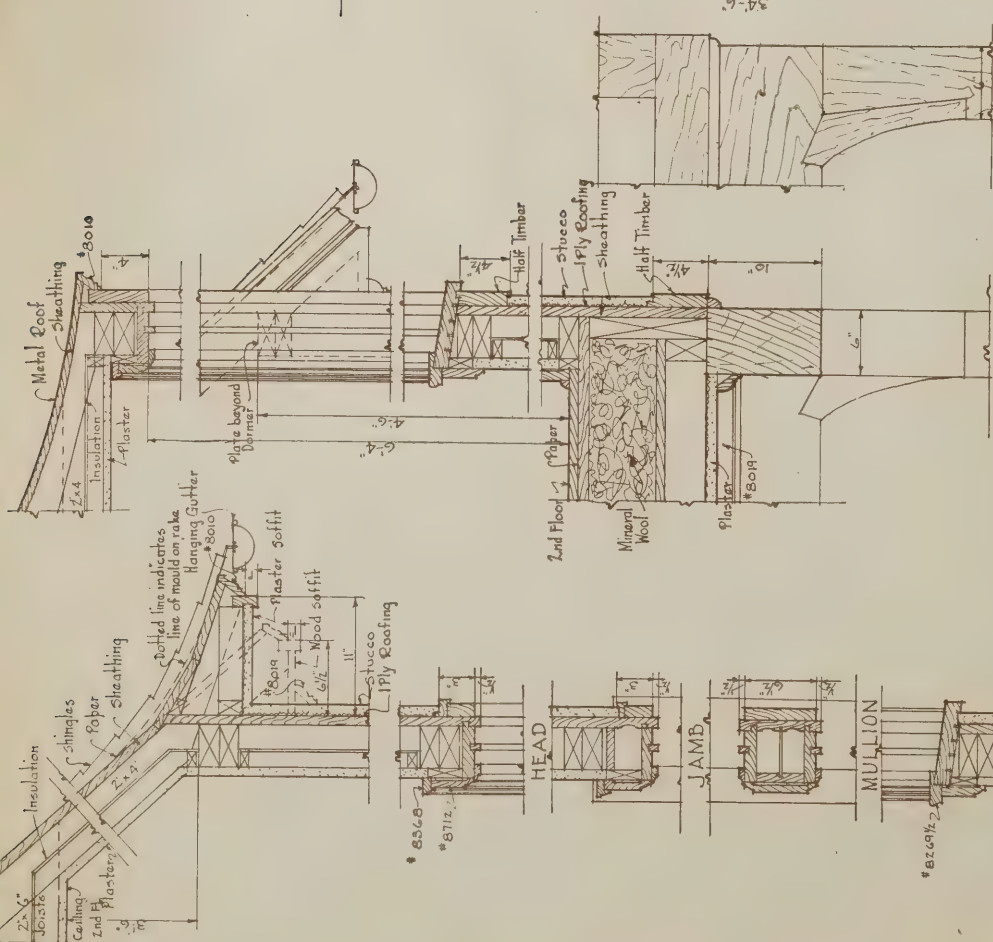
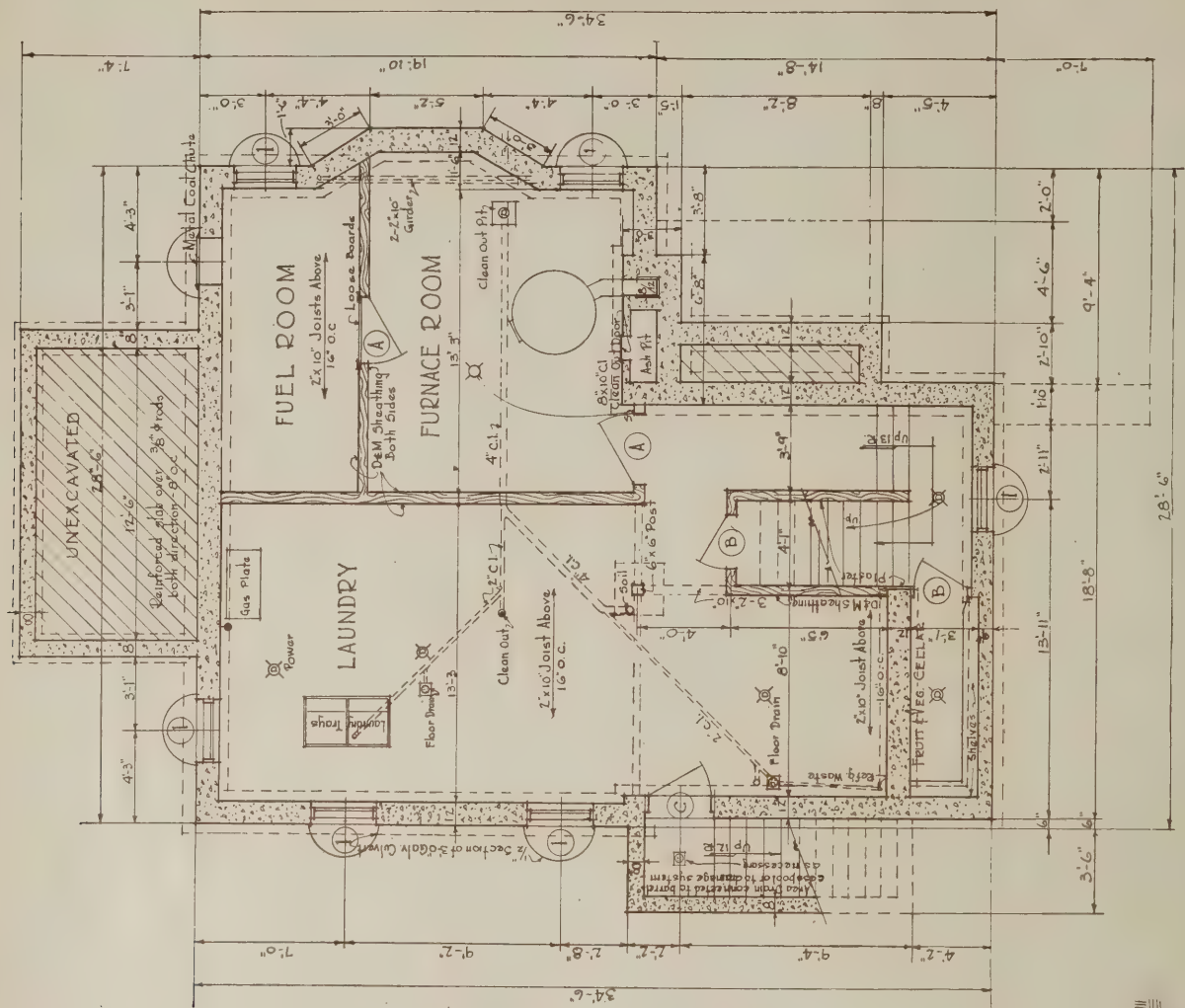
Stock numbers refer to moulding in Universal Millwork Design Book #20. In case these mouldings cannot be procured, others of similar design and size may be substituted.

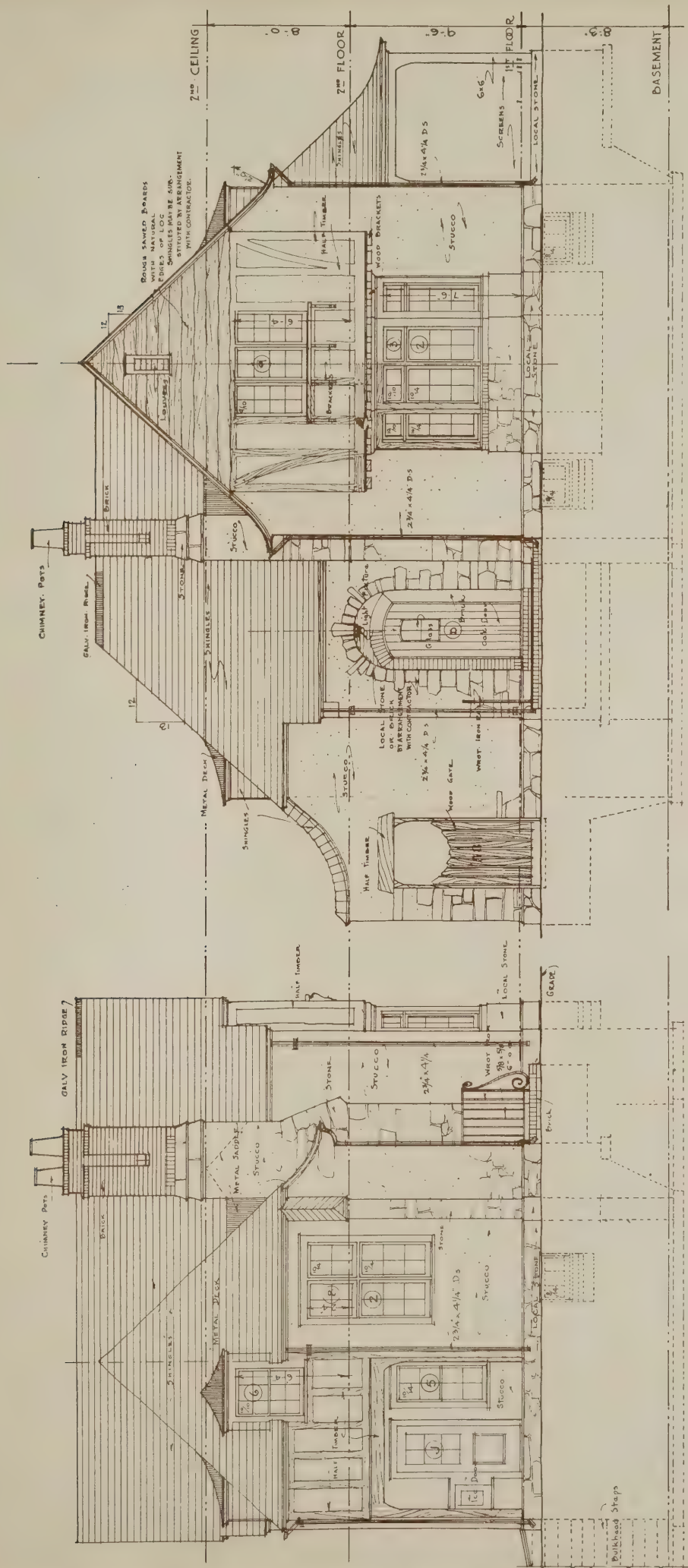
Provide 1/2" screen and storm sash for all exterior openings except the door unit otherwise noted. Bottom rail of storm sash to have vent.

Dimensions are taken to outside of foundation walls, to outside of studs on exterior walls and center of studs on partition walls.

Foundation walls shown concrete may be stone brick concrete block or load-bearing hollow tile. Where building code requires permit foundation walls may be 4" thick (with 20"x9" footings) except in case of stone which shall be 18" thick.

MATERIALS	ELECTRIC WIRING SYMBOLS
CONCRETE	CEILING OUTLET
BRICK	DROP CORD
WOOD	BRACKET
STONE	BASE PLUG
	SWITCH
	3WAY SWITCH
	GAS OUTLET
	PUSH BUTTON
	BELL OUTLET
	Buzzer





FRONT ELEVATION

SCALE 1/4" = 1'-0"

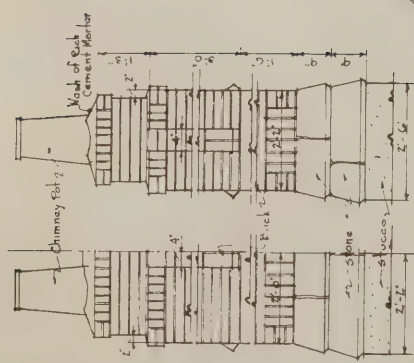
SIDE ELEVATION

SCALE 1/4" = 1'-0"

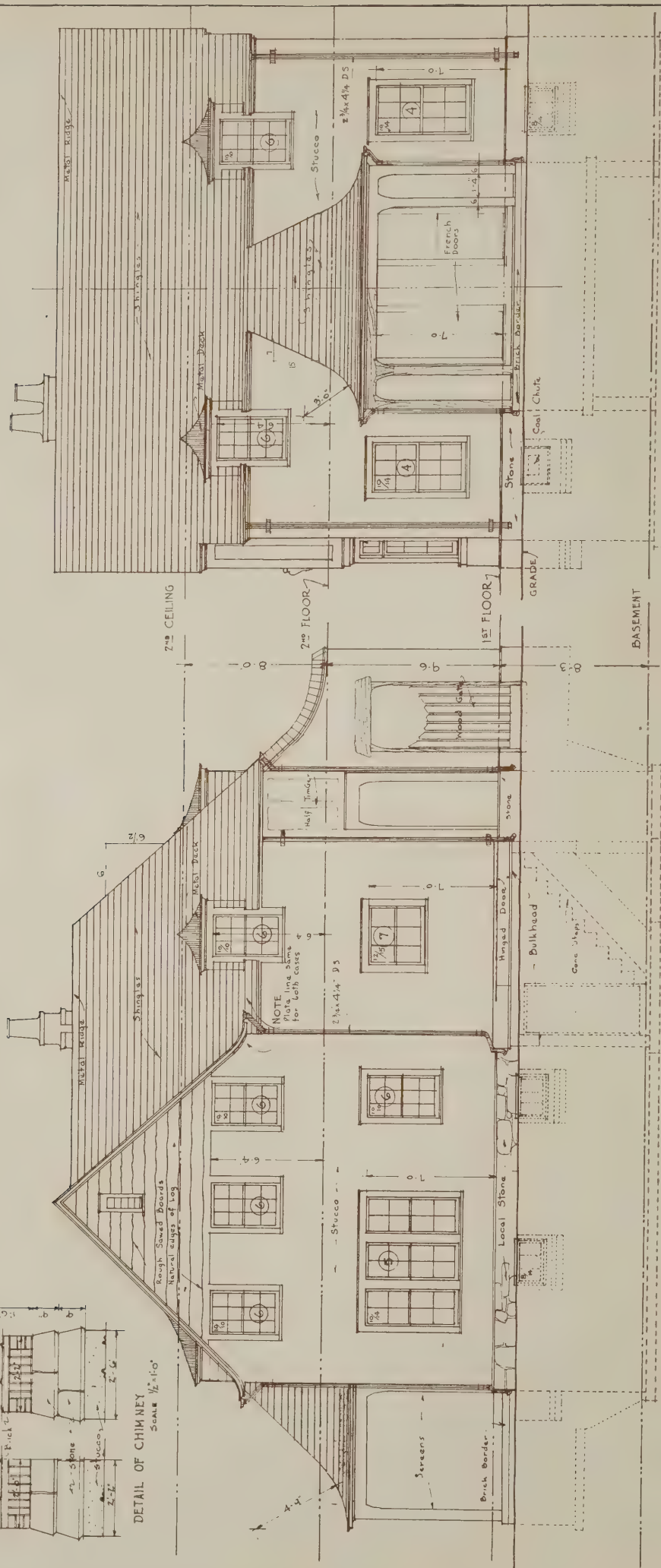
HOME PLAN FOR	National Builder, January 1924
PLAN NO.	GAG-4
SHEET NO.	3



THE ARCHITECTS' SMALL HOUSE
SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
HOME OFFICE: EMMETT, ILL.

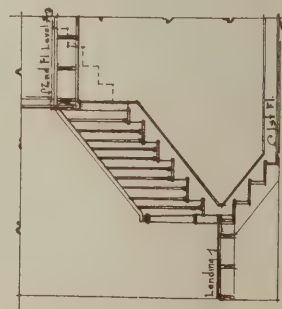


DETAIL OF CHIMNEY
SCALE 1/2" = 1'-0"



REAR ELEVATION
SCALE 1/4" = 1'-0"

SIDE ELEVATION
SCALE 1/4" = 1'-0"



SECTION THRU STAIR - CURTIS STAIR C-921 SCALE 1/2" = 1'-0"

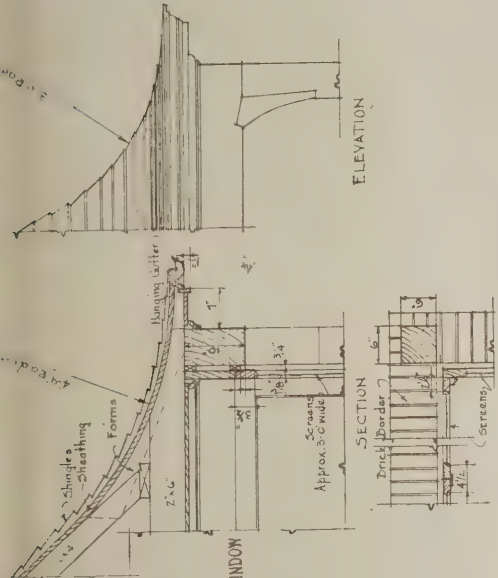
HOME PLAN FOR National Builder, January, 1924	
PLAN No	GAG4
THE ARCHITECTS SMALL HOUSE SERVICE BUREAU	
SHEET No	

SCHEDULE OF WINDOWS

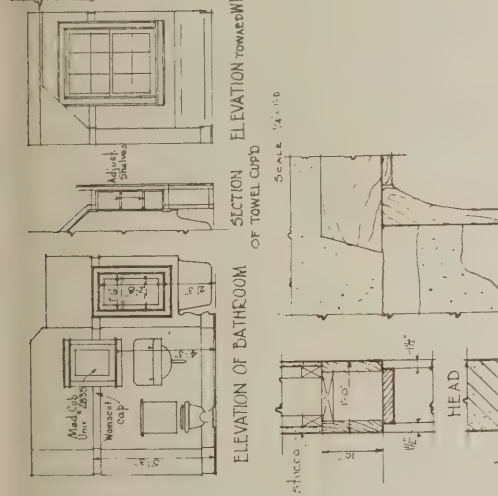
QUART TYPE	DESCRIPTION	NO. OF LIGHTS	FRAME
1	BASEMENT SASH	2	10/14 1 7/8
2	CASEMENT	2	10/14 1 7/8
3	FIXED SASH	2	10/10 1 7/8
4	DOUBLE HUNG	12	10/14 1 7/8
5	"	4	9/14 1 7/8
6	"	12	10/10 1 7/8
7	"	6	12/15 1 7/8
8	FIXED SASH	4	9/14 1 7/8
9	CASEMENT	8	9/10 1 7/8

SCHEDULE OF DOORS

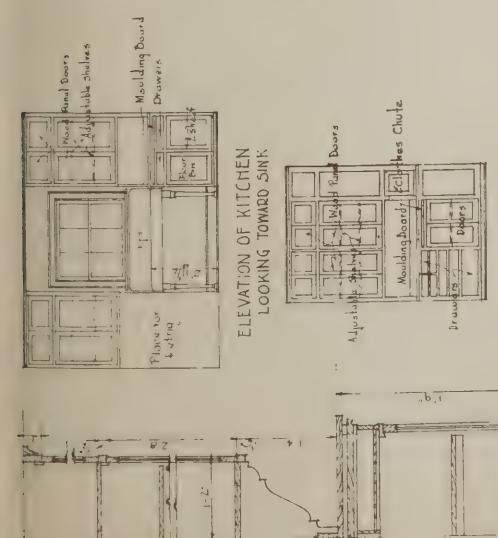
QUANT TYPE	DESCRIPTION	REMARK
2	A 3'-0" x 7'-0" x 1 7/8"	UNIV. 710 5 PANEL
2	B 2'-4" x 7'-0" x 1 7/8"	" 713 5 "
1	C 2'-8" x 7'-0" x 1 7/8"	" 710 5 "
1	D 3'-0" x 7'-6" x 1 7/8"	As Detailed FRONT DOOR
4	E 2'-6" x 7'-3" x 1 7/8"	UNIV. 1103
2	F 3'-0" x 7'-0" x 1 7/8"	UNIV. 1176 FRENCH
2	G 2'-4" x 7'-0" x 1 7/8"	" 1105
2	H 2'-6" x 7'-0" x 1 7/8"	" 1171 FRENCH
1	J 2'-6" x 7'-0" x 1 7/8"	CURTIS C-231 REAR
8	K 2'-6" x 6'-8" x 1 7/8"	UNIV. 1103
1	L 1'-0" x 6'-8" x 1 7/8"	" 1125
1	M 2'-2" x 6'-8" x 1 7/8"	" 1125



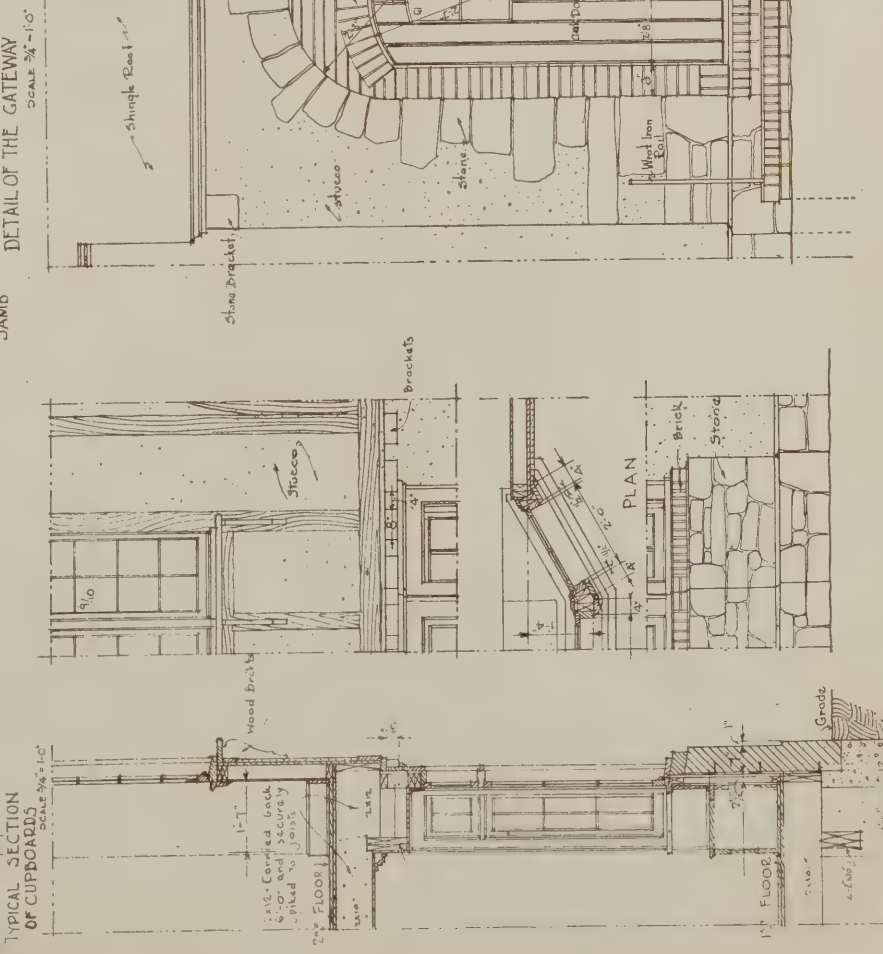
DETAIL OF PORCH SHOWING SCREENS
SCALE 3/4" = 1'-0"



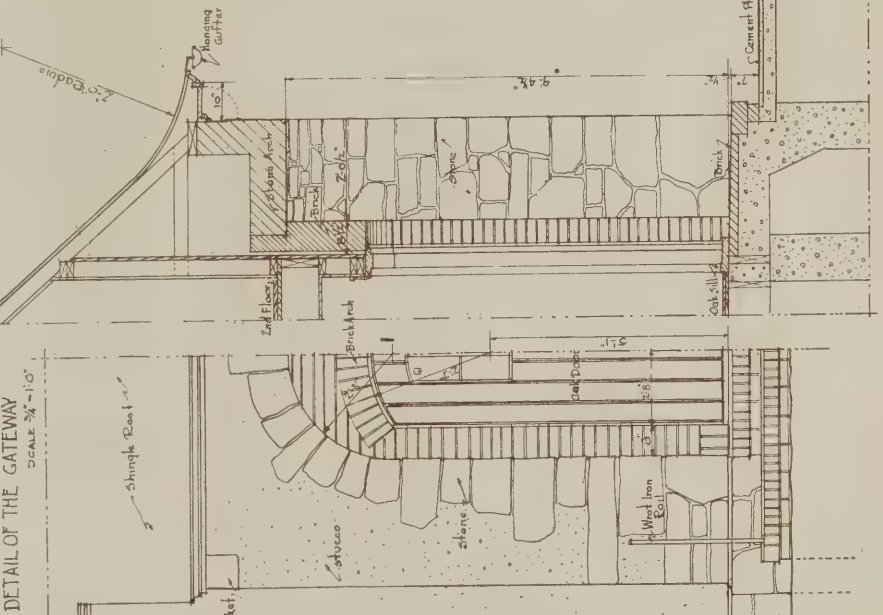
DETAIL OF THE GATEWAY
SCALE 3/4" = 1'-0"



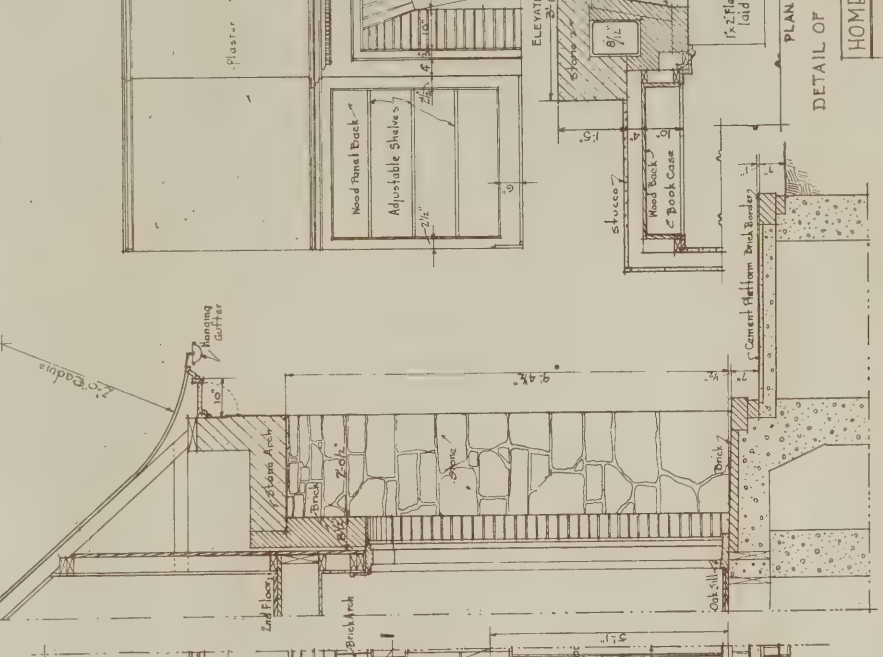
CUPBOARDS IN PANTRY
SCALE 1/4" = 1'-0"



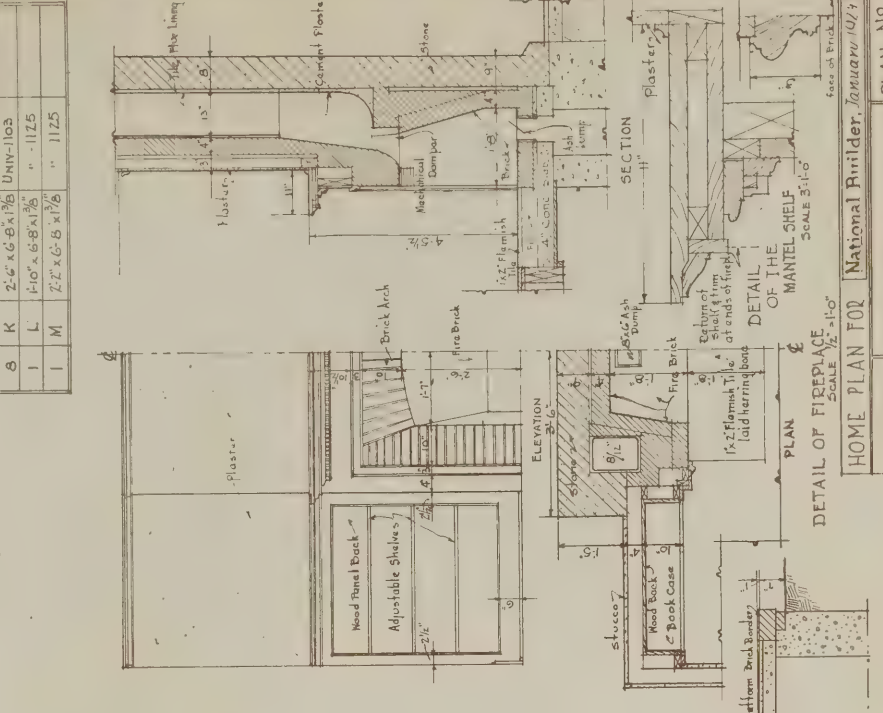
SECTION
DETAIL OF FRONT BAY
SCALE 1/2" = 1'-0"



SECTION
DETAIL OF FRONT ENTRANCE
SCALE 1/2" = 1'-0"



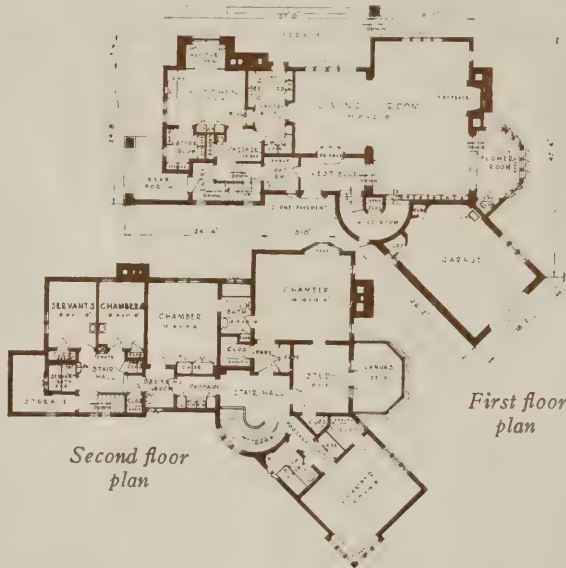
SECTION
DETAIL OF FRONT ENTRANCE
SCALE 1/2" = 1'-0"



SECTION
DETAIL OF FRONT ENTRANCE
SCALE 1/2" = 1'-0"



The home of Mr. F. E. House, Duluth, Minnesota. William Chalmers Agnew, Jr., architect



The front entrance with garage wing in the foreground



Looking toward the flower room, showing another view of the garage wing and its interesting bay window

Quantity Survey for House No. 6A64

Designed Especially for National Builder by
The Architects' Small House Service Bureau

EXCAVATING		70 lin. ft. 2x10 box sill.....	6 casements 10x14-6L-1½
256 cu. yd.....		900 ft. com. bds. 1st floor subfloor..	4 sash 10x10-2L-1½
BACK FILL		1086 ft. 13/16x1½ 1st. fl. fin. floor.	2 wds. 10x14-12L-1½
56 cu. yd.....		360 lin. ft. 1x3 bridging.....	4 wds. 10x14-8L-1½
FOUNDATION		1100 lin. ft. grounds.....	8 wds. 10x10-12L-1½
If 12" concrete, 50 cu. yd. gravel,		288 lin. ft. 2x4 1st fl. part'n plates	1 wd. 12x15-6L-1½
200 sax cement.....		84—2x4-9 1st floor partition studs..	2 sh. 10x14-4L-1½
If 9" concrete, 40 cu. yd. gravel,		3—2x10-16 1st floor stair horses.....	3 casements 9x10-8L-1½
168 sax cement.....		8—2x10-16 2d floor joist.....	Storm Sash:
If 12" tile, 24,300 CMB tile, 19 cu.		23—2x10-14 2d floor joist.....	6 st. sh. 8x14-3L-1½
yd. mortar		13—2x10-18 2d floor joist.....	6 st. sh. 10x14-6L-1½
If 9" tile, 17,500 CBM tile, 13 cu.		3—2x10-14 2d floor joist headers.....	4 st. sh. 10x10-2L-1½
yd. mortar		900 ft. com. bds. 2d floor subfloor..	2 st. sh. 10x14-12L-1½
302 sq. ft. ashler stone.....		1000 ft. 13/16x1½ 2d. fl. fin. floor..	4 st. sh. 10x14-8L-1½
600 face brick.....		360 lin. ft. 2x4 2d floor part'n plates	8 st. sh. 10x10-12L-1½
CEMENT FLOORS		105—2x4-8 2d floor partition studs..	1 st. sh. 12x15-6L-1½
7 cu. yd. gravel.....		12—2x6-16 2d floor ceiling joist.....	2 st. sh. 10x14-4L-1½
5 cu. yd. sand.....		19—2x6-14 2d floor ceiling joist.....	3 st. sh. 9x10-8L-1½
74 sax cement.....		13—2x6-18 2d floor ceiling joist.....	2 louvre sash—1½
9 spatter blocks.....		900 ft. D&M attic floor.....	Screens:
CHIMNEY		70 lin. ft. 1x4 ribbon.....	6 screens 8x14-3L-1½
2830 common brick.....		2—2x8-12 porch girders.....	6 screens 10x14-6L-1½
100 fire brick.....		2—2x8-14 porch girders.....	4 screens 10x10-2L-1½
160 inside face brick.....		4—2x8-8 porch girders.....	2 screens 10x14-12L-1½
12 sq. ft. hearth tile.....		12—2x4-8 porch ceiling joist.....	4 screens 10x14-8L-1½
68 lin. ft. 8x12 flue tile.....		366 lin. ft. 2x4 outside wall plates..	8 screens 10x10-12L-1½
20 lb. fire clay.....		110—2x4-14 outside wall studs.....	1 screen 12x15-6L-1½
3 cu. yd. mortar.....		20—2x4-16 gable and dormer studs	2 screens 10x14-4L-1½
1 cast iron ash dump.....		12—2x4-12 opening headers.....	3 screens 9x10-8L-1½
1 throat and damper.....		6—2x4-14 opening doubles.....	2 screens for louvres—1½
1 angle 4x3x5/16—4'0.....		12—2x4-10 porch rafters.....	Outside Door Frames:
2—8x10 cleanout doors		48—2x4-16 rafters	1 dr. fr. 3'0x7'6-1¾ seg. top.....
1—8" thimble		26—2x4-14 rafters	1 dr. fr. 2'8x7'0-1¾
1—6" thimble		4—2x4-16 rafter headers	2 dr. fr. 2'6x7'0-1¾
6 yd. metal lath.....		3—2x4-14 dormer rafters	1 icing door frame.....
LATH		2300 ft. shiplap wall sheathing.....	Outside Doors:
9 yd. metal lath over furnace.....		250 ft. rough sawed boards.....	1 dr. 3'0x7'6-1¾ seg. top.....
230 yd. metal lath for stucco.....		200 ft. siding.....	1 dr. 2'8x7'0-1¾ (No. C239).....
11340 wood lath.....		1800 ft. boards roof sheathing.....	2 dr. 2'6x7'0-1¾ (No. 1272).....
PLASTER		13½ M shingles.....	1 icing door.....
9 yd. plaster on metal.....		130 ft. ceiling porch.....	Storm Doors:
230 yd. stucco on metal.....		25—2x4-16 lookouts and extras.....	1 st. dr. 3'0x7'6-1¾
810 plaster on wood lath.....		10—2x6-16 scaffold and extras.....	1 st. dr. 2'8x7'0-1¾
14 yd. Keene's cement.....		4—2x8-14 scaffold and extras.....	2 st. dr. 2'6x7'0-1¾
TILE FLOORS		6—2x10-14 scaffold and extras.....	Screen Doors:
48 sq. ft. ceramic tile.....		MILLWORK	1 sc. dr. 3'0x7'6-1¾
26 lin. ft. cove base.....		Frames:	1 sc. dr. 2'8x7'0-1¾
LUMBER		6 frames 8x14-3L-1¾	2 sc. dr. 2'6x7'0-1¾
1—6x6-7 post		2 single fr. 10x14-6L, tr. 10x10-2L..	Outside Millwork:
6—2x10-14 girder		1 mul. fr. 10x14-6L, tr. 10x10-2L.....	200 lin. ft. cornice.....
3—2x10-14 stair horses.....		1 mul. fr. 10x14-6L, tr. 10x14-4L.....	16 cornice brackets.....
4 ft. 2" plank cleanout cover.....		2 single fr. 10x14-12L-1¾	4 window brackets.....
172 lin. ft. 2x4 bsmt. partition plates		1 triple fr. 10x14-8L-1¾	3 half timbers 8"x4'6.....
50-2x4-7 bsmt. partition studs.....		1 single fr. 10x14-8L-1¾	2 half timbers 8"x4'0.....
1140 ft. D&M bsmt. partition shthg.		8 single fr. 10x10-12L-1¾	1 gate
15—2x10-16 1st floor joist.....		1 single fr. 12x15-6L-1¾	1 gate frame with timber header....
15—2x10-14 1st floor joist.....		1 triple fr. 9x10-8L-1¾ casement.....	32 lin. ft. timber porch beam.....
13—2x10-18 1st floor joist.....		2 louvre frames	4 porch posts.....
4—2x10-16 headers		Windows:	1 timbered opening frame 9'0x8'6....
		6 sash 8x14-3L-1¾	

128 lin. ft. plaster panels.....	
1 bulk head door and frame.....	
Interior Doors:	
2 doors 3'0x7'0-1 $\frac{3}{8}$ (No. 720).....	
2 doors 2'4x7'0-1 $\frac{3}{8}$ (No. 720).....	
1 door 2'8x7'0-1 $\frac{3}{8}$ (No. 720).....	
4 doors 2'6x7'0-1 $\frac{3}{8}$ (No. 1103).....	
2 doors 3'0x7'0-1 $\frac{3}{8}$ (No. 1276).....	
2 doors 2'4x7'0-1 $\frac{3}{8}$ (No. 1103).....	
8 doors 2'6x6'8-1 $\frac{3}{8}$ (No. 1103).....	
1 door 1'10x6'8-1 $\frac{3}{8}$ (No. 1125).....	
1 door 2'2x6'8-1 $\frac{3}{8}$ (No. 1125).....	
Jambs:	
2 jambs 3'0x7'0.....	
2 jambs 2'4x7'0.....	
1 jamb 2'8x7'0.....	
4 jambs 2'6x7'0.....	
2 jambs 3'0x7'0.....	
2 jambs 2'4x7'0.....	
8 jambs 2'6x6'8.....	
1 jamb 1'10x6'8.....	
1 jamb 2'2x6'8.....	
1 jamb 3'0x7'0.....	
Interior Trim:	
6 side trim 8x14-3L.....	
2 side single trim 10x14-6L tr. 10x 10-2L.....	
1 side mul. trim 10x14-6L tr. 10x 10-2L.....	
1 side mul. trim 10x14-6L tr. 10x 14-4L.....	
2 side single trim 10x14-12L.....	
1 side triple trim 10x14-8L.....	
1 side single trim 10x14-8L.....	
8 side single trim 10x10-12L.....	
1 side single trim 12x15-6L.....	
1 side triple trim 9x10-8L.....	
2 side louvre trim.....	
1 side dr. trim 3'0x7'6 segment top.....	
1 side dr. trim 2'8x7'0.....	
2 side dr. trim 2'6x7'0.....	
1 side icing door trim.....	
4 side trim 3'0x7'0.....	
4 side trim 2'4x7'0.....	
2 side trim 2'8x7'0.....	
8 side trim 2'6x7'0.....	
4 side trim 3'0x7'0.....	
4 side trim 2'4x7'0.....	
16 side trim 2'6x6'8.....	
2 side trim 1'10x6'8.....	
2 side trim 2'2x6'8.....	
2 side opening trim 3'0x7'0.....	
1 flight basement stairs.....	
1 flight grade stairs.....	
1 flight main stairs with rail C901.....	
2—3'6 kitchen cupboards.....	
2 breakfast room seats.....	
1 breakfast room table.....	
2 clothes chute doors, jambs, trim.....	
1—4'0 cupboard.....	
1—9'0 hinged seat.....	
1—3'0 book case.....	
1 mantel shelf.....	
1 chimney cabinet.....	
1 linen cabinet.....	
1 towel cabinet.....	
1 medicine cabinet.....	
1 scuttle door.....	
1 scuttle door jamb.....	
1 side trim for scuttle door.....	

550 lin. ft. base.....
550 lin. ft. base shoe.....
550 lin. ft. base molding.....
12 lin. ft. closet shelving.....
12 lin. ft. closet hook strip.....
320 lin. ft. picture molding.....
120 lin. ft. ceiling cove.....
12 lin. ft. closet clothes rod.....
12 lin. ft. threshold.....

INSULATION

720 ft. $\frac{1}{2}$ " vegetable insulation or equal for ceiling.....
1800 ft. $\frac{1}{2}$ " vegetable insulation or equal for walls.....
4 rolls waterproof paper for walls.....
3 rolls felt roof.....
3 rolls rosin for floors.....

WEATHER STRIPPING

6 sash 8x14-3L.....
6 sash 10x14-6L.....
4 sash 10x10-2L.....
2 wds. 10x14-12L.....
4 wds. 10x14-8L.....
8 wds. 10x10-12L.....
1 wd. 12x15-6L.....
2 sh. 10x14-4L.....
3 sh. 9x10-8L.....
1 dr. 3'0x7'6.....
1 dr. 2'8x7'0.....
2 dr. 2'6x7'0.....
1 icing door.....

CAULKING

4 single door frames.....
1 icing door frame.....
1 coal chute.....
22 single wd. frames.....
2 mullion wd. frames.....
2 triple wd. frames.....

TINWORK

4 metal deck 5'0x5'0.....
1 chimney flashing.....
45 lin. ft. ridge roll.....
3 finials.....
52 lin. ft. hip roll.....
40 lin. ft. flashing.....
100 lin. ft. gutter.....
24 gutter ends.....
36 gutter hangers.....
7 nipples.....
elbows.....
7 offsets.....
6 shut offs.....
7 strainers.....
100 lin. ft. conductor.....
28 conductor hooks.....
300 tin shingles.....
1 clothes chute lining.....

REINFORCING STEEL

21— $\frac{3}{8}$ rods 8'0.....
12— $\frac{3}{8}$ rods 14'0.....
6— $\frac{3}{8}$ rods 8'0.....
12— $\frac{3}{8}$ rods 4'0.....
6— $\frac{3}{8}$ rods 9'0.....
14— $\frac{3}{8}$ rods 3'6.....

HARDWARE

cellar sash sets.....
9 casement sash sets.....
15 sash locks.....
15 sash lifts.....

38 storm sash sets.....
38 screen sets.....
3 front door sets with butts.....
1 rear door set with butts.....
1 icing door set with butts.....
4 storm door sets with butts.....
4 screen door sets with butts.....
1 gate set with hinges.....
1 bulk head door set.....
1 floor hinge.....
2 push plates.....
22 inside door sets with butts.....
27 door bumpers.....
4 dozen clothes hooks.....
1100 lb. assorted nails.....
6 lb. assorted brads.....
4 stair rail brackets.....
450 lb. sash weights.....
3 hanks sash cord.....
9 pr. orn. butts.....
5 cupboard turns.....
4 elbow catches.....
1 set castors.....
1 bin pull.....
2 drawer pulls.....
2 pr. spring hinges for clothes chute doors.....
10 pr. orn. butts.....
5 cupboard turns.....
5 elbow catches.....
10 drawer pulls.....
1 pr. hinges for seat cover.....
12 pins for bookcase shelves.....
1 pr. orn. butts.....
1 cupboard turn.....
8 drawer pulls for linen cabinet.....
1 pr. orn. butts.....
1 cupboard turn.....
1 pr. orn. butts.....
1 cupboard turn.....
1 pr. hinges for scuttle door.....

ORNAMENTAL IRON

1 wrought iron rail 4'0x4'0.....

EXTERIOR PAINTING

4 gal. trim paint.....
2 gal. body paint.....
1 gal. screen paint.....
1 gal. st. sh. paint.....
40 gal. shingle stain.....
1 gal. metallic paint.....
2 gal. boiled oil.....
1 gal. cement paint.....
$\frac{1}{2}$ gal. sash color.....
6 lb. putty.....
1 gal. japan.....
1 gal. turpentine.....

INTERIOR PAINTING

12 gal. white paint.....
8 gal. enamel.....
5 gal. filler stain.....
2 gal. shellac.....
9 gal. varnish.....
3 gal. floor shellac.....
4 doz. sheets sandpaper.....
5 gal. floor varnish.....
2 gal. oil.....
1 gal. japan.....
1 gal. turpentine.....
1 gal. alcohol.....
3 lb. steel wool.....

Scaffold Support for Finished Wall

A Suggestion for Stucco Contractors

MANY builders have felt the need of an inexpensive form of scaffold support which could be used in connection with working on a finished wall. It goes without saying that no scaffold can be directly attached to a finished surface without doing some damage, and it has been customary in the past, when working above grade after

of the bracket and prevented from slipping on the ground by means of a stake. If it is desired to work at a greater height than than shown, 2x6, or larger joists, with the ends beveled to the proper angle and with light, diagonal braces from joist to joist, should be used instead of the studs. The bracket merely rests on the wall and causes

and *Sheet Metal Journal* in the case of a sheet metal contractor whose methods are just as applicable to any contractor, carpenter, mason, painter or what not.

Men are walking by and around people that want to buy from them, and do not know it. There is one sheet metal contractor in a certain city that uses his eyes, nothing gets by him that looks like an order that can be caught. Naturally, he does something more than sit still and wait for orders to come in.

Wherever he goes about his home city, he keeps his eyes on buildings. When he sees repairs are needed, down it goes in the note book. A deftly-worded letter goes



Scaffold support for finished walls



Detail of bracket and method of support

the wall had been finished, to erect a system of ordinary falsework, a method which has proved quite costly, due to the time required to build it, the amount of material involved, and the time required for dismantling.

Where the work to be done is not too far from the grade level the method shown in the photograph forms a simple and practical means of providing a substantial base for the scaffold plank. It consists merely of a right-angle support made of 2x4 studs and braced with 1-inch board. It is simply placed against the wall and held in position by means of a 2x4 stud resting in the corner

no damage when it is removed. All necessary support is furnished by the diagonal brace. This method is simple, practical, safe, easy to erect and dismantle, and should commend itself to any builder who is looking for a means of cutting his construction costs.

Alertness Picks Up Orders

LOOKING for business and just waiting for business makes the difference between success and a bare living. The former is described by the *Warm Air Heating*

to the owner. Sometimes as many as a hundred of such are sent within a month, suggesting needed repairs, and how well equipped the writer is to do them. The orders from this source keep three mechanics busy—on the most profitable kind of work.

These are all "pick-ups," the selling expense is small so that it is out of all proportion to the amount of business secured. Naturally many of the customers secured in this way become permanent, and "repeat orders" are the rule rather than the exception.



This is the stucco house, which was moved without cracking the stucco, as it stands in its new location. The light vertical streak near the center of the building is where the two sections into which the house was cut were joined after moving

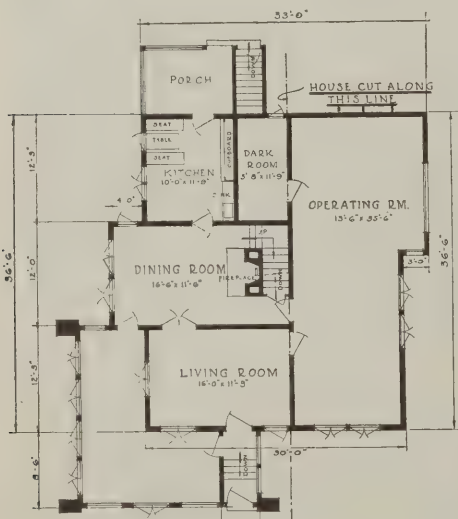
Moved a Mile and Nary a Crack

A Stucco House in Waukegan, Illinois, Lifted Off Its Foundation and Moved a Long Distance to a New Site Without Damage to the Exterior Wall

FROM past experience it would seem that such a feat described here was almost impossible, but nevertheless it has

This building is a combination house and studio and was designed for a Waukegan, Illinois, photographer, who wished to combine his studio and living quarters, in order to simplify his work and at the same time make it unnecessary for him to occupy and pay rent for two separate es-

tablishments. Shortly after the house was finished the ground upon which it stood was purchased by the school board to be

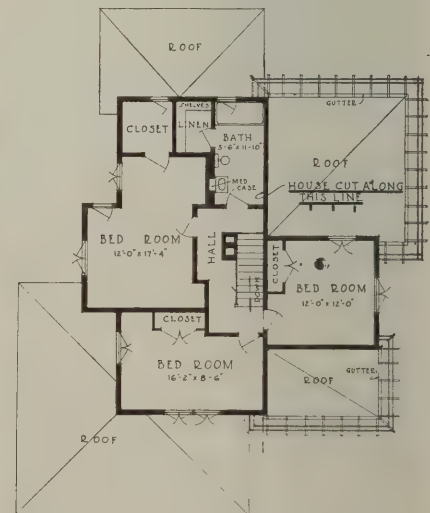


The first floor contains the living-rooms, the work-rooms, and a large sun-porch

been done. Contrary to general opinion, this house-moving job proves that stucco houses may be moved in as satisfactory a manner as a house with wood or brick for the exterior finish.



An interior wall corner, a likely place for a crack, yet no crack is to be seen



On the second floor are located the bath-room, sleeping-rooms, and a storage closet

used as a playground and as a possible site for a new school building which was to be erected.

The combination studio and residence was entirely unsuited for any purpose the

school board could put it to and therefore it was decided to sell the building and have it removed from the site. The job was a difficult one, but some of the illustrations shown here prove that the moving work was well done and that the stucco was strong enough to withstand the forces which ordinarily tend to crack a stucco wall.

The building was too wide to be moved



Notice that no cracks are visible under or near the cornice

as a unit, hence it was cut in two as shown on the accompanying floor plan, and moved in sections. Ordinary steel house-moving trucks were placed under the two sections and they were pulled along the street to the new site, where the foundation was waiting to receive the building. The two sections were set on the new foundation and after being fitted together, the exterior joints were stuccoed so that the break would be concealed. In

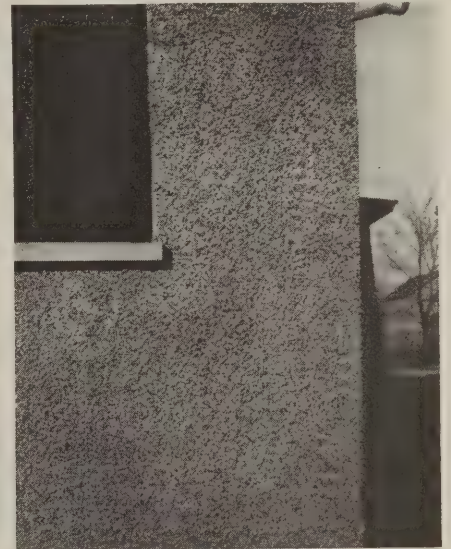


Front view of the main section of the building as it was being towed through the street. Heavy, wide-tread trucks were used

the illustration showing the front of the building, the light vertical streak is the place where the two sections were joined. In time the effect of weathering will make this streak less prominent and it will eventually be the same color as the rest of the wall.

The remarkable feature about this job is the fact that there are practically no visible cracks in the stucco. It is not unusual, in moving stucco houses, to find wide cracks in the corners and around the window frames when the house is lifted off its foundations and, in many cases, to have large patches of stucco separate from the lath and fall off. An inspection of the accompanying detail pictures will show, however, that for all practical purposes, the stucco on this house is intact, and no more disturbed than if the house had never been moved.

The material used for the exterior walls was a prepared magnesite stucco, bought on the open market, and mixed and applied according to the directions furnished by the manufacturer. For the contractor who has hesitated to use stucco it would seem that this test proves it to be a material well-



A porch corner. Another likely place for a crack, yet none is to be seen



Rear view of the main section of the building as it was being set on its new foundation. It was pulled into the lot rear-end first

suited to the needs of any exterior wall finish. Few houses of any kind can be lifted off their foundations and moved almost a mile without damage to the walls.

It may be said in conclusion that three things made possible this feat of moving a house without damaging the walls: first, a good grade of stucco; second, a contractor who applied the stucco according to directions furnished by the manufacturers, and third, a careful job of housemoving.

C. W. Webster, of Waukegan, was the architect for this building, and Leonard J. Latz was superintendent of construction.

A New Form of Monolithic Wall Construction

A. N. Phillips of El Cajon, California, Develops an Inexpensive Type of Concrete Wall Construction for the Small House

AS an example of a novel type of construction, NATIONAL BUILDER presents in this issue a system recently developed by A. N. Phillips, a builder of El Cajon,

higher than ordinary frame construction.

Reference to the illustration showing the wall construction will give at a glance a general idea of the system. The gentleman,

about $1\frac{1}{4}$ inches thick and at the studs the thickness is $5\frac{3}{4}$ inches. In order that the forms may be easily removed, the studs are tapered from 3 inches on the inside face to $4\frac{1}{2}$ inches where they meet the wall slab. The wall slab is offset 1 inch from the outside foundation face.

In the construction of a house under this system, the foundation is laid in the ordinary manner. The floor joists, of regular dimensioned lumber, are placed directly on the foundation, and between joists is set a header, located about an inch away from the inside foundation face. (See Fig. 2 in sketch.) This space between the header and the foundation wall is to provide for a free circulation of air between the outside wall and the inside wall which is formed of lath and plaster. As a means of preventing the entrance of mice and vermin, a fine wire screen is fixed to cover the opening. If a dead air space is desired between walls, the headers may be set flush with the foundation wall, thus closing the opening and preventing circulation. The air passage between walls is provided in the following manner:

Wedge-shaped blocks are set in the forms when the studs are cast and, due to their shape, are held firmly in the studs after the concrete hardens. Small blocks are nailed

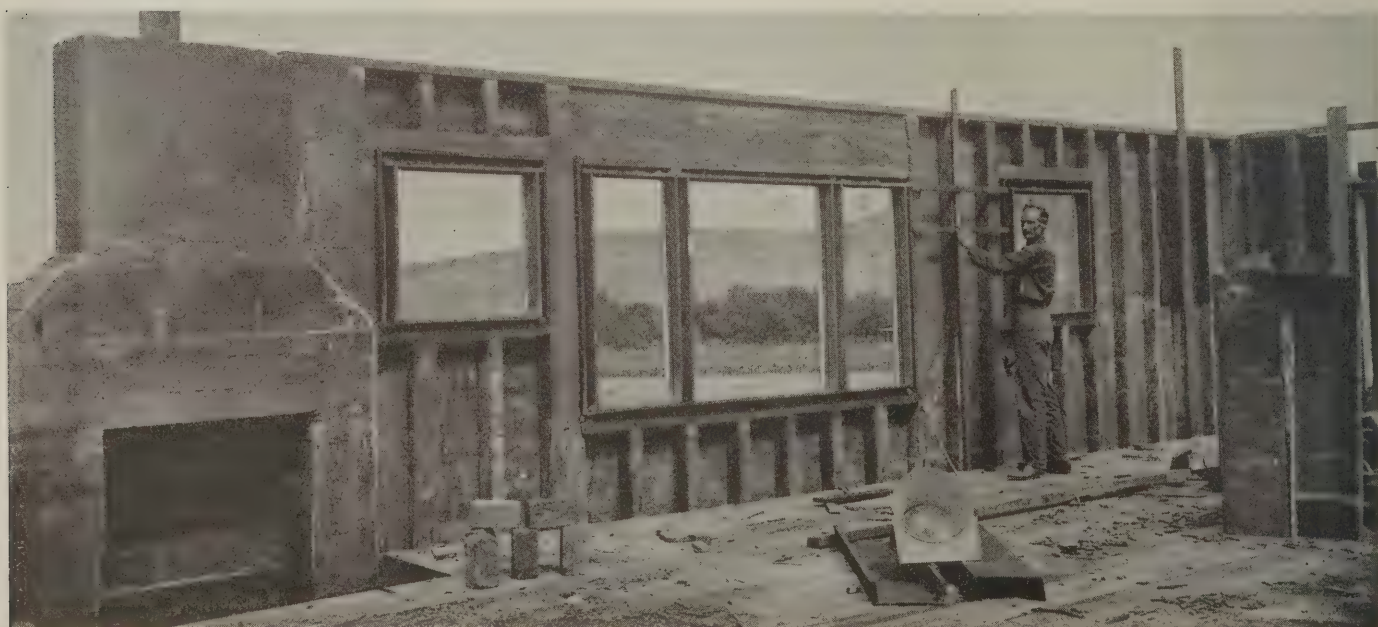


Home of A. N. Phillips at El Cajon, California, built according to the method described in this article

California. The idea has already been tried out and the result of the trials, with a complete description of the method of construction is presented in this article. According to Mr. Phillips, the advantages of this type of building are many, and the cost is no

who is illustrating the manner in which the lath is applied, is Mr. Phillips.

The wall is similar in design to the wall of an ordinary frame house except that the studs and sheathing are all of concrete cast in place. The wall slab between studs is



A. N. Phillips illustrating manner in which lath are applied to walls. Studs and sheathing are all of concrete, cast in place

to these wedges and the furring strips for the lath are nailed to these blocks. Thus the inner and outer walls are in contact only where the furring strips touch the wood nailing blocks. The entire thickness of the wall from the outside face to the finish plaster coat on the inside is about 7 inches, of which the air space is about 4 inches, except at the studs where it is equal to the thickness of the nailing block.

To construct the walls, temporary 4x4 posts are set up at the corners, and to these are fastened the top wall plates. The forms are lined up with the wall plates and poured sill-high, then the frames are set and the pouring continued. In the sleeping rooms the frames are so constructed that the sash

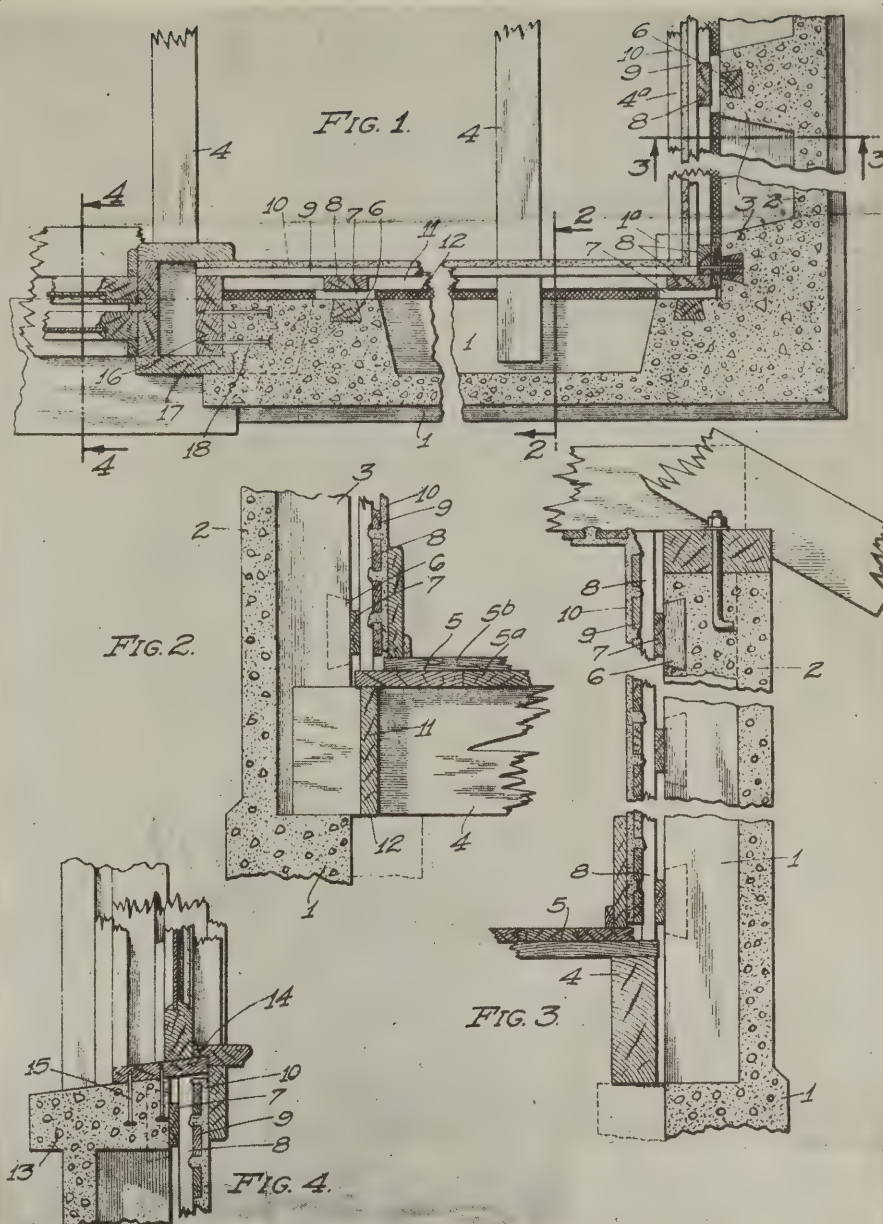


Special construction at bedroom windows to allow for full window opening

drops into the wall, thus leaving the entire window opening free. Quarter-inch twisted rods are placed in the walls horizontally at 12-inch intervals and a few extra pieces are set around the corners and openings to provide against cracks.

The forms are kept in place for a day or two and after their removal the wall is well soaked each day for several days. A mixture of five parts sand, three parts of $\frac{3}{4}$ -inch crushed stone and two parts cement with a small amount of hydrated lime is used for the walls, and after curing, the outside face is finished with a coat composed of six parts sand, two parts lime putty and one part white Atlas cement.

The finished bungalow shown here is the home of Mr. Phillips at El Cajon, California, and, according to him, the cost was about \$4500. The bungalow is quite attractive and Mr. Phillips expects to build several more like it in San Diego during the coming season. In addition to the bun-



Patent office drawing showing detail of construction. (1) Bevel at water table. (2) Wall slab. (3) Stud. (4) Joist. (5) Rough floor. (6) Wedge in concrete stud which forms nailing base for furring strip. (7) Block between wedge and furring strip. (8) Furring strip. (9) Lath. (10) Plaster. (11) Wood header. (12) Wire screen. (13) Sill. (14) Window frame. (15) Nails to hold frame in wall

galow shown, Mr. Phillips has also built a house and garage for L. M. Herald at Flint Springs. A patent, covering the method of construction, has been applied for.

Cement Making Pictured in New Film

MUCH of the unusual equipment involved in making cement is interestingly illustrated in a two-reel moving picture called "The Story of the Manufacture of Portland Cement," just released.

Starting with views of one of the large plants in which the country's cement is made, the film pictures in a non-technical way the essential steps in transforming thousands of tons of raw materials into portland cement.

From the moment that a great blast breaks loose a cliff of limestone in the quarry to the time when the finished cement goes into storage in big concrete bins, the process of manufacture is almost entirely mechanical—otherwise present day outputs would be impossible.

In addition to straight photography, animated drawings have been inserted to make clear what occurs inside the grinding mills, what goes on within the white-hot interior of the huge kilns and how the cement sacks, suspended upside down, are filled after they have been tied.

This film can now be secured without charge by interested organizations through any office of the Portland Cement Association, or from association headquarters at 111 West Washington street, Chicago.

Making a Corner China Cabinet

By James Hart Dunlop

THE china cabinet is one of the many little details which goes to make the fitting of the principal room of the house complete.

The design which is shown is very suitable for a room which has few built in fittings, and as the capacity of the cabinet is not very large, it can be at least set apart for the housewife's best set of china.

The cabinet as made up is framed as a piece of furniture having a square back on both portions which fits into the internal angle of the room.

In choosing the wood have the cabinet made up of hardwood and of wood which will match the furniture in the room in which it is to be set.

STOCK SHEET—FINISHED SIZES

Lower Portion			
Number	Length Inches	Breadth Inches	Thick- ness Inches
1 Bottom Shelf	27	15	$\frac{3}{4}$
1 Top Lower Portion.....	27	16	$\frac{3}{4}$
2 Inside Shelves	24	12	$\frac{5}{8}$
2 Stretcher Rails	18	12	$\frac{3}{4}$
1 Front Rail	24	2	$\frac{5}{8}$
2 Side Rails	16	2	$\frac{5}{8}$
3 Legs	$10\frac{1}{2}$	$13\frac{1}{4}$	$1\frac{3}{4}$
6 For Ball of Feet.....	3	$13\frac{1}{4}$	$\frac{5}{8}$
6 For Ball of Feet.....	3	3	$\frac{5}{8}$
4 Pieces for Back.....	$20\frac{1}{2}$	3	$\frac{5}{8}$
2 Panels	$20\frac{1}{2}$	12	$\frac{1}{2}$
2 Front Pillars	$20\frac{1}{2}$	3	$\frac{3}{4}$
4 Stiles	19	$2\frac{1}{2}$	$\frac{3}{4}$
4 Rails	10	$2\frac{1}{2}$	$\frac{3}{4}$
4 Blocks	6	1	$\frac{1}{2}$
2 Panels	15	6	$\frac{3}{8}$
Top Portion			
1 Bottom Shelf	24	13	$\frac{3}{4}$
1 Top Shelf	24	16	$\frac{3}{4}$
3 Inside Shelves	24	12	$\frac{5}{8}$
4 Pieces for Back.....	44	3	$\frac{5}{8}$
2 Panels	44	12	$\frac{1}{2}$
2 Front Pillars	44	$2\frac{1}{2}$	$\frac{3}{4}$
2 Side Strips	44	$2\frac{1}{2}$	$\frac{5}{8}$
1 Top Rail	21	$3\frac{3}{8}$	$\frac{3}{4}$
1 Molding	36	4	$\frac{7}{8}$
1 Molding	30	1	$\frac{1}{2}$
1 Molding	30	$\frac{1}{2}$	$\frac{1}{2}$
5 Blocks	$13\frac{1}{4}$	$1\frac{1}{2}$	$\frac{1}{2}$
2 Stiles for Door.....	39	3	$\frac{3}{4}$
2 Rails	$19\frac{1}{2}$	$2\frac{1}{4}$	$\frac{3}{4}$
3 Astragals	16	$\frac{5}{8}$	$\frac{5}{8}$
2 Astragals	36	$\frac{5}{8}$	$\frac{5}{8}$
3 Glass Slips	16	$\frac{5}{8}$	$\frac{1}{4}$
2 Glass Slips	36	$\frac{5}{8}$	$\frac{1}{4}$
4 Glass Slips	9	$\frac{1}{4}$	$\frac{1}{4}$
6 Glass Slips	6	$\frac{1}{4}$	$\frac{1}{4}$

Glass, Hinges, Handles, Nails and Glue

In making up a piece of work of this kind a great amount of labor can be saved by getting the wood planed to the finished size, but if the timber is being bought rough a little should be added to the sizes given to allow for the planing.

Beginning with the lower part of the bottom portion, have the three legs drawn in for the top rails and the stretcher rails.

The position of the legs and the shape of the stretcher rails is shown in the drawing.

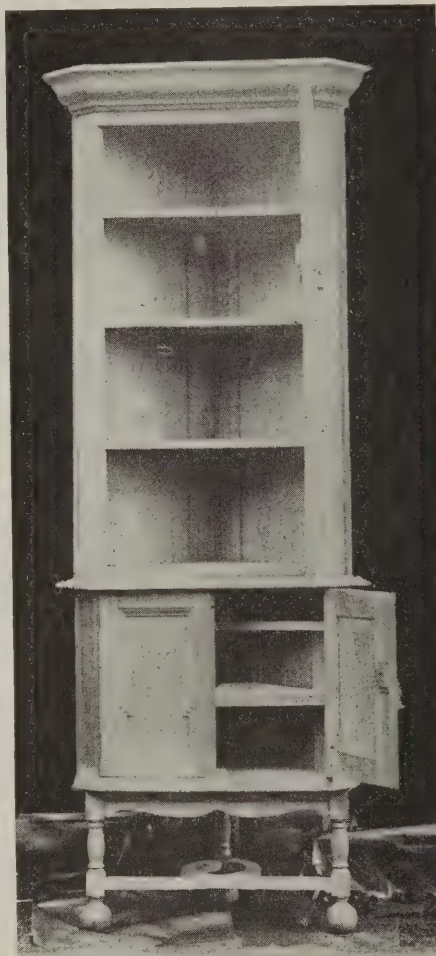
The mortises for the stretcher rails are $\frac{3}{4}$ of an inch long and are cut out on the sides of the legs.

The mortises of the top rails are cut on the sides of the back leg and at right angles but the outer ends are cut into the legs at an angle of 45 degrees.

When the mortises are cut out build the ball foot of the leg.

This is done by gluing on the opposite sides the $\frac{5}{8}$ pieces.

These are then planed off flush with the edges of the legs and the other two pieces



Cabinet with the door open, showing arrangement of shelving

each 3 inches by $\frac{5}{8}$ of an inch glued on. In each case the blocks should be well clamped until the glue becomes hard.

The legs are now turned to the shape shown and when sandpapered and cleaned up this part of the frame is glued together.

The next stage is the cutting out and the molding of the two shelves for this portion and when that is completed the two side parts of the back are dovetailed to the edge of the shelves as shown at sketch of joint at F.

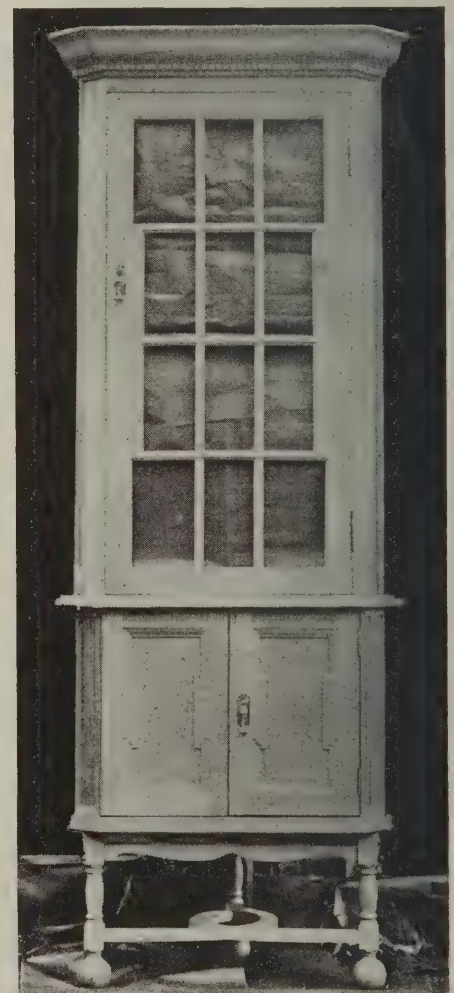
The back edges of the molded top is left straight and if there should be any desire to make the portion of the cabinet project past the upper portion the dovetailed joints of the back should be lap dovetails, otherwise they might show through on the top of the projecting part.

The dovetails and the cut out on the lower shelf is arranged exactly as shown at joint F. In this way the panel which fits in between the side parts is slipped in from below and goes right up to the under side of the top when it is nailed to the edges of the shelves.

The side pillars to which the doors are hung are housed into the lower shelf and the under side of the top.

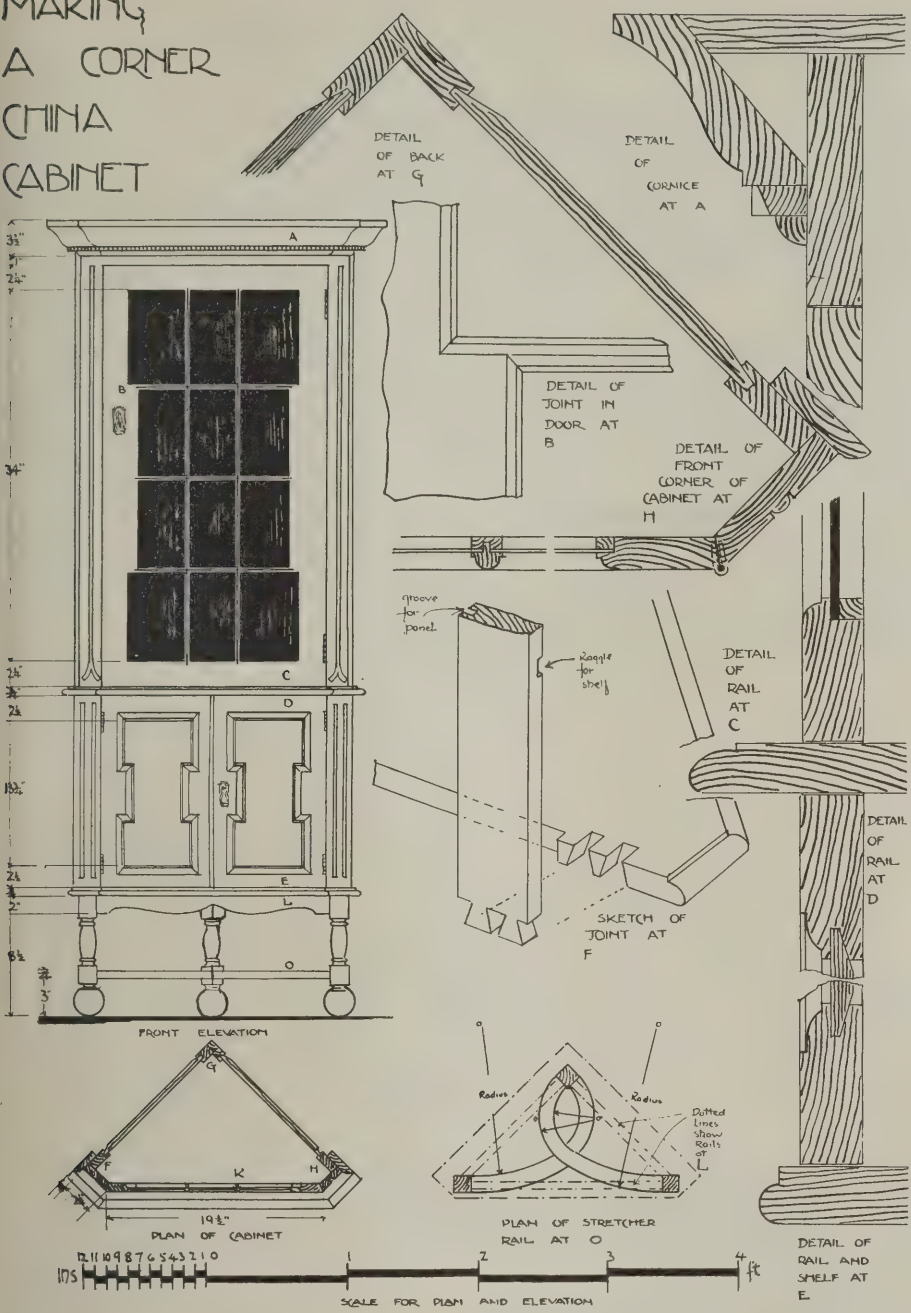
In making up the top portion the bottom shelf and the top shelf are both cut out the same length only the top shelf is a distance broader on the front edge and on the square ends equal to the distance shown in the detail of the cornice.

The side pieces are then dovetailed into the top and bottom as shown at sketch of joint at F. The side pieces are grooved and ragged for the other three shelves. The depth of the raggle is made to come in line with the face of the back panel so



China cabinet showing the woodwork before the glass is put in

MAKING
A CORNER
CHINA
CABINET



and equal in breadth to the four strips required. Plane up the piece the exact length and run the molding plane on the ends. Run the molding plane on the one edge and saw off a strip equal to the breadth of one block. Mitre the ends and fit in position. With the top door the joints of the door are mortised and tenoned. The diminished top and bottom part of the stile is then sawed out.

Fit the door together and flush it off; then take the separate doors and run the moldings and checks as far as the shape of the framing will allow. Finish the molding and checks for the glass with a chisel.

The astragals are now drawn in and molded and checked and the points mitred and halved. The detail of the joint at the deminished part of the stile is shown in the drawing. Fit and hang the door and put on the hardware.

The handles should now be taken off and the cabinet given a coat of stain, filling and three coats varnish, each coat being well polished down before the next one is added.

Houses That Sell Them-
selves

"IN these days of 'serve self' cafeterias and automats," says William Cooper, contractor and builder, 90 East Johnson Street, Germantown, Pennsylvania, "it is not remarkable to find home seekers supplying their own desire for information about the prospective home.

"I have, for many years, employed a plan for drawing the customer's attention to the features of my houses in the absence of the salesman. The method, simply that of utilizing the sign writer's art, is of placing cardboard signs in various places throughout the house.

"Very often the salesman is engaged in another part of the operation while a party is examining the property. Small signs calling attention to the character and quality of the materials or features of the house, as well as a brief summary of the carrying charges, fix themselves in the minds of the possible buyer.

"Even if the salesman is there, the reading of such words as 'Studding used here is Hemlock,' 'Double flooring,' 'Gas Range connected to outside Vent,' 'No future assessments for street improvements,' 'Monthly Carrying Charges \$47,' and so forth, cause these points to remain more firmly fixed in the mind than if they came from the mouth of the salesman.

"A liberal display of the builder's name on the cards connects the features with that particular house, and in a large city, where there are many to select from, the result is to clear up the confusion in the mind when the buyer is 'thinking it over' at home."

that in this way the ends of these three selves are cut straight.

The side pillars for the door are shown with a sunk bead run down the middle of the frame. The bead is stopped in line with the top of the door while the bottom end is branched out at the bottom to come in line with the beads in the bottom portion. Once those two pillars have been fixed the top rail of the door frame is checked into it. This rail comes underneath the bottom side of the projecting shelf at the top so that if the molding for the cornice is at hand the edge of the shelf can now be bevelled and the blocks cut and nailed in position ready for the cornice to be fixed up.

Mitre the strip for the dentil blocks and saw out the blocks to the size.

The lower quarter round which com-

pletes the cornice is made to mitre into the side molding of the same section which is shown at the detail of the corner of the cabinet.

In making up the doors the lower ones have their framing prepared in the usual way and have the joints mortised and tenoned at the corners. The molding which is shown is stuck on the framing and runs on the face about 5/8 of an inch and down a quarter of an inch. The moldings are mitred at the corner and at the same time the mitres are cut out for the molded blocks which are added to the side framing of each door.

Prepare the panels and cramp up the doors. The molded blocks are now made and glued in position. A simple plan in working these blocks is to get the wood for them in one piece about 6 inches long

Valley Forge Reproduced in Concrete

THE famous and beautiful old building which served as headquarters for General Washington during the eventful winter of 1777-1778 at Valley Forge has just been reproduced in concrete masonry construction at Narberth, Pennsylvania, by Mr. Walter K. Durham, a local architect. The owner is Mr. R. F. Brown. The residence was erected by A. C. Shand, Jr., a well known local builder. Masonry materials were furnished by the Penn Building Block Company of Philadelphia.

While the colonial style of architecture is particularly appropriate in eastern Pennsylvania, rich in revolutionary history, the beauty and adaptability of the type recommends it for use anywhere. The charming porch, with floor only slightly above the grade line, identifies the building as suburban, and if erected in more thickly settled neighborhoods, at least in the central states, most owners would desire the porch protected from easy approach, and possibly glassed in.

The secret of the appeal of this type lies largely in simplicity of line and refinement of detail. The front entrance detail, the quadrant lights in the gables and the simple dormers are all characteristic of early Colonial design. The small panes in the windows add to the feeling and provide an interesting touch in keeping with the light gray tones of the wall surfaces.

Walls of the modern replica of this historic dwelling are of concrete block covered with portland cement stucco. The stucco is in light gray and was given an attractive rough stippled finish. The floors and partitions are of usual frame construction, supported on joists securely



Replica of the house used by General Washington at his headquarters at Valley Forge. Walter K. Durham, architect

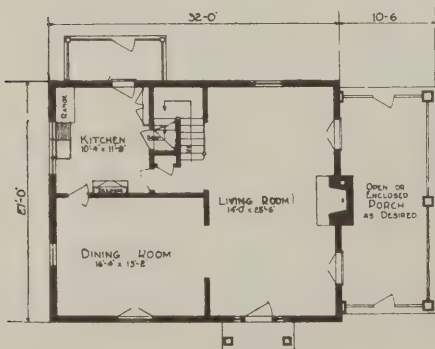
seated in deep wall recesses, and also resting on masonry partition walls in the basement.

The principal feature of the ground floor plan is a large living room 14 feet by 25 feet 6 inches. In the living room, corresponding to the great fireplace before which many famous patriots of America's revolution toasted their shins, there is a concrete fireplace of smaller and more modern design. To either side of the fireplace is a quaint French door leading

to the large open porch. Should a small entry room be desired, it can be provided by enclosing or glazing in the entrance area.

The stairs leading to the second floor are conveniently placed between the living room and kitchen. The dining room is ample and pleasantly located and the kitchen is well planned and provides plenty of space. The second floor contains three large bedrooms, bath and a large and unusual linen closet. All of the bedrooms have cross ventilation and each has a spacious closet. Maid's quarters and bath are provided in the attic.

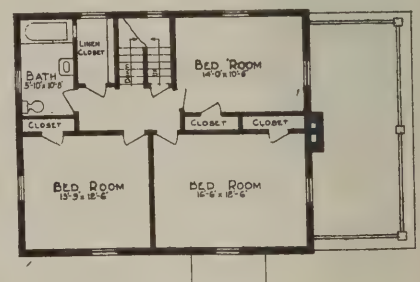
Should Washington return to find himself within the concrete building, he would see quite a distinct difference—modern lighting, heating and plumbing instead of the primitive facilities of his day. Builders will find in the old houses built by the colonists many other splendid designs to follow for modern homes. They can be easily adapted to present-day requirements and, with modern materials and equipment, be made very attractive dwellings.—A. J. R. Curtis.



First floor plan



Detail of entrance



Second floor plan

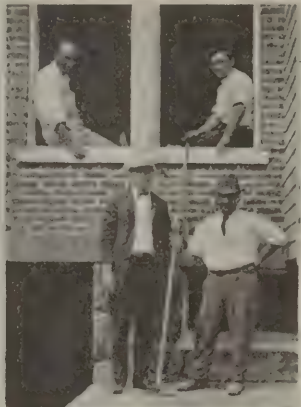
On the Job with the Construction Editor



J.W. Roby - Moberly, Mo.



C. Jensen (L) Moorhead, Minn. D. Hemminga (R) Fargo, N.D.



S. Tabosso - Wilmington, Del



Ed. J. Dunn
Rutland, Vt



Nicholas
Carabillo
Hartford, Conn



A.J. Shade
Harrisburg Pa.



Sam
Walker
Eau Claire
Wis.



J.S. Bondurante
Huntington, W. Va.



W.C. McCudden,
Sioux City, Ia.



L.E. Brickell
Watertown S.D.



S.J. Robert,
Worcester, Mass.



H.G. Ruppert
Newark, N.J. A. Wolowelsky
N.Y. City



On the Job in Hartford, Conn.

A Convenient Putlog Support

THERE are many types of scaffolding in use by mason contractors over the country, and here is one, used by W. T. O'Neil, of Hartford, Connecticut, that may furnish a hint to a brother contractor.

This is a putlog rest, and stands vertically, furnishing support for a putlog. The putlog lies with one end in the wall and the other end on the support. This stand is made of two 2x4s, spaced about 2 feet apart at the base and slanting so that they are



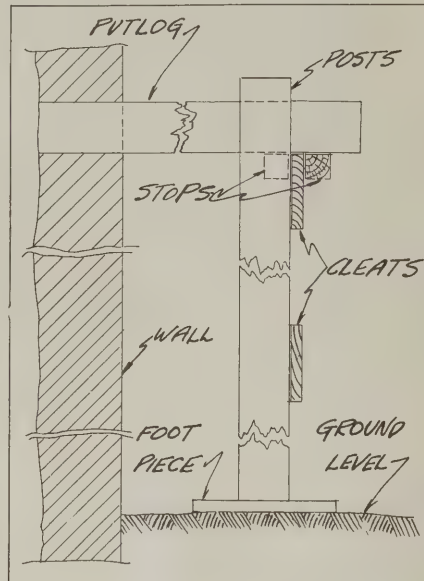
Front view of putlog support. No lateral bracing is necessary because the slanting legs act as braces

about 8 inches apart at the top. The legs are held apart by means of two pieces of 1x8, the lower set about 2½ feet off the ground, and the upper, upon which the putlog rests, having its top edge about 6 inches below the top of the leg.

The putlog should rest on the stand as shown in the sketch, with two stops nailed to the under side to hold the stand in position, thus preventing its sliding out from under the putlog.

When this stand is used, a foot-piece should be placed as shown in the sketch, so that a firm base is provided. No lateral bracing is necessary since the stand tends to brace itself because of the slanting legs. These stands may be made in varying

heights to suit different conditions. They should last a long time, and may be easily hauled and stored.



Sketch showing construction details of putlog support. Notice the stops on the putlog which prevent the support sliding out from under it

Emergency Protection

YOU'VE seen the time, haven't you, when the rain came on just as a load of cement was delivered and you had no place to store it? You didn't let it get wet, of course, for cement costs money. You hustled around



Planks are used to hold down the tarpaulin. They are set in rope loops running through the tarpaulin eyes

somehow, and dug up some kind of protection to keep that cement dry.

Here is what Meagher and Callahan, of Hartford, Connecticut, did under a similar circumstance. The only protection they could find for several barrels of lime was

a tarpaulin and a few planks, and it was up to them to do the best they could with the materials at hand. Some difficulty was encountered in holding the tarpaulin in place, but the illustration shows a method that worked very nicely. The picture tells the story.

A Fixed Hod Rest

THE illustration below shows a hod rest used by A. F. Peaslee, of New Haven. This hod rest is not complicated or expensive



This hod rest is nailed to the side of the mortar box

sive to make. It is simply a wide board, notched at the top to hold the hod, and fastened to the mortar box.

It is customary to use loaded barrels or tripod lean-tos for hod rests but a board, nailed to the side of the mortar box, will serve the purpose admirably and will make it unnecessary to block the job with the cumbersome hod rests commonly used.

On the Job in Peoria, Illinois.

Chimney Scaffolding

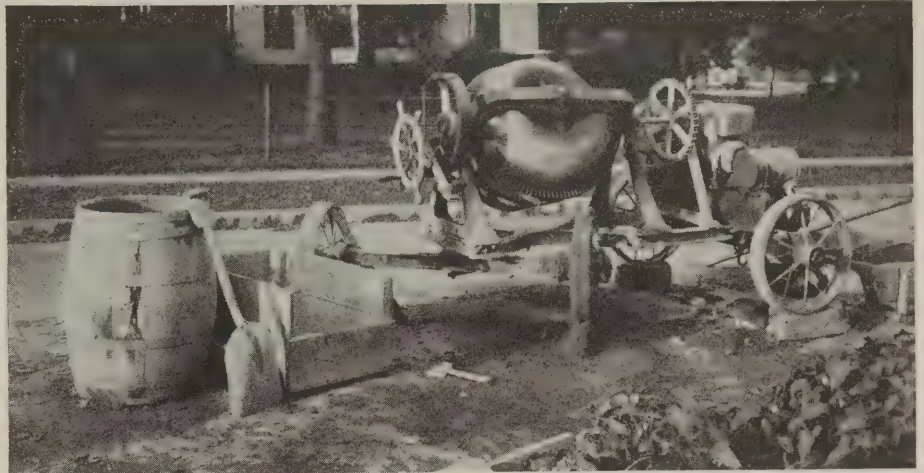
THE chimney scaffold illustrated here used by W. M. Allen & Son Company, of Peoria, utilizes the partly built chimney as a base for carrying a collar which furnishes stability to the scaffolding. A study of the sketch will show the assembly details.



The built-up scaffold

The collar is formed by four pieces of 2x12, one piece being set on each side of the chimney as shown in the sketch. In order to hold the outside framework to the chimney the 2x12 collar pieces are nailed to the horizontal members of the outside framework, with 2x4 or 4x4 nailing blocks to provide a good connection. The whole arrangement is stiffened by means of diagonal bracing which runs between auxiliary vertical members toenailed to the outside framework.

Notice on one side of the scaffold a ladder, and on the other, a bucket guard. This guard prevents the material bucket from damaging the scaffold as it is being hoisted to the top.

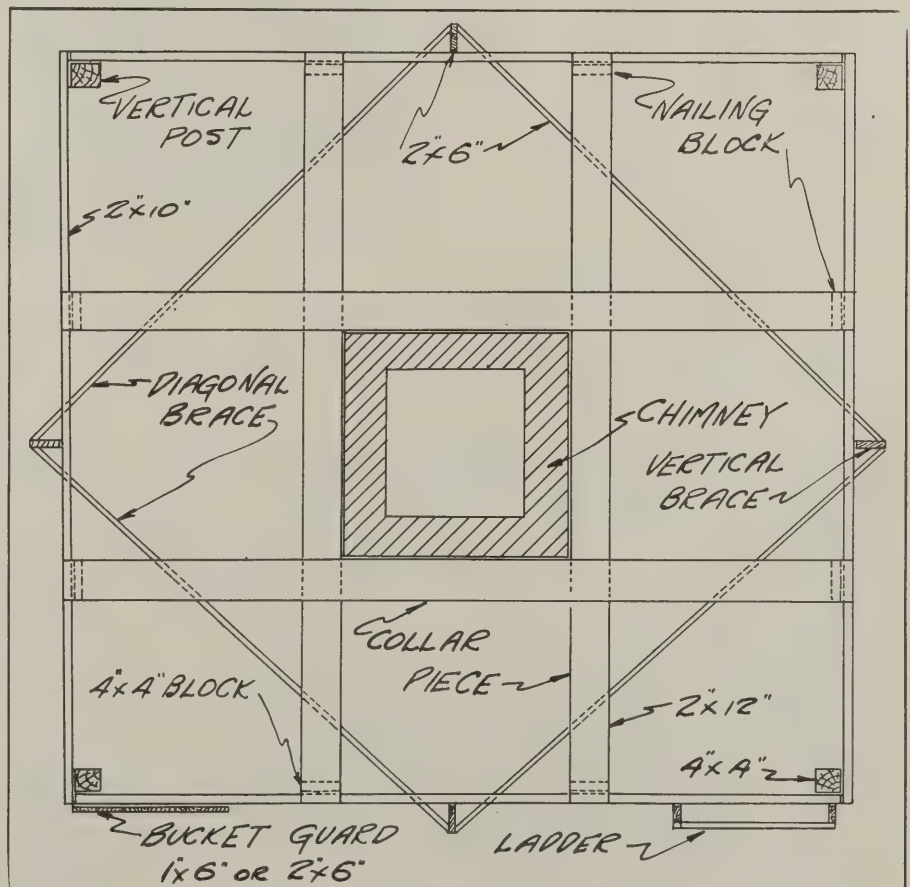


The cement is kept in a small box beside the mixer and measured with a shovel instead of being poured from the bag

Measuring Cement for Small Mixer

WHEN using a small mixer, G. Janssen & Sons, of Peoria, dump the cement

into a small box beside the mixer and measure it into the mixer with a shovel instead of pouring it from the bag. This means a more accurately measured mix, and a saving in cement since it is hard to control cement pouring from a bag.



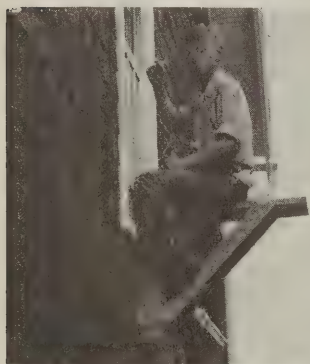
Construction details for a tall chimney scaffold

On the Job in Raspeburg, Md.

A Painter's "Cripple"

BEHOLD Edwin Loveless, of Raspeburg, sitting on his painter's "cripple." This device, as may readily be seen, is a good thing for the man who has any painting or other work to do around window frames. It means a saving in time and labor that would otherwise be spent in building a scaffold.

The framework for a "cripple" is fully



Edwin Loveless, of Raspeburg, working on his painter's cripple. The cripple provides a comfortable seat and, if built right, is perfectly safe

detailed in the accompanying sketch which can be used as a guide for any one who cares to build a "cripple" for himself. Notice that on the end which goes inside the window, several holes are bored so that the

pipe, which prevents the whole arrangement from tipping, can be moved to suit the thickness of the wall. The pipe is held in place by a collar on the under side of the seat board and a cap on the upper side. To move the pipe, the cap is taken off and the pipe dropped out of the hole.

When built right, this device is perfectly safe and should prove useful to almost every contractor who has occasion to work on an outside wall.

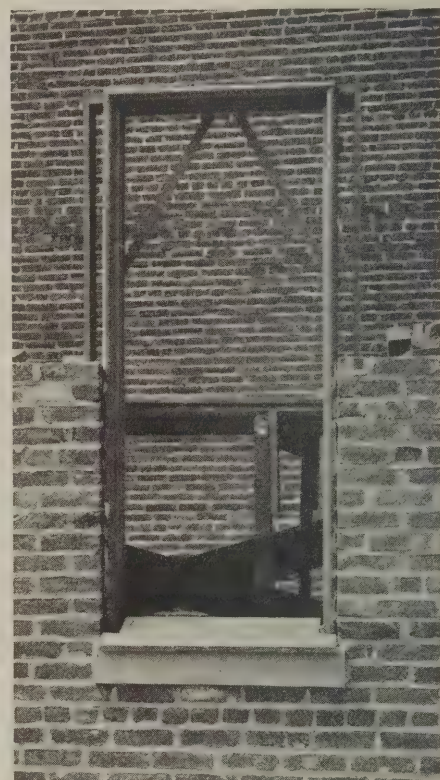
Protect Your Cut Stone

UNFORTUNATELY, few contractors take the trouble to provide protection for exterior trim, with the result that many times the appearance of a building is marred by an ugly break where a falling brick has knocked a chip off the stonework. It requires very little trouble to prevent such disfigurement and, without question, the few cents spent in covering ornamental stone will bring big returns to the contractor in adding to his reputation as a careful builder.

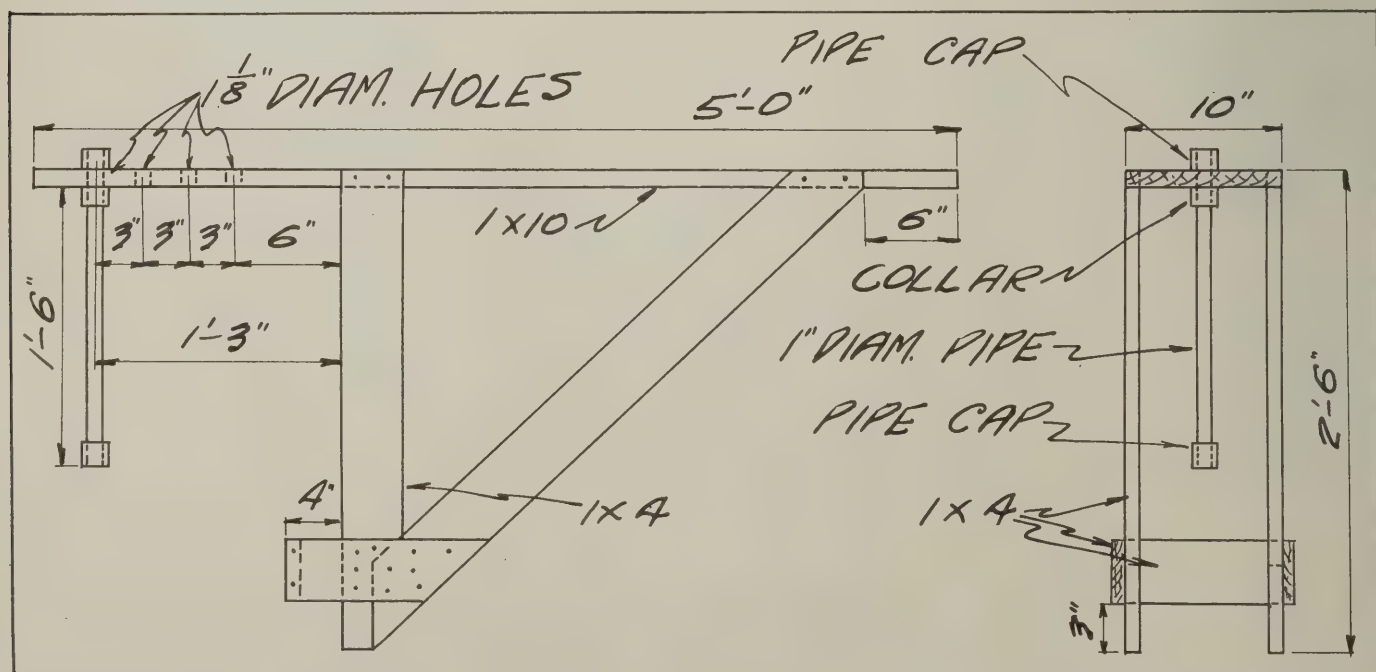
When covering cut stone sills Henry Berger, of Raspeburg, simply tacks a board to the window frame. This board will prevent falling brick or debris from chipping the stone work and causing unsightly marks. It is left in place until the work is done and is removed by the pointers who do the cleaning up.

This board costs practically nothing and

the time required to fit it into place is hardly worth considering.



A board, placed as shown here, will protect the stone sill from falling debris



Construction details for a painter's cripple. Notice that the cripple can be adjusted to fit any sized wall by moving the length of pipe closer to or away from the vertical leg

On the Job in Milwaukee, Wis.

Steep Plank Walking

IN some instances it is more convenient to use plank walkways than ladders. When these planks are set at slight angles cleats are generally nailed to them, as shown at A in the sketch, in order to provide a foothold if the planks be wet or slippery.

It is seldom advisable to set these planks at sharp angles on account of the difficulty

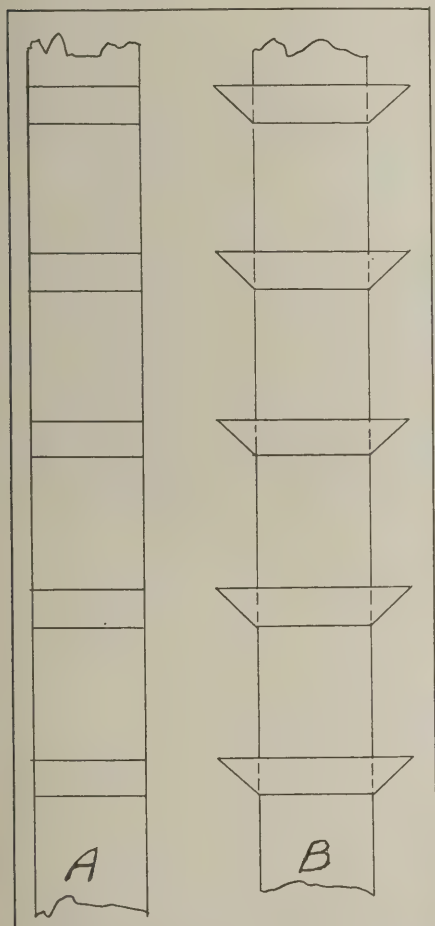
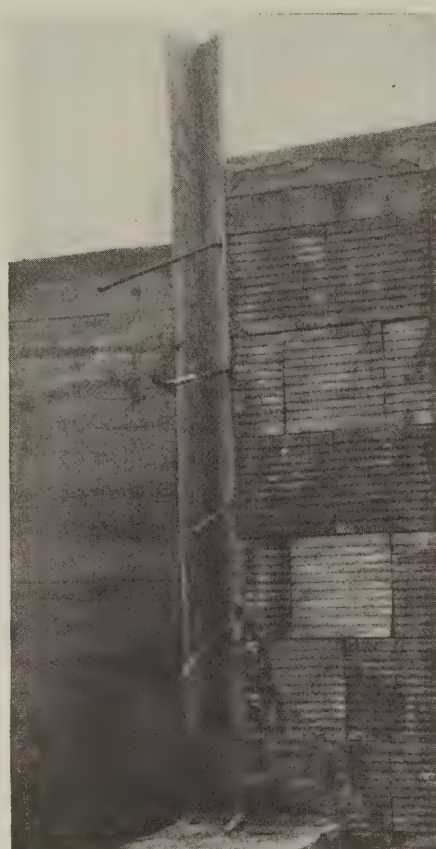


Fig. A is the ordinary method of nailing cleats to a plank to provide a foothold, and Fig. B shows how to provide an additional foothold in wet weather

of getting a secure foothold, but when the builder feels that his purposes are best served by doing so he may well take a tip from the Bustrin Construction Company, of Milwaukee, and instead of sawing off the cleats at the edges of the plank, as in A in the sketch, saw them so that they project over the edge as in B. The projecting cleat will provide a foothold, in case the plank becomes slippery due to mud piling up on the plank at the cleat.

Foundation Joint

IT is becoming common practice for concrete contractors to make foundation joints as shown in C, in the sketch, instead



V-joint blocking set in place to stop flow of concrete

of as shown in D. When it becomes necessary to stop work for the day, two boards

are set at right angles to each other, as shown in the illustration, and toe-nailed to the forms. They serve as a stop, preventing the flow of concrete.

By using this method of stopping the flow of concrete in foundation forms a clean, sharp joint is produced instead of a ragged, sloppy joint which some builders deem satisfactory. Another advantage of this kind of joint is that no fitting of a stop is necessary since the two boards which form the V can be indented to a sharp angle or not, as suits conditions.

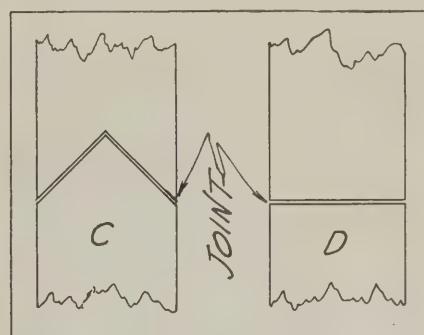


Fig. C is a V joint and Fig. D is a butt joint. Notice how the V joint locks the two sections of the foundation together. A few steel rods running through the joint make a strong bond

Some contractors claim that this V-joint is superior to a butt joint because it serves to lock the two sections together, especially if a few rods are set in, as shown in the illustration. This photograph was taken on a job being done by John L. Stanage at Milwaukee.

An item worthy of notice is the fact that hollow tile was used for foundation lining as protection against dampness in the basement.



View of plank with extended cleats

On the Job in Atlanta, Georgia.

Reinforced Concrete Flower-Box Support for Brick Veneered Walls

FLOWER boxes go far to add to the attractiveness of a house. A gaily painted flower-box, containing blooming plants, may go a long way to relieve the monotony of an otherwise dull and uninteresting wall, and to a builder they may provide that little distinctive touch which goes for the making of a sale.

Here is a new kind of reinforced concrete flower-box support that was devised

be notched to receive it. The purpose of the steel rod is not only to add strength to the bracket but also to provide a means for anchoring the bracket in place.

When the molds have been set and braced, and the rods fastened in the molds, the concrete, consisting of a 1:2:3 mix of white cement, torpedo sand and $\frac{1}{4}$ -inch gravel or crushed stone, is poured into the mold and

allowed to set for about 48 hours. Then the molds are removed and the brackets finished with a 1:1 mix of fine sand and white cement, and supported for about two weeks, when they will be strong enough to sustain themselves.

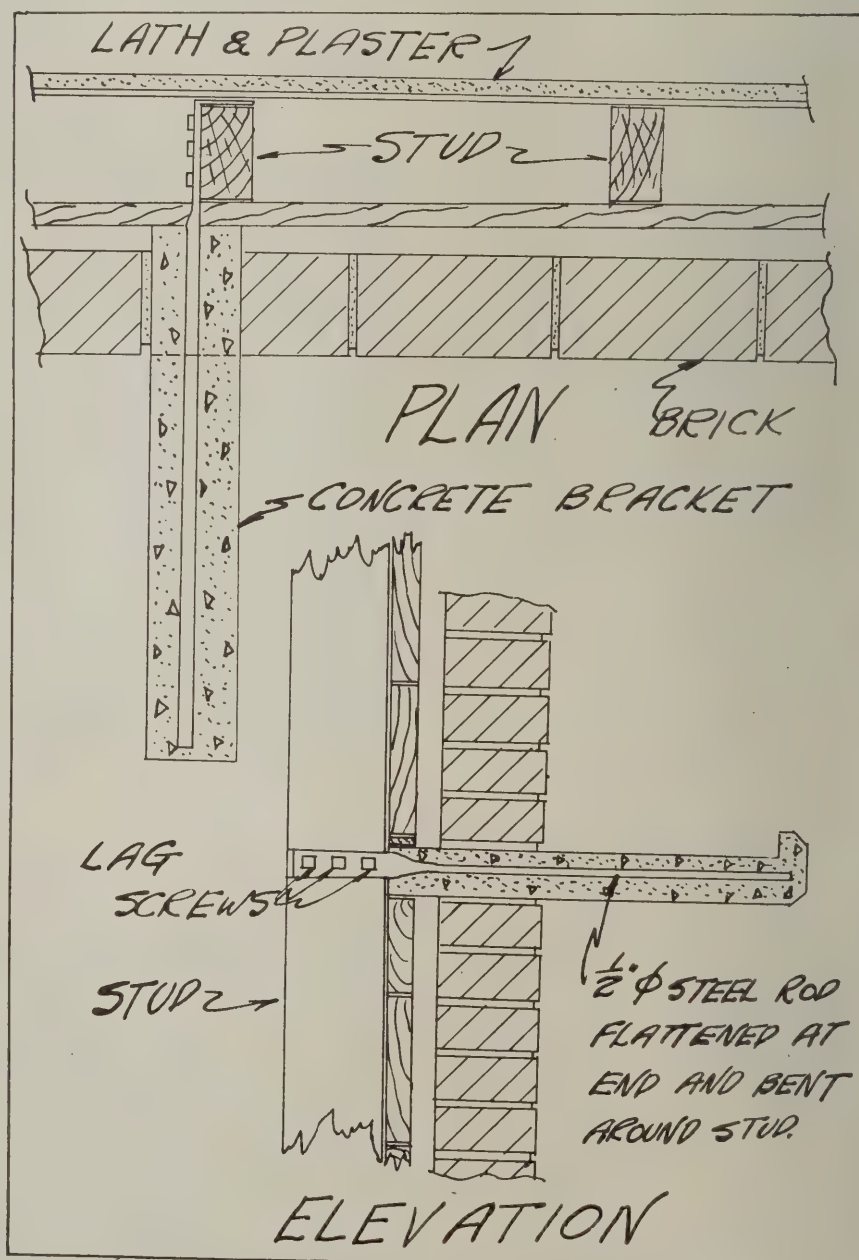
It is important that the molds be braced properly so that the finished brackets are not deformed when the molds are removed.



This illustration shows the reinforced-concrete flower box supports in place, and the brackets used to hold them until they are strong enough to sustain themselves. Notice the bracing used to prevent shifting of the brackets

by W. H. Zuber, superintendent of construction for E. C. Seiz, of Atlanta, Georgia. It consists of nothing more or less than a concrete bracket, made of fine aggregate and white cement, and reinforced with a $\frac{1}{2}$ -inch, round steel rod, flattened at the end and bent at a 90 degree angle to fit around the stud as shown in the accompanying sketch.

Wooden molds are made for these brackets and set in place in the wall. The steel rod is then fixed in the mold and fitted to the stud with lag screws as shown. In order that the part of the rod which is bent around the 2-inch face of the stud does not interfere with the lathing, the stud should



Construction details for a reinforced concrete flower box support for brick veneered walls. Notice how the rod is set in the body of the bracket and how it is bent around a stud inside the wall. In order that the best part of the steel rod does not interfere with lathing, the stud is notched to receive it. Three-sixteenths-inch lag screws are used to hold the rod to the stud

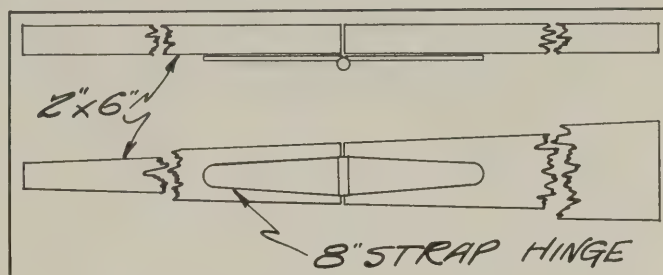
On the Job in Dayton, Ohio

Formwork for a Concrete Cistern Head

THE formwork shown here for a concrete cistern head is the idea of Gust Hodapp, a contractor of Dayton, Ohio. Mr. Hodapp builds these cistern heads without any reinforcing and claims that in his several years of experience not one has caved in.

This formwork consists of a center post which supports a wood disk. The disk is held to the post by hooks, as shown in Fig. 3. Four hooks are used, so that the

Fig. 1
Details
of hinged 2x6s
which are
used to furnish
support
for the cistern
head



easily drawn out through the cistern hole. It will be seen that, in order for these head-

When the concrete has set and it is time to remove the forms, a piece of line is attached to the eye on the disk, the hooks are released, the disk is lowered, and the center post removed. Next, the head-forms (Fig. 1) are removed, the disk drawn up through the cistern hole, and the job is done. The head forms are generally stuck tightly enough to the under side of the cistern head so that they remain in place when the disk is lowered.

The circular plate support is held to the center post by means of hooks which fit into eyes on the post. These hooks are held to the wood disk by eye-bolts. It is much better to use eye-bolts than screw-eyes for this purpose as a screw-eye may be pulled out of the wood due to the weight of the concrete which the disk is called upon to support. The wood disk can be built up of several pieces and held together by cleats. Notice in the sketch that the eye-bolts run through the cleats where this is possible. This serves to distribute the load evenly over the disk.

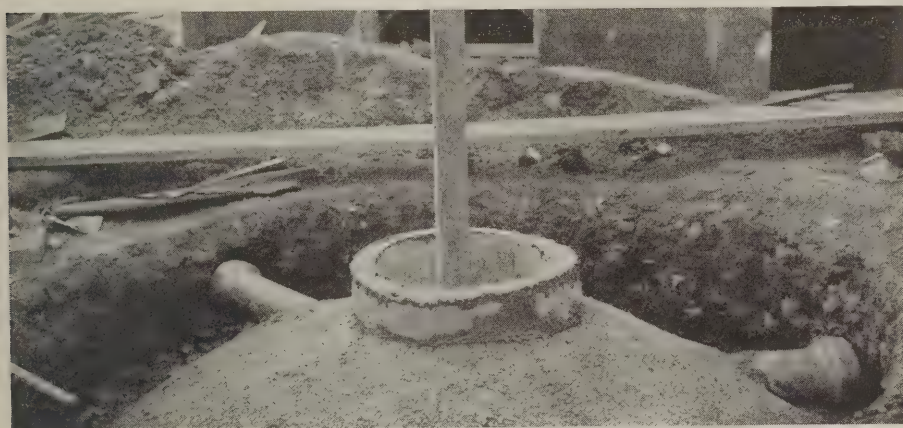


Fig. 2—View of the completed cistern head. Sheet metal forms are used to shape the mouth of the cistern. Notice the center form support projecting from the mouth

disk is fastened to the four sides of the center post. This prevents the disk from tilting and the whole arrangement from collapsing.

The forms for the head are built as shown in Fig. 1. They rest on a sill at the cistern wall and on the wood disk as shown in Fig. 3. These head-forms are hinged in the center so that they can be

forms to be removed without trouble, they must be of such a length that they may be folded within the depth of the cistern.

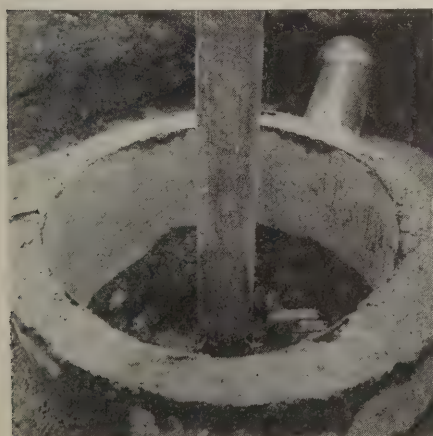
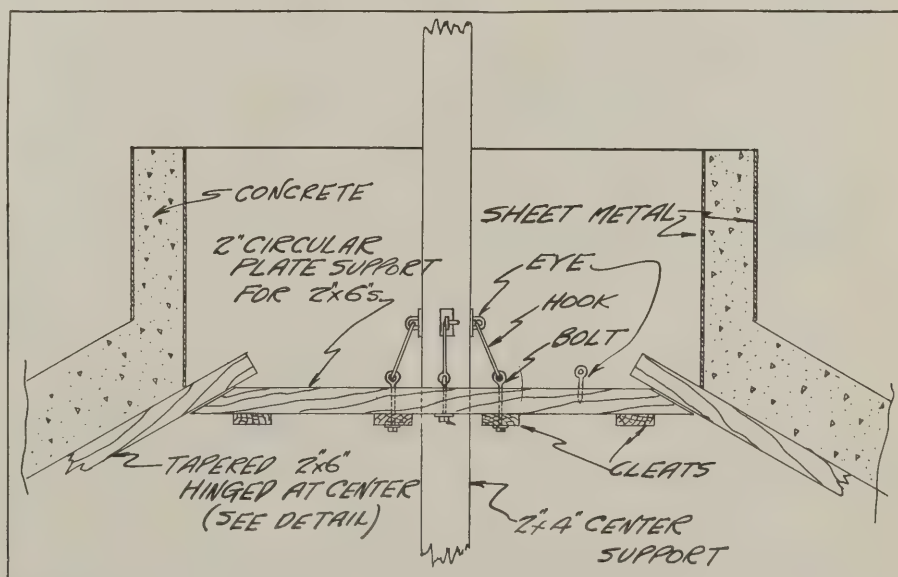


Fig. 3—Close-up of cistern mouth showing hooks used to hold wood disk to center support



Sketch showing assembly of form work. Notice that the wood disk is small enough to be drawn through the cistern mouth but large enough to furnish support at the proper angle for the hinged head forms

Kinks from the Job and Office

By V. L. SHERMAN

Send in your kinks—give the benefit of your experience to the other fellow as well as get the benefit of his. NATIONAL BUILDER pays \$5.00 for every kink published.—The Editor.

Our Hopes for 1924

OUR hopes in the coming of a new year may be set down in this: "That we may hear oftener from the men who find little time to write." There is no dearth of material in this department, and we are glad to have every letter that comes, but we are more often suited by those which show evidence of being written at stolen moments. We want more ideas and more discussion. If you busy men will only jot down the first, or raise a question now and then when you feel the occasion. The department is a source of interest to a great many, especially the younger men in the business, so it really behooves some of the older and more experienced to chip in with their notions. A good example is furnished in a letter concerning "Octagons and Double-Vision" on the next page.

About twice a year we hear from a gentleman down in Indianapolis. We certainly would not feel offended if he wrote oftener. Another is a letter from Mr. Wallace R. Harris, president of the Concrete Products Association, in which he takes exception to a previously published statement. Now it might seem strange that the virtues of the cinder block are not fully known to all builders, but it is a fact that at a recent building ordinance committee meeting only one of the five knew definitely of the qualities of a cinder block. The rest had only first impressions. This department has no intention of ever going off half-cocked, but we do intend to put in any points to a discussion that have a reasonable base.

We also wish to reiterate the statement that we will be extremely careful in reproducing sketches and diagrams submitted.

Handy Expansion Bolt

H. N., of Denver, writes: "In fastening foreign bodies to concrete walls or piers after the concrete has hardened and no previous provisions were made for same, I drill a hole in the concrete 4 to 6 inches deep. The hole should be 1/16-inch larger than the stud to be used. Thread the stud on both ends. Cut a slot with a hack saw about 3 inches deep in one end of the bolt, make a wedge tapered from 1/16-inch to about 1/4-inch; width and length should be the size of the slot in the stud. Next, insert the sharp end of the wedge in the slot in the stud and insert the stud with the slotted end in the

hole in the concrete and drive it in tight, using a piece of oak for a follower block to avoid damaging the thread on the end of the stud that projects out. As the stud is being driven into the concrete the wedge is being driven into the slot in the stud, causing it to spread and the threads will grip the concrete, making it impossible to pull the stud out.

Gothic Roof Scaffold

FROM Sarnia, Ontario, R. W. McK. writes: "I am sending you a plan of a scaffold bracket, Fig. 1, that we used on a gothic roof barn. We found it very handy as it saved building so much scaffold. It is made of about 1 1/2 x 3/8-inch iron, and so made that

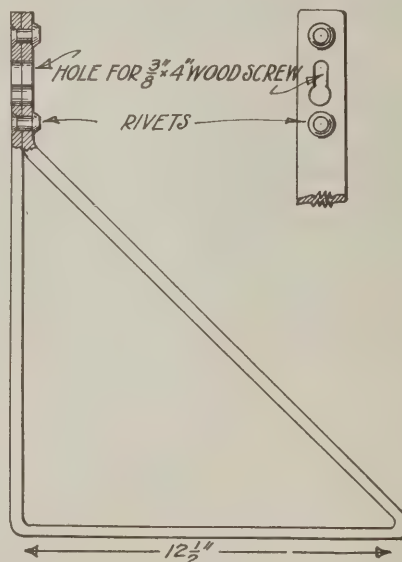


Fig. 1—Scaffold bracket for gothic roofs

a 12-inch plank will go through easily. It is put on with 3/4 x 4-inch wood screws in the rafter. It has a hole large enough for the head of the screw to go through. Above the hole is a 3/8-inch slot for the shank to fit so it will not come off. It can be used for sheeting and shingling both. We generally used about two scaffolds of these and then the roof was flat enough to permit common toe holds to be used."

A Shingling Straight Edge

FIG. 2 represents a straight edge which B. W. C., of Medford, Massachusetts, finds very handy when shingling a roof with cedar shingles. "It consists of a narrow board with the point of the shingles nailed on the back every four or five feet. The amount to the weather is shown in the figure. To use the straight edge place the butt of the shingle to the bottom of the last course

and drive a nail in the top, about a quarter inch down. Lay the shingles against the straight edge right over the points and, when that course is laid, drive down on the straight edge and the points will pull

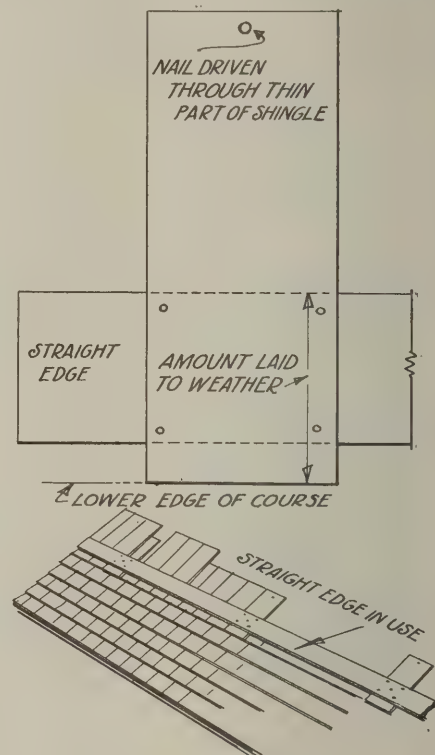


Fig. 2—Shingling straight edge

out from under the course to be used again. This leaves the nail concealed under the course of shingles. The straight edge can be used until the tip of the shingle is pretty well frayed or becomes too thick. Then new ones can be put on.

"I find this straight edge saves a lot of time as it requires no measuring and makes no nail holes in the roof."

Regarding Cinder Blocks

IN NATIONAL BUILDER for November, 1923, we published a letter from Virgil G. Marani, chief engineer, Gypsum Industries Association, Chicago. The following is from Wallace R. Harris, president, Concrete Products Association, Chicago. Mr. Harris takes exception to parts of the previous letter:

"Referring to our discussion on the subject of cinder concrete blocks: If we declare that complete combustion of coal is attainable, what do we find in the ash pit? I take it we do not obtain cinders as they are commonly known but do obtain, possibly, some slag and ash.

JOHNSON'S UNDERCOAT & ENAMEL

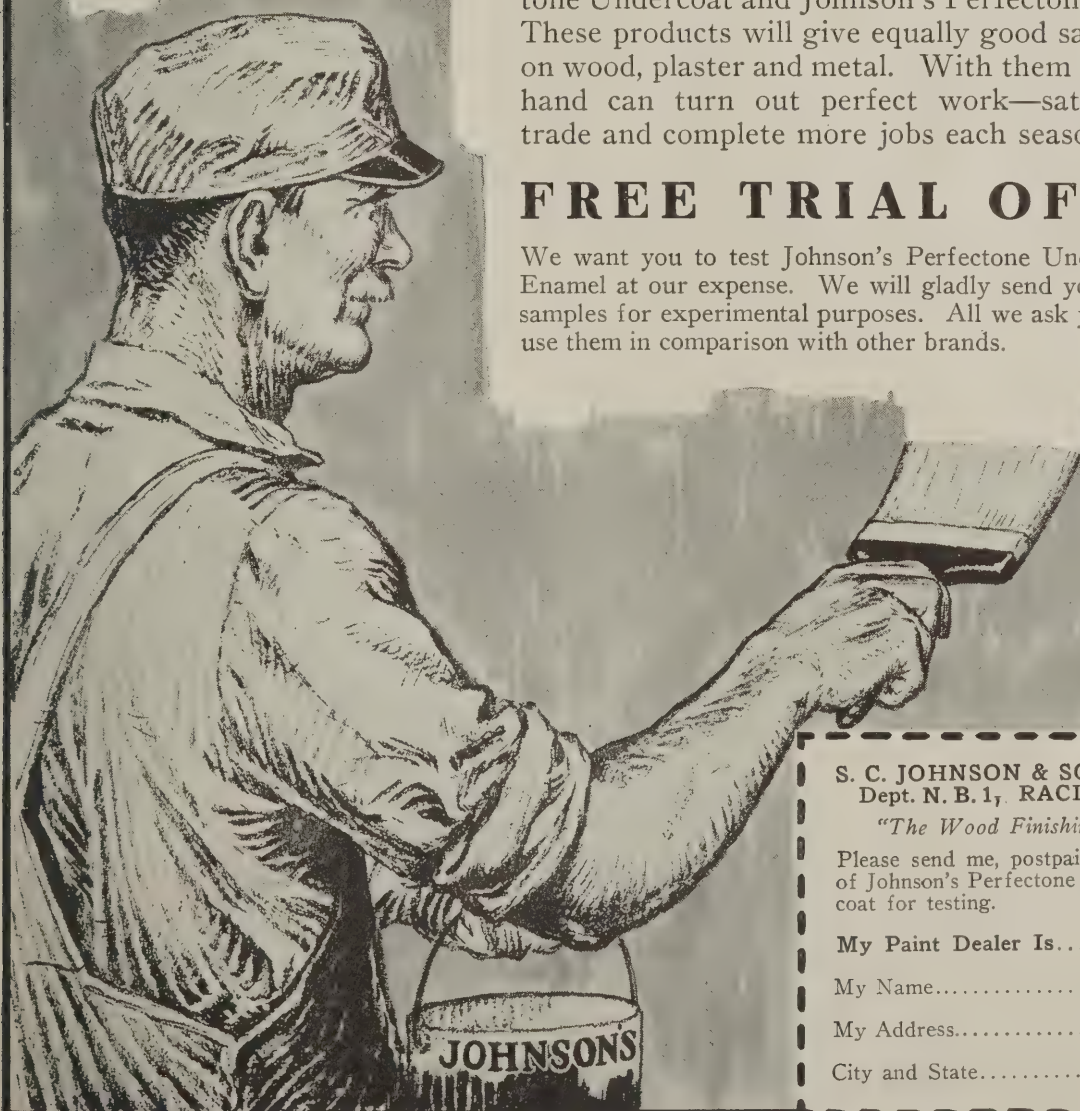


If you are the contractor on a job, the responsibility for that job belongs to you. Even though you sub-let the painting contract, still the owner holds you responsible—consequently it is to your interest to see that high class materials and workman-ship are employed.

Build up a reputation as the best contractor in your locality—then you can always get the price and will never experience a poor season. Your customers will get the finest kind of a job if both walls and trim are finished with Johnson's Perfectone Undercoat and Johnson's Perfectone Enamel. These products will give equally good satisfaction on wood, plaster and metal. With them any brush hand can turn out perfect work—satisfy your trade and complete more jobs each season.

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"Cinders obtained from bituminous coal, burned in grates fed by automatic stokers, are being used to a great extent in manufacturing high quality cinder concrete blocks, in accordance with patents issued to F. J. Straub and now controlled by Crozier-Straub, Inc., New York. According to the terms of the licenses issued, the block must have a crushing strength of not less than 800 pounds per square inch of gross area, as required by the Hoover code.

"Referring to the last paragraph of Mr. Marani's statement, bituminous coal cinders are used in making high quality cinder concrete block in proportions of one part of cement to $6\frac{1}{2}$ parts of screened cinders, not washed."

The editor knows that the blocks in question were tested at the laboratories at Lewis Institute, going well over 800 pounds per square inch, gross area. Also that the tests at the Underwriters' Laboratories were satisfactory. "The blocks are amply strong, give service in several types of buildings, are fire resistant, are sound deadeners, take plaster and stucco readily, and are being received favorably by the masons."

Don't Scar the Doors

FIG. 3 shows a method used by F. G. W., of Ashton, Iowa, "in seating a mortise lock, especially in $1\frac{3}{8}$ -inch hardwood doors, to prevent the side wood from breaking off while chiseling the seat for the mortise lock

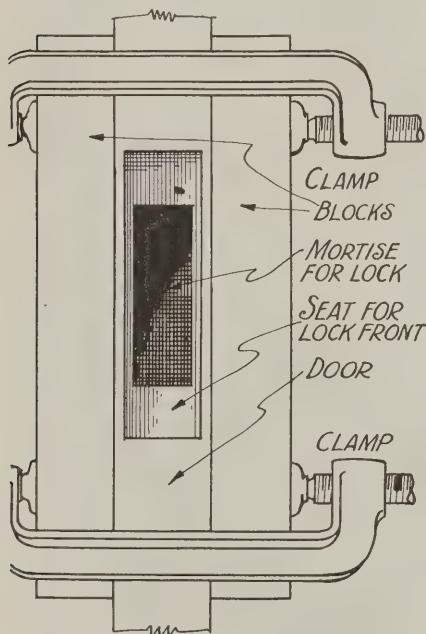


Fig. 3—Door binder for lock sinking

front. Simply clamp a piece of scrap stuff on each side of the door, flush with the edge and opposite lock seat, and chisel away. The small portion of wood left on both sides of the lock will not split or chip away."

The Octagon and Double Vision

FROM E. P. McC., of Indianapolis: "In NATIONAL BUILDER for November is an

article on 'The Steel Square—How to Read It.' This is a most interesting article and should be studied by all who are in need of a working knowledge of this most useful of tools.

"The octagon cut marked in the center of the tongue of the square, however, I never use because it is not well located for measuring purposes, and I have always regarded the try square, set at an angle of $22\frac{1}{2}$ degrees, as being much the better instrument to locate corners of an octagon, as shown in Fig. 4."

The second part of his letter deals with a mechanic who spoiled two doors and had

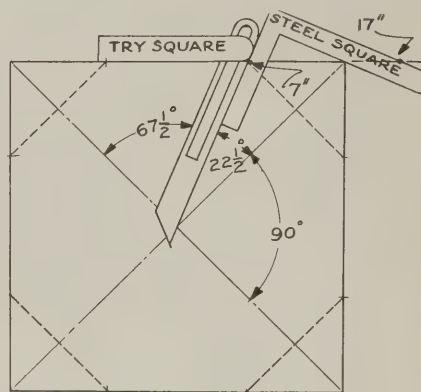


Fig. 4—Octagon construction

nearly finished a third before admitting that his bit was not made properly. In his comprehensive way Mr. McC. continues: "Now while I have a poor opinion of a mechanic

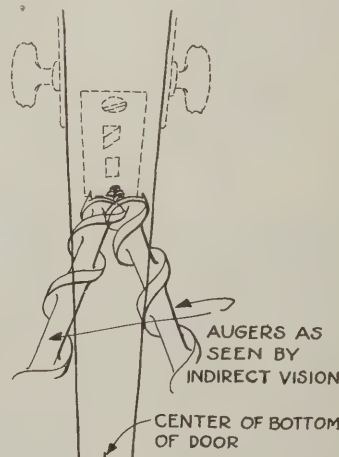


Fig. 5—Keeping a bit straight by use of double vision

who will commit such blunders, perhaps a helping hand would not be amiss to those who are not yet adepts at this class of work. The bit was a very good one so I showed him that, by standing directly in front of the door and by fixing his eyes intently on the center of the bottom of the door, his indirect vision would show two augers instead of one boring into the door. Then if he would maneuver so as to keep the bottom of the door equidistant between the two bits of his double vision he would never 'bore out' through the side of the door, but would surely bore straight in, as in Fig. 5."

A Combination Bench and Horse

L. M., of Seattle, submits another handy combination. He writes: "I am sending, for your approval, a description of a combi-

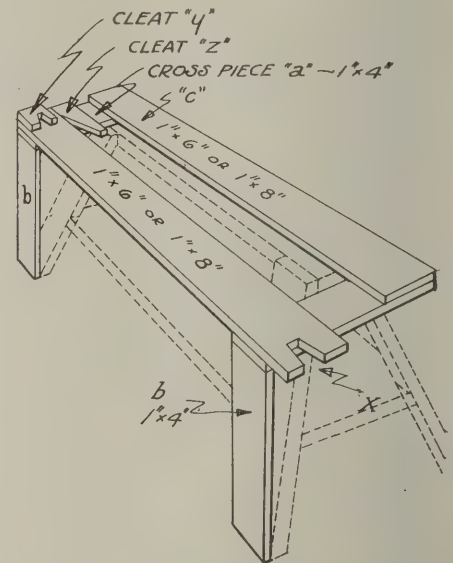


Fig. 6—Combination bench and horse

nation bench and horse which carpenters in this locality use considerably. In Fig. 6 you will see that we take an ordinary carpenter horse and nail on two cleats, (a, a), of 1x4-inch or 1x6-inch, then add legs, (b, b); nail boards, (c, c), on top; cut notch, (X), and add cleats, (y and z); and bench is ready for use.

"It is especially handy for fitting sash and doors, being large enough on top to hold most any of them without the aid of another horse. When planing down use notch X for large sash and doors, and cleat Z for smaller ones, letting them rest on the tool tray, thus bringing them up within reach. I find one of these to be very useful throughout an entire job of finishing."

The Pitchboard

RELATIVE to the use of the pitchboard we are glad to hear from E. H. N., of South Pasadena, California: "Your excellent department of 'On the Job' in the November issue contained a suggestion from W. H. Tarbell, of Rutland, Vermont, as to a helpful method of laying out stair stringers. The writer built stairs and railings in New York state through a period of several years some years ago and it seems to him that the item referred to is not quite complete. I would submit a little further light along this line.

"The templet used is properly called a 'pitchboard.' It should be made of thin wood, preferably half-inch soft pine. Plane the edges representing rise and run first square through the board and accurately square with each other. Then with the aid

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The progressive contractor and builder has found a way to increase his yearly income by keeping busy all the year 'round. When building is at a standstill and there are no profits coming in, he makes \$25.00 to \$50.00 a day re-surfacing old floors with the "American Universal" electrically driven floor surfacing machine. It does the work of six men.

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The demand for re-surfacing floors is the greatest during the coldest months of the year—during the time when you are not busy building. Think of the great number of public buildings where the floors require re-surfacing. Your prospects consist of residences, schools, colleges, clubs, hospitals, churches, apartment buildings, office buildings, stores, dance halls, auditoriums, roller rinks, bowling alleys, factory buildings—in fact every new or old floor represents a job for you.

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The beautiful, smooth, uniform work which the "American Universal" floor surfacing machine turns out puts the most expert hand scraper's best efforts to shame. There's absolutely no comparison. You'll find it easy to land big jobs at fancy prices—and it requires absolutely no experience to turn out first class work with the "American Universal."

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You know the owners of the buildings and homes where the floors require re-surfacing. You are acquainted in your community, and this will make it still more easy for you to land the contracts for re-surfacing the great number of old floors in your locality which are in need of it (and badly so) right now.

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An "American Universal" floor surfacing machine is always a good investment. It will replace six men on your payroll during the building season—and turn loss into big profits during the dull season. One fair sized job pays for the machine.

\$134.35 in 74 Hours!

"Since I have been using my 'American Universal' floor surfacing machine, I have found that it is exactly as you represent it to be. It will do the work of five or six men—and do it well.

I have not had a dissatisfied customer, and my 'American Universal' floor surfacing machine keeps me busy. I have several big jobs ahead such as dance halls and lodge rooms.

Have actually used the 'American Universal' seventy-hour hours, and it has paid me \$134.35 in that time.

Have three big jobs to do in the next two weeks that will alone pay for the machine. I could not do without my 'American Universal' floor surfacing machine."

F. N. Crawford, Colorado.

Makes \$400.00 on One Job!

"I have tested out the 'American Universal' and am very well pleased with it. I am working the machine on the St. Mary's Home for Girls at Cresson, Pa., which has about 42,000 square feet of floor space. The machine will make me on this one job at least four hundred dollars.

The owners are well pleased with the smooth, uniform work which my 'American Universal' machine turns out."

J. C. Ivory, Pennsylvania.

\$75.00 in 12 Hours!

"The 'American Universal' floor surfacing machine is a great labor saver and does excellent work. In learning to operate it, I made \$75.00 in 12 hours."

W. H. Norwood, Arkansas.



American Floor Surfacing Machine Co.

519 S. St. Clair Street
Toledo, Ohio

Write Today for Full Particulars

of a good steel square, using the inner edges of tongue and blade, mark the lengths of rise and run, respectively, on the pitchboard with a sharp knife. Plane the hypotenuse edge square and true to these distance marks, setting the plane fine, to make it very accurate. Thus you produce a templet of fine accuracy to a riser height of small fractions.

"Next prepare the edge of stringer by jointing off the finish edge straight and true. If it is a wall stringer to be housed out, joint the upper edge; if an open front stringer to be housed out for treads and mitered for the risers, joint the lower edge. In either case gauge a line with a panel gauge to the desired width to the lower edge of the pitchboard. Then ascertain the exact length of the pitchboard by standing it on its hypotenuse and marking its extremities on a board with the point of a knife. Set a pair of dividers to these points and 'step off' as many of these distances on the gauge line as there are treads to lay out. Place the pitchboard flat on the stringer with its hypotenuse resting on the gauge line and its points coinciding with the divider marks. Mark each tread and riser along the edges of pitchboard with a sharp knife, taking care not to cut into the pitchboard.

"This is the method used by old stair-builders for years to lay out finished stringers with accuracy. The knife mark serves as guide to saw either straight or mitered cut or to chisel the edge of housing."

Improving the Screwdriver

IN connection with Figs. 7 and 8, D. R. V. H. writes the following: "What workman has not damaged the piece he was carefully finishing because the blade of the screwdriver slipped from place and sank into the sandpapered surface of the wood? By going



Fig. 7—Screwdriver guard in use

slowly and carefully the screw can be placed without mishap. But when the rush job comes along—then you will need a guard such as is shown in the illustrations.

"Secure an empty revolver shell large enough to fit over the screw head. Drive a round stick into it and set head up in the vise. Cut a notch about $\frac{3}{4}$ inch deep in the center of the head and spread it slightly with a cold chisel until the screwdriver blade fits easily and snugly into it. Only about one-half inch of the shell is needed. This is slipped onto the screwdriver

blade when the screw is started and left in place until the screw is nearly in. If properly made it is impossible for the blade to leave the screw head. To insure this, how-



Fig. 8—Making the screwdriver guard

ever, the guard should come a trifle below the end of the blade when in place."

Building on an Ash Dump

W. C., a Philadelphia contractor, writes: "In a great many cities where available vacant ground is becoming scarce it becomes necessary to utilize the city dumps for residential purposes. The growing city soon encroaches on the filled-in ground that was once far on its outskirts. Notwithstanding the work of the dump pickers, who gather the cans, bottles, metal and other valuable bits of the city's discarded effects, there always remains a great lot of compressible material among the ashes. It is the latter which creates in the minds of prospective purchasers of home sites the

fear of future settlement of the buildings erected there.

"The writer has, for many years, successfully built and sold numerous blocks of brick and stone dwellings on deep ash dumps in the city of Philadelphia. The houses are thoroughly modern and sold for an average price of \$7000 each. As may be inferred, special attention was given to the distribution of the soil load. On lots which had lain 15 years filled to a depth of 20 feet with city ashes, the digging of the cellars disclosed the expected coal ashes, broken china and metal objects. The combustible articles had disappeared, owing to the ever-present dump fires during the filling in, and the things liable to decay had gone.

"The terraces around the completed houses were formed of ashes shoveled out of the cellars and the grass sod planted there later grew with unusual vigor, due, no doubt, to the excellent drainage through the light soil. The cellars were always dry. The houses were of the row type, less than 16 feet in width, with 18-inch thick stone walls and 9-inch thick brick walls, two stories in height.

"Footings of 1-2-4 slag concrete with a typical section, as shown in Fig. 9, are placed under the stone walls entirely below the level of the cellar floor. As the ordinary dwelling house of this type, with an assumed live floor load of 40 pounds per square foot, shows, on calculation, a soil load of between 2900 and 3900 pounds per foot of length of wall, depending, of course, on their location (whether a party wall or not), the distributed load is less than 1000 pounds per square foot of soil with the concrete footings shown. Soils such as described safely carry, on test and in practice, a somewhat greater load than this. However, tests should be made if no other data is available.

"During the construction, comparative weekly readings with a builders' level were made, using a fixed bench mark, and the results showed no uneven settlement in the buildings, and future years proved the houses as stable as others built on natural ground."

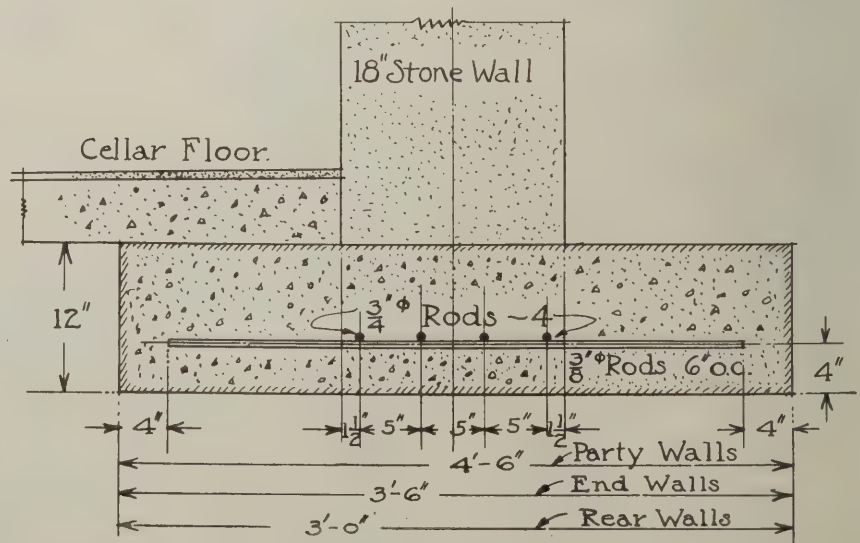


Fig. 9—Footing for made ground



Old Product in New Sensational Use

WINTHROP Composition Beveled Siding was hailed enthusiastically by contractors and dealers whenever we presented it to them, even back in the days when we were still in the stage of development. They liked the product. They knew the quality—they knew our WINTHROP Tapered Asphalt Shingles.

Now, in this page, we announce this new sensational use of an old, old product for the first time and offer it broadcast.

This siding is beveled. It is 6 inches wide and is laid 5 inches to the weather. The strips are 8 feet long. Nails are furnished with the siding. Goes on just like wood siding. Its surface is crushed stone—a white granite.

WINTHROP Composition Siding offers the advantages of stucco with no disadvantages. It requires no paint. It is fire-resisting. It cannot rot, run, crack nor chip. The overlap of the thick butts breaks the monotonous surface so tiresome in flat finished walls. Contractors want WINTHROP Composition Siding because it can be applied without harm in freezing weather. Dealers welcome WINTHROP Composition Siding because it enables them to sell a profitable and meritorious finished product. Owners like WINTHROP Composition Siding because it can be furnished ready for immediate use. Local dealers supply it at a price comparing favorably with the price of high grade wood siding.

Let us put a sample and full information in your hands. It's an opportunity for you. Act at once.

**Get Your
Sample Now**

BECKMAN-DAWSON ROOFING COMPANY

14203 Monnier Road, Detroit, Mich.
830 F. C. Austin Building, Chicago

Of General Interest



Fig. 1

Fig. 1—The Betsy Ross house in Philadelphia, the famous birthplace of Old Glory, recently received, amid elaborate ceremonies, its first coat of paint in fifteen years. A feature of the ceremony was the participation of a number of actresses, headed by Peggy Wood, famous musical comedy star, who donned overalls for the occasion and lent a helping hand in putting on the first coat of paint.

Fig. 2—This photo shows the highest modern building in Europe, the so-called "Babel Tower" at Stockholm, Sweden. It is thirteen stories high, with a restaurant in its top story.

Fig. 3—The famous Cornelius Vanderbilt residence on Fifth Avenue, from Fifty-seventh to Fifty-eighth Street, New York, is reported to have been sold to a syndicate of operators. The palatial landmark, built in 1894, is assessed for about \$7,225,000.

Fig. 4—Boss of two hundred men, Wanda Winkiel, formerly a nurse, is constructing fifty-four homes in Maspeth, Long Island. The cameraman caught her giving orders to one of her foremen.

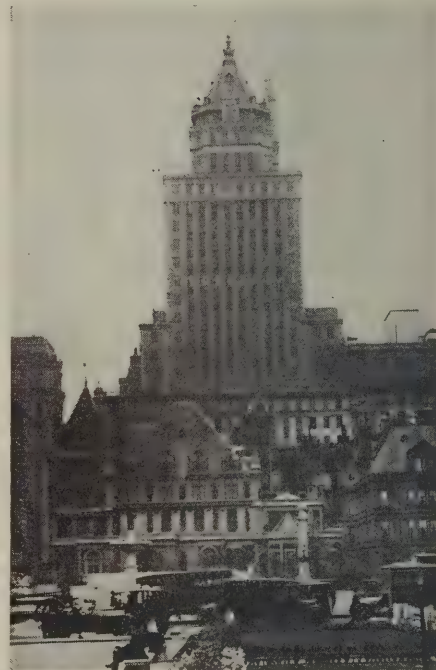


Fig. 3



Fig. 2

Fig. 5—The contractor who built the Ramona, California, "town hall" in 1893 was very much temperance. A bricklayer working on the building was very much wet. Factions had been factioning, and so to "slip one over" on the contractor, the "booze houn" concealed a pint bottle of whiskey in the wall over the arch, right near the date stone. After thirty years' silence the bricklayer has confessed his secret and now many longing eyes are seen turned upward toward the cache.

Fig. 6—The Tokio Rebuilding Commission Heads. Photo shows (left to right): Minister of Education Inukai, Minister of Agriculture and Commerce Okano, Minister of Home Affairs Viscount Goto, Minister of Justice Kichiro Hiramuma, and Baron Deu, Minister of Communications, gathered together for a conference on the Tokio rebuilding situation.



Fig. 4



Fig. 5



Fig. 6

An Interior Finish of Beauty



Assures a Quicker and More Profitable Sale

In one of Chicago's largest and most successful department stores the clerks are not permitted to "sell" the customer. Their instructions are to display the goods in the most attractive setting and let the customer's eye clinch the sale.

Many a builder can profit by such a policy and since the eye first meets only the externals it is of the utmost importance that the interior and exterior finish represent great care.

Builders will find on the left a list of painting and decorating products that represent not only an assurance of quality, beauty and durability, but of service as well.

Our wood stain panels, provided free in sets to all users and architects, are but one well known example of our complete co-operation with discriminating builders and architects.

AD-EL-ITE Products

RIPOLIN
The Original
Holland Enamel

AD-EL-ITE
Penetrating Stains

Naples Velvet
Flat Paint

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Varnishes

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For the Builders' Library



"The Planning of Apartment Houses, Tenements and Country Homes," by Teunis J. Van Der Bent, is a text book for students of architecture, household arts, practical arts and hygiene of private and institutional dwellings and a guide for architects, superintendents and managers of various types of institutions. The author states that the principal spur and greatest encouragement to the completion of this book was that it might create in educational circles in universities, colleges, educational and vocational schools a strong demand for a carefully planned course for the study of methods of planning, decisions on location and government or management of communities, etc., which outline "The Hygiene of the Dwellings." This book has been divided into two parts, the first being "A Glimpse at the Origin and Development of Man's Dwellings" covering man's needs, his enemies, shelter of prehistoric times, prehistoric dwellings, dwellings of the historical period—Houses in Egypt, Pelasgic, Ionic, Greek, Roman Houses, Houses of the Middle Ages, and Dwellings of the Renaissance and Modern Times as late as 1850. Part II gives "Elementary Instruction in House Planning" to be used as a text book or guide by students of house sanitation, city development, the laws in reference to dwellings and combinations of dwellings, etc., with a chapter on each of the following subjects: Details of Plans, Planning, Plans of Dwelling Houses in the Country, City Dwellings—Private Houses, Sanitary Planning and Finish of Rooms in Dwelling Houses, Apartment Houses, and The Tenement House. This book, published by Brentano's, Fifth Avenue and 27th Street, New York City, contains 355 pages, size 9x12, and sells for \$4.75.

"Self-Taught Mechanical Drawing and Elementary Machine Design," by F. L. Sylvester, M. E., is a book prepared for the use of practical mechanics and young draftsmen. It contains, besides the author's work, contribution by Erik Oberg, associate editor of machinery, and some information on lettering by C. W. Reinhardt. The book is written primarily for the needs of those practical men who desire to advance themselves by a study of such subjects as algebraic formulas, elementary machine design, elements of trigonometry, etc. It is written clearly and concisely, fully illustrated, and the material is well presented for "home study." This book is now in its third edition and the issue at hand contains 345

pages, 6x9 inches, bound in red cloth. The price is \$2.50. Published by the Norman W. Henley Company, 2 West 45th Street, New York City.

"Stair Builders' Guide," by Morris Williams, is a treatise on the construction of straight flight, platform, cylindrical and elliptical stairs, explaining the theory and practice so the average building mechanic may understand stair construction, with

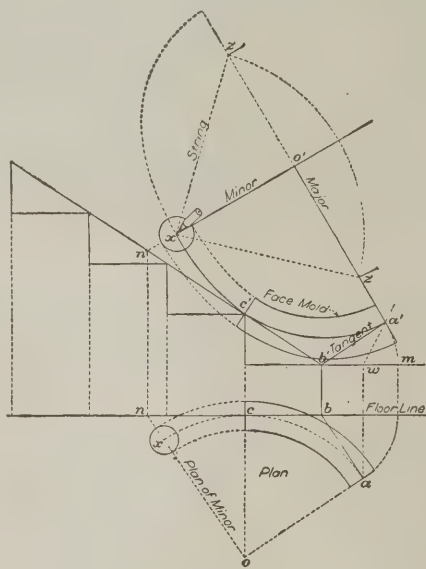


FIG. 71

From the chapter on "Face Molds" in
"Stair Builders' Guide"

examples of work ranging from the simplest to the most complex forms. Stair-building differs materially from all other branches of carpentry; it is a science having its fundamentals in the solution of some of the most intricate problems in plane and solid geometry, and the author confidently asserts that this work embraces the requisite information to enable carpenters to master thoroughly the science of hand railing. There are 258 pages, 6x9, with 360 illustrations. Bound in cloth, the price is \$2.50. Published by the U. P. C. Book Company, Inc., 239 West 39th Street, New York City.

"Wallpaper, Its History, Design and Use," by Phyllis Ackerman, is claimed by the publishers to be the only work on this subject. From a concise history of wallpapers, the book describes manufacture of modern papers, early American wallpapers, problems of design, textures in modern paper and decorative problems. The author, who has worked practically in the decorative arts for years, applies

laboratory results in the psychology of color and well grounded theories of aesthetics to the problems of interior decoration. There is a chapter on modernists which will be of value to those interested in the new art movements. The present revival of interest in wallpaper as a decoration, and especially in the old patterns of the late eighteenth and nineteenth centuries, makes the publication of this book particularly timely. The author's aim is to make understandable to the general reader the decorative possibilities of wallpaper and to encourage the production and use of fine wallpaper designs. The book contains 268 pages, 5½x8¼ in size, 29 illustrations, is bound in cloth and sells for \$3.50; published by Frederick A. Stokes Company, 443 Fourth Avenue, New York City.

"Light and Color in Advertising and Merchandising," by M. Luckiesh, director, Laboratory of Applied Science, National Lamp Works of General Electric Company, is a book of 268 pages treating with light and color as affecting the work of the advertising specialist, commercial artist, color printer, merchandiser, interior decorator, lighting specialist, architect, manufacturer and all others who deal with light and color as expressive media. The author has attempted to analyze light and color as potentialities in advertising and merchandising, basing his discussions on years of observation and research. Technical details have been subordinated to popular treatment in order to make the material readily understandable to those who are interested in the subject from other than a purely scientific or theoretical standpoint. Separate chapters are devoted to the characteristics of color, color preference, emotional value, effectiveness of colors, distinctive interiors and several other subjects. There are many excellent illustrations in color. The book contains 268 pages, with index, is 5½x8 in size and is bound in dark green cloth. It is published by D. Van Nostrand Company, 8 Warren Street, New York City, and the price is \$3.

"Better Built Homes for Two-Family Occupancy," Volume XIII, published by the Curtis Companies Service Bureau, Clinton, Iowa, shows exteriors and floor plans for 21 two-family houses. Of these, 15 have two apartments each with five rooms and bath and six have six rooms each with bath. The designs are by Trowbridge & Ackerman. 9x12 in size; price \$1, or free through lumber dealers.

National Builder's Annual Illustrated and Descriptive Buyers' Guide

January 1924

to

December 1924

READERS of *National Builder* write thousands of letters during the year asking where they can find this or that tool, building material or accessory. These inquiries are always cheerfully answered. Many times, however, this information is wanted at once and the delays of writing must be avoided.

To help our readers answer many of these questions themselves, we publish on the following pages a complete Directory of the products made by the leading manufacturers of building materials, accessories and equipment in the United States, as represented by the advertisers in *National Builder*.

This Directory, or Buyer's Guide, not only lists the products of these concerns, but also describes them in brief, thus giving the reader more information about each item than he would get from a mere listing.

This directory covers a wide variety of items, ranging from Architectural Service to Woodworking Machinery, and includes practically every article used by the contractor and builder.

But naturally, such a directory cannot tell the whole story. The reader is urged to consult the advertisements of the firms mentioned and if still further information is desired, to write to them for catalogs and other literature for complete data.

National Builder will also be glad to assist in the search for the right material, accessory or equipment for the right purpose, if this Buyer's Guide cannot answer your questions. The advice and assistance of our Service Department are yours for the asking.

NATIONAL BUILDER.

Architectural Service

American Face Brick Association, 130 North Wells St., Chicago, Ill. See Brick.

Architectural House Planning Service Co., 20 South 18 St., Philadelphia, Pa. Publishers of "Small Homes of Character" (\$1.00 postpaid), containing 50 examples of 4-, 5-, 6- and 7-room houses. Plans, specifications and bill of materials



Typical model on 1/8-inch scale

are available for each house built of frame, brick or stucco. A cardboard model for each house, scale 1/8-inch to the foot, done in colors to show decorative possibilities, is also supplied, with or without buying the rest of the service. Cardboard models made to order for any houses. Prices quoted upon examination of plans and sketches.

Curtis Companies Service Bureau, Clinton, Iowa. See Woodwork.

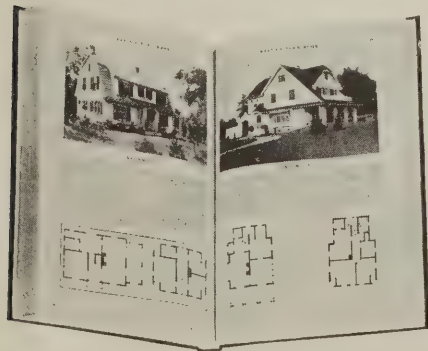
Grieme's Architectural Service Bureau, Dept. A, 110 Engineers Bldg., Cleveland, Ohio. Publishers of "Modern Single Homes" (30 designs) and



From "Modern Single Homes"

"Two-Family Houses" (27 designs). These are portfolios, each 11x14 in size, with plans drawn to 1/8-inch scale and two elevations shown for each house. Essential dimensions are indicated in every case. Each portfolio is \$2.50 postpaid. Service includes complete plans, specifications, list of materials and professional advice on all matters pertaining to building the houses illustrated.

Keith Corporation, 120 North Seventh Street Building, Minneapolis, Minnesota. Publishers of "De Luxe" Plan Book, 336 plans of bungalows, cottages, and two-story houses, and of Keith's Magazine, a monthly journal issued for the past 25 years, devoted to planning, building, and deco-



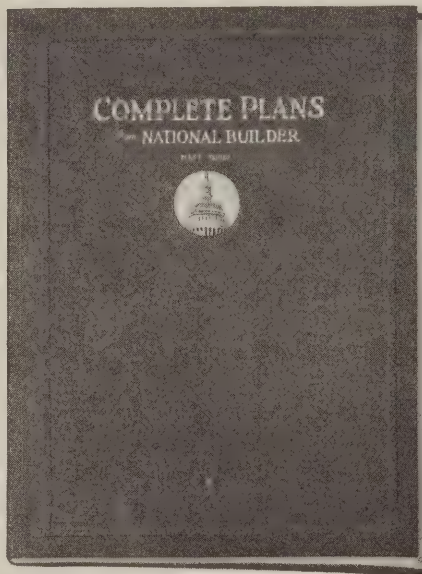
Plan Book De Luxe, 336 complete plans

rating homes of moderate cost. This De Luxe Plan Book, with one year's subscription to Keith's Magazine, is sent for \$4.50 postpaid. Complete

architectural service is rendered for each house illustrated, including working drawings and specifications.

Long-Bell Lumber Co., R. A. Long Bldg., Kansas City, Mo. See Lumber.

National Builder, 542 S. Dearborn St., Chicago. Publishers of this journal and of "Complete Plans from National Builder." This book contains the complete working drawings, including plans, elevations, sections and construction details, with quantity surveys for eighteen houses of from four to six rooms. These plans were prepared especially for National Builder by The Architects' Small House Service Bureau and are reproduced



A book of complete plans for eighteen small houses

on the scale of 1/8-inch to the foot. Blue-prints of the plans, by special arrangement, are supplied to subscribers for National Builder by The Architects' Small House Service Bureau at one-half their regular prices. This 128-page book is 9x12 inches in size, bound in flexible Brocade cover and is given free with two-year subscription to National Builder at the regular rate of two years for \$3.00.

Portland Cement Association, 111 West Washington St., Chicago. See Cement.

Scroggs & Ewing, Architects, 610-B Lamar Bldg., Augusta, Ga. Publishers of "Homes of Distinction," a book of 68 pages showing houses in a variety of architectural styles—Spanish, Ital-



A Scroggs & Ewing design

ian, English, Swiss and "Modern." Illustrated in colors and supplemented by floor plans and detailed descriptions, with cost data. Blue prints and specifications supplied for all houses shown. The book is sent for \$1.00 postpaid.

E. W. Stillwell & Co., Architects, 931 California Bldg., Los Angeles, Calif. Publishers of four



House of California style

plan books of "all climate" houses of California style. These books show pictures, floor plans and

estimated costs of building over 200 designs. They are sold at \$1.00 each or \$2.50 for any three of the four, with a garage folder furnished free. The following titles are represented: "West Coast Bungalows," with 50 houses of 6 and 7 rooms; "Little Bungalows," with 75 houses of 3, 4 and 5 rooms; "Representative California Homes," with 50 houses of 7 to 10 rooms, and "The New Colonials," with 60 houses of 6 to 10 rooms. Blue prints are furnished for all houses shown.

Barn Equipment

Hunt, Helm, Ferris & Co., Harvard, Ill. Stalls, stanchions, pens, litter carriers, water bowls, feed trucks, hay tools, garage equipment, coaster wagons, fence posts and other farm specialties. See Hangers.

Bases—Iron; for Wood Columns

S. Cheney & Son, Manlius, N. Y. Manufacturers of the "Zimmerman" patent iron base for wood porch columns, which protects the foot of the column from rot caused by the wood soaking up water and from unusual wear and tear. This



The Zimmerman patent iron base for wood porch columns

base has center bearings and it lifts the column from 1 1/2 to 6 inches off the floor, allowing air to circulate between the floor and column. It is sold in standard sizes, from 4 to 16 inches square, ready for shipment. Special bases are made to order, with or without lugs.

Beds—Closet

Holmes Disappearing Bed Co., 363 W. Superior St., Chicago. Manufacturers of the "Holmes" disappearing or closet bed, in three principal types: roller, pivot and recess. Special features



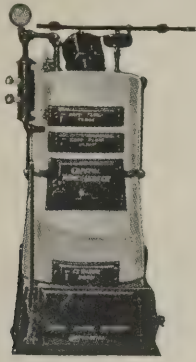
A Holmes bed of the roller type

of the Holmes beds are: the full coil spring sleeping surface, accomplished by the use of 117 individual coil springs; and the foot control device which automatically places the foot legs in proper position.

Murphy Door Bed Co., 22 W. Monroe St., Chicago. See Medicine Cabinets.

Boilers

United States Radiator Corp., general offices, Detroit, Mich. Manufacturers of "Capitol" boiler.

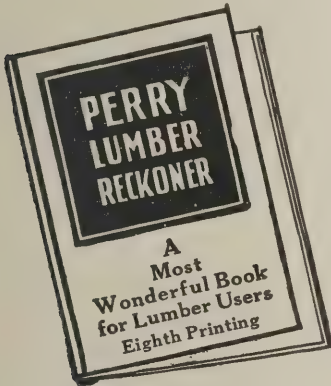


The "Capitol" boiler

ers, which, it is claimed, are the product of more than thirty years sustained investigations into the principles of correct and efficient heating.

Books on Building

Benjamin L. Jenks, 1207 Marshall Bldg., Cleveland, Ohio. Publisher of the "Perry Lumber Reckoner," a 106-page book which gives at a



A short-cut for lumber users

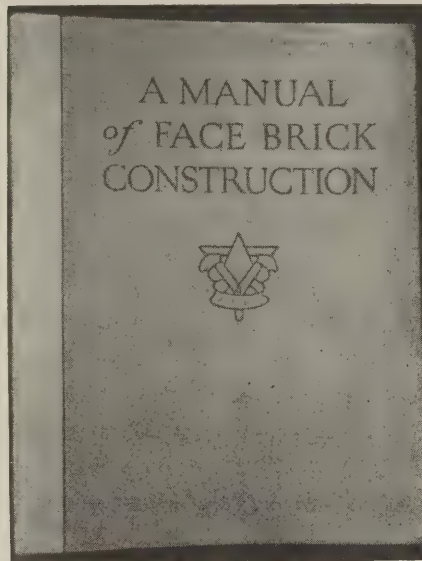
glance the number of feet in any number of pieces any size; a copyrighted short-cut for lumber users. Price \$2.00. Sent on five days' trial.

Frank R. Walker Co., 536-C Lake Shore Drive, Chicago. Publishers of The Building Estimator's Reference Book, containing information regarding estimating the cost of every phase of building

construction (price, \$10); and of a new book entitled Practical Accounting and Cost Keeping for Contractors, treating of contractors' bookkeeping and accounting systems and how to keep time and labor costs on the job (price \$2.50 postpaid).

Brick

American Face Brick Association, 130 North Wells St., Chicago, Ill. This organization is maintained by the principal manufacturers of face brick for the purpose of disseminating information regarding the uses of face brick and face brick construction. To that end, the association issues a number of publications on face brick. "The Story



One of the many publications of the American Face Brick Association

of Bricks," which is sent free, presents the history and manufacture of bricks in an interesting and attractively illustrated manner. "The Home of Beauty" (\$.50) is a book of plans of face brick houses designed by architects of standing. "A Manual of Face Brick Construction" (\$1.00) is an authentic, practical textbook on brickwork. It shows the different types of face brick walls, explains foundation and solid face brick construction, face brick on hollow tile, face brick veneer, the special uses of face brick, brick bonds, mortar joints, increasing fire protection, gives useful tables and suggestions, works out typical problems in estimating quantities, contains a glossary of brick-laying terms, and in addition contains plans and designs, illustrated in colors, for 30 face brick houses.

Brick Machines (See Concrete Products Equipment)

Building Paper

Beaver Products Co., Buffalo, N. Y. See Wall-board.

Brown Company, Portland, Maine. Manufacturers of "Bermico" sheathing paper, made of

Once sold, *Bermico* is self-selling—that is why it appeals to every dealer.

When you buy sheathing—

You can't afford to ignore

the quality of the material.

It's the quality that counts.

It's the quality that makes

the difference between a

good job and a bad one.

It's the quality that makes

the difference between a

good job and a bad one.

It's the quality that makes

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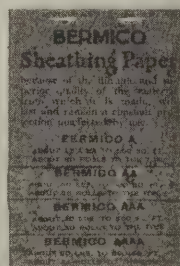
the difference between a

good job and a bad one.

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good job and a bad one.



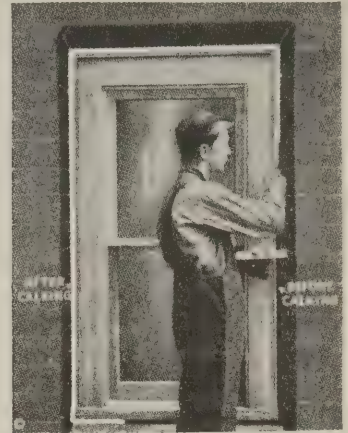
The "Bermico" folder contains samples

fine Canadian and New England spruce and sized with rosin. See also Towels.

Certain-teed Products Corp., 100 E. 42nd St., New York City. See Roofing—Asphalt.

Calking

Weatherproof Calking Co., 756 Washington Ave., No., Minneapolis. Manufacturers and distributors of "Hennen's Elastic Calking Paste" for calking all joints about door and window frames and for glazing either wood or metal sash or for

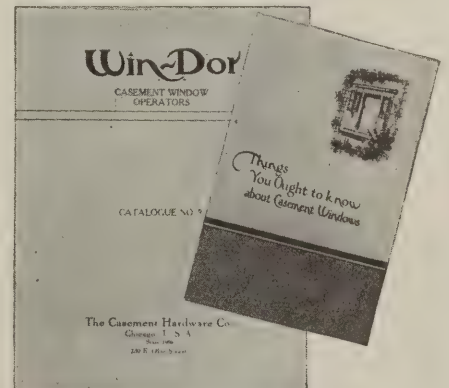


Applying "Hennen's Elastic" calking paste

sealing terra-cotta and coping stone joints. Hennen's Calking Paste is an elastic and very adhesive compound which, it is claimed, holds fast to any kind of masonry, stone, wood, iron or glass; is not affected by heat, cold or moisture and retains sufficient elasticity to prevent cracking from shrinkage or vibration of the frames. It is sold in any quantity direct from the factory.

Casement Hardware (See also Hardware)

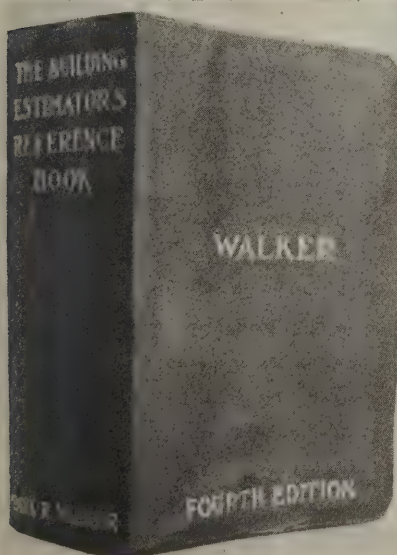
Casement Hardware Co., 237 Pelouze Bldg., Chicago, Ill. Manufacturers of "Win-Dor" casement hardware. This convenient casement control is made of heavy brass plate throughout, or galvanized for painting; it operates inside the screen



Books about casements and casement hardware

through a notch in the bottom rail; the handle is detachable; there are no ratchets or gears; it is self-locking in nine positions; the operator screws to the top of the stool and directly to the bottom of the sash.

Andrew Hoffman Mfg. Co., 906 Steger Bldg., Chicago. Manufacturers of Hoffman casement fixtures for folding casement windows, either outward or inward opening. This company manufactures the hardware fixtures only, which are applicable to wood sash and frames made by any planing mill according to full size details furnished upon request. The fixtures are easily applied (carpenters average an hour and a quarter for hanging a pair of sash) and provide many advantages such as inside cleaning, perfect ventilation, and elimination of binding or sticking. These windows are weather-tight and ordinary shades and curtains are used. The sash may be hung in series, omitting all mullions if desired, and are suitable for all classes of buildings.

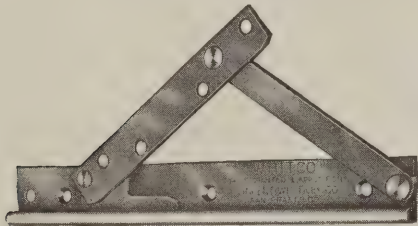


A book well known to contractors, architects and builders



"Hoffman" equipped windows are easily cleaned

Vincent Whitney Co., 365 Market St., San Francisco, Western distributors, and H. E. Holbrook Co., 444-447 Mass. Trust Bldg., Boston, Eastern distributors, of "Whitco" casement hardware, a simple, self-contained unit; one size fits all sash and meets every installation requirement, it is claimed, from a single sash or pair of sash



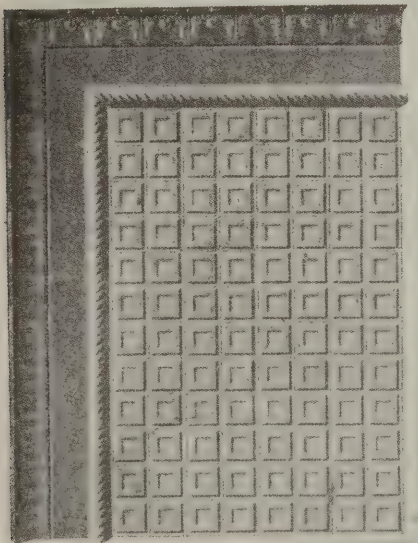
The "Whitco" casement hardware

to a wide opening containing multiple sash with-out mullions. There is no assembling of hardware parts; a set consists of two pieces, one for the top and one for the bottom of the casement sash, and one for each side of transoms. Special finishes are eliminated, because the hardware is concealed; no special sash or frame is required. In solid brass, each set retails at \$2.25; in rust-proofed steel, brass trimmed, \$1.75.

Ceilings

Cortright Metal Roofing Co., 50 N. 23rd St., Philadelphia. See Roofing—Metal.

Edwards Manufacturing Co., 430-450 Eggleston Ave., Cincinnati, Ohio. Manufacturers of sheet



Metal ceiling design No. 2028, one of many patterns offered by the Edwards Mfg. Co.

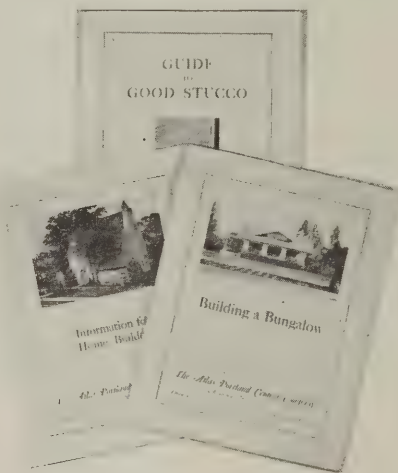
metal products, including metal roofing, siding, awnings, ceiling, etc. Embossed metal ceilings and sidewalls are made from sheets of specially prepared steel and stamped into ornamental designs. These ceilings and walls are, it is claimed, sanitary, durable, fire-resisting and germ proof. Quotations are submitted with a drawing showing how the ceiling will look when erected, when a rough sketch of rooms, showing all off-sets and openings, are sent for the purpose.

International Steel & Iron Co., Dept. 21, Evansville, Ind. See Structural Steel Products.

Moeschl-Edwards Corrugating Co., Box 564, Cincinnati, Ohio. See Metal Building Products.

Cement—Portland

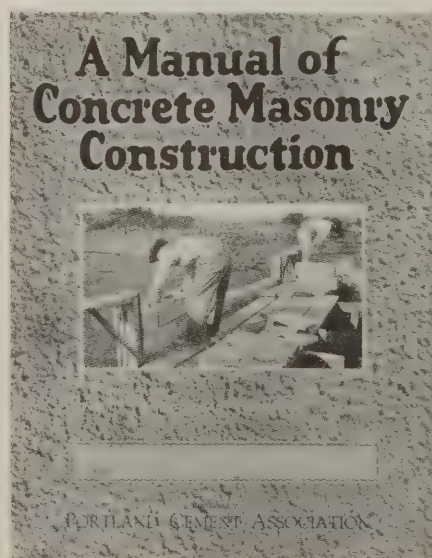
Atlas Portland Cement Co., 25 Broadway, New York. Manufacturers of "Atlas" Portland cement and "Atlas White" Portland cement. Atlas White Portland cement has all the properties of regular gray Atlas but is, in addition, pure white in color and non-staining. It is used where a pure white finish is desired for stucco or for laying up and



A group of books on Atlas Portland cement

pointing brick, tile, marble or other fine textured stone. It is also used where color is introduced into finishes or joints, as its pure white color makes possible true color values. The company maintains a service and technical department whose staff of engineers gladly co-operates with users of cement; and a complete library of informative literature is published. The illustrations show a few of the publications available for distribution.

Portland Cement Association, 111 W. Washington St., Chicago. This association is a national organization, maintained by the leading manufacturers of Portland cement, "to improve and extend



One of a library of publications by the Portland Cement Association

the uses of concrete." A large number of publications are issued on the different uses of Portland cement, under the following heads: Canals, conduits, sewers and drainage; farm uses; concrete products; roads, streets and alleys; structural concrete; technical data, tanks, etc., and miscellaneous subjects. "A Manual of Concrete Masonry Construction" is particularly recommended for the contractor and builder. It is a 32-page booklet, size 8½x11, and is sent free on request.

Coal Chutes

Indiana Foundry Co., 950 Oak St., Indiana, Pa. Manufacturers of a variety of cast iron products used in building, particularly coal chutes.

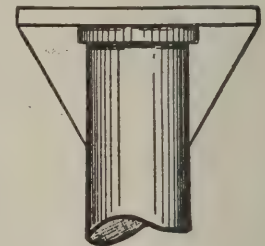


Cast iron coal chute with wire glass door

These chutes are made in standard sizes for walls of varying depths and are furnished with wire glass doors or cast iron doors, as desired.

Columns—Patent

Crex Patent Column Co., 2300 So. Springfield Ave., Chicago. Manufacturers of the Crex patent steel column for factories, apartment buildings, stores, residences and other buildings. This column consists of an outer shell of steel filled with concrete in such a way as to get the full strength

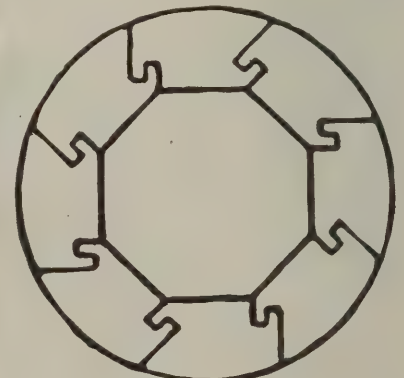


An all-steel patent cap is put on every Crex column

of the solid concrete interior. It has an all-steel cap of patent construction, the strength of which can be reliably computed. The Crex column, it is claimed, can be furnished in about one-fifth the time required for other columns.

Columns—Wood

Hartman-Sanders Co., 2155-87 Elston Ave., Chicago. Manufacturers of a complete line of



Kol's patent lock-joint used in the construction of wood columns, manufactured by the Hartman-Sanders Co.

wood columns and other millwork. Originators and sole makers of columns constructed with Koll's patent lock-joint, which prevents joints from opening up and the columns from coming apart. Columns of all sizes and in a wide variety of designs are offered for all architectural styles, and they are illustrated and described in catalog T-47.

Concrete Block Machines

See Concrete Products Equipment.

Concrete Brick Machines

See Concrete Products Equipment.

Concrete Products Equipment

Anchor Concrete Machinery Co., 530 Dublin Ave., Columbus, Ohio. Manufacturers of a complete line of machinery for making concrete blocks, bricks, building and roof tile, and silo blocks and staves. They offer free to concrete products men their interesting "Hand Book on Concrete



Catalog of the Anchor line of concrete products equipment

Products." Included in the book are articles by such leaders of the concrete products industry as Harvey Whipple, secretary of the American Concrete Institute and editor of Concrete; and Wallace R. Harris, president of the National Concrete Products Association and editor of Concrete Products.

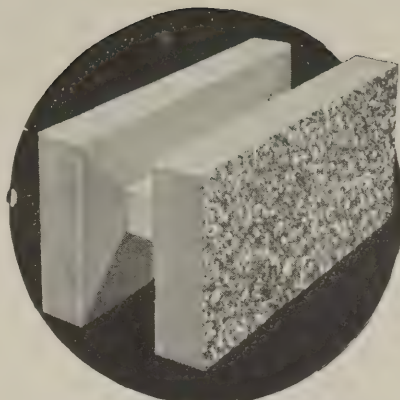
Concrete Equipment Co., 530 Ottawa Ave., Holland, Mich., manufacturers of the "Utility" line of concrete machinery and molds for the manufacture of all kinds of concrete products. Two types of concrete block may be made with "Utility" equipment: the regular 8x8x16 in. block,



Concrete products like this are made with the "Utility" line of concrete machinery

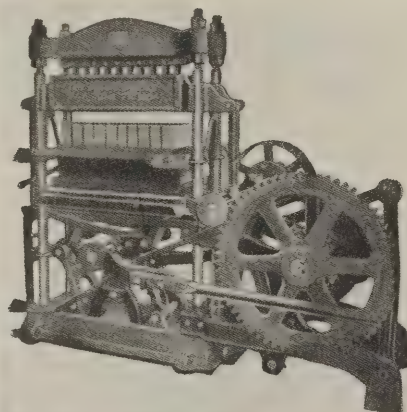
and light-weight blocks, 5x8x12 in. This firm also makes brick machines, with or without power tampers, and various kinds of plain and adjustable molds for every purpose. A descriptive catalog, which not only describes the equipment but also specifies weights, costs, and selling prices of the products, is sent free upon request.

Flexo-Concrete Mold Co., 815 Vernal St., Cedar Rapids, Iowa. Manufacturers of molds for "Flexo-Crete" building blocks. These molds are made of 20 and 22 gauge galvanized iron, with trussed construction for rigidity and ease in removing. Ten or 15 blocks in any of five sizes, using a 1-2-4 mixture, can be made at one time. Equipment for making gable blocks, quarter, half and three-quarter blocks and blocks to receive the ends of joists is also supplied.



A "Flexo-Crete" building block for hollow wall concrete construction

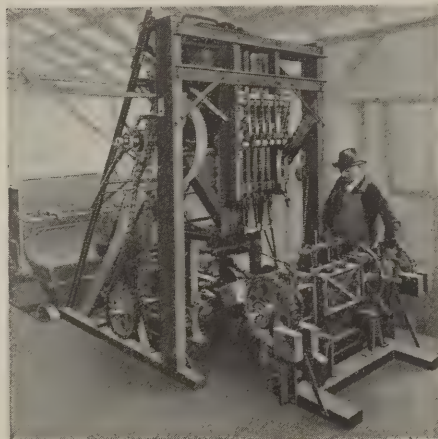
Helm Brick Machine Co., 985 Mitchell St., Cadillac, Mich. Manufacturers of machinery for making concrete blocks and bricks. Helm concrete brick are made under the face-up pressure system and are equal, it is claimed, to the most expensive pressed face brick, every brick being



The Helm press for making concrete blocks or bricks

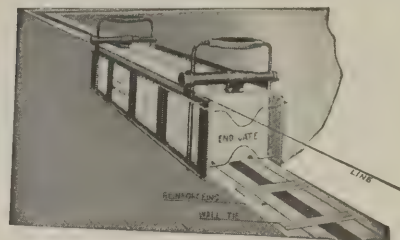
perfectly true and all uniform in shape, size and color. They are made in a variety of ornamental designs useful for trimming and fireplaces. Frost and moisture, it is claimed, will not affect Helm brick, and they will not scale or chip off. The Helm press has a capacity, according to the manufacturers, of 15,000 bricks or 1500 blocks a day.

The Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, O. Manufacturers of concrete molding machinery. One "Ideal" product is the "Roll-Over" block machine, which may be used for making either concrete block or tile. In this machine the operations follow in logical order, thus making for a high degree of efficiency.



The Ideal Concrete Machinery Company's new roll-over stripper for making concrete blocks

The Universal Cement Mold Co., North Milwaukee, Wis. Manufacture hollow wall molds for building concrete double wall buildings, with a

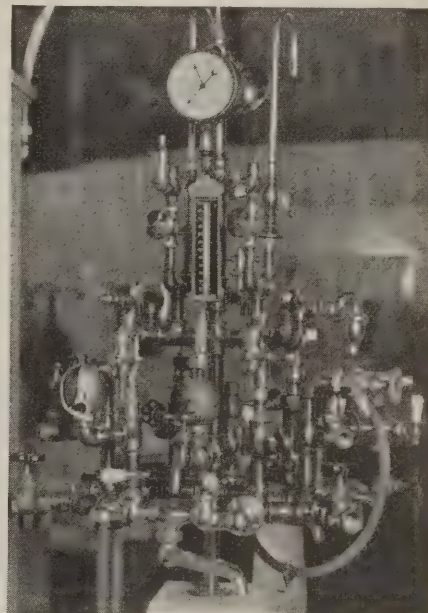


"Universal" cement mold for hollow wall blocks

2 1/4-in. dead air space. Buildings so erected are, it is claimed, fire, frost and moisture proof, sanitary and substantial.

Copper

Copper & Brass Research Assn., 25 Broadway, New York City. An association formed for the improvement of the copper and brass industries. This association publishes several books and pamphlets upon the use of these metals which contains

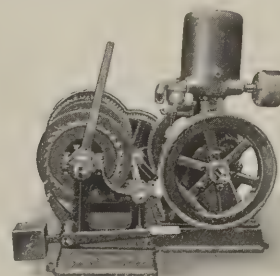


A "family tree" of plumbing fixtures arranged by the Copper & Brass Research Association

information relative to the best way to use them. They may be had free of charge. The association also maintains a building service department which furnishes information to building contractors concerning any problems involving the use of copper and brass.

Derricks

Sasgen Derrick Co., 3101 Grand Ave., Chicago. Manufacturers of portable and stationary hand,



Sasgen derricks are made in various sizes

gasoline and electric power driven derricks, with builders' and tow truck derricks as specialties; also of "Isco" garage door stop, made of steel in four different styles.

Doors—Fir

Wheeler, Osgood Co., Tacoma, Wash. Manufacturers of "Woco Quality" yellow fir doors and "Laminex" veneered fir doors, of all types: solid and veneered stiles and rails with veneered panels, and veneered stiles and rails with solid



Cross-section showing construction of "Laminex" veneered fir door

panels. Waterproof glue is used in all veneered—"Laminex"—doors. Styles of doors: panel, sash, casement, cupboard, garage; in numerous designs. Also manufacturers of fir sash and windows and 3-ply laminated fir panels constructed with a waterproof glue. Catalog No. 31 contains full data on designs, sizes, etc.

Dumbwaiters (See Elevators)

Elevators

Energy Elevator Co., 214 New St., Philadelphia. Manufacturers of elevators and dumbwaiters. The type A-115 Energy dumbwaiter has a capacity of

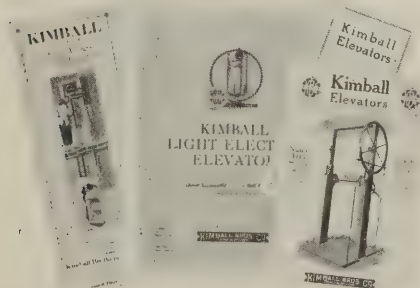


"Energy" elevator

75 lb., automatic lock, anti-friction roller bearings, fire hoist rope, adjustable guide shoes and exposed weights, is 24 in. wide, 20 in. deep and 30 in. high with two compartments, 14x12.

International Steel & Iron Co., Dept. 21, Evansville, Ind. See Structural Steel Products.

Kimball Brothers Co., Council Bluffs, Iowa. Manufacturers of a large line of elevators for every purpose, dumbwaiters and hoists. Kimball elevators have positive operation and "straight

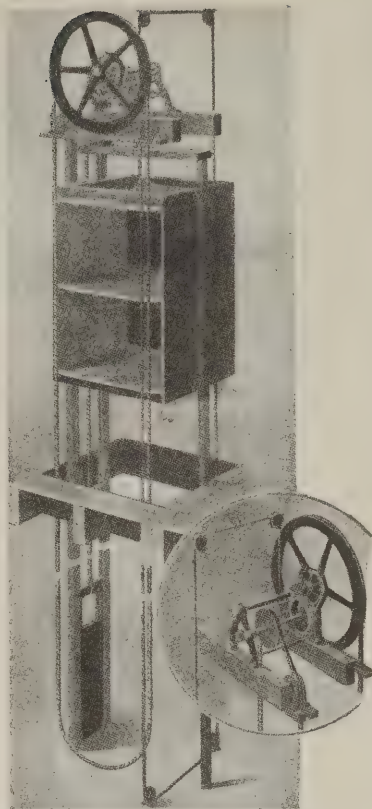


Some free booklets on Kimball products

line" drive. Light electric elevators, hand power elevators, hand power dumbwaiters and iceless refrigerators, and K type automobile elevator for severe garage use are leading products.

Fred J. Meyers Manufacturing Co., Hamilton, Ohio. See Ornamental Metal Work.

Sedgwick Machine Works, 157 W. 15th St., New York City. Manufacturers of handpower elevators and dumbwaiters. Standard sizes are carried in stock ready for immediate shipment; special sizes are made up and shipped within four days. Full dimensions and blue prints are furnished with each outfit.



Sedgwick geared band-brake dumbwaiter

J. G. Speidel, Reading, Pa. Manufacturer of elevators for all purposes, dumbwaiters, simplex



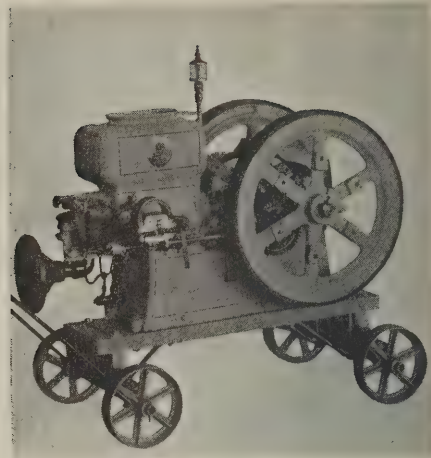
A Speidel product

chain hoists, cranes, and chains for all industrial purposes. A catalog contains full information.

Engines

The Hercules Corp., Eng. Div., Evansville, Ind. Manufacturers of oil, gasoline and kerosene engines. The Hercules oil engine in 7 and 9 hp. sizes only has been built for burning cheap fuel. The construction is stronger, more compact and sturdy than ordinary and all electrical mechanism is eliminated. It has been tested, the manufacturers state, and run on different grades of crude oils.

Witte Engine Works, Kansas City, Pittsburgh and San Francisco. Manufacturers of the "Witte Throttling-Governor" engine for contractors; also used as standard equipment on hoists, concrete mixers and other power machinery. This engine burns kerosene, gasoline, distillate or gas, and is equipped with "Wico" high-tension magneto and motor style carburetor and speed regulator.



A sample from the "Hercules" line of oil, gasoline and kerosene engines



The "Witte Throttling-Governor" engine

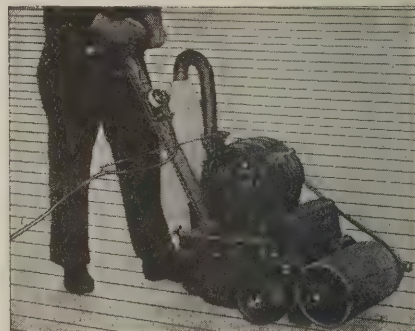
Fireplace Furnishings

Chas. F. Lorenzen & Co., 521 W. Monroe St., Chicago. See Tiles and Mosaics.

Nicholas Hardware Co., 121 Marion St., Oak Park, Ill. See Hardware.

Floor Surfacers

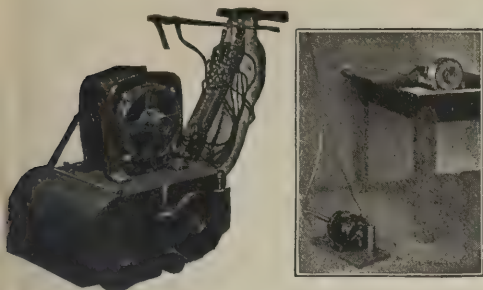
The American Floor Surfacing Machine Co., 515 S. St. Clair St., Toledo, Ohio. Manufacturers of the "American Universal" floor surfacing machine, made in one size having a sanding drum 12 in.



"American Universal" floor surfacing machine

wide. This machine is built on the interchangeable system, every part being made and machined to gauges, insuring absolute certainty that they will fit, and will surface per day from 4000 to 7000 sq. ft. once over or completely finish from 2000 to 3000 sq. ft.

Wayvell Chappell & Co., 40-41 N. Jackson St., Waukegan, Ill. Manufacturers of the "Wayvell Chappell" automatic ball bearing electric floor surfacing machines and the "Little Automatic" electric surfacing machine for removing varnish from desk tops, counters, etc.



Wayvell Chappell floor and desk surfacers

Electric Rotary Machine Co., 3825 W. Lake St., Chicago, Ill. Manufacturers of floor surfacing, polishing, waxing, sanding and scrubbing



"Electric Rotary" floor surfacers can be operated in small quarters

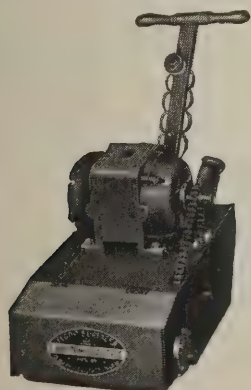
machines. These machines are used for finishing floors and may be successfully operated in small quarters as well as large areas.

Fox Supply Co., Brooklyn, Wis. Manufacturers of "Fox" floor scrapers. Fox floor scraper No. 4 has a 6-inch cutting edge; weighs about



One of five sizes of "Fox" floor surfacers

100 lb.; rubber tired wheels; adjustable handle, and one-half dozen blades, a hone, wrench and burnisher go with each machine.



"Lightning Electric" floor surfacer

National Sanding Machine Co., 20 E. Jackson Blvd., Chicago. Manufacturers of "Lightning Electric" floor surfacer, which, it is claimed, will surface right up to the quarter round without the use of a side roller and leaves no waves or chatter marks in the roughest floors. This machine is sent on five days' free trial and sold with a five-year guarantee.

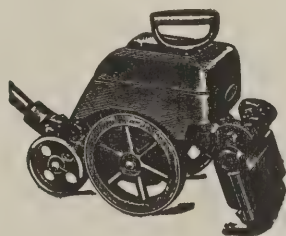
M. L. Schlueter, 224 W. Illinois St., Chicago, Ill. Manufacturers and distributors of the "Schlueter Rapid," electrically driven, wood-floor surfacing machine. This machine can be used



The "Schlueter Rapid" floor surfacer is automatic in operation

for surfacing within $\frac{1}{4}$ in. of wall or baseboard without the use of a side roller and does the work of several men. It is automatic in operation and covered by a five-year guarantee.

Triple "A" Machine Co., 4607 E. Ravenswood Ave., Chicago. Manufacturers of the "Triple 'A'" spring driven floor smoother. This machine, it is claimed, does a clean job right up to the base



"Triple 'A'" machines are always ready for use

and corners, free from waves. It carries its own power and is always ready for use. It is sold on 30 days trial; price \$100; terms: \$50 with order or C.O.D. and balance in 30 days; money back if dissatisfied and machine is returned.

Flooring

Everlasbestos Flooring Co., 95 North St., Rochester, N. Y. Manufacturers of "Everlas-



"Everlasbestos" composition flooring can be laid over old floors

bestos," a composition flooring made of asbestos and various chemical ingredients. These floors may be applied over any foundation, whether old or new, and may be laid in either red, buff, or gray, by any mason or cement contractor. Illustrated manuals, with instructions for laying "Everlasbestos" floors, are furnished free with orders.

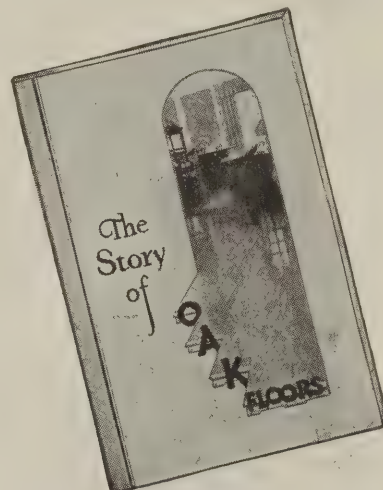
Exchange Sawmills Sales Co., Long Bldg., Kansas City, Mo. Manufacturers of long leaf Southern pine lumber and "Essco Heart" flooring, made from only the heart-wood of the pine, and with edge-grain. Each bundle of Essco Heart flooring is trade-marked. Sold through retail lumber dealers.



Trade-mark on "Essco Heart" flooring

Franklin R. Muller, Inc., 205 Madison St., Waukegan, Ill. See Stucco.

Oak Flooring Bureau, 1045 Ashland Block, Chicago, Ill. This bureau is a national organization, maintained by the leading oak flooring manufacturers in the U. S. This bureau issues a number of books and pamphlets, among which



One of the Oak Flooring Bureau's free booklets

are "The Story of Oak Floors," a 24-page book in 4 colors, and "How and Where To Use Oak Floors," a booklet of 16 pages, covering the technical names and grades of oak flooring, besides imparting the proper methods for handling, laying, finishing and caring for oak floors. These booklets are all free and may be obtained upon request.

Wood-Mosaic Co., Inc., New Albany, Ind. Manufacturers of wood mosaic and parquetry flooring

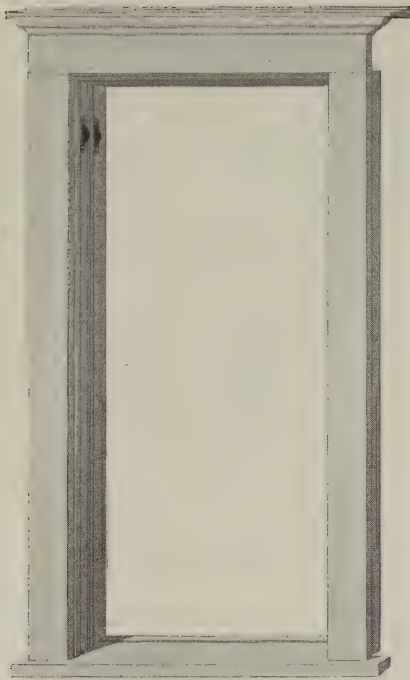


This trade-mark identifies products of the Wood Mosaic Co.

and borders. Borders are made in many patterns and sizes to fit any flooring from samples showing exact size of tonguing and grooving.

Frames—Window and Door

Andersen Lumber Co., Bayport, Minn. Manufacturers of Andersen standard white pine window, door, and cellar sash frames. Each Andersen frame is shipped in two compact bundles containing 7 simple units which, it is claimed, can be nailed together in 10 minutes or less. These frames are available in 121 different sizes and can be used in frame, brick, or concrete buildings.



"Andersen" frames can be set up in ten minutes, it is claimed

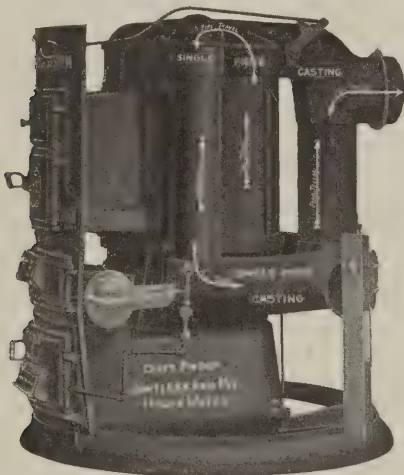
Catalogs of Andersen products are sent on request.

Curtis Companies' Service Bureau, Clinton, Iowa. See Woodwork.

Furnaces

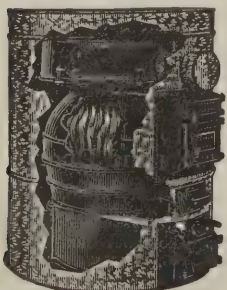
Andrews Heating Co., 1585 Heating Bldg., Minneapolis, Minn. See Heating Specialties.

Beckwith Co., Dowagiac, Mich. Manufacturers of Round Oak stoves, ranges (oil, gas, coal and combination), and pipe and pipeless furnaces. The



One of the widely known "Round Oak" products

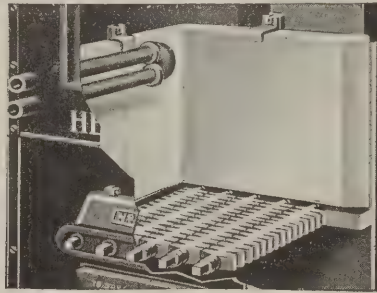
Round Oak Moisture Heating Systems are said to deliver moist, pure, everchanging air, free from dust, smoke or gas; are simple in control, durable, economical, sanitary and capable of burning all standard fuels.



"Bovee" cast iron (left) pipeless (right) furnaces

Bovee Furnace Works, 60 W. 8th St., Waterloo, Iowa. Manufacturers of "Bovee" furnaces—compound radiator horizontal wood and coal, cast iron and pipeless—in all sizes having 20-inch to 36-inch fire pots, with fittings for regular piping, pipeless, central heating, central and run to bath, central heating with two outlets and three run floor or wall registers.

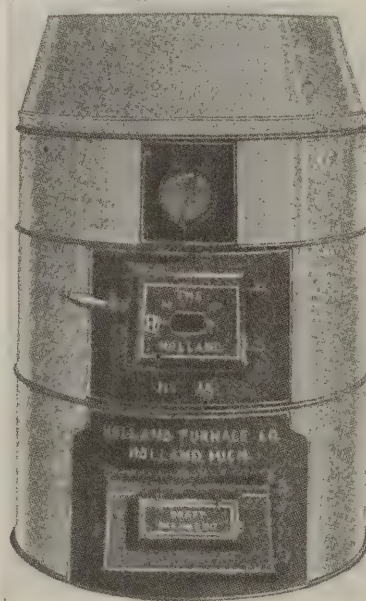
Hess Warming and Ventilating Co., 907-L Tacoma Bldg., Chicago, Ill. Manufacturers of the "Hess Welded Steel Furnace." The combustion chamber and ash pit are enclosed in a sheet steel



Inside a "Hess Welded Steel" furnace

radiator having all seams securely riveted and permanently sealed by oxy-acetylene and electric arc welding, which fuses the edges of the steel sheets so they form one solid piece of metal. "Modern Furnace Heating," a book on heating problems, and details of the Hess free plan service are sent on request.

Holland Furnace Co., Holland, Mich. Manufacturers of "Holland" furnaces. To insure proper installation of the right equipment for every building, the services of Holland trained men are offered contractors and builders on heat engineering problems. Heating systems are sold un-



The services of "Holland trained" men go with "Holland" furnaces

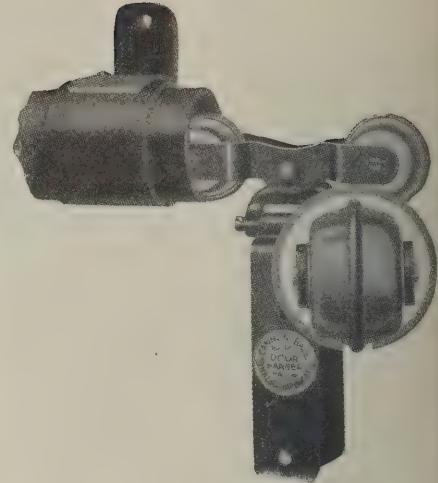
der the "Holland Bond," which is good for five years and is transferable when the house is sold.

Gypsum Blocks

Certain-teed Products Corp., 100 E. 42nd St., New York City. See Roofing—Asphalt.

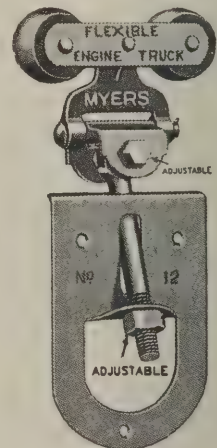
Hangers—Door

Hunt, Helm, Ferris & Co., Harvard, Ill., manufacturers of "Cannon Ball" track and door hangers. The tubular track and round ball wheels mean even bearing and smooth operation in spite of sagging walls, and nothing can collect in the track to bar the easy passage of hangers and wheels; moisture is prevented from condensing inside track, mingling with rust scale and dust, freezing and causing binding and jamming. See also Barn Equipment.



"Cannon Ball" track and hanger with cross section showing wheel

F. E. Myers & Bro. Co., Ashland, Ohio. Manufacturers of "Myers Stayon" door hangers for sliding doors on any building, in a wide range



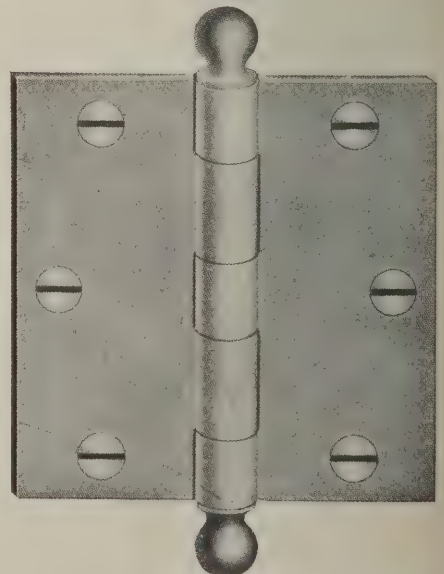
The "Myers Stayon" door hanger

of styles and sizes and with patented adjustable stay-on and flexible features to insure light operating, weather-resisting, stay-on-the-track sliding doors.

Richards-Wilcox Mfg. Co., Aurora, Ill. See Hardware.

Hardware

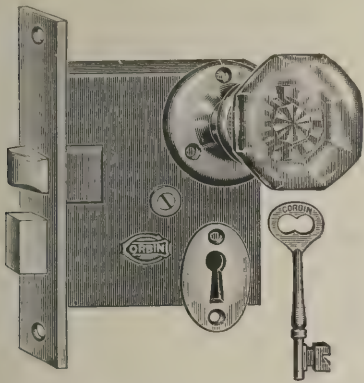
Griffin Manufacturing Co., Erie, Pa. Manu-



Hinges of all kinds are an important "Griffin" product

facturers of ornamental, strap and T hinges, butts, cellar window hardware, hasps, door handles and holders, brackets, push plates, drawer pulls, door stops, sash and screen lifts, barrel bolts, corner braces and irons, mashers, mending plates and pressed steel buttons.

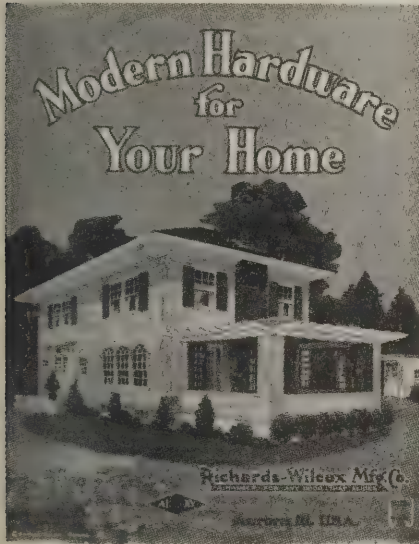
Nicholas Hardware Co., 121 Marion St., Oak Park, Ill. Distributors of builders' hardware,



Nicholas Hardware Co. are distributors of all kinds of builders' hardware

garage hardware, bathroom furnishings, fireplace furnishings, coal chutes, wire cloth, tools, etc.

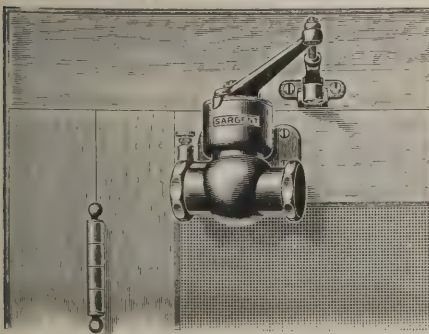
Richards-Wilcox Mfg. Co., Aurora, Ill. Manufacturers of "Slidetite" garage door hardware, "AiR-Way" multifold casement window hardware



The Richards-Wilcox catalog describes "Slidetite," "AiR-Way" and "R-W" products

and "R-W" vanishing door hardware. "Modern Hardware for Your Home," an illustrated catalog, contains detailed information concerning all items of hardware manufactured by this company and is sent free on request.

Sargent & Co., 52 Water St., New Haven, Conn. Manufacturers of builders' tools and hard-



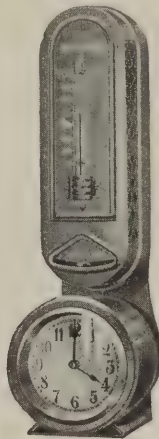
Sargent & Company's liquid door closer for light doors

ware of various sorts. They also make a liquid door closer suitable for light doors, which operates on a new principle.

Heat Regulators

American Stove Co., 2210 Chateau Ave., St. Louis, Mo. See Oven Heat Regulators.

Minneapolis Heat Regulator Co., 2753 4th Ave., So., Minneapolis, Minn. Manufacturers of the "Minneapolis" heat regulator, a thermostat, placed

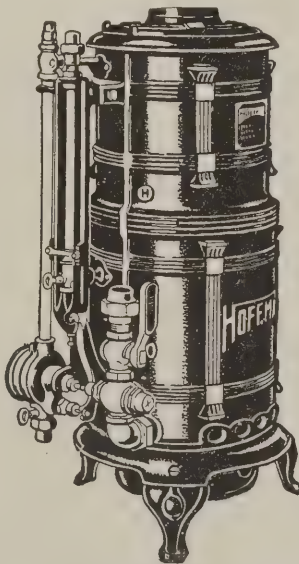


The "Minneapolis" heat regulator

on the living or dining room wall. This thermostat operates a motor in the basement, controlling the drafts and dampers of the heating plant, the steam valve, gas valve, or oil valve. A number of models are furnished.

Heaters—Water

Hoffman Heater Co., 2103 Oberlin Ave., Lorain, Ohio. Manufacturers of "Hoffman" instantaneous automatic water heaters. A special feature is a new safety valve control for hot

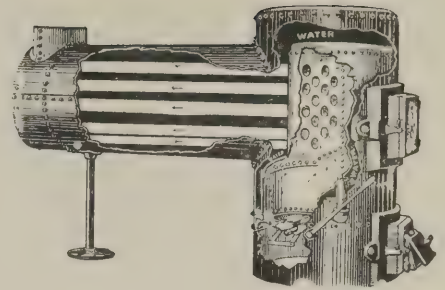


A "Hoffman" instantaneous automatic water heater

water storage systems for residences, industrial and commercial uses, and adaptable to any water or gas conditions. Four new model Hoffman heaters are especially adapted to home use.

Heating Specialties

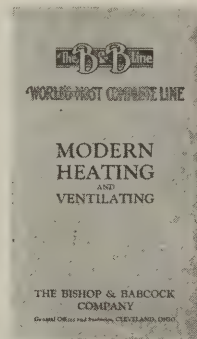
Andrews Heating Co., 1585 Heating Bldg., Minneapolis. Manufacturers of heating boilers, hot air furnaces, sewage disposal systems, septic tanks, air pressure tanks, garbage burners. The Andrews locomotive steel boiler has, it is claimed, more than twice as much heating surface per



Construction of "Andrews" locomotive steel boiler

square foot of grate area as cast iron boilers. The "Heating Book" catalog contains full information and is sent on request.

Bishop & Babcock Co., Cleveland, Ohio. Manufacturers of vacuum and vapor heating systems, steam specialties, radiator valves and traps, va-



The "B & B Line" handbook is 4x7 inches in size

uum pumps, temperature control systems and water pumps and systems. A handbook, "Modern Heating and Ventilating," gives full information in convenient form about the "B & B" line.

Hoists

American Cement Machine Co., Keokuk, Iowa. See Mixers—Concrete.

Anchor Concrete Machinery Co., 534 Dublin Ave., Columbus, Ohio. See Concrete Products Equipment.

Construction Machinery Co., Waterloo, Iowa. See Mixers—Concrete.

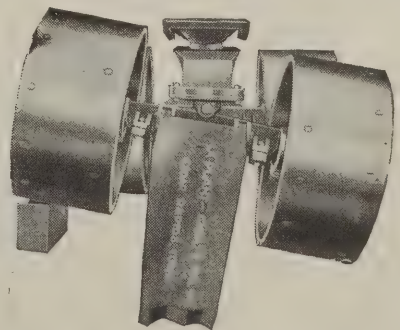
C. H. & E. Manufacturing Co., 319 Mineral St., Milwaukee, Wis. See Woodworking Machinery.

Energy Elevator Co., 214 New St., Philadelphia, Pa. See Elevators.

J. G. Speidel, Reading, Pa. See Elevators.

House Moving Tools

La Plant-Choate Mfg. Co., 3114 First Ave., Cedar Rapids, Iowa. Manufacturers of house moving tools, road scrapers, tractor dump trailers, machinery trailers, pipe-line and logging trailers,



There is no chance to rack a house, it is claimed, when loaded on La Plant-Choate "Steel Giants"

heavy-duty low-loading trailers, portable gears for bins, snow plows and stump pullers. Catalog "R" gives full details and is sent free.

Instruments—Drawing and Surveying—See Levels

Insulation

Samuel Cabot, Inc., 141 Milk St., Boston, Mass. Manufacturers of Cabot's insulating and deadening "Quilt." This material is made of



Cabot's "Quilt" is for insulation and sound deadening

cured eel-grass, stitched in 3-inch widths between kraft paper. It is one yard wide and comes in rolls 250 feet long.

The Celotex Co., 111 W. Washington St., Chicago, Ill. Manufacturers of "Celotex," a sheathing made from cane fibers. Celotex is used for sheathing instead of wood, for plaster base in-

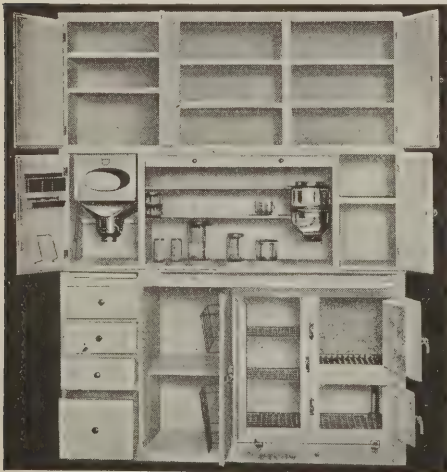


"Celotex" is used for sheathing, insulation, and other purposes

stead of lath, and for roof insulation, sound deadener and exterior finish. The weight is about 60 lbs. per 100 sq. ft., and the stock sizes for 7/16-in. thickness are: width, 4 ft.; lengths, 8 ft., 8½ ft., 9 ft., 9½ ft., 10 ft. and 12 ft.

Kitchen Cabinets

LaGrange Fixture Sales Corp., 150 E. Spring St., LaGrange, Ind. Manufacturers of "Kozy-



The "Kozy-Kitch" kitchenette is a combination of everything for the efficient kitchen

Kitch" kitchenettes, a combination of necessary features for the efficient and economical planning of apartment and residence kitchens; built-in or set-in; includes refrigerator; entirely enclosed, with sanitary lap front doors and roll curtain; white enamel finish inside and out. Catalog gives complete details and arrangements.

Lath

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, Ohio. See Stucco.

Lath—Metal

The General Fireproofing Co., Youngstown, Ohio. Manufacturers of fireproof products and "Herringbone" rigid metal lath. By means of



"Herringbone" rigid metal lath

interlocking edges the side lapping of sheets is not necessary. This metal lath is furnished painted or galvanized, and in Armco Ingot Iron.

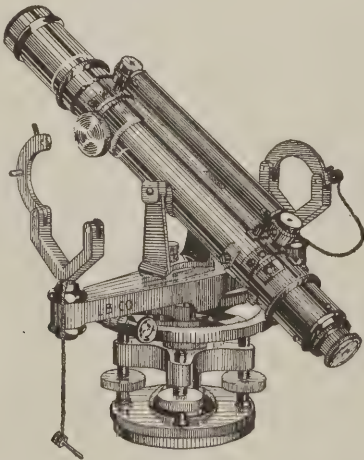
Milwaukee Corrugating Co., 36th Ave. and Burnham St., Milwaukee, Wis. See Metal Building Products.

Truscon Steel Co., Youngstown, Ohio. See Metal Building Products.

Levels

A. S. Aloe Co., 513 Olive St., St. Louis, Mo. See Mixers—Concrete.

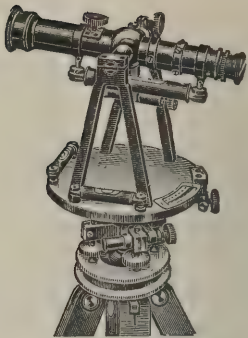
The L. Beckman Co., 1004 Jackson St., Toledo, O. Manufacturers of builders' convertible wye levels and other builders' and engineers' instruments. The convertible wye level is constructed along the same lines as the regular archi-



"Beckman" convertible wye level

tects' and builders' level but by the addition of a special device the telescope can be tilted 45 degrees in either direction. This is of advantage to the builder who wishes to do transit work where the greatest accuracy is not required and who does not want to go to the expense of purchasing a regular builder's transit.

Kolesch & Co., 138 Fulton St., New York.

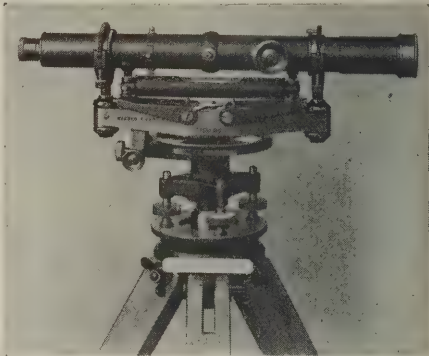


A sample from the "Kolesch" line

Manufacturers of surveying instruments, drawing materials, transits and levels.

Sargent & Co., 52 Water St., New Haven, Conn. See Hardware.

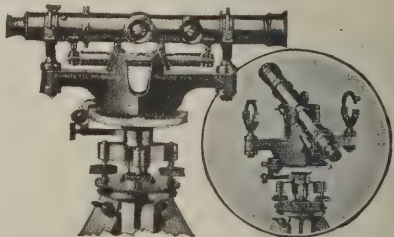
Warren-Knight Co., 136 N. 12th St., Philadelphia. Manufacturers of builders' combination convertible and farm levels; leveling and target rods; tapes; builders', contractors and engineers' transits; lumber crayons; drafting supplies, drawing materials and instruments. The "Sterling" convertible level has new and exclusive features



Model No. 40 "Sterling" level manufactured by the Warren-Knight Company

such as the convertible device on the level bar; the wide angular tilt of the leveling head, together with the shifting center for getting exactly over a point; the longer telescope and the unusually sensitive level vial; the larger diameter telescope, the high magnifying power; the close focus, and the patented wye clips that allow converting the instrument for transit work without jarring it out of level.

David White Co., Inc., Milwaukee, Wis. Manufacturer of "White's Improved Convertible



"White's Improved Convertible" level

Level," a combination level and transit having level bar and transit standards cast in one; also of other contractors' equipment, fully described in catalog showing the complete line.

Lime

Woodville Lime & Cement Co., 1340 Nicholas Bldg., Toledo, Ohio. Manufacturers of "White Lily Finish," "Gold Medal" and "White Enamel Finish" hydrated lime. The company's plant is at Woodville, Ohio, in the center of a tract of limestone of unusual quality, it is claimed.

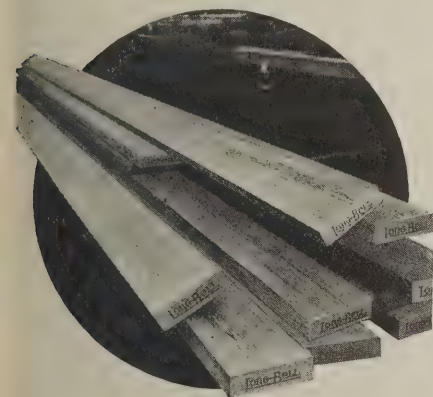


This trade-mark identifies "White Lily Finish" hydrated lime

Lumber

Exchange Sawmills Sales Co., Long Bldg., Kansas City, Mo. See Flooring.

The Long-Bell Lumber Co., R. A. Long Bldg., Kansas City, Mo. Manufacturers of Long-Bell lumber. This company operates extensive mills



Every piece of "Long-Bell" lumber is trade-marked

through the west which turn out dimension lumber and other wood products used in building. They offer, through lumber dealers, an extensive house plan service for users of Long-Bell lumber.

Medicine Cabinets

Bennett Manufacturing Co., Alden, Erie Co., N. Y. Manufacturers of "Steel Maid" medicine



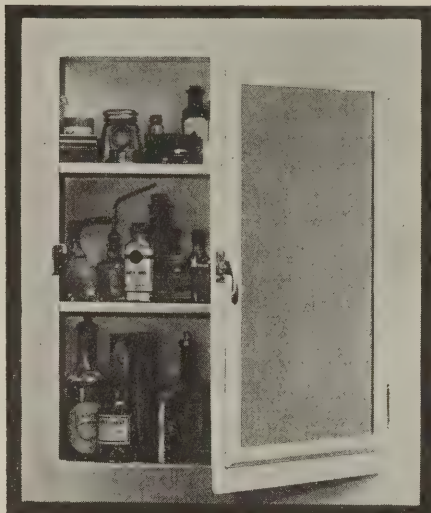
A "Steel Maid" medicine cabinet

and bathroom cabinets. These cabinets are made of cold rolled, stretcher level, full finished furni-

ture sheet steel, electrically welded, and are given a durable pure white enamel finish that will not change color, chip, crack or peel. A free folder contains full information.

Curtis Companies Service Bureau, Clinton, Iowa. See Woodwork.

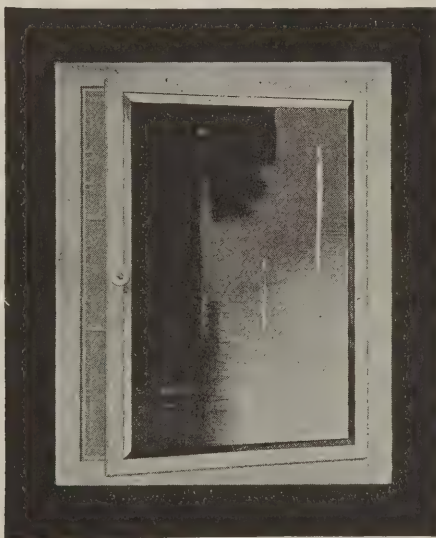
Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. Manufacturers of "Murphy" built-in products—"In-a-dor" beds, cabinet ironing boards, kitchen equipment, etc., for homes and



A recent addition to the products of the Murphy Door Bed Co.

apartments. A recent addition to the Murphy line is an all-steel medicine cabinet with mirror and a patent latch. This cabinet is supplied in different styles.

"White-Steel" Sanitary Furniture Co., Grand Rapids, Mich. Manufacturers of the "White-Steel" line of medicine cabinets, which are made

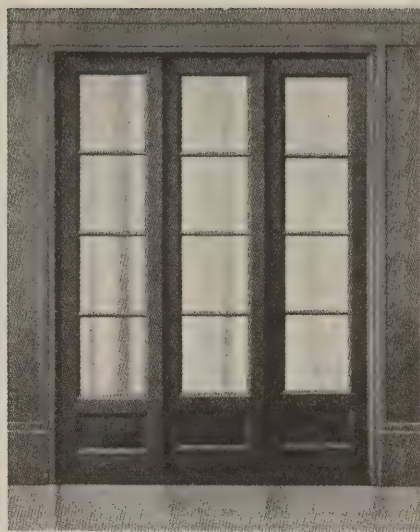


The "White-Steel" medicine cabinet

of Henzin metal, a rust resisting material, with six coats of "White-Steel" enamel. The cabinet is made in two pieces and fitted with polished plate glass shelves.

Metal Building Products

Dahlstrom Metallic Door Co., Buffalo St., Jamestown, N. Y. Manufacturers of hollow metal doors, partitions and trim in steel, iron, brass and



"Dahlstrom" elevator enclosures are fire-resisting

bronze; cold drawn metal moldings and pressed shapes for ornamental work, bank fixtures, counter screens, elevator enclosures and special work. General Fireproofing Co., Youngstown, Ohio. See Lath—Metal.

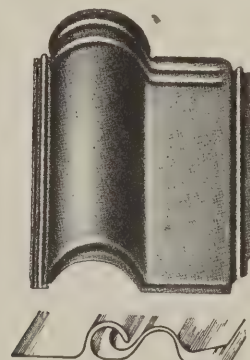
Milwaukee Corrugating Co., 36th Ave. and Burnham St., Milwaukee, Wis. Manufacturers of metal building products, steel ceilings and "Milcor"



This corner bead is only one of many "Milcor" products

expansion corner beads. This expansion corner bead can be used both for inside and outside corners and depends for its utility upon the fact that it dissipates blows and shocks.

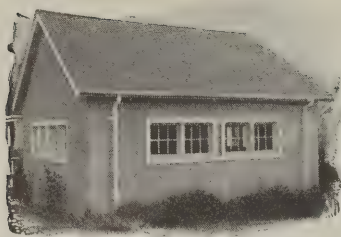
The Moeschl-Edwards Corrugating Co., P. O. Box 564, Cincinnati, Ohio. Manufacturers of metal siding, ceiling, eave troughs, box gutter, conductor pipe, skylights, ventilators, shingles, Spanish tile, doors, garages, cornice, awnings,



"Mecco" metal Spanish tile

marquise, canopies, hollow metal windows, smoke screens, elbows, shoes, cutoffs, conductor hooks, mitres and gutter hangers. Catalogs illustrating and describing "Mecco" metal Spanish tile will be sent upon request, and estimates furnished when plan of roof is submitted.

Truscon Steel Co., Youngstown, Ohio. Manufacturers of "Truscon" and "National" steel joists, "Truscon" copper steel casements, reinforcing steel, "Kahn" trussed bars, rib bars, rib metal, column hooping, steel "Floretyles" and "Floredomes," wire mesh, concrete inserts, contraction joints, steel buildings; "Hy-Rib" metal lath, cor-



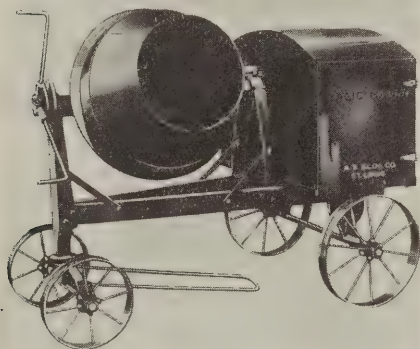
"Truscon" products are used in all types of buildings

ner beads, base screeds; pivoted side wall sash, continuous and sliding sash, partitions, doors, etc.

Millwork—See Woodwork

Mixers—Concrete

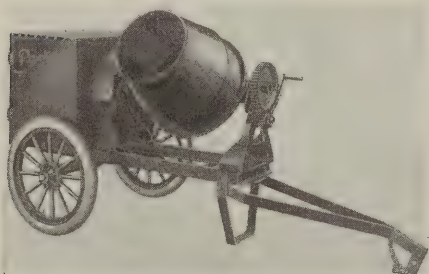
A. S. Aloe Co., 513 Olive St., St. Louis, Mo. Manufacturers of contractor's instruments and equipment. The Aloe "Magic" concrete mixer is



A. S. Aloe Co. have everything for the contractor from concrete mixers to levels

a small mixer of the tilting type, mounted on a steel chassis and steel trucks. This machine is sold on small monthly payments.

American Cement Machine Co., Keokuk, Ia. Manufacturers of concrete mixers and power hoists. This concern makes the "Packard" tilt-

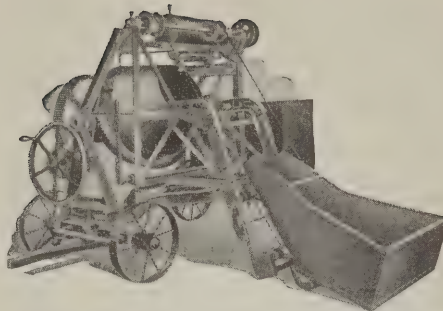


The "Packard" tilting mixer

ing mixer, which can be towed behind a truck as a trailer. This mixer is mounted on a steel frame and carried on rubber tires.

C. H. & E. Manufacturing Co., 319 Mineral St., Milwaukee, Wis. See Woodworking Machinery.

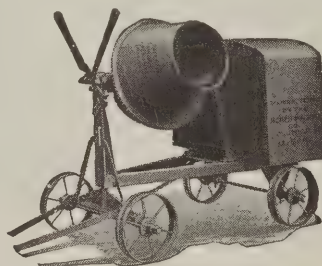
Construction Machinery Co., Waterloo, Iowa. Manufacturers of concrete mixers and contractors' machinery. This company manufactures the "Wonder" concrete mixer, a machine furnished in several different sizes, to meet different conditions. "Wonder" mixers may be supplied with additional equipment, such as hoists, power loaders, etc.



The "Wonder" mixer is furnished in several sizes

Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, Ohio. See Concrete Products Equipment.

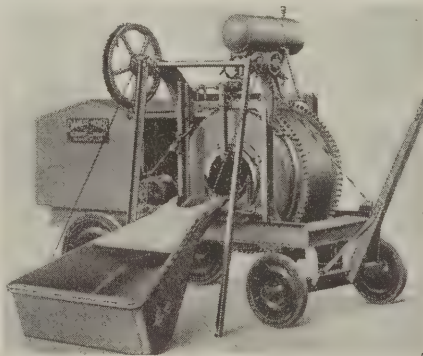
Jaeger Machine Co., 250 Dublin Ave., Columbus, Ohio. Manufacturers of the "Jaeger Tilting Drum" concrete mixers. This line includes 24 different outfits in four different sizes—mixers



"Jaeger" tilting drum mixers are in 24 different outfits

with and without loaders, hoists, water tanks, engines; mounted on trucks or skids and equipped with steel wheels or wheels with rubber tires. Mixers range in capacity from $2\frac{1}{2}$ to 14 cu. ft. mixed concrete.

Koehring Co., 31st and Concordia Ave., Milwaukee, Wis. Manufacturers of concrete mixers, bar-benders and cutters, cranes, and power shovels. This company manufactures the Koehring "Dandie" concrete mixer, which is designed to be used for building culverts, footings, side-

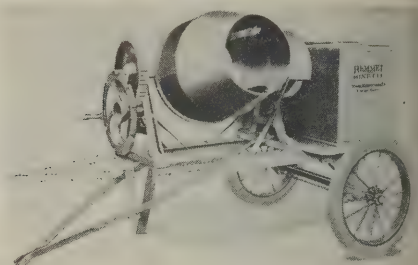


The "Dandie" mixer can be supplied with a variety of equipment

walks, curbing, basement floors, or other work within the range of concrete mixers of from 4 to 7 cu. ft. capacity of mixed materials. The following equipment can be supplied with the "Dandie" mixer: open charging hopper and platform, batch hopper bin or charging skip, automatic water measuring tank, light duty hoist. Disc wheels and rubber tires are optional. Gasoline power is standard, but steam power may be furnished.

Rommel Manufacturing Co., Kewaskum, Wis. Manufacturers of the "Rommel Chainless, Beltless, Mixrite" concrete mixers, designed for the man who has a number of jobs around town calling for a machine that is quickly moved from job to job. Available in sizes from 2 to 7 cu. ft.

capacity; mounted on skids, steel wheels or pneumatic tired trailer trucks; with or without en-

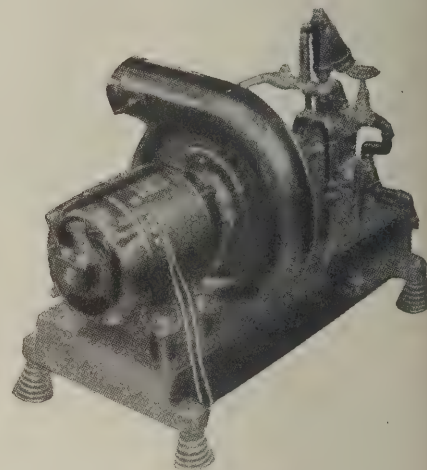


"Rommel Chainless, Beltless Mixrite" mixers are quickly moved from job to job

gines. The chainless, beltless drive, it is claimed, reduces friction loss, eliminates danger, is not affected by moisture and does away entirely with slack belts or chains and their periodical replacements.

Oil Burners

Aladdin Oil Burner Corp., 740 S. Michigan Blvd., Chicago. Manufacturers of "Aladdin" oil burner, for which the following exclusive features are claimed: Uses lubricating oil under pressure



Because it is mounted on springs the "Aladdin" oil burner is said to be without vibration

for lubrication; constructed to eliminate oil or flame pulsation; mounted on spring suspension and flexibly connected to eliminate mechanical vibration; incorporates a down-draft flame to secure application and distribution of the heating elements.

Oliver Oil-Gas Burner Machine Co., Oliver Oil Bldg., St. Louis, Mo. Manufacturers of the Oliver Oil-Gas Burner. This type depends entirely upon gravity and nature for its operation. The oil is led from the tank to the burner by gravity and is atomized by generating the oil in the feed

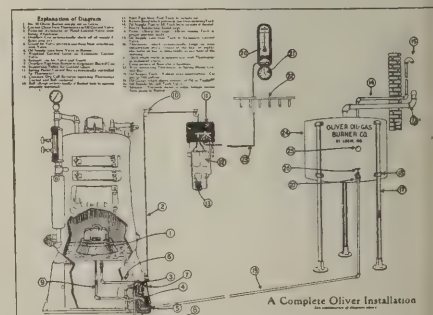


Diagram from catalog of Oliver Oil-Gas Burner Machine Co., showing installation

pipe before turning the burner on. The pre-heating transforms the oil into a vaporous body that when released and precipitated upon a hot plate bursts into flame. Pressure is obtained by gravity and by running the oil through a large diametered pipe line and releasing the vapor through a minute orifice.

Ornamental Metal Work

Fred J. Meyers Mfg. Co., Hamilton, Ohio. Manufacturers of ornamental and structural iron work of every description, and ornamental wire, iron, steel and bronze work. Their products include grilles, railings, folding gates, window and

WIRE • IRON • BRASS and • BRONZE • WORK WINDOW GUARDS & RAILINGS

THE FRED J. MEYERS MANUFACTURING CO.
HAMILTON, OHIO, U.S.A.

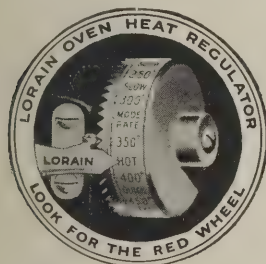
CATALOG No. 67

Catalog No. 67 of the Fred J. Meyers Manufacturing Co. is $7\frac{3}{4} \times 10\frac{1}{2}$ inches in size

store guards, metal signs, fencing, gates, lighting posts, jail cells, iron roof trusses, wire partitions, elevator cars and enclosures, marquisies, balcony and porch railings, iron stairs, fire escapes, iron cellar doors, iron gratings, thresholds, iron flag poles, etc. Their catalog No. 67 describes their products in detail.

Oven Heat Regulators

American Stove Co., 2210 Chouteau Ave., St. Louis, Mo. Manufacturers of the "Lorain" oven heat regulator, standard equipment on such cook stoves as the Reliable, New Process, Dangler,



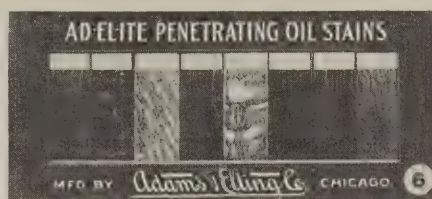
The "Lorain" oven heat regulator is standard equipment on leading makes of stoves

Quick Meal, Clarke Jewel and Direct Action. This device is a thermostatic attachment for controlling the oven heat. A notched wheel on the side of the oven may be set to any temperature indicated on it.

Paints, Varnishes, Stains, etc.

Adams & Elting Co., 1833 Seward St., Chicago, Ill. Manufacturers of a complete line of paints, varnishes and stains, including "Ad-El-It" stains, "Hygienic" hot water kalsomine, "Ripolin" enamels, "Double Lustre" ready-mixed house paints, "Ad-El-It" varnishes, "Anaconda" white lead, "Naples Velvet" flat wall paint, and "Ad-

El-It" cement coating. This company furnishes free, to users of their stains, a set of panels



This set of panels, showing results on different woods obtained by Adams & Elting Co. finishes is furnished free to users of their products

showing mahogany, walnut, oak and novelty effects on such woods as birch, gum, cypress, etc.

Beaver Products Co., Buffalo, N. Y. See Wall-board.

Certain-teed Products Corp., 100 E. 42nd Ave., New York City. See Roofing—Asphalt.

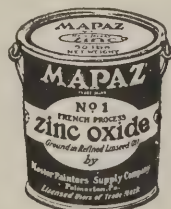
S. C. Johnson & Son, 1012 Sixteenth St., Racine, Wis. Manufacturers of floor wax, floor varnish, interior enamels, undercoats, flat washable wall



Floor varnish is one of S. C. Johnson & Son's principal products

finish, wood dyes, fillers and varnish remover. Johnson's Prepared Wax has been manufactured for nearly half a century. One pound is said to be sufficient for one coat over 300 sq. ft. Put up in 1, 2, 4, 8 and 30-lb. packages.

Master Painters Supply Co. (Inc.), Front St. and Maiden Lane, New York City. Manufacturers of "Mapaz," a paste composed of fine French



"Mapaz" zinc oxide is guaranteed as to purity and contents

process, "Green Seal" zinc oxide, ground in refined linseed oil; guaranteed as to purity and contents by the New Jersey Zinc Co. See also New Jersey Zinc Co., under Roofing—Metal.

Richardson Co., Lockland, Cincinnati, Ohio. See Roofing—Asphalt.

Plaster (See Lime)

Plumbing

Andrews Heating Co., 1585 Heating Bldg., Minneapolis. See Heating Specialties.

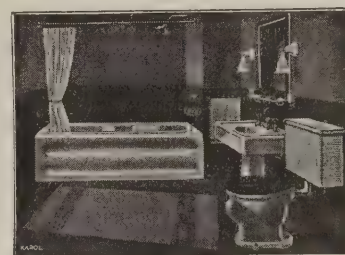
Hardin-Lavin Co., 4531-41 Cottage Grove Ave., Chicago. Manufacturers of plumbing and heating supplies, completely illustrated and described in



The Hardin-Lavin "Hardy Man Book" is sent for 25 cents

the "Hardy Man Book," which contains time- and money-saving ideas, plans, practical kinks, etc., and is sent for 25 cents.

B. Karol & Sons Co., 808 S. Kedzie Ave., Chicago. Distributors of plumbing, heating and pneu-



B. Karol & Sons Co. have a complete plumbing line

matic waterworks supplies. Sold direct to the contractor or user.

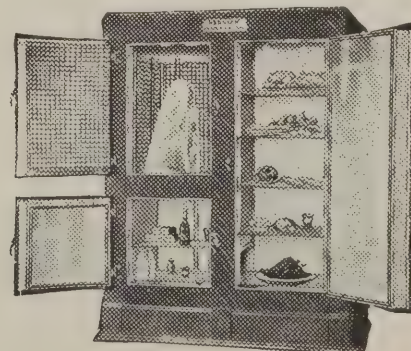
Pumps

C. H. & E. Manufacturing Co., 319 Mineral St., Milwaukee, Wis. See Woodworking Machinery.

Construction Machinery Co., Waterloo, Iowa. See Mixers—Concrete.

Refrigerators

Herrick Refrigerator Co., Waterloo, Iowa. Manufacturers of refrigerators. Herrick outside icing



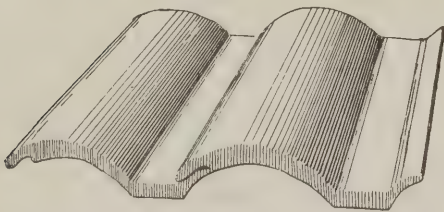
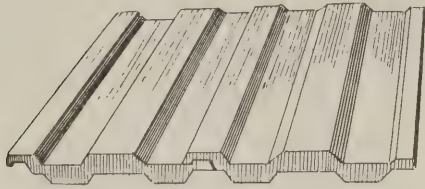
Herrick refrigerators and water coolers are used extensively in modern homes and apartments

refrigerators are used extensively in modern homes and apartment houses, giving economical service at no cost for operation during part of the year. Herrick Water Cooling Refrigerators for direct connection to water supply pipe furnish ice water with no meltage or contamination in the water. Any size or style Herrick equipped with the water cooler or Herrick outside icing.

Roof Tile (Concrete) Machinery

Anchor Concrete Machinery Co., 534 Dublin Ave., Columbus, Ohio. See Concrete Products Equipment.

Concrete Tile Machinery Co., 5850 Ogden Ave., Cicero, Ill. Manufacturers of mechanical equip-



Above, French tile; below, Spanish tile. Manufactured in quantities by Concrete Tile Machinery Co. equipment

ment for making concrete roofing tile. This firm manufactures power machines as well as those operated by hand.

Roofing—Asbestos

Asbestos Shingle, Slate and Sheathing Co., Ambler, Pa. Manufacturers of "Ambler" asbestos shingles, building lumber, corrugated sheathing, "Texture" roofing, and "Linabestos"



Styles of "Ambler" asbestos shingles

fireproof wall board. Ambler asbestos shingles are made in a variety of colors and may be blended to give various color effects. They are also made with straight or broken edges in order to meet the individual views of the architect or owner.

Johns-Manville, Inc., 296 Madison Ave., New York City. Miners of asbestos and manufac-



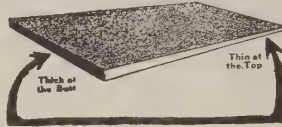
A piece of crude asbestos showing mineral fibres which are the basis of all Johns-Manville products

turers of all types of asbestos roofings, shingles, pipe and boiler insulations, lumber, ready to lay

roofing, sheet roofing for skeleton construction, etc. Catalogs and booklets on all its products, may be obtained direct from the company upon application.

Roofing—Asphalt

Beckman-Dawson Roofing Co., 830 F. C. Austin Bldg., Chicago, and 14203 Monnier Road, Detroit. Manufacturers of "Winthrop Tapered" asphalt shingles, "Argotile" individual and 4-in-1 strip shingles, in tile-red, sea-green and blue-



The thick butts of "Winthrop Tapered" shingles are built up of layers of everlasting asphalt

black; "Winthrop" beveled siding put on like wood siding, in white granite color; slate and smooth surfaced roll roofings, waterproof insulating papers, plastic paints and cements, and asphalt felts for built-up roofings.

Beaver Products Co., Buffalo, N. Y. See Wall-board.

Roofing—Asphalt

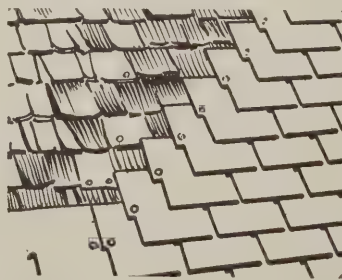
Certain-teed Products Corp., 100 E. 42nd St., New York City. Manufacturers of "Certain-teed" roofing, flooring, paints, blocks, and plaster. Certain-teed roofing is made in various forms,



The "Certain-teel" label

including talc surfaced roll roofing, in light, medium and heavy grades, slate surfaced roll roofing, in blue-black, red or green, slate surfaced shingles, individual in blue-black, red or green, in 4 widths; 10x32, 12 3/4 x32, in blue-black, red or green.

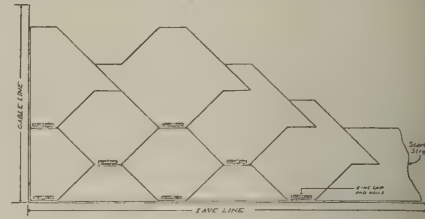
Flintkote Company, 242 Madison Ave., New York; 1353 Peoples Gas Bldg., Chicago; 809



"Flintkote" shingles are laid right over old roofs

Park Square Bldg., Boston. Manufacturers of "Rex Flintkote" strip shingles, to be laid right over old wood shingles.

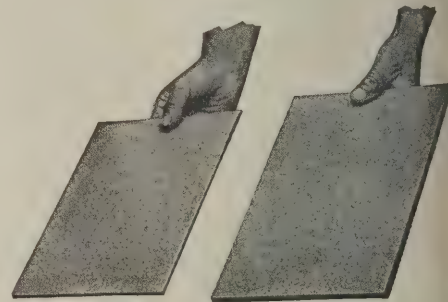
H. M. Reynolds Shingle Co., Grand Rapids, Mich. Manufacturers of asphalt shingles and mineral surfaced rolled roofing. Reynolds shingles



"Pyramid Twin" shingles and how they are laid

are made individual, twin, or in strips, and are supplied in different colors and finishes.

Richardson Co., Lockland (Cincinnati), Ohio. Manufacturers of prepared and built-up roofing, asphalt shingles, roofing felt and roof paint. The "Super Giant" shingle, 10x14 inches in size, 750

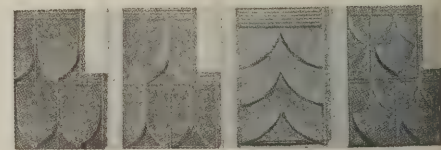


Richardson "Standard," 8x12 3/4-inch (left), and "Super Giant," 10x14 (right), shingles

per cent thicker, 100 per cent more rigid and 35 per cent more economical to lay," and with unusual color possibilities, is a distinctive product. Other brands are "Lok-Top" asphalt shingles and "Rubbertex" roll roofing.

Roofing Metal

Cortright Metal Roofing Co., 50 N. 23rd St., Philadelphia. Manufacturers of metal shingles and roofing. Cortright Metal Shingles are made in two sizes, 10x14 (requiring 141 slates to cover 100 sq. ft.) and 7x10 (requiring 297 slates to cover



A few patterns of "Cortright" metal shingles

100 sq. ft.), are suitable for all buildings where the pitch is not less than 6 in. to the foot, and afford perfect protection against rain, snow, hail and sleet. There are three grades: tin, stamped and painted red or green; hand-dipped extra coated galvanized tin, stamped and galvanized by dipping into a bath of melted zinc; and, when requested, stamped from galvanized sheets.

Edwards Mfg. Co., 430-450 Eggleston Ave., Cincinnati, Ohio. See Ceilings.

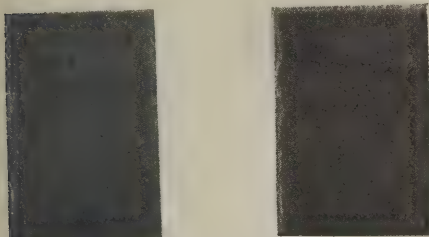
Milwaukee Corrugating Co., 36th Ave. and Burnham St., Milwaukee, Wis. See Metal Building Products.

New Jersey Zinc Co., 160 First St., New York; New Jersey Zinc Sales Co., 1138 Guardian Bldg., Cleveland; 1439 Oliver Bldg., Pittsburgh; 1205 Merchants Exchange Bldg., San Francisco, and Mineral Paint Zinc Co., 1111 Marquette Bldg., Chicago. Manufacturers of "Horse Head" rolled zinc, containing better than 99.9 per cent zinc and free from deleterious substances usually found in ordinary zinc; and of standing seam "Horse Head" zinc roofing, cornice crimped, packed in casks, each containing a quantity sufficient to cover 100 sq. ft. of roof; casks containing clips,

nails and complete instructions for simple application. "Horse Head" rolled zinc is also available in gutters and downspouts, flashings, valleys, etc. See also Master Painters Supply Co., (Inc.), under Paints, Varnishes, Etc.

Roofing—Slate

Vendor Slate Co., Inc., Easton, Pa. Quarriers and distributors of "Genuine Bangor" slate, a rich blue-gray slate of high quality. Members



Two grades of "Genuine Bangor" slate, No. 1 "clear," on left, and "semi-clear" on right

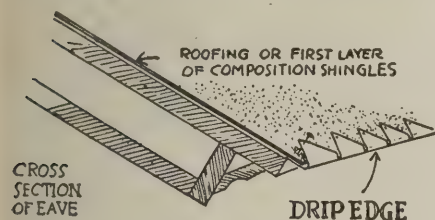
of the Bangor Slate Association, whose certificate is issued with all shipments as a guarantee of genuineness. Two grades of "Genuine Bangor" slate are produced: No. 1 "clear," and semi-clear.

Roofing—Slate Covered

Beaver Products Co., Buffalo, N. Y. See Wall-board.

Roofing Specialties

Miller & Gleason, Olean, N. Y. Manufacturers of the "Miller" drip edge, for finishing the edges

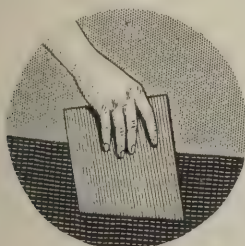


"Miller" deep edge as applied to the roof

of roofs of prepared roofing and shingles to protect them against ladders, winds and weather, and to make a better looking job.

Roofing—Stained Shingles

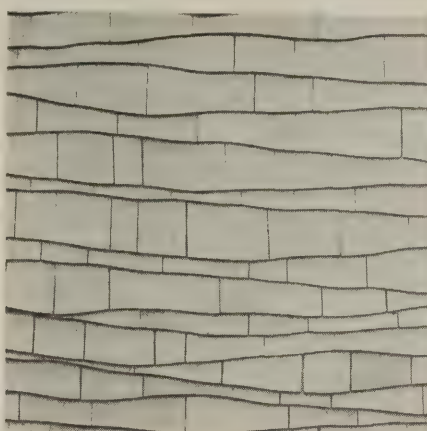
Barcrest Co., 481 Beaufait Ave., Detroit, Mich. Manufacturers of "Barcrest," hand-dipped stained shingles, "Barcrest White," "Barcrest" wood preservative and creosote stains; also "Barcrest" angle shingles for sidewalls and stained shingles



"Barcrest" stained shingles are hand-dipped

for thatched roof effect. Barcrest shingles are obtainable in random or dimension widths, 16, 18 and 24-in. lengths, 6/2, 5/2 and 4/2 thicknesses, in 30 different colors. Roofing suggestions, color schemes and catalog are furnished on request.

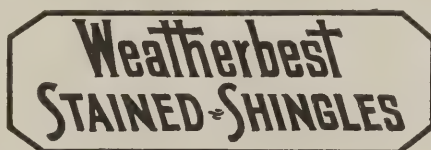
Creo-Dipt Co., Inc., 1072 Oliver St., N. Tona-wanda, N. Y. Manufacturers of "Creo-Dipt" stained shingles preserved with creosote; "Creo-Dipt" shingle stains, including "Creo-Dipt Dixie White" stain; and "Creo-Dipt" stained shingles to produce thatched effects. These shingles are



"Creo-Dipt" stained shingles are used for thatched effect roofs

sawed from live timber cut from the best portions only of the bodies of selected first growth British Columbia coast cedar; all vertical grain and parallel widths. Stains are applied by special "Creo-Dipt" process, in 30 regular shades, in six grades, 16, 18 and 24-inch length, and in several widths and thicknesses.

Transfer Stained Shingle Co., Inc., North Tona-wanda, N. Y. Manufacturers of "Weatherbest" creosoted stained shingles, used in thatched-effect roofs and for ordinary roofs and exterior wall coverings. These shingles are made from premium red cedar cut from selected timber with vertical

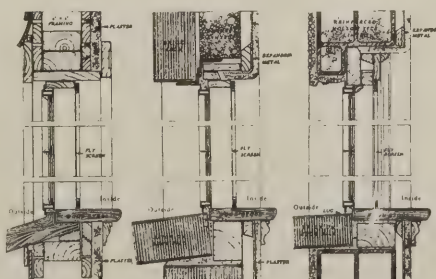


Trade-mark of Transfer Stained Shingle Co.

grain. Chemically fine pigments are combined with linseed and creosote oils for the stain, which is made to adhere to the wood by a "fixative" material or binder. Produced in 21 shades of standard colors, as well as special colors made to order; furnished in 16-, 18- and 24-in. lengths and random widths.

Sash—Steel

Henry Hope & Sons, 103 Park Ave., New York. Manufacturers of "Hope's" steel windows of standard sizes and types. The sash are delivered ready for fixing into the building as a complete



Frame and shingle walls. Solid brick or stone walls. Hollow tile and stucco walls. Application of standard steel casements to various types of construction

Construction details are given for "Hope's" steel windows

unit, with casements hung and complete hardware attached. All joints are electrically welded and fittings, hinges, etc., are riveted. Fittings allow for a wide range of ventilation, from an opening of about 1 in. to a right angle.

David Lupton's Sons Co., Allegheny Ave. and Janney St., Philadelphia, Pa. Manufacturers of "Lupton" copper-steel residence windows. The

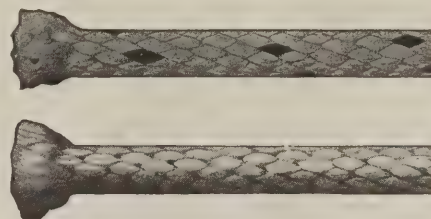


"Lupton" sash are "projected" and can be easily cleaned from the inside

Lupton "projected" movement permits washing both sides from within the room. Catalog No. 112 gives full information concerning standard designs and sizes and is sent free.

Sash—Cord

Samson Cordage Works, 88 Broad St., Boston, Mass. Manufacturers of braided cords and cotton twines, including "Samson Spot" sash cord. The colored spots in this cord serve as an iden-

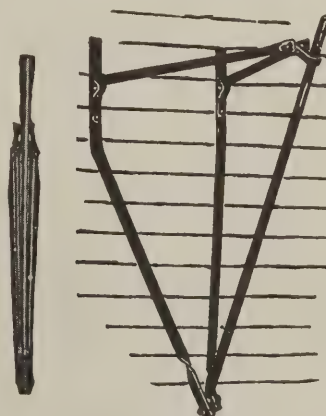


Two kinds of cord made by the Samson Cordage Works

tification mark. Besides Samson, this firm also manufactures mason's line, and the Phoenix brand sash cord. Neither one of these sash cords contains the loaded center so often put in a cord for no other purpose than to increase the weight.

Scaffold Brackets

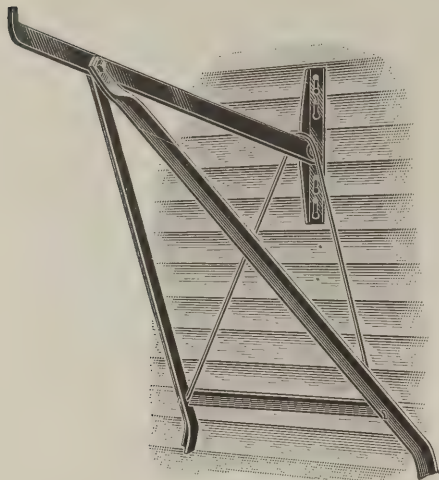
Elite Mfg. Co., 110 Ohio St., Ashland, Ohio. Manufacturers of the "Reliable" scaffold bracket. This bracket hangs on 4 nails and can be im-



The "Reliable" scaffold bracket folds up when not in use

mediately removed by lifting it from the nails. While these brackets are most frequently used on frame construction they are equally adaptable to brick and stucco work. Full directions are given by the manufacturer for all types of construction.

The Steel Scaffolding Co., Evansville, Ind. Manufacturers of steel scaffolding for all pur-

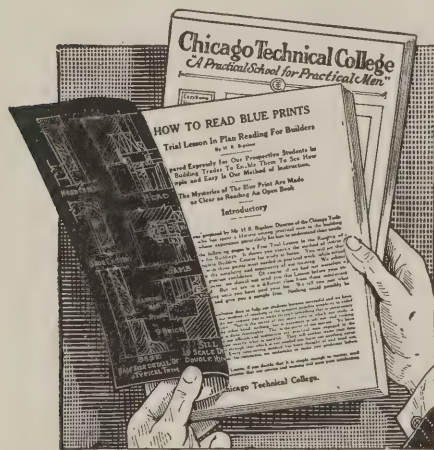


One kind of bracket made by the Steel Scaffolding Co.

poses. This company also manufactures a ladder jack for painters which is easily attached to any ladder to form a support for a scaffold plank.

Schools—Correspondence

Chicago Technical College, 1037 Chicago Tech. Bldg., Chicago. Courses for men in the building trades in plan reading; construction, including

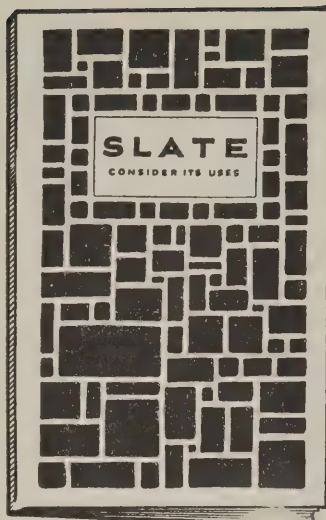


This book is sent free to prospective pupils of the Chicago Technical College

brickwork and carpentry; estimating, superintending, and architectural and other branches of drafting. Two books, "How to Read Blue Prints," containing a trial lesson in plan reading for builders, are sent free on request.

Slate (See Also Roofing—Slate)

National Slate Association, 757 Drexel Bldg., Philadelphia, Pa. An association of slate producers organized to promote the use of more slate for roofing, floors, walks, paving, blackboards, structural purposes, sanitary equipment, and electrical and general purposes. "Slate—Consider Its Uses" is a booklet published by the association which is sent free on request and which contains full data concerning slate.



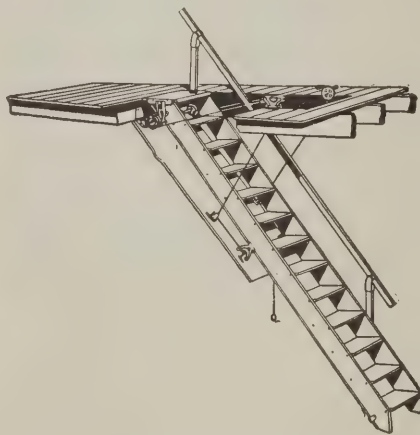
National Slate Association publication for free distribution

Stains

Samuel Cabot, Inc., 141 Milk St., Boston, Mass. See Insulation.

Stairways—Movable

Bessler Movable Stairway Co., 1900 E. Market St., Akron, Ohio. Manufacturers of the "Bessler" movable stairway, a substantial, practical flight of stairs that slides upward into the floor above



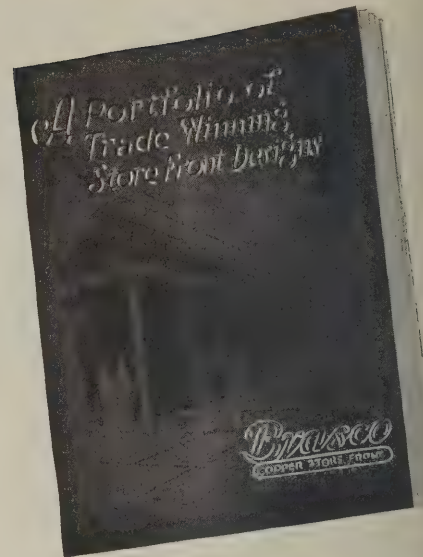
The "Bessler" movable stairway slides upward into the floor above when not in use

when not in use. This stairway makes stair halls and stair wells unnecessary and attics and other overhead spaces usable. When folded up out of the way only a well-finished neat panel is visible in the ceiling from below.

Store Fronts

Brasco Manufacturing Co., 5035 S. Wabash Ave., Chicago. Manufacturers of a large line of copper store fronts for stores of all kinds, which is completely illustrated and described in "A Portfolio of Trade Winning Store Front Designs" sent free on request.

Detroit Show Case Co., 1652 W. Fort St., Detroit, Mich. Manufacturers of "Desco" copper store fronts. "Desco" copper store fronts are made of heavy cold rolled copper and are complete in every detail. The design is simple and requires no special woodwork for installation. Full size details, prices and name of nearest distributor will be sent on application.



"Brasco" copper store fronts are completely described in this book



Corner bar showing copper strip outside and wood strip inside on "Desco" store fronts

International Steel & Iron Co., Dept. 21, Evansville, Ind. See Structural Steel Products.

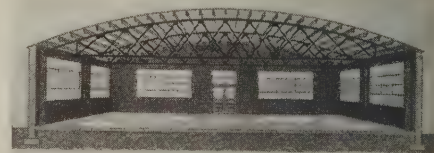
Stoves

American Stove Co., 2210 Chouteau Ave., St. Louis, Mo. See Oven Heat Regulator.

Beckwith Co., Dowagiac, Mich. See Furnaces.

Structural Steel Products

International Steel & Iron Co., Dept. 21, Evansville, Ind. Manufacturers of various steel products, specializing in structural steel, modern store fronts, steel windows, skylights, ceilings, ele-

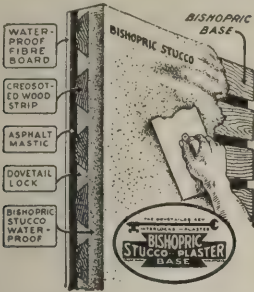


Steel trusses are one of a variety of products of the International Steel & Iron Co.

vators, etc. This company operates a free estimating and plan service for their customers and furnish free plans and quotations on their materials required.

Stucco

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, Ohio. Manufacturers of "Bishopric" stucco and base for interior and exterior use. Bishopric stucco is shipped in air-tight metal



How "Bishopric" stucco is applied on "Bishopric" base

drums (100-lb. each), and is furnished in alba white, shell pink, sienna buff, ivory cream, granite gray, French gray or any special color and with stipple, spatterdash or rough cast finish. A booklet, "For All Time and Clime," contains working details and specifications and is sent free.

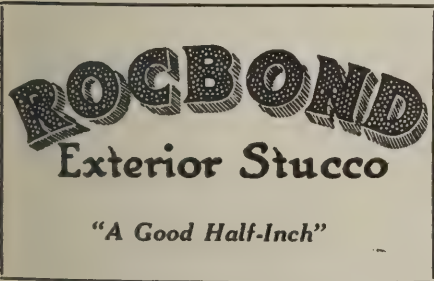
Franklyn R. Muller, Inc., 205 Madison St., Waukegan, Ill. Manufacturers of "Asbestone Everlasting" stucco for exterior or interior plaster work. One ton of Asbestone Everlasting stucco



Sacks of "Asbestos" are stamped with this trade-mark

plaster includes 2375 lb. of material, twenty 100-lb. sacks of Asbestone Everlasting stucco and 375-lb. of flake magnesium chloride; available in many stone dash finishes. This company also manufactures composition flooring.

Rocbond Company, Van Wert, Ohio; Cedar



The "Rocbond" trade-mark

Rapids, Iowa, and Harrisburg, Pa. Manufacturers of "Rocbond" exterior stucco.

Tiles and Mosaics

Chas. F. Lorenzen & Co., 521-523 W. Monroe St., Chicago, Ill. Distributors of tiles and mosaics for all purposes—for floors in bathrooms, kitchens, breakfast rooms, porches, living rooms and stores, also store entrances and for walls in bathrooms and kitchens and other places where sanitation is of importance. Their catalog No. 200 shows many designs and contains complete descriptions. It is sent free on request. A folder on andirons, grates and fireplace furnishings is also available.



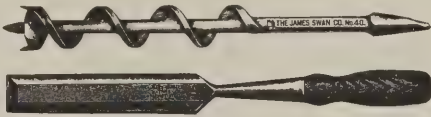
One of many designs shown in Catalog No. 200

Wood-Mosaic Co., Inc., New Albany, Ind. See Flooring.

Tools

Sargent & Co., 52 Water St., New Haven, Conn. See Hardware.

James Swan Co., Seymour, Conn., and 28 War-

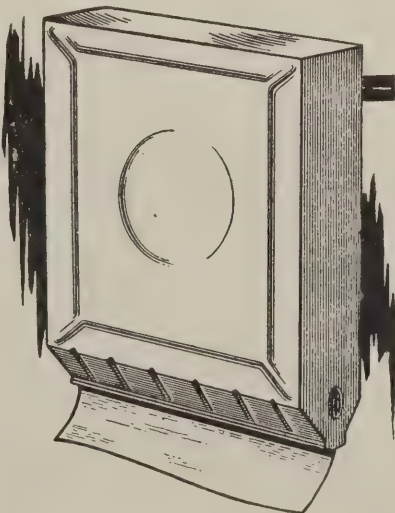


Some "Swan" tools

ren St., New York. Manufacturers of "Swan" mechanics tools.

Towels

Brown Company, Portland, Maine. Manufacturers of "Nibroc" towels and kraft wrapping paper. Nibroc towels are recommended for use in bathrooms, lavatories, laundry, kitchen, garage,

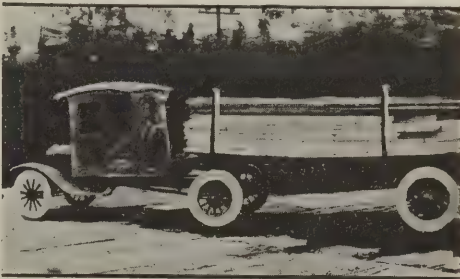


"Nibroc" towels are recommended for the home as well as schools, factories, etc.

dairy and farm buildings, and in schools, public institutions and industrial plants. "One wipes dry," it is claimed, and they have no lint or fuzz, being made from the toughest fibres. See also Building Paper.

Trailers

Martin Rocking Fifth Wheel Co., Springfield, Mass. Manufacturers of trailers and trailing equipment for every line of business, with special



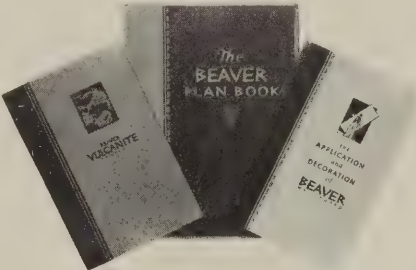
A trailer especially suited to builder's requirements

trailers for contractors and lumbermen. A special combination lumber dumping trailer is a new product.

Wallboard

Asbestos Shingle, Slate & Sheathing Co., Ambler, Pa. See Roofing—Asbestos.

Beaver Products Co., Buffalo, N. Y. Manufacturers of "Beaver" wallboard, tileboard, blackboard, plasterboard, "American" wall plasters, plaster board, gypsum blocks and molding and



Some "Beaver" booklets

finishing plaster, and "Beaver Vulcanite" building papers, plain and ornamental roll roofing, built-up roofs, slate surfaced shingles and roof paints and cements.

Compo-Board Co., 5776 Lyndale Ave., N., Minneapolis. Manufacturers of "Compo-Board," a



Trade-mark and construction of "Compo-Board"

wallboard with a wood core. It is made in 48-in. width and 1/4-in. thickness and in the following lengths: 6, 7, 8, 9, 10, 12, 14 and 16 ft.

Upson Company, Lockport, N. Y. Manufacturers of "Upson Processed Board" and "Upson Processed Fibre Tile." This Fibre Tile, it is claimed, is the only board of the kind with a hard, smooth, fuzzless surface; the tile indenta-

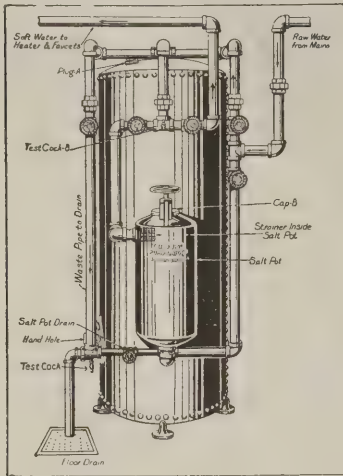


The "Upson" trade-marks

tions are pronounced and permanent. Samples of Upson products, with further information for contractors and builders, are sent on request

Water Systems

Duro Pump & Mfg. Co., Dayton, Ohio. Manufacturers of a complete line of electric and engine driven pressure water systems and household water filters. A new household water softener embodying the upward flow principle has recently



The "Duro" water softener embodies the upward flow principle

been announced and it is claimed that the upward flow of water through the mineral keeps the mineral in suspension, preventing packing, and does not restrict the flow or cut down the pressure at the faucets. The Duro softeners are equipped with a cast iron salt pot designed and located to be easy of access.

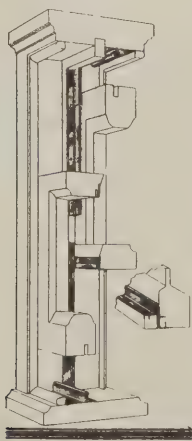
Waterproofing

General Fireproofing Co., Youngstown, Ohio. See Lath—Metal.

Weatherproof Calking Co., 756 Washington Ave. N., Minneapolis, Minn. See Calking.

Weatherstripping

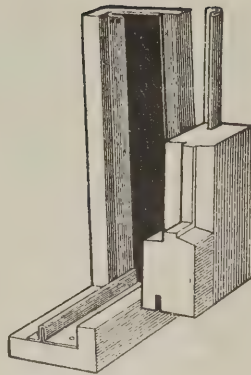
Concrete Engineering Co., 140 S. Dearborn St.,



Detail showing application of "Ceco" metal weatherstrips

Chicago. Manufacturers of "Ceco" metal weatherstrips, sold through contractor and dealer agents.

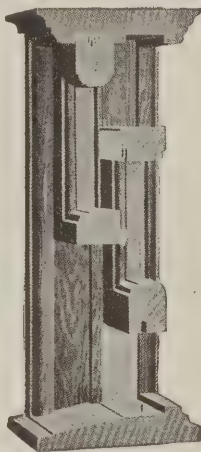
The Diamond Metal Weather Strip Co., 626 Kerr St., Columbus, O. Manufacturers of flexible and removable weather strips and calking and glazing compounds. Full size blueprints will be furnished showing various types of equipment. The calking compound is used for filling and calking around the frames of windows and



"Diamond" metal weatherstripping as applied

doors of buildings. The glazing compound dries with a skin coat on the surface.

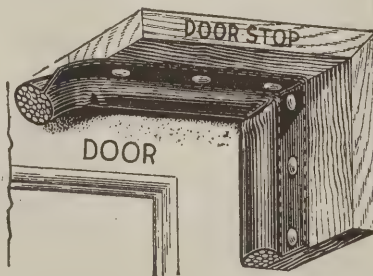
Federal Metal Weather Strip Co., 1238-50 Fullerton Ave., Chicago. Manufacturers of the "Fed-



"Federal" metal weatherstripping as applied

eral" metal weatherstrip which is sold through contractors and builders.

E. J. Wirfs, 106 S. 17th St., St. Louis, Mo. Manufacturer of the "Home Comfort" weather strip, refrigerator gaskets, and cold storage doors.

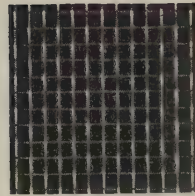


How the "Home Comfort" weatherstripping is applied

The "Home Comfort" weatherstrip is built up of several insulating fibers enclosed in a waterproof covering. It is furnished in either black or white.

Wire Cloth

The Gilbert & Bennett Mfg. Co., 937 First National Bank Bldg., Chicago. Manufacturers of wire cloth, netting, fencing and wire goods. Pearl wire cloth is made in two grades of an exceptionally hard, strong steel wire protected by a weatherproof, metallic coating, which, it is claimed,

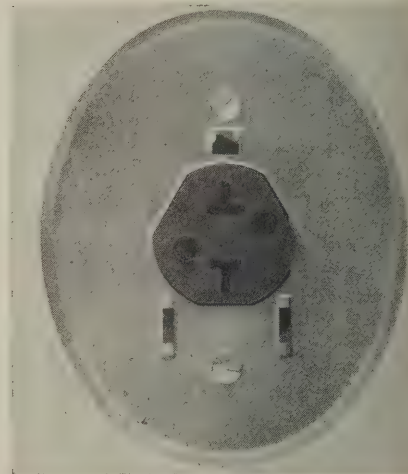


Extra heavy and regular grades of "Pearl" wire cloth

will not crack, chip or peel and is as near rust proof as metal can be.

Wiring Devices

General Electric Co., Bridgeport, Conn. Manufacturers of "G-E" wiring devices and a large line of electrical equipment, including wall Elexit outlets for plugging in side lights or electrical

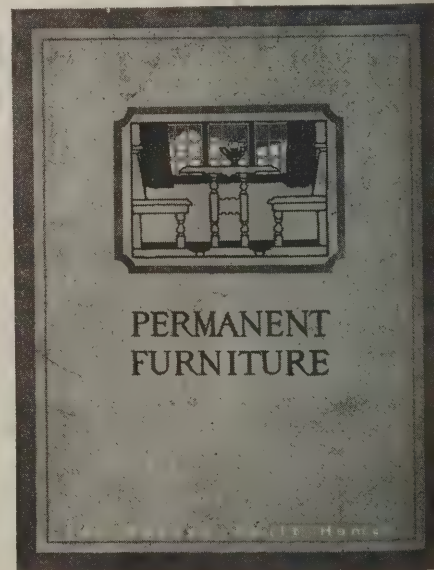


Elexit with wall plate

appliances, two-gang tumbler switches, to give complete control of light from one room to another; twin convenience outlets, and three- and four-way switches. "The Home of a Hundred Comforts" is a booklet sent free on request by Section NB-12.

Woodwork

Curtis Companies' Service Bureau, Clinton, Ia. is operated by and for the following Curtis companies: Curtis Bros., & Co., Clinton, Ia.; Curt-



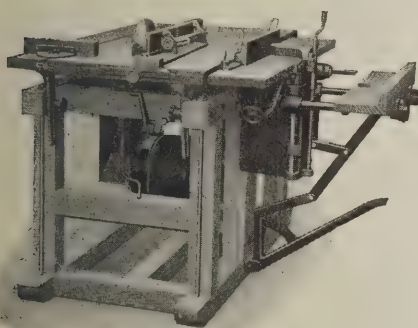
One of many Curtis booklets

& Yale Co., Wausau, Wis.; Curtis Sash & Door Co., Sioux City, Ia.; Curtis, Towle & Paine Co., Lincoln, Neb., and Topeka, Kas.; Curtis-Yale-Holland Co., Minneapolis, Minn.; Curtis Door & Sash Co., Chicago; Curtis Detroit Co., Detroit; Curtis Companies, Inc., Pittsburgh, Pa., New York, Baltimore, Md.; Oklahoma Sash & Door Co., Oklahoma City, Okla. The purpose of this Bureau is to advise with contractors who install, architects who specify, dealers who sell, and home builders who purchase Curtis woodwork. A series of 5 booklets, describing the principal items of the Curtis line are sent free to those interested. Besides "Permanent Furniture," illustrated above, these booklets are "Interior Doors and Trim," "Entrances and Exterior Doors," "Stairs and Stair Parts," and "Windows." The general catalog "Architectural Interior and Exterior Woodwork Standardized" is found in the hands of many retail lumber dealers located east of the Rockies.

Hartman-Sanders Co., 2155-87 Elston Ave., Chicago. See Columns—Wood.

Woodworking Machinery

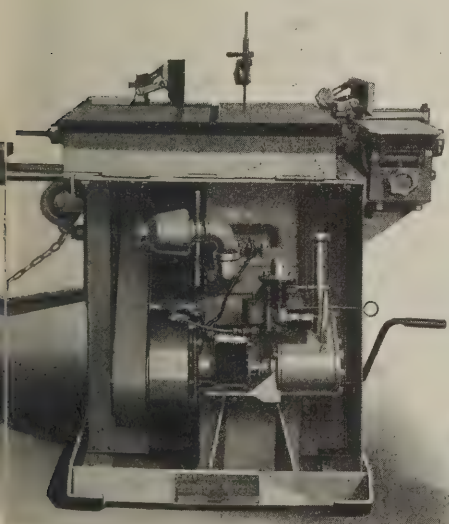
American Saw Mill Machinery Co., Hackettstown, N. J. Manufacturers of woodworking machinery and contractors' equipment. This firm



The "American" woodworker

manufactures the "American" woodworker, a combination woodworking machine upon which several simultaneous operations can be carried out.

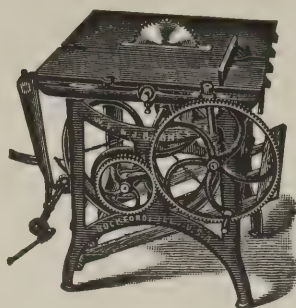
C. H. & E. Manufacturing Co., 319 Mineral St., Milwaukee, Wis. Manufacturers of portable



One of many C. H. & E. machines

saw rigs, diaphragm pumps, centrifugal pumps, piston pumps, triplex pumps, gasoline hoists, double drum hoists, mortar mixers, and material elevators. The portable saw rigs are made in five sizes, and the accompanying illustration shows the C. H. & E. "Home Builders" saw rig with joiner and borer attached, and operated by a 4-horsepower engine. This company also manufactures larger machines for heavier work.

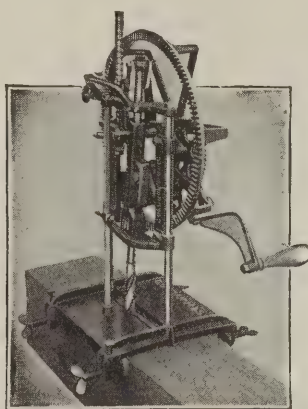
W. F. & John Barnes Co., 436 Ruby St., Rockford, Ill. Manufacturers of "Barnes" hand and



W. F. & John Barnes Company's No. 4 saw

foot power circular saw and nine other machines for woodworkers, all described in a catalog.

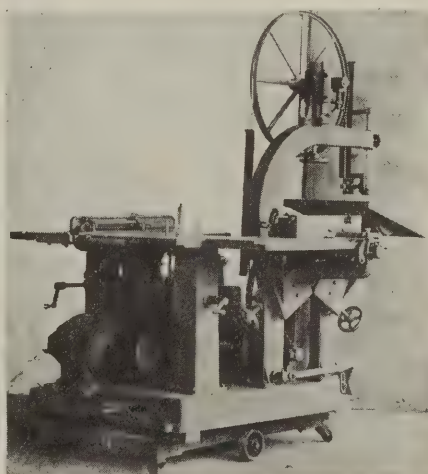
Colgan Machinery & Supply Co., 16 E. Broad St., Columbus, O. Manufacturers of the "Champion" mortising machine. This machine may be



The "Champion" mortiser ready for business

used for cutting mortises in any kind of wood. It is automatic, adjustable, and has large gears for easy running. Once set, no adjustments are necessary for mortises of the same size. The machine weighs about 25 lbs.

Crescent Machine Co., Cherry Fork Ave., Leontonia, O. Manufacturers of "Crescent" woodworking machinery and the new model Crescent



New model "Crescent" universal wood worker

universal woodworker. This machine permits the carrying on of 5 operations at the same time and various attachments may be added to enlarge its scope.

Gallmeyer & Livingston Co., Grand Rapids, Mich. Manufacturers of woodworking machinery

and equipment. Besides ordinary woodworking machinery this firm also manufactures boring ma-



Gallmeyer & Livingston Co. make many woodworking machines

chines, carvers, joiners, sanders, grinders, and saw benches.

Huther Bros. Saw Mfg. Co., 1190 University Ave., Rochester, N. Y. Manufacturers of special saws and cutters for wood and metal. One of their products is a dado head which cuts grooves,



Dado head manufactured by Huther Bros. Saw Mfg. Co.

any width, with or across the grain. The inside cutters are made in thicknesses of 1/16 in., 1/8 in., and 1/4 in. The outside cutters are 1/8 in. thick, both cutters being groovers, so that they may be used singly or as a pair.

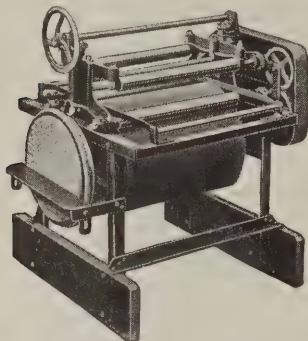
The Master Woodworker Mfg. Co., 612 Brush St., Detroit, Mich. Manufacturers of the "Master



The "Master" woodworker as actually installed and in use

Woodworker," a combination woodworking machine for carpenters, contractors and builders, lumber yards, cabinet makers, woodworking shops, etc. The "Master" woodworker rips, cross-cuts, joins, bores, sands, dados, makes all kinds of moldings, tenons, mortises, cuts jack rafters, etc. It consists of twelve machines compactly arranged in one complete woodworking outfit.

Parks Ball Bearing Machinery Co., Knowlton and Langland Sts., Cincinnati. Manufacturers of woodworking machinery of all kinds: band saws,



One of many woodworking machines manufactured by the Parks Ball Bearing Machinery Company

sanders, cross-cut and rip saws, planers, mortisers, etc. The Parks machinery catalog gives complete information on all models and sizes of machines.

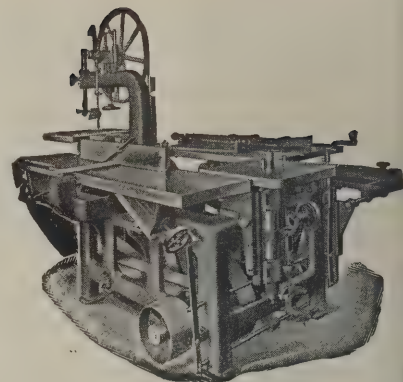
Sidney Machine Tool Co., Sidney, Ohio. Manufacturers of Famous woodworkers, saw benches, band saws, single and double swing saws, swing cutoff saw, surfacers, jointers, planers, turning and double end pattern makers' lathes, post boring machines and the "Sidney" make of medium, standard and heavy duty engine lathes. The Famous Junior "30" woodworker has recently been announced, and consists of five standard woodworking units in one—band saw, saw table,

jointer, shaper and boring machine, all five of which can be operated at the same time or individually. There are nearly 20 attachments. Floor space required, 72x96 in.

Keep This Directory Up-to-Date!

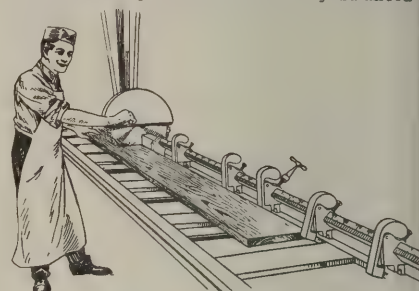
EVERY manufacturer whose products are included in *National Builder's Annual Illustrated and Descriptive Buyers' Guide* is represented in the advertising pages in this issue. For further information refer to these advertisements or write the manufacturers direct.

Each issue of *National Builder* during the year will contain advertisements of new products or of new uses for old products as well as further descriptions of standard building materials, accessories, and equipment. If you keep a file of *National Builder* this *Buyers' Guide* will always be up-to-date. You never can tell when you will want to know, in a hurry, where you can buy some particular material or item of equipment. If you have your *National Builders* handy you will always have a convenient reference book and index to the reliable manufacturers serving the building field.



A "Famous" woodworker, product of the Sidney Machine Tool Co.

Tannewitz Works, Grand Rapids, Mich. Manufacturers of an all-steel automatic swing saw gauge, with stops that are accurately balanced.



The Tannewitz automatic swing saw gauge

easily pushed back, allowing the operator to set any stop, thus cutting the various lengths accurately and quickly. The bar is graduated both ways for use on either side of the saw. Stops and brackets are of steel.

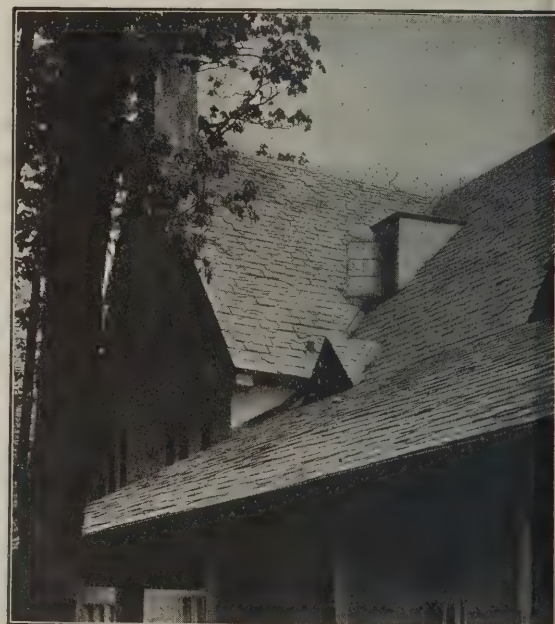
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Twelve-Family Apartment
Complete Plans for Bungalow
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"National Home Builder"

February
1924

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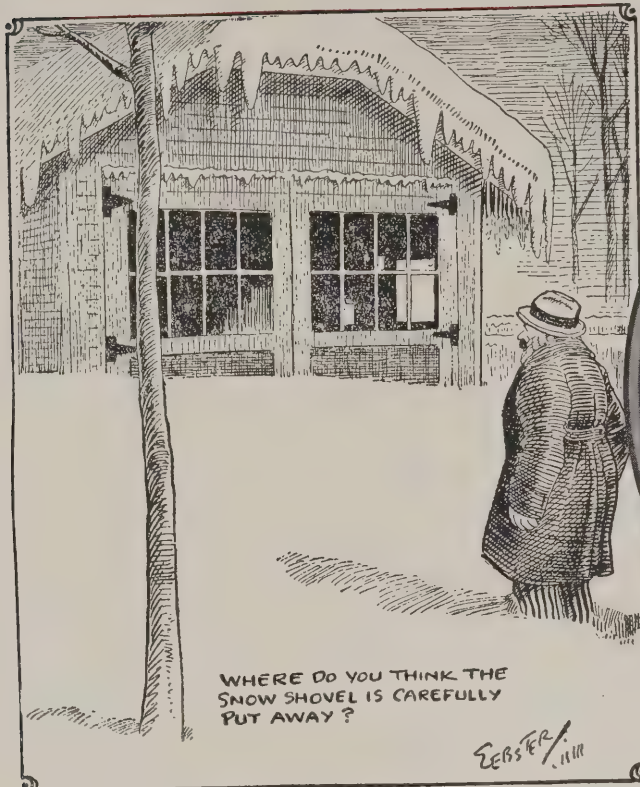
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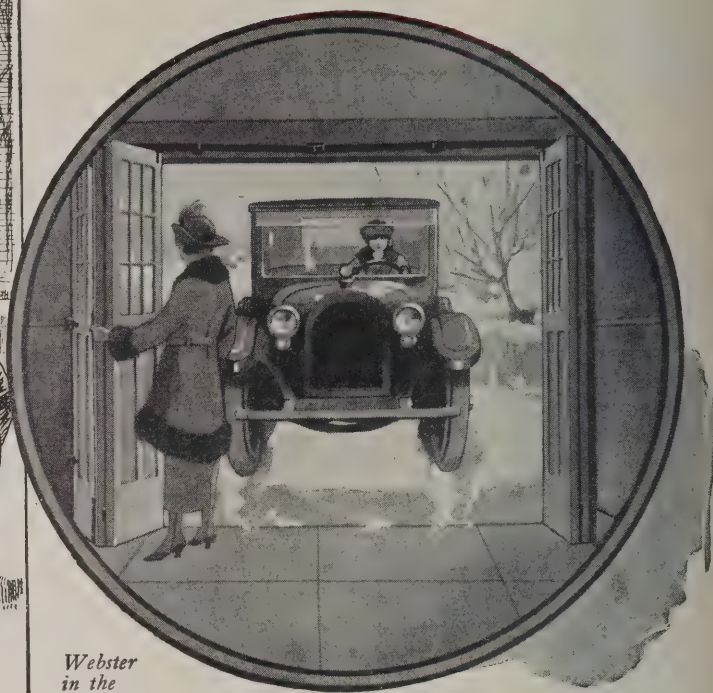


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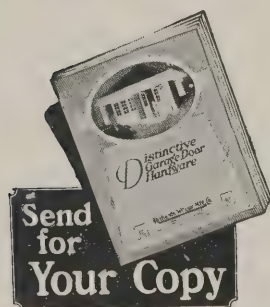
WHERE DO YOU THINK THE
SNOW SHOVEL IS CAREFULLY
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Garage doors hung on *Slidetite* slide and fold *away* from the snow



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Before building another garage, or remodeling an old one, send for a copy of Catalog H-29. It contains many helpful suggestions and detail doorway plans for architects & builders. Slidetite is sold by leading hardware & lumber dealers everywhere.

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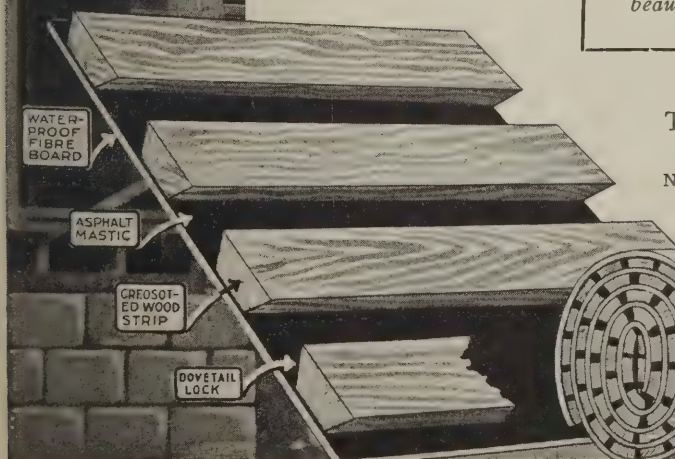
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Volume 67 February, 1924 Number 2

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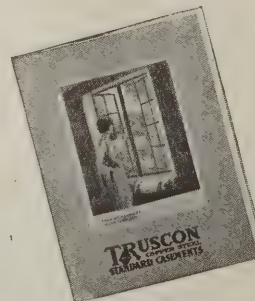
The Window That Adds Charm to the Home

Casement windows in the home are admired by visitors just as choice furnishings and decorations are admired. The added charm which the casement window gives both the interior and exterior of the home is one of the first things which attracts attention to the new house.

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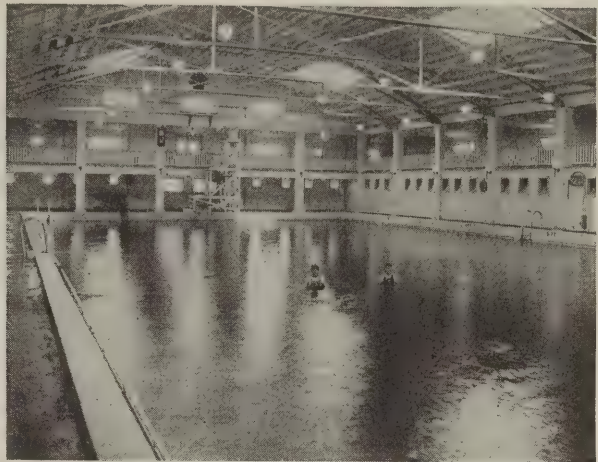
National Builder

Get in the Swim in March

OUT in Colorado a building has recently been completed with the swimming pool illustrated here. This pool has many points of particular interest to builders and there will be an article about it in the March NATIONAL BUILDER. You may not be building swimming pools every day of your life, but some time or other you will probably get a chance to build at least one and then you will wish to know something about them, so save your March NATIONAL BUILDER for future reference, and when the time comes that you will have a chance at a swimming pool you will be "in the swim."

EVERY day somebody asks us for information about four-family apartment buildings. They are mighty good revenue producers and are being built in greater numbers all of the time. NATIONAL BUILDER has discovered an attractive four-family building in St. Louis. It looks more like a big, handsome house than "flats" and that makes it all the more valuable from a rental or selling standpoint. Keep an eye out for the photograph and plans of that four-family apartment.

HARDWARE! That is one of those things which go into a house which affect the contractor's reputation. That is because it is one of the "working" parts. If the hardware doesn't work he gets the blame. His selection of the hardware also reflects on his judgment and good



The March NATIONAL BUILDER will tell you all about this swimming pool in Colorado and the building of which it is a part

taste and adds or detracts considerably to the good appearance of his building. The March NATIONAL BUILDER will have some interesting things to say about hardware. Don't miss them.

THESE three articles we know will appear in March. Of course, there will be others, but just what they will be it is impossible to say at this time because NATIONAL BUILDER's articles are always fresh and are not planned far in advance in a cut-and-dried way.

THAT always assures you the newest, liveliest building help fresh from the field. That, we believe, is the kind of magazine that the readers of NATIONAL BUILDER want, and have learned to expect.

HAVE you made sure that the March issue will reach you? Have you renewed your subscription, or if you have moved recently, have we been notified of your change of address?

NATIONAL BUILDER is a journal for the contractor, architect and builder. It is published on the first of each month by the Trade Press Publishing Corporation, 542 South Dearborn Street, Chicago, Ill., to whom all communications concerning subscriptions, contributions or advertising should be addressed.

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Renewals: Instructions for renewal, discontinuance or change of address should be given three weeks preceding date of issue. Both old and new addresses should be given. Subscribers wishing to discontinue their subscriptions must notify the publisher upon date of expiration.

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Contributions to the editorial pages will be accepted solely on their merits and paid for at the regular space rates. Contributions of timely nature must be in on the 15th of the month preceding date of issue.

Advertising: Space in the advertising pages is sold according to published rates, furnished on application. Copy must be in on the 15th of the month preceding date of issue if proofs are to be submitted for approval before publication. Last forms close on the 23rd of the month preceding date of issue. The publishers reserve the right to reject or revise any advertisement containing statements of doubtful authenticity or derogatory to any building material, accessory or equipment.

Mechanical Requirements: Type size of page, 7x10 in.; half-page, 3½x10 in. or 7x4½ in.; quarter-page, 3½x4½ in. or 7x2½ in.; eighth-page, 3½x2½ in. Screen required, 120 line; reversed plates must be stippled or Ben Day.



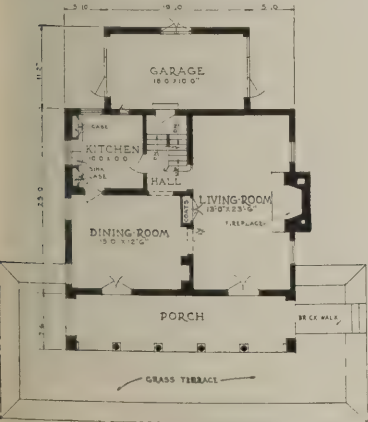
Tall, slender porch columns are a characteristic detail of the old Southern Colonial mansions, but here you see how very attractive they can be in the very small house. They must not be too big under any circumstances, particularly in the little house.



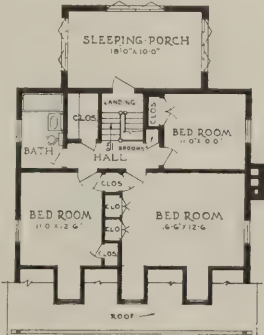
The House of the Month

WHAT striking results can be obtained from a proper use of common, inexpensive materials and simple details is suggested by this little house in Riverside, Illinois, the home of Dr. and Mrs. H. R. Williams. The design is strongly suggestive of the magnificent

old Colonial homes with two-story porches seen so often south of the Mason and Dixon line. Here the slender proportions of the porch columns are in perfect keeping with the size of the house, and the columns extend clear to the porch floor, as they ought to. The three narrow dormers are also in good taste and add to the interest of both the exterior and interior. Common brick, laid very roughly, and with joints unpointed, is the material used; wooden shingles cover the sides of the dormers, where they are painted white, and the roof. The blinds on both the windows and the doors to the porch are solid boards. Notice the location of the garage. The sleeping porch above it is half-way between the first and second floors. The plan is out of the ordinary in that there are two front doors and the stair hall and stairs are in the back of the house. The garage is reached from the hall. The interior pictures on the next page show some interesting details of the first floor. James Roy Allen, 410 South Michigan Avenue, Chicago, was the architect.



First floor plan

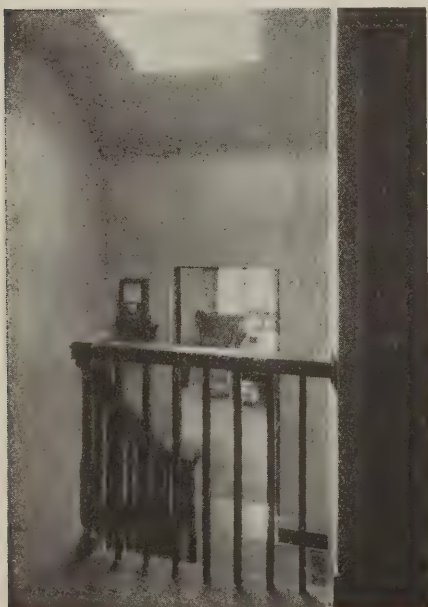


Second floor plan

Inside The House of the Month



The walls throughout all rooms are plastered with a rough finish and of buff tint. The woodwork is birch with walnut finish and the hardwood floors are stained dark



Looking down toward the sleeping porch from one of the bedrooms. A skylight makes a bright stair well



The dining room looking toward the living room fireplace. A china closet sets in an arched niche in the wall

Getting Away from the Commonplace in Design and Plan in a Small City Hotel

The New Urbana-Lincoln Hotel, in Urbana, Illinois, Sets the Pace for Small City Hostelries in Many Particulars, and Is Indicative of What Up-to-Date Communities Are Learning to Do

GOOD roads and automobiles are making a good hotel absolutely essential to every town that expects to retain a place on the map. Nor are "modern conveniences," such as hot and cold running water and "rooms with bath," sufficient. The hotel must be attractive; it must have an inviting appearance, and it must have domestic qualities and be as much of a "home" as possible to its transient guests.

The citizens of Urbana, Illinois, have appreciated these requirements of the modern hotel, and they have set about to satisfy them. The result, in the form of one of the finest hotels in the United States outside the metropolitan districts, is illustrated and described in full on the following pages.

Yes, it was the citizens of this town of 10,000 who did this, not a hotel syndicate or outside corporation. The building was promoted by the local chamber of commerce

and it is owned by over 950 stockholders—all local business men and citizens.

Any reader wishing further particulars for the sake of starting something of the kind in his own town can get them from Mr. A. T. Burrows, chairman of the board of directors of the Urbana-Lincoln Hotel Company, and publisher and editor of the *Urbana Daily Courier*, Urbana, Illinois.

Urbana is the seat of the state university. The town had never had a hotel which could properly take care of the social and business activities which the university gave rise to. It had never had a hotel which was adequate to the needs of the commercial travelers visiting the town, and with two concrete state highways leading through the town, it could hardly offer the tourist attractive accommodations. The new hotel is planned and designed to serve all these needs. It can take care of any convention

of from 50 to 200 attending delegates; and it can meet the requirements of the regular traveling commercial men and the tourists at all times of the year. It is situated in an especially strategic point for the latter, for the "Egyptian Trail," a concrete road from Chicago to Cairo, passes the building on the east, and the concrete state highway Route 10, from Danville to Springfield, St. Louis, Peoria and other points west, follows the street on the south. Both of these roads are heavily traveled the year round.

Not only was this hotel promoted and financed by citizens of the town, but it was designed, planned and built by local men. Joseph W. Royer, 301 West Main Street, Urbana, was the architect, and A. W. Stoolman, the contractor.

In designing and planning this building, the architect has entirely avoided the commonplace small city commercial hotel both

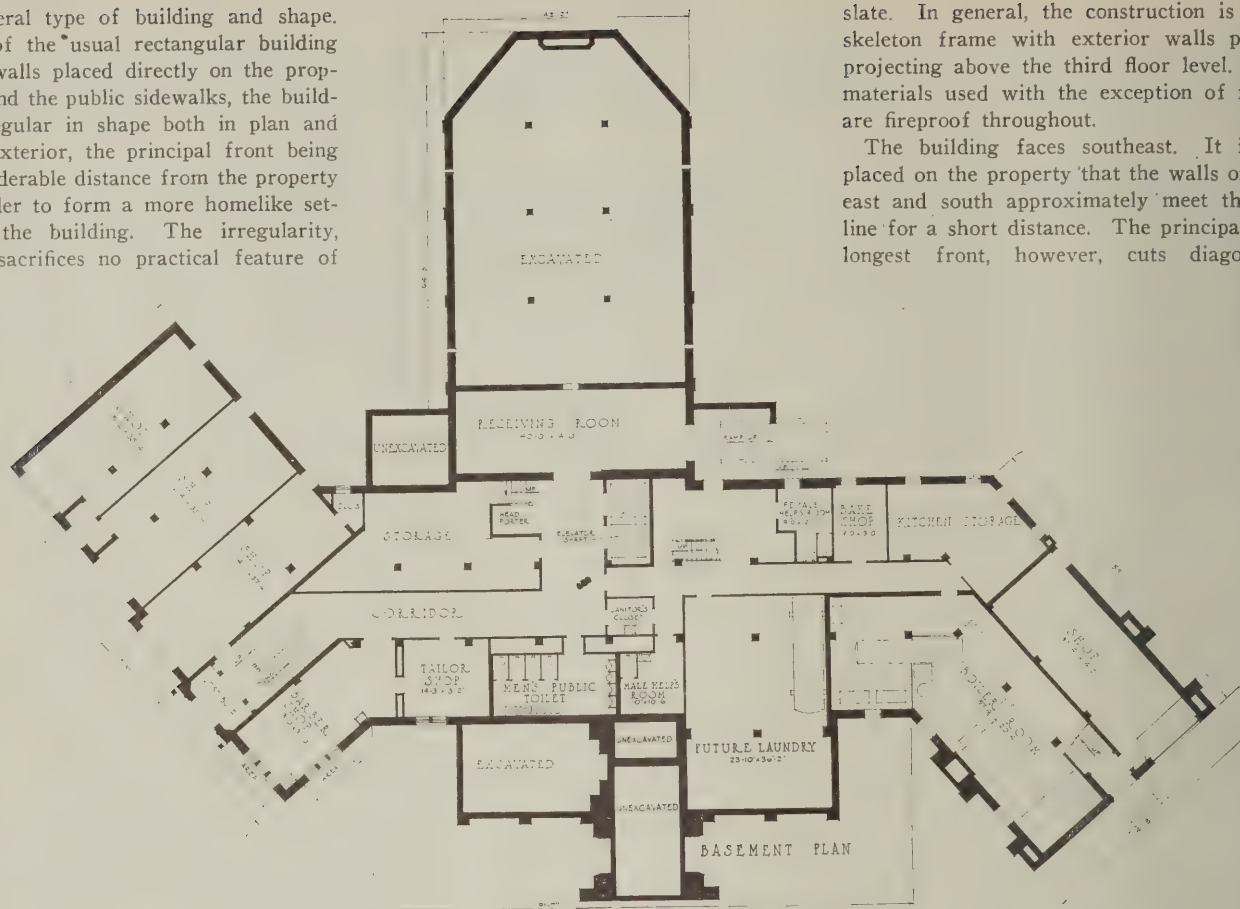


The Urbana-Lincoln Hotel, Urbana, Illinois. Joseph W. Royer, architect; A. W. Stoolman, builder. This building is situated on the northwest corner of the intersection of two concrete state highways and within a few blocks of Main Street and the commercial section of town

as to general type of building and shape. In place of the usual rectangular building with the walls placed directly on the property line and the public sidewalks, the building is irregular in shape both in plan and mass of exterior, the principal front being set a considerable distance from the property line in order to form a more homelike setting for the building. The irregularity, however, sacrifices no practical feature of

slate. In general, the construction is steel skeleton frame with exterior walls placed projecting above the third floor level. The materials used with the exception of finish are fireproof throughout.

The building faces southeast. It is so placed on the property that the walls on the east and south approximately meet the lot line for a short distance. The principal and longest front, however, cuts diagonally



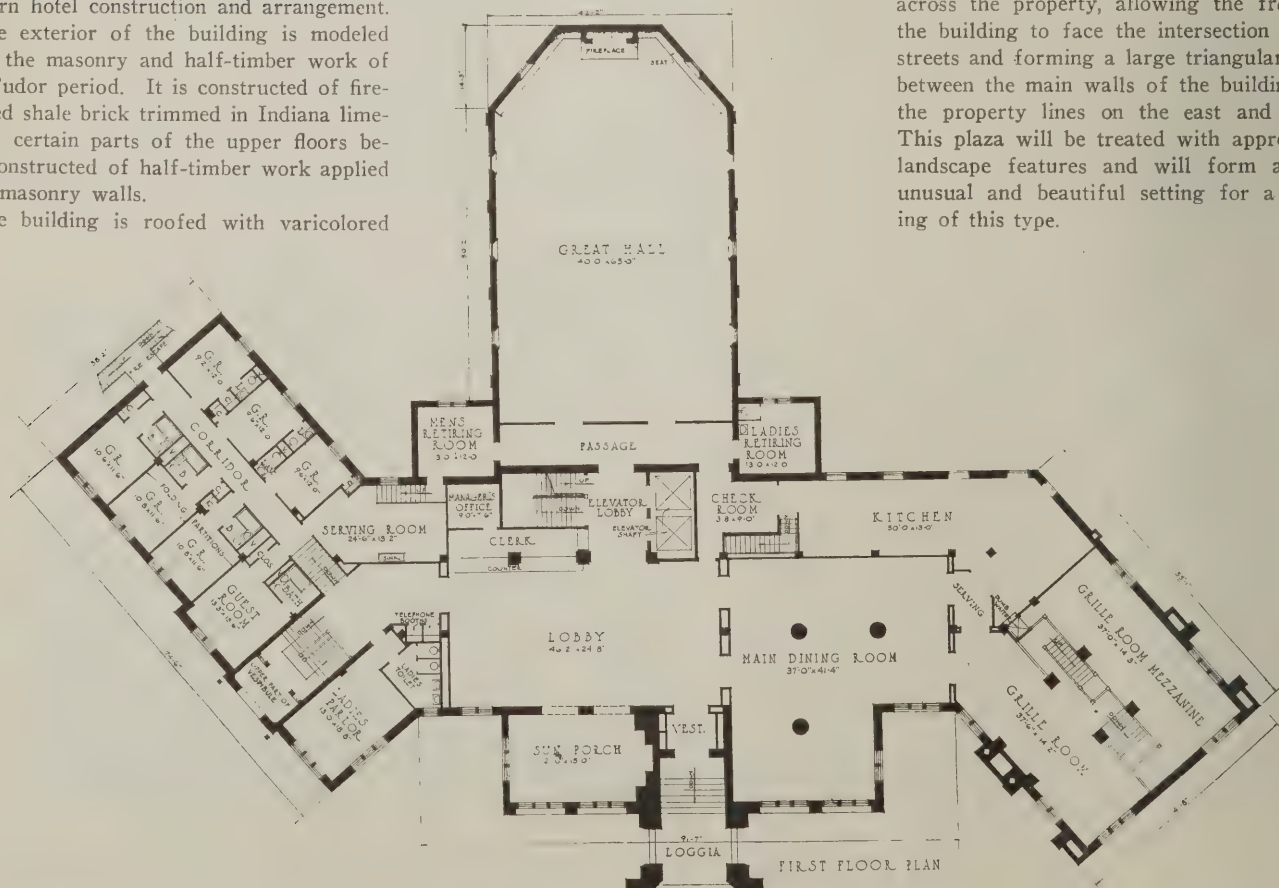
Basement plan. Notice the shops provided for in the two wings

modern hotel construction and arrangement.

The exterior of the building is modeled after the masonry and half-timber work of the Tudor period. It is constructed of fire-flashed shale brick trimmed in Indiana limestone, certain parts of the upper floors being constructed of half-timber work applied over masonry walls.

The building is roofed with varicolored

across the property, allowing the front of the building to face the intersection of the streets and forming a large triangular plaza between the main walls of the building and the property lines on the east and south. This plaza will be treated with appropriate landscape features and will form a most unusual and beautiful setting for a building of this type.

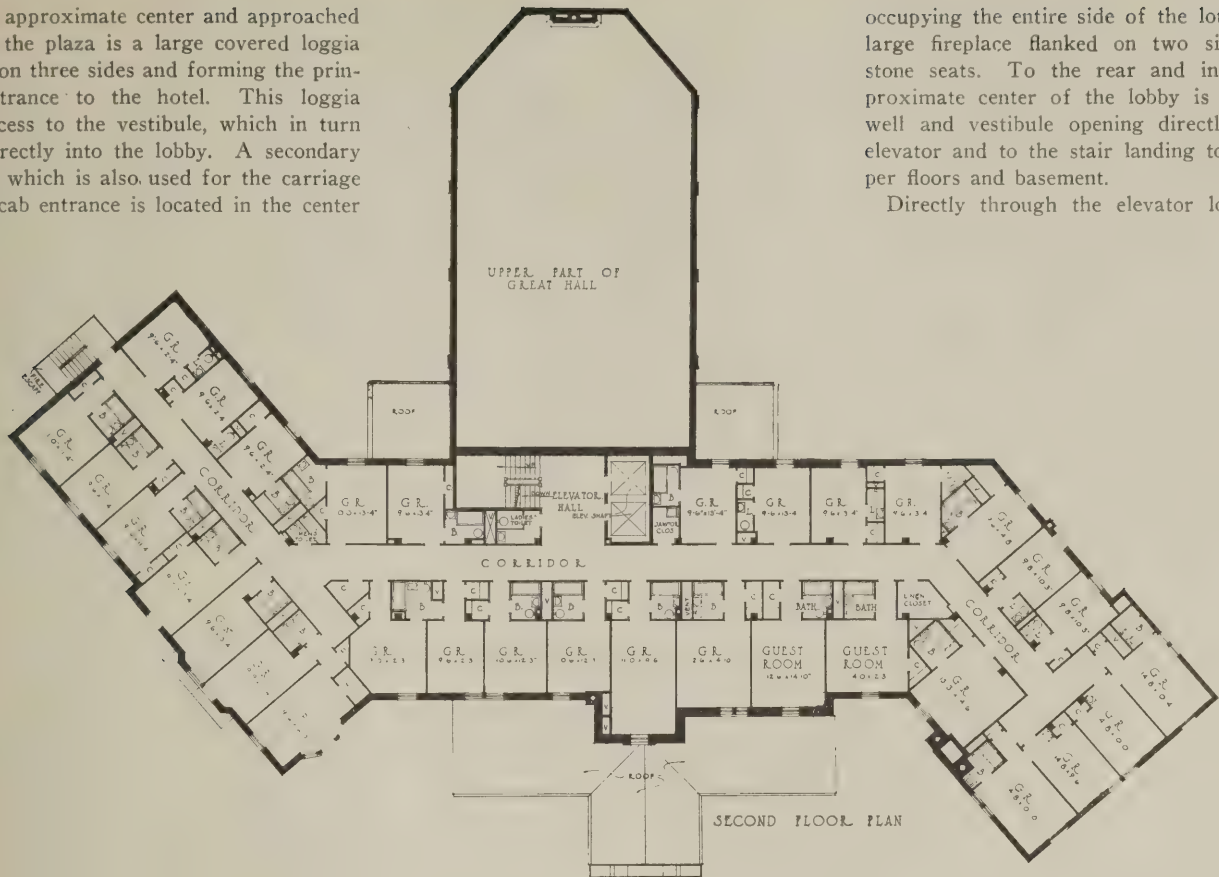


First floor plan. Photographs of the lobby, great hall, grille and dining rooms are shown on pages 30 and 31

In the approximate center and approached through the plaza is a large covered loggia opening on three sides and forming the principal entrance to the hotel. This loggia gives access to the vestibule, which in turn opens directly into the lobby. A secondary entrance which is also used for the carriage and taxicab entrance is located in the center

occupying the entire side of the lounge is a large fireplace flanked on two sides with stone seats. To the rear and in the approximate center of the lobby is the stair well and vestibule opening directly to the elevator and to the stair landing to the upper floors and basement.

Directly through the elevator lobby and



Second floor plan. The third floor plan is essentially the same

of the south front and leads directly into the lobby.

The principal floor level is approximately five feet above the grade of the yard and public walk, the transition between being made by a series of broad and easy steps in the passage and vestibule in both entrance and lobby.

The lobby is approximately 25x46 feet,

with high cambered wood beamed ceiling, the panels between the wood beams being plastered. The entire lobby is paneled in oak to an approximate height of nine feet. Opening directly into the lobby and facing the plaza is a large lounge. The walls of this room are tastefully treated in tapestry brick, the ceiling being stained wood with heavy wood timber beams. At one end and

to the rear of the main lobby is the entrance to the ball room. The ball room is 40x65 feet and is treated after the manner of the Great Halls of the Tudor period. The ceiling is constructed of dark stained wood supported by a series of heavy timbered beams. Around the entire room and extending to the height of approximately 10 feet the walls of this Great Hall are formed



Fourth or "attic" floor plan, where the lower priced rooms are situated

of half timber work with the spaces between faced with variegated brown tapestry brick or wood beams. At one end of the Great Hall is a huge fireplace extending from floor to ceiling, providing a means of ventilation and also providing the possibility of a great cheery open fire on appropriate occasions. On both sides of the fireplace and built directly into the beam work of the walls are long oak benches. The space between the top of the half-timbered wainscot and the bottom of the wood ceiling is plastered in an interesting texture common to this class of material. The windows are metal, long and narrow, having deep splayed brick reveals so arranged as to form irregular quoins around the entire openings. In connection with the Great Hall and on the same level are the men's and women's retiring rooms.

The dining room is located to the right of the lobby and opens directly on it by two pairs of large French doors. This room is simply and appropriately treated with a series of heavy Tudor arches supported on large circular columns. The ceiling is relieved by large wood beams with areas of plaster between. Opening directly on to the dining room and forming a part thereof is a large dining porch overlooking the plaza on the front of the building.

The kitchen is located on the same level and to the rear of the dining and grille rooms, serving both directly through a small service and checking room. The kitchen is large and well lighted and contains all equipment necessary for the proper service of the dining and grille rooms.

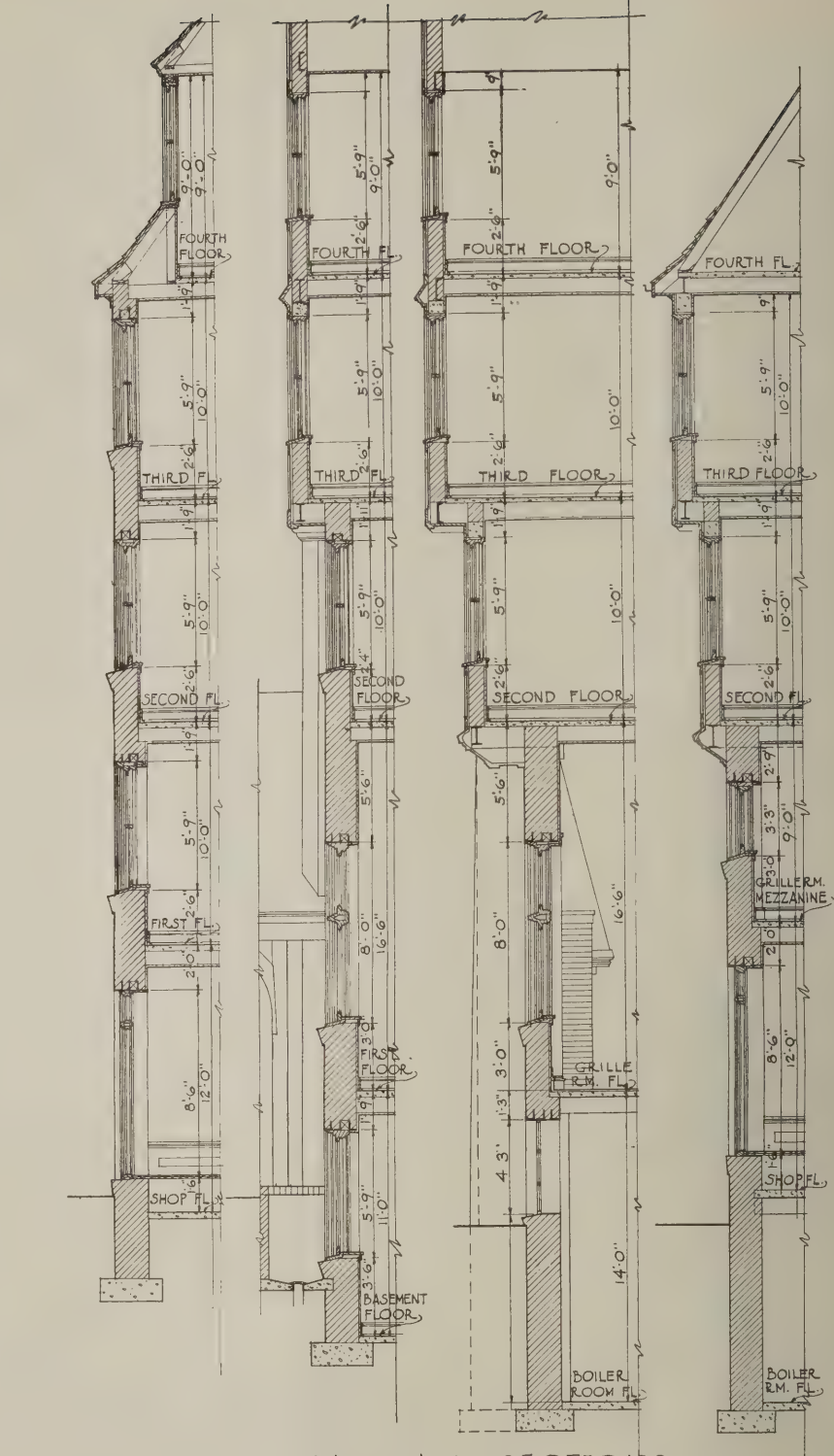
In addition to these rooms, the first floor contains the usual accommodations for the clerk and manager's office, a check room, and a complete public ladies' parlor and suite, which is located between the lobby and the south entrance in order to provide more privacy.

The first floor mezzanine contains seven guest rooms and a large service room, four of the guest rooms being arranged with folding partitions so that they may be used as private dining rooms or committee rooms; the serving room is used for quick and efficient service to these rooms.

The remaining three floors are given over to guest rooms, with the usual service room for the proper maintenance of them. The building contains 100 private guest rooms, about 70 per cent of which have private baths and the others private toilets.

The basement of the building is divided into three units in addition to the usual storage rooms, public rooms, service rooms and the rooms for the receiving and distribution of baggage. The public rooms which are accessible by the elevator and main stair and from the south entrance are barber shop, tailor shop and men's public toilet. Here also is the office of the head porter.

The service rooms consist of separate locker and toilet rooms for the men and



TYPICAL WALL SECTIONS

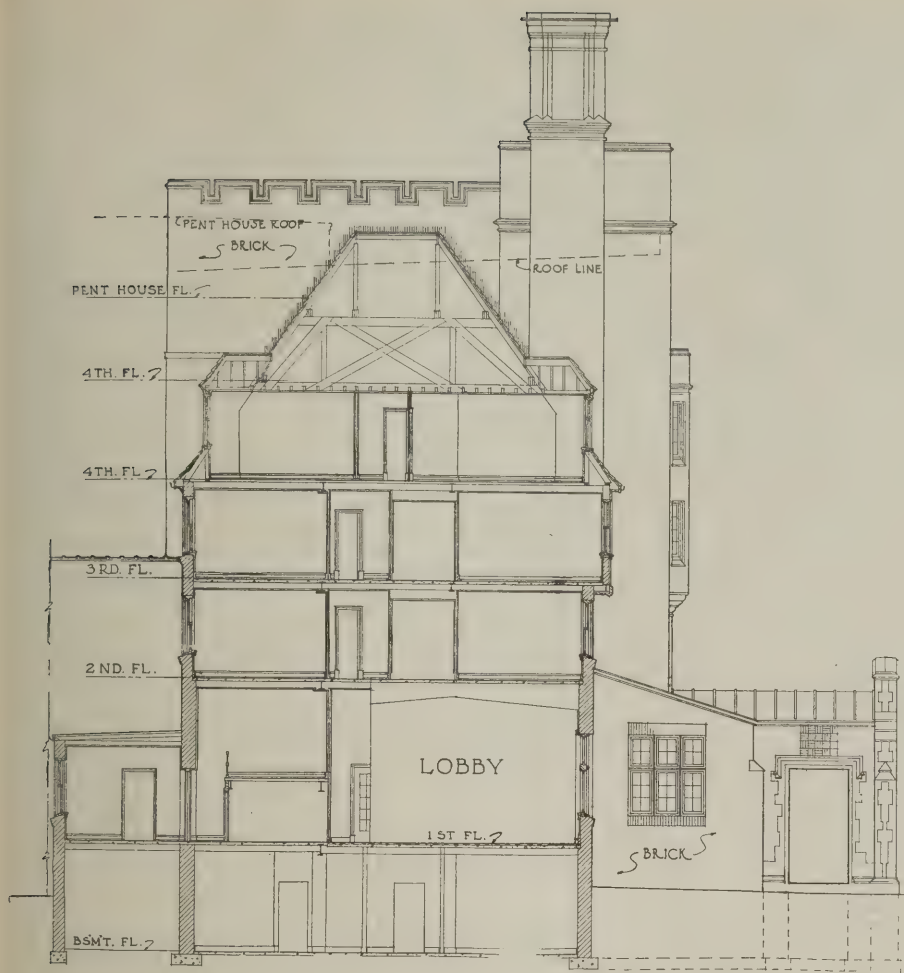
Typical wall sections, showing construction and handling of projecting floors

women help; the rooms in connection with the kitchen are bulk storage, bake shop, refrigeration room and the rooms for mechanical equipment, and the boiler and machine rooms and laundry. All baggage is delivered to the receiving room through a large concrete ramp from the service court, then taken directly through the freight elevator to any part of the building or stored for future delivery.

This hotel was built at a cost of about

\$400,000. The Urbana-Lincoln Hotel Company own the building and permanent furniture and equipment. The hotel is run by an operating company to whom the building and its equipment are leased.

NATIONAL BUILDER has been told that a hotel, in order to make money, must operate at about 65 per cent of its capacity throughout the year. If it operates at 80 per cent, it is a profitable investment, indeed.



Transverse section. In general, the construction is steel skeleton frame

Anyone who has done any traveling and has tried to get rooms in good hotels in popular towns can understand from this what paying properties the average good hotel is. No doubt there are many that are not making a good return on the money invested, but often it is their own fault.

It is a definite fact that traveling men and tourists alike will "pass up" a town that does not have a good hotel just for the sake of "making" a town that does, even though the former city may be the logical one at which they should stay. There is no doubt but that the new Urbana-Lincoln hotel will attract many visitors to Urbana who would otherwise go to the nearby larger places. The local merchants naturally benefit through the presence of transient guests, and therefore it is of interest to everybody in town to cater to the traveling public.

What has been done, as described on the foregoing pages, is a distinct departure from the stereotyped hotel design and plan and it is the sort of thing that progressive communities everywhere are learning to do.

There is nothing like a good hotel for giving a town a good reputation among travelers. It is a powerful advertising medium, since the traveler's opinion of a town is very largely based upon the hospitality it affords him through its hotel, and if he has pleasant memories of his stay in that town, he will always think well and speak well of it.



The Urbana-Lincoln Hotel from the east. The exterior of the building is in the style of the masonry and half-timber work of the Tudor period. It is constructed of fire-flashed shale brick trimmed in Indiana limestone



The lobby is approximately 25x46 feet. It has a high cambered wood beamed ceiling, the panels between the wood being plastered. The walls are paneled in oak up to a height of nine feet. The photograph shows a portion of the sun porch or lounge



The ballroom is treated after the manner of the Great Halls of the Tudor period. The ceiling is of dark stained wood supported by a series of heavy timbered beams. The fireplace is a prominent feature and an important means of ventilation



Opening directly onto the dining room and forming a part of it, is a large dining porch or grille, overlooking the plaza in front of the building



Guest rooms have been tastefully but simply furnished in a style appropriate to that of the building. Seventy per cent of the guest rooms have baths attached; the rest have private toilets



A series of heavy Tudor arches supported by large round columns is used in the dining room. The ceiling is relieved by large wood beams with areas of plaster between. The plaster has a rough finish of parchment shade



The Rogers apartment building, Knoxville, Tennessee. M. E. Parmelee & Son, architects; W. P. Lawson, general contractor

Twelve-Family Apartment Building for a Narrow Lot

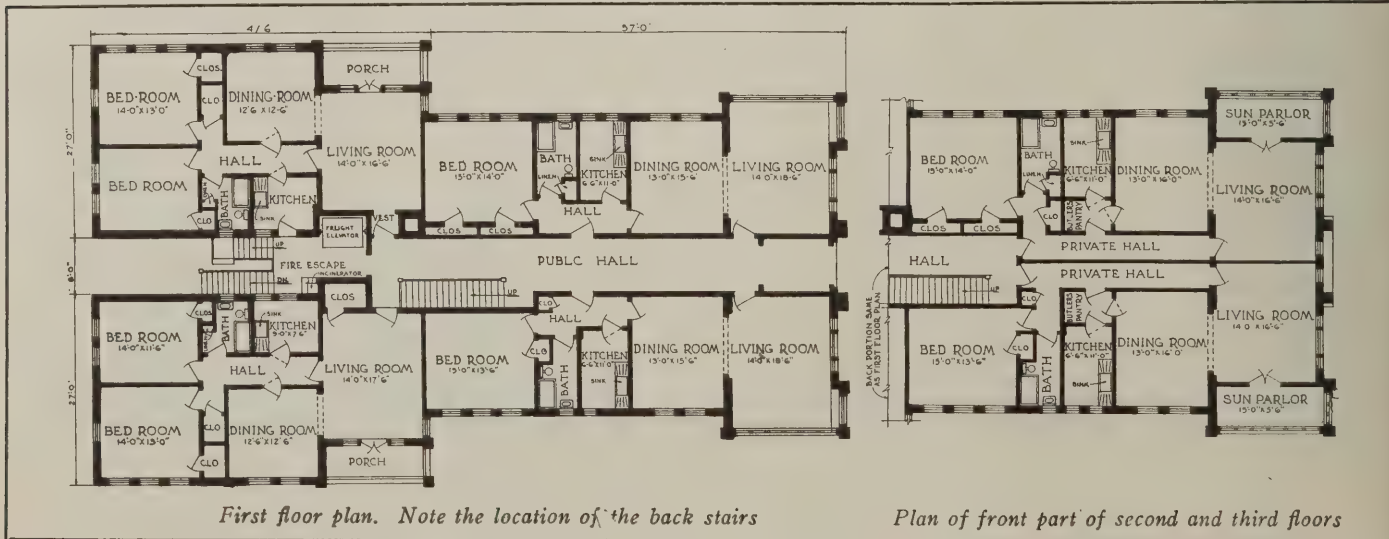
BUILDERS and architects confronted with the problem of putting apartment buildings on narrow lots will be interested in seeing how twelve four- and five-room apartments have been condensed into a building only 62x98 feet 6 inches by M. E. Parmelee & Son, architects, and W. P. Lawson, general contractor, in Knoxville, Tennessee. The building is known as the Rogers Apartment.

The principal concern is getting proper outside light and ventilation for each room. This plan is in the shape of a T, the smaller four-room apartments being in the

front, with their rooms stretched out in a line and with the living rooms having a sun parlor at one end providing cross-corner ventilation. The five-room apartments are in the back of the building and a jog in the outside walls allows windows on two sides for the living rooms and a small porch in addition. One bedroom has cross-corner ventilation. Both sets of apartments have plenty of closet room in the bath and bedrooms. Wide cased openings between the living and dining rooms throw these rooms together and give them an appearance of greater size. The front

apartments on the second and third floors have the space of the public hall of the first floor divided between them; thereby each gains a pantry and a large linen closet.

Casement sash of the pivoted type allow use of the full openings in summer and are easily cleaned. The building is "modern" in every respect, with incinerators, oak floors, elevator, and fire escape. The kitchenettes are furnished with stoves equipped with an oven heat regulator and the apartments are heated by a vapor heating system.



National Home Builder

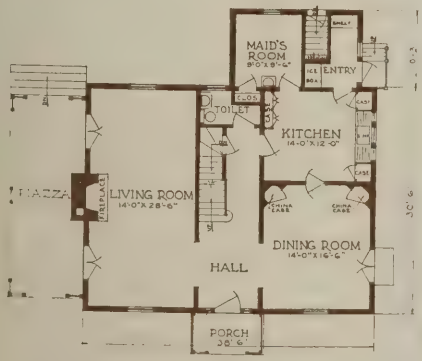


Inviting Doorways Add to the Attractiveness Here

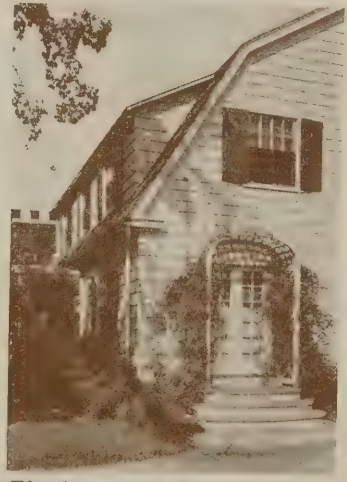
A HOUSE behind a screen of trees and shrubs is a delight to look at but hard to photograph. But these views of the home of Mr. F. S. Chaffee, in Rutland, Vermont, plainly show the two attractive doorways which distinguish this house.

Lattice work has been effectively used in both of them, and such treatment is becoming to the architectural feeling of the house. The latter is of the gambrel roof or Dutch Colonial style which is very popular now-a-days. Skill-

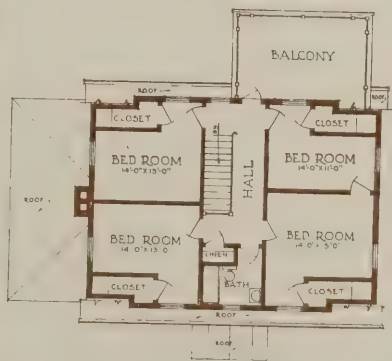
full use has been made of the space in this house, whose plan is almost square and therefore gives a great deal of floor space with a minimum of walls. The toilet, with outside window, is at the end of the hall back of the stairway. The hall makes it possible to reach the front door from the kitchen without going through the dining room. The maid's room, with a lavatory of its own, is directly off the kitchen. There are two basement stairways, one reached from the inside.



First floor plan



The doorway to the dining room



Second floor plan



Two Examples of the Work of Lafond & Hartung



Second floor plan



First floor plan

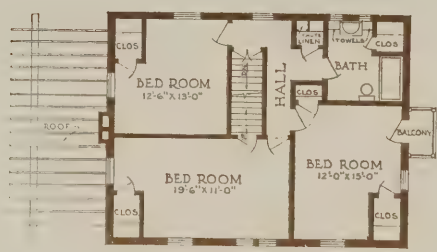
THIS house is a combination of stucco and shingles with half timber panels in the second story. It has a composition roof and a chimney of common brick. An interesting feature is the front porch along two sides, which insures the occupants a breeze from at least three directions on hot summer days. The porch sides are shingled over, giving a privacy not found in porches with open balustraded sides. A one car garage in the rear is connected directly with the house and is accessible from the kitchen without going outside. Space saving and utilization is a point especially studied by Lafond & Hartung. It is to be noted here in the treatment of the stairway, which is enclosed and the space beneath it utilized for a roomy cloak closet. A bookcase fireplace combination fills one entire end of the living room which has light and ventilation from windows on three sides. French doors shut off the dining room which has cross-corner ventilation. A breakfast nook is served directly from the kitchen and is lighted by swing-in casements immediately above the table. Upstairs built-in wardrobes are to be found in two of the bedrooms and there is a large closet in the hall over the stairway. Notice that the stairway is lighted by window. This house was known as job No. 2044 on the books of Lafond & Hartung, Kankakee, Illinois, and it was designed, planned and built for Mrs. D. L. Hogan.



in Kankakee, Illinois. See Pages 70 to 72

ALTHOUGH Lafond & Hartung build over half a hundred houses every year it is their boast that no two are exactly alike. They make special effort to give every customer a plan and design that is distinctly his own and that fits his requirements. The two houses on this and the preceding page are illustrative of the individuality which they get into their work and show what a wide variety of types of buildings they design and construct.

Nor does it make any difference in what materials they work. Their organization contains skilled bricklayers and masons as well as carpenters and other tradesmen. Here is one of their brick houses, known as Job No. 2004, and built for Mr. Stanley McBroom. The house is on a corner lot and therefore particular attention has been paid to the design of the two elevations shown in the photograph. Its plan is of the central hall type. The hall provides a large closet for cloaks and permits access to the dining and living rooms. The stairway is enclosed and the basement stairway is beneath it. The latter comes up to an entry which opens directly onto the hall. The kitchen is three steps up from this entry. Every room in the house except the bedroom gets light and ventilation from two sides and the living room gets the benefit of the solarium. There are good big closets in the bedrooms and in the hall.



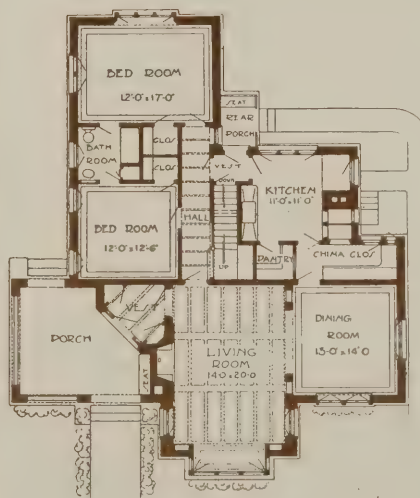
Second floor plan



First floor plan



How Many a Bungalow Might Look If Properly Designed



Floor plan

THE exterior of this bungalow is noteworthy for the restraint shown in the handling of the roof, the omission of brackets and other ornaments which spoil too many houses of this type. This house is in Milwaukee, Wisconsin, and is the home of Mrs. Benjamin Weil. Brust & Philipp, 405 Broadway, Milwaukee, were the architects.



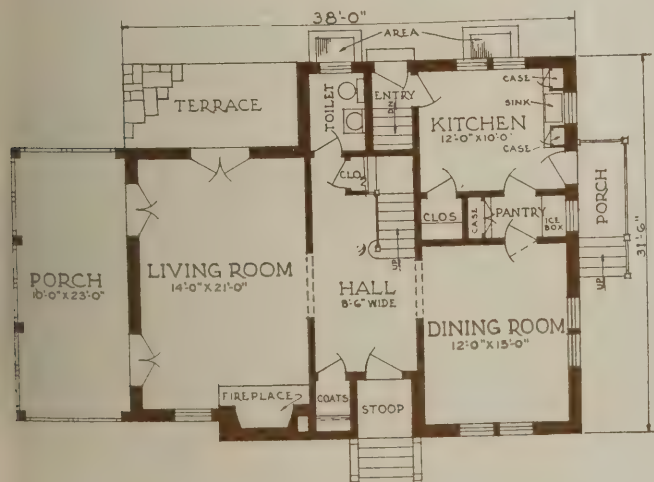
A wide opening between the dining room and living room gives a pleasant vista



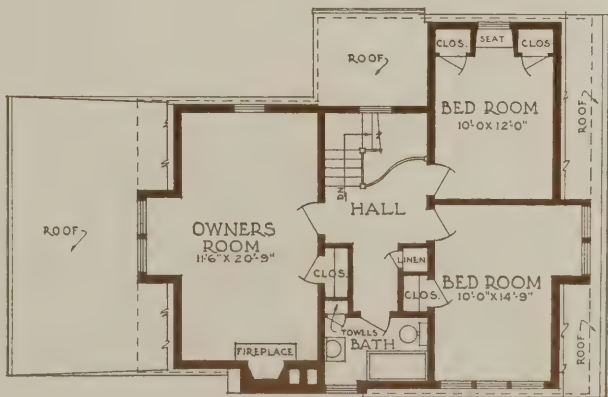
Overhanging Eaves Are Tastefully Used in This Design

STAINED shingles are appropriate to the house on a wooded lot. Here they are combined with brick in a pleasing manner in a house of "modern" type, with wide, overhanging eaves. The design is by

Marcus R. Burrowes, architect, 2631 Woodward Avenue, Detroit, Michigan. It is the home of Mr. C. B. Tuttle. The treatment of the large porch, which is screened in winter, is very successful.



First floor plan



Second floor plan

A House Overlooking the Mississippi River at Keokuk, Iowa, Which Is Unique



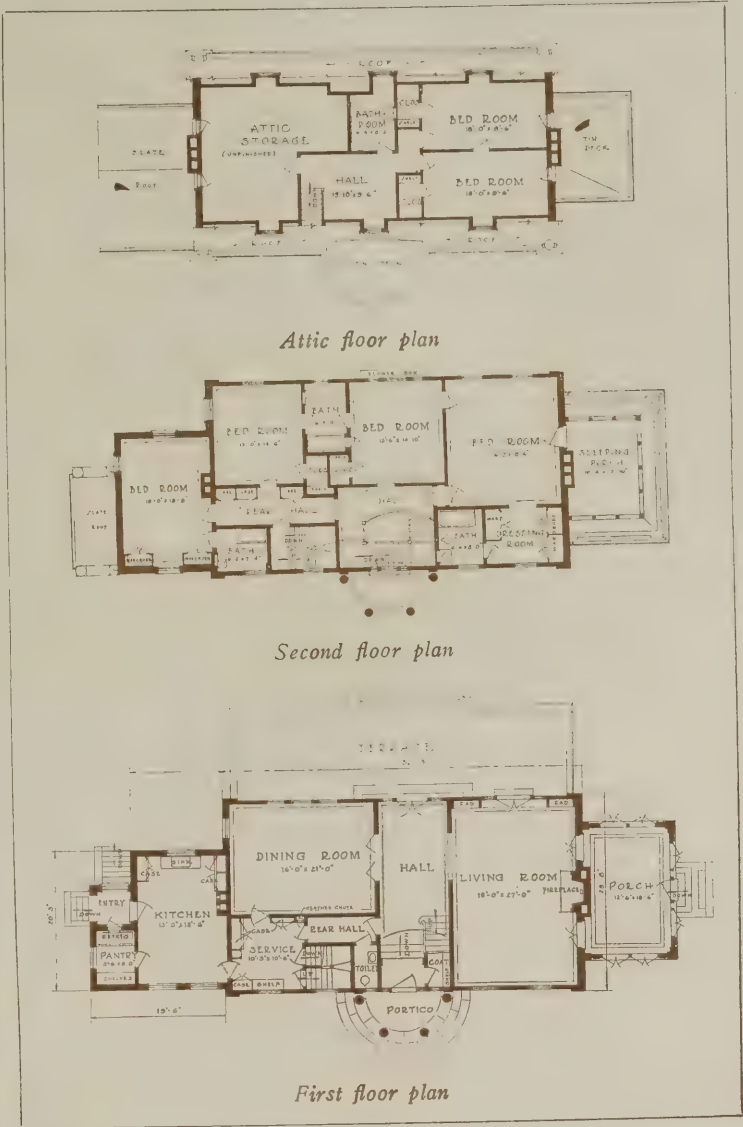
The west facade showing the house as it is viewed from the street. The entrance portico, with columns of two-story height, is a distinctive feature



The east facade, the windows of which command a view up and down the Mississippi

Design, Construction and Plan

THE home of Mr. Merle F. Baker, in Keokuk, Iowa, is unusual in design, construction, plan and location. It is a full two-story Colonial design, with an entrance portico with two-story columns, and a gambrel roof, and it has two "fronts." The design embodies an unique but rarely successful combination of two materials—brick and wood. The plan is so arranged that the principal rooms have their windows looking out across the Mississippi River, and since the house is built on a high bluff, a view up and down the river for miles is possible, and it includes, on the south, the famous Keokuk Dam, a structure of architectural as well as engineering significance. The garage, which is of the same style and materials as the house, is connected with the kitchen by a pergola. The driveway from the street—which is a part of the Mississippi River Scenic Highway—leads directly by the entrance portico. Talmadge & Watson, 189 West Madison Street, Chicago, were the architects, and J. W. Young, Keokuk, the contractor.



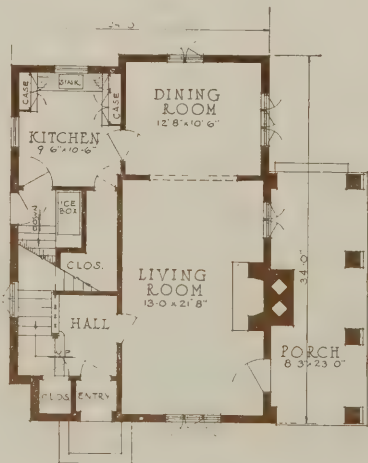
many miles, with the famous Keokuk Dam to the south. This view is looking north



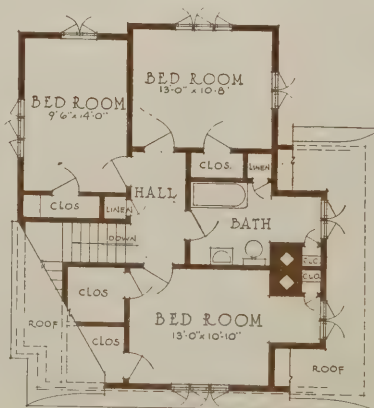
Not Every House Is as Attractive as This When Newly Finished

THESE pictures of the home of Mr. Frank Chester, in Champaign, Illinois, were taken before any planting had been done and early in the winter. Imagine how attractive the place will be when the shrubs are in and the grass has grown! Effective use

has been made of half timber work in the front gable and dormer, and the brick trim around the doorway, window and at the corners, in the front elevation. Dee Todd was the contractor and Joseph W. Royer, 301 West Main Street, Urbana, Illinois, the architect.



First floor plan



Second floor plan



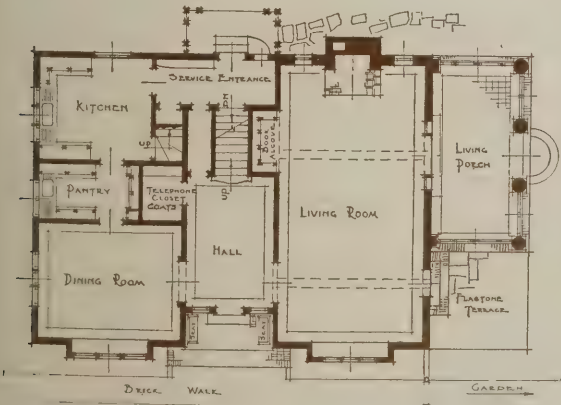
Rear view



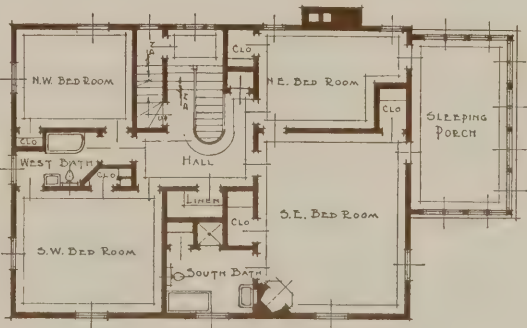
and Planting Only Adds to the Charm of This Design

STAINED shingles, with butts sawn on the bias, cover the sides of this house above the first floor line and stucco is used below. There is space for several emergency bedrooms in the attic. The master's bedroom has its own bath and is connected

directly with the northeast bedroom and both have direct access to the sleeping porch. The chimney is at the other end of the living room from that shown on the plan. Russell L. Walcott, 11 East Huron Street, Chicago, was the architect.



First floor plan



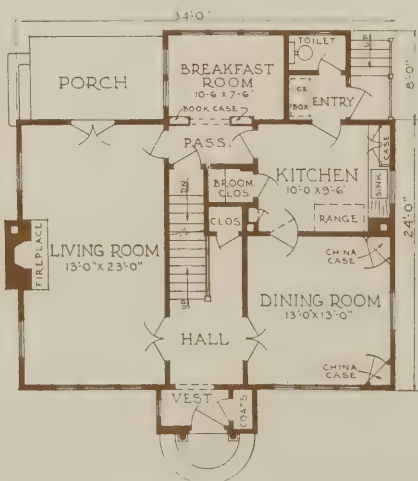
Second floor plan



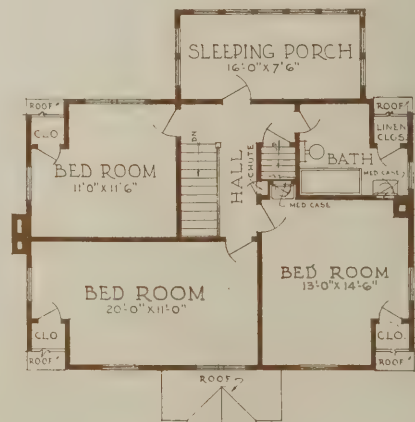
An Entrance Vestibule Is an Important Feature of Both the Design and Plan of This Little House

FROM the outside the vestibule, with the fan light entry, is a point of interest. It is the most important architectural feature. On the inside it permits unrestricted use of the hall as a hall instead of an entry. It has a closet for coats and there is another one at the end of the hall. Corner china closets are items of permanent furniture in the dining room. The

location of the breakfast room makes it convenient from the living room. The downstairs toilet can be reached from outside the house. Note how the corners of the bedrooms are utilized for closets because of the "cut" ceilings. The sleeping porch is off the hall. This house was built by the Hanna Lumber Company, in Tulsa, Oklahoma.



First floor plan



Second floor plan

Complete Working Drawings and Details

A Five-Room Bungalow for a Forty-Foot Lot

House No. 5A65, designed especially for National Builder by The Architects' Small House Service Bureau

© 1924 by N. B. and A. S. H. S. B.

HERE is a modern five-room bungalow designed to meet exactly the requirements of many National Builder readers. Inspection of the plans will show an arrangement of the rooms that should make housekeeping a pleasure. The plan makes a division between the kitchen, dining room, living room, and sun porch—that part of the house which is usually called the living quarters—and the bedrooms or sleeping quarters.

A large living room measuring a little over 21x13 feet in the clear has in addition a sun porch nearly 10 feet long by 13 feet wide. If one desires, this porch can be made a part of the living room and not separated from it by the doors, or a plaster arch could be substituted for the partitions. In order to protect the living room from blasts of winter cold, a vestibule has been added in which there is ample space for hanging coats, and in which there is a seat with a hinged cover for over-shoes and things of that kind. A fireplace occupies the inner wall of the living room in such a way that the chimney stack may be had without additional expense to serve a coal-burning kitchen range. Between the dining and living rooms there is a cased opening in which doors may be put if preferred.

The kitchen has been arranged for convenience in housekeeping. A rear door from this room leads out into an entry in which there would be a refrigerator provided with outside icing. Through

the entry one may go to the basement or to the outside.

The bedrooms, each about 11 feet square, and a bathroom complete the arrangement. There are large closets in the bedrooms and hallway.

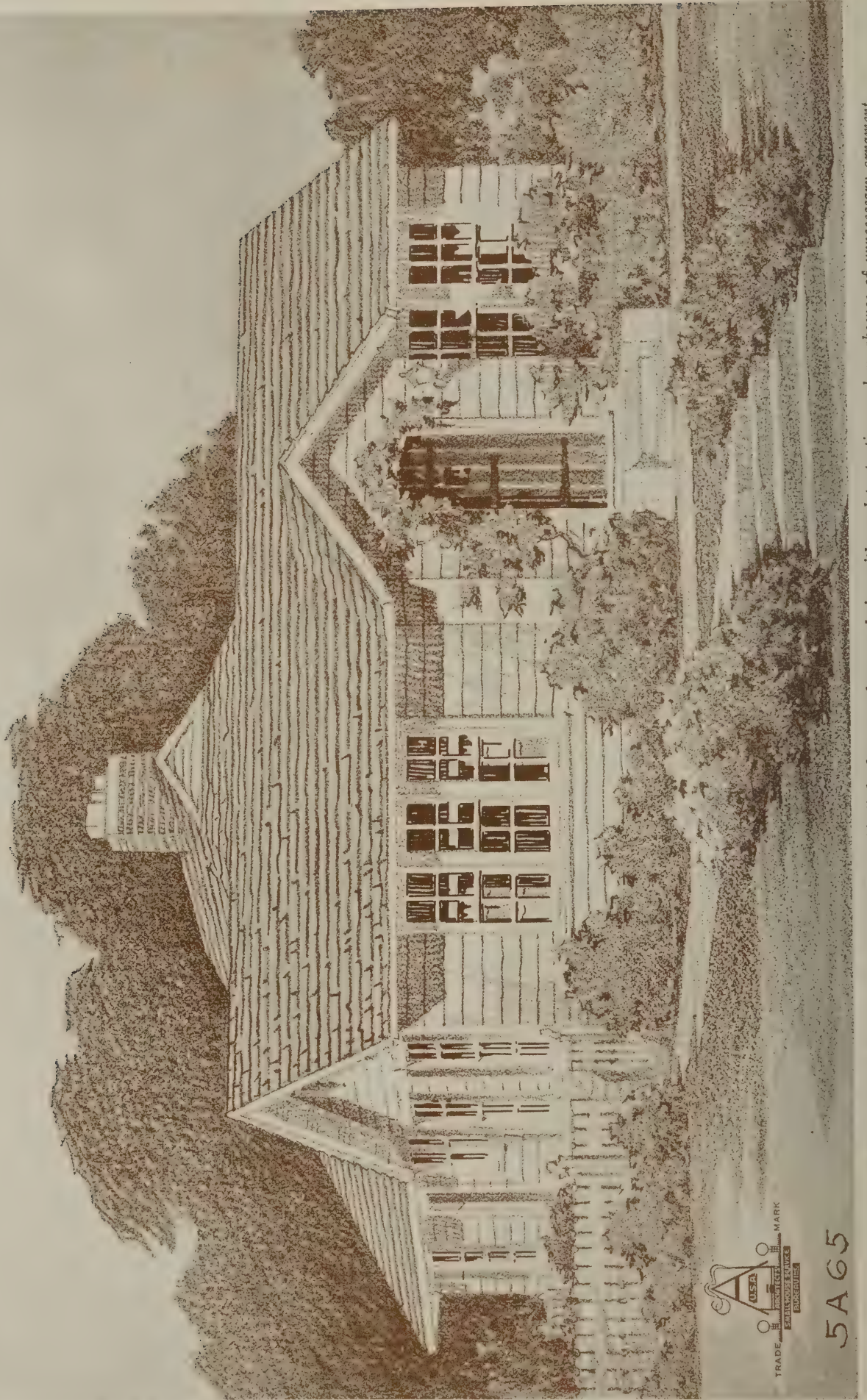
This house has been designed with a rather low-pitched roof so that there is not much space in the attic. The construction is frame, with an exterior finish of wide siding, though shingles or stucco might be substituted. The exterior has been designed so as to keep costs down to a minimum. It is, however, very effective in appearance from the fine balance of walls and openings, the flower boxes at the sun room windows, and the rustic iron-bound door at the entrance. This should prove to be an inexpensive house to build as bungalows go. It should therefore appeal to many people who demand the bungalow type of house at the lowest expense.

The plan arrangement is such that it would probably be most satisfactory with a southern or western exposure. However, in order to take advantage of prevailing winds or lighting it could easily be reversed.

In most districts this design can be accommodated on a forty-foot lot. A wider lot would of course be desirable.

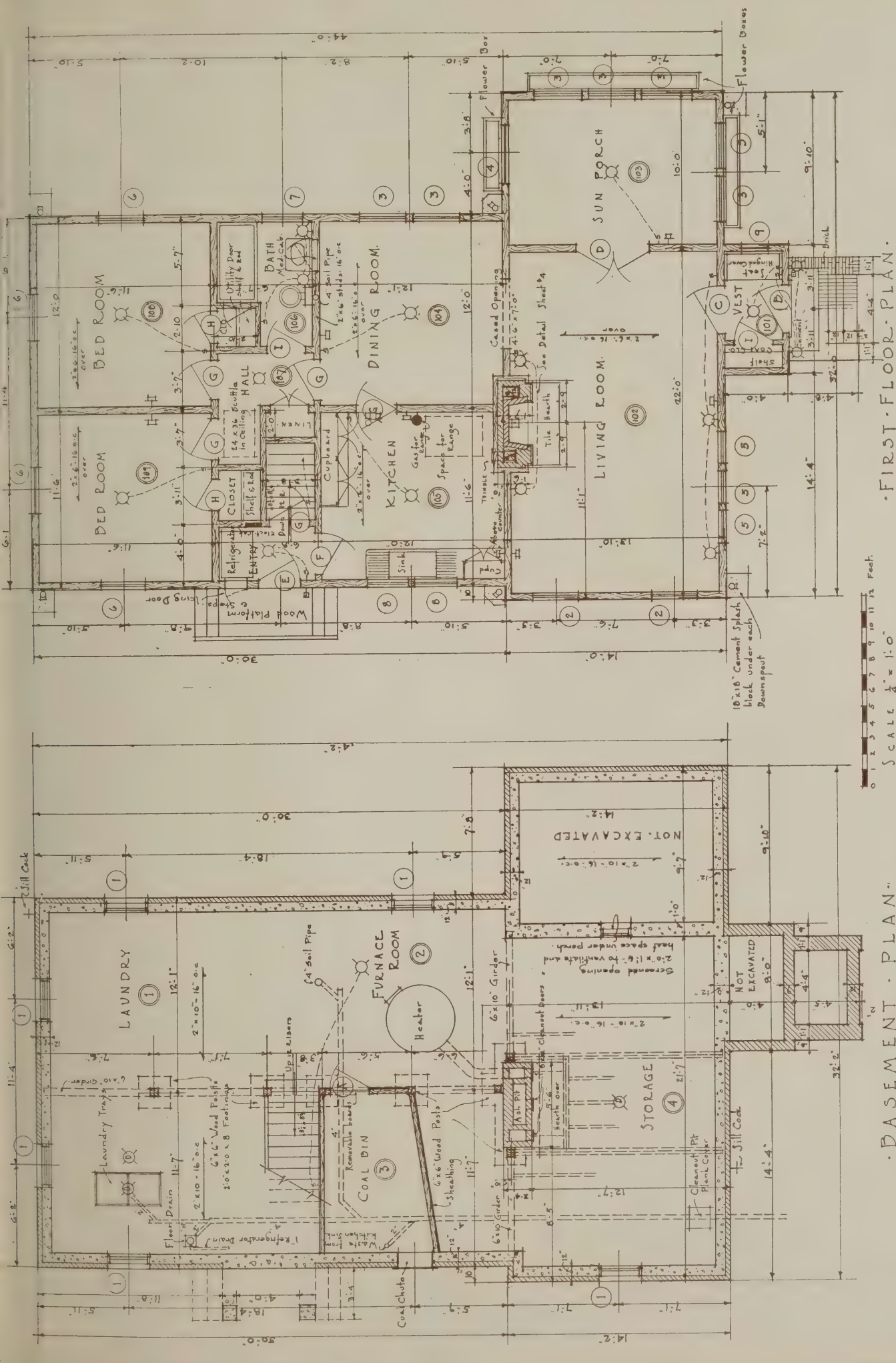
The price of this plan is \$25.50. (To National Builder subscribers, \$13.00.)

ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 49 and 50. These drawings are on a scale of $\frac{1}{4}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau, subscribers for "National Builder" desiring blue prints of the original of these plans, which are drawn on the scale of $\frac{1}{4}$ inch to the foot, are entitled to a 50 per cent discount off the Bureau's standard price, as stated in the last paragraph above. Orders should be addressed to "National Builder" for authenticating the purchaser as a bona fide subscriber, but checks should be made out to The Architects' Small House Service Bureau. Duplicate sets of blue prints are \$3.00 each; specifications are \$2.50 a set, and extra quantity surveys are \$3.00 a set.



Builders who fancy the house of bungalow type will find in this little free-room house a design with good proportions and an absence of unnecessary ornament which make it very attractive when built of any material

5A65



HOME PLAN FOR National Builder February 1924

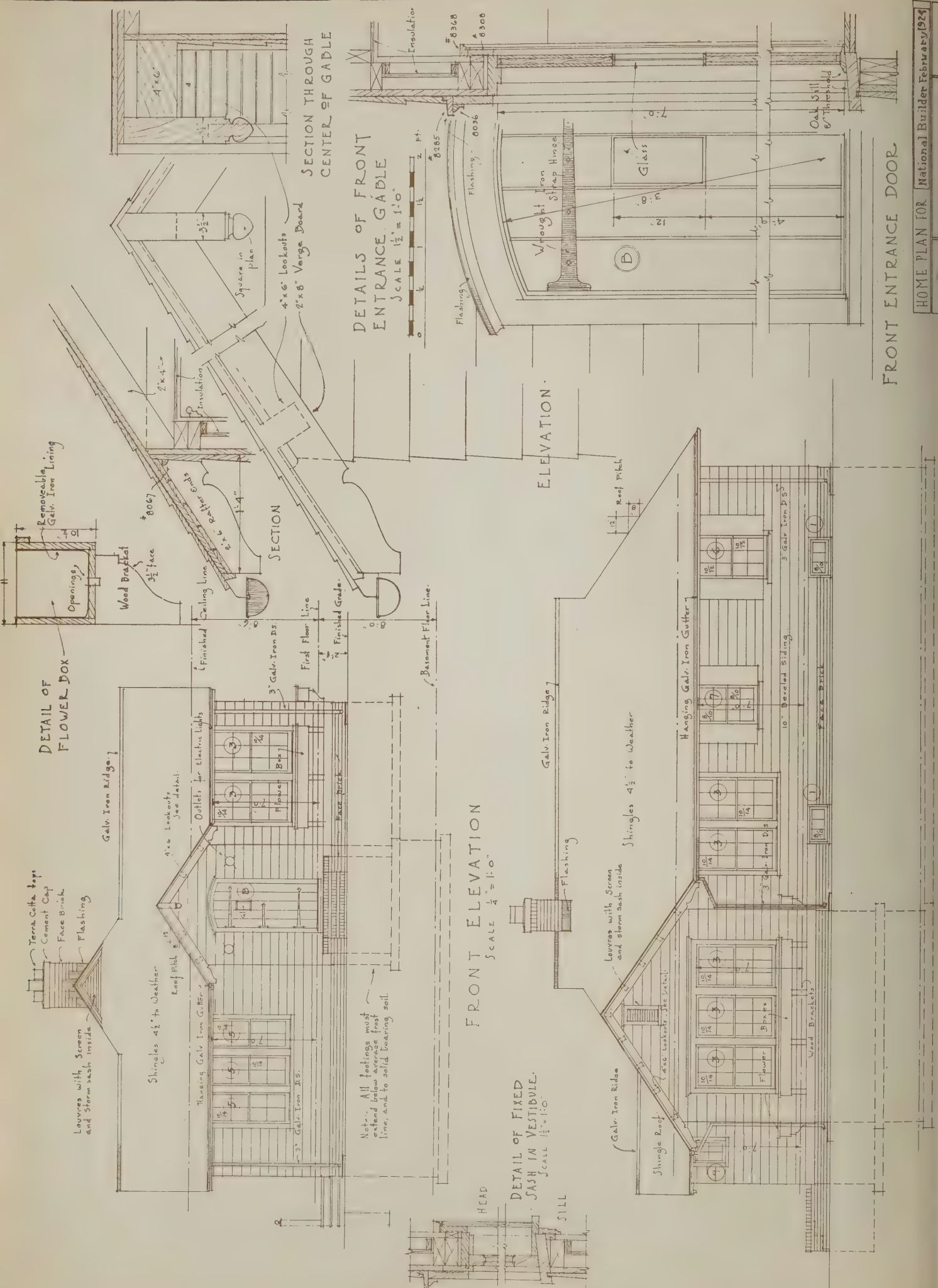
THE ARCHITECTS SMALL HOUSE SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
JAMES C. HARRIS, CHICAGO

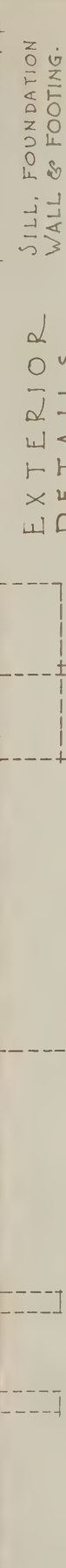
SA 65
SHEET NO. 1

Stock numbers refer to mouldings in Universal Millwork Catalogue, Page 20. In case these mouldings cannot be procured, others of similar design and size may be substituted.
Provide 1/8" screen and storm sash for all exterior openings except ice door unless otherwise noted. Bottom rail of storm sash to have vent.

Dimensions are taken to outside of foundation walls, to outside of studs on exterior walls and center of studs for partitions.
Foundation walls shown concrete may be stone. Brick concrete block for load bearing foundation walls may be 8" thick (with 20-25 footings) except in case of stone which shall be 16" thick.

SCALE 1/4" = 1'-0"





DETAILS
SCALE $1\frac{1}{2}" = 1'-0"$

1

HOME PLAN FOR National Builder February 1924

THE ARCHITECT'S SMALL HOUSE
SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
• HOME OFFICE, MINNEAPOLIS •


EST. 1925
INCORPORATED IN MINN.
1000 HUNTERS LANE, S.W.
MINNEAPOLIS, MINN. 55425

5 A 6 B
SHEET NO. 3

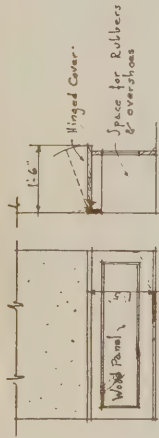
SIDE ELEVATION

SCALE $\frac{1}{4} = 1.0$

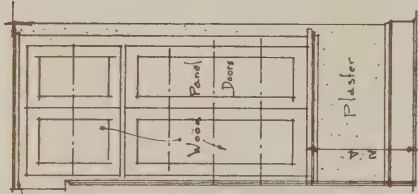
0 1 2 3 4 5 6 7 8 9 10 11 12

ft.

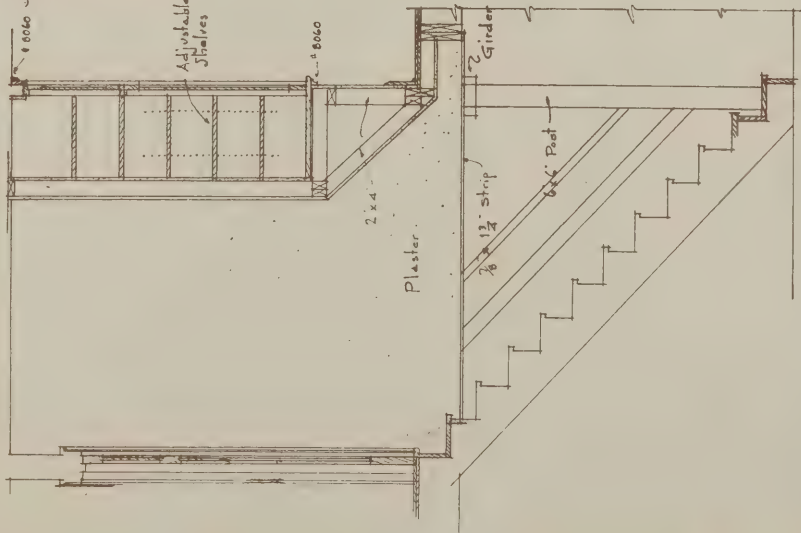
NOTE: IN CASE HOT AIR FURNACE AND PIPING ARE USED, THIS CONSTRUCTION OF FIRESTOPPING AROUND PIPES PASSING BETWEEN FLOOR JOISTS AND STUDS IS RECOMMENDED.



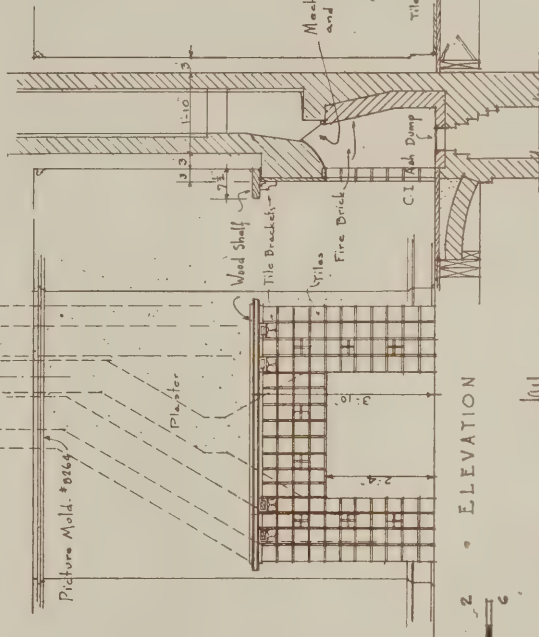
VESTIDOLE SEAT
SCALE $\frac{1}{2}'' = 1'-0''$



ELEVATION OF LINEN CUPBOARD.

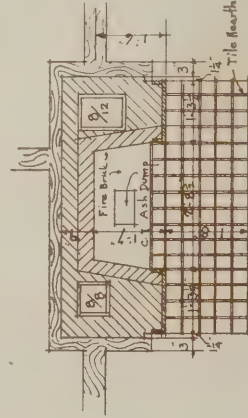


SECTION THRO BASEMENT STAIRS SHOWING CONSTRUCTION OF LINEN CUPBOARD. SCALE $\frac{1}{2}'' = 1'-0''$

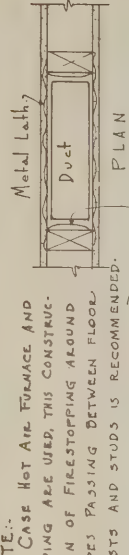


SECTION

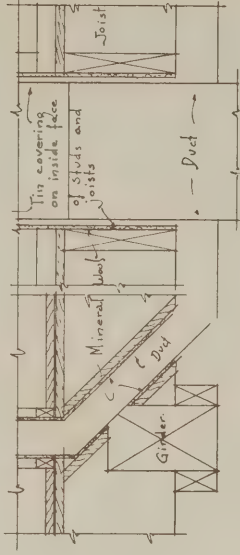
DETAILS OF FIRE-PLACE
SCALE $\frac{1}{2}'' = 1'-0''$



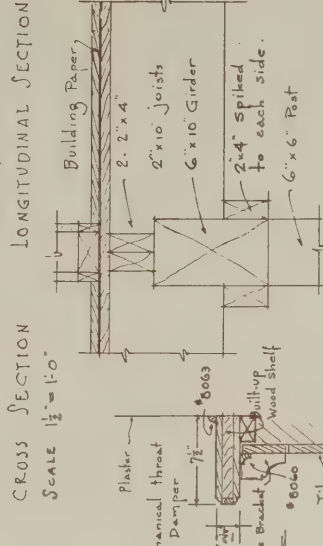
PLAN



PLAN



CROSS SECTION
SCALE $\frac{1}{2}'' = 1'-0''$



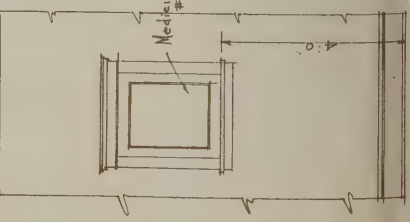
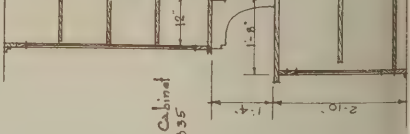
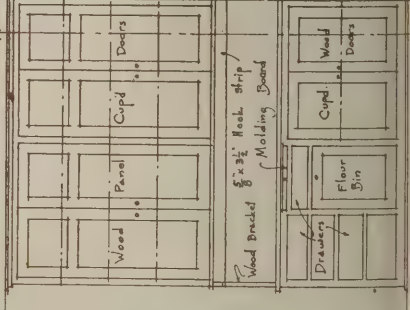
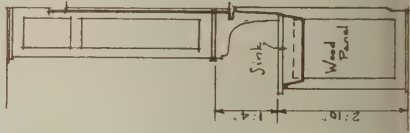
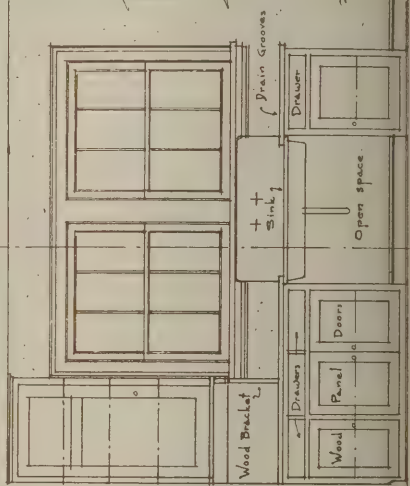
LONGITUDINAL SECTION

DETAIL OF POST & GIRDER.

DETAIL OF MANTEL SHELF
SCALE $\frac{1}{2}'' = 1'-0''$

QUANTITY	TYPE	SIZE	DESCRIPTION	REMARKS
1	A	2-6 x 6 x 1 1/2	UNIV. 710	COAL BIN
1	B	3-0 x 7-0 x 1 1/2	SPECIAL	SEE DETAIL
1	C	3-0 x 7-0 x 1 1/2	UNIV. 1103	VESTIDOLE
1	D	2-4 x 7-0 x 1 1/2	UNIV. 1600	FRENCH DOOR
1	E	2-6 x 6 x 1 1/2	SEE SIDE ELEVATION	
1	F	2-8 x 7-0 x 1 1/2	UNIV. 1103	INTERIOR
5	G	2-6 x 7-0 x 1 1/2		
2	H	2-0 x 7-0 x 1 1/2		
2	I	2-4 x 7-0 x 1 1/2		

QUANTITY	TYPE	DESCRIPTION	NO. OF LIGHTS	SIZE OF OPENING IN JAMB	FRAME
6	1	BASEMENT	3	8-10	2-4 x 1-9
2	2	DOUBLE HUNG	12	10-14	2-10 x 5-2
7	3	DOUBLE HUNG WITH MULLION	12	"	"
1	4	DOUBLE HUNG	16	10-14	3-6 1/2 x 5-2
3	5	DOUBLE HUNG WITH MULLION	8	10-14	2-11 x 5-2
4	6	DOUBLE HUNG	12	10-12	2-10 x 4-6
1	7	"	12	8-10	2-4 1/2 x 3-10
2	8	"	6	10-18	2-10 x 3-5
1	9	FINE JAMB	4	8-10	1-6 x 2-1



Quantity Survey for House No. 5A65

Designed Especially for National Builder by
The Architects' Small House Service Bureau

See pages 43 to 48, inclusive, for description, perspective, complete working drawings and details

EXCAVATING					
255 cu. yd.....		1—6x10-18 girders		1 triple frame 10x14-12L-1½.....	
BACK FILL		1—6x10-12 girders		1 single frame 10x14-16L-1½.....	
48 cu. yd.....		3—2x10-14 stair horses		1 triple frame 10x14-8L-1½.....	
FOUNDATION		82 lin. ft. 2x4 bsmt. partition plates		4 single frames 10x12-12L-1½.....	
If 12" concrete, 66 cu. yd. gravel,		20—2x4-7 bsmt. partition studs.....		1 single frame 8x10-12L-1½.....	
266 sax cement.....		270 ft. D&M bsmt. partn. sheathing		1 mul. frame 10x18-6L-1½.....	
If 9" concrete, 50 cu. yd. gravel,		4 ft. 2" plank clean out cover.....		1 sh. frame 8x10-4L-1½.....	
202 sax cement.....		25—2x10-14 first floor joist.....		4 louvre frames	
If 12" tile, 28,000 CBM tile, 21 cu.		48—2x10-12 first floor joist.....		Windows:	
yd. mortar		4—2x10-8 first floor joist.....		6 sash 8x10-3L-1½	
If 9" tile, 24,000 CBM tile, 18 cu.		4—2x10-16 first floor joist headers..		9 wds. 10x14-12L-1½	
yd. mortar		9—2x10-12 box sill.....		1 wd. 10x14-16L-1½	
1344 face brick.....		4—2x10-12 doubles under partitions		3 wds. 10x14-8L-1½	
1 cu. yd. mortar.....		1380 ft. com. bds. subfloor.....		4 wds. 10x12-12L-1½	
60 lb. mortar color.....		180 lin. ft. 1x3 bridging.....		1 wd. 8x10-12L-1½	
CEMENT FLOOR		1600 ft. 13/16x1½ flooring fin. floor		2 wds. 10x18-6L-1½	
6 cu. yd. gravel.....		468 lin. ft. 2x4 1st fl. part'n plates		1 sh. 8x10-4L-1½	
6 cu. yd. sand.....		136—2x4-9 1st floor partition studs		Storm Sash:	
72 sax cement.....		25—2x6-14 1st floor ceiling joist.....		6 st. sh. 8x10-3L-1½.....	
6 spatter blocks.....		48—2x6-12 1st floor ceiling joist.....		9 st. sh. 10x14-12L-1½.....	
CHIMNEY		4—2x6-16 1st fl. ceiling joist headers		1 st. sh. 10x14-16L-1½.....	
2175 common brick.....		4—2x6-8 1st floor ceiling joist.....		3 st. sh. 10x14-8L-1½.....	
225 face brick.....		2—2x10-10 opening headers.....		4 st. sh. 10x12-12L-1½.....	
90 fire brick.....		468 lin. ft. 2x4 outside wall plates....		1 st. sh. 8x10-12L-1½.....	
12 sq. ft. hearth tile.....		141—2x4-9 outside wall studs.....		2 st. sh. 10x18-6L-1½.....	
180 inside face brick.....		16—2x4-14 opening doubles.....		1 st. sh. 8x10-4L-1½.....	
20 lin. ft. 8x8 flue tile.....		4—2x4-16 opening headers.....		4 st. sh. for louvres.....	
26 lin. ft. 8x12 flue tile.....		20—2x4-14 gable studs and braces..		Screens:	
20 lb. fire clay.....		1500 ft. shiplap wall sheathing.....		6 screens 8x10-3L-1½	
3 cu. yd. mortar.....		1400 ft. 10" siding.....		9 screens 10-14-12L-1½.....	
1 cast iron ash dump.....		2—2x6-3 porch joist headers.....		1 screen 10x14-16L-1½	
1 throat and damper.....		3—2x6-6 porch joist.....		3 screens 10x14-8L-1½	
1 angle 4x3x5/16—4'0		22 ft. 4" flooring, porch.....		4 screens 10x12-12L-1½	
3—8x12 clean out doors.....		1—2x10-14 step horse		1 screen 8x10-12L-1½	
1—6" thimble		360 ft. ceiling plancier.....		2 screens 10x18-6L-1½	
1—8" furnace flue.....		1400 ft. D&M attic floor.....		1 screen 8x10-4L-1½	
5 yd. metal lath.....		42—2x4-16 rafters		4 screens for louvres.....	
LATH		22—2x4-14 rafters		Shutters:	
9 yd. metal lath over furnace.....		38—2x4-12 rafters		2 pr. shutters wds. 10x14-12L-1½....	
8232 wood lath.....		12—2x4-7 rafters		4 pr. shutters wds. 10x12-12L-1½....	
PLASTER		4—2x4-18 valleys and hip.....		1 pr. shutters wds. 8x10-12L-1½....	
9 yd. plaster on metal lath.....		25—1x6-12 collar ties.....		Outside Door Frames:	
588 yd. plaster on wood lath.....		60 lin. ft. 1x6 ridge rafter.....		1 dr. fr. 3'0x7'0—1¾.....	
14 yd. Keene's cement.....		2352 ft. bds. roof sheathing.....		1 dr. fr. 2'8x6'8—1¾.....	
TILE FLOORS		16¾ M shingles.....		1 icing door frame.....	
39 sq. ft. ceramic tile.....		25—2x4-10 scaffold and extras.....		Outside Doors:	
25 lin. ft. cove base.....		8—2x6-14 scaffold and extras.....		1 dr. 3'0x7'0—1¾ Special.....	
LUMBER		6—2x8-16 scaffold and extras.....		1 dr. 2'8x6'8—1¾ Special.....	
7—6x6-7 posts		7—2x10-12 scaffold and extras.....		1 icing door	
1—6x10-7 girders		800 lin. ft. grounds.....		Storm Doors:	
1—6x10-8 girders		MILLWORK		1 st. dr. 3'0x7'0—1¾.....	
		Frames:		1 st. dr. 2'8x6'8—1¾.....	
		6 single frames 8x10-3L-1½.....		Screen Doors:	
		2 single frames 10x14-12L-1½.....		1 sc. dr. 3'0x7'0—1¾.....	
		2 mul. frames 10x14-12L-1½.....		1 sc. dr. 2'8x6'8—1¾.....	

Outside Millwork:

2 barge boards 7'0.....
1 barge board key.....
22—4x6 look outs.....
4 barge boards 11'0.....
2 sets side entrance steps.....
2 newel posts
5 lin. ft. porch rail and balusters....
1—10'6" flower box.....
4—flower box brackets.....
1—7'0 flower box.....
3 flower box brackets.....
1—4'6 flower box.....
2 flower box brackets.....
1 segment top entrance trim.....
7 sq. ft. lattice panel strips.....
1 screen for opening 2'0x1'6.....
1 opening frame 2'0x1'6.....
192 lin. ft. cornice.....

Interior Doors:

1 door 2'6x6'8—1¾ (No. 720).....
1 door 3'0x7'0—1¾ (No. 1103).....
2 doors 2'4x7'0—1¾ (No. 1600).....
1 door 2'8x7'0—1¾ (No. 1103).....
5 doors 2'6x7'0—1¾ (No. 1103).....
2 doors 2'0x7'0—1¾ (No. 1103).....
2 doors 2'4x7'0—1¾ (No. 1103).....

Jambs:

1 jamb 2'6x6'8
1 jamb 3'0x7'0
1 jamb 4'8x7'0
1 jamb 2'8x7'0
5 jambs 2'6x7'0
2 jambs 2'0x7'0
2 jambs 2'4x7'0
1 jamb 4'6x7'0

INTERIOR TRIM

6 sides trim 8x10-3L.....
2 sides sgle. trim 10x14-12L.....
2 sides mul. trim 10x14-12L.....
1 side triple trim 10x14-12L.....
1 side sgle. trim 10x14-16L.....
1 side triple trim 10x14-8L.....
4 sides sgle. trim 10x12-12L.....
1 side sgle. trim 8x10-12L.....
1 side mul. trim 10x18-6L.....
1 side sh. trim 8x10-4L.....
1 side dr. trim 3'0x7'0 seg. top.....
1 side dr. trim 2'8x6'8.....
1 side icing door trim.....
2 sides dr. trim 2'6x6'8.....
2 sides dr. trim 3'0x7'0.....
2 sides dr. trim 4'8x7'0.....
2 sides dr. trim 2'8x7'0.....
10 sides dr. trim 2'6x7'0.....
4 sides dr. trim 2'0x7'0.....
4 sides dr. trim 2'4x7'0.....
2 sides opng. trim 4'6x7'0.....
1 flight basement stairs with rail....
1 electric meter cabinet.....
1 scuttle door 24x36.....
1 scuttle door jamb
1 scuttle door trim
1 utility door
1 utility door jamb.....
1 utility door trim
1 medicine cabinet.....

1 linen cabinet.....
1—6'0 kitchen cabinet.....
1—2'6 kitchen cabinet.....
2 drain boards and work tables.....
1 mantel shelf.....
1 seat with hinged cover.....
430 lin. ft. base
430 lin. ft. base shoe.....
430 lin. ft. base molding
164 lin. ft. ceiling cove.....
260 lin. ft. picture molding.....
20 lin. ft. closet shelving.....
20 lin. ft. closet hook strip.....
10 lin. ft. clothes rod.....
30 lin. ft. band molding.....
1 astragal for 7'0 door.....
6 lin. ft. threshold.....

TINWORK

60 lin. ft. ridge roll.....
5 finials
30 lin. ft. hip roll.....
50 lin. ft. valley tin.....
11 lin. ft. chimney flashing.....
126 lin. ft. gutter.....
40 gutter hangers.....
6 gutter ends.....
4 inside miters.....
2 outside miters.....
7 nipples
7 strainers
7 elbows
7 offsets
7 shut offs.....
70 lin. ft. conductor pipe.....
21 conductor hooks.....
1—10'6 flower box lining.....
1—7'0 flower box lining.....
1—4'6 flower box lining.....

WEATHER STRIPPING

6 sash 8x10-3L.....
9 wds. 10x14-12L
1 wd. 10x14-16L
3 wds. 10x14-8L
4 wds. 10x12-12L
1 wd. 8x10-12L
2 wds. 10x18-6L
1 wd. 8x10-4L
1 dr. 3'0x7'0
1 dr. 2'8x6'8

CAULKING

2 door frames.....
1 icing door.....
15 single frames.....
3 mullion frames.....
2 triple frames.....
4 louvre frames.....
1 coal chute.....

INSULATION

1076 sq. ft. ½" vegetable fibre or equal for ceiling.....
1220 sq. ft. ½" vegetable fibre or equal for walls.....
3 rolls felt roof.....
2 rolls red rosin for floors.....
3 rolls felt for walls.....

HARDWARE

6 cellar sash sets.....
20 sash locks.....

20 sash lifts.....
31 storm sash sets.....
31 screen sets.....
7 sets shutter hardware for pairs....
1 front door set with butts.....
1 rear door set with butts.....
1 icing door set with butts.....
2 storm doors set with butts.....
2 screen doors set with butts.....
1 floor hinge.....
2 push plates.....
11 inside single door sets with butts
1 inside double door set with butts..
15 door bumpers.....
600 lbs. sash weights.....
6 hanks sash cord.....
1 coal chute.....
800 lbs. assorted nails.....
6 lbs. assorted brads.....
3 doz. clothes hooks.....
1 pr. orn. butts } meter cabinet.....
1 cupboard turn }
1 pr. hinges for scuttle.....
4 friction stays for utility door.....
1 pr. orn. butts } medicine cabinet..
1 cupboard turn }
4 pr. orn. butts } linen cabinet.....
2 cupboard turns }
10 pr. orn. butts }
5 cupboard turns }
5 elbow catches }
5 drawer pulls } kitchen cabinet....
1 cut. board pull }
1 set castors }
1 bin pull }
2 pr. orn. butts } kitchen cabinet....
2 cupboard turns }
4 pr. orn. butts }
4 cupboard turns } dr. bd. cabinets.
4 drawer pulls }
1 pr. hinges for seat cover.....

EXTERIOR PAINTING

9 gal. white paint body.....
4 gal. trim paint.....
3 gal. oil
50 gal. shingle stain.....
½ gal. porch paint.....
1 gal. screen paint.....
1 gal. sash paint.....
6 lbs. putty.....
1 gal. japan
1 gal. turpentine

INTERIOR PAINTING

8 gal. enamel
11 gal. white.....
5 gal. filler stain.....
3 gal. shellac
7 gal. varnish
4 gal. floor shellac.....
6 gal. floor varnish.....
2 gal. oil
1 gal. japan
1 gal. turpentine
1 gal. alcohol
4 doz. sheets sandpaper.....
3 lbs. steel wool.....

Furnishing Without a Knowledge of Period Styles

By Edward Stratton Holloway

Author of "The Practical Book of Furnishing the Small House and Apartment"

IT seems hardly possible that the intelligent man who has for years given his thoughts and energies to the planning and building of attractive dwelling-houses or apartments can fail to be interested in the matter of furnishing. Both for his own use and as an aid to his effectiveness in his own calling he must certainly realize that the erection of the shell of the dwelling and its furnishing are inseparably connected—that the rooms must be designed for the proper placing of the furniture, and that their proportions and details must be such as to present a pleasing

All art, of whatever kind, is based on order. The lack of order—i. e., confusion—is the cause of all unsatisfactory furnishing. We see it manifested in such ways as these: Too great a quantity of furniture, necessarily crowded and badly arranged; golden-oak, mahogany, maple and walnut pieces used together; incongruous forms and weights of furniture; lack of color-harmony; clash of pattern, and the like. Practically all such faults are the result of want of plan. In business, in social life and in amusement, we find what we want and then

evening gloves and a pair of \$3 sneaker shoes. The incongruity would lie not only in the unsuitability of these to each other because of purpose, but also in their variation in quality and degrees of handsomeness. A graceful brocade-covered settee and a Windsor chair likewise belong to different worlds of furnishing. The house itself and the means and tastes of the occupants are a general guide to the manner of furnishing and the one great principle to be observed is—fitness.

Keeping this one word in mind it will be

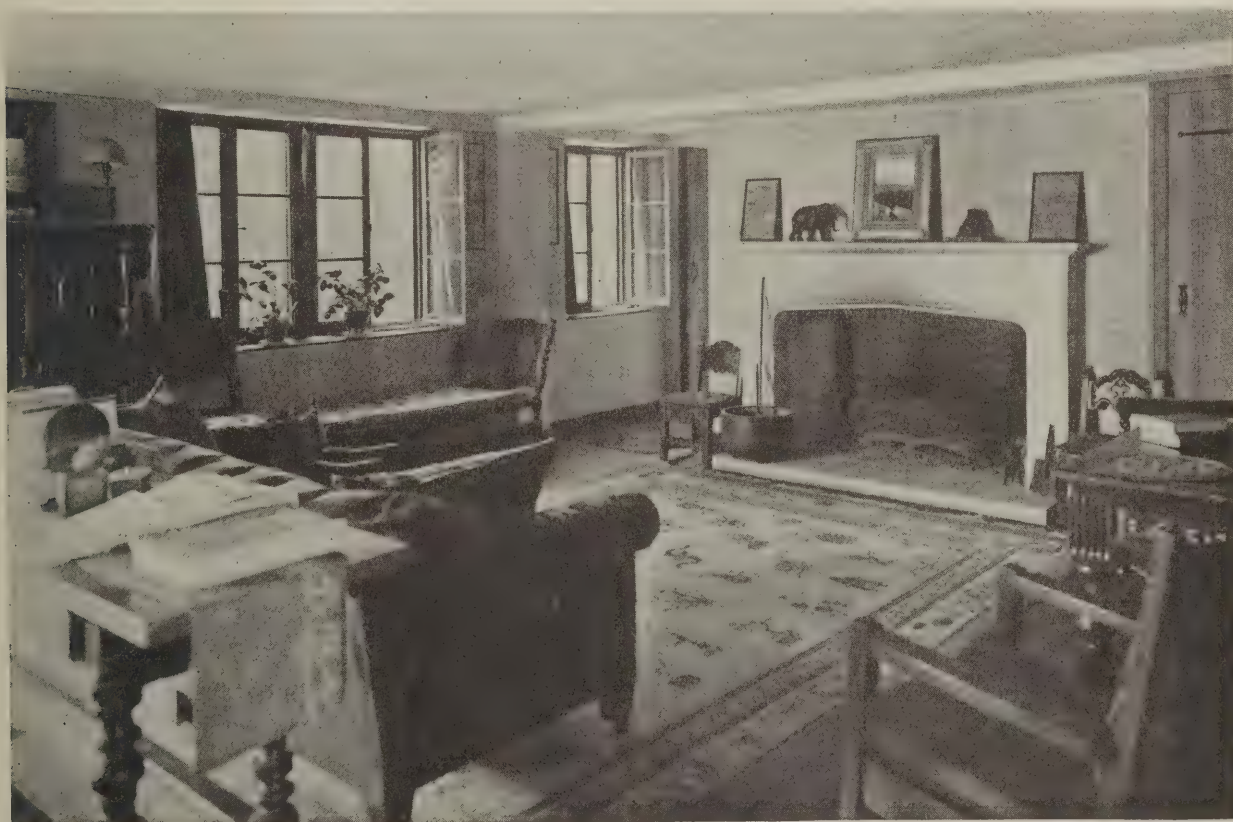


Fig. 1—The homelike phase of oak furnishing in a New England home

appearance when the household goods of the occupants are installed.

No matter what the style of furnishing may happen to be, there are certain easily understood principles that apply to all household decoration; everyone is familiar with them in his daily life but he often forgets to apply them to furnishing.

"go after it." The first step in decoration, likewise, is to decide what sort of home we want and can have—what shall be the general character, and scope and expense of its furnishings. A sensible woman going out to provide herself with a costume for street wear would scarcely purchase a \$25 ready-made suit, a \$200 bird-of-paradise hat, \$20

seen how easy it is—even without any knowledge of period furniture—to provide suitable pieces for the various rooms of the dwelling. One hears of Jacobean—or of Sheraton furniture, but he need be in no way disturbed if he does not know one from the other; if he sees them in a furniture shop he will at once realize, quite as

well as the most experienced decorator, that they do not fit together. They are entirely different in their shape, size, weight, material and color—and this is all he absolutely needs to know.

Let us see, then, what we are to look for in determining what will and what will not go together.

First, in small premises oak and mahogany furniture do not well accompany each other. In handsome houses where there is abundant relieving space, such as that illustrated in Fig. 4, they are sometimes combined, but it is inadvisable in the usual house. And this leads us a few steps further: not only are the colors, the grains and the degrees of polish different in the two woods, but the size, weight and form of the furniture in which they are employed are markedly unlike.

Why is it that they are so unlike? The answer to this shows how interesting furniture and furnishings are; for in one of many ways they illustrate the nature of people—and the characters of people and the way they lived is always absorbing. In the days of the great queen Elizabeth even the immense palaces and the houses of the nobility had very little furniture; it was of size suitable to very large rooms and it was of heavy oak. They were an outdoor-loving, robust people and their furniture accorded with them. Gradually greater refinement and luxury of living developed, but down to the beginning of the Eighteenth

Century these characteristics prevailed to a great degree.

Now right here is the helpful point—for



Fig. 3—Entrance hall with oak furniture in the house of C. L. Nord, Centerville, Delaware. Mellor, Meigs and Howe, architects, Philadelphia

it divides all period furniture into two different kinds, and anyone without a knowl-

edge of period styles will at once be able to see to which of the two kinds any piece belongs and to realize that, for the usual house, pieces of the different kinds do not go well together. The furniture of the one sort—that designed before the Eighteenth Century in England and America—was of oak, and generally heavy in its form. Figs. 1, 2 and 3 show its general characteristics and it will be seen that if we took any of the pieces out of these three rooms and put them together they would accompany each other very well.

Now let us contrast with these pieces the furniture we see in Figs. 5 and 6. These pieces are all light, and graceful, and refined—for refinement and greater amenity of life were the characteristics of the people and homes of the Eighteenth and early Nineteenth centuries, as contrasted with the earlier period. We shall again see that none of the furniture in any of these three rooms would "fight" with that in any other. The reason is plain: Though they represent several different period styles, though their form and ornament be somewhat unlike, the same general characteristics run through them all—they are of the same spirit. Furthermore all of this furniture is of mahogany. During the mahogany periods there was much painted furniture both in England and on the continent and it well accompanies mahogany. This naturally cannot be said of much of the cheap and vulgarly painted furniture of the present day.



Fig. 2—Oak furniture with appropriate wall hanging. Emma S. Brown, interior decorator, Philadelphia



Fig. 4—Furniture of the heavier and lighter types in the James A. Burden house, Syosset, Long Island. Delano and Aldrich, architects



Fig. 5—A living room with Adam and Sheraton furniture

but it is applicable to good and well-furnished reproductions.

Colonial furniture is, naturally, that designed previous to 1776, and consists of the American following of all the English styles previously mentioned. What is too commonly called "Colonial" is really post-colonial, and it is properly called American "Empire." It is a more distant following of the styles of the Directory and Napoleonic Empire of France. The earlier, lighter and more graceful pieces are excellent, and they may be combined with the mahogany furniture already mentioned. The style gradually deteriorated into the very heavy, clumsy and often ungainly pieces, frequently having great, bulky curves as "ornaments."

Between these two woods of oak and mahogany came the period of walnut furniture. It is represented by the styles of William and Mary and of Queen Anne, and most readers will be familiar with them through the advertisements of reproductions. As this furniture was between the others in time, so it was also between them in character—it was not quite so robust as the oak furniture, nor quite so graceful and refined as the mahogany.

In the color and grain of the wood and in general form it usually accompanies the later mahogany better than the earlier oak. Just at the end of the Seventeenth Century walnut came into fashion and it is to that time that the heavy table in Fig. 4 belongs. Such furniture was made both in oak and walnut and this table may be of the latter wood and if so would the better agree with the mahogany console-table in the room.

In each of the three divisions will be found pieces that are not particularly appropriate to each other. Some of the Queen Anne and Chippendale arm-chairs with serpentine legs, for instance, are broad and heavy, and it is well not to use them in close proximity with slender, straight-legged pieces such as are shown in Figs. 5 and 6,

though they may perfectly well be employed in the same house. In judging all such matters it is only necessary to take into consideration size and weight and general contour.

All furniture should have its appropriate background. In the usual small house or apartment we cannot expect to be provided with such expensive walls as are afforded by paneling and specially prepared surfaces, but at least their general character and finish should be such as not to "fall out" with the furnishings.

For the oak furniture designed in the elder days the walls were of oak paneling, plaster, or the two combined, and the general effect was weighty, as befitted the house and its contents. Fig. 1 shows a most appropriate background of plaster in combina-

tion with the casement windows then used. Fig. 3 illustrates specially designed woodwork in connection with plaster, this interior being executed by a firm of architects of the first class, and Fig. 2 exemplifies a plain wall with oak base. It will be seen that all have strength and simplicity. In usual practice it will be sufficient with oak furniture to retain these general characteristics by the use of plain plaster walls, or, if they are papered, by one of the wall-papers giving the effect of plaster, or a plain felt of some such neutral tone as quiet buff, gray or stone-color.

During the mahogany period walls were usually paneled or wainscoted in white or light tints, or were of plain white plaster or were papered. A very considerable leeway is permissible with mahogany furniture, so that it is particularly well adapted to present-day use. Fig. 6 has a paneled wall, and Fig. 5 a canvas paper. Such simple papers as these and in light colorings are best, as dark or heavily designed surfaces lessen the apparent size of the room. Two-tone and brocade papers in small patterns are good, as are also the plain felts. The woodwork should be in white or very light tint or else mahogany.

In deciding, therefore, upon mode in furnishing, one should simply consider whether he prefers the earlier furniture of oak with its generally heavier characteristics, or the later lighter and more graceful style.

Where a house is distinctly of period style—such as Jacobean or American Colonial—its furnishings should naturally agree therewith. Many small houses, however, have no particular distinguishing architectural features, and for these any generally appropriate mode may be chosen.



Fig. 6—Graceful chairs of Directoire inspiration in the dining room of Robert M. Hogue, Allen's Lane, Philadelphia. C. A. Zeigler, architect, Philadelphia

Rural Library Building

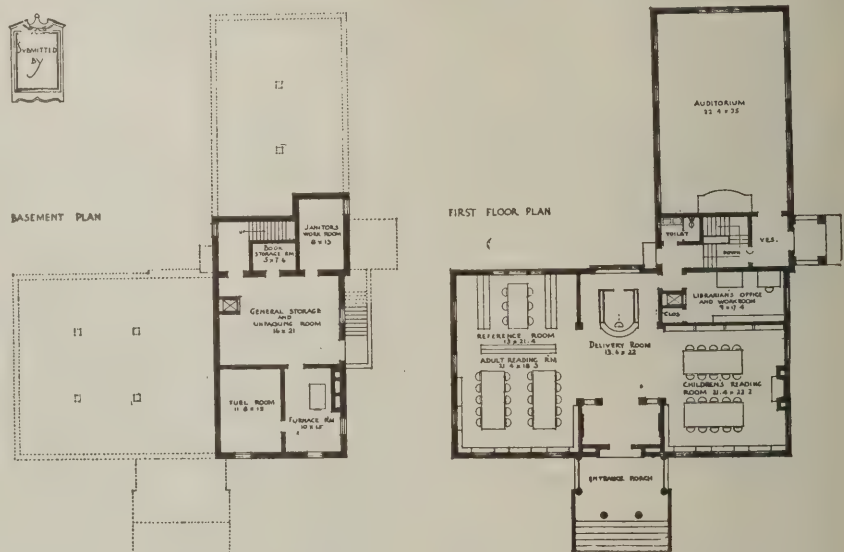
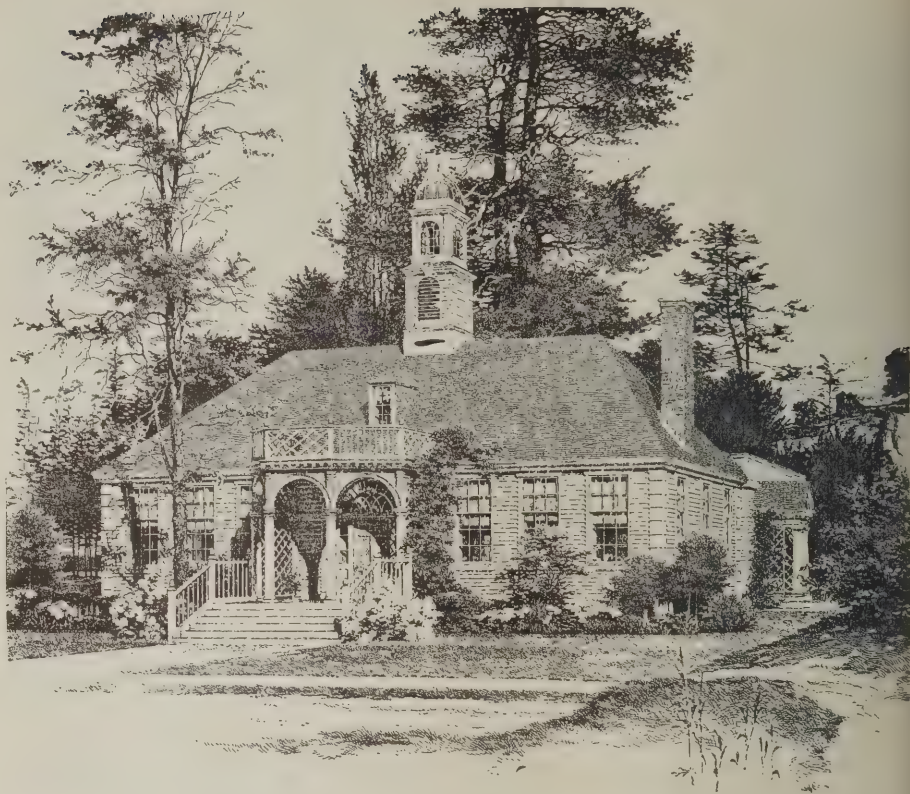
First Prize Design in the White Pine Architectural Competition

Submitted by
Richard M. Powers
and
Albert C. MacLellan
Boston, Massachusetts

RECENTLY the White Pine Bureau conducted a competition for a "rural library building for a progressive and growing community with a population of 2000, located 'somewhere in the United States.'" One hundred and one sets of drawings were received and judged, representing twenty-four states. NATIONAL BUILDER has been given permission to reproduce here the drawings of the design awarded first prize. It was submitted by Richard M. Powers and Albert C. MacLellan, Boston, Massachusetts. The jury of award consisted of Donn Barber, William Boyd, Richard H. Dana, Jr., H. Louis Duhring and Hubert G. Ripley. Second prize went to H. A. Salisbury and Frederick S. Stott, Omaha, Nebraska; third prize to Ralph H. Hannaford, Boston, and fourth prize to Merton G. Kingsley, Lakewood, Ohio.

Of the first prize design the jury of award stated:

"A very simple and admirable plan. Of all the plans submitted this seemed to the jury to best meet the requirements of the program. It is practical, convenient and easily supervised. The auditorium annex could easily be omitted, if for reasons of economy it be considered not essential, without im-



Perspective, floor plans and elevations for a rural library building as designed by Richard M. Powers and Albert C. MacLellan, Boston, Massachusetts

pairing the design or the general effect of the building. The basement space, could then become valuable and the building would probably be better served if it were wholly utilized. The exterior possesses a high degree of both beauty and form in its ensemble and in all its naive details and the scale is highly consistent. A study of these details discloses a rare choice of simple forms suitable for execution in wood. The wood pickets beside the steps, the lattice, the profile of moldings, the detail of the lantern and the direct way in which these forms are used make a pleasing variety and a harmonious design.

"The rendering of the perspective, while not affecting the award, is commended by the jury as a most delightful example of draftsmanship, marvelous understanding and beautiful work."

The problem to be worked out, as stated by the holders of the competition, specified the following provisions:

"The lot is on a corner with a frontage of 100 feet on the main street and 200 feet on the secondary street. The land is level. Main street runs north and south.

"The architectural style is optional, and the plan arrangement left to the ingenuity of the designer.

"All the outside finish for the building, including siding and corner boards, window sash, frames and casings, outside blinds, cornice boards, brackets, ornaments, moldings, etc., *not* including shingles, is to be of white pine.

"The library building shall contain: De-

livery room (not less than 225 square feet), adult reading room (not less than 375 square feet, seating capacity 20), reference room (not less than 275 square feet, seating capacity 6), children's reading room (about 475 square feet, seating capacity 20), librarian's office and work room (175 to 200 square feet, capacity 500 volumes), space for auditorium uses with small platform (seating capacity 125). By 'room' is meant space devoted to the purpose designated rather than an area enclosed within partitions. Shelving shall be provided for 8000 volumes, either in a book room or on wall and floor bookcases in the reading room, or by a combination of both methods.

"If consistent with the design, attic space may be devoted to a local historical museum (not less than 400 square feet).

"The building will be heated and ventilated by a hot air furnace or steam boiler. Therefore, a furnace room and a fuel room are necessary, also a small general storage room and janitor's work room. There should be a storage room for books not in constant use and a toilet room and lavatory for the use of the librarian and her staff. No public toilets and no drinking fountains will be required.

"The librarian's office shall contain ample space for a desk and table, a wash basin, coat closet, supply cupboard, wall shelving and a lift from the unpacking room in the basement. Privacy must be secured by shutting this room off from the rest of the building.

"There must be good natural light at all

points and especially at the loan desk in the delivery room. Avoid skylights.

"Not more than two persons, and usually only one, will be responsible for the supervision of the entire library when it is open to borrowers and readers. In many recent successful buildings partitions have been omitted and low bookcases have served to mark divisions.

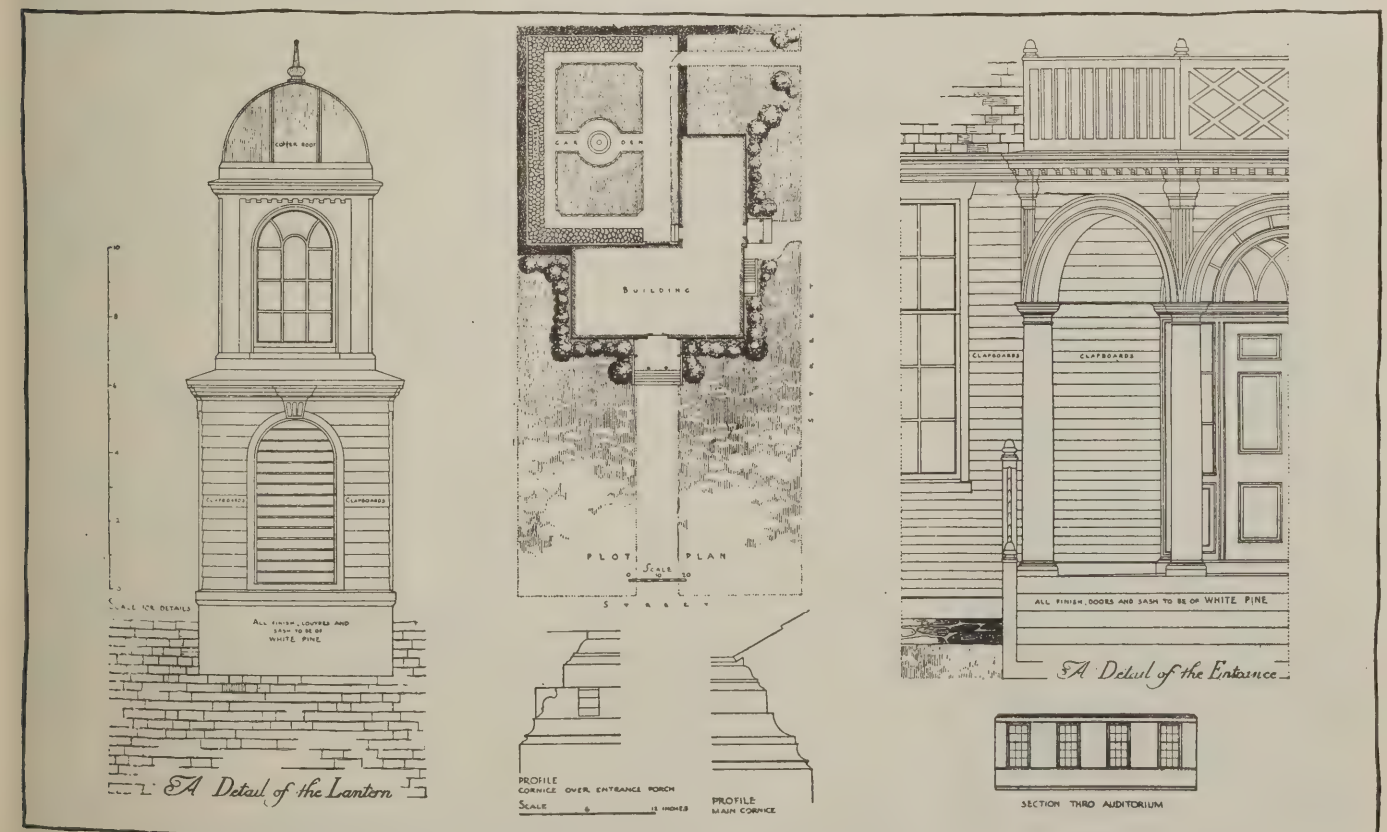
"A part of the building must be devoted entirely to the children. For a limited number of hours much of the activity of the library focuses in the children's room. The books, the card catalog and reference or school collection will be assembled here. Shelving must be adapted to their convenience. A bulletin board, a few shelves behind glass doors for the exhibit of 50 to 100 illustrated books are desirable features for a children's room. A fireplace may be planned in this room if it is in keeping with the general scheme of the room.

"Space must be provided for a general bulletin board, the card catalog, a magazine rack, conveniently accessible to the public.

"Two or more entrances should be provided.

"The competitor shall design an appropriate sign for the building, which, drawn to scale of $\frac{1}{2}$ -inch to the foot, shall be his *nom de plume*."

Drawings of the four prize winning designs and the six designs receiving mention are reproduced in Number 4, Volume IX, of The White Pine Series of Architectural Monographs, published by the White Pine Bureau, Merchants Bank Building, St. Paul.



Building a Small Bookcase and Stand

By James Hart Dunlop

IN making up a piece of furniture, as shown in the line drawing and halftone illustration, the wood used should match the other furniture in the room where it is to be placed.

The example shown was made of black walnut. The finished sizes of timber required are:

Pieces	Length, Ft. In.	Breadth, In.	Thickness, In.
2 Sides	2 10	8	5/8
1 Top	1 11	9	5/8
1 Bottom	1 11	8	1/2
1 Bookshelf	1 11	4 1/2	1/2
1 Bookshelf	1 11	2 1/2	1/2
4 Bases	11 1/2	3	5/8
2 Bases	3 1/2	3	5/8
1 Base	1 11	3	1/2
1 Base Block	1 11	1	1 1/4
1 Back	1 3	23	3/8
4 Styles	1 3	2 3/4	3/4
4 Strips	1 3	1	3/8
1 Movable Shelf ..	1 11	7 1/2	1/2
4 Rails	11	2 3/4	3/4
2 Panels	11	5 1/2	1/4

- 2 Circle Block 3 1/2 in. diameter, 1/2 in. thick.
- 2 Brass Drop Handles
- 1 Brass Lock
- 1 Brass Door Handle
- 2 Pairs 2-in. Edge Hinges
- 1 Brass Bolt for Door

A great amount of hard work can be saved in the making by having the wood bought machine dressed. Begin by setting

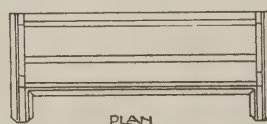
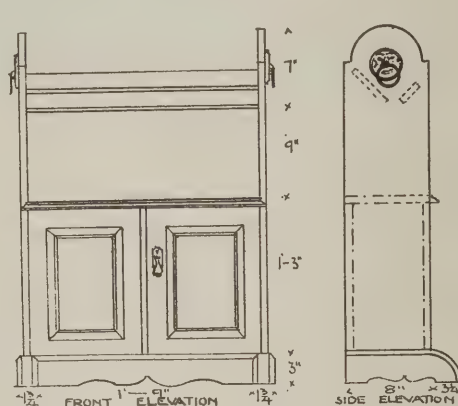
off the shape of the sides of the case and marking off the position of the notches for the shelves.

The bookshelf is cut into the side a distance of 3/16 in. and the same depth is adopted for the bottom shelf. The middle shelf, which forms the top of the case, is dovetailed in for a depth of 1/4 in.

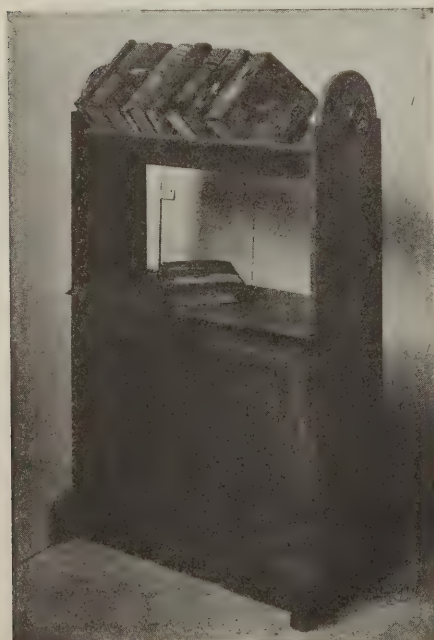
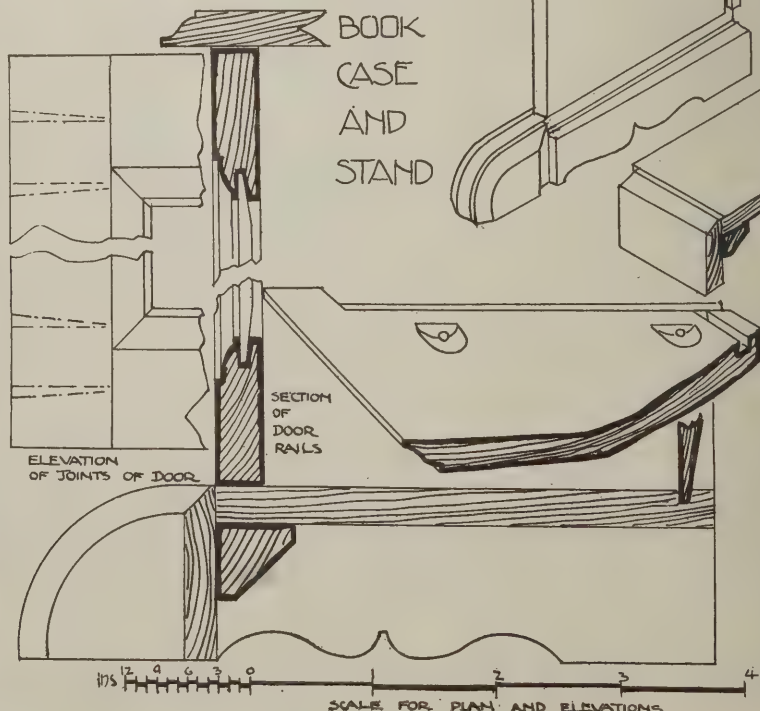
The dovetail which is formed on the edge of this shelf is cut square on the top of the notch so that the top side of the shelf does not require to be shouldered.

All the taper is formed on the lower side of the notch so that the notch is about 1/2 in. wide on the face of the side pieces, while the width at the back is the full thickness of the shelf, 5/8 in.

After the sides and shelves have been fitted together temporarily they are separated and the shelves and the sides grooved for the back on the lower portion. The groove on the sides is stopped between the notches for the shelves. The base pieces for the sides are next cut with a circular



BUILDING
A
SMALL
BOOK
CASE
AND
STAND



A small bookcase

end and the upper edges chamfered. The base piece which is on the inside of the case is now cut on the top edge to bring it level with the bottom edge of the notch in the side piece, when the base pieces may be glued on to the bottom of the sides and when dry these pieces get a final touch up preparatory to being put together.

The back of the case should now be prepared the exact size and the edge of the panel fitted into the grooves. The main framing of the case can now be fitted together and the joints screwed up from the underside of the shelves. The base piece on the front is next cut out the length and fitted in to the notches shown in the sketch of the base. This piece is then chamfered on the top edge and is shaped on the lower one.

Fix this base piece by glueing and by the addition of a block piece at the junction of the base and shelf. The two half doors which are shown are made from $\frac{3}{4}$ inch material and jointed with a mortise and tenon joint. The tenons are a quarter of an inch thick and are rebated as shown in the line drawing of the joints of the door.

After framing up the doors, put the framing together, flush the joints and run the molding plane on the inner arrises. The framing should now be grooved $\frac{3}{8}$ of an inch deep. The size of the groove need not be more than $\frac{3}{16}$ of an inch. Mitre the moldings at the corners and fit the doors together.

The panels are now prepared the right size and the doors put together and glued and wedged up. Fit the doors in position and proceed with the hinging.

The hinges of the doors are sunk into the edge of the style, having a very slight projection on the face and the edge of the door.

Sink the tail of the hinge into the side of the case, making the depth of the sinking equal to the thickness of the metal at the inside edge and not to show any sinking on the edge of the case.

This arrangement allows the door to shut back freely on to a wood stopper, which can be fixed on the inside of the shelf.

A movable shelf can be arranged for inside the case if necessary. A very simple and effective method is to prepare four

strips of wood equal to the height of the inside of the case and 1 in. by $\frac{3}{8}$ in. thick. Have one edge of each cut like the teeth of a saw. Begin by marking off the whole length into 1 in. spaces and make a saw cut at each mark $\frac{1}{4}$ in. deep. This saw cut is at right angles to the edge and across the face. Then chisel out on the edge from the top of the saw cut to the bottom of the saw cut. Fix one of these pieces in each corner of the case and with the variegated edges facing each other and so that a wood fillet can be fitted from notch to notch forming a support for the shelf. If these variegated strips of wood are fitted up parallel the supporting fillet for the shelf can be shifted up or down.

The shelf is now cut the length and notched at the corners to allow it to fit over the fillet, which means that the shelf can be shifted up or down according to the spacing required in the case.

The case should now have the lock and handles put on. Take those fittings off again when about to varnish. Three coats of varnish will give a very nice finish if each coat is well rubbed down before the next is put on.

Safeguarding the Domestic Oil-Burner

By Curtis R. Welborn

Associate Engineer, Gases and Oils Department, Underwriters' Laboratories, Inc.

OIL has played, and will play for a considerable period of time, in all probability, a prominent part in our national and international relations; but not until recently have we given much concern re-

public to seek available and cheaper fuel. As a result of the demand put forth on the part of the public, the combustion, the mechanical and the electrical engineers, as well as the "jack-of-all-trades" of the country have made and attempted to make oil-burning devices for domestic use. Some of these devices are well manufactured, of suitable material, and safeguarded as far as the advancement of the art dictates, while a number are nothing more or less than piles of hardware, introducing a real menace to life and are an ever-present agent to increase our national ash heap. Those devices that in principle possess real merit and are equipped with up-to-date safeguards may still be hazardous. Unless an oil burner is properly constructed, installed, and maintained, it may not be considered as having been safeguarded so far as practicable. This article from a fire-prevention viewpoint may be termed a brief survey on "How to Do It and How Not to Do It" with respect to the construction, installation and maintenance of domestic oil-burning equipments. Briefly, it is thought that the

factors that will enhance the success of any domestic oil burner are:

First: That the device be correct in principle and properly constructed.

Second: That the device be sold correctly.

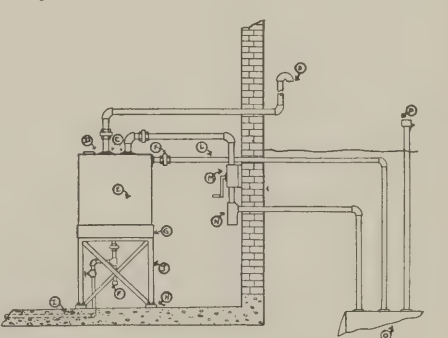


Fig. 2—Shows buried storage tank filled and vented by standard fill and vent fitting

Third: That the device be installed and maintained correctly.

Experience over an extended period of time involving research and the testing of domestic oil burners leads to the grouping

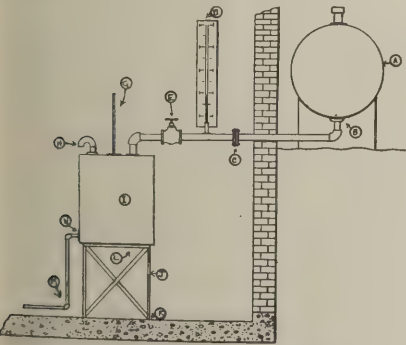


Fig. 1—How not to install an oil burner

garding the part it is beginning to play in our domestic affairs. The prevailing coal shortages and accompanying high prices have forced the great buying American

of such burners into two distinct classes. In the first class are those constructed by the cut and try method, in which little or no consideration has been given to varying conditions under which the device will be called upon to perform in actual service, to the character and combustion of the fuel utilized in the device, to the known physical properties of the metals employed in the assembly, to the safeguarding of the equipment against the tampering of the laymen, or to internal phenomena that lead to or introduce additional hazards. In the second class are those designed prior to the construction

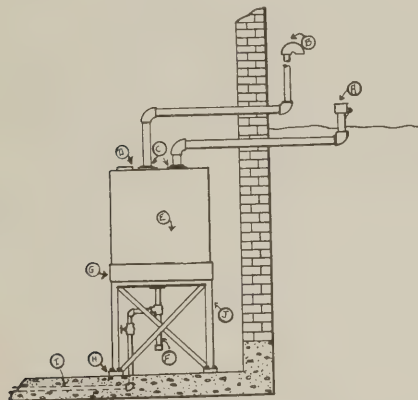


Fig. 3—The inside tank contains the entire storage of fuel

of a test sample, in which careful attention has been paid to all features previously mentioned.

When subjected to actual service conditions, covering an extended period of time, the burner of the first type has been observed, in most cases, to fail in operation, and in the failure the construction, in some cases, introduced hazards jeopardizing property to a great extent. It is deemed advisable, from a fire-protection viewpoint, that domestic oil burners be designed in proper sizes or with some form of adjustment to meet the varying field conditions with respect to the many different types of the existing heating units and their inherent characteristics, and that combustion of the fuel specified by the manufacturer of the device be proven suitable using oils of both the asphaltum and paraffin bases. It is also necessary to determine whether the materials employed in the assembly, with particular reference to those exposed to high temperatures, possess properties that will insure durability and reliability of operation for an extended period of time, and ascertain, also, whether the device is safeguarded with apparatus that will render the equipment inoperative in event of flooding or other internal phenomena in the heating equipment that may introduce fire and casualty hazards.

While the method of sale of oil-burning equipments is largely a question of house policy of the manufacturer, it may appear

to be far-fetched to the average individual for those interested in the reduction of fire hazards to state, that this is a factor also concerning them; nevertheless, this is a fact. As an illustration, over-zealous salesmen often, through a firm belief in their product and the lack of technical enlightenment, misrepresent to the innocent American buying public, the character of the fuel that their equipment will consume, its economy as compared to coal and low operating costs; and fail, in many cases, to make a careful survey of the installation in which the burner is to be installed. The purchaser finds that he can buy the fuel of the specific gravity recommended by the salesman, but when placed in service, the device is soon inoperative or fails to function. Varying conditions imposed on the equipment fail to substantiate the low cost of operation and economy of fuel as compared to coal, and that the burner capacity is adequate for the heating plant. The purchaser then assumes that the equipment is out of order, as the sales talk assured proper performance on all of these points, and he proceeds to make adjustments to accomplish these ends. As a result of tampering on the part of the average layman, fire and casualty hazards often follow. It is thought, and here suggested, that the house policy with regard to sales propaganda and talk should be confined strictly to facts, particularly those of a technical nature, and that all salesmen should be carefully and thoroughly schooled before attempting to secure contracts.

The installation of an oil-burning system may be divided into three distinct phases; namely, the tanks, the pipe lines, and the burner proper, and, in many instances, the electrical phase. Each phase offers certain outstanding problems, which, if neglected, are liable to introduce hazardous conditions.

In the matter of tanks, three types of installations are commonly employed. In the first and most common type of installation the auxiliary supply tank is used for main storage. In the second type an auxiliary supply tank filled from an underground storage tank is employed; and, in the third type, a force pump, drawing fuel oil from a storage tank located below or above the point of consumption is used.

Before discussing in detail the more desirable methods of installation, it is thought advisable to present here a compilation of misinformation that has been doled out to the public by individuals who apparently have given the question of safety a very minor position in presenting their article to the ultimate consumer. To bring out clearly this compilation, the reader's attention is invited to Fig. 1, which might be titled, "How Not to Install an Oil Burner." In the illustration the letters refer to the following:

(A) Storage tank above ground.

- (B) Pipe line between the storage and auxiliary tanks and leading from the bottom of the large container.
- (C) Use of flanged unions with rubber gaskets.
- (D) Glass gauge located in basement and employed in the line to indicate the oil level of the storage tank.
- (E) Shut-off valve without standard packing box.
- (F) Impossibility of having an overflow pipe from the auxiliary tank to the storage tank.
- (G) Ordinary cork float gauge, with stem projecting through top of tank.
- (H) Auxiliary tank vented inside of basement.
- (I) Tank constructed of very thin material and unprotected from corrosion.
- (J) Tank resting on combustible support.
- (K) Support not fixed to floor.
- (L) No means for cleaning auxiliary tank.
- (M) Pipe line to burner exposed.
- (N) Pipe connections to tank secured by soldered flanges.

NOTE: All of the preceding items are not shown in detail by Fig. 1, but the list may be considered as an example of what actually has been found in service.

The outstanding hazards connected with each of the features as lettered in the foregoing paragraph are as follows:

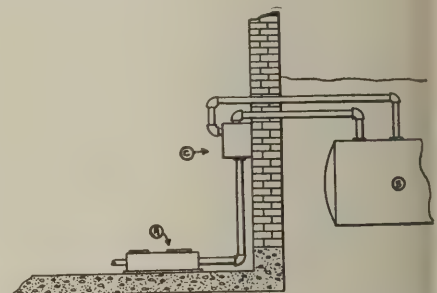


Fig. 4—Pump at (A) used to draw oil from storage tank

- (A) (B) Should a pipe line rupture or leak, the contents of the storage tank will be discharged into basement.
- (C) Rubber will in time become useless as a gasket when in contact with the liquid fuel.
- (D) Breakage of glass gauge will discharge the contents of the storage tank into the furnace room.
- (E) Valve subject to leaks due to leaking stuffing box and if left open even slightly will discharge oil into the basement.
- (F) No means provided for discharging excess oil to main storage.
- (G) Should tank be filled to capacity, liquid fuel will be discharged into the room.

- (H) In event of a basement fire oil vapors will increase the hazard.
- (I) Thin material subject to leakage.
- (J) In event of fire, supports will be consumed and fuel added to the flames.
- (K) External shocks applied to the tank will strain connections and cause leakage of liquid fuel.
- (L) Necessitates dismantling lines and in all probability re-assembly will not be accomplished in a manner that will insure tightness of joints.
- (M) Application of external shocks to small pipe line will likely result in leakage or severe strains on connections, causing leakage.
- (N) Flanges which are not riveted as well as soldered are almost certain to fail and permit discharge of oil through the fuel opening into the tank.

In studying the existing requirements covering the installation of tanks for domestic oil-burning equipments, there are two installation forms that may be followed and which assure a reasonable degree of safety. These are shown by Figs. 2 and 3. In Fig. 2 the labeled storage tank (O) is buried beneath the lowest level of the basement floor line and filled and vented by means of a standard fill and vent fitting (P). The oil is drawn from the underground storage tank by means of a standard hand pump (M), through a standard strainer (N), and discharged into an auxiliary tank (E), constructed of a metal not less than No. 18 U. S. gauge and whose capacity does not exceed 60 gallons. The unions (K) used in this assembly are of the brass to iron conically seated type. The tank is equipped with an overflow line (L) at least one pipe size larger than the discharge line leading from the pump, and also with a weather-proof, hooded vent (B) terminating outside of the building.

The auxiliary tank, Fig. 2, is also provided with an indicating gauge (D) of a type in which the breakage of the glass will not discharge oil into the building. The tank is mounted on a support (G) and (J), of a non-combustible material that is rigidly fixed to the floor (P). All connections to the tank are assembled by rivets and solder or by the welding process. The piping between the auxiliary tank and the burner (I) is either buried in a concrete trench or snugly run in corners of the basement to afford the maximum protection. The tank is provided with a means (F) for cleaning out the usual foreign matter held in suspension in liquid fuel which may pass the strainer (N).

In Fig. 3 the inside tank contains the entire storage. The same practice with respect to the tank is followed as shown for the auxiliary tank in Fig. 2, with the

exception that the tank is filled from the outside of the building.

The roofs of subways, the presence of tide waters and other of nature's natural obstructions have forced the users of oil-burning devices to store liquid fuel above the point of consumption, and should a pipe line rupture occur in installations where pumps are employed to draw the fuel from the tank, a syphon may be created and discharge the contents of the storage tank into the furnace room. In Fig. 4 a diagrammatic sketch is given showing a pump at (A) drawing the liquid fuel from storage tank (B) through an anti-syphoning device at (C). This anti-syphoning arrangement may be secured by different methods, but the end to be secured is to have all pipe connections into the tank located above the liquid level and the discharge of oil in case of pipe breakage effectually prevented.

It has been observed in some instances where devices that are safeguarded as far as the state of the art dictates, and installed in accordance with the regulations covering the class, that operating troubles are often experienced by the purchaser. Upon investigation of the causes leading to this trouble, the service man finds that little or no attention has been given the device. Mechanical appliances must be examined frequently to insure proper performance. Manufacturers are furnishing maintenance instructions, and if proper functioning of the device is to be reasonably expected, these must be followed. It is considered good practice by those actively engaged in this work to thoroughly examine these equipments once each day.

In conclusion it has been noted that many localities have not made use of the available information on this subject that is published by the National Board of Fire Underwriters, 76 William Street, New York City, which will, upon request, be supplied free of charge. As a result, a very wide difference of practice is manifested in the types of burners and installations permitted. Only those types of equipments the merits of which have been tested and proven and which are installed in accordance with practices accepted by the authorities, should, on the part of the departments having jurisdiction, be allowed, if we who are attempting to safeguard America give the public what it is asking of us.—Reprinted from *Laboratories Data*, Vol. IV, No. 10, October, 1923.

To Build Chicago's Tallest Skyscraper of Brick

BRICK orders for the new \$15,000,000 Straus Building being erected at the corner of Michigan Avenue and Jackson Boulevard, Chicago, total close to 4,000,000 brick.

This structure, the future home of S. W. Straus & Company, investment bankers, will be 22 stories in height, with an additional 10-story tower, making the highest office building on Michigan Avenue's developing skyline.

For the south and west sides of the building 500,000 Kittanning face brick will be used; for the interior court, which will be entirely surrounded by offices, a dipped white enameled brick chosen after a series of scientific tests to determine high lighting value was selected. In all there will be 260,000 of these dipped enameled brick.

To back up the other brick used 3,010,000 common and hollow brick are specified in the contracts, which are being sub-let by the Thompson-Starrett Company, general contractors.

Nineteen thousand paving brick are to be used in backing up the parapet. Other clay product contracts include 350 tons of terra cotta, 570,000 square feet of tile for partitions and 490,000 square feet of 14-inch tile arches for the floor system.

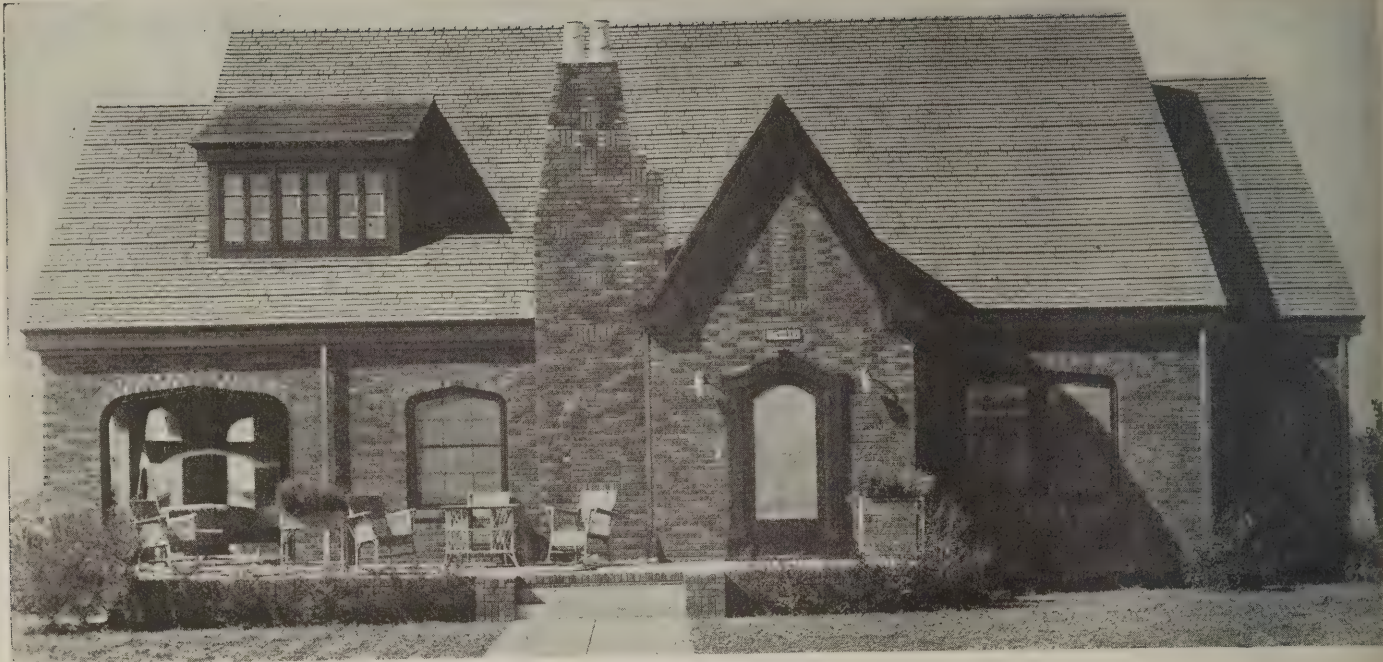
Contracts totaling close to \$500,000 for carpentry, mill, and cabinet work have been awarded to the Matthews Brothers Company, of Milwaukee, Wisconsin, according to announcement made by L. J. Sheridan, chairman of the building committee, recently.

The distinguishing characteristic of the contract is that all the trim and cabinet work is to be in solid black American walnut, making the new sky-piercing 32-story structure, if not the only, at least one of the few office buildings in Chicago using this beautiful native American wood.

Of almost equal importance in the eyes of the lumber trades is the fact that the flooring throughout the rentable office space will be in two-inch maple, instead of the customary 2¼-inch flooring, where wood flooring is used. In making this selection the Straus organization came to its decision because the two-inch maple flooring would be better looking and would be more free from warping.

The choice of wood flooring over concrete flooring that is used in many office buildings is significant. Wood is more pleasant than concrete from the standpoint of office workers; wood possesses more resiliency and warmth. While concrete is fire-proof as compared with wood, there is no special advantage in concrete in this particular if only the top floor surface is wood, because the under tiling is of course entirely fireproof.

It is equally significant that the choice of wood flooring be made by S. W. Straus & Company, who annually finance millions of dollars worth of building construction. Concrete is making marked strides as a floor material in many cities but S. W. Straus & Company chose wood because of its comfort and general desirability despite its higher cost.



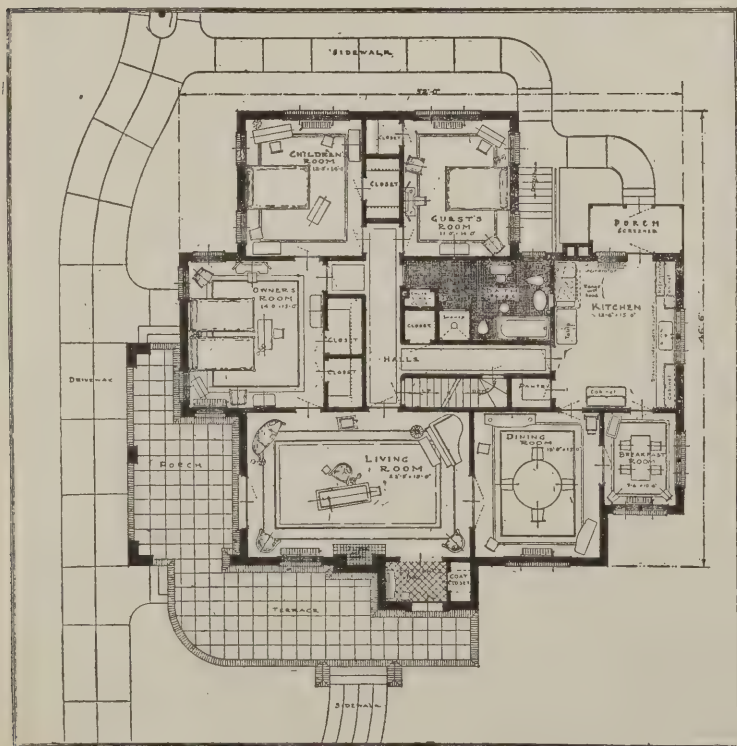
Bungalow in Tulsa, Oklahoma, built by *The Tulsa World*. W. Alva Fry, architect; K. M. Vaughn, builder

How Two Newspapers Encourage Local Building

SO-CALLED "model homes" have been and are being built in all parts of the country. None, however, are of more interesting character and their building more significant than those houses which have re-

cently been completed by two newspapers located in widely separated parts of the United States—*The Tulsa World*, of Tulsa, Oklahoma, and *The Minneapolis Journal*, of Minneapolis, Minnesota.

As stated by one of these papers, these houses have been built to demonstrate present building costs; the home owning possibilities for families with small income; how attractive small homes may be built at mod-



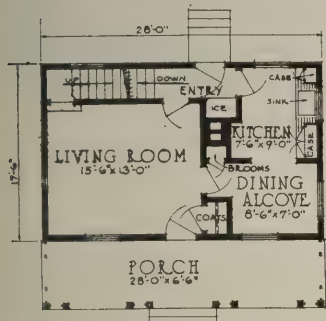
A two-car garage of the same material and architectural style as the house was built on the back of the lot. It contains living quarters for the chauffeur or help, in addition to space for two cars. At the left is the floor plan for the bungalow built by *The Tulsa World*. The plan is reproduced as it was published in the newspaper, showing the location of all the furniture as the house was actually furnished by local tradesmen. The plan is an unusually good one from the standpoint of closet space and interior equipment. Only "the best of everything has gone into it," said *The World*. "From the first, the model home has purported to show what is possible in building a home, with the exercise of good taste, good judgment and the realization that a home is being built for all time, not for just a few years' service."



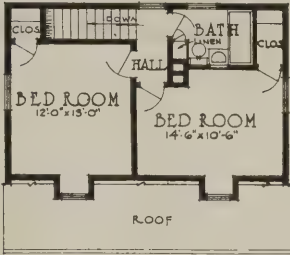
The frame house built by The Minneapolis Journal



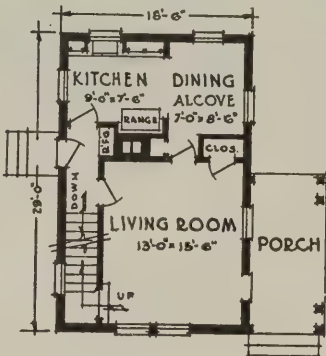
The stucco house built by The Minneapolis Journal



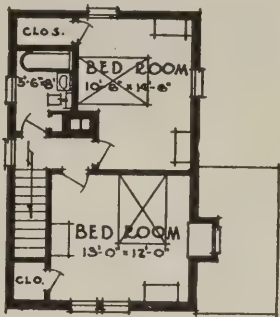
First floor plan of frame house



Second floor plan of frame house



First floor plan of stucco house



Second floor plan of stucco house

erate cost; how to raise the money to build a small home; what good credit means to the home owner; how to spend a limited home-building fund scientifically; the economy of good architecture and architectural supervision; how to reduce building costs by the use of standard material and standard sizes without sacrificing beauty or durability; the attractiveness and economy of simplicity in design and construction; how to make home ownership secure for the families, and why it is cheaper to own a home than it is to rent.

The Minneapolis Journal built three houses; one of wood, one of stucco on hollow tile and one of brick. All of the

houses were designed by The Architects' Small House Service Bureau, whose main office is located in Minneapolis. Building houses of three different materials served as an interesting demonstration of the comparative costs of wood, stucco on hollow tile, and brick.

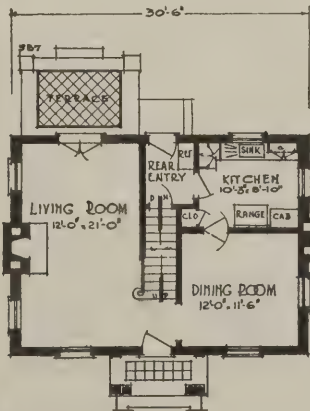
These Minneapolis homes, as well as the one in Tulsa, were all built with the co-operation of merchants supplying materials, accessories and equipment that entered into the construction. Each paper devoted pages of publicity to the houses while they were under construction, and told the complete story of their opening to and inspection by the public. Thousands of visitors inspected the

houses. These demonstrations of good building and the practicability of good building have, both newspapers feel, had a very salutary effect upon home building in the two cities. It could not be otherwise, for showing the public a beautiful home and inviting it to go through that home is the best way in the world of increasing the desire to own a home and therefore, to stimulate building.

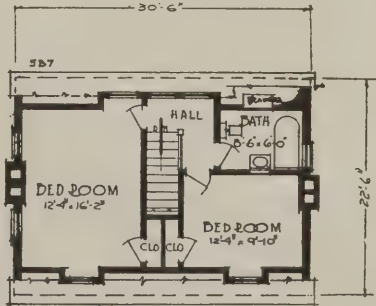
The examples set by The Minneapolis Journal and The Tulsa World are commended to the attention of newspapers everywhere as a means of co-operating with local factors in the building and home furnishing industries in encouraging homebuilding.



The brick house built by The Minneapolis Journal



First floor plan of brick house



Second floor plan of brick house



Fig. 1—An illustration showing the warm appearance of a thatch-effect roof

Thatched Effect Roof Construction

The Latest Ideas in Framing for This Type of Roof

HAVE you ever built a "thatched effect" shingle roof? Do you know the framing details for a roof of this type? If you don't, study this article carefully, for sooner or later some client of yours is going to ask you to build such a roof for him and it will pay you to prepare yourself in advance. Thatched effect roofs seem to be increasing in popularity and, if the old saying, "forewarned is forearmed," still holds true, the up-to-the-minute contractor who always keeps abreast of the times and is constantly informed on the latest developments in his field will find this information profitable.

Much of the beauty of a thatched effect

roof is due to the color schemes available by means of various colored shingles, the elimination of all sharp angles, and the fact that the shingles are laid out of the horizontal. Laying the shingles out of the horizontal produces long irregular waves so that the courses vary in exposure from 1 to 5

inches, with an average exposure of 3 inches, or from 2 to 5 inches, with an average exposure of $2\frac{1}{2}$ inches. The hip type of construction should dominate since the general

furred rafters as shown in Fig. 8, which are used to give the roof a slightly convex appearance. The furring should be nailed directly to the rafters, as shown in Fig. 8, and should reach a height of 5 or 6 inches midway between the ridge and the eave, diminishing to nothing and merging into a curve at the ridge and eave.

An important feature of the thatched effect roof occurs at the rake and the framing detail is shown in Fig. 5. Notice that a number of headers are set between the end rafter and the verge board. These headers should be brought well forward to the verge board and returned against it, forming in section the arc of a circle. The rounding of the

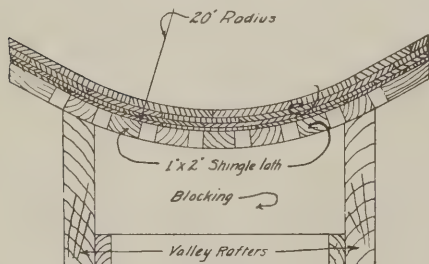


Fig. 2—Valley section

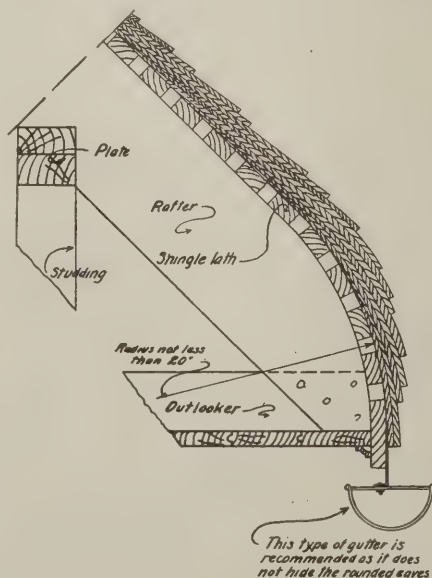


Fig. 3—Eave section with hanging gutter

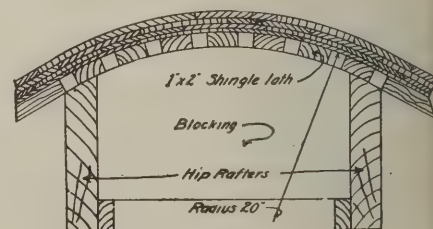


Fig. 4—Hip section

roof is due to the color schemes available by means of various colored shingles, the elimination of all sharp angles, and the fact that the shingles are laid out of the horizontal. Laying the shingles out of the horizontal produces long irregular waves so that the courses vary in exposure from 1 to 5

inches, with an average exposure of 3 inches, or from 2 to 5 inches, with an average exposure of $2\frac{1}{2}$ inches. The hip type of construction should dominate since the general

architectural scheme tends to the elimination of all sharp angles and edges, making the roof appear as one continuous, unbroken covering. All ridges, rakes or gable projections, hips, valleys, and eaves, are rounded.

There are two basic types of roof framing; plain rafters as shown in Fig. 5, and gable should be greatest at the apex and diminishing toward the eaves if the proper effect is to be produced. Instead of a standard pointed ridge, there should be a rounded curve, which may be obtained by bringing the ends of the rafters about 2 or 3 inches above the ridge board and rounding them

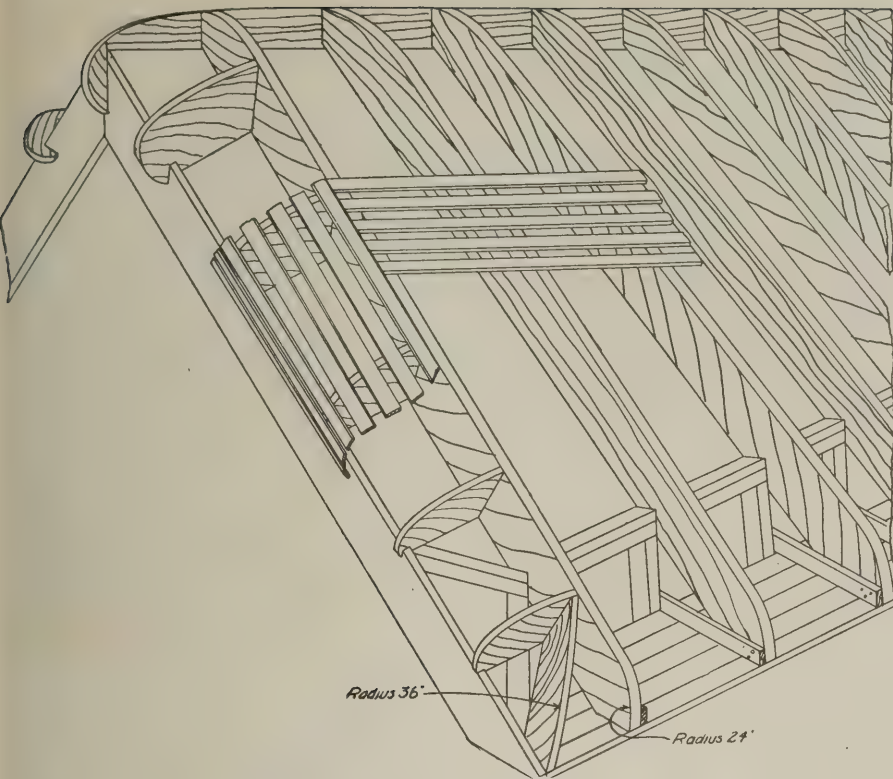


Fig. 5—Roof framing without furring. This also illustrates method of framing at the rake. Notice how the shingle lath are placed

off to a 20-inch radius as is shown in Figs. 5 and 6.

Following the scheme of having continuous curves on a thatched effect roof, provision must be made for an overhanging curve at the eaves, as shown in Fig. 7, or for a gutter, as shown in Fig. 3. These figures show the proper method of securing the curve with either blocking or lookouts. Where gutters are used, the hanging gutter shown in Fig. 3, is recommended since this kind does not hide rounded eaves.

Reference to Figs. 5 and 7 will show the

parallel to the rafters. These shingle lath should be nailed about $\frac{1}{2}$ inch apart thus allowing for proper ventilation of the roof. They should be placed on all rounded surfaces but on flat surfaces ordinary roofing boards may be used.

Shingles for thatched effect roofs can be secured ready to lay. They may be bought from manufacturers already stained and bent to the proper radius, with the butts sawed in an irregular manner, so that long, wavy, irregular courses result when the shingles are laid on the roof. As the gen-

eral idea of a thatched effect roof is to form a complete covering for the house, that is, allow no unbroken sections, a course of shingles once started should continue over hips and across valleys until meeting a gable end or a rake.

Shingles are bent both with the grain and across the grain. Those bent with the grain can be nailed on a 10-inch radius but shin-

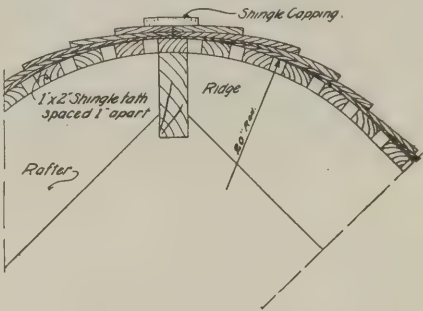


Fig 6—Section at ridge

gles bent across the grain should never be set on anything under a 20-inch radius.

To produce the desired irregular waves the shingles are laid with the long side of each shingle to the short side of the previous one until the maximum 5-inch exposure is reached. To bring the course down again to the minimum exposure, 1 inch, the process is reversed and the short side of each shingle is laid to the long side of the preceding one. No attempt should be made to secure uniformity since the beauty of a thatched effect roof lies in its unstudied irregularity.

To carry out the general scheme, bent shingles should be used at the ridge in the following manner: On each side of the ridge board use shingles bent against the grain; then lay a course of shingles bent with the grain for capping the ridge. In case metal capping is used it should be painted to conform to the general color scheme.

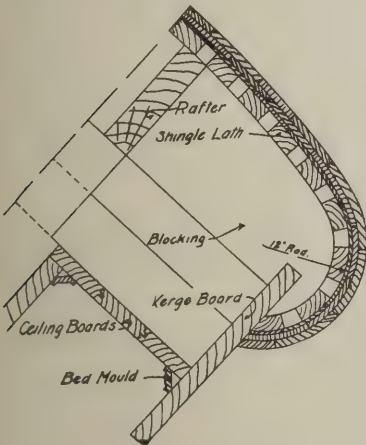


Fig. 7—Section at rake

base upon which the shingles are nailed. Instead of ordinary roofing boards, 1x2 shingle lath are used, as shown. Note that at the ridges and eaves the shingle lath are nailed at right angles to the rafters but at the rake, in valleys, and over hips they run

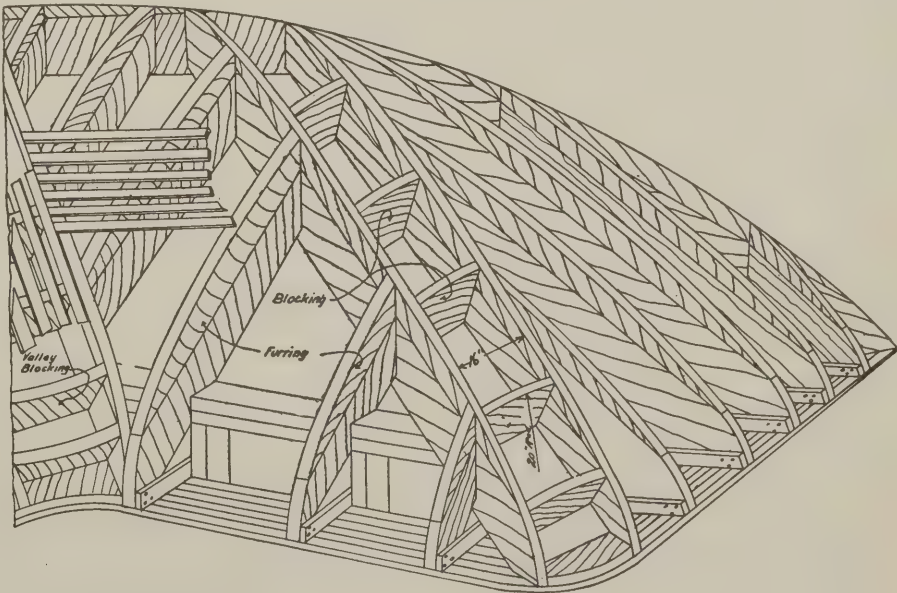


Fig. 8—Roof framing with furring. Notice how the furring merges into the curves of the ridge and eave



Here is the first group of bungalows almost completed. Compare this with the bleak view on the next page

Careful Planning Shows Itself Here

This Big Development Totalling 200 or More Brick Bungalows and Two-Flat Buildings, in South Chicago, Illinois, Was Figured Out in Advance

ONE day a prairie, the next day a city—that's what's happening to a certain section of South Chicago. One day quiet, no noise but the wind sweeping through the weeds—the next day, a bang of hammers, the sound of saws, and the chug, chug, chug of a concrete mixer—sweet music to a builder's ears.

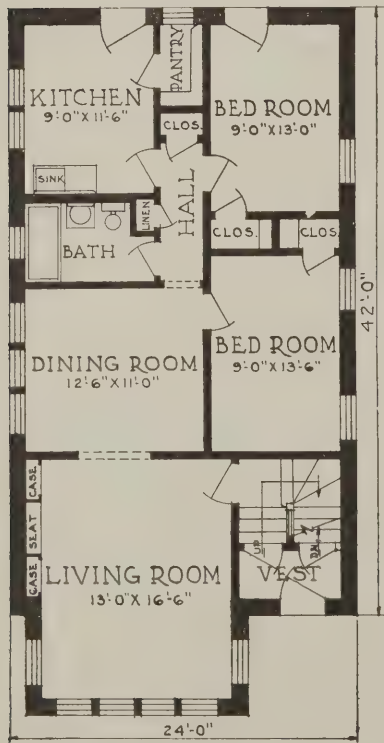
Many are the results of contractor's magic,

but there are none more romantic and few more useful than reclaiming waste land for its rightful purpose—to house families. It is a big job to build and sell two hundred or more brick bungalows and two-flat buildings, but such a stunt has just been tackled near Chicago, Illinois, by G. M. Posner & Company.

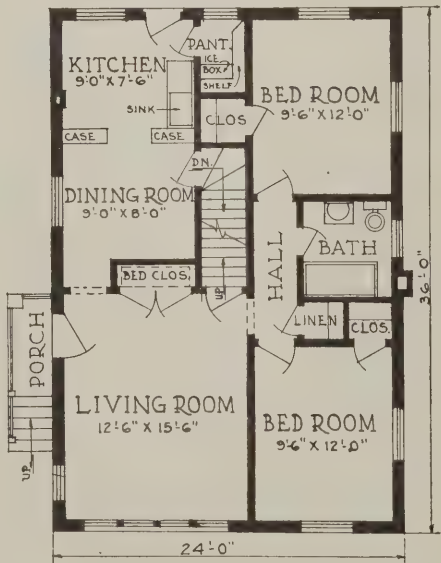
Much careful planning and considerable figuring was done before the development was started. Just what types of buildings

in advance so that there would be no expensive changes made once the work was started.

Because of their popularity in the district, the "city" type bungalow and two-apartment building were selected, and S. N.

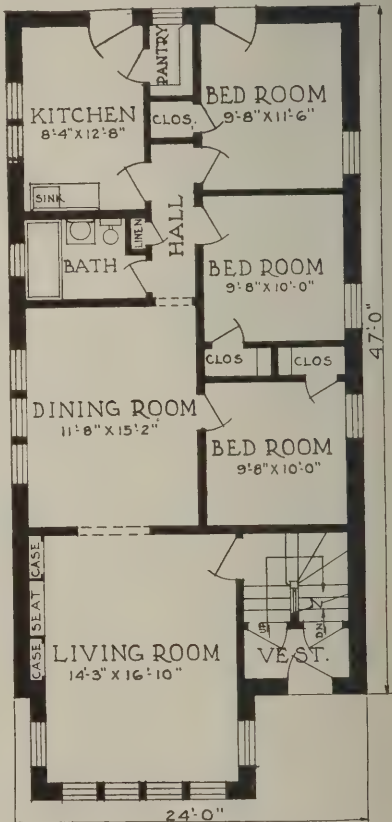


Typical floor plan of the five-room two-flat building



Bungalow floor plan. Note the provisions for thorough ventilation

were to be designed, how the floor plans were to be arranged, in what manner the work was to proceed, all this was calculated



Typical floor plan of the six-room two-flat building



This is the way the ground looked as the work was started. It didn't look like much, did it?

Crowen, a Chicago architect, was told to go ahead and work out the best possible plan to suit the requirements of livable rooms for houses to be sold at moderate prices. Three different floor plans were decided upon: a bungalow, a five-room two-



Reading from left to right—Jack Gates, superintendent of construction; M. H. Sobel, Chicago capitalist; G. M. Posner, of G. M. Posner & Company, builders

apartment, and a six-room two-apartment.

All rooms are of good size for this type of building and the economy of the floor lay-outs selected show that they have been wisely arranged to get rid of that devourer of useful floor space, the long hall. Take a look at the plans shown here and you will see that only enough floor space is devoted to the hall to provide access to the rear rooms.

The buildings are going up in groups, seven to a group. When the foundations are laid for one group, a second is started, and the bricklayers are set to work on the first group. By the time the second group of foundations are laid the bricklayers are story-high with the first group and they are then put on the second group while the carpenters rough in the buildings the bricklayers have just left. Thus, the work is coordinated and all are kept busy.

Everything is controlled by a predetermined schedule. If the second-story walls

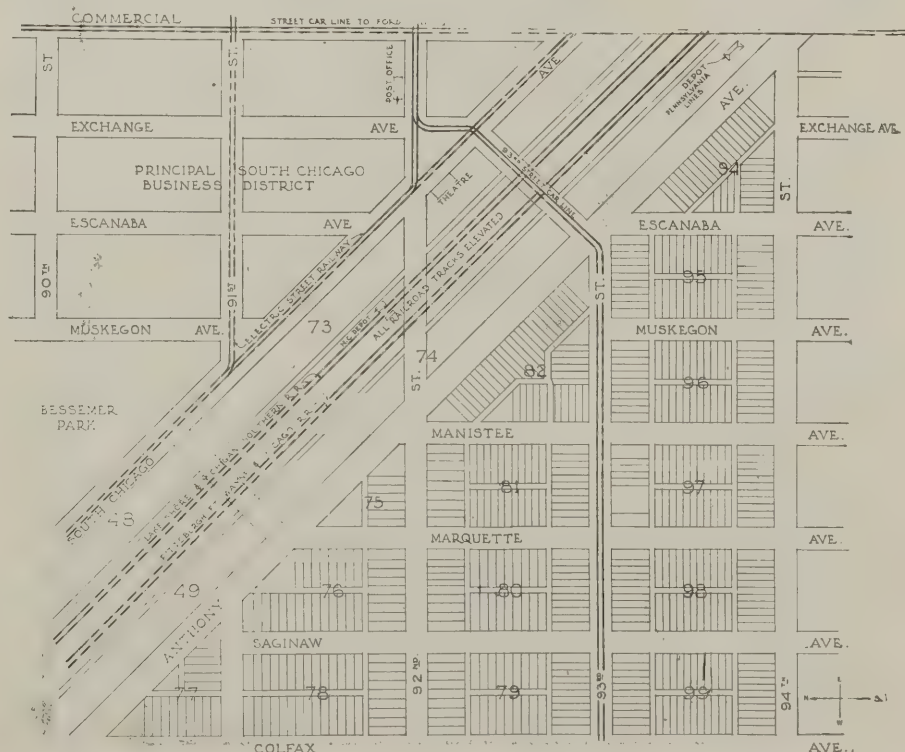
of a group of two-flats are not completed by the scheduled date, Mr. Posner gets down on the job and wants to know why. This system is sort of tough on the superintendent sometimes but Jack Gates, who is running this job, says he really doesn't mind. It keeps him on his toes, he says, and he takes just as much pride in finishing a bungalow on time as the engineer of the Twentieth Century Limited does when he brings his train in on the minute.

"It's a gay life, this building business is," says Gus, (Gus is what the boys call Mr. Posner), "but in order to make it go there's got to be system in the work. Careful planning, that's the thing that makes money for the contractor. Changes while the work is under way are expensive, they interfere with orderly operation and make the workmen dissatisfied. It's a whole lot easier and a great deal less expensive to make changes on paper before the work is started than to make them after the work is under way."

In this South Chicago development, seven two-flats are completed and twenty-one bungalows are under construction. It is expected to have two hundred buildings finished by this time next year.

There are certain outstanding features in connection with these floor layouts which are worthy of attention. First, is the fact that in all the plans, the living rooms and sleeping rooms are segregated. The kitchen, dining room, and living room are on one side of the house and the bedrooms on the other. Notice, too, the large amount of closet space.

The bungalow plan is especially worth study. Here the living and sleeping quarters are entirely separated and the room efficiency is increased by the use of a disappearing bed, fixed to open into the living room. Notice the small amount of space occupied by the stairway going down to the basement and the one going up to the attic, both of which are built in the same well.



Subdivision plat showing ground upon which the project is being carried out

The Reappearing Apprentice

By V. L. Sherman*

SOME time back Mr. Crissey wrote an article for the *Saturday Evening Post* called "The Disappearing Apprentice." After going over the reports of the Chicago meeting of the National Association of Building Trades Employers and attending the meeting in St. Louis of the Vocational Education Association of the Middle West, it seems the young man did not entirely disappear. The last couple of weeks has done more to restore my once healthy outlook than seemed possible.

As a matter of fact, the future of the building trades begins to look so wholesome from the standpoint of worker and employer that I'm tempted to start with the old joke of the optimist who sees a light burning where there is none and the pessimist who blows it out. Daylight is coming and no one can blow that out. Employers and employes have finally come to the common belief that the one road for the benefit of both parties is improvement in the crafts.

For the first party the misfits are a nuisance, for the second they are pests. Both parties have made use of them for their own good, but they have had enough. Both need real apprentices.

The question is how are they going to get them, and how are they going to carry them through the early stage of liability so the better fellows will be eager to follow the trades? As a starter we will quote from one report before the Building Trades Employers: "To sum up the situation so far as national training of apprentices is concerned, it appears that no national organization is as yet leading the way. The local groups of widely scattered cities have done the development work, and through the old system of trial and error have found what is helpful and what brings failure. They have found that proper apprentice training means unrelenting hard work and careful, painstaking attention to a lot of insignificant details." The meeting of em-

ployers certainly went in deep in the matter of apprentices. Now we will travel to St. Louis and the meeting of vocationalists.

The chief aim of those engaged in vocational training is to improve the methods for training young men and women, or boys and girls, for their future life in industry. And to make matters more simple one of their chief concerns is the proper selection of work for each student. They call it vocational guidance, and hope through its help to reduce the number of misfits. These vocationalists are largely public school men and women. There are some from private organizations, and the best trade schools. They are in the work for the improvement of their own craft as well as for their livelihood, and have the energy and integrity which go with those worth trusting. They are not so old in the field that they mistrust new ideas or new companions, but most of them are old enough in their own particular craft to distinguish between selfish and unselfish ideals. They are out to solve the apprentice question. I really believe they are going to solve it. And those concerned in apprenticeship will do well to offer all the help they can. Apparently the questions between employer and employe are open ones now and may be for some little time, but the solution is going to be for the benefit of industry as a whole. Balkiness now on the part of either employer or employe will prove poor policy.

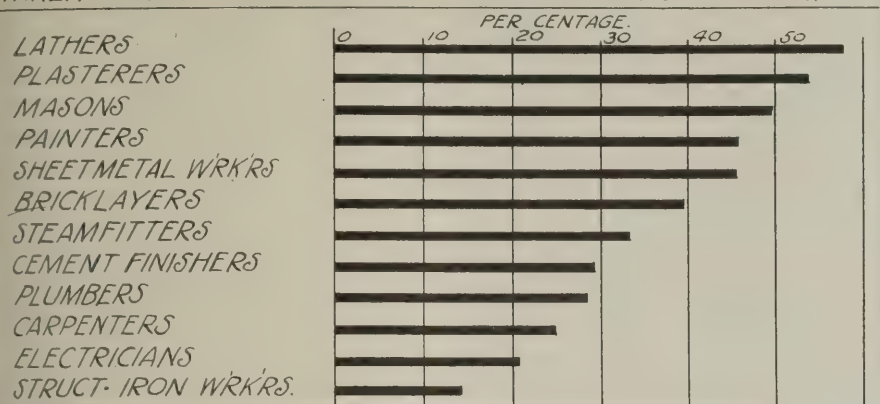
On the afternoon of Wednesday, January 16, before a conference under the Federal Board for Vocational Education at the St. Louis meeting, Mr. Cassidy, secretary of the St. Louis Building Trades Council, is quoted as saying: "The plan for preparing for apprenticeships in the building trade by school courses is excellent, but our school board first must be divorced from antagonism toward union labor." It is said that such antagonism was shown when teachers in the schools were forbidden to join any body affiliated with the American Federation of Labor. It is also implied that many of influence will not allow employment of instructors who are union members. This of course is old, but the general attitude of the meeting was pretty clear that union or non-union, the future instructor is to be the best in his line, and that if any school board is prejudiced against card holders



Outdoor building in an ideal climate. Class has nearly completed structure

*As this issue goes to press, Mr. Sherman has just returned from the convention of The Vocational Education Association of the Middle West in St. Louis, where National Builder was fortunate in having him as a representative, and his observations and opinions are passed on here in the hope that they will throw some light on a problem—that of the apprentice—which is of vital interest to contractors and builders.—Editor.

LABOR SHORTAGES IN THE BUILDING TRADES.—THIS IS TAKEN FROM A SURVEY BY THE ASSOC. GEN. CONTRS. OF AMERICA.



This chart shows the urgent need of doing something about the apprentice problem

they would do well to keep it under their hats.

Mr. Charles Prosser, of the Dunwoody Institute, Minneapolis, entered the Thursday meeting early enough to confine the argument to reason, and later said that he had grown gray in his attempts to carry on for the sake of the young people. He didn't mention his increasing gray matter, but we judge from the efficient way in which his institute has handled apprenticeship work that his clear thinking as well as his honest purpose has won both sides.

Mr. Prosser left it to another gentleman, Mr. Hawkins, to go over details of the experimental apprenticeship, or rather pre-training, of seventeen boys from fifteen cities, who were sent to Minneapolis for a thirteen weeks' intensive course in tile setting. To the material men goes first credit for action after seeing the necessity for real workmen. The tile makers got together, and with the combination of an expert tile setter and a man who knew the product and could write, they were able to compose a well illustrated text. This was the first year. Then it was subjected to the inspection of ten experts and revised. This text is taken along step by step with the photographs of operation. Of the boys who undertook the course only one had ever handled a trowel, and at the end of seven weeks the progress was said to be astonishing even to optimists.

Now comes a sad part. When some of these boys were interviewed as apprentices, after they had left Dunwoody Institute, more than one seemed to feel a certain sadness that the things he had been taught to do so well sometimes drew a smile from the builder, who was building for a seller, who didn't care for much beyond appearance. But material men are looking to the future, and the bondholders in the building line, and the architects, and the real estate men, and the honest builders and craftsmen all have fingers in this pie. They are going to see that the future workman will not slight work through ignorance. So we have the

New York Building Congress. To defray the expenses of the Apprenticeship Commission to analyze trade, \$50,000 was made up—\$15,000 from the material men, architects and real estate board, \$10,000 from organized labor and \$25,000 from the contractors. Mr. Bennett, editor of the *Industrial Education Magazine*, gave me these figures, remarking that he had been in New York, and was pleased with the outlook.

While the writer feels a little squeamish about paternal action, there is enough precedent in the way of excellent teaching through government agencies to warrant action through the Federal Board for Vocational Education. There have been meetings in Washington attended by all concerned, which point to strong centralized effort toward

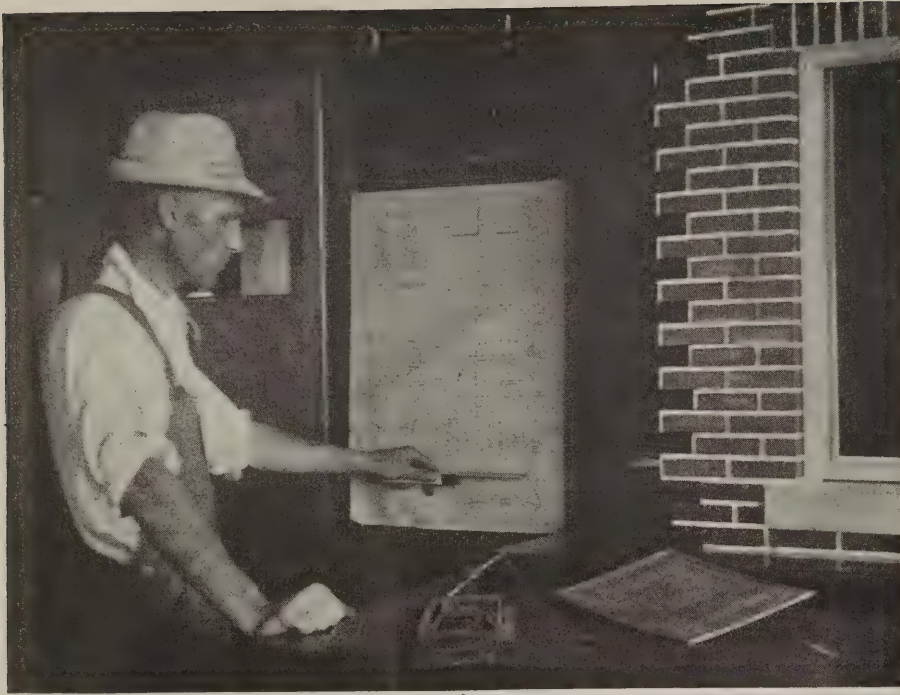
trade instruction. If anyone hints "Washington" many think "politics." We have no such feeling in this case, but for no other reason than that it will open channels of suggestion and criticism we wish health to the Federal Board.

Another exponent of the good in apprenticeship training was Mr. Bowman, of the National Trade Extension Bureau of the Plumbing and Heating Industries. From all indications the proposed training of apprentices in this line is to be as thorough as the name. Mr. Bowman is educational director. He supplied the writer with a 48-page booklet from their offices at Evansville, Indiana, which is pure meat for those interested in the plumbing and heating business. In his talk before the convention, Mr. Bowman said: "In plumbing, State Inspector King, of Wisconsin, estimates that only one boy in seven completes his time." Again: "In only two of twenty cities investigated were the apprenticeship quotas filled." Here we have another phase. Do the boys find their period of training too long and at too low a wage for them, as against quicker paying jobs of less skill? Can the apprentice pass up the advertisement of a certain college of automotive engineering, which promises to place any entering student in need of money so that he can make "\$30 per week from the start?" He can't always pass it up. The result is that only heaven knows much about the repairing of your automobile.

The material man and others are hard at work preparing the best of texts for the teaching of trades. Some are available now and many others will be soon. Mr. Bowman



One member of the plumbing class at the Ranken School



Student in carpentry taking drafting lesson with full scale models and prints

hopes that the offices at Evansville, Indiana, will soon be in a position to supply many on these texts. Little has been said so far as to the position of organized labor. The dearth of active workmen in all lines points to the fact that the contractor leans toward a trade-mark in buying his help just as much as in buying anything else. Where the workman is not personally known to the contractor there is too much of chance in hiring non-union help. On the other hand, if many who are partly proficient do finally get into the trade there is the necessity of taking them into the union. They are hardly journeymen.

Without doubt the old days of the pace maker in the non-union group are gone. The good union workman is too high in value to suffer from anything but lack of work. All concerned are reaching the point in their figures to see that well trained hands and minds are best all around. The remaining thing is for all outsiders to forget there ever was any ill feeling between the two parties and to help the local schools perfect the necessary training of apprentices.

We should like to add this as our own opinion. The ill feeling said to exist between employers and unions is greatly exaggerated. As a rule they are greatly interested in mutual welfare. If the elements are left to the sound minds of both sides, better results will be obtained than if they are interfered with. It works a good deal like the railroad problem. (Do you notice how both the carriers and the men are hoping for the elimination of the third member in arbitration?) The building industry will come to an improved state if the schools will offer their help and the school boards will offer few opinions.

As regards schools, we wish to add something brief from Mr. Prosser's statements. The courses given should regard honesty of the work given, adaptability, the cost and segregation. You remember the skipper in "Captains Courageous," who couldn't keep things separate? Apprenticeship courses are greatly varied. One of the speakers at the convention stressed the point that it wasn't the employers or the trade union men who were holding back on the proper training, but it was the "high brow" educator, the "academic minded."

Mr. William Bachrach told me of the extension work that is being done under his supervision along trade training in Chicago. While not all of the unions have taken advantage of the school facilities in the extension schools, many of them have, and, as he quaintly puts it: "I haven't noticed any riots." Certainly there is no reason for a riot. The honesty of instruction is quite evident. Mr. Lewis Gustafson, superintendent of the David Ranken, Jr., School in St. Louis, supplied my request for photographs after going through the shops. Three of them appear on these pages. The David Ranken, Jr., School is sixteen years old and has done much of the "unremitting hard work" that is to lighten the work now. This school with the others of its caliber, and the public schools, which have been at it for some time, should receive the help and the credit due them.

Tokyo Organizes Huge Building Company

A HUGE building construction company is being organized in Tokyo for the purpose of undertaking the construction of commercial and industrial buildings on the

unit basis, says a report received by the Far Eastern Division of the Department of Commerce from its representative at Tokyo. This company plans to specialize in four-story reinforced concrete buildings designed to withstand earthquake shocks. Such material as cannot be obtained locally or which cannot be supplied in standard specifications will be obtained abroad, it is announced.

Funds for the promotion of this new company will, according to present plans be obtained in large part from the government at a low interest rate. At present the company is marking time awaiting the announcement of the plans of the Capital Restoration Board as to the areas set aside for industrial and business purposes, etc. Temporary construction is in progress in a big way in Tokyo and Yokohama but permanent building is, of course, being delayed until after promulgation of regulations designating industrial and commercial zones, height of buildings, materials to be used, etc.

It appears at present that in addition to securing abroad a large part of the iron and steel and lumber that goes into the permanent reconstruction, considerable quantities of cement will have to be imported as well. Ordinarily Japan exports considerable cement but the enormous demand that is bound to come with the commencement of permanent building activities, coupled with the destruction of about eight per cent of Japan's cement production, will be greater than the industry can meet.

The annual capacity of Japan's cement mills was, before the earthquake, in the neighborhood of 14,000,000 barrels and plans are under way which will, within six months' time, bring this up to 17,000,000 barrels, notwithstanding the losses suffered by the earthquake. Until such time as this increased output is brought about, it is expected that the domestic supply will be inadequate and that considerable cement will have to be imported. In anticipation of this need, the government has placed cement on the free list, effective until March 31, 1924.

Sand and Gravel

ACCORDING to "Sand and Gravel in 1922," published by the U. S. Geological Survey, producers of sand and gravel in the United States reported to the Geological Survey sales in 1922 amounting to \$64,617,664, as compared with \$56,484,245 (revised figures) in 1921. The increase in quantity was 19 per cent and was made in spite of the fact that cars were not always available for shipping this material. According to reports, the producers could not supply the demand for sand and gravel on account of their inability to get cars, and at least one large company went out of business.

The output of building (including roofing) sand and gravel increased 23 per cent in 1922, but the quantity of sand and gravel used for paving and road making increased only 9 per cent.

Paying Property for the Small Investor

ACCORDING to the Bureau of Labor Statistics there are more residential buildings constructed in the United States than all other kinds put together.

And of non-residential buildings there are more stores built than of any one kind except such relatively unimportant buildings as private garages and sheds.

That means that there is a greater demand for houses and stores than for any other kind of building property. The investor who puts his money in either type of building is confidently assured of a good market. The investor who puts his money in a building that combines both residential and commercial uses is almost sure to find plenty of tenants for his property.

The building illustrated here is a combined commercial and apartment building in St. Louis, Missouri. It was built for W. C. Culver by Norman B. Howard, architect. On one side of it is a row of shops and on the other is a large apartment building. Hence, this little building is a sort of transition between them. But as such it will fill the requirements of many communities and of many localities.

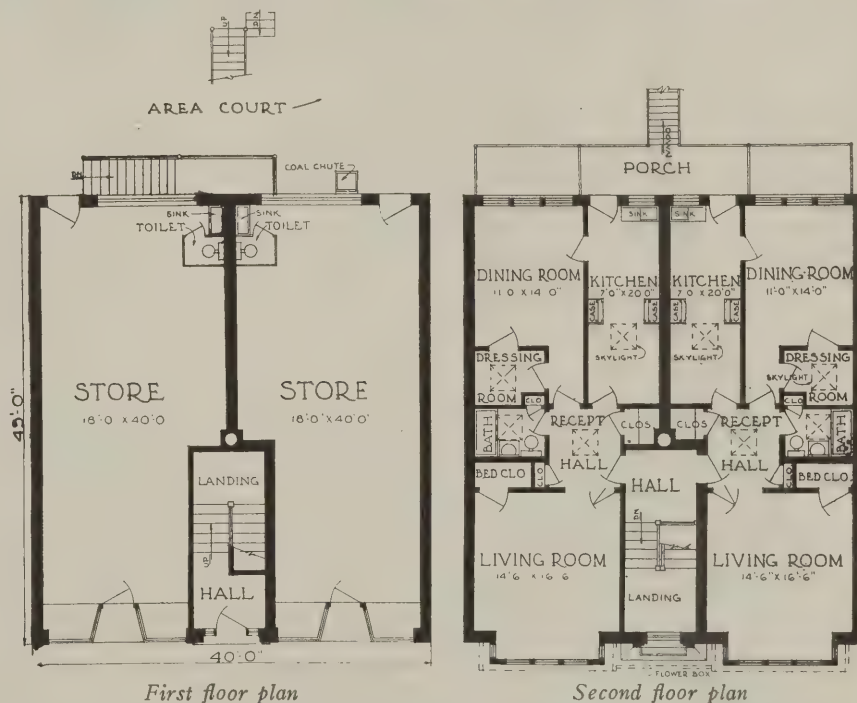
The building is on a 40-foot lot and is only a little over 40 feet deep, yet it contains space for two stores, providing each a good display window, and upstairs are two apartments with three major rooms each and a dressing room and bathroom in addition.

The front elevation as shown by the photograph is of interest because it illustrates what can be done on a 40-foot lot. The half-timbered projecting bays of the upstairs living rooms are points of interest that add to the attractiveness of the entire building and give it a domestic quality in keeping with the living quarters on the second floor. The entrance to the second floor is so treated as to give individuality to each half of the building.

The shops are particularly adapted to specialty stores or exclusive shops such as those selling wearing apparel for men or women, jewelers, shoes, books, etc. The large transoms above the entrances increase the amount of light admitted to the front of the store and in the rear are large win-



Small commercial and apartment building in St. Louis, Missouri. The half-timbered projecting bays give the building a domestic appearance in keeping with the living quarters on the second floor. W. C. Culver, owner; Norman B. Howard, architect



There is no direct connection between the stores and the apartments, hence either can be rented independently of the other—an advantage to both tenant and owner

dows which brighten that part. Each store has a toilet and sink in the back and direct access to the outside.

The apartments on the second floor are so arranged that skylights are not necessary over either the living or dining rooms. The large bays in the living rooms are distinct features which are as desirable additions to the inside as they are to the outside. Closet beds are furnished in the living rooms. A dressing room in each apartment is an important feature, for it helps to preserve the

privacy and order of the household. The long kitchen has abundant space for the storage of food supplies and it is equipped with dressers or cases. There is a closet in the bathroom for towels and linen and a large closet in the hall for clothes.

The apartments are in no way connected with the stores and it is not necessary that the shopkeepers live in the building. Hence, the owner is privileged to lease his stores and apartments independently—an advantage for him as well as for the tenants.

When Chums in High School They Planned the Big Building Organization Which They Now Head

MANY a boy whose home town is only fifty-six miles from a big city like Chicago thinks that his only chance of making his way in the world is to go to the city and there carve his fortune. Indeed, too many small towns offer very little encouragement to their native sons. The lure of the metropolitan stores and industries is one that the ambitious boy is apt to fall for.

But the case was different with Stanislaus L. Lafond and Earl W. Hartung, who are and always have been of Kankakee, Illinois. This in spite of the fact that Kankakee is the seat of one of the state hospitals for the insane, an asset of doubtful value so far as adding to the fame of the town is concerned; and in spite of the fact that the city, unlike such aggressive neighbors as Gary, Indiana, has never had anything of conspicuous importance to recommend it and to increase its population. Consequently, these boys had nothing but their own desire to succeed to encourage them in making their dent in Kankakee.

To make good in the community where for over twenty years—the first twenty

students in the same manual training classes in the Kankakee high school not more than ten years ago. They liked to “make things.” The two boys had a great many interests in common, and they felt



S. L. Lafond



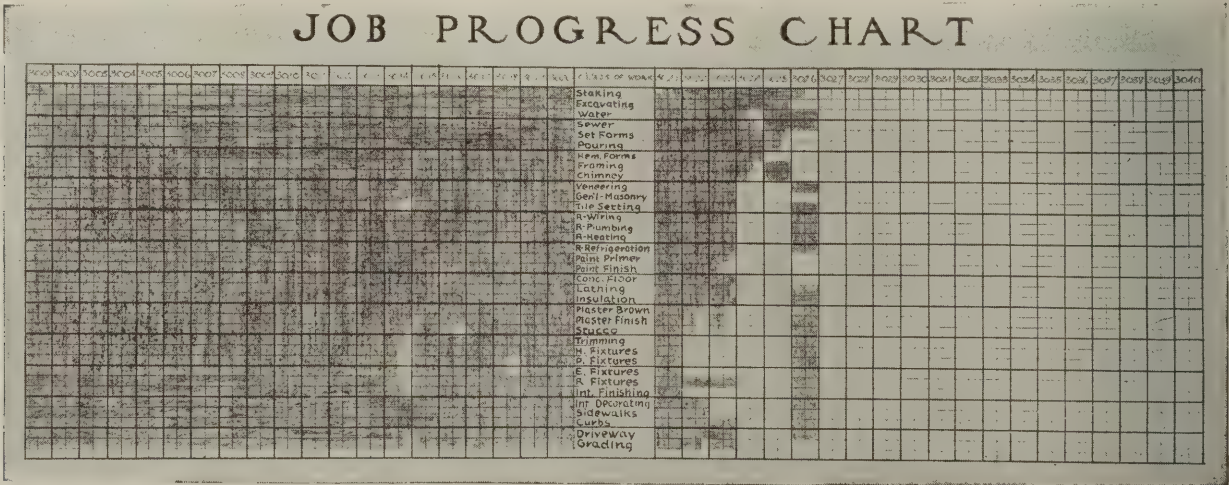
E. W. Hartung

that they liked each other well enough to want to make their friendship permanent. They also made the equally important discovery that each of them possessed some qualities which the other lacked, and that each was a good foil for the other for that reason. Hence, they thought

building organization. They decided that they wanted to build homes for their neighbors and their neighbors' children when the latter established their own families.

But, just as Rome was not built in a day, neither are large building organizations such as the one that these two former high school chums now head. They had to lay further foundations for their future work. They thought they would like to “bum” their way West, picking up what knowledge of building they could as they went. They got no farther than Sioux Falls, South Dakota, where Stan got a job in a meat packing plant. Helping the butcher was quite different from building and he always had his eye on a job up in the front office where blue prints for new buildings and repairing were drawn. One day he boldly asked for the job—and got it. He made good and the first thing he knew he was sent to St. Paul to supervise the construction of a new branch building.

Earl took employment with one of the nationally known millwork factories, working his way up from the shop to the office, where he gained an extensive knowledge of



This chart tells the office the exact condition of every job at all times. Each job is numbered, as indicated at the head of each column. As the different phases of work on it progresses, the little squares are filled in, thus showing at a glance how fast the work is progressing and what remains to be done

years of your life—you have been known as a kid, is a still further handicap. Home town folks simply won't let a fellow grow up and as for giving him business, particularly building business on a man-to-man basis—well, it is rather hard for the beginner.

“Stan” Lafond and Earl Hartung were

they ought to succeed as partners in business. Naturally, they wanted to go into the building business, because that is what they liked best.

So before they had received their high school diplomas they had made up their minds to establish some day, in Kankakee—not in Chicago or any strange city—a

the millwork industry. The boys lived together and continued to lay their plans. The most important part of this planning being the determination to have as a slogan of the organization, QUALITY—VALUE—SATISFACTION. This slogan has been strictly adhered to, as their buildings will show.

ITEMS OF COST.	DATA FOR SPECIFICATION.
Permits	1. Drawings
Excavation	2. Specifications
Foundation	3. General Conditions
Concrete	4. Payments
Roofs	5. Grouting & Grading
Lumber	6. Concrete work, rough
Millwork	7. Concrete work, finished
Joinery	8. Concrete Blocks
Sheet Metal	9. Concrete, re-inforced
Hardware	10. Cistern
Pails	11. Fireplace
Lathing	12. Chimney
Insulating	13. Brickwork
Plastering	14. Brick Veneer
Stuccoing	15. Tile Work
Painting	16. Framing Timbers
Plumbing	17. Bridging
Electric	18. Floor-lining
Airline	19. Sheathing
Creding	20. Siding
Sawer	21. Roobboards
Rater	22. Shingles
Screene	23. Roofing
Cabinets	24. Window & Door Frames
Shades	25. Doors
Linoleum	26. Windows & Sash
Composition Flooring	27. Floors
Floor Coverings	28. Closets
Steel	29. Flooring
Miscellaneous	30. Composition Flooring
	31. Tile Flooring
	32. Stairs
	33. Inside Finish
	34. Finishing Lumber
	35. Porches
	36. Opounds
	37. Insulation
	38. Lathing
	39. Metal Lath
	40. Plastering
	41. Wainscoting
	42. Stucco
	43. Metal-work
	44. Coal-Chute
	45. Cabinets
	46. Screens
	47. Shutters
	48. Hardware
	49. Exterior Painting
	50. Interior Painting
	51. Papering
	52. Decorating
	53. Heating
	54. Plumbing
	55. Sewer
	56. Gas Piping
	57. Refrigeration
	58. Fixtures
	59. Shades
	60. Linoleum

TELEPHONE	
Alexander	- - 27
Bertrand	- - 214
Block	- - 242
Campbell	- - 480
Chapman	- - 3306
Devere	- - 759-3
Finefield	- - 1067
Gellie Bros	- - 234
Gray, R.H.	- - 1374-2
Haskins	- - 2869
Kammen	- - 121
Klaus	- - 340
Lafond, T & Son	19-
Langan P Int	- 127
Loiselle	- - 674-7
Marcou	- - 402
Martin, J.J.	- - 1019
Martin, Bradley	- 1900
Murphy	- - 76
Paulisgen	- - 1021
Pratt	- - 522
Public Service	- 129
Ruter	- - 194
Fuehle	- - 227
Shidler	- - 114
Shirley	- - 2342
Stanford Howe	- 229
Stolts	- - 2572
Troup	- - 71
Werts	- - 160

Every estimator knows how easy it is to forget something in taking off a material list. To insure the omission of nothing, Lafond & Hartung have prepared this comprehensive list of all items that could possibly enter into their estimates. Note the telephone numbers of supply men and concerns upon whom they depend for prices, data, etc. It is handy for ready reference

They did not want to be builders of big buildings at the outset. Knowing that their opportunity lay in the construction of small houses, they wanted some small house experience. They applied for and got jobs in the building department of a large Chicago mail order house. Here "Stan" saw the inside operations of a "plan factory" and learned some of the kinks of the house selling game. At the same time he took a course in building at a technical school.

Earl during this time was estimating and selling building material for various kinds of buildings. Owing to his extensive knowledge of lumber, he was sent in a supervisory capacity by the same firm on large housing projects in the field.

"Stan" served with the 108th Engineers during the construction of Camp Grant, having charge of the drafting department.

During the spring of 1921, the boys decided that business conditions were right for the launching of their project. Hence, local capitalists were approached and consulted with regard to the advisability of this move. No encouragement was extended, so, without jobs, with limited friends, without any established reputation as builders, without any local evidence of what they could do, and known around town as just "kids," the outlook was certainly not promising.

But never once did they lose sight of the goal they had in mind. They went back home and with their drawing instruments worked out a plan and design for a bungalow which could be built at a very low price. They took the drawings—the only visible exhibit of their possibilities which they had—to a man in town who had some money and a speculative tendency. They told him what he might do in the way of making more money by building this bungalow. He must have liked the appearance and earnestness of the boys, for he told them to go ahead with two such bungalows.

The result showed that they did not exaggerate to their client the money-making possibilities of building.

A real estate man anxious to turn his property a little more quickly and at a little better profit, was sold on financing a house. It was a success and he told them to build another. "Why be a piker," they asked, "by building only one? Build five!" He did, and he sold them, some before they were finished, and the others shortly afterwards, all at profitable figures.

With these examples of past performances and evidences of the quality of their work they found it easier and easier to



As soon as a job is completed, Lafond & Hartung order a photograph (sometimes several) made of it by a professional photographer on an 8x10 plate. These are backed with linen and hinged for filing in a leather cover binder. Complete blue prints for each job, also on linen backing, are conveniently filed in numerical order. With these selling tools they are able to clinch many an order without further ado



Kitchens with built-in dressers, closets, dining alcoves, etc., are a hobby of Lafond & Hartung and help many a prospect to make up his—her—mind to go ahead and build

get business and so they added to their organization.

In 1923 they built over fifty-three buildings of all kinds—houses, apartments, two-family houses, stores, gas-filling stations, additions to factories, etc., and a lot of repairing, remodeling and interior finishing work in addition. Their concrete construction department—they own and operate two large concrete mixers—bid for and secured curbing contracts from the city. They have made arrangements with an electrical contractor for doing their electrical work and a plumbing contractor for doing their plumbing, but aside from these departments they themselves contract all work that goes into the average house. The most recent addition to their activities is a department of interior decoration, and they are decorating houses built by other builders, so highly is their work liked. Word received shortly before this was written states that they have moved their offices from their old quarters into larger and more attractive quarters in the Fraser Building in Kankakee.

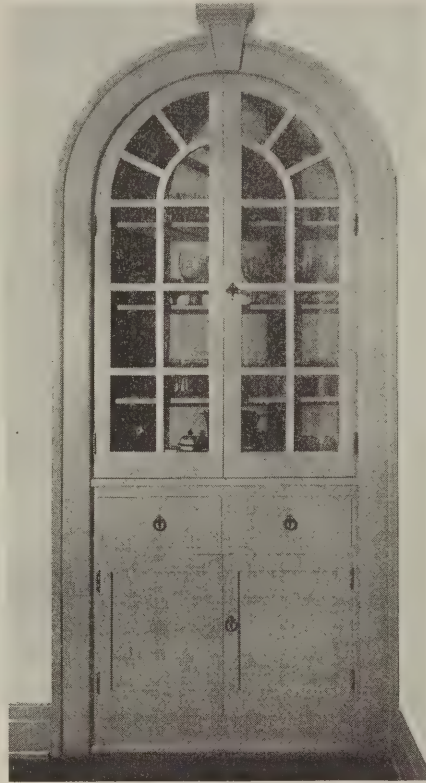
The statement was made earlier in this article that these two young men recog-

nized their own differences as well as their own similarities and that each is a balance for the other. This is a point that so many partners overlook. The average business executive is prone to surround himself with men of his own type. Consequently, he builds up a one-sided organization and eventually it is liable to topple over. There are remarkable differences in the personalities and temperaments of Messrs. Lafond and Hartung, and it is undoubtedly in this very fact that the secret of their success lies. Mr. Lafond looks after the promotional end of the business; Mr. Hartung has the construction end. Neither interferes with the work of the other. They know the principles of team-work and they pull together in perfect harmony.

This same thing is true in large measure throughout their entire organization. Every man they have on their pay roll is best adapted for the particular work that he is supposed to do, and the heads of the organization are wise enough to delegate responsibility where it belongs and not to interfere after doing so. The organization at times numbers as high as 75 men, and over half that number are employed constantly the year around.

An interesting sidelight on how they have built up their organization is found in how they develop their foremen. As soon as a mechanic on a job manifests any executive ability whatever and demonstrates that he can carry responsibility, he is immediately spotted as a possible crew foreman. He is given instructions in how to read plans and made thoroughly familiar with the organization's methods and system before he is entrusted with the responsibility of running a crew of workmen. NATIONAL BUILDER will be pardoned

for quoting a statement made by Mr. Lafond concerning the contribution that this magazine has made in the education of their workmen. Mr. Lafond states that one of the most useful features of this journal is the set of complete working drawings which is published in every issue and which thoroughly familiarizes the reader with carefully drawn and carefully detailed plans. He has found these plans



A corner china case from a Lafond & Hartung dining room. Their houses are partly furnished when the owner moves in

of considerable assistance in the preparation of plans in his own office and in instructing his men in plan reading.

It will be of interest to all our readers to know that each client of this progressive firm has his individual ideas incorporated in special plans and specifications drawn complete in every respect in their own architectural department. This department is maintained to render a plan service similar to that rendered by any good architectural office.

Some of the selling tools and office forms used by Lafond and Hartung are reproduced on these pages, together with examples of some of their interior cabinet work which has made their houses very popular among local home owners. And on pages 34 and 35 in the "National Home Builder" two houses they have recently built are reproduced as samples of their work. Later on NATIONAL BUILDER intends to publish a complete set of working drawings which they prepared for a gas-filling station and to describe in some detail the completely equipped kitchens which are a feature of the houses built by Lafond and Hartung.

A day spent in the office and out on the job with these two young men was one of the most enjoyable that the editor of this journal ever put in, and the stories they told him of how they secured this and that job and what the owner thinks of their work—as told by the owners themselves in visits to their homes and offices—would make as interesting reading as is to be found in any story of business success. Builders who read this and who can possibly arrange a trip to Kankakee to see their work at first hand, will not be disappointed in this organization—and they will get a welcome that will surprise them.



Left: The Rothacker Film Company's camera house on stilts. Right: The Straus Building on Michigan Boulevard, Chicago. Every morning the cameraman cranks a few feet of film and next year's engineering students will see a \$15,000,000 building go up in sixteen minutes

The Steel Square

V—The Adjustable Fence

AS stated in the preceding article, there are certain deductions to be made from the figures obtained for lengths of rafters from the various rafter tables. The values for the lengths of rafters as given in the tables are calculated theoretically for a condition which considers the various roof members as straight lines; that is, no account is taken of the thickness of the pieces used in framing. Therefore, when framing a roof it is necessary to deduct from the figures obtained from the tables on the square the distances shown in Fig. 2. This sketch does not represent every possible case where a deduction is necessary, but the other cases will make themselves apparent to the user of the square as they occur. In every instance the deduction is equal to one-half the thickness of the piece against which the rafter is framed.

The seven pitches most commonly used are given on some steel squares, but for the builder who is constantly meeting with extraordinary problems in roof framing, the diagram shown in Fig. 1 may be helpful. This diagram shows a square set with the tongue as a base and the body standing vertical. From the 12th outside inch-graduation mark on the tongue lines are drawn to each outside inch-graduation mark on the body, representing the slope of rafters for roofs of different pitches. The distance from the heel of the square to the 12th outside inch-graduation mark on the tongue represents the run of the common rafter,

and the different outside-edge inch-graduation marks on the body represent various rises. The inclined lines therefore represent the slopes of roof rafters.

For a rise of 1 and a run of 12 (the run is one-half the building width), the pitch would be 1/24 as given in the column of pitches, and the number of degrees the rafter is inclined from the horizontal would be 4½, as shown by the figure near the arc. In a similar manner, the pitch of a roof with a rise of 17 and a run of 12 would be 17/24, and the angle of slope would be 54¾ degrees. The pitches are given directly opposite the figures which represent the rises, and the angles of inclination are shown at the arc, and beneath the line

drawn through the outside inch-graduation which represents the rise.

The steel square is founded upon the principle of the right angle, and in every calculation into which the square enters the tongue and the body of the square are taken as the two sides of an unlimited triangle which enclose the right angle. Sometimes, for ease in handling the square, it is convenient to limit the triangle, defining a third side opposite the right angle by a device known as the adjustable fence.

An adjustable fence is shown in detail in Fig. 4. It is best made of hardwood, preferably cherry or black walnut. In size, it should be about 24 to 30 inches long, 2 inches wide and about 1¾ inches thick, with a saw kerf at each end as shown, into which the two arms of the square may be inserted. Two screw bolts (some carpenters recommend wing nuts instead of the square nuts shown) serve to hold the square tightly.

Some carpenters use an adjustable fence

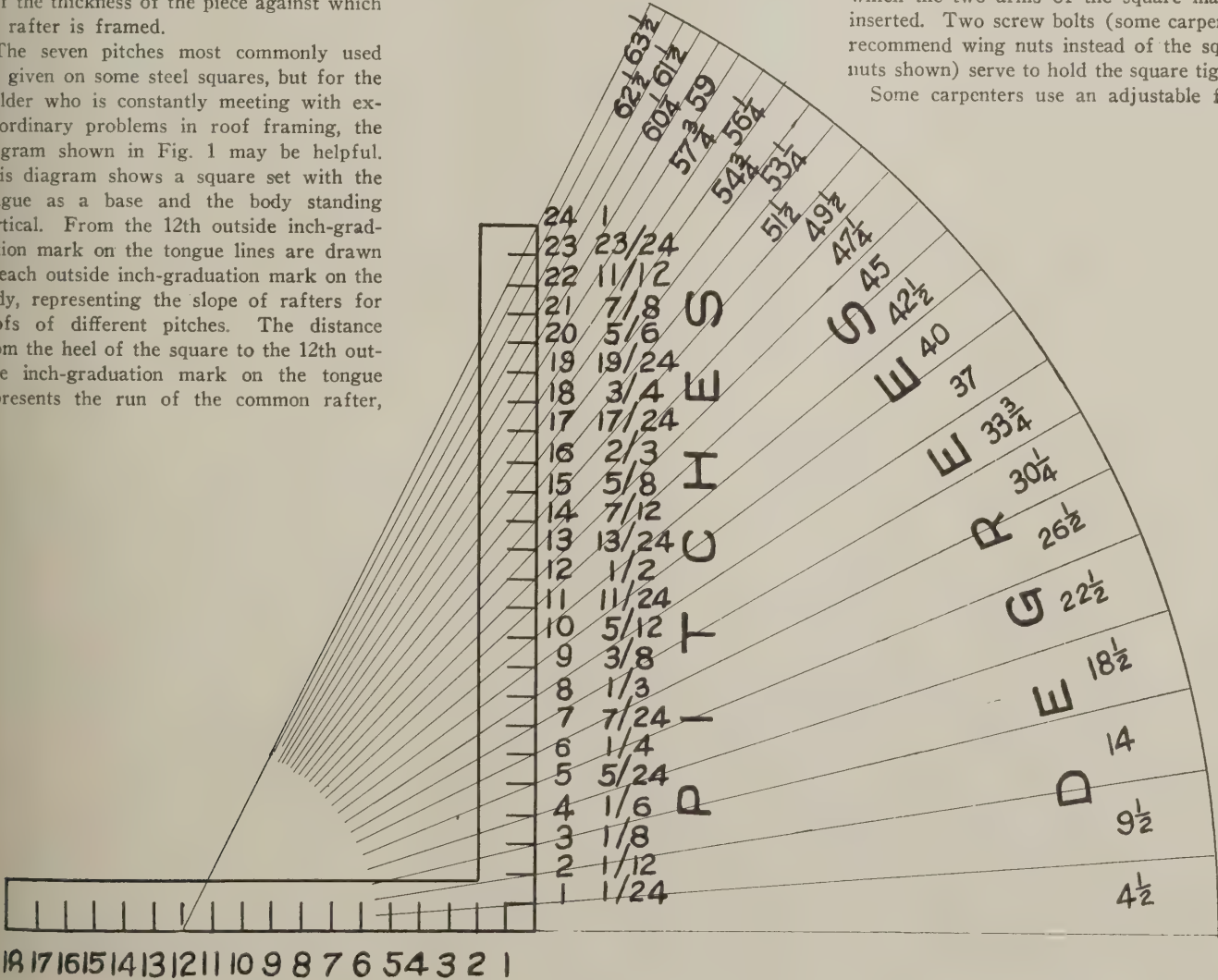


Fig. 1—Diagram of roof pitches and angles. The pitches are given opposite the figure on the body, which represents the rise, and the angle which the piece makes with the horizontal is given below the line drawn through the graduation mark which represents the rise. This diagram shows at a glance the pitch and angle with the horizontals for 24 different pitches

with only one saw kerf, running all the way from one end of the fence to within about 8 inches of the opposite end, thus making it necessary to use only one bolt for clamp-

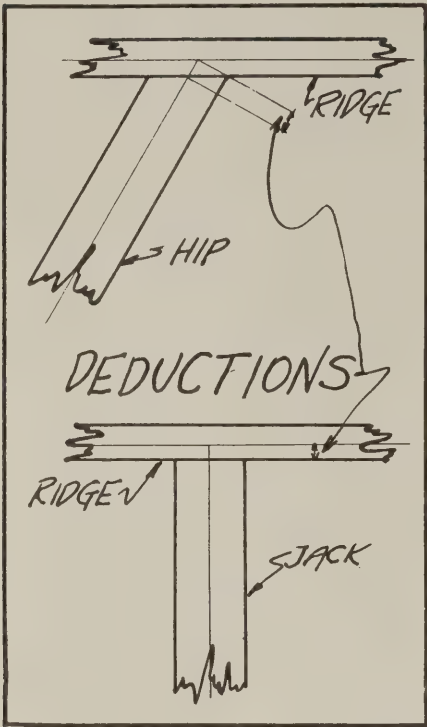


Fig. 2—Sketch showing deductions from lengths of rafters to allow for thickness of stock

ing the square. This type of tool, while it may do well enough if carefully handled, cannot be expected to hold the square as firmly as the one shown here.

By the use of the adjustable fence the square may be set for a given cut. If a cut is to be repeated many times, consider-

all that is necessary is to set the fence on the stock and, since the square is clamped for the proper cut, mark the cut. It is highly important that the edge of the fence be set exactly on the proper inch-graduation mark if accuracy is desired. Fig. 3 shows the application of the fence to a rafter.

The adjustable fence furnishes a means of cutting braces as illustrated in Fig. 5.

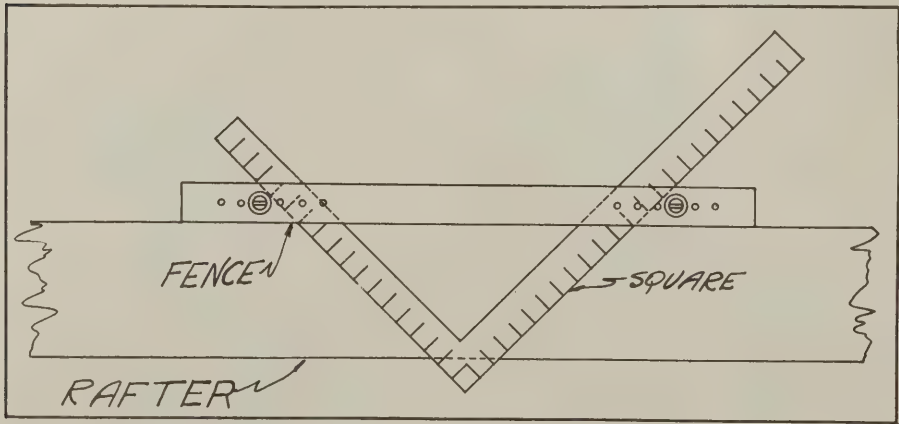


Fig. 3—Application of the steel square and adjustable fence to a roof rafter. Notice that the square can be slid anywhere along the rafter

able time may be saved by means of the adjustable fence. All that is necessary is to clamp it on the square with the edge at the inch-graduation marks required for the cut. Instead of setting the square on the stock and using time to bring the proper outside-edge inch-graduations to the edge,

In this example the post is 4 feet and the beam 3 feet. For the cut on the brace set the adjustable fence at 12 on the body and 9 on the tongue, the figures for the required cut. Then apply the square four times as shown. The cut for the bottom of the brace is marked on the body, and the cut

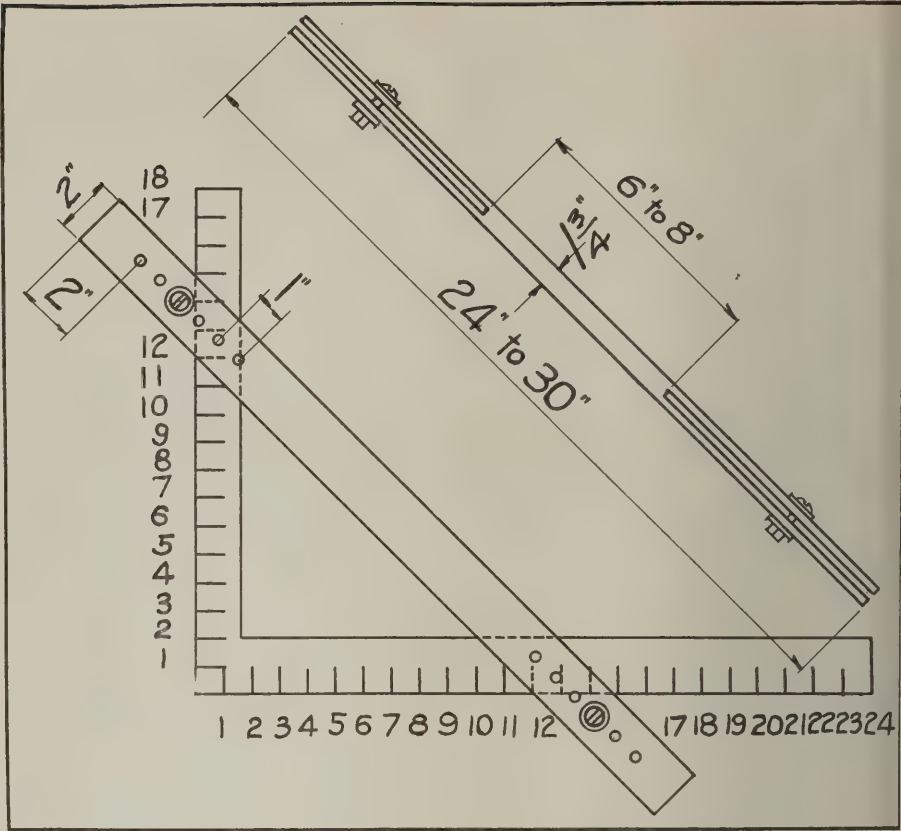


Fig. 4—Construction details for an adjustable fence. Wing nuts may be used instead of the square nuts shown

for the top on the tongue.

The adjustable fence is a handy instrument and a necessary accessory to users of the steel square. The added convenience obtained through its use should be well worth while the time and trouble required to make it.

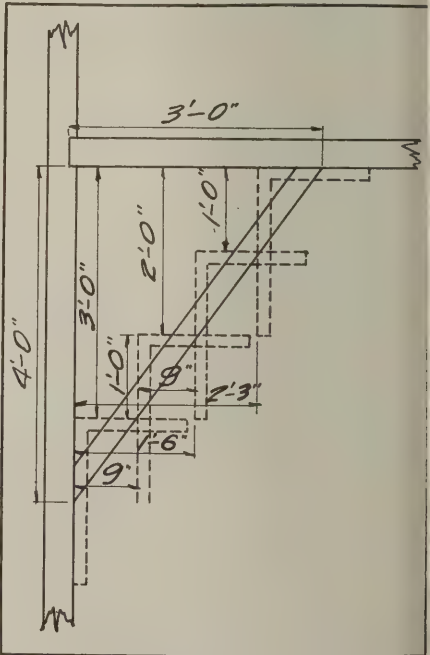


Fig. 5—Application of the steel square and adjustable fence to brace measure. Notice that the square is applied four times in order to get the required cuts

On the Job in Columbus, Ohio

To Lay Hard Wood Flooring Using Short Pieces

SOME carpenters like to lay their flooring in a line running the length of the building. They start at one end, lay down

laying is begun and the whole floor is wedged from one wall to another.

Furthermore, this system ought to eliminate much of the squeaking often noticed in wood floors, which is a defect that is bound to reflect on a builder's craftsmanship, inas-



Notice the broken joints in this flooring enabling the carpenters to use up the smaller pieces. This method of laying floors provides for building up the full width of the floor soon after the laying is begun. Thus the floor is wedged tightly and is not liable to loosen up if left overnight, as might be the case if the flooring were laid in sections parallel to the walls

eight or ten widths, and then carry this line clear to the other end of the building.

Not so, however, with the carpenters employed by W. G. Richter, a contractor of Columbus. His men lay hardwood flooring as shown, starting at the end of the building and carrying the flooring across the width until they have built up a long slanting line. They then carry this line right along to the other end of the floor. Thus, they move continuously instead of going from one end of the building to the other, and do not waste time coming back to the starting point when the end of the line is reached. They also find it more convenient to use up the smaller pieces of flooring by working them in as they go along. Any method of floor laying whereby the short pieces can be worked in is sure to be welcomed by the carpenter and this idea is presented here in the hope that it may be useful.

It would seem, too, that laying flooring as shown here would provide a tight floor. Where the floor is laid from one end to the other in strips, it may be possible for it to loosen a trifle before the entire width is laid, but by laying the floor as shown here, the full floor width is reached soon after the

much as it is very noticeable to those using the floor.



Window frame bracing that does not block the job, but assures well-plumbed frames, which make sash fitting easy. Notice the bracing system which seems to be very carefully and logically worked out. Notice also that plenty of working space is provided between the braces so that little interference is given the bricklayers who may be working on the wall

Bracing for Window Frames

SOME jobs look like an awful mess while the walls are going up. The way some masons support window frames, holding them in place until they can be built into the walls, seems to be without any reasoning or forethought. Looking down the length of wall, one sees nothing but a forest of poles and a maze of cross pieces.

If you will notice the photograph which was taken on the job being done by Bryan & Company, of Columbus, you will see in what an orderly fashion the temporary window frame bracing has been built. The main support is furnished by vertical 2x4s, one of which is set opposite every frame. In order to steady these vertical pieces, braces are nailed both ways, as shown, and a lateral brace is carried from one post to the other. The window frames are held by 1x6 boards nailed to the frame and to the vertical posts.

The advantages of a system of window frame bracing like the one shown are not only the well plumbed frames, which will make sash fitting easy later on, but also the fact that the job is not blocked by a lot of cross pieces and posts, running in all directions, which interfere with the workmen. It would seem that the advantages derived from this system of bracing were well worth the added expense in building it.

On the Job in Boston, Mass.

A Battered Chimney

BATTERED walls of any kind are always hard to build. They mean considerable time lost by the bricklayer in getting the required offsets in order to give the correct slope to the corners. Sometimes, however, it is possible to locate the slope by means of mason's line, as shown in the accompanying illustration.

In order to set these lines, two horizontal



This illustration shows the chalk line guides for the chimney

pieces of 1x6 were nailed across the rafters, close to the ridge. Two projecting pieces of 2x2 were nailed to these 1x6's to form the top point to which one end of the line was fixed, and the other end was tied to a nail set into the mortar joints where the batter started.

This made the work easy for the bricklayer. All he had to do was to lay his brick at the corner to the cord, set his level to test the face of the wall, and the job was done. This photograph was taken at a residence being built by Semple and Clark, at Watertown, Massachusetts.

Working Inside and Out

UNOCCUPIED buildings lose money for their owners. Every owner wants to have his job completed as soon as possible so that the premises may be occupied and earning money, and the contractor who can get his work done in a short time is often favored. Indeed, most contracts carry the old familiar clause, "Time is the essence of this contract."

On a remodeling job being done in Boston, Massachusetts, the contractor arranged to wreck the front of the building without making it necessary for the owner to move out merchandise which was stored on the upper

floors. Before the work was started the building was partitioned off a short distance in from the front wall by the partition shown in the photograph below. This was an ordinary stud partition such as is used on any wall. Next, the joists in the stairway were shored up so that the stairway partition could be wrecked.

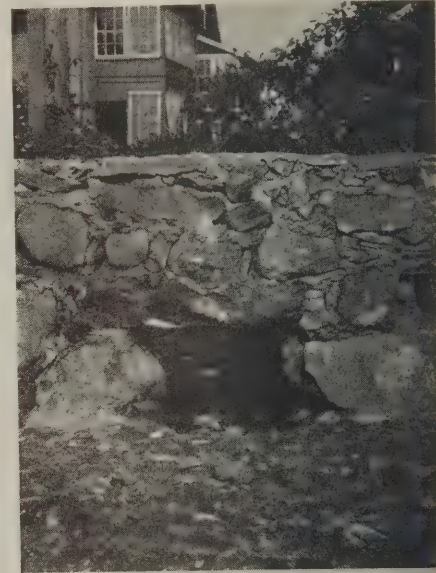
The front wall of the building was wrecked and the debris was carried down to the street in buckets by a stiff-leg derrick mounted on the top of the building. As soon as the wrecking is completed the new front wall will be put in, partitions removed, and business will go on as before. The Robert R. McNutt Company of Boston were the wrecking contractors.

Provision for Sewer Pipe Entry in Rubble Foundation

IF a builder's work could be arranged so that everything was done at the proper time, life would be one sweet song to the man on the job. It is the things that are not done when they should be, that cause most of the trouble.

Take the illustration shown here as an instance. At the time the foundation was laid, the water pipes had not been brought inside the building. Drilling a rubble foundation is no easy job, so to make it easier

for the pipe layer, this contractor, Harry B. Brown, who was building even houses in Belmont, provided an opening at the level of the basement floor through which the



This opening was provided for pipes and will be filled with small stones and mortar as soon as these are laid

pipes could be run. The opening was spanned by a heavy stone which acted as a lintel to carry the weight of the foundation above.

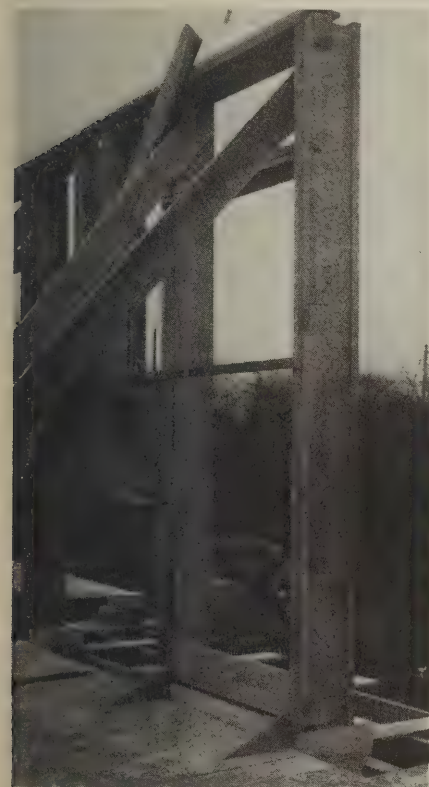


Temporary partitions were built in a short distance from the front wall before the work was started

On the Job in South Bend, Ind.

An Aid to Holding Door Frames

THE stunt shown here used by a South Bend, Indiana, contractor, to hold door frames while building up the wall seems



Notice the cleats nailed to the bottom of this door frame to hold it in position

to be a pretty good one. It requires only a few cleats nailed to the bottom of the frame as shown and nailed to the rough floor. The cleats will hold the frame firmly at the base while the diagonal supports may be depended upon to hold them at the top.

Formwork for a Basement Window Opening

THE formwork shown here for basement window openings used by Szabo & Popay, of South Bend, Indiana, seems to be as simple a bit of carpentering as is possible under the circumstances.

Two forms are cut to the depth of the window frame and set between the foundation forms as shown in the illustration. They are held in place by means of nails driven through the wall forms and into

the edges of the vertical pieces shown fastened together with cleats. It does not seem necessary to fit a bottom piece for the opening, for the concrete in this instance did not seem to flow above the level of the bottom of the form. This stunt works best where a comparatively dry mix is used.

It means a saving of both labor and material since it is not necessary to use lumber for a bottom-sill piece nor is it necessary to use labor to fit it in place.

A Time-Saving Ladder

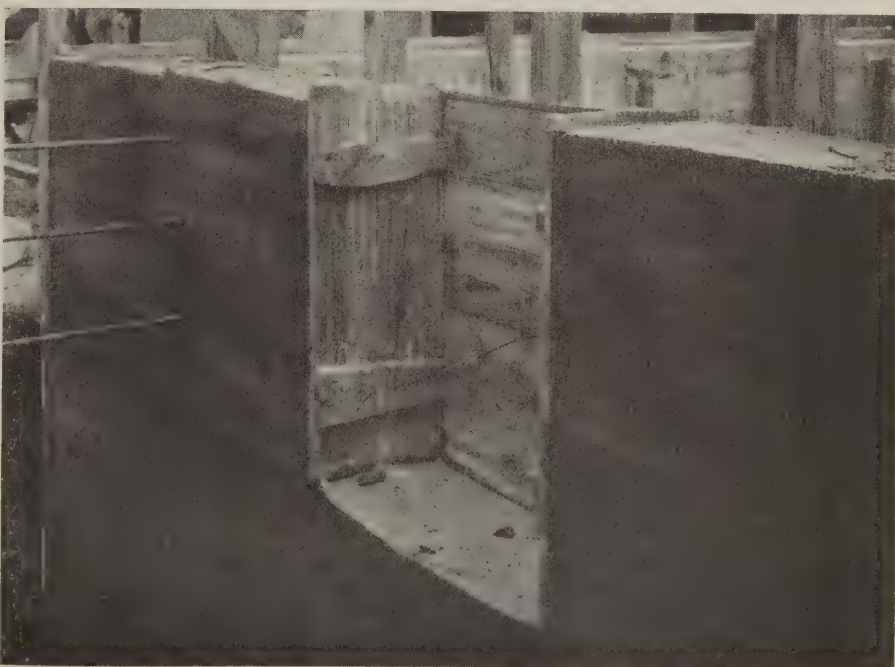
LADDERS, as ordinarily built on the job, are made wide enough to accommodate only one man. If a bricklayer wants to go up and a carpenter wants to go down at the same time, someone must wait, or else meet about half-way between the two ends of the ladder. When two men meet half-way between the ends of a ladder, something is going to happen, and no contractor wants any more arguments between mechanics on his job than are necessary.

If one of the men is accommodating enough to wait until the other one has come up or down, it means that someone has lost a minute or two, standing at the ladder. A minute or two may not sound like much, but by counting up all these little minutes that are wasted in one day the contractor will see that they soon run into money. Rob-

ert L. Reisenger, of South Bend, Indiana, has come around to building double ladders, such as are shown here. It would seem to be a good idea and well worth passing out to brother contractors.



By means of this ladder two men can be accommodated at the same time



Notice that no bottom-sill piece has been used in the form

On the Job in *Mt. Vernon, N.Y.*

Bracing Walls in a Frame Building

FRAME buildings with walls built on studs require some form of bracing to hold the line of studs in place until it is strengthened by the sheathing and floor joists. Zibelli Brothers, of Mount Vernon, New York, use a simple system of bracing, such as is shown on this page.

They nail a 2x4 cleat on the rough floor and use it as a base upon which to nail one end of a brace which runs to the upper part of the wall. These braces are set about 16 feet on centers along the length of the building and are braced against each other by diagonals, thus strengthening them in the center.

A Material Elevator for an Apartment Building

ONE of the main points in connection with the delivery of materials to workmen on the job is the distance they have to be hauled. Long hauls for wheelbarrows mean expense for the contractor, and anywhere the contractor can cut down the distance the laborers have to push the buggies is going to mean a saving of money.

In Mount Vernon, Morris Frudenheim, a contractor who is putting up a big apartment building, used the delivery supply system shown here. A central hoisting tower

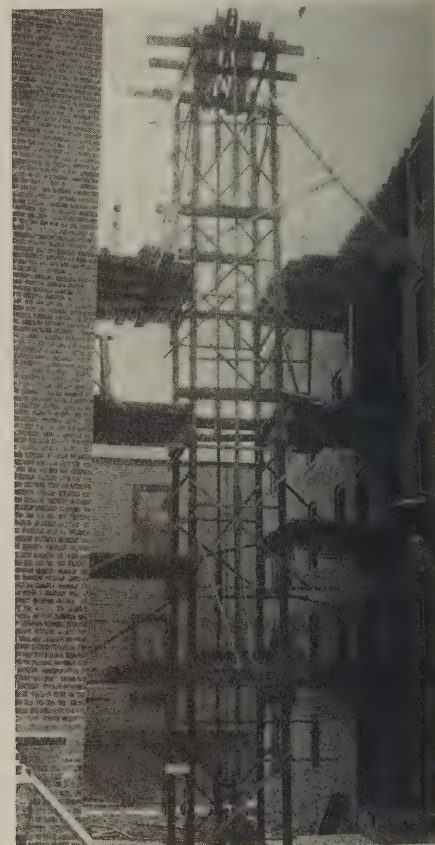
was built midway between two wings of the building and all material for all floors was delivered by means of this tower. Plat-



The walls around the delivery platforms were left broken out, to be finished when the elevator was no longer needed

forms running to both wings at each floor provided for the delivery of material from the elevator to any part of the building. Thus the length of haul was reduced since all materials were delivered to the different floors from a point near the center of the building.

In order to keep the delivery platforms open, the walls around them were not built up, but were left broken out, and were to be finished when the elevator platforms were no longer needed. Notice on the top floor



The central hoisting tower built midway between the two wings of the building



A simple form of temporary bracing for outside bearing walls

how the roof joists are shored up to hold them over the delivery platform where the wall has not been built. The shoring for supporting the joists is a line of ordinary 2x4 studding with the center studs spread apart at the bottom wide enough for a man to bring a wheelbarrow through. It may be a little more expensive to build up the wall after the work is done, and it may cost a little more money for the shoring required to hold up the roof joists, but these little items are hardly to be considered when weighed against the great saving in cost of labor.

On the Job in the Middle West

Bonding a Bumping Post to a Concrete Floor

BUILDING-CORNERS at the entrances to barns or garages are very likely to be damaged by vehicles coming into the building or passing out. It does not take a very heavy blow to break the corner of a brick wall and some means should be taken to protect these brick corners against damage.

The method commonly employed is to attach a bumping post of steel or concrete at

tration above. He places some heavy spikes in the cement floor while it is fresh, allowing them to stick up above the surface about 3 or 4 inches. When the bumping post is built these spikes project into it at the base, thus holding it firmly in position. The heavier the spikes used and the greater distance they are allowed to project into the bumping post, the stronger the connection between the bumping post and the floor will be. It might even be well to use quarter-inch steel rods which project into the post 8 or 10 inches, and a few rods in the mortar joints between bricks, allowed to project into the post, would also help.

A Convenient Blue Print Box

BLUE prints have a habit of getting lost and many workmen have had the unfortunate experience of being without their working directions at the time they needed them most. It is hard to keep the blue prints on the job all in one place, because they are constantly being used by the different trades, and on different parts of the job.

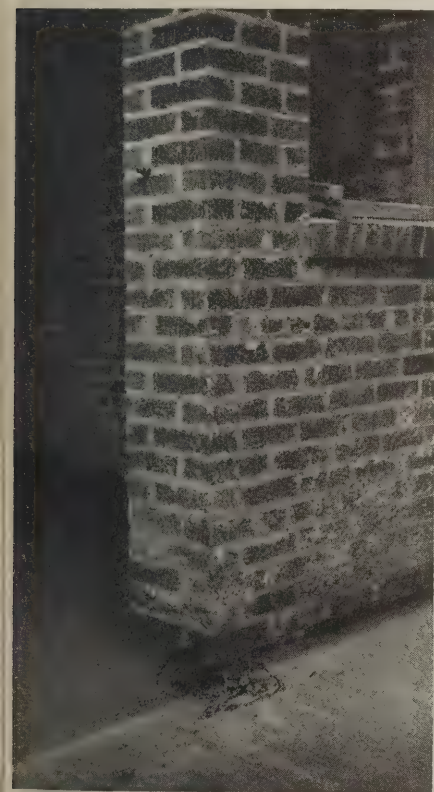
A. Simpson, a Detroit, Michigan, contractor, thought of this scheme to prevent the loss of blue prints. He tacked a few boards around the job as shown in the illustration below, and distributed blue prints among the various trades. When they were finished with their work for the day the men simply put the blue prints in these boxes and left them there. When they came back in the morning the blue prints were there, ready for use, and no time was lost in looking for them.

These boxes were scattered over the job so that they were located on the different floors and the different wings of the building. This meant that the mechanic did not have to waste time looking for one, but found one always at hand and ready for use.

Getting Power from a Concrete Mixer

ENGINES on concrete mixers can be used for other things besides turning the mixer drums around. The equipment necessary to get power from the engine is very simple, as will be seen from the accompanying photograph. The only things necessary are a few U-shaped bolts, threaded at each end, and a wood disc which is fastened to the engine fly wheel with the bolts as shown.

It is recommended that the bolts be at least $\frac{3}{4}$ -inch in diameter, as they will be



Heavy spikes are placed in the fresh cement protruding three or four inches above the surface

the corner. This post takes the brunt of the shock when any vehicle comes in contact with the wall corner and though the bumping post may be damaged, the corner of the building is protected. Because of their cheapness and because they may be built directly on the job, many contractors prefer to use concrete bumping posts instead of the cast iron bumping posts formerly used. When these concrete bumping posts are built they should be bonded to the cement floor or driveway so that they will not be pushed off the wall when a wheel bears against them. R. A. Mitchell, a cement contractor of Moline, Illinois, prefers to bond bumping posts as shown in the illus-



Power is obtained from this mixer for driving a circular saw

required to transmit from $1\frac{1}{2}$ to 3 h.p., which is about the rating of the average small concrete mixer engine. Charles D. Krueger, of Appleton, Wisconsin, gets power from his engine for driving a circular saw as well as for running his mixer.



Notice the blue print box on the roof

On the Job in Davenport, Ia.



A blockade horse used by the Central Engineering Company of Davenport

A Temporary Blockade

THE Central Engineering Company, of Davenport, keep a number of blockade horses such as are shown here as a part of their standard construction equipment. These horses are made in three parts: the bar and



One of the bar supports

the two supports. The bar can be slipped out of the supports in a jiffy, thus allowing the horse to be set up in a hurry. The illustrations show the construction in detail.

This piece of equipment should be especially useful to the cement contractor.

Shoring Support for Stone Sill

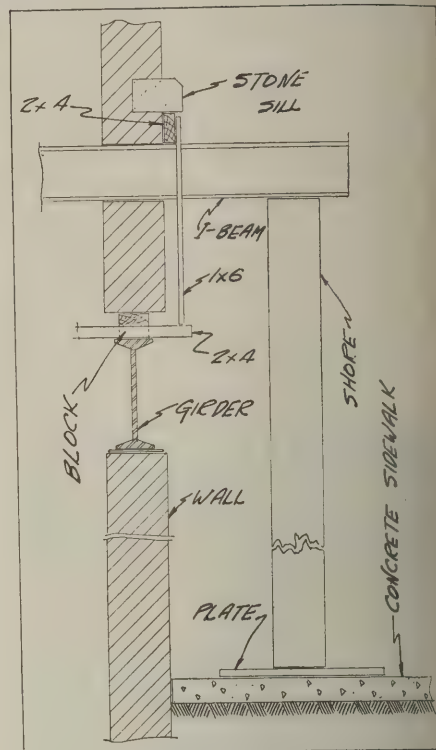
THERE are many kinks in the shoring business. Almost every job presents new problems and some of them, though they may not be important in themselves, do play a prominent part when the job is considered as a whole.

Take, for instance, this building being shored by John Vollertsen of Davenport. The building was supported on shoring to

permit the removal of a part of the lower wall and the installation of a steel beam to carry the building above a series of show windows which were to be set in the place occupied by the wall. A short distance above the tops of the shores was a stone sill and some bracing was necessary to hold the sill in order to keep it from cracking and slipping down.

Before the beam was installed the sill was carried by a 2x4, placed directly underneath it and supported by diagonals from the shores. After the beam was set, the 2x4 underneath the sill was supported by struts which rested on the I-beam, thus taking a possible side thrust off the shores.

Notice the shoring system. The I-beams above the shores are set underneath the piers between the windows, thus carrying the wall in the most effective manner.



Sketch of shoring system



View showing method of supporting stone sill from I-beam

Kinks from the Job and Office

By V.L.SHERMAN

Send in your kinks—give the benefit of your experience to the other fellow as well as get the benefit of his. NATIONAL BUILDER pays \$5.00 for every kink published.—The Editor.

An Efficient Auto Truck

WE have here, Figs. 1 and 2, an auto truck containing a motor generator set. This truck carries a six cylinder motor, two cylinders of which are used as



Fig. 1—Portable compressor truck showing tank location

air pumps supplying the tank just back of the driver's seat. The truck is owned by Carideo & Son, of Mt. Vernon, New York.

The automobile motor is not very effi-

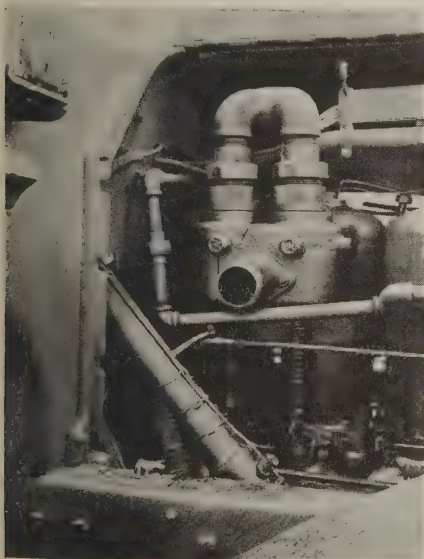


Fig. 2—Pump cylinder at rear of motor

cient except under continuous operation at high speed. Any combination such as this is a real money saver, and a traveling

air pump is usually most welcome. We would like to go into the technicalities of the matter, but we are quite sure that any local expert could supply the information and the transformation better than ourselves. The machine shown in the photograph is a six, cast in pairs. We would say that the intake side of the T head motor was used as the pump intake, and if the valve timing was not nearly enough to correct, the tappets were removed and much lighter springs mounted on the stem. The exhaust side of the T head runs into a union above the valve cover holes with a check valve "at a suitable location." That sounds all right, but we would suggest as little compression space as possible, and small checks.

A six cast enbloc with internal manifold might be used if the valves were positively blocked. There is only one real disability that the writer can observe. The crank pins of a six are balanced with the firing order of the cylinders. The lack of two power strokes with a four bearing crank leaves a hollow after the first syllable. If you can stand that everything will go well.

Saw Filing Vise

R. S. T., of La Crosse, Wisconsin, submits the sketch, Fig. 3, of a saw filing vise he has made from scraps. As

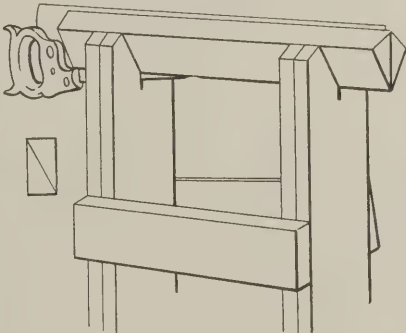


Fig. 3—Split 2x4 saw filing vise

stated by the maker of the vise, further description is hardly necessary.

Spread Pressure of Poured Concrete

E. A. F., engineer contractor, of Litchfield, Illinois, writes: "Regarding the side thrust on forms occasioned by freshly poured concrete, the following table, Fig. 4, will be sufficient for ordinary conditions, as same varies with the temperature of the mixture. However, the pressures will never exceed those given.

"H is the vertical distance, in feet, from top surface of concrete to point at which pressure is required. P is the pressure in pounds per square foot at this point."

H. Head	P. Pressure	H. Head	P. Pressure
1 Ft.	150 ^{lb.} /sq.ft.	8	1170
2	300	10	1450
3	450	12	1720
4	585	14	1980
5	640	16	2230
6	885	18	2480

Fig. 4—Pressure on forms due to fairly wet concrete poured continuously

E. A. F. submits these as measurements made by Major Shunk, U. S. A. The pressures certainly do not appear to be underestimated.

An Ornamental Fence

MR. FRUDDEN, of N. Frudden & Son, lumbermen, Greene, Iowa, has sent us the photograph Fig. 5 of an ornamental fence planned and erected by them to screen a railway line, and at a cost of approximately \$5 per rod for materials.



Fig. 5—Fence to screen railroad

"The fence is 5 feet 4 inches high and made in 8-foot sections. The main posts, 4x4, are about 20 inches in the ground and creosoted. A 2x4 plate runs the length of the top and a 1x10 on edge at the bottom supports another 2x4 sill. The lattice is made up of 3/8x3 cypress battens ripped in two. They are placed every 6 inches square. A piece of blind stop, 7/8x1 1/2, is nailed around the inside of the section as a frame work to nail the strips to."

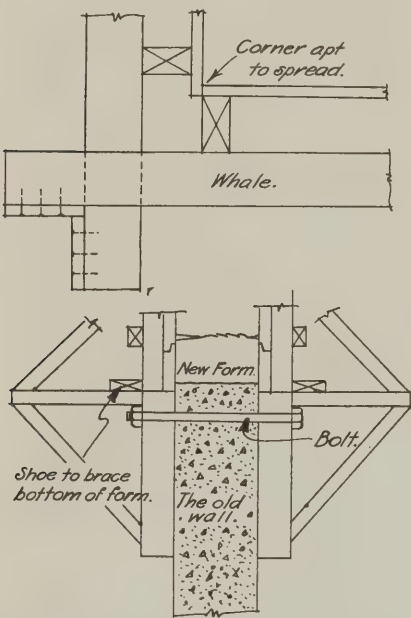
To Prevent Decay

A RATHER simple means of preventing decay of porch posts at the base is offered by H. N., of Denver. "Porch posts, where they rest on the porch floor, will decay at the base in a few years. To prevent this bore a 3/4-inch hole in the center

of the base of a post and make the hole about 6 inches deep, if the post is not over 4 inches in diameter. If it is larger bore several $\frac{3}{8}$ -inch holes near the edge of the post and fill these holes with linseed oil. Plug the holes tight so the oil will not leak out and put the post in place. This treatment will double the life of the porch post."

Addition to Concrete Forms

H. B. S., of Easthampton, Massachusetts, wishes to make some additions to the concrete form article which appeared in NATIONAL BUILDER for November, 1923.



Figs. 6 and 7—Added concrete form construction

He thinks a little might be added. "Referring to Fig. 7 on page 74 of the November issue, the outside corner of the form is not as strongly braced as it might be for a wall of any height. The outside whalers should be let run by and two strips nailed on the outside of the intersection. See Fig. 6. The same may be applied to collars around column forms.

"If the wall is to be high and built by stages the top row of bolts has not lost usefulness. Before being withdrawn, after the forms are removed, wooden scaffold brackets may be hung on them, and a fine scaffold may be had to work on and to brace the new form against." See Fig. 7.

Heated Mortar Board

A SHEET iron topped mortar board warmer is suggested by S. B., of Detroit. The sketch, Fig. 8, was submitted with the letter which reads: "This box is in the size of a bricklayer's mortar board. The bottom and sides are ship lap, and the top sheet iron. One side has

an opening, which is cut the length of a brick, and about four bricks high. These are laid loosely on their flat. A kerosene

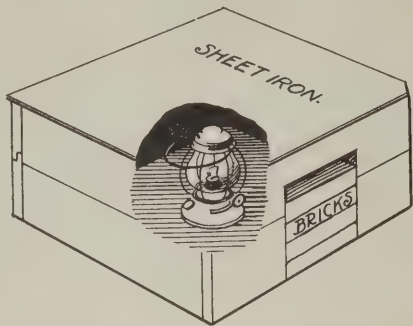


Fig. 8—Warmed mortar board

lamp is used for a heater. This is successfully used on some jobs during the frosty weather. It prevents freezing, and eliminates waste of time and material."

Helping to Keep the Cold Out

WITH all the promises of the coal man and the heater man we have no quarrel, but if we want results we set them against the wall builder and watch them fight it out. If the heat escaping from a heated house came away in the form of smoke that loss would be noticeable. And if all

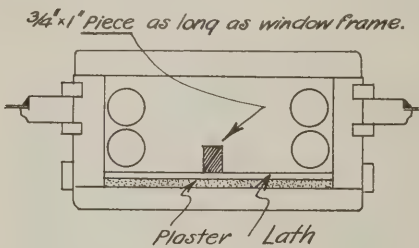


Fig. 9—Mullion construction for warmth

the cold that leaked into a house without invitation carried a little odor that would be regarded. But most of the dwellers put the coal into the heater regardless, and consider the osmotic action as regular ventilation.

W. W. M. sends us sketch, Fig. 9, of which he says: "The illustration shows how I plaster between the mullion frames to get a tighter joint. First cut a $\frac{3}{4}$ x1 piece the right length, and nail pieces of lath on it the full length of the stick. This is fixed at each end, and by driving a nail here and there through the jamb into the lath. It is a great help in keeping out the cold."

Loose Pin Butts

FIG. 10 is submitted by A. N. P. "Here is a new one to me. A carpenter made a small shed for a temporary tool store. He nailed two 2x3 battens on one side and projected the ends a little past the cor-

ner, spacing them the height for his door. Then he nailed his door into two battens,

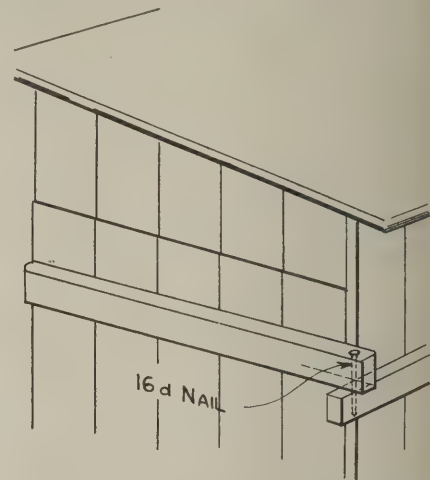


Fig. 10—Batten hinges for tool shed

spaced likewise, hung his door on and drove two 16 d. nails in for pins."

Putting on Grounds for Doors

THIS method is suggested by H. H. S. who submits the sketch, Fig. 11, "Two-thirds of the labor can be eliminated by using a double straight edge when putting

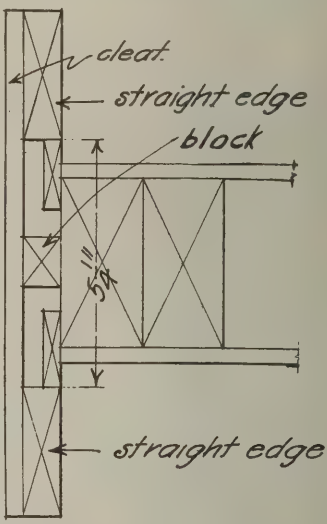


Fig. 11—The double straight-edge

on grounds for door openings. For instance, take a 6 foot 8 inch door opening. Two straight edges, 6 feet 8 inches long set apart $5\frac{1}{4}$ inches (or whatever the width of the jamb is). A 1-inch by 2-inch cleat nailed about 8 inches from each end will hold them together. A block, nailed on center, between the two straight edges, holds the frame work away from the rough jambs enough to permit the grounds to be slipped in. The frame work should be plumbed in such a manner that it will provide for the proper thickness on both sides of the partition."

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Johnson's Floor Varnish dries dust-free in two hours and hard over night. It imparts a beautiful, high lustre—has good body—is easy working—will give long wear—is absolutely water-proof—and will stand all reasonable tests.

Johnson's Floor Varnish is tough, elastic and durable. It will not chip, check, mar, blister or scratch white. Is very pale in color so can be used on the lightest floors and linoleum. Splendid for furniture, woodwork and trim of all kinds. May be rubbed if desired.

FREE TRIAL OFFER

We will gladly send you a pint of Johnson's Floor Varnish, all charges prepaid, if you will test it in comparison with the brand you are at present using. Write us on your business letterhead—there is no obligation whatever attached to this offer.



FREE---This Book on Wood Finishing

This book is full of practical information on finishing new floors and trim and refinishing old work of this kind. Written by experts—profusely illustrated contains color charts—gives covering capacities, etc. Fill out and mail this coupon.

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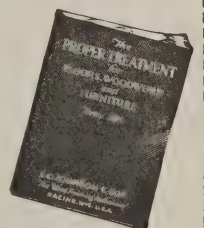
Please send me, free and postpaid, your book on Interior Wood Finishing.

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In Lieu of a Slip Stick

W. F. S. submits the following and charts, Figs. 12 and 13, for convenience in estimating:

"This chart, Fig. 12, will be found convenient for quickly estimating the number of yards to be removed from any ordinary, and most extraordinary, excavations. To use the chart simply run a straight line across from Column A to Column C and the number of yards is immediately given in Column B. For example, how many yards must be removed from a circular excavation 30 feet deep by 100 feet in diameter? The dotted line drawn across the chart shows how it is done. Connect the 30, Column A, with

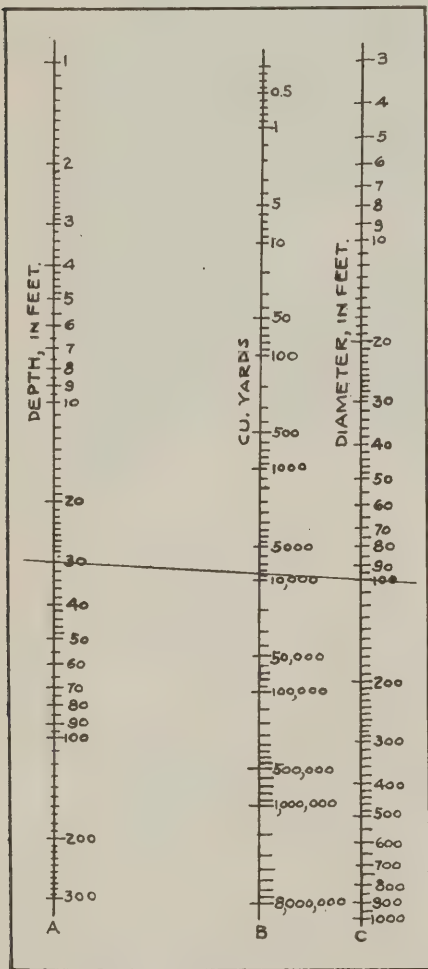


Fig. 12—Estimators' quantity scale

the 100; Column C, and the intersection with Column B gives the answer as very close to 8700 yards. Figure it out with a lead pencil and the correct answer will be found to be 8720, showing that the chart is surprisingly accurate as well as quick.

"The range of the chart, as will be noted, is very great. It will take care of any depth of excavation from 1 to 300 feet and it will take care of any diameter from 3 to 1000 feet. The maximum number of yards is 8,000,000—a considerable yardage.

"Very often the Building Engineer wants to compute the number of lengths of pipe

necessary to make up a pipe line of a given length, the number of boards to make a given distance, etc., and he has to perform a problem of division. Long hand division is usually a tedious task for every one of us. For example, if a pipe line 500 feet long is to be built and pieces of pipe 9 feet long are available, how many lengths of pipe will be needed? The dotted line running across this chart shows how easily it is done. Simply run the line through 9, Column A, and 500 Column B, and the intersection with

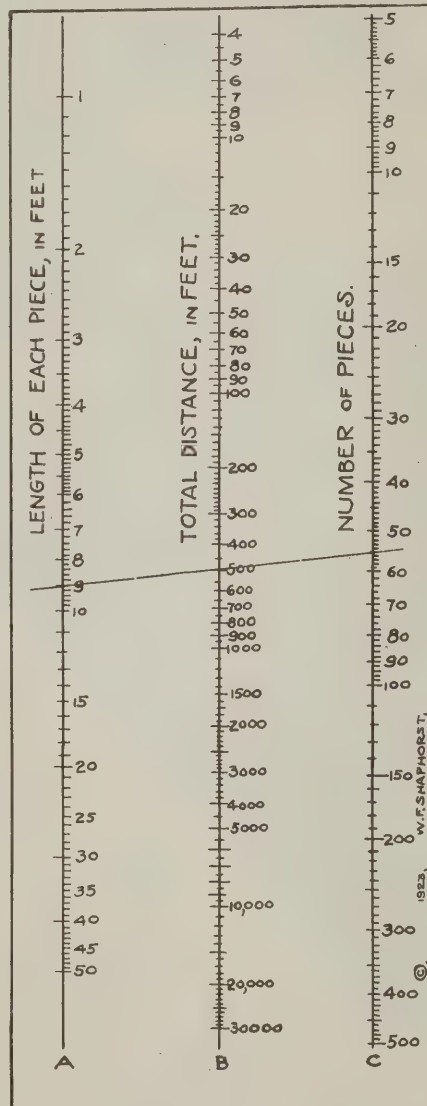


Fig. 13—Estimators' linear scale

Column C shows the answer to be slightly over 55. In other words, about 56 pieces of pipe, pieces of lumber, etc., would be required to make a total distance of 500 feet.

"It will be noted that the range of the chart is very great. It will take care of a total length varying from 4 to 30,000 feet. The length of each piece may vary from 1 foot to 50 feet, and it will take care of any number of pieces from 5 to 500. As a matter of fact, the chart has no limitations whatever. By simply adding two ciphers to any figure in Column B, two ciphers would have to be added to the figures in Column C.

Thus, if the total length were 50,000 feet instead of 500, the same dotted line drawn across this chart would give the answer as, 'about 5600 pieces' instead of 56.

"To be sure, the chart is not 'absolutely accurate,' but it gives surprisingly close results and is excellent for use in estimating or for checking up one's longhand figures. After giving it a trial the user will be amazed as to its simplicity, quickness and accuracy."

Power Required for Cement Making

POWER requirements of the cement industry afford a good indication of the complex and heavy nature of its manufacturing operations.

In power installed, the cement industry ranked 10th among all manufacturing industries of the country, according to the 1919 U. S. Census figures, the latest available.

Of the Census Bureau's 350 classifications of manufactured products, only two called for more power per dollar of selling price than cement.

As much power was devoted to cement making in this country as to glass, agricultural implements, paints and hardware combined.

All the power for the newspaper and periodical print shops that reported on power—12,735 of them—was only enough to grind the raw materials in the country's cement plants. And the power needed for this work is only two-fifths of the total power needs of the cement mills.

Similarly, all the power reported in the thousands of establishments producing agricultural implements, women's clothing and soap would grind only the clinker in cement mills. And clinker grinding accounts for only another two-fifths of the cement mills' power consumption.

These heavy power requirements in the cement industry are explained by the hardness of the materials used and the great amount of grinding they require.

At the outset, the materials commonly are solid rock—limestone and shale. Later they are converted into cement clinker, which is still harder. Both in the raw state and again as clinker, these materials must be ground finer than flour. Where coal is used, as it is in most plants, it also must be ground finer than flour. Altogether this means eight heavy crushing and grinding operations.

Large as the industry's power requirements are, they are not the heaviest fuel consuming part of cement making. The kiln burning is that. Grinding, quarrying, and all the other power and heat consuming operations together take only two-fifths of the fuel needed in manufacturing portland cement. The kiln burning alone takes the remaining three-fifths.

In all, half a ton of coal or equivalent fuel is burned in making a ton of cement.

\$25.00 to \$40.00 a Day

Keep the Money Rolling in During the Winter Months Re-surfacing Floors "The American Universal Way"

The progressive contractor and builder has found a way to increase his yearly income by keeping busy all the year 'round. When building is at a standstill and there are no profits coming in, he makes \$25.00 to \$40.00 a day re-surfacing old floors with the "American Universal" electrically driven floor surfacing machine. It does the work of six men.

Big Demand for This Class of Work

The demand for re-surfacing floors is the greatest during the coldest months of the year—during the time when you are not busy building. Think of the great number of public buildings where the floors require re-surfacing. Your prospects consist of residences, schools, colleges, clubs, hospitals, churches, apartment buildings, office buildings, stores, dance halls, auditoriums, roller rinks, bowling alleys, factory buildings—in fact every new or old floor represents a job for you.

Work Easy to Get

The beautiful, smooth, uniform work which the "American Universal" floor surfacing machine turns out puts the most expert hand scraper's best efforts to shame. There's absolutely no comparison. You'll find it easy to land big jobs at fancy prices—and it requires absolutely no experience to turn out first class work with the "American Universal."

Who Stands a Better Chance Than You?

You know the owners of the buildings and homes where the floors require resurfacing. You are acquainted in your community, and this will make it still more easy for you to land the contracts for re-surfacing the great number of old floors in your locality which are in need of it (and badly so) right now.

An Investment Worth \$5,000 a Year to You

An "American Universal" floor surfacing machine is always a good investment. It will replace six men on your payroll during the building season—and turn loss into big profits during the dull season. One fair sized job pays for the machine.

American Floor Surfacing Machine Co.

519 S. St. Clair Street, Toledo, Ohio
Write Today for Full Particulars

\$134.35 in 74 Hours!

"Since I have been using my 'American Universal' floor surfacing machine, I have found that it is exactly as you represent it to be. It will do the work of five or six men—and do it well.

I have not had a dissatisfied customer, and my 'American Universal' floor surfacing machine keeps me busy. I have several big jobs ahead such as dance halls and lodge rooms. Have actually used the 'American Universal' seventy-four hours, and it has paid me \$134.35 in that time.

Have three big jobs to do in the next two weeks that will alone pay for the machine. I could not do without my 'American Universal' floor surfacing machine."

F. N. Crawford, Colorado.

Makes \$400.00 on One Job!

"I have tested out the 'American Universal' and am very well pleased with it. I am working the machine on the St. Mary's Home for Girls at Creason, Pa., which has about 42,000 square feet of floor space. The machine will make me on this one job at least four hundred dollars.

The owners are well pleased with the smooth, uniform work which my 'American Universal' machine turns out."

J. C. Ivory, Pennsylvania.

\$75.00 in 12 Hours!

"The 'American Universal' floor surfacing machine is a great labor saver and does excellent work. In learning to operate it, I made \$75.00 in 12 hours."

W. H. Norwood, Arkansas.

American Floor Surfacing Machine Co., 519 South St. Clair St., Toledo, Ohio.

Please send me full information on your "American Universal" floor surfacing machine. (This puts me under absolutely no obligation to you whatever.)

Name.....

Street Address.....

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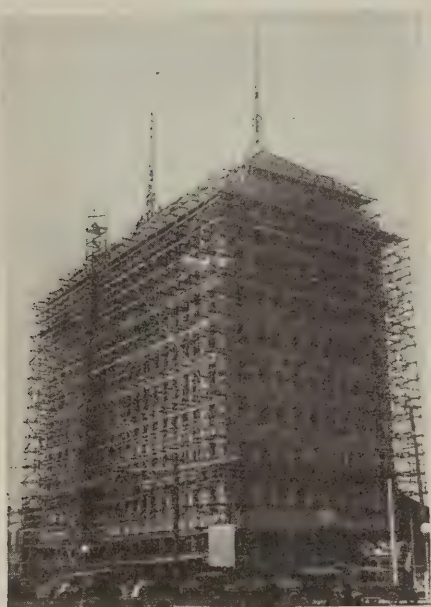
State.....

The following information will assist you in answering my inquiry intelligently. Use (x).

() I am a contractor and want to use the machine on my own work.

() I am interested in surfacing floors "The American Universal Way" as a business.

Of General Interest



© "P. & A. Photos"

A new office building at Fresno, California, has building specifications calling for radio aerial towers and radio telephones in every office



© "P. & A. Photos"

This is the way Miami, Florida, feels about its trees. In spite of the fact that this one was seriously in the way of building, the new structure was built around it



© Underwood & Underwood

View of the house on High Street, Burlington, New Jersey, in which James Fenimore Cooper was born and (at right) the adjoining house in which Capt. James Lawrence—famous "Don't give up the ship" commander of the U. S. Chesapeake—was born. The Cooper birthplace has just been formally dedicated as a Cooper Museum, filled with relics of the great novelist's life. It was built some years before Cooper's birth, which occurred in 1879, and is well preserved



© "P. & A. Photos"

This 200-foot construction tower, in Los Angeles, crashed to earth, due to lack of proper guy wires to hold it steady



© "P. & A. Photos"

The University of Pennsylvania expedition recently unearthed this foundation of a forgotten Egyptian town in the vicinity of the tombs of the nobles of Tut Ank Amen's Court which was located near the Valley of the Tombs of the Kings

Write for Sample of Winthrop Beveled Siding, for Information and Specifications

Winthrop Beveled Siding goes on just like wooden siding. It will not rot. It never needs paint. Its surface is of crushed granite. It has a solid beauty, but the shadow lines of the thick butts prevent monotonous expanse of surface.

You can use Winthrop Beveled Siding regardless of the state of weather. Impervious to moisture. Unharmd by freezing weather. The cost of this remarkable product is about that of good wood siding.

Winthrop Beveled Siding is eight feet long. It is 6 inches wide and is laid 5 inches to the weather. Nails are furnished with the siding. Let us send you a sample and full information at once. This product is making a decided impression among builders. Know about it. Act at once. Write today.

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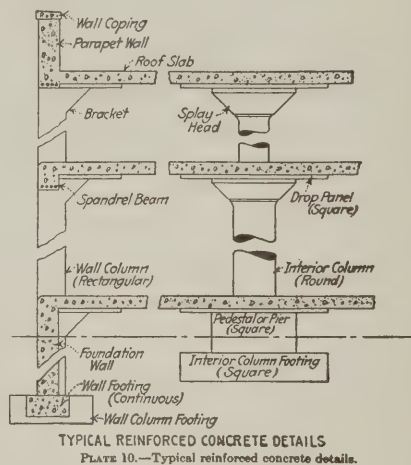


"The Small House—Its Possibilities," by Mary Harrod Northend, is a book for people who are planning to build, or planning to buy, or, being the happy owners of a suburban house, wish to develop its utmost possibilities. The small house has never been so popular as it is today. Partly on account of the cost of materials and labor, partly because architects and builders have learned how to utilize every square foot of space as never before, the great majority of home builders are interested in the small house. Chimneys, roofs, wainscot, alcoves, cupboards, step saving kitchens, the place for odd pieces of furniture, lighting, ceilings, shrubs and flowers around the house are a few of the details about which the author gives valuable information. There are many illustrations from Miss Northend's collection of photographs of old and modern exteriors and interiors. This book, size 5½x8½, bound in cloth, is published by Dodd, Mead & Company, 443 Fourth Avenue, New York City, and sells for \$2.50.

"Greenhouse Construction and Heating," by James H. Beattie, horticulturist, office of Horticultural and Pomological Investigations, Bureau of Plant Industry, is Farmers' Bulletin No. 1318, published by the United States Department of Agriculture, and discusses the importance, location, layout, types, sizes and proportions, materials and parts, ventilation, painting and glazing, heating, water supply and gives some specific information regarding greenhouses which will be useful to those who contemplate engaging in glass farming. Copies may be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 5 cents a copy.

"Jobbing Work for the Carpenter, Builder and Handy Man," by Edward H. Crussell (second edition), contains chapters on selection and care of tools, use of tools, tools and workshop equipment, cutting doorway through a partition wall, store counters, making a cash till, a small bookcase, general repairs, taking measurements, making a four-paneled door, window frame construction, showcase construction, cabinet hardware, a roll-top desk, making a drawing board, picture framing and kindred subjects, crating furniture and household goods, curved work, contractors' ladders, fences, shop kinks, and the shop doctor. There are 273 pages, 6x9, with 270 illustrations. Bound in cloth, the price is \$2.50. Published by the U. P. C. Book Company, Inc., 239 West 39th Street, New York City.

"Plan Reading and Quantity Surveying," by Charles F. Dingman, is intended to delineate, in so far as it is practical to do so in a book of moderate size, the methods to be used in scaling quantities from plans of projected buildings and in setting these quantities down in such form that they will be available for use by the estimator, whose function is to estimate the cost of the necessary materials and labor to produce in the finished structure, the items listed. There are chapters on mensuration; dimensioning



From *"Plan Reading and Quantity Surveying,"* by Charles F. Dingman

with abbreviations; excavating, grading, bracing; plain and reinforced concrete work; stone work, architectural terra cotta; brickwork; fireproofing, cement blocks; lathing, plastering, stuccoing; frame and rough carpenter work; finished carpenter work; glass and painting—finishing and glazing; steel and iron work—steel sash; terrazzo, marble and tile work; plumbing; steam and hot-water heating; sheet-metal work—roofing; electrical wiring; a summary with suggested reading to round out a knowledge of building construction. There is an appendix—A, "The Quantity System" and B, "Reminder List." This book is indexed and bound in imitation leather; size 4x7. Price \$2.50. Published by McGraw-Hill Book Company, Inc., 370 Seventh Avenue, New York City.

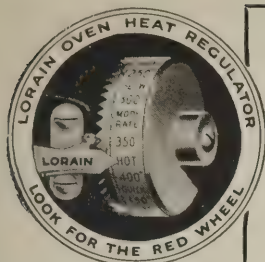
"Your Future Home," a collection of small house plans designed by The Architects' Small House Service Bureau, is edited and published by the Weyerhaeuser Forest Products, St. Paul, Minnesota, "as a means of helping the home-builder to obtain house plans with the essential attributes of good design, efficient and

economical planning and substantial construction at moderate cost." This book contains hints on financing, the building of a home, how to select a plan and how to read and understand plans. There are 69 house plans—22 six-room, 22 five-room, 17 four-room and eight three-room houses. Each house is presented in perspective and accompanied by floor plans and description. Building documents supplied by the bureau are illustrated and described and there are reproductions of a complete set of working drawings and details. The book is 8½x11 and sells for \$1.

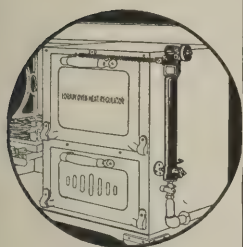
"Survey of the Real Estate Market" as of November 1, 1923, is the third semi-annual survey of real estate conditions throughout the United States and Canada and is based on analysis of local factors by 241 member boards of the National Association of Real Estate Boards, with headquarters at 220 South State Street, Chicago, Illinois. Herbert Undeen Nelson is executive secretary. The survey contains a summary of conclusions on the conditions of the market, shortage of structures, rent movement, labor situation, demand for single dwellings, money supply, subdivision movement and report of geographical divisions. Copies of this booklet may be had on request.

"Standard Specifications for Lime Plaster," Bulletin 305A, is the result of several years study of field conditions and has been prepared in conjunction with representatives of the engineering and architectural professions as well as expert plasterers and producers of lime. The specifications are in such form that they may be quoted directly and included in an architect's complete building specifications, or if desired the short form may be used and the contractor referred to the standard specifications. This new bulletin is 8½x11 in size and marked for standard A. I. A. filing. Each specification is on a separate page and the arrangement is logical and simple. Copies may be secured from the National Lime Association, 918 G Street, N. W., Washington, D. C.

"Stately Mahogany" is a 16-page pamphlet treating with the history, use, quality and care of mahogany. These pages are written in a style which makes their reading a pleasure. The subject-matter is well presented in an interesting manner, is entirely non-technical and contains some excellent and authoritative information on the care of finished mahogany. The pamphlet is sent free upon application to the Mahogany Association, Inc., 1133 Broadway, New York City.



One easy turn of the Lorain Red Wheel gives the housewife a choice of 44 measured and controlled oven heats for any kind of oven cooking or baking



View showing application of the Lorain Oven Heat Regulator to the gas range oven.

A. PERMUT
General Contractor and Builder
11405 Saywell Avenue
Cleveland, Ohio

January 3, 1924

New Process Stove Co. Div.,
American Stove Co.,
Cleveland, Ohio.

Gentlemen:—

Recently I gave you an order for 15 gas ranges for the Biltmore Apartments. I intended to purchase these ranges without Lorain Oven Heat Regulators. Your salesman, however, explained the advantages of Lorain, and I decided to install Lorain-equipped stoves.

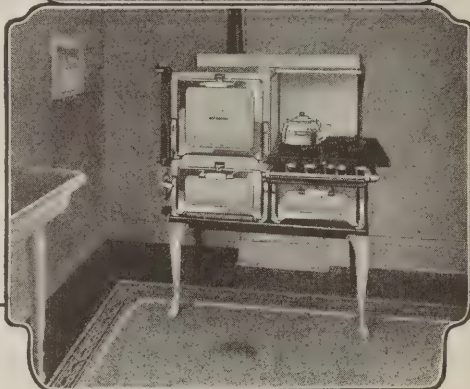
I was somewhat skeptical about this, but since they have been installed I can safely say I have made no mistake. The first suite rented was to a woman who had just about decided to take a suite elsewhere at \$100.00 per month. She, however, rented one of my suites at \$130.00 per month, mostly due to the fact that these suites are furnished with New Process Gas Ranges with Lorain Regulators.

Later on my agent came in with two people looking for a suite. He called their attention to the ranges with the Lorain. The woman then remarked that this in itself was worth renting the place for.

Eleven of the suites are now rented, and all tenants are pleased with the stoves. I hear nothing but compliments from all of them. I have been using your ranges for a good many years in my different apartments, and I recommend that owners of apartments furnish same with Lorain-equipped Gas Ranges.

Thanking you for past favors, I am,
Yours very truly,
(Signed) A. PERMUT.

The Biltmore Apartments, Overlook Road, Cleveland, Ohio. A. Permut, Owner, Cleveland. A. F. Janowitz, Architect, Cleveland. Kitchens throughout equipped with New Process Gas Ranges with Lorain Oven Heat Regulators.



Representative kitchen of Biltmore Apartments, showing type of New Process Lorain-equipped Gas Ranges in use.

Homes with Lorain-equipped Gas Ranges Rent More Quickly

WHAT makes some homes rent more quickly than others? The ones that rent *first* usually have the best of modern equipment.

One of the many examples of this fact is shown on this page. Read the letter of Mr. Permut above.

When the average housewife seeks a place in which to live, and finds a Lorain-equipped Gas Range stove as part of the equipment she immediately becomes most interested. She knows that this is the wonderful labor-saving stove with Lorain Oven Heat Regulator, the famous device that automatically controls the oven heat at any desired cooking temperature, thereby making possible many unusual cooking feats.



Thousands upon thousands of fine homes, apartments, churches, hospitals and other types of high-grade buildings have kitchens furnished with Lorain. These famous stoves are used for cookery instruction purposes in over 900 of the leading schools and universities of America.

If you want homes or suites to rent more quickly, see that Lorain-equipped Gas Ranges are installed. For specific data, see pages 2315-2324 inclusive, 18th Edition, Sweet's Architectural Catalog. Catalogs, prices etc. gladly furnished on request.

These famous gas stoves are equipped with the Lorain Oven Heat Regulator:
Dangler, Direct Action, New Process, Quick Meal, Reliable and Clark Jewel.

AMERICAN STOVE COMPANY, 222 Chouteau Ave., St. Louis, Mo.
Largest Makers of Gas Ranges in the World

LORAIN OVEN HEAT REGULATOR

When writing advertisers please mention National Builder

Among the Manufacturers

*New Devices Methods and Improvements
in the Building Industry*

A Portable Air-Cleaning Machine

THE popularity of small portable cleaners for residence work has in turn created a strong demand for portable cleaners of greater utility and more comprehensive cleaning capacity for use in buildings, which for any reason may not be piped for stationary vacuum cleaner service, and as auxiliary equipment to the installed type. Office buildings, churches, schools, theaters, stores, factories, lodge rooms, hotels, libraries, hospitals, restaurants, garages and other buildings, with or without elevator service, can be adequately cleaned by the new model



The "Tuec" portable cleaner

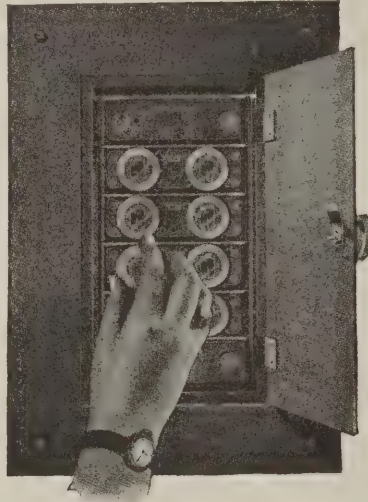
"Tuec" portable cleaner, according to the manufacturers, the United Electric Company, of Canton, Ohio.

The company announces this new truck cleaner as the last word in heavy duty portable cleaners, retaining all the utility features of previous models, plus many refinements. It has inbuilt the same sturdiness, simplicity, durability, efficiency, economy and safety as other Tuec models, both truck and stationary.

Mounted upon rubber-tired, steel disc wheels, the new model Tuec, it is explained, is exceptionally mobile and easy to handle and use. The small wheel-base permits the new equipment to be carried from floor to floor in the smallest passenger elevator, through narrow doorways and along restricted corridors. The light flexible hose, aluminum tools and aluminum extension handles afford easy access to moldings, beams, shelving, bins, ceilings, walls—in fact, all exposed surfaces ordinarily beyond the reach of the custodian, without the use of a cumbersome step-ladder.

New Panel Board

BULLETIN No. 27 has recently been published by the Frank Adam Electric Company, St. Louis, Missouri, and describes Type "R," a standardized, sectionally con-



Type "R" safety type panel board

structed, safety type panel board for residences. The booklet contains specifications for wiring the average modern home. Type "R" is illustrated.

"Rug Anchor" Not Oil Cloth

ON page 84 in NATIONAL BUILDER for December, 1923, under the caption, "'Rug Anchor' Prevents Accidents," the material was referred to as "oil cloth surface on one side and cloth on the other." Mr. J. J. Burke, Director of Sales, E. I. du Pont de Nemours & Company, Fabrikoid division, Newburgh, New York, manufacturers of this "rug anchor," calls attention to the fact that this product contains no oil cloth. "It is a special compound," says Mr. Burke, "differing entirely in ingredients used and method of application from the coating on oil cloth." NATIONAL BUILDER is glad to make this correction and hopes that the term oil cloth misused in the article referred to will not create a wrong impression in the mind of anyone contemplating using the rug anchor.

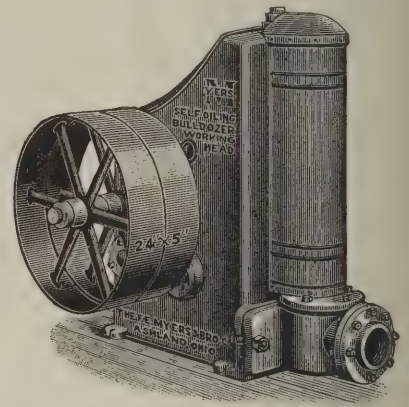
"Milcor" Addition Completed

THE Milwaukee Corrugating Company, manufacturers of Milcor metallic build-

ing products, have just completed a new addition to their main plant at Milwaukee, Wisconsin. The new addition covers 50,000 square feet.

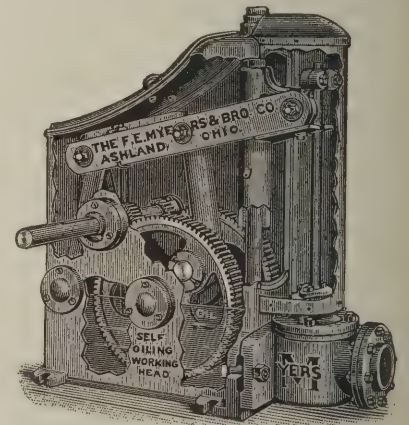
New Deep Well Working Head

A NEW type of working head has recently been added by The F. E. Myers & Brother Company, of Ashland,



The Myers self-oiling Bulldozer working head

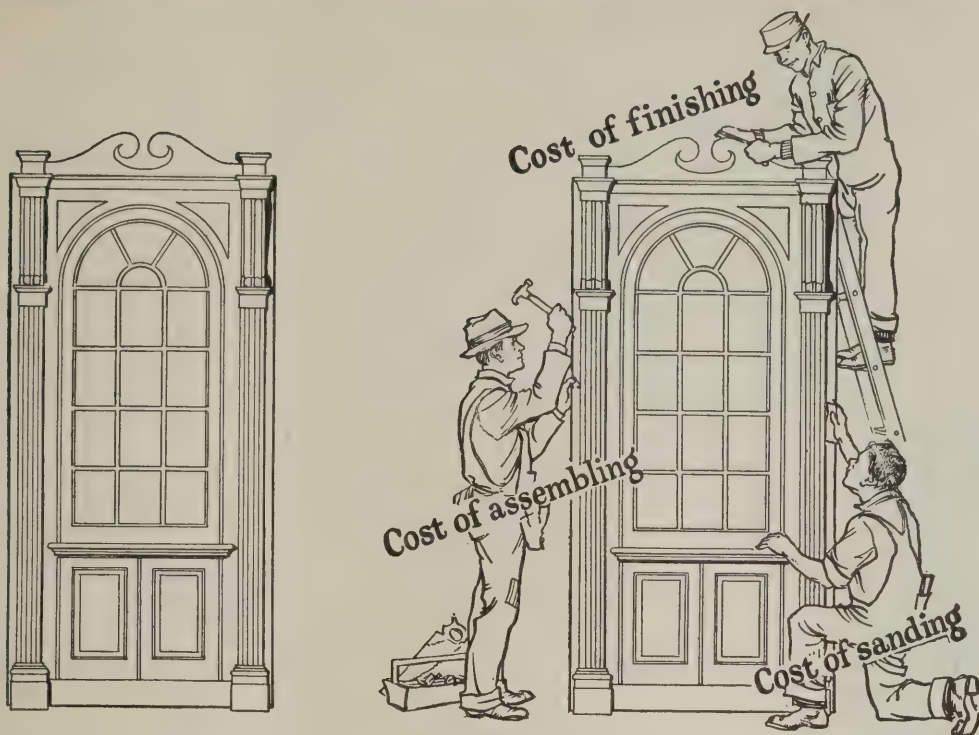
Ohio, to their self-oiling line, which they claim has been very successful wherever installed and used. The Myers Self-Oiling



The head with covering removed to show working parts

Bulldozer Working Head, with 18-inch stroke, will run continuously without attention, and is designed to meet the needs of railroads, manufacturing plants, mines, village water works, apartment houses, hotels, etc., where water is required from deep wells. All working parts are fully

China
Closet
C-700



Price vs. Cost

The price often may seem lower—but look what comes with it!

The contractor who picks up his woodwork at a "bargain price" gets something else thrown in — the privilege of assembling, finishing, and preparing for the painter.

After it is all done, he finds his actual or total cost at least the same — and usually more — than if he had bought good woodwork in the first place.

Curtis Woodwork is ready to install

Horses can't run races with automobiles. It doesn't pay to have your men do by hand what machines in the Curtis factories can do in the twinkling of an eye. The woodwork that comes ready to set in place and paint is the kind that saves you money.

Curtis woodwork comes to you as nearly ready for the job as the Curtis mills can make it.

So wide a variety of standard designs is made by Curtis that there is no need for your ordering special jobs. Quicker service and more for the money is your reward for

sticking to standard designs. The public is being educated through advertising as to why Curtis Standardized Woodwork is desirable and should be used.

People learning to appreciate good woodwork

Contractors who specify Curtis find that they can get away from a mere price shaving proposition. Because Curtis is easier to sell to people who appreciate its value. To paraphrase Ellis Parker Butler: "Pigs is pigs to people who know nothing about them — but the man who has studied up on them readily sees why one is worth more money than another."

So it is with woodwork. Advertising is teaching the public to buy quality. We want contractors and dealers to co-operate with us. Send for our free miniature catalog "Permanent Furniture" and see the entire Curtis line of built-in conveniences. The coupon will bring it. Send it today.

THE CURTIS COMPANIES SERVICE BUREAU

72 Curtis Building, Clinton, Iowa

Curtis Companies, Incorporated, Clinton, Iowa

Curtis Bros. & Co., Clinton, Iowa
Curtis & Yale Co., Wausau, Wis.
Curtis Sash & Door Co., Sioux City, Iowa
Curtis, Towle & Paine Co., Lincoln, Nebr.

Curtis, Towle & Paine Co., Topeka, Kan.
Curtis-Yale-Holland Co., Minneapolis, Minn.
Curtis Door & Sash Co., Chicago, Ill.
Curtis Detroit Co., Detroit, Mich.

Sales Offices in: Pittsburgh New York Baltimore

Curtis Woodwork is identified by the mark at the right. Whatever you buy—sash, door, molding, or interior woodwork—see that it bears this trademark. Curtis Woodwork is sold under the "1866 Curtis" trademark by retail lumbermen east of the Rockies.

1866
CURTIS

"We are not satisfied unless you are." Every month in the year the Curtis story is told to millions of readers in such magazines as: The Saturday Evening Post, Ladies Home Journal, American, House and Garden, House Beautiful, and Country Gentleman; also in Sweet's Catalog.

The Curtis Companies Service Bureau

72 Curtis Bldg., Clinton, Iowa

Please send me a free copy of the Curtis "Permanent Furniture" showing the Curtis line of built-in conveniences.

Name

Address

When writing advertisers please mention National Builder

enclosed and run in oil. Catalog No. SO24 illustrates and describes this model as well as all other Myers Self-Oiling Bulldozer Power Pumps and Working Heads.

Salamanders Help Builders Over Winter Weather

SALAMANDERS are especially valuable for carrying on and completing winter concrete work. These portable heaters can be used on any part of the building job to banish frost, as drying agents, thawing out numb fingers, or, when fitted with a flue, to heat a temporary office or shop. They



The Donley salamander

have become of inestimable value to contractors as a means of drying or keeping fresh concrete in warm, moist condition while it is hardening. To accomplish this the concrete is protected by sheathing or canvas covering. It is necessary that a pan of water be placed on each salamander to provide proper moisture. The salamander should not be close enough to concrete to cause drying out in spots. One salamander will properly heat up 300 square feet of floor space. The fuel should be applied frequently and in small quantities, to prevent too much smoking and to provide a more uniform heat.

The Donley Brothers Company, 13900 Miles Street, Cleveland, is supplying builders with three grades of salamanders—the regular, special and scaffold. These salamanders are designed to burn any kind of fuel.

Donley salamanders are claimed to have an especially strong construction. The continuation of the legs prevents buckling when the salamanders become red hot. They have an added advantage in that all parts are standardized and interchangeable—parts can be changed from any one particular salamander to any other grade and still fit.

The regular Donley salamander is built of 14-gauge steel and has a heavy grate to

withstand long and severe usage. It has a total height of 36 inches, a shell height of 24 inches and a diameter of 24 inches. It is shipped in the following assemblies: With grate, 55 pounds. With grate and top, 70 pounds. With grate and ash-pan, 60 pounds. With grate, top and ash-pan, 75 pounds.

The Donley scaffold salamander is designed for use on out-of-the-way places, such as scaffolds, where light and easy transportation is desired. It has a total height of 30 inches, a shell height of 18 inches, a diameter of 16 inches, and no top. It has the following weights: With grate, 35 pounds. With grate and ash-pan, 38 pounds.

This year the company has placed a new salamander on the market called the Donley special salamander. It has been built to meet conditions where salamanders are desired for temporary or less severe use. It is made of 18-gauge steel with lighter grate. In size it is identical with the regular salamander. It has the following weights: With grate, 40 pounds. With grate and top, 55 pounds. With grate and ash-pan, 45 pounds. With grate, top and ash-pan, 60 pounds.

Modern Method for Staining Shingles

THE Industrial Sales Company have installed at their plant at Newark, New Jersey, a complete shingle staining plant with equipment and machinery for staining shingles of either 16, 18 or 24-inch size and furnishing them ready to lay. This is a patented process.

The shingles are dipped in the bundle. That is, the entire pack is submerged in a tank of stain a sufficient time to insure the penetration of the stain into the pack and

into the pores of the shingles themselves. The bundle is then removed from the tank and transferred immediately, while still saturated with stain, to the forcing and drying machine. This machine consists of a large horizontal centrifugal with a cage large enough to contain a bundle of shingles. When the bundle is in place the power is turned on and the centrifugal operated up to its maximum speed of 500 r.p.m. This forces the stain through the entire pack, insuring an equal distribution of stain over all the shingle surfaces.

The same machine acts as a dryer, removing and recovering the excess stain from the bundle of shingles, so that while the bundle has not been opened during the staining process the shingles are not only thoroughly stained, but all excessive stain spots are eliminated.

The quality of product being produced at this plant is said to be worthy of note, as nothing but the best grade of red cedar shingles are used in the process and all stain used is the genuine Cabot's Creosote Stain. Cabot's stain, it is claimed, combines the finest grade of permanent colors with the best quality of creosote, yielding stained shingles which are effectively preserved and colored.

The advantages of using ready stained shingles lie in the fact that all labor, muss and trouble are eliminated and the shingles are delivered to the job in bundles ready to lay. Another important point is that these shingles are protected from moisture so that no water enters the pores of the wood before staining. It is impossible to obtain a good staining job on wet shingles and many a shingle stain job has been ruined by wet weather between the time of delivery and the staining of the shingles on the job.



The shingle staining plant of the Industrial Sales Company

"I got 6 jobs out of 10 calls with this FREE BOOK"

Wm. J. Benko finds how easily he can make more money

PEOPLE in New Brunswick, N.J., didn't know that they could modernize and beautify their homes at slight expense by having $\frac{3}{8}$ inch oak flooring laid right over the old worn softwood floors. Wm. J. Benko told them he could do it, and left in ten homes a copy of this new free book, in colors. He showed them the illustration on page 17, laying oak over old floors, one room at a time, with least possible inconvenience to home life. He pointed out the beauty of oak floors, permanent value added to property, saving in housework. It's all in this book. They only had to see, to be convinced.

Here is what Mr. Benko writes:

"I distributed ten of the books you sent me personally to houses, and out of these ten places, I got six orders for new oak floors."

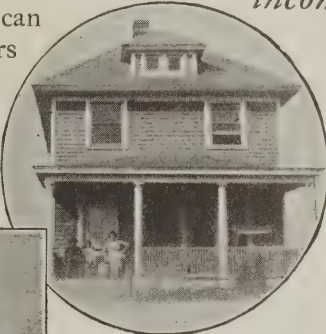


Wm. J. Benko found out how to increase his income easily and quickly.



As soon as I receive a new supply, I will have my name printed on them, and I'm sure I can keep my six floor layers busy all winter long."

What big money returns for such a little personal effort!



One of the homes Mr. Benko floored. There are many like it in your own block.

We will send you free copies of this book. Hand them out personally to homes that need new floors. They are all about you, right in your own block. Get this business now, at just the time of year when everybody is thinking of

toning up the home. Let us help you without charge or obligation.

Mail the coupon today.

OAK FLOORING BUREAU
1045 Ashland Block, Chicago



The new permanent oak floor.



Put your flooring problems up to our experts. We will gladly serve you

Write for this free book now!



OAK FLOORING BUREAU
1045 Ashland Block, Chicago
Please send me your free, illustrated book, "The Story of OAK FLOORS."

Name.....
Address.....
City.....
State.....

When writing advertisers please mention National Builder

Announce New Line of Woodworking Machines

THE W. F. & John Barnes Company, of Rockford, Illinois, has just announced a new line of light electric woodworking machines—the Barnes bench electric driven scroll saw and the Barnes bench electric driven former, both of which are illustrated on this page.

The motor-driven scroll saw with boring attachment is equipped with a $\frac{1}{4}$ -horsepower motor. A round belt runs from the motor to the balance wheel which drives the pitman, insuring a smooth and perfect running jig saw. The saw blade runs 1200 strokes a minute and it is stated that an operator can saw 2-inch pine, $2\frac{1}{2}$ feet per minute; 1-inch pine, 5 feet per minute, and 2-inch maple, $1\frac{1}{2}$ feet per minute. The swing around blade under the arm is 24 inches, table is 34 inches long by 20 inches wide, height is 11 inches, saw blades are 7 inches long, weight, including motor, is 80 pounds, boxed for shipment 130 pounds, and with floor stand and boxed the shipping weight is 175 pounds.

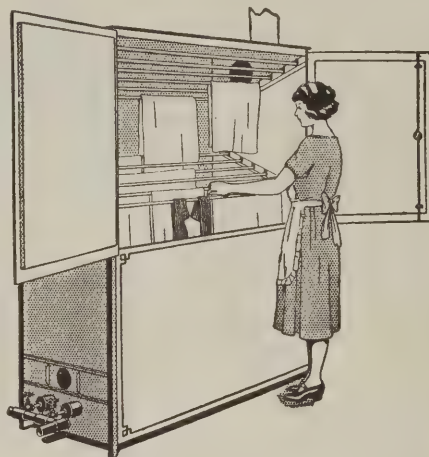
The motor-driven former is used for molding edges on bracket, scroll work, panel work and moldings of various styles up to $\frac{3}{4}$ inch. The spindle of steel and bearings of bronze, insuring long wear, can be raised and lowered to give $1\frac{3}{4}$ inches between the table and lower cutting edge of the knife. The speed of the knives is 3500 r.p.m. There is a large assortment of knives which can be used singly or in combinations. The former is equipped with a $\frac{1}{4}$ -hp. motor speeded at 1750 r.p.m.; the table is 34 inches long by 20 inches wide; the height from foot to table is 11 inches; weight, including motor, is 73 pounds; boxed for shipment, 123 pounds; with floor stand boxed, the weight is 168 pounds.

Both machines are designed for practical service in the workshops of carpenters, contractors, cabinet makers and manual training schools, and the mechanical construction is said to be such that bearings and parts are easily adjusted to take up wear.

A Cabinet Clothes Dryer

ON a cold, blustery winter day have you not often thought how pleasant it would be if the task of carrying clothes from the laundry to the yard could be done away with?

The Williamson Heater Company, Cincinnati, Ohio, manufacture the "Snow White" clothes dryer, designed for the average American home, and with all the advantages



"Snow White" clothes dryer

in labor saving, cleanliness and economy formerly only attainable in the most expensive homes.

The cabinet is 5 feet wide, 6 feet 2 inches high and 2 feet deep, comes packed in one crate, and with the aid of a pair of pliers and a screwdriver anyone can install the cabinet in less than an hour's time, the manufacturers claim. Shipping weight is about 325 pounds.

The "Snow White" is heated by a two-pipe gas burner. The air enters the dryer at the bottom and passes through a deflector plate which is perforated except immediately above the burners, through half-inch mesh galvanized wire screen 2 inches above the deflector, and after circulating through the clothes it escapes through the vent pipe. The gas consumption is so small

as to be practically negligible, it is claimed.

The drying time for clothes is from five to thirty minutes, depending upon their weight. The racks are of heavy galvanized iron pipe and easily removable. The hanging space is about 60 feet.

This sort of equipment is coming into wide use in apartment buildings, as well as houses, for in the former space for hanging out clothes either in the basement or courtyard is often unavailable.

A New Gable Finial

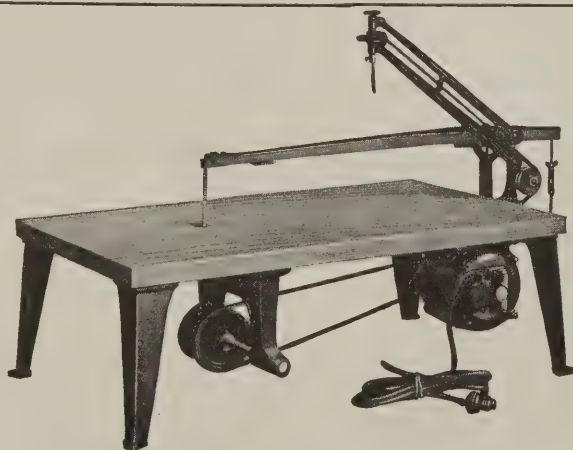
THE Milwaukee Corrugating Company, Milwaukee, Wisconsin, manufacturers of sheet metal building products, have designed a new gable block finial called the No. 915 Gable Finial. They claim this



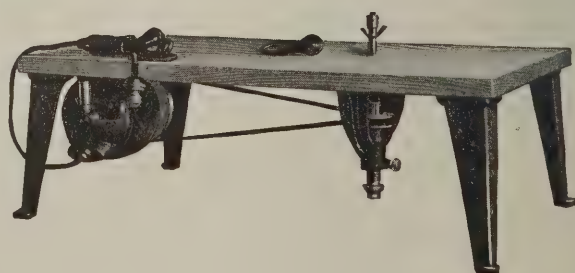
A new gable finial

finial bids fair to become even more popular than their No. 5 Gable Globe Finial. The No. 915 Gable Finial is practically a one-piece finial and is formed by a special process from the best copper-bearing terne plate. The seams are carefully lapped, thus giving it unusual strength and rigidity. It is galvanized both inside and out after formation, so as to give it the longest possible life, and has the additional advantage in that it can be used with $1\frac{1}{4}$, $1\frac{1}{2}$, and 2-inch ridge roll.

Upon request the Milwaukee Corrugating Company will forward a two-color circular with further information.

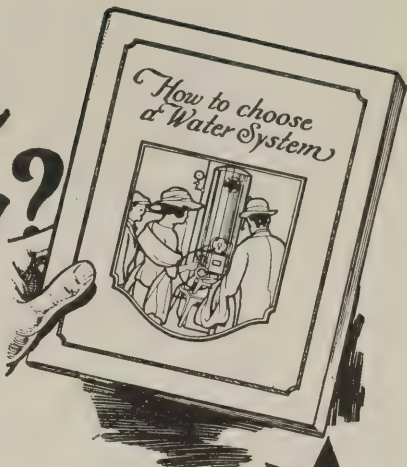


Electric bench scroll saw



Electric bench former

How do You get your Water?



This is the age of the automobile. Transportation has been simplified. No longer is our dwelling place restricted by the artificial limits of the city.

The progress is outward—ever outward. Thousands of new homes are being built this year beyond the limits of city water service. These homes demand

DURO Water Systems

"Just Like City Water Service"

Duro Water Systems are designed expressly for the average suburban home. They bring all the comforts and conveniences of city water service to the suburban or country home. They are easily installed—require no attention—are automatic in operation.

Duro pumps are driven by high line current, farm light plant or gasoline engine. They are made in many sizes and styles—for cisterns, for shallow wells, for deep wells. Complete systems as low as \$99.50.

DURO Water Softener



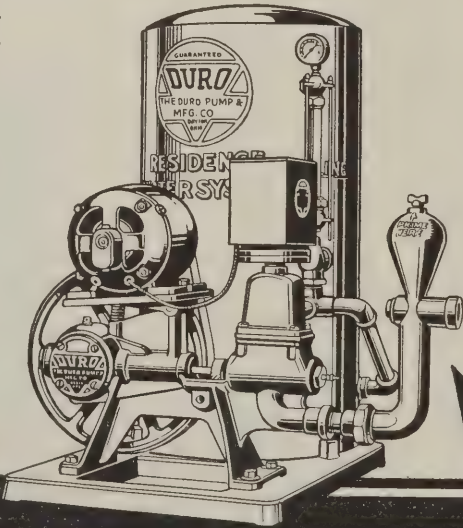
The latest Duro product. Rapid-rate upward flow—no packing of mineral. Easily regenerated. Saves cost of cistern and double plumbing.

FREE BOOKLETS

Get our free Booklets. Every Architect and Contractor should have the Duro Data Book & Standard Specifications. "How to Choose a Water System" is a booklet that takes the guess-work out of buying a water system. Write for them today.

The Duro Pump & Mfg. Co.
202 Monument Ave. Dayton, Ohio

Largest Manufacturers of Water Supply Systems, Water Softeners and Filters



Tear off and Mail

The Duro Pump & Mfg. Co., 202 Monument Ave., Dayton, Ohio.

Please send me the booklets checked as follows: ☐ Duro Data Book. ☐ "How to Choose a Water System." ☐ "How to Select a Water Softener."

My Name

My Address

My Business

When writing advertisers please mention National Builder

Keeping Concrete Construction Costs Down in Winter

MOST architects, engineers and contractors know that nearly all classes of building can be soundly and economically constructed during cold weather months. The volume of winter work is steadily growing; all year 'round progress and profits, both for builders and owners, are encouraging steady increase in the operations carried on from November to April.

The introduction of portland cement made it possible to erect masonry and lay concrete floors in freezing weather. It did not, however, leave the contractor without problems, many of them difficult to solve, and all of them affecting the soundness of the construction as well as his pocketbook. He found that cold slowed up the set of concrete mortar. When the temperature fell below 50 degrees F., the set of concrete was perceptibly retarded, forcing him to keep crews of floor finishers on overtime work and reducing the number of brick laid per man per day. Therein was his pocketbook seriously affected. His costs increased inversely with the temperature, and usually ran from \$2.00 to \$5.00 higher per thousand brick on masonry, and showed a similar increase on floor work.

Then it began to be found that the mortar joints of winter-laid masonry were giving trouble, even where cement mortar was used. The exterior of the brick or stone facing would show unsightly blotches of white deposit—efflorescence—salts from the common brick backing (which has been dissolved by moisture absorbed into the porous joints), were brought out when the sun drew the moisture out, and remained in deposit on the face of the wall.

The absorption of water frequently caused damage to the interiors of buildings. It was evident that winter masonry would have to provide for water-proof mortar if these two faults were to be eliminated.

Below 32 degrees F. the water in mortar froze, forcing a closing down of the job, or necessitating shelter and heat, both involving considerable expense.

The Master Builders Company, of Cleveland, Ohio, as manufacturers of concrete floor hardeners, had early recognized the need and had realized the importance of meeting it with a complete solution. Their product, Master Mix, a colorless liquid compound used in combination with the gauging water for cement mortar, was developed and placed on the market in 1916.

Master Mix is a combination of several elements, each producing its characteristic effect in the concrete mortar. One of these elements that is of primary importance to successful masonry is its waterproofing function. Master Mix contains the basis of all waterproofing media, resulting where

used in the positive and permanent waterproofing of all mortar, either in floors or in masonry. This prevents the absorption of moisture, and thus eliminates efflorescence, which is the result of such absorption. It does so by increasing the density of the concrete, which is another way of saying that it decreases the natural size of the voids and reduces to a minimum the porosity of the hardened concrete. Mortar hydrated with Master Mix is buttery and works easily under the trowel, according to the manufacturers.

The second important element incorporated in the compound is a hardener which renders cement floor toppings dustproof and extremely wear-resisting. There is not only a high initial tensile strength, it is claimed, but permanent high tensile and compressive strengths in concrete so treated.

What is perhaps of greatest importance to the contractor is the speeding of the set of mortar in cold weather. Master Mix accelerates the set of cement mortar, completely offsetting the slowing-up effect of the cold, and thus makes it possible for floor finishers and bricklayers to maintain a constant warm-weather pace. Masons can strike a clean, fast joint; there is no sloppy mortar to clean off the walls, on the contractor's time. Master Mix, when used in the proper proportions in the mixing water, prevents mortar from freezing down to 15 degrees F., making it possible to keep the job going until it is too cold for men to work.

The use of this liquid material is simple. It is stirred into the mixing water in proportions that vary with the temperature—and the mixture is used to gauge the sand and cement.

New Catalog Announced

GILLIS & GEOGHEGAN, 558 West Broadway, New York, have just issued a new 24-page 8½x11-inch two-color catalog. It is fully illustrated with photographs of actual installations of G&G Telescopic Hoists, as used for handling ash cans, barrels, bales and other loads between floors. It also contains two forms of specification for each model, one a very short form, and another which describes in detail the apparatus.

With the catalog is included a special folder to fit a vertical filing cabinet for convenience in locating the data. Anyone interested may obtain a copy by writing to the firm.

New Method of Cooling Ford Engine for Concrete Mixer

WITHOUT some extra cooling device the Ford engine will not work satisfactorily, when standing still, for industrial use. The illustration shows the method used by the Archer Iron Works, Western Avenue and 34th Place, Chicago. This is a very simple cooling method and is done by simply blocking up the overflow pipe on the Ford radiator and running a two-inch hose from a water tank to the top of the Ford radiator. This water tank has a capacity of fifteen gallons. The fact that the water in the tank is changed about every minute makes an added advantage in cooling the Ford engine.



An extra cooling device for Ford engines for industrial use

The Only Journal Devoted Exclusively to the Contractor, Architect and Builder

National Builder



MARCH 1924

Serving the Building Industry Since 1864

In This Issue—

Concrete Block House
Indoor Swimming Pool
Four-Family Apartment
Complete Plans for Colonial Home
Wallboard
Hardware
“National Home Builder”



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National Builder

Spring Is Coming! And So Is the Spring Building Number of NATIONAL BUILDER

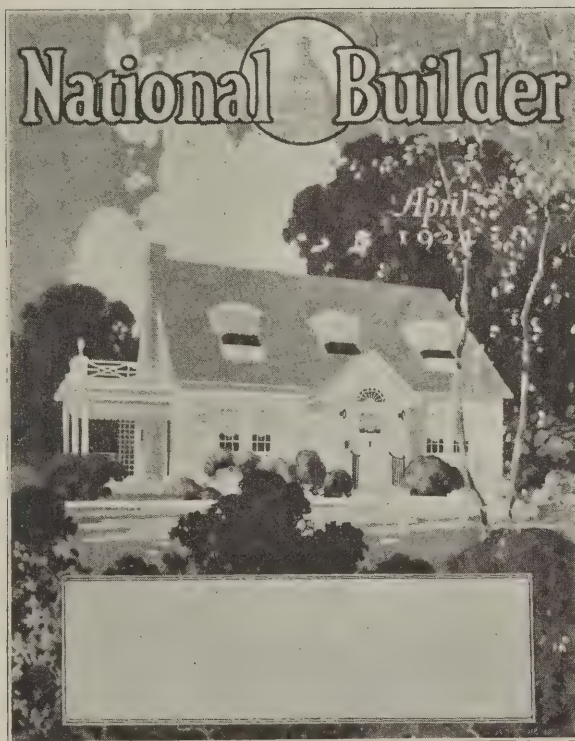
A BUILDERS' journal is not a medium in which to burst into verse over the event of spring, but as we think of what our readers are going to get in the Spring Building Number of NATIONAL BUILDER, we can't help but become enthusiastic.

This big number is published to help our readers sell. It is going to be bigger and better than any issue heretofore published.

It will be a veritable selling manual—a real sales help with which you can go out and get business. It will be full of pictures and plans galore of all kinds of buildings so as to help you get under the hide of Mr. Prospect and make him want that new house, or garage, or apartment, or whatever it happens to be, so badly that he won't wait.

To be specific, the sepia section, the "National Home Builder," will be twice its regular size. It will include photographs and plans of at least twenty-six beautiful houses of all types from all over the country.

There will be plans and big pictures of stores and garages, complete plans for a gas filling station, for a summer tourists' rest station, and for a two-car garage,



This is the cover design for the big Spring Building Number of NATIONAL BUILDER. The cover will be printed in four colors and inside there will be pages with decorative borders and attractive tints—all designed to make your prospect want to build and to help you sell him

in addition to the complete working drawings and quantity survey for an attractive small house prepared especially for NATIONAL BUILDER by The Architects' Small House Service.

There will be articles about apartment buildings of all sizes, generously illustrated, showing all equipment and material used and drawings of their floor plans. A small town moving picture theater will be described in detail with photographs of its principal features.

There will be complete descriptive articles, abundantly illustrated, of beautiful small houses of different architectural types and in different materials and with practical floor plans.

This big issue will be the best thing of its kind ever offered to the contractor and builder for getting business. Don't fail to get your copy and when you get it, read it through and then put it under your arm and go out after business.

This big issue will be sold at fifty cents per copy but if you are a regular subscriber it will cost you nothing extra. If you are not a regular subscriber, why not have your subscription start with the April issue?

NATIONAL BUILDER is a journal for the contractor, architect and builder. It is published on the first of each month by the Trade Press Publishing Corporation, 542 South Dearborn Street, Chicago, Ill., to whom all communications concerning subscriptions, contributions or advertising should be addressed.

Subscription Rates: In the United States and Possessions—\$2.00 for one year; \$3.00 for two years; single copies, 25 cents. In Canada: \$3.00 for one year; \$5.00 for two years; single copies 35 cents. In foreign countries: \$3.00 for one year; single copies 50 cents.

Renewals: Instructions for renewal, discontinuance or change of address should be given three weeks preceding date of issue. Both old and new addresses should be given. Subscribers wishing to discontinue their subscriptions must notify the publisher upon date of expiration.

National Builder is a charter member of both the Audit Bureau of Circulations and The Associated Business Papers, Inc.

Contributions to the editorial pages will be accepted solely on their merits and paid for at the regular space rates. Contributions of timely nature must be in on the 15th of the month preceding date of issue.

Advertising: Space in the advertising pages is sold according to published rates, furnished on application. Copy must be in on the 15th of the month preceding date of issue if proofs are to be submitted for approval before publication. Last forms close on the 23rd of the month preceding date of issue. The publishers reserve the right to reject or revise any advertisement containing statements of doubtful authenticity or derogatory to any building material, accessory or equipment.

Mechanical Requirements: Type size of page, 7x10 in.; half-page, 3½x10 in. or 7x4½ in.; quarter-page, 3½x4½ in. or 7x2¾ in.; eighth-page, 3½x2¾ in. Screen required, 120 line; reversed plates must be stippled or Ben Day.



The slender and graceful lines of the wrought iron porch rail and window baskets, painted an oxidized blue-green with the window trim, contrast pleasantly with the substantial mass of the concrete units



The House of the Month

PEOPLE passing by this house in Oak Park, Illinois, the home of Mr. A. J. R. Curtis, often wonder of what material it is constructed, whether of marble, granite, limestone, terra cotta or, as it actually is, of concrete block. Its unusually good concrete surfaces are pleasing in appearance. Yet there is no attempt to deceive as to the material; on the other hand, the design is an honest expression of the concrete block construction and the house is a good example of what can be done with that material when properly handled. The article on pages 25 and 26 describes the construction in detail.

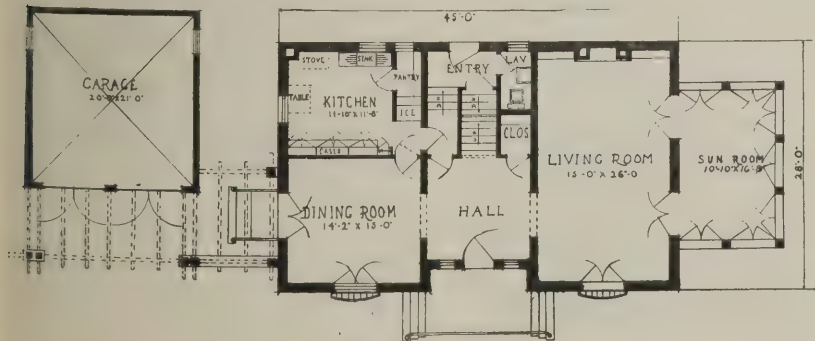
It is to be observed here that the building is rectangular in plan, having a sunroom projecting out of the rectangle at one end, balancing the garage at the opposite end. The garage is not part of the house, but is attached to it by a porte cochere extending along the front of the garage and up to the house. This makes it possible to reach the garage conveniently through a

short covered passage. Square columns of concrete dimension stone are used in the sunroom and for the support of the roof over the porte cochere.

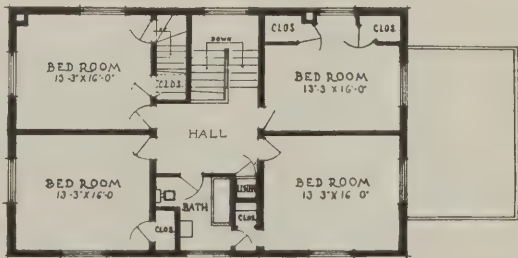
This house is unique so far as modern residences go in that large lights of glass were used throughout. Plate glass was used for the French doors and large windows. All of the main windows on the second floor have a width of 4 feet 6 inches, framing a picture of pleasing shape—long in the horizontal direction.

Study of the floor plans will reveal no sleeping porches, no breakfast nooks, no back stairways and no porches other than the open porticos, which are only large enough to give ample entranceways.

The main stairway was so placed that guests in the house do not get continuous view of it and use may be made of it for ordinary service purposes without attracting the attention of others in the house. The architect was Henry K. Holsman, 37 South Wabash Avenue, Chicago.



First floor plan



Second floor plan

Inside The House of the Month



Looking from the dining room, through the hall and living room, toward the sun room



A view of the opposite direction from that in the picture on the left



The living room fireplace and mantel, with bookcases on the sides



Arched openings are an architectural feature of the interior

Building The House of the Month of Concrete Block

By A. J. R. Curtis*

WHEN I decided in January 1921 to build a concrete house for the occupancy of my own family, some of my friends intimated that I might be embarking on an experiment while others suggested that I wait for the expected further decline in building costs.

Although concrete houses are something of a novelty in most communities they are by no means an experiment. Having already examined some 1500 such houses and interviewed many owners and occupants, I could not feel that I was taking a chance or that I was entitled to be considered venturesome. Observation of building costs shows that the building would cost as much if built today, and no appreciable reduction is now in sight.

The NATIONAL BUILDER, in its series of articles appearing during the last two years, published a resume of the approved standard construction methods which were used throughout in the concrete masonry work. The bearing walls are of "hydrostone" type concrete block throughout and basement partition walls are of the same material. This type of block produces a two-piece or double wall which was used for all of the work up to the second floor level and a single wall which was used for the walls of the upper portion of the house and for the garage.

All of the facing block are surfaced with a special concrete mixture giving them a soft rich buff tone. The surfacing mixture contains white portland cement, buff torpedo sand, mica spar and other marble-tone aggregates and a small amount of buff oxide of iron. A soft, slightly rough texture was obtained by proportioning the facing mixture so as to create a deficiency of fine particles, and by spraying the surface with a fine fog nozzle soon after placing in the mold. The blocks have plain, flat surfaces, no attempt being made to simulate "rock face," "panel face" or "tooled face" effects.

The house depends for its attractiveness on simple proportions and a few plain decorations done in concrete dimension stone, the latter being made of color and texture corresponding to that of the block. There is a heavy water table course of semi-elliptical section, extending unbroken around the building; a plain belt course at the sec-

ond story window line and an entrance way with large Doric columns and lintels.



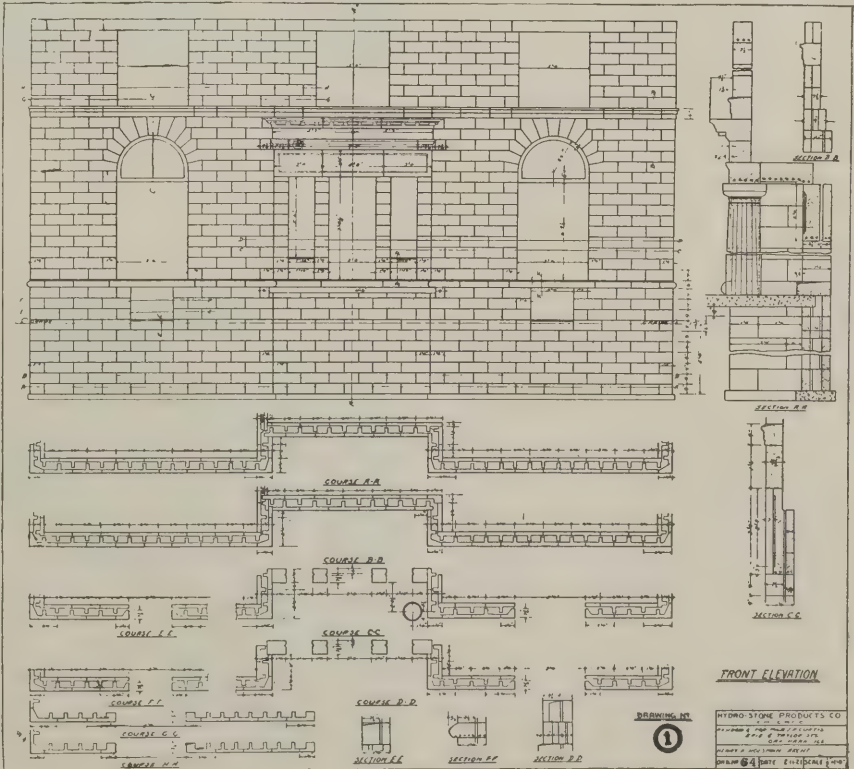
General view of building under construction, showing solid concrete columns, weighing one ton each, being raised into place

All of the concrete masonry was set in rich portland cement mortar without hydrated lime, making $\frac{3}{8}$ -inch struck joints. All external portions about the watertable course were laid in white portland cement mortar, to which pink mortar color was added to contrast mildly with the concrete units.

French doors in the living and dining rooms open onto the iron balconies on the front elevation, and sgraffito medallions of pleasing design, in blue and cream have been used in the semi-circular lintels above these openings. A corresponding frieze of sgraffito was used to decorate the space over the front door.

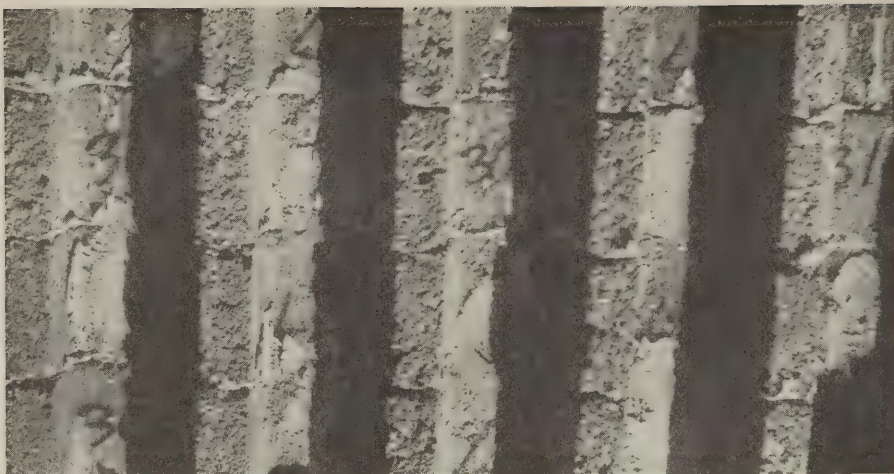
The exterior steps at front and side porcos are of reinforced concrete cast in place and surfaced with the same materials used in the facings of the block and dimension stone.

Interior concrete slabs cover the floor space above the heating plant and in the sunroom. All of the other interior floors are of the customary wood joist construction. With a maximum span of 17 feet and other floor spans of about 12 and 15 feet,



Sheet of instructions for laying the concrete blocks as furnished to the stone mason

*Mr. Curtis, the owner of "The House of the Month" illustrated and described in this issue, is manager of the Concrete Products Bureau of the Portland Cement Association. In building his own home of concrete he has practiced what he preaches, and his description of the construction of the house is both interesting and thorough.



*Interior of the single wall construction, used for the second story, looked like this
The furring strips were attached to these protruding webs*

12-inch floor joists were used, contrasting with the practice which is becoming all too common of using 10-inch and even 8-inch joists on these long spans.

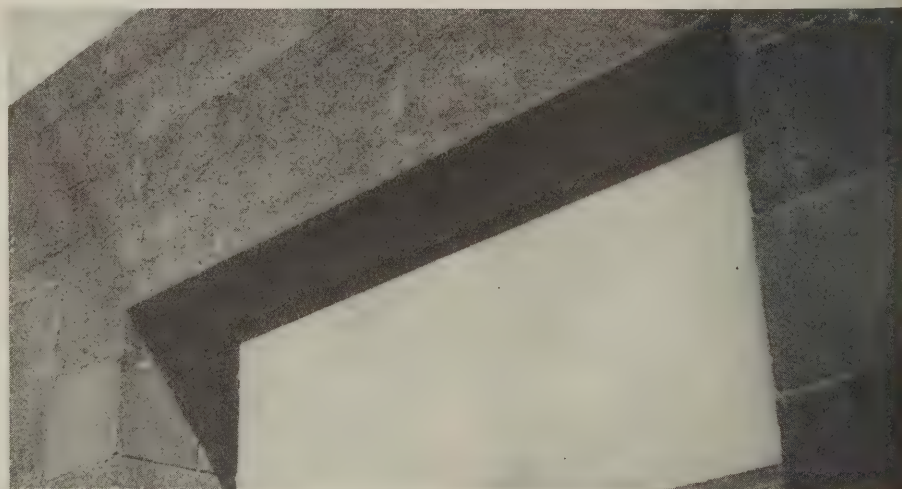
Arched plaster openings, without trim, are characteristic of the interior finish throughout, in which wood was used sparingly and omitted altogether where possible. Door and window casings are only $2\frac{3}{8}$ inches wide and of simple design. The windows have no stools nor aprons and are framed just like ordinary picture framing. Red gum, with mahogany stain or white enamel, was used throughout.

Sloping only two ways, the roof has but a single ridge with very little flashing and no valleys to maintain. Very heavy timber framing carries a wooden flooring carefully made of tongued-and-grooved material and covered with a seven-ply asphaltic paper on which is laid imperial Spanish tile of a dark, dull red shade. Sunroom and garage have flat composition roofs. The gutters are of wood treated with creosote preservative and lined with seven-ply asphaltic paper. The two chimneys are of concrete dimension stone, the larger having a flue 16x16 inches and the smaller a flue 13x13 inches. Both chimneys are lined with hard burned flue lining.

The following facts concerning the building, briefly summarized, may be of interest: The masonry walls are 12 inches thick up to the second floor exclusive of the plaster, which was applied directly to the surface of the inner concrete wall. Above the first story the masonry walls are 10 inches thick exclusive of the furring, lath and plaster. Furring was attached to wooden furring strips in the $\frac{3}{8}$ -inch wall joints. Counting concrete block and concrete dimension stone, over 6600 units were laid in the house and garage. The two Doric columns at the entrance weigh one ton each, and support six tons of lintels. Although the construction is unusually heavy, the building and its contents are estimated to exert a weight of less than 25 pounds to the square inch on the footings, while the block used were



View of the double walls under construction, showing continuous air space. The decorative facing is plainly visible on the units in the outer wall



Plaster was applied to the interior surface of this double wall. Notice how insulation around openings was improved by the use of double or "split" lintels

specified to stand a load of 1000 pounds to the square inch individually and would undoubtedly carry more than 500 pounds to the square inch, as laid up in portland cement mortar. Such large excess in bearing capacity is of no particular advantage, but absolute rigidity of the walls, so highly prized and seldom achieved, was secured by this construction.

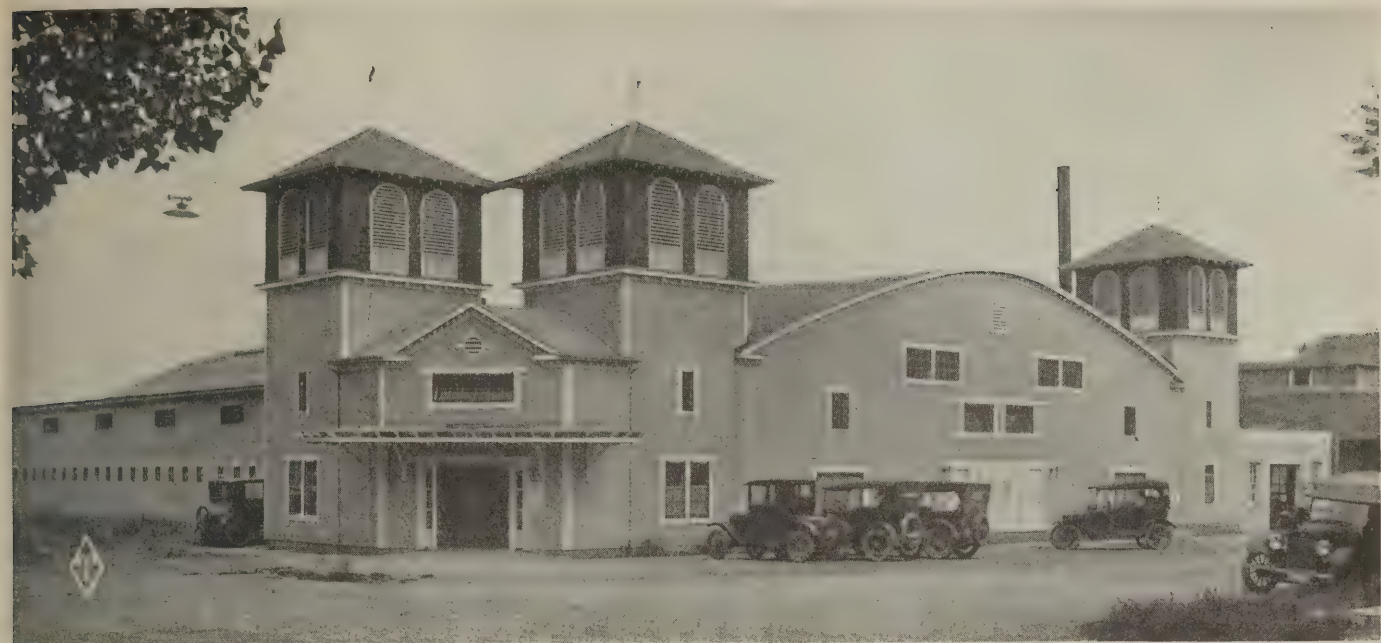
The excellent insulation properties of this house became apparent with the first approach of cold weather. The walls are not only well insulated but they are windproof as well, a factor of no small influence in making houses warm in winter. Experience in summer shows a corresponding tendency toward coolness on warm days—further evidence that the wall insulation is efficient.

Economic Survey Completed

THE state of Michigan has completed the first phase of the economic survey of the forest resources of three counties and much valuable information on the present condition of the forests and forest land in this region has been secured, announces the Lake States Forest Experiment Station of the Department of Agriculture. A part of the study was devoted to the potential capacity of these lands to produce forests as well as the possibility of developing them for other kinds of use. This study is of great importance in Michigan, once an important forest-producing state and now almost entirely cut over.

Rommel at Kewaskum, Wisconsin

IN the advertisement on page 127 in NATIONAL BUILDER for February, 1924, the address of the Rommel Manufacturing Company was misspelled. It should have been Kewaskum, Wisconsin.



A front view of the building showing the main entrance. While it is nothing pretentious the effect is pleasing

Indoor Swimming Pool in Boulder, Colorado

By John T. Bartlett

THERE are various items in connection with the new swimming pool of the Hygienic Ice and Coal Company of Boulder, Colorado, which should be interesting to those engaged in the building industry and to others whose intention it may be to promote a similar enterprise. Many other cities where similarly favorable conditions exist need just such an institution.

The most interesting factor about this swimming pool is the fact that it utilizes a by-product of the adjacent ice plant to heat the swimming pool water. This by-product is hot water which is manufactured in the natural course of carrying on an artificial

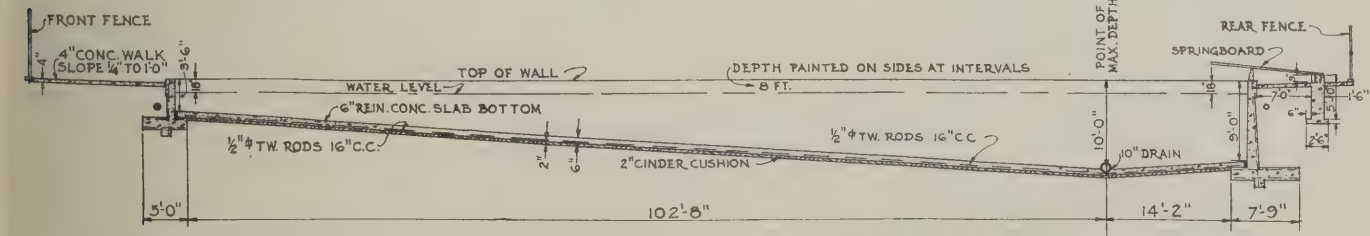
150x100 feet of enclosed building. Not the least interesting point about this structure is the fact that it was erected at a cost of only slightly more than \$40,000. This meant of course that expensive material and other items which go to increase the cost of a building had to be used sparingly but the readers will see from the accompanying plans and photographs that the most has been obtained for the money expended.

The structure itself is of the low lying type with square wooden towers at three of the four corners. Two towers are at the entrance.

On the inside of the building, on either

For such a building as is described here light and ventilation are important and it is interesting to see how they have been provided for. Six big skylights in the roof, each 8x14 feet, together with plenty of windows in the walls, admit plenty of sunlight, and a 37-inch diameter fan high up near the roof in one end of the building provides such efficient ventilation that the air is changed once in every two hours.

Of course, the most important feature is the big pool. This has a water depth of two feet six inches in the entrance end of the building and gradually increases to eight feet six inches at the deepest point. From



Longitudinal cross-section through the pool. Note construction of the pool walls and floor, and the special pier provided for the springboard

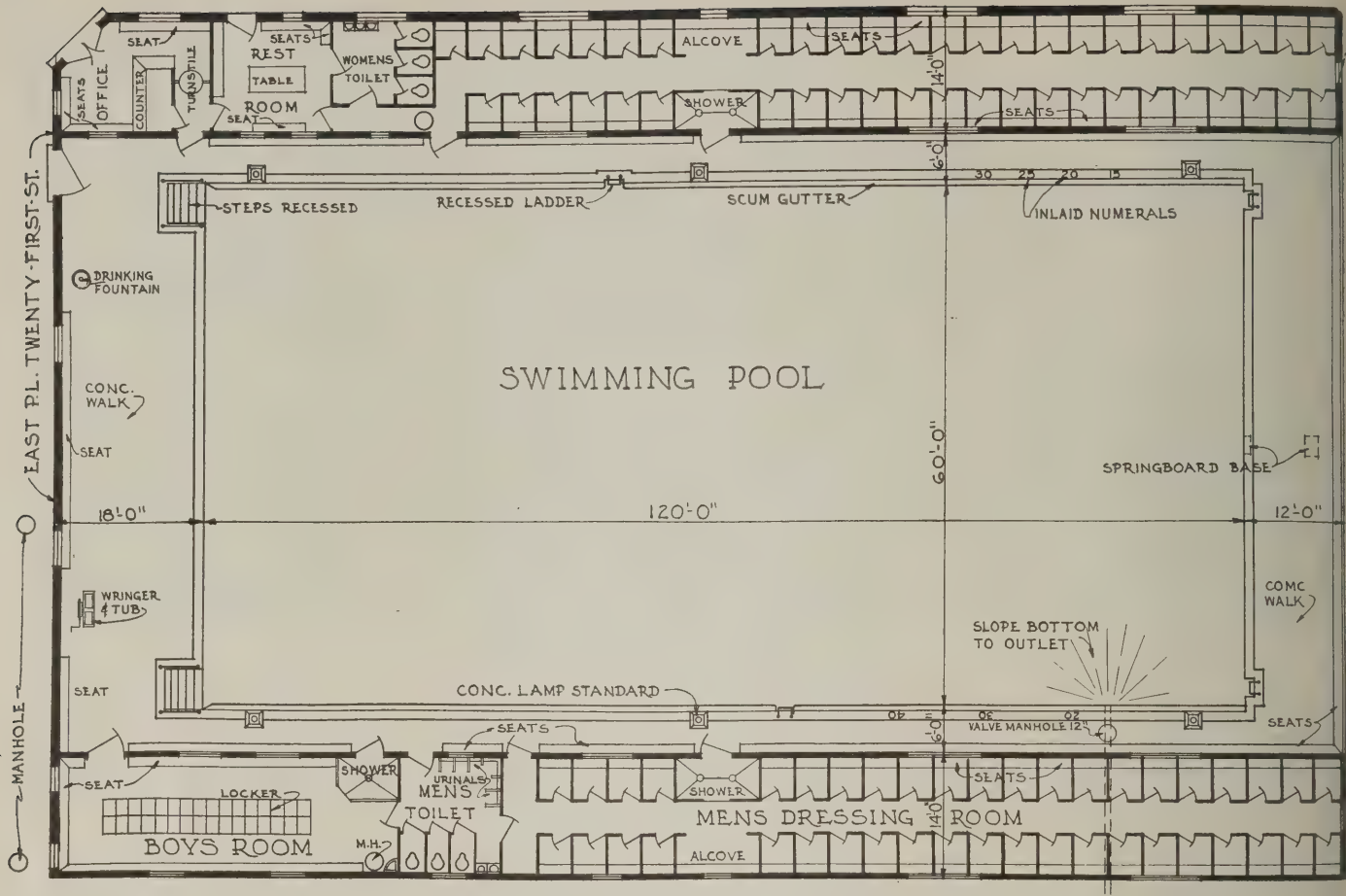
ice making business. The fact that moved the Hygienic Ice and Coal Company management to investigate the swimming pool proposition was the fact that this hot water was being wasted and they sought to utilize this waste.

The dimensions of this pool are as follows: 120x60 feet of swimming pool and

side and about six feet back from the edge of the pool there is a continuous partition broken at regular intervals with small windows. These partitions are the dressing room walls, and the windows are for the admission of light into the dressing rooms. Overhead a balcony extends around the entire building.

the point of maximum depth, which is four-teen feet from the far end of the pool the depth decreases to seven feet six inches. This is because the greatest depth is desirable at the point where bathers may be expected to land from the diving platform.

Hot water from the ice plant, controlled by a valve at that place, enters the pool



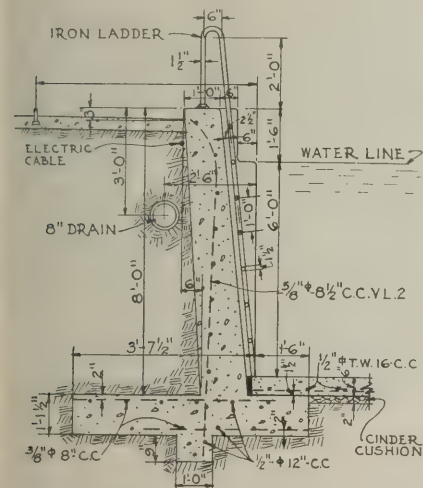
Plan showing location of dressing rooms. Note location of showers



Interior view showing springboard, diving platform and various details of construction

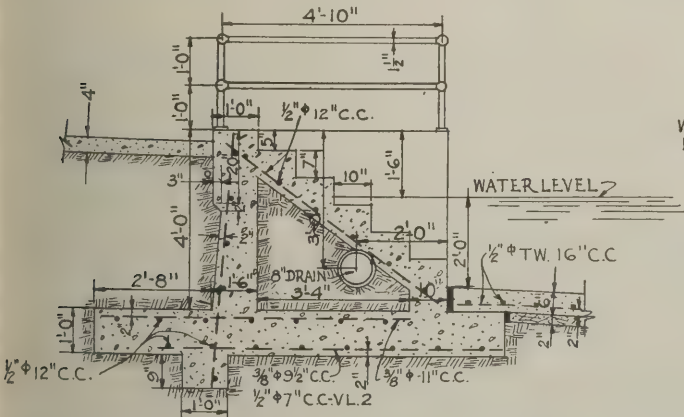
through a six-inch pipe. The main drain, located at the point of greatest depth in the pool, is ten inches in diameter, constructed of drain tile, and controlled by a valve in a concrete man hole just outside the wall of the pool. This drain runs for a distance of 550 feet from the pool and empties into an irrigation ditch.

Connected with the ten-inch main drain is an eight-inch drain which circles the entire pool. This secondary drain carries off



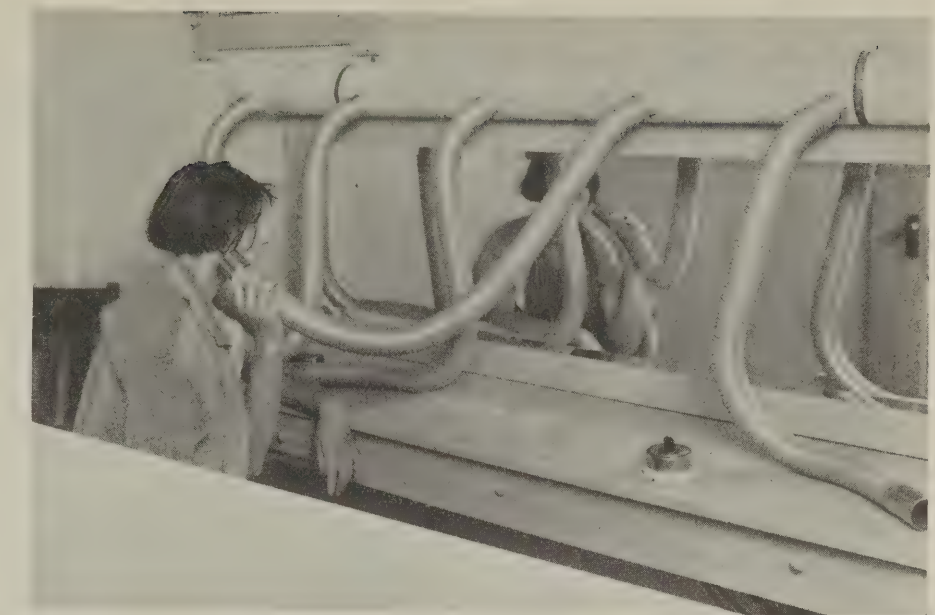
Section through pool wall at deep end showing construction details

the water from the scum gutter and the floor of the building. The pool walls are 18 inches thick below the water line and 12 inches thick above it. The six-inch difference is used for the scum gutter, and a four-inch drain tile connects this scum gutter to the eight-inch diameter secondary drain. Reinforced concrete footings support



Left: Section through pool wall at shallow end showing construction details. Right: Section showing details of scum-gutter and hand-rail

the pool walls and they vary in width with the height of the wall from five feet to eight feet three inches. The pool floor is six inches thick and to secure water tightness asphalt filling is placed in the joint between the floor and wall. For fire protection two 2-inch fire hydrants have been installed. They occupy niches in the partitions, one on each side



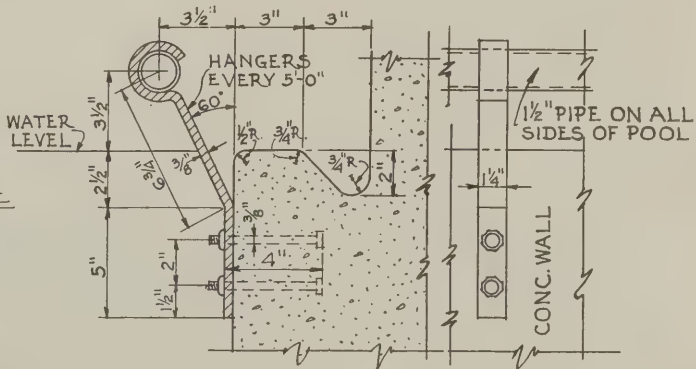
This is the hair-drying apparatus installed for the convenience of women patrons

of the pool in the center. Exits in the balcony and on the main floor are sufficient to provide for the rapid emptying of the building in case of fire.

When the pool was first opened one thing unknown was the extent to which it would be patronized by women. It behooved the management to make it as attractive as possible in order to bring women patrons and it might be well to describe some of the conveniences installed for them. One of the first things the management decided upon was hair dryers, so electric hair dryers were bought and installed in the rest room. Either because they were improperly maintained or unintelligently used they gave

this pipe he connected six sections of two-inch flexible steel tubing, each of which were three feet long. These were set fourteen inches apart. Now all the woman patron has to do is to sit up to the table and hold the business end of one of the tubes to her head. If only one or two others are using the dryer simultaneously she probably takes two of the tubes. This arrangement dries hair very quickly and is economical and efficient and also fool-proof.

In a great many places there is a need for just such a pool as the Hygienic Ice and Coal Company has furnished Boulder. It does, of course, require some money and some courage to go ahead with such a proj-



some trouble, so Mr. Hauck of the Hygienic company put his own inventive talents to work. He combined an ordinary ventilating blower with electric heating elements and installed this on the floor at one end of the ladies' rest room, then attached a pipe which described a curve and passed horizontally along the wall above the table. To

ect but from the experience of the Hygienic Ice and Coal Company it would seem that this should prove a profitable investment. The upkeep and maintenance expenses are small, as few people are required to run such a business, and what would be one of the main items of expense, hot water, is a by-product which would be otherwise wasted.



Fig. 1. This photograph was taken about fourteen hours after the collapse started. Notice the concrete hanging by the reinforcing on the upper floors

The Collapse of The Vincent Hotel at Benton Harbor, Michigan

WHAT is probably one of the most spectacular failures in the history of reinforced concrete construction is the collapse of the framework for the new Vincent Hotel at Benton Harbor, Michigan. The work had been carried to the eighth floor when the disaster occurred, starting at about 9:30 p. m. on January 28 and continuing for approximately thirty hours. Just what caused the accident, improper design, failure to take the necessary precautions for winter concreting, or a poor grade of cement, has not as yet been determined but investigations now under way by several interested parties will undoubtedly trace the causes for the failure to the proper sources.

The building, which stood on a lot 100 feet square, was L shaped, above the second floor as shown in the accompanying floor plan. It was constructed of reinforced concrete throughout and at all times the work was under the direction of a trained engineer.

The trouble started at the fifth floor, which began to show signs of failure soon after the eighth floor was poured. Fig. 1 shows the building in the first stages of collapse about fourteen hours after the failure started. The breaking down of

the three central panels in the front of the building followed close upon the failure of the fifth floor. By noon-time, when

the sun was high, the Main Street side of the building began to give way and Fig. 1 shows this part of the building al-



Fig. 2. This illustration shows the structure after the collapse was complete. Only a few of the first and second floor columns remain standing



Fig. 4. Close-up view of the collapsed structure. Notice that the concrete has broken entirely away from the reinforcing rods

ready gone, with the reinforcing hanging to the rest of the structure and tending, by its dead weight, to further the collapse. On the morning of January 30, the disintegration was complete, with only parts of the first and second floors standing. It is interesting to note that the wreckage seems to be an easily broken, mush-like material lacking entirely the hard close-knit appearance so characteristic of good concrete. Few cast parts such as beams or columns are seen in debris; most of the wreckage can be cleared away with

a shovel. Fig. 4 shows a close-up view after the collapse. Notice that the concrete seems to have broken entirely away from the reinforcing, leaving the debris a mass of tangled steel rods, broken form lumber, and a trashy substance which can be shoveled away. Where solid pieces of structural members have held together, a few good blows with a heavy sledge serves to break the concrete away from the reinforcing. The general opinion seems to be that this fact indicates the collapse was due directly to poor concrete, but the cause

of the concrete being bad, whether it was dirty sand, too lean a mixture, inferior cement, or freezing, has not yet been determined.

A study of Fig. 5, a temperature chart, drawn by T. L. Condron, a Chicago engineer, for *Engineering-News Record*, shows some interesting facts. Notice that extremely cold weather, more than 15 degrees below zero, followed close upon the pouring of the fifth floor, fifth story columns, and sixth floor where the failure started. Another cold wave followed the pouring of the sixth story columns and the seventh floor. The collapse occurred when comparatively warm weather, 20 to 35 degrees above zero, set in.

In order to prevent the freezing of the concrete, all pouring in freezing weather was done only after the floor being poured was enclosed in tarpaulins. Hot water was used, the aggregates were heated and a gas torch was operated in the mixer. Salamanders were kept burning and the fresh floor enclosed for about three days after pouring, when they were moved up to the next floor. In the extremely cold weather calcium chloride was added to the mixing water.

While the disaster is deplorable it may, after the causes for the collapse have been determined, point to some interesting information, valuable to contractors engaged in similar work. The findings regarding the provisions taken against the concrete freezing, and the quality of the cement used should prove particularly interesting.

R. L. Reisinger & Company, of Milwaukee, where the contractors and the architects were Nichol, Sholer & Hoffman of Indiana Harbor, Indiana.

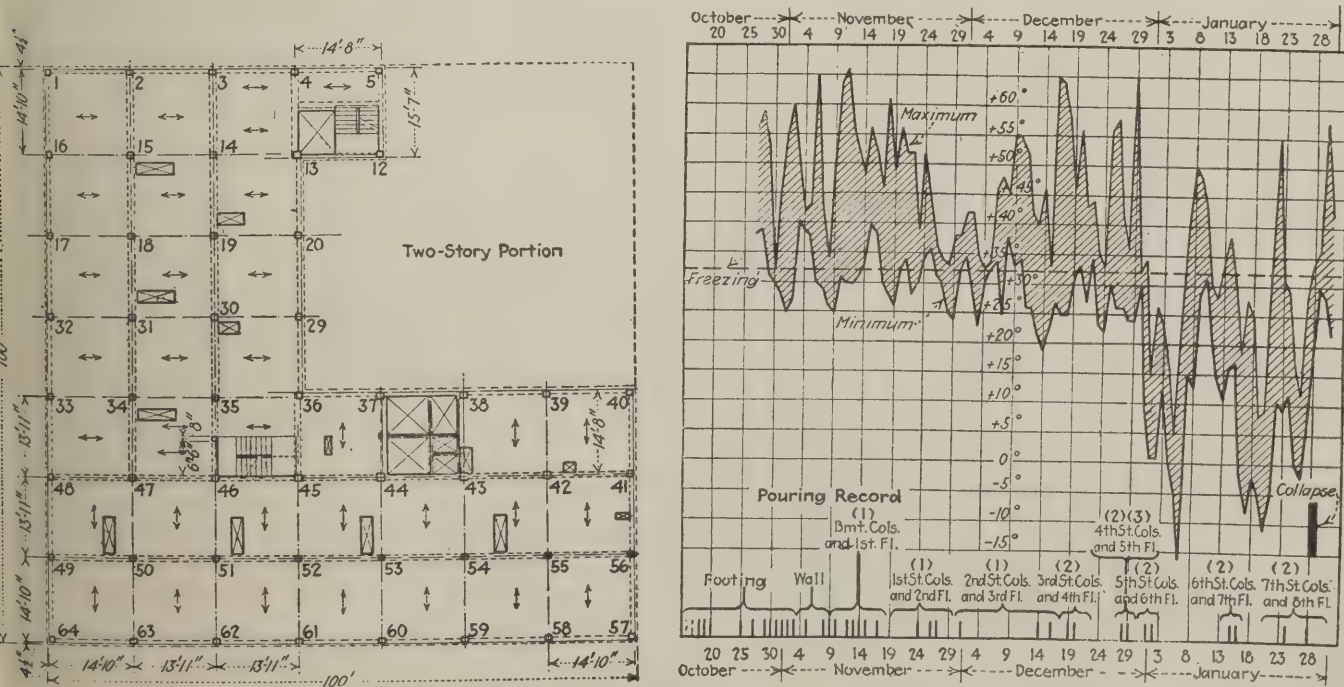


Fig. 5. Floor plan of the Vincent Hotel at the left, and temperature chart taken from "Engineering News-Record" which shows maximum and minimum temperatures during construction. Note that the part of the building which collapsed first was poured in extremely cold weather, and that the collapse took place after the weather became warm



This is not a big residence but a four-family apartment building, in St. Louis, Missouri. Henry Wright, architect

Four-Family Apartment for a Corner Lot

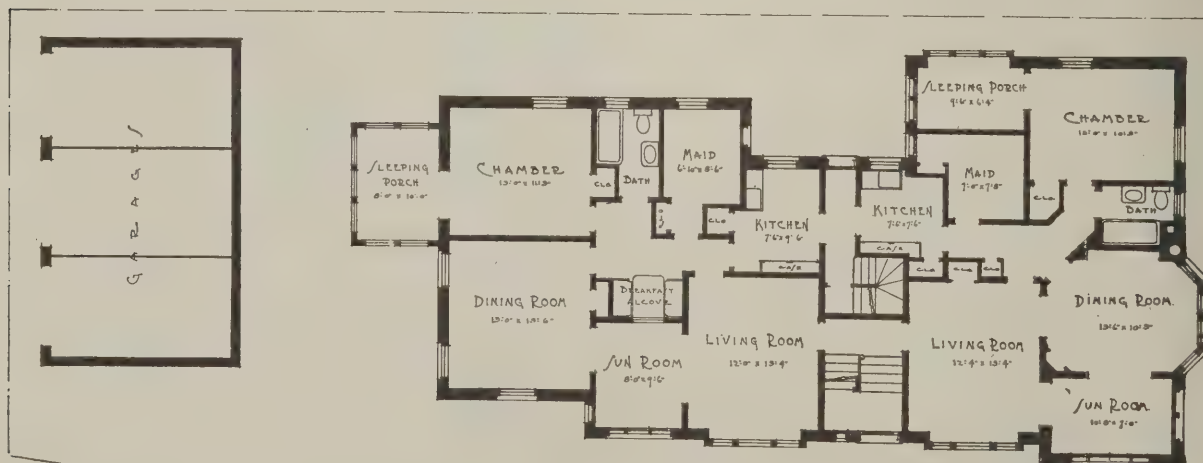
THE cities—and even some towns and villages—of this country have long ago had too much of the flat roofed, ill-proportioned flats, duplexes and apartment houses, with their monotonous similarity and stereotyped ornaments and details. It is time some attention was paid to the appearance of these buildings. We are making rapid progress toward better looking individual

houses, but we should no longer neglect the apartment house.

Here is a four-family apartment house for a corner lot built in St. Louis, Missouri, which suggests what can be done with this type of building. It is the work of Henry Wright, architect, 408 Pine Avenue, St. Louis. The building has more the appearance of a large residence than an apartment

house, yet the exterior frankly expresses the purpose of the building.

The plan shows a departure from the commonplace layout, too. The apartments on the same floor are not identical. The unusual arrangement of rooms was necessitated in some part, however, by the unusual shape of the lot. A series of three garages was built on the lot for the tenants.



The plan is not perfectly symmetrical, due to the shape of the lot. Note the three-car garage for tenants' cars

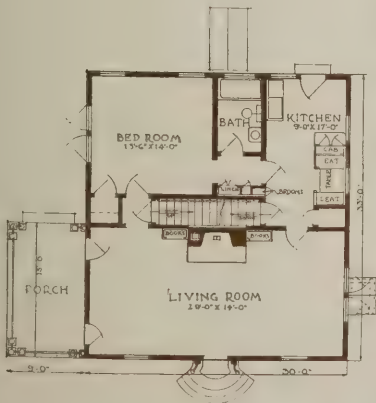
National Home Builder



Careful Study Has Gone Into the Plan and Design of This Little House

YOU see it in the restraint shown in the treatment of the roof, with its three little dormers, in the interesting front entrance, and in the layout of the large living room. The house boasts of five rooms, but the absence of a dining room is not noticed, for there is a dining alcove for family meals and when there are guests one end of the 29-foot long living

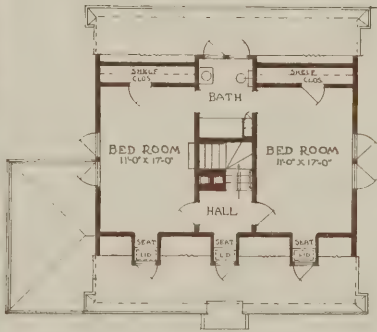
room can be used for dining. The downstairs bedroom is an advantage in many ways. It has a private bathroom, and there is another bath upstairs for the two bedrooms on that floor. Note the large closets in these bedrooms. This house is the home of Fred W. Payne, in Terre Haute, Indiana. The architect was Johnson, Miller & Miller, of Terre Haute.



First floor plan



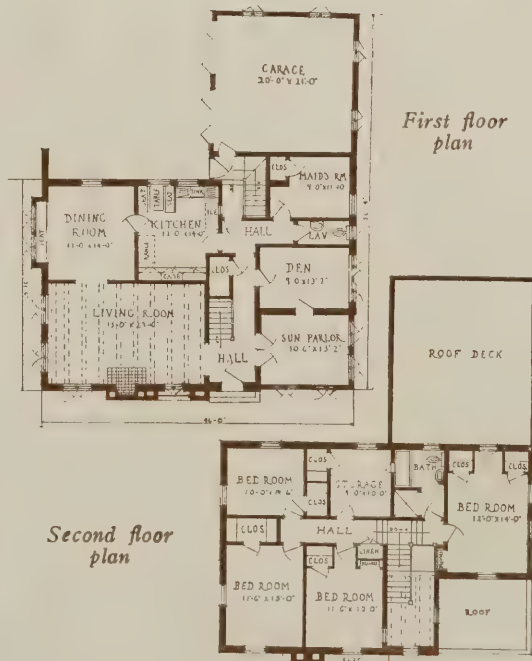
The fan-like design over the door is built-up of beveled siding



Second floor plan



Houses of This Type Are Increasing in Favor All Over the Country



COLONIAL and English houses are seen in all the high class residential sections and have been for some time. Today, however, there is also a marked interest in houses of the Spanish and Italian types. It is because of the simplicity that they are growing in favor. Their wide blank wall spaces and low-pitched roofs are a variation from the more common styles. Here is an example of this type of house from Champaign, Illinois. It is the home of Mr. L. Christopher, and was planned and designed by K. Clawson, of the office of Joseph W. Royer, architect, Urbana, Illinois. Sowers & Corkery were the general contractors. The floor plan is interesting and the exterior design is striking. There is a hall which provides access to the sunparlor, den, lavatory, maid's room and kitchen and the basement stairs; grade entrance and garage are easily reached from it. This arrangement represents the maximum of convenience. Upstairs there are four bedrooms and a bath with bath tub and shower. Drawers can supplement the closet space in two of the bedrooms. A small room is set aside for storage space, but it might also be used as a sewing room or maid's room.

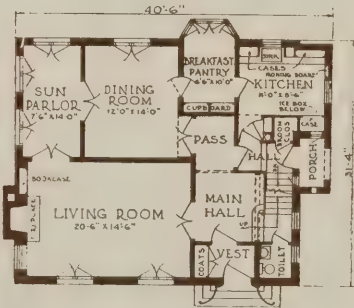


Planned for Comfort and Convenience and Designed for a City Lot

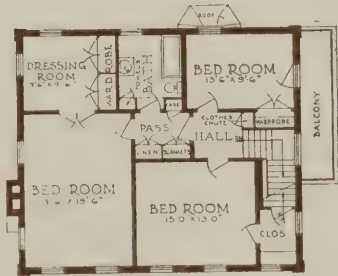
EXCEPT that the driveway is not covered, there is every convenience of the porte cochere in the arrangement of this house. The little enclosed porch with its arched doorway is directly off the back hall, communicating with the basement stairway, kitchen and passageway and main hall. A downstairs toilet is at the first turn of the stairway. Placing the fireplace at one end of the living room allows good space of the furniture. Both living room and dining room are open to the sun parlor. A "breakfast pantry" is an interesting adjunct to the service quarters. Upstairs the three bedrooms have plenty of closet space. This house is the home of Arthur N. Rhoda, in Milwaukee. Glas, Shepherd & Glas were the architects.



The front entrance is a prominent detail of the house. The small panes in the door are very unusual



First floor plan



Second floor plan



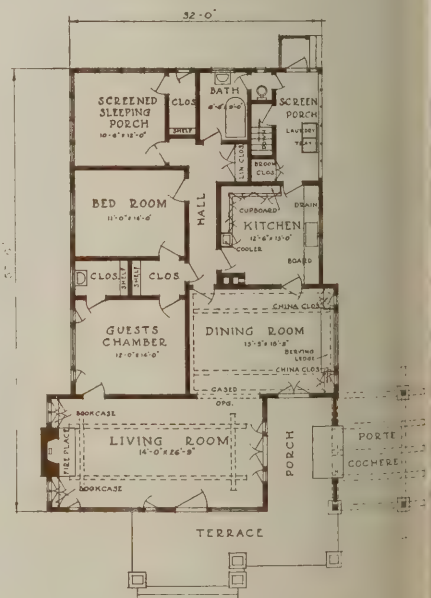
Bungalow Fanciers Will Find Much of Interest Here Both Inside and Outside

THIS design, it is claimed, won first prize for a bungalow at the Panama-Pacific exposition. The house shown here was built from the original plans by Mills & Son, of 3656 West North Avenue, Chicago, in Oak Park, Illinois. It is of frame construction, with stained shingles on the walls and asphalt shingle roof. Beamed ceilings are used in both the

living and dining rooms. The plan shows a compact arrangement of six large rooms with a sleeping porch in addition. The front bedroom has a lavatory in its large closet. The bathroom is easily reached from the outside as well as the inside. The basement stairway is equally convenient, both inside and outside. Note the large screened rear porch.



Detail of front porch. The use of iron posts avoids the heavy appearance of oversized wood members



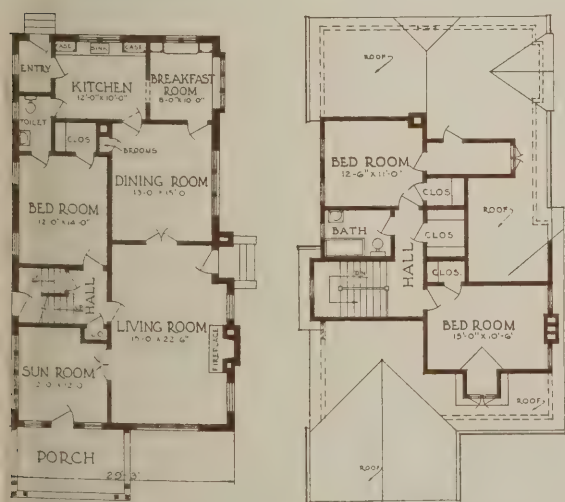
Floor plan. This bungalow, without the porte cochere, could be built on a 45-foot lot



Half-Timber and Brick Are Attractively Used in This Story-and-a-Half House

ALL the advantages of the bungalow and two-story house seem to be combined in this story-and-a-half house in Danville, Illinois, the home of Mr. J. W. Acree. There is a downstairs bedroom with toilet adjacent and, upstairs, two good sized bedrooms and bath. One of the upstairs bedrooms has cross-ventilation through the dormer windows of the front elevation. The dormer can be used as a closet. It provides a doorway to the storage space

beneath the roof. Advantage is also taken of the roof space in the large closet opposite the bathroom. Attention is directed to the placing of the front entrance, for it avoids the necessity for hall space. The door is protected by an unenclosed vestibule, and it is at one corner of the room, so that passers in and out do not disturb occupants of the room. H. F. Skadden was the architect and C. F. Barton the contractor.

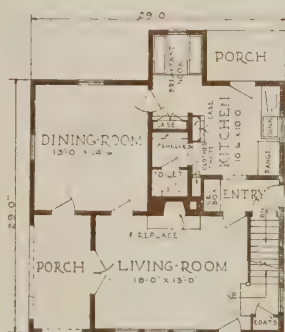


First floor plan

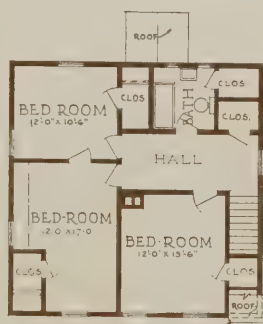
Second floor plan



Rear view, showing the sun room, the stairway projection, and the dormer that provides windows for the bathroom and rear bedroom



First floor plan



Second floor plan

Effective Treatment of the Gambrel Roof on a Perfectly Square Plan

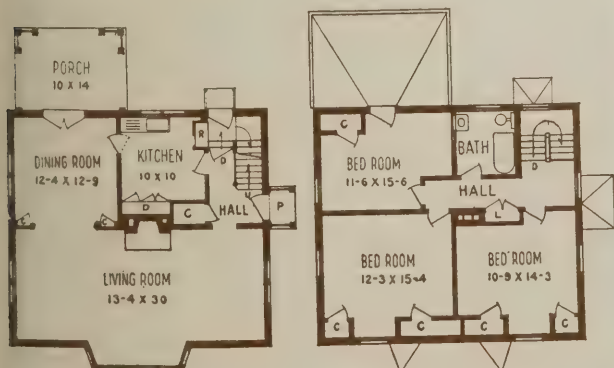
I T cannot be stated too often that the square is the most practical figure for building construction purposes, which gives the maximum of area with the minimum of perimeter. This important fact has been taken into consideration in planning this little house, where there is an extraordinary amount of room considering the small size of the house. These rooms are well laid out, too. The entrance is in one corner of the living room and on the same end with the stairway and cloak closet; thus, there is really no need for a hallway. The little entry in the rear makes for easy access between kitchen and living room and with the grade entrance permits traffic in and out of the basement from the outside of the house without going through any room. The ice box is at one end

of the entry, where it is protected from the heat of the sun on hot days and where it can be easily reached by the ice-man, yet it is convenient to the worker in the kitchen. The only addition to the house outside of the square plan is in the little breakfast nook, which could easily be omitted if not desired. In the exterior of the house the designer has avoided the commonplace square type by using a gambrel roof, which shows longer lines that enhance the attractiveness of the house. Shingled sides, with the shingles laid in double courses, one projecting about an inch below the other, make a wall that is attractive and durable at the same time. This house was planned, designed and built by V. A. Banta, for Mr. Ray Joiner, in Centerville, Iowa.



Built of Hollow Tile, With a Big Living Room

THIS house is in Aspinwall, Pennsylvania, and is the home of Mr. E. V. Walker, who was also the architect. It is built of hollow tile covered with stucco and has an asphalt shingle roof. The plan is unusual, in the manner in which the entrance and stairs and the living and dining rooms are arranged. On the second floor there is similar economy of space, for there are three good sized bedrooms and a bath, with a hall linen closet.



First floor plan

Second floor plan

Two views of the large living room, which is a noteworthy feature of this house



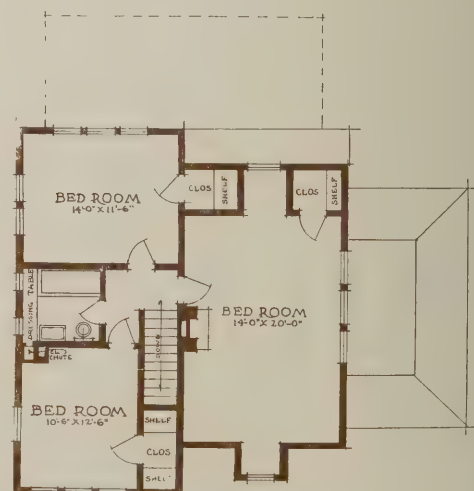
For the Family That Must Have a Large Living Room

A BEAUTIFUL stairway is an architectural detail that often adds much to the attractiveness of the hall or living room. That is the case here; the hall is omitted and there is an open stairway in the living room. The kitchen is in the front of the house within easy reach of the front door and delivery boys do not have to intrude upon the back part of the lot at all. The terrace in the rear, reached from both living room and dining room, has

unusual privacy and, with a garden nearby, is a pleasant outdoor sitting room on summer evenings. In winter there is the large sun room to invite the sunshine. A fireplace in the large upstairs bedroom makes a second floor living room of it. This house is the home of Judge R. C. Allen, in Tulsa, Oklahoma. It was designed by A. C. Fabry, architect, and built by the Hanna Lumber Company, all of the same city.



Left: First floor plan. Notice the terrace and the doors opening to it from both living room and dining room



Right: Second floor plan. A fireplace in the big bedroom helps make an upstairs living room of it

Complete Working Drawings and Details

Colonial House with Central Hall and Six Large Rooms

House No. 6A66, designed especially for National Builder by The Architects' Small House Service Bureau

© 1924 by N. B. and A. S. H. S. B.

HERE is a plan that has been a favorite in America for over 200 years. The exterior has also been a high favorite for that length of time. It seems impossible that such a combination of sound architectural things should ever go out of style. The exterior is remarkable for its finely proportioned walls and openings. The beautiful entrance detail and the side porch with its graceful arched forms give a touch of distinction to this design that is rarely seen in small house architecture.

In order to comply with various tastes in the way in which the cornice may be worked out, there are alternate drawings providing for a fine architectural treatment of a projecting cornice and another providing for a very narrow cornice. Each of these methods of handling the cornice lines gives a fine effect.

The construction is frame with exterior finish of 10-inch bevel siding. This will look very well if the rough side of the siding is placed outward and if a somewhat transparent type of paint is used. There is a brick base course, brick chimney stack and a brick faced mantel and hearth.

As for the interior, it will be seen that the living room, stairhall, and dining room really form one large room. There are wood cased arches separating

these rooms. Doors could be hung in these arches if desired. French doors open onto the concrete porch floor.

The kitchen is completely equipped with cupboards and serving tables, and there is provision for outside icing with a cupboard over the ice box, and a broom closet. There is also a dining alcove in which a seat is provided with the idea that a table will be drawn up to this seat. If it is desired to extend the alcove to include benches on each side of the table, that could be done.

Upstairs there are three full size bedrooms, six closets, including broom and line closets, and an efficiently arranged bathroom.

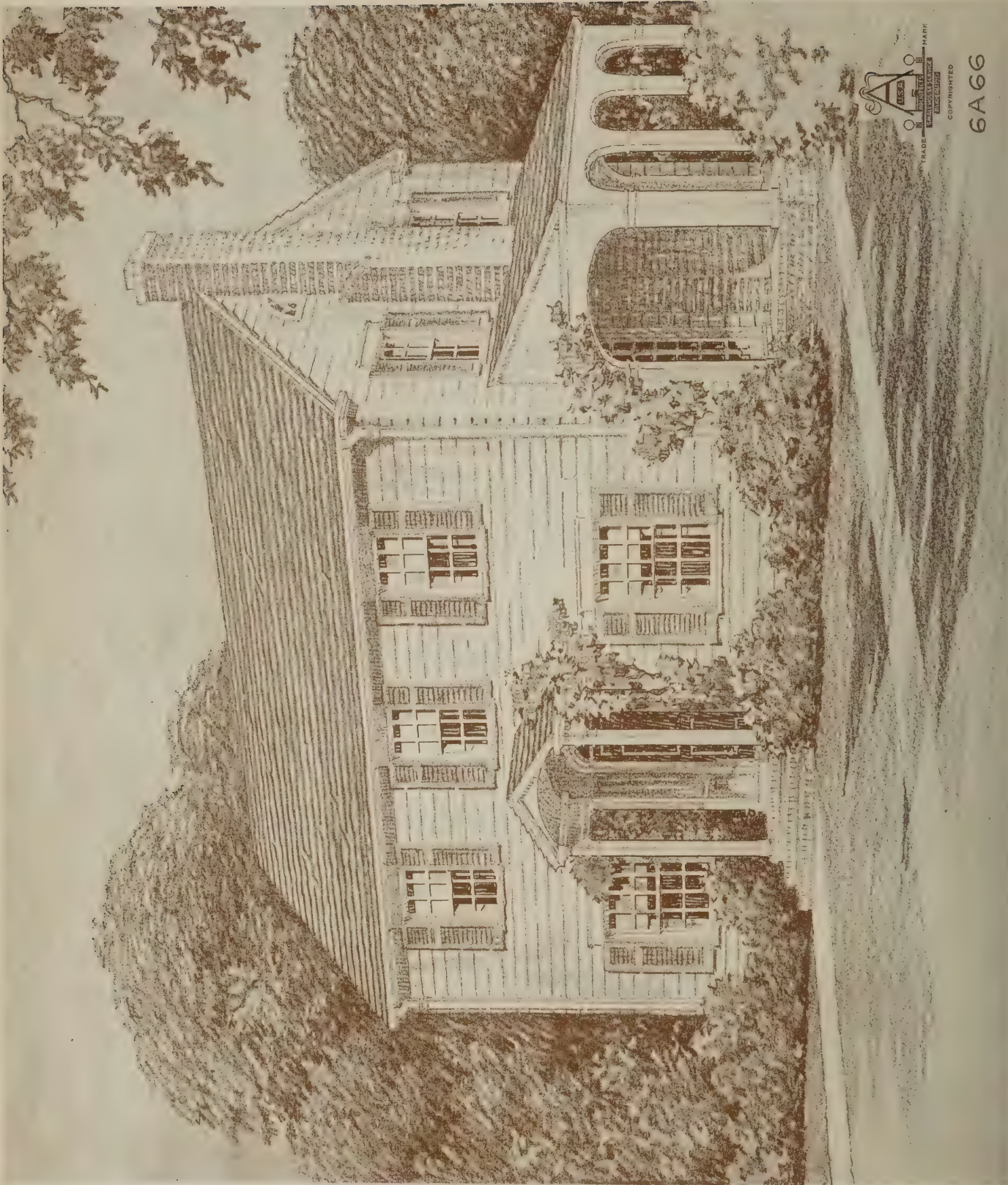
This house will go on a 40-foot lot if the porch is omitted or placed at the rear. If the porch is placed at the side where shown, a 50-foot lot will be required.

It is designed to face west or north, and may be reversed for other facings.

This design has been especially provided in answer to a great many inquiries. It is sure to prove a favorite with home builders, contractors, and people who finance small homes.

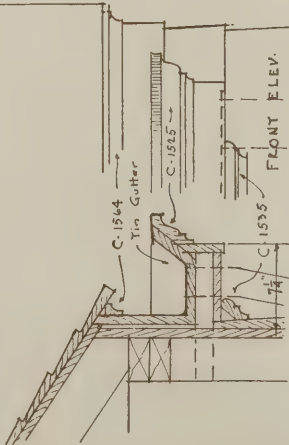
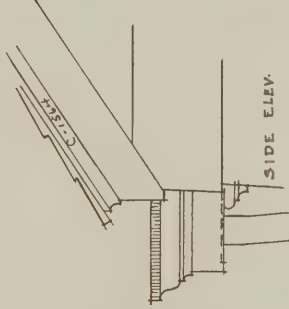
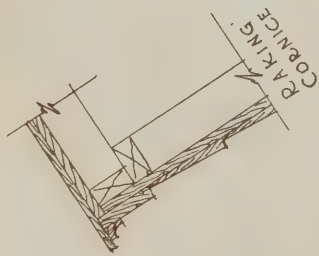
The price of this plan is \$30.50. (To NATIONAL BUILDER subscribers, \$15.50.)

ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 49 and 50. These drawings are on a scale of $\frac{1}{8}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau, subscribers for "National Builder" desiring blue prints of the original of these plans, which are drawn on the scale of $\frac{1}{4}$ inch to the foot, are entitled to a 50 per cent discount off the Bureau's standard price, as stated in the last paragraph above. Orders should be addressed to "National Builder" for authenticating the purchaser as a bona fide subscriber, but checks should be made out to The Architects' Small House Service Bureau. Duplicate sets of blue prints are \$3.00 each; specifications are \$2.50 a set, and extra quantity surveys are \$3.00 a set.



6A66

Ten-inch beveled siding, with the rough side out and painted with a semitransparent paint, will produce a house of striking appearance



ALTERNATE DETAIL OF CORNICE RETURN AT GABLE ENDS

Scale 1/2" = 1'-0"

NOTE - THIS DETAIL TO BE USED IF OWNER PREFERS TIGHT EYES AT GABLE ENDS INSTEAD OF THE PROJECTING EYES, AS SHOWN ON ELEVATION.

Extend Term Coils, Flue Linings 6" above Cup.

Cement Cup

Flashing

Galv. Iron Ridge

Shingles 4 1/2" Exposed.

Hanging Galv. Iron Gutter

Flashing

2 1/2" x 4 1/2" D.S.

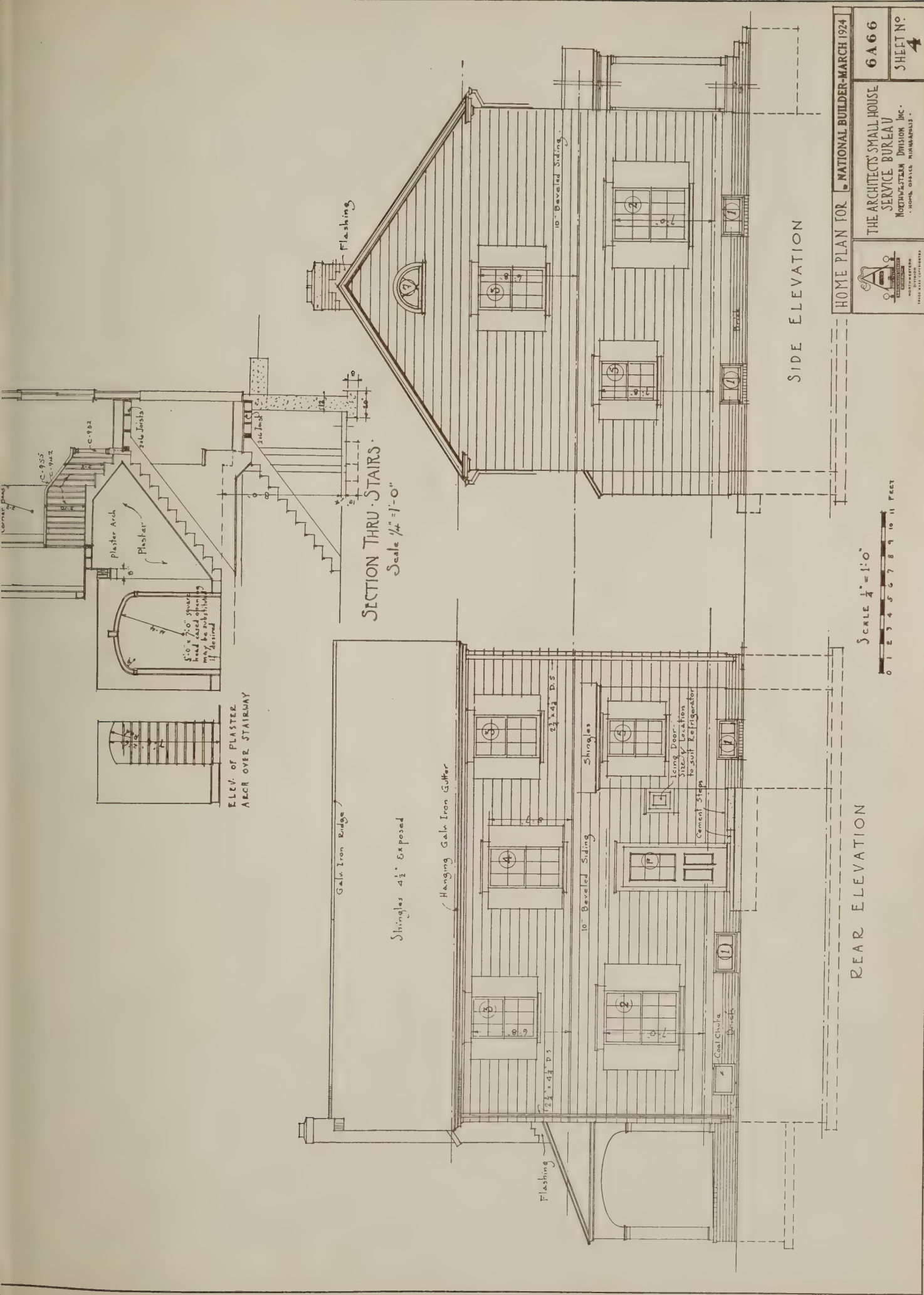
2 1/2" x 4 1/2" D.S.

Finished 2nd Floor

Finished 1st Floor

Fin. Basement Floor

All Footings must extend below average frost line and to solid bearing.



SCALE 1" = 1'-0"

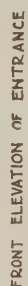
0 1 2 3 4 5 6 7 8 9 10 11 FEET

HOME PLAN FOR NATIONAL BUILDER-MARCH 1924

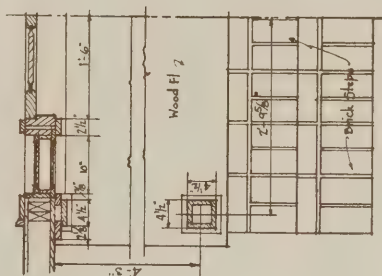
THE ARCHITECT'S SMALL HOUSE SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
- CHICAGO, ILL. -

6 A 66

SHEET NO. 4



SECTION THRU ENTRANCE



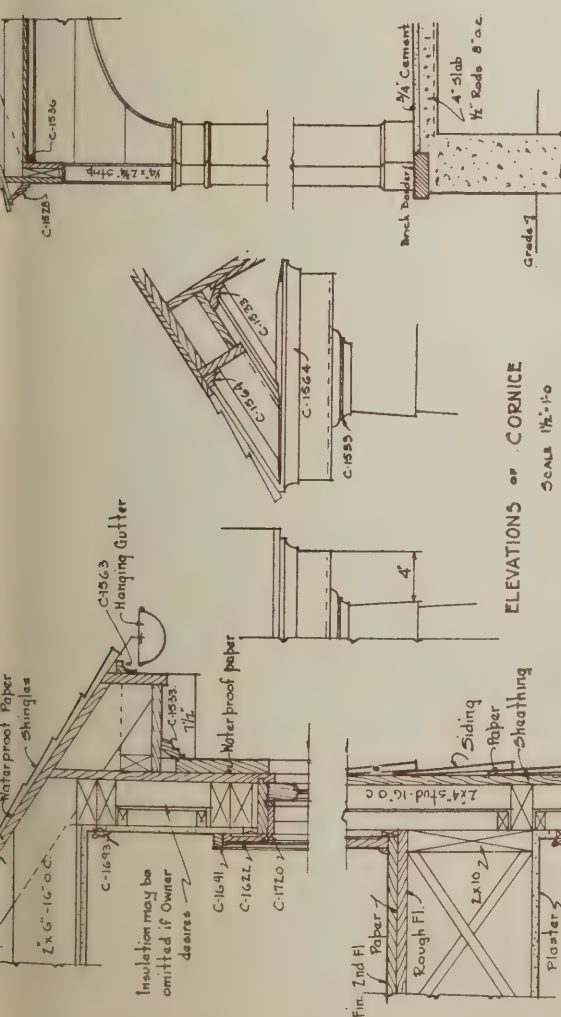
SECTION B-B

PART ELEVATION
OF KEY BLOCK-F3

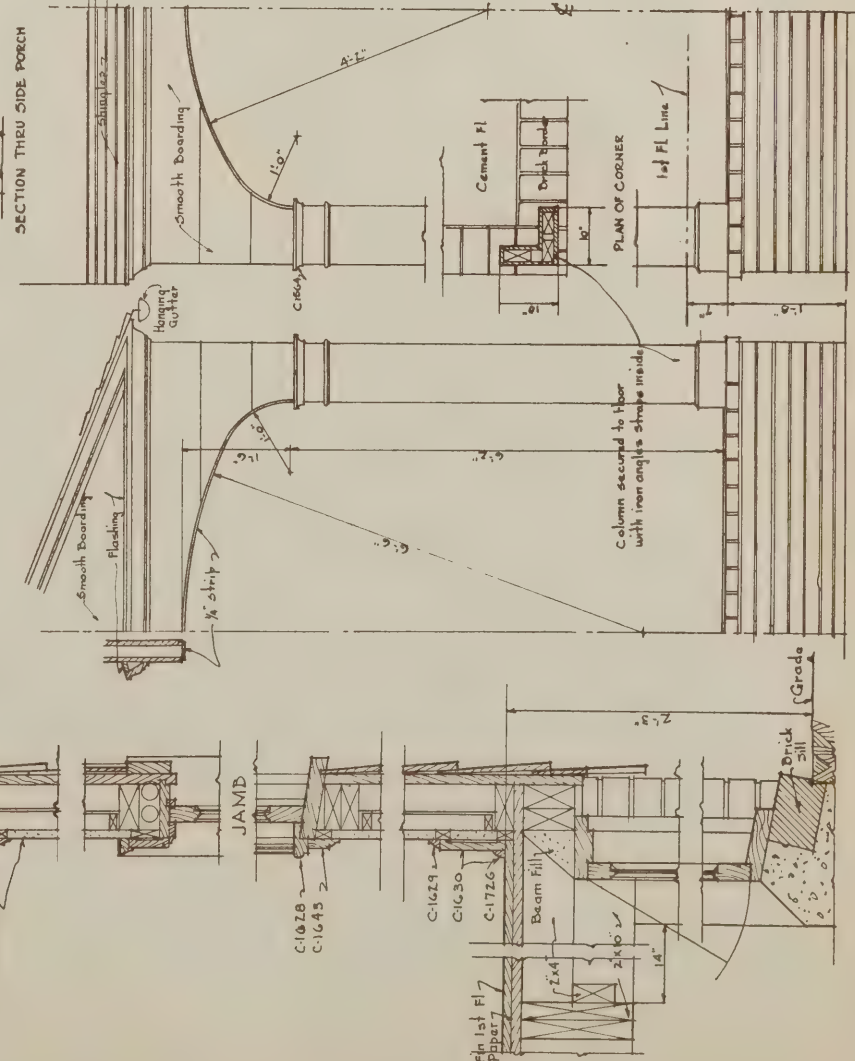
DETAILS OF FRONT ENTRANCE

Similar to C₆₁₀₀ - except as shown.

SCALE $\frac{3}{4}" = 1'-0"$



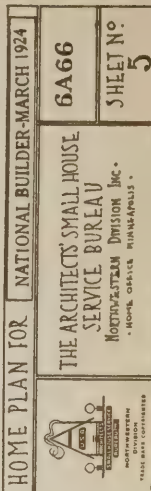
ELEVATIONS OF CORNICE

Scale $1\frac{1}{2}'' = 1'-0$ 

TYPICAL SECTION ~

SCALE $1\frac{1}{2}'' = 1'0''$

ELEVATIONS OF SIDE PORCH

 $\frac{3}{4}^{\circ} = 1^{\circ} 0'$ 



This design is a good example of the thatched effect roof. The brickwork around the entrance and the stairway doors are especially interesting

Combining a Fanciful Design with an Interesting Plan



First floor plan. The "front" of the house is devoted to the service quarters and garage, while the living and dining rooms command a view of the garden

Second floor plan. Bedrooms Nos. 1 and 2 have a bathroom between, while chamber No. 3 has a private bath. Note the seclusion of the maids' rooms



The home of Grace Carter, in Detroit, Michigan; Aloys Frank Herman, architect, and Howard T. Simons, designer, 701 Owen Building, Detroit

Quantity Survey for House No. 6A66

Designed Especially for National Builder by
The Architects' Small House Service Bureau

See pages 41 to 47, inclusive, for description, perspective, complete working drawings and details

EXCAVATING					
90 cu. yd.		2—6x10-24 girders.....		2500 ft. shiplap wall sheathing.....	
BACK FILL		8—2x4-12 girders, ribbon.....		2200 ft. 10" siding wall sheathing.....	
0 cu. yd.		4 ft. 2" plank, clean out cover.....		30 ft. flooring for porch.....	
FOUNDATION		3—2x10-14 stair stringers.....		2—2x6-12 porch joist.....	
f 12" concrete, 51 cu. yd. gravel,		52 lin. ft. 2x4 basement partition		1—2x4-12 projection rafters.....	
206 sax cement.....		plates		20—2x4-16 scaffold and extras.....	
f 9" concrete, 40 cu. yd. gravel,		14—2x4-7 basement partition studs		6—2x6-14 scaffold and extras.....	
162 sax cement.....		160 ft. D&M basement partition		8—2x8-12 scaffold and extras.....	
f 12" tile, 24800 CBM tile, 19 cu.		sheathing		1—2x10-16 scaffold and extras.....	
yd. mortar.....		19—2x10-14 first floor joist.....		MILLWORK	
f 9" tile, 19000 CBM tile, 15 cu.		19—2x10-18 first floor joist.....		Frames:	
yd. mortar.....		4—2x10-16 headers.....		6 frames 10x12-3L-1¾.....	
040 face brick.....		4—2x10-16 box sill.....		4 single fr. 10x14-16L-1¾.....	
cu. yd. mortar.....		2—2x10-14 doubles.....		8 single fr. 10x12-12L-1¾.....	
0 lb. mortar color.....		900 ft. com. bds. 1st floor sub floor		1 single fr. 10x14-12L-1¾.....	
CEMENT FLOOR		1116 ft. 13/16x1½ first floor fin-		2 single fr. 9x10-12L-1¾.....	
cu. yd. gravel.....		ish flooring.....		2 single attic quarter circle sash fr.	
cu. yd. sand.....		240 lin. ft. 2x4 first floor partition		1 single attic half circle sash fr....	
6 sax cement.....		plates		Windows:	
spatter blocks.....		70—2x4-9 first floor partition studs		6 sash 10x12-3L-1¾.....	
REINFORCED CONCRETE		3—2x10-16 stair horses.....		4 wds. 10x14-6L-1¾.....	
cu. yd. gravel.....		64 lin. ft. 1x4 ribbon.....		8 wds. 10x12-12L-1¾.....	
0 sax cement.....		19—2x10-14 second floor joist.....		1 wd. 10x14-12L-1¾.....	
cu. yd. sand.....		19—2x10-18 second floor joist.....		2 wds. 9x10-12L-1¾.....	
CHIMNEY		4—2x10-16 headers and doubles.....		2 quarter circle sash.....	
500 common brick.....		900 ft. com. bds. second floor sub-		1 half circle sash.....	
500 face brick.....		floor		Storm Sash:	
0 fire brick.....		1000 ft. 13/16x1½ second floor fin-		6 st. sh. 10x12-3L-1¾.....	
0 lin. ft. flue tile.....		ish flooring.....		4 st. sh. 10x14-16L-1¾.....	
6 sq. ft. hearth tile.....		336 lin. ft. 2x4 second floor parti-		8 st. sh. 10x12-12L-1¾.....	
0 lb. fire clay.....		tion plates.....		1 st. sh. 10x14-12L-1¾.....	
cu. yd. mortar.....		100—2x4-8 second floor partition		2 st. sh. 9x10-12L-1¾.....	
cast iron ash dump.....		studs		2 st. sh. quarter circle.....	
throat and damper.....		25—2x6-24 ceiling joist second floor		1 st. sh. half circle.....	
angle 4x3x5/16—4'0".....		1000 ft. D&M attic floor.....		Screens:	
—8x12 clean outs.....		330 lin. ft. 2x4 outside wall plates		6 screens 10x12-3L-1¾.....	
—6" thimbles.....		100—2x4-18 outside wall studs.....		4 screens 10x14-16L-1¾.....	
yd. metal lath.....		8—2x4-16 outside gable studs.....		8 screens 10x12-12L-1¾.....	
LATH		10—2x4-12 headers.....		1 screen 10x14-12L-1¾.....	
200 wood lath.....		2—2x8-20 porch girders.....		2 screens 9x10-12L-1¾.....	
yd. metal lath.....		4—2x8-8 porch girders.....		2 screens quarter circle.....	
PLASTER		16—2x4-8 porch ceiling joist.....		1 screen half circle.....	
yd. plaster on meal lath.....		200 ft. ceiling porch.....		Shutters:	
4 yd. plaster on wood lath.....		4—2x4-4 porch girders.....		1 pr. shutters 10x14-12L-1¾.....	
3 yd. Keene's cement.....		2—2x4-6 porch girders.....		4 pr. shutters 10x14-16L-1¾.....	
TILE FLOORS		30 ft. ceiling porch.....		8 pr. shutters 10x12-12L-1¾.....	
sq. ft. ceramic tile.....		16—2x4-10 porch rafters.....		2 pr. shutters 9x10-12L-1¾.....	
lin. ft. cove base.....		6—2x4-4 porch rafters.....		Outside Door Frames:	
REINFORCING STEEL		52—2x4-16 rafters.....		1 dr. fr. 3'0x7'0-1¾ with tr. seg.	
—¾ rods 5'6".....		34 lin. ft. 1x8 ridge rafter.....		top	
—¾ rods 19'0".....		300 lin. ft. 1x3 bridging.....		2 dr. fr. 3'0x7'0-1¾.....	
—½" rods 8'0".....		1200 lin. ft. furring strips and		1 dr. fr. 2'8x7'0-1¾.....	
—½" rods 6'6".....		grounds		1 icing door frame.....	
LUMBER		6—2x4-16 look outs.....		Outside Doors:	
—6x6-7 posts.....		1600 ft. bds. roof sheathing.....		1 dr. 3'0x7'0-1¾ (No. C106).....	
		12 M shingles.....		4 dr. 1'6x7'0-1¾ (French).....	

1 dr. 2'8x7'0-1¾ (No. C121).....
2 astragals for 7'0-1¾ doors.....
1 icing door.....
1 segment top transom.....
Storm Doors:
1 st. dr. 3'0x7'0-1¾.....
2 pr. st. dr. opng. 3'0x7'0-1¾.....
1 st. dr. 2'8x7'0-1¾.....
Screen Doors:
1 sc. dr. 3'0x7'0.....
1 sc. dr. 2'8x7'0.....
2 pr. sc. drs. opng. 3'0x7'0-1¾.....
Outside Millwork:
176 lin. ft. cornice.....
2 corner porch columns.....
4 front porch columns.....
2 porch posts.....
2 half posts.....
14 lin. ft. porch soffit.....
14 lin. ft. outside fascia.....
14 lin. ft. inside fascia.....
20 lin. ft. porch ceiling cove.....
18 lin. ft. gable end porch circle trim.....
3 front porch circle head opng. trim.....
56 lin. ft. ceiling cove.....
1 special entrance trim with transom.....
Interior Doors:
1 door 2'6x6'8-1¾ (No. C310).....
1 door 2'6x7'0-1¾ (No. C302).....
1 door 2'6x6'6-1¾ (No. C302).....
4 door 2'6x6'8-1¾ (No. C302).....
4 door 2'4x6'8-1¾ (No. C302).....
1 door 2'0x7'0-1¾ (No. C302).....
Jambs:
1 jamb 2'6x6'8.....
1 jamb 2'6x7'0.....
1 jamb 2'6x6'6.....
4 jambs 2'6x6'8.....
4 jambs 2'4x6'8.....
1 jamb 2'0x7'0.....
1 jamb 3'0x7'0 (no stops).....
2 jambs 5'0x7'0 (no stops).....
Interior Trim:
6 side trim 10x12-3L.....
4 side trim 10x14-16L.....
8 side trim 10x12-12L.....
1 side trim 10x14-12L.....
2 side trim 9x10-12L.....
2 attic quarter circle sash trim.....
1 attic half circle sash trim.....
1 side door trim 3'0x7'0 with tr. (seg. top).....
2 side door trim 3'0x7'0.....
1 side door trim 2'8x7'0.....
1 side icing dr. trim.....
2 side trim 2'6x6'8.....
2 side trim 2'6x7'0.....
2 side trim 2'6x6'6.....
8 side trim 2'6x6'8.....
8 side trim 2'4x6'8.....
2 side trim 2'0x7'0.....
2 side trim 3'0x7'0.....
4 side trim 5'0x7'0.....
1 flight grade stair.....
1 flight basement stair.....
1 flight main stair with rail.....
1 mantel shelf.....

1-2'0 kitchen cupboard.....
1-4'0 kitchen cupboard.....
1-3'8 kitchen cupboard.....
2-2'0 broom cabinets.....
1 scuttle door.....
1 scuttle door jamb.....
1 scuttle door trim.....
1-2'6 linen cupboard.....
1 utility door.....
1 utility door jamb.....
1 utility door trim.....
540 lin. ft. base.....
540 lin. ft. base shoe.....
540 lin. ft. base molding.....
282 lin. ft. picture molding.....
76 lin. ft. ceiling cove.....
16 lin. ft. shelving.....
16 lin. ft. hook strip.....
16 lin. ft. panel strip.....
16 lin. ft. threshold.....
16 lin. ft. closet clothes rod.....
1-6'0 hinged seat.....
1 medicine cabinet (No. C817).....

WEATHER STRIPPING

6 sash 10x12-3L.....
4 wds. 10x14-16L.....
8 wds. 10x12-12L.....
1 wd. 10x14-12L.....
2 wds. 9x10-12L.....
1 dr. 3'0x7'0.....
4 dr. 1'6x7'0.....
1 dr. 2'8x7'0.....

CAULKING

24 single frames.....
2 single dr. frames.....
2 double dr. frames.....
1 chimney.....
1 coal chute.....
1 icing door frame.....

TINWORK

37 lin. ft. ridge roll.....
3 finials.....
5 lin. ft. chimney flashing.....
36 lin. ft. flashing tin.....
68 lin. ft. gutters.....
4 gutter ends.....
30 gutter hangers.....
4 elbows.....
4 nipples.....
4 strainers.....
4 offsets.....
4 shut offs.....
80 lin. ft. conductor pipe.....
12 conductor hooks.....
300 tin shingles.....

INSULATION

800 ft. $\frac{1}{2}$ " vegetable fibre or equal for clg.....
1800 ft. $\frac{1}{2}$ " vegetable fibre or equal for walls.....
4 rolls felt walls.....
3 rolls felt roof.....
3 rolls felt floors.....

EXTERIOR PAINTING

5 gal. trim paint.....
12 gal. body paint.....
1 gal. oil.....
$\frac{1}{2}$ gal. shellac.....
1 gal. sash color.....

1 gal. screen paint.....
$\frac{1}{2}$ gal. shutter color.....
1 gal. cement floor paint.....

INTERIOR PAINTING

8 gal. white paint.....
6 gal. enamel.....
4 gal. filler stain.....
2 gal. shellac.....
6 gal. varnish.....
5 gal. floor varnish.....
2 gal. floor shellac.....
1 gal. oil.....
1 gal. Japan.....
1 gal. alcohol.....
10 lb. putty.....
2 doz. sheets assorted sandpaper.....
3 lb. steel wool.....

HARDWARE

6 cellar sash sets.....
15 sash locks.....
15 sash lifts.....
24 storm sash sets.....
24 screen sets.....
15 sets shutter hardware for pairs.....
1 front door set with butts.....
2 double French door sets with butts.....
1 rear door set with butts.....
1 icing door set with butts.....
2 single storm door sets with butts.....
2 double storm door sets with butts.....
2 double screen door sets with butts.....
2 single screen door sets with butts.....
1 transom lift.....
1 pr. butts for transom sash.....
1 floor hinge.....
2 push plates.....
11 inside lock sets with butts.....
18 door bumpers.....
4 doz. clothes hooks.....
4 stair rail brackets.....
960 lb. assorted nails.....
6 lb. assorted brads.....
1 coal chute.....
460 lb. sash weights.....
3 hanks sash cord.....
3 pr. orn. butts.....
3 cupboard turns.....
1 drawer pull.....
6 pr. orn. butts.....
3 cupboard turns.....
3 blind catches.....
1 set bin castors.....
1 bin pull.....
3 drawer pulls.....
2 cupboard turns.....
2 pr. butts.....
2 $\frac{1}{2}$ pr. orn butts.....
2 cupboard turns.....
2 pr. orn. butts.....
1 cupboard turn.....
1 elbow catch.....
1 pr. hinges for scuttle door.....
4 friction stays—utility door.....
1 pr. hinges for seat.....
1 pr. orn. butts.....
1 cupboard turn.....

kitchen cabinet.

kitchen cabinet.

broom cabinets.

linen cabinet.

ice box cabinet.

medicine cabinet.

Portland Cement Celebrates 100th Birthday

By Donald R. Mather

THIS year the portland cement industry throughout the world celebrates its 100th anniversary. In 1824, an Englishman produced and patented what he called "portland cement." With this as a basic material, in now fashion, out of concrete, structures surpassing those ancient works which puzzled engineering students for so many ages.

Perhaps the most widely known examples of the use of concrete by the ancients are those left by the Romans; among them, the Pantheon, whose massive, 142-foot dome is today just as rigid and just as beautiful as the day it was finished.

In the primitive Dark Ages following the fall of the Roman empire, men blindly groped about seeking to regain the lost arts and sciences. In their search for a cement with which to bind their masonry together permanently they discovered that the Romans had used volcanic ash from Vesuvius. About the middle of the eighteenth century an Englishman by the name of John Smeaton was given a contract to rebuild the Oldstone lighthouse in the English Channel.

He experimented in search of a cement mortar which would harden under water, and finally produced a good hydraulic cement by burning a mixture of lime and clay. Smeaton's experiments were followed by others, and finally another Briton, Joseph Aspdin, a brick mason, mixed together lime and clays according to a new formula, burned the mixture to clinker and then ground the clinker to dust again. He found he had produced a superior cement. When hardened it resembled a building stone quarried on the Isle of Portland nearby, so he called his product "portland cement."

The first important jobs using portland cement were the great Thames tunnel built in 1828 and the London drainage canal, 1859. An attempt was made to manufacture port-

land cement in America till 1872. The Eads Jetty of the Mississippi River was the first engineering project of importance to use American made cement.

Cement-making methods of fifty years ago compared with those of today reveal an almost unbelievable development. Today, tons of dynamite at a time shatter the hill-sides at cement plant quarries. The crude millstones for grinding the rock have been replaced by huge gyratory crushers and by ball and tube mills which reduce boulders to powder finer than flour.

The tall chimney-like kilns, which took a week to burn, have given way to vast rotary kilns whose volcanic heat causes a chemical change in the rock after three hours burning and turns it to pasty clinker.

After cooling, this clinker is reduced to a fine gray powder, when it is ready to be



Kiln made by Joseph Aspdin, the British inventor of portland cement

finished cement will always be exactly according to standard specifications established by the United States Bureau of Standards, the American Society for Testing Materials and other technical societies.

A comparison of American portland cement production figures over the past twenty-five years gives an idea of the industry's rapid advance to the front rank: In 1898 the production was 3,600,000 barrels; 22,000,000 barrels were produced in 1903; by 1910, the figures had reached 76,500,000 barrels; 1922 production was 114,000,000 barrels, and the estimate for the 1923 production is 135,000,000 barrels. The United States now produces and uses more portland cement than all the rest of the world combined.

It is used today in every branch of the building industry—from large engineering projects on one hand to small repair jobs "around the house" on the other, and no doubt centuries from now it will tell as much about us as King Tut's tomb tells us about him today.



One of the huge rotary kilns whose interior is a man-made-volcano

sacked and shipped. This powder is so fine that 78 per cent of it will pass through a sieve woven finer than silk—a sieve that will actually hold water.

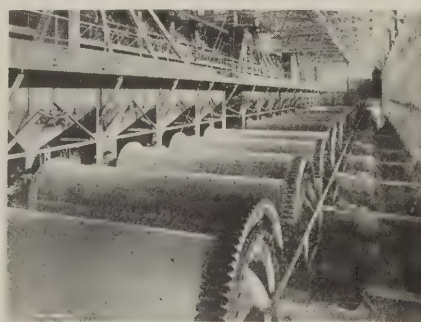
Beginning with the time the rock leaves the quarry, cement making is constantly in the control of chemists in the plant laboratory. Careful tests of the materials are made at frequent intervals and the mixture is varied so that the properties of the



In the early days the rock for portland cement was ground between crude millstones



A modern gyratory crusher which devours the rock as it comes from the quarry and prepares it for the kiln



Modern tube mills, in which the rock for portland cement is reduced to the finest powder

Wallboard Comes Down From the Attic

ART and industry are getting closer and closer together every day. This is evident in the increasing number of manufacturers who are giving attention to the *design* of their product as well as to its materials and construction. It is a very encouraging sign of the times and one which the building industry should be glad to see. There are so many things that enter into the construction of buildings which can make them beautiful or ugly that this tendency should have a marked influence upon the character of modern building. The forward-looking builder owes his support and approval to those products which have that most desirable but heretofore often neglected "plus" element—good design.

The latest material to which the principles of good art and architecture have been applied is a very lowly one—wallboard. This material has long been associated with cheap, flimsy, temporary construction. It has been relegated to the attic, basement, barn, out-houses and other uses where it does not come within the every day sight of man. But wallboard is a comparatively new material and its construction and uses have been undergoing an evolutionary change much for the better. It has come down from the attic and is now adaptable to the best rooms and the finer houses when properly used and no doubt there will be many discriminating builders and architects who will actually prefer it.

The principal objection to wallboard has been its unsightliness. It shows nail marks, and it is usually associated with the unattractive battens or strips which are used to conceal the joints between panels.

Its advantages are that it is inexpensive and quick to put up and it is applied by carpenters. It will not crack under ordi-

nary usage and it lasts indefinitely, or at least as long as the wood members of the house of which it is a part. It can be put on in any kind of weather and it is not necessary to wait for the house to dry before the interior trim can be hung, effecting a material saving in time and money. It can be put on right over old paper and old walls and therefore saves much demolition expense.

Obviously, a material of so many advantages should not be confined to the less important parts of the house. It should be made to serve a useful purpose as a major construction material.

This has recently been proved possible through the research work of the manufacturer of one well known wallboard, the Upson Company, of Lockport, New York. They have simply applied the accepted principles of good architecture and interior decoration to ordinary wallboard and have produced the interesting results shown on these pages. Mr. Frederick L. Ackerman, an architect of wide experience in residential architecture and of high standing in the profession, was commissioned to plan and design a number of representative rooms in different architectural styles and employing stock sizes of wallboard. Practically no changes were necessary in the company's product. It was only necessary to utilize their regular wallboard in the proper manner, which consisted of fitting it into rooms in variously paneled styles and the designing of a few simple forms of stock wood moldings to be used for covering up the joints between the panels and for decorative purposes. The illustrations show living rooms of Colonial and Adam type and a Georgian dining room. Other styles or architectural expressions can also be produced in a simi-

lar manner and the company maintains a special staff of designers and technical men for the purpose of serving its customers in the matter of properly laying out their rooms for using wallboard in these different styles. It is only necessary for the builder to indicate the size of the room in which he wishes to use wallboard and the company's instructions, consisting of details of the trim and suggestions for the panels, are sent him.

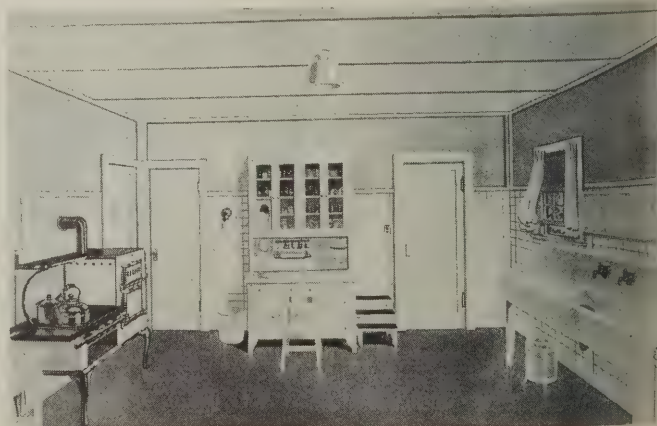
"Upson Board" is manufactured, it is claimed, of pure wood fiber cut into large panels and made in quarter-inch thickness. This thickness is recommended for the best results with the kind of work illustrated here. A special surface is put on the wallboard to make it take paint well and to produce the best painted effects. A patented fastener has been devised by the manufacturers for applying the wallboard without nails, nail head holes or hammer marks showing, thus removing the first objection previously mentioned to the material.

This development in the wallboard industry should have a far-reaching influence among contractors and builders. To many it will mean opening up wallboarding as a new occupation, for undoubtedly the application of these new principles to this material will develop considerable remodeling business and enough of it to warrant specialization in wallboarding by many contractors and carpenters. The present high cost of building is forcing many owners into "modernizing" old houses and wallboard is especially suited to this kind of work, as well as being a cost saving factor in the construction of new buildings.

The illustrations show a few typical wallboard paneled rooms and the stock moldings with which the various period effects are attained.



A bedroom paneled with wallboard. Wallboard tiling is seen in the bathroom



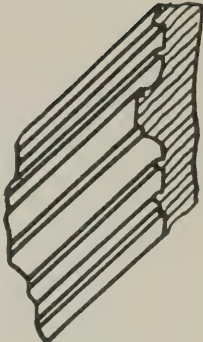
How wallboard is used in place of tile for kitchen walls



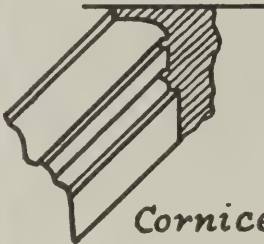
A Georgian dining room. Paneling of this type stands half way between plain walls and highly decorated walls of some of the "periods"



Decorative Strip



Dado Cap



Cornice

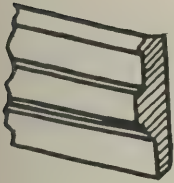
These simple wood moldings are all that are necessary to produce the Georgian feeling in the dining room on the left



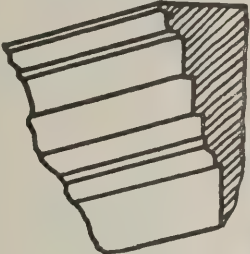
Decorative Strip



Beam



Dado Cap



Cornice

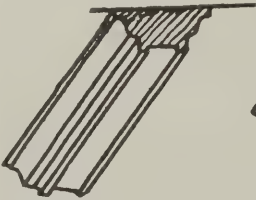


Paneled walls are always in good taste. Here is a living room paneled in the Colonial style

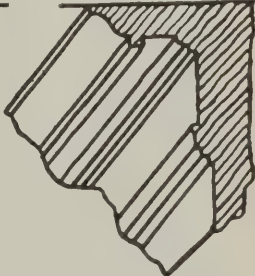
Stock patterns of moldings used for Colonial paneling



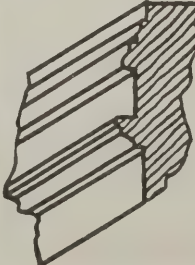
This is a living room in the Adam style. No builder need have any hesitancy in recommending such interior effects to his customer



Beam



Cornice



Dado Cap

Wood moldings of these forms are used in paneling in the Adam style

Consider the Hardware

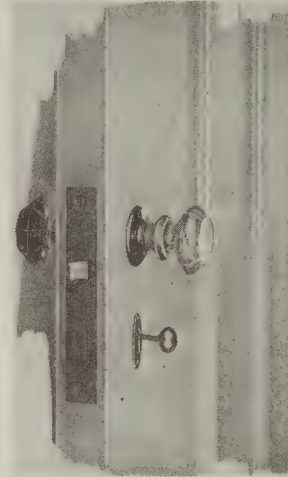
By H. T. Becker

FROM two to four per cent of the cost of building an ordinary home (excluding land, of course) is necessary to secure good hardware for it. This ratio is reduced for larger buildings, being about one per cent, more or less, in such structures as libraries, large hotels, office buildings and hospitals. The relative cost of good hardware to the cost of the whole building is so low, and so very little more than the cost of cheap fittings, that to skimp here is unwise from every viewpoint.

There are four things you want the hardware in a building to do: To work, to beautify, to last as long as the building and to add to the investment value of the property. All of us have seen really good jobs which were noticeably cheapened by a little false economy on one such small item—an item which perhaps is inconspicuous, and only became outstanding because of its poor quality. It undermined the impression of good construction on the entire job, just as a trademarked product of known quality which you can point to with pride, raises the whole tone of the property.

The best hardware is made of brass and bronze, cast in molds. Next in quality comes brass and bronze hardware wrought from thick sheets of these metals with great hydraulic presses. If properly made and properly protected at the surface with an enduring finish, cast iron and wrought iron hardware is good hardware in every sense.

Most of us are familiar with many of the improvements that have been made in modern lock-and-key-making science. The cylinder lock in its modern form, evolved by



Small glass knobs for interior doors are much in favor and are suitable for almost every house. Similar knobs should be used on the built-in cabinet work in the same room

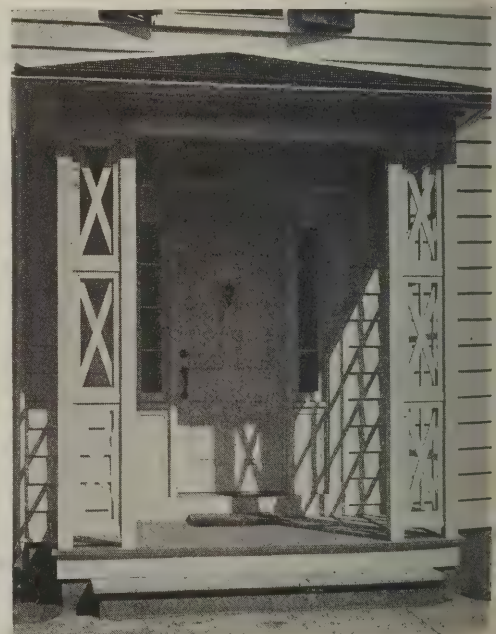
Yankee ingenuity, is now the standardized mechanism of security throughout the civilized world. Each one of the millions of them is different from each other one, just

as each human face differs from every other. The master-keying system, properly used in a new building, makes it unnecessary for the owner to carry a bungle-some bunch of house keys in his pocket in order to get into the front door, the rear and side door, the garage, the cellar, or the car while each has its own individual lock and key for all except the owner. The keyhole knob is another rather recent development that has proved its practicability.

From the knocker and the door-knob and key-plate on the front entrance, to the smallest hinge on a cabinet door, hardware of correct finish and design, and good mechanism, is important. Among the items of builders' hardware which have been studied and improved recently are the electric door opener, which enables one upstairs to open a door downstairs by simply pressing a button. There are transom lifters, invisible and noiseless; casement hardware that makes casements practical as well as artistic; door checks that are almost human in closing doors and closing them silently. These are to be had both for ordinary exterior doors and screen doors. Door holders, operated by a touch of the toe, prevent doors from banging and from marring furniture and woodwork. For doors, drawers and cupboards, glass knobs are popular because of their good looks and easy cleaning, and can be had in a large assortment. The hardware for the front entrance has become



Small wood knobs are neat and effective. Door knobs for interior doors should be small and harmonize in finish with light fixtures



Antique-appearing knocker and thumb-latch door handle are appropriate for the Colonial entrance



This is an example of poorly-selected hardware. It is conspicuous and crude for a sideboard, where it might pass for use on a kitchen dresser. Compare it with the hardware on the sideboard on the right



Drop handles of silver finish, with filigree plates, are beautifully appropriate on the small drawers of the Colonial sideboard. Wood knobs are used for the doors. Note the French door handle. Corresponding finish should be used on all the hardware in a room

a matter of moment. A knocker of authentic design, harmonious with the building

itself, in brass or wrought iron, is almost necessary to complete the picture. Door handles that are modernized adaptations of the old-fashioned thumb latches are in wide use for many types of buildings, instead of the more ordinary door knob. Drawer fittings and cabinet hardware for built-in furniture should be very carefully chosen by the builder to harmonize with the whole interior scheme. Huge hinges and latches, oxidized or black japanned, may be suitable for a tool-chest, or even a kitchen cupboard—but they utterly ruin the effect of a built-in cabinet which otherwise would be a beautiful bit of real furniture. The hardware on good furniture is worth observing for hints along this line.

all in one harmonious design, down to the key plate on a closet door.



Cupboard latches are to be had in a number of finishes—brass, oxidized copper, black japanned. They should be as small as consistent with the size of the door. Notice the placing of these

One of the more recent developments in builders' hardware, which gives the builder more opportunity for refinement in this detail of his work, is the furnishing of period designs to accompany the various architectural types of buildings which are being built so much at the present time. This is in line with the commendable tendency to have every detail of the job—wall finish, floors, woodwork, furniture, everything in the house, including furniture—harmonious with the main motif of the building itself. The architect is, of course, the best authority on these points. Even on the moderate-priced home good hardware that is also correct as to type can be had from regular stock, and should be selected with care,



Sash lifts of this sort work better than the old thumb lift placed in the middle of the bottom rail. They equalize the strain on the sash. The sash fasteners draw the sash firmly together

The Steel Square

VI—Laying Out Angles for Roofs of Various Pitches

SINCE only the standard pitches are stamped on steel squares, the carpenter may find himself in a tight place if he is called upon to frame a roof of other than standard pitch. This article treats with the manner in which the steel square may be used to find various angles and cuts for roof rafters of unusual pitches by means of the auxiliary tables given in Figs. 1 and 4 and as shown on the diagram in Fig. 5.

Reference to the diagram shown in Fig. 5 will illustrate the manner in which the tables are to be used. The various figures on the chart represent the following quantities: The figures lettered on the square are the standard inch-graduation marks, the figures at the ends of the arrows are the inch-graduation marks to be used for finding certain angles, and the figures at the arcs represent the angles for which the

risers and runs are to be determined.

Suppose we have a roof with a pitch of 40 degrees and it becomes necessary to lay out the top and bottom cuts for a common

distance from heel) and for the rise which will take 10 1/16 inches on the body (vertical distance from heel). Notice that a line drawn through the 12 inch-graduation mark on the tongue and the 10 1/16 inch-graduation mark on the body when produced to the arc has the figure 40 below it. This means that the line so found represents the pitch for a 40 degree roof and is inclined 40 degrees from the horizontal.

Now, suppose we are required to find the run and rise for a roof of 70 degrees pitch (inclined 70 degrees from the horizontal). If we used 12 on the tongue for the run and attempted to find some inch-graduation mark along the body through which a line could be drawn to give us the required slope of 70 degrees, we would find that the body would have to be extended to more than the 24 inches generally found on the standard square. Therefore we reverse the proc-

FOR ANGLES OVER 45 DEGREES TAKE 12 ON BODY AND FIGURES GIVEN BELOW ON TONGUE			
Angle	Inches	Angle	Inches
46	11-19/32	68	4-27/32
47	11-3/16	69	4-21/32
48	10-13/16	70	4-3/8
49	10-7/16	71	4-1/8
50	10-1/16	72	3-29/32
51	9-23/32	73	3-21/32
52	9-3/8	74	3-7/16
53	9-1/32	75	3-7/32
54	8-23/32	76	3-
55	8-13/32	77	2-25/32
56	8-3/32	78	2-9/16
57	7-25/32	79	2-11/32
58	7-1/2	80	2-1/8
59	7-7/32	81	1-29/32
60	6-15/16	82	1-11/16
61	6-21/32	83	1-15/32
62	6-3/8	84	1-1/4
63	6-1/8	85	1-1/16
64	5-27/32	86	27/32
65	5-19/32	87	5/8
66	5-11/32	88	13/32
67	5-3/32	89	7/32
		90	0

Fig. 1—Values for run and rise of angles less than 45 degrees. Consult Fig. 5

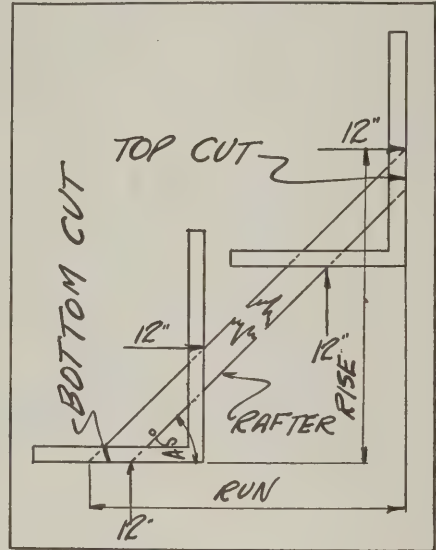


Fig. 2—Method of finding top and bottom cut for 45 degree angle

rafter. What distance along the body shall we take for the rise and what distance along the tongue shall we take for the run or

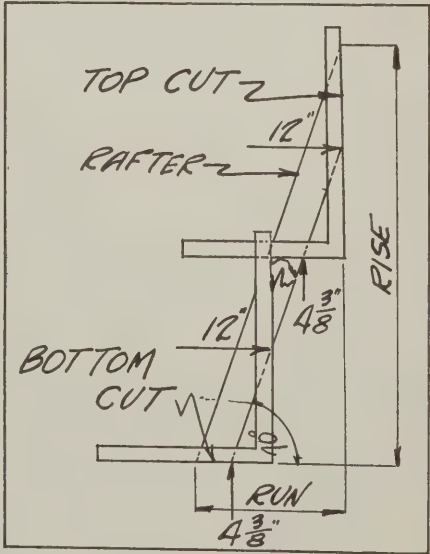


Fig. 3—Method of finding top and bottom cut for 70 degree angle

vice versa? Let us refer to Fig. 5, assuming that the body stands vertically and the tongue horizontally. For the run we will take 12 inches on the tongue (horizontal

FOR ANGLES UNDER 45 DEGREES TAKE 12 ON TONGUE AND FIGURES GIVEN BELOW ON BODY			
Angle	Inches	Angle	Inches
1	7/32	23	5-3/32
2	13/32	24	5-11/32
3	5/8	25	5-19/32
4	27/32	26	5-27/32
5	1-1/16	27	6-1/8
6	1-1/4	28	6-3/8
7	1-15/32	29	6-21/32
8	1-11/16	30	6-15/16
9	1-29/32	31	7-7/32
10	2-1/8	32	7-1/2
11	2-11/32	33	7-25/32
12	2-9/16	34	8-7/32
13	2-25/32	35	8-13/32
14	3-	36	8-23/32
15	3-7/32	37	9-1/32
16	3-7/16	38	9-3/8
17	3-21/32	39	9-23/32
18	3-29/32	40	10-1/16
19	4-1/8	41	10-7/16
20	4-3/8	42	10-13/16
21	4-21/32	43	11-3/16
22	4-27/32	44	11-19/32
		45	12-

Fig. 4—Values for run and rise of angles greater than 45 degrees. Consult Fig. 5

ess and instead of taking the 12 inch-graduation mark on the tongue (horizontally) and some other inch-graduation mark on the body (vertically), we take 12 on the body for the rise (12 inches vertically from heel) and 4 3/8 on the tongue for the run (4 3/8 inches horizontally from heel). A line drawn through the 12 inch-graduation mark on the body and through the 4 3/8 inch-graduation mark on the tongue will give us the desired angle of 70 degrees.

For angles other than those shown on the chart in Fig. 5 refer to the two tables, Figs. 1 and 4 which give the values for the run and rise for all angles from 1 to 90 degrees. While these values are not exact mathematically, they are sufficiently correct for any work the carpenter may be called upon to do in roof framing.

It is important that the body of the square represent the vertical and the tongue the horizontal, for if their positions are reversed and the tongue placed vertically, the angle found will be the complement of the angle desired and instead of a 5 degree angle, the angle found will be 85 degrees.

Fig. 2 and Fig. 3 show two applications of the principle given above. Fig. 2 shows the square held in position for the top and bottom cut for a 45 degree angle and Fig. 3 shows the square used to obtain a 70 degree angle.

To those who understand trigonometry it may be interesting to see how the writer arrived at the values given in the tables. Let us take the values for a 30 degree angle. Referring to Fig. 5, it will be seen that the triangle formed by the outside edges of the square will have two sides at right angles, the length of one being 12, and the length of the other, for the present, unknown. Having the length of one side of the triangle, and an acute angle,

we can solve for the length of the other leg of the right angle as follows:
Let X represent the length required.
Then:
$$\frac{X}{12} = \tan 30^\circ$$

or, multiplying both sides of the equation by 12, and cancelling through:
$$X = 12 \tan 30^\circ.$$

Since $\tan 30^\circ = 0.5774$,
$$X = 12 (0.5774) = 6.9288.$$

Assuming the the values to be inches,
$$X = 6 \frac{15}{16} \text{ inches,}$$
 the value given in the table and in Fig. 5, which is correct to the closest 32nd of an inch.
These values are close enough for all ordinary carpenter work since seldom if ever do carpenters work any closer than to a 32nd of an inch.

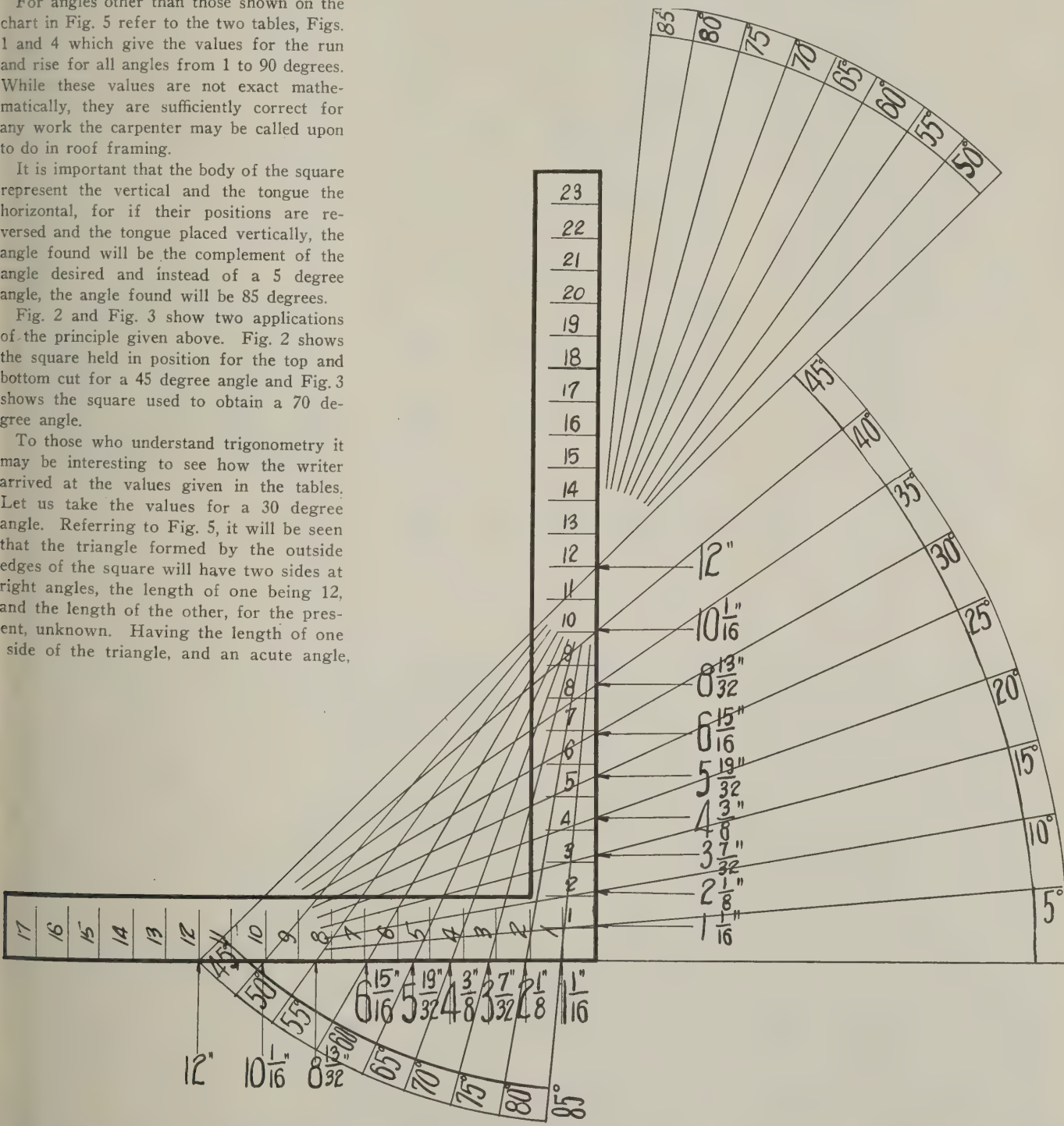
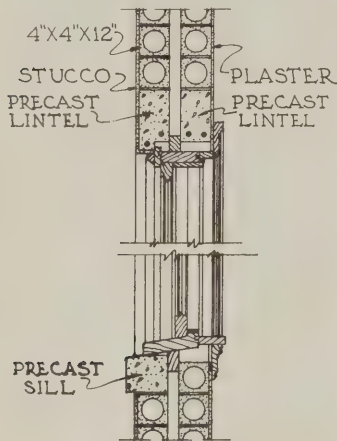


Fig. 5—Method of locating angles with the steel square. Suppose it is required to find the rise and run for an angle of 35 degrees. On the arc find 35 degrees. Follow the line directly above the figure 35 and find where it cuts the body and tongue of the square, in this case, 8 13/32 inches on the body, and 12 inches on the tongue. Then for a roof of 35 degrees pitch, the run will be 12 and the rise 8 13/32 or, in other words, the rise will be 8 13/32 inches per foot. In order to find the slope of a roof whose run is 12 and whose rise is 12, find 12 on the tongue and 12 on the body of the square, follow the line drawn through these two figures until it strikes the arc, and below the line, read 45, the angle for a roof whose run and rise are equal

Something Interesting in the Way of Inexpensive Workingmen's Homes

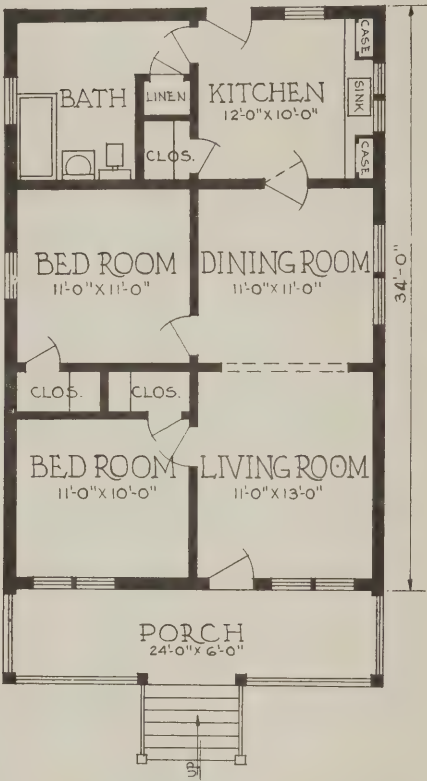
Small Cottage at Holland, Michigan, Shows What Can Be Done for a Small Amount of Money if the Project Is Carefully Planned

IN large houses, built by people to whom money is no object, it is all very well and good to provide large halls, and to use expensive materials but unfortunately we are not all rich and able to disregard ex-



Wall section showing details at window

pense in building our house. The greater majority of home builders are beset with the problem of not "how much floor space can we allow in our reception hall?" but "can we afford to have a reception hall?" To the man with little money to spend, fancy



Floor plan

ornaments, lavish decorations and unnecessary refinements in design are out of the question.

Especially is the workingman puzzled when he comes to build his house. The average wage earner is not concerned with marble halls and gold door knobs but with



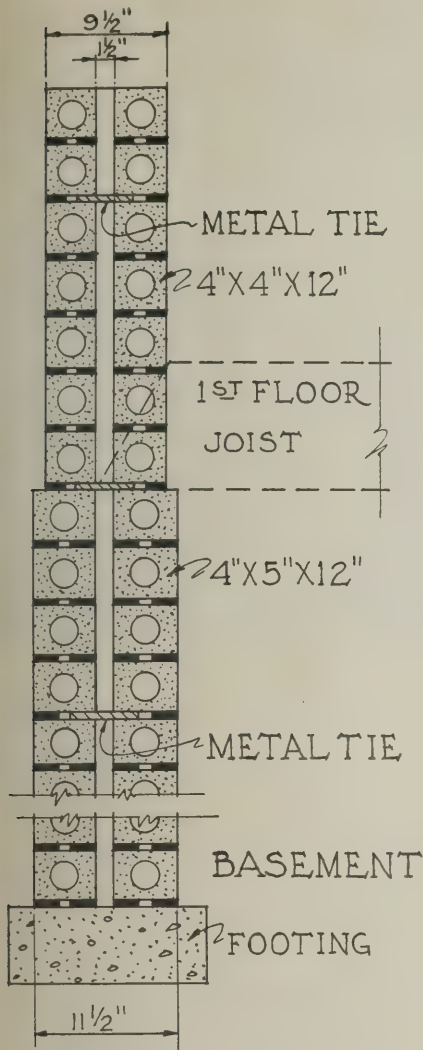
Rear view showing enclosed porch

livable rooms, of good size, laid out in an economical fashion, and a simple exterior which will pronounce him as a man of good taste and enable him to point with pride to his home.

The little house shown here is the home of John Van Dervliet, of Holland, Michigan. It stands as proof that inexpensive



This house, built at Holland, Michigan, is a good example of how a building, though low in cost, may nevertheless be attractive in design



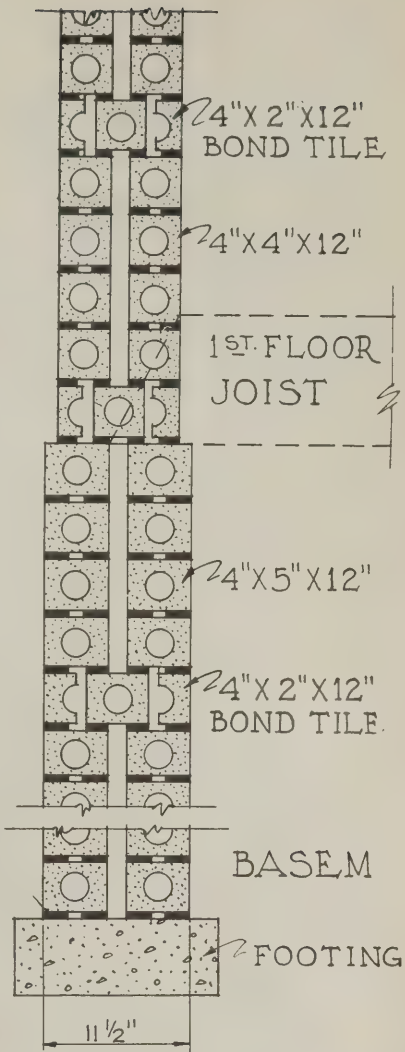
Type of wall construction using metal ties

homes need not be ugly or ill-planned. The exterior, while simple, is very pleasing to the eye and the house, with its light-gray stucco finished foundation, its buff colored stucco walls, and its green composition shingle roof presents a pleasing picture when viewed from any angle. Good authority states that the cost of constructing this house, including plumbing and furnace heat, in the fall of 1923, was less than \$2500.

There are five rooms and both contained within a space 24x34 feet, and all rooms are "livable" size, as a study of the floor plan will show. As regards the economy of planning, notice that not one inch of floor space is devoted to halls; every bit of floor area is thrown into rooms and closets. The front and rear porches are added conveniences. As regards "livability" the two interior photographs show more than any words could describe. The comfortable furniture adds much to the attractiveness, of course, but it is the layout of the house which permits the furniture arrangement.

The walls are built of concrete tile, two possible methods of construction being shown here. In one type of wall the two widths of block are tied together with metal ties and in the other type bond tile are used. Notice that both types of construction provide three separate and distinct dead air spaces which permit plastering and stuccoing directly on the walls as was done in this case.

All in all, this home shows what can be done for a small amount of money. Although the cost is low and the materials used are inexpensive, the house is well built and a joy and comfort to its owner.



Type of wall construction using bond tile



View of interior looking toward the front of the house from the kitchen



View of interior looking from the living room toward the kitchen

Bermuda Houses

RECENT awakening of interest among contractors, architects, and builders in the recognized architectural styles known as Colonial, English, Spanish, Italian, etc., most of which are of foreign origin, warrants consideration of a very distinctive small house architecture which is native to the western hemisphere—that of Bermuda. For the first time a thorough study has been made of the small houses of Bermuda and the result is attractively and thoroughly presented in "Bermuda Houses,"* a book by John S. Humphreys, A.I.A., Associate Professor of Architecture, School of Architecture, Harvard University.

The principal building material of Bermuda is a soft stone which is easily quarried and cut with handsaws and trimmed with hatchet and adze and when it is burned makes a good lime which is used for mortar, stucco, and whitewash.

Gable and hip roofs are used indiscriminately and there is no common angle of pitch; there are no dormers, and no longer spans of roof than 18 feet.

The roofs are formed of sawn or hewn wood rafters and are covered with sawn slabs or tile of Bermuda stone about 1½ inches thick and 10 or 12 inches in width. The eaves project from 6 to 10 inches—a small projection for tropical houses, due here no doubt to the fear of hurricanes taking the roofs off houses with wide roof projections. The slight overhanging eaves are supported by heavy rafters of square section. The framing of the roofs reflect the craftsmanship of the shipwright rather than the carpenter. To make the roofs waterproof they are heavily coated with a liquid cement which smoothes out the surfaces and softens the roof lines and when they are whitewashed they look like "icing," according to Mark Twain.

Heavy chimneys are also a characteristic of the Bermuda houses and on the exterior buttresses are often used to overcome the outward thrust of the rafters under their heavy stone tile loads.

The native house plan is of no interest. The interior of the house is simply divided into rectangular divisions. Projecting wings are frequently built on for additional rooms. The houses are often built on irregular ground with living quarters level with the ground in the front and a high basement wall in the back providing quarters for slaves or a stable.

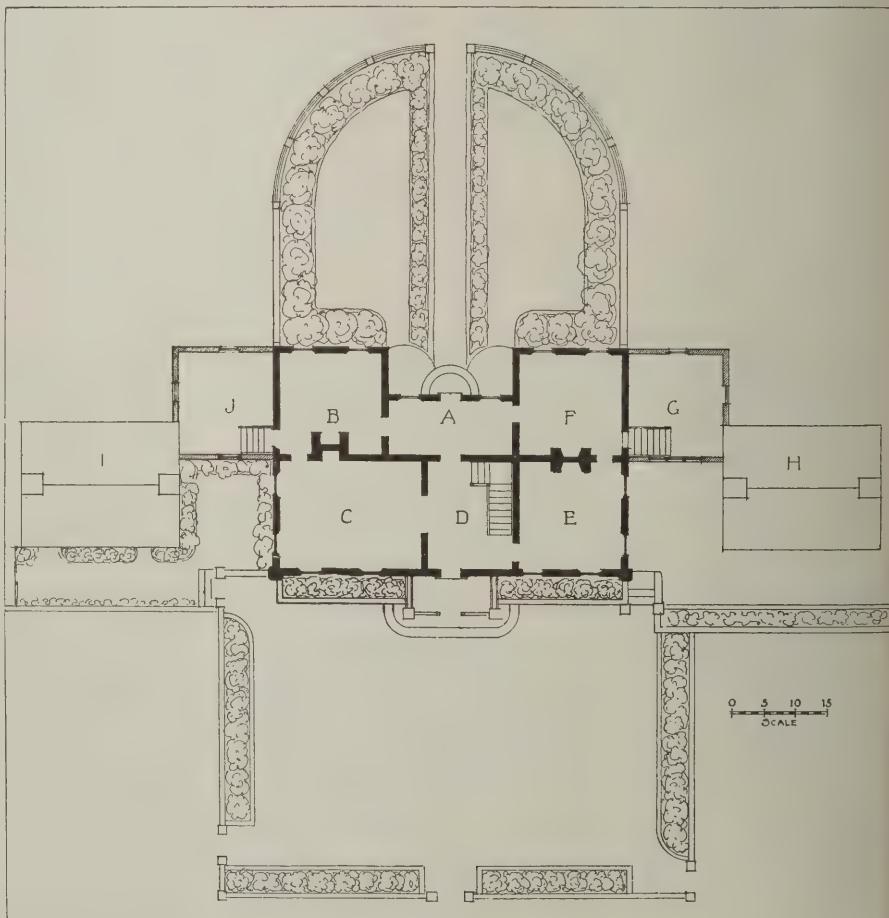
Bermudian architecture is totally of English origin. The forms, of course, are

*Published by Marshall Jones Company, 212 Summer Street, Boston. Price \$15.



From "Bermuda Houses"

"Bloomfield," south front, a house in Paget, Bermuda. "Bloomfield is a later type of house designed for a Bermudian gentleman. Built early in the nineteenth century, the symmetrical disposition of house and garden, and the detail of its interior show a distinctly Georgian inspiration. It is, nevertheless, completely Bermudian in expression, due to the smallness of its scale, the materials used, and the exterior details"



From "Bermuda Houses"

Plan of first floor. A—entrance hall; B—study; C—drawing-room; D—stair hall; E—dining room; F, G and H—kitchen service; I and J—servants' quarters

adapted to the material at hand and hence a distinct Bermudian style is the product. It is naturally much more becoming to the

islands than the new buildings that are constantly being constructed for the tourists and for permanent residents.

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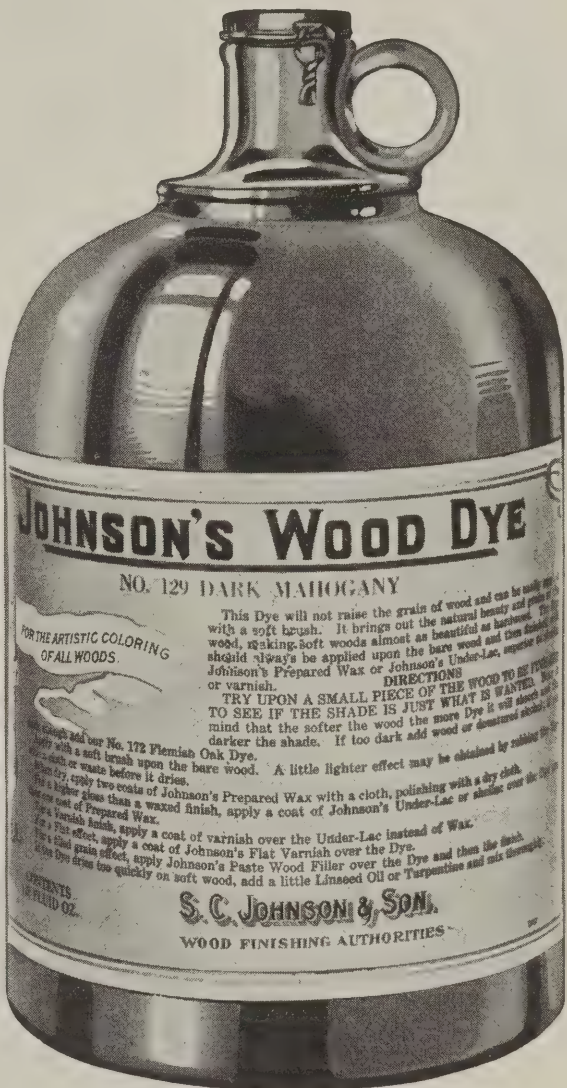
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On the Job in Pensacola, Fla.

Framing for a Telephone Opening

IT has become the vogue to install special niches in the wall for the telephone, and the manner of framing shown here, used by the C. H. Turner Construction Company of Pensacola, Florida, seems to be as simple and easy as the job can be done.

The lower shelf is nothing more or less



This simple framing is all that is necessary to install a wall niche for a telephone

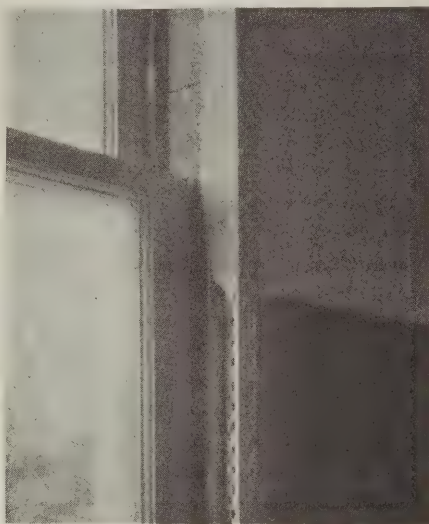
than a piece of 2x4 nailed between the studs, and the arched top is formed by setting two curve-cut pieces of 1x8 or 1x10 according to the diameter of the curve, in notches in the studs as shown. It is recommended that metal lath be used around the top as this material lends itself well to bending and for this kind of work may be somewhat easier to apply than wood lath. The idea of a telephone niche should appeal to the contractor who builds houses to sell. It is a convenience that may be installed at a very low cost and besides its actual utility it should prove an excellent selling point. In the average home the telephone is usually on a small table in the hallway, with the result that it occupies space and in many cases obstructs passage. The telephone niche solves the problem by providing a shelf where the phone may be set without in any way occupying valuable hallway space.

Plastering for a "No Trim" Window

SOME architects, especially in designing houses of the Spanish type, advise that as little trim as possible be used in order to obtain the effect demanded by Spanish interiors. This calls for a special kind of

construction about the window frame since casing is not used, and R. Burres, a Pensacola contractor, does the job in the fashion shown here.

Two furring strips are set against the frame or the stud, as the case may be, the

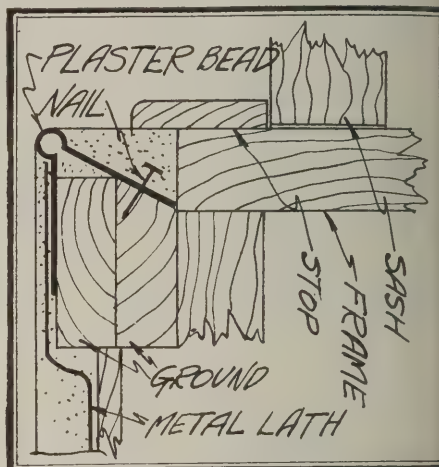


Actual photograph showing wall partially plastered

inside strip being beveled as shown in the accompanying sketch. A plaster bead is set on the furring strips and fixed to them in the ordinary manner. A strip of metal lath should be set on the wall running from the corner of the bead around the furring strip to the wall. This strip of metal lath will prevent the chipping off of the plaster at the bead which might easily occur if it were omitted.

In order to hold the plaster behind the

window stop a few small nails or brads are set into the inside furring strip and allowed to project above the top and into the plaster.

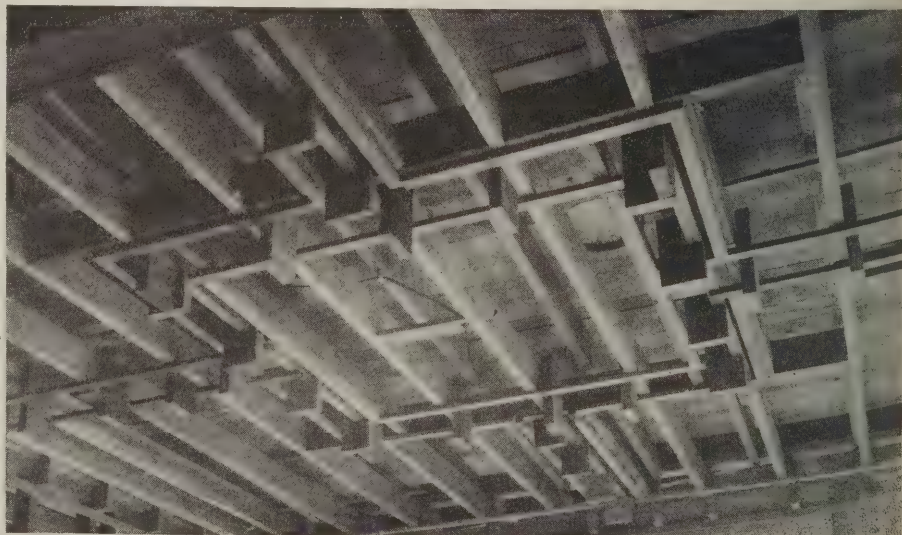


Construction details for a "no-trim" corner at the window. The small nails just behind the window stop keep the wedge of plaster from breaking away from the wall

The joint between the plaster and the window frame is concealed by the stop when it is nailed in place. A glance at the photograph will show the job as it was done.

Framing for a False-Beam Ceiling

THE illustration at the bottom of the page shows the method of framing for a false beam ceiling, as built by a Pensacola, Florida, contractor. Full details are shown in the illustration and little explanation is necessary.



Framing for a "false-beam" ceiling. The design of the beams can be seen from the layout of the framing



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An Underpinning Well

WHERE an excavation is to be carried below an existing foundation, underpinning is always necessary to prevent the collapse of the adjacent building. In ordinary soil the foundation is generally underpinned a few feet at a time by digging wells along the wall line, excavating under the foundations and filling that part of the excavation under the foundation with concrete. Where these wells are to be carried to a depth of six or eight feet they are best constructed as shown in the accompanying sketch.

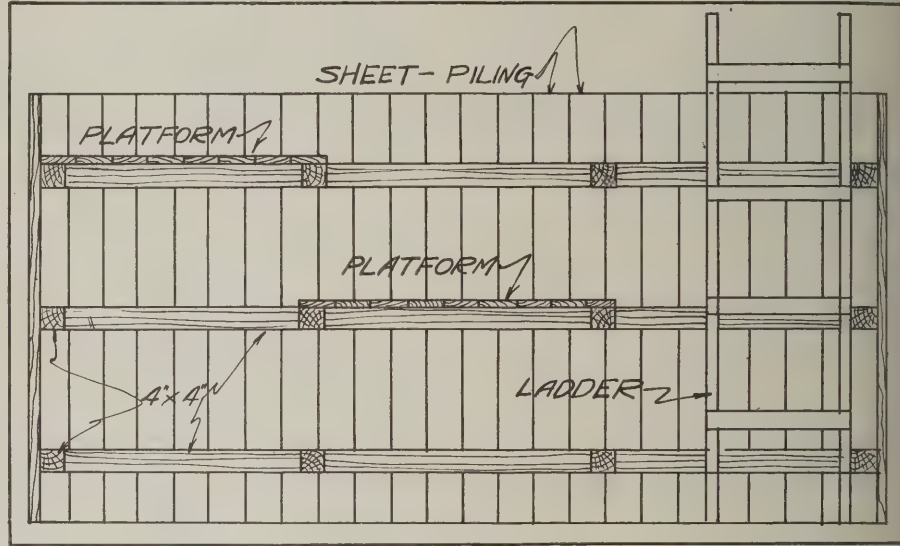
It is too much to expect a man to shovel dirt from one level to another level six or more feet above, and the work is most efficiently carried on in the following manner: Two platforms are installed in the well as shown. The dirt is shoveled to a man on the first platform who in turn sets it upon the next platform or on the grade level as the case may be. Thus one man is required to lift the dirt only a short height and does not become exhausted as would be the case if he had to lift each shovel full from his feet to a point above his head.

The well is protected from cave-ins by 2x6 sheeting which is placed within horizontal lines of 4x4's. These 4x4's should not be spaced farther apart than 3 or 4 feet on centers if the excavation is to be carried to any depth, since considerable bracing is

required to offset the earth pressure.

This question of earth pressure is not one to be passed over lightly and is very important where excavations are to be carried to any considerable depth. Earth pressure

placed close together and their section increased to greater than 4x4 to offset the increased pressure. The lateral bracing which spans the width of the well is also increased in the same manner.



Sketch showing construction detail for an underpinning well where the depth is not over ten feet

increases with the depth and where underpinning is to be taken down to a considerable distance, the space between the horizontal timbers, or wales, as they are commonly called, is reduced. They are

The photographs were taken on a job by the Karno Smith Company of Trenton, New Jersey, and they show the formwork in place in the well for filling the aperture under the foundation with concrete.

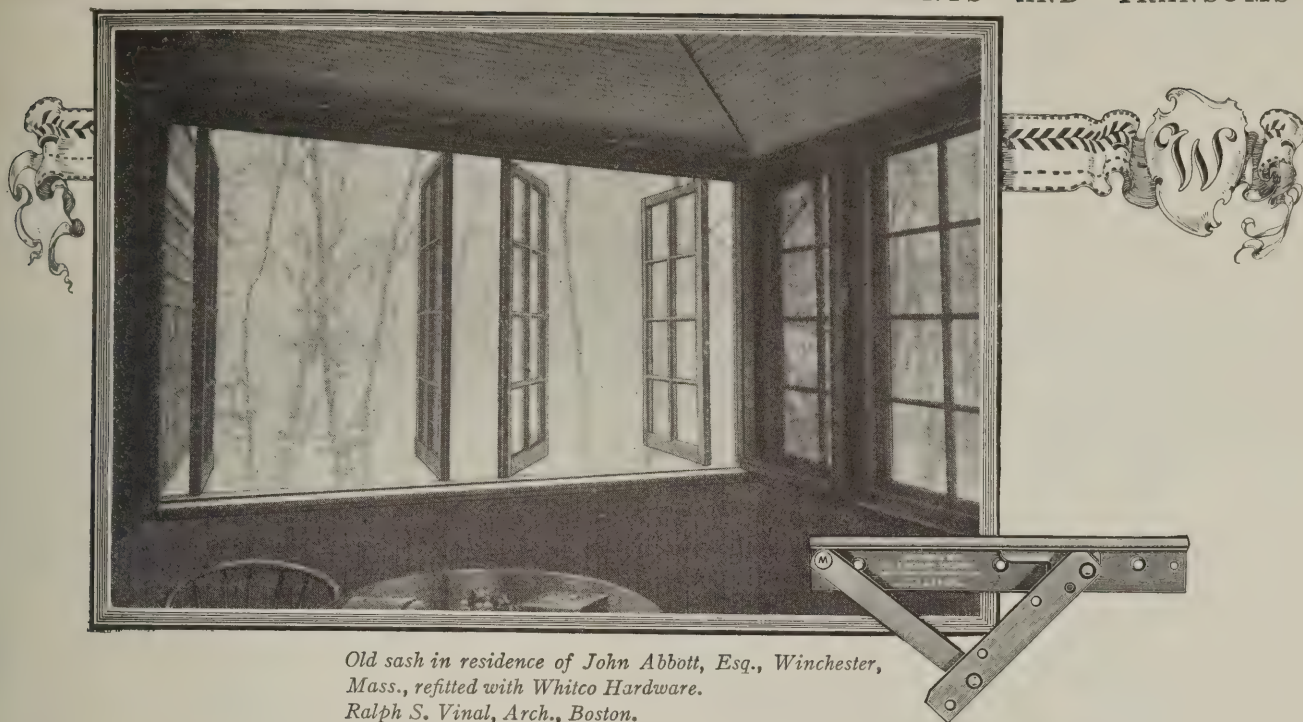


View of one end of the well. Notice how the wale timbers keep the sheet piling from caving in



View of the other end of the well. Here is shown the top platform to which the excavated material is shoveled from below

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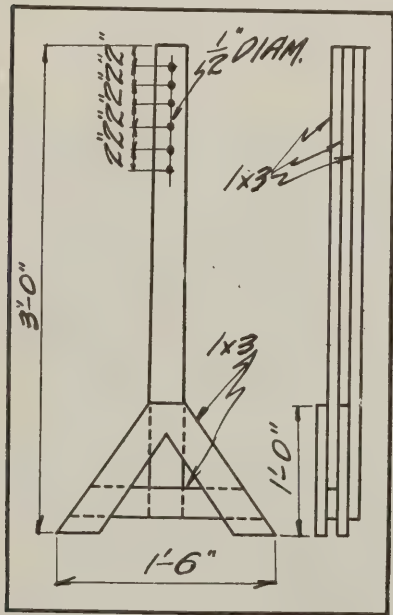
A Ladder Scaffold Bracket

J. C. HASSON, a Moline, Illinois, contractor, has designed a scaffold bracket for ladders which may be useful to some brother



The two pieces which form the bracket

contractors. This bracket and the manner in which it is used is fully shown in the accompanying photographs and sketch. It is



Sketch showing strut assembly

best constructed of hard wood, such as oak or hickory.

The function of this type of bracket is to make it possible to use ordinary painter's

ladders as supports for scaffold plank thus doing away with the necessity of building scaffolds when ladders are available.

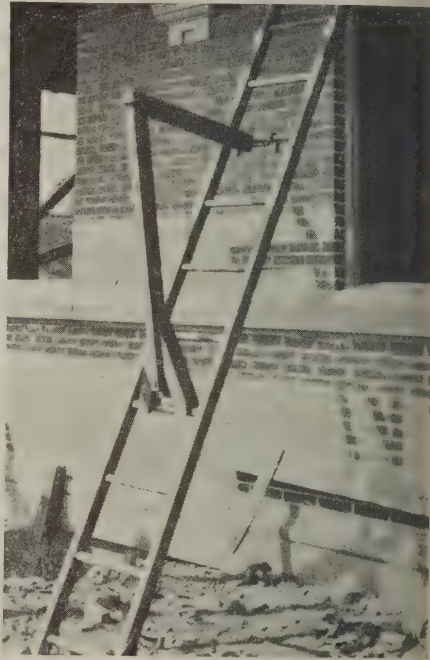
When in use, the bracket and ladder form a triangle as shown in the illustration in the right hand column. The bracket is made in two parts: the strut, and the horizontal piece upon which the plank rests. The strut is built-up as shown in the sketch, the base being slotted so that it cannot slip off the ladder rung.

The horizontal member has a steel collar at one end, which fits over the strut, and a hooked arrangement at the other end which clasps the rungs as shown in the illustration. In order to keep the horizontal member truly horizontal, the strut is bored for holes as shown in the sketch, and a bolt slipped through one of the holes to keep the steel collar of the horizontal piece from slipping down the strut. Changing the location of the bolt will change the angle of the horizontal member of the bracket.

Roughing in for a Tile Floor

THE type of floor commonly found in bathrooms is generally of small octagon tile. In order to keep the level of the tile floor the same as the level of the wood floor in the hallway, the type of construction shown here is recommended. Furring strips are nailed to the joists about three inches below the top edge and pieces of 1x6 are set between the joists to rest on the strips. The top edges of the joists are pointed

off as shown in the photograph in order to have as little wood as possible in the cement sub-floor, which is laid directly on the rough wood floor. Too much wood in the cement floor may possibly result in cracks after the



The bracket in place

tile is laid, due to the contraction of the wood after drying out.

This photograph was taken in Springfield, Illinois, on a building being erected by C. H. Shanks, a contractor of that city.

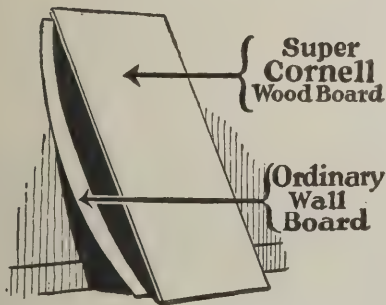
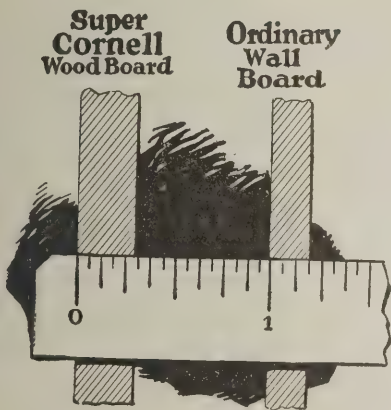


Notice that the edges of the joists are trimmed to a V shape

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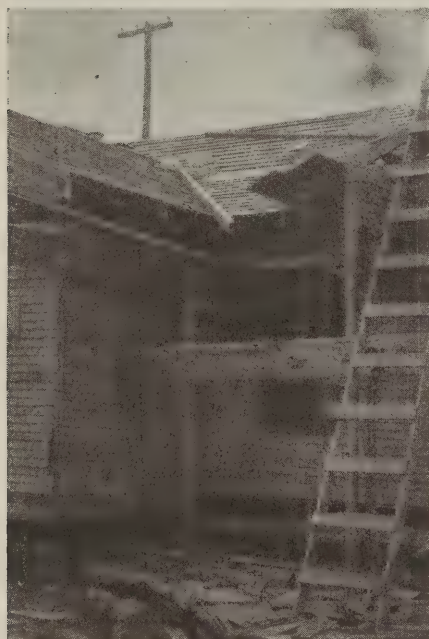
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N

On · the · Job · in · Texas

An Aid to Shingling in Valleys

THIS little idea by R. F. Cummings, a Waco, Texas, contractor, may be useful to you. Instead of setting the shingles by eye a piece of 2x4 is placed in the valley as shown; the shingles butted up against it and



This 2x4 set in the valley provides a good stop for placing shingles at the valley edge. It should also go far to assure a straight line along the valley

nailed in place. When all the shingles have been set along the valley line the 2x4 may be removed. By using this method a straight line along the valley shingles is assured.

The usual method is to strike a mark on the roof sheathing with a chalk line and set the shingle on the line, or else butting the shingles against a straight edge nailed on one side of the valley, completing this side and then nailing the straight edge on the other side and working up against it. By using the method shown here, the shingle courses may be carried around the roof without interruption if the carpenter prefers this method of operation. The 2x4 set in the valley provides just enough room between the two sections of the roof to allow water to run down freely.

A good deal of time may be saved by cutting shingles on the ground to fit the angle of the valley instead of cutting them on the roof. All that is necessary is to determine the proper angle, locate the cut in a mitre box and then the work is easy.

Formwork for a Circular Concrete Terrace

THERE are two ways of doing curved cement work, a slipshod way, and the right way. Mr. Ed. Uhr, a San Antonio contractor, believes in doing his work right, as a glance at the photograph shown here will prove.

For building a curved concrete terrace he sets a few stakes in the ground, nails horizontally set pieces of 1x6, which are cut to fit the curve, to these stakes, and bends a piece of siding around the templet thus formed. Since the 1x6 pieces are cut to a given radius the curve will be exact without any indentations or flat spots and the effect will be pleasing to the eye.

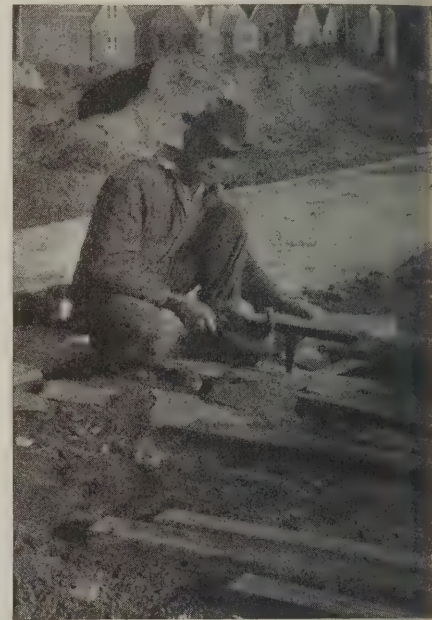
It is hardly possible to get an exact curve by using the ordinary method of bending siding around stakes without using a templet, and for the contractor who would always do his work in the best possible fashion, this form of construction is recommended.

A Slate Roofer's Stake

IN the photograph is shown Harvey Hutchins, of Dallas, using a slater's stake. This stake is made of two pieces of $\frac{1}{8}$ or $\frac{3}{16}$ -inch iron welded together as shown in the photograph, and it may be carried anywhere around the job.

The end shown sticking in the wood is pointed and a few blows on the top serve

to fix it firmly in place. In cutting slate shingles to fit around a downspout or in valley the slate shingle is first marked and then placed upon the stake as shown in the



A slate roofer's stake is used in the manner shown for cutting slate shingles to fit around chimneys or stack openings

photograph with the mark along the edge of the stake. That portion of it which is not desired is chipped off with a hammer by pounding on the slate along the line of the stake.



This carefully placed formwork is bound to result in a true curve. The horizontal templet is cut to a given radius and its purpose is to brace the piece of siding shown bent to the curve

How I Saved On Labor Cost and Lumber Waste

An Advertisement Based on Personal Experience

★By GLEN PIERCE, Contractor, IONIA, MICH.

(As stated in an audited Gould Report)

FOR over ten years I have used Long-Bell long leaf dimension in general contracting work, and have found that it effected savings in carpenter labor and waste as compared to ordinary grades of lumber. The use of this lumber gives me a very desirable reputation as a builder.

Because Long-Bell lumber is thoroughly seasoned by either air or kiln drying, structures built with it do not depreciate nearly as rapidly as those built with ordinary lumber. This fact is not often recognized by an owner; but he will give the contractor credit for having built a good house. I have built up a reputation for doing good work because I use high grade lumber wherever possible; and my increasing business is undoubtedly due in large measure to this fact.

The lasting quality of Long-Bell lumber is well illustrated in the large open-air pavilion which I built in the Ionia fairgrounds over eight years ago. This build-

ing has been constantly exposed to the weather, both winter and summer; but it is practically as good today as when it was put up.

There is a saving in carpenter's time with high grade lumber because a minimum of cutting and sorting is required. It comes cut full length and carefully graded.

Carpenter's time is also noticeably saved with good flooring, which, being accurately machined and carefully seasoned, can be fitted together with a minimum of effort. Ordinary flooring often requires considerable effort to drive the joints together and even then is likely to spread because not thoroughly seasoned.

On an average, 10 per cent of the carpenter labor cost can be saved with Long-Bell lumber. Since a carpenter handles an average of 500 feet per day at a savings of 75 cents (★), the saving in labor is \$1.50 per thousand.

The saving in waste is easily 7 per cent as compared to ordinary lumber. At an average cost of \$45.00 per thousand feet, this amounts to \$3.15 per thousand.

The saving in carpenter labor and waste gives a gross saving of \$4.65 per thousand.

I use Long-Bell lumber *because it is a dependable, high grade product*, which effects important savings for my clients and me.



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Mr. Pierce estimates that Long-Bell trade-marked lumber saves him in carpenter labor as follows:

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Nails to Hold Drum Head to Shores

SHORING is ticklish work no matter under what conditions it is done, and no means of strengthening shoring systems or providing safe guards against accidents should be neglected. Every shoring contractor knows that each member of a shoring system must be tight and rigid, and capable of being held so if the work is to be properly done. Very often the loosening



Nails driven into the under side of the shore at the drum flange and bent over the drum serve as a precaution against the flange rotating. The rotation of the drum flange may result in a loosening of the entire shoring system, hence it is well to take some step to prevent it

or collapse of one member of a shoring system may result in the collapse of the supported structure, with a consequent destruction of valuable property and a possible loss of life.

The E. W. Ullrich Glass Company of New Orleans, have a little kink as shown in the photograph above. They drive a few nails into the underside of the shore to hold the drum tightly. These nails prevent the drum from rotating due to vibration or any other cause and allowing the shore to work loose.

As shown in the illustration, the nails are driven into the body of the shore, bearing against the drum flange. They are then clinched over the flange, holding it tightly in position. It may even be well to file a

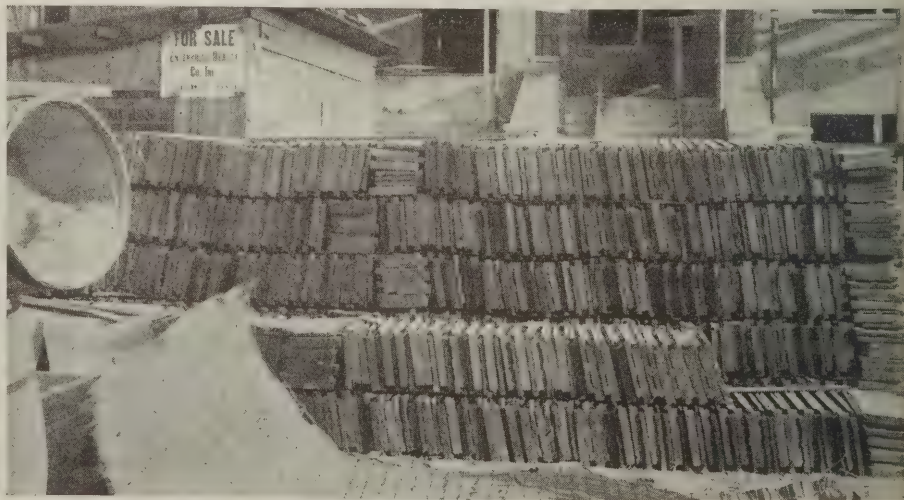
few cuts into the edge of the flange so that the nails could simply be driven into the shore at the cut, thus making a positive stop. This little stunt should appeal to every shoring contractor who believes in "Safety First."

A Way to Pile Tile Roofing

MANY a tile roofing contractor has found himself with a lot of broken tile on hand at the close of a contract. Not only does this broken tile represent a loss due to the fact that it is useless, but it must be gathered up and more money spent for hauling it away.

The breakage of the tile roofing on a job can be considerably reduced if the tile is piled right when it is delivered. The photograph shows the way a New Orleans contractor piles his roofing tile. Notice that wood strips are set between the layers of tile so that each layer rests on a solid base. Notice also that no layer of tile is allowed to run any great distance without being braced by a few tile piled horizontally, one upon the other. This serves to bond the tile into a single unit.

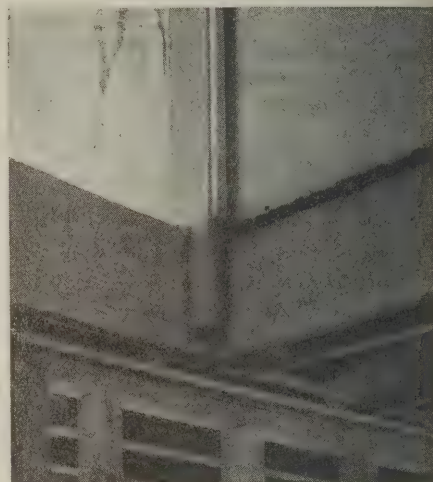
The item of breakage is one of the many small leaks a contractor has to contend with and, unfortunately, one which he is very likely to overlook. The writer has heard time and again the wails of roofing contractors over broken tile, only to glance over to the storage pile and see how carelessly it was built up. Contractors should make it a point to instruct their workmen as to the proper handling of materials in order to cut down those little wastes which soon mount up into large money losses.



See how carefully these roofing tile have been piled. Proper stacking will go far to reduce the loss due to breakage

Fixing the Door Frame Firmly at the Base

IN order to avoid setting nails in the jamb, the Enterprise Realty Company of New Orleans, builders, arranged to have this door frame extended below the floor line. The frame was ordered about nine inches longer



This interior door frame was held firmly at the base in the manner shown

than needed and cut as shown in the photograph. That part which came inside the header was allowed to extend below the floor line and was nailed to the joists. This was a means of providing a firm nailing base for the frame. There is little possibility of this frame ever working loose, as it is firmly held in the corner. Nails can be driven diagonally or perpendicular to either joint.



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the assurance that he can secure Desco materials quickly and in such shape that an inexperienced man can properly install it.

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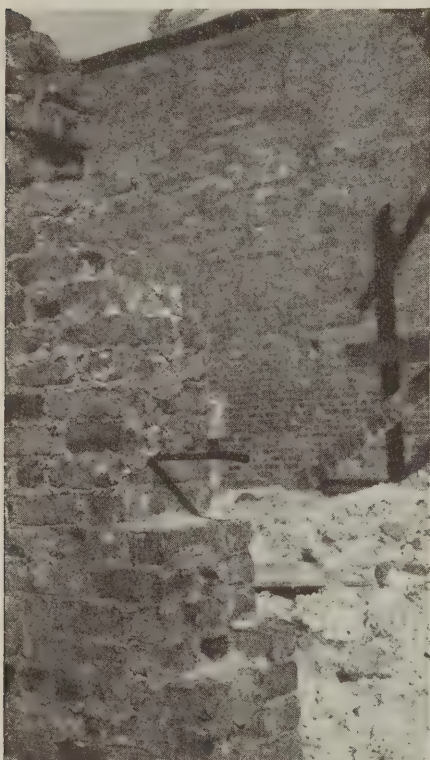
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On the Job in Birmingham, Ala.

A Method of Bonding Terra Cotta Facing to a Brick Wall

HERE is shown an aid to holding terra cotta facing to brick walls. Walls may be run up before the terra cotta is delivered



This bent steel rod shown set in the brick wall, forms the tie between the wall and the ornamental facing

on the job, if a few pieces of $\frac{1}{2}$ -inch round iron bent to a hook are set in the wall, as shown. These provide a good bond and they are an excellent aid in pushing work which might otherwise be delayed.

To Keep Sand from Spreading

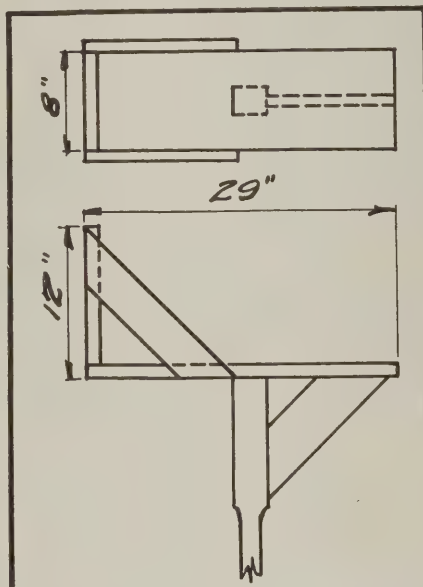
SAND is generally delivered on the job and dumped at several points, no effort being made to confine it. It is not long before the wind, workmen stepping over it, or children playing upon the pile, soon scatter the sand far and wide, with a result that quite a bit of it may be lost.

Chichester and Company, builders of Birmingham, Alabama, are aware of the facts stated above and so they have set up a few planks as shown in the photograph to keep

the sand pile within limits. These planks really act as a retaining wall and thus a great deal of sand can be dropped on a small area, since the retaining wall permits piling the sand high without spreading it over a large area.

A Home-Made Brick Hod

THIS is a hod built by a Birmingham, Alabama, contractor especially for carry-



Sketch showing construction and dimensions. Only one diagonal brace is necessary to support the box since the hod-carrier's shoulder acts as the brace on the other side of the handle

ing bricks. As will be seen from the photograph and sketch the construction is simple. The hod may be built of a few pieces of scrap picked up around the job and the design is excellent for the purpose intended.



A photograph of the hod in its natural environment

The base of the box and the end piece may be made of 1x8, the diagonals of 1x3 or 1x4 and the handle may be cut from a strong piece of 2x2. While it may seem possible for the bricks to fall out when the hod is carried, it is quite unlikely that this will happen, as they will be held to the box by their own weight.



These few planks thrown together form retaining walls which confine the sand and keep it from spreading. This makes possible the dumping of a large amount of sand in a small area, a necessity where the working space is small

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By V.L. SHERMAN

Send in your kinks—give the benefit of your experience to the other fellow as well as get the benefit of his. NATIONAL BUILDER pays \$5.00 for every kink published.—The Editor.

From an Old Time Stair Builder

"FIFTEEN to twenty-five years ago it was the rule here for contractors to hire professional stair builders to erect the stairways. Later it seemed as if the regular carpenter took over the stair builder's calling. Perhaps the contractors encouraged the change in the interest of economy, but it is a debatable question whether or not there has been a saving worthy of mention. While I have but little criticism to offer on the finished product as done by the carpenter, I have been vexed at the enormous waste of lumber and labor because the carpenters have not utilized the tricks of the trade. I feel safe in saying that not one in twenty of the regular carpenters cut their carriage or stair horses as they should be cut. Nor do they stop at the number needed to make a good job, but invariably add one more. Two horses are enough for any three-foot stairway, and the usual dwelling has none wider than this.

"I submit a sketch, Fig. 1, of two stair horses. *A* is as a professional stair builder would cut it. *B* is as the carpenter cuts them (at least in this city). *A* is cut out of a 2x8-inch, *B* is cut out of a 2x10-inch. Both are practically the same in strength. If *A* had been cut like *B* it would have been so weakened as to be well nigh worthless. Every crotch on *B* requires 16 inches of hand sawing, while *A* gets the same results with about 11 inches. I noticed just a few days ago a double house had three horses to a side, cut to full point at outer angle of riser and tread kerf, all of them 2 by 10 inch by 18 feet, as it was a long stairs with an easy rise of approximately 6-inch and 11-inch tread. A horse cut from a 2x8-inch with a 3-inch frustrum would have been just as good in every respect and two to a side quite sufficient.

"If it is an open stairs I cut but one horse and nail the triangles from first horse onto a 2x4-inch for the outside horse, which is supported by cripple studs anyway. Just a little sawing out in the angle of the crotch is all that is required on the second horse.

"In Fig. 2 I have shown an easy method of laying off a stair horse ready for the saw. Always double the rise and run. The usual 9-foot story with 2x8-inch joists in second floor measures 117 inches. With 16 risers of 7 inches each we would reach a

height of 112 inches. This is 5 inches short of the next floor. By making the risers 7¼ inches we get up to 116-inch level, which is sufficient. By elevating the horse 1 inch at the top we have a dip of almost exactly

1/16 inch to each tread which I regard as more desirable than a dead level. Now to lay off the stick.

"Take your place at the bottom end and bottom edge of stick to be cut and with the

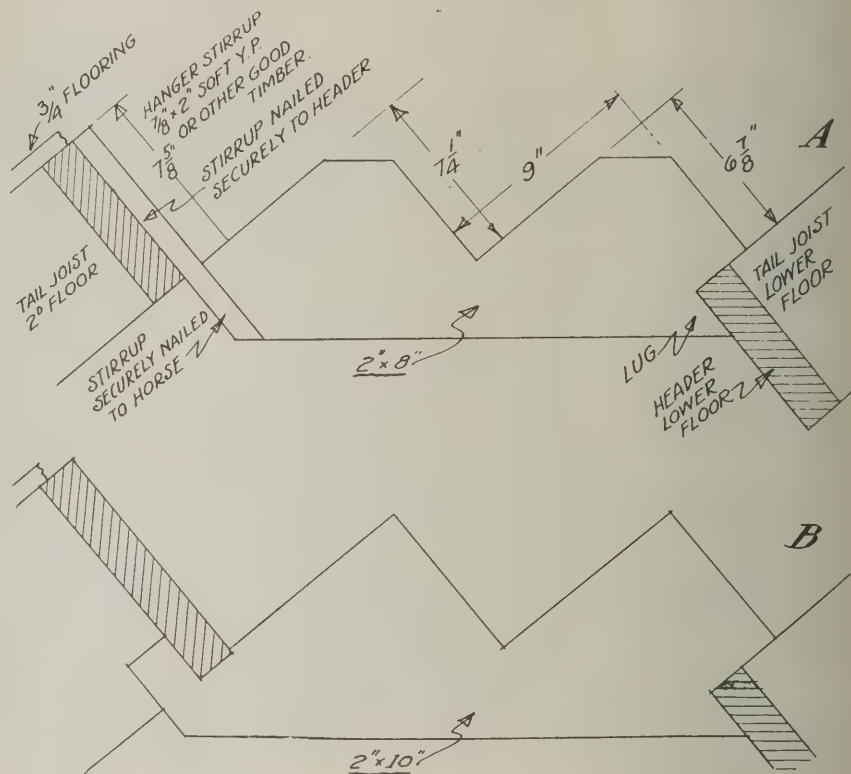


Fig. 1—Finished stair horses

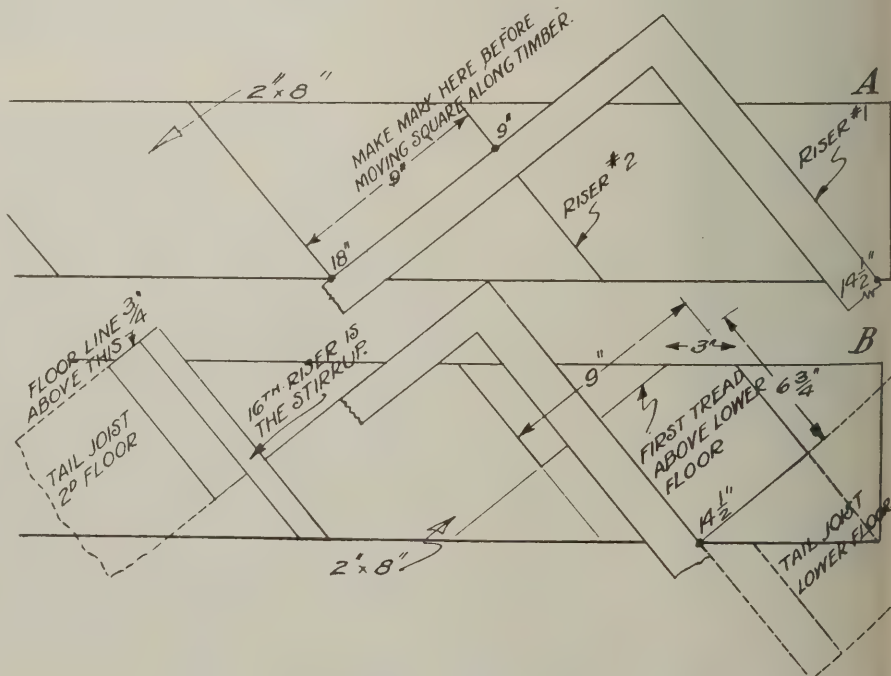


Fig. 2—Layouts



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end at your right. We will suppose 10-inch treads are to be used. This calls for a 9-inch tread cut. Doubling the $7\frac{1}{4}$ -inch rise we have $14\frac{1}{2}$ inches. Doubling the tread 9 inches we have 18 inches, $14\frac{1}{2}$ inches on the tongue of the square and 18 inches on the blade. Use the bottom edge of the timber as your guide. *A*, in Fig. 2, is a 2x8-inch. With $14\frac{1}{2}$ and 18-inch marks even with the lower or near edge of the piece scribe along the tongue. Then before lifting the square make a mark at Fig. 9 on the blade. Then slide the square along until the tongue touches the 9-inch mark and scribe for riser No. 2. Keep on until you have 16 scribes, vertical. When this is done timber will look like *A* in the drawing. Now go back to the bottom end. *B* is the same stick drawn to avoid confusion of line. If your first riser scribe is near the end of the timber it will be necessary to make the first tread scribe from the top edge or else use the small numbers, $7\frac{1}{4}$ and 9, instead of $14\frac{1}{2}$ and 18. First measure up along the upper edge of the timber a distance of about 3 inches above where the first riser cuts the top edge of the stick. This is the point from which to project your first tread scribe. After the first tread scribe is projected use the numbers $14\frac{1}{2}$ and 18, on tongue and blade as when laying off the risers. Then slide the square along until the $7\frac{1}{4}$ mark on the tongue touches the last tread scribe made, which was No. 1. Then make tread scribe No. 2. Repeat until you have 15 tread scribes and you are ready for the saw, except the bottom riser, which must be cut off horizontally—with or without a "lug," as one wishes, and must be about $\frac{3}{8}$ -inch lower than all other risers if set on the floor joists, and $1\frac{1}{8}$ -inch lower if set on top of floor. This is supposing you have $\frac{3}{4}$ -inch flooring and $1\frac{1}{2}$ treads. The top riser should be cut off vertically and should always be hung with a stirrup made of stuff that will bear nailing securely to the horse and top floor header. It should be $\frac{7}{8}$ x2-inch, and be $\frac{3}{8}$ -inch greater rise than all other risers except the bottom one before mentioned. With a $\frac{3}{4}$ -inch floor above, this makes all risers equal when stairs are finished. *B*, in Fig. 1, is the style of hanger I noticed a few days ago. This is not good carpentry."

A Kitchen Cooler

E. H. N., of South Pasadena, California, writes to tell of a cooler which he "tried with good success in Massachusetts."

"One of the water supply pipes, in this instance the one leading to the kitchen range boiler, was diverted in under the drip board beside the kitchen sink, and was made to return back and forth in a grid of short horizontal pipes. Then at one corner with a riser the process was repeated. This formed two shelves of pipe coils about 8 inches apart. From this the pipe was continued to the fixture. All water drawn from the faucet drew cold water into the coils,

keeping the shelves cold. The structure was enclosed by building a double-board closet around it with paper between the boarding, and a door made in similar manner with a double rabbet in its edges."

A Handy Combination

A. B. R. writes: "After a house is finished the owner very often wants an extra shelf or two. I do not like to take my tool box along so I only take my plane, hammer

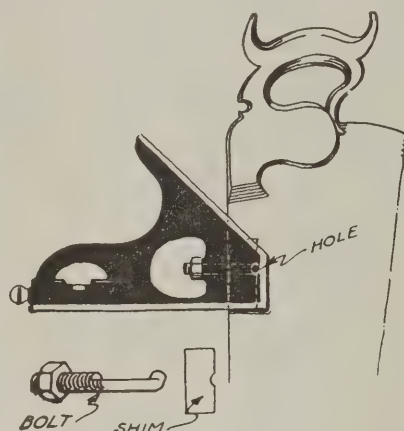


Fig. 3—Square rigged raw

and a saw which I have fixed as follows: See Fig. 3. I punched a hole in the blade near the handle. Then I filed a bolt, $\frac{1}{4}$ x $1\frac{1}{2}$ -inch, so I can fasten my square on the saw. I have saw, square and level all in one tool."

Cutting Apron Ends

"**W**HEN cutting apron ends," writes B. W. C., "I find a good way to get the outline for coping the end is to take a short piece of the stock and cut a back mitre on both ends, and cope both ends of the templet. See Fig. 4. Get the length of the apron, place the end of the templet on the

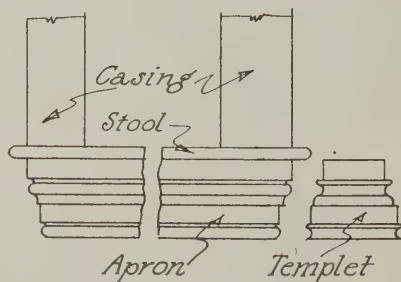


Fig. 4—Coping templet

face of the apron, and mark around the outline of the templet. By doing it this way the exact design on the face of the stock may be copied on the ends."

The use of the word cope in the foregoing reminds the editor of one or two criticisms which have been received regarding the terms used in the texts and drawings. One was the use of the words 'try-square' where it was suggested that bevel would

have been the right one. To the editor a try-square has been a smaller, thick flanked square with only the blade graduated, but he has no intention of quarreling with terminology where there are likely to be half a dozen names for the same thing. The word cope might be synonymous to copy, but there is evidently quite a difference in the origin. To cope is to cap or cover, or it is to match, equal, exchange. Copy implies numbers, one of a number of copies, or the original from which a number are made. The use of the word wheel-house instead of pilot-house once came near starting a riot. It was all a matter of bringing up.

Squaring the Circle

IF, like most editors, you have read "The Anatomy of Melancholy," you will remember that the old timers in science divided their spare time between alchemy and squaring the circle. Down to now we have never gotten around to either one, but this little piece of geometric construction has proved itself fully as useful as any refinement of the ratio 3.1416.

M. W. C., of Tulsa, Oklahoma, sends

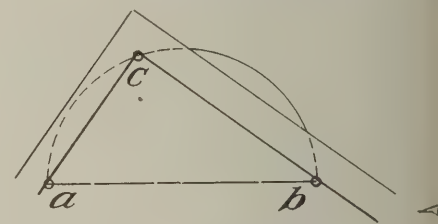


Fig. 5—Squaring a circle

sketch, Fig. 5, and writes: "Drive two nails the same distance apart as the desired diameter of the circle to be drawn. Then lay the square so that the inside edge of the tongue and the blade will lie against these. Set your pencil in the inside angle of the square, *C*, and slide the square around, keeping it on the nails all of the time. The result is a perfect semi-circle. Reverse the square for the other side of the circle." Works like the pattern makers' plane.

"To the Ladies"

WHERE pins are integral parts of the hinges on doors and blinds and are of equal length, there still remains the old difficulty in hanging which Miss H. G. H., of Middletown, New York, writes: "I read NATIONAL BUILDER in the public library, and because I get so much good out of it myself I want to pass along an idea that will be of assistance to others. Every one who does some building on their own house will appreciate means of lightening the heavy parts of the work. One of the greatest strains is that involved in replacing doors and blinds on their hinges. The trouble is not so much in the weight as in the steering and balancing. I now avoid all this difficulty because my brother once presented me with



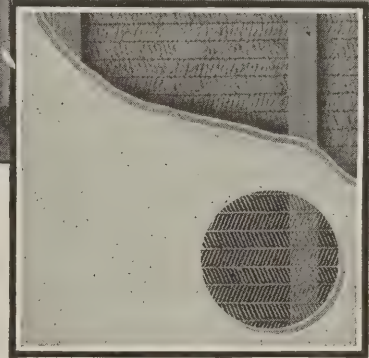
Meckelberg residence, Two Rivers, Wisconsin. Ludolph M. Hansen Co., Green Bay, Wisconsin, Architects and Contractors.

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a hack saw and taught me how to use it. I saw a half-inch off the lower pin. Then, while standing, I slip the upper hinge together and let the blind's weight rest on the lower hinge. Then I place the lower hinge on its pin. It is wonderfully easy."

If Space Permitted

IF space permitted, this department would hog a good share of this number to print a few of the letters we should like to put in evidence. (Our "hopes for 1924" seem to be on a fair road to realization.) They do not all contain "kinks," but some of the letters are worth more than that. The editor confesses he went to college. And he has taken an interest in college since. There was always the notion at the back of his head that if engineering schools insisted on

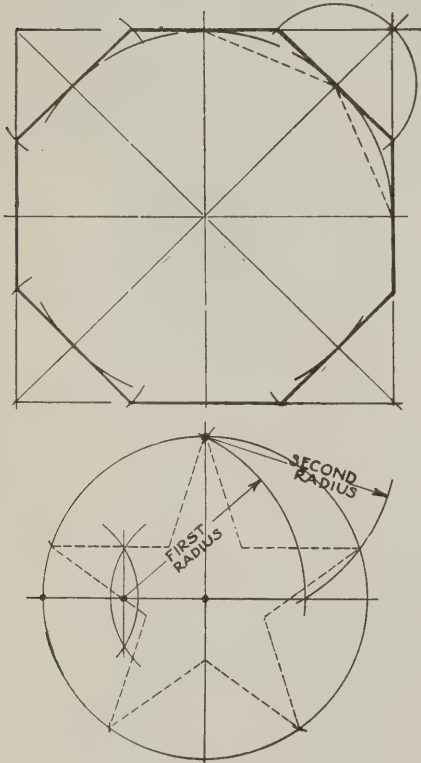


Fig. 6—Octagon and pentagon constructions

trying to develop engineering sense and neglected the common or historical sides of the crafts the graduate would be poorly prepared. Therefore, when he reads that this gentleman or that became acquainted with certain knowledge through the necessities of the trade he doesn't feel any pity for him. The gentleman holds "cards and spades" over the college graduate.

"You and your company know with your years of experience and dealing with carpenters and builders that very few are college graduates, and not familiar with higher mathematics. Instead their time has been taken up educating themselves in their respective trades. Simple rules for laying out their work was the best way from a mechanical as well as a time standpoint. I have been at it since 1876, and from that time till now I have seen many ex-

planations of the octagon, and in nearly every case they leave the beginner surrounded in mystery. When a beginner looks at the octagon rule on a square the first thing that comes in his mind is mystery, a row of points and no explanation. The majority of mechanics cannot explain the octagon rule as it is laid out on the square. But there is a rule which may be very easily remembered: The diagonal of a square equals one side of the square plus one side of the inscribed octagon." The octagon layout and pentagon layouts, Fig. 6, are shown herewith. As C. E. M. says: "At some time or other one is called on to lay out one of Uncle Sam's five pointed stars."

The following from A. N. P. may be a trifle strong, but there are others we know who have much the same sentiments: "How many have thought the same towards the sea of books dealing in part with roof framing? Verily 'of making books there is no end,' and the subject has caused much weariness. Every workman who knows his business can see how worthless are all the rules and tables, for their purpose is to tell 'how' and omit the 'why.'"

"There is the 'modern steel square.' If there has been any improvement for the last generation the writer, for one, cannot see it. Most of them have the dope for the lengths of common and hip rafters with figures giving the side cuts, etc., etc., and everything but the ten commandments. (Harsh words toward a metal handbook.—Ed.)

"I have noticed that the terms 'half-pitch,' 'third-pitch,' and so on are passing out of use among the workmen for the terms in rise and run. It seems that the measure of the pitch in relation to the rafter rather than the width of the building would be best. Does the architect or designer think much about whether his roof lines conform to a half, third or fourth pitch, or so on? Generally the best results can be obtained by having the workmen set up the first pair to let the owner or architect study the effect of the surroundings.

"Getting back to tables and rules. Let us remember how many ways have been offered to get the 'difference in lengths of the jack rafters.' Assume that hip joins the point at the last common rafter, and the roof is 8-inch per foot. If the square is placed in that position at the ridge with 8-inch on the tongue at the top of the rafter, 12-inch will touch the rafter on a horizontal run of 12-inch from the ridge. And isn't it plain to see that if we square over from this point that we would hit the hip just one foot away? And that by taking two steps down (for rafters on 2-foot centers), on the common rafter we can square over 2 feet and find where the first jack hits the hip. So our first jack is shorter than the common rafter by twice the diagonal of 8-inch and 12-inch. But doing all this stepping down and squaring off is only to get a 'third' out of it. The way to do is to take the diagonal of whatever the pitch and cut jacks that much shorter for each foot of

spacing."

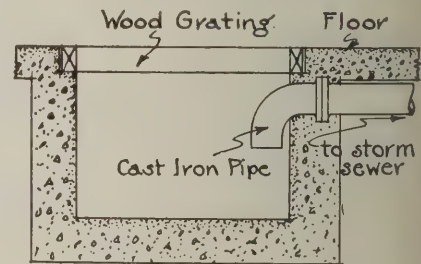
There are two types likely to give most books short shrift. The first is the one whose knowledge comes from sense, and to whom words are a poorer medium. The sense is generally so much more direct—anything beyond the most concise statement is tiresome. The other type enables the weeklies of popular fiction to outrun the best of publications. One of this type remarked on being offered a book to while away the time that he had given up reading for cards. He "wanted something to occupy his mind."

J. H. U. writes: "I am sure I have never seen a method for getting rafter lengths that I was taught in the eighties. For $\frac{1}{4}$ pitch multiply span by .559 or $\frac{7}{12}$ For $\frac{1}{3}$ pitch multiply span by .6 or $\frac{3}{5}$ For $\frac{1}{2}$ pitch multiply span by .625 or $\frac{5}{8}$ For $\frac{2}{3}$ pitch multiply span by .71 or $\frac{7}{10}$ For $\frac{3}{4}$ pitch multiply span by .8 or $\frac{4}{5}$ For $\frac{1}{2}$ pitch multiply span by .901 or $\frac{9}{10}$ For full pitch multiply span by 1.12 or $1\frac{1}{8}$

"From this you can easily determine the stock lengths. Also in billing out a job by adding whatever projection is decided on. As a rule I always use a common square to lay off hips and valleys, jacks, etc., but can easily find same on old method with the aid of the drawing board.

A Garage Sump

J. E. N. of Lake Charles, Louisiana, sends in this: "A wash rack is very essential in a public garage, and getting rid of the water is an important factor. The accompanying sketch, Fig. 7, shows a method



DETAIL OF SUMP FOR WASH RACK.

Fig. 7—Section of garage wash rack sump

I have been using and find very satisfactory. The floor of the wash rack should have a good fall to insure proper drainage to the sump. The sump should be of good size; for the ordinary wash rack a sump 18x30x24 inches deep proves satisfactory. For the cover a grating made of 2x4's on edge answers the purpose. The most important feature is the installation of the drain pipe. The ell forms a seal and prevents foreign matter from entering the pipe. The mud settles to the bottom of the sump, and when it reaches the bottom of the ell the water backs up on the wash rack. Then it becomes necessary to clean the mud from the bottom of the sump. There is never any danger of the mud getting into the drain pipe.

Residence at 603 Cliveden Avenue, Germantown, Philadelphia. Architect and Builder, Mr. Don Peters, Philadelphia. Owner, Mr. John W. Latham, Philadelphia. Kitchen equipped with Direct Action Gas Range with Lorain Oven Heat Regulator.



Showing type of Direct Action Lorain-equipped Gas Range in residences illustrated on this page.

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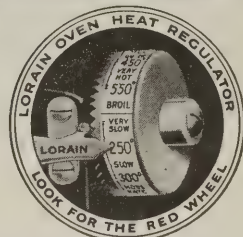
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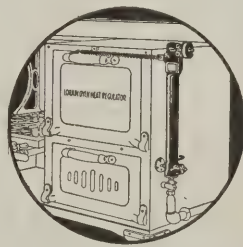
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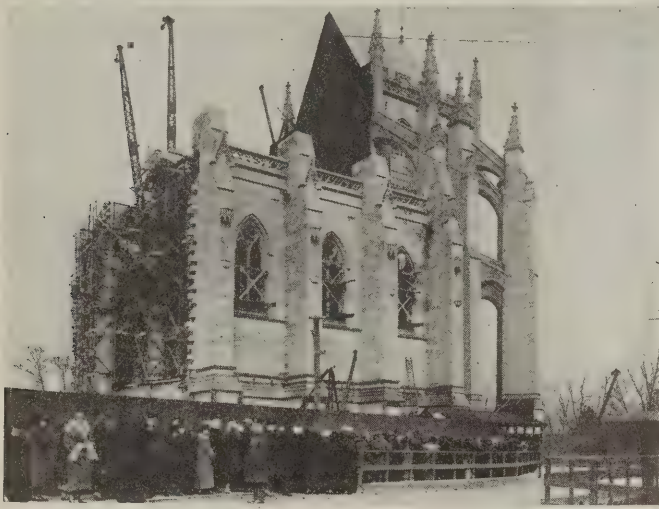


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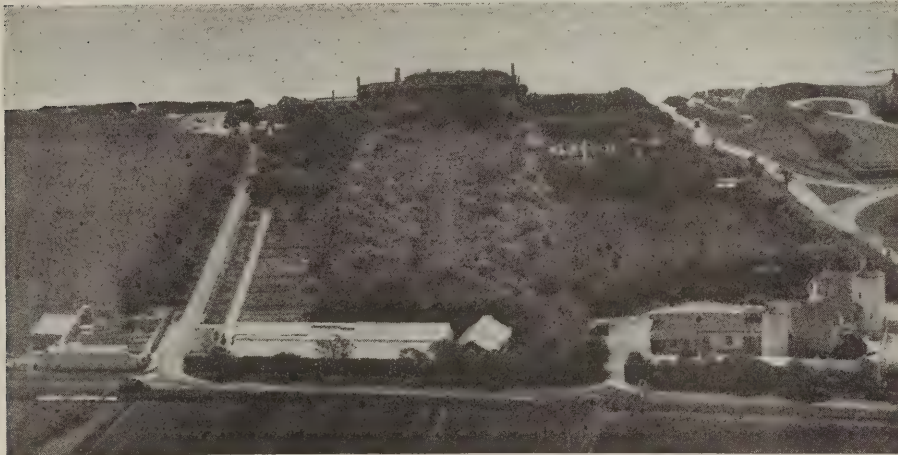
These famous gas stoves are equipped with the Lorain Oven Heat Regulator: Direct Action, New Process Quick Meal, Reliable, Clark Jewel, and Dangler.



Of General Interest



A never ending line of admirers of the late Woodrow Wilson is passing in and out of Bethlehem Chapel with its sepulchre of the great, that they may view the place where all that was mortal of Woodrow Wilson passed into its last tomb. The photograph on the right is an airplane view of the chapel from the front



The beautiful estate of Henry H. Rogers, and formerly occupied by Countess Von. Hoogstraeten (nee Millicent Rogers) which has been forfeited by her, to continue her romance in a modest love nest with her Austrian nobleman. The estate is situated in Southampton, L. I., and is one of the fashionable show places of society's smart set



This saw, of the largest size ever made, is 108 inches in diameter and weighs 795 pounds. It was made by Henry Disston & Sons, Inc.

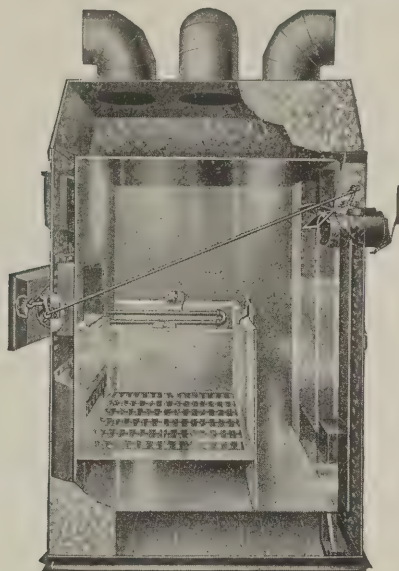


Left: This house on St. Francis Street in St. Augustine, Florida, has officially been given the title of the oldest house in the United States. Right: Emil Fuchs, one of America's greatest living sculptors, completing a bust of Harvey Wiley Corbett, internationally known president of the Architectural League of New York, which will be placed in the halls of the league

Why a HESS!

Reason No. 8

Scientific Draft Control



*"Every
Inch a
Furnace"*

Quick Results and Fuel Economy

THE front draft lift-door just above the grate, operated by a chain from the first floor, quickly "blows up" the fire, the result being unusually prompt and effective.

The direct draft outlet and damper are located in the most effective position for creating a powerful draft—near the top of the radiator, connecting directly with the smoke outlet in the chimney.

The rear check draft, conveniently operated from the floor above by a chain, admits a flow of cold air directly into the smoke outlet, very effective in quickly checking the fire. The front draft and back check draft are supplemented respectively by the ash pit door and the perforated plate and wheel in the fire door, both controlled from the basement.

An unusual but valuable feature is the automatic action between the fire door, direct draft damper, and back check draft. When the fire door is opened, the direct draft damper opens and check draft closes, absolutely preventing smoke puffing out in your face when you feed the fire. These drafts also operate independently if desired.

You will find complete details about Hess Furnaces and many valuable heating facts in our booklet "Modern Furnace Heating." Ask for a copy

HESS WARMING AND VENTILATING COMPANY
1208-R South Western Avenue - Chicago

Branches Offices: New York City (Brooklyn); Detroit; Minneapolis; Milwaukee; Cincinnati
Local Distributors: B. M. Huntington, Walla Walla, Wash.; Henry Taylor & Sons, Jacksonville, Fla.
Frank Mezera, Eastman, Wis.; C. E. Shingledecker, Clarion, Pa.; Harry Cable, Falls Creek, Pa.

HESS *Welded Steel* FURNACE

For the Builders' Library



"Principles and Practice of Construction Cost-Keeping, Part II, Analyzing Costs," by Wm. M. Affelder. This pamphlet points out that the greatest advantage derived from a cost system lies in having a knowledge of the unit cost of production during the progress of the work, so that construction costs can be carefully checked and excessive costs reduced. One of the important elements of construction cost-keeping is the labor costs and the author explains how best to record this item. Copies of this booklet may be procured from the office of the Secretary, National Association of Cost Accountants, 130 West 42nd Street, New York City. The price to non-members of the association is 75 cents.

"How to Own Your Home"—A handbook for prospective home owners. This is a bulletin prepared by John M. Gries and James S. Taylor, Division of Building and Housing, Bureau of Standards, Department of Commerce. It is probably the most popular and widely circulated booklet on home building issued by the division. There are chapters on problems of home ownership, how much to pay for a home, written agreements, financing, general property considerations, house plans, and quality of construction, buying or building a house, buying a house, maintenance costs and expenses of home ownership, and an appendix containing financing tables. The booklet is sold by the Superintendent of Documents, Government Printing Office, Washington, D. C.; price 5 cents. It is 5¼x9¼ in size and contains 28 pages.

"The Thickness of Wet Paint Films," by A. H. Pfund, associate professor of physics, Johns Hopkins University, is reprinted from the *Journal of the Franklin Institute*, April, 1921, by The New Jersey Zinc Company, 160 Front Street, New York City. This bulletin describes a "Paint-film Gauge," an instrument devised to measure the thickness of wet paint-films with an attainable accuracy better than 3 per cent, the spreading-rate of different types of paint, and the hiding-powers of paints.

"Sheet-Metal Work," by Marion S. Trew, instructor in sheet-metal work at Washington Junior High School, Rochester, New York, and Verne A. Bird, director of industrial arts, Rochester, is a 64-page book, 6x9 inches, bound in stiff paper covers. It treats with elementary problems in sheet-metal working and is really a note-book for beginners at the trade. It contains information on materials used in sheet-metal work, systems of measuring, tools, practical problems on

joints, simple sheet-metal products and several tables relative to standard gauges, weights, etc. The price is 85 cents. The Manual Arts Press, Peoria, Illinois, is the publisher.

"Good Practice in Construction," by Philip G. Knobloch—This is one of those rare "detail" books that has a place out on the job as well as on the drawing board.

Evidently it was the author's intention to present a reference work in which the methods described had been tried and proven. To insure this he collected details from the files of the executed work of ten leading architectural offices. These details he com-

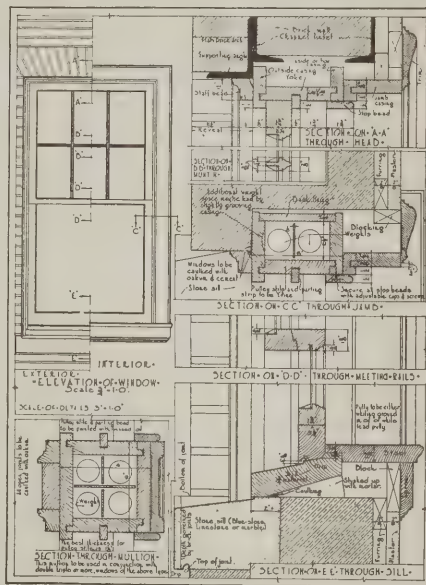


PLATE 13. WOOD DOUBLE-HUNG WINDOW IN MASONRY

One of 52 plate pages from "Good Practice in Construction"

bined and revised where necessary to make them applicable to construction work in general. Then, calling on the judgment of numerous experienced materialmen and members of the building trades for suggestions and advice, he made further revisions to the end that the details should represent up-to-date construction methods of a thoroughly practical and reliable nature.

The book contains 52 plate pages, 9x12, indexed and cross indexed in a thorough manner; the text being supplied by notes which are lettered directly on the plates in connection with the details which they illustrate. It is published by The Pencil Points Press, Inc., 19 East 24th Street, New York City; price \$4.00 and worth it to anyone who has to "get down to brass tacks" and actually put a building together.

"The Books of a Thousand Homes,"

Volume I, contains 500 plans of moderate cost, three- to eight-room houses, compiled by Henry Atterbury Smith, member of the American Institute of Architects and of the American Society of Civil Engineers, is published by the Home Owners Service Institute, 35 West 39th Street, New York City. This organization is devoted primarily to the provision of a practical educational service for the prospective home builder. Working drawings, details and specifications are available for any house in the book at a cost of \$25. This price also includes membership in the Home Owners Service Institute for one year with full advisory service. The first section (pages 41 to 144 inclusive) contains plans of six-room houses, the second section (pages 145 to 220 inclusive) of three-, four- and five-room houses and the third (pages 221 to 278 exclusive) seven- and eight-room houses. This book, 8¼x12, contains 312 pages, is bound in stiff cardboard covers and sells for \$3.

"Concrete Data for Engineers and Architects" sets forth principles based on data compiled from many thousands of tests made at the Structural Materials Research Laboratory, which is under the direction of Professor D. A. Abrams, and maintained jointly by co-operation of the Lewis Institute and the Portland Cement Association. The essential principles embodied in this booklet are: Well graded aggregates, less mixing water, proper and complete mixing, careful placing and last, but none the less important, proper curing or protection after placing. This booklet is 8½x11 in size, contains 16 pages and will be sent free upon request by the Portland Cement Association, 111 West Washington Street, Chicago.

"Durability of Stucco and Plaster Construction" (progress report containing results of investigations up to April, 1916), by R. J. Wig, engineer physicist; J. C. Pearson, associate physicist, and W. E. Emley, associate chemist, in co-operation with an advisory committee composed of practical plasterers, representatives from government offices, engineering societies, and industrial associations, is Technologic Paper No. 70 of the Bureau of Standards, Department of Commerce. Copies can be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C., at 15 cents a copy.

"Your Next Home" published by The Common Brick Manufacturers' Association of America, 2121 Discount Building, Cleveland, contains pictures and plans of sixty beautiful homes—everyone built.

Capitol Boilers

Thirty years of manufacturing experience, the broadest written guarantee in the heating field, a dominating national advertising campaign, and genuine quality in the product—these powerful factors are back of your recommendation of Capitol Boilers.

It is these factors that give Capitol Boilers their preferred position in the minds of millions.

They serve you as well as ourselves—and make it easy for you to serve your customers with the utmost in heating economy and efficiency.



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When writing advertisers please mention National Builder

Among the Manufacturers

New Devices Methods and Improvements
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An Automatic Cellar Drainer

THE Penberthy Automatic Cellar Drainer is a device for keeping cellars, basements, scale pits and elevator pits dry and free from water, using city water pressure for power or it may be operated with steam. Contractors and builders use the Penberthy to drain excavations instead of depending on gasoline or electric pumps.

The manufacturers state that all parts ex-



Fig. 1—Penberthy automatic cellar drainer

cept the strainer, are brass, and except the float, are above water. The construction is simple, being an efficient ejector or siphon

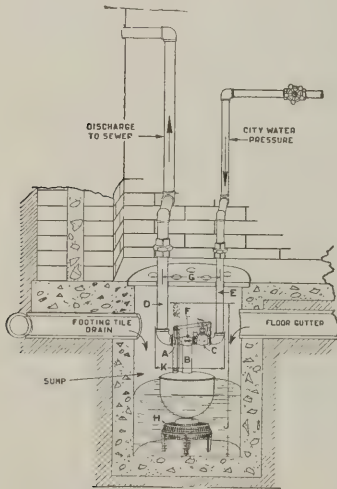


Fig. 2—The Penberthy automatic cellar drainer installed in a pit

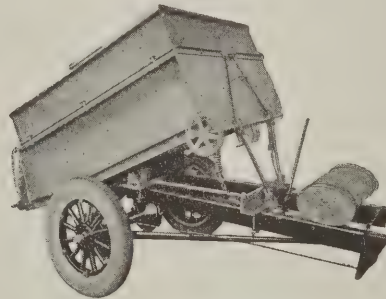
jet to which is attached a quick-opening, float-controlled valve.

The drainer is placed in the sump or place where the water or seepage collects, a line from the city water supply attached at one side E (See Fig. 2) and a line leading to the discharge point (sewer, gutter, etc.) to

the other side D (See also Fig. 2). As the water rises in the pit, the float is raised and when the right height is reached, the valve is opened instantly allowing the city water to flow through the ejector, causing a suction, and carrying the sump water with it to the discharge. As the water goes down the float follows and when the low point is reached, the valve closes to remain closed until enough water collects to again raise the float, when the whole operation is repeated. This device is made by the Penberthy Injector Company, Detroit Michigan.

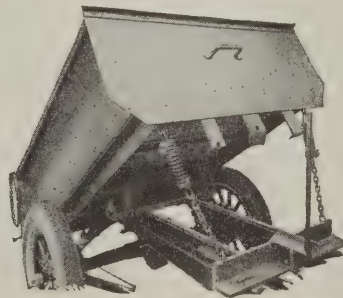
National Distribution for "Jiffy" Bodies

THE Jiffy Twin Duty Dump Body, manufactured by The Griscom-Russell Company, 90 West Street, New York, has met with such success during its first year, ac-



The Jiffy twin duty dump body

cording to the manufacturers, that arrangements have been completed for national distribution of this product. Warehouses have



Another view of the "Jiffy" body

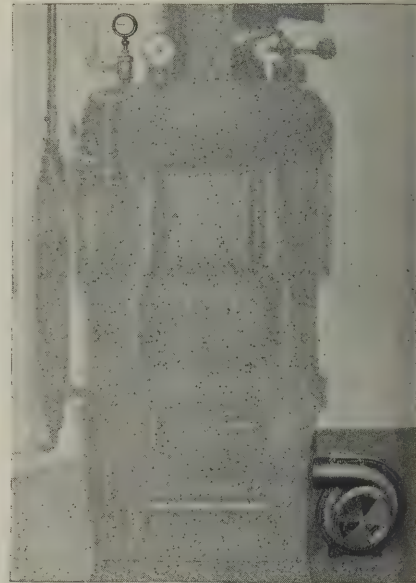
been established in various points throughout the United States which insure prompt shipment from all distributing agencies. As is clearly shown in the accompanying illustrations and as indicated by the name, "Twin Duty," this body can be converted from a gravity dump type to a lift and lock type. This feature, together with the remarkable simplicity of the operating mechanism and

correct design throughout—the result of half a century's experience by the manufacturer—accounts for the results secured. Bulletin No. 1507 fully describes the Jiffy body.

Forced Draft Blower for Domestic Furnaces

AN electric blower for furnishing forced draft under the grate of a boiler or furnace used for house heating has been put on the market by the Coppus Engineering Corporation, Worcester, Massachusetts.

The blower is operated by a 1/12 hp., 60 cycle, 110 volt Westinghouse motor. The



Coppus house heating blower installed on a round low pressure steam boiler

fan, which is a hard aluminum casting with perfect running balance, is mounted directly on the end of the motor shaft.

With the blower, it is possible to burn the cheaper grades of coal, such as buckwheat and screenings, at a saving of \$1 or \$6 a ton over the more expensive kind. By means of an inlet damper the air delivered by the blower can be regulated in quantity and pressure to meet the conditions of the fuel bed and to give complete combustion. An automatic control for steam or hot water boilers or hot air furnaces can be furnished that will shut off the motor when the temperature or steam pressure reaches a predetermined maximum and will start it again when the temperature or pressure drops. Practically automatic operation is thus possible, with a more even temperature and higher efficiency.



What actually makes a house sell or rent—

Not always the big factors of location, appearance, size or number of rooms. Very often it is one or more inexpensive features or improvements which turn the scale.

Your prospect is not often a keen judge of real estate values. He may not be able to appreciate high grade materials or fine workmanship. But he will always understand and appreciate the Minneapolis Heat Regulator on the heating plant.

He knows it is a nationally advertised article of proven merit. Its story of comfort, convenience and fuel economy has been broadcasted through leading national magazines since 1885.

No man ever gets too prosperous to ignore any device which saves one-third on his fuel. It is the clinching argument that has helped materially to put many a signature on the dotted line.

Easily and Quickly Installed

No need to change plans or blue prints to include the Minneapolis. As simple as a telephone installation. It operates any type of heating plant, new or old, using any fuel, coal, oil, gas or central station steam. It is indispensable to the perfect operation of the modern oil or gas burner. Recognized as a necessity instead of an "extra." Adds less than 1 per cent to the cost of the most modest home. Write for free literature upon any type of installation in which you are interested.

MINNEAPOLIS HEAT REGULATOR COMPANY

405 East 28th Street

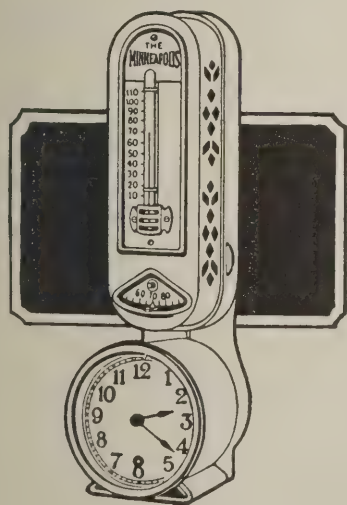
Established 1885

Minneapolis, Minn.

Branch offices in principal cities. Elsewhere see a heating contractor.

The "MINNEAPOLIS" HEAT REGULATOR

"The Heart of the Heating Plant"

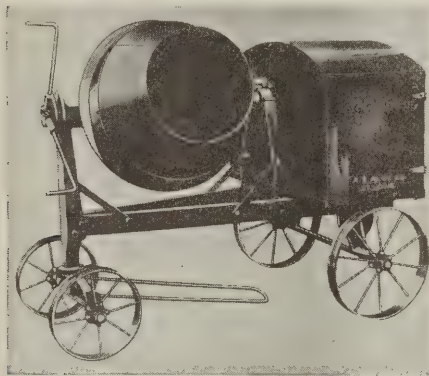


A New Catalog

CATALOG No. 111 of Geo. B. Carpenter & Co., 440 North Wells Street, Chicago, Ill., is the 1923 edition of the cyclopedic sales book published by this old established house of manufacturers and distributors of general supplies and equipment for contractors, mills, power plants, machine shops and all forms of industrial activity. Over 1000 pages are devoted to a display of and complete information about cordage, twines, cotton duck, mechanical rubber goods, marine supplies and general hardware, tents, camp furniture, awnings and flags. The book is completely indexed. It is $6\frac{3}{4} \times 9\frac{1}{4}$, red board binding with cloth backbone and is $1\frac{3}{8}$ in. thick.

Aloe Reduces Price on "Magic" Mixer

A REDUCTION of \$25 on the Aloe "Magic" concrete mixer has been announced by the A. S. Aloe Company, 615 Olive Street, St. Louis. This brings the price of their machine to \$250 f.o.b. factory. Pacific coast customers are served



The Aloe "Magic" mixer

directly from San Francisco. The plan that has been worked out by these manufacturers in selling the Magic mixer is of considerable help to smaller contractors needing concrete mixing equipment, for by this plan the Magic mixer can be purchased with a \$25 cash payment and \$25 a month. This enables the contractor to have the full use of the mixer during his busy time and grants him a very lenient plan for payment. The Magic mixer is equipped with a "Little Giant" engine.

Mortar Colors

COLOR Harmony in Brickwork and Clinton Mortar Colors are folders recently published by The Clinton Metallic Paint Company, Clinton, New York. Clinton mortar colors come in red, black, two shades of buff, brown, chocolate and olive green and the manufacturers guarantee that these colors are permanent, uniform and dependable. Dealers have a

"color experimenter" by means of which they can easily show pleasing combinations of tinted mortar with brick of any color. Booklets giving full instructions for use of color in mortar will be mailed free upon request.

A Ball-Bearing Door Hanger

THE ideal installation for doors in the modern apartment or in other places where the space is limited and insufficient for the swing door is to arrange the doors to slide. The Lane Ball-bearing Sliding Door Hanger, shown in the illustration, is strong, easy running, nearly noiseless, and durable, according to the manufacturers. It is designed with a heavy all steel frame, in which the wheel is fitted with the best form of ball-bearings, and both the cups and cones are machined from solid steel and



The "Lane" ball-bearing door hanger

hardened by the same processes as those used in the modern high-grade bicycles.

Any settling of the building with resultant dragging of doors may be readily overcome by the convenient adjustment located at the top of the door, accessible to one standing in the opening.

The Lane ball-bearing sliding door hanger fulfills an increasing requirement for sliding doors in small apartments, etc., where otherwise a swing door would be impossible.

Concrete Floors

"CONCRETE Floors," published by the Portland Cement Association, 111 West Washington Street, Chicago, contains tentative standard specifications for concrete floors, a chapter on heavy duty

floors for industrial buildings, terrazzo floors, concrete dance floors, colored floor finish, concrete floor treatments, floor coverings, typical concrete floor designs, and computation of quantities of materials. This 16-page booklet, $8\frac{1}{2} \times 11$ in size, is intended to serve architects, engineers and designers by eliminating the uncertainty in floor construction and obviating a great deal of needless experimentation. Copies will be sent to those interested free upon request.

A Screen Wire Stretcher

THE Markwell Manufacturing Company Inc., 176 Franklin Street, New York City, manufactures a foot-operated screen wire stretcher which they claim is very conveniently and quickly operated. I



A foot-operated screen wire stretcher

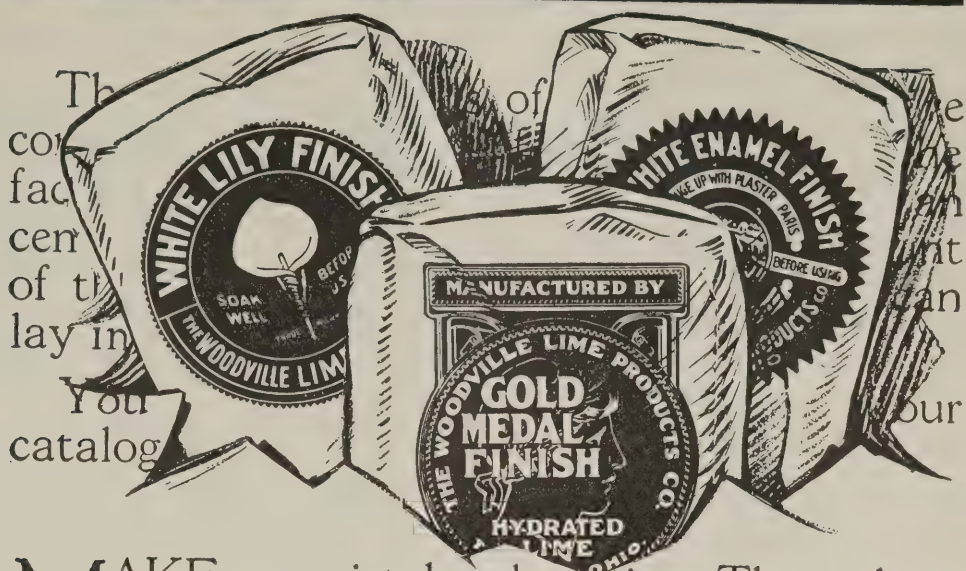
stretches the wire and holds it while being backed. The device will take any width of wire up to 48 inches.

This company also manufactures automatic tacking machines, crayons, mitering machines, clamping benches, glue brushes, corrugated fasteners, glaziers' points, automatic point drivers, etc.

Circulars and prices will be supplied by the company upon request.

A New Size in Hercules Engines

THE new 2 hp. size recently added to the Hercules line of gasoline engines manufactured by The Hercules Corporation, Evansville, Indiana, was designed to meet a specific demand from the industrial field. While the Hercules $1\frac{1}{2}$ hp. had repeatedly proved that it would exceed its rated horsepower by at least 10 per cent, there was still a gap between it and the 3 hp. size and there are a number of machines being marketed at this time the operation of which the 2 hp. Hercules is particularly well adapted. In common with all the rest of the Hercules family the 2 hp. has high pressure bearings 8 per cent tin—throughout, malleable iron cam gears, malleable iron governor spindle and weights, grease cup on cam gear pin clip for supporting oil pipe, extra heavy fly wheels, and the Wico high tension magneto.



MAKE no mistake about it. These three well known brands of lime come from the richest deposit of limestone known to the entire world.

The original hydrated lime, from the Woodville district, is furnished to the trade *only* in bags bearing one of these three labels.

They are superior for finish work. They are unsurpassed for plasticity and build strong white walls that are forever free from pitting, blistering, or popping.

To insure having walls, of hard, snow white texture, ask your dealer for one of these brands.

If you want the most economical method of bricklaying, use one of these three brands in your mortar and note how much more sand it will carry than cement and how many more brick the men will lay per day.

These three brands of hydrated lime are coming into general use for bricklaying.

The Woodville Lime Products Co.

623 MADISON AVE.

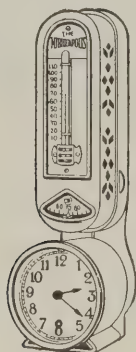
TOLEDO, OHIO

Booklets covering the merits of White Lily, White Enamel and Gold Medal Finishes will be sent to you without charge. Drop us a line.

Automatic Heat Regulator

SO great has been the demand for automatic heat regulation in homes that it has been necessary for the Minneapolis Heat Regulator Company, Minneapolis, Minnesota, to make extensive additions and improvements on its factory which will make possible a 70 per cent increase in production. Factory space will increase 40 per cent.

The Minneapolis Heat Regulator is an electrically operated thermostat. It takes complete charge of the dampers, drafts or valves on a heating plant, maintains a



The Minneapolis heat regulator

steady, even day and night temperature and insures the greatest degree of heating comfort, convenience and economy. It prevents over heating and under heating and is a real health safeguard.

The essentials of heat regulation are simple. A thermostat is placed on the wall of a central room, usually the living room. A three-way electric cable runs from the thermostat to the motor in the basement. This motor may be a gravity motor run by weights, a spring motor operated by a coil spring, or an electric motor. The motor operates chains which are attached to the front damper and to the check damper.

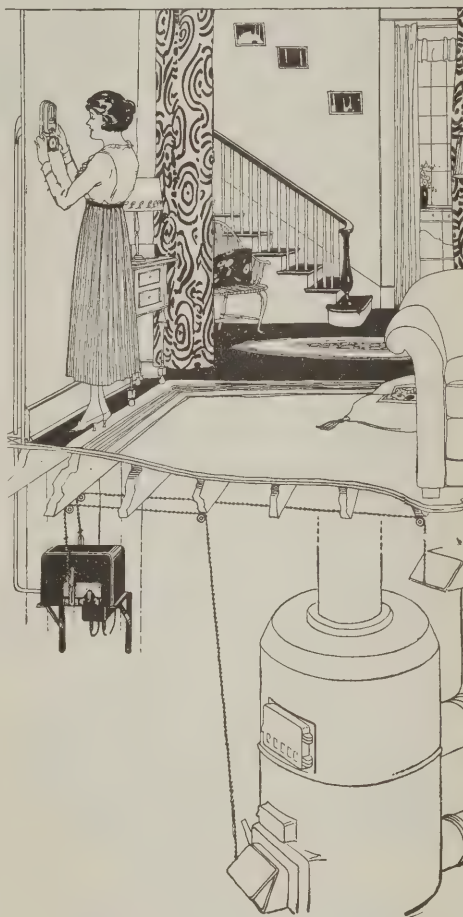
When the temperature drops below a designated temperature set on the indicator of the thermostat, the front damper on the furnace will be opened. When the temperature rises to the set temperature, the front damper is closed and the check damper is opened.

The operation of the regulator is governed by a thermostatic coil in the thermostat. This coil is made of brass and steel. Expanding or contracting with heat or cold, it forms a contact which starts the basement motor into operation, opening or closing drafts and dampers. When the temperature drops and the coil contracts, the pendulum is moved and a circuit is completed which makes the motor open the front damper. When the temperature rises to that on the indicator, this causes the pendulum to swing to a contact point on the opposite side and the circuit is closed which makes the motor close the front damper and open the check.

Thus when the indicator is set for a

certain temperature, this temperature is maintained. The thermostat is adjusted so that a change of one degree makes the pendulum swing one way or the other. This mechanical regulation of the furnace is far more satisfactory than human regulation.

Minneapolis engineers have developed many mechanical marvels based on this simple principle of expansion and contraction of metal. One device, the "Pressurestat," regulates vapor and low pressure steam systems preventing excess pressure at the boiler. Another device, the "Hydrostat," maintains an even temperature of the water in hot water boilers,



The complete installation of the Minneapolis heat regulator

and may be used in dual control with room type thermostat, or as a single control of just the boiler. Temperature of different chemical mixtures is also regulated by similar devices.

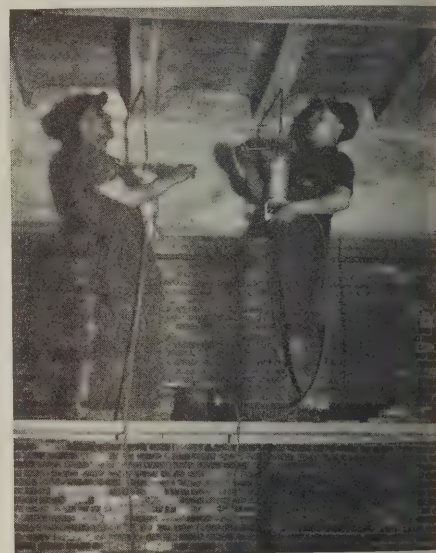
The latest and most advanced development of the Minneapolis Heat Regulator Company is the Minneapolis thermostatic relay switch. When used in conjunction with any Minneapolis thermostat, it provides an ideal means of temperature control for automatic oil burners, electric refrigerating apparatus, electric heating units and any similar equipment where it is necessary to operate an electric switch in accordance with temperature changes. This switch insures the only perfect oper-

ation of the device feeding oil in oil burners. Over heating of rooms, and waste of oil is prevented.

The Minneapolis Heat Regulator Company manufactures its entire product in one plant and under one roof. Even the clocks that are part of the thermostat are made and assembled at the Minneapolis plant. By means of this clock, the temperature may be maintained at a comfortable degree during the day, and dropped automatically at night to a lower temperature and raised again at any time in the morning to the day time temperature. Rooms are comfortable by getting-up time.

An Electric Hammer

THE National Electric Manufacturing Company, 661 Chatfield-Woods Building, Pittsburgh, has recently announced the "Syntron" electric hammer, for contractors, steamfitters, plumbers and ma-



These men are using the "Syntron" electric hammer

chine shops. The company states that the hammer, which can be plugged into an ordinary light socket, will sink a hole one inch in diameter into hard concrete at the rate of three inches a minute. There is no motor, gears, cranks, eccentrics or connecting rods; simply one moving part—the hardened steel hammer head, which flies back and forth in a cylinder.

Change Firm Name to That of Product

THE manufacturers of "Weatherbest" creosoted stained shingles have changed the name of the company from the Transfer Stained Shingle Company, Inc., to the Weatherbest Stained Shingle Company, Inc. This concern is located in North Tonawanda, New York, and has a Western plant at Minnesota Transfer, Minnesota.

Portland Cement Stucco Is Quality Stucco

The high recognition accorded Portland Cement Stucco by the architectural and engineering professions is due primarily to its dependability. The reason for this dependability is the fact that its most important ingredient—Portland Cement—is *standardized*.

Not only has Portland Cement Stucco superior strength and durability; applied in accordance with the most advanced specifications, it assures structures of distinction and beauty.

Our new booklet, "Portland Cement Stucco," gives all details of good practice. From these you can write your own specifications.

This booklet is yours for the asking. It is a practical "how-to-do-it" book for the superintendent and foreman, as well as a reference book for the architect, engineer and contractor. Here are a few of the things it contains:

- Typical Construction Details with Sketches.
- Varieties of Surface Finish and How Obtained.
- Notes on Coloring Pigments.
- Proportioning Mixtures.
- Use of Hydrated Lime.
- Back Plastered Work.

Send today for "Portland Cement Stucco." It is a booklet you will want to keep. Address our nearest District Office.

PORTLAND CEMENT ASSOCIATION

A National Organization

to Improve and Extend the Uses of Concrete

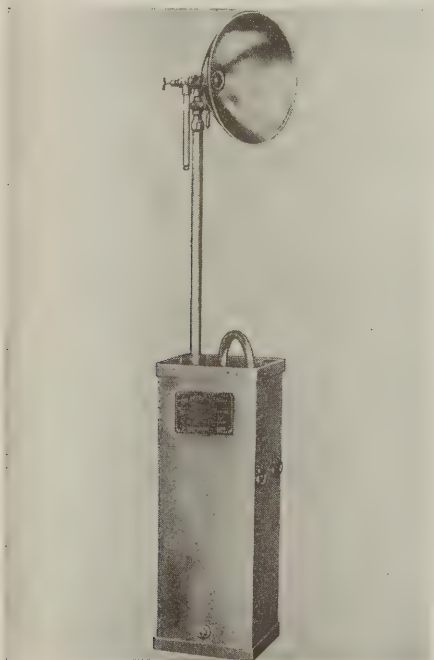
Atlanta	Denver	Kansas City	New York	San Francisco
Birmingham	Des Moines	Los Angeles	Parkersburg	Seattle
Boston	Detroit	Memphis	Philadelphia	St. Louis
Chicago	Helena	Milwaukee	Pittsburgh	Vancouver, B.C.
Dallas	Indianapolis	Minneapolis	Portland, Oreg.	Washington, D.C.
	Jacksonville	New Orleans	Salt Lake City	



Front and rear views of a screen wire stretcher manufactured and sold by J. E. Donaho, of Milton, Iowa

Night Lighting for Contractors

AT this season of the year, when days are short and owners are anxious for completion of work, the night shift becomes a very important factor in the success or failure of a job. By taking advantage of the night shift, progressive contractors are securing work against



A portable acetylene flare light

their competitors, in view of better estimates and better records of completion. They are also getting greater profits out of their work by utilizing expensive plants throughout two or more shifts per day.

In order to get the best results from night work by eliminating delays to men and machines, it is essential that the work be well lighted. One form of light which is giving good service is the portable acetylene flare light. The accompanying illustration shows one of the acetylene flares made by the Alexander Milburn Company, 1420 West Baltimore Street, Baltimore, Maryland. This is an 8000 c.p.

light, is 6 feet high, weighs 150 pounds, and is equipped with handles so that it may be carried from place to place without difficulty. It is said to burn for 12 hours on 8 pounds of carbide.

The principle of operation of these lights is: When calcium carbide and water are combined, a combustible gas called acetylene is generated. Calcium carbide, usually called carbide, comes in several forms. The form most generally used is ordinary commercial carbide in lumps $2\frac{1}{2}$ inches in size, as this size yields the greatest number of cubic feet of gas per pound, and is obtainable everywhere. One pound of lump carbide gives 4.84 cubic feet of gas, and the average cost of lump carbide is 5 cents, making the cost of the gas about 1 cent a cubic foot.

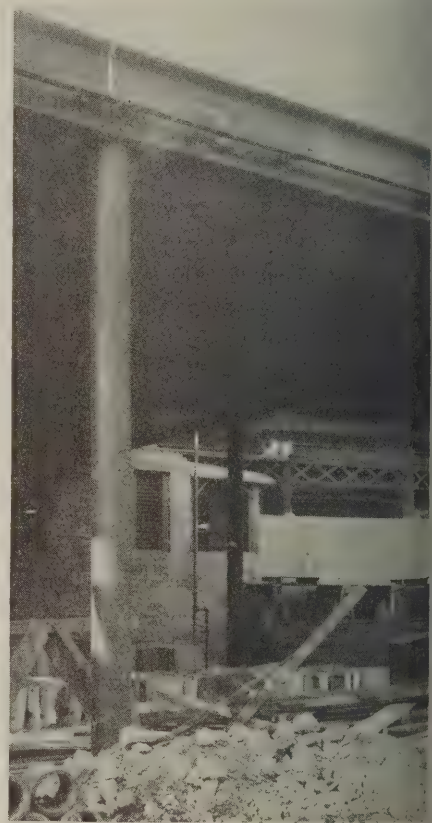
The charging and lighting are easily performed by unskilled labor. The carbide is placed in a carbide holder containing a series of conical-shaped pockets. This holder fits into a gas bell slightly larger, there being only enough space between the two to form a gas chamber. These in turn are placed in a square tank which forms the base of the light and is filled with water. The water acts on the carbide, immediately generating a gas in the chamber, which rises through an inverted "U" pipe, travels down through a gas washer in the base and thence up through the feed pipe to the burner.

The sludge or slaked carbide is easily removed from the conical pockets by taking out the carbide holder and dumping. The water in the tank need not be changed. The standpipe, burner and reflector are not handled.

The brilliancy of the light is assured by the relatively large water supply in the square tank. The water column automatically maintains a steady flow of gas at the burner without any attention whatever. As the internal pressure within the light can never exceed the water column, a large factor of safety is assured. When the light is turned off, the increased pressure of the gas automatically forces the water from the carbide chamber, preventing any generation while the light is out. This not only insures safety, but makes the light ready for use at all times.

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This picture shows one of the Crex columns used in the new McJunkin Building now under construction at Broadway and Wilson Avenue, Chicago

tests are furnished by the manufacturers upon request.

A booklet giving approximate prices, safe loads and construction details will be furnished by the Crex company upon request.

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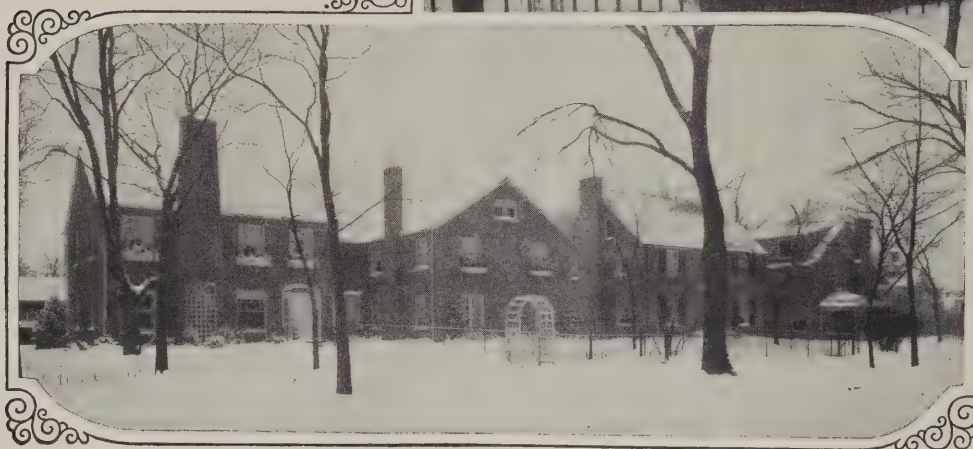
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Above: A typical Oliver garage equipped with Slidetite Garage Door Hardware. Left: A group of Oliver-built dwellings in Evanston, Illinois.

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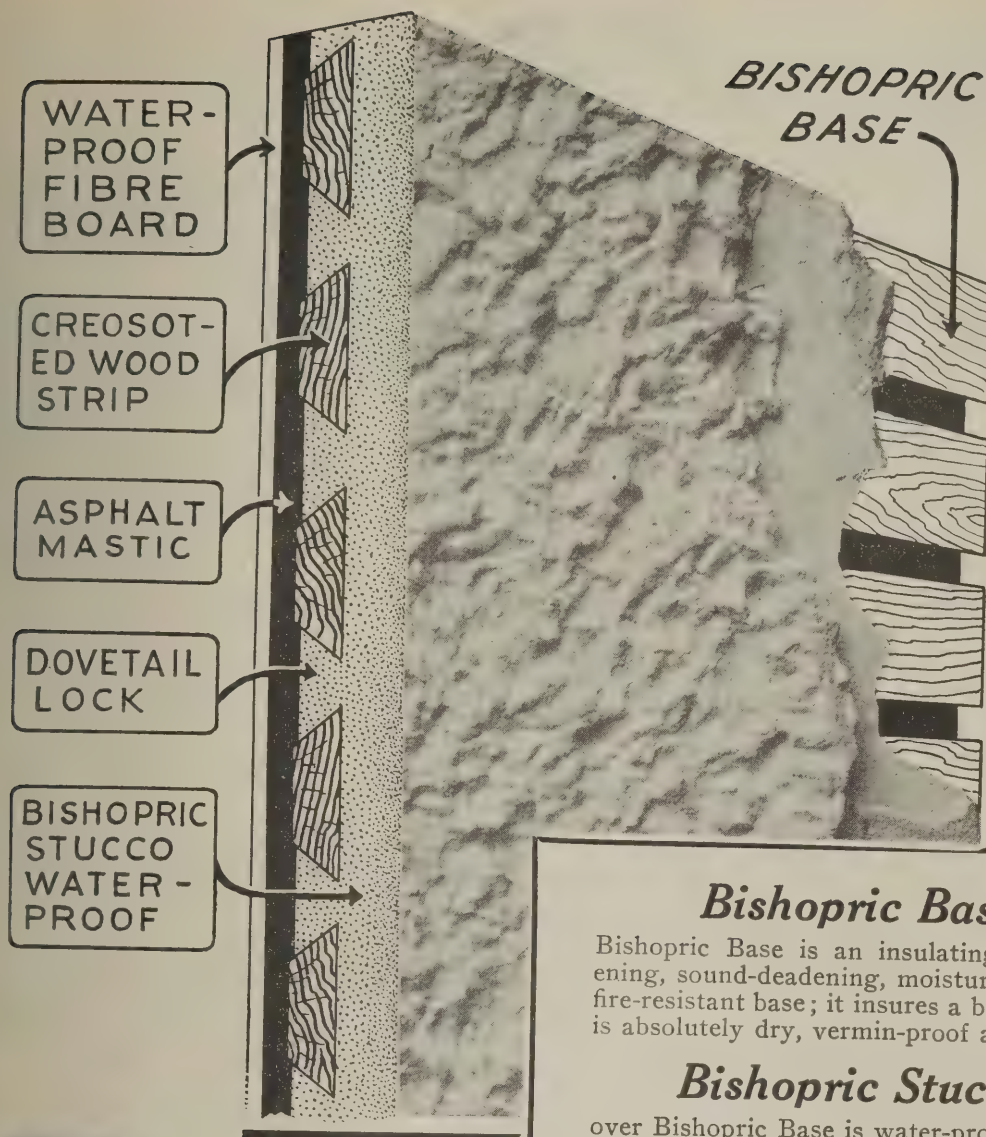
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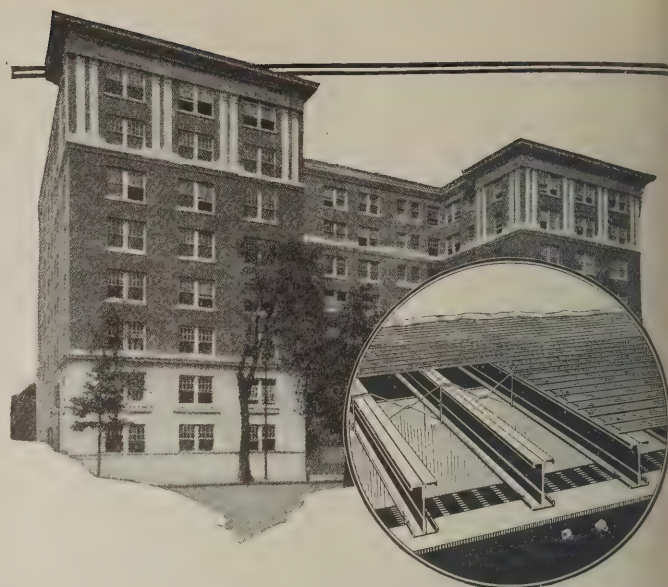
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Ritz Apartments, New York City. Ritz Holding Co., architects and contractors.
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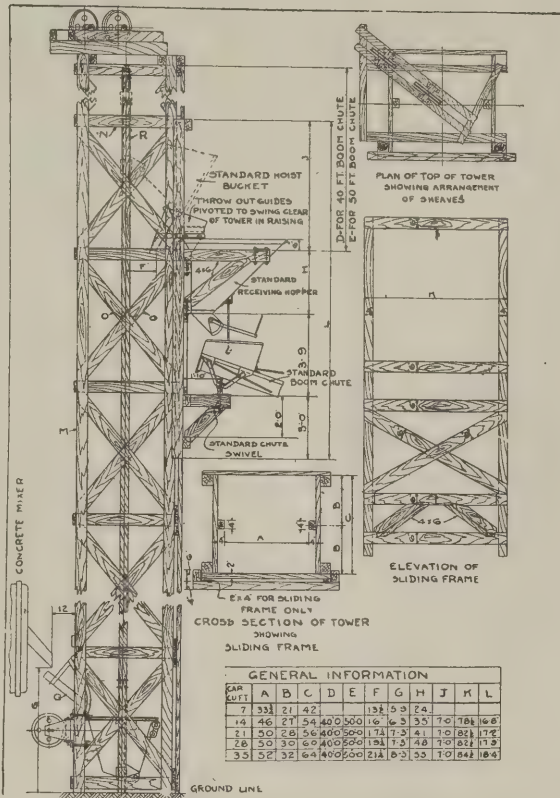
We're Going to Work Again

GETTING out this Spring Building Number has been so much fun that we all feel like we have had a vacation. But after laying off of the construction stuff for a month we're all pepped up and ready to go to work again.

For one thing the May issue will have a whiz of a story about a reinforced concrete job of moderate size, where the builder used his head as well as his hands. It will be full of hints that will save you time and money on present or future reinforced concrete jobs.

All of the regular features will be back again; the construction editor's snappy "On the Job" articles, Sherman's "Kinks," "The Builders' Library," "Among the Manufacturers," in fact the whole darn family—and then some!

Of course, all of this doesn't mean that the May issue isn't going to have plenty of nifty pictures and plans of houses and other buildings to aid you in stimulating the ideas of your



This is one of the cuts (reduced in size) that illustrate the story in the May National Builder about how an ingenious builder solved his problems in putting up a reinforced concrete building

prospects who want to build but have no definite plans.

For instance, one of the features will be a small six-room masonry house, built by an architect for his own use, which means that it is unusual, both in plan and design.

Then, too, there will be the regular sepia toned supplement, "The National Home Builder," including The Architects' Small House Service Bureau's complete working drawings for a small house.

Like the movie critics who fear they will spoil the show, we're not telling the whole story. Some of the best things about the next issue of NATIONAL BUILDER will not be unfolded until you receive your copy.

If you are not sure just when your subscription expires, don't risk disappointment, but ask the subscription department to enter you for another year or two, because NATIONAL BUILDER cannot furnish back numbers.

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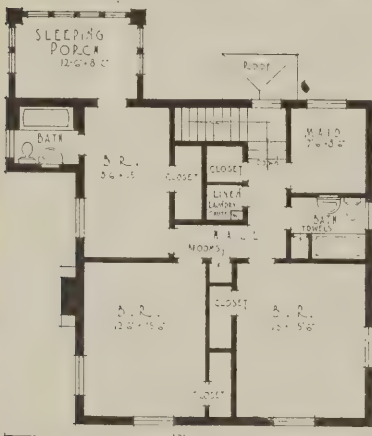
Renewals: Instructions for renewal, discontinuance or change of address should be given three weeks preceding date of issue. Both old and new addresses should be given. Subscribers wishing to discontinue their subscriptions must notify the publisher upon date of expiration.

Contributions to the editorial pages will be accepted solely on their merits and paid for at the regular space rates. Contributions of timely nature must be in on the 15th of the month preceding date of issue.

Advertising: Space in the advertising pages is sold according to published rates, furnished on application. Copy must be in on the 15th of the month preceding date of issue if proofs are to be submitted for approval before publication. Last forms close on the 23rd of the month preceding date of issue. The publishers reserve the right to reject or revise any advertisement containing statements of doubtful authenticity or derogatory to any building material, accessory or equipment.

Mechanical Requirements: Type size of page, 7x10 in.; half-page, 3½x10 in. or 7x4½ in.; quarter-page, 3½x4½ in. or 7x2½ in.; eighth-page, 3½x2½ in. Screen required, 120 line; reversed plates must be stippled or Ben Day.

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Catering to the Market for High Class Homes With Modern Conveniences

EVERY photograph album contains pictures of people whose clothes plainly indicate the period in which the photographs were taken. Likewise, there is many a street in every town and city whose houses plainly indicate by their architectural style, or the lack of it, and their interior equipment, when they were built.

Fortunately, it seems that the houses that are growing in popularity today are those which do not represent a fad in either style, plan or equipment. We have noticed a return to the houses of the architectural styles which have stood the test of time, such as the Colonial, English, Spanish, Italian, etc., and we are putting into these houses architecture and equipment which makes for comfort and convenience in living.

The contractor and builder who addresses himself to catering to people interested in this type of house is bound to find a ready market for his services. There is enough business of this kind among people with good taste in every community to afford one or two up-to-date builders a very good living.

David Oliver, 1322 Greenwood Street, Evanston, Illinois, is a contractor and builder who has taken advantage of such a demand existing in his community for high-class homes with modern conveniences.

A row of houses which he has recently constructed is shown in the picture at the top of this page. Mr. Oliver's house is the second



The stair hall and stairs are not the least important parts of the interior

one from the left and it is illustrated in detail with exterior and interior views on this and following pages.

Here he has taken just some ordinary vacant lots on an ordinary street in Evanston, and built up an attractive community of houses that are conspicuous among their neighbors for their good proportions, the simplicity of their details and their solid construction. There are others in the same neighborhood not shown in the picture. While all of these houses are in the Colonial style, employing essentially the same materials, they get away from that deadly monotony which so often characterizes the work of the thoughtless builder whose houses are constructed in the same section and who, for the sake of an imaginary saving, construct the same designs over and over again with but minor variations. The result is "David Oliver houses" have become widely known in his community. To possess one is a mark of distinction and a source of pride to the owner.

Mr. Oliver's houses are not only good in design both outside and inside and thoughtfully laid out as to their interior plans, but are also thoroughly "modern" in equipment. All windows and outside doors are weatherstripped with metal strips. The bath rooms have tile walls and floors with built-in fixtures, showers, standard tubs and pedestal basins. There are built-in ironing boards and dining alcoves in the kitchens, with abundant built-in



A large, light living room, with a usable fireplace, is provided in each house

cabinets in the kitchens and pantries; big, usable fireplaces, built-in book shelves, down stairs lavatories, broom closets, laundry chutes, sleeping porches and other details which make comfortable, convenient homes to live in.

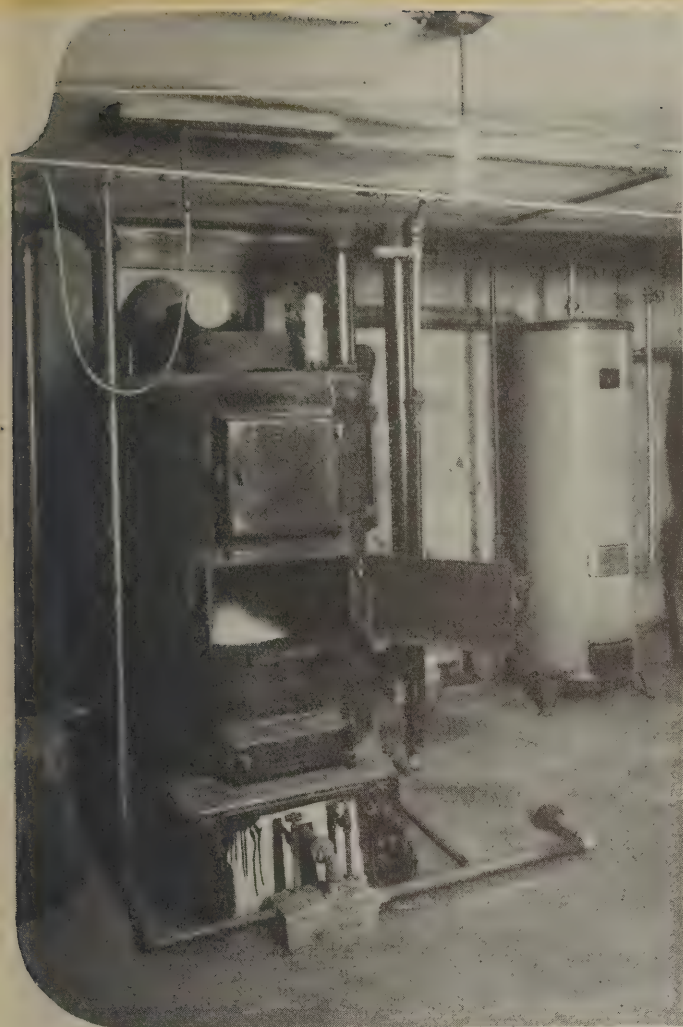
Mr. Oliver is a believer in the oil burner.

While he does not furnish oil burners with his houses, nevertheless, he arranges for their installation at the time the houses are built. He provides a pipe connecting the future burner with the sewer in the basement, an item which amounts to about \$7.50 at the time the house is constructed but

which, if not provided for at that time but done later, would cost the owner about a hundred dollars to install. He believes in the advisability of a higher firepot for the oil burner than is necessary for other heaters and so provides for one in each house. Although it cost fifty dollars more, never-



Left: Batteries for the radio are concealed in a built-in cabinet in the sun room. Right: Dining alcoves and built-in ironing boards are adjuncts to every kitchen



Left: The oil burner and the hot water heating plant. Note the water heater in the background. The oil burner was connected with the sewer when the house was built. Right: Tiled walls and floors, with built-in soap dishes, showers, standard tubs and pedestal lavatories, are found in the bathrooms

less he finds that it is worth the price and will add more than that much value to the house. The houses are heated by hot water heaters, which are furnished with the house.

Mr. Oliver recognizes that the automobile has come to stay and that consideration must be made for its housing at the time the house is built. Hence, he builds for each house a two-car garage. It is of the same material as the house and in the same architectural style. He uses the four-door principle with exterior hangers and track.

An interesting detail of his own home as shown in the illustration of the sun parlor is the cabinet that he builds in for the purpose of containing the batteries for the radio where they are out of sight yet readily accessible. This is an innovation that will no doubt grow in importance with the spread of the use of radio machines in every household.

It is interesting to note that Mr. Oliver is something of a

globe-trotter. He picks up building ideas from all parts of the world and has made a study of the domestic architecture of certain countries of Europe as well as the Colonial architecture of our Eastern states. His interest in NATIONAL BUILDER and the use that he makes of this journal in his work is an indication of the value of this magazine to the contractor and

builder who is interested in the construction of high class homes with modern conveniences.

In some ways these houses seem to convey a sort of hand-made feeling that is difficult to describe and almost impossible to attain in these strenuous days. Some of the detailing, for instance, may lack sophistication, but for this very reason, gains in character, which, at least in homes, should perhaps be considered more important. This element called character is one of the outstanding features of our old Colonial work. All of the worth-while early work exhibits it and profits thereby.

These houses are also a good example of grouping. Altho they are placed rather close together they do not give an impression of being crowded. This is perhaps due to the fact that they are varied in mass without being made different in style. They all belong to the same family, no member of which attempts to push into the foreground.



A two-car garage like this is built for each house. Four-doors, hung on outside track and hangers, are used



Here is a bit of old world flavor transported to modern America

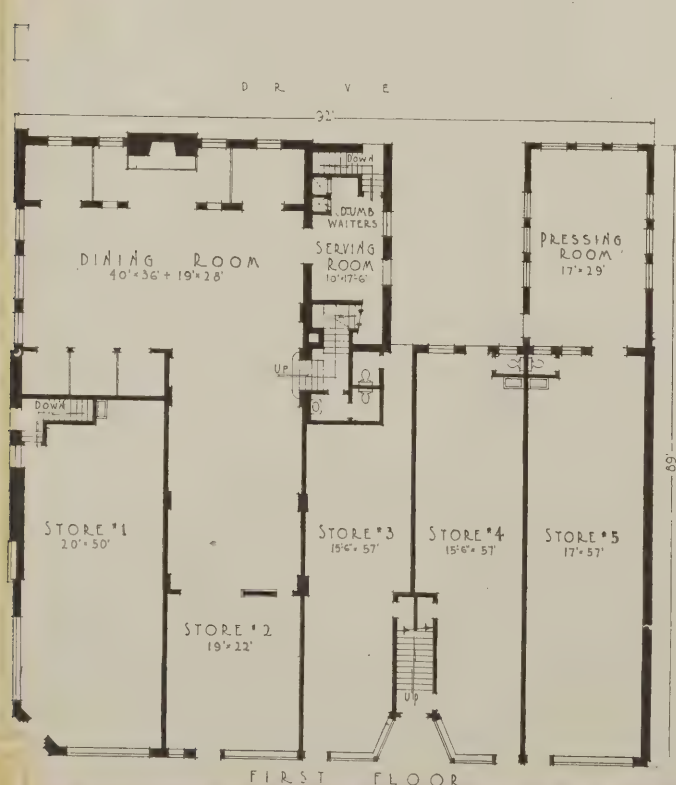
Unusual Business Buildings

THE constant aim of designers of store buildings is, or should be, distinction. This is particularly true of store buildings

located in industrial towns and of the "neighborhood stores" in the apartment house districts of cities, and elsewhere where compe-

tition is keen and where the population is constantly shifting.

The bulk of the trade in such localities is





The steep pitched gable breaks the monotony of the wall and marks the entrance to the second story

seldom from customers of long standing who call the proprietor by his first name and who may be counted on to return to the same butcher and baker and candlestick maker year after year. On the other hand the trade in such cases is maintained not so much thru the personality of the proprietor or his assistants as it is attracted by a pleasing individuality in the appearance of the building.

The buildings which illustrate this article compose a group of this character that is attracting much favorable attention in Kansas City, Missouri, where they are located. They were designed by Lodge & Gornall, architects, 1505 Commerce Building, Kansas City, Missouri, for the Laslie Realty Company of the same city.

The design of the large building which



The arch over the alley at the rear, and the low roof lines give character to this portion of the building



Basement plan

composes the left portion of the group is carried out in brick and half-timber with a sparing use of native stone toward the rear. The roof is of slate.

The first story contains four stores and a high-class tea room—store No. 2 really being a portion of the latter and forming the street entrance thereto. Booths with built-in tables and seats and a large fireplace at one end give the tea room a quaint character. Store No. 5 is occupied by a tailor. In the rear of this store is a one-story extension which serves as a pressing room.

A stair between stores No. 3 and No. 4 leads to the second floor which contains three offices and a large ball room. The convenience features required by patrons are met by the rest room, smoking room, coat room, lobby and so forth. The ball room and the tea room are connected by a stair leading from the foyer. The roof above the ball room is carried on huge timber trusses

which are left exposed to add to the picturesqueness.

Serving rooms adjacent to the ball room and the tea room facilitate the serving of refreshments in either of these rooms. Two dumb waiters extend from the serving rooms to the kitchen which is located in the basement.

Only a portion of the basement is excavated; just enough to provide for the kitchen, the heating plant and a storage space under store No. 1.

By reason of two stairways to the first story, a fire escape to the exterior, and a fire door leading from the corridor to the adjacent building, the second story is rendered practically panic proof in case of fire or other disturbance.

Metal windows are used for the sewing rooms, pressing room, and kitchen. Additional ventilation for the kitchen is provided by two vent flues in the chimney.

THE building illustrated on this page is the end building of the group described on the two previous pages. It was designed particularly for the use of a photographer. It is as distinctly Georgian or Colonial in style as its neighbor is English half-timber, yet both buildings are so well done that none but a pedant would insist that the same style be adhered to thruout.

This building is faced with the same kind of brick as its neighbor, which establishes a color harmony. The portico effect is worked out in white marble, a material well adapted to the delicacy of the carvings. The entrance hood is of copper and the railing of wrought iron. The pitched roof is also of copper.

At the rear of this portion of the building is a small basement containing a heating plant.

The first floor contains the shop, with the work room, dark room, print room and a toilet at the rear. A stair with turned balusters and newel leads to the patrons' reception room on the second floor. In connection with the reception room are two dressing rooms with a toilet between them.

The front portion of the second floor is given over to the photographer's living quarters. Here is compactness indeed. The living room is generous in size, but the other rooms are scarcely larger than the bath room. Yet the arrangement is carefully worked out so that more efficiency is developed than is the case in many larger apartments. A disappearing bed transforms the living room into a sleeping room at night, and if several guests are to be entertained, the other end of the living room may be called into service for dining purposes, otherwise the small dining room or alcove is large enough. The kitchen is small, but well arranged so that quite elaborate meals may be prepared if desired. The kitchen cabinet has a service door opening into the corridor. The refrigerator is also located at this end of the cabinet, so that ice and other supplies may be delivered without entering the apartment. The fire door at the end of the corridor corresponds to a similar door located in the second story corridor of the other portion of the group. The lighting and ventilation of the interior rooms of the apartment is accomplished by means of light wells which lead to the skylight on the roof. The third story con-



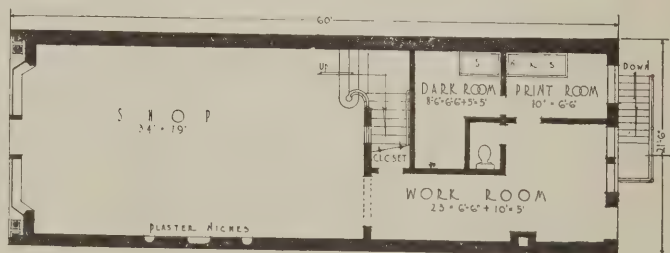
The photographer's shop at the end of the group is a replica of the Betsy Ross house, the birthplace of Old Glory

tains the studio and a small dark room for developing portrait prints.

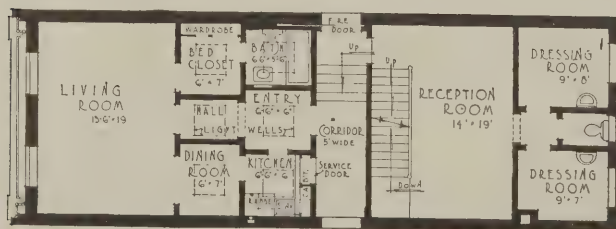
The variation of floor levels in this building has been carefully worked out to satisfy the requirements of rooms of different ceiling levels. That is, the living quarters, in which the ceilings may be compara-

tively low, are placed above the shop. On the other hand, the height of the ceilings of the first story work rooms is kept low to provide ample ceiling height for the second story reception room and dressing rooms and for the studio in the third story. The attic space left in the portion above the living quarters is reached by means of a door from the studio dark room.

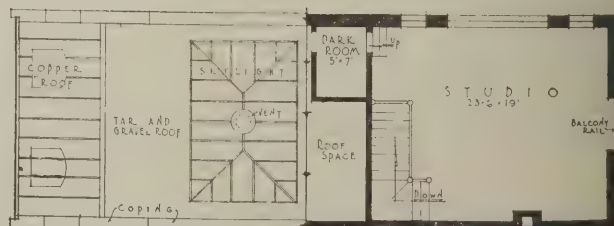
The studio contains a pair of French doors with an ornamental iron railing outside. This feature forms a useful adjunct for use in composing special poses. A large window in the north wall provides ample light.



First floor plan



Second floor plan



Third floor plan



View of the bathing pavilion from across the lake

A Private Bathing Pavilion

This Might Serve as the Nucleus of a Similar Building
for a Small Park

SOMETIMES the possibilities for the development of a piece of property are overlooked and full advantage is not taken of natural conditions so that their full beauty and usefulness may be enjoyed. Many homesites and small parks contain ponds, or low ground, where artificial lakes could be formed, which, by only a slight effort, could be transformed into bathing and boating features of considerable value from a standpoint of both appearance and recreation.

The illustrations which accompany this article show a private bathing pavilion on the property of Mr. Louis M. Stumer at Homewood, Illinois. The architects were Simmons & Fellows, 122 South Michigan Avenue, Chicago.

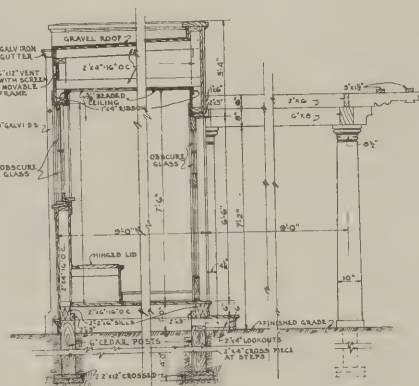
The picturesqueness of the small lake and the surrounding landscape serves as a foil for the semi-formal design of the bath-

ing pavilion. The pergola, which extends along the lake side of the building, introduces a decorative note and adds to the

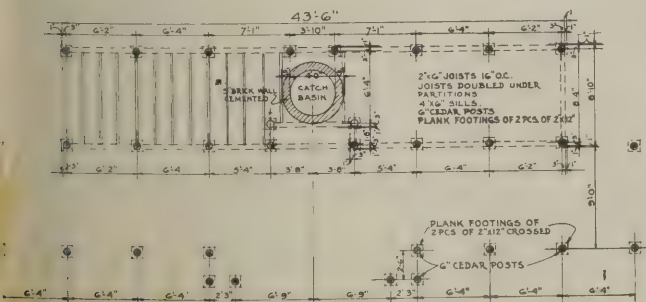
size and dignity of the pavilion. It may also be used as a space for serving informal teas.

The plan of the pavilion is extremely simple, being merely a rectangle partitioned off to form six bath houses, with a pump house in the center dividing the bath houses into two groups of three on a side. Each bath house has a built-in seat with a hinged lid and each has a window and a glazed door to insure light and ventilation. A wide seat overlooking the lake is built into the side of the pavilion in front of the pump house.

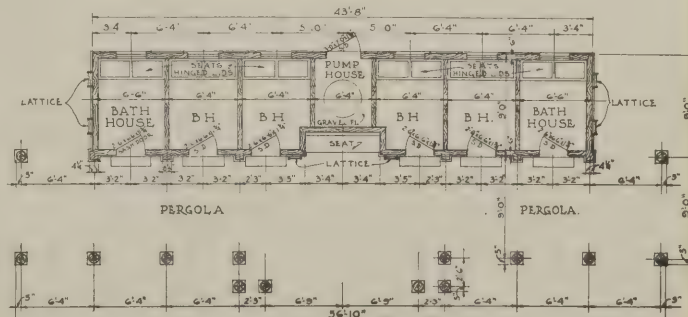
The construction consists of cedar posts sunk below frost line and carrying double 2x6 sills. Beaded ceiling is used for the walls and the ceilings and the exterior is of narrow siding. The roof is covered with composition roofing. The roof space is ventilated by metal grilles above the doors.



Typical section thru bath houses and pergola



Foundation plan



Floor plan



A section of Van Pelt Street, Philadelphia, as it now appears

Society Folk Take Over Small Back Street

THE newest "Village" in Philadelphia, and the most important one of the series, to be occupied by well-known society folk, headed by United States Senator Pepper and Hon. Judge Norris S. Barratt, is located in Panama Street, south of Spruce.

There was a time when that block of Panama Street which is now a beauty spot presented a scene that was not inviting to refined people. As a matter of fact, the some forty old houses in that block had been occupied by negroes for twenty years or more before the magical work of a skilled architect transformed them into homes fit for the elite. In the old days no prominent man or woman would have ventured a walk thru this narrow lane except, perhaps, in quest of a colored servant. But, today, remarkable as it may seem, a number of fashionable ladies are living in practically the same houses from which in former times they had probably obtained cooks, washerwomen and maids-of-all-work! Truly, the age of miracles has not passed.

"The small, artistic house in the heart of a city is the coming thing for society people," declared William F. B. Koelle, the young architect who is responsible for the Panama Street improvement and several other "Villages" of the same character.



Van Pelt Street, Philadelphia, before reconstruction

"The maintenance of a big house in town is exceedingly costly; it is hard to find a sufficient number of good servants; and, in most cases, there is no one there to derive the benefit. But, in the Panama Street case, as an example, the matter of expense is not so important as the fact that the small house is artistically complete in every particular, is both distinctive and satisfactory."

Before the Panama Street transformation had been accomplished the dingy dwellings in question were worth about \$3000 apiece. Now they are worth many times that figure—several of the larger ones which were made over into double-size homes, having sold at from \$30,000 to \$40,000. All of the houses were sold before the improvement had been completed and both social and business references were required from those who desired to join the community.

It is interesting to note that the homes for several of the owners were designed especially to their order including those for Senator Pepper and Judge Barratt. As the two rows of houses now stand they present a delightful appearance, some of the buildings being of different design from others in the row, and incorporating unusual features such as flower boxes at windows, lanterns, French windows with ornamental iron

balconies, potted plants on either side of steps and stucco fronts decorated with colored tile and tapestry bricks. The original brick walls of the old houses were utilized by the builders in revamping the two rows of houses, but the interior of each house was removed to provide for new hardwood floors, open fireplaces, modern tile bathrooms and convenient arrangement of the various apartments.

The backs of these homes open upon charming Italian gardens with flagstone walks, marble benches, fountains, trellises, terraces, plants, shrubs and even a sundial.

Another section of Philadelphia which was recently converted into a secluded place for people of "the inner circle" is that now known as "Sansom Gardens." This village, consisting of a dozen remodeled homes of beautiful design, is also located near Rittenhouse Square, at Sansom, Van Pelt, Moravian and Beechwood streets. These are all side streets and, previous to the improvement, the houses were not an asset to the city.

In the re-building of the old three-story houses in Sansom Gardens the buildings were given a stucco finish relieved by colored tile and mosaic decorations. Windows of the second floor open upon small iron balconies while the first floor windows have flower boxes. Instead of the usual pavement in the streets there are walks of red brick with mosaic borders. Every fourth house has a gateway with a trellis leading into a central garden court. This series of gardens is exceedingly beautiful, the special features



A section of Panama Street, Philadelphia, as it now appears. This entire block is now occupied by prominent society people, and the improvement cost more than \$300,000

including eight fountains, and a great variety of plants, small trees and shrubs. The dining room of each home looks out upon some part of these gardens.



Panama Street, Philadelphia, as it appeared before prominent society folk took it over for improvement



Pitched roofs and ample yard spaces help to avoid the ordinary flat building appearance

Home-Like Apartments

THE following suggestions are the result of a great deal of study and experience on the part of Henry Wright, architect, Planters Building, St. Louis, Missouri, who has made an intensive study of the problem, in an effort to meet the situation in a manner which will answer the requirements of investment and the needs of the average city family. Very pleasing and livable apartments may be designed and built in large buildings or apartment courts, but such buildings will only be built during periods of high rental and home shortage. An effort has been made to bring such building within the means of the small investor and is consequently confined to units of three or four families each.

An old proverb is that the "Proof of the pudding is in the eating." We are fortunate to be able to show the result of an experiment in small apartment buildings made a few years since in a suburban neighborhood. The building shown is one of two apartments built on a corner, one facing each street. This permits a pleasant rear yard of considerable size, flanked by sufficient garages to serve the average requirement.

The following comments testify to at least a measure of success in attaining the homelike quality:

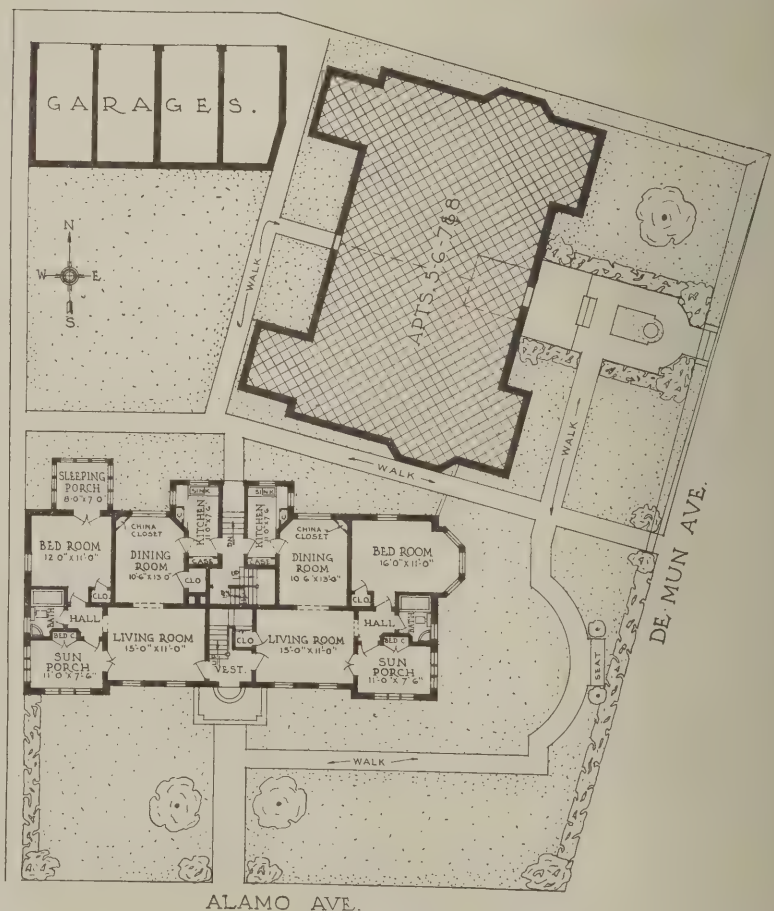
A gentleman and his wife were given the address to inspect one of the apartments but returned with the report that they found no apartment at the address given but that the site seemed to be occupied by a large home.

A tenant who had been required to make his home in apartments for many years,

altho much desiring a bungalow home, found one of these apartments afforded almost the full convenience and enjoyment which he sought.

Another tenant remarked that, while in

their previous apartment experience, his family usually dined out and spent the evenings away, they now found themselves content to remain for the most part in their apartment home.



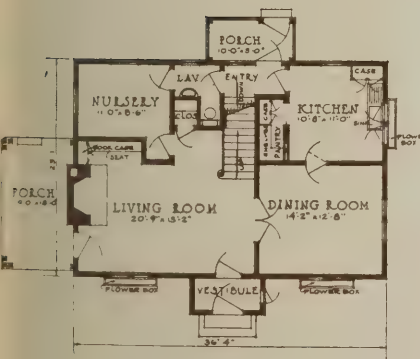
Plot plan

National Home Builder

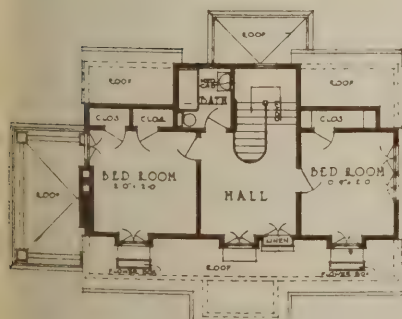


The curved top dormers are unusual but well designed

A House in the Dutch Farmhouse Style



First floor plan



Second floor plan

THE design of this house suggests the old Dutch farmhouses of Long Island. The low eaves, the generous stretch of roof, the mingling of red brick with wide clapboards, all are characteristics of the style.

The first floor plan of this house is very carefully worked out. The entrance is through a vestibule with a quarry tile floor. The living room is an interesting room with a fireplace and built-in bookcases in one corner. The main stair rises from a sort of recess formed in the other corner of the same wall. A nursery, complete with toilet, opens from the recess.

This house is located in Terre Haute, Indiana, and both the owner, Mr. Frank Crawford, and the architects, Johnson, Miller & Miller, of the same city, are to be congratulated for the success of this house.



Entrance





Here is an expression of real American architecture

An Exceptional House

HERE is a house that seems to have literally grown into its site. The walls are of wide, weathered shingles, the gray tone of which acts as a foil for the white painted entrance. Two wide porches help to blend the house with the surroundings.

The plan is most unique for a Colonial house. There are two entrances, one at the side into the living room and one leading from the porch at the right into an entry which also opens into the living room. A hall leading from the entry contains the main stair, a coat closet

and a toilet. The kitchen and dining room are contained in a one-story extension. The second story contains three bedrooms and two baths.

The house was designed for Mr. Charles I. Barber of Knoxville, Tennessee, by Barber & McMurry, architects, of the same city.



First floor plan



Second floor plan



The tile roof is largely responsible for the Italian character of this house

A Symmetrical House

FEW of our houses are symmetrical. Even in formal designs where the openings and other features are kept exactly symmetrical, there is usually an extra porch or other extension at one side that is not repeated at the other. Often this is not a serious defect but sometimes it spoils the entire effect.

The C. V. Bronson house, designed by Barber & McMurry, architects, Knoxville, Tennessee, is an example in which symmetry is maintained, at least insofar as the front is concerned

which is all that is ordinarily attempted in house design. The symmetry is obtained here by balancing the sun room at one end with a porch at the other.

Much of the quality of the design is due to the brick facing which is of paving brick, which, because of its large size, adds distinction to the wall. Brick of ordinary size is used around the entrance. The shutters prevent the wall from appearing too bare.

The plan is of the central hall type with a study in place of the usual dining room. The breakfast room serves as a dining room except on special occasions when the study may be utilized for this purpose.



First floor



A wide flower box adds interest to the entrance



Second floor



In a short time this house will have grown into its site, due to the planting which has just been set out

A Seven-Room Bungalow with a Corner Porch

READERS of NATIONAL BUILDER sometimes inquire why we publish pictures that show houses under unfavorable conditions, before the yard planting has grown enough to take away the barren effect. The reason is this, we gather the most of our material in person while on the road. Our territory is the entire United States, which means we must step high, wide, and often in order to get around. Therefore, we are forced to adopt the old saying, "A bird in the hand is worth two in the bush," for our motto. When we see a suitable building we photograph it and trust our readers' imaginations for the rest. Anyhow, such a picture isn't deceptive—the house stands on its own bottom, so to speak.

The bungalow shown on this page is located in Dallas, Texas, and is the home of Mr. P. L. Beardon. The construction is of brick veneer on frame except for the porch piers which are solid brick.



Floor plan

The elevation of the house is simple and pleasing. The shutters and the arched entrance to the porch add decorative notes, which, together with the sweep of the roof over the porch, make it a pleasing design. The chimney has been made one of the most important elements of the composition.

The corner porch is a feature of the plan, as it forms the main entrance to the house. The drive runs alongside of it and a cement platform between them makes it possible to step from a car almost directly to the shelter of the porch or vice versa. The living room has windows on three sides, thus insuring ample light and ventilation. There is a breakfast room between the kitchen and the dining room.

Another feature is the outside entrance to the rear bed room. This door makes it possible to enter the house from the garage without passing thru the important rooms.



Repeating the lines of the main gable makes this entrance harmonious

A Texas Bungalow with a Steep Roof

MANY amateur logicians tell us that high pitched roofs should be used only in climates of much snow, and that low pitched roofs should be used in hot climates. As a matter of fact, in the comparatively mild climate of France we find among the steepest of all roofs, while in the Swiss Alps the roofs are made extremely flat to hold the snow which is valued as furnishing a warm blanket for the houses.

All of which brings us down to the accompanying illustrations which show a house built and owned by the Kirkgard Construction Company of Dallas, Texas. W. Kirkgard of Dallas was the architect.

The steep roof aids materially in taking this house out of the commonplace, and the slight flare at the lower portion of the gables gives a finished appearance that is agreeable. The use of corbeled brick brackets to seat these flares is simple and

effective. As there is no second story, dormers were not required in

the roof, thus avoiding the choppy appearance that disfigures so many roofs. Windows and louvers in the gables furnish ventilation for the roof space.

The plan is of the bungalow type and contains seven rooms and a large side porch. Two of the bed rooms are *en suite* with a bath between. A bath with a shower instead of a tub serves the other bed room. Note that the two rear bed rooms are open to ventilation on three sides.

A portion of the side porch extends inside the line of the house. It is thus made less conspicuous and takes up less of the width of the lot, both of which are decided advantages.

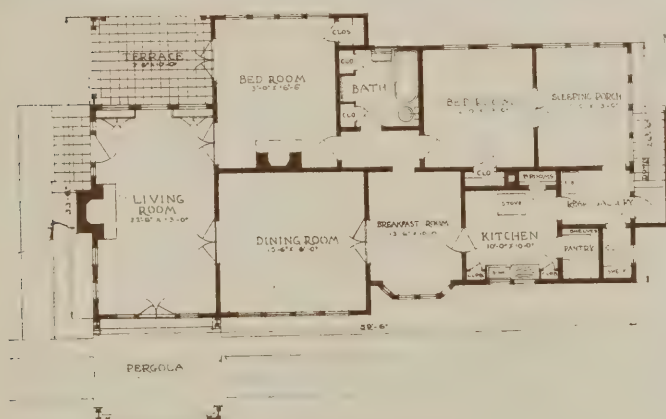
A breakfast room of unusual size is located between the dining room and the kitchen, thus being useful for pantry purposes if desired. There is no basement.



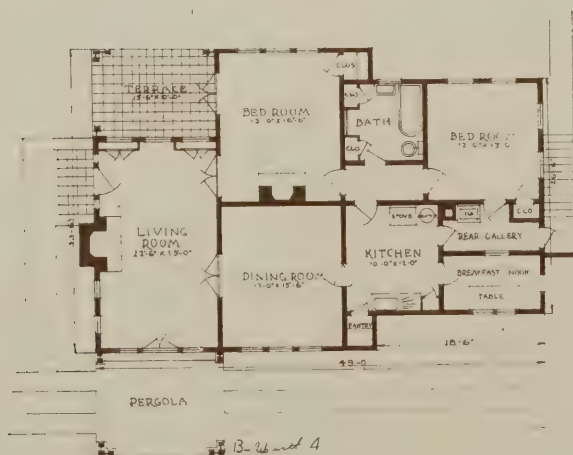
Floor plan



In certain portions of the country quarry tile are popular for facing steps, terraces, porches, etc.



As originally planned



As actually built

Boiling Down a Plan

IN most cases there are two stages in laying out plans. In the first, a plan is laid out to include all of the features that the owner's fancy may dictate. This often results in producing a larger or more expensive layout than is desirable. Then comes the boiling down process in which the relative importance of the features must be carefully weighed to the end that only the really important features shall be included.

The two accompanying plans show a case in point. The upper plan shows the first plan evolved for the house, while the lower plan shows how it was boiled down to reduce the length of the house. With reference to the changes that were made: the first plan shows a large breakfast room between the kitchen and the dining room; a large pantry off the kitchen; a large closet off the rear gallery, and a sleeping porch on the rear. In the revised plan, the breakfast room is reduced in size and placed in the corner behind the kitchen; the pantry is reduced in size and relocated, and the gallery closet and the sleeping porch are omitted entirely. This results in a reduction of ten feet in the length of the house—quite an important saving in a house where ground space or expense are to be considered. It should be noted that except for narrowing the dining room two feet, no other changes were made in the plan.

The house is the home of Mr. K. L. Johnson of San Antonio, Texas. Beverly Spillman, Alamo Bank Building, San Antonio, was the architect.



The iron railed flower box of brick is permanent and slightly

A Bungalow with a Front Bed Room

MANY people who prefer the bungalow type of house rather than the two-story kind, also prefer a front bed room, and are sometimes doubtful if a bungalow plan will permit this feature.

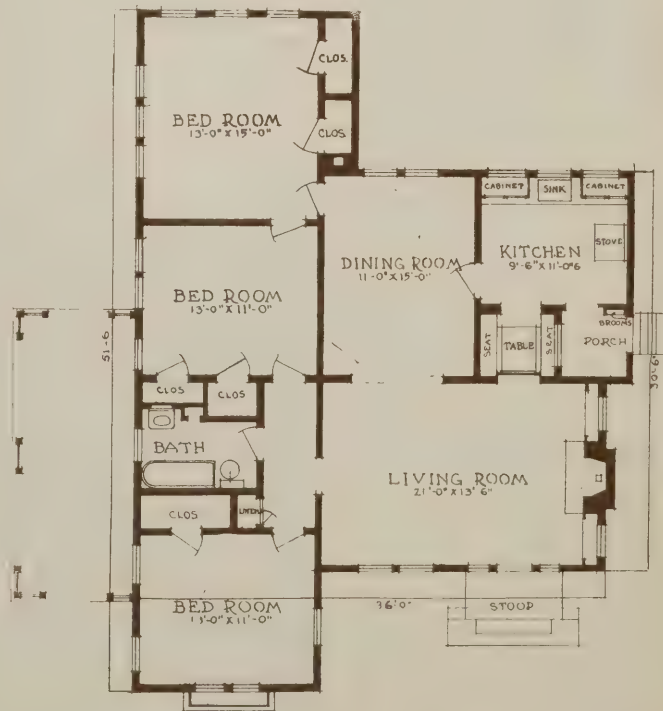
In the home of Mr. Joseph Mueller, designed by C. B. Schoepple & Co., architects, Gunter Building, San Antonio, Texas, this requirement has been met in a satisfactory manner. The bed room has been projected in front of the main line of the house so that three sides are available for light and ventilation. It should be noted that the rear bed room could also be exposed in a similar manner by moving the present closet to a position along the inner wall between the middle bed room and the rear one. All of the bed rooms have generous closets; the two rear bed rooms having two closets each, and the front bed room closet is large enough to be divided if desired. A linen closet in the hall and a towel closet in the bath room provide additional closet space.

The kitchen cabinets are provided with outside windows and glazed doors to provide light in the cabinets as well as additional light for the kitchen. The recess in the living room wall, opposite the breakfast alcove table, is provided with open book shelves.

The position of the porch at the left side of the house is unusual in that it is not directly accessible from the interior of the house.

A short hall connects two of the bedrooms with the bathroom between. The rear bedroom is connected to the adjacent one by a door or it may be entered by

means of a door from the dining room. The breakfast alcove has a built-in table and seats and has a borrowed light from the rear porch. The living room has a fireplace flanked by bookcases and is separated from the dining room by a wide arch.



Floor plan



The vine covered pergola extends the lines of the house and frames the garage

A House with a Pergola Garage Entrance

PERGOLAS add a decorative note that is popular in house design. Often, however, they are located without rhyme or reason and detract from, rather than add to, the attractiveness of a house.

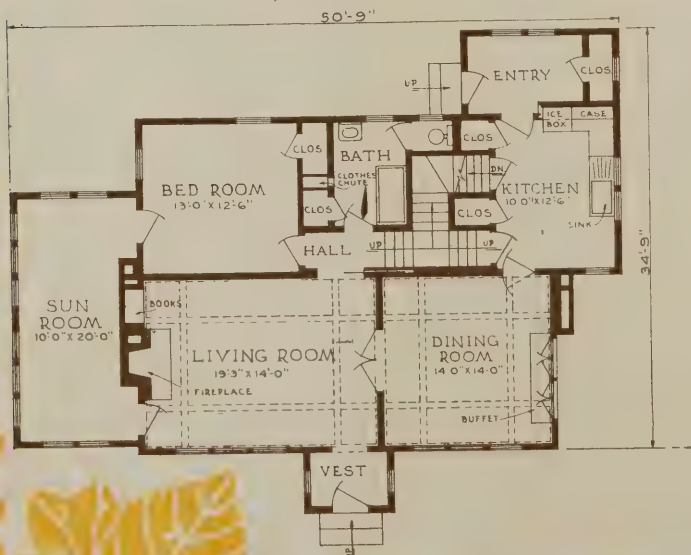
The design of the home of Mrs. A. H. Kuyper at Pella, Iowa, employs a pergola in a logical and attractive manner, in that it causes the house to appear longer and also forms an attractive approach to the garage.

The plan contains six rooms and bath worked out in an ingenious manner. A feature of the first floor is the

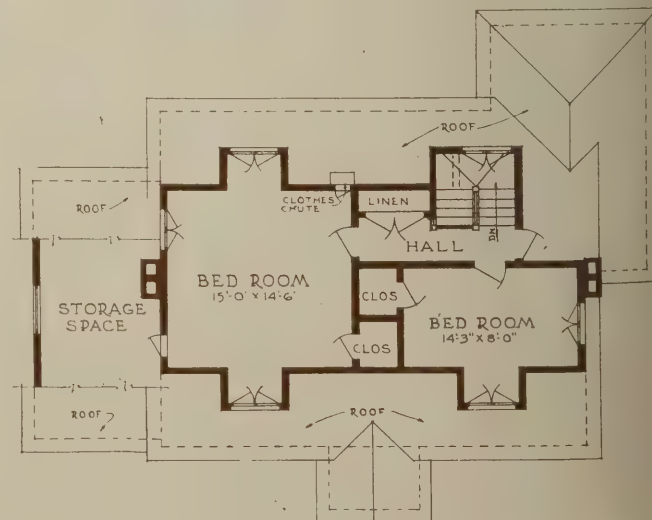
bedroom and bath which it contains. Such a bedroom is preferred by many people and in any case comes into good play when there is illness in the house. Note that one end of the sunroom may be used as a sleeping porch in connection with the bedroom. The first story bathroom solves the problem of a downstairs toilet.

The stair to the two bedrooms of the second story may be reached from either the kitchen or the hall. There is no bathroom in the second story.

The architect was James Verhey of Pella, Iowa, and the builder was R. Lautenbach of the same city.



First floor plan



Second floor plan



A pergola porch with an awning sun shade is an attractive and practical feature

Four Rooms with Attached Garage

IT is beginning to be understood that the use of attached garages with small houses offers a way of increasing the apparent size of the house and at the same stroke usually effects a saving in cost.

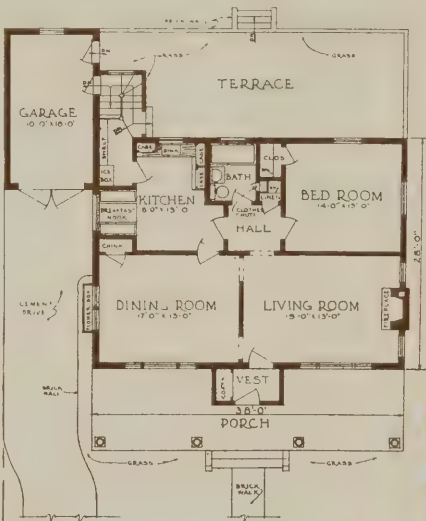
In the home of E. Dean Huber at Danville, Illinois, the garage is set back farther than is ordinarily the case in order that the attached garage may serve to mask one end of the terrace which extends along the rear of the house.

The plan shows a very compact bungalow of four rooms. A projecting vestibule entrance with a coat

closet protects the living room from sudden drafts. The customary wide arch between the living room and the dining room is replaced by narrower arched openings at each end of the dividing wall.

A high cabinet for storing blankets extends above the linen closet and the bathroom door. A laundry chute is located under the medicine case in the bathroom. A basement extends under the entire house.

The architect was Walter Martins of Danville, Illinois. R. S. Jackson and Sons of the same city were the builders.



Floor plan



Left—Rear view. A fenced-in garden in the rear makes full use of the lot



This bungalow can be built with or without a basement

Two Plans for a Wood Bungalow with Battened Gables

FOR those who admire the low lying house with wide overhanging eaves and open cornice, this attractive simple bungalow is recommended. It has something of the feeling of the Swiss chalet and therefore a sort of rustic charm.

The house owes much of its inviting appearance to the fact that it sets low on the ground with no visible foundation lines and one goes up but two steps from the lawn to the level of the front door.

The walls are covered with beveled siding and the gables with

boards laid vertically with battens covering the cracks between them. This is a very interesting effect and makes the use of elaborate ornamental woodwork detail unnecessary and undesirable. Note the openings in the gables just under the ridges; they permit free ventilation of the attic and so help to keep the interior cool in summer.

It is interesting to note that two floor plans have been worked out for this bungalow. It is the larger of the two which fits the house as illustrated, setting on a low foundation. The smaller plan is for the house reversed and with the floor line two and one-half feet above the grade. In this smaller plan there is a large kitchen with a dining alcove but no dining room. This sort of arrangement is preferred by some families because the dining room is not a room in continual use.

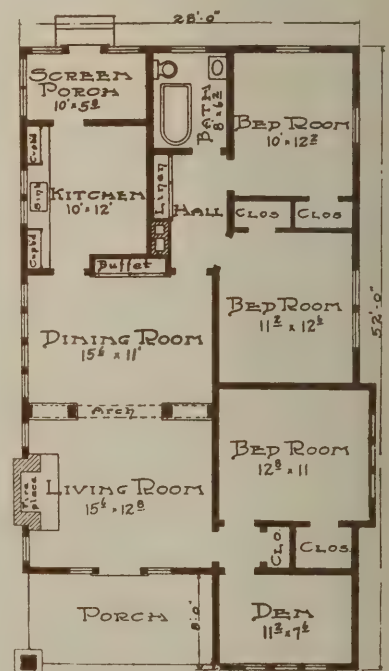
In the large plan are a number of interesting features. There is a good sized living room with a fireplace at one end and separated by a colonnade opening from the dining room. This wide opening makes the two rooms appear as one large room and they can be so used when entertain-

ing. The front projection of the house is occupied by a den with windows in only one wall, the others being used by bookcases and furniture. A coat closet near the den provides space for the coats of guests.

These plans and designs are by E. W. Stillwell & Company, 137 California Building, Los Angeles.



Small plan for house reversed and with floor line 2 1/2 feet above the grade



Plan for the house as illustrated



This brick bungalow, in Chicago, was planned and designed for a narrow city lot

A Brick Bungalow with a Side Entrance

HOUSES on narrow lots often present a problem with respect

to the location of the entrance. This is especially true where an entrance opening directly into the living room is not desired and where a hall leading to the rear rooms would require the sacrifice of considerable space in the front portion of the house. In such cases the side entrance often solves the difficulty.

The side entrance type of plan has been used in the home of F. A. Schutte, Chicago, and for which Jesse Schiller, 7606 Crandon Avenue, Chicago, was the architect.

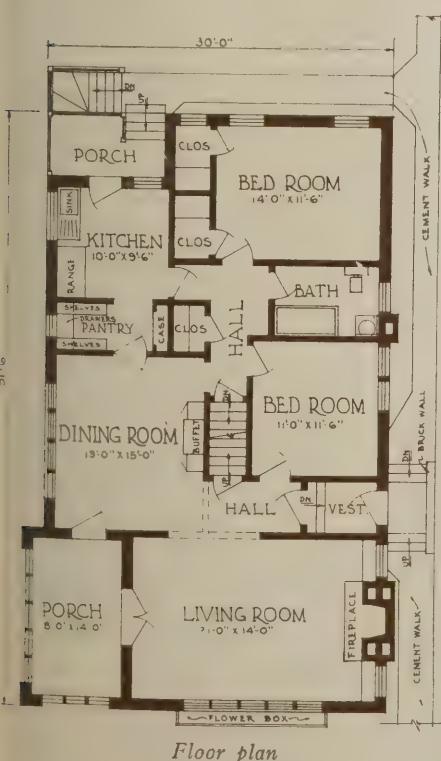
This house is a good example of the value of trellises and flower boxes in adding interest to a design. The value of yard planting is also seen here. The white woodwork repeats the white jointing of the wall and the green shrubs bring out the color of the brick, in both cases adding interest to the composition.

The side entrance is from a brick platform into a vestibule the floor of which is two steps below the main

floor level. Then comes a small hall which is separated from the living room and the dining room by wide cased openings. A door from this hall opens into one of the bed rooms and another door conceals the stair to the attic.

The living room contains a fireplace, flanked by bookcases at one end, and French doors lead onto an enclosed porch at the other. The dining room has a built-in buffet at one side and a glazed door to the porch.

A pantry fitted with a case at one end and shelves and drawers at the other is located between the dining room and the kitchen. The kitchen opens onto a rear porch under which is the entrance to the basement. A rear hall provides circulation in the rear portion of the house and contains a linen closet and the interior stair to the basement. The bath is conveniently located between the two bed rooms.



Floor plan



The clean cut appearance of this house is largely due to the contrast of stucco and shingles

A House with Garage Attached

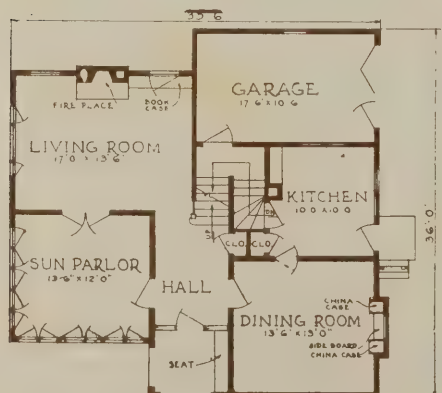
HOUSES with attached garages may be considered in the evolutionary stage. The entire automobile subject is such a comparatively new one that the most of us haven't wholly decided just what to make of it. Nevertheless it seems likely

that the advantages of attaching the garage to the house will eventually cause this method to become the customary one.

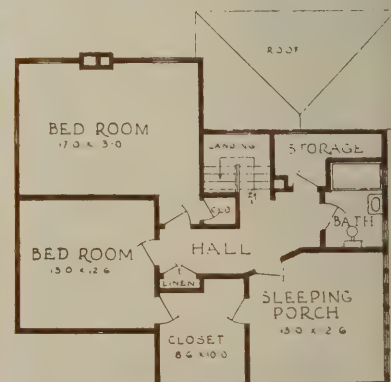
The house which illustrates this page is the home of J. B. Taylor, designed by B. S. Staley & Sons of Centerville, Iowa. The base course is of brick, the walls above this to the second story window sills are stucco on frame, and above this shingles, laid in alternate narrow and wide courses.

The garage may be entered from the house by means of a door off the landing, part way down the kitchen stair to the basement.

A large sleeping porch is a feature of the second story and a large closet between it and one of the bed rooms serves as a dressing room.



First floor plan



Second floor plan



Vines and shrubbery add to the attractiveness of this house

A Six-Room House with a Corner Entrance

CORNER entrances seem particularly suited to picturesque types of houses. Or perhaps it should be stated the other way around because a corner entrance type of plan seems naturally adapted to a picturesque

design rather than to a formal one.

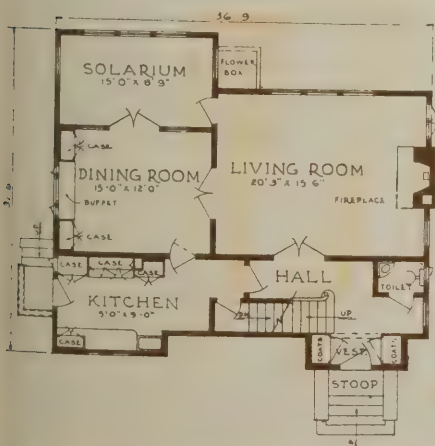
The home of Louis V. Phelps at Grinnell, Iowa, was designed by Ladehoff & Son, architects, of Clinton, Iowa. The construction is of stucco on frame.

The entrance is into a sort of vestibule with a cased opening separating it from the hall. Two coat closets at each side of the vestibule and a toilet in the hall are practical conveniences. The kitchen is of the narrow "laboratory" type well fitted with wall cases.

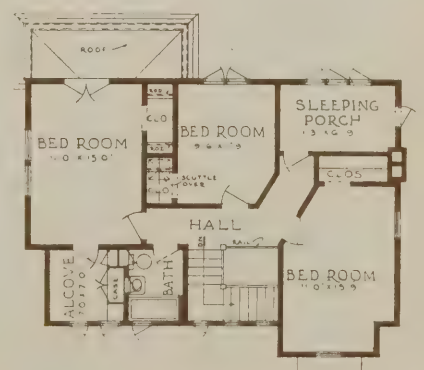
The solarium opens from both the

dining room and the living room and may be used as a dining porch if desired.

The second story contains three bed rooms and a sleeping porch. One of the bed rooms opens into an alcove that may be used as a dressing room or for sewing, etc.



First floor plan



Second floor plan



The slight breaks in the roof aid in softening the lines

An American House Showing Italian Influence

OUR residential neighborhoods are becoming so spotted with houses designed in the Italian style that one begins to wonder where it will all end. If, however, past experience is any guide we may be reasonably certain that the somewhat exotic character of many of these houses will be generally recognized and that future work in this style will be severely modified to conform to American ideas.

The construction is of wood frame finished with stucco. The arched

openings with their accompanying buttresses, the excellent spacing of the windows, and the plain wall surfaces make this a beautiful and distinctive house.

A basement, containing a heater room, laundry, and storage rooms, extends under the entire house. A stair from the kitchen entry serves the basement.

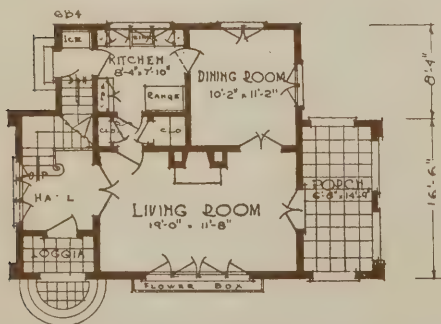
The main entrance is from the corner through a small loggia into a compact hall which contains the main stair and is separated from the living room by French doors. The living room is well lighted and spacious and has a fireplace at one side, thus providing an interior chimney which is considered more efficient and economical than an exterior one. French doors lead into the dining room in one case and onto the porch in the other.

The kitchen is compact and well arranged and a small storage pantry makes it possible to pass from

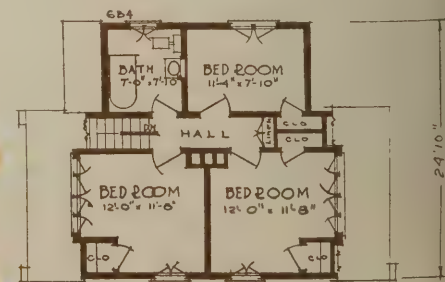
kitchen to living room without permitting cooking odors to follow. Space in the rear entry provides for the ice box.

A generous bath, a linen closet, and three bed rooms, two with cross ventilation, complete the second story.

This house is the home of W. B. Hayes at Champaign, Illinois. It was designed by The Architects' Small House Service Bureau for the Weyerhaeuser Forest Products, St. Paul, Minnesota, from whom plans may be obtained.



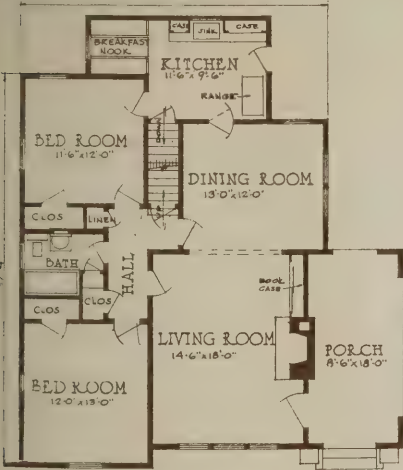
First floor



Second floor



A Distinctive Little House in the Country Club District in Kansas City, Missouri

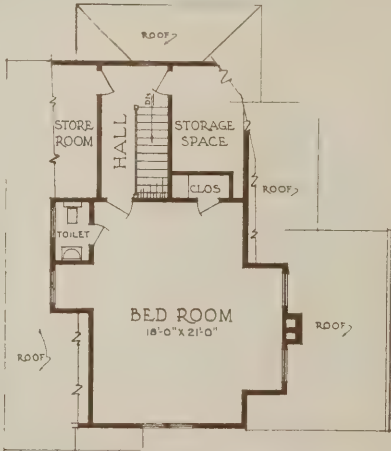


First floor plan

Mr. Robert Hovey, Owner; J. A. Wagner, Contractor, and Harry F. Alman, Architect, 1115 East 40th Street, Kansas City, Missouri



Rear view from the garage



Second floor plan



The Country Club District in Kansas City is laid out for beautiful homes. This is the view one gets of Mr. Hovey's house from a nearby sunken garden





The New England Colonial type of house continues to be a favorite

A Six-Room Colonial House

THERE is something about red brick chimneys, white clapboards and green shutters that, to many people, creates a home feeling that nothing else suggests. And for all of us it may be said that we admire such a house, even tho we may prefer other materials and effects for our own use. The above preference is no doubt largely due to the fact that many people who prefer the Colonial style cannot feel that a design is really Colonial unless these materials are used. This is, of

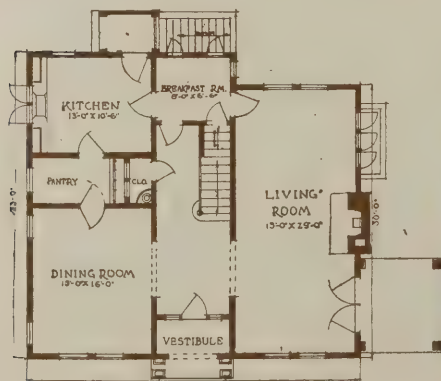
course, a mistake, because ample precedent may be found in old Colonial work for the use of practically any of the materials with which we finish the exteriors of our houses today.

The home of Mr. J. W. Andes at Knoxville, Tennessee, was designed by R. F. Graf, architect of the same city. The style is Colonial, which is enhanced by the surrounding foliage. The detailing of the entrance harmonizes with that of the porch, thus establishing a harmony between these features.

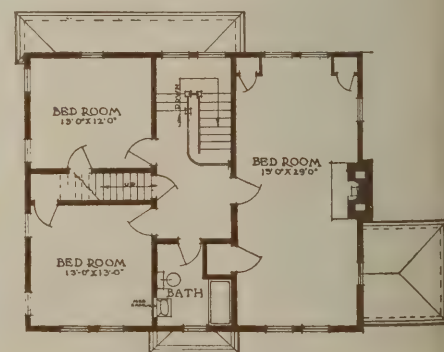
At one side of the living room is a fireplace flanked by French doors to the porch.

The location of the breakfast room is unique, but results in it being accessible from either the kitchen, the living room or the hall. The kitchen opens into an enclosed entry under which is the exterior stair to the basement.

The second story contains three cross ventilated bedrooms and a bath. One of the bedrooms extends along one entire side of the house and contains a fireplace.



First floor



Second floor



The use of French doors at the entrance is unusual but pleasing

A Colonial House in Brick

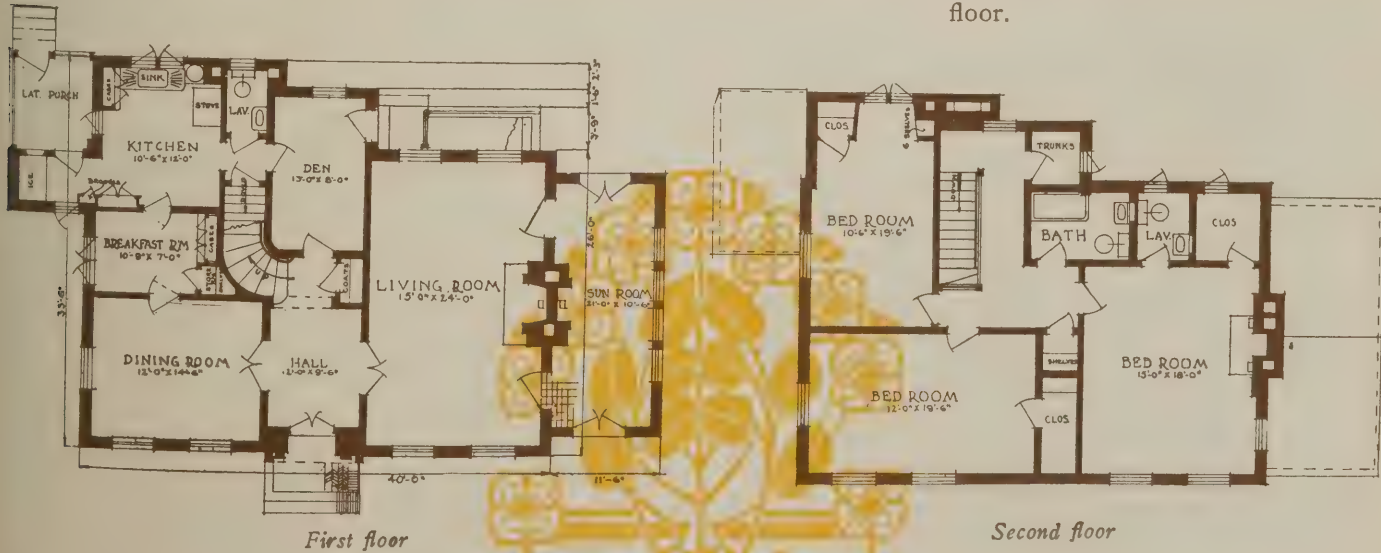
THE design of this house is in a way reminiscent of some of the old Colonial houses built of brick in the Maryland and Virginia district. It has the same breadth of effect and handling of detail that characterizes those old houses. It was designed for Mr. R. H. Cooley of Knoxville, Tennessee, by Barber & McMurry of the same city.

The entrance is of the broken scroll type with deep reveals paneled with wood. The plan is of the central hall type with dining room at one side and living room at the other. The quarter turn at the bottom of the main stair is attractive and practical. A small den or study at the rear of the hall has a door to the exterior.

The living room contains a fireplace flanked by glazed doors which

open onto the sun room. The sun room also has a fireplace and the floor is of quarry tile. Both the living room and the dining room are separated from the hall by French doors. A breakfast room, which also serves as a pantry is provided. A lavatory is located in the rear of the house.

There are three bed rooms, a bath and a separate toilet on the second floor.





Rough-cast stucco and stained trim are combined in this house

A Six-Room Bungalow, Broadside to the Street

THIS house is of the six-room bungalow type, but its location on a wide lot made it possible to turn the house broadside to the street, which results in a plan that is somewhat out of the ordinary. In this arrangement, the living room, the dining room and two of the bedrooms overlook the street. In the estimation of many people, this is a decided advantage over the usual type of plan.

A feature of the entrance is the wide porch or walled terrace which extends in front of the living room and

the dining room. The front door opens into a small vestibule which in turn opens into both the living room and the dining room. A window seat built in where the vestibule projects into the dining room is a feature, as is the wide opening between the living room and the dining room.

A compact hall entered from one corner of the living room provides circulation for the three bedrooms and the bath. Each of the bedrooms has a large closet and two linen closets are provided in the hall. The kitchen is entered from the rear by means of a grade-line entry with space for a refrigerator at the kitchen landing. A door between makes the bathroom accessible from the kitchen.

A corner lot is the most desirable site for this bungalow, and preferably one on which the building would face the south. If the plan were reversed the dining room would fall on the east, a desirable location for that room, and the bedrooms on the west, where two of them would get the benefit of the prevailing south breeze in the summer. If the house were placed on an inside lot with the dining room on the street, then the bedrooms would have the privacy of the rear garden.

This house is located in Kohler, Wisconsin, and was designed by Brust & Philipp, architects of Milwaukee.



Floor plan



The design conforms to that of the nearby club house

Four Rooms and No Basement

THE community club house of the Pitt River Power Plant No. 1 in the Cascade Mountains of California is described on page 90 of this issue of NATIONAL BUILDER, and in that connection reference is made to a group of cottages which have been built to serve the living requirements of employees who have families.

The illustrations on this page show one of these cottages—a four-room type.

Perhaps the most striking feature of this plan is the absence of a basement and the substitution of an above ground auxiliary building instead. This building is really an ell extended from the main house. It is entered by means of an open passage which opens into the store room on one side and the laundry on the other. The storage room contains a large bin for wood and smaller bins for other supplies, and is provided with a closet in one corner for stor-

ing jam and other home-canned goods. A large pantry is located opposite the laundry.

The kitchen is well arranged and is furnished with generous cabinet and closet space. A cooling cabinet with an outside louver vent is built into one corner of the pantry, a double drainboard sink and the cooking range are located along the outside wall under the windows, and another range, an electric one, is provided in one corner. There is no dining room, so a combination cabinet between the kitchen and the living room is provided.

The living room has a fireplace in one corner and is separated from one of the bedrooms by French doors. There are two bedrooms, each with ample closet space, and a bathroom. A rear hall contains a linen closet.

The exterior of the cottage is finished with stained wood to conform to the materials used in the nearby club house.





Polychrome tile inserts and red Spanish tile add color to the walls

A Charming Little Double House of Spanish Style

THIS house is designed for two families and is of frame construction, with the outside walls finished with cement-stucco over metal lath. The stucco is given a semi-rough surface, and is tinted in a deep

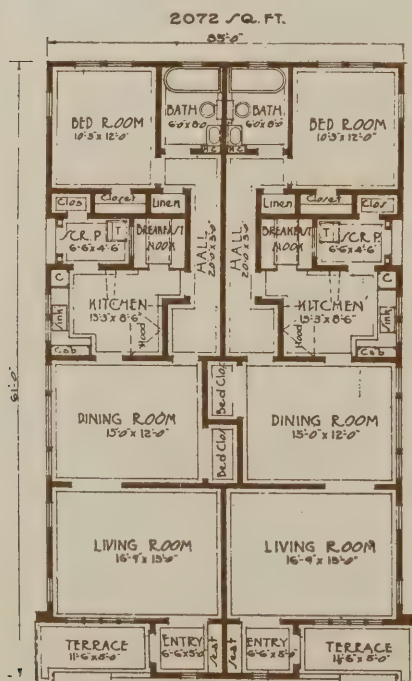
cream shade. The wood trimming is done in light bluish gray, and over the two groups of casement windows on the front are cornices covered with red roofing tile. Tile is also used for roofing a portion of each side of the vestibule extension. The main roof, however, consists of roofing composition, laid on a flat surface. The foundation is of concrete.

As here built, the house contains, in each half, living room, dining room, kitchen, a cozy little breakfast nook, one bed room, bath room, a connecting hallway and the usual screened service porch. The architect, however, also offers a much

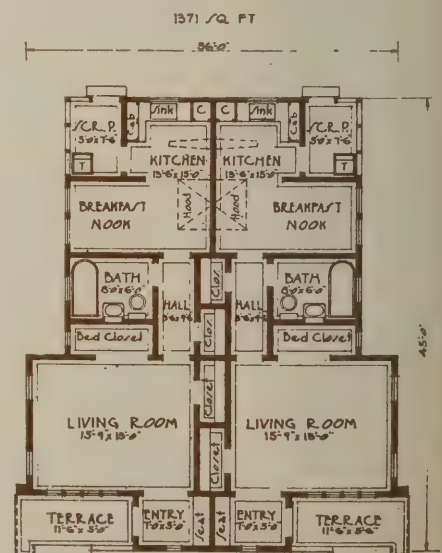
smaller plan for producing a house on the same front appearance.

Both plans are especially well supplied with delightful closets and built-in features.

The house is equipped with built-in gas radiators for heating. It is built in Los Angeles, California, and the plans are by Floyd A. Dernier, of that city.



Plan as built



Suggested reduced plan



The studio type window and the arched entrance porch are features of the design

A Small Stucco House with a Patio

THIS little house is of particularly distinctive style. In the first place, it will be noticed that the front part of it is quite a little higher than the rear portion. This, it may be explained, is for the purpose of allowing the living room an unusually high ceiling. It also, as will be seen, permits an uncommon and highly effective window treatment. The front entrance, designed with a little corner porch and a closed-off vestibule, comprises another enhancing feature of exterior design, and the roomy patio adds especially to the charm of both the inside and the outside.

The outside walls are of cement-stucco over metal lath and frame construction, and are tinted a light cream shade. The roof of the front portion consists of red roofing tile, and of the rear it is of composition on a flat surface. The wood trim is reddish brown, with a rubbed finish of bluish gray, and the front door, which is finished with a rounded top

and paneled, is of brown mahogany. The entrance porch and vestibule are floored with cement, as is also the patio and the house foundation is of concrete.

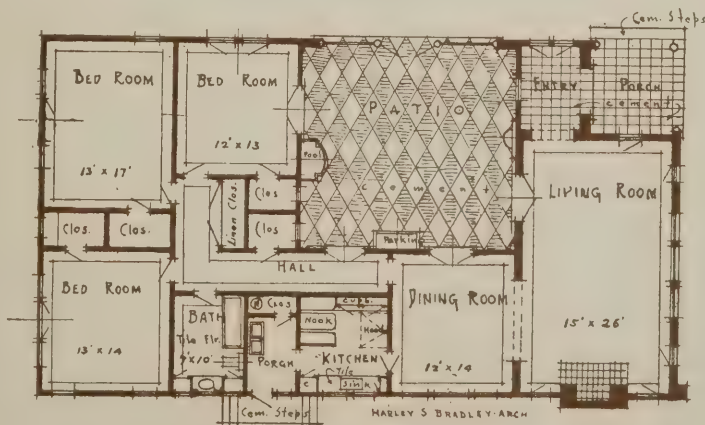
The patio is particularly delightful. While it is semi-enclosed along the outer or driveway side, it is without overhead covering, except for a tile cornice. Its cement flooring consists of an alteration of red and gray, in diamond pattern, and it is designed with a wall fountain, a pool for gold-fish and a small parking space. It may be entered from either the living room, the dining room, the

hall or one of the bed rooms. A pair of French doors provides this connection in each instance.

The house contains six rooms and a bath. The kitchen is equipped with a delightful breakfast nook, with built-in seats and table, and also contains excellent cupboards, a draft cooler-closet and the other customary conveniences. The bath room possesses two small towel cabinets.

The ceiling of the living room is vaulted to unusual height, and that of the dining room is finished with a plaster cove. The woodwork in these two rooms is finished in gray, and the walls are of cement plaster and painted. In the hall and bed rooms the woodwork is in old ivory and the walls are papered, and in the bath room and kitchen the woodwork is in white enamel, while the walls are given a smooth, hard finish and enameled.

The house is built in Los Angeles, California, and was designed by Harley S. Bradley, architect, of that city.



Floor plan



A two-family house in Manhattan, Kansas. Miss Machir, owner; Alice Walton, architect

A Home That Will Pay For Itself

ALL homes do that, of course, because no house is entirely an expense: it is an investment. A house is about the only purchase that a family can make which appreciates, instead of depreciates, in value with use.

But here is a house that can actually be made to pay for itself in dollars and cents as well as in comfort and pleasure to its owners. It is designed and planned for occupancy by two families, the owner presumably using one floor and renting the other to someone else. The first floor is a five-room layout with bath, while the second floor is a unique arrangement of a living room with a combination kitchen and dining alcove and one bedroom with a bath. Both

apartments have open verandas and each living room has a fireplace.

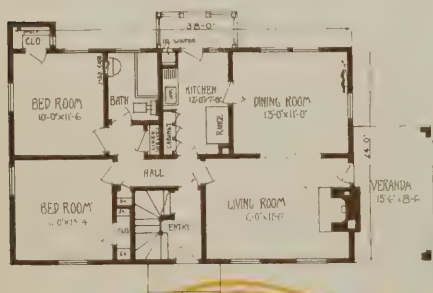
It is interesting to know that this unique house was planned and designed for a woman by a woman. The owner is Miss Machir, of Manhattan, Kansas, and the architect was Miss Alice Walton, 404 Scarritt Arcade, Kansas City, Missouri.

If the plans for this building were not shown here, no one reading these pages would think for a minute that this was a two-family house. It has none of the appearances of the ordinary duplex or two-flat building. Hence, it would not violate the homelike feeling of any residential section. In fact, it might contribute considerable to the appearance of any neighborhood, for the design is much better than that of many one-family houses.

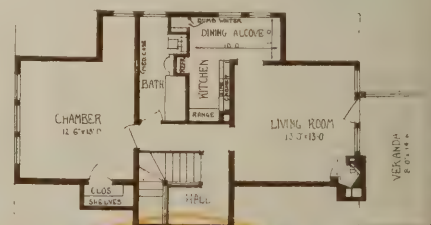
While both occupants use the

same front door, yet there is absolute privacy for each, for the downstairs entry can be entirely shut off from the main apartment. A secondary hall inside the first-floor apartment connects the two halves of that apartment, one of which is occupied by the living quarters and the other by the sleeping quarters, a very desirable arrangement. Each of the downstairs rooms, except the kitchen, has light and ventilation from two sides. The bathroom and kitchen are opposite one another, so as to effect economies in plumbing.

This is also true of the kitchen and bathroom on the second floor. The kitchen here, however, is considerably smaller than downstairs. Note the dumbwaiter in the dining alcove. It permits the delivery of groceries, etc., to the second floor.



First floor plan



Second floor plan



In the upper left-hand corner is how the old house looked before it was renewed and enlarged as shown above. Frank Weber, owner; J. W. Young, contractor, Keokuk, Iowa

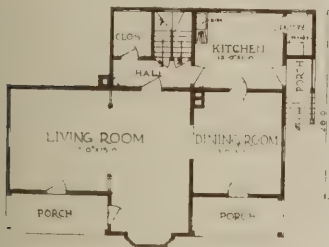
How an Old House Was Remodeled with Successful Results

MR. FRANK WEBER, in Keokuk, Iowa, owned the old house shown in the upper left-hand corner photograph, which, by its design, in-

dicates that it was built by the preceding generation. It was located on Grand Avenue, Keokuk's "Riverside Drive," and the building up of new modern residences on all sides was fast making the old house conspicuous by its ugliness and old-fashioned appearance.

With the assistance of Mr. J. W. Young, the shell of this old building was utilized and developed into the attractive half-timber and stucco residence shown above. The neighbors predicted that it would be money thrown away to attempt to do anything with the old house, but the final results show what can be obtained with the help of a skilled builder.

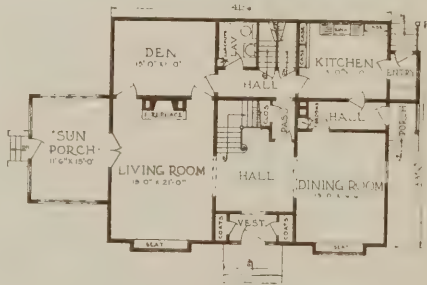
The plans on the left show the layout of the old house and those on the right show the house as it was remodeled and enlarged.



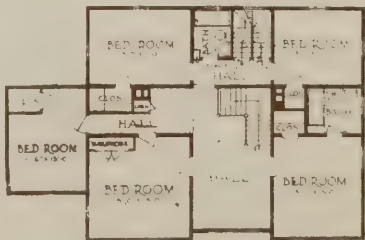
First floor plan of the old house



Second floor plan of the old house



First floor plan of the new house



Second floor plan of the new house





The large windows of the first story give almost the effect of French doors

A Small Rectangular House That Isn't Boxlike

SMALL houses of a simple rectangular plan type such as this one offer considerable difficulty in the way of producing an attractive design. The boxlike character that is suggested by such a plan is often responsible for a sort of mental panic on the part of the designer, who, in an attempt to overcome the imagined shortcomings of the plan, is apt to pile on ornamental and trick details until the result takes on the appearance of a beer garden.

The design of the house which illustrates this page is exceptionally good. The entrance is well detailed

and the large chimney is well proportioned, altho it might appear a trifle heavy if the brickwork had not been painted. Such small things as this make or break a house design. The shingled walls, the divided lights and the shutters and blinds, all play a part in making this design attractive.

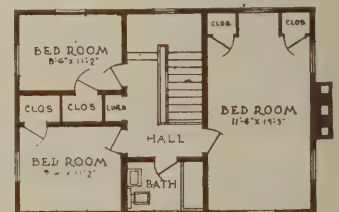
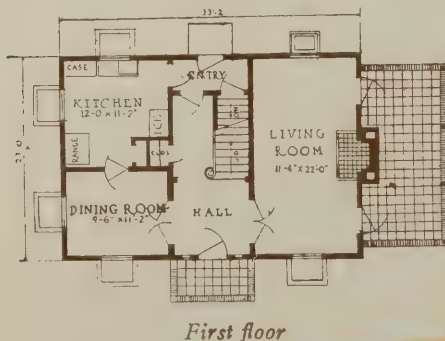
The kitchen seems rather large when compared with the dining room, but this no doubt is due to the owner's preference for this distribution of the space. The location of the entry at the rear of the main hall is excellently worked out, as it serves as an entry to the kitchen, and at the same time, a door into the main hall makes it available for use as an auto entry from the garage at the rear of the house. The location of the basement stair descending from the entry is convenient to the kitchen and also to the front hall, so that the furnace may be tended without wasting steps.

A well proportioned semi-ellip-

tical arch at the foot of the main stair divides the hall into two parts. Among other features of the interior is a built-in china cupboard—not shown in the sketch—in the dining room, and a well designed wooden mantel in the living room. The porch is open and is floored with concrete, colored and marked off in checkerboard fashion.

The second floor contains a bath and three bedrooms, one of which is very large, having the same area as the living room below.

This house is the home of Mr. Carl Stephens of Champaign, Illinois, and was designed by J. W. Royer, architect, of the same city.



Complete Working Drawings and Details

A Six-Room House Plus a Sun Room and a Sleeping Porch

House No. 6A65, designed especially for National Builder by The Architects' Small House Service Bureau

© 1924 by N. B. and A. S. H. S. B.

THIS plan is a typical brick house, the real quality of which will be brought out if bricks of an interesting color variation are used and if they are laid in white or cream colored mortar with joists of good thickness. The construction provides for solid brick walls furred on the inside to make them damp proof and cold proof.

Observing the plan, you will see that the stair hall, living room and sun room really make one whole apartment with the possibility, however, of each space being shut off in case the home owner should desire it. The dining room also may be included with the other rooms, more or less, to satisfy the individual desire.

One of the conveniences that will appeal to the housewife is the relation of the hallway to the kitchen. One may go to the second story from the kitchen without passing through the living room. In fact, from the kitchen one may go to the basement or to a grade entrance outside. We have learned that this is a convenience desired by many.

In the arrangement of the kitchen all those niceties which appeal to the scientific housewife of today have been provided. The arrangement is such that it is more a question of turning and reaching for things than walking for them. There is a broom

closet in this kitchen, and also a cloak closet in the rear hallway.

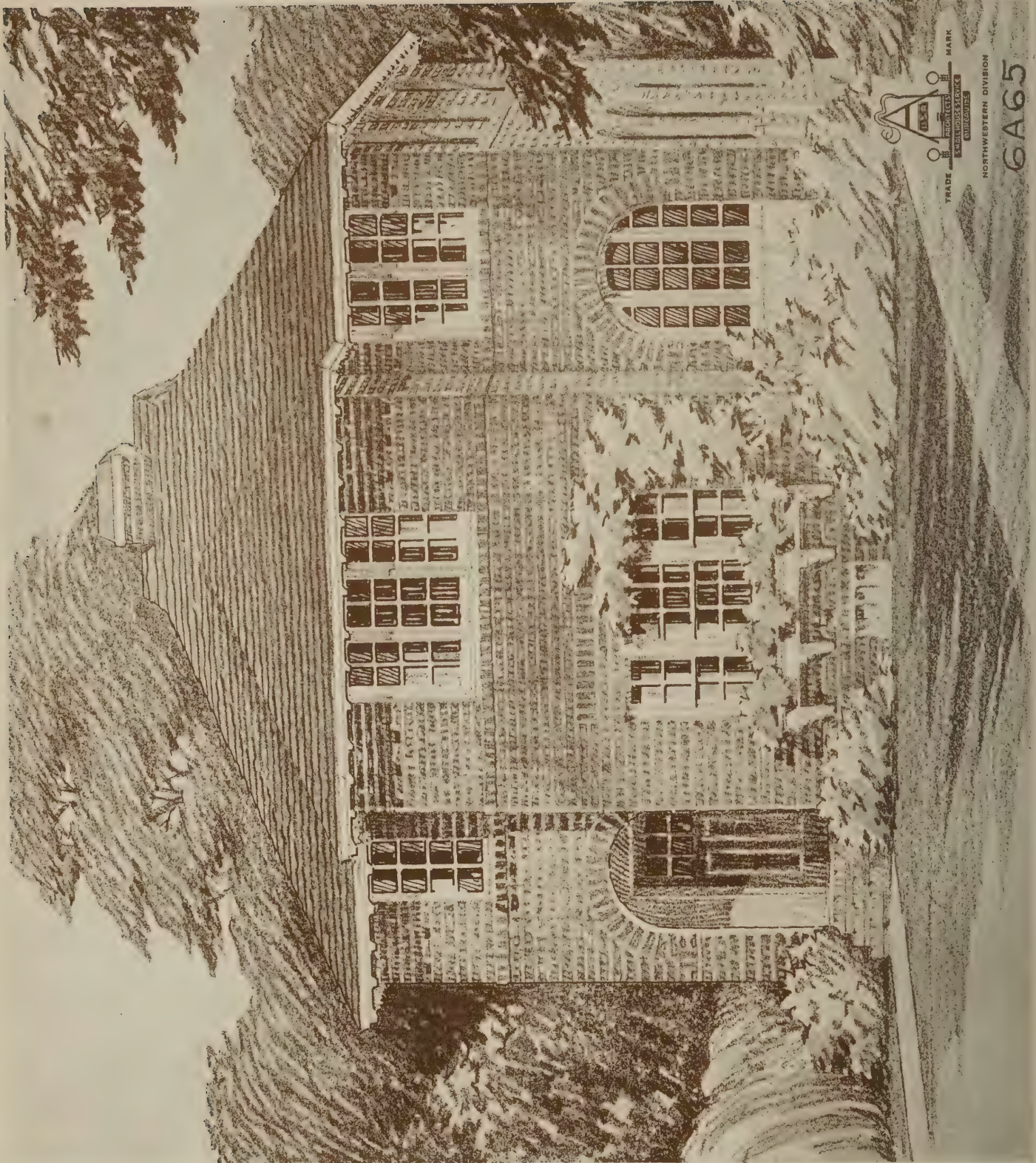
Bookcases flank one side of the fireplace in the living room. A plaster arch balances the other flank and opens into the dining room. The living room is remarkable for its fine wall spaces as well as for the open character of its connections. A large window along the front wall should insure fine light. The sun room balancing the stair hall is an innovation in these plans, with which no doubt many people will be greatly pleased.

In the second story one finds three bedrooms and a sleeping porch which could be made to accommodate three or four single size beds or cots. There is a large closet in each bedroom and an additional linen closet opening off the hallway. The second story windows are of the casement type. Double hung windows may be substituted if desired.

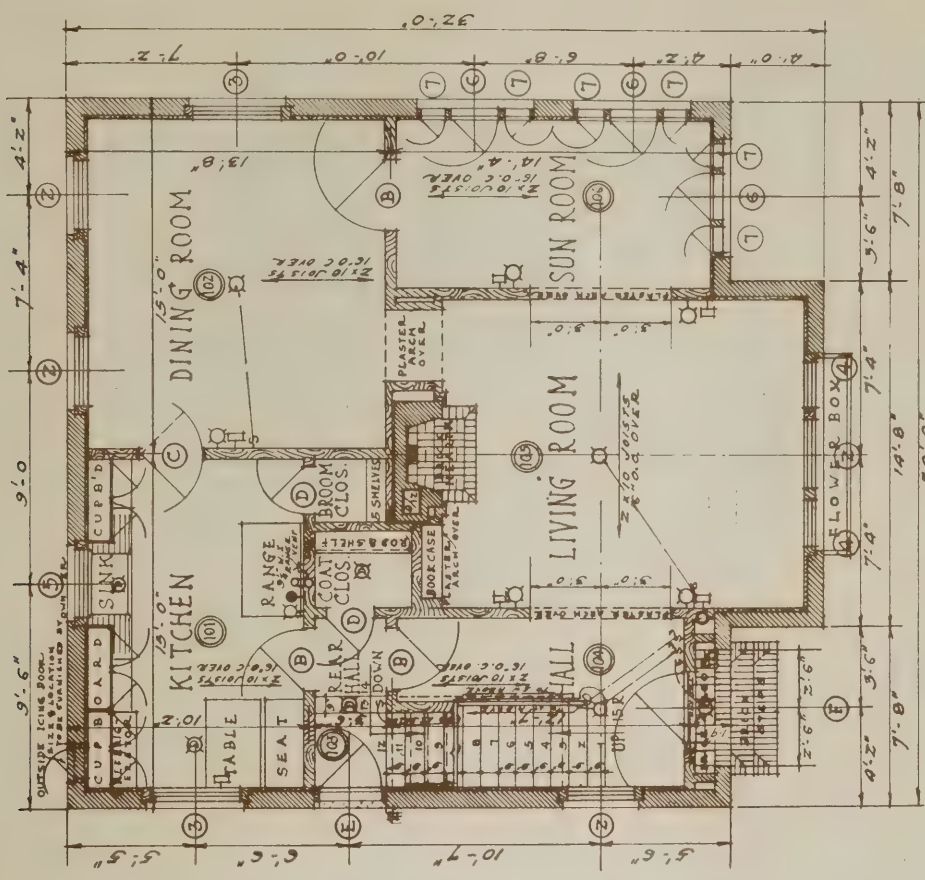
This house has been designed for a lot 40 or more feet wide. The arrangement of the rooms is such that it can be accommodated to almost any facing. Consideration should be given to prevailing wind, location of trees, outlook from the windows, and so on to determine whether or not the plans should be reversed.

The regular price of the plans for this house is \$30.50. (To NATIONAL BUILDER subscribers, \$15.50.)

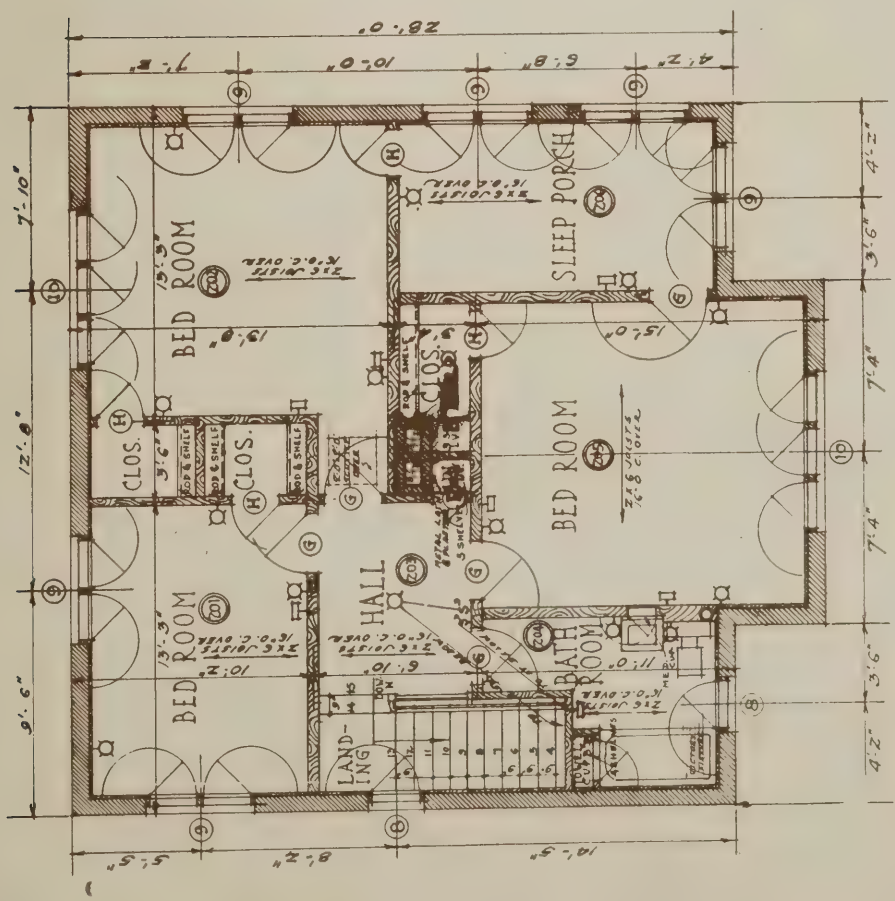
ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 65 and 66. These drawings are on a scale of $\frac{1}{4}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau, subscribers for "National Builder" desiring blue prints of the original of these plans, which are drawn on the scale of $\frac{1}{4}$ inch to the foot, are entitled to a 50 per cent discount off the Bureau's standard price, as stated in the last paragraph above. Orders should be addressed to "National Builder" for authenticating the purchaser as a bona fide subscriber, but checks should be made out to The Architects' Small House Service Bureau. Duplicate sets of blue prints are \$3.00 each; specifications are \$2.50 a set, and extra quantity surveys are \$3.00 a set.



The interest of this house is largely dependent on the handling of the brickwork. The upper portion of the wall, above the brick belt course, is to be laid in English Bond



FIRST FLOOR PLAN
SCALE - 1/4" INCH = 1 FOOT



SECOND FLOOR PLAN
SCALE - 1/4" INCH = 1 FOOT

HOME PLAN FOR

RATIONAL BUILDER - APRIL, 1924

THE ARCHITECTS SMALL HOUSE
SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
HOME OFFICE, MINNEAPOLIS

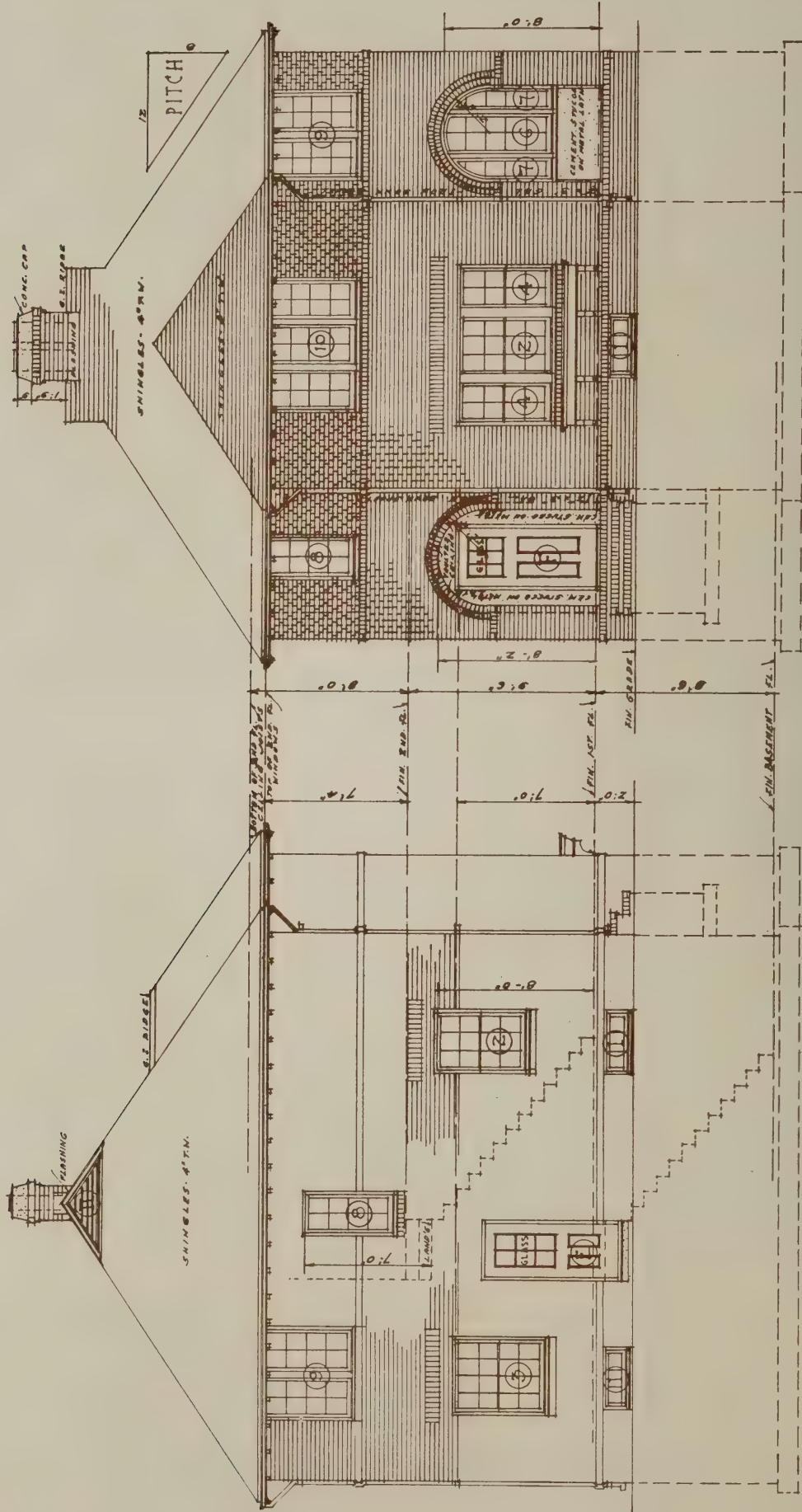
PLAN NO.
6A 65

SHEET NO.
2 OF 5

MATERIALS	ELECTRIC WIRING SYMBOLS
CONCRETE	CEILING OUTLET
BRICK	DROP (ORD)
WOOD	BRACKET
PLASTER	BASE PLUG
	SWITCH
	3-WAY SWITCH
	GAS OUTLET
	PUSH BUTTON
	BELL OUTLET
	BELL

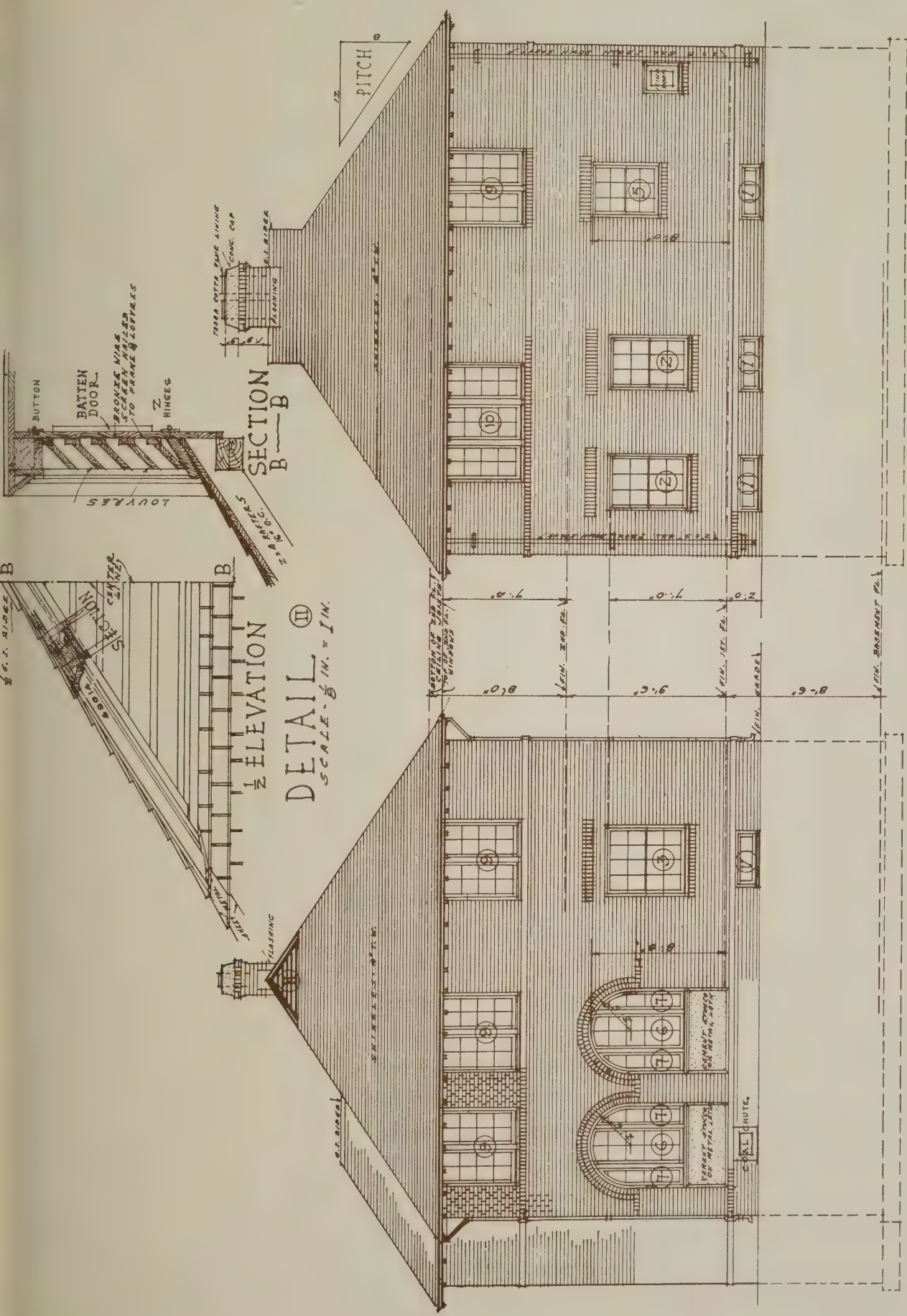
Stock numbers refer to mouldings in Universal Millwork Design Book No. 20. In case these mouldings cannot be procured, others of similar design and same may be substituted.
Provide 1/2" screen and storm sash for all exterior openings except for door unless otherwise noted. Bottom rail of storm sash to have vent method.

Dimensions are taken to outside of foundation walls, to outside of sills on exterior walls and center of studs for partitions.
Foundation walls shown concrete may be stone, brick, concrete block or load bearing hollow tile where building ordinances permit. Foundation walls may be 9" thick (with 20's footing) except in case of stone which shall be 10" thick.



-FRONT ELEVATION-
SCALE - 1/4" = 1 FOOT.

-SIDE ELEVATION-
SCALE - 1/4" = 1 FOOT.



-SIDE ELEVATION-
SCALE - 1/4" INCH = 1' FOOT

-REAR ELEVATION-
SCALE - 1/4" INCH = 1' FOOT

HOME PLAN FOR NATIONAL BUILDER - APRIL, 1924

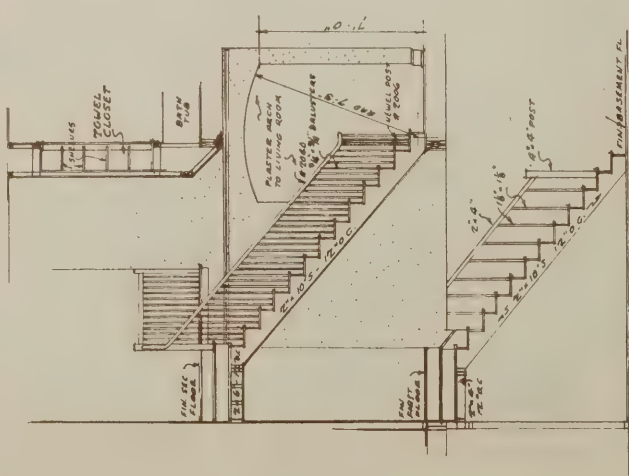
THE ARCHITECTS' SMALL HOUSE
SERVICE BUREAU
NICHOLLETTER DIVISION INC.
- HOME OFFICE MINNEAPOLIS -

PLAN-NO
6A 65

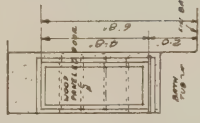
SHEET NO
4 OF 5

• SCHEDULE OF WINDOWS •			
QUANTITY	TYPE	DESCRIPTION	REMARKS
7	1	CELLAR EYES	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
2	2	DOUBLE HUNG	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
2	3	"	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
2	4	"	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
1	5	"	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
3	6	CORNER	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
6	7	"	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
2	8	"	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
12	9	"	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME
6	10	"	10 1/2" x 12 1/2" x 1 1/8" SASH FRAME

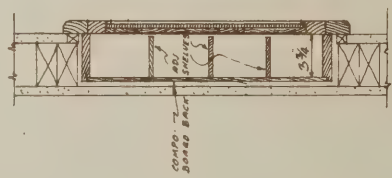
• SCHEDULE OF DOORS •			
QUANTITY	TYPE	SIZE	DESCRIPTION
1	A	20' x 6' 1/2"	UNU # 710
3	B	20' x 7' 1/2"	UNU # 1103
1	C	20' x 7' 1/2"	"
2	D	20' x 7' 1/2"	"
1	E	20' x 7' 1/2"	"
1	F	30' x 7' 1/2"	"
5	G	20' x 6' 1/2"	UNU # 1103
4	H	20' x 6' 1/2"	"
1	I	15' x 6' 1/2"	"



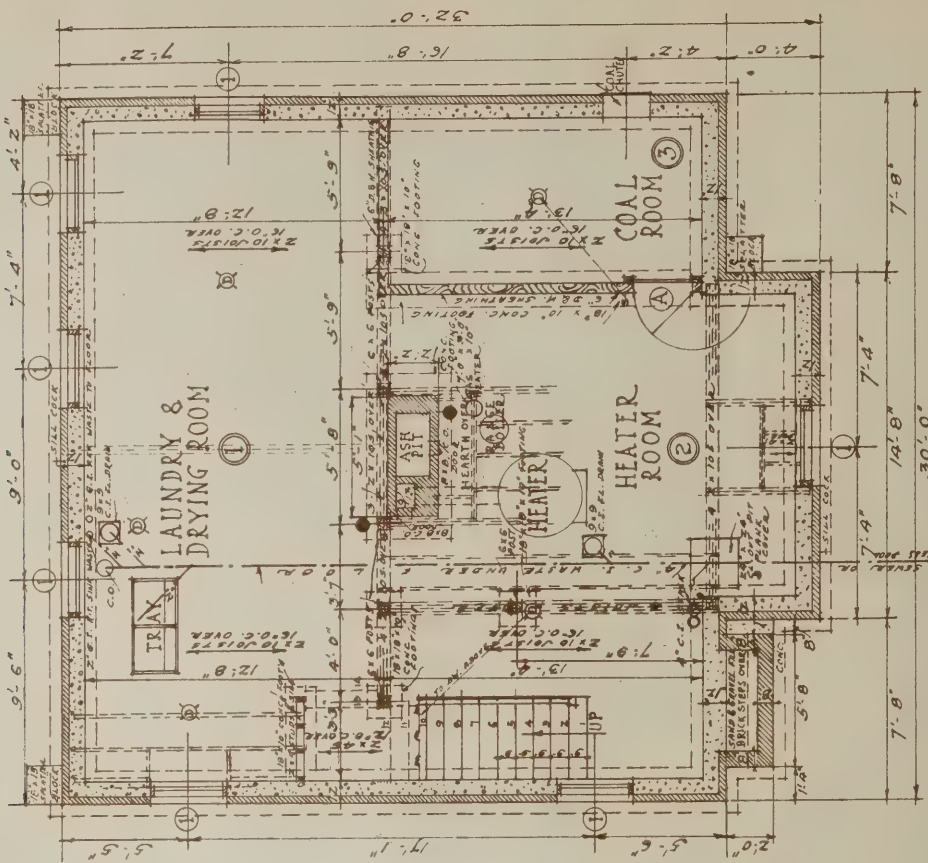
• SECTION THRU STAIRS •
SCALE 1/4" = 1'-0"



• ELEVATION OF TOWEL CLOSET •



SECTION
ELEVATION
• DETAIL OF MEDICINE CABINET •
SCALE 1/2" = 1'-0"



BASEMENT PLAN
SCALE 1/4" = 1'-0"

MATERIALS	ELECTRIC WIRING SYMBOLS
CONCRETE	CEILING OUTLET
DOOR CASE	3 WAY SWITCH
DOOR	DOOR

Dimensions are taken to outside of foundation walls, to outside of studs on exterior walls and center of studs for partitions.

Block numbers refer to moldings in Universal Millwork Design Book. For ease in ordering, specify block number and finish.



Home of Mr. Curtis Phillips, Centerville, Iowa; V. A. Banta, contractor

Beveled Siding and Green Blinds in a House of Colonial Design

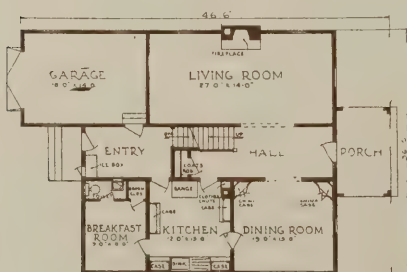
NATIONAL BUILDER has had the privilege of presenting several examples of the work of Mr. V. A. Banta, contractor and builder, in Centerville, Iowa. The December, 1923, number described the country club house which he has recently completed in that city and in September, 1923, "before and after" pictures were shown of an old house which he had remodeled and considerably improved for one of his customers. On page 38 in the issue of March, 1924, a little Dutch Colonial house with a rather original plan, which was worked out by Mr. Banta, was presented; and here is the home of Mr. Curtis J. Phillips, of Centerville, which happens to be the very next-door-neighbor to the little

Dutch Colonial house.

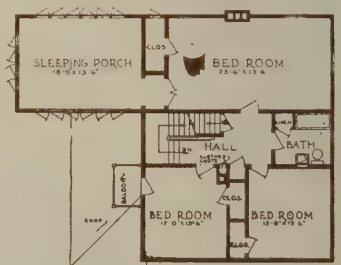
The fact is that this house of Mr. Phillips's was the first house of the kind ever built in Centerville and it was through Mr. Banta's interest in houses of better design and his desire to get away from the stereotyped bungalow, which he feels has seen its day, that Mr. Phillips was persuaded to build a house following Colonial traditions in practically every point of its exterior and interior design. Since this house was erected, quite a number of others have been built in Centerville, mostly by Mr. Banta, and his experience and the trend of building in his town plainly indicates that his customers are becoming more and more interested in houses with better architecture and are learning to appreciate the value of good proportions and tastefully designed details in small house work.

The Phillips house adheres closely to the symmetrical, center hall Colonial type. The exterior is covered

with beveled siding laid ten inches to the weather and painted white, with the blinds on the windows painted green. The twelve-light double-hung windows are used throughout. A modern feature is introduced in the large front porch, but here Colonial latticed porch columns and railing above have been employed very effectively. Small gabled dormers of becoming size and proportions relieve the flat expanse of the roof and provide light and ventilation for the spacious attic above the second floor. The roof is of asbestos shingles in various colors. The chimney is of red brick and the foundation is marked by a line of red bricks laid in a soldier course. The floor of the front porch is of 9x9 red quarry tile.



First floor plan



Second floor plan

Quantity Survey for House No. 6A65

Designed Especially for National Builder by
The Architects' Small House Service Bureau

See pages 57 to 63, inclusive, for description, perspective, complete working drawings and details

EXCAVATING 200 cu. yd. BACK FILL 54 cu. yd. FOUNDATION If 12" concrete, 43 cu. yd. gravel, 170 sax cement. If 9" concrete, 31 cu. yd. gravel, 126 sax cement. If 12" tile, 20100 CBM tile, 16 cu. yd. mortar. If 9" tile, 15200 CBM tile, 12 cu. yd. mortar. FACE BRICK 14500 face brick. 12 cu. yd. mortar. 580 lb. mortar color. COMMON BRICK 14000 common brick. 10 cu. yd. mortar. 2000 brick wall ties. CEMENT FLOOR cu. yd. gravel. 4 cu. yd. sand. 62 sax cement. 4 spatter blocks. CHIMNEY 3100 common brick. 225 face brick. 100 fire brick. 12 sq. ft. hearth tile. 140 inside face brick. 70 lin. ft. 8x12 flue tile. 20 lb. fire clay. 3 cu. yd. mortar. 1 cast iron ash dump. 1 throat and damper. 1 angle 4x3-$\frac{3}{4}$"-4'0. 2-8x8 clean outs. 1-6" thimble. 1-8" thimble. 5 yd. metal lath. LATH 9 yd. metal lath over furnace. 1200 wood lath. PLASTER 9 yd. plaster on metal. 300 yd. plaster on wood. 17 yd. Keene's cement. 4 yd. stucco on metal lath panels. TILE FLOORS 49 sq. ft. ceramic tile. 11 lin. ft. cove base.	LUMBER 6-6x6-7 posts. 4-2x10-14 girders. 4-2x10-12 girders. 4-2x10-18 girders. 4 ft. 2" plank clean out cover. 84 lin. ft. 2x4 basement partition plates. 20-2x4-7 basement partition studs. 280 ft. D & M basement partition sheathing. 4-2x10-14 basement stair horses. 3-2x4-16 shelving supports. 40 ft. D & M shelves. 48-2x10-14 first floor joist. 6-2x10-10 first floor joist. 4-2x10-14 doubles under partitions 4-2x10-16 headers. 300 lin. ft. 1x3 bridging. 850 ft. com. bds. first floor subfloor. 1080 ft. 13/16x1$\frac{1}{2}$ first floor finish floor. 117-1x2-9 first floor wall stripping. 1300 lin. ft. grounds. 276 lin. ft. 2x4 first floor partition plates. 80-2x4-9 first floor partition studs. 3-2x10-16 first floor stair horses. 24-2x10-14 second floor joist. 14-2x10-14 second floor joist. 15-2x10-14 second floor joist. 4-2x10-16 headers. 900 ft. com. bds. second floor sub- floor. 1020 ft. 13/16x1$\frac{1}{2}$ second floor fin- ish floor. 117-1x2-8'0 second floor wall strip- ping. 348 lin. ft. 2x4 second floor partition plate. 100-2x4-8 second floor partition studs. 53-2x6-14 second floor ceiling joist 900 ft. D & M attic floor. 117 lin. ft. 2x8 wall plates. 1-1x6-12 ridge rafter. 14-2x4-18 rafters. 6-2x4-10 rafters. 48-2x4-14 rafters. 4-2x4-16 rafters headers. 118 lin. ft. 2x4 rafters tail headers. 1500 ft. com. bds. roof sheathing. 13$\frac{1}{2}$ M shingles. 25-2x4-18 scaffold and extras. 10-2x4-14 scaffold and extras.	8-2x6-14 scaffold and extras. 6-2x8-16 scaffold and extras. 4-2x10-16 scaffold and extras. 10-2x4-16 roof braces. 8-1x6-8 collar ties. 2-2x4-14 valley rafters. 4-2x4-18 hip rafters. INSULATION 730 sq. ft. $\frac{1}{2}$" vegetable fibre or equal for second floor ceiling. 3 rolls rosin for floors. 3 rolls felt for roof. MILLWORK Frames: 7 cellar frames 10x8-3L-1$\frac{3}{8}$. 3 single fr. 10x12-12L-1$\frac{3}{8}$. 1 triple fr., ctr. 10x12-12L, sides 10x 12-8L-1$\frac{3}{8}$. 2 single fr. 10x12-16L-1$\frac{3}{8}$. 1 single fr. 10x10-12L-1$\frac{3}{8}$. 3 triple casement fr., ctr. 10x12-10L, sides 10x12-5L-1$\frac{3}{8}$. 2 single casement fr. 10x12-8L-1$\frac{3}{8}$. 6 double casement fr. 10x12-8L-1$\frac{3}{8}$. 2 triple casement fr. 10x12-8L-1$\frac{3}{8}$. 2 louvre frames. Windows: 7 sash 10x8-3L-1$\frac{3}{8}$. 4 wds. 10x12-12L-1$\frac{3}{8}$. 2 wds. 10x12-16L-1$\frac{3}{8}$. 2 wds. 10x12-8L-1$\frac{3}{8}$. 1 wd. 10x10-12L-1$\frac{3}{8}$. 3 casements 10x12-10L-1$\frac{3}{8}$. 6 casements 10x12-5L-1$\frac{3}{8}$. 20 casements 10x12-8L-1$\frac{3}{8}$. Storm Sash: 7 st. sh. 10x8-3L-1$\frac{1}{8}$. 4 st. sh. 10x12-12L-1$\frac{1}{8}$. 2 st. sh. 10x12-16L-1$\frac{1}{8}$. 2 st. sh. 10x12-8L-1$\frac{1}{8}$. 1 st. sh. 10x10-12L-1$\frac{1}{8}$. 3 st. sh. 10x12-10L-1$\frac{1}{8}$. 6 st. sh. 10x12-5L-1$\frac{1}{8}$. 20 st. sh. 10x12-8L-1$\frac{1}{8}$. 2 st. sh. for louvre frames. Screens: 7 screens 10x8-3L-1$\frac{1}{8}$. 4 screens 10x12-12L-1$\frac{1}{8}$. 2 screens 10x12-16L-1$\frac{1}{8}$. 2 screens 10x12-8L-1$\frac{1}{8}$. 1 screen 10x10-12L-1$\frac{1}{8}$. 3 screens 10x12-10L-1$\frac{1}{8}$. 6 screens 10x12-5L-1$\frac{1}{8}$. 20 screens 10x12-8L-1$\frac{1}{8}$.
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2 screens for louvres.....
Outside Door Frames:
1 dr. fr. 2'8x7'0-1¾.....
1 dr. fr. 3'0x7'0-1¾.....
1 icing door frame.....
Outside Doors:
1 door 2'8x7'0-1¾.....
1 door 3'0x7'0-1¾.....
1 icing door.....
Storm Doors:
1 st. dr. 2'8x7'0-1¾.....
1 st. dr. 3'0x7'0-1¾.....
Screen Doors:
1 sc. dr. 2'8x7'0-1¾.....
1 sc. dr. 3'0x7'0-1¾.....
Outside Millwork:
96 dentil rafter tails.....
146 lin. ft. cornice.....
1—8'6 flower box.....
4 flower box brackets.....
Interior Doors:
1 door 2'6x6'6-1¾ (No. 710).....
3 doors 2'8x7'0-1¾ (No. 1103).....
1 door 2'8x7'0-1¾ (No. 1103).....
2 doors 2'0x7'0-1¾ (No. 1103).....
5 doors 2'6x6'8-1¾ (No. 1103).....
4 doors 2'0x6'8-1¾ (No. 1103).....
1 door 1'6x6'8-1¾ (No. 1103).....
Jambs:
1 jamb 2'6x6'6.....
3 jambs 2'8x7'0.....
1 jamb 2'8x7'0.....
2 jambs 2'0x7'0.....
5 jambs 2'6x6'8.....
4 jambs 2'0x6'8.....
1 jamb 1'6x6'8.....
Interior Trim:
7 sides single trim 10x8-3L.....
3 sides single trim 10x12-12L.....
1 side triple trim, center 10x12-12L, sides 10x12-8L.....
2 side single trim 10x12-16L.....
1 side single trim 10x10-12L.....
3 side triple trim, center 10x12-10L, sides 10x12-5L.....
2 side single trim 10x12-8L.....
6 side double trim 10x12-8L.....
2 side triple trim 10x12-8L.....
2 side louvre trim.....
1 side door trim 2'8x7'0.....
1 side door trim 3'0x7'0.....
1 side icing door trim.....
2 side door trim 2'6x6'6.....
6 side door trim 2'8x7'0.....
2 side door trim 2'8x7'0 (no stops).....
4 side door trim 2'0x7'0.....
10 side door trim 2'6x6'8.....
8 side door trim 2'0x6'8.....
2 side door trim 1'6x6'8.....
1 flight basement stair with rail.....
1 flight main stair with rail.....
1—3'0 book case.....
1 mantel shelf.....
1—3'6 kitchen cupboard.....
1—6'6 kitchen cupboard.....
1—3'8 kitchen table.....
1—3'8 kitchen seat.....
1 meter cabinet.....
1 medicine cabinet.....

1 utility door.....
1 utility door jamb.....
1 utility door trim.....
1 scuttle door.....
1 scuttle door jamb.....
1 scuttle door trim.....
630 lin. ft. base.....
630 lin. ft. base shoe.....
630 lin. ft. base molding.....
156 lin. ft. ceiling cove.....
360 lin. ft. picture molding.....
48 lin. ft. band molding.....
48 lin. ft. closet shelving.....
40 lin. ft. closet hook strip.....
30 lin. ft. closet clothes rod.....
6 lin. ft. threshold.....
2 drain boards.....

TINWORK

8 lin. ft. ridge roll.....
3 finials.....
100 lin. ft. hip roll.....
12 lin. ft. flashing.....
26 lin. ft. valley tin.....
13 lin. ft. chimney flashing.....
200 tin shingles.....
134 lin. ft. gutter.....
40 gutter hangers.....
6 outside miters.....
2 inside miters.....
4 nipples.....
4 offsets.....
4 elbows.....
4 shutoffs.....
4 strainers.....
80 lin. ft. conductor.....
12 conductor hooks.....
1—8'6 flower box lining.....

LINTELS

Lintels for 7 frames 10x8-3L.....
Lintels for 3 single frames 10x12-12L.....
Lintels for 1 triple, center 10x12-12L, sides 10x12-8L.....
Lintels for 2 single fr. 10x12-16L.....
Lintels for 1 single fr. 10x10-12L.....
Lintels for 2 single fr. 10x12-8L.....
Lintels for 6 double fr. 10x12-8L.....
Lintels for 2 triple fr. 10x12-8L.....
Lintels for 1 door 2'8x7'0.....
Lintels for 1 icing door.....

EXTERIOR PAINTING

39 gal. shingle stain.....
3 gal. trim paint.....
1 gal. sash color.....
1 gal. screen paint.....
2 gal. acid for brick cleaning.....
1 gal. oil.....
10 lb. putty.....
1 gal. turpentine.....

INTERIOR PAINTING

11 gal. white paint.....
8 gal. enamel.....
4 gal. filler.....
3 gal. shellac.....
9 gal. varnish.....
3 gal. floor shellac.....
5 gal. floor varnish.....
2 gal. oil.....
1 gal. Japan.....
1 gal. turpentine.....

1 gal. alcohol.....
4 doz. sheets sandpaper.....
3 lb. steel wool.....

WEATHER STRIPPING

7 sash 10x8-3L-1¾.....
4 windows 10x12-12L-1¾.....
2 windows 10x12-16L-1¾.....
2 windows 10x12-8L-1¾.....
1 window 10x10-12L-1¾.....
3 casements 10x12-10L-1¾.....
6 casements 10x12-5L-1¾.....
20 casements 10x12-8L-1¾.....
1 dr. 2'8x7'0-1¾.....
1 dr. 3'0x7'0-1¾.....

CAULKING

17 single frames.....
6 triple frames.....
6 double frames.....
2 door frames.....
1 icing frame.....
1 coal chute.....

HARDWARE

7 cellar sash sets.....
9 sash locks.....
9 sash lifts.....
29 casement sash sets with butts.....
47 storm sash sets.....
47 screen sets.....
1 front door set with butts.....
1 rear door set with butts.....
1 icing door set with butts.....
2 storm door sets.....
2 screen door sets.....
4 flower box bolts.....
30 anchor bolts.....
25 joist anchors.....
1 floor hinge.....
2 push plates.....
16 inside door sets.....
18 door bumpers.....
4 stair rail brackets.....
4 doz. clothes hooks.....
900 lb. assorted nails.....
10 lb. assorted brads.....
320 lb. sash weights.....
2 hanks sash cord.....
1 coal chute.....
4 pr. ornam'tl butts.....
2 cupboard turns.....
2 elbow catches.....
2 drawer pulls.....
1 set castors.....
1 bin pull.....
4 drawer pulls.....
5 pr. ornam'tl butts.....
3 cupboard turns.....
2 elbow catches.....
1 pr. ornam'tl butts.....
1 cupboard turn.....
1 cupboard turn.....
1 pr. ornam'tl butts.....
1 pr. ornam'tl butts.....
1 cupboard turn.....
4 friction stays—utility door.....
1 pr. hinges for scuttle door.....
4 angles for seat.....
4 angles for tables.....

kitchen cabinet

kitchen cabinet

meter cabinet

medicine cabinet

towel cabinet

A Modern Apartment Hotel

The Lincoln Park Manor, a New Chicago Apartment Hotel, Designed by Olsen and Urbain, and Built by Fred D. Mateer, Provides a Home-like Atmosphere for Guests

HOTEL rooms have long been thought of as cold, cheerless places, without any effort made to provide home comforts for guests. "Each hotel room is just like every other," is the usual complaint of hotel dwellers. "They are all standardized, the same kind of chairs, the same styles of furniture, the same room layout, all so precisely arranged in a chilly regularity"—that's what they used to say.

It remained for the broad vision of a Chicagoan, Fred D. Mateer, to capitalize the idea of building a hotel which would be different from the ordinary, standardized, type of building so commonly encountered. He considered providing a real home for people who were forced to live in hotels, and he thought so well of the idea that he was willing to back his judgment with hard cash. After a consultation with his architects, Olsen & Urbain, a series of hotels was decided on and the building treated here, the Lincoln Park Manor, is the first of the group. The correctness of Mr. Mateer's judgment needs no other proof than the fact that the Lincoln Park Manor has known nothing but prosperity since it was erected.

The building is five stories high, fireproof throughout, built of reinforced concrete. Cut stone trim is used for the exterior, the whole building below the first story window sills being cut limestone. A wrought-iron fence, and leaded glass windows on the first floor add to the attractiveness of the ensemble. The build-

ing is set back from the sidewalk, thus providing for a terrace and garden in front.

Entrance to the lobby is through a pair of heavy doors with leaded glass panels. One enters into a softly lighted room with gold-colored, palm-finished walls, the floor deeply carpeted and furniture tastefully arranged and in harmony with the general color scheme. The clerk's desk and the elevator is located at the end of the lobby

opposite the entrance, thus giving the clerk on duty a commanding view of the floor.

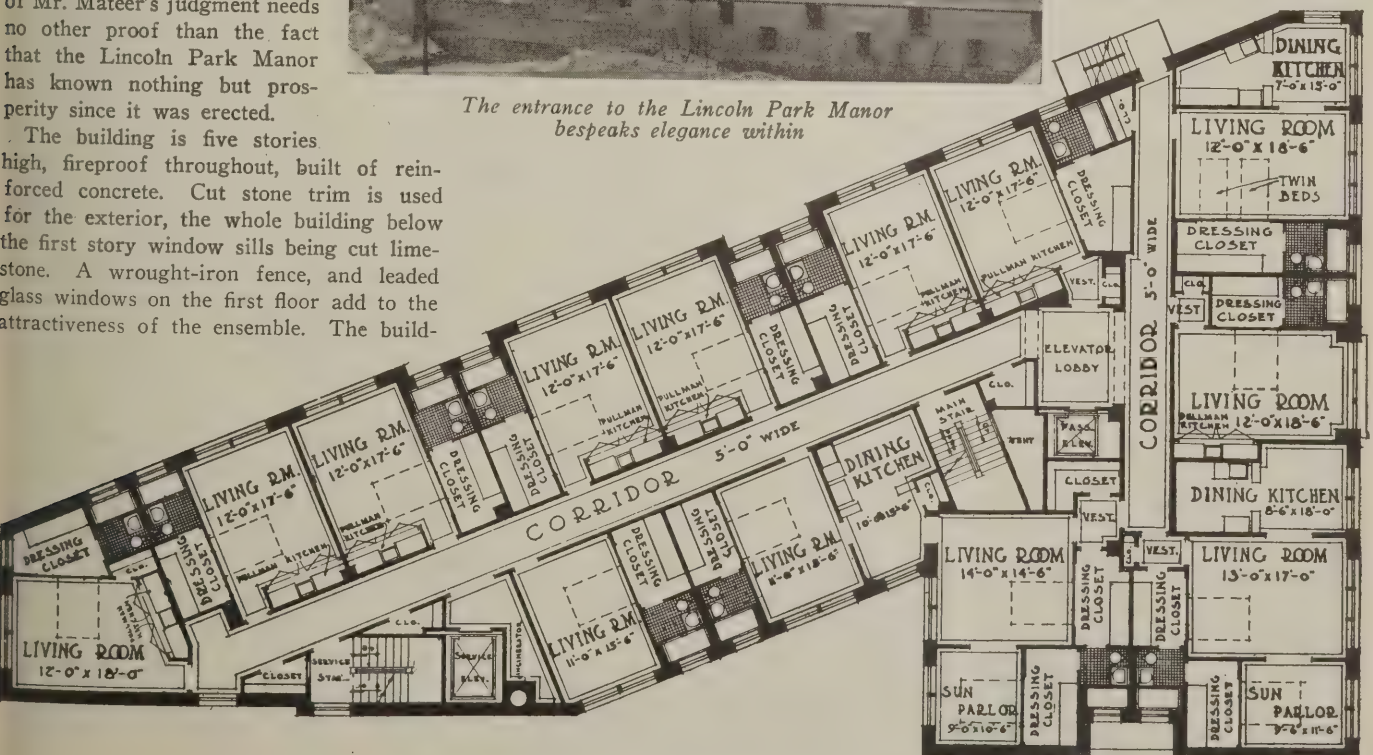
It is interesting to see how the rooms are laid out above the lobby floor. Due to the fact that the building is set on an odd-shaped lot, the floor layout was quite a problem. A glance at the floor plan here will show that the problem has been admirably solved. Access to living rooms is obtained by means of two halls. The elevator lobby is located at the junction of the hallways, thus affording a certain sense of privacy to the rest of the hall.

The elevators, one for passengers, which opens on the elevator lobby, and one for service in the rear of the building are of the automatic, push button type. Notice that in addition to the elevators there are three ways of escape in case of fire: main stair hall, service stair hall and fire escape. The windows on the alley side contain metal sash, an added protection against fire.

Besides living quarters for employees, there are 60 units in



The entrance to the Lincoln Park Manor bespeaks elegance within



Typical floor plan Lincoln Park Manor

the building, as follows: eight three-room including large dining kitchen, five two-room including large dining kitchen, 37 one-room with Pullman kitchenette, and 10 hotel rooms. Every unit contains tub and shower bath.

The apartments are completely furnished, with interior decorations and furnishings of high quality. In certain cases arrangements may be made whereby only the draperies, curtains, and carpets are furnished with the apartment.

The service equipment is of the most modern and efficient type—even electric fireless

cookers and dishwashing devices are furnished. All of the apartments and corridors have a specially designed ventilating system for rooms, doors, and windows.

All beds are of the "disappearing" type. When not in use they fold up into a dressing closet out of the way. This means that the efficiency of each apartment is increased by one room, and in the three-room apartments, which contain two disappearing beds, the arrangement is equal to five rooms. Builders are coming to realize that bed rooms—which are used only one-third of every 24

hours, and that time being when the rest of the apartment is not in use—represent, to a certain degree, waste space, and the "disappearing" bed which offers a means of utilizing a room every hour of the day presents a solution of the problem by using every inch of floor space to the best advantage without making the living quarters uncomfortable.

The dressing closet, into which the beds are placed when not in use, is really a small room in itself. It contains a drawer nest and clothes cabinet and the wall is lined



The Lincoln Park Manor apartment hotel, Chicago. Olsen & Urbain, architects



The living room radiators are concealed under the window seat



The style of the lobby doorway matches that of the main entrance

with hooks for hanging clothes. When the bed is arranged in position for sleeping, the dressing closet may be used for the purpose that its name implies, thus affording a degree of privacy which would not be possible without it. Access to the bath rooms is obtained through the dressing closet.

All living rooms and dining rooms, which open off the dining kitchen, are finished with

a plaster cornice and the walls are covered with a composition wall-covering which permits easy cleaning. The kitchen is separated from the dining quarters by a low cabinet, the upper part being open so that plenty of light and air come into the kitchen from the dining room.

The Pullman kitchenettes installed in the smaller apartments are a marvel of con-

venience and efficiency. When not in use, folding doors conceal them from view and the living quarters are not cluttered up with dishes or pots and pans. When the doors are opened, a complete kitchen comes into view—a sink with a swing faucet, a gas range, ironing board, refrigerator, bread board and a large amount of steel-cabinet storage space. These steel cabinets are white enameled, making them sanitary and easy to keep clean. Refrigeration is supplied from a main refrigeration plant, a part of the regular power equipment.

All power equipment is of the most modern type. Water tube boilers equipped with oil burners are used to supply heat and a vacuum system is used as a part of the heating equipment to provide a steady and noiseless flow of steam through the radiators. Garbage incinerators take care of the waste problem.

All deliveries to tenants are made through a rear entrance to the general service room, where packages are received, sorted and delivered to apartments. Each kitchen is equipped with a service closet, locked on the inside, through which deliveries are made. The servant making the delivery unlocks the outer door of the service box, places the article within, and then relocks the door. A similar contrivance permits the removal of waste in sanitary containers.

The units are of three types. The smaller unit is designed for tenants who do not require provision for preparing and serving meals. There are numerous people of this type who do not care to live in a regular hotel, yet desire the service of maids and housemen provided by the management. This type of unit contains one room with



View of end of lobby showing wood paneled chimney breast



The china cases at the left separate the dining room from the kitchen



The French doors at the right open into the bedroom shown below

a dressing closet and a private bath and shower.

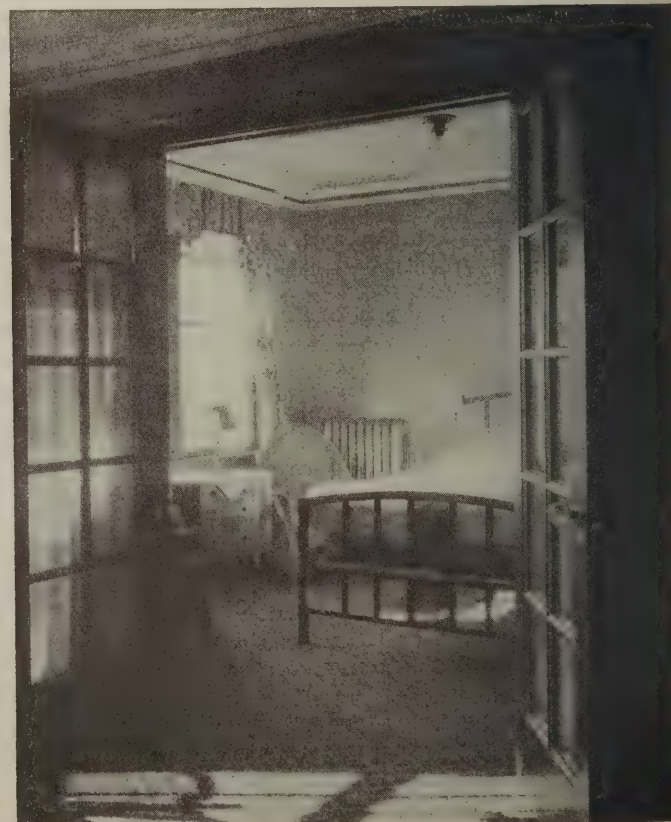
The other types of units contain provision

for preparing and serving meals. One type has a living room, 12x18 feet, with a high-grade steel kitchen of the built-in type,

which is concealed from view when not in use. This unit also contains a dressing closet and a private bath and shower.



Disappearing beds make living rooms do full duty



A sun parlor transformed into a bedroom



One of the compact steel kitchenettes. Note the ironing board at the left



Mirror doors opening into dressing closets

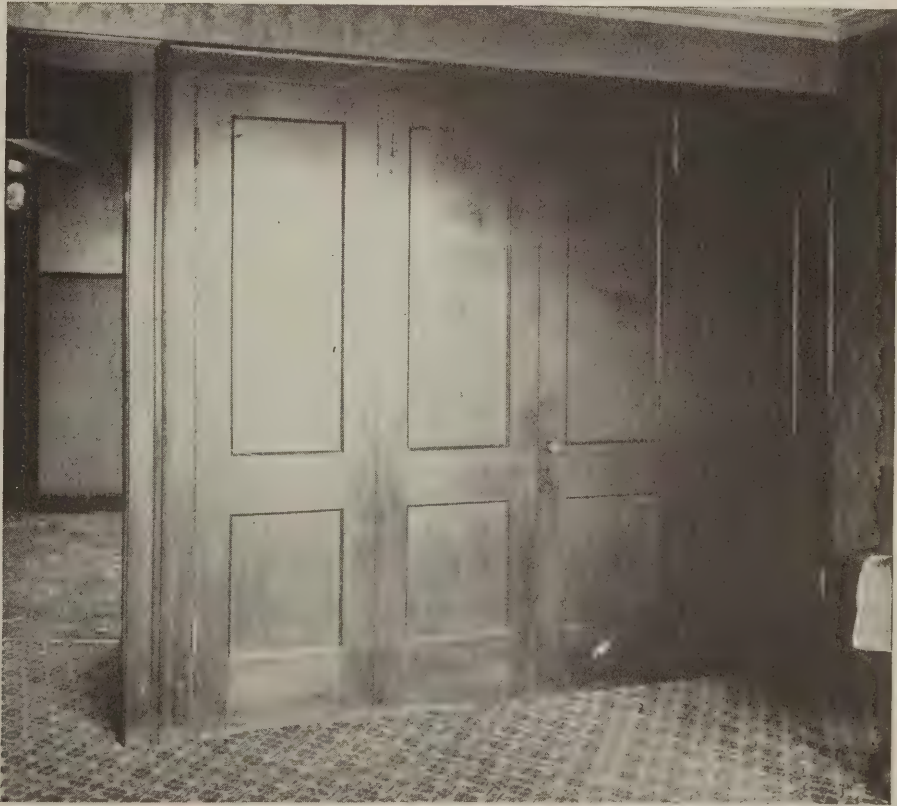
The remaining unit has a living room, 12x18! a dinette, 7x10, and a kitchenette, 7x8 feet, both of which are closed off from the living room by French doors. A dressing closet and bath completes this unit, except that in some cases a sun parlor is added. Nothing has been neglected to make the

apartments attractive to a good class of tenants and to provide for their comfort. A pressure vacuum plant with individual connections to all apartments, circulating ice water in all corridors, and trunk and storage rooms in the basement are also supplied for the convenience of tenants. A ladies' parlor and a men's smoking

room are included on the ground floor. In connection with the ladies' parlor is a complete serving kitchen so that parties and receptions requiring considerable space may be conveniently arranged by tenants.



A glimpse of one of the bath rooms



These doors conceal the steel kitchenettes when not in use





The building is located on a large uncrowded corner lot

Edgewood Club—A Community House

RESIDENTS of Edgewood Grove, a suburb of Terre Haute, Indiana, believe in neighborhood spirit and pride to the extent that they have organized a neighborhood club and built a community building to house its activities.

The design of the building is most unique, yet it would be difficult to supply another style that would produce an equal effect of genuine friendliness that is exhibited by this building of old-time log cabin construction. In this building the log walls are chinked with plaster which is repeated in the form of stucco in the gables. The foundation is of plain face cement blocks and the chimney of brick, stuccoed. The roof is of shingles laid with doubled butts at intervals to produce long horizontal lines harmonizing with the walls. Board and batten shutters and an entrance porch with log columns, carry out the almost primitive simplicity of the design. The architects were Johnson, Miller & Miller, of Terre Haute, Indiana.

The plans are quite simple. The main entrance opens directly into the large social room which is the principal interior feature of the building.

Another entrance at one end opens into a small hall which contains the main stair and also serves as a vestibule for the social

room. A large fireplace at one end of the social room makes a pleasant gathering point for friendly groups who enjoy a pleasant chat around an open fire. A women's coat room, together with a toilet, also opens from the side entrance hall.

The feature of the basement is the large club room which is used for a variety of purposes, perhaps the chief of which is the serving of light refreshments during socials, etc., and for serving suppers on occasion. A completely equipped kitchen partitioned off at one corner of the club room provides for these activities.

The main entrance to the club room is by means of the stair which descends from the side entrance and lands in a small hall in the basement. This hall opens into the club room and also into the men's coat room which contains a toilet compartment and is similar to the women's coat room directly above. The grouping of the two coat rooms and the kitchen together is a result of careful planning to simplify the plumbing, as one stack is thus made sufficient for all of the fixtures in the building. At the same time, the toilet provisions are



The entrance porch gable is of stucco with logs forming vertical panels



The lines of the chimney carry out the old-fashioned feeling

The porch floor of concrete rests on the terrace

sufficiently separated from each other to prevent embarrassment. The basement hall also contains a closet under the stair for the storing of janitor's supplies.

An exterior stair at the rear also opens into the club room, serving as a janitor's entrance and also as an emergency exit in case of fire, etc. Coal storage rooms are provided at each side of the rear stair. These are covered by reinforced concrete slabs which contain coal rings to provide for taking in coal at the ground level.

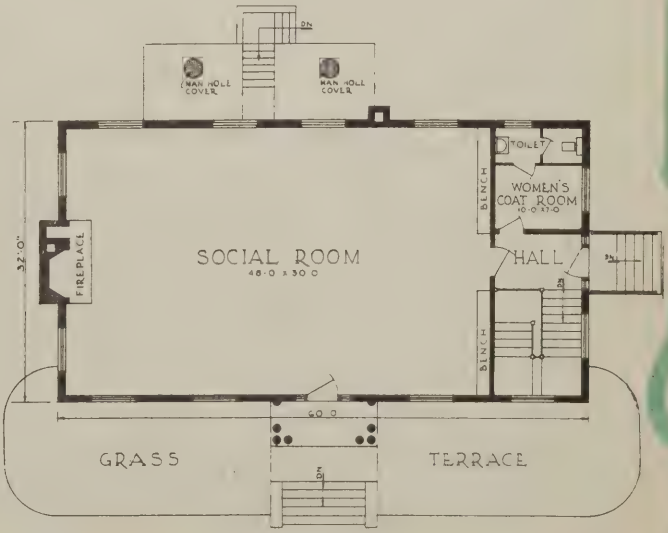
Two furnaces located in the club room supply heat for the building. They are of the pipeless type with registers in the floor of the social room above. The furnace nearest the middle of the building, however, has three additional small heat ducts which provide positive heat for the kitchen and each of the coat rooms. The use of two furnaces makes it possible to economize on fuel by operating but one furnace during mild weather.

A club house of this type is unusually

adaptable to all sorts of uses. Any organization—social, fraternal, professional—can find in a building like this adequate accommodation for a wide variety of activities. The club room can be rented to outside organizations desiring a place to stage banquets; or the social hall made a source of revenue to the owners by renting it to other clubs for dances, parties and sundry entertainments. A building novel in design, as this log cabin structure, has an advertising value and a "tone" that is most desirable.



Basement plan



First floor plan



The exterior is a quiet, pleasing design in ivory toned terra cotta

Modern Two-Story Public Garage

THE Avenue Garage of Oak Park, Illinois, designed by Fred O. Rippel, architect, is representative of the efforts being made to provide every practical convenience for the satisfaction of public garage patrons.

The entrance doors are of the automatic type operated by means of control cords hung throughout the garage so that workmen may open the doors from practically any point in the garage. A dumbwaiter near

the general office is used for lifting batteries to the charging room, thus eliminating the carrying of heavy batteries upstairs.

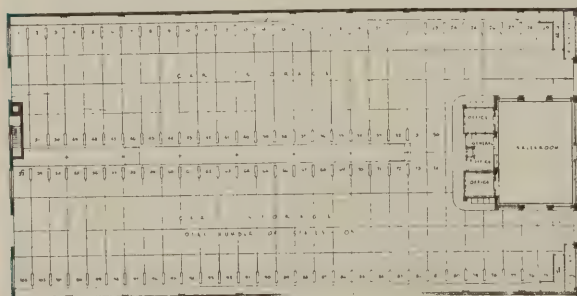
The fire insurance rate is lowered by reason of two bleeders, with fire hose attached, run into the garage from the street. Also by reason of a dozen chemical guns scattered throughout the building.

Referring to the view of the garage interior: The line running down the garage

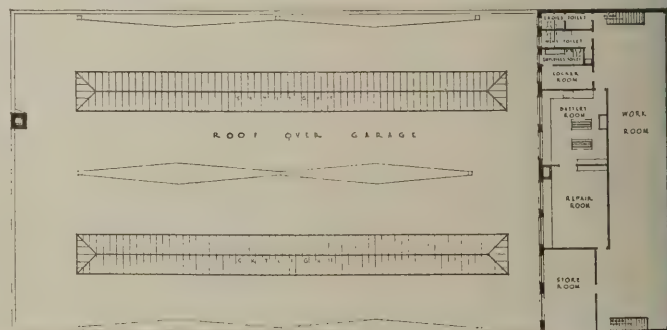
aisle is an air line with connections at each stall for the independent filling of tires. The boxlike structures mounted on stilts contain the heating coils, which ordinarily are run along behind the car stalls and frequently damage spare tires.

No provision has been made for general overhauling or repair work, only battery and tire repairs, etc., being undertaken.

Car washing is accomplished by means of



First floor plan



Second floor and roof plan



The walls of the display room are glazed so that the displays may be viewed from either without or within the building

tarpaulin curtains hung around the individual stalls, thus avoiding the moving of cars, which some owners object to.

The second story adds considerably to the importance of the building, and removes the mechanical department from the first floor,

leaving that space free for car storage and office and sales purposes. This second floor is of reinforced concrete construction.



The car stalls are divided by concrete curbs and they slope to the rear so that cars may coast into position



There are practical advantages in the entrance in the corner. It permits an intimate treatment of the doorway, and on the inside makes a small entrance hall possible



Distinctive Treatment of a T-Shaped House

THE T-shaped plan for the small house permits light and ventilation from windows on three sides for practically every room, confining the stairway to the central portion where it is easily accessible from all parts, and requires very little hall space.



The rear view is as attractive as the front



First floor plan



Second floor plan

In this house, the home of Mr. Charles Swann in Glencoe, Illinois, the T-shaped plan is very successfully utilized with an exterior in the English style. An interesting feature is the treatment of the garage. It is not a part of the house and yet is intimately attached to it by a covered passage, and the lines of the garage are like those of the house on a small scale.

The roof is very steep, with ventilated attic space and is of wood shingles stained warm rich tones of brown, red and green. The exterior walls are stud construction covered with stucco on metal lath, with a white smooth finish for the surface.

The plan is interesting in many respects. Direct access from the kitchen to the front door is possible without going through the dining room, but utilizing the low starting platform of the stairway. The spiral newel post of the stairway is an architectural feature.

Upstairs are three good sized bedrooms with two baths and a sleeping porch.

Casement windows are used throughout, with the interior trim finished in a dark walnut with egg shell finish. Good taste has been shown in the selection of the lighting fixtures and in the details of the interior trim which carry out the architectural style of the house. A fireplace with carved stone mantel is a center of interest in the living room.

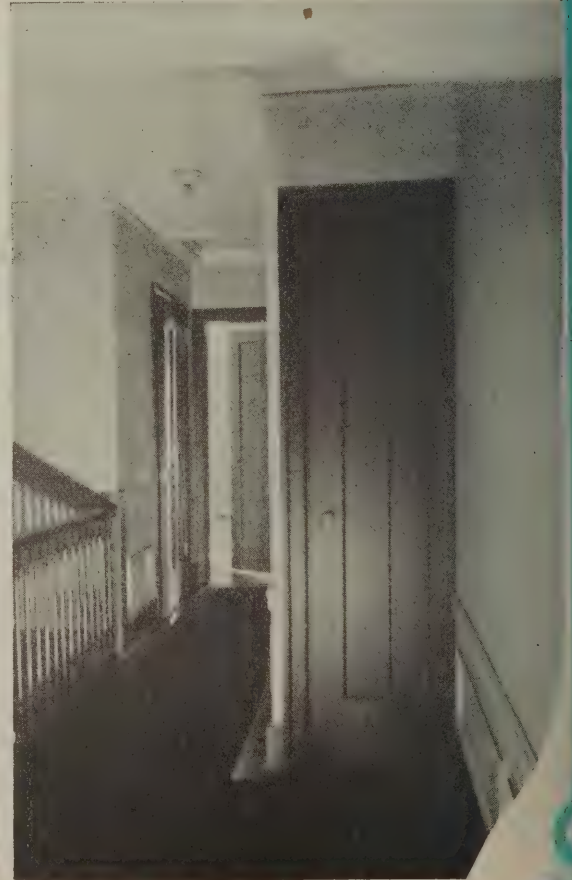
Murray & Sinclair, Winnetka, Illinois, were the designers and builders of this house.



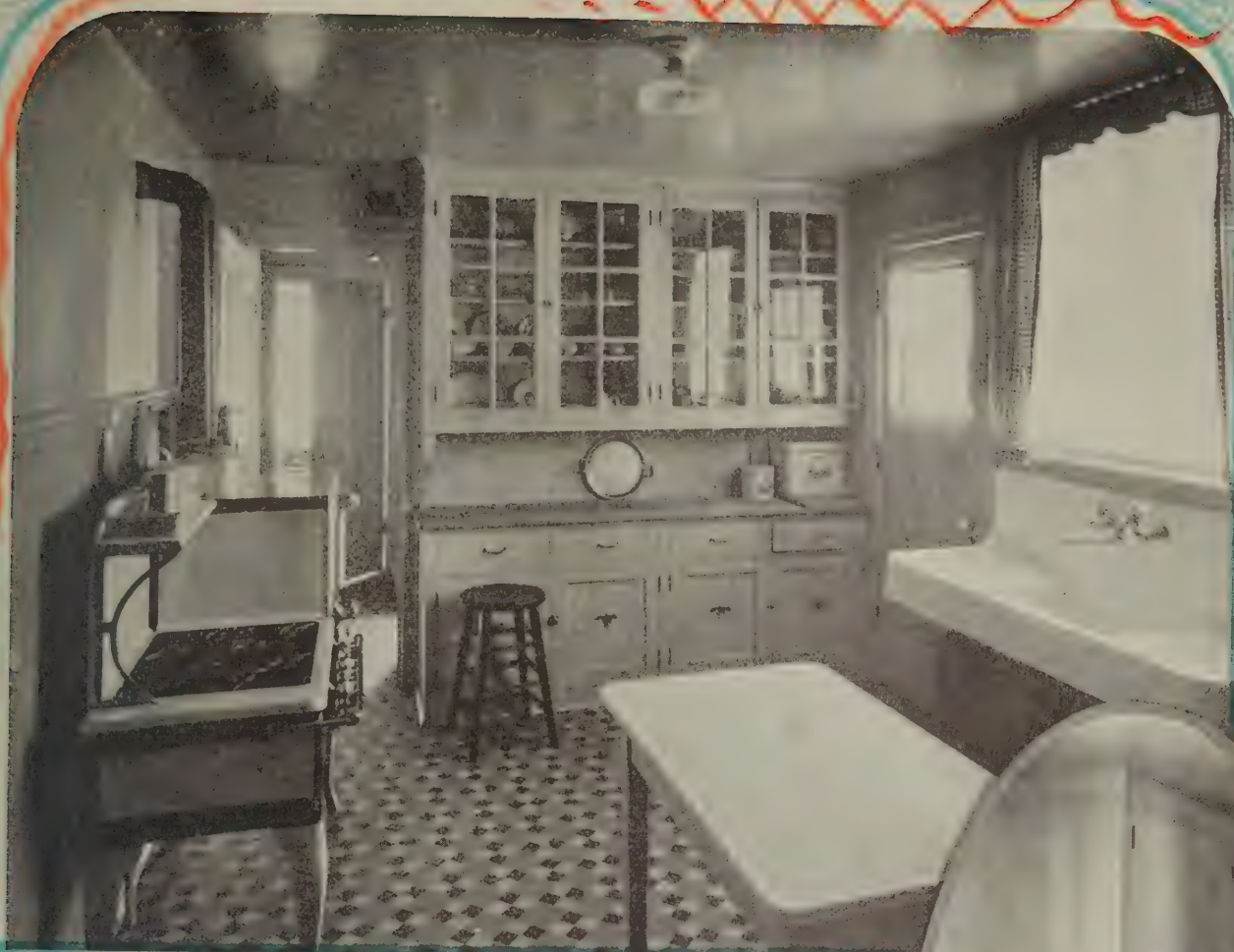
A carved stone mantel around the fireplace is a center of interest in the living room



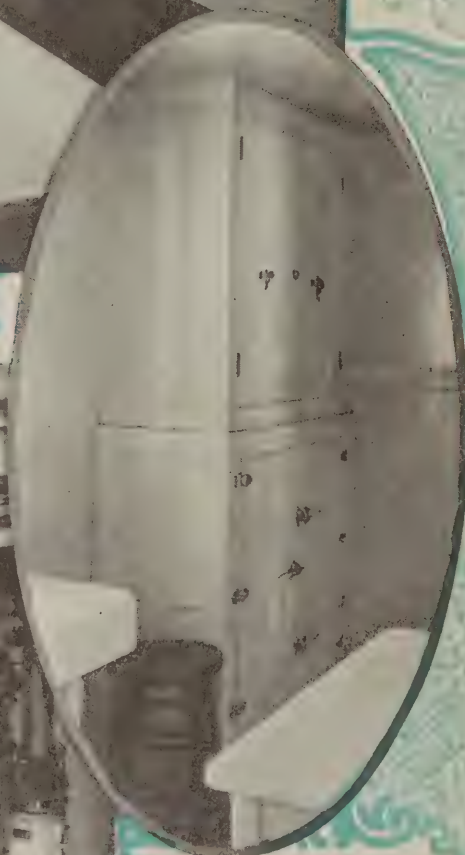
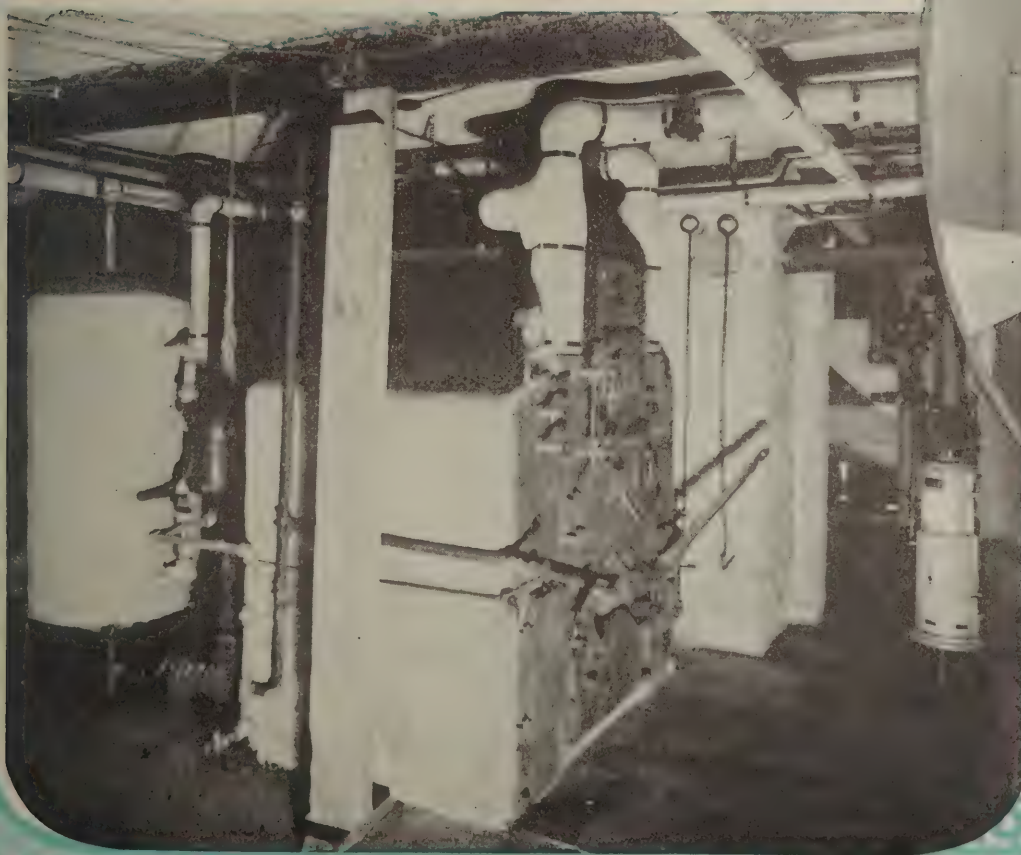
The vista from the dining room



An attractive upstairs hall



The kitchen woodwork is gray-blue with colorful hand-painted designs on the doors



Above: The refrigerator placed for icing from the outside. Above it is a cooler—a cabinet with shelves and ventilated by a screened louver. Left: The heating plant and hot water heater in the basement. Vapor steam is the heating system used.



Rivola moving picture theater, Oskaloosa, Iowa. Vorse, Kraetsch & Kraetsch, architects. The building is an old remodeled store, with new fronts on both streets

Oskaloosa, Iowa, Builds Its Own Moving Picture Theater

WHEN traveling men make a special effort to make a town for over-night or to week-end there because of its moving picture theater, it can truthfully be said that that theater and its shows are good ones.

That is exactly the case with the town of Oskaloosa, Iowa, a community of 10,000 population, situated close to both Des Moines and Ottumwa, cities which have plenty of attractions for young people.

The interesting thing about the Oskaloosa theater is the fact that it was built and financed by citizens of the town. It is not owned by a syndicate or operated as one of a string of moving picture theaters.

Leading citizens of Oskaloosa got together with both their ideas and their money and deliberately created an amusement place for their towns folk which has been most successful in keeping the young people at home nights and which has added much to the enjoyment of good moving pictures by the public in general.

This theater is known as the "Rivola." It utilizes an old building, considerably remodeled, a new front having been put

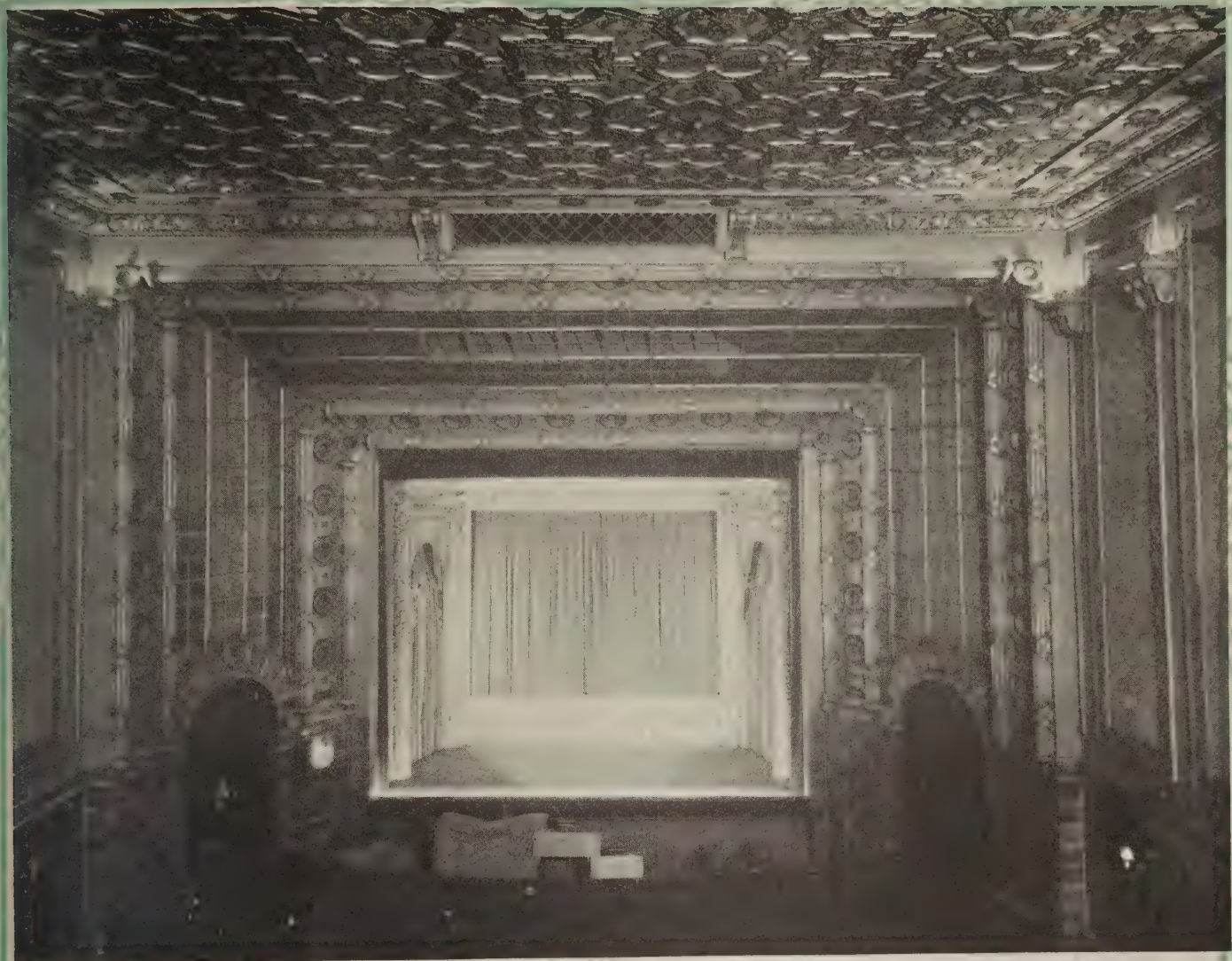


An electric sign and a brightly lighted marquee attracts patrons at night

on and the interior having been laid out for theater purposes. The building was designed by Vorse, Kraetsch & Kraetsch, architects, of Des Moines.

The outstanding feature of this building is its unusual attractiveness. It is situated on a corner lot, one street being the principal thoroughfare of the town. On this front is an electric sign with running lights and an attractive marquee brilliantly lighted, with an illuminated sign board above announcing the current attraction. A marquee also extends along the other street and affords a cover over one of the exits from the foyer.

The tile of the lobby is perhaps a little richer than would have been used had the builders not been fortunate enough to have secured it from a firm who made it especially for a Des Moines theater which was never completed, because of financial difficulties. As every good show man knows, an attractive lobby is the thing that draws the customers and it can be said in all truthfulness that he would in-



The stage, showing the fine tile work on the walls and the molded plaster ceiling

deed be a "hard boiled" movie patron who would not be drawn to the Rivola by its colorful, tiled lobby.

Inside the theater the patron finds himself bathed in a variety of dim colored lights, the colors alternating so slowly that the changes are almost imperceptible.

These changing lighting effects are in vogue among the biggest of big city theaters and they certainly give a metropolitan air to the Rivola.

The seats in this theater are of comfortable design and are heavily upholstered in leather and are spaced far

enough apart for the comfort of the tallest or heaviest patron.

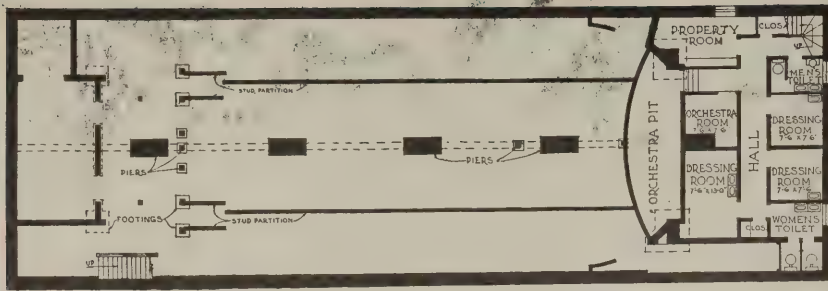
The interior views show the intricate molded plaster work of the ceiling and the decorative treatment of the proscenium arch. These are details that add much to the richness of the surroundings and



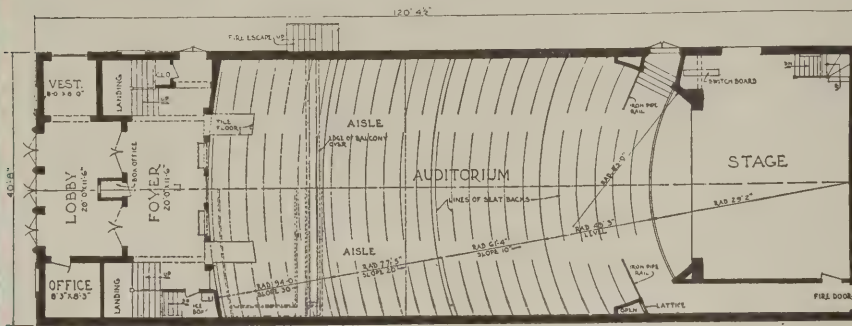
A lobby, richly tiled, makes an inviting entrance to the building.



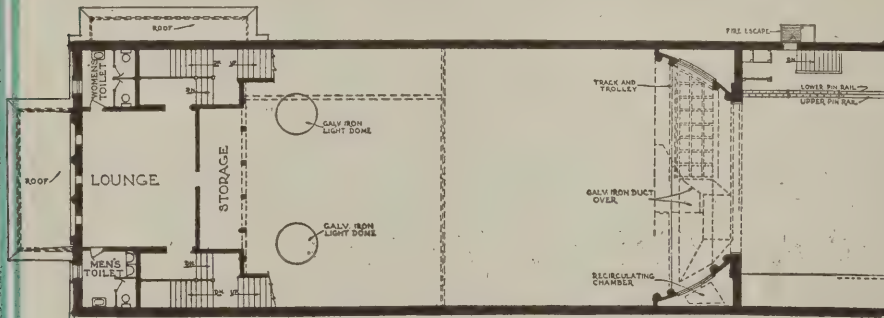
Leather upholstered seats contribute to the patrons' comfort.



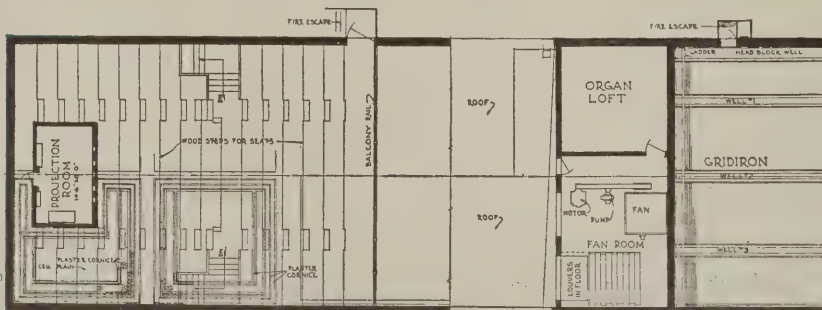
Basement plan. The dressing rooms are for convenience when staging special acts or vaudeville



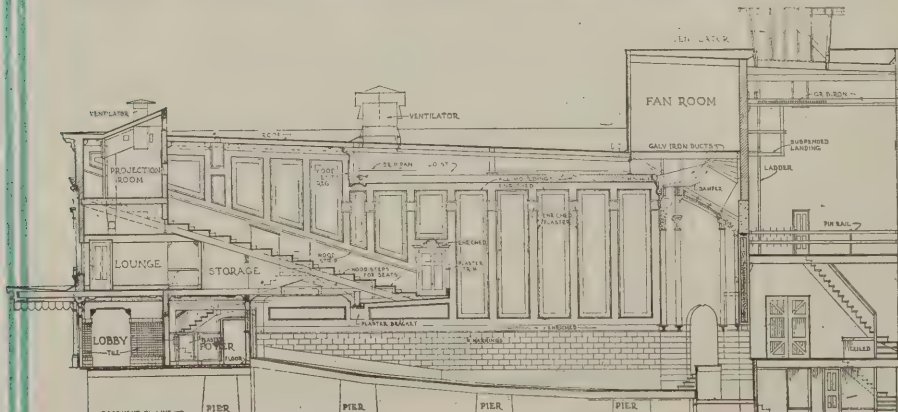
Main floor plan. The aisle arrangement permits quick seating of the patrons



Mezzanine floor plan. The lounge and toilets are convenient to both floors



Balcony plan. A gridiron over the stage is useful when staging "legitimate" plays



Longitudinal section. Note the first floor is not ramped but bowl-shaped

put the spectator in a favorable frame of mind for witnessing the show.

While attractiveness has been the aim in the design of both the interior and exterior of the building, practicability has not been slighted in the least bit. The first floor plan shows the slight curves given to the rows of seats, assuring every spectator an undistorted view of the picture. The longitudinal section shows a floor that is bowl shaped rather than ramped. Thus each patron is allowed an unobstructed view over the heads of those in front.

On the mezzanine floor there is a comfortably furnished lounge with toilets at opposite ends and opening from it a large storage space for theater supplies and accessories. The property and dressing rooms are in the basement beneath the stage and are directly connected with the stage and orchestra pit. The projection room in the rear of the balcony is enclosed by fire walls and has an artificial ventilator together with a window opening above the main roof of the building. The longitudinal section shows the relations of the general parts, indicating the position of the fan room above the stage and the stage ventilator.

Especially care was taken in the heating and ventilating equipment of this theater. The heating equipment is from the city plant and the ventilating is from a special plan worked out by the architects.

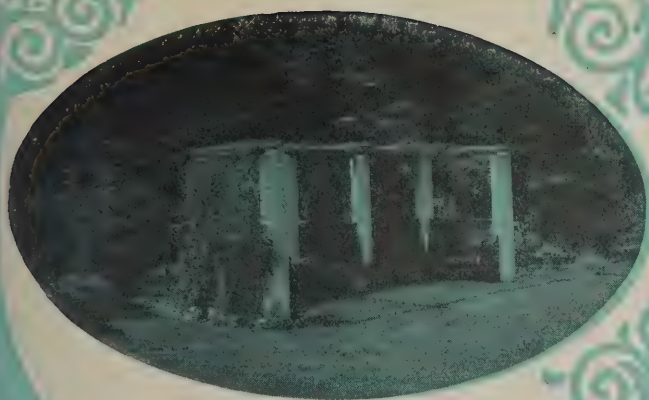
The Rivola theater management books only the highest class pictures and maintains a show that is worthy of their attractive little theater, with the result that the people of Oskaloosa who put money into this enterprise have found it a good investment and the existence of a good moving picture theater in the town has had a salutary influence on the social life of the community.

Rate of Drying of Wall Plaster

THE Bureau of Standards of the Department of Commerce receives inquiries as to when plaster can be safely painted. A careful study of this subject led to the conclusion that plaster can be painted safely when dry.

The next question is how long does it take plaster to dry? This is of importance, not only as regards painting, but also in the erection of wood trim, and because of its effect on the general speeding up of construction. A slow-drying plaster may cause financial loss to the contractor because of delay in completing the work, and it may cause loss of occupancy to the owner.

Plans have therefore been made to measure the relative rates of drying of different kinds of plaster under different atmospheric conditions. The equipment necessary for this research has been designed, and is now being made in the Bureau's shop.



A pergola made of logs on top of stucco-covered posts. Note the seats around the ends and one side



An arched trellis is not hard or expensive to make and it adds beauty to the yard



Garden seats can be made on rainy days

Fixing Up the Porch, Yard and Garden

By H. T. Becker

FROM the time that the first warm spring day tempts the householder out into his yard with a trowel and a package of seeds, until the frost has made the porch too cool for the after-supper smoke, he keeps thinking of "fixing up the place a little." Many times he doesn't get any further than just

thinking about it, because he doesn't know exactly what there is that he could do. The contractor and builder, from his wealth of experience, can offer many suggestions that would turn into real business for him. Try running an advertisement in your local newspaper some time, suggesting some of the possibilities there are for making small improvements on the outside of the house, and see if you do not find some jobs that you didn't know were "brewing." In the main, they are not large jobs, but they are the sort that are not in a rush, and which can be used to keep men busy at odd times, between larger jobs, or while waiting for material, or on rainy days.

The pictures shown here have an unusually large number of ideas for the porch and yard. The latticed porch columns are standard designs suitable for almost every house. Attractive fences may be made of lattice strips, and gates of various stock designs of flat porch balusters, combined with porch newels and inverted drop ornaments. There is no end to the variety to be obtained by the worker's ingenuity.



A pergola is always appropriate when it is well designed. Build it of porch columns set as far apart in each direction as they are high, with 2x8's nailed together and cut like rafter ends, on top; then place 2x6's on edge over them, and some 2x2's to carry the vines, and you have a thing of beauty



An example of the dignified yet interesting effects to be gained by a sparing use of ornament

Apartment Building at Knoxville, Tennessee

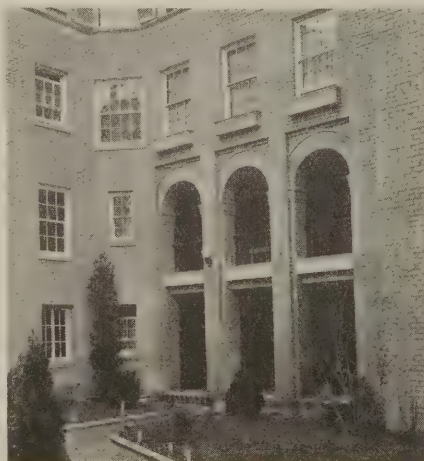
Spanish Type Exterior, Fireproof Construction, and Elevator Installation Combined with Other Features Make This Apartment Worthy of General Notice

THE Aconda apartments at Knoxville, Tennessee, designed by Andrew Thomas of New York and built by Worsham Brothers of Knoxville for Earl S. Worsham, a member of the firm, show intelligent planning and good taste in exterior design. Uncommon interest was displayed in the erection of this building due to the fact that Knoxville has always been a "home" town and the construction of the Aconda apartments was something in the nature of a test of the popularity of this type of structure. It may be said that the experiment has worked successfully and other apartment buildings are now under way.

This building is four stories high and contains twenty-nine apartments of four and five rooms each, including janitor's quarters in the basement. In some of the five-room apartments an extra toilet and shower bath is installed in one of the

chambers.

The natural slope of the site allowed



The loggias add character to the patio

space at the rear for a basement garage with room for about twenty cars, thus providing storage space for tenants' automobiles. Though most buildings of this type are wall-bearing structures with wood joists, the Aconda apartments are of fireproof construction throughout. The floors are of concrete poured on metal lath and instead of interior bearing walls a steel frame was used. The exterior tends toward a Spanish architectural type and is of yellow brick, laid in yellow mortar with flush joints. Ornamentation is provided by means of cut stone, iron balconies and a projection of red Spanish tile at the roof. An interesting feature are the arches at the entrance loggias and the treatment of the elevator pent-houses, of which a detail photograph is shown.

Besides the usual entrance stair hall, this building contains four small automatically operated elevators which are



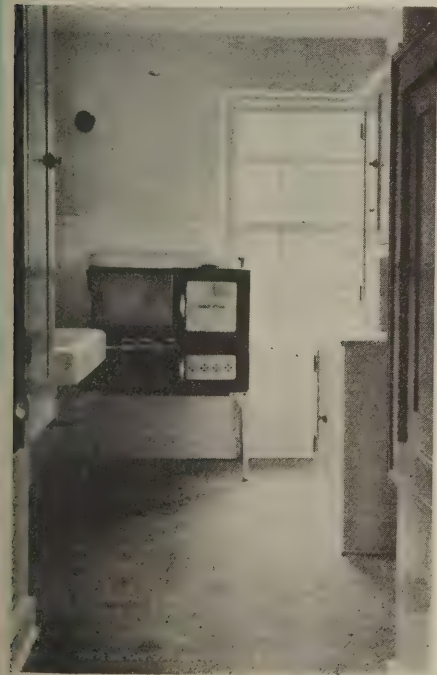
First floor plan

controlled by push buttons and are intended to be operated by the occupants of the car. Instead of rear service entrances, dumb-waiters are used to facilitate delivery of groceries, ice, etc. The heating equipment includes a vapor heating system installation. All exterior doors are equipped with automatic door checks and the building is weather-stripped throughout.

The kitchen and bathroom arrangements have been carefully worked out to provide the utmost in comfort and convenience. Each kitchen has access to a dumb-waiter and contains a built-in ironing board. The kitchen floors are covered with linoleum. The ranges are of high quality, equipped with a pilot light. High



View of boiler room. Note steel joist construction



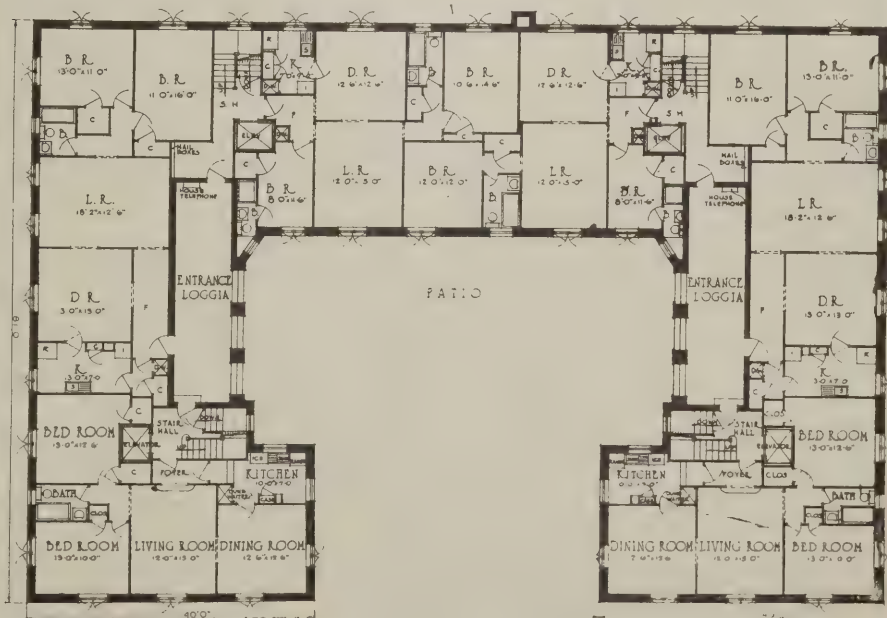
A glimpse of a typical kitchen



View showing elevator pent-house. It is an attractive feature of the building instead of an eye-sore as is often the case

grade plumbing fixtures are used. The bathroom floors are of tile, and the walls of glazed tile with two decorative strips, yellow in color, at the top near the wainscot. Towel racks and soap dishes have been provided and directly above each lavatory a steel medicine cabinet is installed.

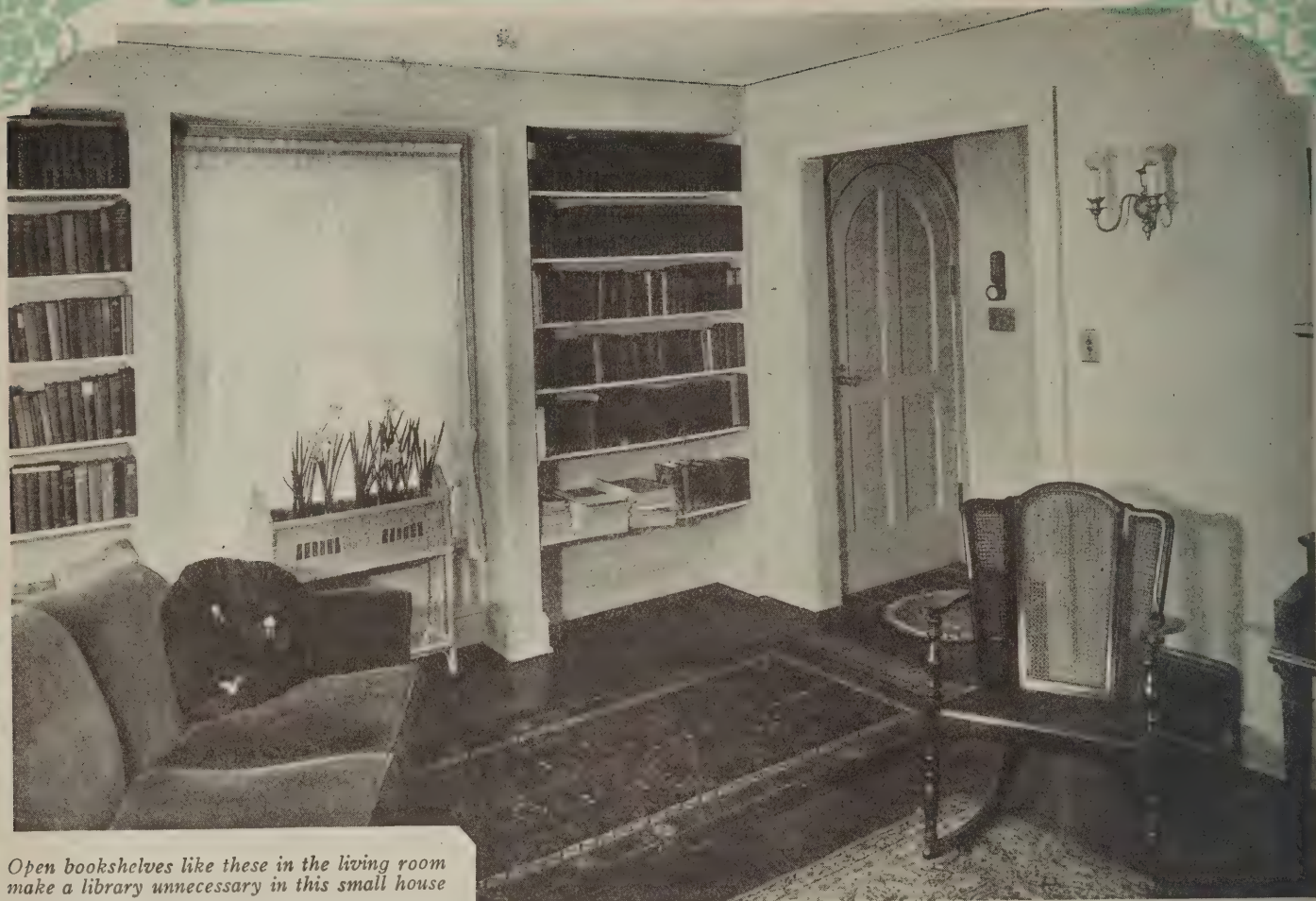
The design of this building is particularly interesting in view of the sparing use of ornament. Most of our apartment buildings are gaudy and extravagant in appearance, not to mention the added expense incurred by such treatment. In view of the tremendous advance of the general public's regard for simple, decent architecture, as is evidenced by the increasing attractiveness of house architecture, it seems that we are on the eve of a similar movement to make our apartment buildings more pleasing. The owners of the Aconda apartments will no doubt profit by their foresight.



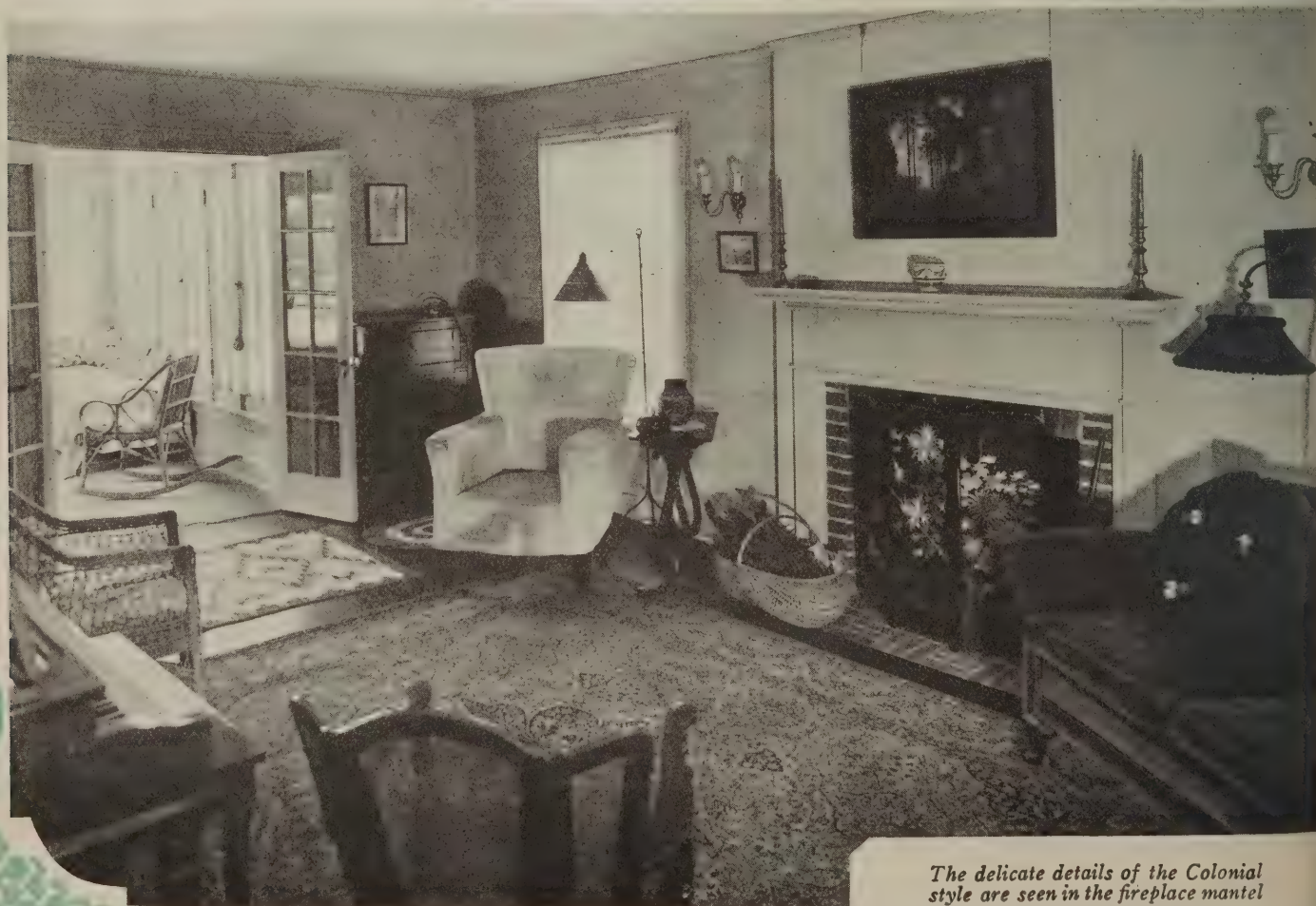
Fourth floor plan



Eaves that come down so low you can reach up and touch them; small paned windows; utmost simplicity in details, and 24-inch silver gray stained shingles laid eleven inches to the weather, make a house that needs nothing more than these and its pleasing proportions to make it a most successful design



Open bookshelves like these in the living room make a library unnecessary in this small house



The delicate details of the Colonial style are seen in the fireplace mantel



Above: The house is heated by a hot air furnace with an oil burner. The picture also shows the electric water heater. Left: Kitchen, showing electric range, refrigerator, and kitchen dressers



Separate meters, fuse boxes, and safety switches are used—one group for light, the other for power

tached garage.

Hall space has been almost entirely eliminated in the plan. You do not come directly into the living room, but there is a little vestibule with a closet for coats. The stairway is reached from the back of the living room, where it is also accessible from the kitchen. There is a downstairs toilet which makes the dining room usable, if preferred, as a bedroom and the sun parlor can be used as a dining room.

Upstairs there is a full bath with two bedrooms, each with a large closet and

storage space under the roof.

The interior views on these pages show how the beauty of the exterior is carried into the interior by the use of delicate trim details and careful spacing of the windows and doors.

Mr. and Mrs. Stillman are both high school teachers and they require a house that is almost automatic in operation. Their home is situated on a wooded lot apparently far away from civilization, but in reality accessible to gas, water, sewage and electricity.

The owners are away from home most of the day, five days out of the week. The house is electrically equipped throughout, not only electric lights, but electricity is used for the hot water heater and for the kitchen range. The hot air furnace has an oil burner attachment. All these devices are practically automatic in operation. A heat regulator keeps the house at different temperatures during different parts of the day and night, having the house warm for the owners upon their return home.



The stone foundations and the walls of rustic materials harmonize with the natural surroundings

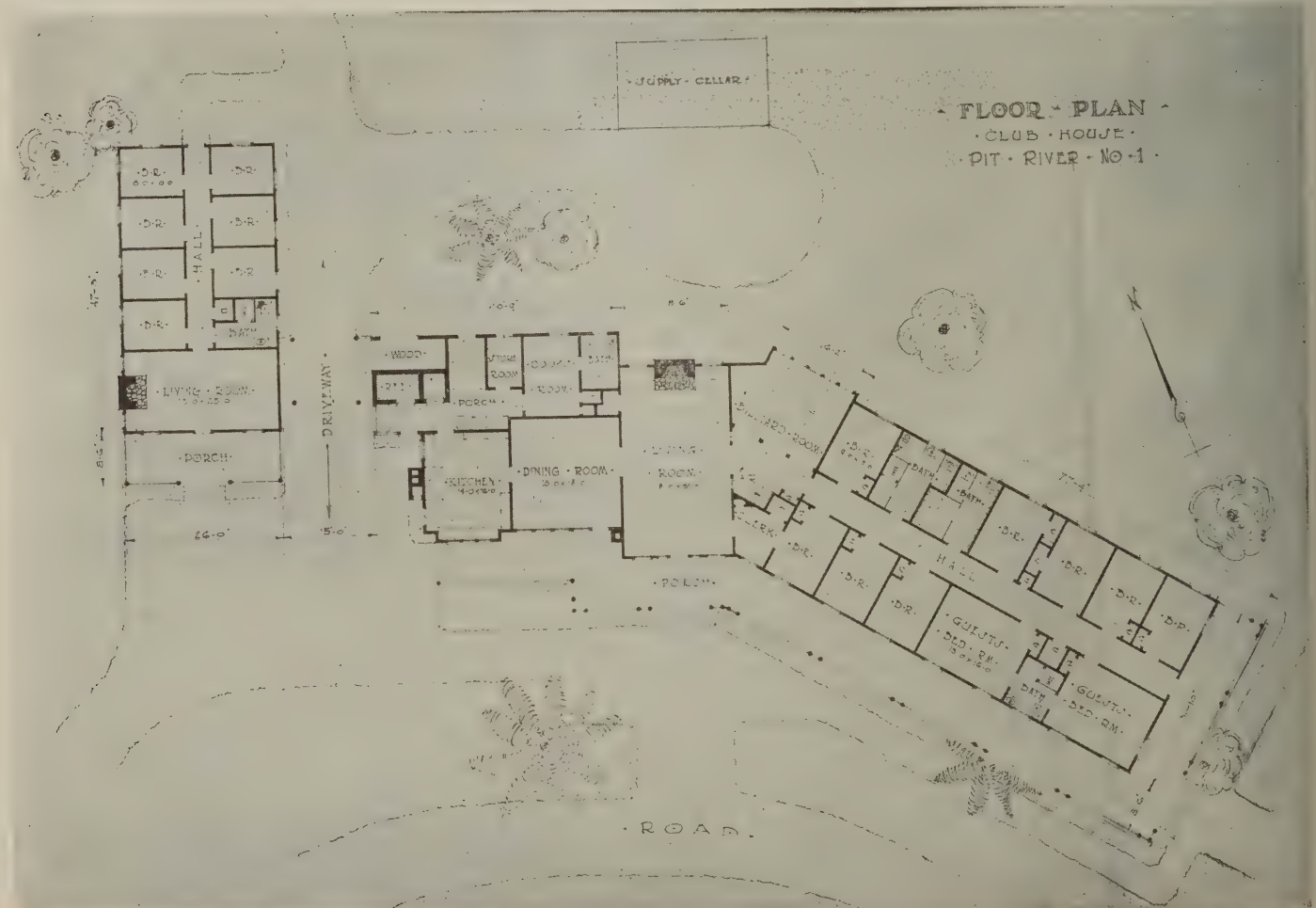
Novel Community Center at Pit River Power House

THE location of Pit River Power Plant No. 1 in the very heart of the Cascades, seventy miles east of Redding, California,

and midway between Mt. Lassen and Mt. Shasta, makes it a beautiful spot to be isolated in but one in which it is necessary to

provide for the social welfare of those who live there.

This community center consists of one



At the left is the working crew's quarters; at the center the social rooms, and at the right are the operator's quarters



The stair balcony overlooks both the living room and the billiard room



The living room has been designed after the Swiss chalet style to harmonize with the natural surroundings

large club house in which is taken care of all single men, guests, and work crews; six cottages for the men with families, four of these having four rooms and two having five rooms, a large garage and a warehouse in which is located the postoffice.

The club house is the central building of this community and also the center of social activity of four power plants within a few miles radius. In plan the building consists of a central portion and two wings. In the center portion are located the living room, billiard room, and dining room, with the

accompanying kitchen, cold storage and store room equipment. The east wing contains the bed rooms for the operators and two large guest chambers and rotates 30 degrees south to give as much sun as possible to all bed rooms. The west wing is occupied by working crews who may come in from time to time.

The building has been designed to set low and near the ground, and rock gathered from the site is utilized for all foundations, with rustic material for the exterior walls.

The interior of the living, dining, and billiard rooms is finished entirely in native

woods, with an open roof construction showing the exposed roof trusses and rafters with burlap covering between. It receives much of its charm and inviting appearance from the large wood burning fireplace, flanked by roomy window seats and book shelves, as well as from the stair balcony which forms a most interesting feature and provides an ideal location for the musicians' use during special social gatherings.

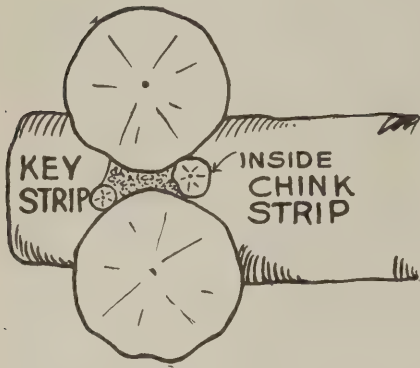
Social activities adapt themselves readily to the layout of the living, dining, and billiard rooms because these three rooms can be combined into one large floor area.



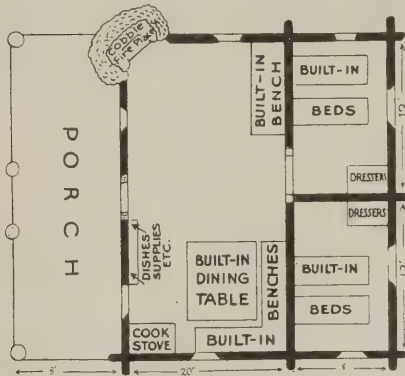
Cedar logs were used for the porch posts and the walls are covered with split cedar shakes

Log Cabins for the Summer Camp

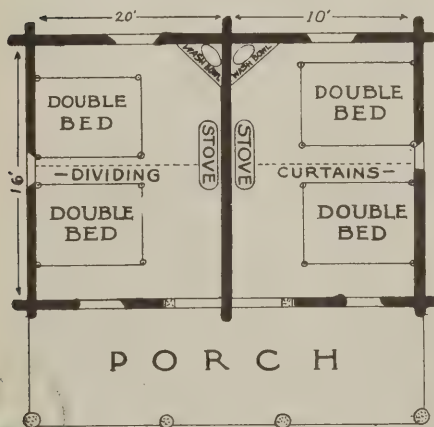
By H. B. Blauvelt



A 2-inch sapling on the lower log forms a key for holding the cement chinking



Plan for a simple log cabin with two bedrooms and a fireplace in one corner of living room



Plan for a sleeping cabin with two separate rooms but with provision for dividing each room into two compartments by drawn curtains

ABE LINCOLN made the log cabin still more famous by being born in one. For centuries the early settlers throughout our thirteen colonies found in the log cabin the means of sheltering them from the dreaded winters. Log block-houses and forts with their log blockades and log palisades around them served also as an effectual protection against Indian raids.

But manufactured lumber generally became used throughout the Eastern colonies and the log cabin moved westward ever on the frontier of civilization. America owes a great debt to the log cabin, for it has been a faithful home to the many generations of pioneers, settlers, woodsmen and farmers who, while living under its protection from weather and Indians, were so able to conquer and civilize our wild rough country.

One very interesting historical bit about the log cabin came with the first use of nails. In the early days nails and iron spikes were extremely scarce and expensive. One log was fastened to another by boring thru it with a hand auger into the next log and driving an oak peg into this hole. (I have and prize today one of the old oak pegs which came from a beam in my great-grandfather's barn in southern New Jersey.) When the settlers started to move westward they took their spikes with them to use in building their log cabins. After they had lived in a spot sufficiently long enough to grow tired of it, in order to reclaim these spikes they used to burn down their cabins and pick the nails out of the ashes the next day

when they had sufficiently cooled off. This practice was so universal that a law was passed permitting the newcomers to a farm to purchase the cabin for the price of the nails in it so that its former owner would move on without feeling obliged to burn down his late home for the sake of the precious nails.

Perhaps the most talked of log cabin structure in the world is "Old Faithful Inn" in Yellowstone National Park. Last year another large and attractive log-cabin hotel was built at Brooks Lake on the south road into Yellowstone. The method of building is solid and substantial. A good logsman can build a cabin from logs as quickly as a good carpenter can put one up with sized and dressed lumber.

Today the log cabin has done its generous share of the heavy work in taming our country. The fact, however, that it has so much history behind it and is such an attractive structure itself leads to its being used more and more every year. Further, because of the novelty of log cabin construction and the very picturesque effects that can be obtained with it, as a style of building it is becoming more popular every year for the building of summer camps and cottages. Not only are individuals building them for their own private camps, but proprietors and managers of summer resorts, especially if they are in the woods near mountains and fresh water lakes, are tending to build them. The latter usually put up a great many small log cabins which will house one family and be placed separately and attractively thru the woods along the



A Wyoming farmer's log cabin home. These logs are square hewn and are known as Swiss or Norwegian log construction

bank of some stream or lake. At the same time one large log cabin building for a combined office, dining room, dance and general meeting hall is built in a location central to the others. In this latter case it is well for the owner to group his cabins attractively with respect to, but at some distance from, the central hall. The advantage of having the cabins along running water is that the guests may then wash and bathe directly in the stream. Scattering the various types widely and effectively should give the inhabitants of each cabin the maximum of privacy.

Because of the very nature of log construction, the number of ground plans available are more or less limited to the square or oblong form. The old block-houses built for protection against the Indians were often hexagonal for defensive purposes, but for modern use the square cornered plans do very well.

It is very simple to work out a ground plan for any cabin. Care should be taken to put in all the windows that are possible, as a cabin tends to be dark. Good fire protection should always be put under and around the stove, because when the logs grow very dry a hot fire would quickly kindle them.

In all log cabins as much of the rough construction and finishing up should be done with the natural, round and unsawed log forms as possible. The furniture, beds, everything can be made out of unsawed logs and poles which will maintain the picturesqueness throughout. Originality should be exerted in using the round log forms, crooks, bents, knots, growths and other natural forms.

As to actual construction, I simply pass

on the specifications of Frank Horton, who has been running the famous Western H. F. Bar Dude Ranch for years, and who has built many a log cabin: "We first peel the logs. The bark will later fall off anyway and look awful while its doing it. Then we so fit the logs as to avoid a crack between them greater than two inches in depth. After all the logs are laid up they are allowed to dry at least three months before we attempt to chink. If this is not done the logs in drying would shrink away from the cement chinking which would then fall out or not be air tight at the best. It is necessary to put a small two-inch sapling on the lower log of each crack. This holds the cement by giving it a key. We use one part of lime and three parts of cement. This mixture makes the cement richer and thicker so that it clings to its place and stays put. We use a cement foundation of one-three-five mix for all our cabins."

The log cabin is extremely well adapted for summer resort cottages and developments because it is something new and unusual which the guests or tourists will go away and tell their friends about. For picturesqueness and general utility both for the individual camp and the group of summer cottages with a central hall, mentioned before, the log cabin as a type of small structure cannot be surpassed.

It was announced just the other day that the Austin Hotel in Texas is building an entire roof garden in the rustic natural log effect. It will undoubtedly create a lot of comment and go toward making the log cabin even more popular.

Those further interested in more information about log cabins, than space per-



Central hall, office, dining room and kitchen for a log cabin camp

mits us to give here, will find a booklet entitled "Log Cabins and Cottages," by William F. Wicks, published by *Forest & Stream Publishing Company*, New York, City, full of useful and original information.

Tension Tests of Limestone

THE Bureau of Standards, Department of Commerce, has recently completed some tension tests on samples of Indiana limestone. This is a novel form of test for a material of this kind, the work having been undertaken in connection with the design of lifting devices used in hoisting large blocks of stone at the mills and also when being placed in buildings. The tensile values for the specimens tested ranged between 300 and 715 pounds per square inch, with an average of 535 pounds per square inch.



Just a few of a large group of log cabins built at Amoretti's Inn, near Jackson's Lake, Wyoming. The guests sleep here and eat at the Central Lodge, illustrated above



General view of the South Shore Manor Apartments

An Ultra-Modern Apartment Building

The South Shore Manor Apartments, Chicago, Contain the Latest Conveniences for Making Housekeeping Easy

LABOR-**S**AVING conveniences and devices for making housework easier are the vogue today. The owner of an apartment house who would attract a desirable class of tenants must keep up with the trend of the times and make his apartments as attractive as possible to the lady of the house.

See how this has been done in the South

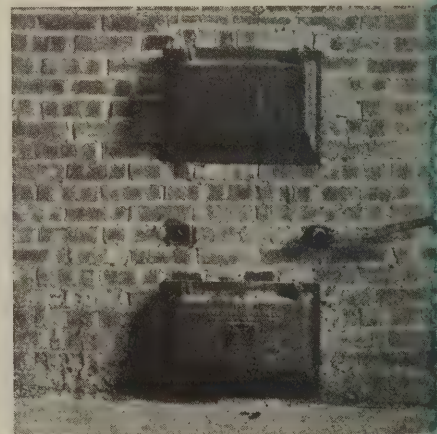
Shore Manor Apartments, located on the lake shore of Chicago. This building contains 48 apartments of four and five rooms each. Dark red face brick is used for the exterior walls and cut stone together with half-timber work and stucco panels, are worked into the design in a pleasing fashion. The building is fireproof throughout.

A sure way to make an apartment at-

tractive to women is to install modern conveniences in the kitchen and to make that room light and cheerful and a pleasant place in which to work. White enameled walls, steel kitchen cabinets, large, one-piece, aproned sinks, ironing boards, and a good sized gas range, together with plenty of light and air, make these kitchens pleasant workrooms. They have more than once been the deciding factor in renting an apartment.

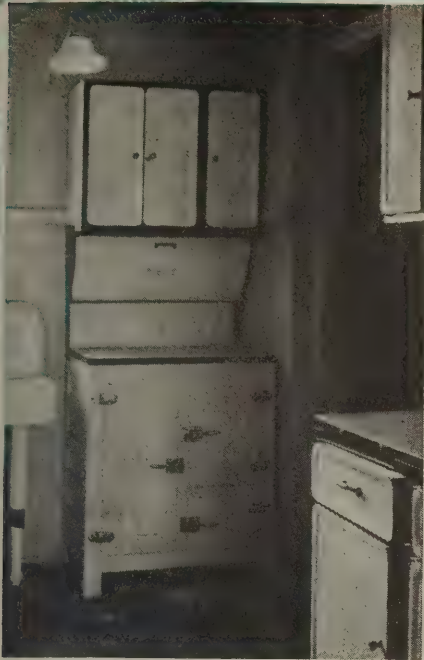


Close-up of typical entrance



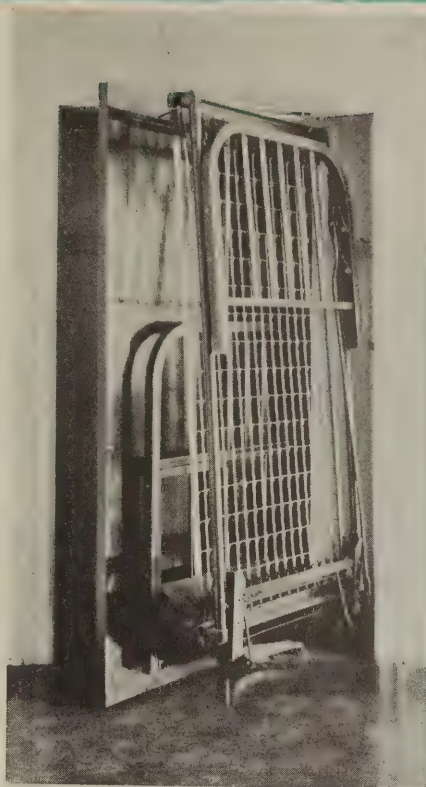
Incinerators solve the garbage disposal problem

No less attractive are the bathrooms. Showers, pedestal lavatories, built-in tubs,



Steel kitchen units are sanitary and practical

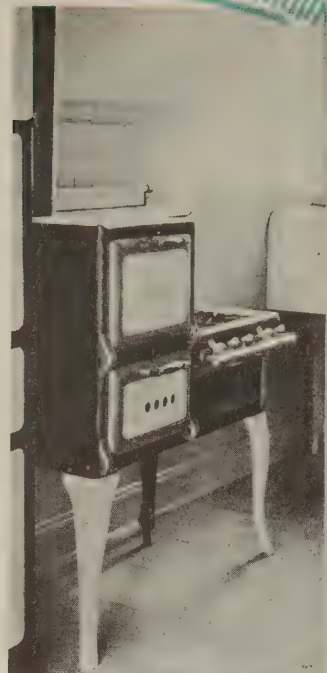
real glazed tile walls and good-sized medicine cabinets with mirrored doors make this room actually glisten. Not only from a standpoint of appearance, but also because these bathrooms are easy to keep clean, they hold an appeal for the prospective tenant. Notice, in the illustration showing the interior of a typical bathroom, that built-in soap-dishes and tumbler holders are provided. An inexpensive but decidedly useful bit of hardware is the hook for a razor strop shown at the base of



Disappearing beds give extra room efficiency

the medicine cabinet. This is a little stunt which shows that the builder was alive to those little inexpensive details which make an apartment a better place in which to live.

Increased efficiency of the rooms is provided for by the installation of disappear-



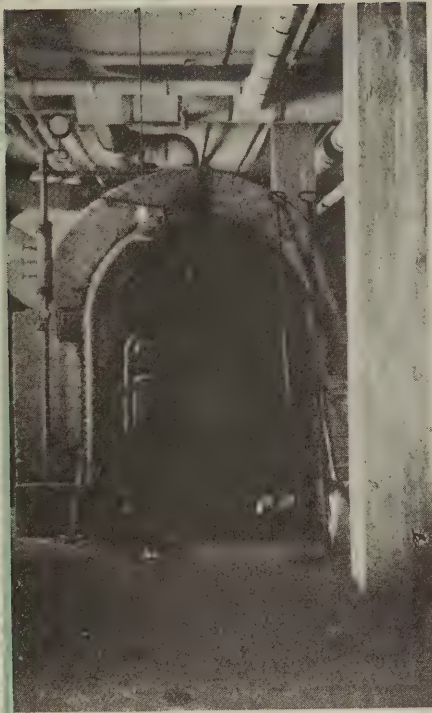
A glimpse of a kitchen showing gas range

ing beds. These beds are set on a panel in the dining room which, when swung around, brings the bed into view. When the bed is put away the panel is swung to and becomes a part of the wall decorative scheme.

All of the conveniences are not in the apartments themselves. In the basement a play room has been built and a billiard room adjacent provides a means of recreation for tenants who desire to spend a sociable evening with a few of the neighbors.



Typical floor plan of the South Shore Manor



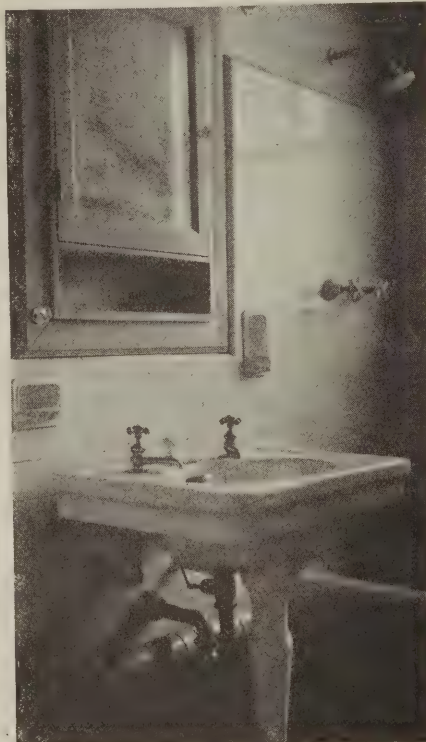
Smokeless boilers keep the tenants warm

or friends.

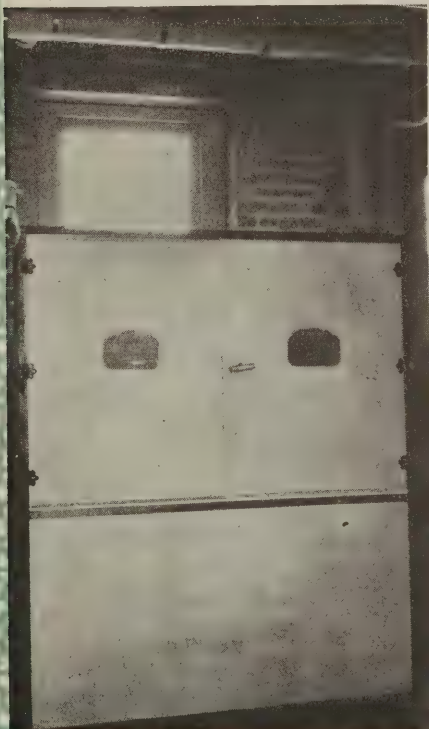
It has now become an accepted fact among progressive builders that features such as this are apt to be decisive factors in determining the earning power of a building. That is, attention is now being paid to the building up of social connections between the tenants, as it is realized that where a more neighborly and intimate relationship exists, tenants are less likely

to move at the termination of every lease. In other words, a family that is engaged in social activities with others in the same building is usually apt to be a permanent tenant.

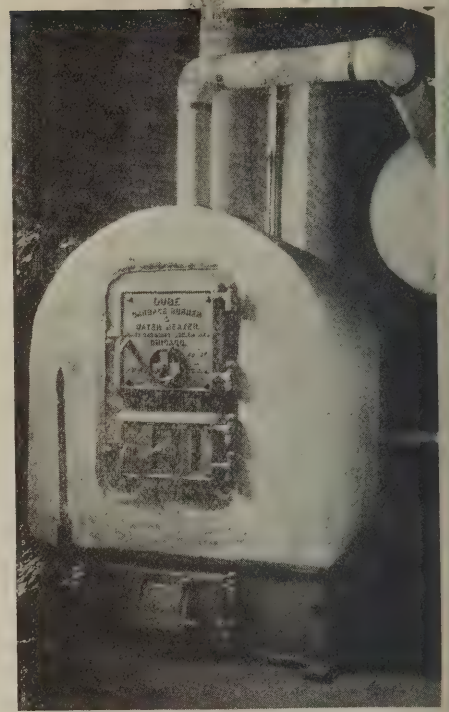
Steam heat, supplied by a battery of two boilers, keeps the building warm in the coldest weather and a device for automatically controlling the drafts has been installed as a means of saving fuel. Hot water is furnished by a separate heater and garbage incinerators, located at various points throughout the building, effectively dispose of the waste problem. For the convenience of laundresses, several gas-heated clothes dryers, of the type illustrated, have been installed.



Note the bathroom accessories built into the tile wall



Gas heated clothes dryers save space and time



Garbage burning water heaters save fuel

bed room 11x13, and a dining room 12x13 with an attached kitchenette 6x9, separated from the dining room by china cases. Note, however, that some of the kitchens are detached and the room sizes vary somewhat. Sun parlors are included with some of the apartments; they are about 9x13 in size.

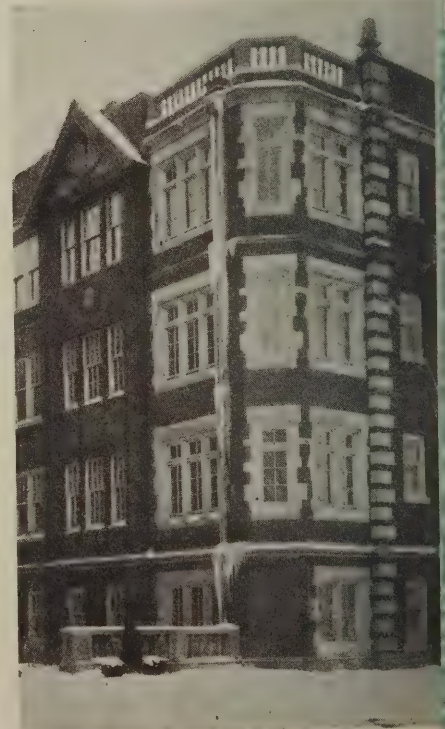
The five-room apartments are similar to the four-room ones, with the addition of another bed room.

Clothes dryers of this type often solve the problem when outdoor drying space is not available or where the prejudices of tenants against ordinary basement drying rooms makes their use undesirable. The rapidity with which laundry may be dried is also an important advantage of cabinet clothes dryers, especially when laundry space is crowded and several tenants use the same equipment.

This building contains many good ideas for the builder who would make his apartments attractive to tenants by the installation of modern conveniences and is well worth study by the builder who contemplates the erection of such a structure.

The apartments are of the four-room and five-room type. A number of them have sun parlors in addition.

An average four-room apartment in this building contains a living room 12x18, a



A corner showing the treatment of sun porches



Note the pivoted windows which furnish ventilation

Small Factory Building at Defiance, Ohio

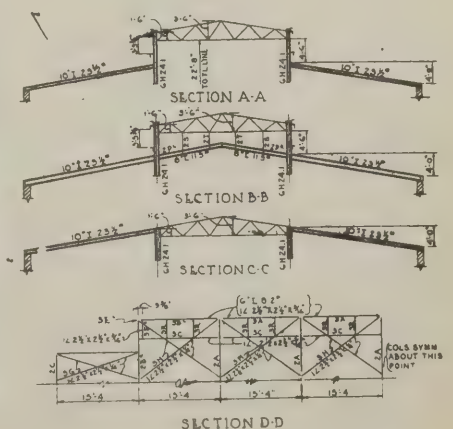
THE movement to promote the location of factory buildings throughout the smaller communities instead of concentrating our industrial activities in the larger cities, is evidently gaining ground. Manufacturers in many lines are beginning to realize that the smaller communities often offer advantages with regard to production that cannot be obtained in the larger centers. Questions relating to the availability of raw materials and the distribution of the finished product will always be major considerations in the location of industrial plants, but there is a rising tendency to seriously consider the human factor as well. It requires no evidence here to demonstrate that, everything being equal, the average factory in a large city does not enjoy the spirit of loyalty and co-operation on the part of the workers that obtains in the smaller community. The illustrations on this page show a

small one-story type of factory that is very popular for many lines of manufacturing. The building is of the strictly utilitarian type, with no attempt toward architectural embellishment. This in itself is a subject which causes more or less controversy now days; one side maintaining that architectural beauty causes a favorable reaction and stimulating influence on the workers; the other side says that this is of little, if any, account.

The construction of this factory is quite simple and economical. The walls are of brick, with buttresses or pilasters at regular intervals to strengthen the wall and provide additional bearings for the steel roof beams which form the principal rafters. Two lines of steel columns on the interior of the buildings provide support at these points for the principal rafters and for the steel trusses which occur in connection with the roof monitor at the

middle of the building. The monitor admits additional light to the middle of the building and its side windows are pivoted to permit efficient ventilation. These windows may be adjusted from the floor level by means of a special window operating device. The roof is of composition, laid on wood framing which is supported on the steel trusses and beams before mentioned. All of the windows in the building are of the steel factory sash type which admit the maximum of daylight. Care was used in laying out the building so that only stock size windows, etc., were required.

All of the steelwork was designed and fabricated by a concern specializing in such work. The accompanying drawings represent part of the set that was furnished to the contractor for guidance in erecting the steel work. Everything was thus made clear so that errors were eliminated.



Erection drawings used in setting the steelwork

Tourists' Accommodation Station

FREE camp grounds are a common thing these days and every city and small town vies with its neighbors in extending hospitality to the tourist.

But free camp grounds is as far as some municipalities go. Keokuk, Iowa, however, through the beneficence of the local Lions Club goes considerably farther. It provides for people touring through Keokuk a very substantial shelter equipped with practically every home convenience.

The exterior and interior of this little building are illustrated here, together with the floor plan of its complete layout, showing the location of the sinks and kitchen



Open during the entire touring season, this little building in one of the parks in Keokuk, Iowa, spells hospitality in all capitals to the tired, disheveled tourist. It is a gift of the local Lions Club and was designed and built by Fred C. Johnson

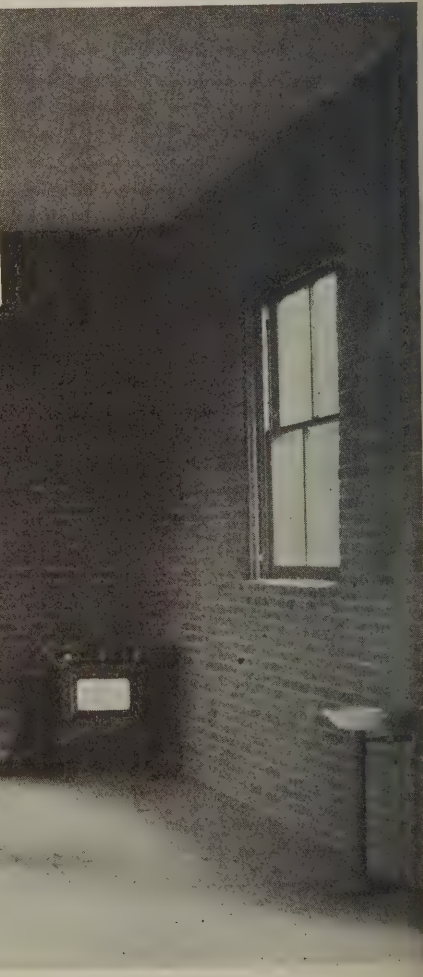
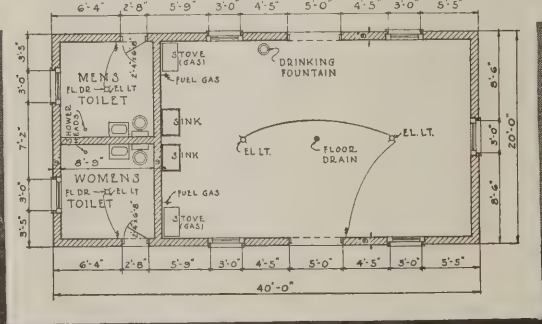
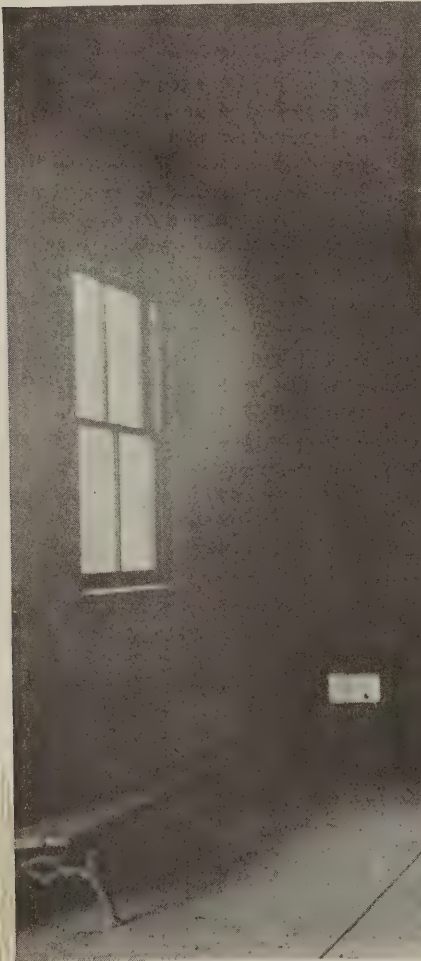
stoves in the main room, and the drinking fountain and benches, on a dry concrete floor, which contribute to the comfort of many a weary traveler.

One end of the building is devoted to the toilet rooms, each one of which is equipped with a shower bath.

There is running water in this building at

all times during the touring season and electric lights are furnished free. The gas stoves are operated by drop-a-quarter meters.

Signs over the doorways of the building state: "This Building Was Erected by the Lions Club for the Use of Tourists, So Make Yourself at Home." Fred C. Johnson was the designer and builder.



The main room of the building is fully equipped with gas stoves with drop-a-quarter meters, sinks, drinking fountain and benches and has a concrete floor. The plan in the insert above shows the location of the toilets. Note that they are equipped with showers



Here is an attractive service station that is almost sure to attract more than a passing glance from motorists

A Byzantine Service Station

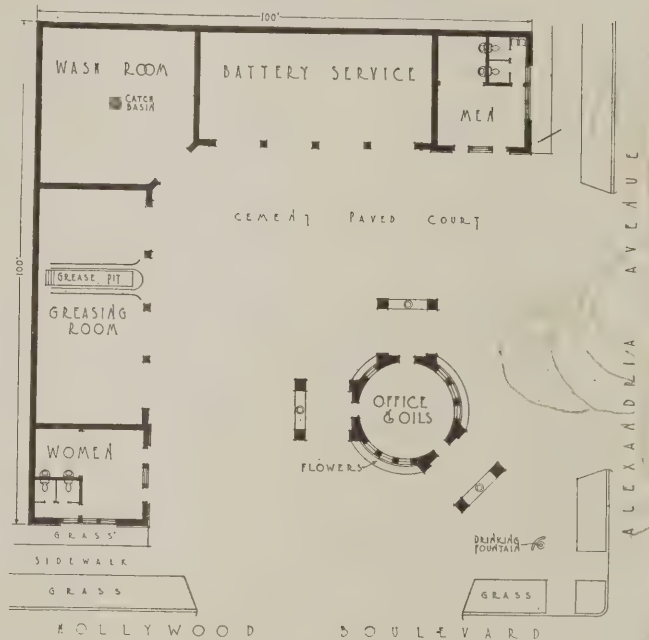
THIS service station is located in Hollywood and represents the last word in this form of architecture. Its slender minarets, and its domes are distinctly Byzantine in style and the coloring carries out the same theme. The domes are a brilliant indigo blue on which are painted silver stars. The minarets (each of which contains a flood light for illuminating the open court beneath) are cream color, banded with orange and red. These same colors appear in the stenciled frieze and medallions on the exterior, the designs suggesting Arabic.

The pillars at the entrance to the various

service booths in the L-shaped building are deep reddish brown, while the main color of all the walls is a rich buff bordering on a cream.

The buildings (two in number) are of substantial brick, stuccoed and the cost is reported to have been \$35,000.

The pavilion which forms the central feature is Y-shaped, each



In the plot plan above, note the generous spaces for maneuvering cars and the wide approaches from the two important streets on which the station fronts



A public drinking fountain with iced water makes warm friends on a hot day

of the three arms being prepared to accommodate two automobiles at once. Thus, a total of six cars may be served at one time, an important consideration on a busy thoroughfare where service stations are numerous and the hurrying motorist doesn't care to form the end of a long waiting line.

To carry out the Turkish idea you will observe that the attendants are dressed in white costumes, adorned with orange sashes and wearing red fezes. A drinking fountain offering ice-chilled city water is installed at the corner.

The layout and design of the entire group exhibits careful study in a field that is comparatively new and therefore should go far in establishing a model for future work of this kind.



View showing elevations on both streets. Note the absence of posts in the corner entrance

Diversification Provides a Steady Income for the Owner of this Building

This Combination Store, Office and Apartment Building Contains Interesting Floor Plans

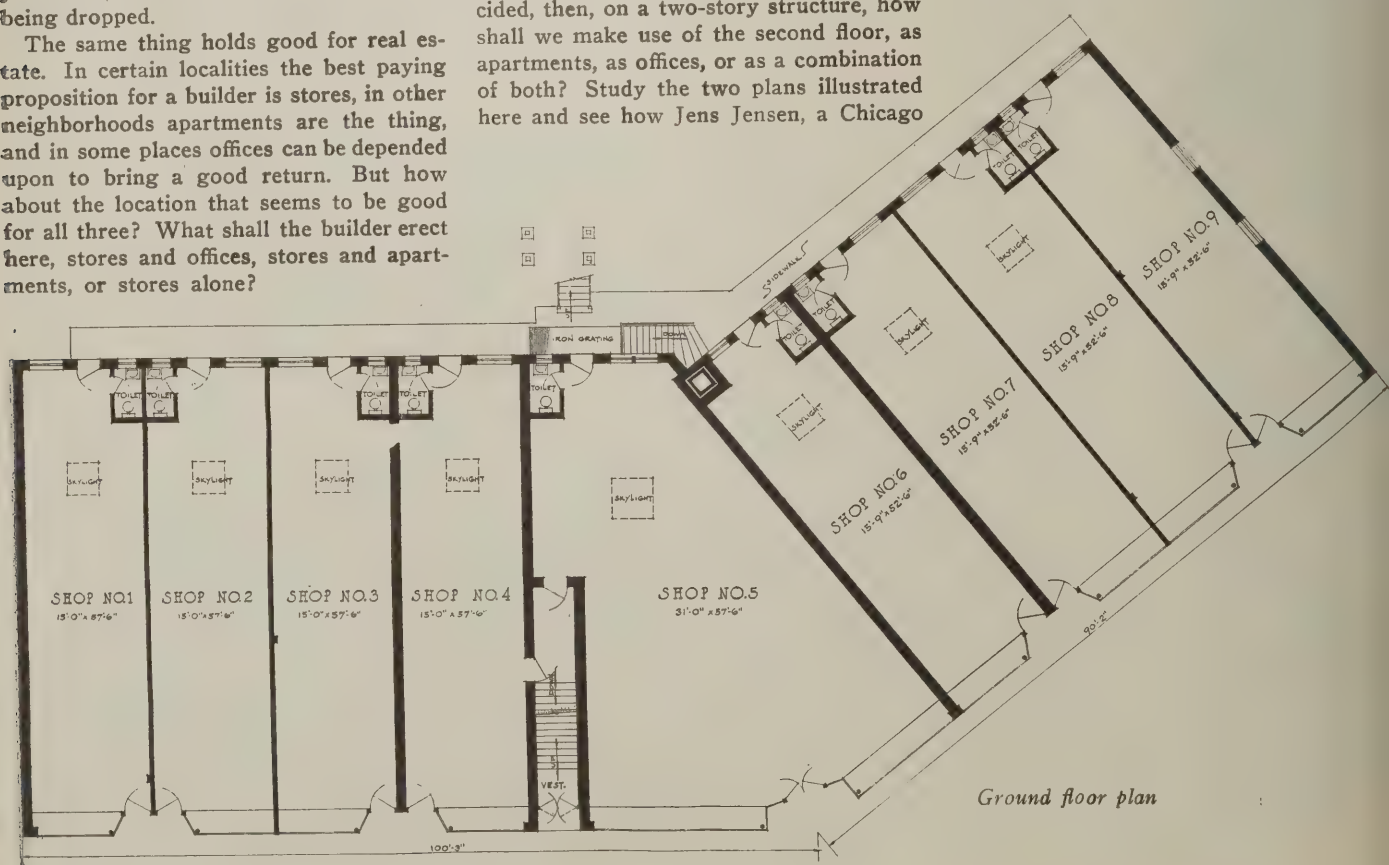
EVERY wise investor understands the safeguard afforded by a diversification of investments. It is not good policy to place all your eggs in one basket unless you know there is no chance of the basket being dropped.

The same thing holds good for real estate. In certain localities the best paying proposition for a builder is stores, in other neighborhoods apartments are the thing, and in some places offices can be depended upon to bring a good return. But how about the location that seems to be good for all three? What shall the builder erect here, stores and offices, stores and apartments, or stores alone?

To build only stores means the erection of a one-story building, with just as much foundation and roof as would be required for a two-story building. Why not, then, put up a two-story building? Having decided, then, on a two-story structure, how shall we make use of the second floor, as apartments, as offices, or as a combination of both? Study the two plans illustrated here and see how Jens Jensen, a Chicago

architect, has worked out the problem for George W. Prassas, who recently erected this building at Fullerton and Milwaukee avenues.

The building stands on an odd-shaped



lot, about 100 feet on the Milwaukee Avenue frontage and 90 feet on the Fullerton Avenue side. It is built of buff brick with terra cotta trim and only enough of the



Detail of front entrance

ground area has been excavated to provide storage space for the tenants and room for the heating plant.

On the ground floor are nine shops, all rectangular in shape except the one at the corner which was made an odd shape due to the dimensions of the lot. Notice that the stair well leading to the second floor is enclosed in a brick wall as a precaution against having the second-floor tenants trapped and unable to escape in case a fire breaks out.

The second floor is devoted to offices and apartments, entrance to which is obtained from a hall running the entire



This is a view of the underside of the skylights which provide light for the office reception rooms

length of the building. This hallway is protected against fire by making the floor of fireproof construction, a reinforced concrete slab resting on steel beams. The balance of the floor is carried on wood joists.

There are five apartments on the second floor, and seven offices, also a public toilet for men and one for women. Of the five apartments three are of the one-room type, with disappearing beds, baths, and kitchenettes, the other two, of four rooms and bath, also contain disappearing beds which open into the living room, thus making these apartments of five-room efficiency.

The offices are divided into two groups, with a reception room for each group. This permits their being rented not only as private offices but also as suites, in case one tenant should require an entire

group. The corner office has a private reception room opening off the main reception room for the group. Each office is provided with a lavatory.

Notice, now, the benefits afforded by this diversification. Some income is bound to be derived from some part of the building at all times since it is hardly possible that all three types of rentable space, stores, offices, and apartments, will fail to attract tenants and thus keep the building partially filled at all times.

The one-room apartments are excellent quarters for bachelors who occupy the offices and the larger apartments provide living



Second floor plan

quarters for tenants of the stores and offices who may have families, thus offering an added attraction to those who rent store and office space.

Small Brick Church Building

By Theo. M. Fisher

IN planning and designing the First Christian Church at Sterling, Colorado, the problem was to produce a church unpretentious and home-like in character, of simple and easily obtainable materials, and with a layout suitable to the needs of a medium sized congregation. The building was designed and the construction supervised by Eugene G. Groves, architect, 222 Foster Building, Denver, Colorado.

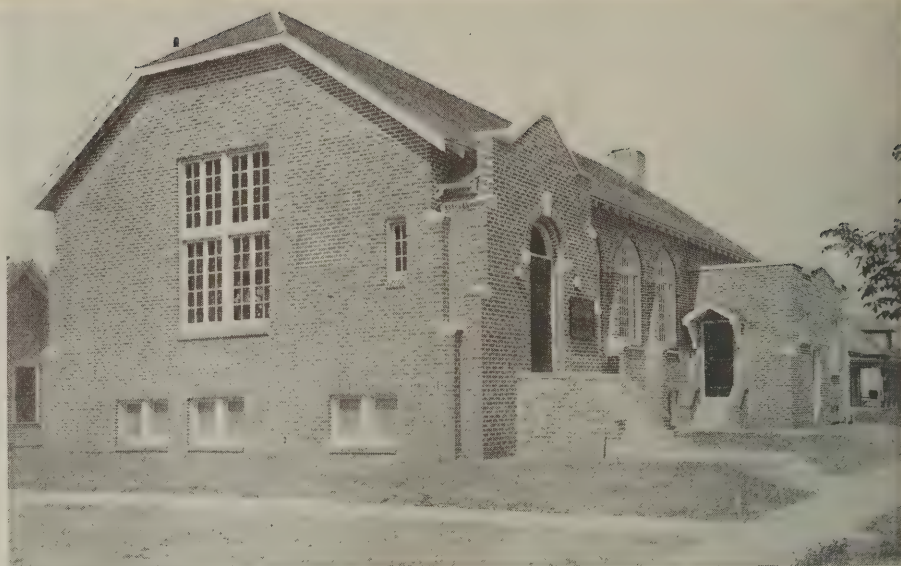
The auditorium has seats for about two hundred people, with a balcony and Sunday School room which can be opened into the auditorium providing maximum seating of about two hundred eighty. The rostrum provides ample space for choir and the communion table. One notable feature is the location of the baptistry in the center and at the back of the pulpit within view of the entire audience. The tank is connected with a heater in the basement so that the water may be tempered. Preparation or dressing rooms with wardrobes are provided off the passageway leading to the baptistry. The pastor's study is accessible alike to the pulpit, and to the public by a street entrance.

The lower floor is a high basement and provides a social hall 30x40 feet with adequate light, and with no standing columns or posts. A kitchen with cupboards, sinks and range opens off this hall and is also provided with a separate exterior street entrance.

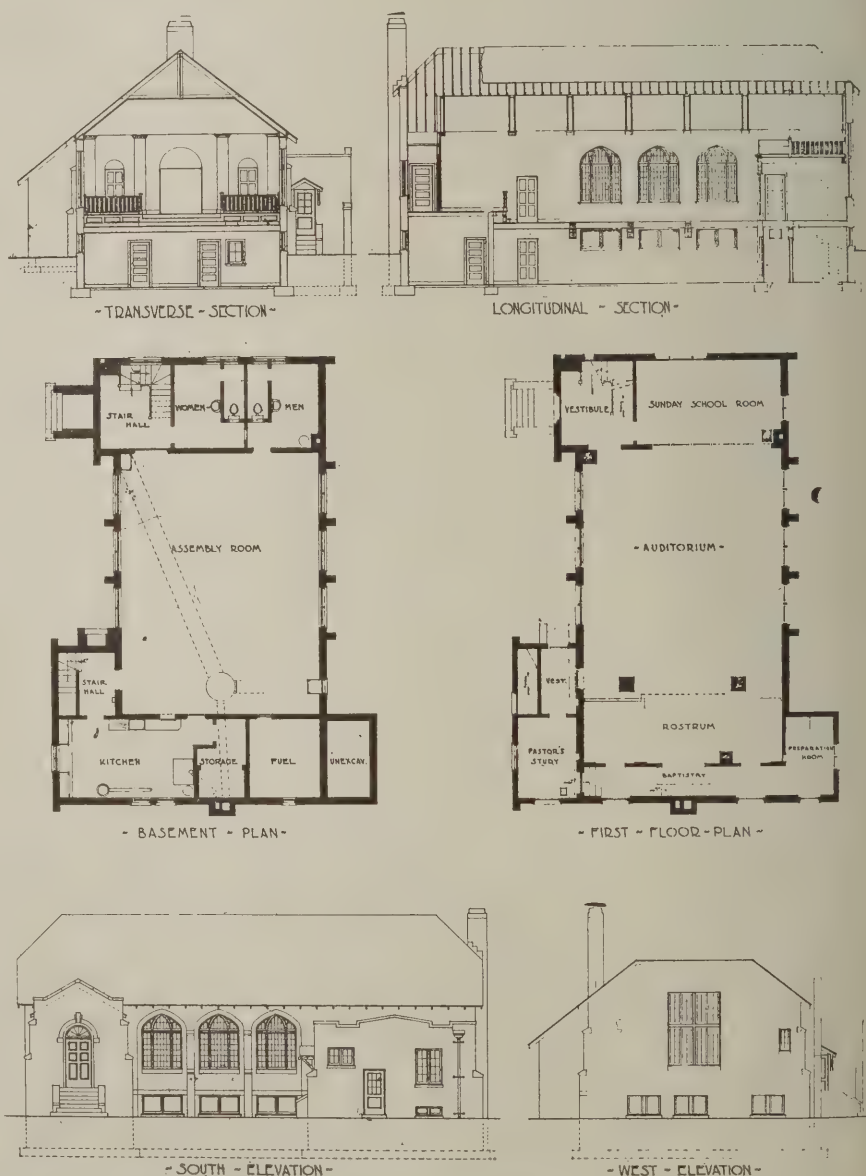
The building was completed in January, 1921, in a period of high prices, for the following costs:

General contract	\$16,700.00
Plumbing	943.00
Heating	515.00
Wiring	335.00
Finish hardware	242.50
Architect's fee, 6 per cent on the above contracts	1,124.13
New furniture purchased by the owners	200.00
Total.....	\$20,059.63

The building has a total of 75,950 cubic feet, costing \$0.26½ per cubic foot. As the plans and specifications were complete, the contracts inclusive, and the building committee composed entirely of men who were content not to change their minds in regard to the requirements of the building, no extras were incurred, and the members of the church knew on the date contracts were let the ultimate amount of funds to be raised.

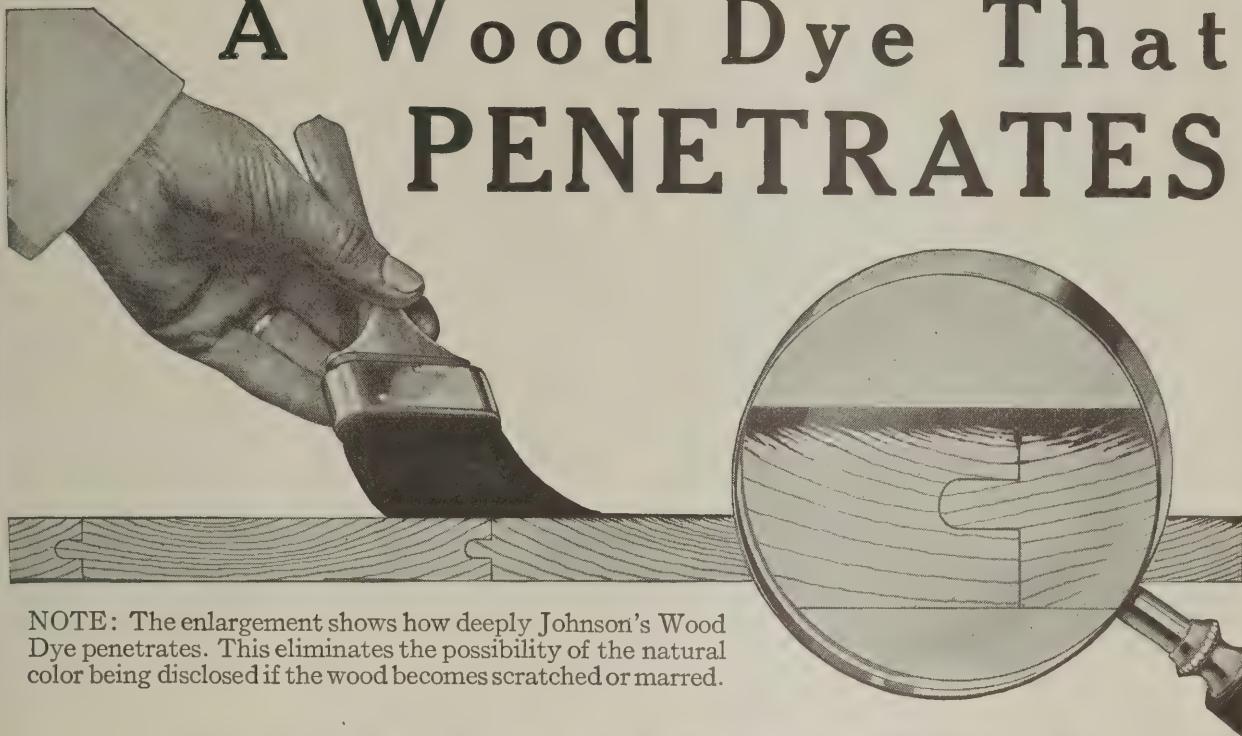


First Christian Church, Sterling, Colorado. Eugene G. Groves, architect



Sections, plans and elevations

A Wood Dye That PENETRATES



NOTE: The enlargement shows how deeply Johnson's Wood Dye penetrates. This eliminates the possibility of the natural color being disclosed if the wood becomes scratched or marred.

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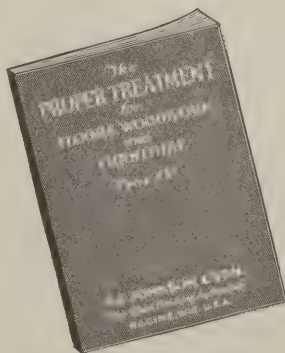
Johnson's Wood Dye is a **dye** in every sense of the word. It contains no finish whatsoever and, like most first class products, it answers one purpose only—it dyes the wood—the finish

must be applied over it. We recommend Johnson's Varnishes or Polishing Wax.

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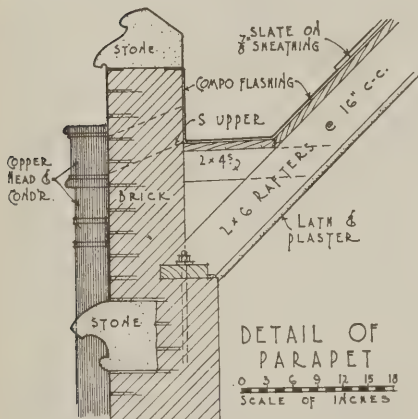
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This building is located near institutional buildings built of a reddish brown stone. The bricks were selected with great care to match the color of the stone



The gutter is lined with prepared roofing

A Playground Building for a Girls' School

THE location of playgrounds in public parks or on sites rather distant from school gymnasiums, etc., makes necessary some provision for locker rooms, showers, etc. This is especially true of playgrounds used by girls who have reached the age for playing the modern, strenuous games which require the wearing of special clothing during their play.

The playground building built for Mary

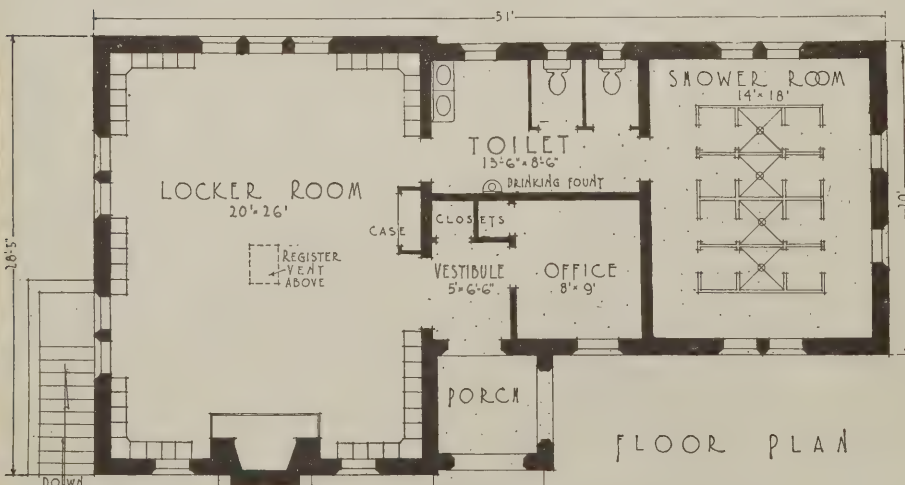
Institute in St. Louis, Missouri, is an exceptionally good example of this type of building. It was designed by Ferrand & Fitch, architects, Washington University, St. Louis.

The style of the building is Collegiate Gothic, built of brick with cut stone trimmings. The quality of the design, in both mass and detail, is notably fine. Landscaping will, of course, provide a setting better suited to exhibiting the architectural quality of the building.

The principal feature of the plan is the large locker room in which the ceiling extends up the slope of the rafters. As this room is used as a rest room as well as a locker room it is furnished with tables, easy chairs, pictures, reading matter, etc. The floor is of wood and a large fireplace at one end carries out the idea of comfort and relaxation.

The shower room stalls are of the double variety, each having two dressing rooms so that two occupants may be served at once; one dressing or undressing, while another occupies the shower compartment.

The closet opening from the vestibule is for the storage of the caretaker's supplies. The office is used by the matron or playground supervisor.



Only the portion under the locker room is excavated. It contains the heating plant



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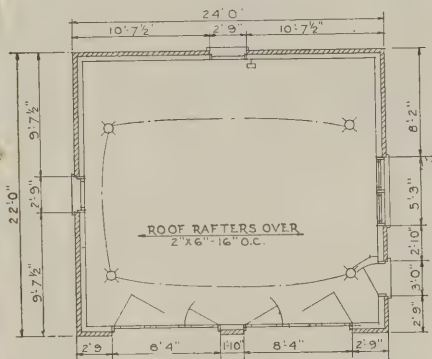
830 F. C. Austin Building

CHICAGO, ILLINOIS

Factories at Argo, Ill., and Detroit, Mich.

Three Double Garages

THE popularity of double garages is no doubt due to the flexibility which they possess even though but one car is owned; a chance guest is easily accommodated; there is more room for working around, and wash-



Floor plan

ing the car; they usually make a better appearance and the expense of construction is usually but little more than for a single garage. Then too, the extra space may often be rented, or, under particularly favorable circumstances, two neighbors sometimes center the garage on the lot line, each sharing the expense.



The possibilities of adding interest by careful detailing of doors is often overlooked



The pergola type cornice relieves the flat appearance of the roof

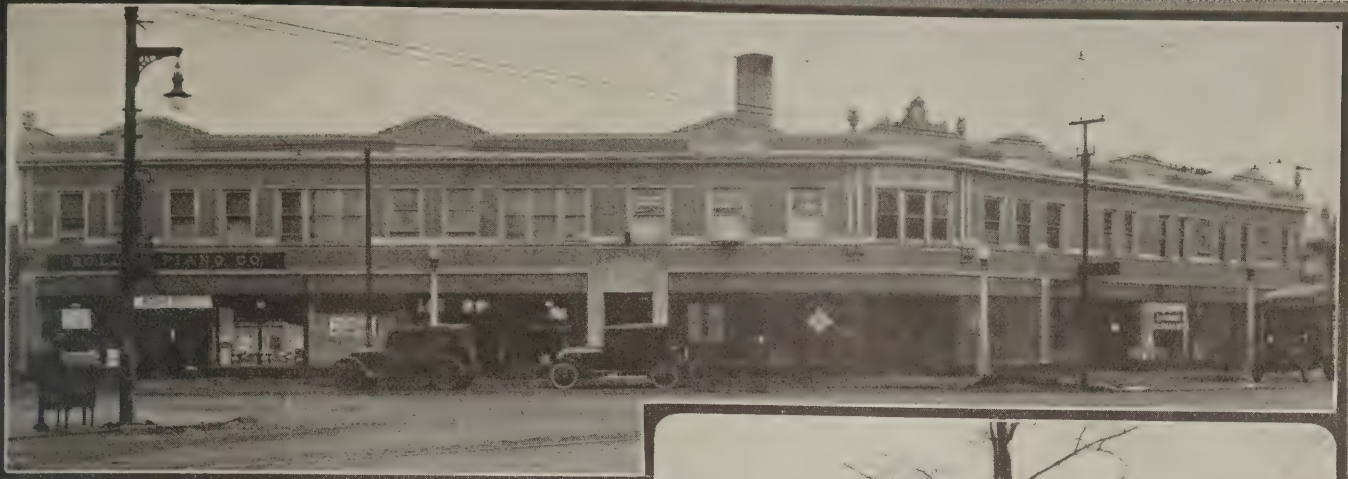


The doors are glazed with wire glass to reduce broken panes

The garage at the top is in the rear of the house of Mr. G. T. Vogelaar at Pella, Iowa, which was described in the December, 1923, issue of NATIONAL BUILDER. The garage was built from the accompanying plan and was designed by Boyd & Moore, architects, Des Moines, Iowa.

THE garage in the middle of the page is located in Champaign, Illinois. It is finished with stucco and has a flat roof. The door in contrasting color, the pergola entrance and the lighting fixtures add interest to an otherwise plain design.

THE garage at the left is owned by Mrs. Louise Cervenka, Riverside, Illinois. The architect was Joseph J. Nadherny, First National Bank Building, Chicago, Illinois. The attractiveness of this garage is largely due to careful proportioning. Very little detailing was done, even the cornice is flat except for the bed-mold.



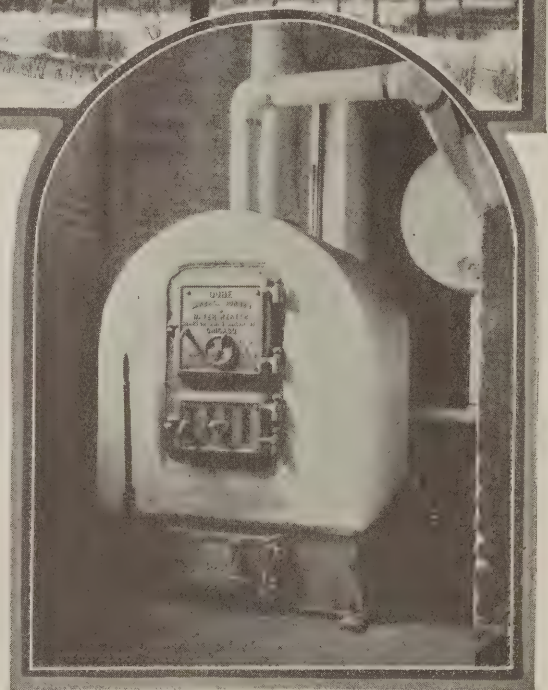
Two Installations of **DUBÉ** Garbage Burner and Hot Water Heater

It is no mere accident that Dubé Garbage Burners and Hot Water Heaters have been used in both the South Shore Manor and the Prassas office building in Chicago. These buildings are on diametrically opposite sides of this big city and in many ways are as far apart as they could possibly be.

It is because of the universal popularity of the Dubé equipment that the builders of these two buildings both thought of it when planning their incinerating and hot water supply systems.

The economical efficiency and ease of operation of the Dubé Garbage Burner and Hot Water Heater recommend it to contractors, architects and builders everywhere.

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General Purpose Barn



Perspective view of general-purpose barn

It is often difficult to decide just what type of farm buildings to erect in order to provide adequate shelter for stock and storage space for feed. Climatic conditions, individual preferences, the amount of stock, the purpose for which the stock is intended—whether for breeding, fattening, growing and finishing and so forth—and the availability of labor and materials must all be considered.

General-purpose barns find their greatest field of usefulness on farms of moderate size, when the problem of shelter for stock and for storage of feed must be solved in a simple way. The resulting concentration of stock so that they may be easily cared for, is another factor in favor of barns of this type.

Two plans for this barn are shown below. In the first plan, provision is made for about 65 sheep together with stalls for horses and cows. The alternate plan omits the sheep pens, replacing them with space for caring

for about a carload of beef cattle. Thus, this plan is suitable for diversified farming where some cattle are marketed, but not in sufficient quantities to justify separate buildings. The alternate plan also provides shelter for a few sheep or young stock. A litter alley with carrier above is also suggested behind the stall space.

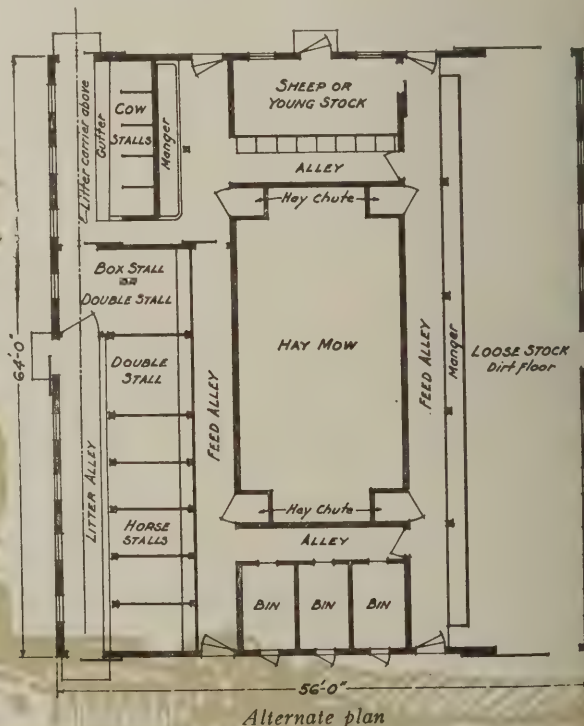
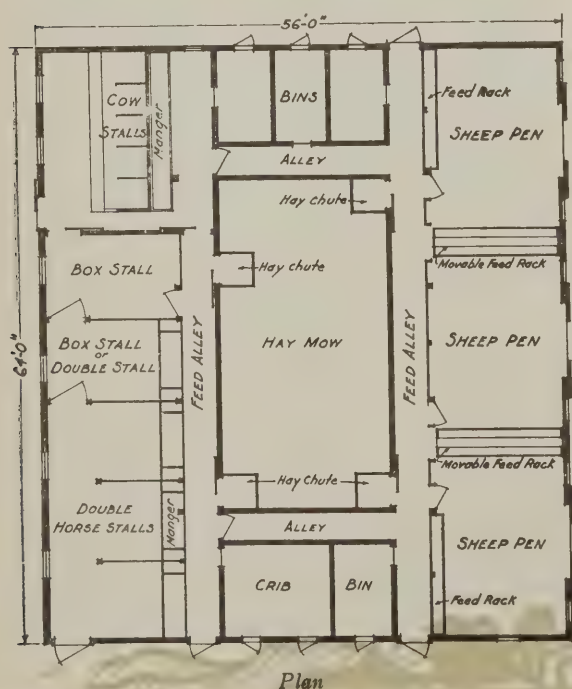
The low hay mow is a feature of importance in both of these plans. Mows of this type have several advantages. They are factors in simplifying the construction because the weight of the mow floor rests directly on the ground in the middle of the building, thus eliminating heavy construction required for a hay mow entirely contained in the loft. The low mow reduces the height to which hay must be carried when using a hayfork or sling. It also saves

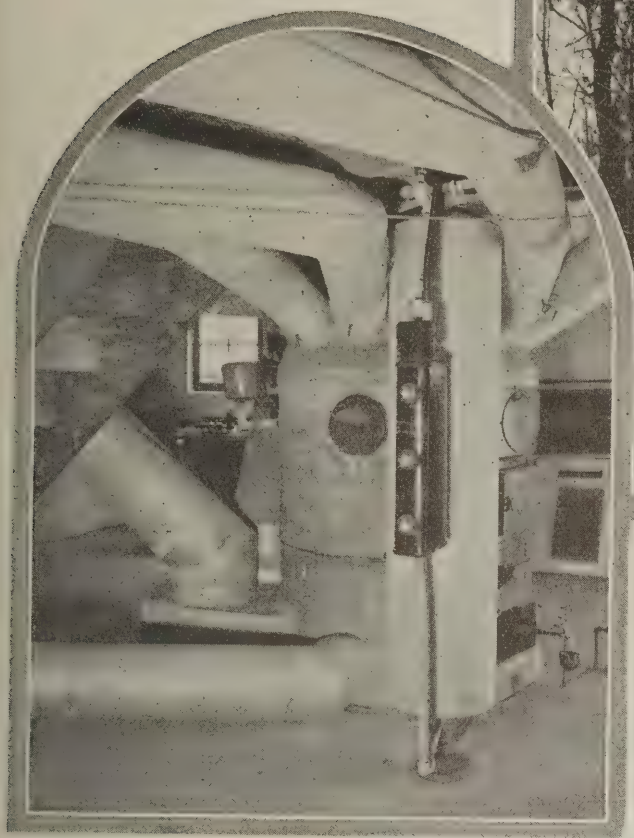
considerable climbing when removing hay for feeding.

The mow as shown has a capacity of about 58 tons of hay. The bins hold about 300 bushels each, and about 300 bushels of ear corn may be stored in the crib.

These plans were prepared by the United States Department of Agriculture, Washington, D. C., from whom further particulars may be obtained. Refer to design No. 612 in writing to them.

It should be noted that these plans are primarily intended as suggestive only. That is, they may, and often should, be modified to suit the individual requirements that are to be met. Complete working drawings of the basic plan type, however, may be obtained from the department, but the alternate plan is not available.





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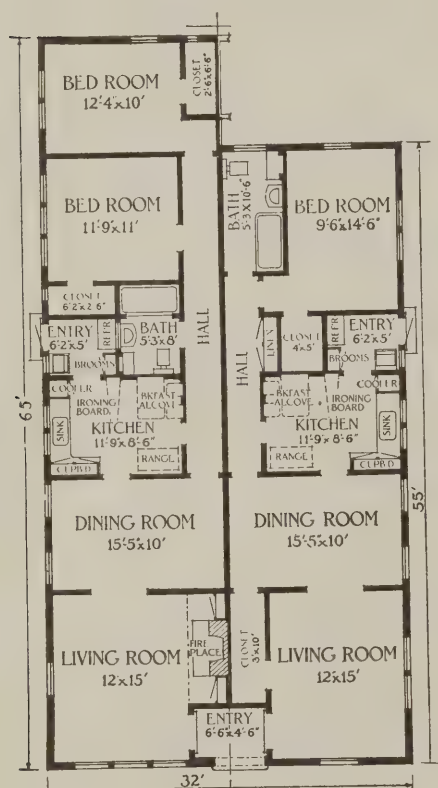
Two California Two-Family Bungalows from the Same Floor Plan

WHEN the two-family house has two exterior entrances it plainly betrays its duplex character and sometimes this is not desirable, especially in restricted residential sections. The plan and designs shown here are of interest because there is, to all appearances, one entrance. This effect is accomplished through the use of a common entry-way, a feature which saves in costs as well as produces a better appearance.

The designs of these two houses are distinctly of the California type, showing Spanish influence, particularly in the one with

should face either north or south so that the apartments are equally desirable from the standpoint of sunshine. There is one bedroom in one apartment and two in the

their desirability in the minds of prospective tenants. The sink is beneath a double window, with a cupboard at one end and a cooler at the other. There is a refrigerator



Floor plan for the house above. For the house below, the entry porch is built out beyond the wall of the house

the flat roof. The simplicity, in fact, the plainness of the exteriors recommends them, however, to builders everywhere, who will find this style of house becoming more and more popular.

The plan is a practical one from many standpoints because it permits building the house on a lot as narrow as 38 or 40 feet. The living room in the front and the rear bedroom in each case enjoy cross ventilation while the other rooms have two and three windows in the outside wall. The house



The plainness and good proportions of this exterior recommend it to the builder of good houses

otherwise. Otherwise, the layouts are identical except for the location of the bathrooms. The kitchens of these apartments are full of permanent equipment which adds much to

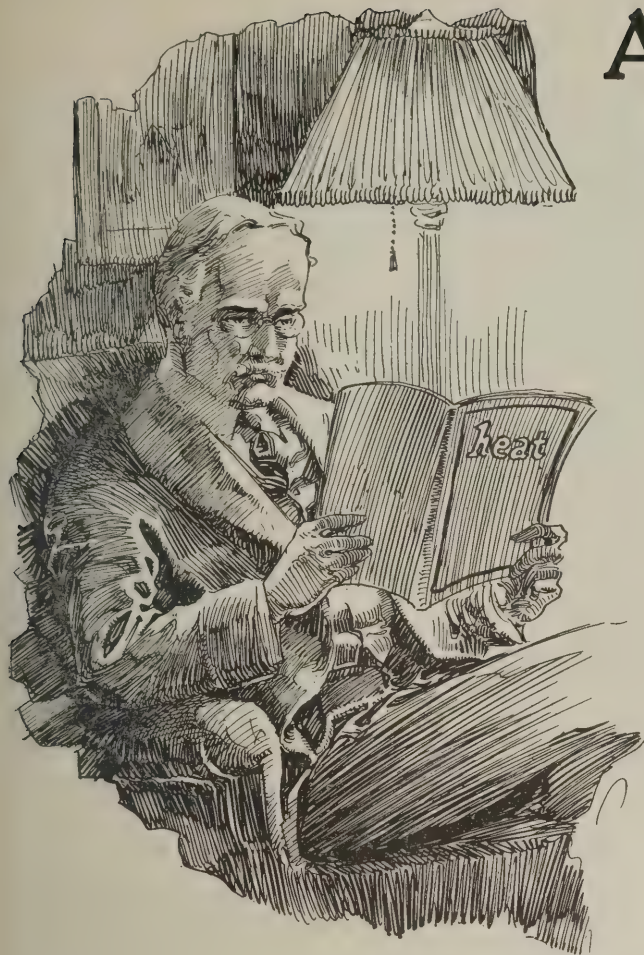
in the entry; also a broom closet. The ironing board is in a built-in cabinet.

E. W. Stillwell & Company, 137 California Building, Los Angeles, were the architects.



Another expression of the same floor plan in a house showing Spanish Mission influence

A "Den" for the "Old Man" and Friends

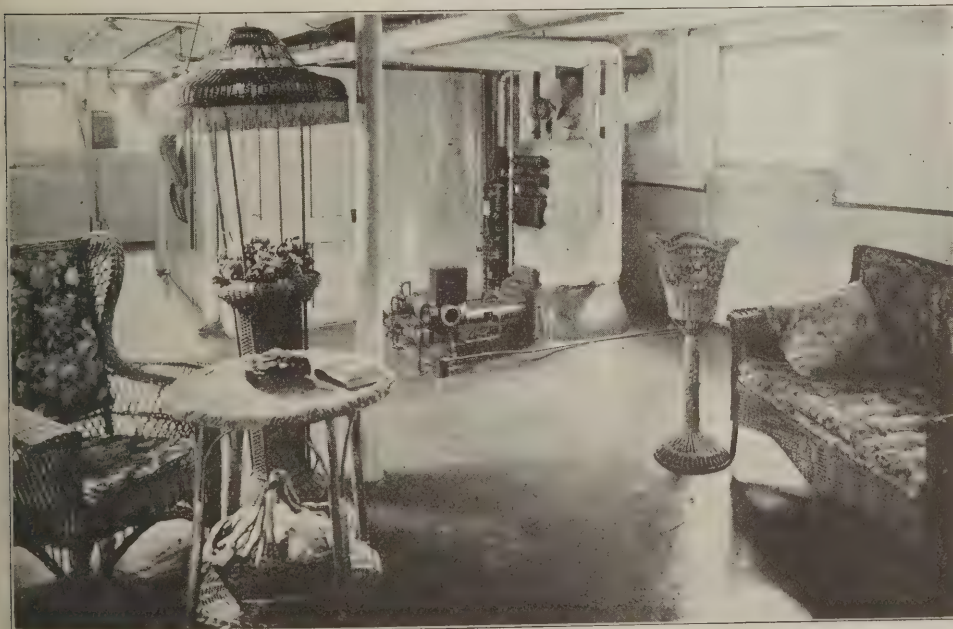


The American Oil Burner offers unlimited possibilities along these lines.

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With an American, no coal bin is needed. The basement is free from the muss of coal and ash dust. There are no old dirty clothes hanging around, clothes worn while shaking the grate, removing the ashes, and cleaning up the basement.

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THE Auburn Branch Library at Atlanta, Georgia, is a good example of what can be done to supply a small library at moderate cost. The building is in the Colonial style, built of red brick and cut stone, and the roof is of tin. The brick is laid in Flemish bond, in ordinary color mortar, and the window sash are divided into small panes.

There are two entrances to the basement; one leading from the street to a lecture room, and another at the side of the building which is utilized as a janitor's entrance. An interior stairway leads from the basement to the main floor. The men's toilet and janitor's closet are located directly opposite the stairway. A platform is located in the

center of the lecture room wall and at one end is a passage which leads to the stairway. Thus access may be had from the street or



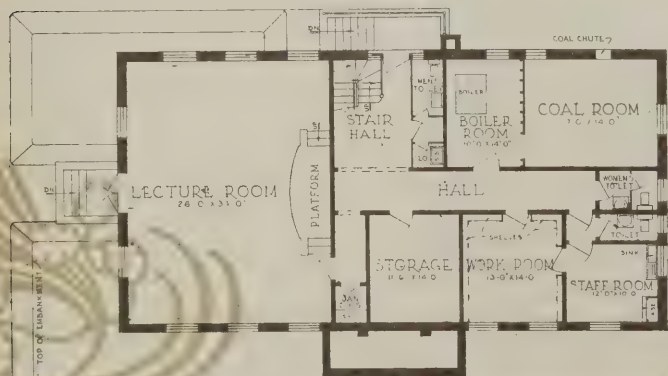
Interior view showing delivery desk

from any part inside the building, and it is not necessary for a lecturer to pass thru the audience on his way to the platform.

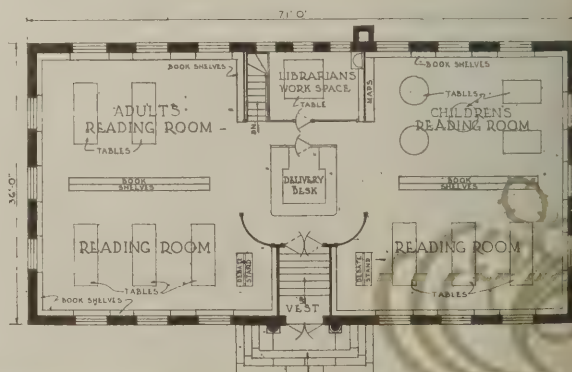
Besides the features already mentioned, the basement contains a storage room, a work room equipped with shelves, the women's toilet, the fuel and boiler rooms, and the staff room which contains a private toilet. The fuel room is equipped with a 17x24-inch coal chute.

Access to the main floor may be had thru the main entrance leading from the street or by means of the stairway leading from the basement.

Hentz, Reid, & Adler of Atlanta, Georgia, were the architects.



Basement

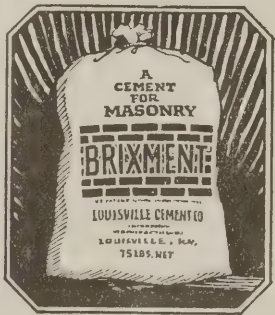


First floor

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Marble Office and Garage Building

MATERIAL men who own their office quarters are often inconsistent in the choice of materials used in the construction of the building. In some cases they use a competing material when their own would serve as well. This is sometimes done on the score of economy, but as a matter of fact, the material man who overlooks the publicity value of being able to present his material to the trade in an attractive and proper manner, is not fair to his product.

The Candoro Marble Company of Knoxville, Tennessee, has provided for their office and garage, marble structures which were conceived with the idea of demonstrating the proper and most effective use of the material which they manufacture.

An adjoining formal garden will also make use of the marble in its ornamental features.

The entrance motif of the main building is framed by an avenue of tall evergreens which border the main approach. A forecourt, bounded on one side by the office and on another side by the garage with its four arches and tile room, has the appearance of an Italian loggia. A tile coped marble wall connects the two structures. The formal nature of the material demanded formal treatment for the whole group.

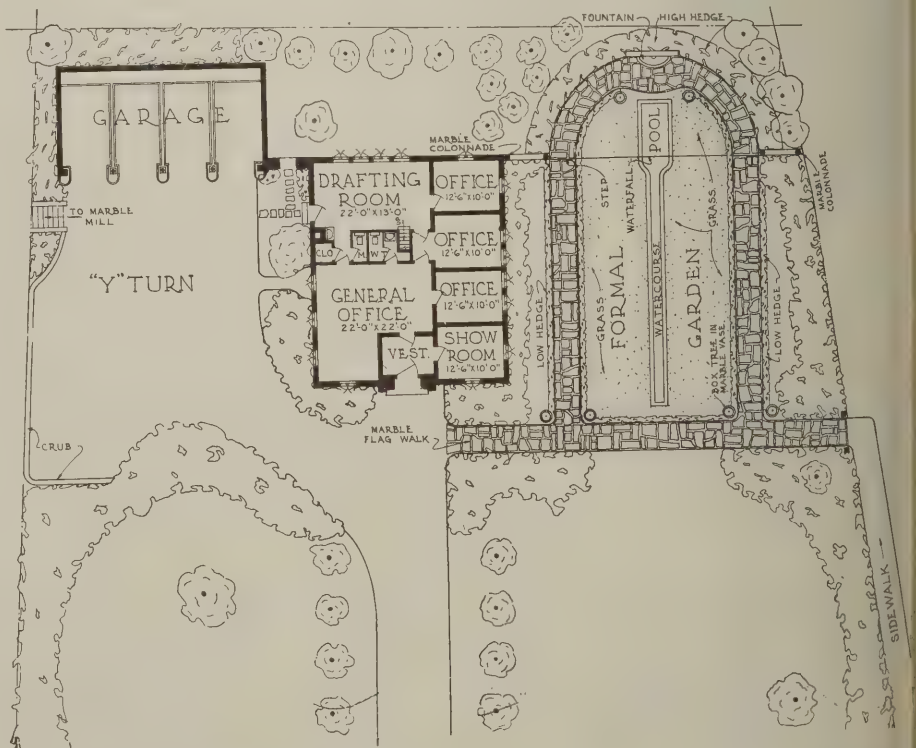
Color and texture were obtained by the use of fluted pilasters, rustications, different surface finishes and carving. Brilliancy was produced by the use of some fine wrought iron work which is ideal in a setting of marble.

Beyond the entrance and vestibule, little marble was used except for floors, base

and toilet rooms. In the vestibule and sample room, a great variety of marbles were used, with the idea of proper display. The floor of the vestibule and main office is of squares of Belgian Black and Golden Veined Tennessee marble tile alternating with base of Black and Gold. Similar treatment is carried out in the private offices. A wainscot of Roman Travertine in the

vestibule reaches to the spring line of the ceiling vaults. The ceiling has been richly decorated in color by Mr. Hugh Tyler.

The entrance doors, the door leading to the main office and lantern hanging from the vaulted ceiling are in wrought iron by Mr. Samuel Yellin. Barber & McMurry of Knoxville were the architects and Elizabeth Wiley, the landscape architect.



The foreground landscaping extends about three times as far as is indicated by the plot plan



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\$42,000 Saved

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A California Parsonage

By A. J. R. Curtis

OF the many beautiful little homes of concrete masonry construction in Southern California, perhaps none is more pleasing in general lines and details than the new parsonage erected for the First Methodist Episcopal Church of Alhambra. It is a pleasing example of an architectural style especially adapted to California needs and tastefully placed with respect to surrounding structures.

Accompanying views give a fair idea of the beauty of outline and perfection of detail attained by the designer, Scott Quintin of Los Angeles, a prominent local architect, using concrete building tile, portland cement stucco and precast concrete decorations in the walls. These materials were furnished by the Los Angeles Concrete Tile Company, the structural units and ornamental pieces being manufactured in the company's plant in Monterey Park.

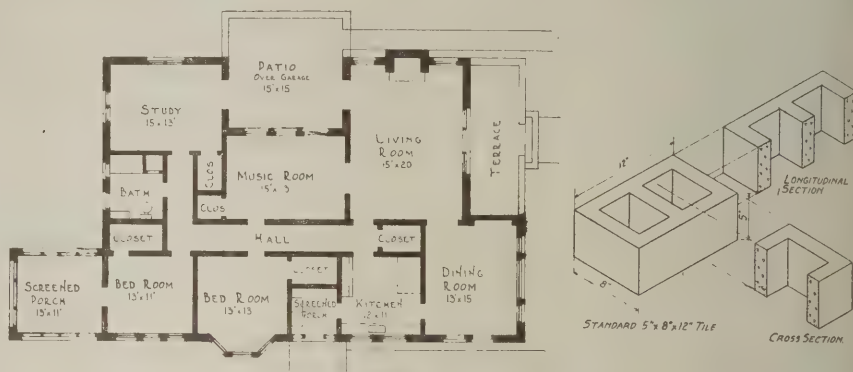
An outstanding characteristic is noticed in the many jogs and irregular surfaces in the wall, an extravagance of this type of architecture, but a condition into which the concrete tile fitted easily and economically. The demands on a structure to be used as a parsonage are much more severe than on the average private home and the designer strove to make the structure as rigid and as nearly permanent and maintenance-free as practicable. The better class construction in that vicinity must have walls of unquestioned rigidity and stability, in order to provide security from the occasional tremors to which many Pacific coast regions are subject.

The main lower walls of this house are 12 inches in thickness and the remaining walls 8 inches thick (masonry thickness), constructed of concrete units which are 8 inches in width, 12 inches long and 5 inches high, as shown in the sketch. In order to secure a strong bond between units, cement mortar was employed producing masonry practically the equivalent of a hollow monolithic wall. The exterior surface is of cream portland cement stucco in an attractive, even-textured stippled design, while the precast ornaments have a texture-character somewhat resembling Bedford stone. The roof is of Spanish tile and the chimney is capped with red mantel brick.

The arrangement of rooms is unique, particularly in the experience of the Eastern, Southern or mid-Western designer and builder, and while the composition appears at first glance to be somewhat broken up, practical experience with this and similar layouts argues for them. In Southern Cal-



The parsonage as seen from the street, showing the arched windows in the dining room



Floor plan. The music room can be used as a bedroom if desired

Type of building units used in construction



Built on a sloping street, it was possible to incorporate the garage beneath the house

ifornia a strong preference has developed for one-story houses and the designer has found himself striving to adapt the advantages of two-story floor plans to a one-story situation. In the accompanying plan it will be seen that there is sufficient separation between living and sleeping rooms to satisfy those who prefer that the latter rooms be quite apart from the former.

Turning again to the elevations, one finds a very pleasing use of circular arched windows, often omitted from masonry houses of the day because the designer fears the influence of circular work of any kind on the costs. In this and similar construction

by the same builders, the arches above such windows are economically taken care of by the employment of pre-cast reinforced beams, which are quick to place without the necessity for unusual skill. It is interesting to note that while both circular and flat top openings appear in both of the elevations shown, their arrangement has not brought about any lack of harmony, at least as far as can be readily detected. The chimney ornamentation is simple and effective, while the massive and undecorated porch walls are a pleasing contribution to the architectural values of the design.



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Office of the Badger Lumber Company, Kansas City, Missouri. Root & Siemens, architects

Office Building for a Lumber Yard

HALF of the first floor of the building is rentable space, occupied by a drug store. The other half is taken up by the local lumber office, the general office being upstairs. The arrangement of having the local office on the first floor is very convenient, for it is within easy reach of customers, and the men who are in and out of the yard constantly need not climb stairways.

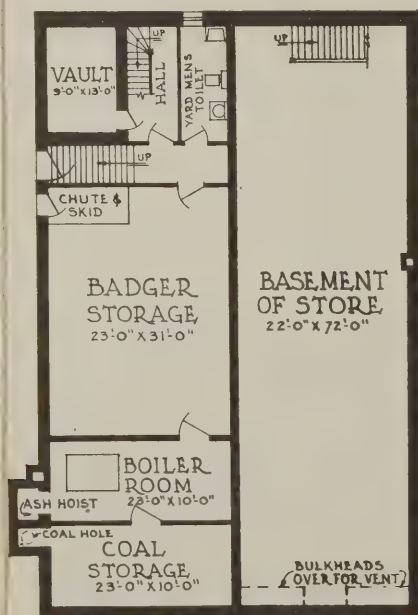
The basement is divided into two sections, separated by a fire wall, one belonging to the store and the other to the lumber com-

pany. The boiler room and coal storage are located in the latter half, for naturally the owner supplies heat to the entire building. A chute and skid are arranged for convenience in putting heavy material or packages into the basement storage. A vault provides storage for office records and supplies. The yard men's toilet is in the basement.

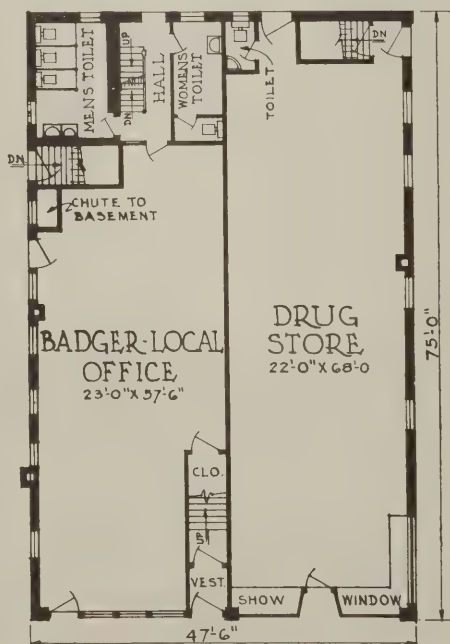
The general offices on the second floor have their own vault, together with a stationery room provided with shelves.

The purchasing agent's office is out of sight of waiting salesmen, yet within easy reach, and the three private offices on one side of the room are directly connected with each other. The secretaries' office is connected with the reception room and shuts the private offices off from waiting guests. The front office has a private toilet.

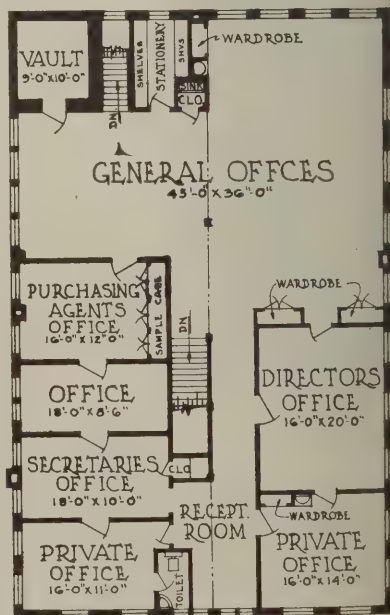
The larger room for the use of directors' meetings is across the hall and directly connected with the largest of the private offices which has its own wardrobe and basin.



Basement floor plan



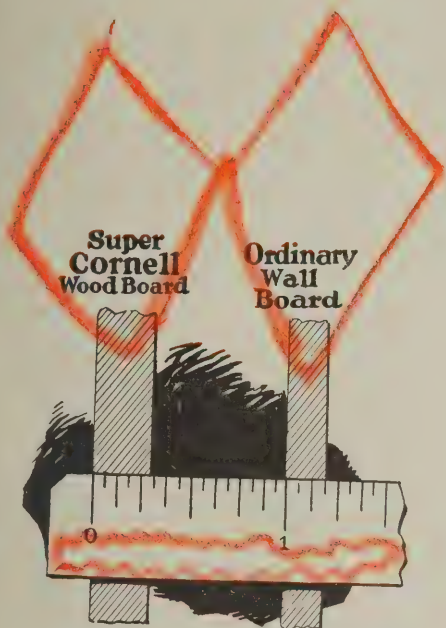
First floor plan



Second floor plan

"It makes a beautiful job"

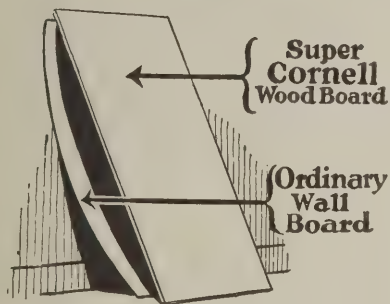
That's what a contractor told us about Super Cornell. He had been dissatisfied with the performance of other "wall boards" on walls and ceilings. He found that



would "stay put;" that it had enough "stuff" in it to hold nails and that its extra thickness gave very much greater insulation.

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New Fronts for Two Old Buildings



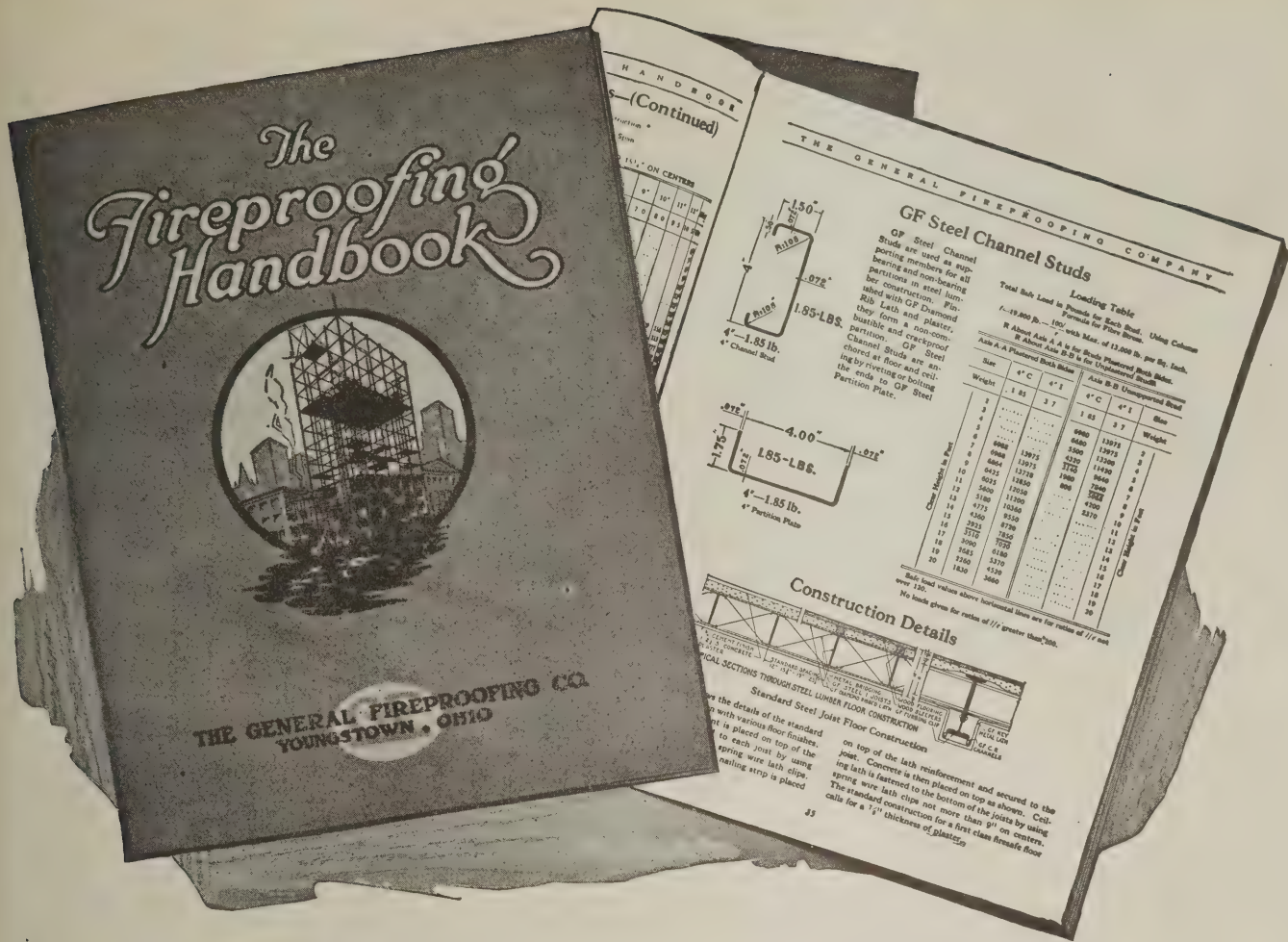
The dainty, almost playful, character of the above design is well suited to the candy shop within



THE two buildings accompanying were very ordinary members of the community until they were dressed up in new fronts, which changed them into pleasing individuals.

The design of the little building shown at the top is very distinctive and no doubt attracts many patrons. The use of divided lights for the display window adds to the character of the front. The arch keystone would perhaps be more pleasing if they were deeper, extending above the top of the arch into the wall above. Note how the English bond adds sparkle to the wall surface. The building is located in Danville, Illinois. Lies & Ludwick were the architects, Lovell Gillespie the builder, and Guy Malone the owner, all of Danville.

The building at the left shows the interesting possibilities of remodeling. It is the home of the State Bank, Gillespie, Illinois. The design is unusual for a bank.



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One of the more important branch offices of the J. C. Nichols Investment Company, in the Country Club District, Kansas City, Missouri. Edward Buehler Delk, architect

These Little Buildings Sell Lots

IT is not unusual for real estate companies developing a subdivision to build some fancy gate posts and erect ambitious street signs along vacant property, but it is very unusual for such attractive little buildings as those illustrated here to be constructed in new residential sections. These buildings are typical of the good taste shown in all their work by the J. C. Nichols Investment Company of Kansas City, Missouri, who are developing the "Country Club District" of that city.

Good architecture has been the keynote of all the buildings constructed in this section, and architects of as high standing as Mr. Edward Buehler Delk, who designed these little structures, have contributed designs in this district for buildings for practically every purpose—houses, stores, schools, churches, clubhouses.

Two of the buildings shown here are branch real estate offices of the J. C. Nichols Investment Company. The third, at the bottom of the page, is a waiting station for patrons of the trolley car line which serves the Country Club District. These buildings are in different architectural styles, each one adhering strictly to traditions and showing good taste and careful study in the disposition of forms and details.

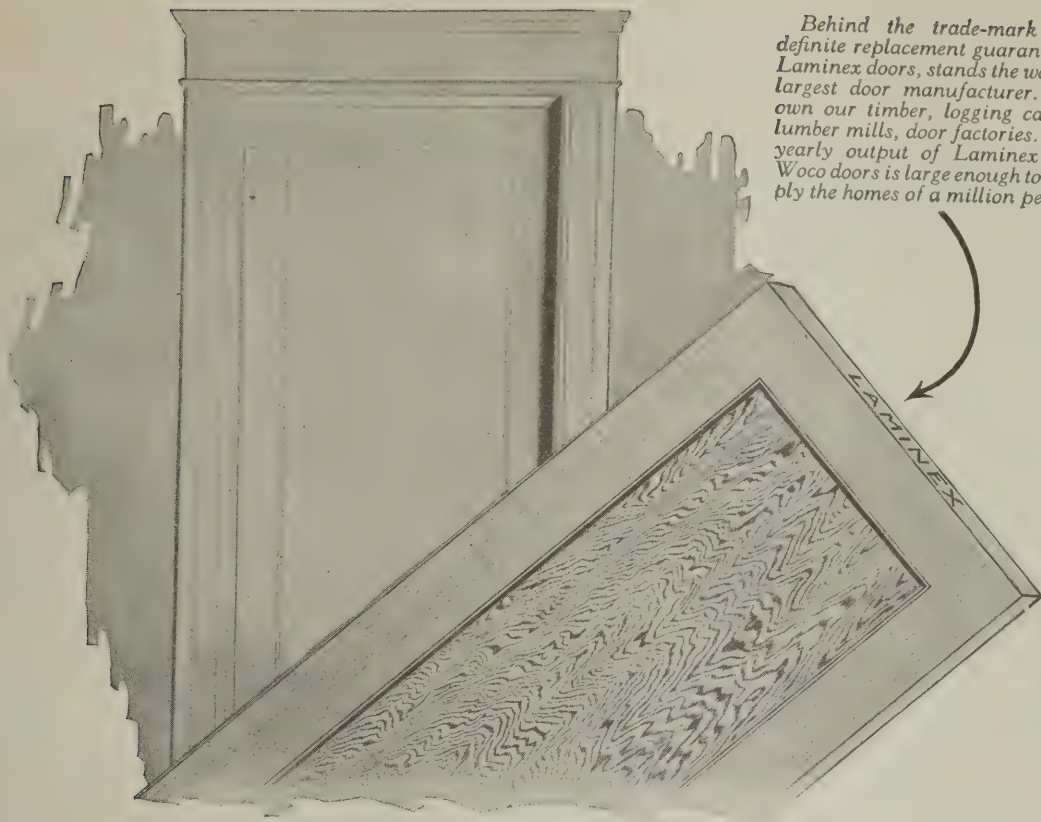
Naturally, such attractive little structures appeal to prospective home owners who are looking for something distinctive in small houses and who are particular about the character of the neighborhood in which they build. The success of the Country Club District in Kansas City, which is famous the country over, is one more argument for the dictum that beauty in buildings pay.



Another and smaller branch real estate office in the Spanish style. The decorative doorway is of unusual interest



People waiting for the trolley cars find shelter in this little building, whose design is reminiscent of old English half-timber garden houses



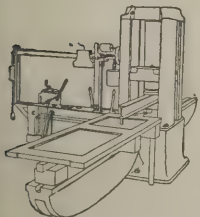
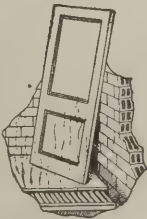
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Inside an Interesting House



Lattice work in the solarium, a floor with colored tile, and a little fountain and pool for goldfish add gayety and color to one of the pleasantest rooms in the house of Mr. G. T. Vogelaar, in Pella, Iowa. Boyd and Moore, architects, Des Moines. Exterior photographs and plans for this house were shown in *National Builder* for December, 1923

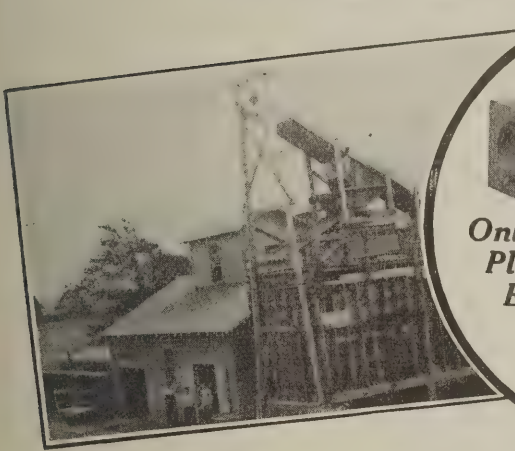


Occupying one end of the owner's bedroom is a combination closet, dressing table and drawer and tray case. The dressing table has mirrors at the side as well as at the back, a plate glass top and a tier of little drawers down either side

The interior trim downstairs is walnut, with wrought iron for the stair balusters. A cornice of molded plaster marks the joint between walls and ceiling

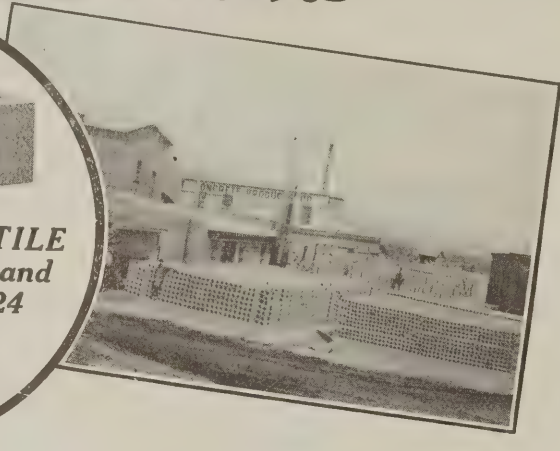


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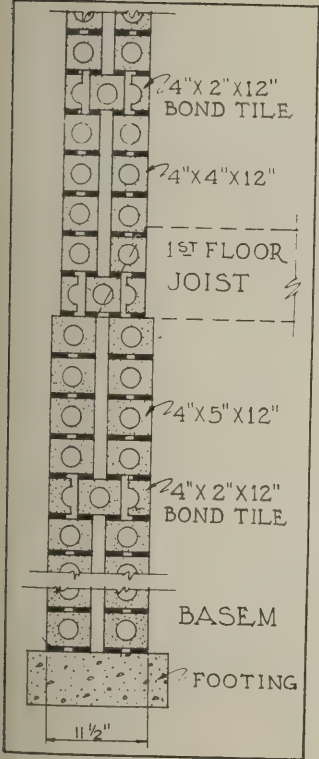
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Scroggs & Ewing, Architects, 610-D Lamar Bldg., Augusta, Ga. Publishers of "Homes of Distinction," a book of 68 pages showing houses in a variety of architectural styles—Spanish, Italian, English, Swiss and "Modern." Illustrated in colors and supplemented by floor plans and detailed descriptions, with cost data. Blue prints and specifications supplied for all houses shown. The book is sent for \$1.00 postpaid.

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Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 35 sent on request.

Books on Building

Benjamin L. Jenks, 1207 Marshall Bldg., Cleveland, Ohio. Publisher of the "Perry Lumber Reckoner," a 106-page book which gives at a glance the number of feet in any number of pieces any size; a copyrighted short-cut for lumber users. Price \$2.00. Sent on five days' trial.

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Frank R. Walker Co., 536-C Lake Shore Drive, Chicago. Publishers of The Building Estimator's Reference Book, containing information regarding estimating the cost of every phase of building construction (price \$10); and of a new book entitled "Practical Accounting and Cost Keeping for Contractors," treating of contractors' book-keeping and accounting systems and how to keep time and labor costs on the job (price \$2.50 postpaid). Books sent on approval to contractors writing on their business letter-head.

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U. S. Radiator Corp., Detroit, Mich. Complete data sent on request.

Borders for Floors

Wood-Mosaic Co., Inc., New Albany, Ind. Catalog showing parquetry and floors in natural colors sent free on request.

Brick

American Face Brick Association, 1763 Peoples Life Bldg., Chicago.

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Concrete Engineering Co., Omaha, Neb., "Handbook of Fireproof Construction," "How to Use Ceco Lathing Materials" and "How to Save Concrete, Steel, Formwork and Labor by Using Meyer Steel Form Construction." These booklets, 8 1/2 x 11 inches, sent free on request.

International Steel & Iron Co., Evansville, Ind. Catalog on steel ceilings, catalog on store fronts and garages and circulars describing metal lath, coal chutes, fireplace dampers, etc., sent on request.

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Weatherproof Calking Co., 757 Washington Ave., N., Minneapolis, Minn. 24 pp. booklet describing their product sent on request.

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Penberthy Injector Co., 1260 Holden Ave., Detroit, Mich. 80 pp. catalog and 16 pp. miniature catalog on cellar drainers, automatic injectors, etc., etc. These catalogs are free and will be sent on request.

Cement, Portland

Atlas Portland Cement Co., 25 Broadway, New York City, N. Y. "Atlas White and What You Can do With It," printed in English, Italian, Portuguese and Spanish; "Atlas Handbook on Concrete Construction," "Building a Bungalow," "Information for Home Builders," "Stucco Questions and Answers," "Atlas White Portland Ce-

ment for the Concrete Block and Brick Manufacturer" and other books sent free on request.

Louisville Cement Co., Inc., Speed Bldg., Louisville, Ky. "Brixment." Booklet. 7 1/2 x 5 in. 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

Portland Cement Association, 111 W. Washington St., Chicago. A large number of publications are issued on the different uses of portland cement, under the following heads: Canals, conduits, sewers and drainage; farm uses; concrete products; roads, streets and alleys; structural concrete; technical data, tanks, etc., and miscellaneous subjects. "A Manual of Concrete Masonry Construction" is particularly recommended for the contractor and builder. It is a 32-page booklet, size 8 1/2 x 11, and is sent free on request.

Sandusky Cement Co., Dept. T, Cleveland, Ohio. "Medusa White Cement Book" sent on request.

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Flexo-Concrete Mold Co., 815 Vernal St., Cedar Rapids, Iowa. Booklet sent on request.

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Concrete Block Mach. Co., 56 Columbia St., Newark, N. J. Literature sent on request.

Concrete Equipment Co., 530 Ottawa Ave., Holland, Mich., manufacturers of the "Utility" line of concrete machinery and molds for the manufacture of all kinds of concrete products. A descriptive catalog, which not only describes the equipment but also specifies weights, costs and selling prices of the products, is sent free upon request.

Concrete Tile Machinery Co., Box 106, Cicero, Ill. Full information and literature sent on request.

W. E. Dunn Mfg. Co., 700 W. 23rd St., Holland, Mich. Free booklet "Basic Facts" sent on request.

J. B. Foote Fdy. Co., 16 Front St., Fredericktown, Ohio. New 40-page catalog on "Money Making Machinery."

Helm Brick Co., Cadillac, Mich. "Concrete for Beauty, Adaptability and Permanence." This is a combination handbook on the concrete products industry and catalog illustrating and describing the well known line of brick and block presses and various accessories for products plants.

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Sasgen Derrick Co., 3101 W. Grand Ave., Chicago, Ill. Circular N2 with illustrations and descriptions sent on request.

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General Electric Co., Schenectady, N. Y. "Wires and Cables." Booklet. 8x10½ in. 85 pp. Illustrated. Four bulletins in a binder, describing wires and cables in general, conductor insulated with vulcanized rubber compound, varnished cambre and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.

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"Lighting of Public Buildings." Bulletin. 6x9 in. 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

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Energy Elevator Co., 214 New St., Philadelphia, Pa. Two illustrated catalogs, "Elevators," 24 pp., 8½x11 inches; "Dumbwaiters," 20 pp., 8½x11 inches. Contain helpful information for architects and contractors. Sent on request.

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Kimball Bros. Co., Council Bluffs, Iowa. "Kimball Elevators," an illustrated catalog of hand power, sidewalk and garage elevators and dumbwaiters and electric passenger, freight and push button elevators; 32 pp.; 7¾x10½ inches; sent free.

Richards-Wilcox Mfg. Co., Aurora, Ill. "Elevators." Booklet. 8½x11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 157 W. 15th St., New York. Catalog and descriptive pamphlets. 4¼x8½ in. 70 pp. Illustrated.

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Richards-Wilcox Co., Aurora, Ill. 60 pp. booklet; 8½x11 in.; flat track and round track types for sliding and swinging doors. Sent on request.

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National Fire Proofing Co., 571 Fulton Bldg., Pittsburgh, Pa. "Mr. Will I. Build and the Dotted Line" sent on request.

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Sargent & Co., 52 Water St., New Haven, Conn.

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Andrews Heating Co., 1585 Heating Bldg., Minneapolis. The "Heating Book" catalog contains full information and is sent on request.

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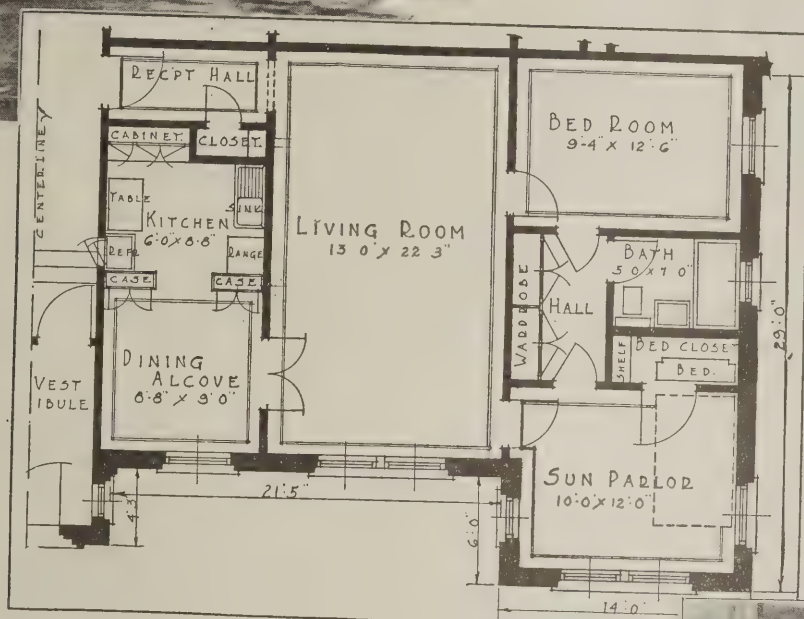
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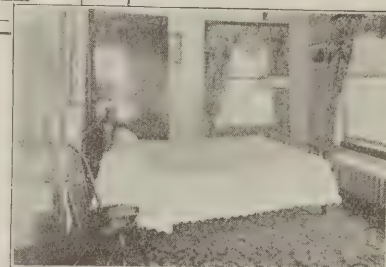
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Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, Ohio. Catalog No. 37 sent on request.

The Jaeger Mach. Co., 250 Dublin Ave., Columbus, Ohio. Complete catalog free on request.

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Bohn Refrigerator Co., St. Paul, Minn. Catalogs and data sent free on request.

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The General Fireproofing Co., Youngstown, Ohio. "Self-Sentering Handbook." 8½ x 11 in. 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforced material.

Truscon Steel Co., Youngstown, Ohio. "Shearing Stresses in Reinforced Concrete Beams." Booklet. 8½ x 11 in. 12 pp.

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H. M. Reynolds Shingle Co., Grand Rapids, Mich. Literature describing their products sent on request.

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Crescent Machine Co., Leetonia, Ohio. Catalog and various circulars illustrating and describing their different machines sent on request.

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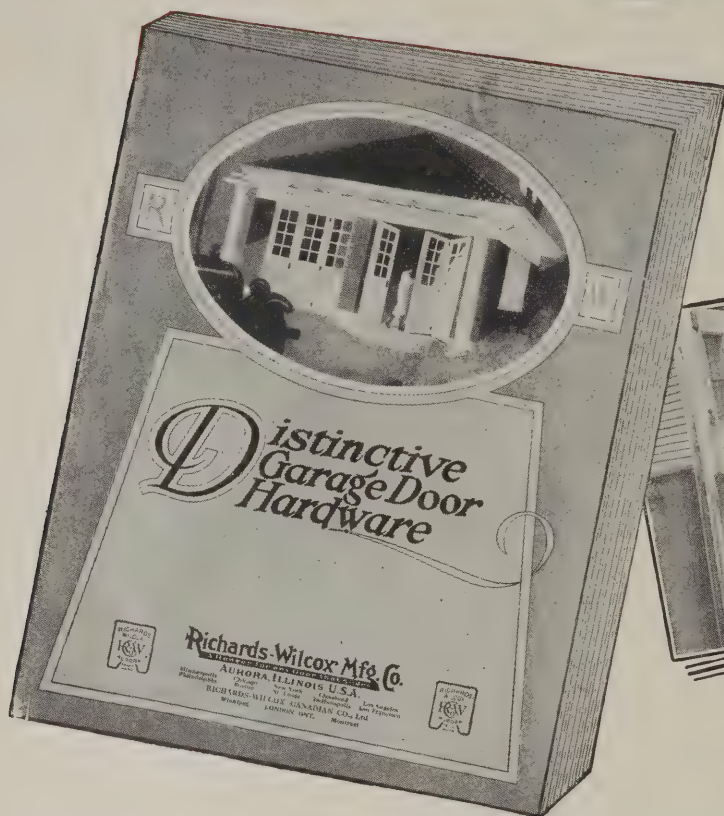
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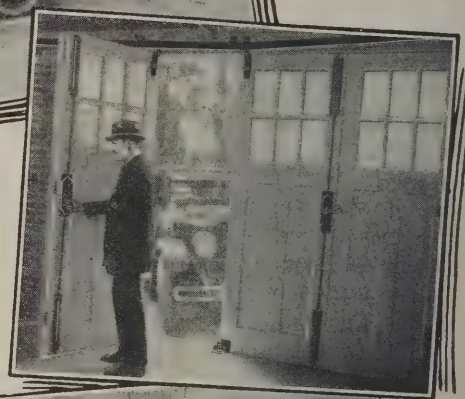
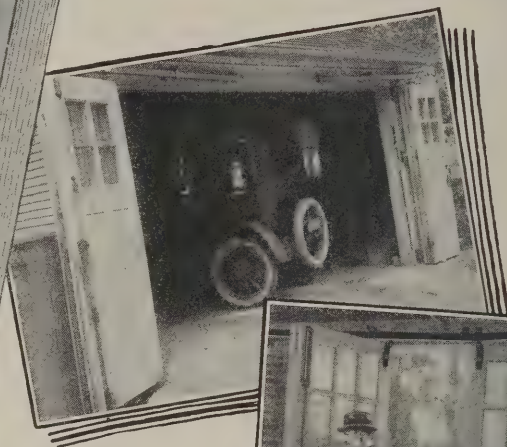
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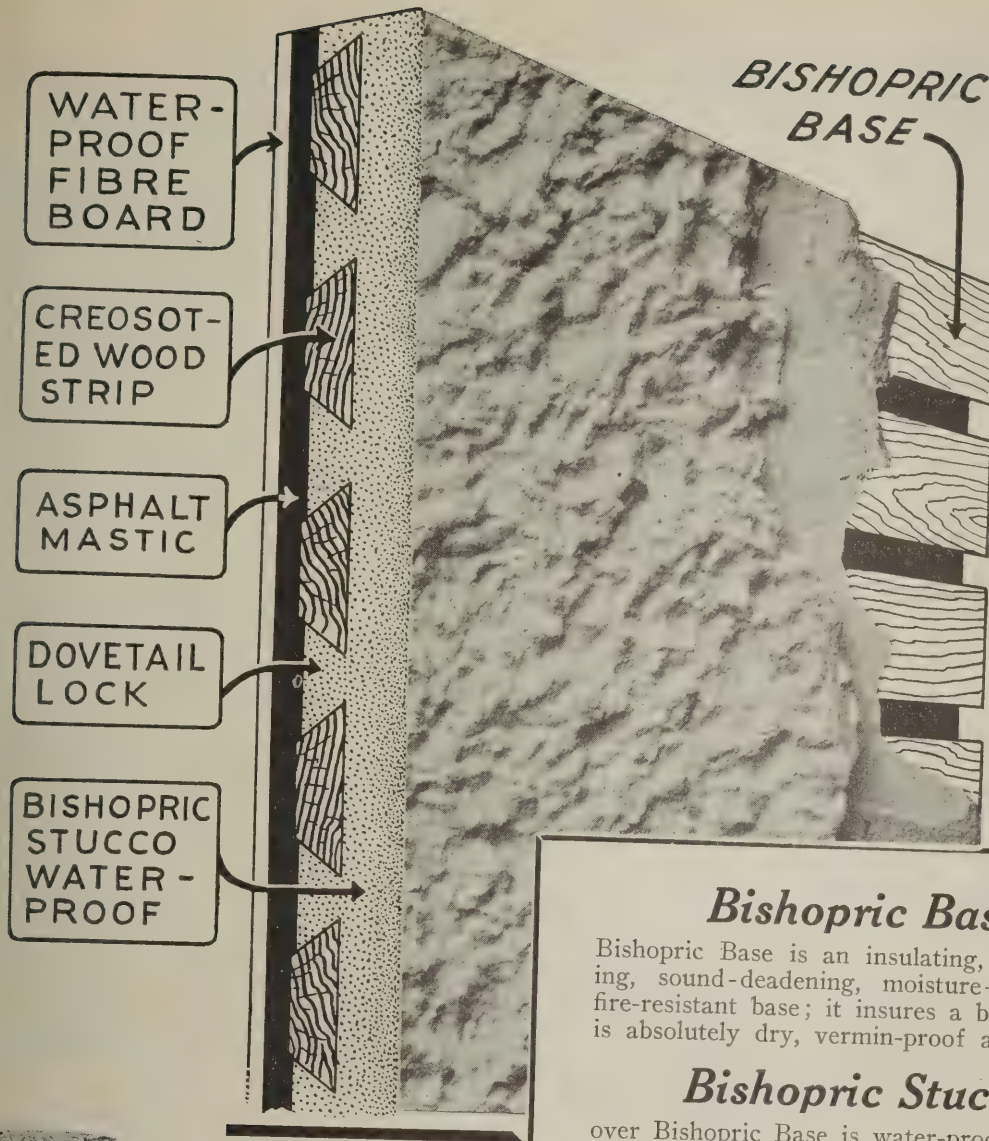
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National Builder

A Glimpse Into June

JUNE is the time of the year when most people begin to think about getting back to nature—some of them *clear back*, via the abbreviated 'bathing suit' route—but the most of us merely aspiring to a camp in the woods or such like.

That's why the June NATIONAL BUILDER will show a very novel log house from a western ranch, so that you'll be in shape to talk turkey to that hard-to-please client when he demands something in the line of a summer camp.

For those interested in reputations rather than vacations, a very unusual church building seating about 300 people and built in the Lombard Gothic style will be illustrated. Then there will be the story of a heman contractor in a moderate size community who builds anything from a 15 by 35-foot serv-

ice station to a manufacturing plant that is easier measured in acres than in feet.

Singer, the hard-to-keep-track-of Construction Editor, is "somewhere west of Laramie" on one of his trips gathing dope for the "On the Job" articles which help to make NATIONAL BUILDER the most practical publication known to the building industry.

"National home Builder," the 16-page sepia section, will feature the complete working drawings

of a four-room bungalow designed in the popular Spanish style by The Architects' Small House Service Bureau — which is a guarantee of its correctness and practical worth. Ten other houses will be shown.

These subjects merely hit the high spots of the contents of the June NATIONAL BUILDER. You will lose real money if you miss it!



This glimpse of the interior of a very unique log house is intended to whet your appetite for the June National Builder containing a whole flock of pictures of this distinctive house

NATIONAL BUILDER is a journal for the contractor, architect and builder. It is published on the first of each month by the Trade Press Publishing Corporation, 542 South Dearborn Street, Chicago, Ill., to whom all communications concerning subscriptions, contributions or advertising should be addressed.

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Renewals: Instructions for renewal, discontinuance or change of address should be given three weeks preceding date of issue. Both old and new addresses should be given. Subscribers wishing to discontinue their subscriptions must notify the publisher upon date of expiration.

Contributions to the editorial pages will be accepted solely on their merits and paid for at the regular space rates. Contributions of timely nature must be in on the 15th of the month preceding date of issue.

Advertising: Space in the advertising pages is sold according to published rates, furnished on application. Copy must be in on the 15th of the month preceding date of issue if proofs are to be submitted for approval before publication. Last forms close on the 23rd of the month preceding date of issue. The publishers reserve the right to reject or revise any advertisement containing statements of doubtful authenticity or derogatory to any building material, accessory or equipment.

Mechanical Requirements: Type size of page, 7x10 in.; half-page, 3½x10 in. or 7x4½ in.; quarter-page, 3½x4½ in. or 7x2½ in.; eighth-page, 3½x2½ in. Screen required, 120 line; reversed plates must be stippled or Ben Day.

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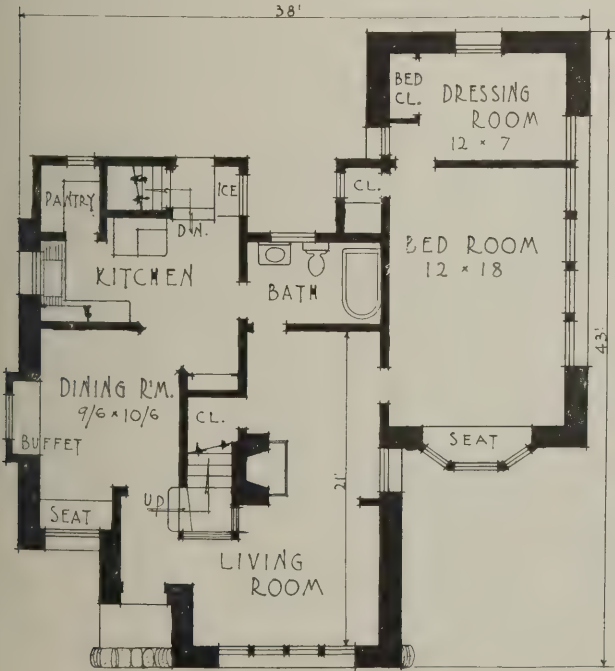
The combination of steep pitched gable, high chimney stack, the mansard roof, and the round arch of the entrance doorway is a daring yet entirely satisfactory handling of a complicated problem



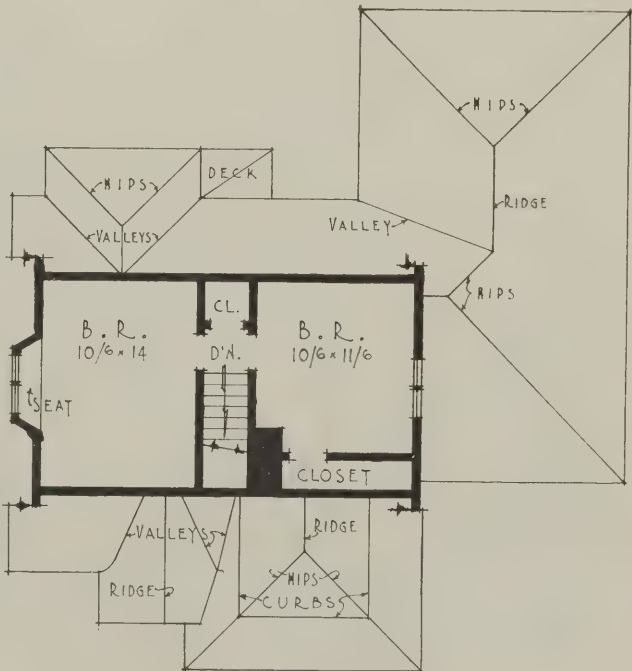
The walls are of rough stonework, with shingled roof and gables. The sheet metal ridge cresting is interesting

The HOUSE of the MONTH

A GOOD thing never grows old is a trite saying, but As the proof of the pudding is in the eating, the particularly true when houses of good design areHouse of the Month for this issue of NATIONAL BUILDER considered. Stop and think of how many houses withwas selected because it illustrates this point very which you are acquainted, built within your memory forcibly. and considered quite the thing at the time when they The exact age of this house cannot be determined, were built, have become commonplace, or worse, longbut residents of the vicinity in Riverside, Illinois, where before their period of usefulness has passed. it is located, maintain that it was built forty or more



First floor plan



Second floor plan

years ago. If this is true, then it is contemporary with the mid-Victorian period when the jig saw and cupola were allied in the terrific war to exterminate good taste in house design.

In any event, the house was several decades ahead of its time and represents the best traditions of the Queen Anne style which was productive of some really fine designs before it was vitiated by an indifferent public.

The house was built by an architect for his own use, which no doubt explains its variation from the houses of the same period.

As for the design, the accompanying illustrations set forth the quaint, homelike character of the house so forcibly that written words seem superfluous. Therefore, as our legal friends put it, we rest our case with this exhibit.

The plans, however, possibly require a few words of explanation. In the first place remember that this house was designed by an architect for his own use. His familiarity with the reiterated, "Yes, that's very nice, but it isn't *practical*," probably awoke in him a spirit of rebellion that caused him to determine that for once he would turn himself loose and do things as he saw fit.

For one thing, the house was made very small, the first story bedroom wing being a later addition. The entrance is into a small hall which is really a recess off of the living room. A steep stair with an open screen overlooking the living room ascends from the hall. The irregular shape of the living room causes it to appear considerably larger than is actually the case. As a matter of fact, the small scale of the house throughout causes one to be unconscious of the almost



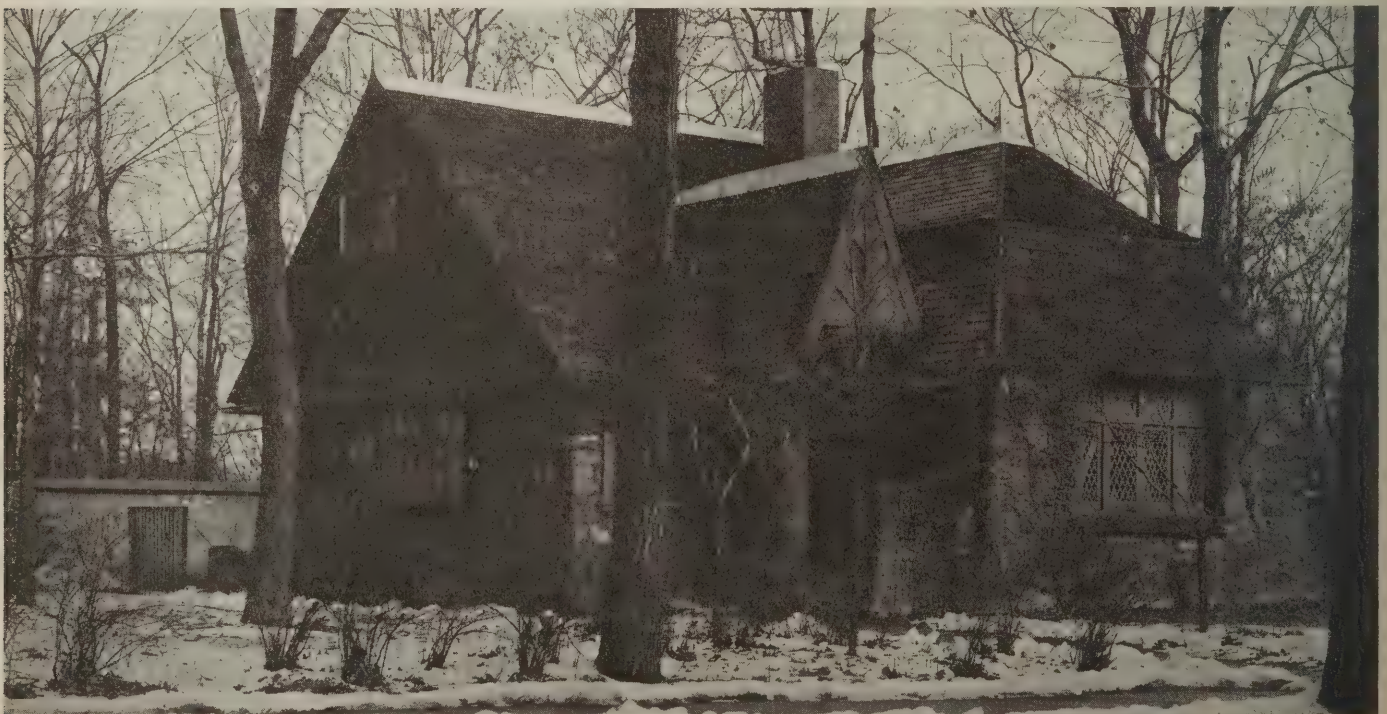
The rear of the house in summer. The wing in the foreground is a later addition

diminutive rooms. The location of the bathroom in the first story is unusual, but really has advantages, particularly where small children are concerned.

At first glance, the kitchen appears to be hopelessly muddled, due to its irregularity. A closer study, however, indicates that it is really quite convenient. The rear entry has the refrigerator at one side and a stair to the basement at the other. A storage pantry opens from the kitchen and there are two built-in kitchen cases. A sink beneath a window and the range

in a sort of recess complete the arrangement. Above the range is a hood with a vent connection to the roof.

The dining room has a built-in buffet at one side and a seat built into a deep niche. The first story bedroom is partitioned off to form a dressing room at the rear. A bed closet in one corner makes this room available for use as a spare bedroom when required. The compact arrangement of the second story will repay study. The roof framing should prove interesting to experts on hips and valleys.



The diamond pane casements, the interesting roof and the deep window reveals are in keeping with the design



A small building, free from pretence, yet dignified and interesting

Small Business Building That Is Simple and Attractive

THE Talcott Building of South Bend, Indiana, is a very simple and straightforward design in brickwork with stone trimmings. Its clean cut simplicity is attractive and commendable. The architect was Ernest W. Young of South Bend.

The first floor contains three store rooms, each of which has a separate basement containing individual pipeless furnaces and

toilets. The rear portion of the basement of the corner store is partitioned off for a small steam boiler plant which supplies heat for the second story.

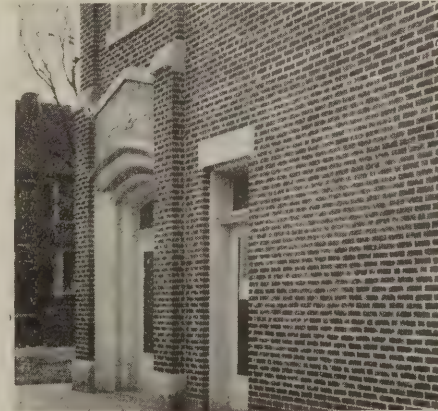
The second story is reached by means of an entrance at the rear corner of the building. This portion of the building contains a ball room well lighted, and ventilated from two sides. Retiring rooms, a check room

and a kitchen providing for the serving of refreshments or suppers completes the second story layout.

The roof is supported by plate girders with one end resting on the front wall, and the other end supported on iron columns concealed in the partition. The floor joists are supported on 15-inch I-beams resting on the brick division walls between the stores.



First floor plan



The entrance to the second story



Second floor plan

Pointers for the Contractor Who Builds with Reinforced Concrete

A Small Reinforced Concrete Addition to This Warehouse in Huntington, West Virginia, Offers Some Good Suggestions in Making Reinforced Concrete Jobs Pay

LARGE reinforced concrete jobs offer many opportunities for profit but there is still money to be made by the contractor who builds reinforced concrete structures of modest dimensions. The place where most money can be saved on handling reinforced concrete work is in handling and delivering the concrete to the

forms. On small jobs the overhead on construction equipment figures to a larger percentage than it does on the big jobs and it behooves every contractor to install as inexpensive a plant as possible without in any manner decreasing its delivery efficiency.

A small reinforced concrete job being done in Huntington, West Virginia, by C. W. Harer, a Huntington contractor, offers some suggestions which may well be adopted by other contractors engaged in a similar line of work. The construction plant is so well laid out and the equipment so well arranged on the job that contractors may well profit by a study

of the illustrations which accompany this article.

The first item of importance is, of course, the delivery of materials to the job and placing them on the site so that the cement and aggregate may be grouped around the mixer, thus making the handling of concrete materials a small factor in the operation of the job. Next, the distributing system must be so located that the concrete can be placed in the forms with as few movements of the delivery apparatus as possible.

Note how the plant and materials are grouped on this job; the delivery system is of the tower chute type, with a self-



Fig. 1—Boom chute supported near end by tall scaffolding similar to an ordinary "horse"

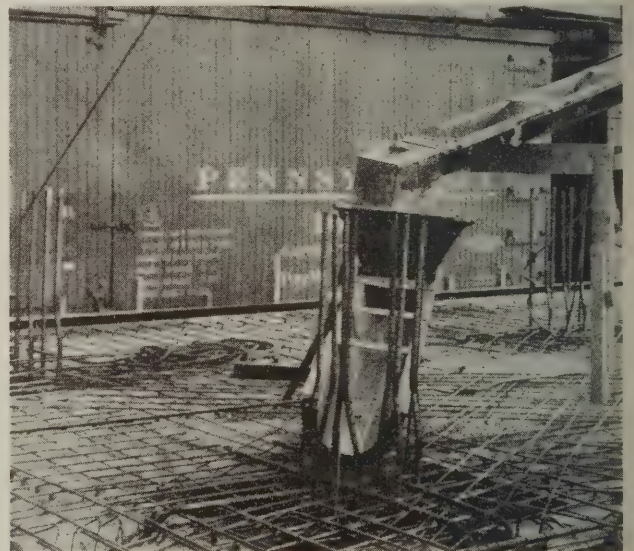


Fig. 2—Closeup of delivery spout and boom chute



Fig. 3—The materials are grouped so that there is no confusion when charging the mixer

dumping bucket, and a receiving hopper at the top of the tower. Concrete is handled from the mixer directly into the tower hoist, which is then run up to the top of the tower and automatically dumped into the hopper from whence it flows by grav-

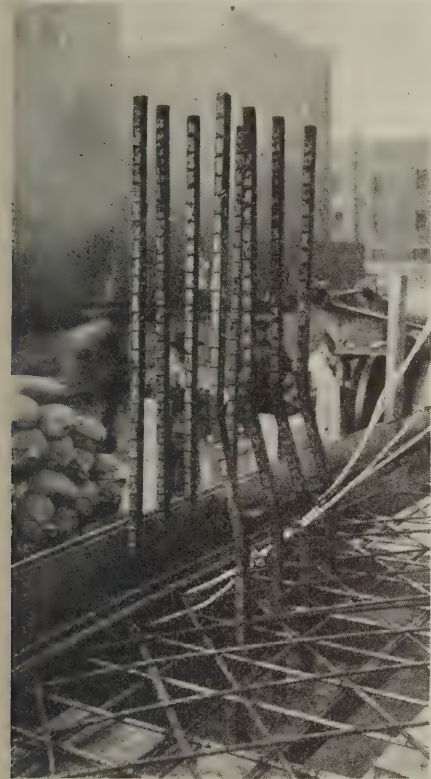


Fig. 4—Column reinforcement is useful in attaching ends of tower guy lines

ity through chutes to the place where it is needed.

It is interesting to see how the aggregates and cement are grouped about the mixer. On the right-hand side of the illustration in Fig. 3 is a pile of cement, placed close to the mixer so that the sacks are



Fig. 5—Ordinary stovepipe used to form openings in floor slabs

easily available to the mixer crew. On the left-hand side are both sand and stone, within 20-feet haul of the mixer. Such an arrangement as this saves money because the materials are located close to the mixer and it is unnecessary to use

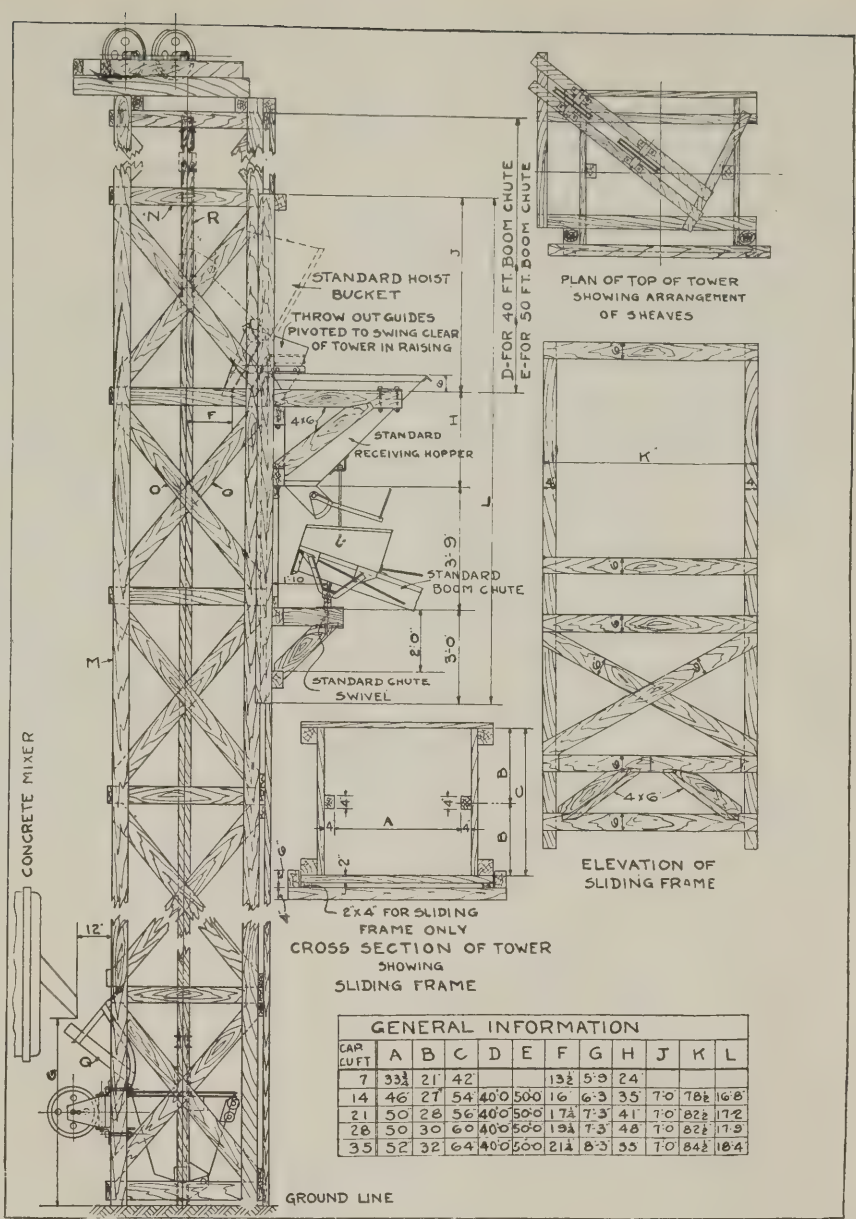


Fig. 6—Detail of hoisting tower with table for various capacities

much labor in getting them to the mixer drum. The mixer, by the way, is of the skip loading type.

The concrete delivery chutes are supported from the top of the tower by lines run through snatch blocks to facilitate taking up the slack. The end of the chute underneath the mixer hopper at the top of the tower rests in a swivel so that by lifting the chute off its end support with the lines it may be swung around any-

where on the job. Full details for the hoisting tower are shown in Fig. 6.

Besides an economical and well designed plant, this contractor has a few little "kinks" of his own which are interesting. In Fig. 4 notice that temporary support for the tower guys is furnished by the column reinforcing. These vertical rods are firmly embedded in the concrete foundation so there is no danger of their loosening. The guy is held from slipping

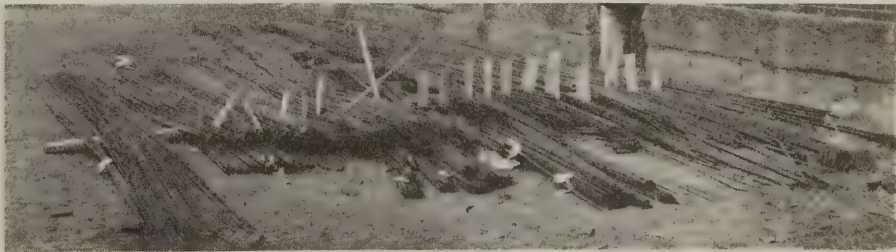


Fig. 7—Instead of resembling a magnified dish of spaghetti, this pile of reinforcement is sorted, each size to itself

with a few steel rods placed horizontally over the guy loop and fastened to the vertical column with wire.

In Fig. 5 notice how provision has been made for openings in the concrete slab floor. Small sections of stove pipe are used for thimbles. A few ten-penny nails, toenailed to the form and running through the thimble will serve to locate it, and the weight of the sand will prevent the concrete from moving it along or tipping it over.

In Fig. 7 notice how Mr. Harer has laid out his reinforcing rods. A piece of 2x4 is laid on the ground, and a few scraps of one-inch stuff nailed vertically to it to form several compartments. Reinforcing rods of different sizes are placed between the vertical strips and it takes but a moment for the workman to pick out whatever size he needs and take it along to the place where it is to be used since they are all placed in order in separate lots and selection may be made at a glance.

Cut Stone Measurement

By Leslie Childs

GENERALLY speaking, where the terms of a contract to furnish building materials are ambiguous or doubtful, custom and usage may be referred to and furnish the rule to be followed. The application of this rule of law is illustrated in *Plato vs. Carson*, an Indiana case reported in 137 N. E. 192.

In this case Carson entered into a contract with Plato whereby he agreed to furnish a quantity of stone. The contract was in writing and, among other things, provided as follows:

"Mr. Samuel Plato: I propose to furnish for the sum of \$1.24 per cubic foot all the Bedford stone to be used in the building of the Evangelical Church at Wabash, Indiana. . . ."

This proposition was accepted by Plato and Carson made delivery of the stone, but a dispute developed over the question of how the stone should be measured in respect to payment. Carson, the seller, contended that the stone should be measured in accordance with the custom and usage of Indiana, which provided for the gross measurement of the blocks. Plato, the buyer, contended that the alleged custom did not apply, and that the measurements should only include the net product after the elimination of all the waste portions.

At this point it may be noted that the contract was silent on how the stone should be measured. The question then of whether or not the custom and usage of Indiana should apply was squarely in issue. In passing upon this point the Indiana court, after first quoting the contract, in part, said:

"Can it be said that the contract . . . clearly indicates the method of measurement to be employed in determining the quantity of stone furnished thereunder, so as to ex-

clude any existing custom in that regard? We are of the opinion that it does not. Without doing violence to the language used, it might be construed to mean that appellee (Carson, the seller) was to receive \$1.24 per cubic foot for each piece of stone that actually became a part of the building. With that construction it would have been necessary to calculate the number of cubic feet in each piece of furnished stone, no matter how irregular in form by reason of cutting and carving.

"And again, without doing violence to the language used, the contract might be construed to mean that appellee was to be paid \$1.24 per cubic foot for each block of stone necessary for the preparation of the finished product required. In support of this construction we call attention to the fact that the contract, as we interpret it, provides that appellee is to receive \$1.24 per cubic foot for all Bedford stone used in constructing the church building in question.

"Now what stone was so used? Was it merely that which became a part thereof by reason of being set therein, or did it include that which was necessarily wasted in cutting the given pieces to the required form? The answer to this question is left in doubt by the language found in the contract, and hence presents a case for recourse to any existing custom of the business involved, in determining the intention of the parties in regard to the question under consideration. . . ."

In conclusion, the court held that this was a proper case for the introduction of custom and usage, in respect to the methods of measurement, as the contract left this phase of the subject in doubt. And that, as the custom and usage of Indiana provided for the measurement of the stone in the gross, this rule should be applied, as contended for by Carson, the seller.

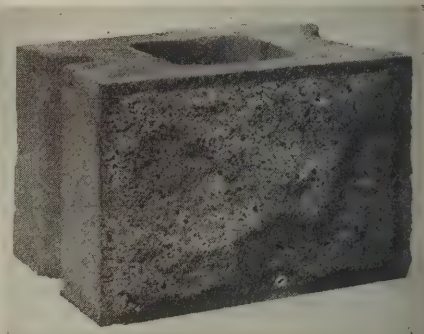
New Concrete Block for Use with Steel Basement Windows

By N. A. Harris

THOSE builders who specialize in erecting houses with concrete block basements will be interested in a new block recently put on the market for use with steel basement windows. Instead of the customary concave end, this new block has a slot into which is set the extending fin at the jamb of the window.

Two sizes of steel windows are well suited for use with these new blocks. They are the 2-light, 14x20 and the 3-light, 12x18. The former on a 1¼-inch sill, stands three blocks high and is two blocks wide. The latter, when standing on a 4-inch sill, accommodates three blocks laid up. Its width is equal to two and one-half blocks. In both cases, ½-inch mortar joints are allowed.

First lay a block each side of the window opening so that the sloping side of the slot will lie towards the inside of the wall. Then place a block, 1¼ or 4 inches thick (according to the sill height desired) at each jamb and spread a generous supply of mortar between them. Stand the window in place on the blocks with the fin setting in the slot, as shown in the detail, and press the channel sill securely

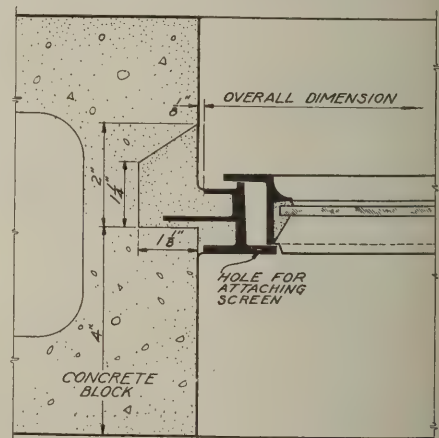


Concrete block for use with steel basement windows

into the mortar. Bracing is unnecessary as the window will stand up by itself.

When laying up the blocks, slap mortar on the perpendicular side of the slot to form a bed for the fin. When the wall is up, press the fin in place, grout up the slot, and point off even with the edge of the inside channel leg. If the leg is followed as a guide, there will be no danger of grouting so close to the ventilator as to bind it.

The self-centering lock holds the frame and sash "true" so that you may use the outside channel leg for a guide in laying



Detail of installation

up the blocks. This eliminates the bother of keeping the jamb plumb.

Build up the sill, trowel it off even with the edge of the channel legs of the frame and point off. Do not imbed any part of the locking device. When you are ready to lay the bond timber, fill the channel at the head with mortar. This will assure good weathering all around.



The Italian style is well suited to the semi-public nature of the building

A Double Purpose Building

THE imposing structure shown in the accompanying illustrations was recently completed at St. Louis, Missouri, for a two-fold purpose. It serves as an administration building for one of several new cemeteries which are planned, and in addition, a portion is given over to a home for the caretaker.

The building is of stucco, with stone trimmings. Three wide arches in front carry out

the Italian effect. Brick or frame might be used in other communities to lessen the cost. The building has a frontage of 54 feet and the depth is 20 feet. The floor plans may be revised to either enlarge or reduce the space.

A section set aside for the public is approximately 15 by 18 feet. Across the end wall is a large fireplace to remove the chill before cold weather sets in or help main-

tain cheer in the dead of winter. The walls are hung with pretty and appropriate pictures and the hardwood floor partly covered with well selected rugs. Toilet facilities are provided.

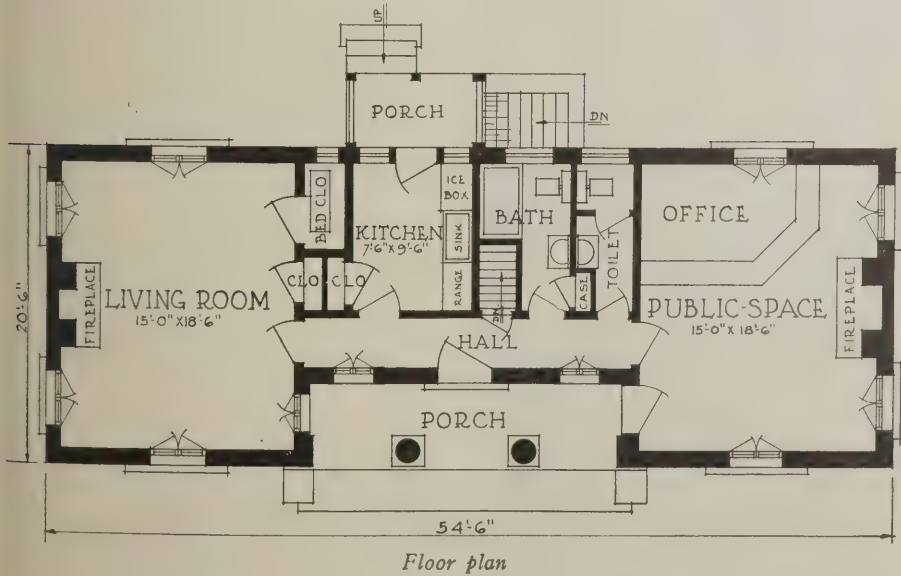
The keeper and his wife live in what might be termed a two-room apartment with the efficiency of four rooms. The living room may be utilized as a dining room for social occasions and the distance from the kitchen is not great. A bed closet in one corner of the living room converts it into a chamber in a few seconds.

The kitchen has been well arranged for the stove, sink and ice box and is 7 feet 6 inches by 10 feet 1 inch. The arrangement saved much space.

The caretaker has a private bath and toilet facilities. All of the plumbing is well concentrated. The laundry is in the basement, directly below the kitchen and bathroom.

The storage space is much larger than might be expected. All of the upper floor is given over to storage but a part might be utilized for bedrooms if desired. The living room, kitchen and bath each have large closets.

The plans were prepared by T. P. Barnet Company, architects, Arcade Building, St. Louis, Missouri.



Warehouse and Office Building at Wichita, Kansas

THE accompanying illustrations show the new warehouse and office building recently built in Wichita, Kansas, for the Western Newspaper Union. The architects were Glen H. Thomas and Scott Fullerton of Wichita. H. A. Noble of Kansas City, Missouri, was the engineer, and the George H. Siedhoff Construction Company were the general contractors.

This building is of the reinforced concrete skeleton type of construction, in which the structural frame, columns, beams, girders and so forth are of reinforced concrete with curtain walls and facing of brick. The floor construction is of the flat-slab reinforced concrete type, thus eliminating interior beams and girders which offer obstructions to light. Altho only four stories have been constructed, the building was designed for six. The fifth floor slab was poured and on this was erected temporary roof construction which may be easily removed when the additional stories are built.

Every precaution was taken to make the construction fireproof; even the windows have metal sash and frames. Wide stairs near the middle of one side and a two-ton elevator provide communication between the floors, and a fire escape at the rear provides an emergency exit.

The physical requirements for this build-



The building is faced with brick with stone trim

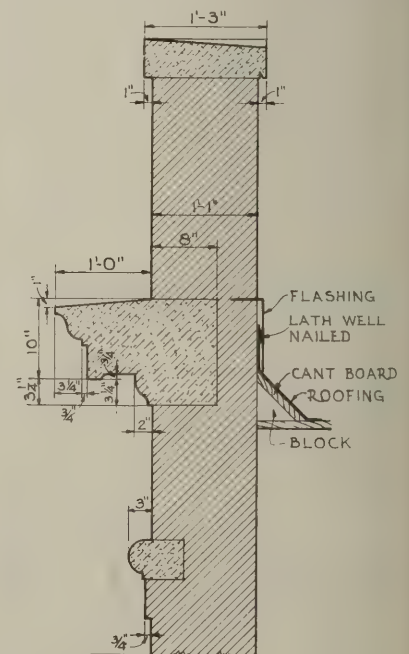
ing are quite severe, resulting from the necessity of providing for the storage and handling of enormous quantities of type-forms and paper stock, as well as making

provision for the operation of heavy printing presses and so forth. To satisfy these conditions, the live loading for the floors was taken at 250 pounds per square foot.

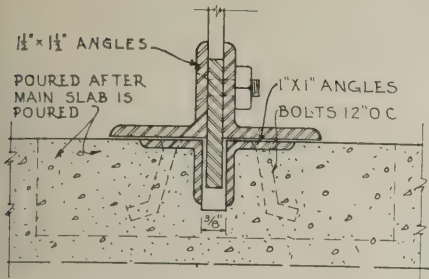
The accompanying cross section shows the footings and foundations below grade. The



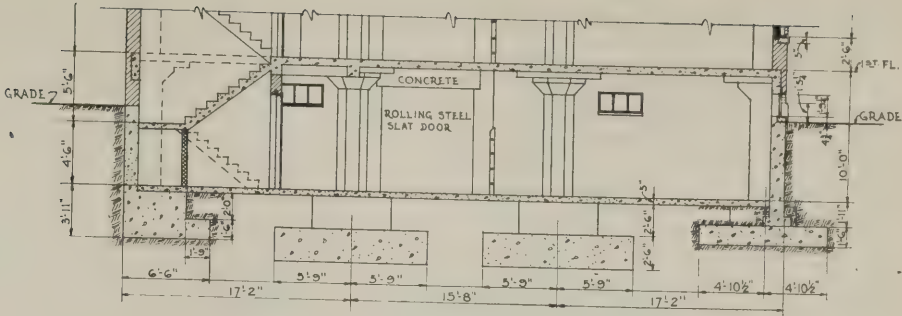
Note the comparatively unbroken ceiling resulting from flat-slab construction



Section through parapet showing cut stone cornice and roof flashing



Detail of rolling door slot in floor



Part cross section showing foundations

column footings are of the isolated type, reinforced with 3/4-inch steel rods spaced from six to nine inches on centers each way, depending on the loading. Note the offset footing along the inside property line.

The basement contains the boiler room, as well as storage rooms for printing inks, open stocks and general storage purposes. The building is heated by a vapor system and the boilers are equipped with oil burners.

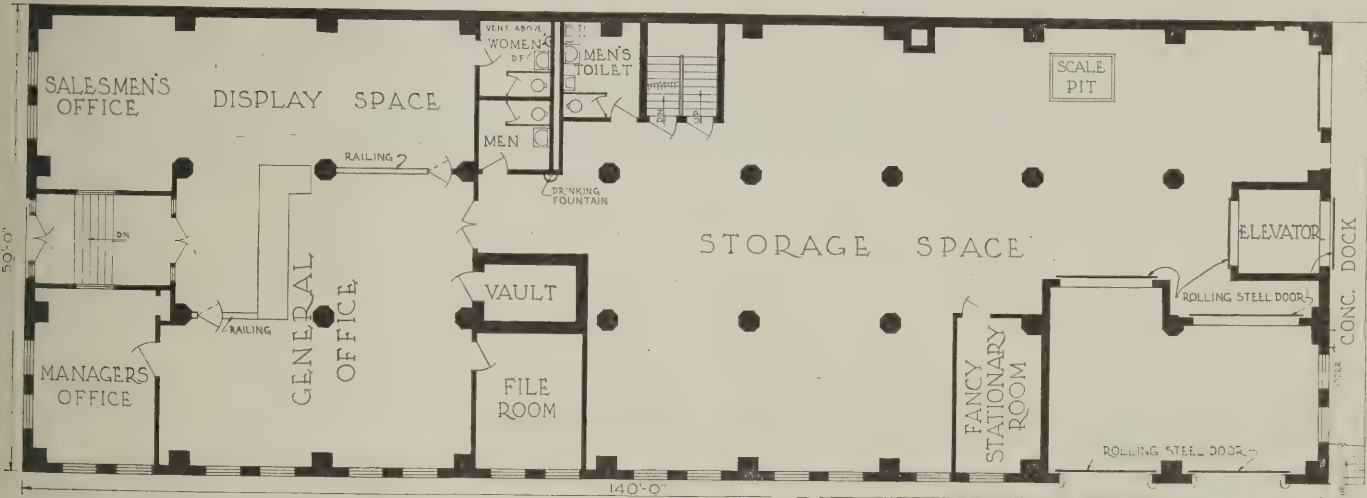
The first story contains the general offices in the front portion with a storage or shipping room at the rear. The entrance is at the street level with a short stair leading to the first floor. A counter separates the

general office from the public space. The display space is conveniently located with reference to the salesmen's office and the public space. Toilet rooms, a fireproof vault and a file room complete the arrangement of this portion of the building. An additional toilet and a room for storing office stationery are located in the shipping room. Note the provision of steel rolling doors for the truck loading space which is thus rendered serviceable for use as a truck garage when the doors are closed. A concrete dock along the alley at the rear affords additional loading facilities.

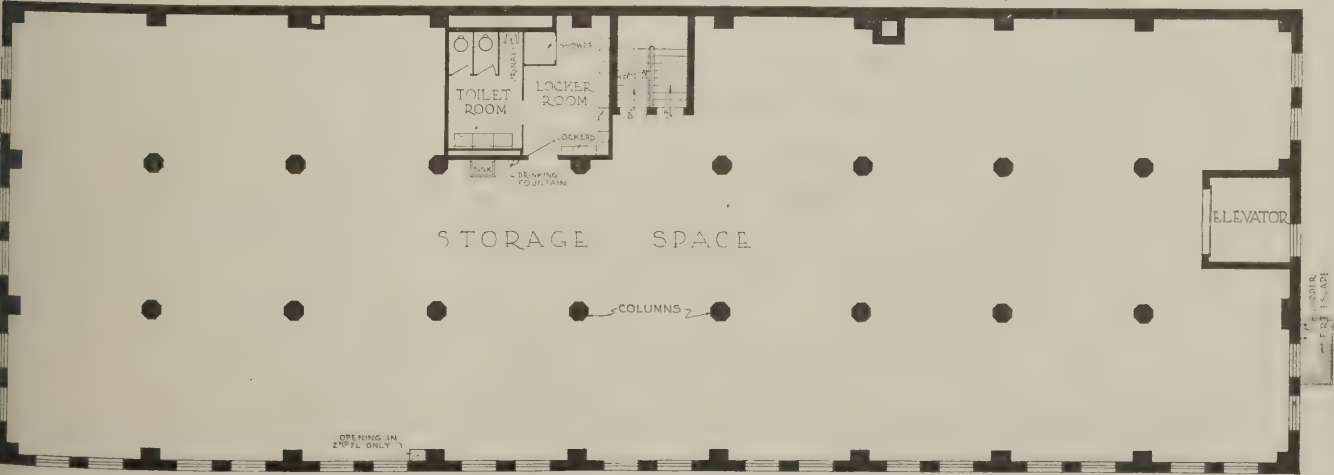
The second story is used for printing and typing purposes and contains toilet facilities

and a locker room. The third and fourth stories are used for storage purposes and are similar to the second in design except that the toilet and locker rooms are omitted. Roughing in for future toilet fixtures in the third story was provided, however.

In keeping with the utilitarian character of the building its design has been kept quite simple. The plain wall surfaces of the exterior have been relieved by slightly projecting vertical courses forming vertical bands or panels. The lower portion of the walls, up to the second story stone belt course, are rusticated by recessing every ninth course of brick one inch. Stone trim was used sparingly and to good effect.



First floor plan. Offices at the front and shipping and storage room at the rear



Second floor plan. Third and fourth floor plans are similar but the toilet and locker rooms are omitted

The Economic Value of the Architect

[The most of us are familiar with the wide discrepancy which often obtains between the high and low bidders for the same job. Here is an architect's viewpoint on this subject. Perhaps some readers have other opinions? If so, send them along.—Editor's Note.]

THE architect as an economic necessity is truly evident. I say evident because of the large number of men who are practicing this profession at the present time. His services are just as essential as those of the other professions. Does he not consist of that group of men who contribute toward making and progressing the growth of a nation?

Needless to say, the average man with prospective views of building any large project immediately seeks the services of an architect as he is fully aware of the folly of building without them. Then too, it would also be impossible for the contractor to submit a reasonable figure without some sort of definite plans and specifications to go by.

But I could cite several occasions where the prospective owner of a small residence intended to build without these services in order to save the expense of the architect's fee. Little realizing that his saving would more than offset the cost of these services. To this type of investor, I would suggest a careful study of the chart. These curves were taken from actual proposals in my files, and represent the usual trend of variations in bids.

There are various reasons why these proposals should vary as much as they do. Suppose contractor A has a considerable

amount of work under progress and is enjoying a very successful season, he figures the plans and specifications as drawn by the architect and puts his bid high as he is not over anxious for the work. Contractor B is having a rather dull time and is anxious to under bid the other contractors, so he submits a low figure. This is true mostly on residential work.

Then too, one contractor will place a larger margin of profit and contingency in his bid than another according to his judgment of the future. If the plans and specifications are not definite enough, the contractor will have to do more or less guesswork. So the bids vary.

The architect can make many a saving in the design of a building. Every piece of material is carefully chosen, every unit which makes up the structure is carefully weighed over in his mind before being constructed. In the planning of the building, unnecessary steps are avoided and time is saved. This means money.

From the very beginning, the prospective builder should realize the importance of an architect's services. He should bring his ideas to him and see them developed accordingly. It is the architect who forms the beautiful and practical design of the owner. He chooses the proper materials and with his supervision sees that there is no waste of time in their construction. He is the one who visualizes the ideas of the owner and develops them. From the small residence to the large public building, his services contribute to the fundamental standards desired; strength, beauty, and economy. —ATWOOD CROMBIE HALL.

Architect Says Specifications Are a Mess

"ALL of us who try to read specifications realize what a mess most of them are," said Sullivan Jones, state architect for New York, at a recent meeting of the New York Building Congress. Major Arthur E. Foote of the Bureau of Simplification, Department of Commerce, preceded Mr. Jones in explaining the work of his bureau in reducing the number of sizes in various manufactured products.

Mr. Jones then said:

"From our survey we found that 73 per cent of the families in this state cannot afford to live in houses at the present cost of production. That is an impossible situation.

"Your committee has taken the first step forward in becoming a part of the American Standards' Committee, which is co-ordinating American standardization with foreign standardization. It can do another thing; it can put into practice those standards which have been established and there are 18 or 19 of them applicable to the building industry.

"There is another thing which you can do; you can standardize practice, but I hate to use the word in that connection. Let us say 'unify' practice in New York City. There is a tremendous need for unifying practice in the matter of writing specifications. All of us write specifications, and all of us who try to read specifications realize what a mess most of them are and how difficult it is to extract the information from them which they contain.

"There is a very simple formula which you can all work on. A specification really consists of three parts. The first part can be expressed by the word 'Where.' Let us say distribution. The second by the word 'What' (the material). The third by the word 'How' (the application).

"Where? What? How?

"The what and the how can be standardized. The 'Where' is all that we really need to write into specification. Those are the paragraphs which apply the standards to the particular job. If that were done, or if the attempt were made, we would soon find out where our standards were lacking and we could begin to feed that information into the American Engineering Standards' Committee.

"That involves another question, which is the question of relating specifications to the drawings. There is a tremendous amount of confusion there. They are redundant. They are in conflict. With the standard specification you could take a good deal of information off your drawings.

"One architect here in New York for whom I have the highest admiration as a practitioner indicates no materials on his drawings."

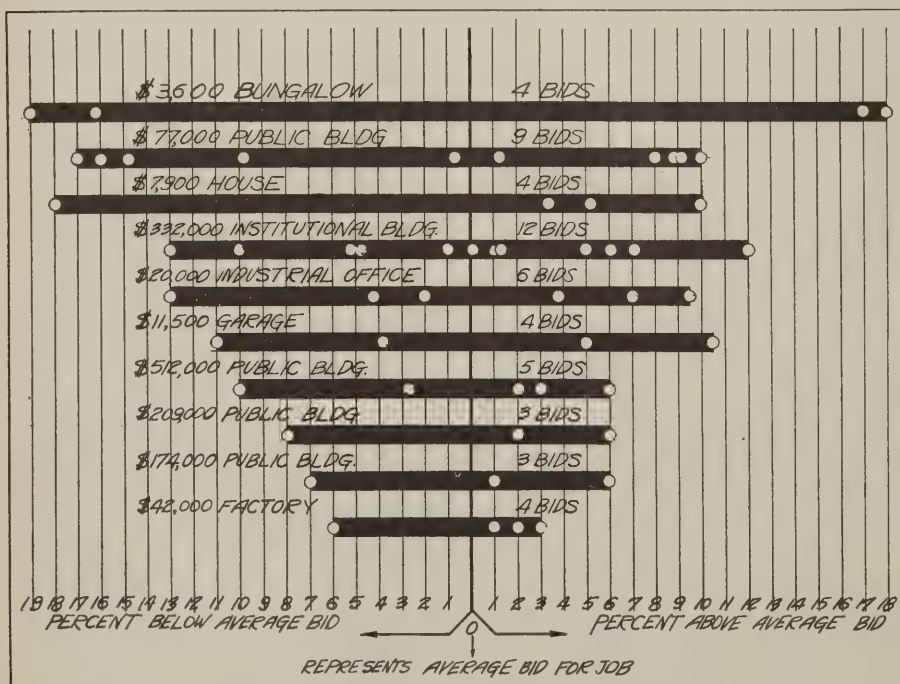


Chart showing variations in bidders' proposals

NATIONAL *home* BUILDER



Simple attractive houses such as this bespeak an important future for American architecture

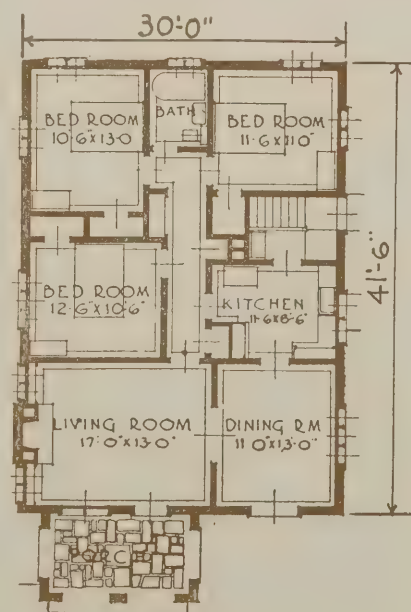
A Popular Bungalow with Three Bed Rooms

HERE are beauty and simplicity, economy and dignity, all welded into a compact bungalow that is one of the most popular designs prepared by the Mountain Division of the Architects' Small House Service Bureau, 415 Chamber of Commerce Building, Denver, Colorado.

The working drawings for this house, which is known as Design 6-B-7, call for brick construction, but in the present case stucco on hollow tile was used instead. The roof is of shingles, but tile roofs have been used with this design elsewhere. As a matter of fact, the design is a very adaptable one and has been freely modified in several cases.

The exterior design is exceptionally attractive in an unobtrusive way, bespeaking good taste

on the part of the occupant as well as the designer. The pitch



Floor plan

of the roof, the placing and detailing of the arched porch and the general proportions of the building are well studied. The walls are of cream colored stucco, float finish, which, together with the red brick walk and window sills, adds an interesting color note to the design. As to style, this design is rather difficult to place. Perhaps, on account of the stucco finish, and the arched openings and wrought iron railings of the porch, we might call it Italian, if this be important.

The entrance is thru the porch, directly into the living room. If desired, the porch may be glazed in to provide protection from the weather. At one end of the living room there is a fireplace opposite which is an arched opening to the dining room.



Tall stacks and stone trim add character to the composition

In Both Design and Plan This Is an Interesting House

THIS brick house with stone trim and slate roof is an uncommonly good example of a house in the English style. The design is picturesque without becoming playful—it represents something more than a merely “pretty” house.

The plan is unique, yet well adapted to the owner's requirements. The entrance is in the angle between the living room wing

and the main house. Either the sun room or the end of the living room may be used for dining purposes. There are two bedrooms on each floor.

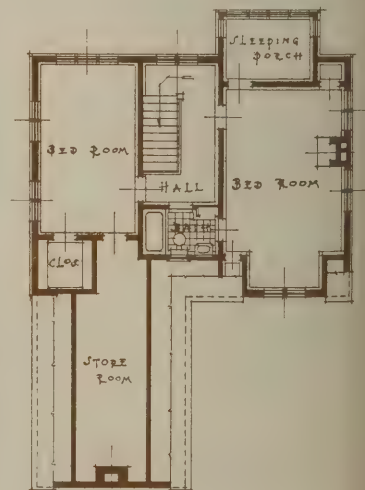
This house is the Knoxville Tennessee, home of Miss Harriet Young. It was designed by Barber & McMurry of the same city



First floor plan



The entrance in a corner



Second floor plan



The decorative window at the stair landing is an important feature of the design

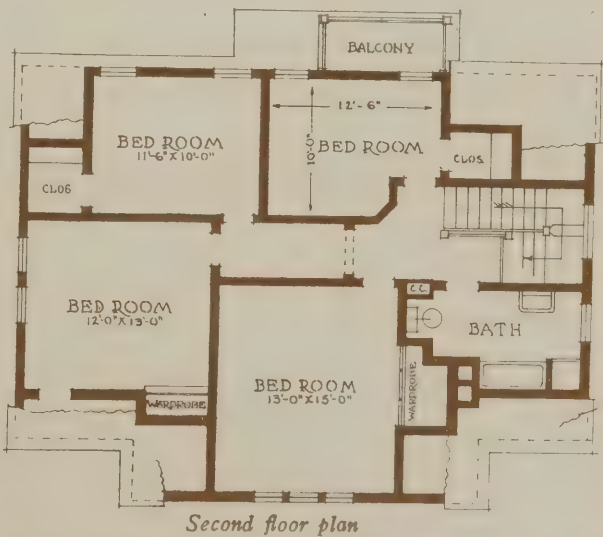
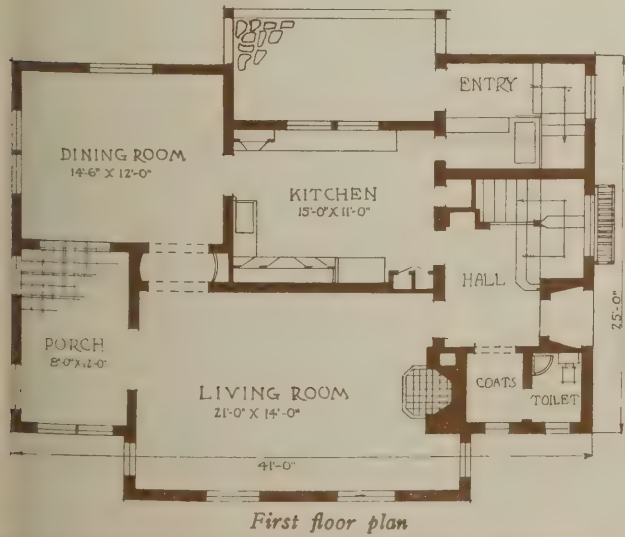
Here is an Attractive House with Four Bed Rooms and Two Porches

MUCH of the attractiveness of this house is due to the interesting roof lines which give it a pyramid effect that is almost always effective in making a house seem to appear to fit its surroundings. The construction is of stucco on wood frame.

The entrance is thru a deeply recessed doorway which opens into the main hall. At one side of the hall is the main stair and at the other end is the coat closet which opens into a toilet compartment. At one end of the living room is a fireplace opposite which

are French doors leading to the living porch. A wide double arch separates the dining room and the living room.

This is the home of E. Meckelberg at Two Rivers, Wisconsin. It was designed and built by L. M. Hansen Company, of Green Bay.





Flower boxes and stained shutters give a homelike touch to the front

A Very Small Cheap House That Isn't a Shanty

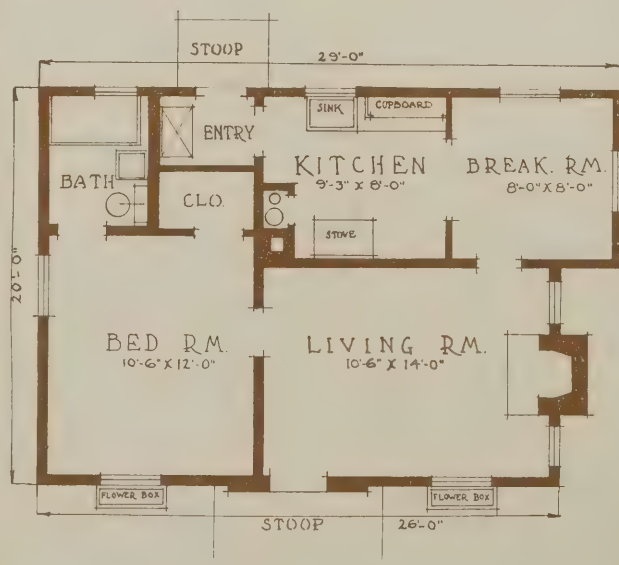
THIS is one of those houses so earnestly searched for but seldom found; a very small house, free from architectural pretense, yet interesting enough to be removed from the "shack" or shanty class. The white, clapboarded walls, the stained roof and the red brick chimneys lend a clean, inviting appearance. The method

of emphasizing the entrance by projecting it slightly beyond the main wall of the house is simple and effective.

The plan contains four rooms. The entrance is directly into the living room which contains a fireplace at one end. The separation of the fireplace and the kitchen flues, thus requiring two chim-

neys, seems unfortunate in so small a house. A bedroom off the living room contains a bath and a large closet. The breakfast room is separated from the kitchen by a wide arch and a rear entry contains space for a refrigerator and opens onto a wide stoop.

The architect was P. L. Murphy, of Tulsa, Oklahoma.



Floor plan



The projection of the breakfast room adds interest



The walls are of white painted brickwork with clapboard gables and a coursed shingle roof

There is Much in Common Between This House and the One on the Opposite Page

AT first glance this house appears to be a duplicate of the one on the opposite page. Close examination, however, reveals considerable variation.

The general layout of the two plans is almost exactly similar; the positions of the rooms, en-

trance, fireplace and so forth being the same. The two bedrooms contained in this plan, however, made necessary a small hall to provide circulation for the rear rooms. The separation of the dining room and the living room by means of a wide arch, and the

small bay in the dining room, make this room appear larger than it actually is. A basement is provided underneath the house.

This house is also located in Tulsa, Oklahoma, and is the home of Mr. E. L. Holmes. The name of the architect is not known.



The entrance boasts a simple fanlight



Floor plan



Awnings and well-arranged planting add to the attractiveness of the house

This Dutch Colonial House Is Built of Concrete

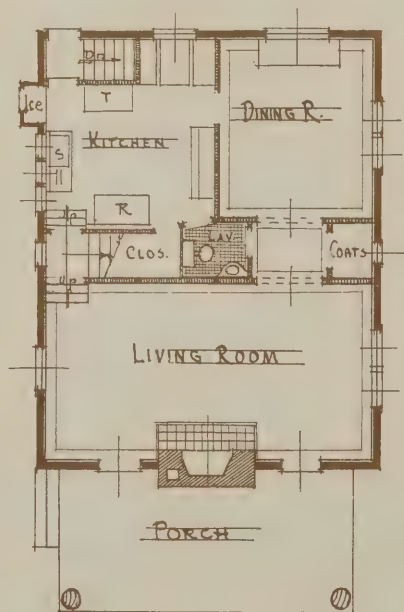
LOCATING the entrance at the side permits the driveway to the garage to pass alongside the entrance—a convenient feature in bad weather—and also makes it possible to incorporate

the drive and walk into one strip, thus avoiding the cut up appearance which usually results when these features are separated on a narrow lot.

The accompanying house is of

tioned chimney, the shutters and the pergola porch add interest.

The plan has been slightly modified so that the entrance opens into the space at the foot of the stair.

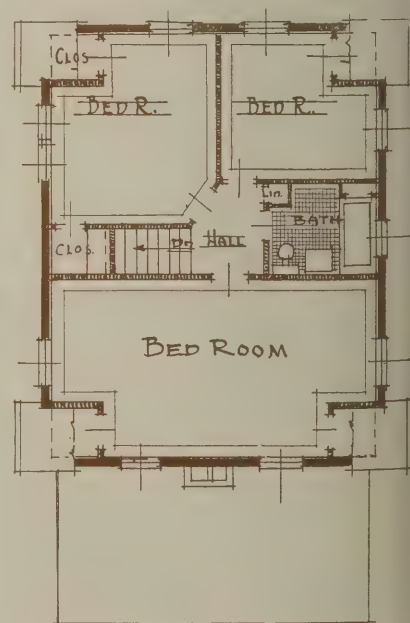


First floor plan



A sun porch has been added at the side the side entrance type and is located in Syracuse, New York. It was designed by Paul Hueber, architect, of Syracuse, and built by Hueber Brothers of the same city.

The construction is of the hollow-wall concrete type with stucco finish. The well propor-



Second floor plan



The green trelliswork matches the color of the blinds and adds interest to the design

A Design That Suggests Both Colonial and Italian Precedent

APPARENTLY there is a well-defined tendency at the present time to amalgamate or harmonize the Colonial style with the Italian in our house architecture. To realize how extensive this movement is, one has but to consult examples of recent house designs from all parts of the country, such as are shown in NATIONAL BUILDER every month.

The accompanying illustrations show a house of this type. At first glance it might be called Colonial, but a closer examination makes one doubtful. The wide terrace, the broad wall spaces and the barrel arch of the entrance hood with

its heavy brackets, suggest the Italian style, even tho any of these features might be found in old Colonial work. Therefore, this house is made to serve as an example of the type under discussion.

The entrance is thru a vestibule into a hall which contains the



The sun parlor overlooks the valley of the Iowa River

A narrow pantry, containing a breakfast nook with a table having seats on one side only, is provided between the kitchen and the dining room. Note the position of the rear entry which is located near the front of the house so that it is easily accessible from the street. A steep slope at the rear of the house makes front deliveries necessary. Four bedrooms are provided in the second story.

This house is located in Iowa City, Iowa, and is the home of J. H. Pearce, Professor of Chemistry at the University of Iowa. The architects were Holmes-Anthony of Cedar Rapids, Iowa, and the builders, J. H. Huntzinger & Company of Iowa City.



Second floor plan

main stair at one side. Doors from the hall open into the living room, the kitchen and into a small study. A large sun porch at the rear of the house overlooks an extensive view which spreads out beyond this portion of the house.



First floor plan



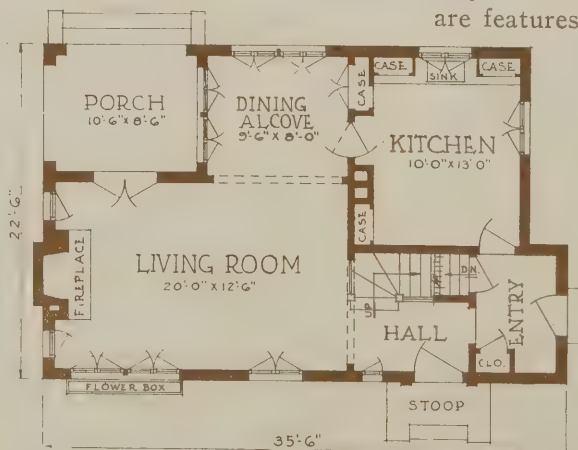
The entrance has individuality and is perhaps the most striking feature of the house

Dignity and Reserve Combined with Moderate Cost

THIS house might be called a "street" type because of its broad front and rather severe yet attractive lines. The construction is of hollow tile finished with cream colored stucco.

The location of the rear entry makes this plan well suited to a lot without an alley. A large window on the stair landing, a sleeping porch and a loggia which may be used as a dressing room are features.

The Architects' Small House Service Bureau, Mountain Division, Inc., 415 Chamber of Commerce Building, Denver, Colorado, are the designers of this house which is Design 4-B-12.



First floor plan



Second floor plan



Refinement and good taste characterize this house of New England Colonial style

An Ell Shaped Plan Insures Plenty of Light and Ventilation

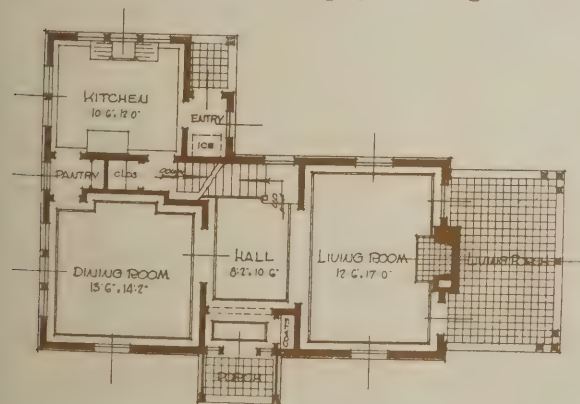
EVEN tho somewhat cheaper to build, square or irregular houses will never supersede the ell shaped house among people who desire abundant light and ventilation.

In the plans shown on this page,

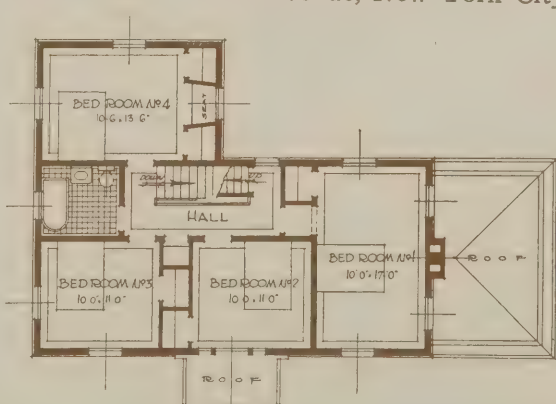
the living room and two of the bedrooms receive light and ventilation from three sides, and the kitchen is as well off when the entry doors are left open. Other features of these plans are the large entrance hall with the stair

placed at the end, the generous closet space throughout, and the small pantry between the kitchen and the dining room.

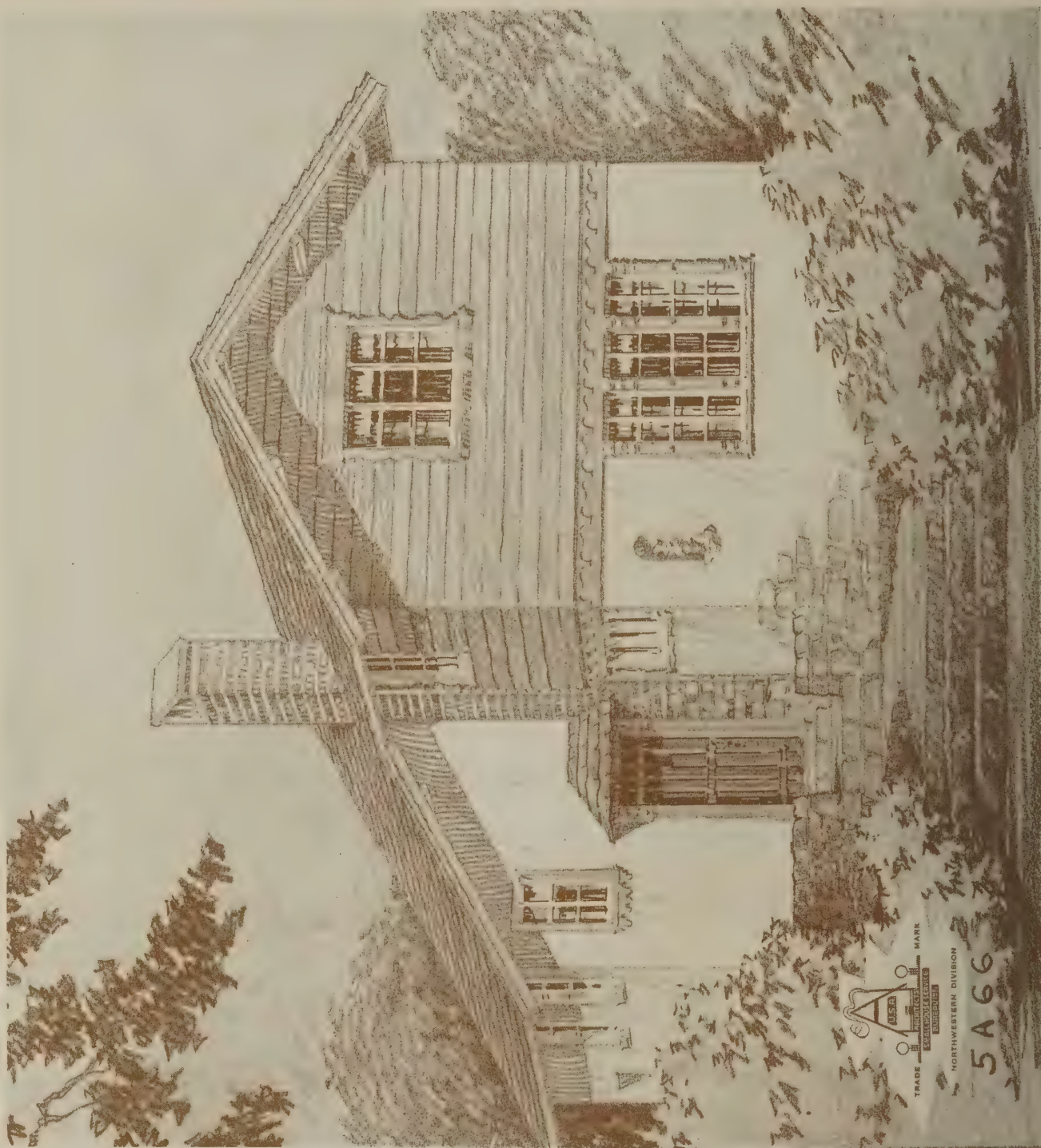
The architects for this house were R. C. Hunter & Bro., 501 Fifth Avenue, New York City.



First floor plan



Second floor plan



The flagstone terrace at the entrance; the lines of the brick chimney; the simple hooded entrance; the small niche in the stucco wall, and the pattern sawed trim of the windows and belt course, all lend informality and picturesqueness to the design

Complete Working Drawings and Details

A Swiss Chalet Design with Five Rooms, a Terrace and a Porch

*House No. 5A66, designed especially for National
Builder by The Architects' Small House Service Bureau*

© 1924 by N. B. and A. S. H. S. B.

NATIONAL BUILDER readers will be interested, we know, in the Swiss chalet design we are supplying this month. This house has a character which distinguishes it definitely from the familiar Colonial houses, fine as they may be.

Perhaps the most significant thing about Swiss architecture is the flat roof and the quaint uses of materials. There is a rustic flavor giving an air of domesticity and hominess. In this particular design nothing has been sacrificed for the sake of external appearance in the accommodations of the plan, for it is a modern workable house that will at once appeal to the practical American family.

The construction is wood frame with stucco on metal lath for the first story and wide siding or shingles for the second story. The foundation above grade is of field stone. This may be of any local stone. A concrete foundation wall extends from the footings to the stone base course.

A flagstone terrace leads to the front door, within which there is a commodious coat closet. From the hall one may go directly into the living room or straight forward through communicating doors to the kitchen. The stairway to the second story also leads from this hall.

In the living room there is a large fireplace flanked with a bookcase, which has an arched ceiling above it.

Casement windows swinging in light the living room. This same type of window is used throughout the house.

The dining room is reached through a plaster arch between this room and the living room. There is a built-in china closet in the dining room.

In the kitchen an ice box, cupboard, and clothes chute line one wall, while the opposite wall provides space for the range, work table, and another cupboard. The whole arrangement makes an extremely efficient room.

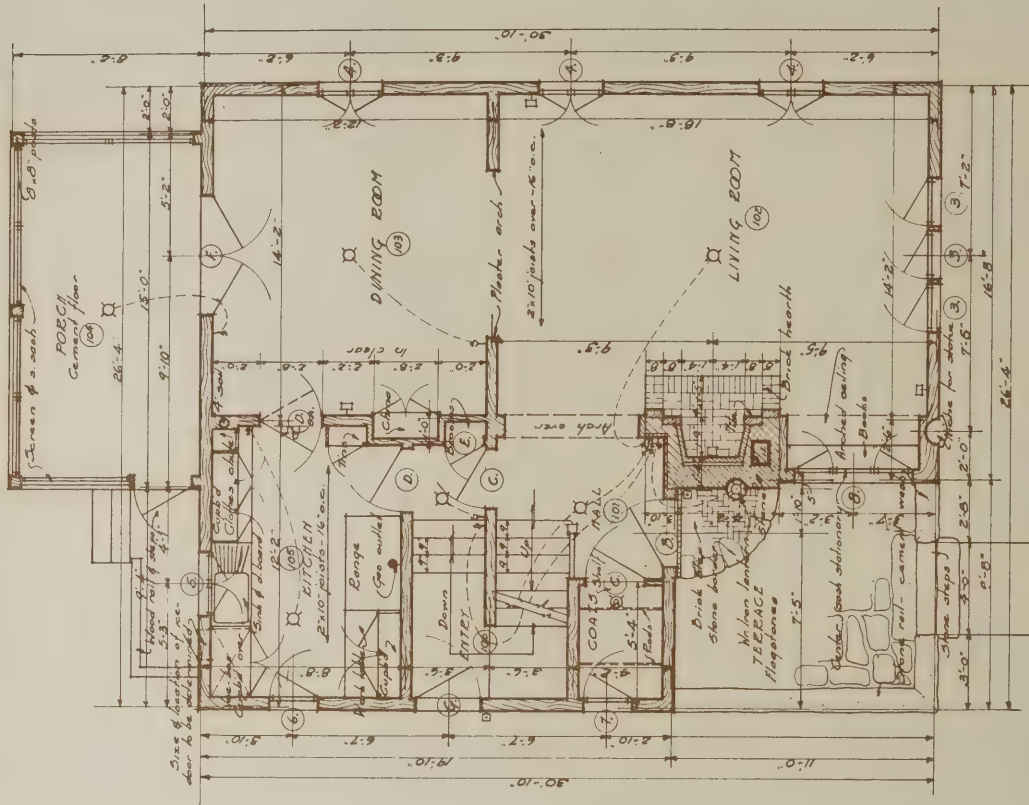
A cement porch is entered off the dining room, and there is a door from this porch to the rear entry.

In the second story there are two good sized bedrooms, bathroom, three large closets, and one very large closet where the roof comes down at the left-hand side to the rear. Doors lead from both of the bedrooms to a balcony. In the front bedroom there is a built-in seat with an arched ceiling above it.

The house is designed to face west or north and should be reversed for other facings. It can be accommodated on a 35 to 40-foot lot.

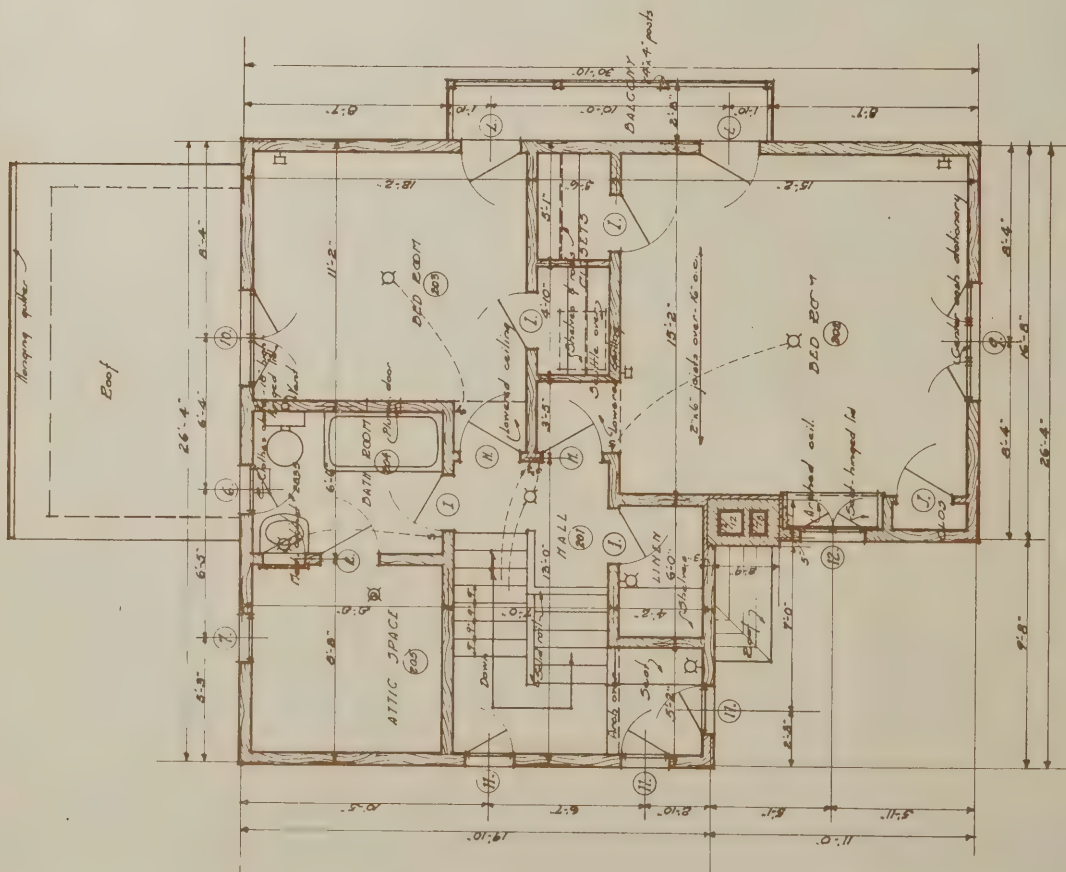
The regular price of the plans for this house is \$25.50. (To NATIONAL BUILDER subscribers, \$13.)

ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 49 and 50. These drawings are on a scale of $\frac{1}{8}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau, subscribers for "National Builder" desiring blue prints of the original of these plans, which are drawn on the scale of $\frac{1}{4}$ inch to the foot, are entitled to a 50 per cent discount off the Bureau's standard price, as stated in the last paragraph above. Orders should be addressed to "National Builder" for authenticating the purchaser as a bona fide subscriber, but checks should be made out to The Architects' Small House Service Bureau. Duplicate sets of blue prints are \$3.00 each; specifications are \$2.50 a set, and extra quantity surveys are \$3.00 a set.



FIRST FLOOR PLAN.

Scale - 1/4" = 1'-0"

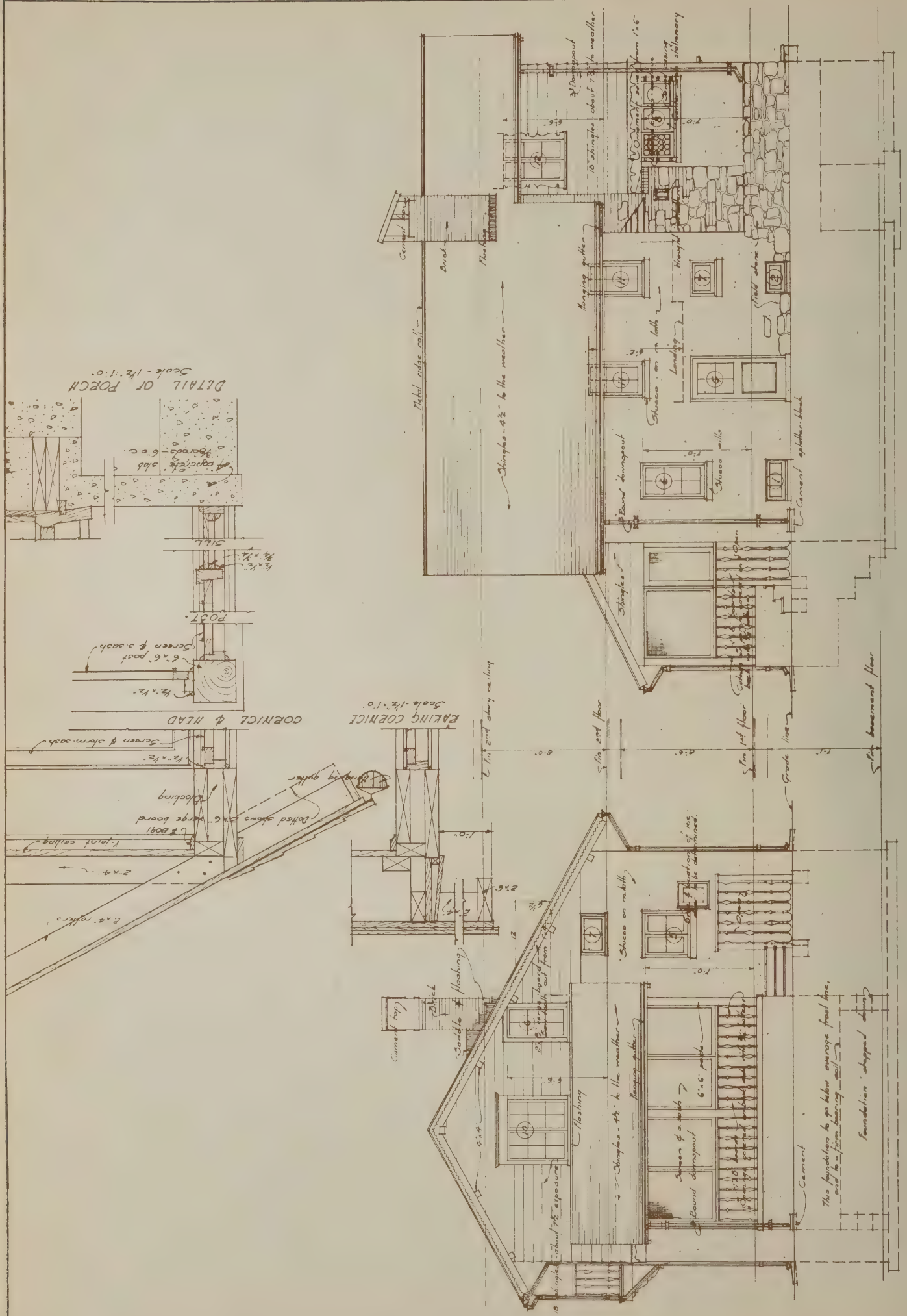


SECOND FLOOR PLAN.

Block numbers refer to moldings in Universal Millwork Design Book 20. Use these moldings in case these moldings are not available.

Dimensions are taken to outside of foundation walls, to outside of sills on exterior walls and center of studs for partitions.

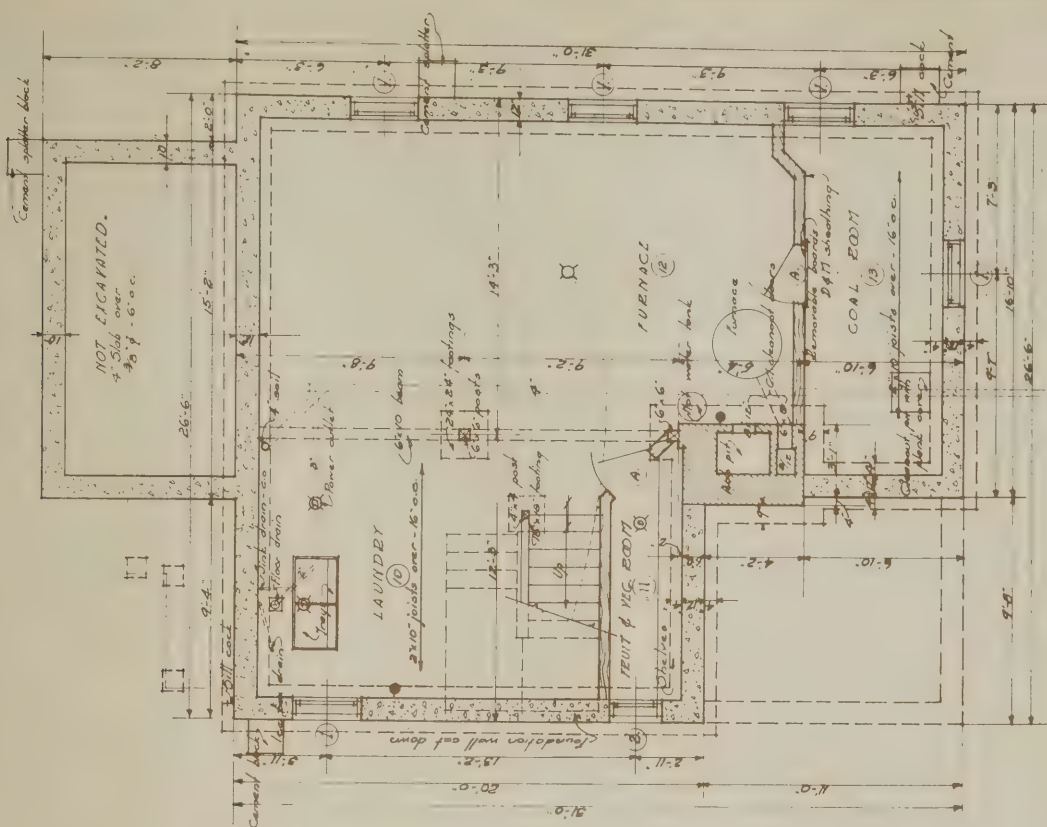
MATERIALS	ELECTRIC WIRING SYMBOLS		
	CEILING OUTLET	3-WAY SWITCH	2-WAY SWITCH
CONCRETE			
BRICK			



REAR ELEVATION

Scale - 1/4" = 1'-0"

SIDE ELEVATION



BASILENY PLAN

$$f_{e|e} - y_{A^*} - i - o -$$

HOME PLAN FOR
NATIONAL BUILDER - May, 1964

THE ARCHITECTS' SMALL HOUSE 5A66

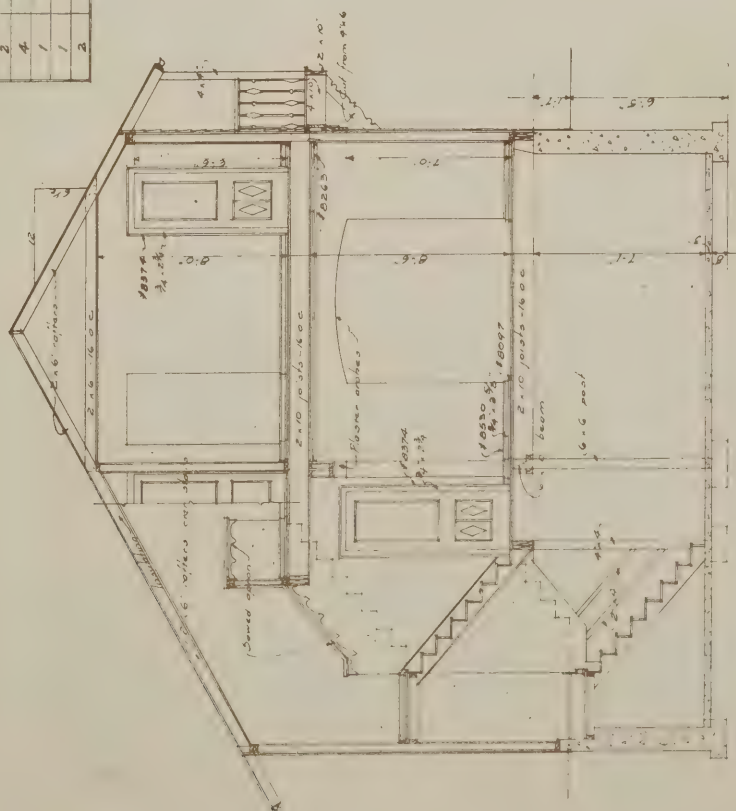
SHEET NO.
1 of 5



1	2		7	48	1-6 x 1-2	1/4"
3	4	Casement	8	10 x 14	2-0 1/2 x 5-2 1/2	1/4"
3	5	Double casement	4	12 x 14	2-0 x 5-2 1/2	1/4"
1	5	"	2 ea.	12 x 14	2-0 1/2 x 2-0 1/2	3/4"
2	6	Casement	6	10 x 14 1/2	2-0 1/2 x 4-0	1/4"
2	7	Casement	2	10 x 12 1/2	2-0 1/2 x 1-5"	1/4"
1	9	Triples casement	Six each	8-20 1/2	5-0 x 2-1"	1/4"
1	9	"	3 ea.	11-1/2	5-0 x 4-0	1/4"
1	10	Double Casement	6 ea.	10 x 14	4-1/2 x 4-0	3/4"
3	11	Casement	9 ea.	10 x 12 1/2	2-0 1/2 x 3-6"	1/4"
1	12	Double casement	3 ea.	12 x 14	2-0 x 4-0	1/4"

See details

QUANTITY	TYPE	SIZE	DESCRIPTION	REMARKS
2	A	2'-0" x 6'-6" x 1 3/4"		
1	B	2'-0" x 6'-6" x 1 3/4"	Univ. #220 5 Panel	
2	C	2'-6" x 7'-0" x 1 3/4"	See section Interior	
2	D	2'-0" x 7'-0" x 1 3/4"	" "	
1	E	1'-6" x 7'-0" x 1 3/4"	" "	
1	F	2'-0" x 7'-0" x 1 3/4"	Double French Arch	
1	G	2'-6" x 6'-0" x 1 3/4"	See elevation Rear	
2	H	2'-0" x 6'-6" x 1 3/4"	See section Interior	
4	I	2'-6" x 6'-6" x 1 3/4"	" "	
1	J	2'-6" x 6'-6" x 1 3/4"	" "	
1	K	2'-6" x 6'-0" x 1 3/4"	" "	
2	L	2'-6" x 6'-6" x 1 3/4"	French	To office
2	M	2'-6" x 6'-6" x 1 3/4"	French	To library



SECTION

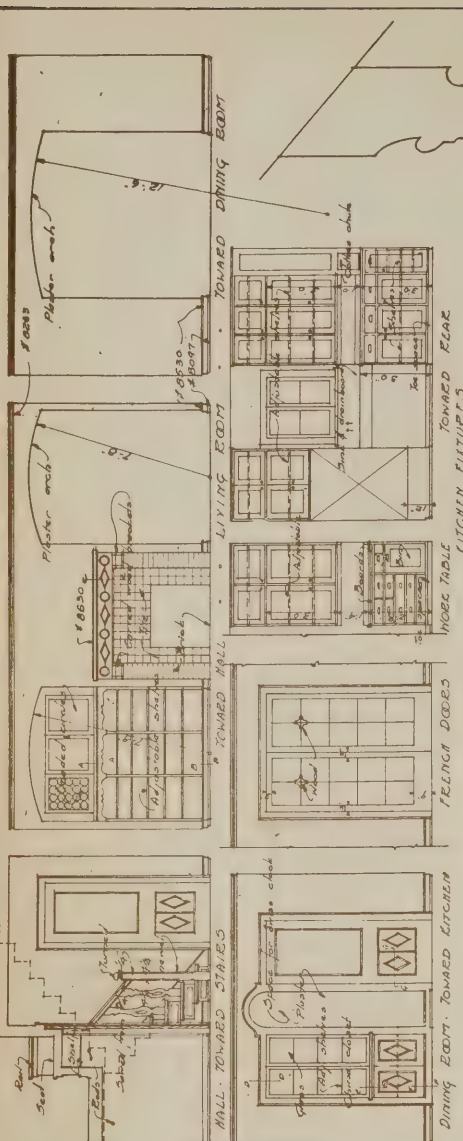
$\frac{1}{2} \log x - \frac{1}{4} \cdot 0$

MATERIALS		ELECTRIC WIRING SYMBOLS	
CONCRETE		CEILING OUTLET	
BRICK		DROP CORD	
WOOD		BRACKET	
PLASTER		BASE PLUG	
		SWITCH	
		3 WAY SWITCH	
		GAS OUTLET	
		PUSH BUTTON	
		BELL OUTLET	
		BUZZER	

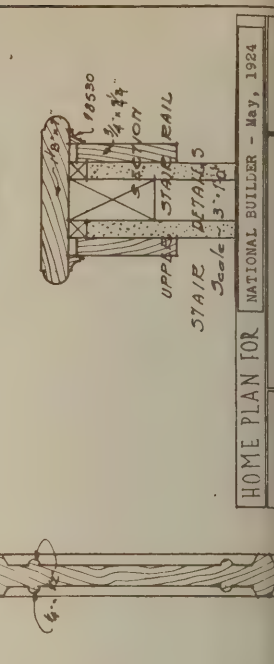
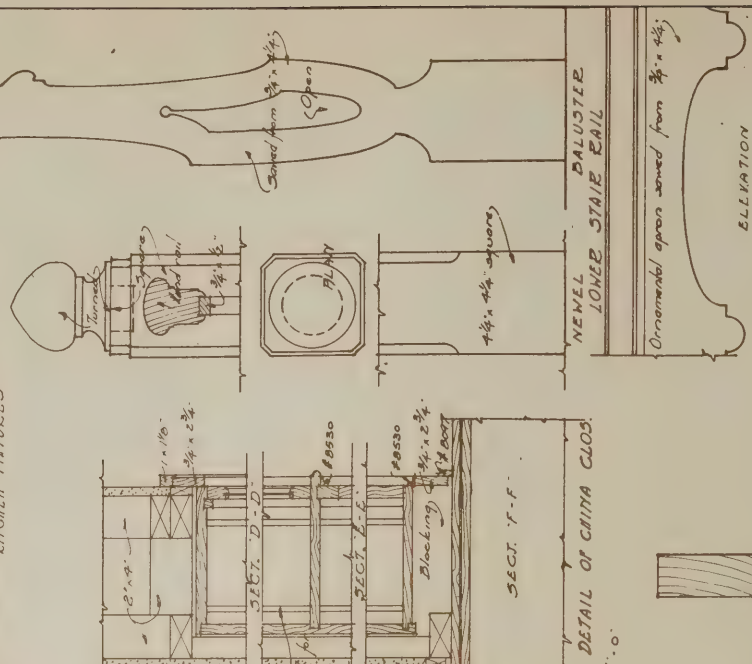
Dimensions are taken to outside of foundation walls, outside of studs on exterior walls and center of studs for partitions.

Foundation walls shown concrete may be stone, brick, concrete block, or load-bearing hollow tile. Where building ordinances permit, foundation walls may be 9" thick (with zone footings) except in case of stone which shall be 18" thick.

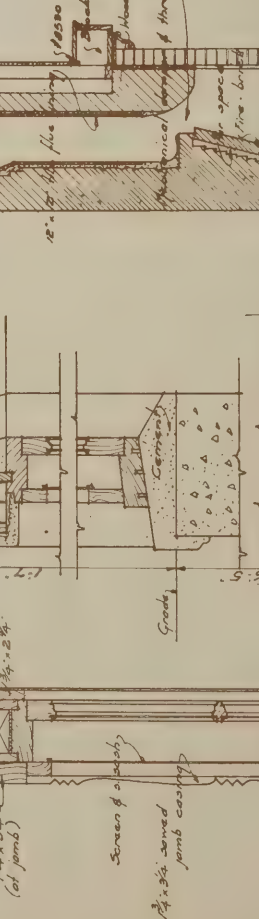
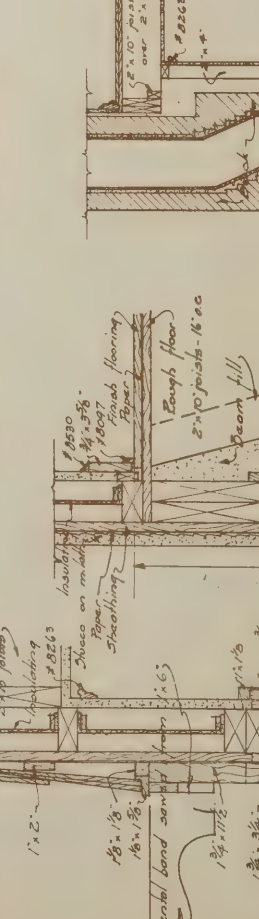
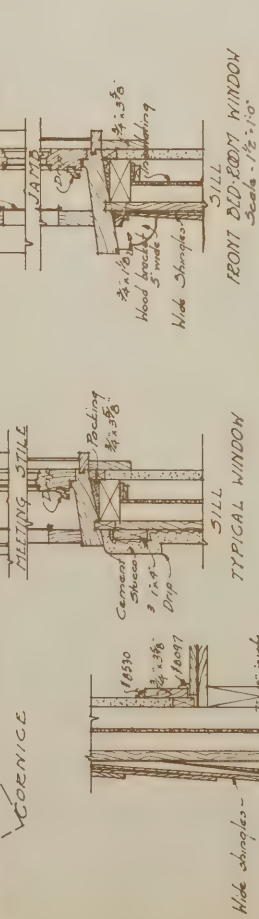
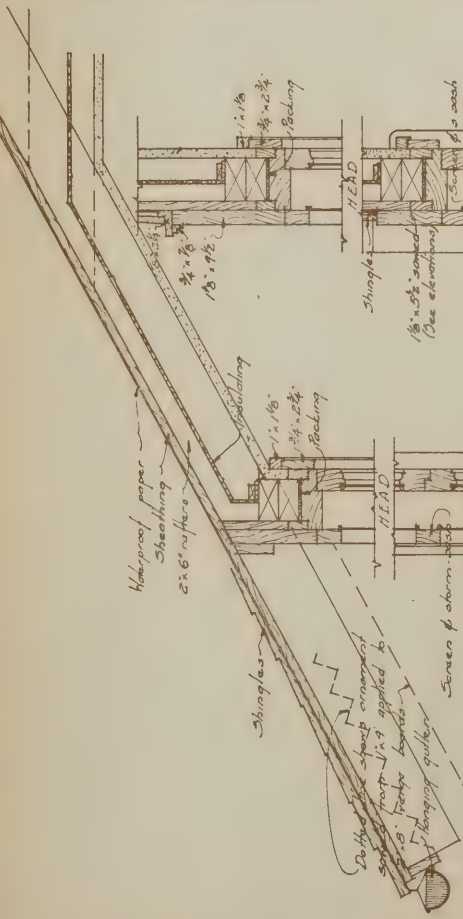
Stock numbers refer to mouldings in Universal Milwork Design Book #20. In case these mouldings cannot be procured, others of similar design and size may be substituted. Provide the screen and storm sash for all exterior openings except ice door unless otherwise noted. Bottom rail of storm sash to have vent



INTERIOR ELEVATIONS
Scale - 1/4" = 1'-0"



HOME PLAN FOR
NATIONAL BUILDER - May, 1924



Scale - 1/2" = 1'-0"

Quantity Survey for House No. 5A66

EXCAVATING		800 ft. com. bds. 1st floor subfloor	3 casements 10x14-8L-1¾
170 cu. yd.		970 ft. 13/16x1½ first floor finish floor	3 pr. casements 12x14-4L-1¾
BACK FILL		195 lin. ft. 2x4 first floor partition plates	1 pr. casements 12x14-2L-1¾
5 cu. yd.		57-2x4-9 first floor partition studs	2 single casements 10x14-6L-1¾
FOUNDATIONS		3-2x10-16 stair horses	4 single casements 10x12-2L-1¾
12" concrete, 44 cu. yd. gravel, 178 sax cement		4-2x10-8 porch girder	3 single casements 16x20-1¾
9" concrete, 35 cu. yd. gravel, 142 sax cement		2-2x10-16 porch girder	3 single casements 8x14-3L-1¾
12" tile, 19,500 CBM tile, 15 cu. yd. mortar		13-2x4-8 porch ceiling poist	1 pr. casements 10x14-6L-1¾
9" tile, 16,850 CBM tile, 13 cu. yd. mortar		150 ft. ceiling porch	3 single casements 10x12-6L-1¾
18 sq. ft. flagstone		1-2x10-8 step horse	1 pr. casements 12x14-3L-1¾
CEMENT FLOOR		3-2x6-14 stoop joist	Storm Sash:
cu. yd. gravel		40 ft. flooring stoop	5 st. sh. 9x9-3L-1½
cu. yd. sand		11-2x10-16 second floor joist	1 st. sh. 9x9-2L-1½
8 sax cement		16-2x10-12 second floor joist	3 st. sh. 10x14-8L-1½
spatter blocks		16-2x10-14 second floor joist	3 pr. st. sh. 12x14-4L-1½
50 face brick for steps		4-2x10-14 headers and doubles	1 pr. st. sh. 12x14-2L-1½
cement base for statue niche		800 ft. com. bd. second floor sub-floor	2 st. sh. 10x14-6L-1½
CHIMNEY		900 ft. 13/16x1½ second floor finish floor	4 st. sh. 10x12-2L-1½
160 common brick		270 lin. ft. 2x4 second fl. partition plates	3 st. sh. 16x20-1½
00 face brick		80-2x4-8 second floor partition studs	3 st. sh. 8x14-3L-1½
00 fire brick		64 lin. ft. 1x4 ribbon	1 pr. st. sh. 10x14-6L-1½
4 sq. ft. hearth tile		24-2x6-12 second floor ceiling joist	3 st. sh. 10x12-6L-1½
80 inside face brick		13-2x4-12 porch rafters	1 pr. st. sh. 12x14-3L-1½
3 lin. ft. 8x12 flue tile		28-2x4-14 rafters	1 pr. st. sh. 12x14-2L-1½
0 lin. ft. 12x12 flue tile		10-2x4-12 rafters	2 screens 10x14-6L-1½
0 lb. fire clay		19-2x4-24 rafters	4 screens 10x12-2L-1½
cu. yd. mortar		36 lin. ft. 1x6 ridge rafter	3 screens 16x20-1½
cast iron ash dump		336 lin. ft. 2x4 outside wall plates	3 screens 8x14-3L-1½
throat and damper		100-2x4-16 outside wall studs	1 screen for pr. 10x14-6L-1½
4x3x5/16-4'0		20-2x4-12 outside wall studs	3 screens 10x12-6L-1½
6x8 cleanout door		8-2x4-14 outside wall studs	1 screen for pr. 12x14-3L-1½
8x12 cleanout door		1100 lin. ft. grounds	Outside Door Frames
-6" thimble		2100 ft. shiplap wall sheathing	1 dr. fr. 2'10x6'8-1¾
-8" thimble		8 squares, 18" shingles	1 dr. fr. 2'8x6'0-1¾
yd. metal lath		1500 ft. com. bds. roof sheathing	1 double dr. fr. opng. 5'0x7'0-1¾
LATH		12½ M shingles roof	1 astragal
35 sq. yd. metal lath for stucco		20-2x4-16 scaffold and extras	1 icing door frame
sq. yd. metal lath over furnace		10-2x6-14 scaffold and extras	Storm Doors:
300 wood lath		8-2x8-16 scaffold and extras	1 st. dr. 2'10x6'8-1¾
PLASTER		3-2x10-18 scaffold and extras	1 st. dr. 2'8x6'0-1¾
5 yd. stucco on metal		3-2x6-12 verge boards	2 st. dr. 2'6x7'0-1¾
yd. plaster on metal over boiler		1-2x8-24 verge board	Screen Doors:
3 yd. plaster on wood lath		3-2x8-14 verge boards	1 sc. dr. 2'10x6'8-1¾
yd. Keene's cement		4-2x10-14 balcony joist	1 sc. dr. 2'8x6'0-1¾
TILE FLOORS		MILLWORK	2 sc. dr. 2'6x7'0-1¾
sq. ft. ceramic tile		Frames:	Outside Doors:
lin. ft. cove base		5 cellar frames 9x9-3L-1¾	1 door 2'10x6'8-1¾
LUMBER		1 cellar frame 9x9-2L-1¾	2 doors 2'6x7'0-1¾ French
-6x6-7 posts		3 casement fr. 10x14-8L-1¾	1 door 2'8x6'0-1¾
-4x4-7 post		3 double casement fr. 12x14-4L each-1¾	1 icing door
-6x10-18 girder		1 double casement fr. 12x14-2L each-1¾	Outside Millwork:
-2x4-18 girder ribbon		2 single casement fr. 10x14-6L each-1¾	180 lin. ft. cornice
-2x4-10 rail		4 single casement fr. 10x12-2L-1¾	14-4x4 brackets
-2x10-14 stair horses		1 triple casement fr. 16x20-1¾	4 balcony brackets
lin. ft. 2x4 basement partition plates		1 triple casement fr. 8x14-3L each-1¾	58 lin. ft. belt
-2x4-7 basement partition studs		1 double casement fr. 10x14-6L each-1¾	58 lin. ft. water drip
0 ft. D&M basement partition sheathing		3 single casement fr. 10x12-6L-1¾	58 lin. ft. molding, 6"
-2x4-16 shelf supports		1 double casement fr. 12x14-3L-1¾	20 lin. ft. balcony nosing
-1x12-10 shelves		Windows and Sash:	20 lin. ft. balcony rail
ft. plank cleanout cover		5 sash 9x9-3L-1¾	1 special front entrance trim
-2x10-16 first floor joist		1 sash 9x9-2L-1¾	30 lin. ft. porch rail
-2x10-12 first floor joist			30 lin. ft. porch fascia
-2x10-14 first floor joist			30 lin. ft. porch frieze
-2x10-16 headers and doubles			46 lin. ft. porch cove
lin. ft. 2x10 box sill			30 lin. ft. porch inside fascia
lin. ft. 1x3 bridging			3-8x8 porch post 8'
			1 set rear steps

1 porch screen 2'6x6'8.....	
1 porch screen 4'6x4'6—1½.....	
6 porch screens 3'6x4'6—1½.....	
1 st. dr. 2'6x6'8—1½.....	
1 st. sh. 4'6x4'6—1½.....	
6 st. sh. 3'6x4'6—1½.....	
Interior Doors:	
2 dr. 2'6x6'6—1½, No. 720.....	
2 dr. 2'6x7'0—1½.....	
2 dr. 2'8x7'0—1¾.....	
1 dr. 1'6x7'0—1½.....	
2 dr. 2'6x6'6—1½.....	
4 dr. 2'4x6'6—1½.....	
1 dr. 2'2x6'6—1½.....	
1 dr. 2'6x6'0—1½.....	
2 dr. 2'6x6'6—1¾ French.....	
Jambs:	
2 jambs 2'6x6'6.....	
2 jambs 2'6x7'0.....	
2 jambs 2'8x7'0.....	
1 jamb 1'6x7'0.....	
2 jambs 2'6x6'6.....	
4 jambs 2'4x6'6.....	
1 jamb 2'2x6'6.....	
1 jamb 2'6x6'0.....	
2 jambs 2'6x6'6.....	
1 jamb 7'0x7'0 arched.....	
1 jamb 5'6x7'0 arched.....	
Interior Trim:	
5 sides trim 9x9-3L.....	
1 side rim 9x9-2L.....	
1 side triple casemt. trim 10x14-8L.....	
3 side double casemt. trim 12x14-4L.....	
1 side double casemt. trim 12x14-2L.....	
2 sides single casemt. trim 10x14-6L.....	
4 sides single casemt. trim 10x12-2L.....	
1 side triple casement trim 16x20.....	
1 side triple casemt. trim 8x14-3L.....	
1 side double casemt. trim 10x14-6L.....	
3 side single casemt. trim 10x12-6L.....	
1 side double casemt. trim 12x14-3L.....	
1 side dr. trim 2'10x6'8.....	
1 side dr. trim 2'8x6'0.....	
1 side dbl. dr. trim 5'0x7'0.....	
1 side icing door trim.....	
4 side trim 2'6x6'6.....	
4 side trim 2'6x7'0.....	
4 side rim 2'8x7'0.....	
2 side trim 1'6x7'0.....	
4 side trim 2'6x6'6.....	
8 side trim 2'4x6'6.....	
2 side trim 2'2x6'6.....	
2 side trim 2'6x6'0.....	
4 side trim 2'6x6'6.....	
2 side trim 7'0x7'0 arched.....	
2 side trim 5'6x7'0 arched.....	
1 flight basement stairs.....	
1 flight grade stairs.....	
1 flight main stairs with rail.....	
1—5'6 book case.....	
1 mantel shelf.....	
1—2'6 china case.....	
2 clothes chute doors.....	
2 clothes chute door jambs.....	
2 side trim.....	
1—5'0 kitchen cupboard.....	
1—3'0 kitchen cupboard.....	
1—3'6 kitchen cupboard.....	
1—1'6 kitchen cupboard.....	
1 meter cabinet.....	
1 medicine cabinet.....	
1 scuttle door.....	
1 scuttle door jamb.....	
1 scuttle door trim.....	
1—5'2 seat.....	
1 hinged seat.....	

1 utility door.....
1 utility door jamb.....
1 utility door trim.....
530 lin. ft. base.....
530 lin. ft. base shoe.....
530 lin. ft. base molding.....
370 lin. ft. picture molding.....
124 lin. ft. ceiling cove.....
32 lin. ft. panel molding.....
40 lin. ft. shelving.....
40 lin. ft. clothes strip.....
40 lin. ft. hook strip.....
12 lin. ft. threshold.....

REINFORCED STEEL

33—¾ rods, 8'0.....

ORNAMENTAL IRON

1 wrought iron lantern.....

INSULATION

660 ft. ¼" vegetable fibre or equal
2d floor ceiling.....
1900 ft. ½" vegetable fibre or equal

O. S. walls.

4 rolls felt roof.....
4 rolls waterproof paper walls.....
3 rolls red rosin for floors.....

CAULKING

15 single frames.....
6 double frames.....
3 triple frames.....
3 single door frames.....
1 double door frame.....
1 chimney.....
1 coal chute.....

WEATHER STRIPPING

5 sash 9x9-3L.....
1 sash 9x9-2L.....
3 casements 10x14-8L.....
3 pr. casements 12x14-4L.....
1 pr. casements 12x14-2L.....
2 single casements 10x14-6L.....
4 single casements 10x12-2L.....
3 single casements 16x20.....
3 single casements 8x14-3L.....
1 pr. casements 10x14-6L.....
3 single casements 10x12-6L.....
1 pr. casements 12x14-3L.....
1 dr. 2'10x6'8.....
1 dr. 2'8x6'0.....
1 double door opening 5'0x7'0.....

TINWORK

35 sq. ft. tin deck.....
88 lin. ft. gutter.....
22 gutter hangers.....
12 gutter ends.....
5 nipples.....
5 strainers.....
5 offsets.....
5 elbows.....
5 shut offs.....
74 lin. ft. conductor.....
15 conductor hooks.....
16 lin. ft. flashing tin 12".....
200 tin shingles.....
1 saddle.....
12 lin. ft. chimney flashing.....
120 lin. ft. 8" flashing.....
36 lin. ft. ridge roll.....
2 finials.....

EXTERIOR PAINTING

20 gal. shingle stain walls.....
5 gal. trim paint.....
2 gal. boiled oil.....
1 gal. porch paint.....
1 gal. screen paint.....
1 gal. cement paint.....
1 gal. sash color.....

½ gal. shellac.....
1 gal. japan.....
1 gal. turpentine.....
36 gal. shingle stain, roof.....
5 lbs. putty.....
11 gal. white.....
8 gal. enamel.....
5 gal. filler.....
3 gal. shellac.....
9 gal. varnish.....
3 gal. floor shellac.....
6 gal. floor varnish.....
2 gal. oil.....
1 gal. japan.....
1 gal. turpentine.....
1 gal. alcohol.....
3 doz. sheets sandpaper.....
3 lbs. steel wool.....

HARDWARE

6 cellar sash sets.....
18 single casement sets.....
6 casement sets for pairs.....
24 single storm sash sets.....
6 storm sash sets for pairs.....
24 single screen sets.....
6 screen sets for pairs.....
1 front door set with 3 splc. hinges
1 rear door set with butts.....
1 double door set with butts.....
1 icing door set with butts.....
2 single stm. dr. sets with butts.....
1 double stm. dr. set with butts.....
2 single screen dr. sets with butts.....
1 double screen dr. set with butts.....
1100 lbs. assorted nails.....
6 lbs. assorted brads.....
1 coal chute.....
1 porch storm door set with butts.....
1 porch screen door set with butts.....
¼ gross buttons and screws.....
4 stair rail brackets.....
1 floor hinge.....
2 push plates.....
16 inside door sets with butts.....
22 door bumpers.....
4 doz. clothes hooks.....
4 pr. orn. butts.....
2 cupboard turns.....
2 elbow catches.....
2 cupboard turns.....
2 pr. orn. butts.....
11 pr. orn. butts.....
7 cupboard turns.....
4 elbow catches.....
4 drawer pulls.....
4 pr. butts.....
4 cupboard turns.....
1 set castors.....
1 bin pull.....
8 drawer pulls.....
4 pr. orn. butts.....
4 cupboard turns.....
2 pr. orn. butts.....
1 cupboard turn.....
1 elbow catch.....
1 pr. orn. butts.....
1 cupboard turn.....
1 cupboard turn.....
1 pr. orn. butts.....
1 pr. hinges for scuttle door.....
2 pr. hinges for seat covers.....
4 friction stays—utility doors.....

Starting a New Community Out on the Right Line

It is possible to count on the fingers of one hand the number of planned cities in the United States; that is, cities that have been laid out before they were built according to some orderly program of development. Most of the municipalities of this country have just "grew up" like Topsy, without any directing hand guiding them in their growth, depending entirely upon chance for what they might achieve in the way of order or beauty.

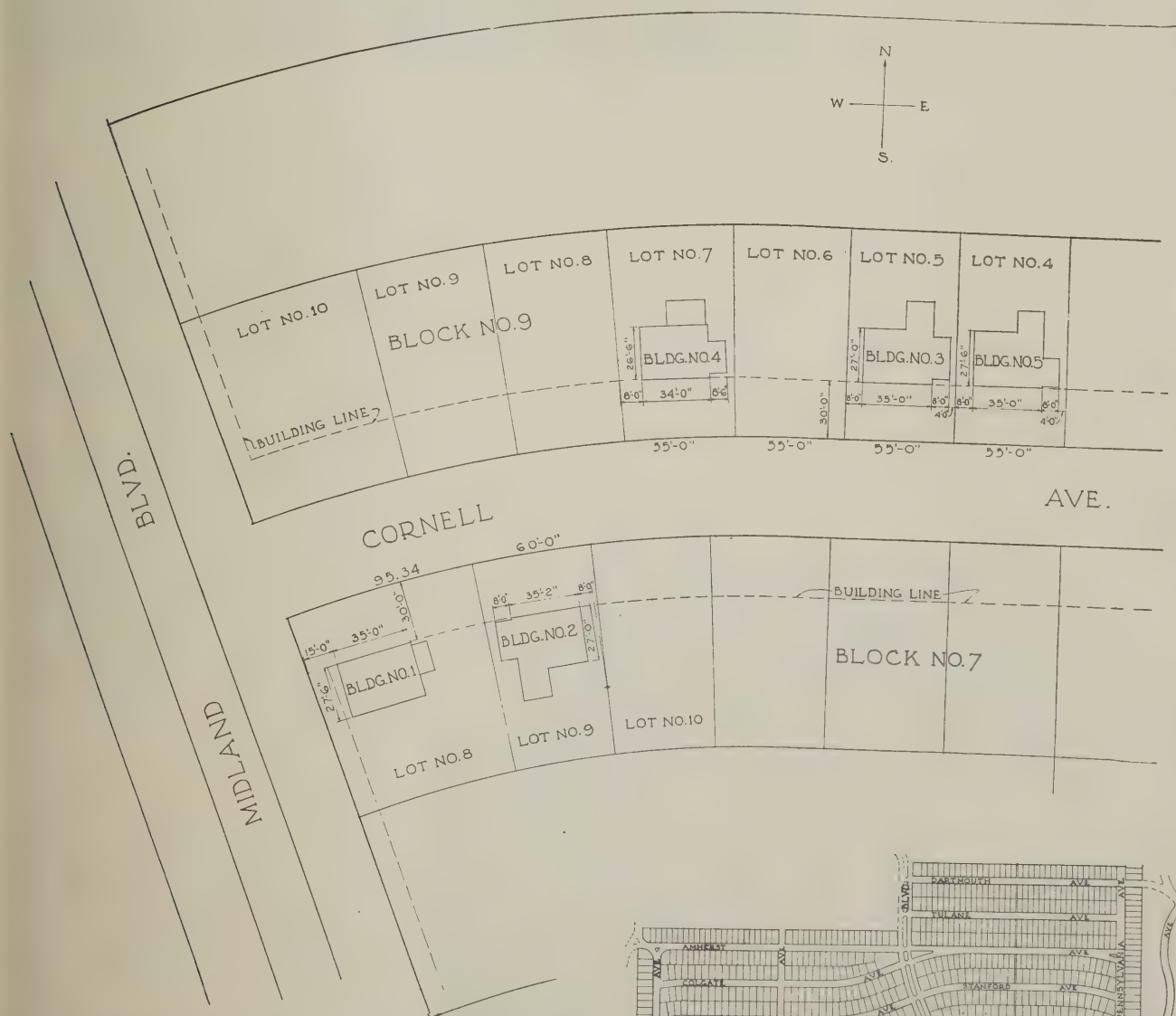
This is also true of even parts of indi-

vidual towns and cities. The average subdivision is simply a plot of ground cut up into lots and left to the caprices of the individuals who build houses in it.

There is, however, noticeable here and there an effort on the part of far-seeing builders and real estate operators to get away from this sort of fortuitous city development. Builders who operate on a large scale and who build to sell, and real estate dealers who resort to building as a means of developing their property and increasing

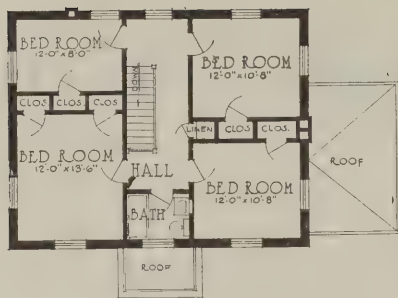
their land values, are realizing the importance of plan and direction in building up communities as a unit instead of as a conglomeration of individual houses.

An interesting example of this trend is seen in University Park, a suburb of St. Louis, Missouri. The little map in the lower right-hand corner on page 51 shows the layout of streets and lots in this section where it will be observed that the standardized gridiron plan is varied somewhat by the introduction of a few curves and parkways

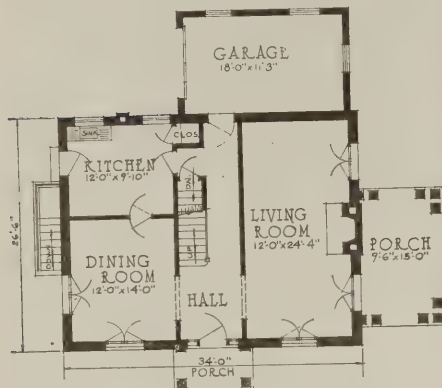


At the right is a map of University Park, a residential section of St. Louis, Missouri, being developed by the Cyrus Crane Willmore Organization, Incorporated, and above is an enlargement of the intersection of Cornell Avenue and Midland Boulevard, showing lot sizes, building lines and how and where the first group of houses built in this section have been placed





Second floor plan for building No. 4



First floor plan for building No. 4

in laying out the section. This plot of ground covers several acres and it is divided into lots which range in size from 45 feet frontage to 100 feet and in depth from 105 to around 116 feet, with the majority averaging about 50 feet of frontage. The building line is set back 30 feet in the front and 5 feet on the sides.

University Park is in a very desirable section of St. Louis. Washington University is a nearby institution and it is surrounded

by residences of a high order. Consequently, the Cyrus Crane Willmore Organization, Incorporated, who are building up this community, desired to have the section conform to the character of the locality and in order to start it out on the right lines have built (at the time of writing) five houses on typical lots, it may be said, to set the pace as regards size, style and location for all other builders or owners contemplating building in this section. The large map, which is an enlargement of one corner at Cornell Avenue

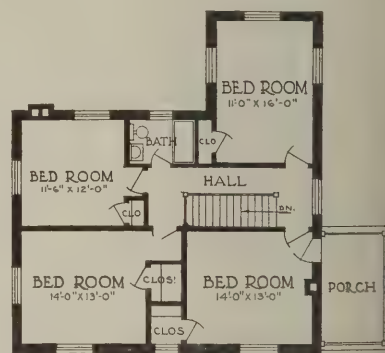
and Midland Boulevard, which is practically in the center of the section as shown on the small map, indicates the location and orientation of these houses. Photographs of them with their plans are reproduced showing the character and style of the buildings. They are architecturally of the first class and are



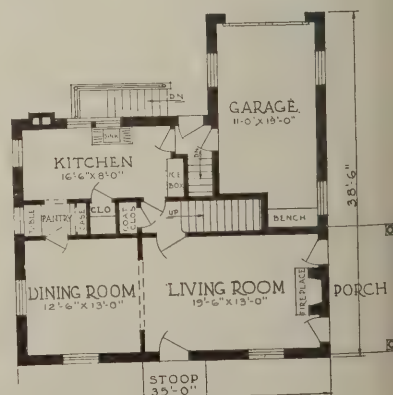
Building No. 4 on lot No. 7, a seven-room stucco house with attached garage in rear. This house is on a 55-foot lot



Building No. 5 on lot No. 4, a seven-room stucco house with attached garage in rear. This house is on a 55-foot lot



Second floor plan for building No. 5



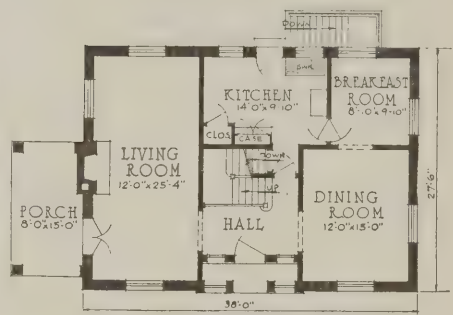
First floor plan for building No. 5



Building No. 1 on lot No. 8, a brick-and-stucco house with seven major rooms and breakfast room and sleeping porch in addition. The garage is not attached. The house is on a corner lot with a frontage of over 95 feet



Second floor plan for building No. 1



First floor plan for building No. 1

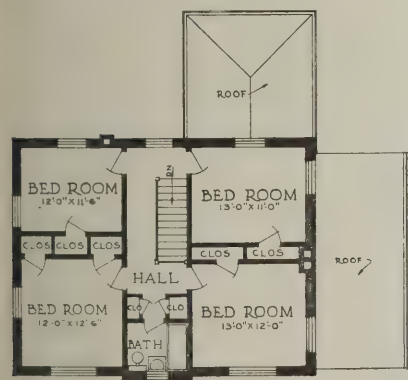
far superior to houses often built in many residential sections. If the rest of University Park is built up in the manner suggested by these examples it should indeed become not only a handsome residential

neighborhood but also a very profitable investment for owners of property in that section.

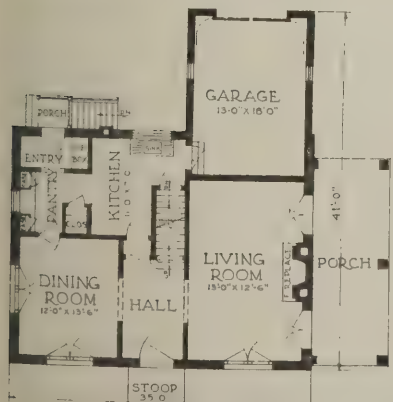
Note that the houses are all of the same general plan type; a rectangle, and usually with attached garages. This makes for unity in appearance and keeps one house from looking like a stranger to its neighbor. The attached garages make for economy and convenience and aid in preventing the cluttered appearance common

to many developments of a similar nature. All of these influences have been carefully studied in this development to the end that possible investors will be impressed by the unusual care shown in directing the future tendencies of the property.

The buildings were designed by Preston J. Bradshaw, architect, International Life Building, St. Louis, and were erected under his supervision by his standardized sub-contract method.



Second floor plan for building No. 3



First floor plan for building No. 3



Building No. 3 on lot No. 5, a seven-room brick-and-stucco house with seven major rooms and attached garage. This house is on a 55-foot lot

A Shopping Center for a Small Community

By John Y. Dunlop

THE shopping center which is shown in the half-tone illustration has been designed for two shops and has been arranged on the lines of the English old-fashioned square paned shop front.

The support for the walls of the house above is on the brick work at either end of the front and the three supporting iron

ther provision.

The roof as shown is covered with tile gables and a tile verge. No form of verge has given so much satisfaction as the plain tile verge in which the roof tiles are bedded on the wall and the edge of the gable tiles underneath. The roof tiles should project about 3 in. from the gable face and after

are panelled and each is formed with a base having toe space underneath. The back counter is framed in much the same way only there are no drawers and on the top of the framing a display case is formed.

A top view is given of this show case with its eight opening parts. The top



Building designed for two stores in the English style, with living quarters above

columns, of which one is in each shop and one in the dividing partition in the center gable.

The lintel over these is reinforced concrete and the wall immediately above of brick.

In setting the window and door frames a general flush effect is most consonant with cottage building, and this is naturally obtained when the frames are set with their back in line with the outer face of the inner wall line. This leaves a visible break of about $\frac{1}{2}$ in., sufficient to give a line on the front and allows the hardwood sill 8 in. wide to project $1\frac{1}{2}$ in., so as to throw off all wall water without the need of fur-

being laid should be pointed up flush but not plastered over the edge of the tiles.

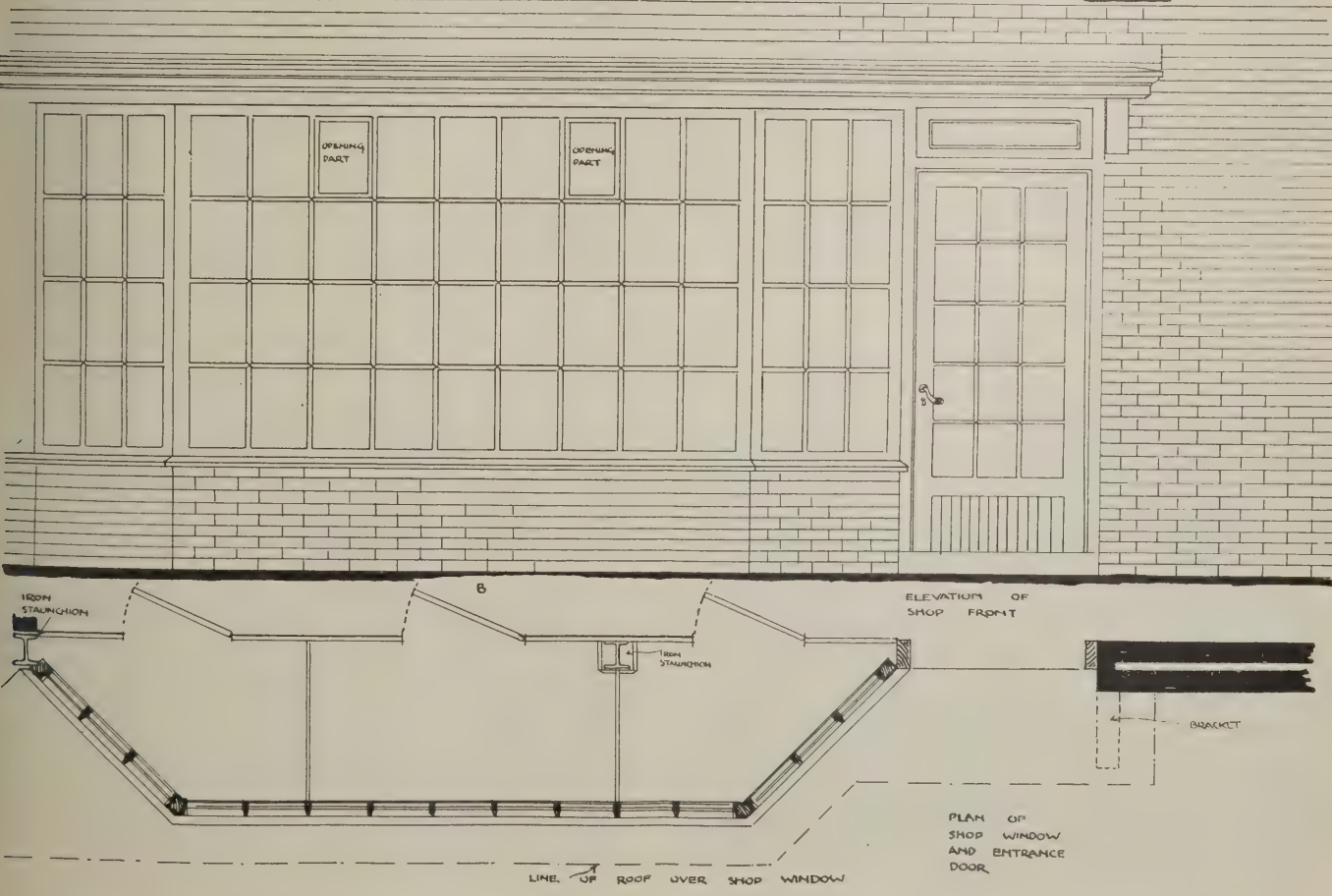
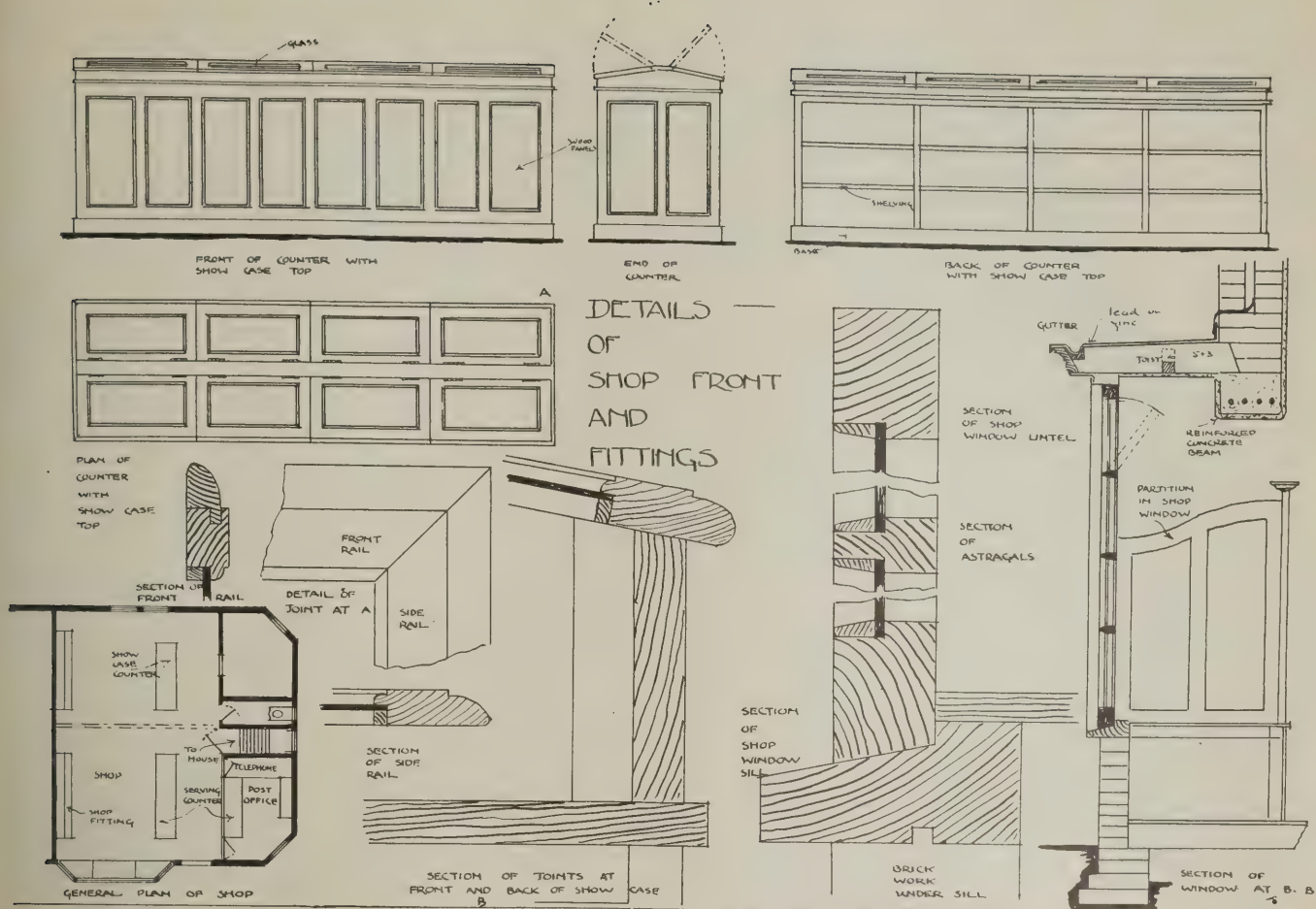
The show window is divided into three portions with a $1\frac{1}{2}$ in. thick panelled frame which is ogee shaped on the top. The inner screen is straight and is framed with open doors in each portion.

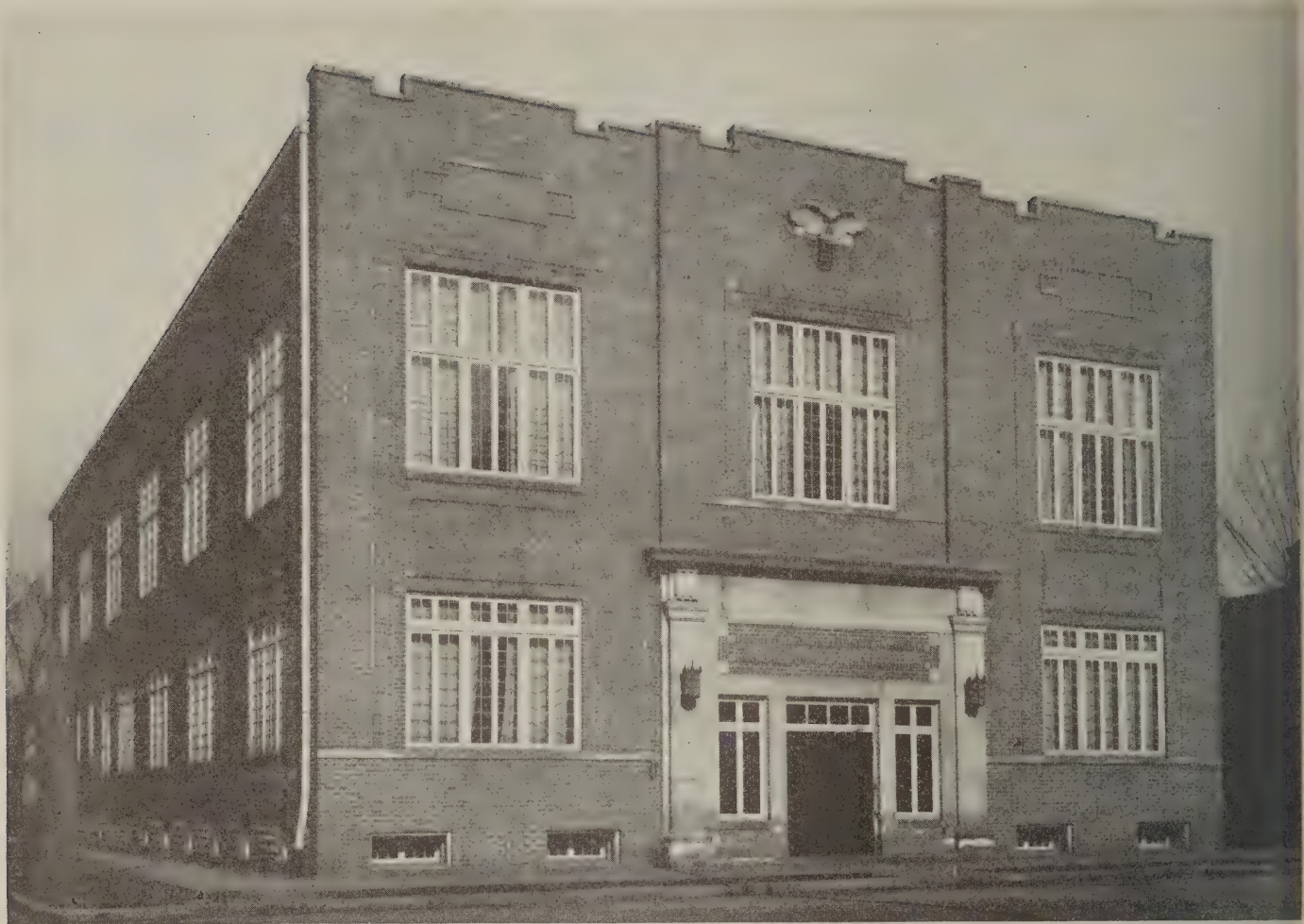
Internally the shop is arranged for the usual business of a small post office with a public counter and telephone space.

The front counter is 12 ft. long and 2 ft. broad framed up with $3 \times 1\frac{1}{2}$ framing and having a row of drawers on the top along the inside. The space underneath the drawers is open and has two rows of shelves. The front and ends of the counter

slopes slightly to the back and the front. A detail of the front of the case is shown in section while one of the joints is shown of the opening part at A. This frame is mitered and half checked and is finished with a thumb moulding on the sloping and lower edge. The moulding in the one part is run on the solid, while on the other it is grooved and glued.

The fittings on the gable wall of the shop and the back of the post office space is formed with a 2 ft. high portion enclosed with doors, above that a row of 6 in. drawers and above that again open shelves set up at intervals to suit the material and goods sold in the store.





New brick facing and stone trim worked a transformation in the appearance of this building

Rejuvenating an Old Building Gives It a New Lease of Life

THE new home of the Eagles' lodge of Peru, Indiana, is an interesting example of remodeling. The original building was

built for use as a livery stable, and, strangely enough, contained a full basement as well as a second story.

In adopting it for use as a lodge building it was found necessary to wreck the front wall of the old building. The remaining



The ladies' parlor is plain, but tastefully furnished



The lounge is excellently lighted by windows in opposite walls

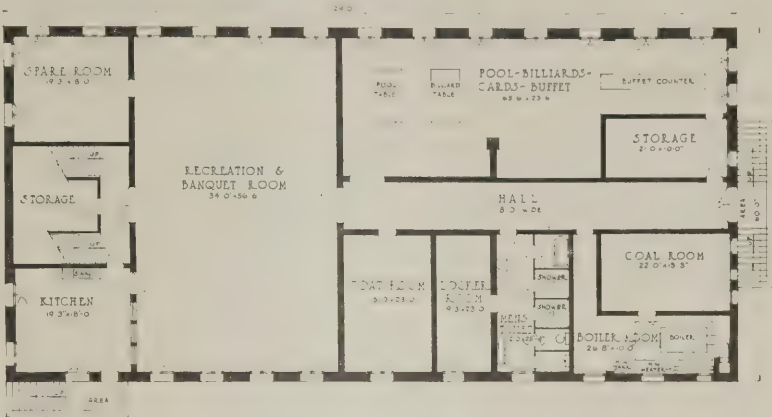
walls were utilized, however, except that new openings were cut thru to meet the requirements for larger windows. As the materials of the original building were over-size, it was found practical to use the old floor construction, except that the wooden posts and beams supporting the interior ends of the joists were replaced by steel columns and I-beams. The roof is supported by steel trusses of the Howe type placed about 20 feet apart across the 60-foot span, thus leaving the ball room clear of columns.

The entrance is into a wide vestibule which contains stairs leading up to the first floor or down to the basement. A large recreation and banquet room with a connecting space or storage room and a kitchen are located in the basement. A separate outside stair for the delivery of supplies is provided for the kitchen. Double doors open from the banquet room into a wide hall which extends thru the rear portion of the basement and leads to an area stair forming an exit into an alley at the rear of the building. A billiard and card room, with a small buffet at one end, opens from one side of the hall. On the opposite side of the hall are located the boiler and fuel room, a large coat room and a men's toilet and locker room. In addition to the sanitary fixtures, the toilet room contains three bath compartments, two showers and a tub bath.

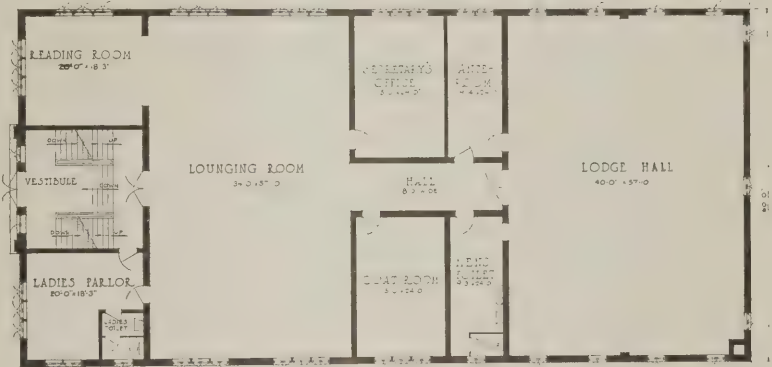
A lounging room on the first floor is entered from the vestibule. Opening from this room is a reading room in one corner and a ladies' retiring room or parlor in the other. Both of these rooms face the street and the retiring room contains a toilet compartment. A wide hall connects the lounging room and the lodge hall. Between these rooms are a secretary's office, an ante room, a coat room and a men's toilet.

The second story contains a large ball room with two parlors, which may also be used as coat rooms, toward the front of the building. A stage at the rear makes the ball room available for use as an auditorium. Separate dressing rooms at the sides provided with toilets makes this feature complete for theatrical use. Emergency exits

are provided by fire escapes leading from the dressing rooms to the alley at the rear. The finished floors of the basement are of cement. Oak was used for the first story and maple for the second. The vestibule is tiled. Metal ceilings were used throughout.



Basement plan



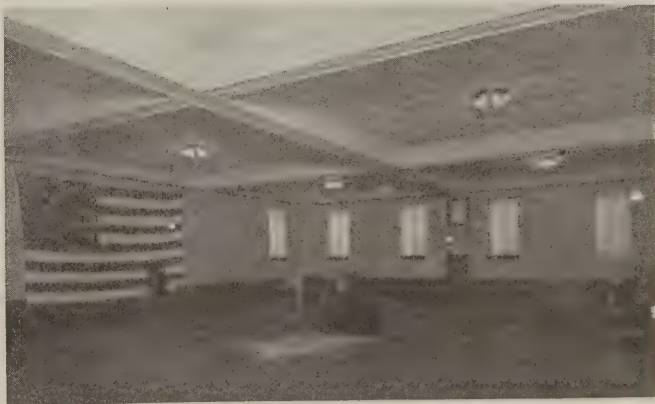
First floor plan



Second floor plan



Here is the original building before it was remodeled



The lodge hall is located at the rear of the first story

The Steel Square

VII. Unusual Pitches

FOR such things as church spires, etc., where the rafters are set at very steep angles, the large diagram shown on the opposite page may be used to advantage when supplemented by the diagram and tables published in the previous articles of this series.

The large diagram gives the inch-graduation mark divisions on the outside edges of the square for pitches ranging from 1/24 to four. The carpenter may, at some time in his experience find use for every pitch shown, since the 1/24 pitch which represents the rise of one inch per foot is not uncommon for flat roofs, and the four-full pitch is not uncommon for a church steeple.

The diagram is to be used as explained below. Suppose we take a steel square by itself and place it in the position of the square shown under the heading at the top, "To one full Pitch." The square is set with the body vertical and the tongue horizontal. Suppose we take the

12-inch graduation mark on the tongue as the run, and the various inch graduation marks on the body as rises, and draw lines from the 12-inch graduation mark to the various inch-graduation marks on the body. These lines will represent the slopes of rafters for various pitches as shown by the figures in the circles to the right of the body of the square.

Now suppose we consider the square moved six inches to the left so that the outside edge of the body of the square in the second position as shown under the heading, "To Two full Pitches," is where the six-inch graduation mark was when the square was in the first position. Now let us draw lines from the same 12-inch graduation mark as was used with the square in the first position to the various inch-graduation marks on the outside edge of the body with the square in the second position. We now have pitches ranging from 1/12 pitch to two full pitches. This is because the run has been reduced from

12 inches to six inches, and the slope of the pitch lines increased accordingly.

Let us now move the square again to the position shown under the heading "To Four Full Pitches." The outside edge of the body now is located where the nine outside-edge inch-graduation mark was located when the square was in the first position. The run has now been reduced to three and by drawing lines from the 12-inch graduation mark used for the square in the first position to the various outside-edge inch-graduation marks on the body, with the square in the third position, we have pitches ranging from 1/6 pitch to four full pitches.

It may be interesting to note that the same pitches may be obtained for all three positions of the square. For instance: the 2/3 pitch with the square in the first position is found by drawing a line from the 12 outside-edge inch-graduation mark on the tongue to the 16 outside-edge inch-

VALUES FOR PITCHES MARKED FROM 3 ON TONGUE TO VARIOUS DIVISIONS ON BODY			
DIV	PITCH	DIV	PITCH
1	1/6	13	2-1/6
2	1/3	14	2-1/3
3	1/2	15	2-1/2
4	2/3	16	2-2/3
5	5/6	17	2-5/6
6	1	18	3
7	1-1/6	19	3-1/6
8	1-1/3	20	3-1/3
9	1-1/2	21	3-1/2
10	1-2/3	22	3-2/3
11	1-5/6	23	3-5/6
12	2	24	4

VALUES FOR PITCHES MARKED FROM 6 ON TONGUE TO VARIOUS DIVISIONS ON BODY			
DIV	PITCH	DIV	PITCH
1	1/12	13	1-1/12
2	1/6	14	1-1/6
3	1/4	15	1-1/4
4	1/3	16	1-1/3
5	5/12	17	1-5/12
6	1/2	18	1-1/2
7	7/12	19	1-7/12
8	2/3	20	1-2/3
9	3/4	21	1-3/4
10	5/6	22	1-5/6
11	11/12	23	1-11/12
12	1	24	2

VALUES FOR PITCHES MARKED FROM 12 ON TONGUE TO VARIOUS DIVISIONS ON BODY			
DIV	PITCH	DIV	PITCH
1	1/24	13	13/24
2	1/12	14	7/12
3	1/8	15	5/8
4	1/6	16	2/3
5	5/24	17	7/24
6	1/4	18	3/4
7	7/24	19	19/24
8	1/3	20	5/6
9	3/8	21	7/8
10	5/12	22	11/12
11	11/24	23	23/24
12	1/2	24	1

Fig. 1—Tabulation of pitches as determined by the accompanying diagram

graduation mark on the body. In the second position this line passes through the eight outside-edge inch-graduation mark on the body and through the four outside-edge inch-graduation mark on the body in the third position, all of which give a 2/3 pitch.

While they are not generally used, the

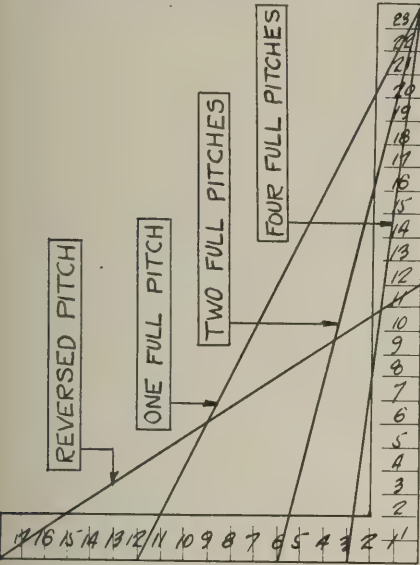


Fig. 2—Supplementary diagram

figures for reversed pitches are given in the circles at the bottom of the diagram. By reversed pitch is meant using 12 for the rise and the various outside-edge inch-graduation marks on the body for different runs instead of the reverse, which is usually done. Thus allowing the tongue of the square to stand vertically and the body horizontally, as shown by the square in the left of the large diagram, and drawing lines from the 12 outside-edge inch-graduation mark on the tongue to the various outside-edge inch-graduation marks on the body, we find the various lines which show reversed pitches.

The supplementary diagram in Fig. 2 will explain the method used in obtaining the various pitches. The method resolves itself into nothing more or less than reducing the run from 12 to six inches in order to obtain two full pitches and from 12 to three inches in order to obtain four full pitches. The line for reversed pitch is shown on Fig. 2 as indicated by arrow.

In case the reader may have some difficulty in using the diagram, three tables are given which show the various pitches obtained from the use of the various outside-edge inch-graduation marks of the squares in the different positions.

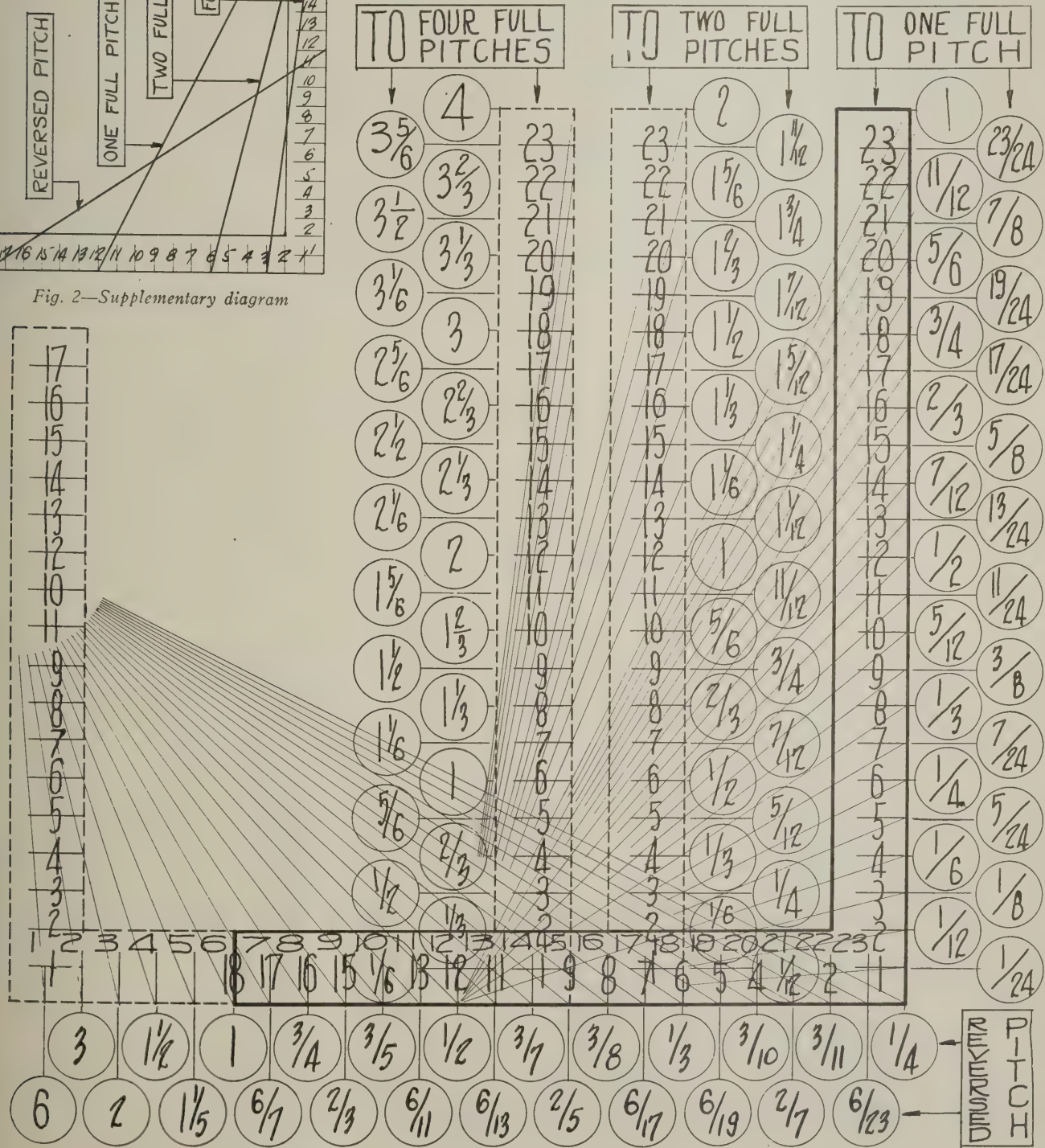


Fig. 3—Diagram for pitches ranging from one twenty-fourth to four full pitches



Located on a steep slope, one entrance is at the side, the other at the upper end of the building

An Income of \$110 a Month

C. E. GENTER of Los Angeles owned a lot which, in addition to the regular city and county taxes, was given a special assessment for street improvements, thus placing it in the position of a star boarder eating his head off. Something had to be done.

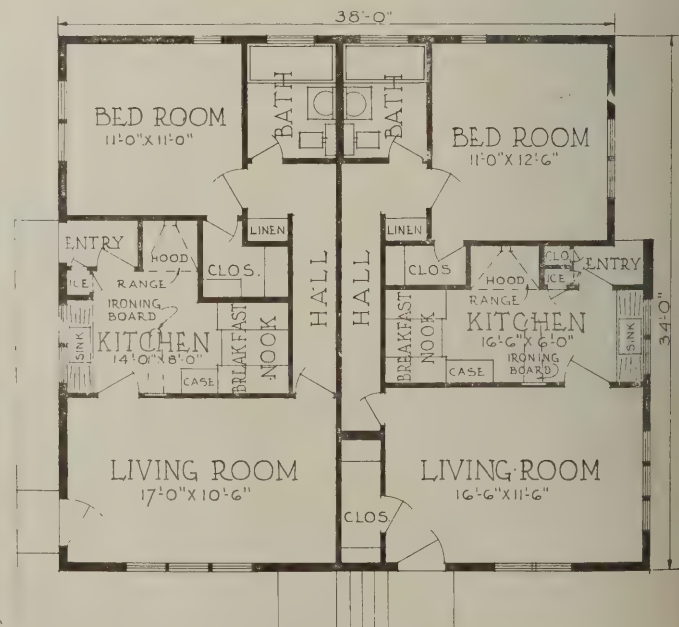
Contractor Gus Kubos, 6715 Lexington Avenue, who was handling several construction jobs in the neighborhood, was called into consultation and asked to design and build a Spanish-type duplex, 38x34 feet, with a community laundry in the basement to serve both the duplex and

the bungalow to the west. The work was done, at a cost of \$5200, and the apartments rented for \$55 each, or \$110 a month for the unit.

The house follows the usual construction for this type of building in Los Angeles—concrete foundation walls and piers,



Mr. and Mrs. Genter have just closed both leases



Floor plan

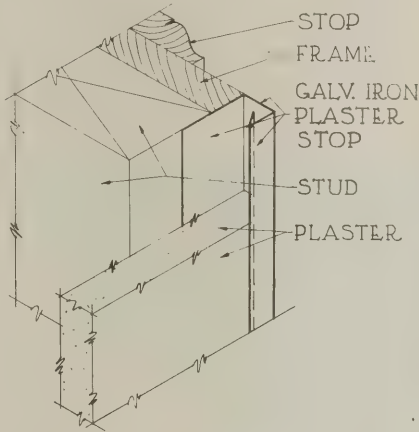


Showing galvanized iron plaster stop around a door opening

2x4 studding in the exterior walls, 2x3's for inner walls. Mr. Kubos, however, omitted the usual door and window frames and casings, exterior and interior, and substituted his galvanized iron plaster stop, as shown. This is claimed to be a durable, practical and economically applied stop. In finishing it, red lead is used for the priming coat, then jamb and

stop given a coat of flat white, then a quicker-drying coat made up of two-thirds flat and one-third enamel, followed by the finish coat of enamel. Leonard H. Pickens, painter, was not sure on the start that he approved the metal stop, but admitted on the finish that it gave a satisfactory job.

Both exterior stucco work and interior plastering (mission texture in living rooms) were handled by Kidson & Munro, 415 West 64th Street. A mesh reinforce-



Detail of galvanized iron plaster stop

ing of 18 gauge galvanized wire was placed—not too tightly—over the exterior buttonlath sheathing and firmly fastened with fourpenny nails, over which was applied a 3/4-inch brown coat of monolithic plastic cement. This was let stand and plentifully wet down for a couple of weeks and then given a coat of California waterproof finish stucco in buff color. The mesh wire when put on with a certain knack, loosely but firmly, acts as a reinforcement and binder—not only for the brown coat but also for the important finish coat.



Tub enclosure and floor are of magnesite cement

The fine piece of cement work in the brackets and the red tile in the hoods over the two doors give a note of distinction. Tile contractor Roy Caswell, 3054 Coolidge Avenue, specializes in jobs of four squares and under and has a constant run of these small jobs, jobs satisfactory to himself and appreciated by the contractor and owner.



L. H. Pickens finishing up the galvanized plaster stop



Gus Kabos says this job is done—another begins



Roy Caswell specializes in small tile jobs

Some Principles of Stair Design

By H. T. Becker

NO subject connected with the art of building is less understood by all concerned than is stair building. There is a dearth of instructive material for study, and masters of the art are few and in general inaccessible. There would be an eager audience in all branches of the building industry for some authoritative works about stair building.

No doubt the reason that stair building has never been formulated into an exact science, with certain rules to follow under given conditions leading to such-and-such results in the finished job, is the fact that practically no two stairs are identical. Yet there are some general principles governing stair building which have been evolved through study and experience. To understand and follow these principles is to eliminate a good many problems that would otherwise arise.

At the outset, it is obvious that the stair was originated to serve a utilitarian purpose. In the second place, it is the largest, the most conspicuous, and the most expensive (because the most technical) piece of woodwork in the whole house; therefore its appearance is important, as well as its sturdy construction. These two factors determine the principles of stair building.

The ease of mounting a stair depends on the proportions of the treads to the risers, which have to be adapted to the physical structure of the human frame. These proportions have been reduced to a "rule of thumb" by some architects. One of these rules is, "Twice the height of the riser, plus the width of the tread, must be between 24

and 25." For example, with a 7-inch riser, you would have 2 times 7 equals 14, and 25 minus 14 equals 11, the corresponding width for the tread. Or, starting with a 10-inch tread, 25 minus 10 is 15, and 15 divided by 2 is 7½ inches, the height necessary for the riser, if the stair is to be comfortably proportioned. Another way of stating this rule



Circular stair in the old Waters House, Salem, Massachusetts. Samuel McIntyre, architect

is "The product of the width of the tread (not including the nosing) multiplied by the height of the riser, should fall between 70 and 75." For instance, if 10-inch treads are desired, the risers should not be less than 7 inches nor more than 7½ inches high. Some builders state the rule "The tread and riser together should be not more than 18 inches nor less than 17 inches"—which is a less accurate way of stating the same thing.

In other words, the width of the tread must be increased proportionately as the height of the riser is reduced, and vice versa. For a main stair, 7½ inches should be the maximum height for risers. Greater height of risers is apt to produce a "ladder." Too often it is considered necessary to detail the stair according to the space allowed for it—a reversal of the commonsense procedure of mapping out a stair with the right proportions for ease of ascent and descent, and then allowing the required amount of space in the plan for such a stair.

The attic stair, of course, is less important because it is not placed in a conspicuous public position in the house, and because it is used much less frequently. Back stairs may have risers 8 to 9 inches high, with treads 9 or 8 inches respectively. As a mat-

ter of fact, the disappearing stair is being used a great deal for this purpose. One architect recently gave it as his opinion that the movable stair would soon be universally used for attic stairs, because of the great saving of needed space.

A second principle concerns the problem of headroom. Stairs should be laid out accurately to determine this essential factor. The old rule of "13 risers for headroom" is all right for rough approximations, but it is not always trustworthy. A practical stairbuilder, who has built and supervised the building of literally thousands of stairs, uses as a desirable rule for finding the number of risers for the average stair: "One and a half times the height of the story." If the story is 10 feet high, there will be 15 risers. In many plans where the space allowed is not sufficient, the stairbuilder is compelled to contract or "squeeze" the stair to get it in. Naturally, he must make the best of the space given him. But the result cannot be other than an inconvenient and deformed staircase, which depreciates the value of the whole building. The clearance should not only allow for a very tall person—with his two-gallon hat on—but should take into account the fact that trunks and furniture must be taken up and down. The builder who has to incorporate an impromptu dormer in the roof of a house under construction, in order to make headroom for the stair (which has actually happened), builds a bad advertisement for himself.

The width of the stairway must allow for furniture-moving, and should be sufficient for allowing persons to pass each other, if it is



A straight flight. Open rail at bottom, closed in near top



Stair with starting volute and continuous handrail

to be an inviting stairway. A good standard width for open stairs is 3 feet 6 inches from plaster wall to the center of the handrail. Standardized material can be had in this width.

The balustrade has a great deal to do with the general effect, good or bad, produced by the finished stair, and this is de-



Combination stair, accessible from both front and rear of house

pendent in turn on the proportions of the newels, balusters and rail. For the most part, these are bought at the mill rather than made on the job, and it is possible to select items that are correctly proportioned, and which will produce a beautiful completed job. One of the most common faults is undue heaviness of newels and balusters. The designers seem to have copied the proportions of Greek columns, entirely disregarding the fact that they were of stone, while the ordinary stair is wood. Wood has eight times the resistance to bending that

marble has, and therefore wooden posts of one-eighth the sectional area will support the same load. It is suitability of material to use which determines what "good proportions" are.

A second fault to be avoided is over ornamentation, which is simply another instance of unsuitability to material.

The standard height of the balustrade is 2 feet 6 inches from the face of the tread to the top of the handrail, and the thickness of the balusters should be proportionate to this height.

In open string stairs, ordinary practice is to set two balusters to each tread, but three usually look better. In curb string stairs, the number of balusters also should be approximately the same and spaced evenly along the face stringer. It will do a great deal toward making the completed job perfect if the face of the balusters always lines up with the surface of the face stringer, not with the plaster, and not with the center line of the handrail, as is often done.

The type of stair to be used in any house is of course practically determined by the type of the house itself. Whenever possible, an open stair is by all means desirable, on account of its roominess and the opportunity it affords as a decorative item of real grace and beauty. (Parenthetically, it might be noted that most authorities agree on one point regarding the location of the open stair; namely, that it is a mistake to have an open stair leading directly from the living room, for the reason that a circulation of air is set up which makes it almost impossible to maintain a comfortable temperature in the living room in cold weather.)

The stair between walls is practical—in fact, ideal—in a very small house. The closed stair saves considerable space, makes for privacy and obviates drafts, thus simplifying the problem of heating. With plenty of light and headroom, it is most desirable.

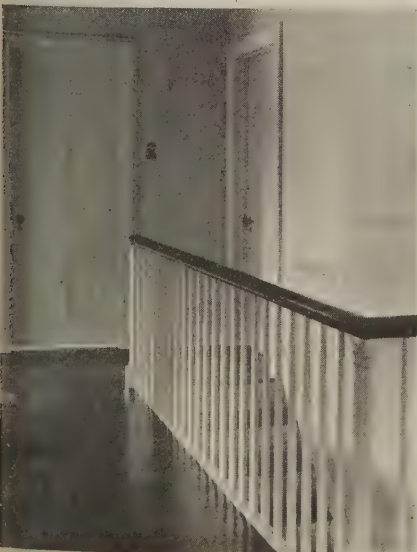
When one enters the house, the stairs if in evidence at all, are the first object that meets the eye and claims attention. If they show poor design and workmanship, they depreciate the whole house; the first impression is not to be wholly eradicated by any commendable feature elsewhere. Therefore, both architect and builder should be at



A novel stair in the Booth Tarkington house at Kennebunkport, Maine

special pains to see that the stairs are properly laid out. It is important that the man in charge of a building should understand the principles which govern stairbuilding, for often the owner desires to change the plans, and the man in charge should know whether the proposed change will interfere with the stair. When the stairbuilder takes measurements, if he finds the framing out of place, the floor laid and partitions set, the alterations are both difficult and expensive.

In a later article, we have some things to say about how a stair should be built.



Railing for a second story stair well. Stained rail, enameled balusters



The balcony effect of wide landings is effective for spacious halls

Interesting Facts About Paint

By Albert Brace

THE writer assumes that in common with him most readers of NATIONAL BUILDER are aware of the preference in many parts of the country which dictates, almost as a matter of course, gold, aluminum or copper bronze paint for radiators. Apartment landlords and home owners, bewailing in one breath the high cost of coal, in the next order the painter to paint or repaint their radiators in these effects. Paint dealers sell countless small cans to people who do their own touching up and no one seemed to question the advisability of this particular decorative treatment until science, in the shape of Professor John P. Allen of the University of Michigan, stepped in.

Researches made by Professor Allen reveal in startling fashion not only that the painting of radiators materially affects the amount of heat given forth but that the use of the bronze paints above referred to are the most inefficient and wasteful that could be selected. Tests were made with two cast-iron rectangular tubes—the one unpainted as a unit of comparison, the other painted in various ways to test the radiation effect. Both steam and hot water were used without any appreciable differences in condensation so that the two methods may be regarded as on a par so far as the painting tests are concerned.

Where the second radiator was painted with copper bronze the heat transmission fell off about 24 per cent and the application of two more coats reduced it still further to 25 per cent. But when two coats of a terra cotta oil enamel were placed over the bronze the effective heat radiation became 3 per cent better than that afforded by the bare metal radiator. Twelve more coats of the enamel failed to change this, but upon two final coats of aluminum bronze being applied the heat transmission was reduced 27 per cent, the percentage indicating that much heat returned unused to the boiler.

Thus Professor Allen demonstrated that gain or loss of heat from a radiator is largely dependent on the surface character and to a negligible extent on the conduction of heat through the metal or paint coats. The number of coats makes no difference, but if the final coat is of a nature to assist radiation the effect of those beneath is nullified and vice versa. It has not been determined what it is that causes the bronzes to cut down heat transmission, but it is assumed to be partly due to its metallic composition and partly to the liquid in which it is customarily mixed.

In Professor Allen's tests of a dozen or more other paints the builder will be inter-

ested to know that white enamel and zinc oxide paint were the most efficient aids of radiation. Next in declining order follow terra cotta paint, bare metal, maroon gloss japan, bronze green enamel, light green paint, white paint, oak varnish stain, silver gray enamel and finally the generally beloved bronzes. Paint manufacturers now are pretty well agreed that best radiation results are obtained from the light shades of flat wall paint. They not only harmonize with the general color scheme but are more



Behold the innocent radiator—paint it one way and heat is lost; paint it another and heat transmission is increased

porous than the gloss enamels and last a longer time without deterioration.

One with a turn for statistics and a feeling for conservation of our fuel resources might derive a dour satisfaction out of figuring the number of tons of coal wasted per year by gold, aluminum or copper bronze painted radiators. The figures would probably give even the most light hearted of us cause for thought.

Color in Hospitals

An authority on the subject complains that our hospital interiors are too frequently finished in white—the color of sterility. To get away from the feeling of coldness thus imparted the patient should be surrounded with warm pleasing colors such as yellow, buff and green, the colors of nature which are most restful to the eyes.

Shortly after the war experiments were made with shell shocked soldiers. One was taken into a room painted green, whereupon he screamed and was so excited that he had

to be taken to another room. On another occasion he was taken into a room painted red with the result that he became tremulous and vaguely disturbed. When they placed him in a yellow room—the other primitive color—he settled down to absolute peace; his nerves relaxed and he became his normal self.

Red Oak

The red oak extensively used in some parts of the country for interior trim has brought about considerable finishing difficulties in that the inherent reddish tone tends to shine through the stain and varnish or wax and give it an unhealthy, unsightly flesh tint. A neutralizing toner of an oil or water type has been developed to offset this which "kills" the red and for all finishing purposes converts it into white oak. The water toner requires a sanding operation, but gives greater permanence of effect and either one will give an alarmingly green color on application that disappears, however, the moment the stain is applied.

How the Egyptians Painted

Following excavations in King Tut's tomb revealing painted work in a variety of colors all in a perfect state of preservation, considerable curiosity has arisen as to how the artisans of the Nile valley were able to execute their work. The making of modern paint has evolved to its present highly technical condition thru centuries and is accomplished with very expensive and intricate machinery. Investigation has developed that while everything was done by hand, the Egyptians were familiar with and had access to beds of earth colors yielding bright reds, blues and yellows.

These colors were intermixed or mixed straight with a pale vegetable gum, probably that of the Syrian tragacanth tree, or with the white of eggs (like our modern distemper colors) and then overlaid with the gum. To apply the paint, brushes made of reeds and rushes were used, the fibers of which were soaked in water to secure fine separation then bound together. We have ample testimony of the fine work on walls and furniture this ingenuity made possible.

As an art, Egyptian painting, while brilliant and true, was comparatively simple in technique. It resembles the medieval art of illumination in that the various colors were bounded by definite outlines and no shading or graduation was involved. The outlines are supposed to have been drawn by master artists who left the filling in of color to subordinates.

This House Is Built of Mud

PRETTY soft, eh, to take the mud from the basement excavation and use it for building the walls of a house? That, however, just about describes the principle employed by Dr. H. B. Humphrey, a government scientist, when he built his new home at Glen Echo, Maryland.

While new to this country, pisé (pronounce, pee-zay) construction is, as a matter of fact, among the most ancient of building methods. Pliny described it in his Natural History, and in certain localities of England and France its use has persisted for centuries. Pisé de terre—French for rammed earth—expresses the system perfectly. Although a first cousin to the adobe of our Southwest, pisé differs widely from it, in that while sun dried adobe blocks are built into a wall like ordinary masonry work, pisé is handled more like concrete. That is, in building with pisé, a form is erected just as for concrete, except that the form must be made unusually strong to withstand the thorough ramming which is said to be the most important feature of the construction.

The forms are usually made in sections about ten feet long and three feet high. Sometimes the form extends entirely around the building, and in other cases only a single form section is used, this being shifted along the wall as the work progresses. In either case the form sections are moved upward, step by step, as the wall is built.

As the secret of stability and endurance of a pisé wall is governed by the thoroughness with which the earth is compacted in the forms, the ramming must be continued until all surplus water is forced out of the earth and the rammer does not leave a print. The rammers are made of a two-by-four, rounded and smoothed to form a handle and having a heavy shoe at the bottom. They are similar to those used for tamping concrete and weigh about 15 pounds apiece.

In building a pisé wall the earth is deposited in the forms in shallow layers, say three or four inches thick, and each layer is tamped and rammed until it is solid, and completely united with the preceding work. Another layer of earth is then added and rammed, the operation being repeated until the form is filled with compacted earth, the form is then moved to an unfinished portion of the wall; these operations continuing until the entire wall is completed. In so far as the actual work is concerned, a strong back is about the only requirement, but very careful supervision is required if successful pisé construction is to be produced by ordinary laborers.



© Underwood & Underwood

These walls are built of soil taken from the site

For one thing, the mixture of earth and water should be carefully proportioned, because, contrary to a natural assumption, the resulting mixture should not be sloppy nor even mucky, but should be of a rather dry consistency, wet enough to unite into a mass when a handful is pressed between the fingers, yet dry enough to crumble when dropped to the ground.

The nature of the soil to be used for a pisé wall should, of course, be carefully considered. Red marl is said to possess ideal qualities in this respect. Soils that are too heavy may be tempered by adding sand, while light soils may be stiffened by the addition of clay. Gravel and small stones contained in the soil are said to be an advantage rather than otherwise, but large stones, vegetable matter, and large lumps must be screened out. Enthusiasts say that practically every farm contains deposits of soil suitable for pisé construction. In addition to red marl, it is said that all earths fit for vegetation are proper material for pisé construction. The latter statement seems rather broad and should be followed with caution.

The angles or corners of a pisé wall are generally given particular attention. Short planks are often embedded at intervals in the middle of adjacent walls so that the ends of the planks overlap at the corners. Rough sawed planks, 5 or 6 feet long, 1 inch thick and 8 or 10 inches wide are used for this purpose. They should be completely embedded in the pisé throughout, so that they do not protrude through the wall surface. Exposed outer corners are often rounded off to prevent damage from chipping.

The house which is shown in the accompanying illustrations measures 48 feet

long by 32 feet wide. The pisé wall rests on a concrete foundation that is carried a few inches above grade to retard the absorption of moisture through capillary attraction at this point. The pisé wall is 18 inches thick and 12½ feet high, and in addition to the floor loads of the second story and the attic, it supports a tile roof weighing in the neighborhood of 20 tons. The gable walls were built of frame construction, not through any fear of the result if the pisé walls were carried up at these points, but solely because this particular architectural effect was desired. In this house the pisé walls were given a coat of cement stucco on the exterior and finished with paint on the interior surfaces. Three unskilled laborers, under the careful supervision of Dr. Humphrey, averaged about two cubic yards of pisé wall per day in building this house.

The durability of a properly constructed pisé structure seems unquestionable, except that all ancient examples are apparently confined to the comparatively mild sections of Europe. Sections that are free from the excessive ranges of temperature common to the greater portion of the United States. This, of course, is by no means a positive indication that pisé cannot be successfully employed in this country, but it is at least worthy of consideration before attempting any serious work of this character. A material giving excellent service for hundreds of years in the Valley of the Rhone in France may not prove so satisfactory in a climate where variations in temperature may exceed 120 degrees, F. The Humphrey house, a recent pisé operation in Kansas City, and experiments with this material in Canada, should, however, extend our knowledge of pisé's adaptation to use in America.



Our future mechanics, artisans, builders and architects will be recruited from boys such as these

Construction by Instruction

IT is hardly necessary to state that at the present time, and for the past few years, the question of obtaining skilled labor has been of paramount importance. Generally speaking, the apprentice system is a thing of the past, yet the demand for skilled labor is ever increasing.

Unfortunately, this demand has required the specialization of parts of trades, rather than a complete knowledge of the trade.

Without going into detail, it is sufficient to say that the American Federation of Labor became intensely interested in the problem. Men from other walks of life were also giving the matter serious attention, such as Will M. Hays of Minnesota, assistant Secretary of Agriculture; Charles H. Winslow of Massachusetts; William G. Redfield, machinery manufacturer of Brooklyn, New York; Charles A. Prosser, an outstanding educator of Indiana; James P. Munroe, manufacturer of Massachusetts, and A. Lincoln Filene, merchant of Boston.

The National Society for the Promotion of Industrial Education was formed, co-operative arrangements were made with the American Federation of Labor and at the 1908 convention of labor, held at Denver, a joint committee was created to consider the subject.

The matter was continually before the

committee, whose labors culminated on February 23, 1917, in the Smith-Hughes vocational bill which was signed by President Woodrow Wilson.

Provision of the Law

This law provides for three different types of vocational education, agriculture, industry and home economics.

In this article I deal with the industrial phase of this law, which briefly permits "the teaching of a trade in the schools."

At present every state in the Union has its own directors of vocational education, as well as its supervisors of the several branches of the work, and a program that provides for the training of teachers of vocational education.

Every teacher is required to have at least "three years experience as a journeyman in the trade in which he expects to teach."

In California, with which program I am familiar, every prospective teacher is required to attend 288 hours at the State University, to take such subjects as mathematics, science, industrial relations and, most important, since the other subjects are based on it, to make an analysis of the teaching content of his trade.

A Local Program

So much by way of a brief summary of

the law and its aims. But of much more vital interest is the teaching content of the typical vocational course in a local high school.

The Riverside Polytechnic High School of Riverside, California, is giving vocational instruction in printing, auto mechanics and carpentry, with which last named course I am identified as instructor and to the consideration of which I shall largely confine myself in this article.

Yet, I may say, as an aside, that what is true of carpentry is measurably true also of other trades.

Now the Smith Hughes law states: "At least three hours a day must be devoted to practical work," known in school parlance as "applied work."

In addition to this, however, and equally important is the work known as the "related work," implying work related to the trade being learned. Under this heading come such subjects as drawing, English, science and mathematics. Not the formal academic kind, good as it is, but the kind with its practical application tied to and involved in it. In addition, a good course in United States history and civics (in California, at least) is required before a student can graduate from the high school.



Framing a roof is good practical experience for any boy

A Building Program

During the past two years the high school vocational carpentry class has constructed one 28x40 one-room kindergarten and two five-room bungalows. The pupils of the third year course are now constructing a five-room French Colonial bungalow. Photographs of these three buildings are here-with presented.

We have tried several ways of handling the work and find that the most satisfactory where the boys go to school three hours in the morning and work on the job three hours in the afternoon. This gives us 15 hours of applied work per week since, of course, we work only during the school week of five days.

We easily spend one school year of 35 weeks in building one of the houses with our present enrollment of 12 boys, ranging from 14 to 18 years of age.

We do not attempt to do the plastering, plumbing or painting, as we are specializing on carpentry and because one house does not offer sufficient work to keep a class in

plumbing, plastering or painting busy during a school year.

The boys do the form work, mix and place the concrete for the foundation of the house and the floor of the garage, all framing, outside finish, inside finish, window frames, screens, built-in features, lathing, laying hardwood floors and the like. Special emphasis is placed at all times on hand work in preference to machine work, altho our school shop is amply equipped with up-to-date machines. Our "objective" from the mechanical point of view is to teach the boys the proper use of wood-working tools, realizing that many jobs will come up when he enters the trade that will not permit him to have access to machines.

Related Material

Our aim for the related subjects, particularly the drawing and the carpentry-mathematics, is that the boy may become proficient in drawing, and designing an ordinary house and have the ability to make a list of all materials necessary for its erection.



The distorted appearance of this case is due to poor photography rather than to poor cabinet work

Special instruction is given on the framing square as applied to roof-framing, stair-building and solving cuts for geometrical figures.

The course includes an elementary cost-accounting system, based on the time-cards that the boys use on the job, so that they will have a little knowledge of the principles of banking, interest, profit and loss and the ability to keep a book record of the cost of a building.

Inasmuch as English always increases one's capacity to speak and express oneself correctly, I hope, from his contact with this part of the related work, not only to teach the proper way of speaking and writing, but to inculcate a desire for good reading as well.



Training hands as well as heads

The photographs are self explanatory, showing the class "in action" during the various stages of the construction process. Emphasis is placed at all times on instruction rather than construction. We often spend one hour out of the three allotted to the job in discussing various ways and methods as to why the work is done in some special way and at that particular time, requiring the boys to figure out the mathematical problems that arise, drawing sketches if necessary.

Our aim is not the building of a house, but the training and teaching of boys that they may become intelligent, self-supporting American citizens, skilled artisans with a sense of fairness and justice.—J. Douglas Wilson, Instructor in Carpentry, Polytechnic High School, Riverside, California.

Small Gravity Retaining Walls

By R. W. Oakley

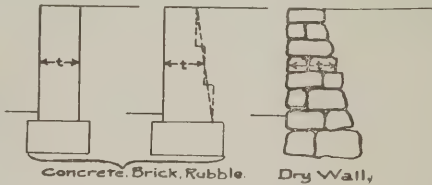
ONE of the least understood and most widely used of every-day structures, in the opinion of the writer, is the retaining wall. Daily, as one looks about, walls are to be seen which are cracked, thrust out of plumb or otherwise damaged, due to faulty construction. For this reason it may not be amiss to consider a few of the characteristics of retaining walls and the requirements they must meet.

We may divide retaining walls into two general classes as follows: "gravity walls," or those which depend solely upon their own weight for stability, and "reinforced concrete walls," which make use of certain principles of mechanics and construction by which greater economy is attained in walls of any considerable height, and in which the material retained is made to assist the wall in functioning. We will devote our attention to the first mentioned, the gravity wall, inasmuch as reinforced walls to be both safe and economical should be designed by an engineer.

Before going into the subject further, the writer wishes to first mention a few facts concerning the characteristics of filled materials, such as earth, coal, cinders, etc. All of these materials, when piled, assume a certain slope, the angle of which is called the angle of repose. If we attempt to increase this angle towards the vertical, the material slides down. It will be seen at once that if we build a wall to retain any such material, it must be made strong enough to support all of the material which lies above the angle of repose. This angle varies with the material, but for ordinary

key or cut-off wall in the bottom of the footing, as shown in Fig. 1. To prevent overturning we must have sufficient width so that the resultant of the weight of the wall and the pressure of the fill passes thru the middle third of the wall. We will not go into the theory, but the table given below takes this into account.

If we slope our material back from the top of the wall, as shown in Fig. 1, we have what is known as a surcharged wall. For surcharged walls, with surcharge equal to the height of the wall, make the thickness of a concrete wall about six-tenths the



REQUIRED AVERAGE THICKNESS.			
Height	Concrete	Brick	Dry
5'	1'-9"	2'-0"	2'-6"
6'	2'-1"	2'-5"	3'-0"
7'	2'-5"	2'-10"	3'-6"
8'	2'-10"	3'-2"	4'-0"
9'	3'-2"	3'-7"	4'-6"
10'	3'-6"	4'-0"	5'-0"
12'	4'-2"	4'-10"	6'-0"
15'	5'-3"	6'-0"	7'-6"

Fig. 2.

height; for brick or rubble, about six-tenths, and for dry walls, about seven-tenths. Surcharges exceeding this height should be handled carefully, preferably by an engineer.

If the surface of the fill is exposed to the elements, always provide for the drainage of the material by placing pipes or weep holes somewhat as shown in Fig. 1. These will prevent the accumulation of water behind the wall, with consequent hydrostatic pressure, which would exceed the pressure of the fill, and make the wall unsafe. This will also greatly lessen the chance of frost action taking place against the wall.

In case the wall is of concrete, and the footing is poured separately, as is generally the case, be sure to place dowels of steel at reasonable intervals as shown in Fig. 1. This will prevent the upper wall from sliding on the footing and will prevent a separation of wall and footing due to the overturning forces.

After filling in behind a retaining wall, extreme care should be exercised not to wet the material too much. Oftentimes this is done, and in case the weep-holes become clogged, a large volume of water accumulates behind the wall, greatly endangering

it, on account of the higher pressure which develops.

In building driveways, roads, etc., it is in some cases necessary to build parallel walls, between which the fill is made to carry the roadway. As shown in Fig. 3, the walls may be made somewhat lighter by the use of ties or stays of steel set at short intervals. These ties may also be made of concrete, with a rod in the center. In any case the rods must be well embedded in the concrete, and preferably bent into a hook at the ends. It is important that this system be used with caution, on walls of only moderate height, because of the danger of setting up internal stresses in the wall which would crack it or cause failure. In higher forms, with heavy loads on the roadway, tie-walls may be used instead of the rods or concrete members.

Quite often it is necessary to waterproof retaining walls, and it may be worth while to consider a few points along that line. Where the wall is of concrete, a small percentage of hydrated lime may be added to the concrete mixture, which will make a very tight wall, especially if proper means are adopted to drain the back of the wall. This may be accomplished by placing a tile drain in back of the wall, or by the use of weep holes.

There are also a number of very good patented water-proofing materials which can be purchased at very reasonable prices and which are mixed with the concrete. Whether lime or patented substances are used, it is always necessary to make a very dense concrete. By the use of graded stone, from

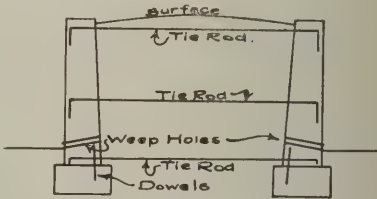


Fig. 3.

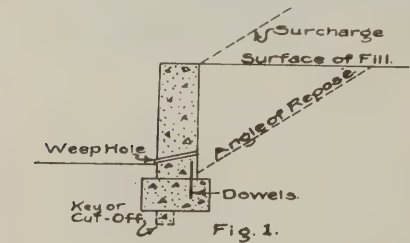


Fig. 1.

earth, we may be quite safe in using a slope of one foot rise to one and one-half of horizontal distance.

Referring to Fig. 1, it is seen that the section of earth lying above the angle of repose tends to do two things; that is, it has a tendency to thrust the wall out horizontally and it has another tendency to overturn it.

To prevent sliding we must have a base wide enough and of sufficient weight to resist this thrusting force. In many cases we may help to accomplish this by placing a

1½ inches down to ¾ inch, and filling the voids with a proper amount of sand, this may readily be done. Careful and thorough tamping is also essential.

Water-proofing pastes of various kinds are often used also. These are applied to the back of the wall before filling in, and are very successful in ordinary cases. It might be well to add at this point that it is practically impossible to waterproof a wall by applying any sort of material to the front of the wall. This is often tried, but is rarely if ever accomplished.

Modern Sewage Disposal for Unsewered Residences

By F. C. Lewis

THE sanitary disposal of sewage in homes which are equipped with running water and no public sewage system is a very important and much neglected problem.

By the word "sewage" we mean the fluid and suspended waste matter from kitchens, toilets, laundry, dairy, etc.

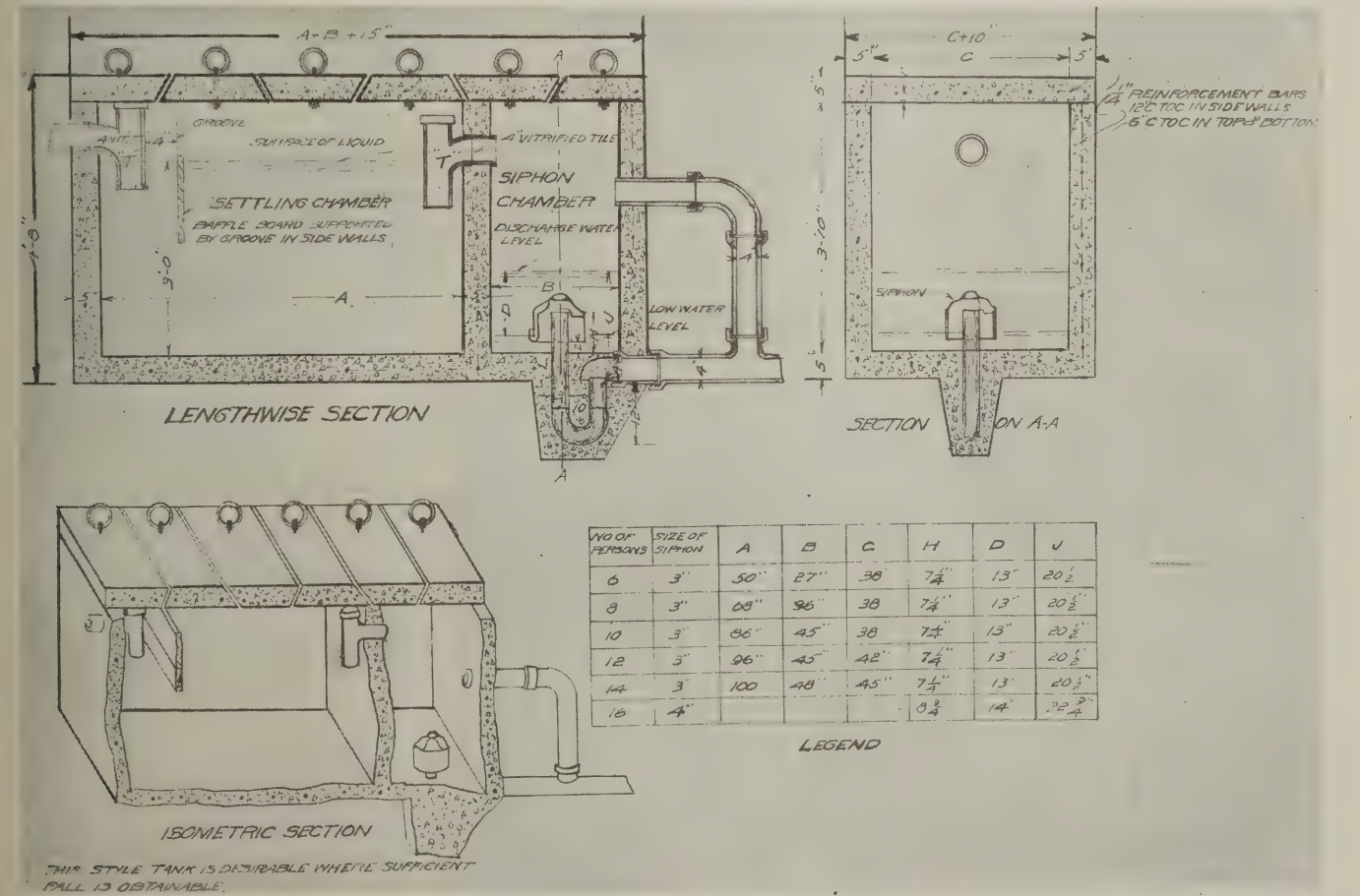
Some of the methods commonly used in the country or small towns are a. shallow earth closet, cesspool or drainage of the raw sewage into an open ditch or stream. Emptying raw sewage into streams is a menace to the neighborhood and should not be permitted. The use of the cess pool is dangerous as it is liable to contaminate the drinking water supply. The earth closet, as usually constructed, offers an excellent place for flies to breed and feed upon the human filth. These same flies may visit the kitchen or dining room, crawl over the foods, light in the milk or butter, walk upon the lips of sleeping babies and smear the filth and dis-

ease germs from their hairy feet on everything they touch.

The septic tank has overcome many of the difficulties found in the above methods of sewage disposal. A septic tank is a dark reservoir into which sewage is drained and allowed to be undisturbed by outside agencies for time enough to allow the bacteria to act upon it. These bacteria feed upon the organic matter of the sewage, purify, liquify and destroy the solid matter. The purification process is not completed in the tank as there is another class of bacteria which cannot survive in the dark but require light for their action. Two methods may be used to promote this second process; the first by draining the liquid from the tank into a line of agriculture tile, and the second by providing a bed of gravel over which the sewage is distributed at intervals, allowing time enough between applications for the bacterial action and absorption of the

liquid material. The undissolved part of the solid material remains in the tank. Two chambers are usually used in the tank, one to provide for decomposition and settlement and the other for periodic discharge of the liquid by means of a sewage siphon. The first chamber is termed the settling chamber and the second the dozing or siphon chamber. The settling chamber should have a capacity below the flow line of about 24 hours of flow of sewage in order to allow the bacteria time to act. The openings of the inlet and outlet pipes should be submerged below the surface of the liquid in the tank so that eddy currents will not be formed.

The amount of sewage and the corresponding size of the tank depend upon the number of persons to be accommodated. A fair estimate is to allow from eight to ten cubic feet of settling tank capacity for each member in the family. The dozing chamber



Plans for a concrete septic tank with a table showing the sizes necessary for families of from six to sixteen persons, also the sizes of the siphon necessary. No tank should be constructed smaller than the six-person size

should have a capacity equal to the flow of sewage for at least eight hours, depending upon the method for final distribution.

The septic tank, although supposed to be air and water tight, should be located as far from the house and water supply as practical, thus reducing the danger of polluting the water supply or creating a nuisance in case the tank should spring a leak or operate improperly. Rain or surface water should not be allowed to go through the tank but in case the final disposal is into a drain tile line the water may be drained directly into the tile line.

The sewage line from the house to the tank should be cast iron soil pipe or vitrified sewer tile with the joints tightly cemented to prevent leakage and laid to a grade of about nine inches to 100 feet, reducing the grade near the tank to break the velocity of the liquid on entering the tank. The tank should have a tight cover and be covered over with about a foot of soil to insure a uniform temperature in the tank and avoid odors and the possible admission of flies.

The purpose of the siphon is to give an intermittent discharge of the liquid from the dozing chamber to the distributing system. The principle of its operation is as follows: When the liquid rises in the tank above the lower edge of the bell, the air which remains between the liquid in the syphon pipe and in the bottom of the tank is confined. As the liquid rises it is compressed, this compression causes the liquid in the long leg of the siphon to lower and hold down the level of the liquid inside the bell lower than the level outside. When a sufficient depth of water in the tank is secured the water inside the siphon pipe will be forced down the curve and the water level in the bell will be just upon the point of entering the pipe. Any additional depth will compress the air and cause it to escape around the bend in the pipe, suddenly relieving the pressure and allowing the water to enter the pipe from under the bell. Thus the syphon starts flowing and continues to



A brick septic tank, being built from the plans on the preceding page, for a family of eight. The walls are laid up with cement, lime mortar plastered on the inside. A concrete top and bottom was used. The cover was reinforced by one-quarter inch bars spaced about eight inches apart, both ways. The tank has no siphon but discharges directly into an agricultural tile line. The tank was constructed under the supervision of the author of this article. It stood a temperature of seventeen degrees below zero before being covered with earth

flow until the water level lowers so that air is drawn in under the bell or through a sniff hole and stops the action of the siphon until the tank has again filled.

In many cases the syphon may be omitted, if the discharge enters a tile line located in a porous soil of such a type that a constant flow of liquid will not waterlog the soil near the tank. A large volume of water turned into the tile line intermittently will be carried more efficiently by the tile line. If the discharge is into an open farm ditch or stream the syphon in many cases may be omitted and the tank will work satisfactorily with but one chamber.

The syphon may be made by using gas pipe for the bends and an inverted crock filled partly full with concrete into which is fastened legs or supports.

Fig. 2 shows the plans for a concrete septic tank suitable for a family of from six to sixteen people. This tank is suitable for locating on land which has sufficient

slope. The plan may be altered for flat land by making the siphon chamber longer and not so deep without changing the volume.

The concrete walls are about five inches thick and reinforced with woven wire or one-quarter inch bars placed both horizontally and vertically through the walls and crosswise in the top and bottom.

The mixture of concrete should be about one part cement, two parts sand and five parts crushed stone, or gravel. The tank should be plastered on the inside with a rich mixture of cement, sand and water to aid in waterproofing. The house drain enters the tank near the top of the settling chamber and extends about twelve inches below the surface of the liquid, to prevent breaking up the scum which forms on the surface of the liquid. The entrance of the liquid into the siphon chamber to the settling chamber is through a four-inch "T" tile which takes the liquid from below the surface. This tile should be low enough to carry the liquid into the siphon chamber before the settling chamber fills up enough to back the liquid up into the tile line. When the siphon chamber fills up the siphon operates and discharges the liquid into the distributing tile line or onto a gravel bed.

No air is admitted to the settling chamber but air is admitted to the siphon chamber through the tile line, or if no tile line is used a pipe may be extended from the overflow line to the surface of the soil. The cover of the tank is made of reinforced concrete in sections of a convenient size to handle. The siphon chamber is about one-third the capacity of the settling chamber and will discharge about three times per day, thus giving the soil near the tile line time to dry out or the gravel bed time to absorb and purify the liquid. The siphon may be made or purchased from a dealer.

Grease should not be allowed to enter the tank as it is not changed much by the bacteria and is also liable to clog the system.



An exhibit of a septic tank showing the two chambers, tile distribution system and the siphon. The sides of this tank are of glass so that the action of the tank may be watched

The Burglar Alarm as a Sales Agent

Inexpensive, but Its Presence Is Welcomed by the Prospective Customer

By Richard Barclay

BURGLAR alarms should be installed in new homes, just as carefully as builders install electric lighting and stationary tubs. Years ago only the timid householder thought of a burglar or a burglar alarm, but today both have become favorite topics of conversation among all classes.

The accompanying plans show the ease with which a burglar alarm system may be installed in an old house. It is even more simple to install one in a new house—either an electric mat system or one where the contact is made when a door or window is opened.

The electric mat system shown in Fig. 1 requires sufficient No. 18 bell wire to connect with each mat and return to the switch board, a continuous ringer to operate the alarm bells, a four-inch alarm bell for inside the house, an eight-inch bell for outside, a switch for each circuit, four dry batteries, and several yards of electric matting which is bought by the yard and may be cut to the size desired.

A closet in a second story bedroom is the best place to set up the dry cells and the switch board, using the closet shelf for the batteries and putting the switches on a panel below them.

Concealing the wires leading from the switch board to the mats and back to the batteries is a simple matter. They can best be carried along under the floor, and an easy way of lacing them from joist to joist is shown in the drawing. For permanence it is best to solder the points where the bell wires are attached to the electric mat.

The value of individual switches lies in the fact that the place where the intruder has stepped upon the electric mat can be instantly detected at the switch board. The

instant electric contact is made the alarm bells ring. The switch, which, when opened stops the ringing, will indicate the door or window where the attempt at entry has been made.

The electric mats should be disposed in front of doors and windows in such positions that a burglar entering the house cannot avoid stepping on one.

and windows should be concealed as much as possible. In running them beneath the floor, the sketches show an easy way to lace them through the joists. Where the joists run in the same direction as the wire, the bell wire can be "fished" along between them for considerable distances.

The wires are brought to the contact springs in the window and door by running

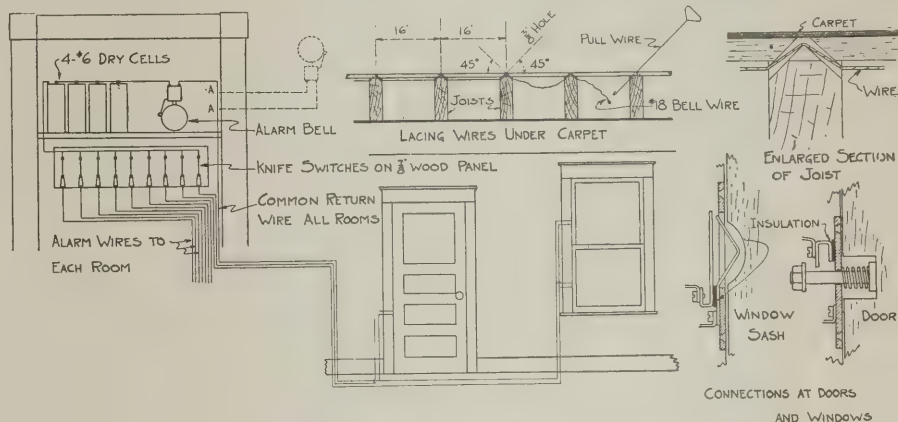


Fig. 2—Details of door and window protection system

The second system mentioned requires sufficient No. 18 bell wire to connect with the windows and doors and return to the switch board, a continuous ringer to operate the alarm bells, a four-inch alarm bell for inside the house and an eight-inch bell for outside, a switch for each window and door connection, a window contact spring for each protected window, a door spring for each door, and four dry batteries.

Fig. 2 shows how the system is installed, putting the dry cells on a shelf and the switches on a panel below. The wires leading through the house to the various doors

and windows should be concealed as much as possible. Both upper and lower sashes in windows should be protected. The window contact spring protrudes into the sash, as shown by the sketch, a half-moon about a half-inch deep and an inch and one-half long being cut out. The contact spring and its wire connections are imbedded in the window frame. Anybody who has put a lock on a door will recognize a similar job of chiseling.

The sketches show how at the door, when it is opened, the plunger springs out, making contact and completing the circuit, and, at the window, the contact spring is forced back against the upright bar and also closes the circuit.

In both illustrations the wiring is shown for only the alarm bell inside the house. Where an outside bell is installed, the wire should not run between the points "A" and "A" but continue to the outside alarm bell and back again.

With either of these systems installed, opportunity is afforded for an unusual demonstration before a prospective customer. A door is opened, or a section of the rug in front of a window protected by an electric mat is stepped on. Immediately the alarm rings. The customer catches a vision of a SAFE home in these unsafe days. Naturally it makes a deep impression.

As a sales agent—not a silent one at that—the burglar alarm offers possibilities.

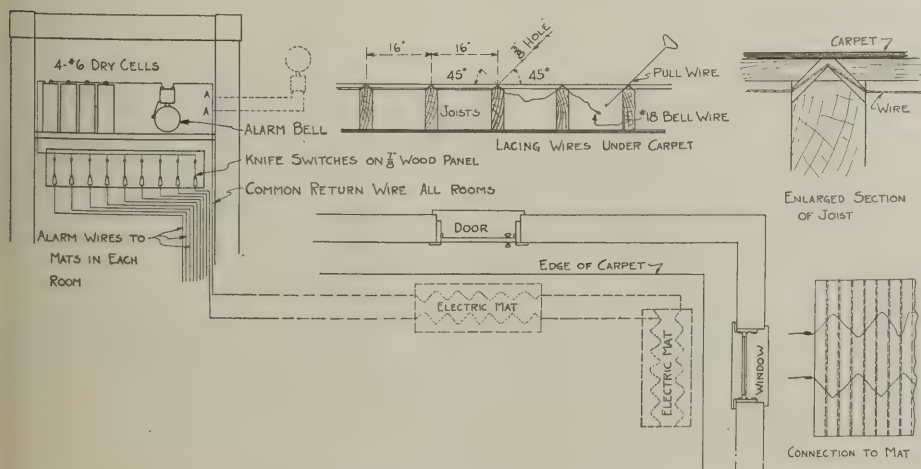


Fig. 1—Details of the electric mat system

Motor Truck Bodies and Their Adaptation to the Contracting Business

A Discussion of Various Types of Motor Truck Bodies

EVERY contractor, no matter how small his business may be, has use for a motor truck some time or other. There are foundation forms to be hauled, pieces of

equipment to be moved, materials transferred from one job to another, and any number of other things to do for which a motor truck would come in handy.

The contractor whose business is small, and not of a great enough volume to war-

rant the purchase of a truck, must hire the services of a local teaming company, but the builder whose business is large enough to keep a motor truck busy may find it

profitable to own one himself. Contractors, when they decide to buy a truck are confronted with two problems, the first of which is: What size truck will give me the greatest service with economy, and second, what type of body is best suited to

my business? A prominent motor truck manufacturer makes the following statement:

"The most recent report obtainable shows that there are 19,620 motor trucks in use in the building industry. The one-ton truck predominates with 5729 in use; 29.2 per cent of the total. Others of higher capacity follow in order:

Capacity	Trucks in Use
1½ ton.....	4258
2 ton.....	3787
3 ton.....	1589
4 ton.....	137
5 ton.....	1569
All others.....	667

"There are 9476 trucks in fleets of five or more in use, which speaks eloquently of the success of the motor truck in the building industry, and indicates emphatically that it is far past the experimental stage as an agent of transportation in this field.

"The growth of the use of the motor wagon which is parallel to the growth of the industry, is indicated by some comparisons of the past decade. In 1913, there were 382 contractors using 420 trucks. In 1923 there were 8167 users employing 19,620 trucks in the business.

"The 1-ton and 1½-ton truck, we have



Fig. 1—A "general purpose" contractor's truck, having a body with removable sides, which permits hauling bulky concrete forms

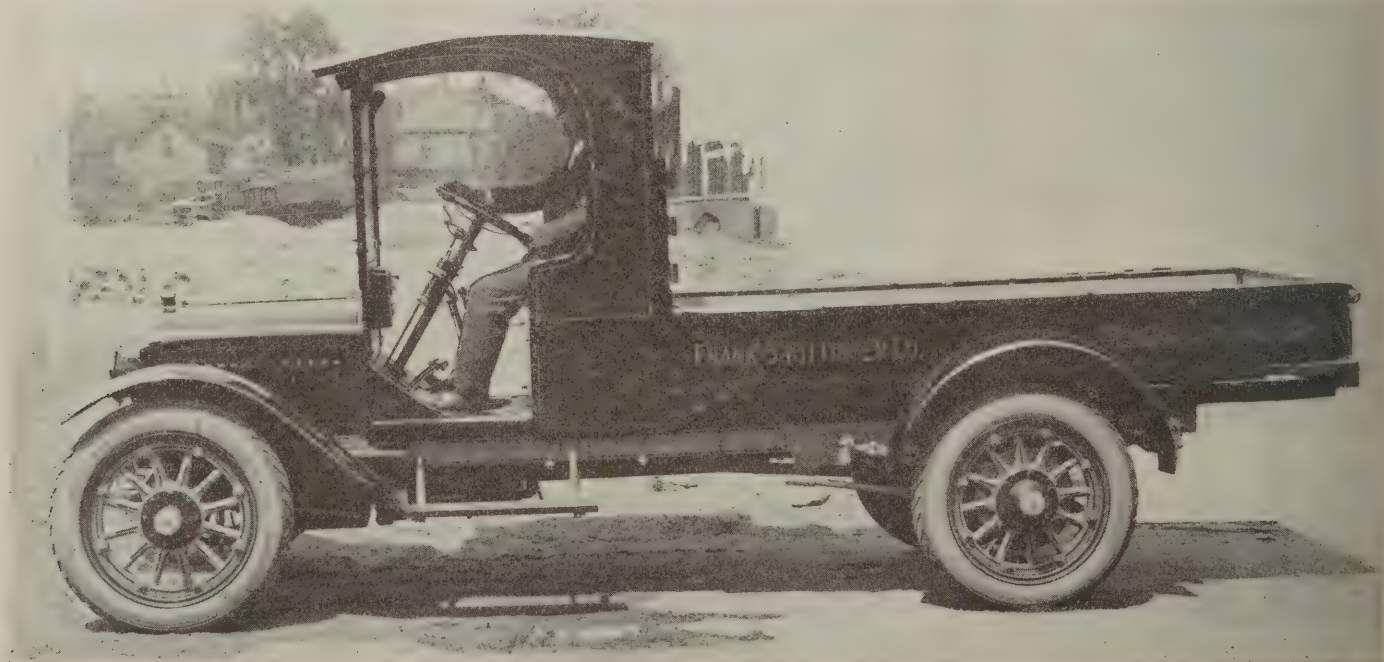


Fig. 2—Another type of body popular among contractors. This body, with low sides, permits easy loading from the street level

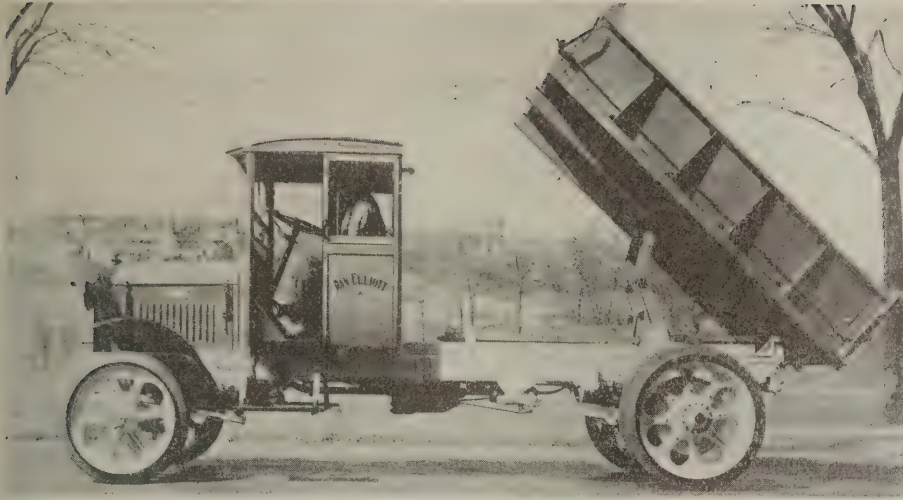


Fig. 3—Dump truck for hauling loose materials. This truck body permits rapid unloading



Fig. 4—"Roll-off" body. By means of the rollers an entire load of lumber can be set down at one time

indicated, are the two most widely used over the whole field. This we believe is due to the fact that the larger number of building contractors do not need heavy duty trucks because the excavating work, delivery of heavy materials and other tasks where an excess of power and load capacity are needed, are performed by excavating contractors, building supplies companies, etc., using their own trucks, and the builder's trucks, over the broad field, is confined to work where speedy delivery and lighter loads are mainly involved.

The 2, 3, 3½ and 5-ton trucks are in use by contractors whose business entails heavy hauling, excavating and the transportation of building materials. The transportation problem becomes an important one to the building contractor, when the building site is an isolated one."

As regards the type of body most suitable for the contractor who owns a truck, the various kinds illustrated here should give him an idea as to the range from which he can make his selection. What is probably the most useful type of body for a 1, 1½, or 2-ton contractor's truck, is shown in Fig. 1 and Fig. 2.

Fig. 1 shows a type of body in which the sides can be removed. By removing the sides the body of the truck becomes a flat surface and permits the hauling of concrete forms which may be so wide as not to fit

for hauling moderate weight, bulky materials such as plumbing fixtures, or frames and sash. Variations could be made on any of the bodies shown here to suit any individual need.



Fig. 5—High stake body suitable for light bulky materials such as frames, crated materials, etc.

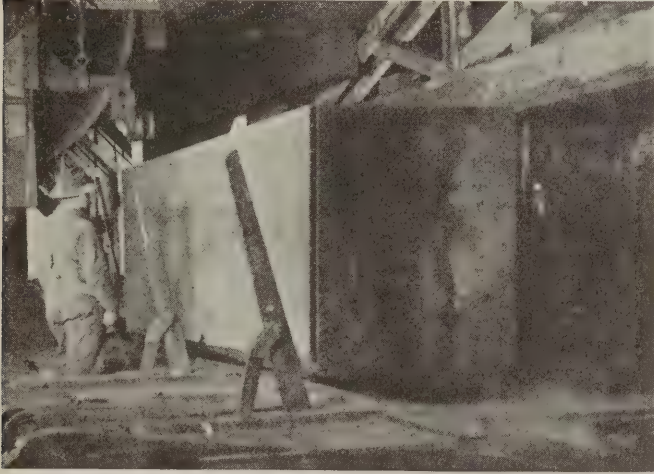
On the Job 5000 Years Hence

THEIR descendants quite likely will not recognize them but certain Americans identified with the building industry are due to stage a comeback to this earth 5000 years from now. They will not return exactly in

building industry early in the Twentieth Century. The shadow images of several hundred different workers identified with the industry will be included.

Until recently it was seriously doubted

has been perfected to the point where Mr Rothacker is ready to deposit history's first collection of motion pictures sealed in a vault under conditions likely to insure their indefinite preservation. The scientists' own



Sawing big trees into lumber for Twentieth Century buildings



Manufacturing hollow building tile, an important industry in 1924

person, as it were—only their shadow selves will re-appear in 6924, but they will look virtually just as natural as they did in 1924. The comeback will be staged via the motion picture screen.

Scenes from a number of building pictures will be included in the collection which Waterson R. Rothacker is preparing to present to the Smithsonian Institute for preservation for posterity. These scenes will be taken from movies which the Rothacker Film Company has made in the past visualizing various phases of the industry—architecture, engineering, construction, lumber, cement, and even the furniture that goes inside the finished building. The scenes will be selected with a view to giving people centuries hence a comprehensive picture of the

whether a motion picture could be preserved for future generations, but thru the Rothacker technical staff the preserving process



The Twentieth Century lady filled her home with furniture such as this

definition of "indefinite" in this respect is anywhere from 10,000 to 50,000 years. It is stipulated that the vault shall not be unsealed for at least 5000 years.

The building industry will be represented in the collection on the belief that people 5000 years from now will be just as interested to see the "crude methods in use during history's early morning" (1924) as they will to view the movie stars of that period. No question but that these methods will seem odd and quaint 5000 years hence!

Of course, it is not absolutely certain that these workers will carry out the proposed comeback. An invasion from Mars, or something, may spoil the plans—but as far as is within the present power of man, everything will be done to insure it.

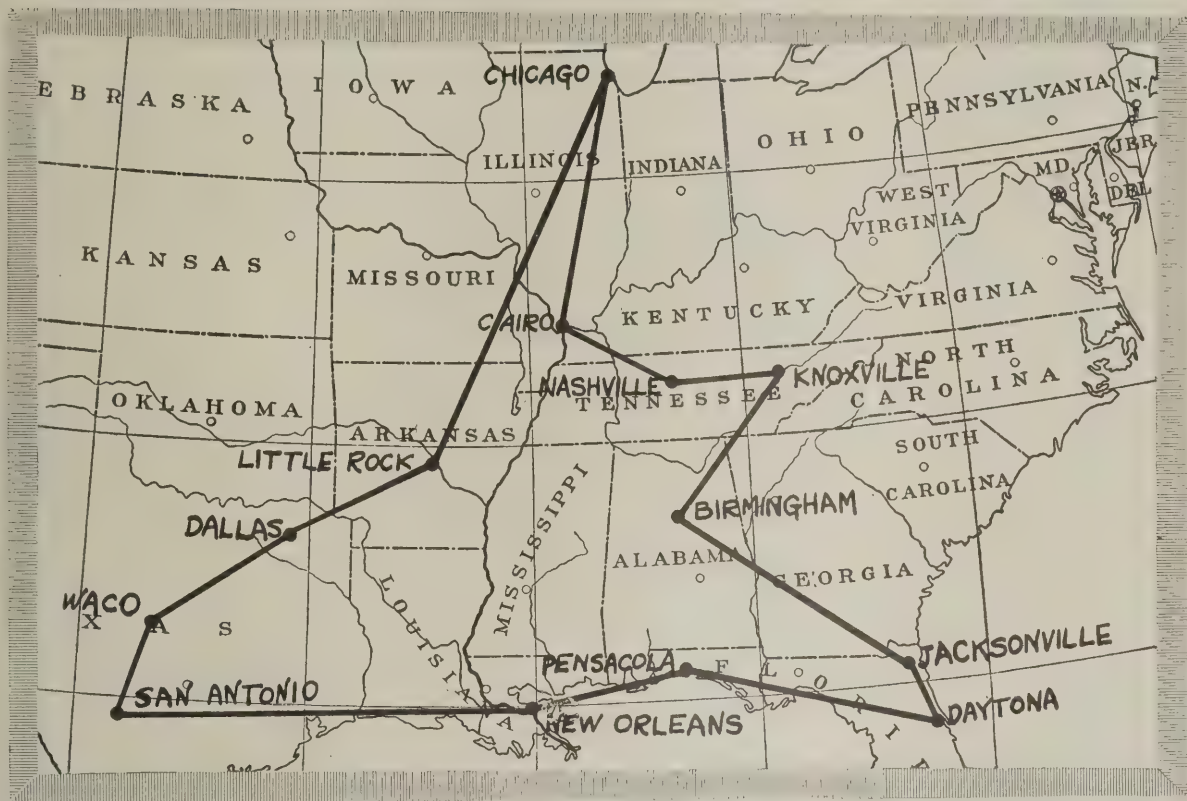


How skyscrapers were erected way back in 1924



Excavating for a big Twentieth Century building

On the Job with the Construction Editor



WHAT sort of steel-workers' scaffolds do you use? How do you handle ornamental cut stone to prevent chipping? Do you ever have difficulty in framing niches in the wall for telephones or statuary? Would you like to know a good method for handling formwork for shallow foundations? How do you support small balconies on houses in the Spanish or Italian style? Would you appreciate a good suggestion for doing away with the water boy on small construction jobs?

Answers to these questions—along with many others—are discussed on the following pages. Not only discussed in words, but actual photographs illustrate good solutions of these problems.

These photographs were made out on the job by the Construction Editor of NATIONAL BUILDER, Roy M. Singer.

Sometimes we wonder for whom Singer is working, for you or for NATIONAL BUILDER. He is practically never in the office, while you subscribers see him daily, or at any rate he sees



Singer (left) on the level with W. A. Rogers of Rogers & O'Rourke, builders, of Dallas

many of you. We haven't seen him for six weeks and he is so far away from the office at this writing that it will be another six weeks before he returns.

Last winter, when building was pretty much at a standstill in most of the country, Singer took a trip South. The map above shows the route he followed. He studied building at first hand, with his camera as a help, in eight states, and his expense account for the trip looks like the national debt. It is only when you see the results of this sort of thing—this policy of NATIONAL BUILDER's of keeping in touch with actual work in the field—that you realize what a service these "On the Job" pages render.

Singer has not, on the six following pages, told you all he saw on his Southern trip. He is reserving some for other issues. But he has told you a lot, and in addition he passes along observations made on other trips.

Keep up with the Construction Editor! He is a good man to follow, for he himself follows the trail of good builders.

On the Job in Jacksonville, Fla.

Providing Support for a Small Platform

IN the Spanish or Italian type of residences the style of architecture demands certain things in the way of ornament that are not common to other architectural types—for instance, the small ornamental platform shown in the photograph below.

These illustrations were made in Jacksonville, on a job being done by the Better

of the joists were cut sloping so that the base of the platform could be built as shown in Fig. 1. It might be well in some cases to bring the platform floor all

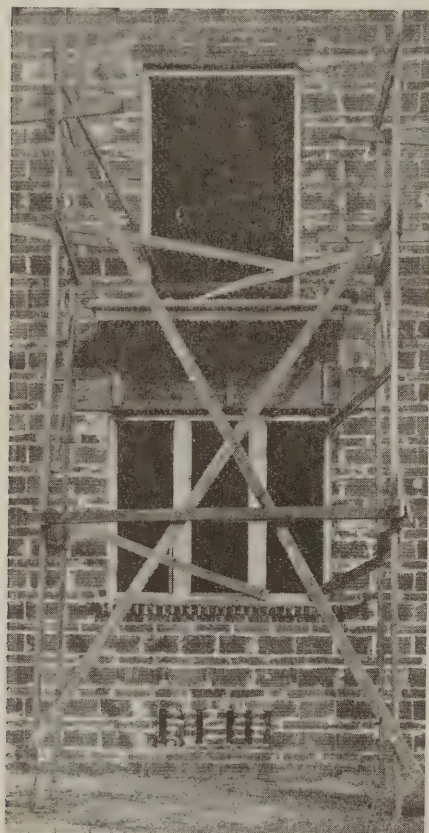


Fig. 1—View of the platform before stucco is applied

Homes Company. The job involved the construction of a hollow tile house of the Spanish type of architecture and as part of the ornamentation of the front and side elevations it was necessary to build small platforms as shown in Fig. 1. The illustration in Fig. 3 shows the job after the stucco was applied and the sketch in Fig. 2 shows the details of construction for the platform.

In order to provide proper support the floor joists were extended beyond the wall as shown in the sketch, faced with sheathing and then the concrete slab which formed the floor was poured. The ends



Fig. 3—This is the way it looks on the finished building

the way back into the building and cast it as a unit with the wall, reinforcing the slab with a few steel rods.

A Drinking Fountain

ON big construction jobs it is generally profitable for the contractor to employ a water boy. On small jobs, however, this is not profitable but nevertheless workmen must be supplied with drinking water.

Charles J. Davis, a Jacksonville contractor, solved the problem in this way. He brings a water line inside the building from the mason's water supply and at-



A convenient and inexpensive drinking fountain

taches to it a small piece of pipe about five or six inches long, set vertically at a shut-off valve as shown. The cost of bringing this line into a building is small and it may be the result of saving quite a bit of money which would be lost by the workmen going off the job to a water supply which may be located several hundred feet distant from the building.

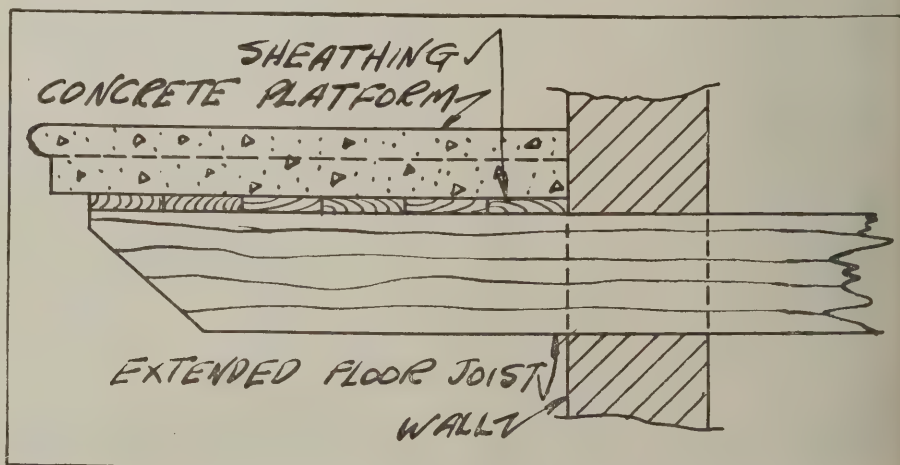


Fig. 2—Sketch showing method of support for small platform

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Johnson's Floor Varnish dries dust-free in two hours and hard over night. It imparts a beautiful, high lustre—has good body—is easy working—will give long wear—is absolutely water-proof—and will stand all reasonable tests.

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This book is full of practical information on finishing new floors and trim and refinishing old work of this kind. Written by experts—profusely illustrated contains color charts—gives covering capacities, etc. Fill out and mail this coupon.

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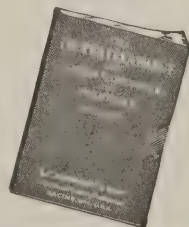
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On the Job in Harrisburg, Pa.

Solid Bases for Concrete Formwork

THE big difference between a successful contractor and an unsuccessful contractor is the fact that the successful man gives attention to details while the man who meets with indifferent fortune generally neglects them. In no work is attention to details so important as in reinforced concrete construction. Strict inspection and constant observation are necessary if good work is desired.

A point often slighted by those engaged in concrete work is the bearing for the form supports. Many a time the writer has seen

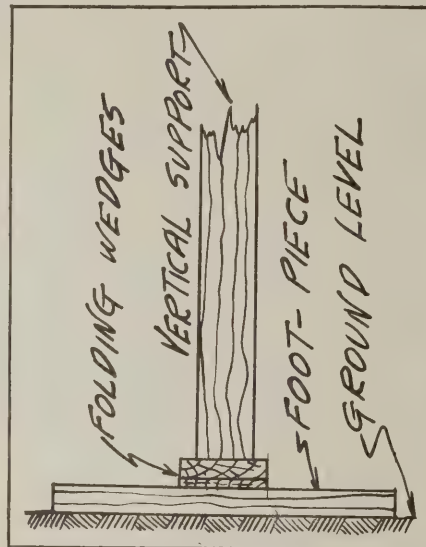


The two pieces which rest directly on the ground provide for the distribution of the load over a large area of ground and the folding wedges upon which the vertical support is set permits leveling of the formwork above

a contractor scratch his head in wonder because of a poor job where something happened to throw the forms off level. If that man had taken the time before the concrete was poured to install a firm base for his form leg, such as is shown here, the trouble might not have happened.

This photograph, taken on a job being done by J. A. McKelvey in Harrisburg, Pennsylvania, shows the way a form leg should be set. Note that the leg rests on a piece of 2x4, which in turn rests on two other pieces of 2x4 at right angles. The single piece upon which the leg rests provides for a good distribution of the load

to the two pieces below it and these in turn tend to spread the load over a large ground area, thus reducing the amount of load per unit of area. For instance: if the 2x4 rested directly on the ground and had to support a load of 200 pounds, the load would be distributed over eight square inches, which is the area of ground covered by the 2x4 leg. Dividing 200 by 8, the resultant pressure on the ground would be



Sketch showing details

25 pounds per square inch. Now, if the ground were only capable of withstanding a pressure of 20 pounds per inch, the form leg would tend to sink and the forms would be distorted.

Suppose, however, that the leg rests on the ground as shown in the illustration. The load comes through the leg to the first piece of 2x4 whence it is distributed to the other two pieces at right angles. If the two lower pieces are two feet long the ground area covered by each is four inches by 24 inches, or 96 square inches. Since two pieces are used, the total ground area covered is 192 square inches. Now if a load of 200 pounds is put upon the form leg the load upon the ground will be only a trifle more than one pound per square inch. And if the ground is capable of supporting 20 pounds per square inch, it will be seen that the leg will not sink into the ground and forms will not be distorted when the concrete is poured.

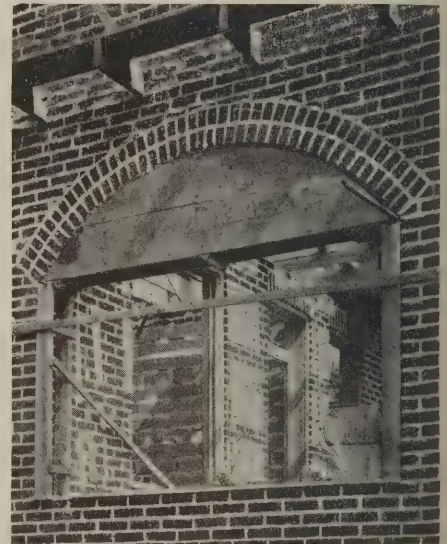
Two pieces of 2x4 are used at the ground instead of a single piece of 2x8 because by so doing a firmer base may be obtained on uneven or loose ground. If folding wedges

are used under the leg as shown in the sketch, the forms may be leveled after they are set.

To Secure a Good Brick Arch

WHEN laying a brick arch it is necessary that the arch centering be set solid if a good job is desired. Many poorly shaped and irregular brick arches are due to forms which have been poorly made or loosely set.

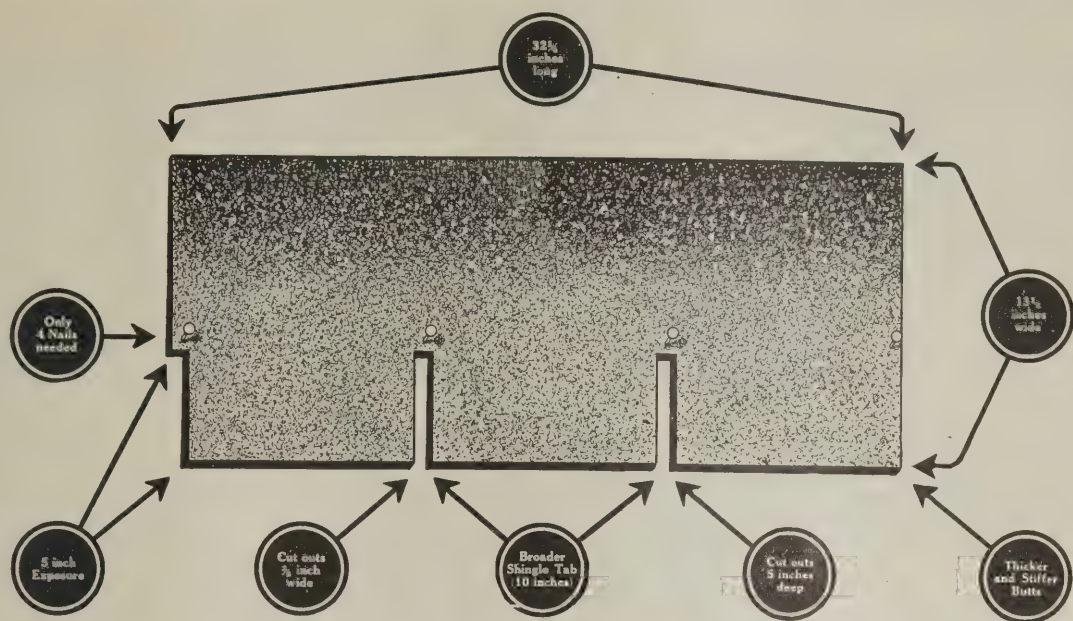
In the illustration, which was made in a Harrisburg, Pennsylvania, building project being carried out by C. L. Long, note that considerable care has been taken to provide a solid setting for the arch centering. Two vertical 2x4 supports are used at each end. They rest on a piece of 1x6 at the base and bear on a similar piece at the top. They are held apart by a short piece of 1x2 both



The centering for this arch was carefully and solidly braced to help the mason to do a good job

at the top and bottom and are prevented from tipping towards each other by a 1x2 strip. Note also that they are held from tipping outward by a diagonal brace. The 1x6 at the base of the vertical 2x4 supports provides a good footing for these members, and the spreaders across them keep them at the corners of the arch form-work where they belong. The whole arrangement shown here is firmly braced and perfectly rigid.

This would seem to be a lot of bracing for so simple a job, but it is the writer's opinion that no piece of formwork can be too solidly braced. The perfectly turned arch is proof enough that it was all worth while.



The Shingle You Asked For

WE are glad to announce the new WINTHROP Tapered Asphalt Shingles in strip form.

You builders made this 3-in-1 Shingle. That is, requests constantly came to us for the famous WINTHROP Tapered Asphalt Shingle in this form. We have now expanded our facilities, perfected the machinery and produced the 3-in-1 Shingle.

To you who know so well the WINTHROP—with its thick butt built up of extra heavy coatings of everlasting asphalt—little need be said about the quality of this new WINTHROP 3-in-1 Tapered Asphalt Shingle.

You know it is thick where the wear comes.

The thick butt shadow line breaks up the monotony of a flat roof. You know the beautiful non-fading crushed slate surfaces in the tile-red, sea-green and blue-black.

You can lay this 3-in-1 shingle with one half the nails. You can lay this shingle without chalk lines, and it spaces automatically. These features represent a big saving in labor.

The WINTHROP 3-in-1 Tapered Asphalt Shingles come packed in bundles, three bundles to a square.

Write for Sample

We want you to examine this shingle for yourself. Send for a sample; specify what color you wish—tile-red, sea-green or blue-black.

BECKMAN-DAWSON ROOFING COMPANY
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On the Job in New England

Sidewalk Protection

WHERE bricklayers are working on a wall from the outside, a contractor has two means of preventing possible injury to pedestrians who may be passing the job. One is to block the sidewalk and another is to erect some form of protection which will stop all falling material before it reaches the sidewalk.

In the illustration shown here, a simple form of protection for people passing below is used. A ledger-board is run between the columns and on it rests one end of the



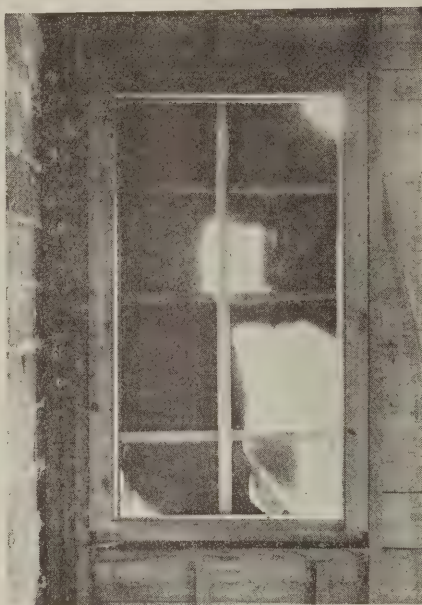
This sidewalk protection is fastened to the scaffolding posts. It is inclined toward the building so that any debris falling upon it will not roll off to the street

rafters upon which boards are nailed. The other end of the rafters rests on a cornice or, if no cornice is built, they may be rested on sills or other wall openings. In order that none of the falling material may drop off into the street, the ledger board is placed at a higher level than the cornice or sill upon which one end of the rafters rests. This makes the whole arrangement incline toward the building instead of sloping to the street. This kind of sidewalk protection makes it unnecessary to build extra framework for supporting it since it is fastened directly to the scaffolding posts.

F. A. Rumery Company, of Portland, Maine, were the contractors for the building at which this photograph was taken.

Temporary Blocking for Wall Openings

WHEN the time comes for plastering a new building, there is usually a period of doubt as to just what method should be used for closing the building in so that damage from blowing rains, dust



These few pieces of 1x2 nailed across the window opening will go far to strengthen the temporary window flocking and prevent the wind from breaking it

storms, low temperatures and the numerous other sources of damage to a freshly plastered wall.

To hang the sash at this time is seldom satisfactory, because of the consequent damage by breakage and mortar droppings; it is expensive to block wall openings temporarily with boards and it is unsatisfactory to stretch paper across the opening, for the paper soon breaks or tears. If a few 1x2 strips are nailed across the opening as shown in the illustration, the paper will last much longer than if it is just tacked at the frame without any intermediate support. The few pieces of 1x2 nailed across the opening prevent the paper from blowing inward and breaking under the force of the wind.

Charles Brice, of Wilmington, Delaware, was the builder on whose job this photograph was made.

A Use for Old Doors

VERNHOF AND RICHMOND, contractors of New Haven, Connecticut, make use of old doors as shown below. Of course, these old doors do not make a very good-looking contractor's shanty, but they do save labor and materials, as a shanty put together of a few old doors requires very little labor and only a few boards for the roof. To the builder who has such material as this lying around in his yard the idea may be a good one.



These old doors are nailed together to make a contractor's shanty, thus saving the lumber which would be required for this purpose



I never dreamt of such lumber

Many a builder grown old in the business expressed surprise that a lumber could have the many features of Celotex.

The ease and rapidity with which it is used as sheathing, as plaster base or as roof insulation amazes him. The lack of waste has his approval. He notices the rigidity of the walls, for Celotex is stronger than wood sheathing.

Celotex has the insulating value of cork and when in place generally costs less than the materials it replaces.

Builders everywhere approve Celotex and they find it to their advantage to explain to their clients how Celotex will cut fuel bills a fourth to a third as long as the house stands—and do it at no added first cost.

Write for complete literature on Celotex to Dept. D-5, The Celotex Company, 645 N. Michigan Avenue, Chicago, Ill. Canadian Representatives—B. & S. H. Thompson & Co., Ltd., Montreal and Toronto.

Celotex is a strong, rugged, weather-proof durable building lumber made from the long, tough fibres of cane. It is better than wood sheathing—equals cork for insulation.

Celotex is used for sheathing instead of wood; for plaster base, roof insulation, sound deadener and exterior finish.

Stock sizes: Thickness $\frac{3}{16}$ in.; width 4 ft.; lengths 8 ft. to 12 ft. Weight about 60 lbs. per 100 sq. ft.

CELOTEX

INSULATING LUMBER

THERE IS A USE FOR CELOTEX IN EVERY BUILDING

When writing advertisers please mention National Builder

On the Job in Nashville, Tenn.

A Steel-Workers' Scaffold

IN order to assist steel workers in the erection of light steel trusses, the Summer Construction Company of Nashville built some light steel-workers' scaffolds shown in the photograph below. These scaffolds, as will be seen from the illustration, are not expensive to construct, may be thrown together in a hurry, and easily knocked down

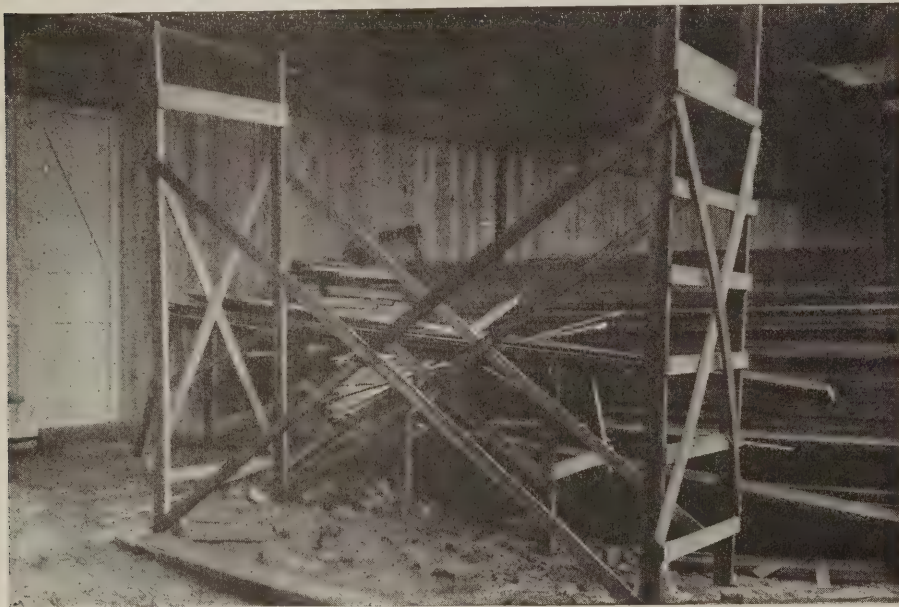
keeps all the sub-contractors' names together where they may more readily be seen by anyone who is interested.

A Novel Stone Cart

CUT stone work is quite commonly used for exterior ornament on nearly all types of buildings. This stone work depends for its beauty as ornament upon its

defacing each other by contact. Next, it must be carefully unloaded and carefully piled and finally it must be brought to the place where it is to be used and set in position with as much care as was used in bringing it to the site.

The Hegeman-Harris Company, contractors, of Nashville, use an ordinary warehouse truck for getting their stone about on the job. This truck is used for carry-



This steel worker's scaffold can be easily dismantled and moved from job to job in sections

and moved in sections. The upper lateral pieces, which hold the two vertical legs, provide a piece upon which planks may be set, and the steel worker has the freedom of a long plank scaffold upon which to work. Notice that a ladder is provided at one side of the scaffold so that the workman can come down to the ground with ease.

Contractor's Sign

THE ordinary building job is usually plastered over with signs of sub-contractors, but the E. G. Holladay Company, contractors of Nashville, provide display space for their sub-contractors by erecting a signboard, as shown at the right, and dividing it into enough space to provide room for all the sub-contractors on the job. The sub-contractors are charged a reasonable amount in order to pay for the cost of the sign.

This method of providing display space for the names of sub-contractors not only does away with having the job plastered over with signs on all floors, but also it

sharp corners and graceful curves and if the corners be broken or the curves chipped the resulting picture is not pleasing to the eye.

Too much care cannot be taken to prevent the chipping of ornamental cut stone. First, it must be carefully piled on the truck that brings it from the stone yard and packed on the truck in wood shavings or straw to keep the pieces from rubbing together and

Padding a hand truck to keep the sharp edges from damaging cut stone

ing the smaller pieces as is shown in the illustration. The sharp edges of the blocks are padded with straw wrapped in burlap sacks and tied with string. While this would appear to be more or less of an emergency outfit, nevertheless it is well suited to the purpose for which it is intended, and might be more generally followed.



Notice the neat appearance of this sign. It does away with the nuisance of having the job plastered over with small signs



Your Main Street is to be rebuilt ~ *Do you want the job?*

Within the next few years practically every merchant in your city will be *forced* to install a modern store front. Present day competition is so keen that only the up-to-date merchant can survive, and an up-to-date store demands an up-to-date exterior. They *must* keep pace with the times—or go under.

There are going to be a lot of profitable contracts for someone. Are *you* prepared to handle them? You can do it with the “Desco” method of construction. Those beautiful all-metal fronts are really as simple as ABC with

“Desco” Standardized methods and materials. Our free book tells all about it. Send for it today and be prepared to get your share of the generous profits in this field.

*Write us for the name of the nearest “Desco” Distributor.
Additional information in Sweet’s Catalog.*

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Desco METAL

STORE FRONTS

Money Making COUPON

Detroit Show Case Company
1655 Fort St. West, Detroit, Mich.

Without obligation on my part you may send me your book on “Desco” store fronts.

Name

Address

City and State

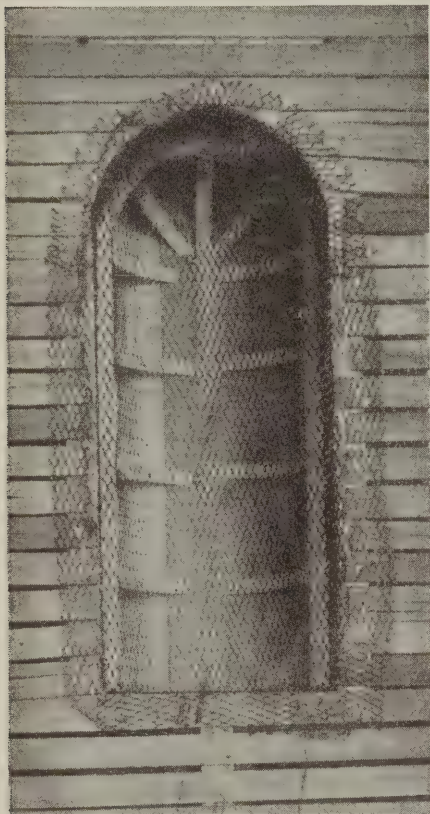
Business

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On the Job in Dallas, Texas.

Framing for an Ornamental Statuary Niche

IN some buildings where niches are set in the walls for telephones or for statuary they may be framed as shown here. The base is provided by a 2x4 header set in the wall and the curve at the top is



This niche is set in the space between two studs. The curved effect is formed by several pieces of 1x6 cut to the proper radius and set around the edge as shown. Wire lath is used to form an even curve

made by curve cutting a one-inch piece and setting it in place in notches in the studs. Curved work such as this must be carefully done, as the eye is quick to resent any clumsy lines.

To provide the graceful curve shown by the framing in connection with this niche, small pieces are cut and set in place as shown in the photograph. The long piece running around the outside of the niche is a piece of 1x1 kerfed on top to permit its being bent. Wire lath is used, as it is most satisfactory for curved surfaces. This photograph was made on a job being done by the J. W. Halsall Building Company of Dallas, Texas.

Reinforcing in Foundations

IN foundations for small buildings, where reinforcing is placed in the wall but not in the footing, the method shown here, used on a job by Rogers and O'Rourke, of Dallas, is a satisfactory method to employ.



These rods sticking up above the foundation form a base to which the reinforcement rods in the wall may be wired to hold them in place

Small pieces of reinforcing rods, about one foot six inches long, are set in the footing and allowed to stick up above the top of the footing for about six inches, as shown in the photograph. When the reinforcing rods for the wall are placed they

may be tied with wire to the part of the rod in the footing which projects above the surface. This will serve to hold them firmly in position and prevent their being moved by the concrete as it is poured.

Formwork for Shallow Foundations

IN cases where basements are not built, the only excavation required for the foundations is a trench. In the event that it is necessary to carry the foundation above the grade level some sort of form-



Illustration showing construction of forms. The extended cleats provide a place to which bracing may be nailed

work must be set up above the trench to confine the concrete when it is poured.

The formwork used by George L. Crawford & Company, Dallas, Texas, contractors, is well suited to this kind of work. The forms are nothing more or less than two pieces of 1x10 shiplap nailed together with 1x4s spaced about four feet on centers. The 1x4s provide not only a handle for moving the form about but also a place to which braces may be nailed when the forms are set in place.

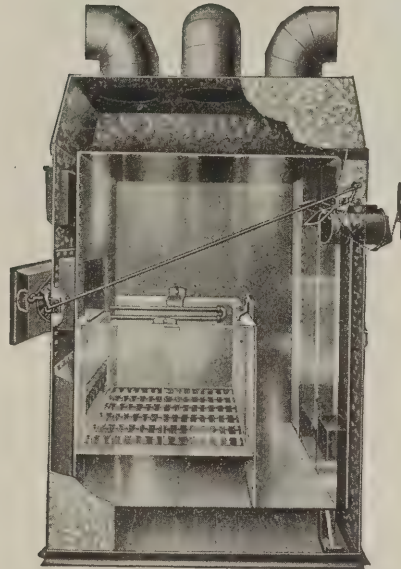


Illustrations showing the forms in place. Note how the braces are nailed to the cleats

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HESS *Welded Steel* FURNACE

On the Job in Fargo, N. Dakota

Making Plank Walks Safe

AN inclined plank walk such as is shown in the photograph is handy on a job. The plank itself, if simply placed in position as shown, is liable to slip off the platform while someone is walking on it

a wedge shaped piece of wood at the end of the plank which rests on the platform. The plank is therefore held tight and it cannot slip. This is much better than nailing the plank to the platform because it can be easily lifted off.

Safeguards such as this, while apparently



This plank walk cannot slip and cause the injury of a workman

and whoever is unfortunate enough to be on the plank at the time it goes down is liable to be hurt.

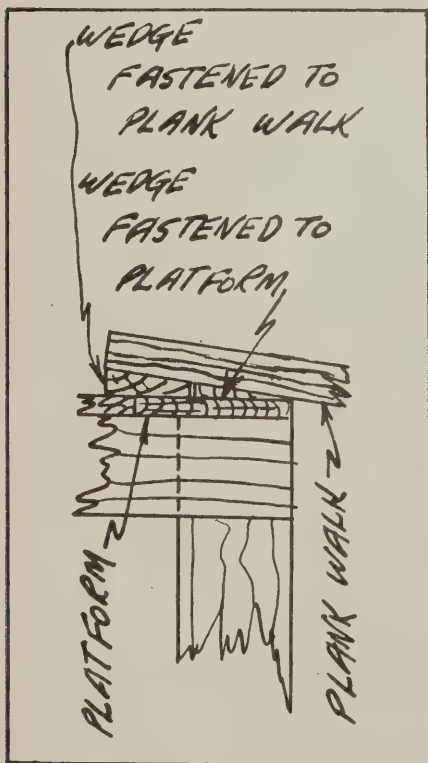
In order to prevent the plank slipping

of a trivial nature, are really forms of insurance against loss of time and money through personal injury and damage suits.

Framing for an Interior Arched Opening

THE Mountplaisir Building Company of Fargo frame wide interior arched openings as shown in the photograph. They saw two planks to the curve of the arch as shown and carry the load above the cut plank by two pieces of 2x6.

The sawed planks which form the curve of the arch are not strong enough to support the load above because the greater part of their effective section is cut away. The 2x6s above the cut piece are depended upon to carry the entire load over the opening, the two lower planks being used only to form the curve.



Sketch showing how plank walk is secured

off the platform Louis Gratias, a contractor of Fargo, North Dakota, has a little kink in connection with this runway which is shown in the sketch. He nails a shingle at the edge of the platform and

Nailing a Tin Siding Corner

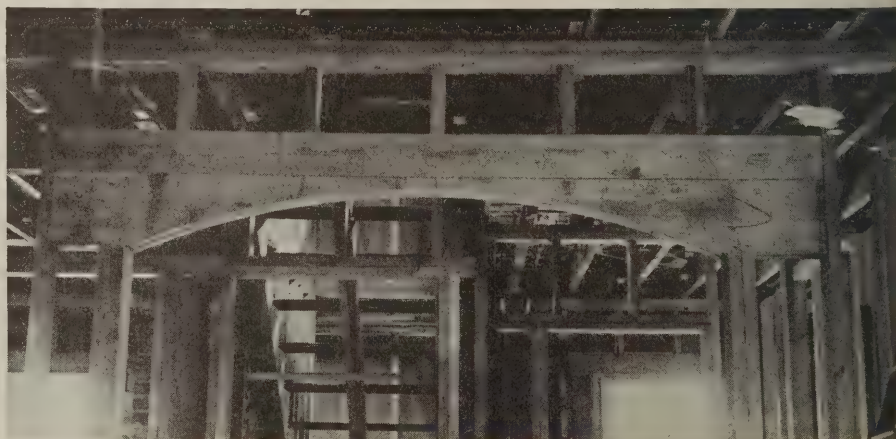
ON small inexpensive houses where siding is used for the exterior walls, tin corners are sometimes set, as a means of reducing the labor costs of mitering the



The siding is only tacked at the corners until the tin corner-pieces are placed

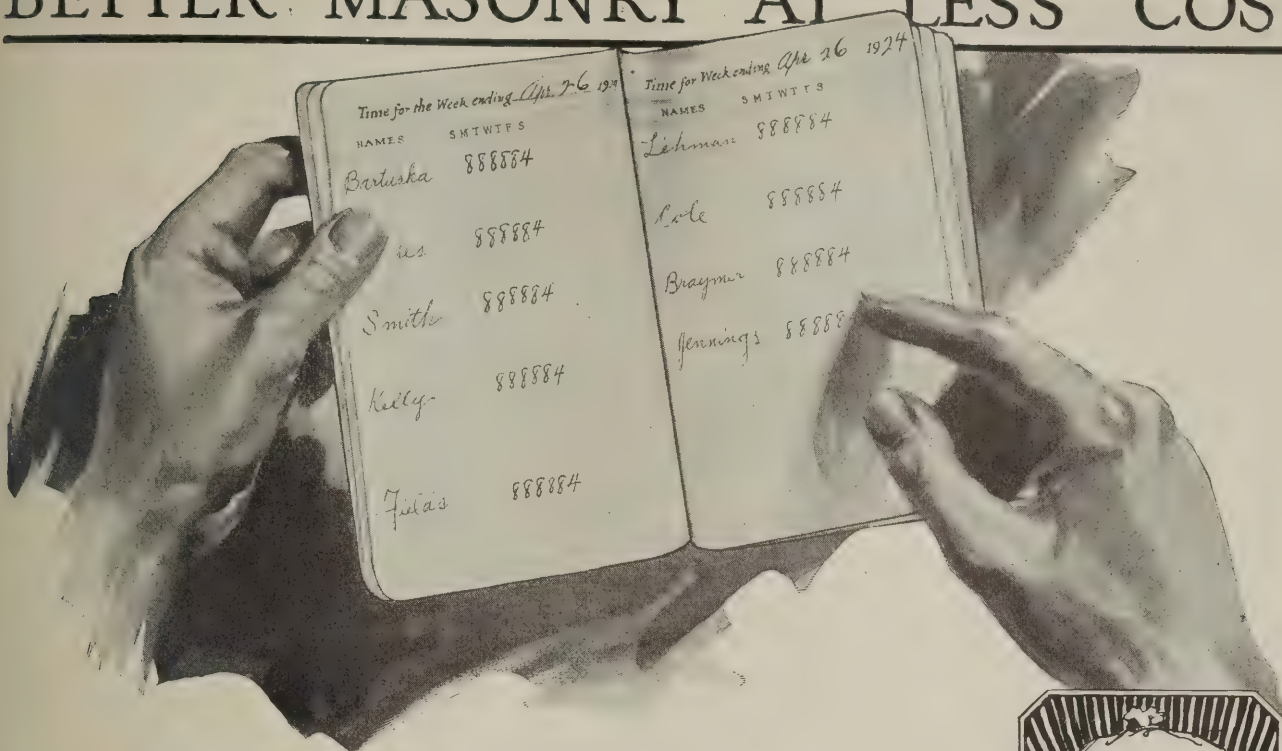
siding at the corners.

This Fargo contractor attaches these tin corners in the manner shown. He nails the siding to the wall driving the nails full depth except at the corners. At the corners the siding is only tacked, the nails being left extended as shown in the illustration. When the time comes for placing the metal corners the nails are withdrawn, the corners set in place and bent around the edges of the siding and the nails driven tight.



This method of framing an arched opening should do away with plaster cracks due to sagging of the joists over the opening

BETTER MASONRY AT LESS COST



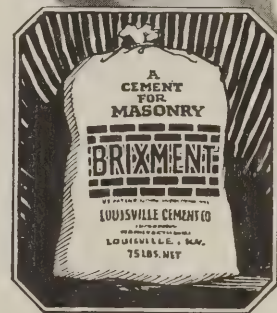
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The saving of time is an inevitable factor in every successful building operation. The contractor who can effect this economy in the highest degree is naturally working under the best conditions and can control and profit by the largest volume of worth-while business.

Because of its following distinctive characteristics, BRIXMENT not only assures better masonry but enables the contractor to save time, labor, material and money:

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Send in your kinks—give the benefit of your experience to the other fellow as well as get the benefit of his. NATIONAL BUILDER pays \$5.00 for every kink published.—The Editor.

Window Framing with Stucco Construction

FROM Kearny Nebraska, H. McC. sends the sketch, Fig. 1, showing his method of construction in stucco. The

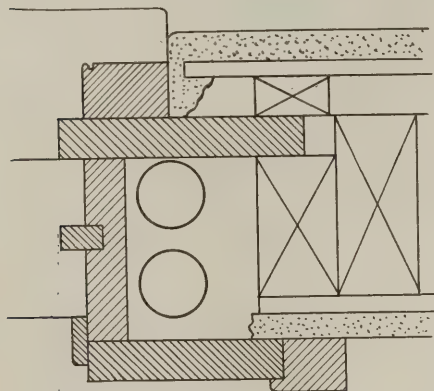


Fig. 1—Window frame construction in stucco

absence of text leads us to believe that he thinks kindly of us and has abounding confidence in his construction.

A Convenient Tray for Assorted Nails and Screws

D. A. H. also sends in the following letter referring to Fig. 2: "One of the most convenient accessories that the wood-worker at the bench can have is a container for small nails and screws. These things he often makes himself, of wood, or he buys those household baking tins that have about a dozen pockets in them or he may get hold of one of those metal trays that shoe repairers use to keep their various sized nails in, ready to the hand.

"But one of the neatest trays is that shown herewith which is obtained at the battery shop around the corner. The insides of automobile storage batteries go bad in a couple of years, when the owner has to buy a new one, receiving from the battery man an 'allowance' of about \$2 for the old one, which allowance is merely a way of expressing the discount. For the battery man scraps the old battery.

"Inside the wooden box there are the rubber 'jars' of the battery and these jars

are filled with plates and an electrolyte. It is the plates that go bad—the rubber jars, or boxes, are usually in first class shape, but the battery man has so many and uses so few in repairs that he seldom values them, so he is willing to give them away or sell them for 10 cents a piece.

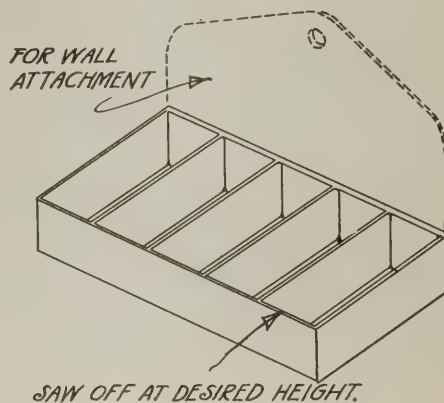


Fig. 2—Novel nail tray

"There are about five partitions molded in the jar and if the latter is sawed off about an inch and a half up from the bottom, a case is made that has five spaces of about six square inches surface area in each. A number of these can be supplied when the work calls for a wider variety of nails, brads, screws, etc. One very nice thing about these trays is their freedom from slivers or catchy joints—there are none because the partitions are molded in one piece and the inside edges are slightly filleted. Another advantage is the non-rusting quality of the material. Withal, the tray is light and strong.

"A variation of this takes the form of the wall tray shown. All or a portion of one side is left as a back to the unit and a hole is bored through this to hang on a nail. When desired, the material can be worked into somewhat different shape by heating and bending it while warm."

Rafter Cuts

WE have here, from E. P. McC., a note on rafters which refers to the auxiliary plan and elevation shown in Fig. 3. "There is one fixed mechanical fact that I never see stated by those promulgating roof framing rules. That is that the bevel of the common hip or valley jack is always 45 degrees in a horizontal plane no matter how steep or how flat the pitch may be." (It seems to us there was something touching that in the methods for figuring differences in jack lengths.—Ed.) "This fact makes it an easy matter to cut the jack bevel using only an ordinary pocket rule. The figure shows the

top end of main rafter (pitch unknown) turned on its side, and the same timber turned top edge up. The line, C D, must be exactly the same length as the thickness of the timber used for the rafter. It must be at right angles to the plumb cut, A B. Where it cuts the top edge of the stick at D is point from which to project the bevel cut, either right or left bevels, as shown at w-x or y-z. These bevels are true and exact no matter what the pitch.

"Also the jack bevel is always a combination (on the framing square) of the length of the main rafter and half the width of the

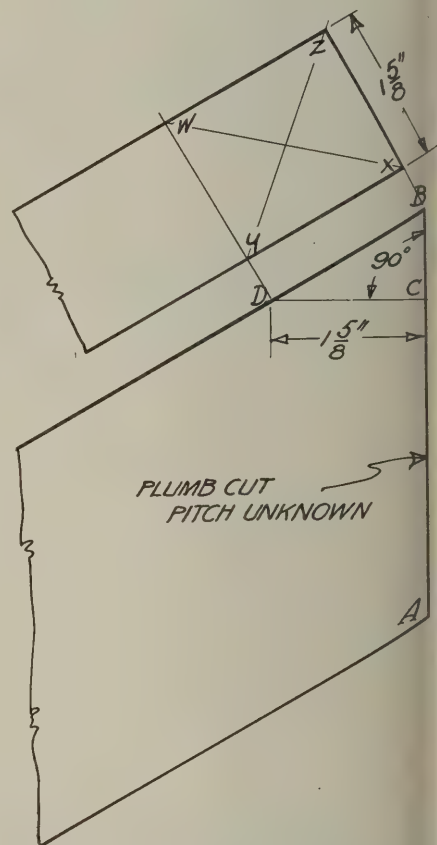
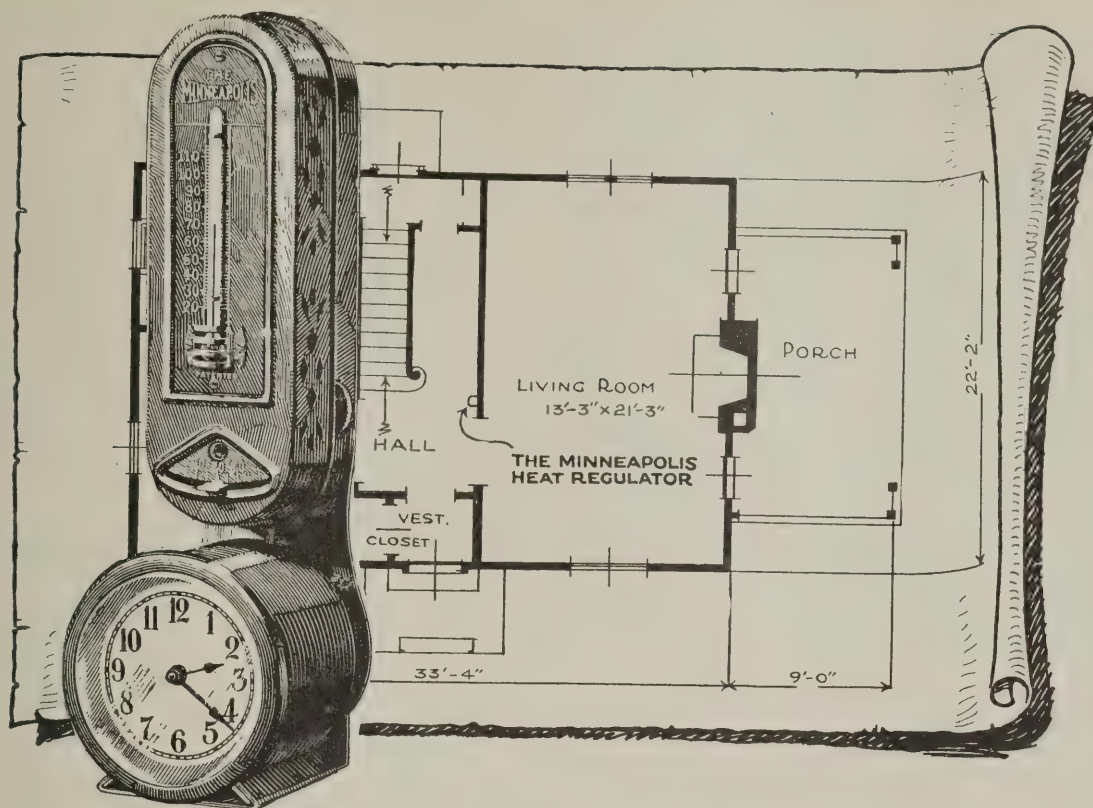


Fig. 3—Hip and valley rafter cuts

building expressed in inches instead of feet. Thus, if a building is 30 feet wide and the main rafter is 18 feet 9 inches long, then 18 3/4 inches, the length of the main rafter and 15 inches, half the width of the building will project the correct bevel—long slant, of course.

"The amount in inches the jack and valley rafters increase or diminish in length is the same amount exactly as is shown on the framing square for the length of the main rafter provided the rafter are set one foot on centers, once and one-half the amount if set on 18-inch centers and double the amount if set at 24-inch."



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The Minneapolis Heat Regulator on the heating plant is an improvement your prospects understand and appreciate. It means something concrete to them. They may not be able to estimate the value of fine materials and workmanship in the house itself. But advantages of Minneapolis automatic heat control are fast becoming recognized as essential to the really modern home.

People look for it just as they look for hot water in the bath room and are disappointed if it is not installed.

A heating plant regulated by the out-of-date methods of the shovel and coal pile, or guess-work manipulation of drafts and dampers, steam or gas valves, is out of place in a good home.

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Handy Floor Cutter

ONE way out is shown in Fig. 4 submitted by H. S. B., of Philadelphia, who subscribed the following: "Here is one I am using just now. I have about 500 lineal feet of partition to put in place in a concrete building. There is a $\frac{7}{8}$ -inch maple floor on sleepers. Concrete is flush with the top of the sleepers. The job was to cut out the floor so as to place the plaster blocks.

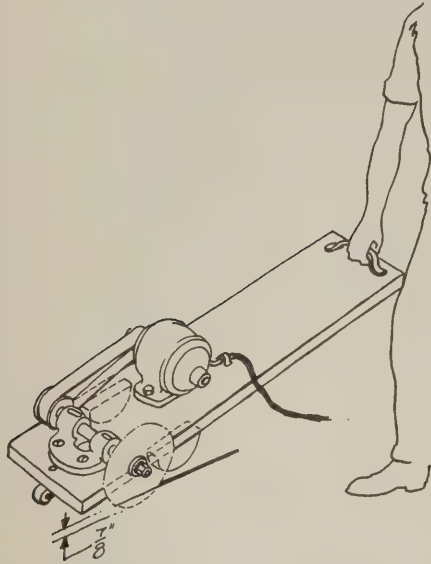


Fig. 4—Labor saving flooring saw

"I took a board 12 inches wide, about 3 feet long and $\frac{7}{8}$ -inch thick. Put a saw mandrel close to one end and a $\frac{1}{4}$ h.p. motor at the other. Put an 8-inch saw on the mandrel outside the edge of the board and connected with belt to motor. Made two curved blocks and placed under the board and behind the saw. Then placed a small caster under the board ahead of the saw in such a position that the cut would be just $\frac{7}{8}$ -inch. This saves us a great deal of time."

Floor for Shower Bath

J. E. N., of Lake Charles, Louisiana, forwards this letter to accompany Fig. 5: "Frequently in medium price work where a number of shower baths are used the cost will not permit the use of porcelain receptors, and it is difficult to make a satisfactory job. The sketch shows the construction of a floor trap and drain that is both satisfactory and economical. As shown, the sub floor is first put in place, it is then covered with No. 4 sheet lead, which is run up the sides of walls about six inches, with all joints made tight with solder.

"A hole four inches in diameter is then cut near the center of floor, and drain inserted and made fast with solder. Several $\frac{1}{8}$ -inch holes are made in the four-inch pipe directly above lead lining in

order to drain any water that might penetrate through the concrete.

"The lead lining is then covered with several inches of waterproofed concrete, reinforced with galvanized expanded metal lath. This concrete is then finished smooth, and made so that all water will run to drain. The walls are then plastered or ceiled, and the plaster or ceiling brought down over the lead lining on walls.

"The drain and trap needs little explanation.

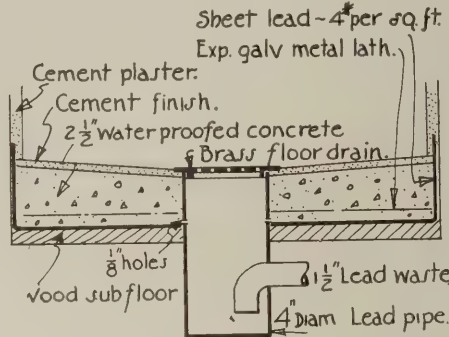


Fig. 5—Floor construction in shower bath

tion. It is made of a four-inch heavy lead pipe with a removable face drain, soldered to one end, and bottom end closed, a $1\frac{1}{2}$ -inch lead pipe with one-fourth bend is inserted in side and connected to waste. All joints and connections made tight with solder."

Building Stone Houses

THROUGH certain sections there are many buildings, homes, schools, churches, built of the nearest aggregate, stones. They are nearly everlasting and many of them are particularly attractive. A. G. H. writes: "Those having an excess of stones on their land can use them to practical advantage in building stone houses. Stones are cheaper than lumber and a house built from this material will last for centuries. The walls are made 18 inches thick up to the first floor; from here they taper in on the outside to a thickness of 12 inches at the eaves 10 feet high. After reaching the first floor, the lower joists are put on and the studding raised the same as for a frame building except that the outside studding is set flat. It is sheathed on the outside the same as for a frame house. This is used for the inside form for the rock and cement.

"The outside form should be put up one board at a time as the material is put in. The best sides of the stones should be placed against the outside form, then fill spaces as closely as possible, being careful not to make the back of the wall higher than the front. Mix sand and cement 1 to 4, rather thin, and pour in to level up within 2 to 4 inches of the top of the rock, and repeat.

"One should build up between two windows to the top of the wall and remove

outside form in twenty-four to forty-eight hours. Then with a trowel and broom clean off mortar to show stones in wall. In this way a house can be built without any skilled labor."

Preventing Wind Rattle in Garage Doors

G. W. H., of Boone, Iowa, sends this: "I am enclosing a 'kink' for fastening swinging double garage doors on the inside. Since I ran across the idea shown in Fig. 6 I have never failed to get a good,

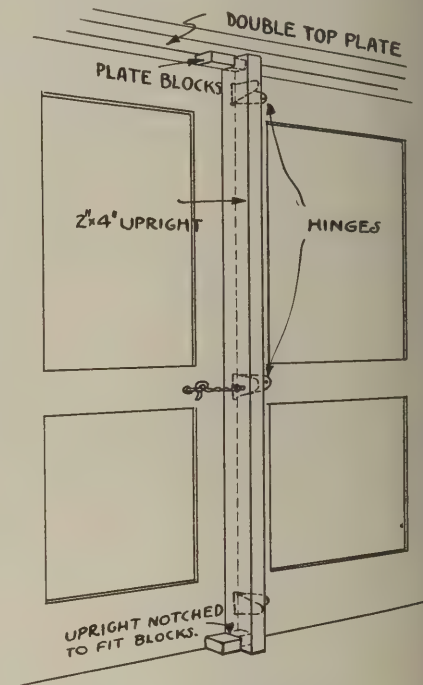


Fig. 6—Garage door bar

tight door bar or lock. The device closes the crack between the doors and when the hook is tightly set the doors are as free from wind rattle as if they were a unit. You do not need a lot of extra hardware, bolts, hasps, locks, etc. All that is needed is three hinges, a hook and staple and the two-by-four."

Recommendations for Sheet Rock Walls

J. I. W., an architect in San Antonio, Texas, submits this prescription for sheet rock:

"Fill all joints, nail holes and other defects with plaster of paris, using care to make an even job. When dry apply a heavy coat of cheap varnish. Before varnish is dry dash clean dry sharp sand into varnish until the desired effect is obtained. When varnish is dry apply a coat of any good size and finish with a coat of oil paint or calomine. If properly done the joints will be successfully covered and the whole surface will have the appearance of a sand finished wall."

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Whitco Hardware makes the casement window self-adjusting, and does away with the use of both butts and adjusters. One size hardware fits all size sash, no special detail of sash or frame is required, each set may be used either right or left hand and—

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Whitco Hardware is sold only through retail dealers in builders' hardware. If your hardware man cannot supply you, send us his name and we will see that your needs are taken care of.

New Woodwork Under Plate Glass

S. F. B., of New London, Ohio, sends in the drawing, Fig. 7, showing how he put new woodwork under plate glass. "The main light was 7x8 feet and the side light 7x3 feet. I got the work out in the shop and next morning got help to take out the glass. Did the woodwork alone and had the glass back in eight hours.

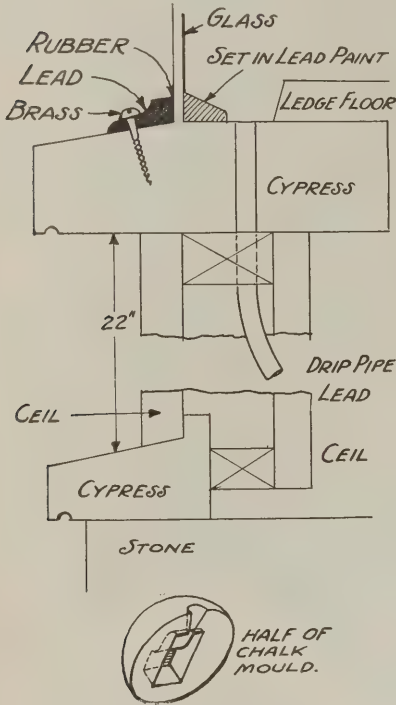


Fig. 7—Renewal under plate glass show window

The old side rails were good and I cut them off and brought the new sill up under. I made the lead mold by cutting the shape of the lead in a cake of chalk, then put another cake against it and poured in the lead."

An Efficient System of Porch Construction

WE are indebted to H. G. S., of Sparta, Wisconsin, for the following letter referring to Fig. 8: "In place of building up frame work from rough material and casing over with a better grade under porch ceiling joists as is commonly done, use a grade of 2x6-inch or 8-inch or 10-inch sized one S. and E. of a grade equal to No. 1 com. or better or something that is suitable to paint for O. S. finish. The width is to be determined according to the span between bearings and the cornice in general. Run two strings of this material in front and on the ends, parallel and at such a distance apart as is necessary. This distance is to be determined by the size of posts or columns. Miter the outside string. After having these so

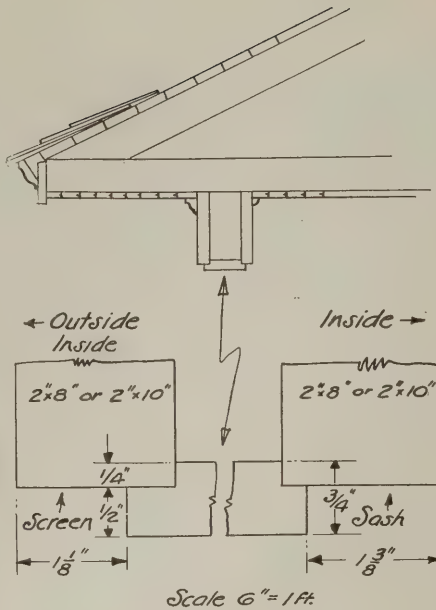


Fig. 8—Simple soffit construction

placed toe nail on the ceiling joists and keep in place.

"To put in soffit rip the same 2½ inches less than the outside width of your two-inch stock as it stands and rabbet in on the back of this stock ¼-inch deep and of such width so that when nailed in place it will leave a rabbeted jamb to the front of 1⅝-inch for the screws and 1⅜-inch inside for the sash."

Uses a Jig

FROM S. F. B., of New London, Ohio: "Three days after my NATIONAL BUILDER came I had occasion to put a mortise lock in a 1⅝-inch door and I tried the kink F. G. W. sent in. It works all right. In

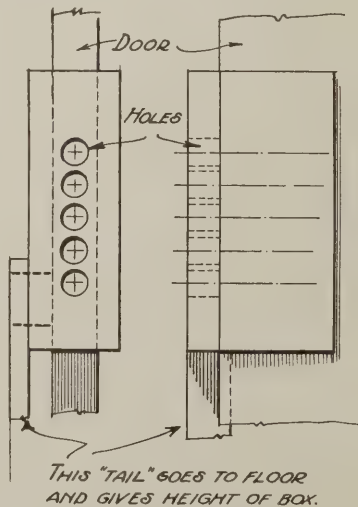


Fig. 9—Jig for door

return I will send in something I use. It may be old to some, but sometime, somewhere, someone may use it. As in Fig. 9, just slip on the box and put on the clamp the same as F. G. W. does and go ahead."

Winter Concrete

WE publish herewith two letters. The first one, from N. N., of Kansas City, runs: "During this last winter some small, hollow concrete blocks were being made for laying up a wall on a small house instead of using stone or similar materials. As these blocks were made out of doors in cold weather, they did not set up before they froze. To overcome this difficulty they were filled with heated sand immediately after being poured into the forms. They were then covered with empty cement sacks. In this way they were kept from freezing until they set."

The second letter is from D. A. H., of Middletown, New York. "The article in the NATIONAL BUILDER for March which treats of the Vincent Hotel collapse is extremely interesting to the profession. I had long been interested in this sort of thing and am sending you a photograph of a job that went bad near here some little time ago. The building is a school that was put up for the city and which began to go to pieces before it was ever used. It was contracted for after a successful experience with a similar building,

"Here the trouble was partly cold weather pouring and partly poor materials, the latter furnishing another proof of the need of a competent architect both in drawing up the specifications and in letting the contract. Also of the value of having the trained third party to act as inspector during construction. In this case it had been decided to save 'unnecessary' expense.

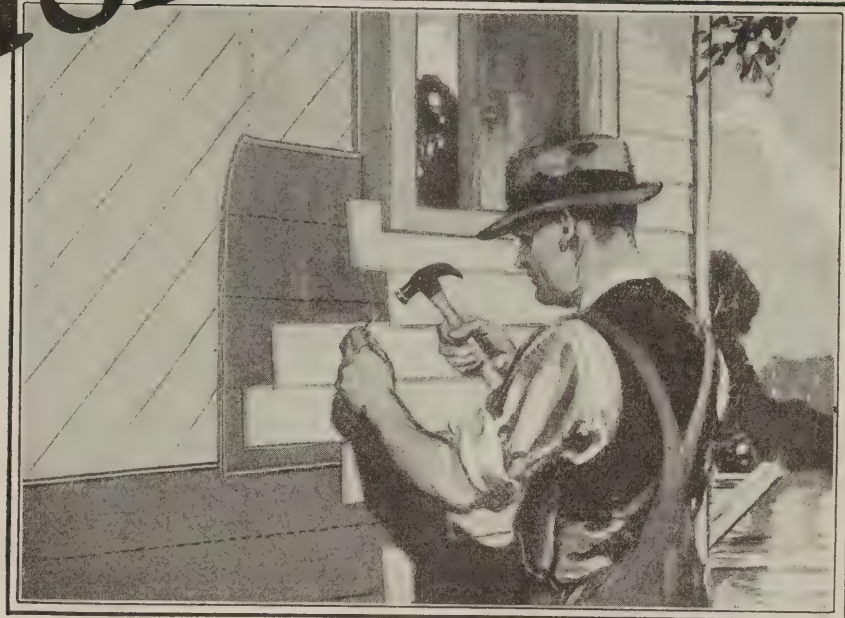
"As will be noted, part of the cornice has fallen off and the surface has started to peel in several places. The photograph was taken in June, the school to have been ready in September. Above the foundation the pouring was done in the latter end of winter and while nominal precautions were taken for the most part work was said to have been done on mild days.

"Though the contractor had received about half of his payment he withstood suit to recover this on the grounds that work done was up to specification and had passed inspection."

If such a contract could be voided as resulting in loss to the public or as not good public policy, who is to blame, the builder or the board? Or is the loss an "act of God?" Knowing of a number of concrete failures through this last winter, and having more or less of a notion as to the causes, the writer has preferred to turn them over in his mind to cogitating on the nearness of leap-year politics.

There was a time when winter sailing was considered much in the same light as some now consider winter building. But—winter sailing has come to stay, and so has winter building. If concrete, in any weather, is not kept up to a setting temperature long enough to set, suspicions will be realized. When a boat sinks there's a hole in the boat and not in the water.

Housline



increases the value of a house without increasing its cost

JOHNS-MANVILLE Housline is a high efficiency building insulation. Here are some facts about it that deserve the careful attention of every man in the building industry.

Of all the materials on the market for insulating building walls, Housline shows the highest efficiency in laboratory tests. If you think that is theory, then here's some practice—the result of a test made by a speculative builder who used it in over 600 houses. This is what he says:

“ . . . we experimented with two houses of the same model, one sheathed with Housline and the other with ordinary paper, and found that the latter required 10% more radiation to heat the house to the same degree . . . we have classed Housline with the standard materials used

in the construction of our houses.”

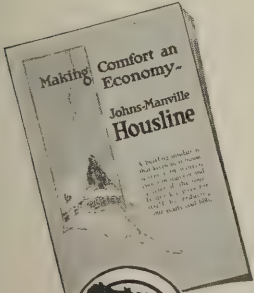
This saving in radiation means a direct saving in radiator and furnace investment—offsetting the cost of the Housline. It means fuel economy, a sales argument that makes a hit with the buyer in these days of high prices—you can get more money for a Houslined house.

These facts put strong selling arguments in the hands of builders and dealers. In addition, Housline is being backed by a big national advertising campaign and the most thorough sales co-operation that such a material ever had.

Write to us to-day for details of this sales plan that is going to bring you big business. It's worth money to you.

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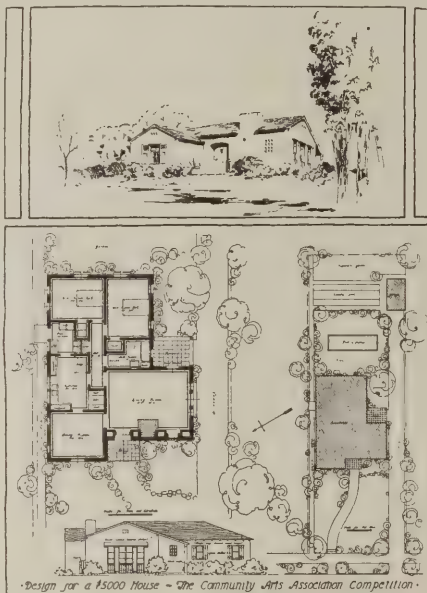


D'Espouy's "Fragments D'Architecture Antique" has long been a standard source of information regarding classic architecture. The original French edition contains 200 plates of monochrome wash drawings of carefully measured and superbly rendered plates from among those made by various winners of the Grand Prix de Rome of the Ecole des Beaux Arts during their studies in Italy. The new edition consists of 100 plates selected from the original work. Anyone working in the classic styles will find this book a veritable mine of inspiration. One hundred plate pages, 9x12, handsomely bound. Published by the Pencil Points Press, New York City. Priced at \$6. This book should prove popular to interested people who do not care to invest \$100 or more in the complete editions.

"Old Canterbury on the Quinnebaug" with introductory text by Richard H. Dana, Jr., is Number 6, Volume IX, of The White Pine Series of Architectural Monographs. Canterbury is one of the early Colonial hill towns in Windham County, Connecticut. There are several buildings of unusual merit pictured, which have been preserved in their original state and are unspoiled by modern improvements. The whole village is said to be harmonious, having happily escaped the march of progress and lies peacefully "off the map." This publication is prepared by Russell F. Whitehead, 150 East Sixty-first Street, New York City.

"The Planning of the Modern City," by Nelson P. Lewis, assisted by Harold M. Lewis (second edition), is a review of the principles governing city planning, with the idea that the fundamental problems of city planning are, and from their very nature must be, engineering problems. There are chapters on the city planning movement, the correction of mistakes, elements of a city plan, the transportation system, the street system, parks and recreation facilities, public buildings and civic centers, the economic value of a city plan, the industrial town or district, street traffic, street details—utility and adornment, the railroad in its relation to the street system, restrictions—zoning, the environs of the city, garden cities, city planning legislation, progress and methods, financing a city plan, municipal land policies, and the opportunities and responsibilities of the municipal engineer. There are 457 pages, size 6x9, with 149 illustrations. Bound in cloth the price is \$5.00 postpaid, published by John Wiley & Sons, Inc., 432 Fourth Avenue, New York City.

"Small House Designs" is the title of a 134 page book containing sixty designs of houses said to cost about \$5000. The designs being a selection from among those submitted in a national competition for "a small dwelling house, suitable for California, containing not over five rooms . . . placed upon an inside lot 50 feet wide . . . without an alley in the rear, also a garage for one car." Some



Reduced specimen page from *Small House Designs*

of the titles of chapter headings are: Hints to Home Builders, Ways to Lower Building Costs, Financing the Small Home, Spanish-California Type Designs, English Rural Stucco Type Designs, English Stucco Type Designs and Wood Exterior Type Designs. Each design is accompanied by a brief discussion of its salient characteristics, the remainder of the text being largely quoted and paragraphed material abstracted from previously published pamphlets and articles, but losing no value on that account, and containing much sound practical advice. The book should be of value to those interested in the so-called California bungalow. It is bound in boards and priced at \$5. Copies may be obtained from the Community Arts Association 936 Santa Barbara Street, Santa Barbara, California.

"Wall Plaster: Its Ingredients, Preparation and Properties" (Report of the Bureau of Standards Plastering Conference)—This 66-page booklet represents an effort to collect and correlate information about

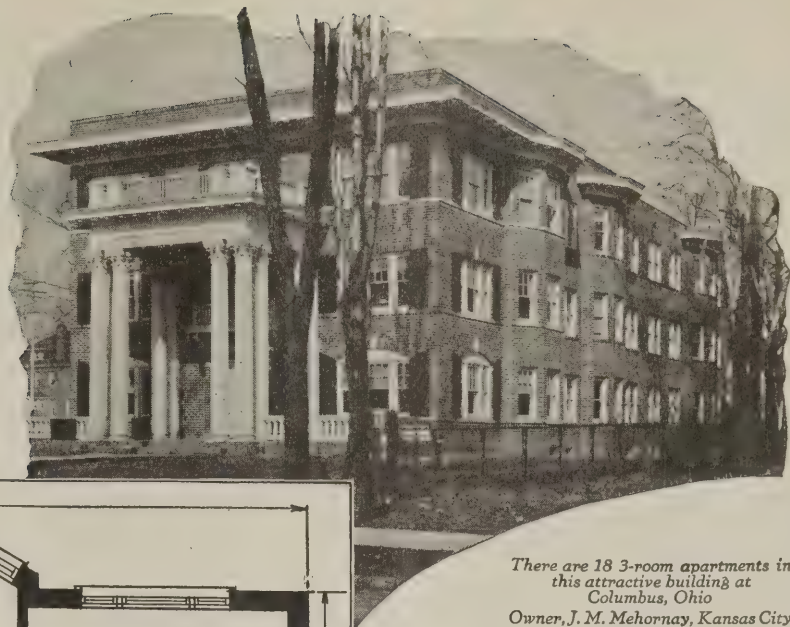
the factors which enter into successful plastering.

Much of the information was available in the trade but to assist in the work a committee known as the Bureau of Standards Plastering Conference was organized from among men most familiar with the subject. From the information thus furnished and from laboratory research work the report attempts to explain not only how an operation is performed but also why this is the best way to do it.

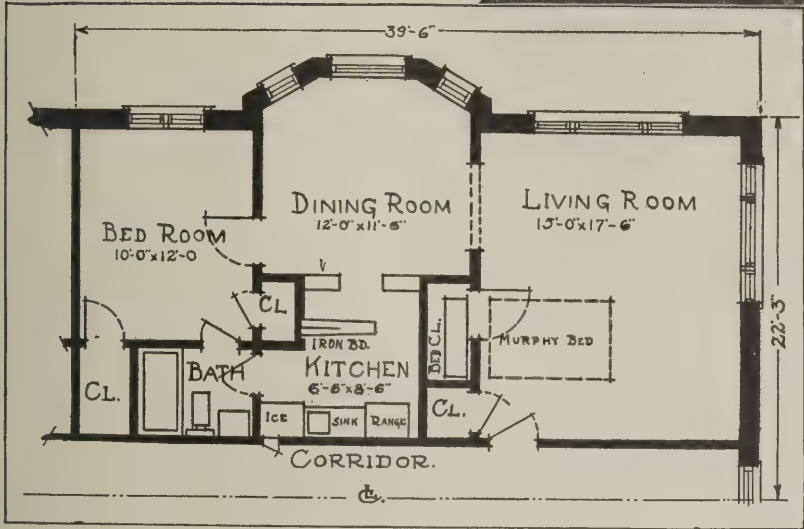
Specifications and directions are given for erecting wood, wire, and metal lath and gypsum plaster board; for the ingredients of plaster, including their mixing and application; for decorative treatments, and the factors to be considered when selecting materials for special cases. Common defects and their causes and remedies are described. This book should be studied by all who have any concern about good plastering. Sold by the Superintendent of Documents, Government Printing Office, Washington, D. C. Price 15 cents per copy.

"Beef-Cattle Barns," by E. W. Sheets, Senior Animal Husbandman, Animal Husbandry Division, Bureau of Animal Industry, and M. A. R. Kelley, Barn Architect, Division of Agricultural Engineering, Bureau of Public Roads, is Farmers' Bulletin No. 1350, of the United States Department of Agriculture. This bulletin discusses type, location, size, arrangement, ventilation, construction and design. Copies can be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents per copy.

"Henley's 222 Radio Circuit Designs" is a comprehensive and up-to-date collection of modern receiving and transmitting circuits with complete design data showing the electrical values of inductances, capacities and resistances, with the name of each element on the diagram of the circuit. Each circuit is said to have been tested and can be successfully built and operated when directions are followed. It is replete with correct and trustworthy radio information from which any one can successfully build and operate any of the circuits given. The book is edited by John E. Anderson, formerly with the Western Electric Co.; Arthur C. C. Mills, radio expert, and Elmer H. Lewis, radio instructor of the East Side Y. M. C. A., New York City. There are 271 pages, 5x7¾, with 284 diagrams and illustrations. Published by The Norman W. Henley Publishing Company, 2 West 45th Street, New York City.



There are 18 3-room apartments in this attractive building at Columbus, Ohio
Owner, J. M. Mehornay, Kansas City
Architect, N. E. Peters, Kansas City



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The latest ideas—practical suggestions—valuable experience of builders throughout the United States—are offered to you through our Technical Service Department. A wealth of material is at the disposal of representative architects and builders.

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An Extra Bedroom that Costs Nothing to Build, Decorate, Heat and Light

One Murphy In-A-Dor Bed gives each apartment of this distinguished-looking building the advantage of one more sleeping chamber than the owner had to build and the tenant has to care for.

At night the living room is easily transformed into an airy, corner bedroom—one with a comfortable, sleep-inviting Murphy Bed.

Because of their well-planned floor space these 3-room apartments provide adequate living and sleeping accommodations for three or four people.

Observe the efficient kitchen arrangement—the Murphy Cabinet Ironing Board—and how delivery and ice service can be made without entering the apartment.

Murphy Beds are made in twin types and standard, full size 4' 6" x 6' 4". Simple in construction and operation, they require no special door for perfect concealment. They swing easily through an ordinary 3-foot opening.

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There is only one In-A-Dor Bed—"The Murphy"

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*New Devices Methods and Improvements
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New Steel Window Catalog

"THE Blue Book of Steel Windows," issued by the Detroit Steel Products Company, 2250 East Grand Boulevard, Detroit, Michigan, shows the complete line of Fenestra products. A special section is devoted to Fenestra Reversible Ventilator Windows—which are designed for school and office buildings. Sidewall, counter balanced, monitor and underwriters' sash as well as details of mechanical operators and installation are clearly shown.

An Unique Machine for Making Light-weight Concrete Block

THE Concrete Equipment Company, Holland, Michigan, have recently brought out a concrete block making machine which in several essentials departs quite radically from other power machines now on the market.

In announcing the Utility light-weight block machine the manufacturers state that it was especially designed to produce a block that would meet the need for lighter construction than is afforded by the conventional block.

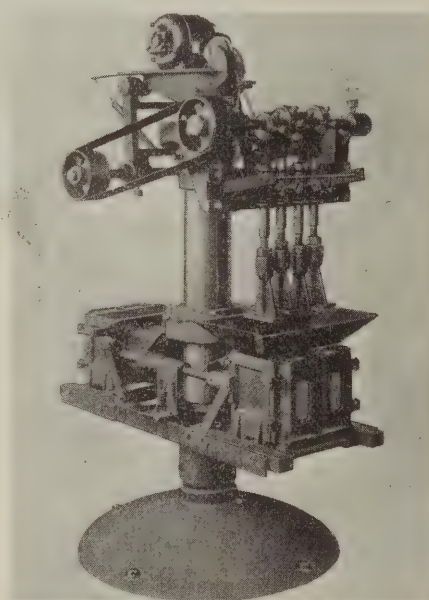
The unit made by this machine is 5x8x12 inches in size with face surface measuring 5x12 inches. The webs in this block are so spaced that they come directly over each other in the wall, thus affording maximum load bearing efficiency.

The block is made by the face-up method, permitting the use of any desired facing. The facing operation is accomplished quickly and economically before the block leaves the machine. In fact, the facing is so applied that it becomes integral with the block proper.

Although the Utility machine is designed to be used primarily for the making of block by the face-up method, provision has been made for placing face plates of rock or other design in the bottoms of the molds for the making of block by the face-down method.

Perhaps the most unique feature of this machine is the provision it makes for uninterrupted production with a two-man crew. This is accomplished by means of the revolving table which, as the picture shows, has a mold on each end. This table turns easily on ball bearings and locks in correct position.

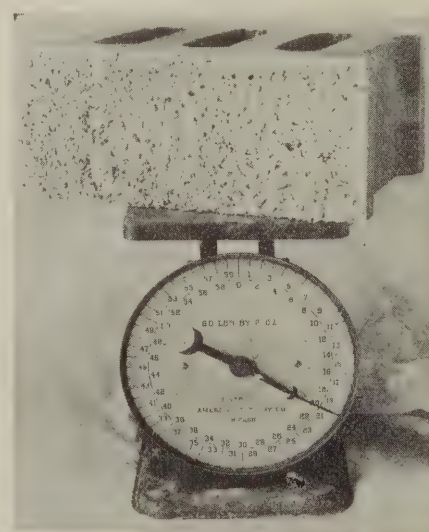
While one man is engaged in making a block, the other faces the block previously made and removes it from the machine. The



The "Utility" concrete block machine

labor is thus very evenly divided and neither man is kept waiting for the other.

The tampers operate at the rate of 600 blows per minute; that is, 2400 blows per minute are struck by the four tampers. This



The finished block

results in thorough nesting of the concrete, assuring a product of unusual density and strength.

A feature of this machine that is of very

considerable interest to the block manufacturer is that it uses wood pallets.

The machine is completely self contained, and derives its power from an electric motor mounted out of the way of dirt and surplus concrete. It is extremely simple in operation and speedy in production.

Under-Voltage Relays

TYPES PQ-25 and PQ-26 under-voltage relays, which provide adequate protection of apparatus from damage caused by sudden return of supply voltage after its failure or reduction are described in bulletin No. 47635 issued by the General Electric Company, Schenectady, New York.

These relays are used for tripping electrically operated circuit breakers when the voltage has decreased to a certain predetermined value; for automatically disconnecting motors on under voltage, thus preventing them from restarting unexpectedly on return of voltage with possible damage to driven machines, and in any case where it is desirable to operate an auxiliary circuit on the occurrence of a decrease in voltage.

The relays are of the self-resetting plunger type and may be supplied for operation on either direct or alternating-current control. Type PQ-25 is for single-circuit control while type PQ-26 is for two circuit control. The former is made in two forms, instantaneous pick-up and time delay drop-out, or instantaneous pick-up and drop-out. The latter is made in one form only, instantaneous pick-up and drop-out.

Catalog No. 90

CATALOG No. 90 has recently been issued by the Allith-Prouty Company, Danville, Illinois, and contains 144 pages illustrating and describing in detail a complete line of door hangers and tracks, fire door hardware, overhead carriers, garage door hardware, spring hinges, rolling ladders and hardware specialties of many kinds. Many of its illustrations and construction details, as for example, those showing various ways of hanging garage doors, are very suggestive and should give the contractor and builder many ideas for solutions of difficult problems. The book is substantially bound in stiff red cover stock with strong end sheets stripped with cloth to make it withstand hard usage. It is 7 $\frac{3}{4}$ x 10 $\frac{3}{4}$ in size.



Horse Head Zinc is not the only permanent, rust-proof metal for conductors, gutters, roofing, flashings and valleys, but all the others are expensive. Send for Bulletin B-3C.



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A Space Saving Removable Partition

THE two-inch solid plaster, metal lath partition, shown below, was designed by the Swetland Company of Cleveland in co-operation with The Cleveland Association of Building Owners and Managers and The Associated Metal Lath Manufacturers. This type of partition has been used successfully in several Cleveland office buildings. It not only saves space but it is economical to erect and it has several distinct advantages which commend it to careful attention.

The novelty of the partition lies in the strip of wood that is placed upon the finished floor. The removability of this partition, combined with its space-saving and sound-resisting qualities, make it valuable, particularly in office buildings.

The drawing shows the detail of construction. Attention, however, is directed to the fact that the wood grounds may be nailed together by long nails, bent over and clinched. (The drawing shows the grounds wired to each side of the stud.)

If picture molding or cornice is erected at the ceiling line instead of below the ceiling line, it may be advisable to have a 2x2-inch buck at the ceiling.

The channel studs may be attached to the floor buck by boring holes 3/4 inch in diameter in the buck and inserting the stud in these holes. (This method would save bending the stud.)

It is essential to have a steel channel stud on each side of the door buck.

This partition is copyrighted by The Cleveland Association of Building Owners and Managers, 612 The Arcade, Cleveland.

An Almost-Unbreakable Lamp

WHAT is claimed to be an "almost-unbreakable" incandescent lamp, is now being marketed by the Greater Service Electric Company, of 329 Broad Street, Newark, New Jersey.

The lamp is an improved Mill Type,



"Champion" Briter-Lite, almost unbreakable lamp, especially adapted for garages, mills, factories, theaters, kitchens, etc.

the stem supporting the coiled filament being much stronger than in other lamps. This bulb, known as the "Briterlite Unbreakable Lamp," will withstand excessive vibration and knocking around; to break the filament, one must break the glass.

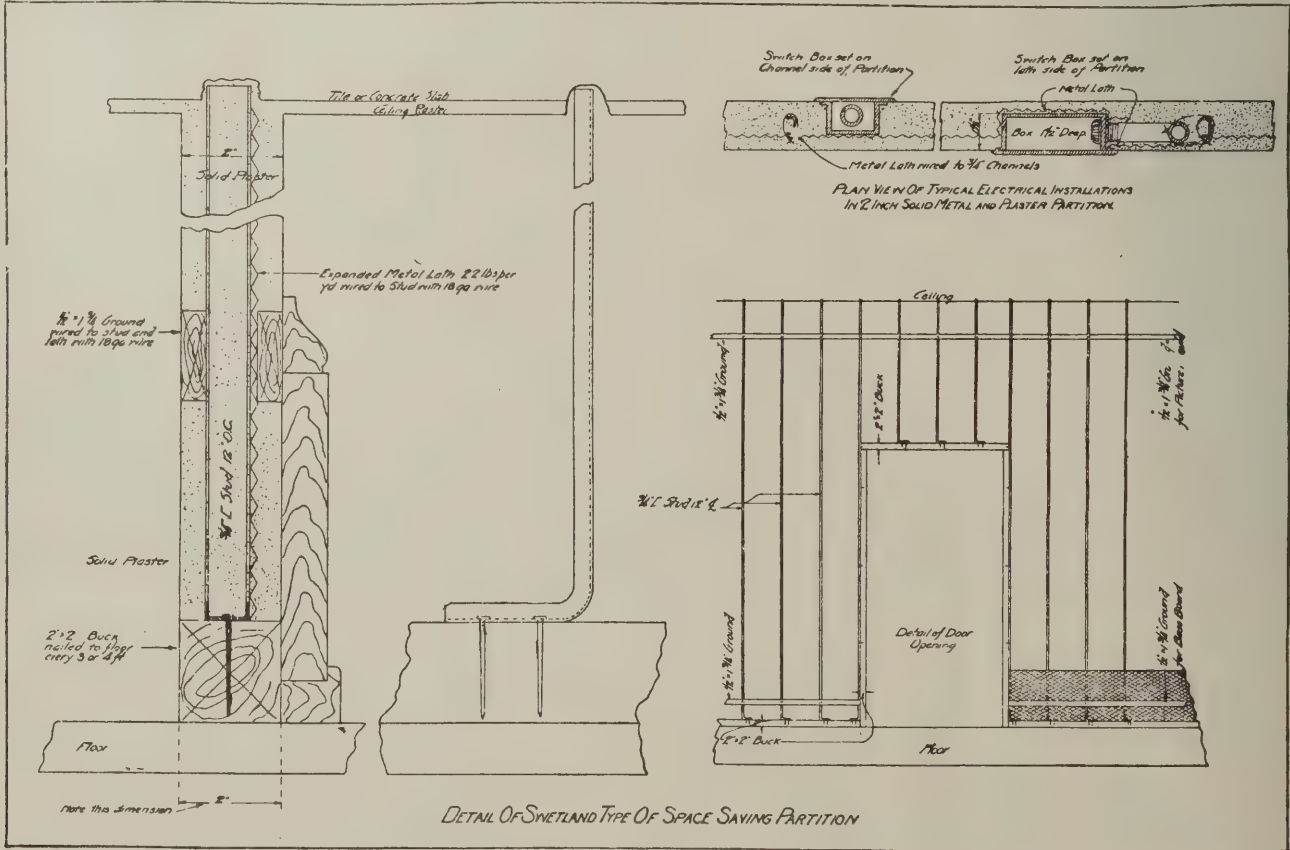
The lamp is especially adapted for use in machine-shops, factories, mills, garages, places near railroads, etc., and comes in 25 and 50-watt sizes.

Ransome Makes Large Addition to Plant

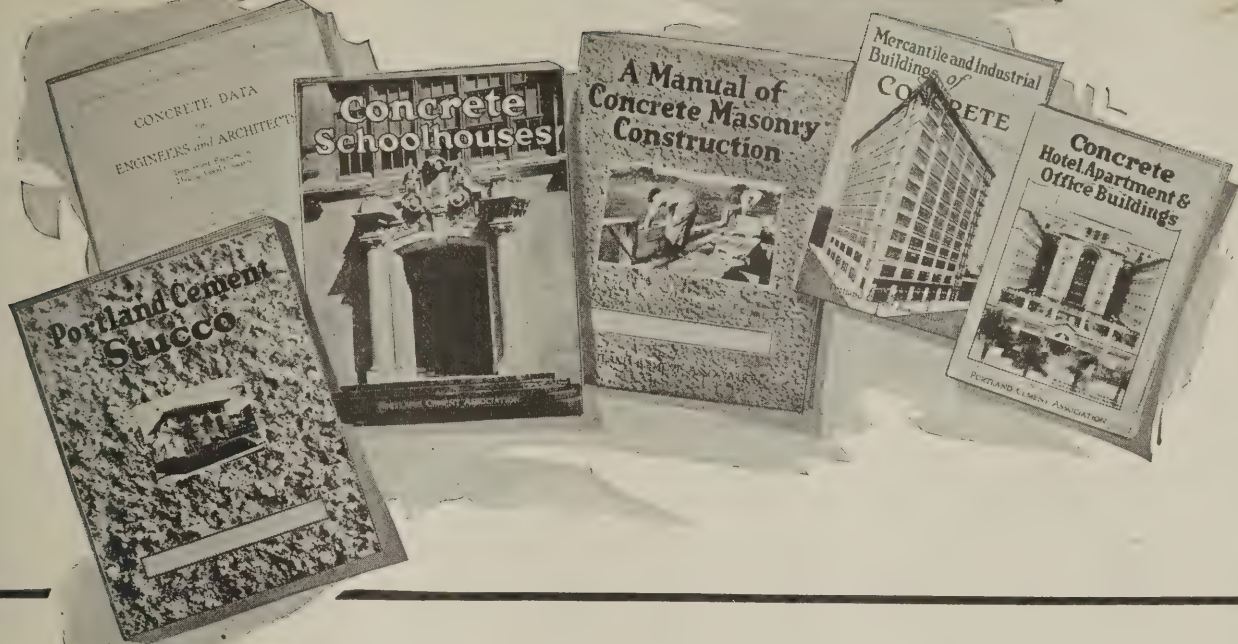
A NEW building having a ground area of 320x64 feet, and representing a 50 per cent increase in manufacturing floor space as compared with that of the original buildings, has just been added to the plant of The Ransome Concrete Machinery Company, at Dunellen, New Jersey.

The new structure is of concrete and structural steel, with full-length windows swung from a point five feet above the sills to the eaves, and can readily be increased to double its present lengths. It contains two five-ton cranes, travelling the full length and in addition is completely equipped with shears, punch-presses, riveting machines, etc., for use on the structural and plate material used in the manufacture of Ransome concrete machinery. The loading platform is so constructed that Ransome pavers may be run onto cars, broadside, under their own power.

A field of ample size has been secured for testing the traction equipment of Ransome pavers under their own power and a stand built for testing the drum mechanism, etc., of Ransome building mixers. Inter-department movement of materials and work is now accomplished by means of electric trucks and trailers instead of the tramway system formerly used. A restaurant for employes has been installed and plans for new office and administration buildings are being considered.



The Swetland type of space saving partition of two-inch solid plaster on metal lath



Concrete and Progress

Not only in the shifting skylines of New York and San Francisco, but throughout all this broad land of ours, we see in the making a new and greater American Architecture.

In the development and steady advancement of modern architecture, concrete is naturally playing a conspicuous part.

Concrete meets the economic and structural requirements of the twentieth century, and its wide range of adaptability in form and color gives the archi-

tect and the sculptor practically unlimited opportunity to express their ideals of beauty.

The booklets, shown above, contain a wealth of practical information on concrete. The list is as follows: "Concrete Data for Architects and Engineers," "Portland Cement Stucco," "A Manual of Concrete Masonry Construction," "Concrete School Houses," "Concrete Hotel, Apartment and Office Buildings," "Mercantile and Industrial Buildings of Concrete."

Let the nearest office listed below know which booklets you want. They will be sent without obligation

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to Improve and Extend the Uses of Concrete*

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Left: French doors hiding the "Fold-Away" dining room. Center: The doors opened. Right: The table and benches in place

"Built-in" Dining Room Furniture

WE have closet beds which make bedrooms out of living quarters, disappearing kitchens which convert ordinary rooms into kitchens, and concealed equipment of all kinds for multiplying the uses of small rooms. Now comes a disappearing dining room set—a "built-in" feature which is out of the way except when wanted, and then is very useful.

The "Fold-Away" dining room furniture is enclosed behind French doors, giving the appearance of an entrance to another room. Opening the doors reveals a folded table, 54 inches long by 28 inches wide, and two benches 46 inches long by 14½ inches wide, comfortably seating four people. The table and benches fold into a panel design that forms a striking appearance, adding beauty as well as a practical dining room.

The Fold-Away dining room sets flush to the wall, and may be installed in old or new buildings, according to the makers, as it requires only six inches of depth space. The table and benches swing down on hinges and automatically lock themselves rigid. When folded and the doors closed, the dining room is out of sight with no furniture to destroy the beauty of the living room.

The Fold-Away dining room was created and designed by Walter C. Fain, a general contractor, of Norfolk, Virginia, and is manufactured by the Fain Manufacturing Company, 313 National Bank of Commerce Building, Norfolk, Virginia.

Either stock design is furnished or they can be built from architects' sketches to harmonize with the general architecture and construction.

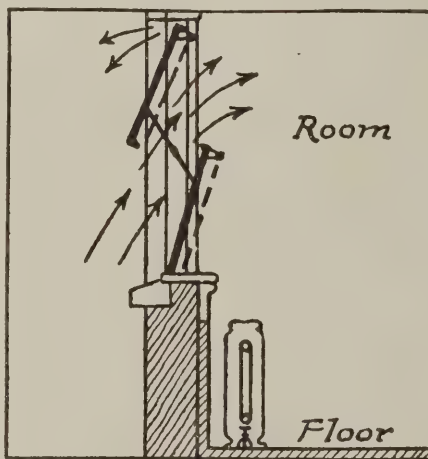
Gypsum Plaster

"HOW to Get Best Results from Gypsum Plaster," is a 32-page booklet, 3¼x6¾, with paper cover reinforced by cloth, recently issued by the United States Gypsum Company, 205 West Monroe St., Chicago, for two reasons: first, to impart information as to the laws which govern the action of all gypsum plasters in order that gypsum plaster troubles may be prevented; second, to provide a quick means of finding the cause of any plaster trouble and

the remedy therefor. Troubles due to weather conditions, irregularity of set, short working plaster, troubles due to sand, too thin coats, troubles due to plastering bases, finishes, and other causes of plaster cracks are the general subjects discussed.

Windows for School Ventilation

SINCE the publication of the report of the New York State Commission on Ventilation, reviewed in NATIONAL BUILDER, July, 1923, there has been renewed interest in this important subject. The Austral Window Company, 101 Park Avenue, New York City, issue a 12-page booklet entitled "Beginning a New Era in School Ventilation,"



The Austral window. The dotted lines indicate shades

which discusses the Commission's findings and the application of Austral windows to the principles laid down. It says:

"The Austral window is designed both for perfect lighting and ventilation, without danger or disturbance of the occupants of the room, and without the annoyance of flapping shades and clumsy awnings.

"As against the 50 per cent opening of the old double hung window, the Austral window allows an 80 per cent opening of the window space. This is due to the slant intake and outlet openings.

"When open for normal conditions, as shown in the sketch, the inward slanting

bottom sash deflects the air current upwards far more satisfactorily than the New York State Commission found it possible to do with the box deflector.

"Austral windows open and close with the greatest ease. With a center intake opening from 8 to 10 inches it is possible, without raising the lower sash, to have an outlet space of 1 to 2 inches at the top of the window. This means, that when sufficient fresh air has been forced into the room through the intake opening to build up a pressure in the room, the foul air at the ceiling is forced out through this outlet opening at the top of the sash.

"On Austral windows, there is a shade on each sash. The lower sash can be shaded without obstructing the upper sash, or vice versa. Awnings are unnecessary as the shades and sash take their place. Austral sash can be turned outside in, and all surfaces reached from the inside for cleaning. They can be had in wood, rolled steel, metal covered and hollow metal windows."

Swimming Pools

"THE Water Supply for Swimming Pools," with data on design, construction and operation, are the title and contents of Bulletin No. 500 just issued by the Graver Corp., East Chicago, Ind. Actual layouts for three installations are reproduced as suggestions for architects, engineers and others who are interested in the design and construction of swimming pools. This bulletin will be found a source of helpful information, because increased interest is being taken in swimming and bathing facilities by both public and private organizations everywhere and both indoor and outdoor pools are being built for amusement and recreational purposes.

Sargent Book of Designs

HARDWARE is a necessary part of the equipment of every building. The Sargent Book of Designs, illustrating various designs of Sargent artistic hardware and locks, is intended as a practical guide to the selection of suitable hardware trimmings. Copies can be had by writing Sargent & Company, New Haven, Connecticut.

24-inch WEATHERBEST Colonial White Stained Shingles for sidewalls and 16-inch WEATHERBEST Moss Green on the roof, carry out the Colonial effect in this handsome home designed and owned by Marvin Olcott, Big Flats, N.Y.



Weatherbest STAINED SHINGLES

"Edge-grain" means "durable stain"



In these flat or "slash-grain" stained shingles, the hard, flint-like surface of the flat grain cannot absorb and hold stain.



The edge grain of WEATHERBEST Stained Shingles allows stain to enter pores of wood and become securely fastened

THE prime essentials in stained shingle effects which give permanent satisfaction to the homeowner and reflect lasting credit on the designer are (1) even, durable color and (2) freedom from curling and warping. Only edge (vertical) grain shingles can be counted on for these essentials. WEATHERBEST Stained Shingles are 100 per cent edge-grain. The stain and creosote preservative penetrate evenly and deeply into the wood fibres. The result is lasting color and a smooth-lying, non-warping surface. For roofs or sidewalls, WEATHERBEST Stained Shingles are attractive, economical and durable.

*Write for WEATHERBEST color samples
and the new WEATHERBEST book on
Thatched Straw Effect Roof Construction.*

WEATHERBEST STAINED SHINGLE CO., Inc.

Formerly Transfer Stained Shingle Co., Inc.

145 Main Street, North Tonawanda, N. Y.
Western Plant, Minnesota Transfer, Minn.



"Asbestone Everlasting" magnesite stucco being applied to the ceiling of a dairy barn

"Asbestone Everlasting" Stucco

"ASBESTONE Everlasting" magnesite stucco for exterior and interior use is guaranteed by the manufacturers, Franklin R. Muller & Company, Waukegan, Illinois, and is said to be fireproof, weatherproof, enduring and artistic. It is a dependable exterior wall finish and is strongly recommended by the makers for interiors, uncased openings, arches and pilasters.

Asbestone is shipped in dry powder form in bags with the mixing compound in flake form in iron containers, and can be applied successfully in summer or winter.

In its natural finish it is a clear white, but it can be finished in a variety of colors by using colored stone dashes. It is applied in two coats—first and finishing coats—and where dash is desired, it is thrown on the finished plaster coat while it is in a plastic condition.

Charging Equipment for Motor Vehicles

LARGE and small owners of electrically driven passenger vehicles, trucks, and tractors will find of special interest bulletin No. 43976 issued by the General Electric Company, Schenectady, New York. This bulletin describes charging equipments for vehicle motive-power batteries which have proved very reliable and satisfactory in service. The manufacturers can furnish equipment for charging motive power batteries by either the modified constant potential method or the constant current method.

There are two classes of apparatus described in the bulletin:

1. Individual battery charging motor-generator sets with switchboards for Edison or lead batteries: for (a) non-automatic; or (b) automatic operation.

2. Motor-generator sets with switchboards for charging two or more Edison or lead batteries: for (a) non-automatic; or (b) automatic operation.

Due to the varied nature of the sizes of the batteries to be charged, of the requirements to be met with in different localities, of the methods of charging, etc., no attempt has been made in this bulletin to show any but a small proportion of the equipment that this company is prepared to furnish.

New Metal Lath Data Book

THE nineteenth edition, Truscon Metal Lath Data Book, has recently been issued by the Truscon Steel Company, Youngstown, Ohio. This booklet contains specifications, details, tables and practical information on Truscon Hy-Rib Metal Lath. Solid plaster partitions, walls, floors, roofs, attached and suspended ceilings, together with practical information for interior plastering and exterior stucco work,

are some of the subjects covered. There are tables of loads and properties of all types of Hy-Rib metal lath and it is intended to meet the requirements of plastering contractors as well as the architect or engineer seeking technical information. It is sent free to anyone in the trade. The book is 8½x11 inches in size and contains 48 pages.

A Note Book of Instructions

THE Warren-Knight Company, 136 North Twelfth Street, Philadelphia, has published a note book, containing instructions for modern practice in establishing lines and levels. This little book, in pocket size, contains a calendar and cross-section pages for notes on costs, estimates, measurements, etc., and will be sent free upon request.

Demountable Motor Truck Bodies

"FONTAINE" demountable bodies for motor trucks are manufactured by the American Truck & Body Company, Martinsville, Virginia, for handling brick.

The company states that in unloading with Fontaine bodies, the brick are deposited in a neat stack without handling by hand, the driver being the only man required to load or unload.

The brick are deposited in bulk without danger of chipping the corners. Two or more bodies can be used with each truck. These bodies may be set on or off the truck, using the power of the engine. Two bodies are always shipped with each equipment. This system allows one body to be loaded while the truck is making a delivery.

The company also manufactures power and hand dump bodies. Catalog and complete information will be furnished by the manufacturers upon request.



"Fontaine" demountable bodies for handling brick



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Above—The world's largest office building, thirty-seven stories high, is to be erected in New York City. At the right—Aside from the magnificent home she shares with Doug, Mary Pickford has her own little six-room bungalow convenient to the studio. It is a very striking little place containing a reception room, dining room, wardrobe and bath

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The photo at the right shows a new invention permitting workers to work with safety on the tallest skyscraper



© Gilliams Service



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Left—The trustees of the cathedral of St. John the Divine, New York City, have decided to resume construction. It is estimated that the nave, west facade, and western towers will cost more than \$7,000,000. Right—The late Sarah Winchester, of San Jose, California, labored for forty years on her monstrosity of a home under the impression that once she stopped adding to it she would die. The house contains 144 rooms and cost over \$5,000,000



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Illustrated and descriptive books and circulars giving complete information about all building materials, accessories and equipment advertised in NATIONAL BUILDER

Acoustics

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. Architectural Acoustics. Booklet, 6x9 in., 24 pp. Illustrated Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

Architectural Service

Architectural House Planning Service Co., 20 South 18th St., Philadelphia, Pa. Publishers of "Small Homes of Character" (\$1.00 postpaid), containing 50 examples of 4-, 5-, 6- and 7-room houses.

Grieme's Architectural Service Bureau, Dept. A, 110 Engineers Bldg., Cleveland, Ohio. Publishers of "Modern Single Homes" (30 designs) and "Two-Family Houses" (27 designs). These are portfolios, each 11x14 in size with plans drawn to 1/8-inch scale and two elevations shown for each house. Essential dimensions are indicated in every case. Each portfolio is \$2.50 postpaid.

Home Owners Service Institute, Inc., 35 W. 39th St., New York City. "The Book of a Thousand Homes," Vol. 1, complete details and description of 500 homes. Price \$3.00.

Associations

Portland Cement Association, 111 W. Washington St., Chicago. A large number of publications are issued on the different uses of portland cement, under the following heads: Canals, conduits, sewers and drainage; farm uses; concrete products; roads, streets and alleys; structural concrete; technical data, tanks, etc., and miscellaneous subjects. "A Manual of Concrete Masonry Construction" is particularly recommended for the contractor and builder. It is a 32-page booklet, size 8 1/2x11, and is sent free on request.

Band and Mitering Saws

The Tannevitz Works, 315 Front Ave., N. W., Grand Rapids, Mich. Special bulletins on variety saws, band saws, portable electric mitering machine and saw gauges will be furnished on request.

Block Machinery

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 35 sent on request.

Books on Building

Frank R. Walker Co., 536-C Lake Shore Drive, Chicago. Publishers of The Building Estimator's Reference Book, containing information regarding estimating the cost of every phase of building construction (price \$10); and of a new book entitled "Practical Accounting and Cost Keeping for Contractors," treating of contractors' book-keeping and accounting systems and how to keep time and labor costs on the job (price \$2.50 postpaid). Books sent on approval to contractors writing on their business letter-head.

National Homebuilders Society, Hofman Bldg., Detroit, Mich. "The Homebuilder," 192 p. book with plans and photographs of modern houses. Price \$3.00.

Boilers

U. S. Radiator Corp., Detroit, Mich. Complete data sent on request.

Borders for Floors

Wood-Mosaic Co., Inc., New Albany, Ind. Catalog showing parquetry and floors in natural colors sent free on request.

Brick

American Face Brick Association, 1763 Peoples Life Bldg., Chicago.

"The Story of Brick." Third edition. Booklet, 7x9 1/2 in. 55 pp. Illustrated. Presents the merits of face-brick from structural and artistic standpoints. Tables of comparative costs.

"The Home of Beauty." Fourth edition. Book, 8x10 in. 72 pp. Color plates. Presents 50 designs for small face-brick houses submitted in national competition by architects. Text by Aymar Embury II, architect. Price 50 cents.

"Bungalow and Small House Plans." Booklets, 8 1/2x11 in. 50 pp. Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3-, 4-, 5-, 6-, 7- and 8-room houses. Price 25 cents each, \$1 for the set.

"A Manual of Face-Brick Construction." Booklet, 8 1/2x11. Text-book on construction of the brick wall and various uses of face brick. Thirty-one colored plates of brick houses with plans. Price \$1.

"Architectural Details in Brickwork." Series 1, 2, 3. 8 1/2x11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others \$1.50.

"Orienting the House" is an illustrated booklet, with a sun dial chart and explanation for placing the house with reference to light and shade. Sent for 10 cents.

"Two Apartment and Double House Plans in Face Brick" contains 14 very attractive designs of duplex and double houses showing 28 plans of five to six rooms each. Sent for 25 cents.

"The Home Fires," a beautiful 48-page booklet giving full instructions as to the best method of building fireplaces; shows 20 original fireplace designs, also 25 half-tones of more elaborate designs by well-known architects, which will be helpful to the builder who wishes to plan his own fireplace. Sent for 25 cents.

Building, Steel Products for

Truscon Steel Co., Youngstown, Ohio. Truscon Data Book. Catalog, 3 1/2x6 in. 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

Concrete Engineering Co., Omaha, Neb., "Handbook of Fireproof Construction," "How to Use Ceco Lathing Materials" and "How to Save Concrete, Steel, Formwork and Labor by Using Meyer Steel Form Construction." These booklets, 8 1/2x11 inches, sent free on request.

International Steel & Iron Co., Evansville, Ind. Catalog on steel ceilings, catalog on store fronts and garages and circulars describing metal lath, coal chutes, fireplace dampers, etc., sent on request.

Calking Paste

Weatherproof Calking Co., 757 Washington Ave., N., Minneapolis, Minn. 24 pp. booklet describing their product sent on request.

Cellar Drainers

Penberthy Injector Co., 1260 Holden Ave., Detroit, Mich. 80 pp. catalog and 16 pp. miniature catalog on cellar drainers, automatic injectors, etc., etc. These catalogs are free and will be sent on request.

Cement, Portland

Atlas Portland Cement Co., 25 Broadway, New York City, N. Y. "Atlas White and What You Can Do With It," printed in English, Italian, Portuguese and Spanish; "Atlas Handbook on Concrete Construction," "Building a Bungalow," "Information for Home Builders," "Stucco Questions and Answers," "Atlas White Portland Cement for the Concrete Block and Brick Manufacturer" and other books sent free on request.

Louisville Cement Co., Inc., Speed Bldg., Louisville, Ky. "Brixment." Booklet, 7 1/2x5 in. 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

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Anchor Concrete Machinery Co., 534 Dublin Ave., Columbus, Ohio. They offer free to concrete products men their interesting "Hand Book on Concrete Products." Included in the book are articles by such leaders of the concrete products industry as Harvey Whipple, secretary of the American Concrete Institute and editor of Concrete; and Wallace R. Harris, president of the National Concrete Products Association and editor of Concrete Products.

Concrete Block Mach. Co., 56 Columbia St., Newark, N. J. Literature sent on request.

Concrete Equipment Co., 530 Ottawa Ave., Holland, Mich., manufacturers of the "Utility" line of concrete machinery and molds for the manufacture of all kinds of concrete products. A descriptive catalog, which not only describes the equipment but also specifies weights, costs and

selling prices of the products, is sent free upon request.

Concrete Tile Machinery Co., Box 106, Cicero, Ill. Full information and literature sent on request.

W. E. Dunn Mfg. Co., 700 W. 23rd St., Holland, Mich. Free booklet "Basic Facts" sent on request.

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Sasgen Derrick Co., 3101 W. Grand Ave., Chicago, Ill. Circular N2 with illustrations and descriptions sent on request.

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Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "How to Use the Murphy Bed" describes its construction, operation and sizes; "Behind the Door," showing installation in private homes and its application to this type of building; "Specifications and Details," giving complete information for the preparation of all types of Murphy beds sent free on request.

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Wheeler, Osgood Co., Tacoma, Wash. Monograph on Laminex construction sent free on request, also Catalog No. 31 and booklets on Laminex doors.

Doors, Metallic

Dahlstrom Metallic Door Co., 411 Buffalo St., Jamestown, N. Y. "Metal Door and Trim Catalog" (Third Edition), 8 1/2x11 in. Complete catalog of architectural shapes, styles and types of Dahlstrom standard construction doors.

Drawing Instruments

American Blue Print Paper Co., 445 Plymouth Court, Chicago, Ill. 32 pp. booklet Catalog "B" describing their Simplex line sent free on request.

Drawing Materials

A. S. Aloe Co., 615 Olive St., St. Louis, Mo. New 132 p. illustrated catalog of drawing materials, engineering supplies, tapes, etc.

Dumb Waiters

Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Dumbwaiters," 20 pp., 8 1/2x11 inches. Describes in detail 14 standard types of dumbwaiters. Mailed on request.

Sedgwick Machine Works, 150 W. 15th St., New York City. Catalog containing descriptions and construction details, 4 1/4x8 1/4 inches; 70 pp., illustrated; sent on request.

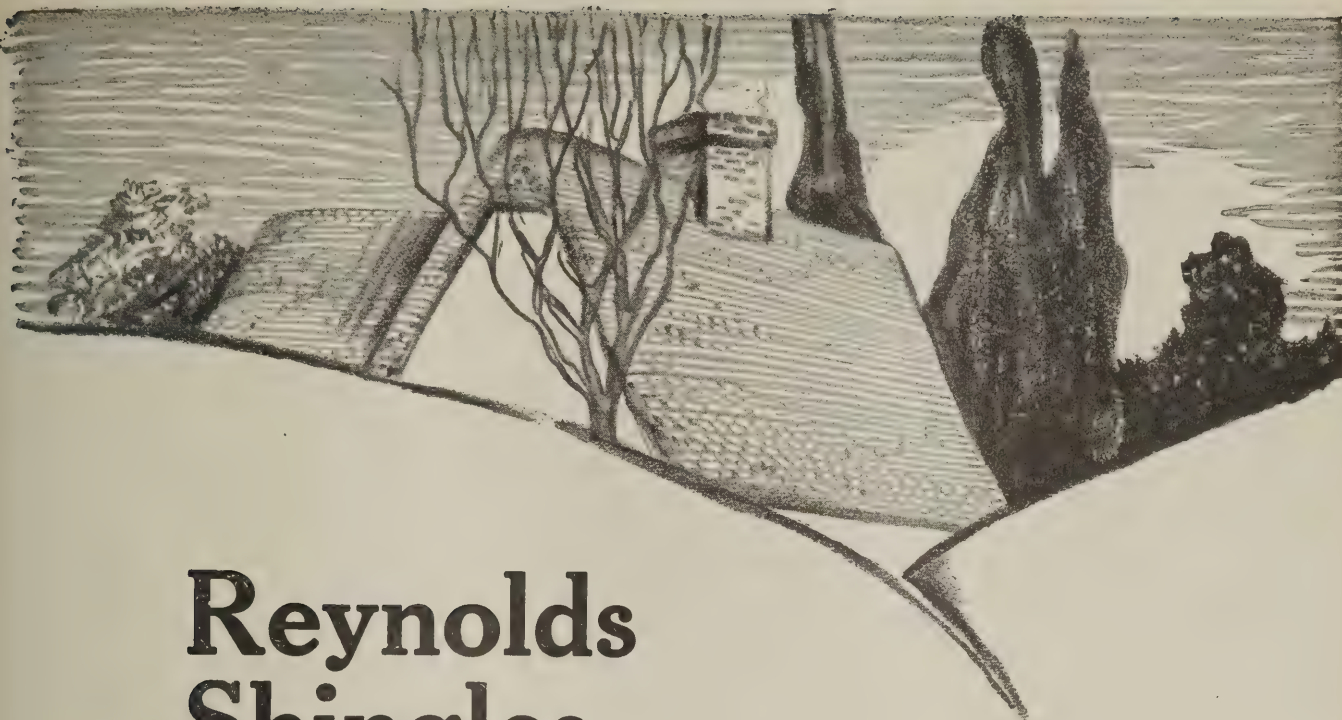
Electrical Equipment

Frank Adam Electric Co., St. Louis, Mo. "Wiring the Home for Comfort and Convenience" with information and diagrams will be sent free. Also Catalog No. 32, 7 1/4x10 1/2 inches on panelboards; Bulletin No. 29, type P safety type panelboards and cabinets, 12 pp., 7 1/4x10 1/2 inches; Bulletin No. 30, 4x9 inches, on fan hanger outlets and floor boxes, 16 pp.; Catalog No. 25 on knife switches and accessories, 32 pp., 7 1/4x10 1/2 inches, and Bulletin No. 27, new triumph residence safety type panelboards, 16 pp., 7 1/4x10 1/2 inches, containing complete wiring diagrams and specifications for average modern residences.

General Electric Co., Schenectady, N. Y. "Wires and Cables." Booklet, 8x10 1/2 in. 85 pp. Illustrated. Four bulletins in a binder, describing wires and cables in general, conductor insulated with vulcanized rubber compound, varnished cambré and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.

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Elevators

Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Elevators," 24 pp., 8½x11 inches. Contains helpful information for architects and contractors. Sent on request.

International Steel & Iron Co., Evansville, Ind. Elevator catalog sent on request.

Kimball Bros. Co., Council Bluffs, Iowa. "Kimball Elevator," an illustrated catalog of hand power, sidewalk and garage elevators and dumb-waiters and electric passenger, freight and push button elevators; 36 pp. 8½x11 inches; sent free.

Richards-Wilcox Mfg. Co., Aurora, Ill. "Elevators." Booklet. 8½x11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 157 W. 15th St., New York. Catalog and descriptive pamphlets. 4¼x8¾ in. 70 pp. Illustrated.

Engines

Witte Engine Works, Kansas City, Mo. Booklet "50 Good Points on Witte Engines" will be sent free on request.

Fire Doors and Fire Door Hardware

Richards-Wilcox Co., Aurora, Ill. 60 pp. booklet; 8½x11 in.; flat track and round track types for sliding and swinging doors. Sent on request.

Fireproofing

The General Fireproofing Co., Youngstown, Ohio. "Fireproofing Handbook," 64 pp. 8½x11 in. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-centering formless concrete construction.

Milwaukee Corrugating Co., Milwaukee, Wis. Brochure entitled "Metallic Construction for the Modern Home"; 16 pp. booklet with a non-technical story featuring fireproof construction for homes through the use of metal lath, etc.

Floor Surfacing Machinery

American Floor Surfacing Mach. Co., Toledo, Ohio. "American Universal Contractor Broadside," "American Rapid Grinder Broadside," "American Handy Grinder Circular" and "American Base and Wall Polisher Catalog" each describing the particular machine mentioned sent free on request.

Wayvill Chappell & Co., Waukegan, Ill. Illustrated folder 9x16 in. Electric Ballbearing Floor Surfacing (or Sanding) Machines. Made in four sizes. Ship on free trial. Describes in detail the construction, also lists all extras furnished with each machine. Also gives suggestions how to start in the floor surfacing business.

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Electric Rotary Mach. Co., 3825 W. Lake St., Chicago, Ill. Illustrated 28 pp. booklet describing the process of sanding new and refinishing old wood floors, surfacing and polishing marble, terrazzo, etc.

Fox Supply Co., Brooklyn, Wis. Circular on scraping floors and proper method of sharpening floor scraping blades sent free on request.

National Sanding Mach. Co., 20 E. Jackson Blvd., Chicago. "The Lightning Electric Floor Surfer"; 16 pp. catalog; sent on request.

M. L. Schluter, 224 W. Illinois St., Chicago, Ill. Free trial offer and information sent on request.

Triple A Mach. Co., 4601 E. Ravenswood Ave., Chicago, Ill. Full information upon request.

Flooring

Everlastbestos Flooring Co., Dept. N, 95 North St., Rochester, N. Y. Description of their product, opportunities in the business and method of estimating amount of materials and cost sent free.

Franklyn R. Muller, Inc., Waukegan, Ill. "Asbestone Flooring, the Floor You Like to Walk On"; 16 pp. booklet sent on request.

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Hess Warming and Ventilating Co., 1208-R S. Western Ave., Chicago, Ill. "Modern Furnace Heating," a book on heating problems, and details of the Hess free plan service are sent on request.

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Richards-Wilcox Mfg. Co., Aurora, Ill. 65 pp. catalog, 8½x11 in., completely describes all styles of garage door equipment. Sent free on request.

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American Stove Co., St. Louis, Mo. Quick Meal Stove Co. Division, St. Louis, Mo. George M. Clark & Co. Division, Chicago, Ill. Direct Action Stove Co. Division, Lorain, Ohio. New Process Stove Co. Division, Cleveland, Ohio. Reliable Stove Co. Division, Cleveland, Ohio. Dangler Stove Co. Division, Cleveland, Ohio. Handbook on gas ranges for architects and builders. 9x12 in. 32 pp. Illustrations and specifications of 95 different types of gas ranges equipped with the famous Lorain Oven Heat Regulator. Also, the American Gas Association's instructions and specifications for the installation of gas in the modern building. Contains considerable information of value to architects and builders regarding equipment of the modern kitchen. Also, detailed drawings and description of the Lorain Oven Heat Regulator, a thermostatic device that registers and automatically controls the heat of the oven, thereby precluding any chance of baking failure.

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Richards-Wilcox Mfg. Co., Aurora, Ill. "Modern Hardware for Your Home," 34 pp. catalog, 8½x11 in., sent free to interested parties.

Sargent & Co., 52 Water St., New Haven, Conn.

"Details to Which Standard Hardware Can be Applied." Booklet. 6 pp. 9x12 in. Illustrated. Treats with diagrams, portions of doors and windows to which hardware can be applied.

Plane and Square Booklets.

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Minneapolis Heat Regulator Co., 405 E. 28th St., Minneapolis, Minn. Booklets "Convenience of Comfort," "Dual Control," "Steam Control" and "Gas Fired Heating Plants" sent free on request.

Rock Island Register Co., Rock Island, Ill. "Registering Satisfaction," 16 pp. booklet, sent on request.

Hoists

C. H. & E. Mfg. Co., Milwaukee, Wis. Complete catalog showing saw rigs, hoists, pumps, elevators and mortar mixers sent on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. Catalog illustrating and describing different types of hoists together with complete specifications.

House Moving Equipment

La Plant-Choate Mfg. Co., 3114 First Ave., Cedar Rapids, Iowa. Special house moving magazine, "Successful House Moving Contractor," sent free on request.

Hydrated Lime

Wm. L. Urschel Lime & Stone Co., Toledo, Ohio. Literature regarding their products will be sent free on request.

Insulation

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, Ohio. "Specifications and Working Details." Booklet. 7¾x10½ in. Illustrated. Contains plainly written instructions for the use of stucco, stucco base, plaster base and insulation base.

The Celotex Co., 645 N. Michigan Ave., Chicago, Ill. Literature and information sent on request.

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. "Johns-Manville Service to Power Users." Catalog. 8½x11 in. 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data. "Making Comfort an Economy," describing Johns-Manville Houseline.

E. J. Wirfs, 106 S. 17th St., St. Louis, Mo.

Booklet, "Strip of One Hundred Uses," sent free on request.

Ironing Boards

Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "Murphy Ironing Board," describing the built-in cabinet ironing board and dimensions of space required.

Iron, Wire and Bronze Work

The Fred J. Meyers Mfg. Co., Hamilton, Ohio. Catalog No. 67 describing their products will be sent free on request.

Lath, Metal and Reinforcing

The General Fireproofing Co., Youngstown, Ohio. "Herringbone Metal Lath Handbook," 8½x11 in. 32 pp. Illustrated. Standard specifications for cement stucco on Herringbone rigid metal lath and interior plastering.

Levels

A. S. Aloe Co., 615 Olive St., St. Louis, Mo. "Be a Bigger Builder" free on request.

The L. Beckmann Co., 100 Adams St., Toledo, Ohio. Complete catalog of engineering instruments sent on request.

Geer & Blum, Inc., 672 River St., Troy, N. Y. Circular "R" sent on request.

Warren-Knight Co., 136 N. 12th St., Philadelphia, Pa. Illustrated catalogs and pamphlets, descriptions and specifications about "Sterling" transits and levels sent on request; also pocket note book containing full instructions and illustrations for modern practice in leveling sent free on request.

David White Co., Inc., 902 Chestnut St., Milwaukee, Wis. Catalog and descriptive folders sent free on request.

Wissler Instrument Co., 601 N. Broadway, St. Louis, Mo. 32 pp. booklet describing their convertible level sent on request.

Lime Products

The Woodville Lime Products Co., 622 Madison Ave., Toledo, Ohio. Eight page booklet, "The Superior Putty Coat Finish," contains information for the contractor on hydrated lime for white or finish coat plaster and directions for use. Also literature on lime for all building uses.

Lumber

Long-Bell Lumber Co., Kansas City, Mo. "Experiences in Home Building," "Saving Home Construction Costs," "The Perfect Floor," "The Post Everlasting" and "Poles That Resist Decay" sent free on request.

Medicine Cabinets

Bennett Mfg. Co., Alden, N. Y. Free folder sent on request.

Hess Warming & Ventilating Co., 1207 S. Western Ave., Chicago, Ill. 20 p. booklet describing their line of Snow-White Steel Cabinets and Mirrors will be sent on request.

Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "Murphy Steel Medicine Cabinet" describing its construction and detail of space required.

White Steel Sanitary Furniture Co., Dept. 23, Grand Rapids, Mich. Full particulars sent on request.

Metal Ceilings

Edwards Mfg. Co., 430 Eggleston Ave., Cincinnati, Ohio. Large catalog showing complete line of ceilings and side walls sent on request.

W. C. Hopson Co., Grand Rapids, Mich. 64 pp. illustrated catalog, No. 22. "Interior Decoration" sent on request.

Metal Lath

Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book.

Millwork

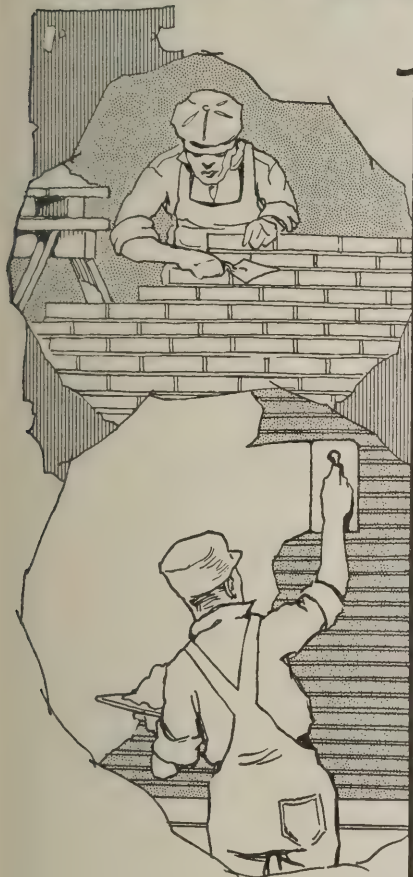
Curtis Companies Service Bureau, Clinton, Iowa. "Architectural Interior and Exterior Woodwork, Standardized." Book. 9x11½ in. 240 pp. Illustrated. This is an architects' edition of the complete catalog of "Curtis Woodwork" as designed by Trowbridge & Ackerman. Contains many color plates.

"Better Built Homes," Vols. XV-XVIII incl. Booklet. 9x12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects for the Curtis Companies.

"Curtis Details." 20 sheets, 17½x22 in., illustrated. Complete details of all items of Curtis woodwork for the use of architects. All literature distributed on recommendation of Curtis dealers.

Markwell Mfg. Co., 178 Franklin St., New York City, N. Y. Catalog sent on request.

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A. S. Aloe Co., 615 Olive St., St. Louis, Mo. "The Concrete Road to Success," sent free.

American Cement Machine Co., Keokuk, Iowa. Description and literature sent free on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. 48-page catalog describing features and also showing illustrations and specifications of various size mixers; also illustrations of mixers in operation.

Helm Brick Co., Cadillac, Mich. Helm Concrete Mixer catalog sent free on request.

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, Ohio. Catalog No. 37 sent on request.

The Jaeger Mach. Co., 250 Dublin Ave., Columbus, Ohio. Complete catalog free on request.

Koehring Co., Milwaukee, Wis. "Concrete, Its Manufacture and Use," 207 pp. book, 4 3/8 x 7 1/4 in. This is a complete treatise on the use of concrete, including over 30 pages of valuable tables relating to quantities of material required for various construction work. Also 24 pp. "Dandie Light Mixer Catalog," and 4 pp., 6 1/2 x 3 1/2 in. folder on their various equipment.

Remmel Mfg. Co., Kewaskum, Wis. 4 pp. circular describing their products sent on request.

Republic Iron Works, Box 32, Tecumseh, Mich. Complete information and data on request.

Mortisers

Colgan Machinery & Supply Co., 102 Hayden Bldg., Columbus, Ohio. Folder describing their products sent on request.

Nails

The F. A. Neider Co., Inc., Augusta, Ky. Samples and literature sent on request.

Ornamental Metal Work

Fred J. Meyers Mfg. Co., Hamilton, Ohio. Their catalog No. 67 describes their products in detail.

Ornamental Molds

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, Ohio. Catalog No. 30 sent on request.

Oil Burners

American Oil Burner Co., 20 E. Jackson Blvd., Chicago, Ill. Booklet entitled "Heat," a reference compilation on heating and fuels for architects and builders sent free on request.

Paints

The New Jersey Zinc Co., 160 Front St., New York City, N. Y. "Painting Specifications" covering old and new work; exterior and interior work; plaster and cement surfaces; cement and concrete floors. "Mapaz Handbook" booklet containing various paint mixing formulas, also full information on Mapaz, sent on request.

Partitions

Richards-Wilcox Mfg. Co., Aurora, Ill. "Partitions." Booklet. 7x10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

Plumbing

Hardin-Lavin Co., 4531-41 Cottage Grove Ave., Chicago. The "Handy Man Book," contains time and money-saving ideas, plans, practical hints, etc., and is sent for 25 cents.

B. Karol & Sons Co., 808 S. Kedzie Ave., Chicago, Ill. Catalog free on request.

Porch Bases

S. Cheney & Son, Manlius, N. Y. Illustrated catalog showing utility, sizes and prices sent on request.

Pumps

C. H. & E. Mfg. Co., Milwaukee, Wis. Complete catalog showing pumps, saw rigs, hoists, elevators and mortar mixers sent on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. Catalog describing 3 and 4-in. trench pumps also contains detailed views of construction.

F. E. Myers & Bro. Co., Ashland, Ohio. Catalog on request.

Refrigerators

Herrick Refrigerator Co., 102 River St., Waterloo, Iowa. Catalog sent on request.

Reinforced Concrete

The General Fireproofing Co., Youngstown, Ohio. "Self-Sentering Handbook," 8 1/2 x 11 in. 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforced material.

Truscon Steel Co., Youngstown, Ohio. "Shearing Stresses in Reinforced Concrete Beams." Booklet. 8 1/2 x 11 in. 12 pp.

Roofing

Asbestos Shingle Slate & Sheathing Co., Dept. B, Ambler, Pa. Service sheets 15x20 in. showing application of Ambler asbestos corrugated roofing and sheathing to wooden-frame and steel-frame buildings. Back of this sheet gives specifications and valuable tables. Sent free.

Beckman-Dawson Roofing Co., 830 F. C. Austin Bldg., Chicago, Ill. Literature and samples sent on request.

Certain-teed Products Co., 1 Pershing Sq., New York City. Literature and information sent on request.

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. "Johns-Manville Building Materials." Book. 8 1/2 x 11 in. 100 pp. Illustrated. A comprehensive catalog of various types of roofing for all forms of construction. Details of wall, floor and ceiling insulation; asbestos wood for fire-proof construction; waterproofing, etc.

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The Steel Scaffolding Co., Evansville, Ind. Catalog and descriptive bulletins illustrating uses of scaffold brackets, adjustable trestles, roof brackets, mason and stuccoer's scaffolds, ladder jacks, etc.

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Chicago Technical College, 237 Chicago Tech. Bldg., Chicago. Two books. "How to Read Blue Prints," containing a trial lesson in plan reading for builders, are sent free on request.

International Corr. Schools, Box 9183, Scranton, Pa. Full information on any subject desired sent free on request.

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Gilbert & Bennett Mfg. Co., Dept. B, 1st Natl. Bank Bldg., Chicago, Ill. Booklet with samples and blue print of porch plan sent free on request.

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Markwell Mfg. Co., 178 Franklin St., New York City, N. Y. Complete catalog illustrating modern equipment mailed on request.

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Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, Ohio. "For All Time and Clime." Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

The Celotex Co., 645 N. Michigan Ave., Chicago, Ill. Literature and information sent on request.

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Brown Co., Portland, Maine. Booklets covering their various papers sent on request.

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Milwaukee Corrugating Co., Milwaukee, Wis. General Catalog No. 15, 272 pp. book, of interest to building supply dealers, hardware dealers, sheet metal workers, contractors, architects and engineers.

Shingles

Beaver Products Co., Buffalo, N. Y. Two books, "Style in Roofs" and "How to Re-roof," sent free on request.

H. M. Reynolds Shingle Co., Grand Rapids, Mich. Literature on their shingles sent free on request.

Shingles, Galvanized

Cortright Metal Roofing Co., Philadelphia, Pa. Booklet "Concerning That Roof" sent free on request.

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New Jersey Zinc Co., 160 Front St., New York City, N. Y. "Once in a Lifetime," booklet describing the lasting qualities of conductors and gutters made from Horse Head zinc.

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International Steel and Iron Co., Dept. 21, Evansville, Ind. "Garage Illustrations" showing 50 modern buildings sent on request.

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American Stove Co., 228 Chouteau Ave., St. Louis, Mo. Catalogs and data on special Lorain equipment for schools sent on request.

Stucco

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, Ohio. A booklet, "For All Time and Clime," contains working details and specifications and is sent free.

Franklyn R. Muller, Inc., Waukegan, Ill. Illustrated booklets describing their magnesite stucco sent free on request.

Stucco Bases

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, Ohio. "Specifications and Working Details." Booklet. 7 3/4 x 10 1/2 in. Illustrated. Contains plainly written instructions for the use of stucco, stucco base, plaster base and insulation base.

Stucco, Exterior

Rochond Co., Harrisburg, Pa., "Homey Homes" sent on request.

Stucco, Magnesite

Muller & Co., Franklyn R., 250 Madison St., Waukegan, Ill. "Everlastic Magnesite Stucco." Booklet 8 1/2 x 11 in.

Surveying Instruments

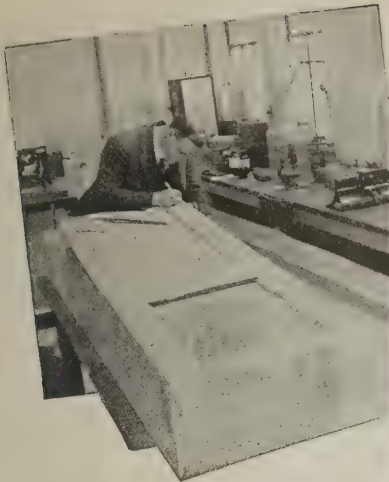
American Blue Print Paper Co., 445 Plymouth Court, Chicago, Ill., 32 pg. booklet Catalog "B" describing their Simplex line sent free on request.

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Charles F. Lorenzen & Co., 521-523 W. Monroe St., Chicago, Ill. Their catalog No. 200 shows many designs and contains complete descriptions. It is sent free on request. A folder on andirons, grates and fireplace furnishings is also available.

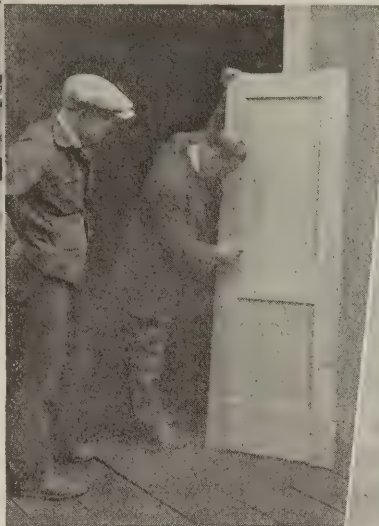
Tool Branding Equipment

Everhot Mfg. Co., 621 S. 10th Ave., Maywood, Ill. Descriptive circular sent on request.



Professor Grondal examining a Laminex door after it has been submerged in water for 24 hours.

Laminex doors taken from dry kiln after 24 hours at 185° Fahr., with relative humidity of 30 per cent.



Laminex doors being tested for strength of panels in 200,000 pound Olsen testing machine.



Proof that LAMINEX DOORS

- 1—Unaffected by water
- 2—Free from shrinkage
- 3—Tough and durable

Nine Laminex stock doors were picked at random, as they came from our factory. They were taken to the Forest Products Laboratory, University of Washington, School of Forestry, and there submitted to the most daring tests ever applied to regular-run mill-work.

Read this report of the test, made by B. L. Grondal, M. S. F.

Report on tests of doors submitted by the Wheeler, Osgood Company

MATERIAL TESTED:

Nine Laminex stock doors, with built-up rails and stiles and an upper and lower panel of three-ply laminated wood, all of Douglas fir, were furnished by The Wheeler, Osgood Company of Tacoma, Washington, under the following designations:

Nine doors 2' x 6'—1½". No. 82-V.

METHOD OF TESTING:

Three doors, selected at random, were tested by subjecting the lower panel to a static load applied by means of a 200,000-pound Olsen testing machine until complete failure ensued. The load was applied to the center of the panel by means of a wooden block having a crowned surface two inches by four inches in area in tests upon two doors, while in the test of the third door the load was applied by means of a steel block over an area of one square inch. The moisture content of the blocks at the time of testing averaged 5.2%. Results of the tests follow:

Door Number	Load required to break panel	Cause of break
1	722 pounds	Splitting of solid wood in center stile.
2	1097 pounds	Breaking of veneer on opposite face.
3	922 pounds	Shearing of veneer by sharp edges of steel block.

In no case did the glueing of the panel or the molding strips holding the panel show signs of failure, and the tests indicate that a door of this type may be expected to withstand very severe usage.

Three doors were subjected to a "soaking" or immersion test in water, to determine the effect of absorption of moisture upon the strength of

the glue or in producing warping and swelling in the door. This test was conducted by weighing each door, measuring the width of each door before and after soaking, re-weighing each door and noting the amount of absorption and finally by drying the doors and noting the effect of such immersion in water upon the structural qualities of the door. In each case the doors were completely immersed in water at a temperature of 65° Fahr., for a period of twenty-four hours, with the following results:

Door Number	Effect upon veneers and glued joints	Shrinkage cracks after drying	Absorption
1	None	None	3 lbs. 2 oz.
2	None	None	2 lbs. 9 oz.
3	None	None	2 lbs. 6 oz.

None of the doors was made unfit for use by this treatment, the only effect of the water being a normal "raising" of the grain. The maximum expansion in width was 0.03 inches and the minimum expansion 0.02 inches. The complete absence of warping of the panels and the door as a whole, and the very slight expansion due to absorption of moisture was especially noticeable.

Three doors were finally subjected to very severe drying conditions in a commercial dry kiln, the doors being placed in the kiln and removed by the writer. In this kiln the doors were subjected to a temperature of 185° Fahr., and a relative humidity of 30 per cent, for a period of twenty-four hours, with the following results:

Door Number	Effect upon veneers and glued joints	Shrinkage cracks	Loss in moisture
1	None	None	1 lb. 0 oz.
2	None	None	0 lb. 13 oz.
3	None	None	1 lb. 2 oz.

The above tests indicate very clearly that inside doors of the character submitted for the above tests may be expected to withstand severe usage and that they should give unusually satisfactory service under extreme climatic conditions.

Very truly yours, Bror L. Grondal.

LAMINEX DOORS ARE TRADE-MARKED AND GUARANTEED

All Laminex doors are trade-marked on the top or bottom rail and bear our gold label replacement guarantee. Built in old growth Douglas fir, with vertical grain stiles and rails as well as all-flat grain.

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The James Swan Co., Seymour, Conn. Literature sent on request.

Transits

Kolesch & Co., 138 Fulton St., New York City, N. Y. Literature and full particulars regarding their product sent on request.

Warren-Knight Co., 136 N. 12th St., Philadelphia, Pa. Catalogs and pamphlets about "Sterling" transits and levels sent on request.

Varnishes

S. C. Johnson & Son, Racine, Wis. "The Proper Treatment for Floors, Woodwork and Furniture," price 25 cents; also book on wood finishing sent free.

Wallboard

Asbestos Shingle Slate & Sheathing Co., Dept. B, Ambler, Pa. Complete data on Linabestos wallboard sent on request.

Cornell Wood Products Co., 190 N. State St., Chicago, Ill. "Cornell Interiors," 24 pp., illustrated booklet; also small pamphlet, "165 Uses for Cornell Wood Board," sent on request.

The Upson Co., Lockport, N. Y. "Interiors Beautiful" and "The Snow White Lining." These booklets sent free on request.

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Duro Pump & Mfg. Co., 103 Monument Ave., Dayton, Ohio. Booklets "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener" sent free on request.

Waterproofing

The General Fireproofing Co., Youngstown, Ohio. "Waterproofing Series A-507-9." Booklet. 8½x11 in. 42 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete.

Window Hardware, Casement

Casement Hardware Co., Chicago, Ill. Casement Hardware. Catalog, 8½x11 in., 12 pp., illustrations, specifications, detail drawings and table of sizes, etc., for all types of Win-Dor casement operators.

Booklet, 5¼x8½ in., 24 pp., illustrated. The story of casement windows and Win-Dor control written particularly for the owner. Free to readers of National Builder.

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Diamond Metal Weatherstrip Co., 620 Kerr St., Columbus, Ohio. Full information and literature on request.

Hoffman Mfg. Co., Andrew, 906 Steger Bldg., Chicago, Ill. "Hoffman Casement Fixtures." Architect's Portfolio. 8½ x 11 in. 30 pp. Looseleaf. Scale details for mill-work, installation, etc., in new and old work.

E. J. Wirfs, 106 S. 17th St., St. Louis, Mo. Booklet "The Home Comfort Weatherstrip" sent free on request.

Windows, Casement

Hoffman Mfg. Co., Andrew, 906 Steger Bldg., Chicago, Ill. "Hoffman Casements." Architect's Portfolio. 8½x11 in. 30 pp. Looseleaf. Scale details for mill-work, installation, etc., in new and old work.

Hope & Sons, Henry, 103 Park Ave., New York. "Catalog." 12¼x18½ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.

David Lupton's Sons Co., Allegheny Ave. and Janney St., Philadelphia, Pa. "Casements and Double Hung Windows." Catalog. 8½ x 11 in. 44 pp. Illustrated. Shows new Lupton Casements and Double Hung Windows, with profuse illustrations and full details.

Windows, Steel and Bronze

David Lupton's Sons Co., Allegheny Ave. and Janney St., Philadelphia, Pa.

"Lupton Service—Products No. 11." Book. 8½ x 11 in. 192 p. Illustrated. The full line of Lupton products described and illustrated. Separate chapter on "Designing Service." Many new types of steel sash for apartments, hotels, etc., shown.

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trated. A condensed version of the No. 11 or general catalog. The new Lupton Projected Sash completely described.

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Truscon Steel Co., Youngstown, Ohio. "Truscon Steel Windows." Catalog. 8½ x 11 in. 80 pp. Illustrated. Contains complete data on all types of Truscon Steel Windows.

Woodwork

Curtis Companies' Service Bureau, Clinton, Ia. A series of five booklets, describing the principal items of the Curtis line are sent free to those interested. These booklets are "Permanent Furniture," "Interior Doors and Trim," "Entrances and Exterior Doors," "Stair and Stair Parts," and "Windows," and the general catalog "Architectural Interior and Exterior Woodwork Standardized."

Woodworking Machinery

American Saw Mill Machinery Co., 61 Main St., Hackettstown, N. J. Bulletin No. 79 gives details about their line.

W. F. & John Barnes Co., Rockford, Ill., Catalog and Bulletin 30-W sent free on request.

Crescent Machine Co., Leontia, Ohio. Catalog and various circulars illustrating and describing their different machines sent on request.

Gallmeyer & Livingston Co., Grand Rapids, Mich. Literature regarding their various machines sent free on request.

Master Woodworker Mfg. Co., 612 Brush St., Detroit, Mich. Catalog on request.

Parks Ball Bearing Mach. Co., Knowlton and Langland Sts., Cincinnati, Ohio. Complete catalog of woodworking machines sent on request.

Richards & Co., Inc., Battery Wharf, Boston, Mass. "Cut Out a Nine-Room House in Nine Hours"; "Don't Let the Dollars Slip Through Your Fingers"; tells how every straight cut in the carpenter's trade can be made by one portable machine and the work of five carpenters done by one man and a helper.

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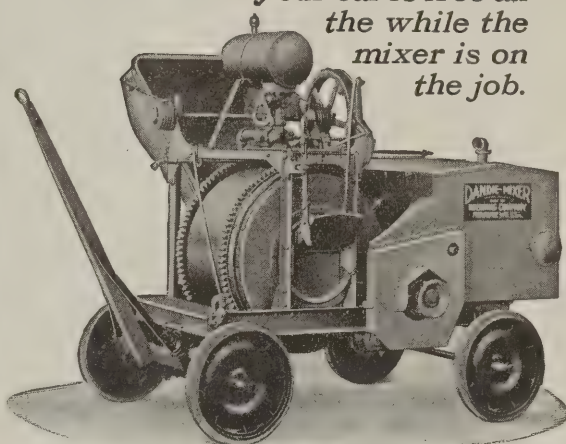
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Manufacturers of products used in the building industry are justified in asking how the Builder and Contractor can be sold on their products. Many who realize his importance in building are often puzzled over how they can get their story to him.

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2. You can write him letters or send him circulars. That method is also effective but also expensive, though a little faster than personal calls.

3. Or you can tell the Builder and Contractor about your products through the medium of his trade journals. *That method is effective, less expensive and it works fast.*

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20.5%	do between 50,000 and	100,000
17.5%	do between 100,000 and	250,000
5.3%	do between 250,000 and	500,000
3.3%	do between 500,000 and	1,000,000
0.6%	do over \$1,000,000	

law as applied to building; since he deals in big figures, he must know something about finance; and inasmuch as he is a business man, he must know business—buying and selling, markets.

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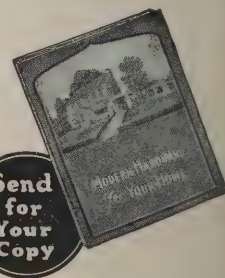
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Today's high building costs make it imperative that no waste space be permitted. R-W Vanishing Doors save space by permitting furniture to be placed on either side of the doorway, and also prevent adjoining doors from swinging and banging against each other.

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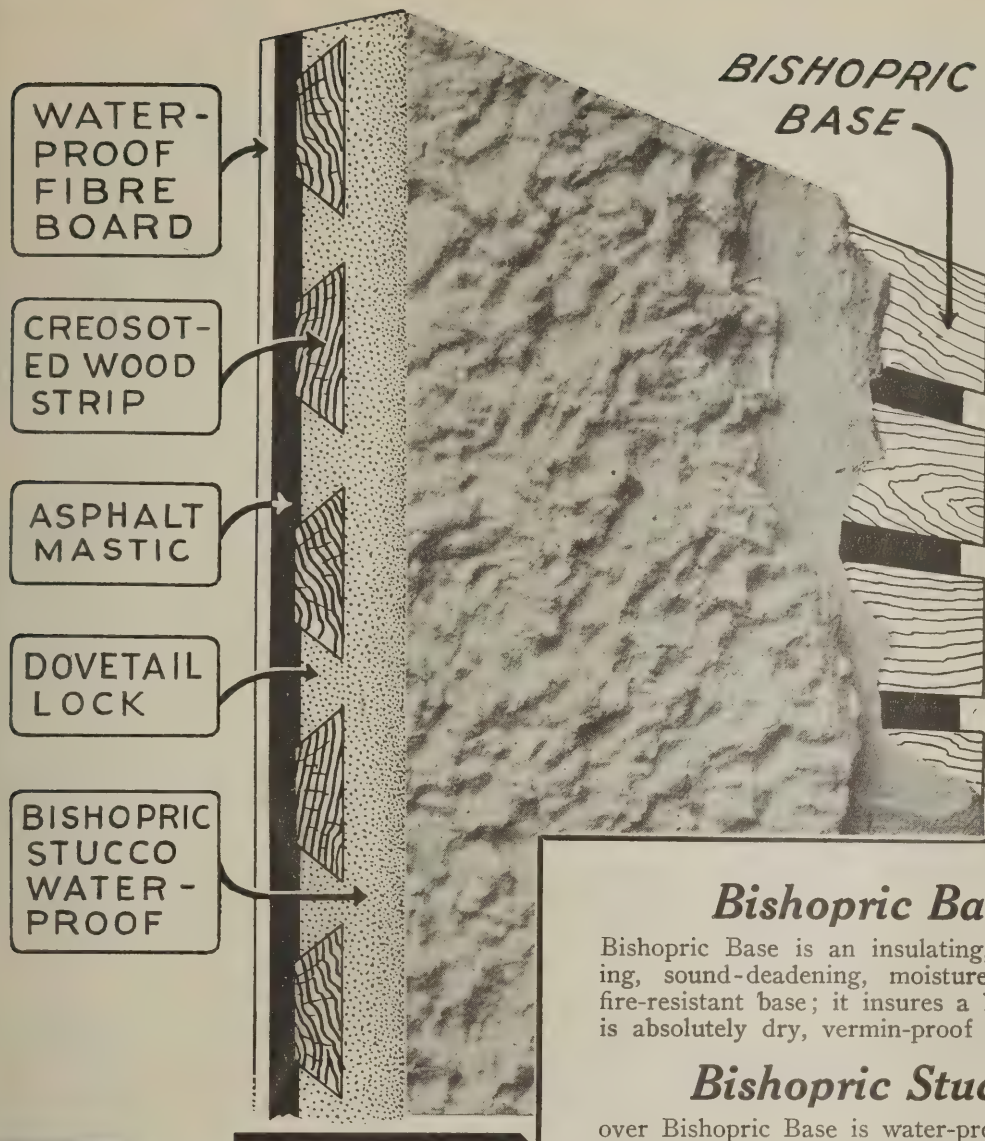
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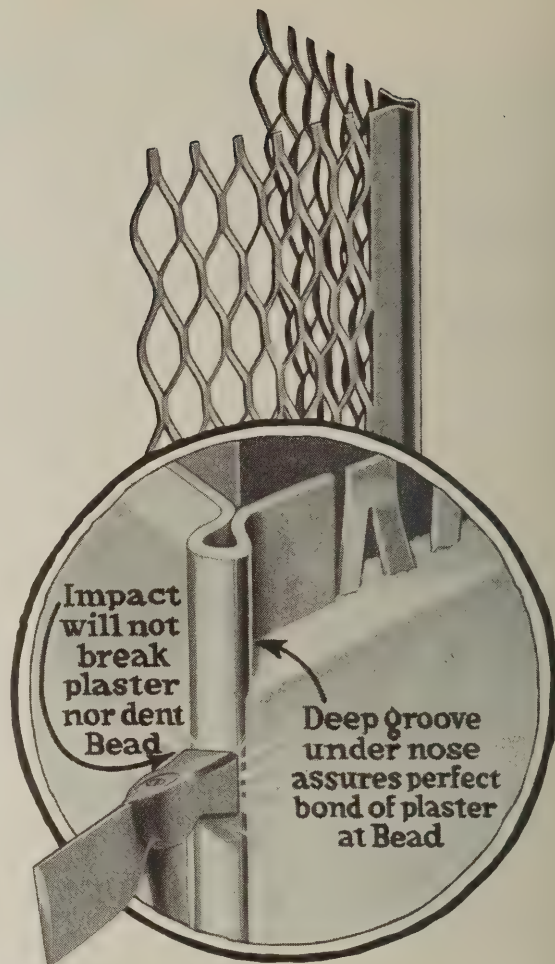
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National Builder

Let's Celebrate with the Homes and Apartments Number!

THE July NATIONAL BUILDER is going to celebrate the Fourth by making a lot of noise in the building world. To assure you that this will be a loud report and not a mere fizzle, we are giving a brief specification of this noise maker.

As the July NATIONAL BUILDER is the annual "Homes and Apartments Number" we are loading up to the muzzle with snappy houses of these types. A judicious proportion of other buildings as well as the regular features such as "Kinks" and "On the Job" will, of course, be included as part of the load to assure the proper snap to the report.

Stone garden furniture and sunken gardens cost money, but they pay big dividends as do other unusual features of a unique apartment house in New York. Another "different" apartment house, this time from the West Coast instead of the East one, has the garden court at the front surrounded by low gabled buildings of the attached or unit type. Other apartments will round out the whole.

In addition to the houses shown in the regular feature, NATIONAL home BUILDER, there will be a stone house in French farmhouse style from St. Louis and a double-bungalow with a high-pitched roof from California.

A building association in Terre Haute seems to have struck something that works in the way of co-operative operation—even the sub-contractors and mechanics are in on this plan. We will tell you all about it in July.

Delaware contributes a wide spreading school building, one story in height, of frame construction and designed in



Stone seats, a fountain and a sunken garden replace the backyard in this New York apartment. Plans and other views of this building will appear in the July National Builder

the Colonial style. This building should prove interesting and useful for reference use.

Although a safe and sane Fourth is the rule, along about the first of July we are going to slip our readers a bunch of ammunition that is warranted to be equal to T. N. T. in waking up the dead ones in the building field. Don't be a wall flower, chip in with your subscription and join the parade of "live ones" who make money every month by celebrating with NATIONAL BUILDER!

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Advertising: Space in the advertising pages is sold according to published rates, furnished on application. Copy must be in on the 15th of the month preceding date of issue if proofs are to be submitted for approval before publication. Last forms close on the 23rd of the month preceding date of issue. The publishers reserve the right to reject or revise any advertisement containing statements of doubtful authenticity or derogatory to any building material, accessory or equipment.

Mechanical Requirements: Type size of page, 7x10 in.; half-page, 3½x10 in. or 7x4½ in.; quarter-page, 3½x4½ in. or 7x2½ in.; eighth-page, 3½x2½ in. Screen required, 120 line; reversed plates must be stippled or Ben Day.

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The entrance loggia flanked by the tall arched doorway to the garage is an interesting feature. Note the use of roofing tiles to form the railing of the balcony above the garage. The iron standards of the balcony support a gayly colored awning in warm weather



The home of W. Ridgely Young, of the firm of Maritz and Young, architects, St. Louis, Missouri

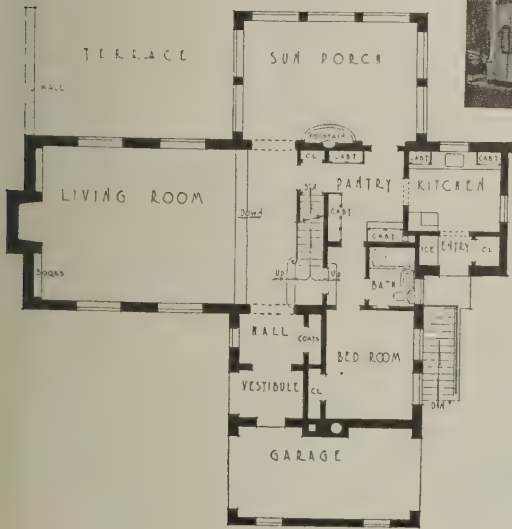
The HOUSE of the MONTH

ST. LOUIS, Missouri, is building many beautiful new homes these days. The better residential sections are an interesting study in domestic architecture, for houses in many styles are to be observed. But one house that is conspicuous, not by its size, but rather for its quiet dignity and simplicity, and this in spite of the fact that it is "brand new" and its lines not yet softened and colored by shrubbery and

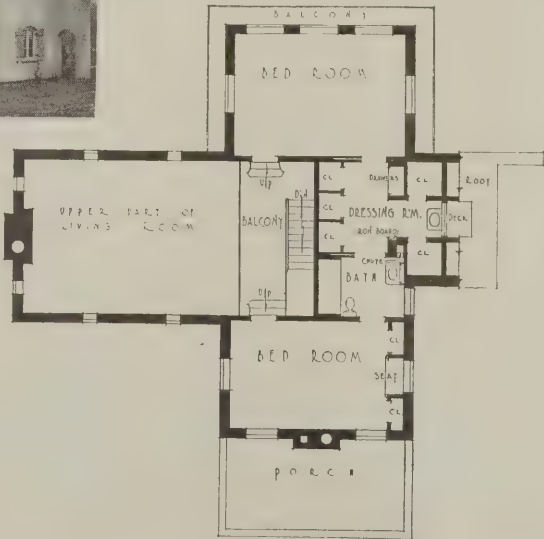
planting, is the home of Mr. W. Ridgeley Young. Mr. Young, a member of one of the leading architectural firms of St. Louis, Maritz & Young, Chemical Building, St. Louis, Missouri, is, of course, the architect of the house. He spent considerable time in Italy studying the small house architecture of that country, and consequently his own home reflects his intimate knowledge of the design of the Italian villa.



Above is a rear view of the house showing the kitchen wing and the cement platform for washing the car outdoors



First floor plan



Second floor plan

The design is an example of quiet dignity accompanied by picturesqueness and informality, resulting in a composition that offers something more than a merely "pretty" house. The walls are of rough textured stucco and the roof tiles are laid with random exposures to repeat this "hand made" quality. The wrought iron balcony around three sides of one of the bedrooms is decorated in an unusual manner with hanging flower pots.

The entrance is through an open vestibule or loggia which leads into a small hall containing a coat closet. The main stair rises from one end of the living room, but a degree of separation is indicated by means of two wide steps extending across the room and forming a sort of platform from which the stair rises. The living room ceiling extends full height to the roof, with plaster showing between the heavy rafters and the purlins.

The sun porch also serves as a dining room, a very sensible and logical provision that is rapidly gaining favor. A large pantry separates the kitchen from the remainder of the house. The location of the maid's bedroom in the first story is good. Note the convenience of the maid's bathroom, which may also be used as a downstairs toilet.

Each of the second story bedrooms has windows on three sides. The dressing room and bath on this floor are conveniently located and well arranged. The roof of the garage forms an upstairs porch that may be protected by an awning when desired.



A corner of the living room showing one of the bookcases which flank the mantel. The polychrome terra cotta panel adds color to the chimney breast. The bull's-eye windows in the clear story wall are of leaded glass



The main stairway has dramatic quality due to the open balcony and the heavy draperies at the sides



The fountain in the sun room is the keynote in the decorative scheme of this room. It has been treated to give an antique effect



Main Street, Elcho, Wisconsin. Wolf, Sexton, Harper and Trueax, Inc., Architects, Chicago. Van Duser Brothers, Builders, Elcho

Old England Visits Main Street

ORDINARILY it is a far cry from an English village market-place of say the sixteenth or seventeenth century to a modern American "Main Street" of the present day. However, a bit of Old England—hedges, clock tower, old inn and all—has recently been introduced into America.

It all came about in this way. Charles W. Fish, a Wisconsin lumberman, owned a block of business buildings in Elcho, Wisconsin, where one of his saw mills is located. One night a fire started in the drug store and by daylight Mr. Fish possessed a nice clean block, except for the matter of a few carloads of ashes and other debris. Inasmuch as there wasn't enough salvage standing to complicate matters, Mr. Fish recognized an excellent opportunity to do something different in the way of a small town business block. That he succeeded in doing so is evidenced by the illustrations which accompany this article.

The contrast between this block and the average business block that disfigures our streets is too evident to deserve comment. Of course, it is not so good as it might have been if more expense had been justified, but taking everything into consideration, it is a distinct step in advance of that which ordinarily makes up our "Main Street" architecture. The irregular gables and interesting skyline, the recesses and setbacks, the combinations of materials and methods, and the trees and hedges all

combine to produce a picturesque composition. An important element in gaining this effect is the absence of protruding signs—even the theater has a frame for displaying posters at the base of the tower.

The construction is principally of the post and girder type, with wooden trusses used for wide spans where interior posts were not desired. Where posts occur in outside walls the spaces between the posts were filled with studding—curtain wall fashion—and the whole sheathed over. The novel exteriors were produced by mopping buff-colored, slate surfaced, roll roofing onto the sheathing and covering

the joints with boards, thus forming panels similar to those that are characteristic of half-timbered construction. The roofs are of variegated asphalt shingles laid in simple patterns. The flat roofs are covered with roll roofing.

The architects were Wolf, Sexton, Harper and Trueax, Inc., 7 West Madison Street, Chicago. The builders were Van Duser Brothers of Elcho.

Owing to lack of space, the community house, an important member of the group, is not shown in this issue. It will, however, appear in a future number of NATIONAL BUILDER.

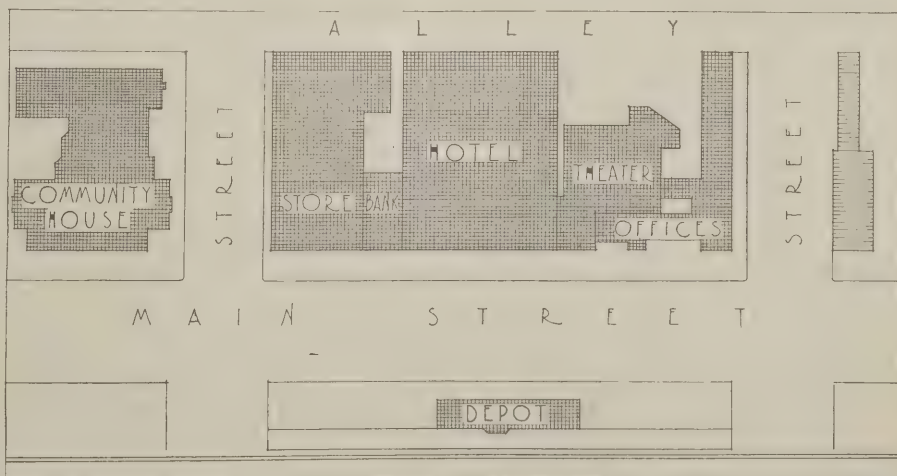


Diagram of the plot layout



The general store is located on a corner



The bank is appropriately faced with stone

THE STORE

The first building of the group is the general store, which is located on the corner and is provided with two entrances at the front and one on the side. The exterior treatment of this building is exceptionally good, the quatre-foil cut-outs and the panel strips are well spaced and attractively designed. The projecting hoods or canopies above the entrance are practical and slightly features.

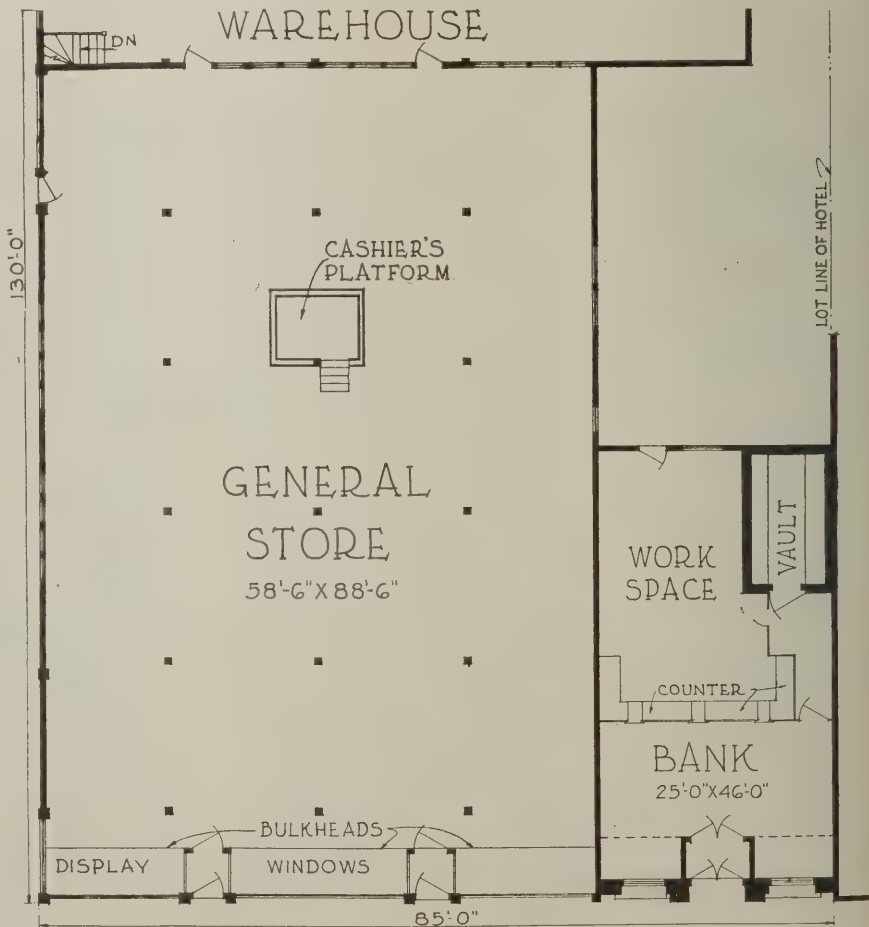
The plan approaches the shape of a square which is considered ideal for the purposes of a general store where the display and handling of varied lines such as clothing, dry goods, groceries and meats must be provided for. A raised cage for the cashier is located near the center of the store. A glazed partition separates the store from a warehouse at the rear. The warehouse is 40 by 77 feet in size and has wide outside doors for the convenient handling of bulky goods.

THE BANK

The exterior of the bank is built of rubble stone, thus introducing a note of variety into the composition, which might otherwise tend to become somewhat monotonous if the same materials were used throughout the entire block. A gabled entrance, timber lintels and the same type of roof keeps this building in harmony with the others. The original design included a flag staff rising from the peak of the gable.

The interior of the banking room is finished with marble, and the fixtures are of mahogany. A burglar-proof safe has been

installed, and a large fireproof vault is vault is used for the storage of records located in one corner at the rear. The and is also fitted with safety deposit boxes.



Floor plan of the store and the bank



The theater has an open loggia across the front



The office building is at the end of the group

THE THEATER

The tower rising from one corner distinguishes the theater from the remainder of the group. The lower portion of the

tower contains a ticket booth opening into the recessed loggia which forms the entrance. From the loggia one passes into the lobby and then into the auditorium.

At one side of the lobby is the stair to the projection room and a small toilet is provided in one corner.

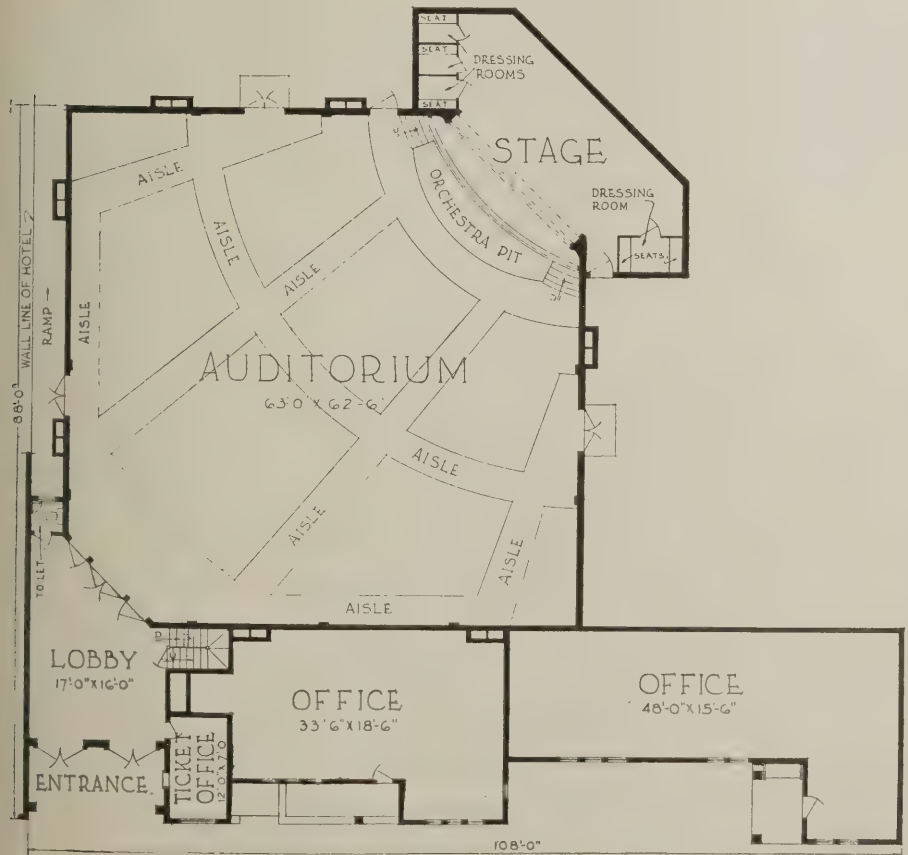
The auditorium accommodates about 500 people and is generously provided with exits, one in each wall. There are two sets of ducts in each wall, supplying ample ventilation. The stage is located across one corner of the auditorium, opposite the position occupied by the main entrance doors. The floor of the auditorium is sloped to insure an unobstructed view from each seat, and an orchestra pit has been provided. Dressing rooms were installed in connection with the stage so that regular performances as well as "movies" may be accommodated.

THE OFFICE

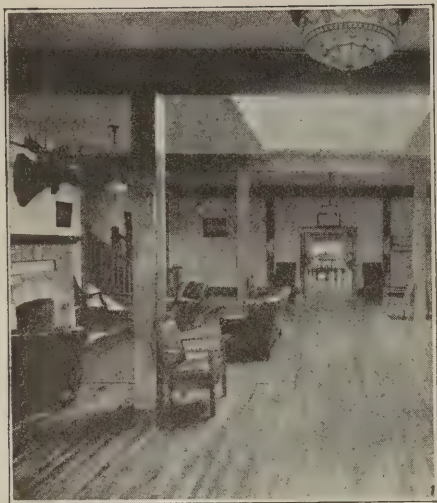
A long, low, picturesque building beginning at the tower and completing one side of the group contains the office portion of the block. This building may be considered in two parts, in which that portion adjoining the tower forms a dentist's office and the remainder is used by the local offices of the lumber company. Only the latter portion is shown in the view on this page.

The entrance to the inner group is interesting in that a walk leads down beside the tower to a paved platform or terrace with a rail or wall along the street side. The terrace leads to the entrance and ends against a wall formed by projecting a portion of the office.

The entrance to the lumber company's office is marked by a gabled projection that is simple and well placed.



Floor plan of theater and office building



The hotel lobby



View of hotel from the station

THE HOTEL

The "Olde Muskie Inn" stands near the middle of the block and in point of size is the most important building in the group. It is two stories in height with twin gables at each side of a wide veranda which, with a somewhat smaller porch above, stretches along the street front with an inviting air of simple hospitality.

Overlooking the veranda is the lobby with a fireplace on one hand and the clerk's space on the other. Beyond the fireplace is the ladies' parlor with a toilet room in connection. A four-room suite

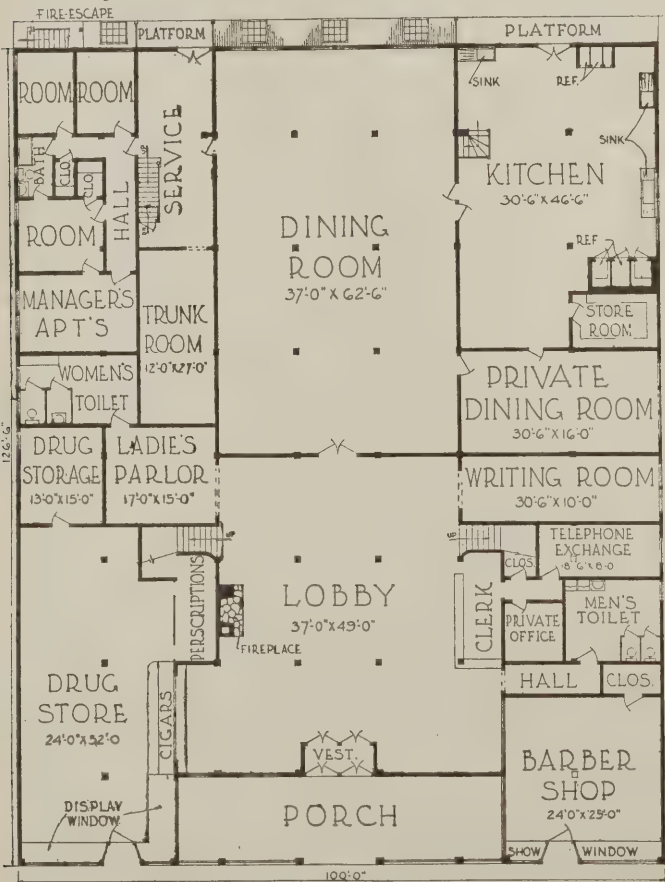
for the manager, a trunk storage room and a service hall with outside entrance are also located in this portion of the building. Behind the clerks space is a small private office and the telephone exchange. A writing room and a passage to the men's toilet also open from this side of the lobby. Two flights of stairs lead from the lobby to the second story.

French doors open from the lobby into the main dining room, in connection with which a smaller private dining room has been provided. The kitchen is completely

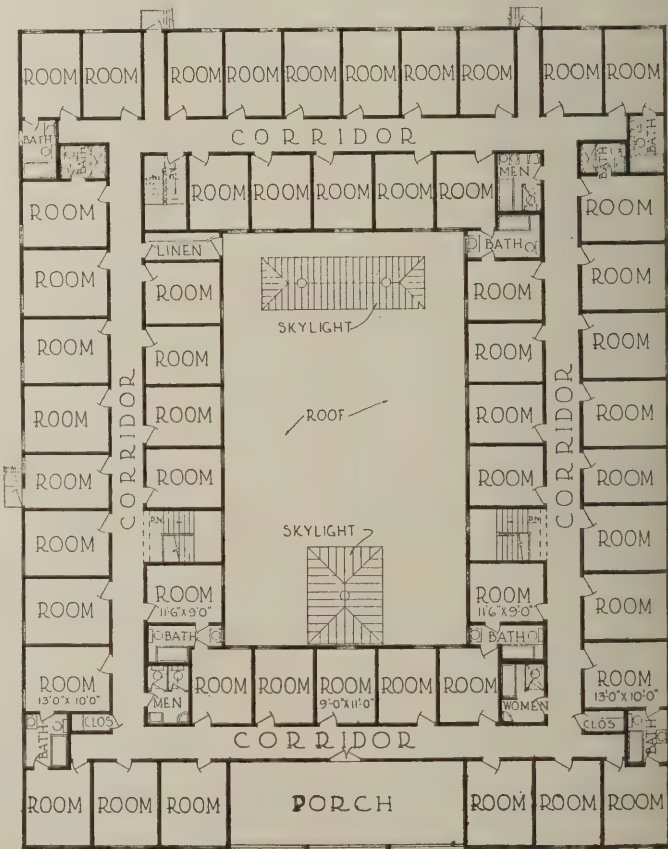
equipped with steam tables, refrigerators and other modern cooking aids.

The second story contains 52 bedrooms, about a third of which are provided with connecting baths. There are four general bathrooms. The second story is built around a generous sized court which furnishes light and ventilation for the inner bedrooms. Skylights in the court provide additional light for the dining room and the lobby.

At one side of the veranda on the first floor is a drug store and at the other side is a barber shop.



First floor plan



Second floor plan



Mountain House of Miss Anne Evans, near Denver. Designed by the owner. John Spence, Builder

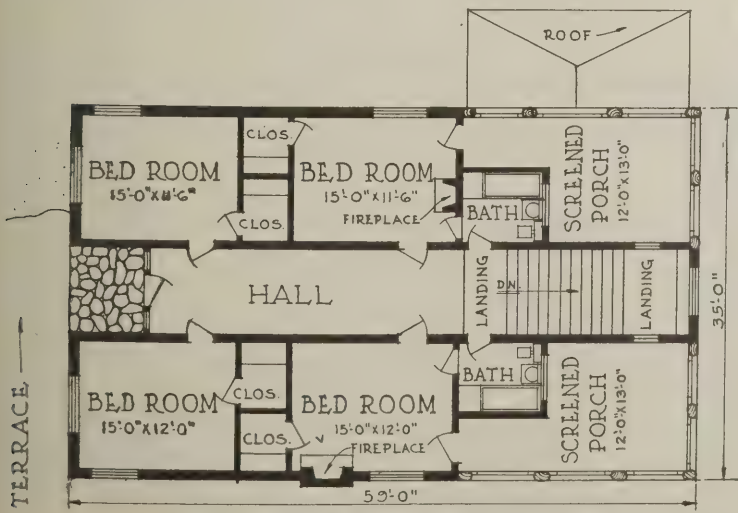
A Log House in the Rockies

By Theo. M. Fisher

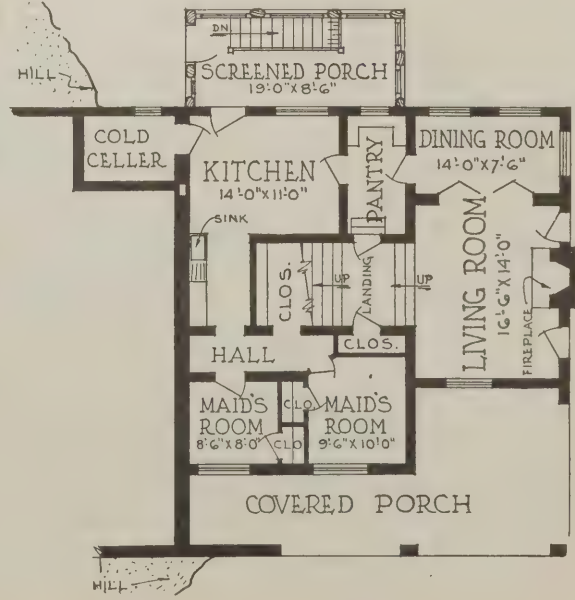
THE summer home of Miss Anne Evans of Denver is one of several distinctive residences on the large stock ranch owned by the Evans family and situated in the mountains about forty miles west of that city. Miss Evans' own house is noteworthy in point of design, unusual handling of native materials and the skill and craftsmanship of John Spence, a local builder, who,

with a crew of neighbor workmen, fitted it together. The whole place breathes substantiality, frankness and wholesome charm. The site is on a steep hillside some twenty or thirty feet above the valley and affords in the sweep of wooded hills and the nearby snowy peaks of the Colorado Rockies, an outlook without superior in a country of magnificent vistas.

Small stone found on the site were used for foundation and retaining walls and for the fireplaces and chimneys, as well as the terrace that has been built up on the declivity of the hill on the west front. Native yellow pine logs, peeled and treated, were employed for side walls, being set on sills made of squared logs 16x18 inches. These uprights are fitted together in tongue and



Upper floor plan above. Lower floor plan at the right.



groove style. The house has no interior finish in the ordinary sense, the walls being simply the inner face of the logs. Gable ends and roof are of stained shingles.

As the plan indicates, the main entrance is on the upper level, the covered entrance porch under the main roof being paved with field stone. The hall is eight feet wide and opens into the four master's bedrooms. Two of the bedrooms open onto large screened-in sleeping porches and have fireplaces and adjoining baths. These bathrooms are also accessible from the landing one step down from the head of the stairway leading to the lower floor. This stairway, like all the inner or partition walls, is of solid hewn logs. These are about 12-inch face and 7-inch rise. The stairway terminates in the living room on the lower level. This apartment and the dining room are in effect one room, the only partition being massive squared posts on either side of the wide opening between. When desired, however, folding or screen doors attached to these posts can be swung into place to completely separate the two rooms. Similar doors are used on occasion to close the stairway opening. The windows throughout the house are casements of small-paned, diamond shaped, leaded glass set in pairs.

The commodious service quarters include ample pantry space, a cold storage cellar excavated in the hill adjoining the kitchen, and a screened porch off the latter from which stairs lead to a laundry on a lower level. The pantry off the kitchen under the main stairs is, in effect, also a passage to the two maids' rooms. From a structural standpoint it should be noted that the living room and dining room part of the house are a one-story mass attached to the main section as a "lean-to." Architectural unity is secured by the roof lines and wide projection of the overhang. This overhang is wide enough to afford ample weather protection from the front doors of the living room around to the covered porch on the north side.

For such a house we note the peculiar appropriateness of the skins of bear, deer



Built of local materials, in the rough, the house "belongs" to its site

and other animals, and rare old Navajo blankets for floor coverings, wall decoration and for couch and bed drapes. As a matter of fact the entire house is a study in consistency. In its adaptation to site; its construction; and in its furnishing, there is a feeling that this house was built to be enjoyed rather than to serve as a pretext for the real thing, simulating an appreciation of nature without understanding.

In its setting and plan arrangement the house seems almost as much a part of its surroundings as are the tall pines that grow close beside it. The fact that stone for the foundations and for the chimneys came from the site and the logs for the walls were cut nearby, of course goes far toward giving the house its feeling of naturalness, but when we consider the fact that in its extreme overall dimensions the house is seventy-five feet long and contains nine rooms, two sleeping porches and two baths, it is easy to realize that restraint on the part of the designer kept things in hand. The temptation to overdo a thing of this kind is usually too great, it is too easy to excite

the admiration of some of our friends by doing something extra devilish in the way of so-called rustic effects. It should be understood, however, that the remainder of our friends—the discerning ones—say nothing, out of respect for our feelings!

The interior construction is strongly reminiscent of ancient methods. Huge posts and girders support the widely spaced floor beams, across which are laid the wide flooring boards, the joints of which are covered with battens, making an interesting ceiling treatment. The leaded casements, with lozenge shaped panes, are in good character with this type of house as are the open bookshelves and the hewn log stairway.

From a structural standpoint the building is satisfying even though it does not conform to the native type of old-fashioned log cabin construction in which the logs were laid horizontally, one on top of another, rather than standing side by side, in a vertical position, as was done here. Novelties such as this frequently result in disaster, but in this particular case no real harm resulted



The entrance, at the upper level, is deeply recessed



The side porch and the sleeping porch overlook the wide valley



The main stair, leading from the living room to the corridor above, is built up of solid logs, roughly hewn to form steps. Note the full-framed construction of the ceilings with heavy timberwork left exposed



The dining room becomes a part of the living room when the folding doors are opened wide. Bookshelves located at random add color and interest to these rooms. Lozenge paned windows are in harmony with the design



The great oak is represented by a huge factory under construction

Great Oaks from Little Acorns Grow

THE LUDOLPH M. HANSEN COMPANY of Green Bay, Wisconsin, has built up a construction business that averages well over a million dollars per year; a rather remarkable achievement in a city that, according to the 1920 census, contains only a trifle more than 30,000 inhabitants.

Not an unimportant portion of this business is the volume of small and moderate sized buildings that are undertaken. Among many builders, minor work is ignored or rejected on the score that it is not profitable enough, or that it "cramps their style" to be identified with small jobs. The Hansen

organization, however, is not so short sighted; recognizing in a small job an opportunity to add another example to their record for efficiency, and at the same time, to keep their work before the public eye. In such work the immediate profits may be negligible and in fact, often non-existent,



This very attractive, but small, service station takes the part of the lowly acorn



A mineral water bottling plant for variety



Attractive houses are also on the program

but as a means of attracting attention, a building operation, large or small, any where and at any time has billboard and similar advertising backed off the boards in so far as real publicity is concerned. People who are really busy will pass up a whole block of billboards to stop and size up a building that is under construction, all of which means that if certain builders *seem* to dominate the field, they are apt to become dominate in the minds of prospective clients with the result that the apparent domination speedily becomes the real thing.

In many cases moderate sized work is entrusted to local builders, but when a really big job comes along it goes to some outside concern with a big reputation. The Hansen organization, however, has entrenched itself so thoroughly in the minds of local people that outsiders are not handed work on a platter.

Of course, the fact that the Hansen organization has been operating for more than twenty years is an important factor in creating confidence on the part of its clients. Another factor is the Hansen policy of keeping abreast of the times. When operations were first begun in 1904, reinforced concrete construction was comparatively unknown outside of the largest centers. This novelty, however, was studied by the organization so that when the time came the Hansen com-

pany was prepared to undertake this type of work with intelligence and skill.

The word "organization" has been subject



Ludolph M. Hansen

to much abuse lately, but when used in connection with the Hansen company it should be taken literally. The company is organized into various departments, each functioning separately, yet in such a manner that lost motion and friction are avoided. There is an advisory or consulting department deal-

ing with appraisals, inspections and other technical advice and recommendations. The engineering department handles field problems dealing with materials and methods. The construction department handles the actual construction work. The drafting department prepares drawings and designs, and the business department has charge of the office records. Each of these departments is headed by an expert who is in charge of a corps of assistants skilled in that particular field.

To this system of organization belongs much of the credit for the completion of buildings on schedule time, a reputation which the Hansen company enjoys. Also the company is noted for its strict adherence to the specifications governing a job.

Modern construction equipment is considered of great importance by the company. In a recent booklet describing its operations, the following is said on this point: "The day of the hod and mortar pail is either gone or is going, as are all of the other tedious, long-drawn and expensive methods of old time construction.

The construction company which has kept up with rising costs, scarcity of labor and demands for rapid work, is the company which has added the latest and best types of machinery and equipment to its operations."



A modern cold storage plant was another successful undertaking



An electric power station helps to swell the total



First Church of Christ, Scientist, Sioux Falls, South Dakota. Schuemacher & Finkelhor, architects, Sioux Falls

A Church Building That Is Logical

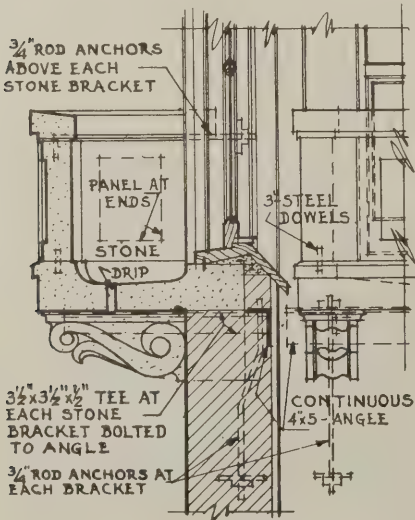
THE Lombard style of architecture is so readily adapted to use in the design of modern American church buildings that it seems strange that its use is so seldom considered.

The salient characteristics of Lombard architecture are, the use of brick; the rather compact plan; the broad unbroken wall sur-

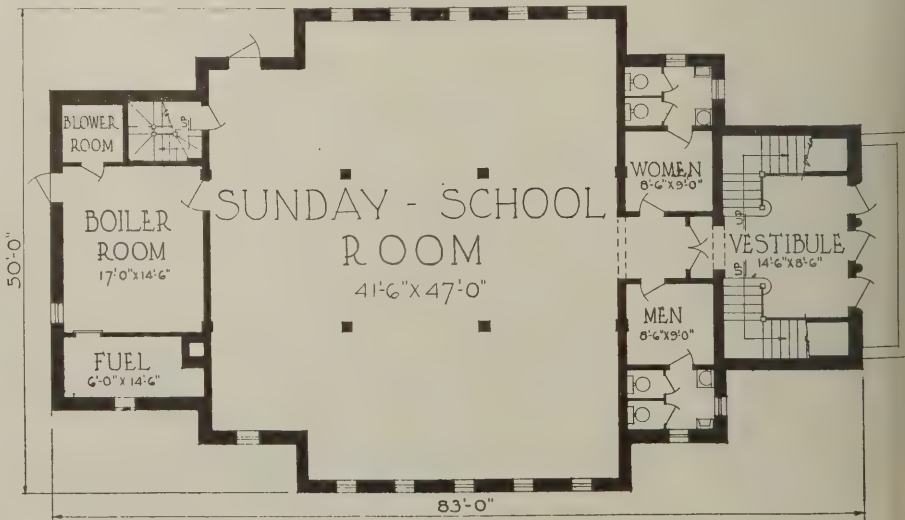
faces; the low pitched roofs, and the tall, narrow openings. Spires are unknown and the bell tower, if present at all, is usually a separate freestanding structure. As these characteristics seem in the main to conform to our present day requirements in church design, it seems logical for us to accept them, rather than continue to attempt an

adaption of the long narrow Gothic styles to our demands for a square auditorium plan.

The building which illustrates this article is a commendable example of a moderate sized church building, restrained in design yet offering a solution that satisfies the requirements of both utility and attractive-



Detail of balcony



First floor plan

ness.

The exterior is of brick which is enlivened by means of patterns and bands of the same material. The cornice of the main building is of corbeled brickwork and the frieze and pediment of the entrance projection is laid up in patterns of brick. Other ornament has been used sparingly, in fact, being concentrated in the stonework at the entrance.

The first floor construction consists of a concrete slab laid directly on earth filling. The second floor is of the reinforced concrete joist and hollow tile type of construction, supported by reinforced concrete girders. Both of these floors are stripped and covered with finished floors of wood. The main roof is carried on two wooden trusses spanning the auditorium. The clearstory walls above the loges are supported on 24-inch I-beams. The auditorium is ornamented with wooden pilasters and a coved ceiling and cornice of plaster on metal lath construction. The rostrum is of wooden construction and is decorated by an elaborate wooden grille for the pipe organ at the rear. The main stair is of the "pan" type, built up of structural steel and sheet metal shapes with the treads formed of cement.

The main entrance is at the ground level, with three wide doors opening to the vestibule. Wide stairways at each side of the vestibule lead to the second story. A short passage leads from the vestibule to the Sunday school room. At each side of this passage are coat rooms—one for men and one for women. In each case the coat room communicates with a well arranged toilet room. The floors of these portions of the building are finished with cement, that of the vestibule being marked off in squares, tile fashion.

The Sunday school room contains four reinforced concrete columns which support the floor girders above. These columns, however, are not objectionable, as the individual classes may be arranged so that the columns offer no serious obstruction. A

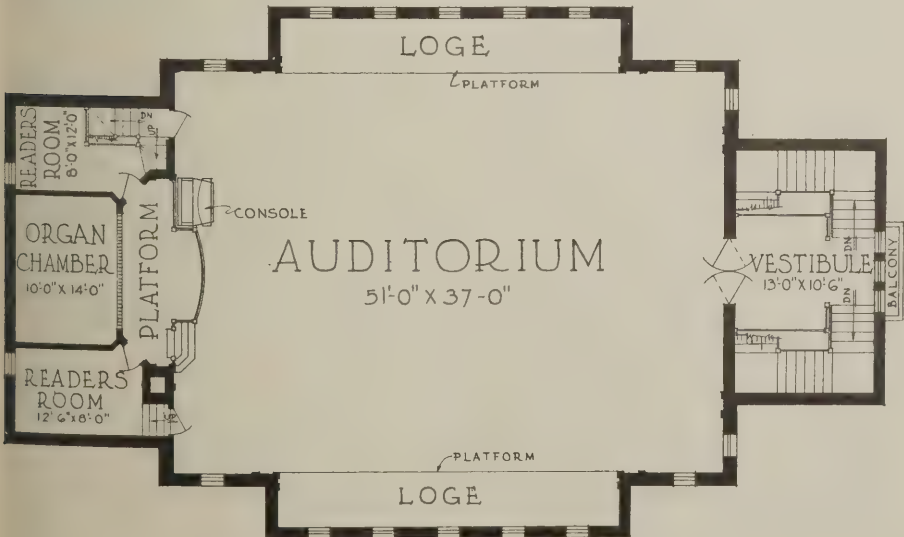


The entrance is a splendid example of good detailing in stone and brick

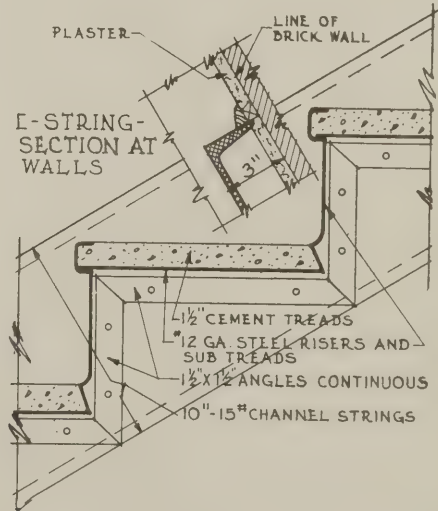
side door provides an emergency exit to the exterior, and a wooden stair leads from the Sunday school room to the second story. The boiler room may be entered from this room or from a door at the rear. At one side of the boiler room is the fuel room, and the blower room for the pipe organ is located in a corner.

The second story contains a large vestibule at the front which opens into the auditorium. The auditorium approaches the

shape of a square which seems to be a requirement for most modern churches. Loges at each side of the auditorium increase the seating capacity and at the same time add interest to the design both without and within. The rostrum is flanked by reader's rooms between which is the space for the pipe organ. An emergency stair to the lower story may be reached from either the auditorium or from one of the reader's rooms.



Second floor plan



Detail of stair



San Marvail Apartments. N. E. Peters, architect, 2820 Harrison Street, Kansas City, Missouri

Apartment House for a Shallow Lot

THE plan of the apartment house which illustrates this page is exceptionally well worked out to utilize a shallow lot. There are twelve four-room apartments, with each of the two main entrances serving six apartments. The rooms are of good size and are well arranged and adequately lighted. Each dining room contains a bed closet. The bed closets are deep shallow ones adapted to the use of the detached type of wall bed which may be rolled to any desired position in the apartment. The back-to-back positions of the kitchens and the inner bathrooms simplifies the plumbing by eliminating separate plumbing stacks for each tier. The halls are compact, and two sets of rear porches are provided for the kitchens.

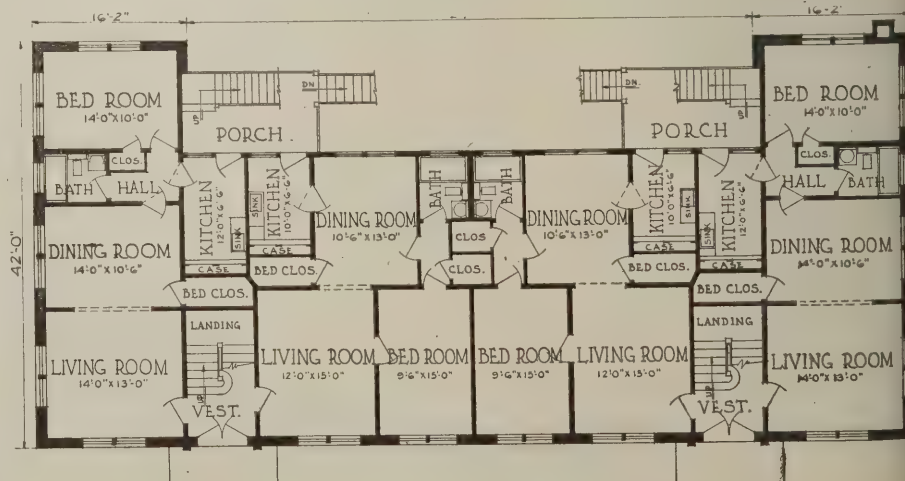
The exterior design is simple and noticeably free from the "spotting" of the wall surfaces with panels and small ornamental inserts that is so common in apartment house design. The tile hoods and the stucco and wrought iron treatment above the entrances is simple and effective in adding interest.

The building is 42 feet deep by 80 feet wide with the apartments on each floor arranged symmetrically about the center line. A typical end suite has the living room opening directly from the main stair hall and separated from the dining room

by a wide cased opening, thus adding to the apparent size of each of these rooms and allowing the dining room an unbroken view toward the front. Opening from the rear of the dining room is a small hall which leads to the bathroom and the bedroom and also serves as a passage from the kitchen, thus helping to keep cooking odors out of the front of the house. Both the bedroom and the living room have cross-corner light and ventilation.

The arrangement of the dining rooms

and the living rooms of the interior apartments is quite similar to that of the end ones except that the cased openings between them are located in a corner and are somewhat narrower. The bedrooms, however, are placed at the front of the building and may be entered directly from the adjoining living room or else by means of a hall which leads to the dining room. The kitchens open directly into the dining rooms and are made two feet shorter than the kitchens of the end apartments.



First floor plan. Second and third floors similar

NATIONAL *home* BUILDER



Home of James Roy Allen, Wilmette, Illinois. James Roy Allen, architect, Fine Arts Building, Chicago

Common Brick Stained White Makes an Italian Villa

THE above title is somewhat misleading, because all of the common brick and white stain in existence would not produce an Italian villa unless a trained hand and eye governed their arrangement and use.

The attractiveness of this house is too evident to waste words on this element. The interesting effect of the wall is produced by laying bearing tile—such as is

used with some types of hollow tile—in every third joint of the brickwork. The trim of the piers is stone, the dormer is of stucco on frame and the roof is of tile.

The loggia forms the main entrance to the house, two sets of French doors opening from it into the living room and the dining room respectively. The inner wall of the loggia is of frame construction stuccoed and the ceiling is plastered, with exposed wooden beams centered on the piers. The living room contains a wide fireplace at one side with folding French doors separating it from the dining room on the opposite side. The main stair rises from the rear end of the living room. The rear entry opens into a small hall which leads to the basement stair and also forms a passage between the kitchen and the dining room. The kitchen broom closet

and the dining room closet forms a recess for the range.

The second floor contains three bed rooms, two of which are quite large, all with ample closets and cross ventilation. A rearrangement of the bath rooms would perhaps be preferred by many people, making the large bath accessible from the hall and substituting a shower for the built-in tub in the smaller one.



First floor plan



Second floor plan



The home of John D. Chichester. Designed and built by Chichester Brothers, Birmingham, Alabama

An "H"-Form Plan Is Ideal for Light and Ventilation

THOSE who are familiar with the houses found "out in the sticks" in certain portions of the South will readily recognize the similarity in plan between them and the house on this page. The small houses are of course usually simpler, often containing only two rooms separated, by a very wide, open air hall, or extending gallery, between the two portions of the house, instead of the living room and porch here shown. In either case, however, the main roof extends over the entire structure without a break.

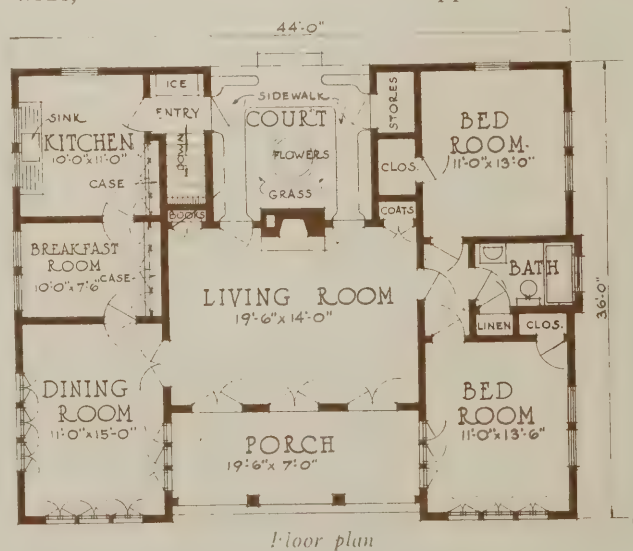
The appropriateness of the plan shown here for locations where a maximum amount of ventilation is required is evident, as it is possible to have openings on three

sides of every room except the living room, and even this room may have direct cross ventilation from side to side.

The recessed porch in this plan serves as a sunshade along one side of the living room, into which it opens through three wide French doors. At the opposite

side of the living room is a fireplace flanked by single French doors which open onto a small court or patio partially enclosed by the two projecting wings and terminated at the rear by a high hedge. The living room also contains a bookcase in one corner and a coat closet in the other.

French doors open from the living room into the dining room, which contains windows on three sides. A breakfast room with a built-in case along one wall separates the dining room and the kitchen. The kitchen has windows on only two sides, but the entry doors may be opened to provide additional ventilation if desired. The entry contains space for the refrigerator and for the basement stair.





Home of Mr. Jack Berson. Haralson and Nelson, architects, Fort Smith, Arkansas

A Greek Revival Style House with a Flat Roof

WHETHER we be for or against the flat roof for dwelling houses we cannot well avoid recognition of the fact that such roofs are extremely logical and economical for such use. The often expressed criticism that a roof of this type is unsuitable for use in climates such as ours, where ranges of temperature are so great is inconsistent; it overlooks the fact that the majority of other types of buildings such as stores, flats, public buildings and so forth are commonly built with flat roofs.

The objection that a flat roof causes the rooms of a house to be excessively warm is not entirely justified. The real factor here is not so much the form of the roof as it is one of clear roof space between the roof surface and the ceiling below it. In other words a flat roof provided with a properly ventilated air space is naturally more efficient in this respect than is a high pitched roof with

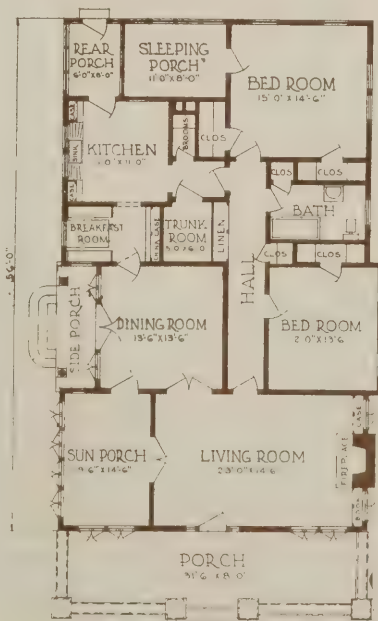
inadequate air spaces. Most story-and-a-half and gambrel roof types, for instance, are quite deficient in this regard.

The fact that a flat roof holds snow is really an advantage providing the roof is tight and prop-

erly flashed so that leaks are prevented; the snow forming an insulating blanket of considerable efficiency.

In design, this house was apparently suggested by the so-called Greek revival style which displaced the Colonial style early in the nineteenth century. When used with skill the style has a certain chaste simplicity and dignity that is attractive in many ways, but its use implies a sort of formal attitude that most modern Americans object to.

Along the front of the house is a paved terrace overlooked by French casements and the entrance doorway. The living room contains a fireplace flanked by bookcases at one end and French doors opening into the sun porch at the other. The dining room may be entered from either the sun porch or the living room and it overlooks a narrow recessed porch, or loggia. There are two bed rooms with a bath.



Floor plan

NATIONAL *Home* BUILDER



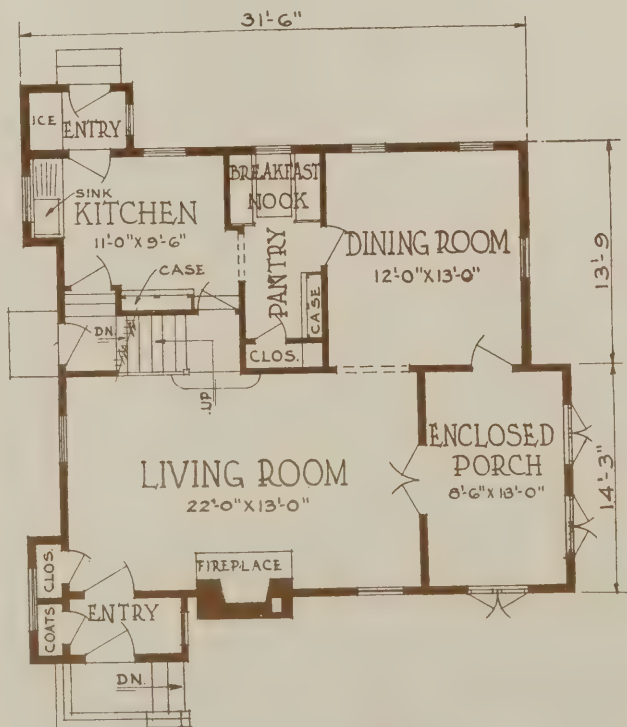
Designed and built by the V. Green Construction Company, 45 West 35th Street, New York City

A Frame House with Unusually Good Lines

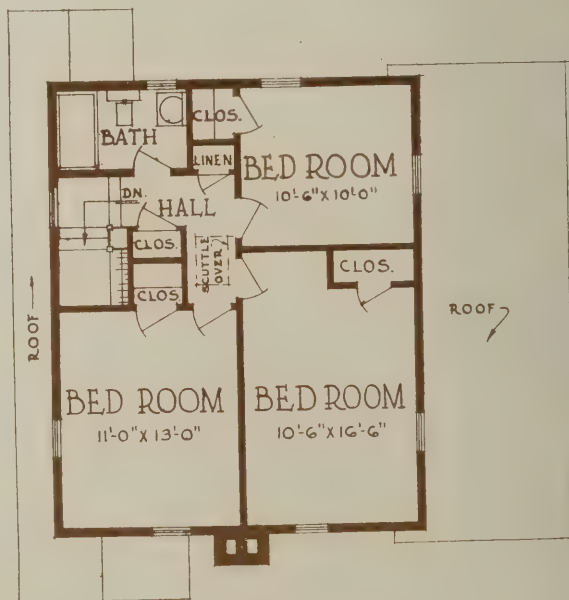
THIS house has many attractive points; the steep roof with its sweep at one side; the projecting entrance; the French doors with a fan-light, and the shutters and flower boxes, all contributing to the general effect. The chimney is well placed, but would probably be improved if painted white to offer less contrast with the walls.

The entrance is at the corner, through a vestibule into the living room. The location of the fireplace

near the front door is good, preventing drafts from passing clear across the floor, whenever the door is opened. The stair is of the combination type, with a door into the kitchen so that one may reach the stair without passing through the other rooms of the house. This scheme eliminates many steps when tending the furnace and so forth. The rear view above is of another house built from the same plans, with a few minor changes.



First floor plan



Second floor plan



Two views of a house at Des Moines, Iowa. L. W. Kranert, architect, Des Moines

Combination of Materials Produces an Interesting Design

A VERY effective method of adding interest and variety to a design is by means of a combination of several different forms of construction, or of various materials, or both. In such cases it is important to recognize the important principle that the eye and mind must be satisfied that such combinations are logical forms of construction. That is, taking the house shown on this page as an example; it is logical to find brickwork at the bottom, stucco above brick, and half-timberwork at the top of the structure. Many houses, however, are not so satisfying, because frame or stucco construction is apparently supporting masonry which arouses a feeling that all is not well, even though it is sometimes

difficult to explain any reason for our displeasure. The long curving sweep of the roof at the entrance and the brick walled terrace are attractive features of the design. The entrance is into a vestibule, at one side of which is a very roomy coat closet. The location of the breakfast room is unusual but quite convenient, as it is accessible from the front hall as well as from the kitchen and the dining room. A toilet is located near the head of the basement stair.

The second story contains three well ventilated bed rooms and a bath. The provision of a separate bed room toilet could well be more generally adopted where two bathrooms are not justified.



First floor plan



Second floor plan



House for Edwin P. Rhoda, builder. Clas, Shepherd and Clas, architects, Milwaukee, Wisconsin

Colonial Style House with a Corner Entrance

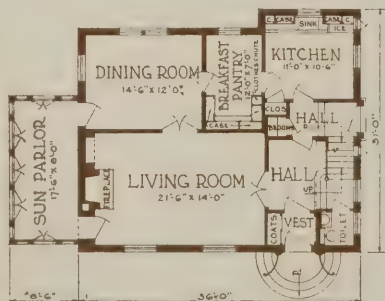
WE have become so accustomed to thinking of the Colonial style as one in which the main entrance must be exactly centered in the facade, that the possibilities of varying such plans to suit other conditions, are frequently overlooked. As a matter of fact, old original Colonial houses with entrances off center are more numerous than is commonly supposed. If this and other facts about the style were more generally recognized many of our modern Colonial houses would benefit thereby.

The location of the entrance at one corner of the house which illustrates this page has the ad-

vantage of forming a sort of balance with the one-story extension at the other end of the house, resulting in a more pleasing composition than would be produced by having the entrance in the customary position at the center.

The entrance is through a vestibule into the main hall at one side of which is the stair to the second story. A down stairs toilet is located at the landing near the foot of the stair. The living room contains a fireplace at one end, and both the living room and the dining room open into the sun parlor. A large breakfast pantry with one end lined with built-in cabinets, separates the dining room and the kitchen. The kitchen has a grade line entry which also communicates with the front hall.

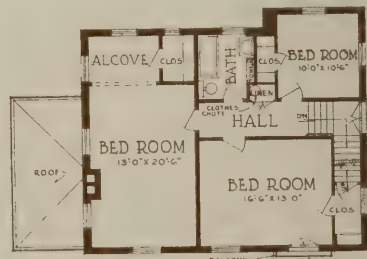
The second story contains three bed rooms, one of which is exceptionally generous in size and has a dressing room at one end.



First floor plan



Detail of entrance



Second floor plan



Home of J. M. Smith. Harold S. Starin, architect, Duluth, Minnesota

A Plan with Two Baths and a Maid's Room

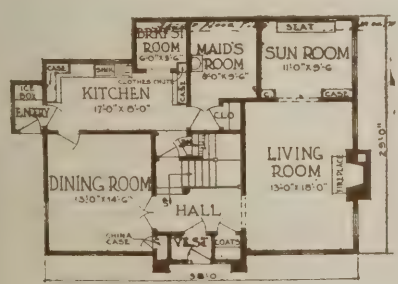
THE introduction of a roof pediment above the entrance of this house is very effective in adding to the importance of the entrance, as well as affording an opportunity to break the long horizontal line of the cornice, by introducing a vertical feeling which overcomes the boxlike feeling often produced by a plain rectangular shaped plan.

The design of the house is quite simple, but very effective when compared with the average house of similar lines. The entrance projects just enough to form a break to produce shadows and is given a domestic touch by means of the simple latticework railing

above it. The hall is of the central type making the stair accessible from the kitchen as well as from the front rooms. The kitchen has an outside entry at one end and opens into a small breakfast room. The living room contains a fire-

place and opens into the sun room at one end. The maid's room in the first story is practical and convenient. It is provided with a closet and a private lavatory.

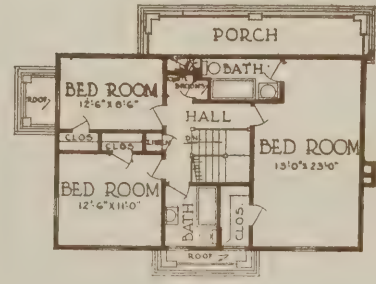
The second story contains three bed rooms and two baths, one of which is a private bath serving the main bed room. The bed rooms are well ventilated, the main bed room having windows on three sides, and all are provided with ample closets. There is a linen closet and a broom closet on this floor, and a narrow porch or balcony forming the roof of the first story extension at the rear which has a wood railing similar to the one above the entrance.



First floor plan



Detail of the entrance



Second floor plan



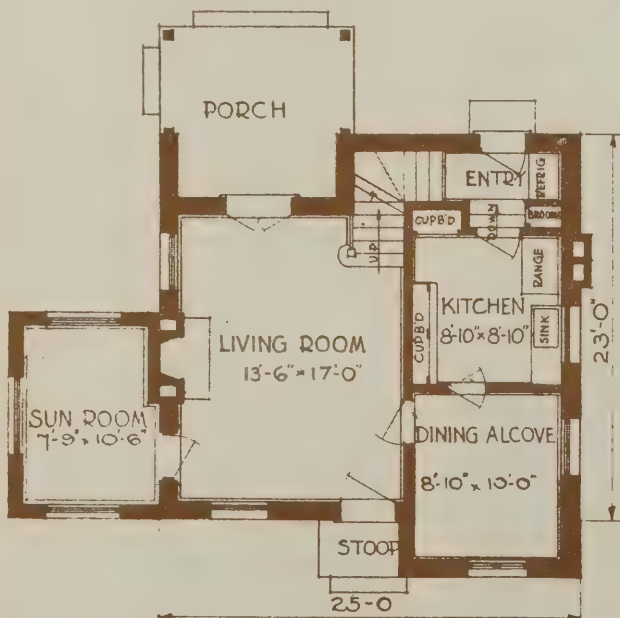
Design 5-B-16 of the Architects' Small House Service Bureau, 1735 Stout Street, Denver, Colorado

Six Rooms and Two Porches in This Small House

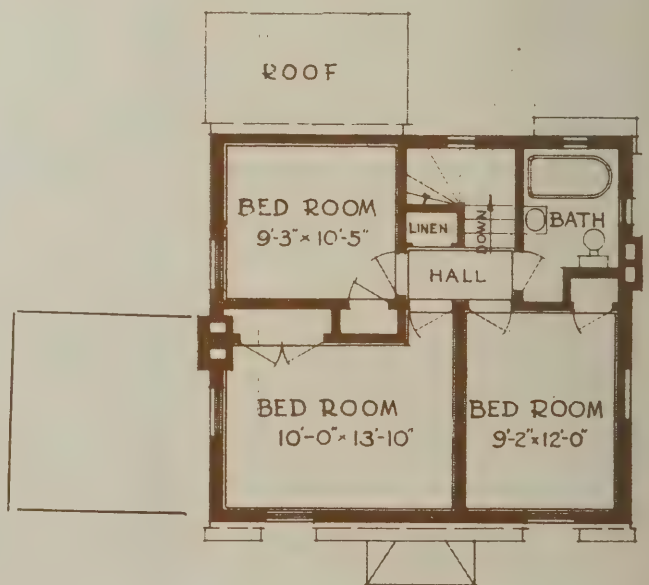
MOTTLED effect roofs made up of varicolored shingles are gaining in popularity, as they add variety to the roof at little or no extra expense and trouble. In the house which illustrates this page, the mottled roof helps to sustain the effect of the brickwork with its wide contrasting joints.

The plan arrangement exhibits considerable skill and study on the part of the designer. Two porches,

one open and one enclosed, open from the living room. The stair arrangement at one corner of the living room, with the basement stair and rear entry beneath, is well thought out. The rather small dining room is an attempt to satisfy those people who, while sold on the idea that a separate dining room in a small house is an economic waste, still do not care to eliminate the dining room entirely.



First floor plan



Second floor plan



Home of Roy Johnson, Portland, Oregon. Harold Dickson Marsh, architect, Portland, Oregon

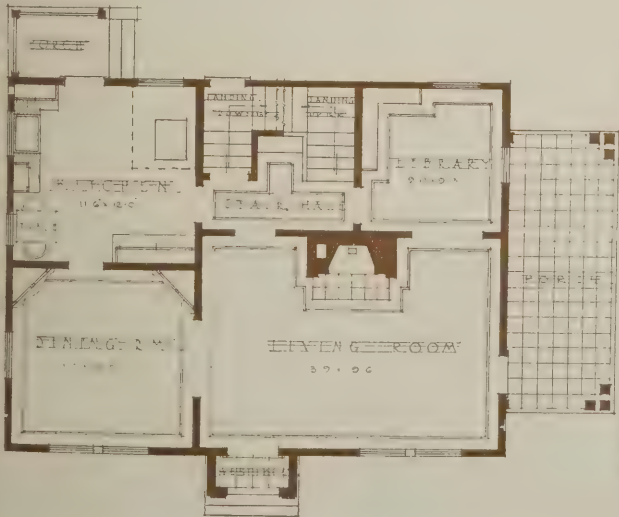
Gambrels Permit Low Roof Lines and Ample Storage Space

THE shingled exterior of this Dutch Colonial house is attractive with its vestibuled entrance and well designed gambrel roof. The dormers are well placed and the close cropped gables are pleasing. The open porch with the balcony or deck above is a practical provision.

The fireplace and chimney are contained within the walls of the house, a provision that is seldom granted in modern plans, but one that has sound common sense behind it, in that the draft of an interior chimney is usually more dependable than

is the case with an outside one exposed to the chilling effect of the outer air. The location of the main stair in a hall at the rear of the house is also unusual, but could also be more generally used on the score of economy and logic. The small library or study may be reached from either the living room or the hall.

The second story contains two bed rooms that are really generous in size, and the most modern housewife could not quarrel with the size and number of the closets.



First floor plan



Second floor plan



This one is rather sedate, but has many admirers

These Houses Are Sisters Under the Skin

THE same basic floor plan was used for both of these houses, the only change being the provision of an outside entrance to the dining room for the brick house and its omission from the other one, and a slight difference in the size and type of the windows.

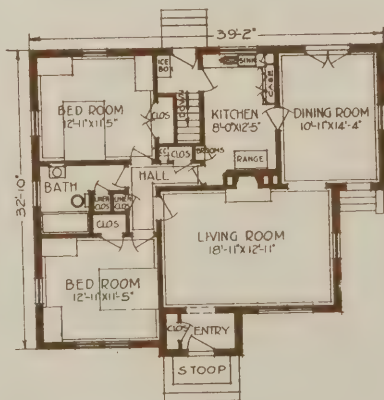
The exterior appearance of these houses is so widely different, however, that few casual observers would recognize the close relation of the two.

The brick design is notable for the consistency with which this material has been used throughout. With the exception of the roof, everything, sills, steps, details and all, is of brick. The simplicity of the cornice, the coursed shingle roof and the well propor-

tioned entrance account for the interest of this house.

In the combination stucco and brick design we have an adoption of the French cottage type that is becoming quite popular. A high pitched roof of the snake-skin variety, made up of shingles of various colors; irregular quoins of brickwork at the corners, and grouped stacks on the chimney, distinguish this house from the commonplace.

The plan and the two designs were prepared by the Mountain Division of The Architects' Small House Service Bureau, 1735 Stout Street, Denver, Colorado, from whom plans may be obtained. The brick house is known as No. 5B-22, the other as No. 5B-27.



Floor plan



This one believes a little dolling up does no harm

Complete Working Drawings and Details

This Four-Room Spanish Bungalow Is Adaptable to Any Climate

House No. 4A33, designed especially for National Builder by The Architects' Small House Service Bureau

© 1924 by N. B. and A. S. H. S. B.

HERE is an example of a distinct step in the architecture of small homes in America. While the majority of us have been struggling with the difficulties of Colonial and English architecture and others have perhaps more frankly expressed their thought about the proper character of a home by using the so-called "Western" style, out in the Southwest, especially in California, home builders have taken the architecture of the Spanish and have contrived an entirely new expression of a home. This has found so much favor in the minds of the small home builders all over the nation that the California bungalow has come very definitely into its own.

To be sure, out in California, they would probably dispense with the porch and put in place of it a patio, and in the patio would be a little pool and fountain with aquatic plants and perhaps a cement frog or other whimsical ornament. Furthermore, in California they probably would not give so much importance to the development of the basement as we have, and there would be in the construction a certain light-hearted disregard for the elements, which we in our more rigorous climate cannot afford to ignore. So the home design we are showing this month contains the spirit of the California bungalow transformed to fit the requirements of the rest of us more or less unfortunate who cannot live in that sunny clime.

One of the peculiarities of this plan is that you can face the house as you desire it. The front of the house may be the porch, or it may be the side where the entrance is found. Certainly the facing will be determined very much by the lot, but certainly also it would be fine if the house could have a large setting. If the entrance is turned toward the front, the house could actually be accommodated on a forty-foot lot.

Before you go into it, we may just as well say that this is to be a soundly constructed affair with concrete foundations and tile exterior walls above grade.

You will find in the plan a living room, kitchen, dining alcove, two bedrooms, and a bath. In California the saying goes that people live in a flivver and sleep in a cupboard, but this house is certainly

neither flivver nor cupboard. At the same time it does not have a formal dining room. Why spend money for a room that is to be used so infrequently as our dining rooms are?

Examining this house more closely, you find the entrance is through a vestibule into the living room. A wonderful stone fireplace fills up one end of the room. The ceiling is beamed. Casement windows that reach down to the floor and that are protected with wrought iron rails look out on the front and assure plenty of light for this room. From the living room you may go to the kitchen where there is also the dining alcove and where every acknowledgment has been made to the exacting requirements of the modern housewife. From this room you may go to the basement or, by means of a grade entrance, directly to the outside, or, through a side door into the long corridor which connects the living portion of the house to the sleeping portion. The porch is also reached by this corridor.

This is an entirely practical porch with a roof over it, thus making acknowledgement to the fact that even if it does not rain in California during the summer time it does elsewhere. Rough logs are used for the ceiling beams of this porch.

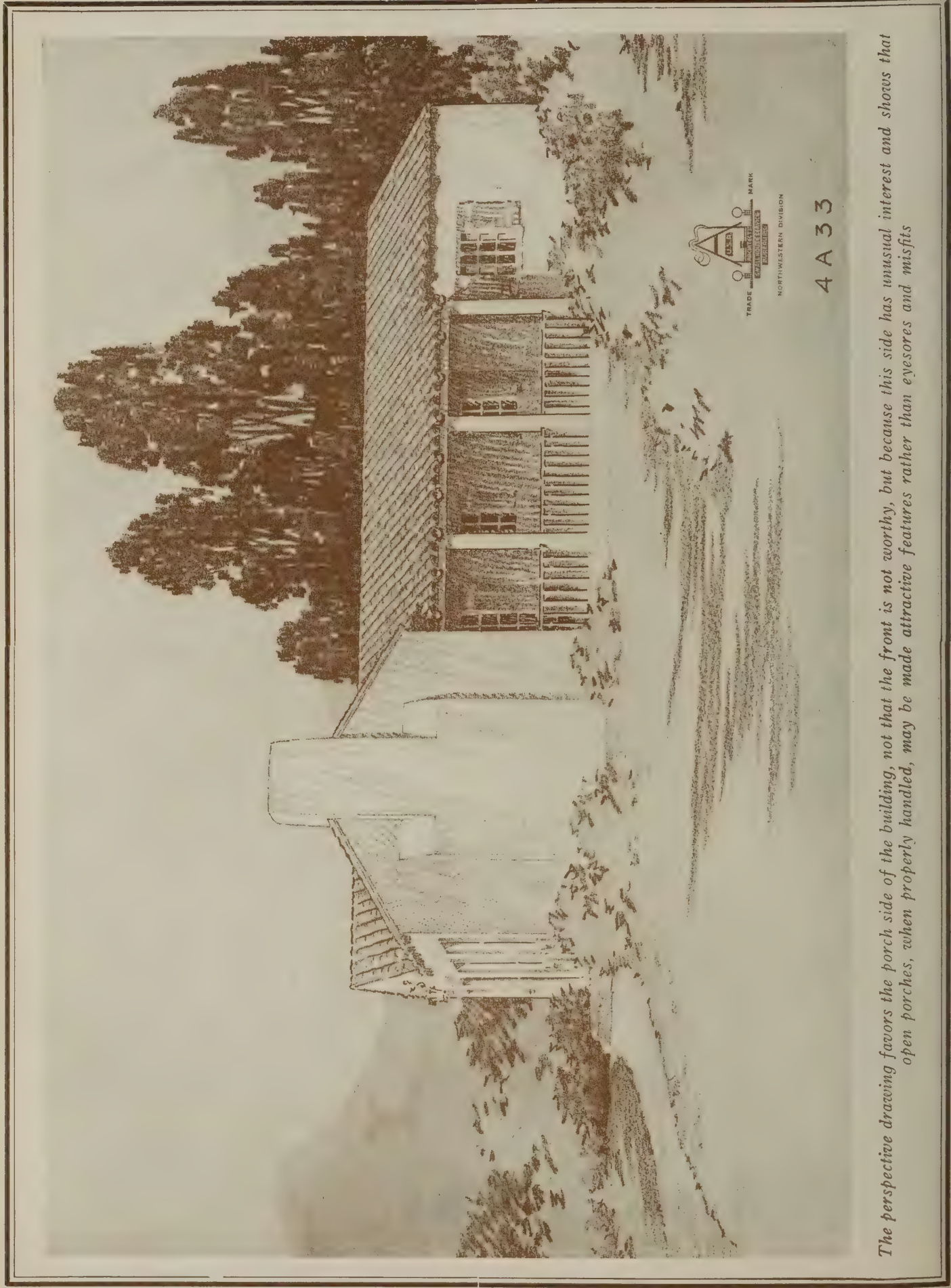
The two bedrooms are of good size, each with cross ventilation and large closets.

For the exterior nothing more need be said than that the designer has made use of devices which are true to the style of architecture he is working in. The recessed doorway, the door itself, bound with wrought iron hinges, the heavy shuttered openings, the grilled window at the side of the front doorway, and the tile roof are all in keeping with the spirit of the California designers. The stuccoed exterior befits the style better perhaps than any other material would do it.

One of the most important details of this house is the way in which it has been made to seem very close to the ground. This has been accomplished at very little added expense. We feel it worth while to warn anyone who plans to build this house to observe rigorously the levels of the building, as the design calls for them.

(The regular price of this design is \$20.50. To NATIONAL BUILDER subscribers, \$10.50.)

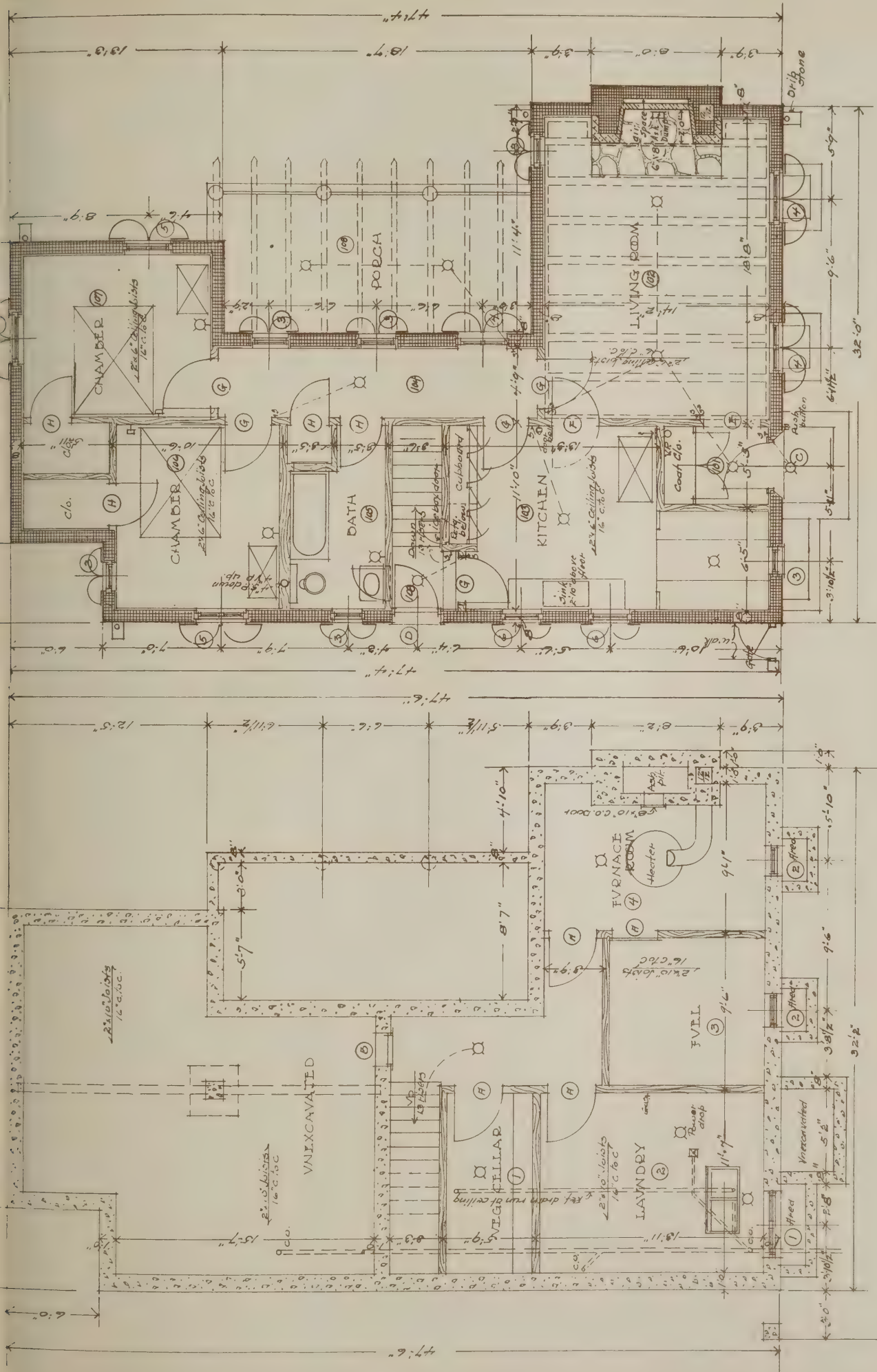
ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 65 and 66. These drawings are on a scale of $\frac{1}{4}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau, subscribers for "National Builder" desiring blue prints of the original of these plans, which are drawn on the scale of $\frac{1}{4}$ inch to the foot, are entitled to a 50 per cent discount off the Bureau's standard price, as stated in the last paragraph above. Orders should be addressed to "National Builder" for authenticating the purchaser as a bona fide subscriber, but checks should be made out to The Architects' Small House Service Bureau. Duplicate sets of blue prints are \$3.00 each; specifications are \$2.50 a set, and extra quantity surveys are \$3.00 a set.



TRADE MARK
REGISTERED
NORTHWESTERN DIVISION

4 A 33

The perspective drawing favors the porch side of the building, not that the front is not worthy, but because this side has unusual interest and shows that open porches, when properly handled, may be made attractive features rather than eyesores and misfits



FIRST FLOOR PLAN
Scale 1/4" = 1'-0"

BASEMENT PLAN
Scale 1/4" = 1'-0"

MATERIALS	ELECTRIC WIRING SYMBOLS
CONCRETE	CEILING OUTLET
BRICK	DROP CORD
WOOD	BRACKET
PLASTER	BASE PLUG
	SWITCH
	3-WAY SWITCH
	GAS OUTLET
	PUSH BUTTON
	BELL OUTLET
	BELL

Stock numbers refer to mouldings in Universal Millwork Design Book No. 1. In case these mouldings cannot be procured, order of similar design and same material. Provide 1/2" screen and storm sash for all exterior openings except ice door unless otherwise noted. Bottom rail of storm sash to have vent.

Dimensions are taken to outside of foundation walls, to outside of sills on exterior walls and center of studs for partitions. Foundation walls shown concrete may be stone. Brick, concrete block or lead bearing hollow tile walls may be 8" thick (with 2" mortar) except in case of stone which shall be 16" thick.

HOME PLAN FOR NATIONAL BUILDER-JUNE, 1924

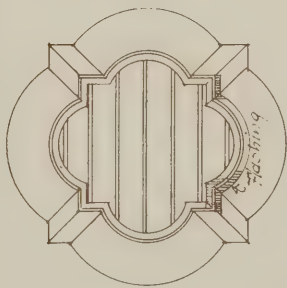
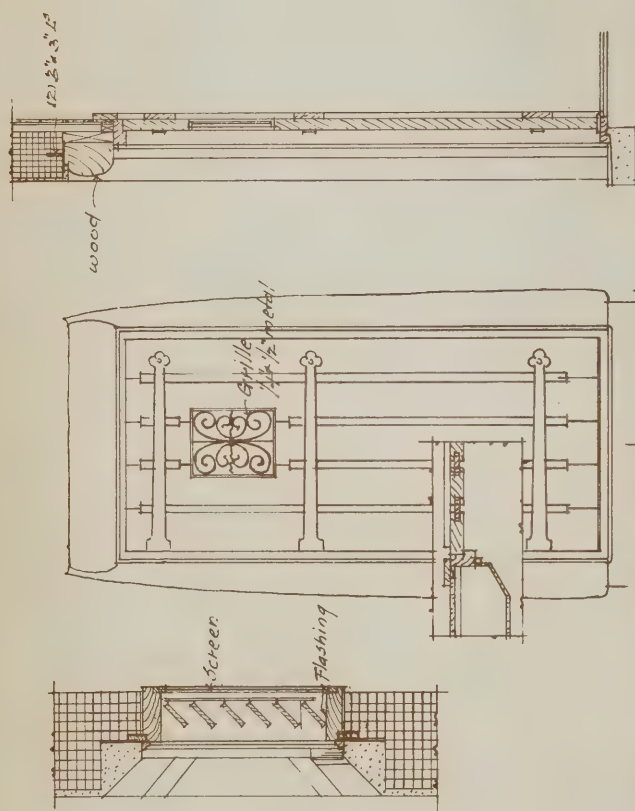
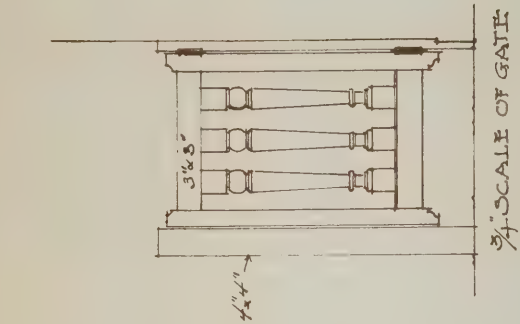
THE ARCHITECTS SMALL HOUSE SERVICE BUREAU

NOTWESTERN DIVISION INC.

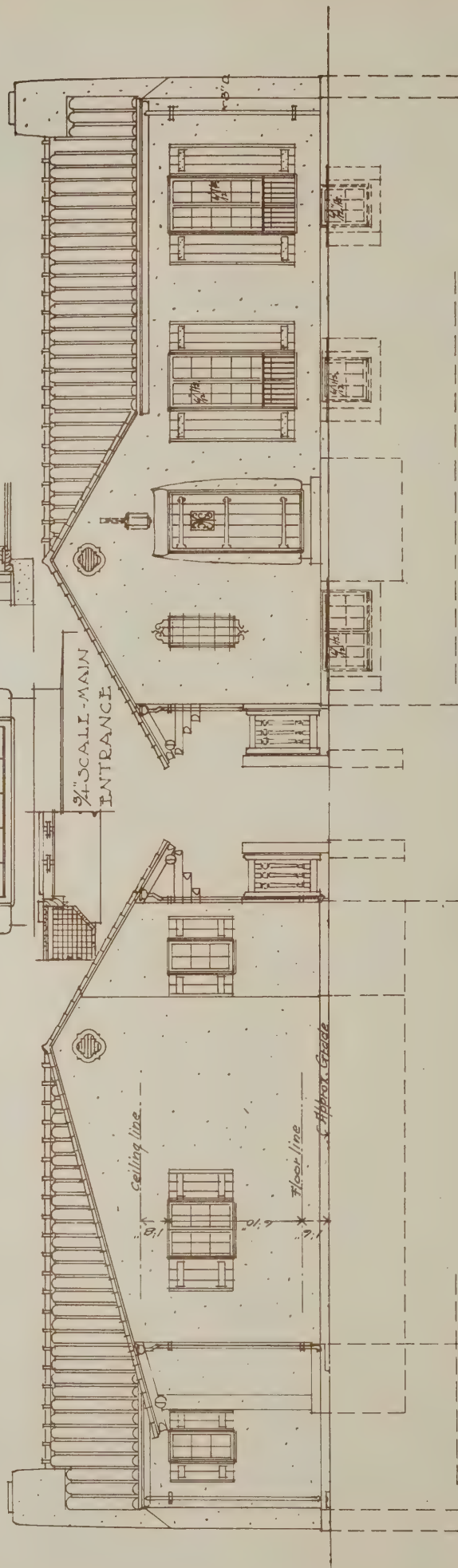
CHICAGO, ILL. MINNEAPOLIS, MINN.

4A33

SHEET NO. 1 OF 4



3/4" SCALE OF LOUVER WINDOWS.



FRONT ELEVATION
Scale 1/4" = 1'0"

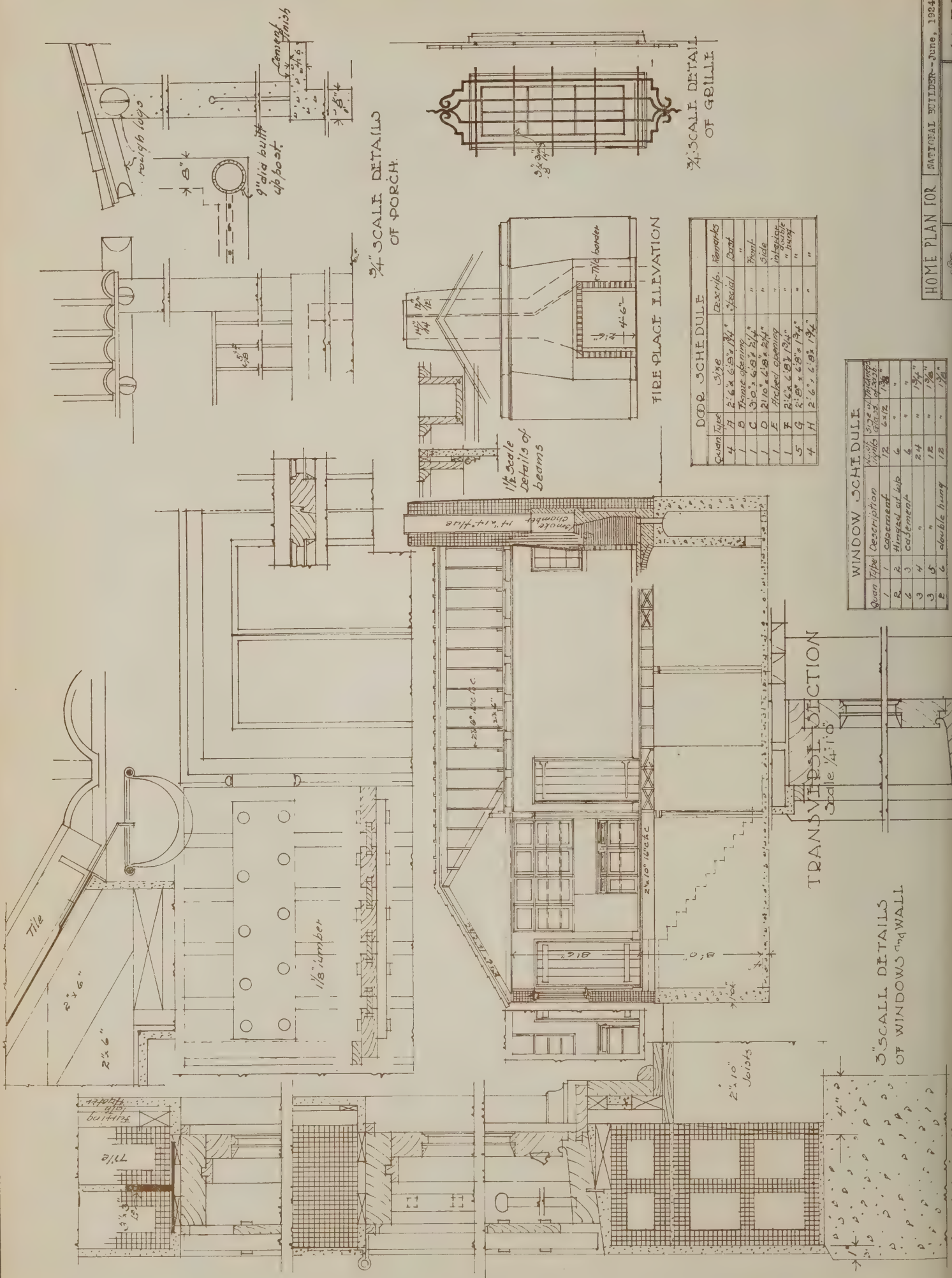
REAR ELEVATION
Scale 1/4" = 1'0"



LEFT SIDE ELEVATION
Scale $\frac{1}{4}$ " = 1'-0"



RIGHT SIDE ELEVATION
Scale $\frac{1}{4}$ " = 1'-0"



3/4" SCALE DETAILS OF PORCH.

FIRE PLACE ELEVATION

DOOR SCHEDULE			
Quan	Type	Size	Remarks
4	H	2'-6" x 6'-8" x 1 3/4"	Special
1	B	3'-0" x 6'-8" x 1 3/4"	"
1	C	3'-0" x 6'-8" x 1 3/4"	"
1	D	2'-10" x 4'-8" x 1 3/4"	"
1	E	2'-6" x 6'-8" x 1 3/4"	"
5	F	2'-6" x 6'-8" x 1 3/4"	"
4	H	2'-6" x 6'-8" x 1 3/4"	"

WINDOW SCHEDULE			
Quan	Type	Description	Remarks
1	1	casement	"
2	2	hinged casement	"
3	3	casement	"
3	4	"	"
3	5	"	"
2	6	double hung	"

Quantity Survey for House No. 4A33

Designed Especially for National Builder by
The Architects' Small House Service Bureau

See pages 59 to 64, inclusive, for description, perspective, complete working drawings and details

EXCAVATING					
200 cu. yd.....				60—2x4-7 basement partition studs..	
BACKFILL				680 ft. D & M basement partition	
70 cu. yd.....				sheathing.....	
FOUNDATIONS				4 ft. 2" plank cleanout cover.....	
If 12" concrete, 72 cu. yd. gravel,				5—2x10-18 first floor joist.....	
290 sax cement.....				5—2x10-22 first floor joist.....	
If 9" concrete, 64 cu. yd. gravel,				17—2x10-18 first floor joist.....	
258 sax cement.....				13—2x10-12 first floor joist.....	
If 12" tile, 34000 CBM tile, 25 cu.				16—2x10-16 first floor joist.....	
yd. mortar.....				2—2x10-16 headers.....	
If 9" tile, 28500 CBM tile, 21 cu.				4—2x10-18 doubles.....	
yd. mortar.....				1150 ft. com. bds. 1st floor subfloor..	
CEMENT FLOOR AND				1400 ft. 13/16x1½ first floor finish	
PORCH FLOOR				floor.....	
6 cu. yd. gravel.....				372 lin. ft. 2x4 first floor partition	
4 cu. yd. sand.....				plates.....	
62 sax cement.....				112—2x4-9 first floor partition studs	
4 cement spatter blocks.....				6—2x6-18 first floor ceiling joist.....	
CHIMNEY				6—2x6-22 first floor ceiling joist.....	
2520 common brick.....				17—2x6-18 first floor ceiling joist.....	
100 fire brick.....				13—2x6-12 first floor ceiling joist.....	
16 sq. ft. hearth tile.....				16—2x6-16 first floor ceiling joist.....	
40 inside face brick.....				1—20 ft. porch girder log.....	
24 lin. ft. 12x12 flue tile.....				1—4 ft. porch girder log.....	
20 lb. fire clay.....				8—11 ft. porch ceiling logs.....	
2½ cu. yd. mortar.....				1—5 ft. porch ceiling log.....	
1 cast iron ash dump.....				3—6x6-8 porch posts.....	
1 throat and damper.....				220 lin. ft. 1x3 bridging.....	
1 angle 4x3x5/16—4'0.....				1900 ft. D & M roof sheathing.....	
2—8x10 cleanout doors.....				14—2x6-9 rafters.....	
1—8" thimble.....				17—2x6-22 rafters.....	
1—6" thimble.....				22—2x6-18 rafters.....	
STUCCO				5—2x6-4 rafters.....	
225 sq. yd. stucco on tile.....				33—2x6-10 rafters.....	
LATH				4—2x6-5 rafters.....	
9 sq. yd. metal lath over furnace....				72 lin. ft. 1x8 ridge rafter.....	
7500 wood lath.....				2—2x6-14. headers.....	
PLASTER				36—1x6-6 collar ties.....	
9 sq. yd. plaster on metal.....				1200 ft. D & M attic floor.....	
530 sq. yd. plaster on wood lath.....				25—2x4-14 scaffold and extras.....	
TILE FLOOR				8—2x4-12 scaffold and extras.....	
58 sq. ft. ceramic tile.....				6—2x6-12 scaffold and extras.....	
31 lin. ft. cove base.....				4—2x8-16 scaffold and extras.....	
TILE WALLS				6—2x10-14 scaffold and extras.....	
20,000 CBM tile for 8" wall.....				180 lin. ft. 2x8 wall plates.....	
15 cu. yd. mortar.....				1200 lin ft. grounds.....	
ROOF TILE				MILLWORK	
16½ squares roofing tile.....				Frames:	
72 lin. ft. ridge roll tile.....				1 mul. casement fr. 6x12-6L-1¾.....	
LUMBER				2 sash frames 6x12-6L-1¾.....	
1—6x6-5 post.....				6 single casement fr. 6x12-6L-1¾.....	
66 lin. ft. 2x10 girder.....				3 mul. casement fr. 6x12-12L-1¾.....	
3—2x10-14 stair horses.....				3 mul. casement fr. 6x12-6L-1¾.....	
204 lin. ft. 2x4 basement partition				2 ck. rl. frames 6x12-12L-1¾.....	
plates.....				Windows:	
				2 casement sash 6x12-6L-1¾.....	
				2 casement sash 6x12-6L-1¾.....	
				6 casement sash 6x12-6L-1¾.....	
				6 casement sash 6x12-12L-1¾.....	
				6 casement sash 6x12-6L-1¾.....	
				2 windows 6x12-12L-1¾.....	
				Storm Sash:	
				2 st. sh. 6x12-6L-1¾.....	
				2 st. sh. 6x12-6L-1¾.....	
				6 st. sh. 6x12-6L-1¾.....	
				6 st. sh. 6x12-12L-1¾.....	
				6 st. sh. 6x12-6L-1¾.....	
				2 st. sh. 6x12-12L-1¾.....	
				Shutters:	
				5 pr. shutters for 6x12-6L single	
				frames.....	
				3 pr. shutters for 6x12-6L mul.	
				frames.....	
				3 pr. shutters for 6x12-12L mul.	
				frames.....	
				2 pr. shutters for 6x12-12L single	
				frames.....	
				Screens:	
				2 screens 6x12-6L-1¾.....	
				2 screens 6x12-6L-1¾.....	
				6 screens 6x12-6L-1¾.....	
				6 screens 6x12-12L-1¾.....	
				6 screens 6x12-6L-1¾.....	
				2 screens 6x12-12L-1¾.....	
				Outside Door Frames:	
				1 dr. fr. 3'0x6'8-2¼.....	
				1 dr. fr. 2'10x6'8-2¼.....	
				Outside Doors:	
				1 door 3'0x6'8-2¼ special.....	
				1 door 2'10x6'8-2¼ special.....	
				Storm Doors:	
				1 st. dr. 3'0x6'8-1½ special.....	
				1 st. dr. 2'10x6'8-1½ special.....	
				Screen Doors:	
				1 sc. dr. 3'0x6'8-1½ special.....	
				1 sc. dr. 2'10x6'8-1½ special.....	
				Outside Millwork:	
				1 gate.....	
				1 gate post.....	
				172 lin. ft. cornice.....	
				2 porch brackets.....	
				1 special entrance trim.....	
				2 attic louver frames and screens...	
				Interior Doors:	
				4 doors 2'6x6'8-1¾.....	
				1 door 2'6x6'8-1¾.....	
				5 doors 2'8x6'8-1¾.....	
				4 doors 2'6x6'8-1¾.....	
				1 icing door.....	
				Jambs:	
				4 jambs 2'6x6'8.....	
				1 jamb 2'6x6'8 no stops.....	

5 jambs 2'8x6'8.....	8 lintels for 4'0.....	8 gutter ends.....
4 jambs 2'6x6'8.....	1 lintel for 5'0.....	4 nipples.....
1 jamb 2'0x2'0.....	2 lintels for 2'8.....	4 strainers.....
1 jamb for icing door.....	INSULATION	4 offsets.....
Interior Trim:	3 rolls 3 ply roofing under tile.....	40 lin. ft. conductor.....
1 side trim. mul casement 6x12-6L.....	1000 ft. 1/2" vegetable fibre or equal for ceiling.....	8 conductor hooks.....
2 side trim sash 6x12-6L.....	3 rolls waterproof paper under first floor.....	52 lin. ft. valley tin.....
6 side single casement trim 6x12-6L.....	WEATHER STRIPPING	12 lin. ft. flashing tin.....
3 side mul. casement trim 6x12-12L.....	14 casement 6x12-6L.....	150 tin shingles.....
3 side mul. casement trim 6x12-6L.....	2 sash 6x12-6L.....	4 elbows.....
2 side wds. trim 6x12-12L.....	6 casements 6x12-12L.....	HARDWARE
8 side door trim 2'6x6'8.....	2 windows 6x12-12L.....	2 cellar sash sets.....
2 side door trim 2'6x6'8.....	1 door 3'0x6'8.....	20 casement sash sets.....
10 side door trim 2'8x6'8.....	1 door 2'10x6'8.....	2 sash locks.....
8 side door trim 2'6x6'8.....	CAULKING	2 sash lifts.....
1 side opng. trim 2'0x2'0.....	7 mul. frames.....	24 storm sash sets.....
2 side icing dr. trim.....	10 single frames.....	13 set of shutter hardware for pairs
1 side door trim 3'0x6'8.....	1 coal chute.....	24 screen sets.....
1 side door trim 2'10x6'8.....	1 door 3'0x6'8.....	1 front door set.....
1 flight basement stairs.....	1 door 2'10x6'8.....	1 rear door set with butts.....
1 flight grade stairs.....	EXTERIOR PAINTING	2 storm door sets.....
1 mantle shelf 8'0.....	3 gal. trim paint.....	2 screen door sets.....
100 lin. ft. beam ceiling.....	2 gal. cement paint.....	1 gate set with hinges.....
64 lin. ft. wall beam.....	1 gal. screen paint.....	1 floor hinge.....
1—4'8 coat closet.....	1/4 gal. metallic paint.....	2 push plates.....
1—7'0 kitchen cabinet.....	6 lbs. putty.....	1 icing door set with butts.....
1 medicine cabinet.....	1 gal. japan.....	13 inside lock sets with butts.....
1 utility door.....	1 gal. outside varnish.....	16 door bumpers.....
1 utility door jamb.....	INTERIOR PAINTING	4 doz. clothes hooks.....
1 utility door trim.....	11 gal. white paint.....	60 lbs. sash weights.....
1 meter cabinet.....	7 gal. enamel.....	1 hank sash cord.....
380 lin. ft. base.....	5 gal. filler stain.....	900 lbs. assorted nails.....
380 lin. ft. base shoe.....	3 gal. shellac.....	6 lbs. assorted brads.....
380 lin. ft. base molding.....	7 gal. varnish.....	1 coal chute.....
300 lin. ft. picture molding.....	3 gal. floor shellac.....	40 anchor bolts.....
16 lin. ft. closet shelving.....	5 gal. floor varnish.....	4 friction stays—utility door.....
16 lin. ft. closet hook strip.....	2 gal. oil.....	1 pr. ornamental butts } medicine
12 lin. ft. closet clothes pole.....	1 gal. japan.....	1 cupboard turn } cabinet.....
6 lin. ft. threshold.....	1 gal. turpentine.....	1 cupboard turn } meter
Ornamental Iron:	1 gal. alcohol.....	1 pr. ornamental butts } cabinet.....
3 pc. rail 5'6x2'6.....	4 doz. sheets sandpaper.....	11 pr. ornamental butts } kitchen
2 pc. rail 2'8x2'6.....	3 lbs. steel wool.....	6 cupboard turns } cabinet.....
2 pc. rail 3'0x2'0.....	TINWORK	5 elbow catches } cabinet.....
1 1/2 pr. ornamental hinges.....	100 lin. ft. gutter.....	6 drawer pulls } cabinet.....
1 grille 1'6x5'0.....	25 gutter hangers.....	4 pr. ornamental butts } coat closet..
1 grille 1'0x1'3.....		2 cupboard turns } coat closet..
1 lantern.....		2 elbow catches } coat closet..
LINTELS		
8 lintels for 3'0.....		

What Is a Patio?

Asheville, N. C., Feb. 12, 1924.

TO THE EDITOR:

Near the top of one of the mountains in the Kenilworth division of this city, is a residence with walled gardens, and termed a "patio" building. Not all of us are sure of just what a "patio" is. Can you enlighten us?—M. A. H.

Answer—The word *patio* is from the Spanish and means a court, more particularly a walled court open to the sky, usually paved and sometimes with a fountain in the center surrounded by plants and shrubs. Patio buildings have been shown from time to time in NATIONAL BUILDER. You have par-

tially described the style yourself in your inquiry. Your question, indeed, leads us back to the description of Cordova by Edmondo De Amicis, an Italian soldier and writer, born in 1846, who describes a patio in these words:

"A *patio*! How shall I describe a *patio*? It is not a court, nor a garden, nor a room; but it is all three things combined. Between the patio and the street there is a vestibule. On the four sides of the patio rise slender columns, which support, up to the level of the first floor, a species of gallery inclosed in glass; above the gallery is stretched a canvas, which shades the court. The vestibule is paved with marble, the door flanked by columns, surmounted by bas-reliefs, and closed by a slender iron gate of graceful design. At the end of the patio there is a

fountain; and all around are scattered chairs, work-tables, pictures and vases of flowers. I run to another door; there is another patio, with its walls covered with ivy, and a number of niches holding little statues, busts and urns. I look in at a third door: here is another patio, with its walls worked in mosaics, a palm in the center and a mass of flowers all around. I stop at a fourth door: after the patio there is another vestibule, after this a second patio in which one sees other statues, columns and flowers. All these rooms and gardens are so neat and clean that one could pass his hand over the walls and on the ground without leaving a trace; and they are fresh, odorous, and lighted by an uncertain light which increases their beauty and mysterious appearance."

Safeguarding Public Schools Against Fire

City of New Orleans Adopts Sprinkler Method Fire Protection for Semi-Fireproof School Buildings

IT is estimated that 25,000,000 children attend the public schools in this country. For a good part of the day these children are away from home, attending school, and under the care of guardians other than their

what means are taken to safeguard them from the danger of death by fire? An investigation into this subject might be productive of beneficial results. It would show that in many cases where business

as well as merchandise, may be destroyed by fire. The city of New Orleans has pointed the way for other American municipalities. She is only one of scores that has taken



Fig. 1—Beauty and safety go hand in hand in this modern school building

parents. It means therefore that the responsibility for the safety of 25,000,000 children rests upon the shoulders of the school boards into whose care they are given during the school period. What type of building is used to house the children and

men have constructed "fireproof" factories and warehouses, and have installed in them the most modern fire protection equipment, these same business men, when acting as directors or members of school boards, have been utterly blind to the fact that children,

aggressive action, but her fire officials in bringing the subject forcibly before the board of education have acted so logically that other cities can not fail to take cognizance of the unquestioned fact that laymen, whether they be mayors, school su-



Fig. 2—Sprinkler layout for second story. Every circle represents a sprinkler head

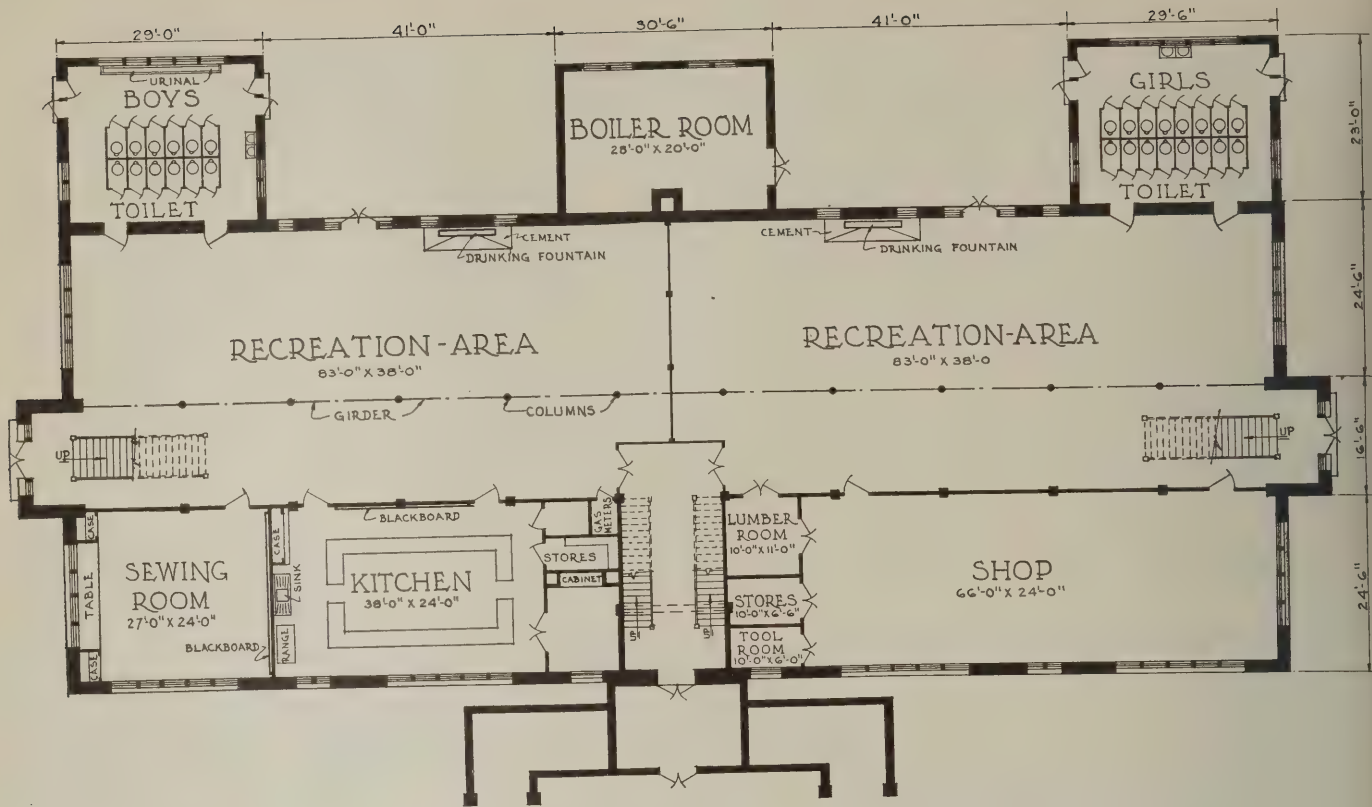


Fig. 3—Ground floor plan. Sprinklers provide safety in this extra hazardous portion of the building

perintendents or members of educational boards, are not competent to pass on so technical a matter as fire conditions in schools and their proper correction. It is a question for experts on fire control.

E. A. Christy, chief architect of the Building Division of New Orleans, was an active figure in securing the co-operation of the

various city officials in the matter of fire protection for the New Orleans schools. Mr. Christy's idea is expressed in the following words:

"In regard to the action taken by the New Orleans parish school board in the matter of safeguarding against fire of a number of school buildings in this city, would respect-

fully state that their action in this was based purely upon certain recommendations made by me about a year and a half ago. At that time the board was confronted with the problem of providing additional means of egress for the most part in connection with the older type of schools, and this question, I may state, was by no means a

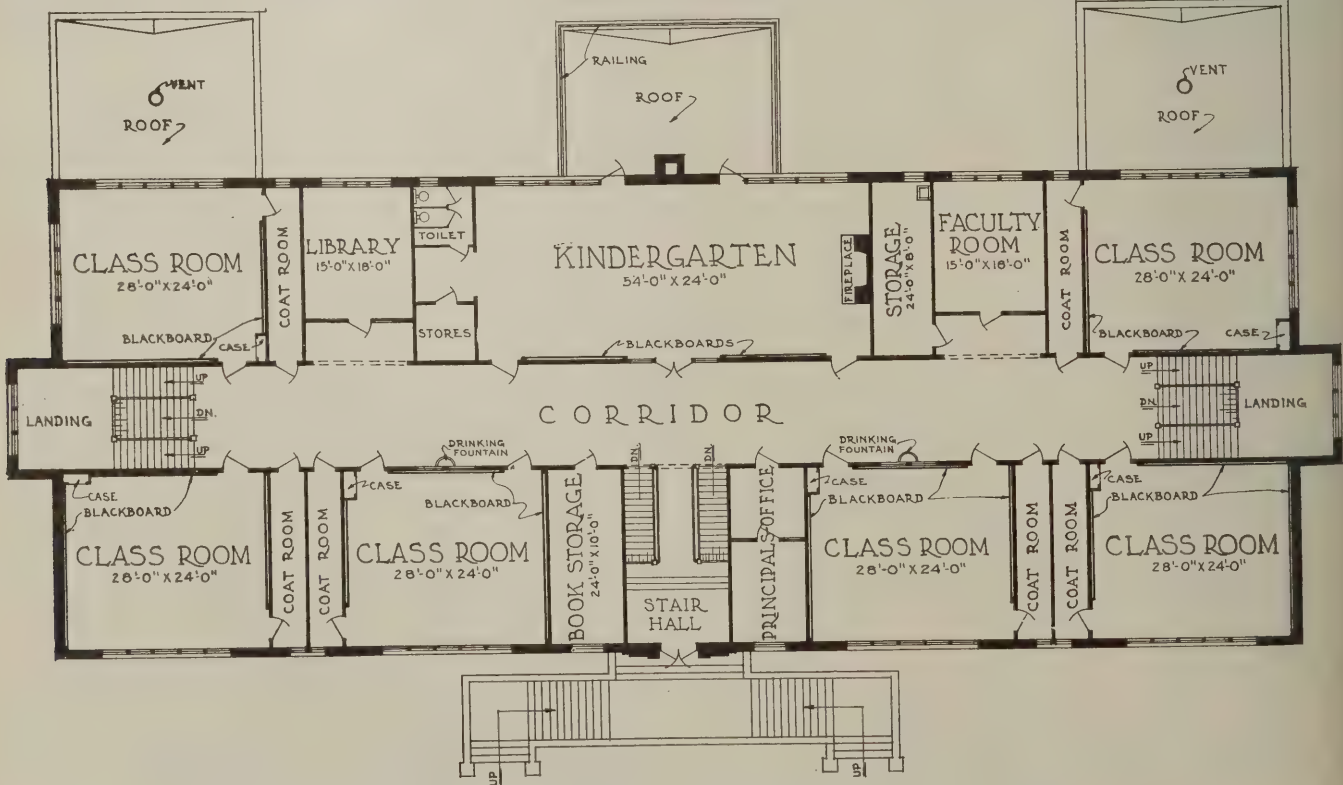


Fig. 4—First floor plan. Here, too, sprinklers are provided, thruout, even in closets and coat rooms



Fig. 5—There is no danger of fire panic in this wide, sprinkler-protected corridor

new one, having arisen time and again, and all discussions relative thereto simply ending in recommendations relative to the installing of additional means of escape, more particularly in the form of exterior metal stairways, and which in very few instances, if I recall correctly, proved a true solution.

"The entire matter was referred by the board to me for a general survey and report, and in my communication addressed to them under date of July 9, 1921, you will note that I urged the adoption as a permanent means of protection the installation of automatic sprinkler equipment. The board, I am pleased to state, acted favorably upon this recommendation, and saw fit to let contracts at once for sprinkler equipment throughout three of the older type of schools, and requested that this form of protection be provided in the instance of four of the new type of buildings, plans for which were then well underway."

Due to the immediate need for additional school-room space it was necessary that several new schools be constructed as quickly as possible. Therefore it was decided to build several schools of the ordinary brick bearing-wall type of structure with wood joist floors, in order to meet the space requirements as soon as possible, instead of building "fireproof" structures which would take a longer time. As a means of illustration, the Audubon School, one of the four referred to in Mr. Christy's letter, is described here.

The building is three stories high, and because of the difficulty of building basements in certain parts of New Orleans, none was provided. Brick, covered with stucco, is used for the exterior walls, and a series of wood trusses, which span the width of the building, carry the load of the roof. Wood joists are used for the floors.

The ground floor is devoted to recreation rooms, toilet rooms, boiler room, etc.,

and the class rooms are located on the two upper floors.

The three exits from the building shown on the floor plans provide a means of emptying the building in a very short time in case of fire, and it is interesting to note that the exits from the two upper floors are entirely independent of those on the ground floor. Notice, on the ground floor plan, that the boiler room is separated from the main building by an unpierced wall. This is an important safeguard because insurance reports show that in many cases fire has spread from the boiler room to other parts of the building for lack of a proper barrier.

Notwithstanding the fact that the walls of this building are constructed of brick, there is a dangerous fire hazard in the floors

and roof, both of which are wood. In order to overcome the possible disaster caused by the floors or roof falling through because of fire, the building is equipped throughout with sprinklers.

A main feed line connected with city water is brought into the building in the center, and branches running vertically are taken to each floor. In the center of the building they lead down the main corridor in both directions and from this line the various sprinkler pipes are taken into the rooms and corridors. No part of the building has been neglected. Notice in the diagram showing the sprinkler layout on the second floor, that sprinkler heads are located not only in the class rooms and main corridor, but also in the store rooms, dressing rooms and closets.

The theory of the sprinkler type of fire protection is that the sprinkler heads are normally kept closed by a fusible seal which melts at a given temperature of say 150 degrees so that in case of a fire the sprinkler heads will open up automatically because of the heat and project their sprays of water over the blaze before it has had a chance to spread very far. Every square foot of the floor area in this school building can be reached by a spray from some sprinkler head.

This New Orleans idea marks an important advance in stopping the useless waste of the public's money in the yearly burning of 1200 schools and in putting an end to the dreadful danger that school children must face while any such rate of burning continues.

The fire officials and chief architect of New Orleans are to be congratulated on their public spirited action and the school board on its prompt compliance with such expert advice. Fire danger in schools should no longer be tolerated.



Fig. 6—The tots in this kindergarten are protected by more than a score of automatic firemen who are always on duty

Overcoming Difficulties in the Excavating Business

James Wilson, Excavating Contractor of Newark, New Jersey,
Handles a Difficult Excavating Job in an Unusual Manner

ALL the world has, for some reason or other, come to look upon the building construction business as a kind of gamble; a more or less romantic business where a man may "make or break" in a short time. Just why people in general should carry this idea about the construction business is hard to say unless it is because of the many incalculable hazards and risks connected with putting up a building as compared with the easily plotted routine of other businesses.

If it be true that chance plays a big part

in the average contractor's success or failure then it may be said to be equally true that in no branch of the construction business does it play so great a part as in the work of the excavating contractor. The many difficulties which beset this individual makes his business a precarious one indeed and one which requires constant attention to details and an up-to-date knowledge of everything connected with his work.

The addition to the Newark *Evening News*, of Newark, New Jersey, presented some un-

usual difficulties for the excavator. The location being on one of Newark's main streets, working space had to be reduced to a minimum. This, however, was the smallest obstacle to the excavator. The real nut to crack was the fact that the required excavation was narrow and deep, barely wide



A general view of the job. Notice that the derrick leg across the face of the building is so arranged that the entrance is unobstructed



A picture of the bucket "digging in." Notice that the soil is sandy and loose, and therefore ideal for working a clam-shell bucket

enough to allow a steam shovel to swing in the width of the lot. Due to the depth of excavation required another difficulty presented itself. If a steam shovel had been used, it would have been hard indeed to get the shovel out of the hole after the work had been done. Jacking a shovel out of an excavation is mighty expensive work and if an incline were left, upon which to bring the shovel out, the removal of this incline would have meant considerable hand work.

It was decided, finally, not to use a steam shovel but to do the work with a clam-shell bucket, working on the end of a derrick boom. In order to reach all parts of the excavation with the bucket a long boom was

necessary and the manner of mounting the boom furnishes the most interesting part of this story.

To hold the boom rigidly, a long-legged derrick had to be used. The derrick was mounted as shown in the accompanying illustrations, one leg being set on the sidewalk and bolted to falsework built underneath, and another leg held inside the excavation, carried on a bearing pin fixed in the wall. The vertical leg, upon which the turntable and boom were mounted, was carried on the foundation of the old building which was wrecked before the excavating was started. On account of the length of the stiff-legs, knee braces were used to stiffen them. These knee-braces were fastened at the base in the same manner as the stiff-legs themselves. A heavy-duty steam engine furnished the power.

Excavating with a clamshell bucket is nothing new; it has been done many times before—in fact, it is the standard form for excavating in sandy soil and for digging out loose material. Seldom, however, has it been used in the manner shown here for building work, especially rigged up as illustrated. As regards the advisability of using this kind of excavating outfit in heavy or clayey soil, it is the writer's opinion that this would not be feasible since the bucket depends for its load upon scraping the material from the surface, and in heavy soil which is best excavated by digging, a bucket would be hard put to scrape up much of a



The stiff-leg brace is fastened to falsework built below the sidewalk. The legs are fixed in the same manner

load. As will be seen from the illustration, however, the soil at this job was sandy and comparatively loose so that a clamshell bucket could be worked efficiently.

The method used for loading the trucks was to back them on an incline and let the clam-shell do the rest. As the excavation progressed, the incline was taken up so that it was kept out of the way of the bucket.

James Wilson, of Newark, New Jersey, was the contractor for the excavating on this job, and C. B. Davis was superintendent in charge of the work. According to Mr. Davis, the plant proved very efficient and the idea worked out very well.

New Methods of Concrete Construction

A NEW method of erecting reinforced concrete buildings is briefly outlined below.

Essentially, the process consists of forming the columns girders, beams, walls and floor slabs with metal lath and reinforcing bars, and filling these "baskets" with a quaky mix of concrete. The exposed steel is then covered with an inch of concrete by plastering, or by the aid of a cement gun.

This back-plastering unites with the keys of concrete forced through the lath and forms a solid mass of concrete with the reinforcing completely imbedded within it.

As soon as one floor is poured, work is started on the columns, beams and walls of the next floor. The entire structural part of the building, including the floor slabs, is usually poured before the walls are put in, just as is the practice on ordinary concrete structures.—*Sand and Gravel Bulletin.*



Illustration showing how trucks were loaded. The runway extends only part way into the excavation



View of the derrick and power plant. The leg extending into the excavation is fastened to a pin fixed in the wall



A glorified garage, yet the same materials could have produced a good design by having a correctly proportioned gambrel roof over a central portion, with a flat roof wing on each side



Here the roof would have been better if it had a graceful sweep at the eaves and if the gable ornament were omitted. Attempts to include a porch under the main roof are foredoomed to failure

“Such” or Dutch Colonial?

IT would seem that the demand for Dutch Colonial houses has out-run knowledge of the subject, if we may judge by some of the buildings so classified in any large—and many a small—city. The exaggerated examples we see are the result of trying to meet a demand without sufficient study of the basic principles involved. Such buildings bring unfavorable publicity to their builders and to the architectural type itself, earning for it the opprobrium “Such Colonial.”

There is an overabundance of nondescript houses that have been erected as Dutch Colonial which are not correctly designed, nor even well-designed. The proportions are poor, the roof is awkwardly handled, the details are badly exaggerated, and the attempt has been made to incorporate too many “ideas” into one small house. People either do not know, or lose sight of the fundamental truth in design, that it is not necessary or even desirable to have much evidence of architectural features in a comparatively small building.

At the outset, let us note that the term “Dutch Colonial” does not refer to the archi-

ture of Holland, but to the style of houses built by Dutch colonists in our own country. There are no Dutch Colonial houses, as we know them, in Holland.

Nor is the term “Dutch Colonial” synonymous with “gambrel-roofed,” as many people suppose. The more gambrels that can be worked into their roof, they evidently think, the more Dutch will their Colonial house be. As a matter of fact, a long, low, sloping roof is just as characteristic of the early Dutch-American houses as the gambrel, which was so beautifully handled that we have come to think of “Dutch” and “gambrel” as the same.

The Gambrel Roof

The origin of this roof form has been explained in many ways by different authorities. The most plausible explanation is that its American development originated in the fact that two-story houses in Colonial days were heavily taxed, while one-story houses were not. The gambrel roof seems to be an effort of the thrifty builders to evade the tax by building one-story houses that would still have the roominess of two stories. The

roof was therefore given a wider overhang (insuring more room upstairs), and sloped very steeply up to the second story ceiling line; from there the intermediate space was covered over in the simplest, most economical way, with as flat a roof as possible. The resulting obtuse angle gave the shape its name, from its resemblance to the old French “gambe,” the leg with the knee joint.

The chief trouble in designing a good gambrel roof lies in the determination of the slope of the roof surfaces. They must not be so steep as to appear squeezed into too small space, nor so flat as to be weak. A satisfactory rule for designing a roof of this type is as follows: Take half the depth of the house (including the wide overhang front and rear) as a radius. With the midpoint of this cross-sectional depth as a center strike an arc. Draw the top line of the roof tangent to the circle at an angle of 30 degrees with the horizontal line. Join the tip of the eaves with this point of tangency, preferably with a graceful curve just at the eaves, otherwise the roof-lines will be stiff and harsh.

The roof must then be tested in relation



This gambrel has an unpleasant form and has too great a projection at the ends of the house. The relation of the dormer to the edge of the roof is good



Balance in this house would have been improved if the entrance had not been elaborated, since it is not centrally located in the usual way. The grouped windows with shutters appear crowded

to the floor lines, especially the second floor line, to determine whether the necessary dormers will take their right places. A little experiment will enable you to arrive at just the right roof slope.

For the one-story or story-and-a-half house, it is best not to use the gambrel roof, but to use Colonial dormers in a low-pitched roof—45 degrees is good—with the same sweeping curve at the eaves. The warning should hardly be necessary that a gambrel roof is not suitable for a square plan; yet we see them, often.

The Construction Materials

The homes of the early Dutch settlers in America—in New Jersey and New York—are of stone, or stone in combination with plaster or clapboards. Brick was scarce, and was used only for chimneys and fireplaces. The chimneys were always inside the house, contrary to the usual modern version. The gable ends of the house were usually built of stone, since they were difficult to protect from the weather. On these ends the roof should have a very slight projection, say 3 inches. The gable walls were as much as 24 or more inches thick, and had 2-inch wide white mortar joints, the stone being squared in random sizes. Often these walls were framed up from the second floor level and clapboarded.

The front and rear walls, on the other hand, were well protected by the wide eaves, say 20 inches, and could be covered with plaster much more cheaply.

While this method of construction (stone for the ends and plaster for the front and rear) was usual, other materials were sometimes used, alone or in combination, and it

is by no means uncommon to see four or five materials in one small building. It was largely a matter of working with materials that were readily available. If the same system is used in modern work, the results will be best. There is ample latitude for choice of building materials for the modern Dutch Colonial house, and really fine examples have been developed in stone (in localities where stone is plentiful), in clapboards, shingles, brick and stucco.

Dormers

It will come as a surprise to many builders to know that the original Dutch Colonial houses, when they had dormers at all—which they often did not!—had an individual dormer for each window, rather than the long dormer which is so familiar nowadays. Dormers should be few, small and not heavy-looking. A small pediment crowning it, narrow spaces on each side of the window and a narrow projection of the roof are rules for obtaining the right effect.

The long dormer is perhaps less wasteful

of space in the bedrooms, and if carefully designed it is not objectionable. The chief fault to be avoided is making it so large that only two thin strips of the gambrel roof are left. It would be better to give up the gambrel roof in cases like that, and make a simple two-story house.

Other Exterior Details

Windows in the old houses were always straight across the top, with the exception of the quarter-circle openings in the attic gables, and were always divided into small, beautifully proportioned panes. This seemingly small point is

so important to the general effect of the finished building, and correctly-proportioned windows of this type are so easily obtainable now, that there seems little excuse for neglecting this detail. Shutters were extensively used. They were usually white, while the blinds of the second story were dark green. Shutters and blinds are almost always desirable in modern Dutch Colonial work.

The main entrance permits of some restrained elaboration. Flat pilasters were frequently used, and some attention was given to the simple detail of the cornice. Sidelights and transoms are in good usage, and so is the Dutch door—cut across the center, so that the halves operate separately.

One of the attractive characteristics of Dutch architecture is the lean-to or wings of equal size and similar fenestration which often flanked the central mass of the house. These sometimes had gambrel roofs, sometimes a rather steep gable, an admirable plan to follow. For houses on comparatively narrow lots, flat roofs on the porch wings produce a less crowded effect.



While some liberties have been taken with Dutch architecture in this example, the general effect is excellent. The perfect simplicity of this house gives it a most homelike charm. Edward Buehler Delk, architect, Fifty-ninth and Ward Parkway, Kansas City, Missouri



If the designer could have thought of any other forms to include in this unhappy roof, he would undoubtedly have added at least a sample of each. "Such Colonial" at its worst



Here the roof appears thin because the dormer approaches too close to the edge of the gambrel. The general proportions of the gambrel are good, but the snubbed gable does not help the design

A New Departure in Sidewalk Protection

Sidewalk Protection on the New Straus Building in Chicago Shows That Temporary Structures of This Sort Need Not be Ugly

IN harmony with the desire of the Chicago Plan Commission to make every structure, both temporary and permanent, a thing of beauty, S. W. Straus & Company have provided that their new home,

ing about Chicago," commented S. J. T. Straus, senior vice-president of S. W. Straus & Company, "I have been particularly impressed with the unsightliness of building construction. The usual protective barricade has been an ugly affair, unpainted and awkward in construction. "When the occasion arose to consider a barricade for our 32-story building now being erected on Michigan Avenue at Jackson Boulevard, I protested against the common type of barricade. I felt that something more artistic could be provided at only a small fraction above the cost of the common type of barricade. On investigation I learned that my idea was correct, and accordingly the architects of our building—Graham, Anderson, Probst & White—were given instructions to provide a protective barricade that would be an artistic asset to Michigan Avenue rather than a liability. "Our barricade is evidence that new building construction need not be unsightly. It is a blending of former types of barricades. In times past the barricade was mere protection to pedestrians, without any consideration for the public other

than the prevention of accidents from falling bricks and other materials. In addi-

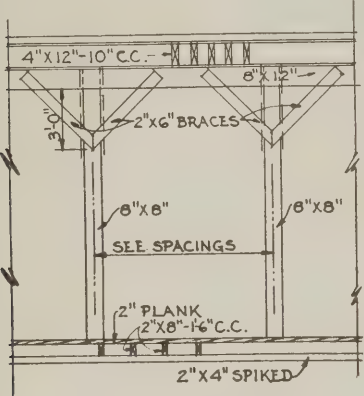


Fig. 1—Design of framing for typical bent

even during the period of its erection, will present a pleasing appearance, in harmony with the beauty of Michigan Avenue, the country's finest boulevard. "In traveling in other cities and in go-

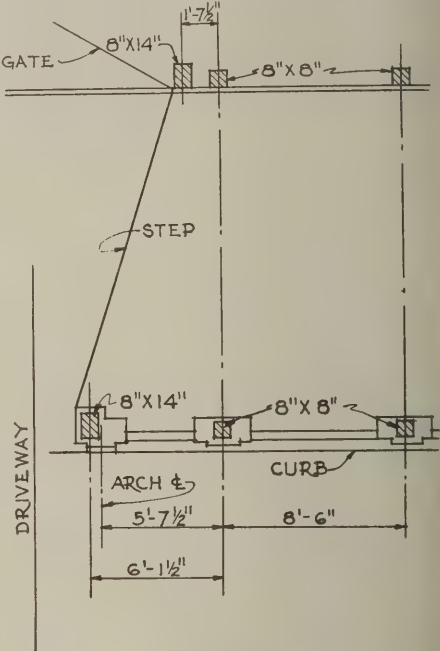


Fig. 2—Part plan where material driveway occurs

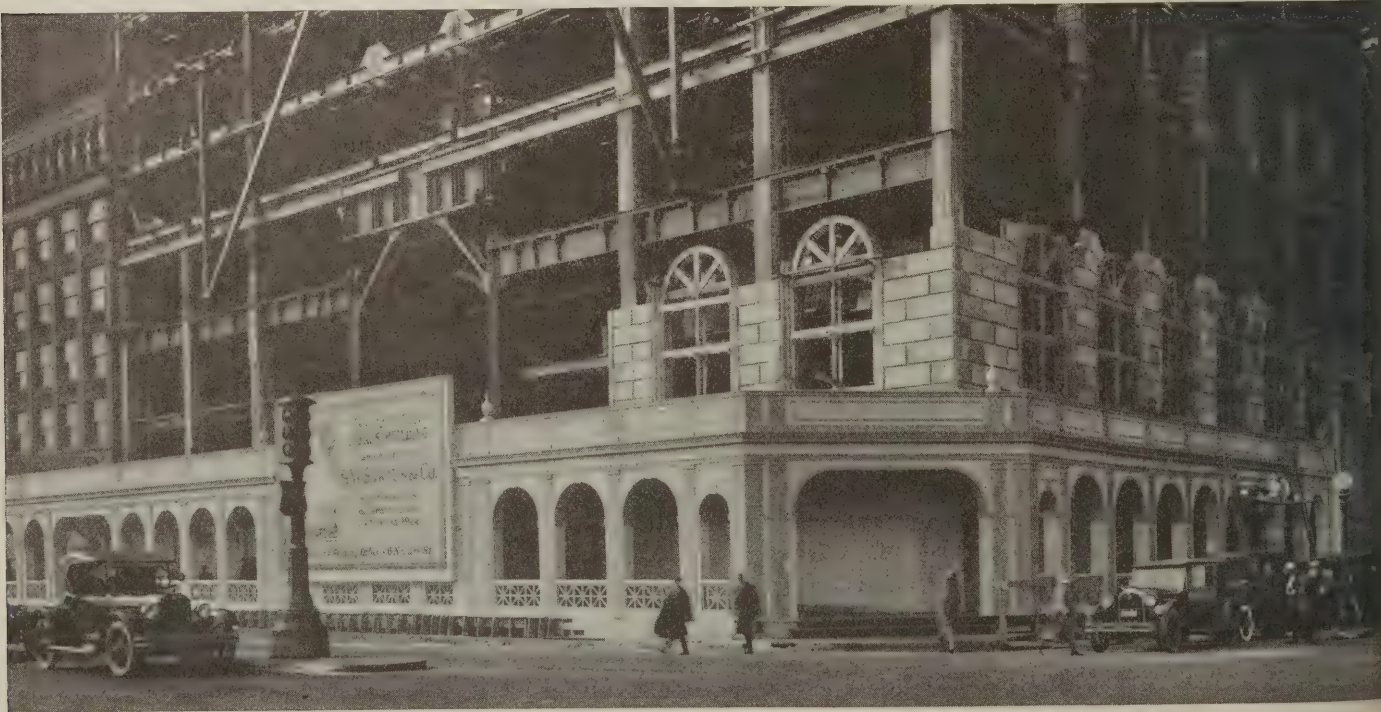
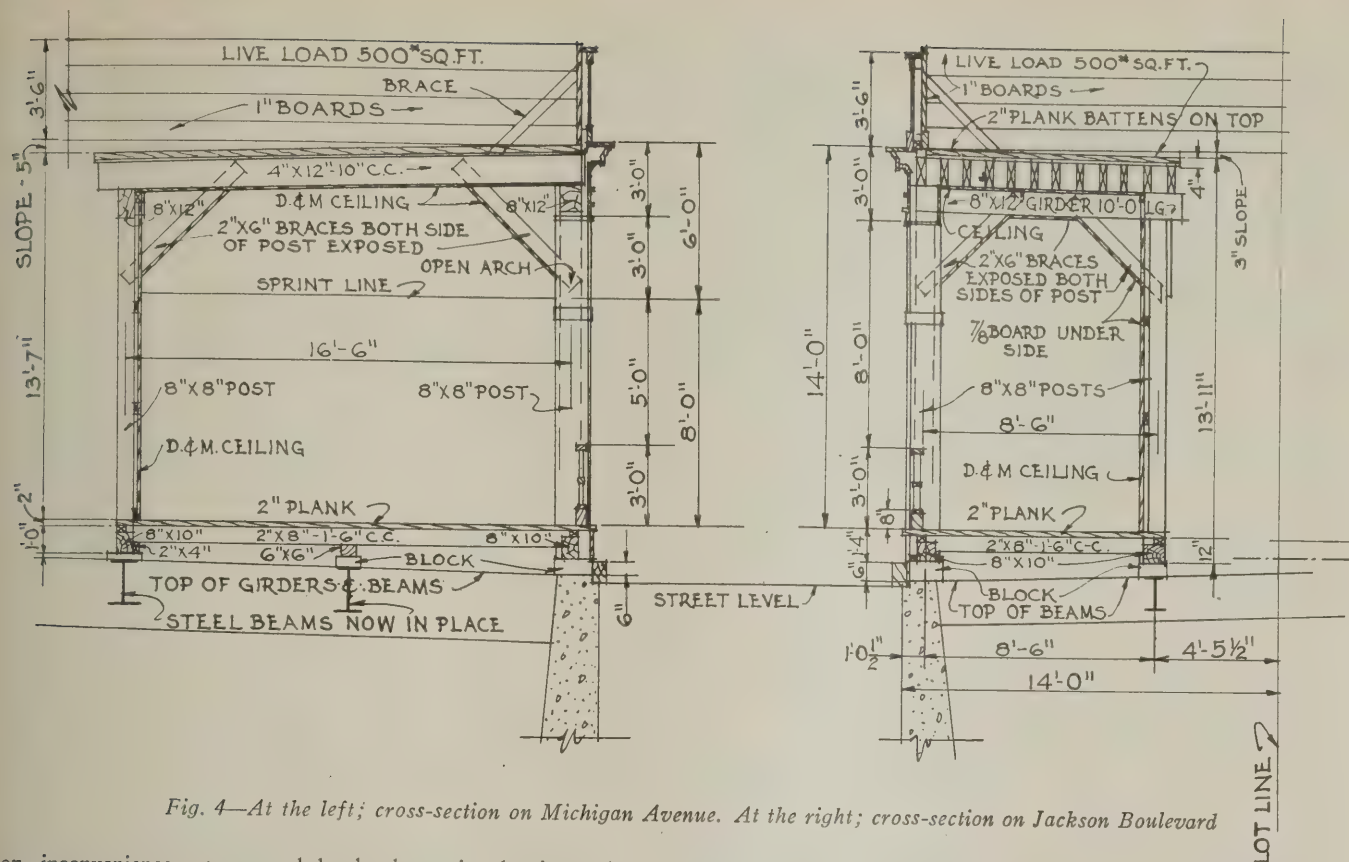


Fig. 3—Barricades usually receive the censure of the people who must look at them. This one, however, promotes better feeling



tion, inconvenience was caused by lumber, brick and stone piled high adjacent to the building operations, without any regard for traffic considerations.

"A new stage of progress was reached when the temporary barricade was built more substantially, further insuring safety for passersby, but in Chicago it remained for someone to take an advance step toward further refinement of the barricade, and we took advantage of the opportunity.

"The barricade has beautiful archways, wide pathways without the interruption of disturbing wooden columns. It is painted

in pleasing colors, which match well with the stone facing of the building. The colors were chosen after four decorators experimented to determine the best color combination.

"Other cities are beginning to realize the need for barricades of ornamental design and have found that the cost of the beautifully designed barricade or canopy is only slightly greater than the cost of a bare protective barricade. It is our hope that the builders of new buildings will accept the precedent set in the ornamental barricade at the Straus Building.

"The margin between the cost of the

usual barricade and a barricade of ornamental design is very small. The principal cost lies in the heavy timbers necessary in the construction. The slightly higher cost of our barricade is more than compensated for in the fact that it has, perhaps more than any other factor, called favorable attention to the building.

"Mr. H. J. White, of Graham, Anderson, Probst & White, concurred with me in this attitude when he replied when asked why our barricade was constructed, 'for appearance sake and for the purpose of showing that it costs only a little more to make a utilitarian thing attractive.'"

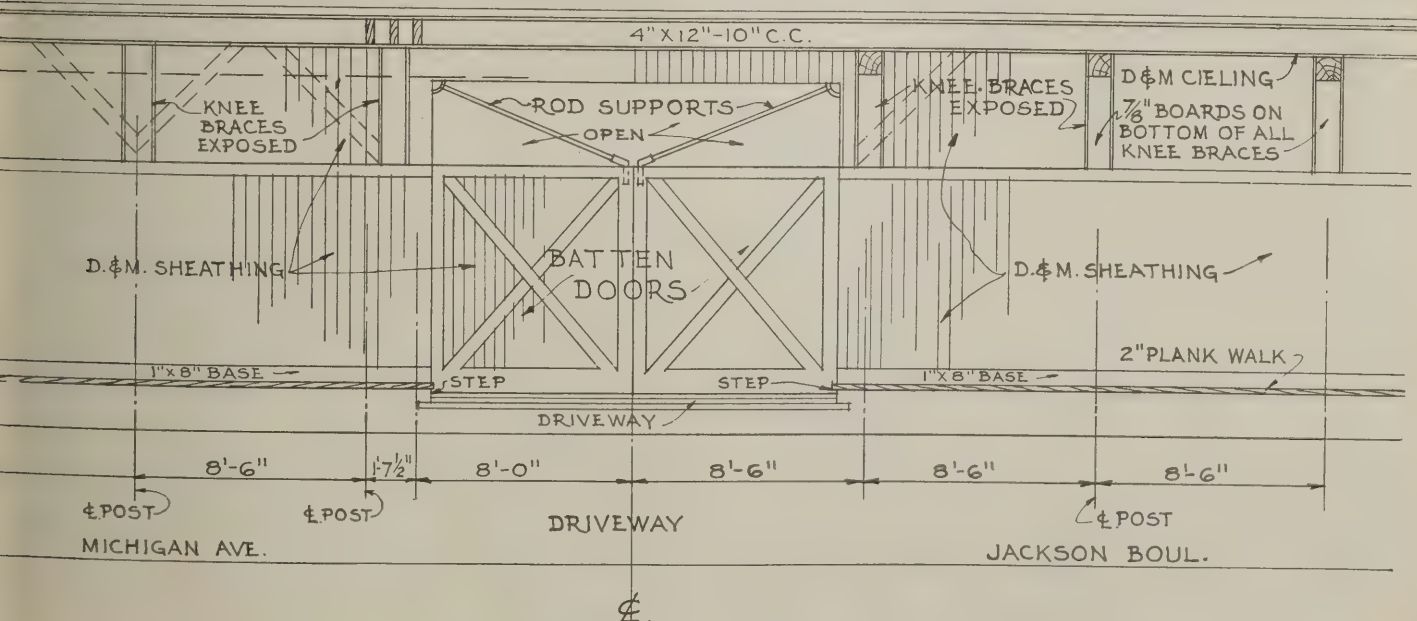


Fig. 5—Sectional elevation looking toward the building



Eleven people were killed in this recent Montpelier, Vermont, fire. Note the condition of the fire escape

The Hazardous Fire Escape

By R. S. Moulton*

IF anyone is in doubt about the efficiency of fire escapes in general, let him try an experiment. Select almost any building at random which is equipped with fire escapes; choose a windy winter night when everything is covered with ice; try to get out of the building by way of the escape. If after locating it and looking out upon it you are not convinced of its unreliability, try to descend it all the way to the ground and when half way down imagine what the situation would be if in front of you were an elderly and portly lady paralyzed with fear and behind you was a panicky crowd pushing forward. If this possibility does not convince you, examine the supports of the balconies and stairs; see what proportion of the metal is rusted away and calculate the remaining factor of safety. It is a thousand to one shot that if you really make a test of this kind you will be convinced about fire escapes without needing to read more in this article.

In new buildings there is really no excuse

*Mr. Moulton is assistant secretary-treasurer of the National Fire Protection Association. He is also secretary of the Building Exits Code Committee of the American Engineering Standards Committee.

for installing fire escapes at all. When the building is originally planned it is a comparatively simple matter to provide enough stairs inside the building to safely remove the occupants in case of fire. The fundamental principles are simple enough. There should be two ways out of every main area and these routes should be so arranged or protected that one or the other of them would always be available in any conceivable fire. This usually means a fire-resistive stair enclosure or a built-in smokeproof tower, but in most cases when originally constructing a building it is possible to arrange adequate exits without any appreciable increase in expense. In addition to having the two ways out, of course, the stairs should have sufficient capacity to take care of all the people in the building, a convenient rule being that stairs should be provided sufficient to get all the people out in three minutes (or less, depending on the character of the building) on the basis of forty-five persons per minute per twenty-two inches of stair width. Detailed information on this subject can be obtained from the National Fire Protection Association, 40 Central Street, Boston, Massachusetts.

Although what has been said above about the inadequacy of the ordinary fire escape is quite true, there still remains a large class of existing buildings where it is economically impossible to provide necessary exits by any other means than by the installation of outside fire escape.

If the fundamental disadvantages of the outside fire escape are considered it is readily appreciated that it is important to have the outside fire escape just as good a stairway as the ordinary stair inside the building. If the fire escape be built just like an inside stairway with the width, pitch, landing arrangement and general construction, the same as would be considered good practice for a stairway inside the building, a very substantial degree of an exit safety is obtainable. There are, of course, a few fundamental differences in the construction of inside and outside stairs. With the outside stairs the railings must be made higher and the material should be steel, well painted to protect against corrosion. Adjacent window openings should be glazed with wired glass in metal frames so that fire will not issue from the building below the escape and render it impassable. The treads of the stairs

should be solid plates and the risers should be solid (although openings for drainage are, of course, permissible). The open slatted type of construction of the ordinary fire escape is one of the principal reasons for condemning it. It is this that makes the footing precarious and that is responsible for the frequently noticed timidity on the part of persons using fire escapes.

Another factor to be mentioned is the bottom of the outside stairway. To be reliable outside stairs, just as the inside stairs, should be extended continuously to the ground level and give free access to the ground. There are thousands of fire escapes all over the country that are well enough constructed above the first story; they afford a reasonably safe path of travel from the upper stories to within fifteen or twenty feet of the ground, then leave their victims on the lowest balcony with the option of jumping at risk of life and limb, or waiting on the balcony to be pushed off by those behind them, or burned by the fire, or perhaps if they are fortunate, to be rescued by the fire department. Sometimes there are swinging sections which are supposed to be lowered by the weight of a man upon them. Sometimes these work when they are not permanently fastened up, or obstructed by signs, awnings, doors, etc., below them, or rusted in the pivot so they will not swing. Where it is by any chance possible to do so, it is infinitely better to construct the fire escape continuously to the ground. Where a swinging section must be used, it should be of the most reliable type possible and should be located well away from any potential obstructions which might prevent its being



Binghamton, New York, clothing factory fire. Some of the 33 girls who perished were roasting to death on the fire escape when this picture was taken

lowered. Roofs over escapes are of great value in Northern climates where snow and ice storms are frequent.

The slide or chute type of fire escape has been introduced in the last few years and is used to some extent in parts of the country. This type of escape, although not suited for general use, has certain advantages. It unquestionably gets people out of the building faster than by any other means. A large manufacturer of explosives, for example, finds that the slide or chute type of escape is the only type of exit which will permit the employees to get away from the upper stories of explosive manufacturing buildings with any reasonable degree of

safety in case of fire. The slide escape, however, is objected to for general use primarily because it is an unfamiliar device which without special training people are not likely to be able to use in an emergency. It is also objected to because of danger of physical injury to those using it, and because it depends for its efficiency on proper maintenance, which this, like all other types of emergency devices, all too often does not receive. The Committee on Safety to Life of the National Fire Protection Association prepared specifications for this slide type of escape for certain uses and presented them to the association at its 1923 annual meeting, but after some discussion during which Fire Chief Sherwood Brockwell of North Carolina exhibited the scar which was the result of his attempt to start an insane hospital patient down one of the slides, the association officially voted against recognizing the slide escape as a required means of egress. Recent developments indicate the possibility of modifying this official action, but the fact remains that the slide escape is a special device not suited to general use.

Altogether the best type of fire escape may be a rather expensive device, and when all is said and done, it is only an expedient at best. Where space permits it is far better to build on a stair tower constructed as part of the building. This in many cases will not be so much more expensive than a fire escape and if properly built will not only provide a stairway that is a far better fire exit than any fire escape, but will add to the usefulness of the building by giving an additional stair for everyday use.



Rear view of apartment house in Boston after the fire in which eight lives were lost. Escape was made impossible by flames issuing from window openings



Flames came out these windows in the early stages of the New York tenement fire and rendered the escape useless. Fourteen people killed

Moving a Heavy Building Off the Lot Into a Narrow Street

An Interesting Job by the Kress Housemoving Company of Los Angeles, California, Which Illustrates Some Excellent Ideas on Modern Practice in Housemoving

EVERY housemoving contractor will tell you that no two of his jobs are alike. Each one presents a new problem; there always seems to be something to do that requires just a little more exercise of in-

into account the cost of wrecking and the value of the house when set upon its new site it will be readily understood that the expenditure was justified.

Because of the narrow street it was neces-

sary to divide the house into two parts so that it could be conveniently moved. The house consisted of a main central portion with a wing at each end, and the first section consisted of the central portion and one wing, while the second section consisted of only one of the wings.

The first section was carried on steel rails and moved off the site on rollers. Before the foundations were broken down, heavy timbers, set on cribbing, were placed longitudinally under the house. Above these longitudinal timbers were set transverse timbers at several points. The longitudinal timbers were carried on 16x16s which, in turn, were carried directly on rollers. The cribbing was taken down when the house was ready to be moved, but was re-erected each night to add to the support of the building.

Study of the illustrations will show more than words can describe. The rollers and supporting system are shown in detail. A point worthy of note is the fact that a three point system of support was used in moving this house. One roller system was used at the front and two similar ones at the rear, thus furnishing bearing at three points, and overcoming to a certain extent the difficulty



Here is the first section of the house partly moved off the lot. When left to stand over night it was not considered safe enough to leave the house without any support except the rollers so it was braced by building up cribbing at each end of the longitudinal beams, setting a couple of screw jacks on top of the cribbing and tightening up on the jacks to make the cribbing take part of the load. In the morning when the moving was ready to begin, the jacks and cribbing were taken down

genuity than was expended on the last job.

When the houses to be moved are small, the work is comparatively simple, but when the job means lifting a big house off its foundations, dragging it down the street to its new site and setting it in its new location, the work becomes somewhat complicated.

The job described in this article was done in Los Angeles, California, by the Kress Housemoving Company of that city. The growth of the city which resulted in several residential streets being changed to business streets caused an increase in the value of a certain piece of property so that the home which stood upon it no longer brought a sufficient return on the money invested in the ground. It was decided to remove the existing residence and erect a business building on the lot, but rather than wreck the house which was in excellent shape, it was determined to move it to a site several blocks distant and save the cost of wrecking the house and at the same time improve a second piece of property. Of course it cost considerable to do the moving, but taking



A view of the second section. This section was so high in proportion to its width that there was danger of its tipping unless it was properly supported. In order to brace it and prevent it from toppling over, the beams upon which it was carried were made extra long and joists run from the extremities of the beams to points on the house, thus holding it securely



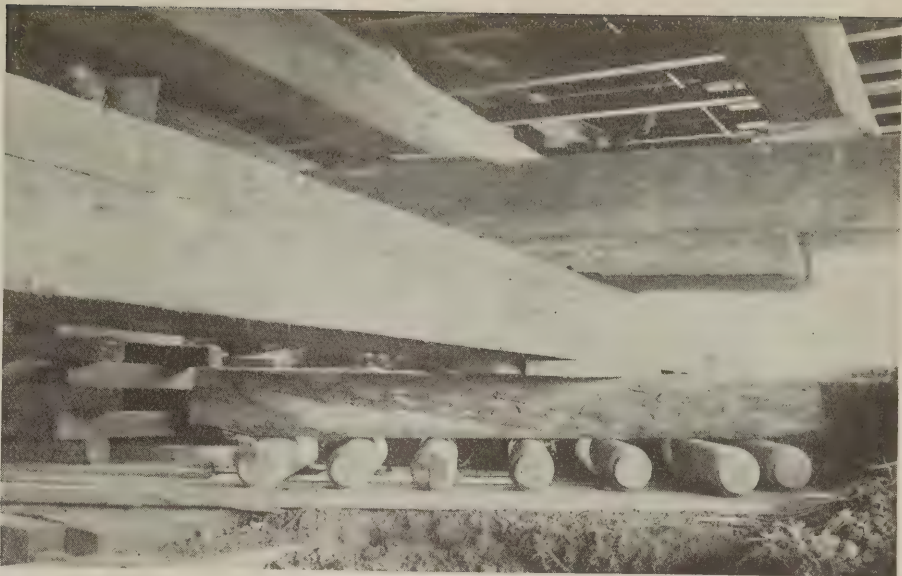
The separators, used to prevent lateral movement of the longitudinal timbers, were firmly chained to the 16x16s which carried the entire load, and the chains were tightened by driving wedges between the chain and the timber

of maintaining the equilibrium of a building supported at four points as is sometimes done.

Notice that the longitudinal timbers are kept apart by separators which are chained to the transverse supporting girders. It is essential that the longitudinal timbers be prevented from shifting lest the building settle slightly and cracks appear in the plaster or brickwork. Wedges were used



View of cribbing and jacks used to support house at each end of the longitudinal timbers when work was left for the night

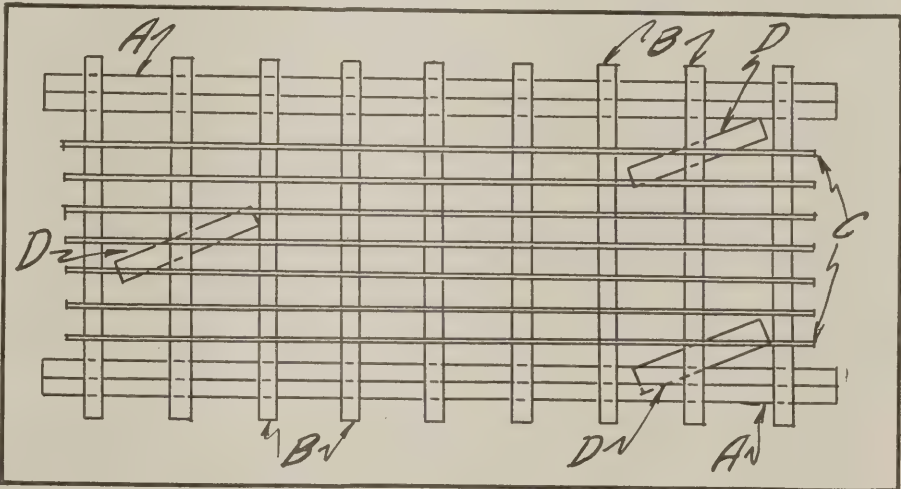


View underneath the building. This shows how the load was transferred to the rollers. On the bottom are the rollers, next the car upon which the building was rolled, then come the wedges used to level the heavy timber upon which the load was concentrated. Above this heavy timber are a few light members used as shims; then comes the longitudinal timber which runs the full length of the house. Above this are the transverse timbers

to bring the binding chains up tight.

The second section was moved off the site on heavy moving trucks. Note, in the illus-

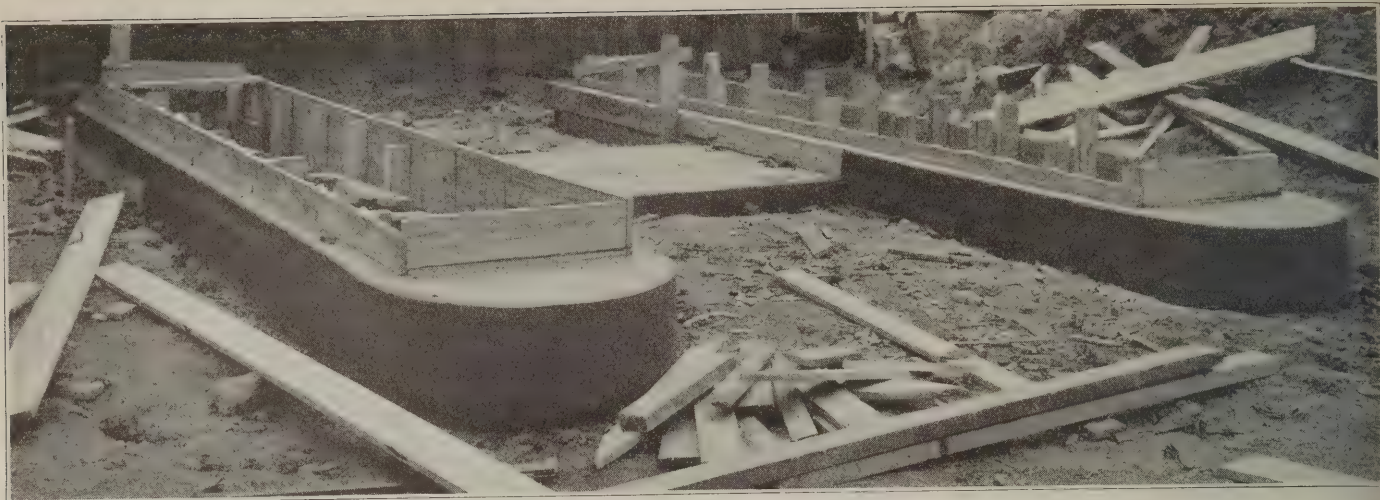
tration on the opposite page, how carefully it was braced and thus prevented from tipping.



Assembly of supporting members. A, longitudinal timbers; B, transverse timbers; C, steel rails, and D, cars. Notice the three-point system of support used



Front view showing track, rollers, car, transverse timbers and ends of longitudinal timbers



View of a double pit with connecting tunnel, showing outside forms removed

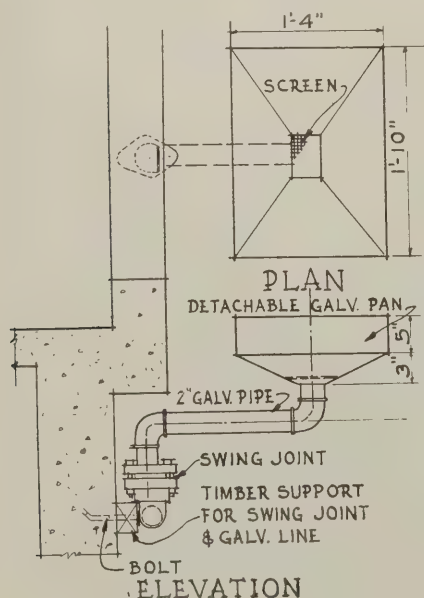
A New Method of Building Service-Station Pits

IT is only in recent years that the gasoline station has come into vogue, but the general popularity of this type of building and the large numbers in which it is being built in all parts of the country makes it imperative for the wide awake contractor to pay some attention to a kind of building which he is bound to be called upon to put up some time or other. Service stations are quite similar to other buildings and the contractor will find little in the building itself that he has not already come in contact with but it is on some of the adjuncts to the station proper that he may meet with some difficulty.

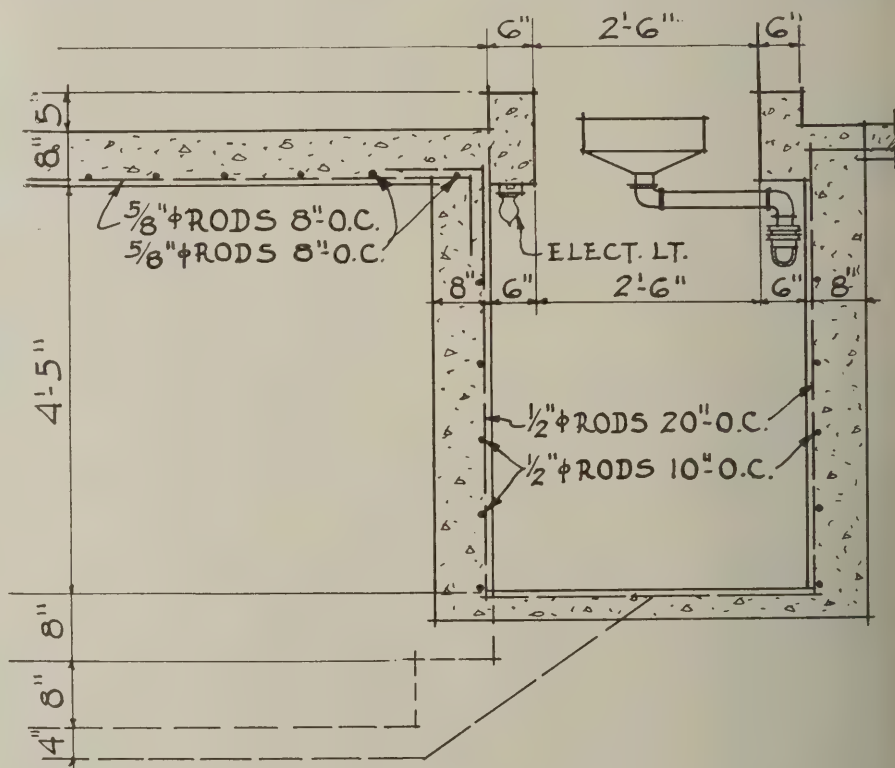
Originally, service stations were simply gas tanks located at different points for the convenience of passing motorists, next came the station which carried small supplies and

now we have the station where a specialty is made of greasing cars and replacing en-

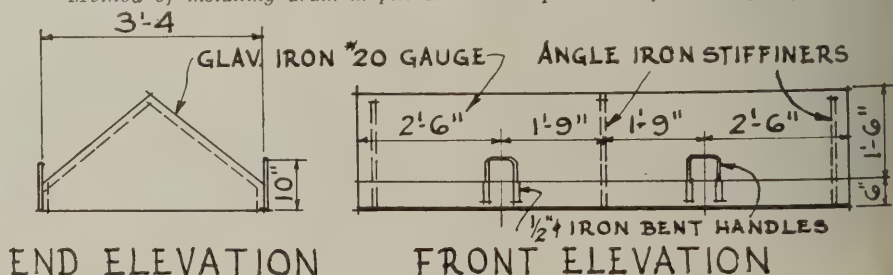
gine oil by draining the old oil out of the crank case and putting in new. This has developed a need for a pit which would permit the mechanics to reach the various parts of the car conveniently and the one illustrated here, built by F. C. Grote at Richmond, Indiana, and designed by Robert N. Turner of the Refiners Oil Company of



Details for oil drain



Method of installing drain in pit. Notice the protection for the light globe



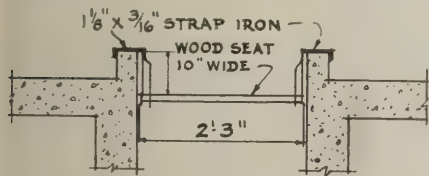
Detail of sheet-metal covers to protect pits when not in use



Inside formwork in place

Dayton, Ohio, is the latest development along this line.

This is a double unit, containing two pits connected by a tunnel and built of reinforced concrete. The illustrations show the manner of building up the framework and using sheet metal forms to secure the curve



Detail of wood seat

at the ends of the pits. The floors of the pits are sloped to a central drain located in the middle of the tunnel so that all rain water may be led off and the pits kept dry.



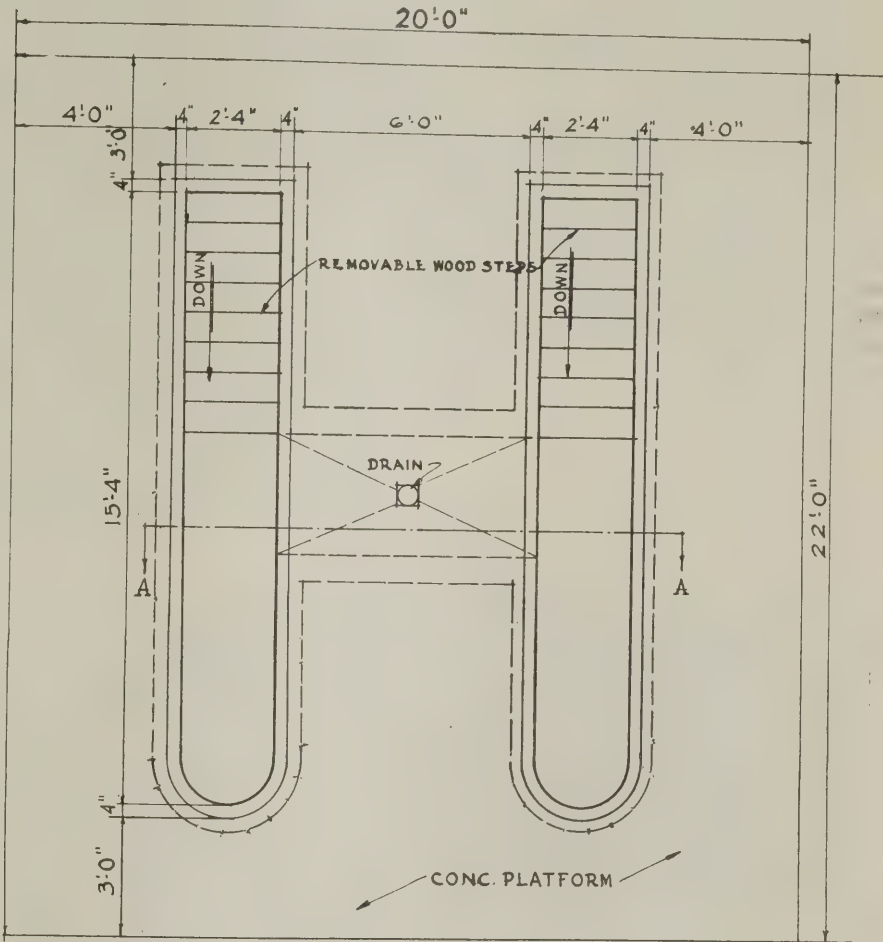
Method of forming outside curve with sheet metal forms

In sandy soil it is sufficient to project the drain into a shallow bed of gravel and allow the water to run off into the soil but in hard soil the drain should be connected to a sewer. The platform over the tunnel between the pits is nothing more or less than a concrete slab designed strong enough to carry the weight of a machine.

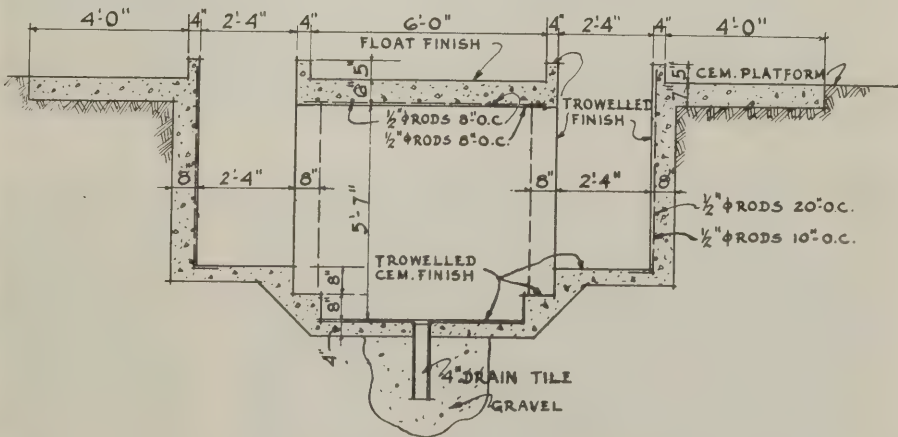
In addition to the design of a typical double pit, additional details showing an

oil drain and the manner of installing it, a pit cover, and a mechanic's seat are given. The drain catches the oil as it comes out of the motor crank case and leads it through a galvanized pipe to the place where it is wanted. This is a decided convenience over draining the oil into a bucket.

On the whole these details are well worth study by the man who has anything to do with this class of work.



PLAN



SECTION A-A

Complete working details for a double pit with connecting tunnel

Some Two - Car Garages

MANY a home owner has found after his house and garage were completed that he made a serious mistake in building his garage for only one car. More and more automobile owners are adopting the two-car idea and of course they require larger garages, but even the man with one car can invariably find use for a two-car garage. Friends may come to visit him and he can put up their cars, or he can rent one half of his two-car garage to a neighbor and thus make his garage be a source of revenue instead of expense to him.

The garage should always conform in design to that of the house to which it is



Living quarters in connection with the garage offer a happy solution of the problem of housing the servants, and the illustration above shows a garage for a large residence in the English half-timbered style



an adjunct, but some suggestions are shown here in photographs of two-car garages which may be of help in working out plans and designs.

Two-car garages are often built with a second story, which may be utilized for many practical purposes. Among other uses, such an arrangement provides living quarters for servants, or it may be used as a play room for children, as a workshop, or as an informal tea room and so forth.

The extension of the roof beyond the doors and the use of lattice at the sides in the design at the left gives this little building a home-like quality which should make it an attractive addition to any city lot or country place



Here are two garages of flat roof type which have a prominence due to their location on the street that is not given to the average garage



This is a view of the existing building and the stone-yard alongside. The stone-yard has been so constructed that when the wood part is removed the brick wall and piers can be utilized as a part of the store building to be erected

Providing for Future Growth

M. C. Barney & Son of Flint, Michigan, Build with an
Eye to the Future

CHANGING property values are something every owner of real estate has to contend with. Property that was worth little a few years ago may be worth considerable today and valuable property today may increase in value to a surprising extent a few years hence. All owners are faced with the problem of erecting a building suitable to

the site upon which it is built. A cheap building, suitable for the site today may be decidedly out of place tomorrow when property values have increased. It behooves all builders then, to plan for the future, and where it is seen that a location is liable to improve, to build a structure that will be suitable for the class of tenant desired.

M. C. Barney and Son, of Flint, Michigan, dealers in cut stone, had the above thought in mind when they set out to improve their stone yard. They happened to be located in a portion of the city that was directly in the path of future growth, and realizing that some day their property would be too valuable to be used for storing and trimming stone they set out to improve it in a suitable fashion.

One of the improvements installed was a new fence. This was not an ordinary wood fence, as inspection of the illustrations will show, but one which provided for the future construction of a store building. The side wall forms one wall of the future store building and the piers are built to support girders which will carry the upper floor. Note how these piers are designed. At present, as will be seen from the illustration at the top of the page, these piers do nothing more than form an ornamental part of the fence. Inspection of the rear of the piers however, will show the purpose for which they were built. Notice that they are corbelled out near the top to receive the beams

which will carry the future store-front. Notice also that jamb-blocks have been set in the piers to form a base to which the window frames can be fastened. The stone coping on top of the piers is only temporary and is used both for decorative effect and to protect the top of the pier from weathering.



One of the corner piers. Note that it is arranged to carry beams in two directions



One of the intermediate piers. The stone plate above where the brick are corbelled out is the base for a steel beam

Redeeming the Back Yard

BUILDERS, and particularly those who specialize on jobbing work, should realize the possibilities for extra work that are offered by the average

Trelliswork is easy to build and the variety of designs are limited only by the imagination of the designer. Pergola effects are often combined with trellis-

work with attractive results. Posts that are set in the earth for supporting trelliswork should be creosoted to prevent rotting.



Plate 1



Plate 2

Plate 1—A sort of a co-operative back yard in the rear of a group of bungalows. Plate 2—A back-yard tennis court. The space between the trellis panels is filled with wire mesh and the court is paved with concrete



Plate 3—An attractive rear fence of trelliswork



Plate 4—Another fence of trelliswork

back yard.

The back yard is no longer a receptacle for tin cans and a parade ground for alley cats, but has become a valuable piece of yard space. People have awakened to the fact that it looked rather foolish to spend so much time and effort on one part of the yard and utterly ignore the other part.

One of the most effective ways of redeeming a back yard is by means of trelliswork. This may be used in building fences and screens.

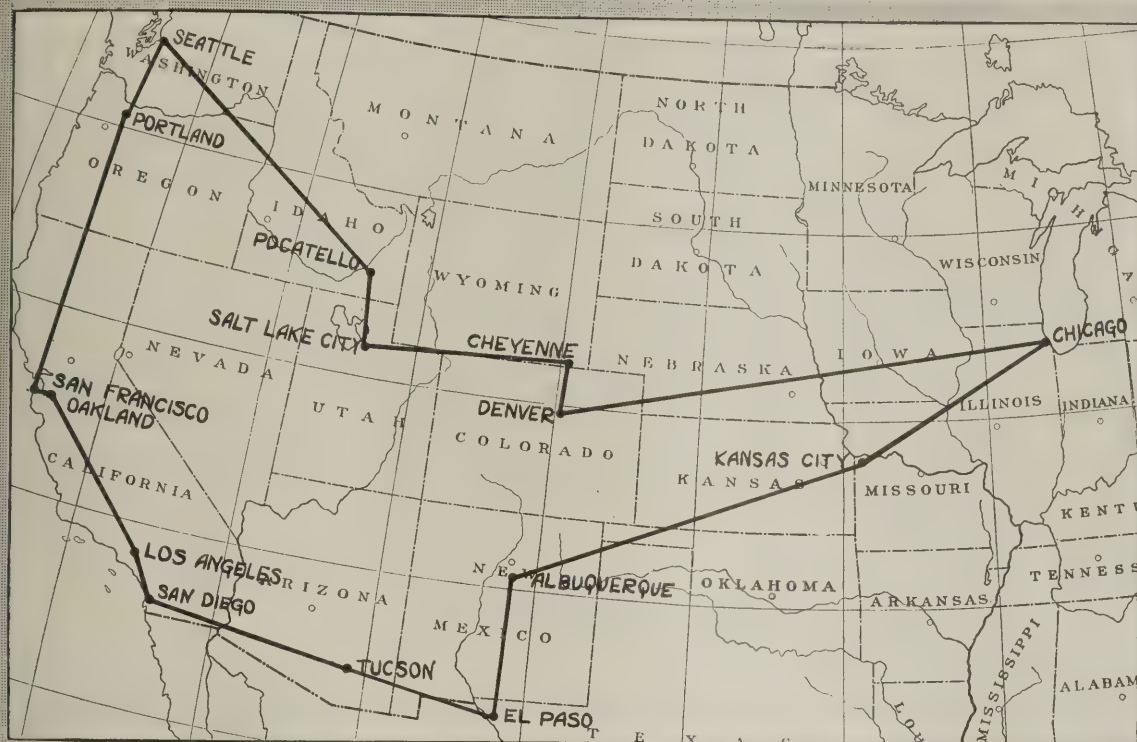


Plate 5—Note the trim appearance of this back yard and the ash receiver built of concrete

Back yards are often turned into tennis courts. A concrete slab makes a splendid playing surface, and when surmounted with a well-designed trellis and comfortable seats, it becomes a very popular pleasure ground.

Garbage and ash bins may be made of concrete and, if desired, may be hidden by a trelliswork screen. A few vines and shrubs planted around them, however, is all that is really necessary.

On the Job with the Construction Editor



THIS has been about the longest trip I've taken since I've been on-the-job for NATIONAL BUILDER. It figures up about 6000 miles or thereabouts and when I look at the map of the country over which I've traveled I begin to realize why some of those train rides seemed so long. I stopped off in eleven states and was gone two months—even took a little side trip into Mexico and learned how to ask for refreshments in Spanish.

The trip has been very interesting, to say the least. I might go on to rave about the wonderful scenery; of the beautiful movie queens I met in Hollywood (apple sauce); and I would be as proud as a peacock if I could get some of my waterfall pictures into the paper, but the boss won't stand for it. He says that scenery pictures are O.K. for the National Geographic, but NATIONAL BUILDER is a magazine for contractors, builders and architects and inasmuch as the National Geographic doesn't attempt

to give us any competition with "On the Job" stuff, it would be best for us not to attempt to go into their field, so I'm going to give you a good idea of how they do things in the building line in the West, which, after all, is what you want to know and what I get paid for.

Now that I've been in the office for a week or so and have got my stuff into shape for the next issue, I guess I'll find out what time a train goes out of here for the East. Someone told me there's a lot of building going on in a little place called New York, so I guess I'll take a run up there. Don't know but what I might take a little jaunt up to Vermont while I'm in that part of the country; I sure do like the maple syrup they serve with the wheat cakes at Rutland!



Left—Samuel Campbell, contractor, Salt Lake City. Middle—Thomas Hargreaves, building inspector, Salt Lake City. Right—Me, myself

Ry. Linger.

On the Job in Little Rock, Ark.

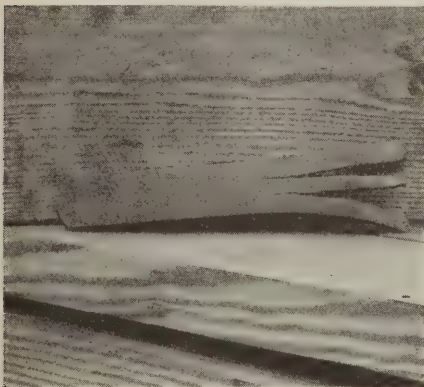
Tools for Making Raked Joints in Brick Work

WILLIAM SMITH and Alf Beadle, two masons of Little Rock, have a few stunts of their own in building brick walls



The tools described below can be used to produce a wall like this

with raked joints. Instead of digging the mortar out of the joints with a scraper, they use the tools shown below, all of which do



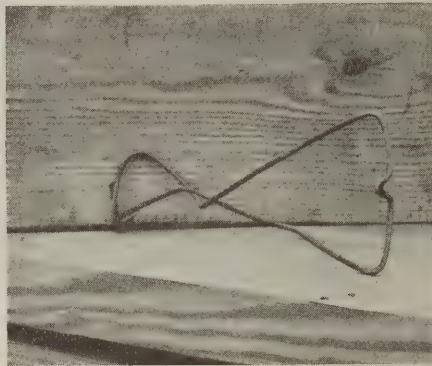
This is known as a raking fork. The two outside prongs slide along the bricks and the middle one cuts out the mortar in the joint. The depth of the cut can be regulated by bending the prongs to a greater or smaller angle

the work in an excellent fashion.

The first is what is called a raking fork, and it is made of a piece of steel $\frac{3}{8}$ -inch

thick, one inch wide, and about eight inches long, split at the end and bent as shown in the photograph. The two outside projections serve as a guide when sliding the tool along the wall, while the center piece cuts out the mortar in the joint.

The second type of raking tool is made of wire bent to the form shown in the pho-



This wire tool is used in the same manner as the raking fork. The bend in the wire cuts out the mortar

tograph. Its use is similar to that described above. After the mortar has been taken out of the joints, the wall is left with a somewhat rough appearance, therefore to



This is the smoothing tool. It is used to smooth the mortar in the joint after the surplus has been cut out with the raking tool

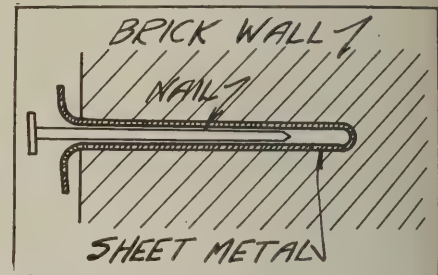
smooth down the mortar in the joints the smoothing tool shown here is used. These tools should be a part of every brick layer's kit.

Holding Casing to a Brick Wall

THE ordinary method of holding any piece of wood trim to a brick wall is to set wood blocks, called jamb blocks, in the wall while it is going up and nailing the wood trim directly to the blocks.

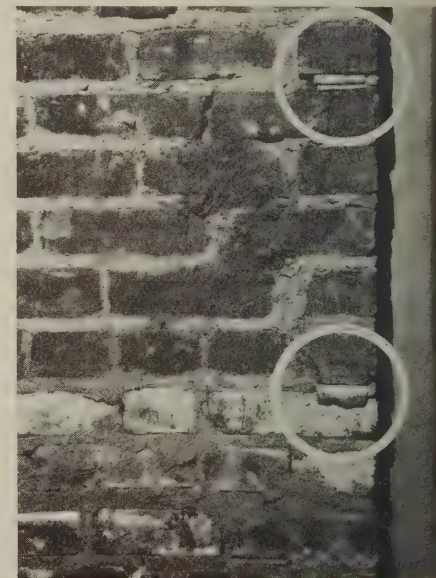
John H. Thalman, a contractor of Little

Rock, Arkansas, has another idea for this kind of job, which is very interesting. Instead of building jamb blocks into the wall



Sketch showing how nail is held in bent sheet metal strip

he sets a piece of sheet metal into the brick joint with lips extended, as shown in the white circles on the illustration. When it is time to set the trim in place the nails



These bent strips of sheet metal, set into the joint when the bricks are laid, will hold nails driven into the slit

are driven between the lips of the piece of sheet metal in the joint. The weight of the brick above the sheet metal will be sufficient to hold the nails in place once they are driven, and little difficulty will be encountered in driving them. The principle is about the same as driving piles in soil. These sheet metal strips have a decided advantage over wood blocks. If they are cut from a piece of metal which is not likely to corrode, such as copper or zinc, their permanence is assured and there is no danger of the nails loosening as is the case when a wood block rots out.



How to Make Soft Woods Beautiful as Hardwood

It is generally admitted that wood finished in its natural shade cannot be worked as successfully into color schemes of decoration as stained wood. It is also true that color brings out the grain and enhances the natural beauty of most woods. For these reasons we manufacture a line of wood colors known as Johnson's Wood Dye.

Johnson's Wood Dye is for the artistic coloring of wood. With it inexpensive soft woods, such as pine, cypress, fir, etc., may be finished so they are as beautiful as hardwood. Johnson's Wood Dye is very easy to apply—it goes on easily and quickly without a lap or a streak.

Johnson's Wood Dye is a *dye* in every sense of the word. It penetrates so deeply that the natural color is not disclosed if the wood becomes scratched or marred—it brings out the beauty of the grain without raising it in the slightest—it dries in four hours and does not rub off or smudge.

Johnson's Wood Dye is made in 17 shades, all of which may be easily lightened, darkened or intermixed—full directions on every label.

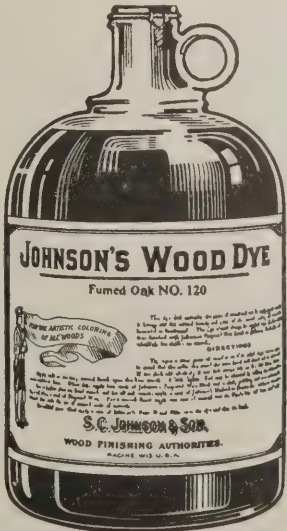
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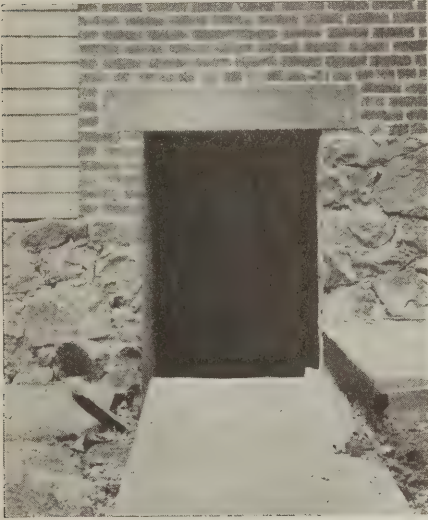
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On the Job in Wilmington, Del.

Reinforced Concrete Lintels

WHILE some contractors use steel lintels and others wood lintels of various sorts, they should not overlook the practicability of reinforced concrete lintels.



Reinforced concrete lintel set over opening in a masonry wall

S. Tabasso, a contractor of Wilmington, Delaware, is awake to the uses of concrete in this connection and the illustration shows where he has placed a reinforced concrete lintel over a doorway.

The lintel illustrated is not a plain concrete slab but it is reinforced with steel rods to help carry the load. The size of the rods, the distance they are to be spaced, and the number to be used can be determined in a moment by any local architect or anyone familiar with the design of reinforced concrete beams.

A Roof Truss for a Small Building

THIS Wilmington, Delaware, contractor had a roof of long span requiring intermediate bracing and for this purpose he used the truss shown in the photograph at the right. The photograph illustrates the method of construction, and very little explanation is required. Notice that one of the ceiling joists is used as the lower member of the truss. The upper member is a 2x6, the diagonals are 1x6, and the verticals 2x4, with the exception of the vertical next to the end, which is 2x6. This truss provides the required stiffness for the rafters.

Combination Closet and Stairway

IN these days of high real estate values and increased building costs, it becomes necessary to make as much use as possible of every available inch of space inside the

built this combination closet and stairway. It leads from the second floor to the space between the roof joists and ceiling joists. In order to provide as much closet room as possible only three treads were put in and since this stairway will be very seldom used the treads were built on very light stringers



This is a front view of the closet. Notice that the steps appear as a series of shelves



This is a side view of the closet. Here can be seen the framing for this sort of arrangement

building. Closets are necessary and stairways to the attic are also necessary, and where the two can be combined as shown here the space saved thereby may be considerable.

Charles Brice, of Wilmington, Delaware,

and constructed very lightly themselves. When this part of the building is not in use as a stairway the treads may be used as storage shelves. This is an interesting method whereby one contractor saved floor space on a building.



This truss was used to help support a roof where the rafters were of exceedingly long span. The truss was placed at the mid-point of the rafters

Get a sample

Winthrop BEVELED Siding has become popular within a few months with those who build for permanence.

One contractor writes: "Refer any doubtful prospect to me and I will gladly tell them what I know about it."

It has the solid, lasting beauty of stucco, yet the thick butts prevent a monotonous expanse of surface.

Winthrop BEVELED Siding never needs paint, yet it will not rot. Its four colors are non-fading and pleasing.

In re-siding buildings that have passed the stage where paint might save them, there is nothing that surpasses Winthrop BEVELED Siding. Goes on over the old siding making a fire-resisting exterior.

Winthrop BEVELED Siding is made in strips 8 feet long. It is 6 inches wide and is laid 5 inches to the weather. Nails are furnished with the siding. Its cost is about that of good wood siding.

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Winthrop
BEVELED
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On the Job in Knoxville, Tenn.

Loading Platform for a Material Hoist

It is sometimes possible to unload materials directly from the delivery truck to the hoist, and transfer them at once to the floors where they are to be used.

Where this is done the small loading platform attached to the base of the hoist,



This platform attached to the tower permits unloading from the wagon directly to the hoist and saves the labor required to rehandle the materials

as shown in this photograph, will be found to be very useful in keeping the work going smoother. This platform is built at truck-body height from the ground so that the material may be unloaded directly from the truck to the elevator without lifting it to the ground and then placing it upon the elevator. This is a little time-saving kink and therefore a money-saver as well. The distance from the truck to the ground does not seem very great but someone has to be on hand to do the unloading and to load the elevator. If material can be set directly upon the elevator the time and labor used in unloading the truck will be saved and the truck will be unloaded and the elevator loaded in the same operation.

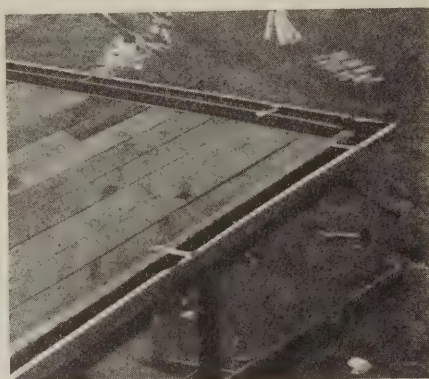
A. H. Whisman, of Knoxville, was the

contractor for the job on which this photograph was made.

A Simple Way of Hanging Sheet Metal Gutters

THERE are many ways of hanging sheet metal gutters, but someone always seems to have a new one. Though this stunt may not be new to everyone, nevertheless, some may find it both interesting and useful.

The gutter is made with a projection which is nailed onto the sheeting of the roof.



A view of the gutter from the roof. Notice the metal strips set into the lip of the gutter and nailed to the roof boards

Small notches in the outside lip are made to accommodate the sheet metal strips which act as a brace to keep the gutter from

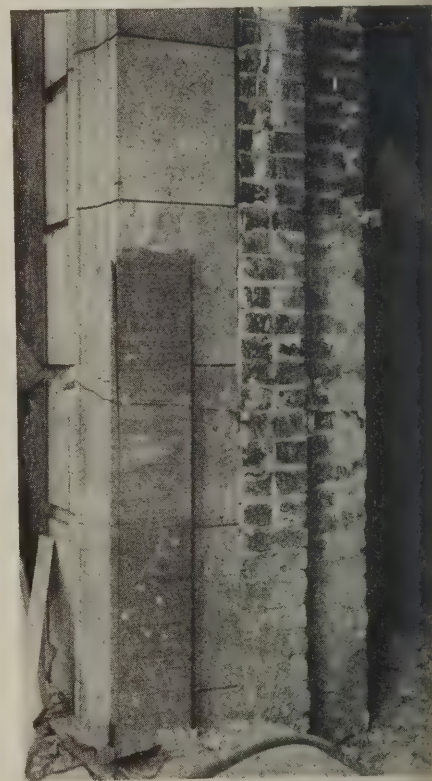


This is a view of the gutter from below. Notice the nice, clean-looking job, and the fact that the hangers do not show

sagging. When the job is completed the method of holding the gutter can not be seen from below. This makes a nice clean-cut job and quite different from the one where the gutter wires or gutter hangers can be seen.

Protection for Cut Stone Trim

WHERE cut stone trim is used at corners, it is very necessary that it be protected, while the building is under construction, against chipping or rubbing, for it takes only a slight blow to break the corner off a piece of ornamental cut stone.



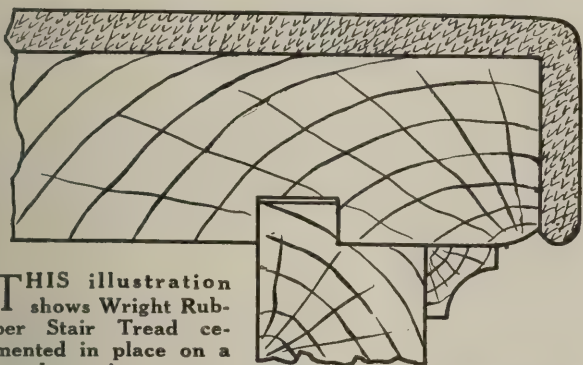
The wood corner protection is held to the stone by wire, fastened to wood wedges set into the joints. The two pieces which form the protecting corner are nailed together at the edges where they are in contact

Two boards, placed as shown in the photograph, serve the purpose of protecting the corners very well, but in ordinary circumstances the means of holding these boards in place presents quite a problem, since there is nothing they may be fastened to except brick or stone.

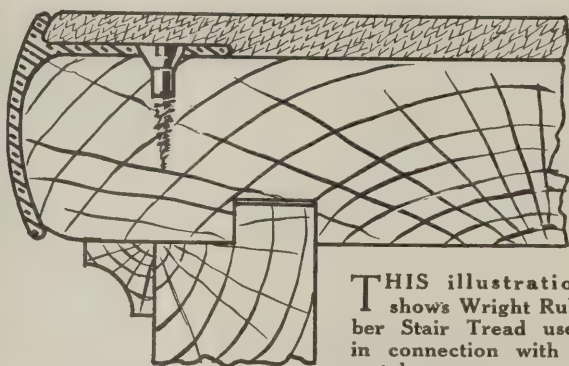
Worsham Brothers, contractors, of Knoxville, Tennessee, use the method shown here for holding these corner pieces in place. Two wood wedges are driven as shown in the illustration, and a bit of wire run from one wedge to the other, thus holding the wood protecting pieces and preventing them from falling. A few nails driven into the edges of the wood pieces will aid their strength materially.

Wright Rubber Stair Tread

Especially adapted for use in Factories, Hotels, Buildings, Stores, Apartments, Homes and anywhere that long wear and safety are desired



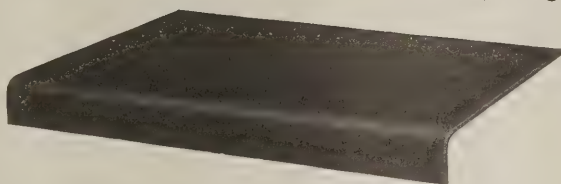
THIS illustration shows Wright Rubber Stair Tread cemented in place on a wooden stair.



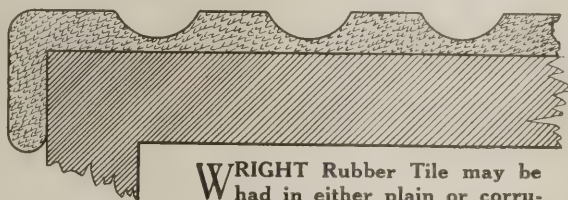
THIS illustration shows Wright Rubber Stair Tread used in connection with a metal nose.

Wright Rubber Stair Treads are a composition of rubber and other strong wear resisting materials. Tough and long-wearing, Wright Rubber Stair Treads will not splinter or chip and will not curl or warp. They wipe clean with a wet cloth or mop and are non-absorbent and non-staining. They are not slippery and are noiseless.

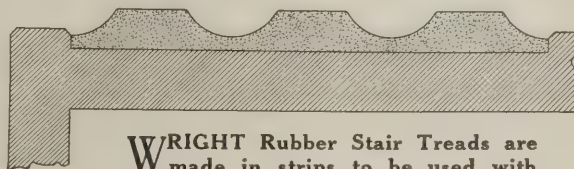
Wright Rubber Stair Treads can be used on either wood or concrete stairs and can be both cemented and nailed or bolted in place. It is not necessary to use expensive hardwood for stairs when Wright Rubber Stair Treads are used. Worn stairs may be evened up with rubber cement and sand before the Wright Treads are applied. Any carpenter can install them.



WRIGHT Rubber Stair Treads are molded to fit the contour of the stair. They are made in 18 inch and 3 foot 6 inch lengths.



WRIGHT Rubber Tile may be had in either plain or corrugated surface. The illustration above shows corrugated tread cemented in place on a metal stair.



WRIGHT Rubber Stair Treads are made in strips to be used with metal, terrazzo or marble recesses.

Wright Rubber Stair Treads may be had in large variety of colors—as plain, mottled or grained effects to match surroundings can be quickly made to order. All colors permeate the entire thickness of Wright Rubber Stair Treads and will appear just as distinct and fresh after years of service as on the day they were installed.

Wright Rubber Stair Treads are ideal for use in Factories, Stores, Hotels, Apartments, Homes, Depots, Theatres, Churches and Buildings where long wear, beauty and safety are desired. Our guarantee covers first-class workmanship, wear and color permanency.

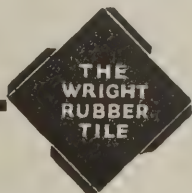
Wright Rubber Stair Treads are made in standard lengths of 18 in. and 3 ft. 6 in.—12 in. wide.

Upon request, we will send samples and complete information concerning these long-wearing, noiseless, non-slippery stair treads to Architects, Contractors and Dealers. Write for this material for your files today.

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The Rubber Tile with the interlapping
nailing flaps

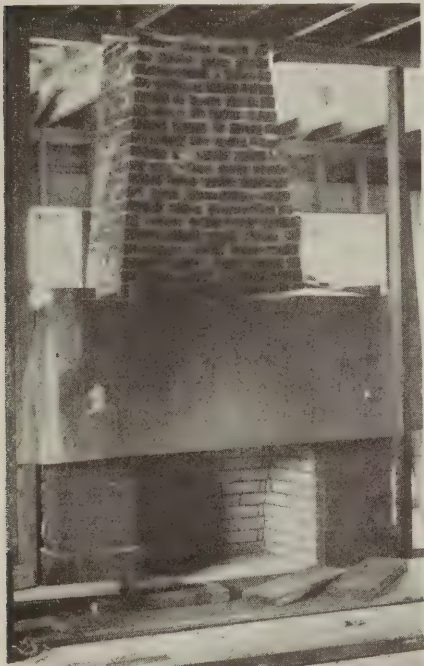
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On the Job in Rutland, Ut.

Protecting Interior Masonry

MANY a time the writer has come to a finished building to see a brick fireplace splashed with mortar stains which even acid could not remove. It is a regrettable sight, since only a little care is necessary to prevent staining brick mantels.

N. C. Fifield, a Rutland, Vermont, contractor, places a section of building paper over the mantel as is shown in the accompanying illustration. This serves to



This paper covering keeps the plaster off the brick fireplace

keep the plaster drippings off and when the job is completed and the paper removed the mantel is as clean as the day it was built.

This sheet of building paper, which costs very little, will go a long way toward reducing the cost of cleaning the mantel after the building is completed. It is a simple matter to clean a mantel that is only covered with dust but it is an altogether different story when it comes to scraping mortar off the brick and in the joints. This suggestion is well worth following.

An Inexpensive Tamper

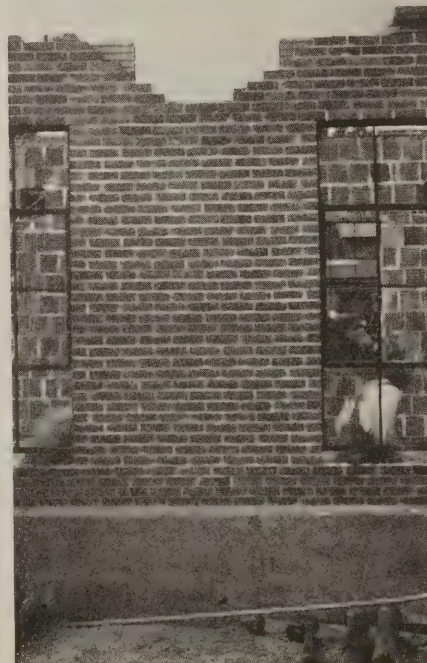
FRED C. IVES, a Rutland, Vermont, contractor, made his own tamper, as shown in the accompanying photograph. It

was nothing but a short piece of scrap 6x6 with two pieces of 1x4 nailed on the sides for handles. There are many types of home-



A simple tamper, made from a waste piece of 6x6 and two short pieces of 1x4

made tampers, but the writer believes this to be as simple as any he has ever seen. The cost of such a tamper is practically nothing.



One side wall is not built-up so that there is plenty of room in which to swing the truss

Providing for Future Erection of Steel Trusses

SOMETIMES jobs are held up for lack of material, with a consequent loss to both the contractor and owner. It may be worth a little extra expense if provision can be made for installing the delayed material, provided the job can be kept going. In the two photographs shown here we see how Bert Bissell, a Rutland, Vermont, contractor, kept the job going even though

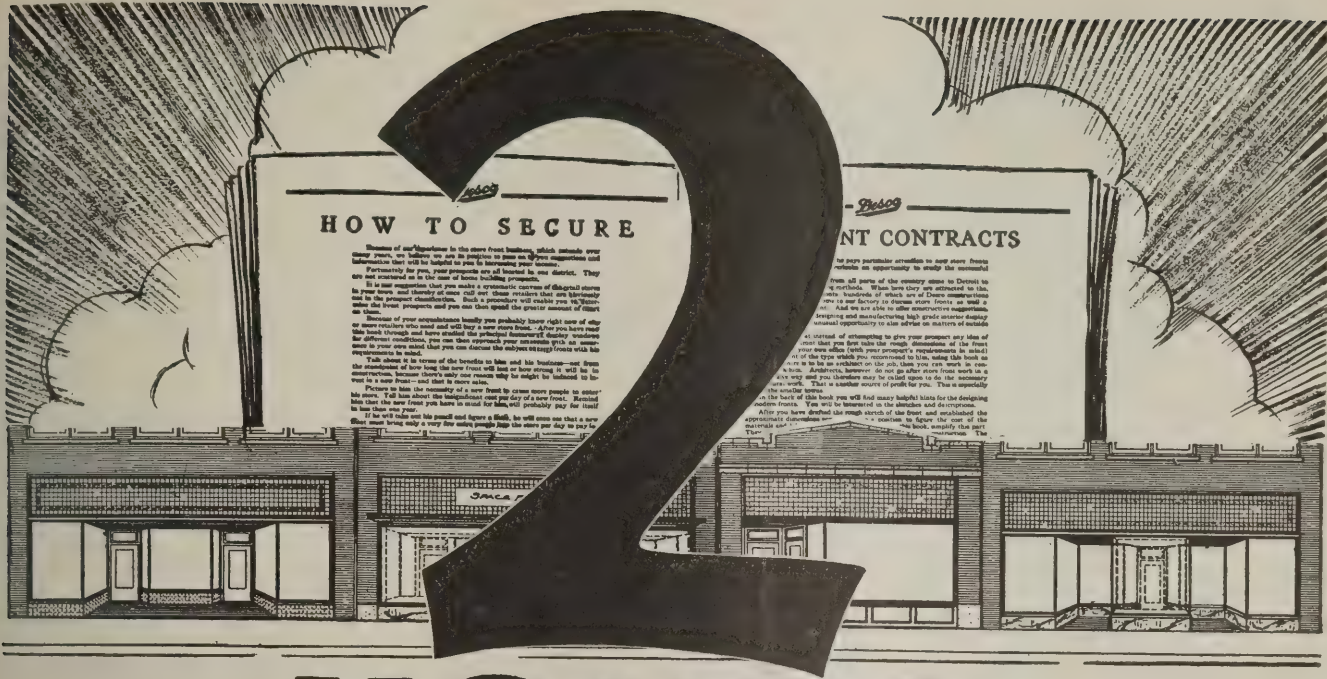


The other side wall is entirely built-up with only the truss seat left open

the steel roof trusses were missing.

The wall was built up to the level of the trusses on both sides of the building. Work was then stopped on one wall but the other wall was continued for quite a distance upward, space being allowed as shown for setting the trusses when they arrived.

The trusses will be erected in the following manner when they come on the job: They will be set diagonally across the building and hoisted to the proper level with a derrick. Then the one end of the truss will be set into the wall, where provision has been made for it, and the other end will be set on top of the opposite wall at the proper level. Only one wall could be built up since provision had to be made for swinging the truss in place.



HOURS with this Free Book may double your income

It isn't the number of jobs you handle that determines your income—it's the profit you make on each. Here's a book that tells about a branch of contracting where there is no cut-throat competition and where there's a real profit on every contract.

It tells about the installation of "Desco" metal store fronts. It surveys the unlimited store front market and tells you how to go after prospects and close contracts. It describes the simple, standardized construction that enables an inexperienced contractor and crew to make perfect installations. It tells how you can quickly establish yourself as a store front specialist.

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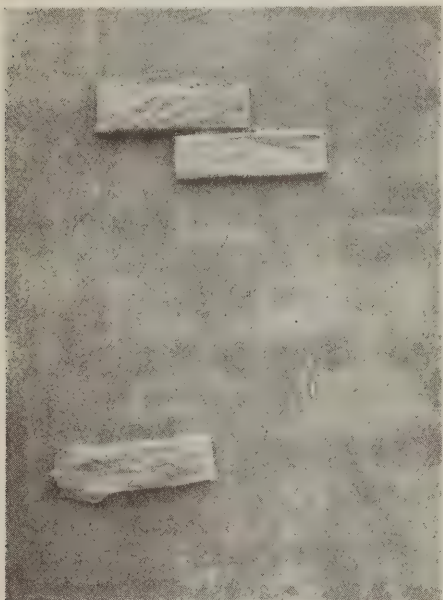
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When writing advertisers please mention National Builder

On the Job in San Antonio, Tex.

Protecting Random-Placed Brick From Stucco Stains

IN certain types of wall decoration where random brick are set, the method shown here, used by a San Antonio contractor, is a good way to prevent the brick being stained

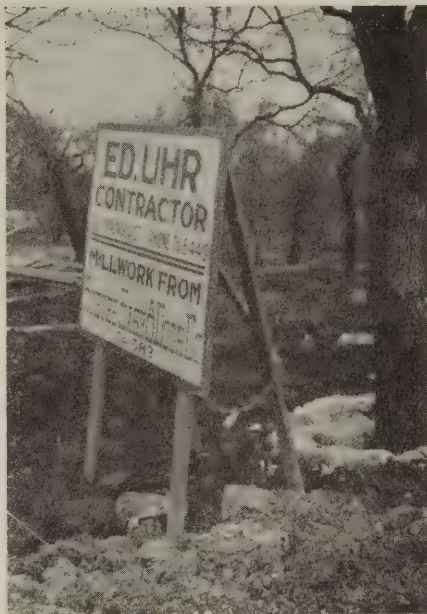


The exposed face of these brick are wrapped in paper to prevent mortar from adhering to the brick

by stucco. The brick are covered with ordinary wrapping paper and set into the wall with the paper around it. The stucco will not stain the brick since the paper wrapped around it acts as a protective coat. When the job is done the paper can be torn off. It is possible to cover only half the brick with paper, holding the paper by tying twine around the brick. If the twine used is strong and the knot well tied this method will suit the purpose admirably.

A Portable Sign Board

THIS photograph tells the story without any further description. It is a sign board used by Ed. Uhr, a San Antonio contractor. This board can be picked up and carried around to any part of the job at will, and has an advantage over the usual fixed sign board that, in case it is in the way, it can be easily moved. Many a time a sign has had to be pulled up and then set over again simply because it was in the

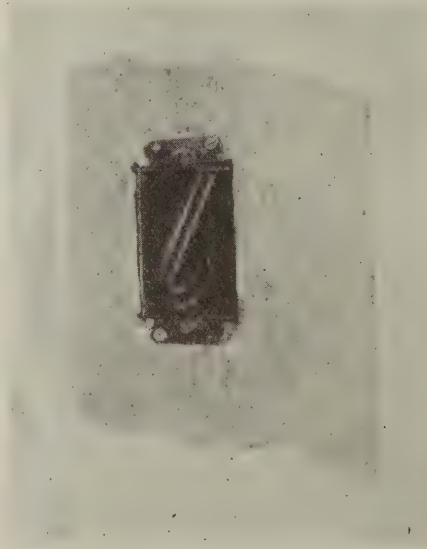


This sign can be picked up and moved around on the job

way. This kind of sign will do away with that nuisance.

Making a Good Job of Light Construction

IN certain parts of the country, particularly in the far west, where the climate is especially mild, a certain form of construction is used in the lower priced buildings whereby the need for plastering is done

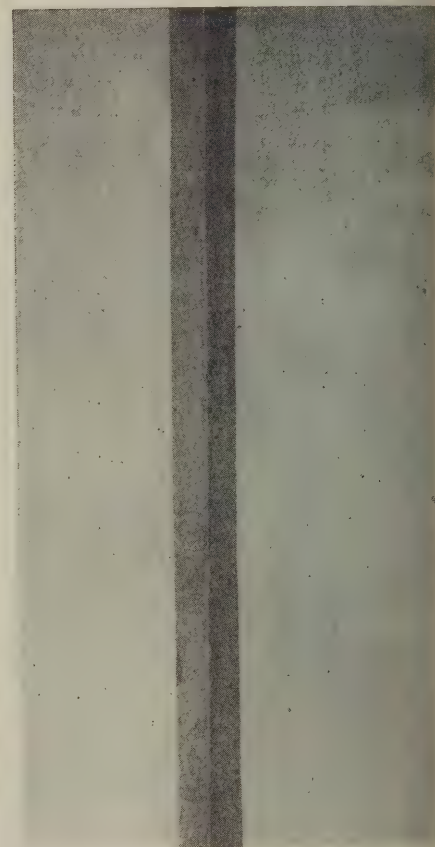


Paper placed about the outlet boxes will prevent air from coming in

away with. The walls are sheathed on the inside instead of being lathed, and instead of plastering, cheesecloth is stretched on the sheathing and nailed in place. Wall-paper can be put over the cheesecloth and the job looks the same as if the plaster is on the wall.

This form of construction is justified in that it means the house can be erected for people of moderate means, but it is only to be recommended for mild climates where the matter of keeping the house warm is not a serious one.

There are good ways and bad ways to

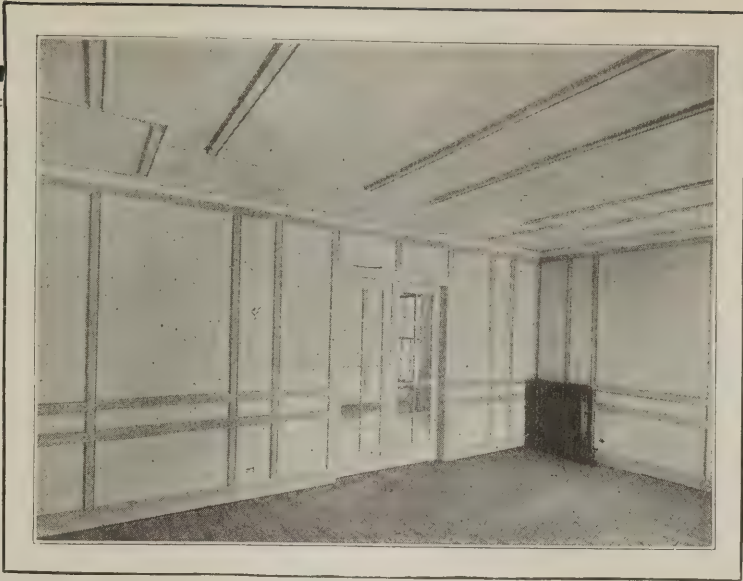


Long strips of gummed paper pasted in the corners will help to seal the corner crack

use this form of construction, and one of the things that go far to make a good job out of this light wall construction is shown here. Around places where joints occur in the sheathing, such as in corners, around outlet boxes, or at door and window jams, heavy building paper is pasted to seal the cracks. This helps considerably to make a better job of this type of construction.

These photographs were made on a job being done by H. F. Bryan, a San Antonio contractor.

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Just as the carpenters left it

You needn't hesitate to tackle any repair or alteration job with either regular "Cornell"— $\frac{3}{16}$ inch thick—or the new extra thick "Super Cornell-Wood-Board."

If you don't think regular Cornell-Wood-Board is heavy enough, use Super. Both are all wood—no paper or bark and 100% good board.

A contracting carpenter in Evanston, Ill., assisted by our free architect service, has just made a most attractive five-room apartment out of a garage, using the new extra-thick Super Cornell for all walls and ceilings.

It's a fine looking job; the owner is delighted. The tenant will find those Cornellized rooms light, easy to keep clean, cool in summer and snug and warm in winter.

This new Super Cornell is over half again as thick as ordinary wall board; it's all wood—every bit of it, and the millions of small dead air spaces insure a high degree of insulation.

You'll find its price is much less than its added thickness might imply.

We'll gladly send useful samples if you send us the coupon.

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General Offices: 190 North State Street, Chicago

Mills: Cornell, Wisconsin



Cut out this coupon and mail today

Please send me free a supply of estimate sheets; also table mats.

Name _____

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N-6

On the Job in Cairo, Illinois

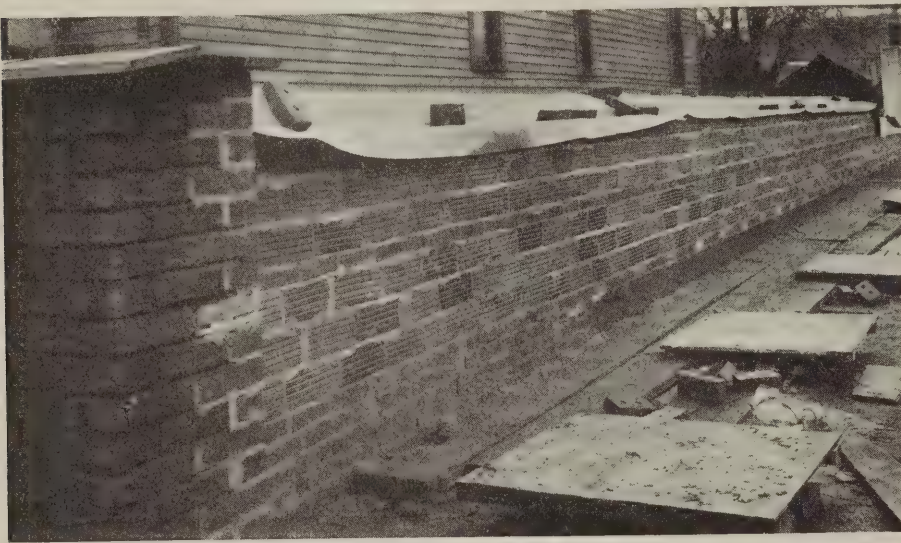
Protecting an Unfinished Brick Wall

NO mason likes to work on a wet wall because the mortar between the joints has to be replaced, and the bricks slip when he sets them down. In order to keep the wall dry, a roll of ordinary building paper

This method of storing mortar has the advantage over piling the mortar in that the pile is confined and is not spreading and wasting the mortar on the edge of the pile. It also means that the space in front of the job usually occupied by the mortar box and pile is free to be used for storing some other material.

and piled neatly so that they are not broken. Broken face brick are just so much waste, and when brick costs from three to five cents apiece it is worth while to take good care of them.

Edgar Stevens, a Cairo contractor, builds the brick shed shown in the illustration below, for protecting brick from the weather. The shed is open on the street side so that the brick can be unloaded from



If fresh-laid walls are allowed to be exposed to the weather, rain will wash out the mortar in the joints and make it necessary for the mason to replace the mortar before going any higher with the wall. A roll of building paper held on the wall with a few brick will keep the water out

held onto the wall by a few loose brick can be depended upon to do the job. The building paper costs very little and its price is easily made up by the saving in the mason's time and the better appearance of the job.

The wall should never be left unprotected when indications point to rain. It takes but a short time to lay the paper and it can be re-rolled and used again.

A Convenient Lime Storage Pit

INSTEAD of cluttering up the job with lime boxes and piles of mortar, this Cairo contractor sets his mortar boxes inside the building and uses part of the excavation as a lime storage pit. It is necessary only to line the pit with some boards to keep the mortar clean. Notice that the mortar boxes are so placed that the finished mortar can be dumped directly into the pit.

A Shed for Storing Face Brick

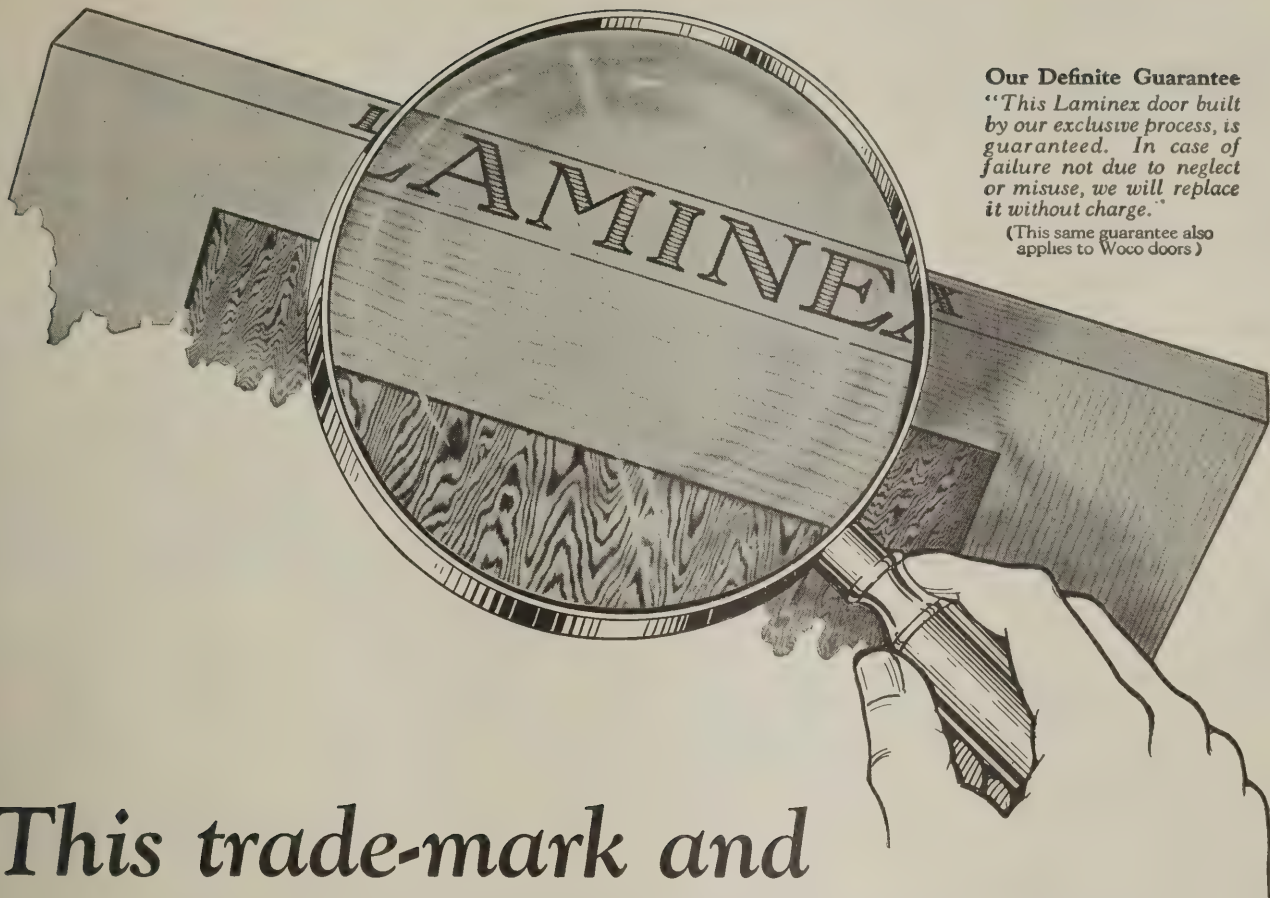
IT is unwise to leave face brick exposed to the weather, since wet face brick is apt to slip when it is set into the wall and cause an uneven looking wall and also a bad job. Face brick should be kept dry

This shed furnishes protection for face brick until they are set in the wall

wagons, and protected by a few boards which are nailed loosely on the sidewalk side. The roof is nothing but some 1x6 flooring laid with a one or two inch lap, so that the water runs off.



This shows how part of the excavation has been utilized to provide a storage space for mortar



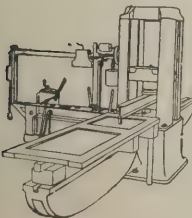
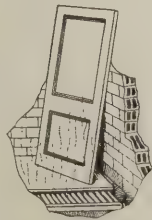
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Strength test—Laminex panels in a 200,000 pound Olsen testing machine, stood an average load of 912 pounds without rupturing.

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That Laminex is the last word in built-up door construction, is proven by practical and scientific tests throughout the country. This process overcomes the common faults in doors.

These are due to the tracheids or cells of wood as it grows, which cause shrinking, swelling and warping. In Laminex doors we build up the parts using a special Laminex water-proof cement and squeezing the whole together by tremendous hydraulic pressure in one solid piece.

Scientific tests of Laminex doors were made by the Forest Products Laboratories, University of Washington. They were soaked in water for 24 hours; subjected to a heat of 185° Fahr. for 24 hours. Not a Laminex door warped! There was almost a total absence of shrinking or swelling.

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Kinks from the Job and Office

By V. L. SHERMAN

Drop Siding and Bevel Siding

WE feel sure that many readers will be interested in the following letters concerning the merits of bevel siding and drop siding. The argument, in its character and tone, shows more clearly than any intentional publicity could that industrial associations are always alert to suggestion. The first and third letters are from Mr. L. F. Steves, of Kenedy, Texas, and the second and fourth are from Mr. T. F. Laist, of the National Lumber Manufacturers Association:

From Mr. Steves to the NATIONAL BUILDER: "I was very much interested in your article in the December issue, 'How the Consumer Wastes Millions of Feet of Lumber.' Using short and odd lengths is all very good, but there is another way of saving millions of feet annually and that is by the manufacturer to quit making the so-called drop siding and go to making bevel siding only in place of it, as they can take a piece of $1\frac{1}{4} \times 6$ -inch and make two pieces of $\frac{5}{8} \times 6$ -inch bevel siding and it takes a piece of 1×6 -inch to one piece of drop siding.

"There would be quite a saving in this and there is lots of siding used, especially in the South.

"Besides, the bevel siding makes a much better wall than the other, and the mill can furnish it for less money.

"If you can bring this to the attention of some one that has more influence I will feel that my poor effort has not been wasted."

From Mr. Laist to the NATIONAL BUILDER: "Referring to the letter of L. F. Steves of Kenedy, Texas, which you forwarded to the Practical Size Investigating Committee, in which he suggests that millions of feet of lumber may be saved annually by ceasing to manufacture drop siding and making bevel siding only:

"He claims that two pieces may be made by using a $1\frac{1}{4} \times 6$ -inch board and that it takes a 1×6 -inch to make drop siding having the same superficial area. This is undoubtedly true, but the writer must recollect two things; first, that the manufacturers must produce what the public wants; and, second, in many localities bevel siding is not in demand and a dealer would have great difficulty in selling anything but the drop siding.

"Furthermore, the statement that bevel siding is better than drop siding depends entirely on the point of view. Bevel siding cannot take the place of drop siding. Many millions of feet of the latter are used without sheathing, the drop siding being of sufficient thickness to stiffen the frame and

afford a wall covering of sufficient strength to be used without an underlayer. This is not true of bevel siding, which must always be used on top of sheathing.

"All through California and the Southern states drop siding is nailed directly on the studs in residence work and even in the colder climates is used for barns, sheds and rural structures very largely in the same way."

From Mr. Steves to Mr. Laist: "Replying to yours of the 1st inst., in regard to bevel drop siding you say the manufacturers must produce what the public wants. I know that to be true, but in nine cases out of ten the owner never says what he wants in the way of siding, but leaves that to the contractor or architect if he has one, and I am sorry to say that most contractors will use drop siding because he can put up more of it in a day and use any saw and hatchet man to do the work. Only very seldom will he cut it to the casing and corner boards, but puts them over it, leaving spaces for the wind to blow in and dirt and spiders to accumulate behind it, as very few will nail wind strips on the ends of siding around the openings.

"As to bevel siding being better will say first, you get more lap. (Have seen drop siding shrunk so that there was only $\frac{1}{8}$ to $\frac{1}{4}$ -inch lap on walls of dormer windows.) I have seen wind blow rain through over the lap.

"As to stiffness, $\frac{5}{8} \times 6$ —bevel siding is certainly as strong as the No. 117 drop, more of which is used in the South than any other. (Have seen board crack the full length.)

"You say that sheathing must be used under bevel siding. That is not necessary at all, as could show you thousands of houses where it is nailed directly to the studs with 8-inch ship lap and wall paper on inside, as there is very little plaster used in the South.

"Have seen two-story houses on several occasions that storms blew off the piling or brick, where bevel siding was nailed directly to the studs, and there was nothing on the inside of the walls (not finished) and they were not damaged to any amount.

"Have followed the trade for thirty years as a carpenter, practically all of that time in the South."

From Mr. Laist to Mr. Steves: "I have read with a great deal of interest your letter of January 6 in regard to bevel siding and have taken the liberty of passing your letter to the editor of the NATIONAL BUILDER, Mr. Francisco.

"I can assure you that we appreciate a discussion of this kind, even though we cannot always agree. I often regret that so few

of our practical and experienced men in the building and lumber trades do not take their pens in hand more often.

"I think a great many controversies are often due to differences in viewpoints and sometimes our conclusions are circumscribed by our personal experience which may be at variance with those of others.

"It would be interesting to note what others have to say of the relative merits of bevel and drop siding, therefore I am in hopes that the NATIONAL BUILDER may find it possible to print your letter with the idea of arousing some interest on the part of others."

A Drawing Board Attachment

FROM D. C., of Claremont, New Hampshire: "The illustration, Fig. 1, shows a device for clamping a drawing board in place. Sometimes it is very convenient to

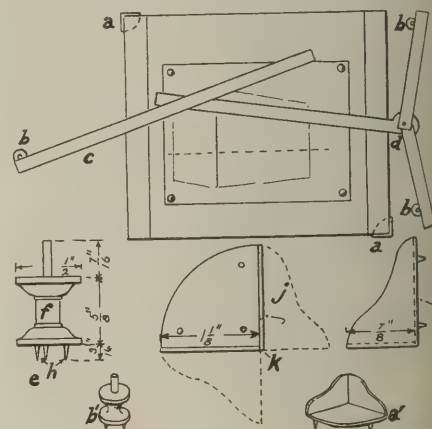
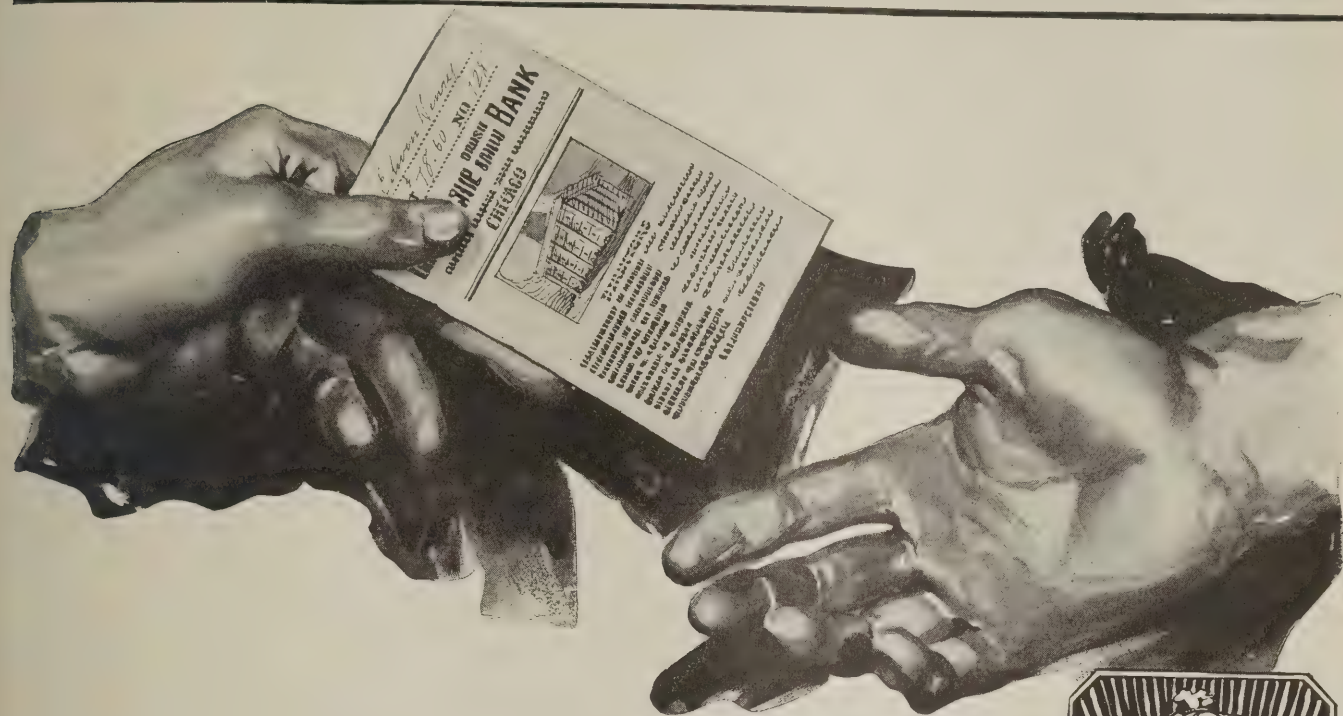


Fig. 1—Drawing board attachment

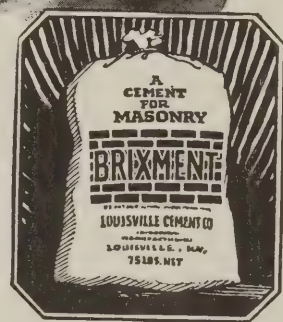
take up a perspective sketch from the table, for some free-hand work to be done upon it, or for any other purpose, and then return it to its proper place on the table for completing the perspective lines without relocating the vanishing points.

"This apparatus I made for use in making drawings upon the block for wood engraving; but find it equally well adapted to hold small boards fixed in place on the drawing table. There are two corner pieces shown in place on the board at *a, a*, and, alone, at *a!* Also three perspective vanishing points, as shown at *b, b, b*, and in perspective at *b!* The straight edge *c* and the centroline *d* in the illustration are in place, resting upon these points. The detail of one of the perspective points is shown at *e* in plan and elevation. The body or spool *f* is made of

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brass. It should be nearly as high as the thickness of the board. The steel pin *g* is firmly fixed in a hole drilled in the center of the spool, and three small steel points are inserted at *h*. The detail of the corner pieces is shown at *i* in elevation and at *j* in plan. This is made of thin brass sheet cut to the shape shown by the dotted lines in *j*. The sides are bent up and soldered at the angle *k*. To use these attachments the board is first located upon the large board or table and in a convenient position for work and the corner pieces firmly fixed under the two corners. After locating the vanishing points on the horizon set the metal points firmly as bearings for the straight edges. The small board can then be lifted and returned to the table at convenience."

Coloring Material in Lime Plaster

HERE we go again with some more publicity, this time a letter from Mr. G. B. Arthur, of the National Lime Association. One of our greatest hobbies follows the advice of Mr. Rockefeller. He said, if we remember correctly, to get someone else to do your work. As editor of this department we have found it quite a successful formula. You do the work as a contributor with ideas and we are both paid. Seriously speaking, though, what we meant to imply was, that while two heads are better than one, a great many heads, ably directed by a few will glean more pertinent information than the deuce. These associations have a faculty of digging up and propagating facts for the benefit of everyone interested, and for their own ultimate benefit. This is modern civilization, and goes better than the old horse trade idea. As a rule you will find, with these large associations, that their knowledge is yours for the asking. Mr. Arthur's letter follows:

"Mr. Francisco, of NATIONAL BUILDER, has asked us over the phone to write you concerning the use of coloring material in lime plaster. We were unable to go into the subject in detail over the phone because there is too much involved in this for a satisfactory discussion in that way. We are sending him a copy of this letter so that he will know what we have done with it.

"We do not recommend the use of coloring material in lime plaster, mortar, or stucco for the reason that we do not know of any satisfactory and permanent coloring material. The aniline dyes are never satisfactory and it is necessary to obtain mineral colors from a reliable concern and even then you must discriminate between the colors which are considered permanent and those which are not. We are giving you the names of several responsible manufacturers at the bottom of this letter and they will be able to tell you something more about their coloring material.

"It is generally understood that green is a color to be avoided and that permanent reds are very hard to find. Some of the other colors may be used with considerable confidence.

"The only really safe way to use color is to mix up the coloring material with the lime in the dry form and mix enough at the beginning for the whole job. It is difficult to mix separate batches from time to time and get the same amount of color through the mass. Then it is necessary to mix it very thoroughly so as to avoid splotches and streaks. As soon as the proportions have been lost it is practically impossible to mix a dry batch to match a batch which is already on the wall.

"Lime is noted for its ability to carry color better than any other material and if you want to use fairly light tints it should be possible to obtain satisfactory results by taking precautions in the mixing. It is done frequently and with fine success. We recommend that you correspond with one of these concerns manufacturing mineral color and then make several panels of the mixture to determine which color you like best when the panels have dried out.

"It is not a thing to be done in a hurry or on short notice and any time you spend in making sure that you will get a satisfactory job will be well repaid.

"Commonwealth Color & Chemical Co., 53 West Jackson Boulevard, Chicago; Kphnstamm & Co., Inc., 11-13 East Illinois Street, Chicago; E. M. & F. Waldo, Inc., 1823 West Lake Street, Chicago; Wishnick Tumpeer Chemical Company, 365 East Illinois Street, Chicago; Thomas Moulding Brick Company, 133 West Washington Street, Chicago."

For a Clean Floor

WOOD is as tender toward dirt as white paper and should be amply protected. Of course protection can be carried to extravagance but generally it pays pretty well in time and dollars. I once thought ceilings inviolate until someone thoughtfully dropped a tool into a pail of brown mortar. R. E. J., of Philadelphia, has this to say:

"After having lots of hard work cleaning floors when plasterers had finished I found it paid to cover the floors with building paper as soon as the studs were set, placing it directly up to the studs. The paper is held down by means of lath nailed to the floor with brads. After all the dirty work is done take up the paper, tearing off at the plaster line. This leaves a nice clean floor."

A Gauge for Putting on Casings

THE following letter in connection with the sketch, Fig. 2, comes from B. W. C. "This sketch for a gauge, which I find to

be very handy, is for putting on trim, especially on doors. I find I get the trim on more exact than by guessing at it as most of us carpenters do. The gauge can be made in a very few minutes from any kind of wood, $\frac{3}{4}$ by 1 by 3 inches. The block is rabbetted on both sides $\frac{3}{8}$ inch wide by $\frac{1}{2}$ inch deep. Then the bottom is made

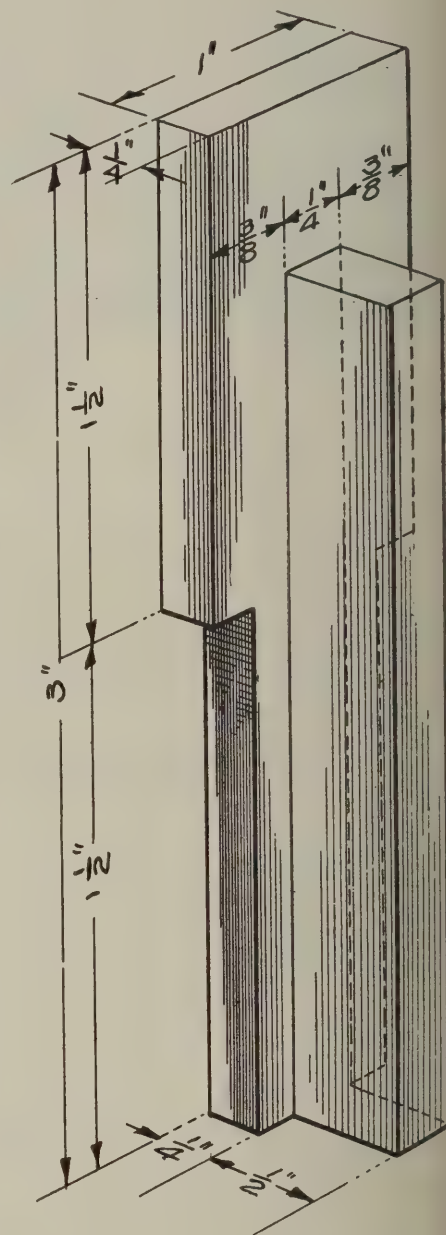


Fig. 2—Gauge for putting on casings

narrower at one end, equal to one-half the distance that the plinth block is wider than the casing. The center core that is left after the block is rabbetted serves as a guide. This is placed against the door jamb and drawn down, marking with a pencil on the $\frac{3}{8}$ -inch part. This is the line to nail the casing to. The smaller part of the gauge is for the plinth block. Also run the gauge across the top to get the line for the header pieces and the length of the casing."

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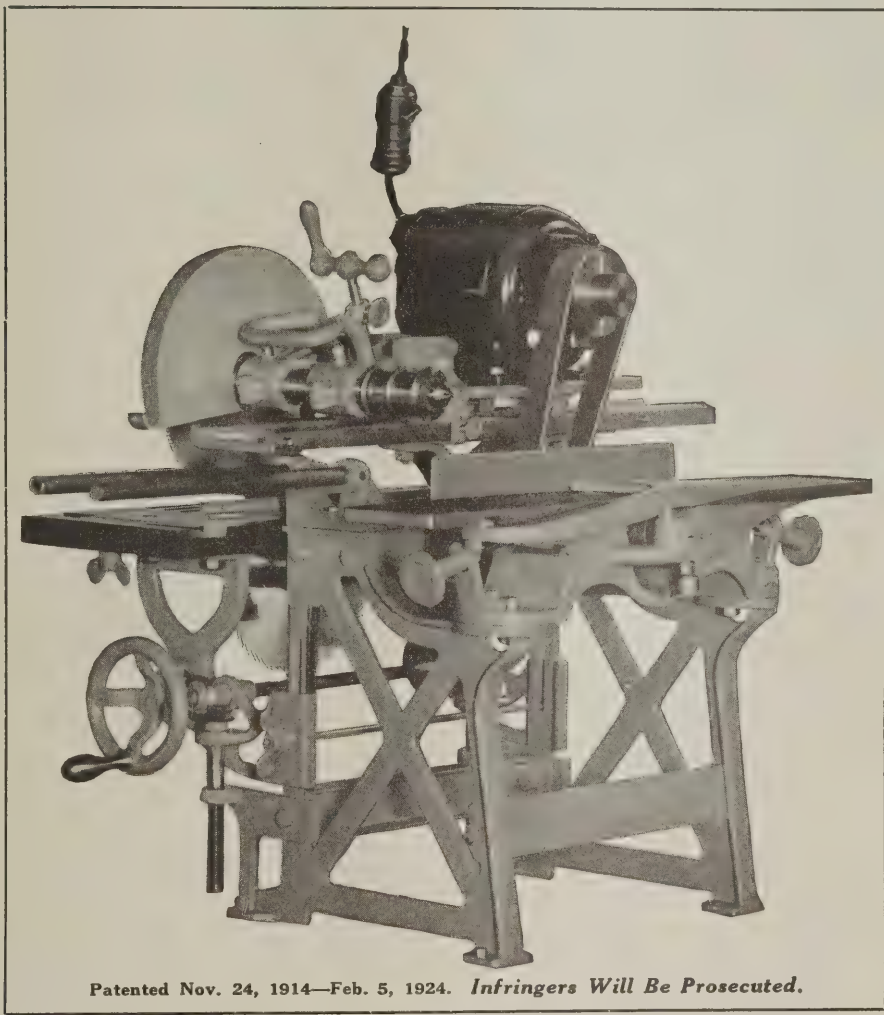
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Model No. 10, Master Woodworker, fully equipped with 7" cross cut saw, 7" rip saw, wrench, oil can, cable, electric switch, rip saw gauge, saw guard, saw fences, endless leather belts, pulleys and tools; 4" jointer, 1/2 H. P. motor, absolutely complete, wired ready to operate—crated for shipment. Cash price, \$50.00 with order, balance \$200.00, cash on delivery.....\$250.00
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Model No. 10, complete length over all, 34", width over all, 22". Weight complete, 160 pounds; shipping weight, complete, 180 pounds. Weight and size include 4" jointer. All machines taken down in three parts by removing three bolts, the heaviest part to carry is 50 pounds. Machine set up, ready to run in two minutes. Catalogue on Request.

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Chart for Horizontal Tank Capacities

AS a general rule we are "agin" promoting short cuts which have to be trusted to a sheet of paper. Dickens' detective in "Martin Chuzzlewit" sort of prejudiced us against carrying memoranda. We like to keep hand books handy on a shelf, but except for the artistic we have no favor for scrap books. There are, however, some things which have been patiently worked out, or ingeniously arrived at, that are worth pasting in your hat, and in these days of oil burning heaters, and oil products in general, the chart, Fig. 3 and this letter, from W. F. S., are surely worth while.

"Here is a chart that gives the gallons of liquid in any horizontal tank without the use of tables, formulas, figures, or computations of any kind. Simply start at the left and zigzag a ruler or thread across the chart three times as demonstrated by the dotted line and the number of gallons is immediately found in Column G. For example: How many gallons in a tank 84 inches in diameter, the depth of liquid being 30 inches, and the length of the tank being 142 inches?

"Run a straight line through the 84, Column A, and the 30 in Column B and locate the intersection with Column C.

By means of the eye follow the radiating "guide lines" to Column D, locating a second point of intersection. From this latter intersection run through the 142, Column E, and locate the point of intersection in Column F. Then from this point run over to the 84, Column H, and the intersection in Column G will be found to be close to 1050 gallons, which is the answer.

"One of the great advantages of this chart is that it takes care of any depth of liquid from one-tenth of an inch to the full capacity of the tank. All guess work is eliminated. To make the chart absolutely clear the writer has included sketches showing the diameter of the tank D, the depth of liquid h, and the length of tank L with wavy arrows leading from them to the proper columns. By following them no mistake can be made. The range of the chart is amply wide. It will take care of any diameter from 2 to 200 inches and of any length of tank from 10 to 100,000 inches.

"This chart will give an answer much more quickly than tables or formulae. It is surprisingly accurate. It is more complete than tables because it takes care of every dimension between 2 to 200 inches whereas tables generally skip many diameters and lengths giving only 24, 28, 32, 34 inches, etc. To avoid confusion all dimensions are given in inches.

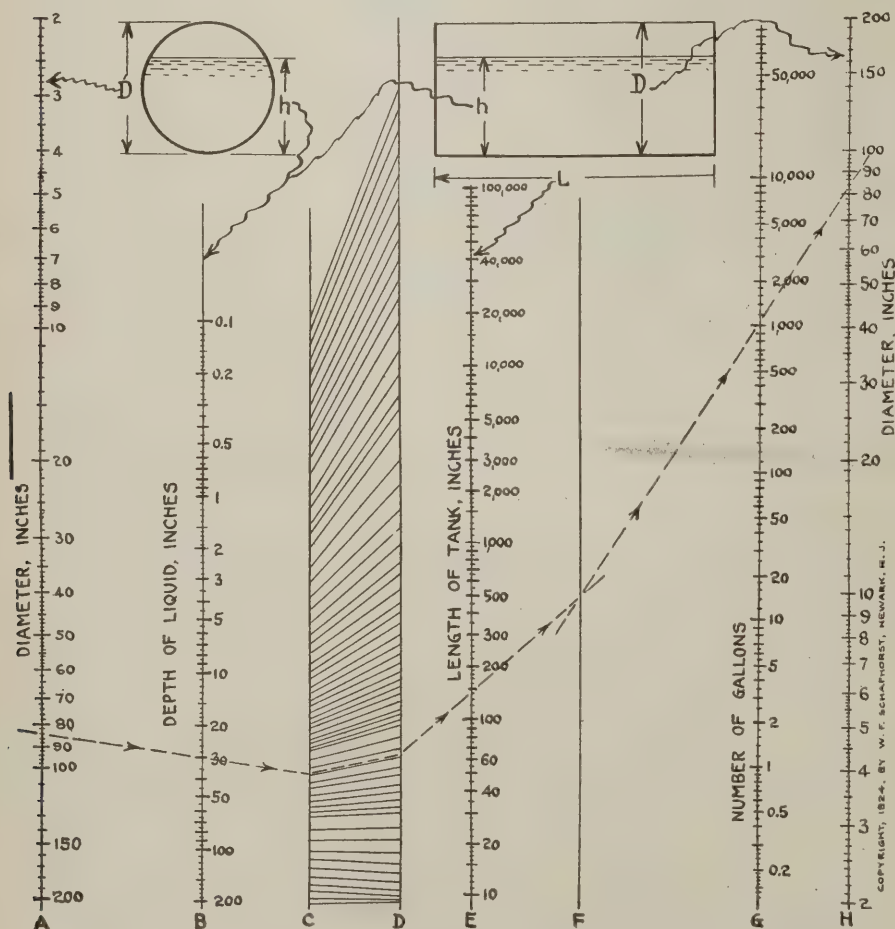


Fig. 3—Horizontal tank chart

"Since Column E takes care of lengths of tanks up to 100,000 inches it is plain that not only will this chart compute tanks but it will include long pipes whenever it is desired to compute either the full capacity of such pipes or their partial capacity; 100,000 inches is equal to 8333 $\frac{1}{3}$ feet. Inversely the chart may be used very conveniently for determining the length of tank necessary to hold a given number of gallons where the diameter of tank and depth of liquid are known or fixed quantities as is often the case. The method of applying the chart to problems of this character is so obvious that further directions are unnecessary."

Pipes in a Stone Wall

ACRITICISM is always more welcome when accompanied by a suggestion. We submit a letter from W. M. regarding pipes in walls. "In NATIONAL BUILDER for February, on page 76, it told about leaving an opening in a stone wall for pipes and then filling in with stones and mortar after the pipes are set. I believe I have a better way than this which is not so much trouble. I set a pipe that is as long as the thickness of the wall and about two inches bigger than the outside dimension of the pipe that goes through the wall. After the pipes are set the space around the pipe is filled with waterproof packing which will give if the wall settles a little. If the pipes are solidly bedded they are liable to be broken."

Blue Print Shrinkage

A. L. wishes to call attention to the troubles which may lead from scaling blue prints. He writes: "Recently I had occasion to lay out some work for a convention exhibit. The ceiling of the hall was supported by mushroom type concrete columns at uniform but irregular intervals, and the space covered measured about 175 by 300 feet. The booth spacing had been decided on and I thoughtlessly turned over the job of marking the spacings to a girl clerk without explaining that the tracing had been made over a blue print. Unfortunately, that was the last I heard or saw of the job until the work was well under way. Due to the shrinkage of the blue print the tracing was some short both ways. The young lady had laid out the space accurately with a scale. Of all the infernal messes one could find, it was the worst. There seemed to be twice as many columns as existed and everyone seemed to be an obstacle. This may have been a specially bad case, but *don't ever scale a blue print.*"

Ordinarily a blue print will shrink about $\frac{1}{4}$ -inch for every three feet. Tracing cloth is also guilty in this respect, as is indicated by its crawling or buckling when tacked onto the drawing board. The accumulated error may therefore be considerable.

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To clean the outside of any casement window from the inside of the room.



There you have it—that eliminates the one drawback to casement windows from the woman's standpoint.

As the illustration shows, there is a space of $4\frac{1}{2}$ " between the sash and the jamb when the sash is open at a right angle to the window frame. Plenty of room to get at the outside surface for cleaning.

Whitco Hardware takes the place of both butts and adjusters. Not only does it make the sash self-adjusting, but it holds it in any position desired. Wind cannot move it and it cannot rattle.

Whitco Hardware can be applied either to old or new sash as no special detail is required.

No special finish is needed as Whitco Hardware is entirely concealed when the sash is closed.

A set of Whitco Hardware consists of two pieces—one for the top and one for the bottom of the window. One size fits all sash. May be used either right or left hand.

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In ordering, state the number of sash to be fitted. This is the only specification needed.

We shall be glad to send full information regarding Whitco Hardware on request.

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"Architecture Toscane" is a reprint of the original 110 plates of measured drawings of Tuscan architecture by Grandjean de Montigny and A. Famin, architects, Fellows of the French Academy in Rome, as published in Paris in 1837. As examples of masterly line drawing in pen and ink, some of these plates would prove the despair of most modern draftsmen. Here will be found inspiration for the design of the most utilitarian factory building as well as the most ornate "movie." Many of the drawings are in lineal perspective, free from rendered shades and shadows, so that the members that make up a composition stand forth in a three-dimensional relationship, rather than in the flat two dimensions common to the ordinary "elevations" used for most measured drawings. There are 110 plates, 9x12, with a concise descriptive preface by John V. Van Pelt, F. A. I. A. It is published by The Pencil Points Press, Inc., New York, and priced at \$6.

"Acoustics of Buildings," by F. R. Watson, Professor of Experimental Physics, University of Illinois, is a book that fills the important need for a clear but simple exposition of the theory of acoustics together with practical advice as to the methods to be used in eliminating and avoiding echoes or reverberations in auditoriums, theaters, etc. The soundproofing of buildings is also treated in detail. Scientific verbosity and pure theory have been largely eliminated to the end that the book may be of distinct value in a practical sense. Before the mind's eye of the author was an audience of architects and builders, rather than a scientific assemblage. The book is cloth bound; contains 155 pages, 6x9; is illustrated with 72 half-tone and line engravings, and is published by John Wiley and Sons, Inc., New York. The price is \$3 net.

"Lumber and Its Uses," by R. S. Kellogg, revised by Franklin H. Smith (third edition) explains in simple, non-technical fashion the properties and uses of the principal American species which are manufactured into lumber. It covers: structure of wood, physical properties of wood, lumber grades, standard sizes of lumber, lumber and log measurements, shipping weights, structural timbers, seasoning of timber, wood preservation, paints and wood finishes, and the uses of lumber in various industries. There are 370 pages, 6x9 in size, with 98 illustrations. Bound in cloth, the price is \$4.00. The U. P. C. Book Company, Inc., New York City, is the publisher.

"An Architectural Pilgrimage in Old Mexico," by Alfred C. Bossom, is the outcome of a journey made by an architect in search of a native architecture indigenous to the soil of modern America; something lacking the stiff regularity that is our conception of the Colonial style and having more character than the missions and pueblos of our Southwest. The evidence that his search was rewarded lies



Reduced illustration from "An Architectural Pilgrimage in Old Mexico"

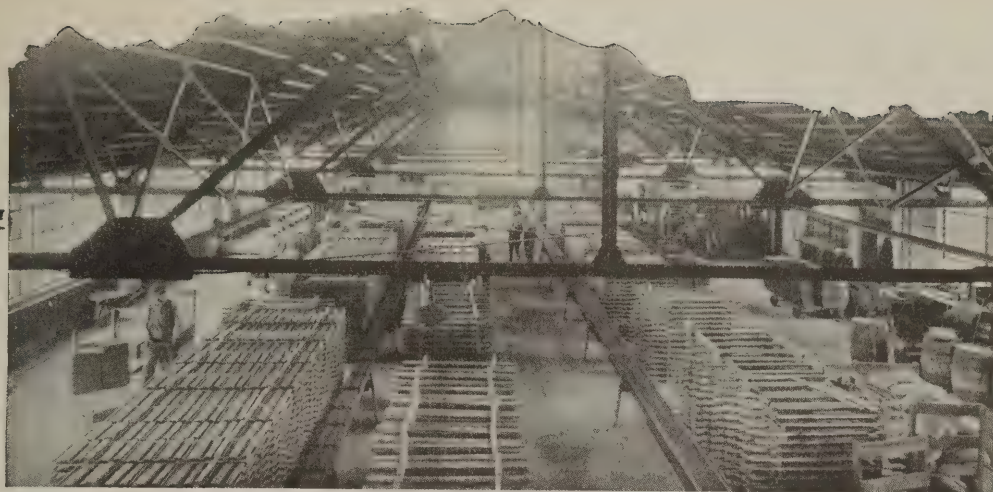
between the covers of this book in the shape of reproductions of photographs and sketches made by the author during his quest. The fact that the Spanish style is growing in popularity by leaps and bounds and that these illustrations show Spanish architecture already adapted to America should make the book invaluable to anyone working in the style. There are 10 plate pages, 10½ by 13½ inches, many with two and three illustrations. The book is completely indexed and contains an author's preface and foreword. The binding is cloth and the price \$20, a lot of money, but amply repaid the first time one has occasion to use the material. The publishers are Charles Scribner's Sons, New York.

"Interior Decoration for the Small Home," by Amy L. Rolfe, is a book written for those who have no exact knowledge of the principles to be followed in making the interior of a house express individuality and true home feeling. The principles are explained by examples rather than by abstract theories left dan-

gling in the air to confuse the reader, who is assumed to be searching for the means and methods of improving the appearance of a given house, and is not concerned with the detached attitude of the professional interior decorator who looks on everything in terms of balance, symmetry and harmony. Not that these basic principles are slighted, but they are elucidated in terms with which we are all familiar. The book should prove of value to architects and builders who are often called on to suggest interior treatments for the houses that they build for others. The book contains 151 pages, 5x7½ inches, and contains 33 illustrations made from actual photographs. It is published by The Macmillan Company, New York, and is sold for \$2.

"Appraisers' and Adjusters' Handbook" is the title of a new book by William Arthur, who is well known as a writer of books dealing with estimating and allied topics. This latest book deals with present day conditions as they affect building valuations. It is divided into two parts. Part I dealing largely with general principles such as square and cubic foot costs, approximate estimating, etc. Part II covers detailed costs with much of the information tabulated for easy reference. Mr. Arthur's works are models of completeness, and as a writer with an ability to take the dryness out of a technical subject, he is unique. His apt remarks and comments sometimes carry one along without a conscious realization that knowledge is being acquired. Of such clay is all real instruction made. The book is bound in flexible fabrikoid, contains 634 pages 4½ by 7 inches, with many illustrations. It is priced at \$5 and is published by the U. P. C. Book Company, Inc., New York.

"The Mechanics of Building Construction" is a new edition of the original book of the same title by Henry Adams, an English engineer distinguished for his writings and lectures on construction. The book seeks to cover the general features of structural engineering, and offer a stepping stone between the elementary and the specialized divisions of the subject. The range of the book is great. Beginning with "Matter and Force" we are carried thru thirty chapters to "Reinforced Concrete," the intermediate chapters touching practically all features of modern structural engineering. There are 590 drawings and diagrams included in the 240 pages of the book, which is 6x9 in size, cloth bound and published by Longmans, Green and Company, New York and London. Price \$3.50.



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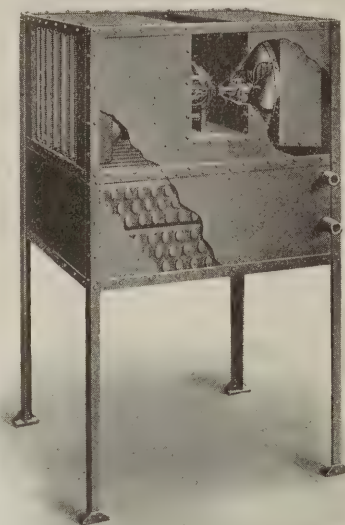
Build Hoist into Fordson

FORDSON tractors, equipped with hoists, and capable of lifting a 4000-pound load 400 feet a minute in a straight line, have been recently used by the Johnson-Anderson Company of Chicago. This equipment, it is claimed, does not interfere with the general operation of the tractor, and while not in use for hoisting purposes renders the tractor available for transporting trailers containing building materials and for hauling concrete mixers and other contractors' equipment from job to job, for which purpose special rubber wheels are available to replace the ordinary tractor wheels which would not be practical for city pavements.

A very interesting pamphlet, outlining 34 uses for these hoists, has been issued by the manufacturers, the Oklahoma Engineering &

attained, in that it enables owners to reduce the heat loss by keeping the heat where it is needed, and not in the upper parts of building or in building walls, and to maintain a uniform degree of heat thruout a building.

In addition, the manufacturers say that



Sectional view of a "Twinfan" installation showing details of construction

this system may be used during the hot sultry days of summer, without steam, for the purpose of creating a circulation of air in buildings. Although this does not materially affect the temperature of the air, it adds materially to the comfort of those in the building by creating an air movement. Some users of the Twinfan system say they use their fans for greater periods in the summer than in the winter.

A booklet on the Twinfan system of heating has been issued by the Dwyer Equipment Company of Chicago and is available upon request.

S. C. Johnson & Son's New Floor Book

S. C. JOHNSON & SON have recently issued a new edition of their unusually interesting booklet, "The Proper Treatment for Floors, Woodwork and Furniture." In addition to giving attractively illustrated directions for the treatment of different kinds of floors, the book includes color charts, gives covering capacities and, in short, contains all necessary information in a form assimilable by the average reader.

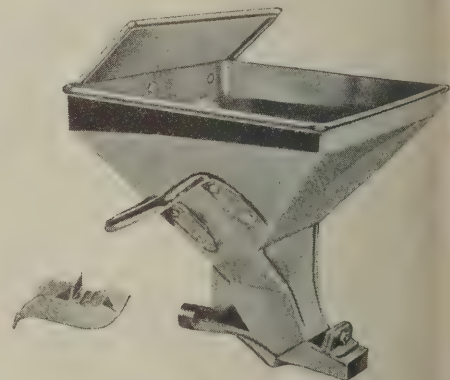
The information contained in this hand-

book is the result, it is claimed, of many months of laboratory work and thousands of experiments, and will be interesting not only to the average contractor and builder but to his clients, who may be interested in maintaining the floors in their homes or apartments in their original perfection. Copies of this book will gladly be furnished by S. C. Johnson & Son, Department N.B., Racine, Wisconsin, to readers of NATIONAL BUILDER.

Invents Mortar Gun

A PLASTERING machine, invented by Mr. Albert Oliver, who over 20 years ago introduced the Clinton system of fire-proof building, is of particular interest to contractors and builders.

This machine traps mortar in 3-pound batches, forced from the box by a 40-pound Ingersoll-Rand compressor. In eight working hours the machine will place 550 square yards of scratch coat $\frac{3}{8}$ inch thick, or 550 square yards of brown coat or second coat $\frac{3}{8}$ inch thick, and about 2000 square yards



Samson mortar gun

of stucco dash coat. One man with five helpers, using this mortar gun, can do the work, it is claimed, of from eight to ten skilled plasterers, with helpers, in distributing mixed mortar. According to the inventor, this gun will take the slavery out of the plastering trade, leaving just as much, if not more, finishing work for the plasterers to do, and making their vocation a more desirable and profitable means of gaining a livelihood. It also makes possible, according to Mr. Oliver, the building of walls and partitions without wood studding and without anything inflammable in either the walls or partitions, and makes better, more healthful, durable, sanitary, and lasting construction possible and, in addition, a greater saving of fuel.

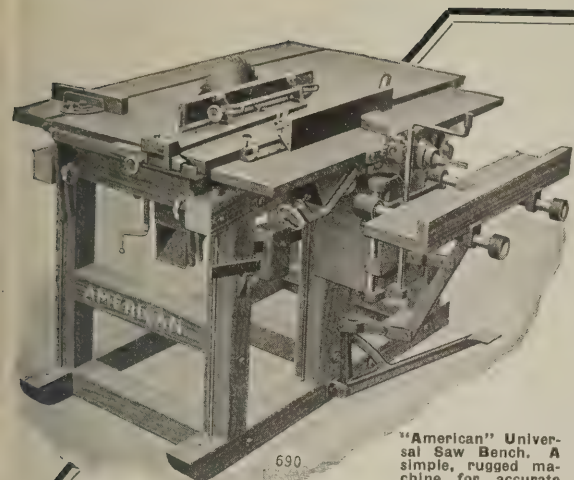


Combination hoist and tractor on the job in Chicago

Foundry Company of Muskogee, Oklahoma, and may be had upon request either of this company or of The Becker-Whitney Motor Company, 6148 South Kedzie Avenue, Chicago.

Economical Utilization of Heat

THE Dwyer Equipment Company of Chicago, manufacturers of the "Twinfan System of Heating," are producing a type of industrial heating equipment which is decidedly unique. The use of this heating equipment, it is claimed, effects the economical utilization of heat to a degree seldom



"American" Universal Saw Bench. A simple, rugged machine for accurate work.

Fourteen Machines In One!

Take a woodworking shop right to your job

Hundreds of progressive contractors speed up the wood-working end of their various jobs by using an American Portable Variety Woodworker. This compact, rugged machine enables you to have most of the facilities of a complete woodworking shop right where you need it—on the job. Its ability to cut costs has been proven time after time.

This one machine may be used as a rip or cut-off saw, as a dado, gaining, grooving, rabbetting, tenoning, or boring machine, as a jointer or planer, a matcher, molder or sander, and as a hollow chisel mortiser. A

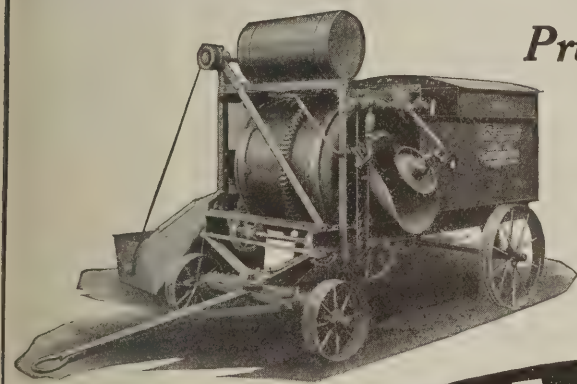
scroll saw attachment may also be included.

Our Bulletin 79 describes in detail the full line of American Woodworking machinery. Write for it.



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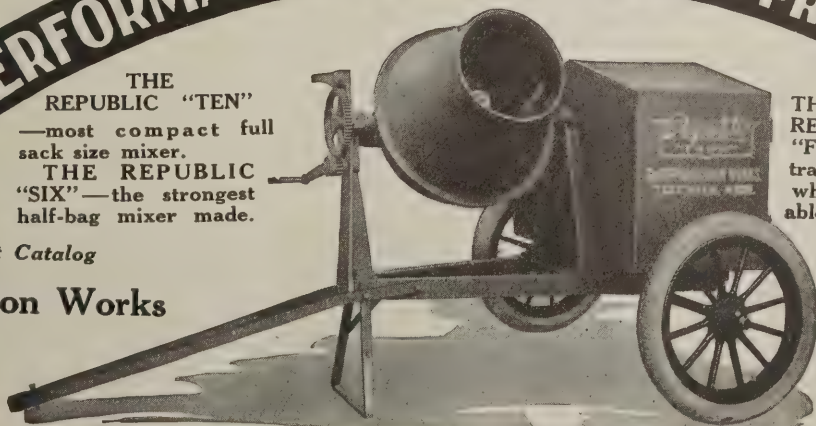
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New Labor and Lumber Saver

EXEMPLIFYING the modern trend towards efficiency and increased economy is the new double-headed nail, manufactured and marketed exclusively by The



New nail with double headed construction

F. A. Neider Company, Incorporated, of Augusta, Kentucky, under the trade name of the "Economy Double-Headed Nail."

This nail has been found to be particularly adapted for concrete forms, staging, and other temporary lumber construction because its second head has an area of four or five times that of the ordinary nail, making it possible to drive home the nail with much force and at the same time to draw the boards together closely. This second head also results in the saving of much lumber which is often spoiled by ordinary nails, it is said, and makes it easy to extract and re-use the Economy nail, which further reduces costs.

"Experiences in Home Building"

THE experiences of several general contractors have been compiled by the Long Bell Lumber Company into an interesting little book called "Experiences in Home Building." This booklet contains much of value to every contractor and builder for it emphasizes the advantages to a builder of sturdy construction in building. To quote from the statement of one builder, "A well constructed building is the only advertisement I ever use."

Actual figures showing the estimated savings on several houses constructed under the plan outlined in this booklet are given, and are interesting both to the contractor and builder and the home owner.

The booklet, which is attractively prepared and printed, may be had upon application to the Long Bell Lumber Company, R. A. Long Building, Kansas City, Missouri.

Bath Equipment and Fixtures

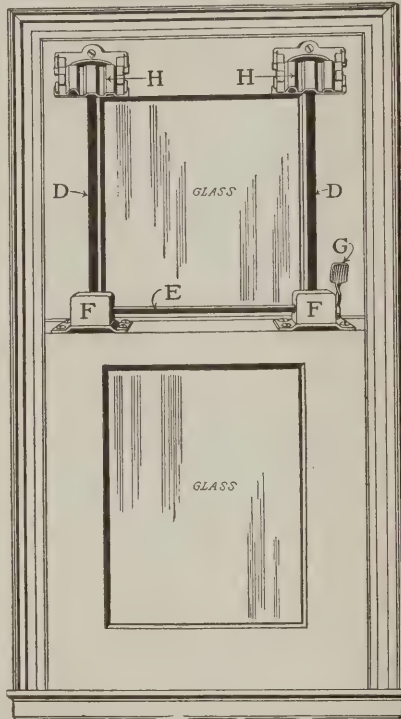
FOR builders who are interested in maintaining a complete file of handbooks and catalogs of building equipment and accessories in their offices, "Porcelain Enameled Bath Room Trimmings," published by the American Enameled Products Company of Chicago, will undoubtedly be of much interest. It contains special information for architects and contractors, as well as many illustrations of built-in bathroom fixtures and equipment such as tumbler and paper holders, combination tooth brush and tumbler holders, combination hand rails and soap

dishes, soap and tumbler holders, lavatory and bath soap dishes, towel racks and wall baskets, towel units, etc.

These are absolutely guaranteed by the manufacturers not to craze, rust, or change color, and can be procured in any color of tile, or in special colors where desired.

Automatic Window Lock

A WINDOW lock that, it is claimed, is automatic, jimmy-proof and "forget-proof" is manufactured by the Mills-Penfield Corporation of 154 Nassau Street, New York. It is said that this new lock prevents accidents, thefts, and carelessness, and at the



"Twindolox" installed showing details

same time insures uniform ventilation from top and bottom of windows equipped with "Twindolox," and that it overcomes the annoyance caused by rattling windows and keeps windows in perfect alignment.

Martin Fifth Wheel and Trailer Plant Enlarged

THE Martin Fifth Wheel and Trailer Company of Springfield, Massachusetts, who manufacture two-wheel and four-wheel trailers, with capacities of from one to twenty tons, have taken over larger quarters which they plan on fitting up with up-to-

date machinery for quantity production, as the advantages of the particular type of trailer manufactured by this company have created such a demand for them that they are used not only all over the United States, but all over the world.

A new semi-trailer, especially designed for lumber hauling, has attracted much attention. In this new type there is no necessity for raising and lowering the front ends by jacks for disconnecting and connecting, but, as an empty trailer is backed up to a material pile, the support is lowered until the wheels touch the ground, the driver pulls a lever disconnecting truck and trailer, and drives away. This operation takes less than one minute and the truck is ready to be attached to another trailer, which has been previously loaded.

To connect, it is only necessary to back the truck against the trailer, and the attachment is made automatically. A binding chain can be thrown over the load and tightly drawn, it is claimed, in twenty seconds' time. Then the wheel operating the jack screw is turned to raise the supporting wheels clear of the ground, and the trailer is ready to move. At its destination the toggle binder is disconnected, the load rolled back until it tips and the rear end hits the ground. Then, by driving out from under, the lumber is piled on the ground in exactly the position it occupied on the trailer. The final drop is but a few inches so there is no damage done to the lumber.

New Solid-Construction Coal Chute

A NEW type of coal chute, made entirely of rolled steel, has recently been put on the market. Since no castings are used in this chute, breakage is eliminated. Doors, whether solid or glazed, are of one-piece rolled steel plate, and joints and frame are electrically welded. Hinges are of rolled steel, substantial and unbreakable, and automatic durable spring latches assure positive locking. Glazed doors are further protected by wire grating over heavy wire glass.

The boot, which goes through the wall is collapsible and folds against the back of the frame, making the chute only 3 inches thick and protecting both the boot and the glass. Four chutes take the place of one ordinary chute, saving in shipping, storage and handling. The chute is fireproof and burglarproof.

Full information regarding this chute may be obtained from the Gabriel Steel Company, Bellevue Avenue, Detroit.



New semi-trailer used especially for hauling lumber

Surfacing Floors

The "American Universal" Way

Efficiency counts nowadays and dollars saved are dollars made. Your profits depend largely upon your operating costs and your operating costs, in turn, depend upon your operating methods.

Why Pay Six Men for One Man's Job?

That's exactly what you are doing when you employ hand scrapers to surface floors instead of doing it with an "American Universal" (electrically driven) Floor Surfacing Machine, because one man with an "American Universal" will do as much work as five to six fast hand scrapers and do a **better** job besides.

Can you afford to go on losing money that an "American Universal" machine would enable you to **save**—to add to profit?

You Can
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FLOOR SURFACING MACHINE

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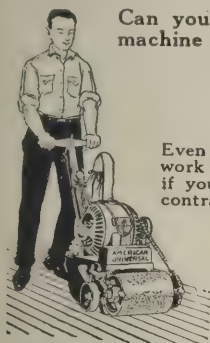
Even if you have not enough floor surfacing work of your own, you will find a big demand for "American Universal" work among other contractors and you can keep your machine busy on highly profitable jobs every day. You can also, if you wish, work up a big paying independent business by specializing in new and old floor surfacing. Dozens of live contractors have done so without the slightest interference with their established business.

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Write us for details regarding the "American Universal" Floor Surfacing Machine. And have us send you letters from many well known contractors who are using it; also particulars of our **Five Day Trial**, prices, terms and other interesting information. Do it now, it will mean money in your pocket.

THE AMERICAN FLOOR SURFACING MACHINE COMPANY
519 South Saint Clair Street, Toledo, Ohio

ONE MAN ON HIS FEET IS WORTH SIX ON THEIR KNEES



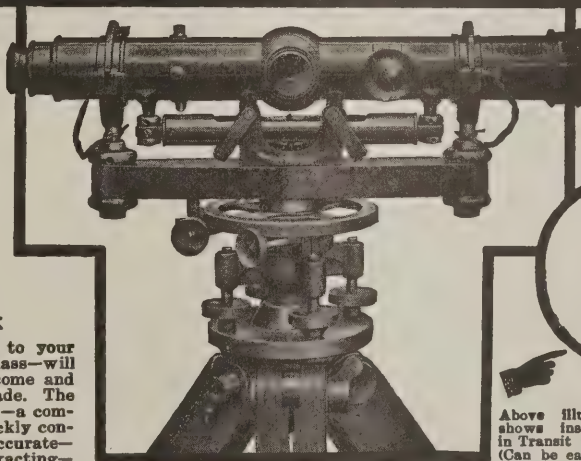
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This instrument will add immeasurably to your efficiency and put you in the big builder class—will do more to increase your business, income and prestige than any investment you ever made. The Aloe Convertible Level is the world's best—a combination of both level and transit and quickly converted to the use of either. Absolutely accurate—satisfies the requirements of the most exacting—yet so simple that anyone can use it.



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Above illustration shows instrument in Transit position. (Can be easily and quickly converted.)

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Book

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BUILDER

Aloe Convertible Level and Transit Combined

You Learn to Use It In An Hour

No technical knowledge necessary. No previous experience needed. With our simple and complete instruction book, included free with every level, you can immediately put the instrument to work. It is a level and transit combined—takes sights either above or below the horizontal. You can use it for leveling foundations, walls, piers, streets, walks or curbs—run straight lines for ditches or drains—boundary lines for fences or trees—surveying lots and fields—plumbing walls, shafts, trestles, posts and pillars.

Easy Monthly Payments

Just \$5.00 brings it to you—for a free trial. If perfectly satisfied, pay the balance in small monthly payments. The instrument will be sent at once and from the first day it will be working for you—paying for itself by saving you the cost of borrowing an instrument or the fees you have been paying other men for this work.

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Our free book—"Be A Bigger Builder"—tells you how to increase your income—how to get the profitable jobs and become a bigger man in your community. Write for this book today.

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Without obligation, send me your FREE book, "Be A Bigger Builder". Also full particulars about the Aloe Convertible Level and details of your easy payment plan.

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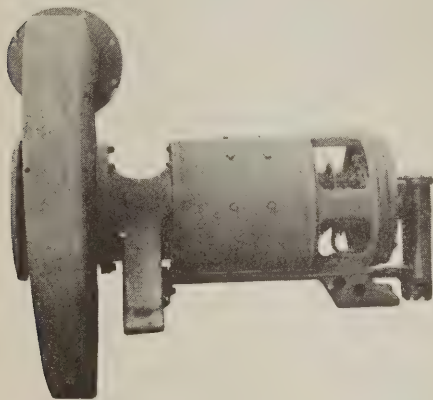
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New Motor Driven Centrifugal Air Compressor

A NEW design of single stage centrifugal compressor has recently been constructed by the General Electric Company of Schenectady, New York. In reality, this comprises two types of compressors with single and double inlet. The single inlet type is intended for general use, the double inlet variety being necessary only for special cases where unusual conditions exist.



New G. E. single stage compressor

These machines are built in capacities ranging from 500 to 75,000 cubic feet per minute, at from 0.75 to 6.0 pounds pressure, and are provided with oil pumps, eliminating capped holes in the tops of bearing lining and thus preventing the entry of dust into the lubricating system.

In addition, bearing supports are of strong construction, the casing being attached to the bearing bracket by a flange, and there is an even distribution of the weight of the casing, making the unit unusually strong mechanically.

Specifications for Template Butts Screw Holes

AN addition to the "Detailed Drawings Showing Application of Stanley Products" has recently been published by The Stanley Works, New Britain, Connecticut. It contains a table showing correct sizes of butts for all kinds of doors, and is of correct size to be inserted in the Stanley Products book mentioned. These specifications were proposed by the Bureau of Standards, working in collaboration with The American Institute of Architects, Hollow Metal Door Society, Builders' Hardware Manufacturers and others.

For Mothproof Closets

THE advantage of built-in equipment of every kind is so thoroughly accepted that the universal use of cedar closets of one kind or another is but a question of time, particularly in view of the moderate cost

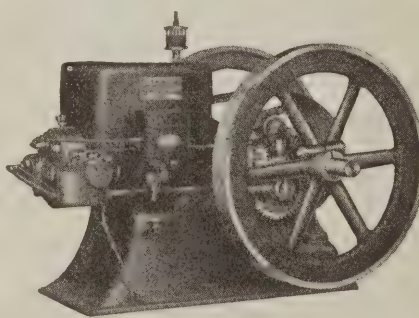
of such mothproof linings as Kilmoth, manufactured by the Kilmoth Products Company, 50 Union Square, New York. This kind of cedar lining was used in all closets in the construction of The Custer Arms at Bronxville, New York, where it was found to be so inexpensive that it will be used in all other work in that development. It is claimed that the cedar has rather a pleasant odor, preserves linens as well as woollens, and its use in private dwellings, hotels and apartments offers a strong talking point in appealing to women clients.

Adaptability of Steel Residence Windows

DAVID LUPTON'S SONS COMPANY, Alleghany and Janney Streets, Philadelphia, manufacture a steel residence window which, they claim, is as adaptable to the moderate priced bungalow from the standpoint of cost as to the handsome home from the standpoint of beauty. They have made countless installations of this window, and have printed an attractive little book, showing many of them, which will be interesting to the modern builder.

Use of Internal Combustion Engine in Construction

THE new type of internal combustion engine which is gaining much favor among contractors and builders has been adopted, according to a statement recently issued by the Witte Engine Works of Kansas City, Missouri, from the American farm. Although the internal combustion type of gasoline and kerosene engine has been widely used for years, it was through its use on



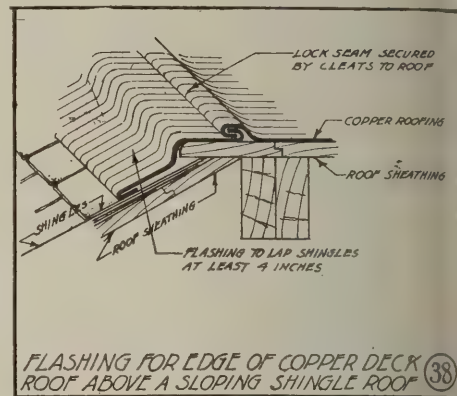
Internal combustion engine having special type magneto

the American farm that it really reached its highest degree of development.

The Witte engine is particularly adaptable to wet or cold weather operation, because of the special type magneto with which it is equipped, and is used on many of the best makes of concrete mixers, sprays, pumps and similar construction equipment which requires dependable and abundant power under all kinds of weather conditions.

Copper Flashings

THE Copper and Brass Research Association, 25 Broadway, New York City, have recently issued "Copper Flashings," a beautiful and practical handbook, which gives standard details of construction and specifications for sheet-copper work, notes on copper flashing practice, and supplementary data on coloring and painting copper, proportioning gutters and leaders and estimating the cost of copper for various uses.



One of the 71 different applications of copper flashings from the new Copper and Brass handbook

This handbook contains much of interest to all who are engaged in building and contracting, for it is the result of much research and investigation by The Copper and Brass Research Association and is augmented by 71 cuts of different applications of copper flashings.

These detailed drawings are particularly interesting to the average contractor and builder, as they are exact in every respect, and make it possible to eliminate all guess work from these operations. This is the kind of handbook which is a distinct addition to the builder's library.

A New Method for Stenciling

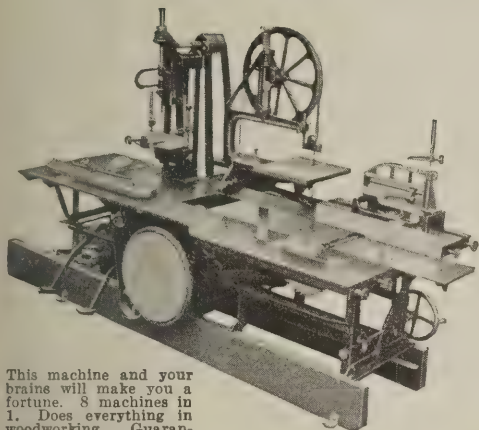
ORDINARY paper stencils are not very durable and are difficult to make where extreme delicacy of line is required. To overcome this fault ordinary lace such as that used for curtains may be treated with shellac to produce a durable and entirely practical stencil.

A full description of the method, together with data on estimating paint qualities, color formulas, and numerous other practical hints and suggestions together with fifty blank pages for memoranda are included in the combination handbook and notebook recently put out by the New Jersey Zinc Company, 160 Front Street, New York City.

The book is of the vest pocket variety 2½ by 4½ inches in size, bound in flexible blue leather, stamped in silver and may be obtained free on request to the above address.

Take Your Choice

Which of these machines for your shop?



This machine and your brains will make you a fortune. 8 machines in 1. Does everything in woodworking. Guaranteed 10 years. Planing Mill Special, \$550.

In the complete Parks line there is a woodworker that exactly fits the needs of your shop. A big combination machine—or separate machines for individual drive—or a small handy variety worker for the shop or out on the job.

Choose *your* payroll-reducer from the Parks line.

Any carpenter can double and treble his business without increasing his payroll, *if he will get a Parks!*

We are shipping Parks machines all over the country to foresighted builders who are putting themselves in readiness to cash in to the limit on this year's heavy building. Send for new complete catalog.

The Parks Ball Bearing Machine Co.
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Canadian Factory
200 Notre Dame East, Montreal, Can.



22-inch band saw, tilting table, tension adjustments, upper and lower saw guides. Jewel, \$75.

The Parks line includes:

Bandsaws, Shapers, Mortisers, Planers, Sanders, Jointers, Lathes, Swing Saws, Separate and Combination Woodworkers.

WOODWORKING

PARKS

MACHINES

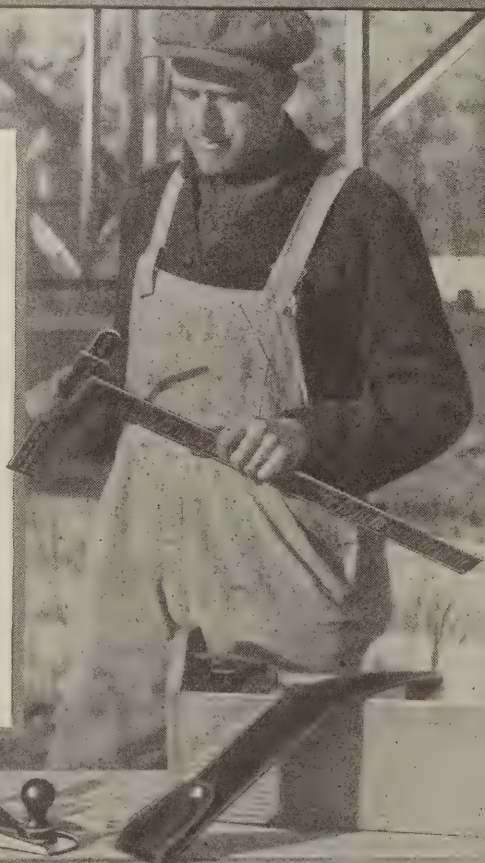
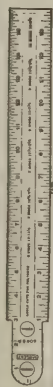
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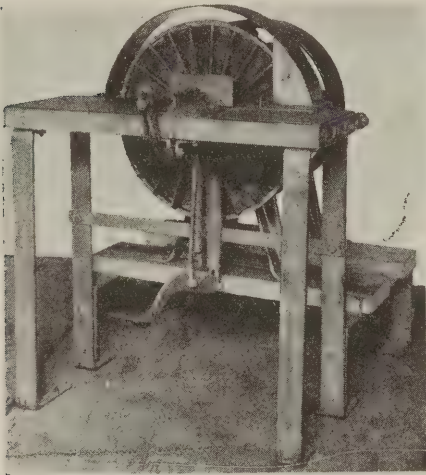
Handbook of Fireproof Construction

THE Concrete Engineering Company of Omaha, Nebraska, have prepared, in attractive form, complete with tables and illustrations, the fourth revised edition of their handbook of fireproof construction. This contains not only illustrated information about "Meyer Steelform" construction, but gives brief explanations of other concrete products, as well, and is intended to familiarize the engineer, architect and builder with the advantages of this kind of construction and these materials.

It is an interesting presentation of these products and will form an attractive addition to the files of any builder or contractor.

Brick Cleaning Machine

THE Fuller Brick Cleaner, manufactured by N. T. Fuller, Spring and First streets, New Bedford, Massachusetts, is operated by either a motor or gasoline engine of three horsepower, or from four



The Fuller brick cleaner

to five hundred revolutions per minute. This machine is about three and a half feet square and weighs about five hundred pounds.

The disk is 18 inches in diameter, with 24 knives set at an angle to keep the knives sharp. These knives, made of 2x3/4-inch hard steel, are set in grooves one inch deep. They are placed in the slots on a taper and are clamped in with a strong band drawn together with a bolt, and the band is locked with forearm with set screws, making it impossible for the knives to get out.

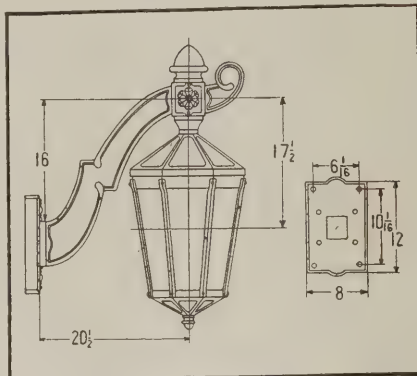
New Synthetic Shellac

A NEW "synthetic shellac," made expressly for use on rough wood, floors, wood-knots, and for killing stains in new plaster, is being marketed by the Greater Service Company of 329 Broad Street, Newark, New Jersey. The synthetic product is claimed to be superior, for this purpose, to the natural imported shellac. The synthetic dries in 15 minutes, perfectly smooth, with

a high gloss. It sells for less than half the price of the natural shellac and is obtainable in white, orange and clear shades. Prices are the same for all shades, and sample trial lots are available before making large purchases.

Ornamental Light Fixtures

THE Westinghouse Electric & Manufacturing Company are sponsors for a booklet of Ornamental Brackets, Newels and Lanterns showing unusual installations of their lighting fixtures thruout the country.

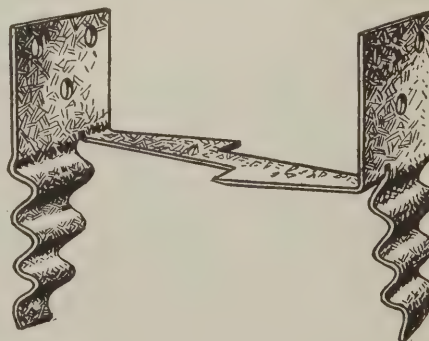


Santiago bracket with octagonal pendant lantern

This book represents an authoritative guide in choosing such accessories, containing as it does photographs and designs of various types of fixtures.

New Grip Device

A NEW device to be used for anchoring sleepers or furring to any part of a concrete or brick building has recently been invented by Mr. Carl Kinninger of Dayton, Ohio, who is also manufacturing this grip. Made from galvanized iron this new device resembles the lower part of a capital "H,"



Grip with ears turned up ready to receive sleepers

and is so arranged that when installed in concrete floors it will not project above the level of the concrete until desired, thus allowing unobstructed use of floors while a building is under construction.

The grip may be tacked into forms before concrete is poured, so that when forms are removed the ears of the grip are at the surface ready to be turned up for the reception of wood or metal furring.

Use Mineralized Sawdust for Aggregate

A NEW product called Novocrete has recently been put on the market by the Novocrete Company, 522 Fifth Avenue, New York City. Tests of this product were made at Columbia University and in England, and the results are embodied in a small descriptive pamphlet issued by the company.

Novocrete is made of portland cement with mineralized sawdust as the aggregate instead of sand or gravel. The advantage claimed for it are low cost, great strength and surface wearing qualities; that it is only two-thirds the weight of ordinary concrete, is fireproof, more comfortable to walk on, is a non-conductor of sound, is easy to work as it can be sawn, screwed and polished, and requires no special plant to make it.

Statement of the Ownership of National Builder

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of National Builder, published monthly at Chicago, Ill., for April 1, 1923.

State of Illinois, County of Cook, ss.
Before me, a notary public in and for the state and county aforesaid, personally appeared L. M. Francisco, who, having been duly sworn according to law, deposes and says that he is the business manager of the NATIONAL 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 44 of the Postal Laws and Regulations, printed on the verse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Trade Press Publishing Corp.; Editor, Jim T. Pomeroy; Managing Editor, Jim T. Pomeroy; Business Manager, L. M. Francisco; all of 542 S. Dearborn St., Chicago, Ill.

2. That the owner is (if the publication owned by an individual his name and address or if owned by more than one individual the name and address of each, should be given below; if the publication is owned by a corporation the name of the corporation and the name and addresses of the stockholders owning or holding one per cent or more of the total amount of stock should be given): Trade Press Publishing Corp., W. D. Callender, P. J. Sullivan, George P. Miller, N. C. Rockwood, W. B. Mayor, D. L. Hicks, L. M. Francisco, and H. P. Session, all of 542 S. Dearborn St., Chicago, Ill.

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

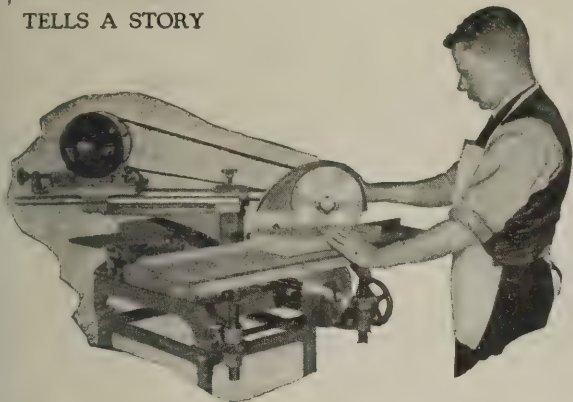
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5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is: (This information is required from daily publications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

L. M. FRANCISCO,
Business Manager.

Sworn to and subscribed before me this 31 day of March, 1924.
(SEAL) Charles O. Nelson.
(My commission expires April 6, 1926.)
Form 3526.—Ed. 1923.

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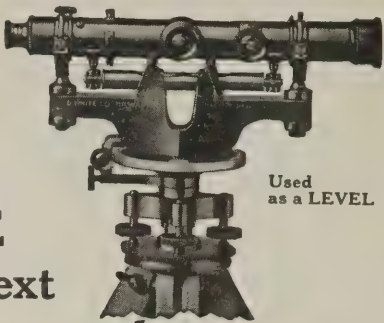
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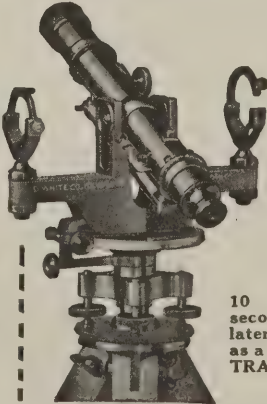
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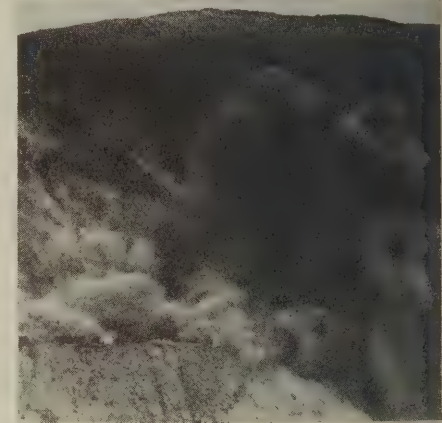


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Left—If rents are too high, build your own home, is the policy of George Kupfer, a bricklayer, who, with the help of his wife, is now building his, a two-story brick house, at Rockaway Boulevard, South Ozone Park, Long Island, New York. Right—Here is "Cathedral Street" formed by exquisite small-scale models of the world's most famous cathedrals—27 in all—a wonderful exhibit at the recent Architectural Club's exhibition in London. In the foreground are the Cathedrals of Cologne (left), Antwerp (right), St. Peter's, Rome, followed by Milan (left) and Strasburg (right)



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Left—Here is a fifty-car train of shingles which was recently moved clear across the continent from Vancouver, British Columbia, to Buffalo, New York. The train contains approximately 9,000,000 shingles, or more than 12,000 squares. Enough to roof 800 average sized houses. Right—Here the world's largest dynamite explosion is shown doing its stuff with a mountain; 182 tons of dynamite were used in one shot to bring down one or two years' supply of stone for a crushing plant; 15,000 spectators were on hand

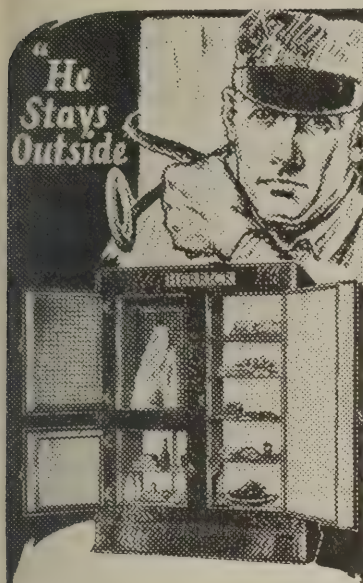


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Left—O. W. Meyers, of Oakland, California, thru a mistake, built his two-story home upon the wrong lot. After the house was completed he attempted to move it to his own lot, but was arrested, as it is unlawful to move a building without a permit. Right—This is the National Academy of Sciences, Washington, D. C., that was built by a \$5,000,000 donation by the Carnegie Foundation. The architect was B. G. Goodhue of New York, and the sculptor was Lee Lawrie



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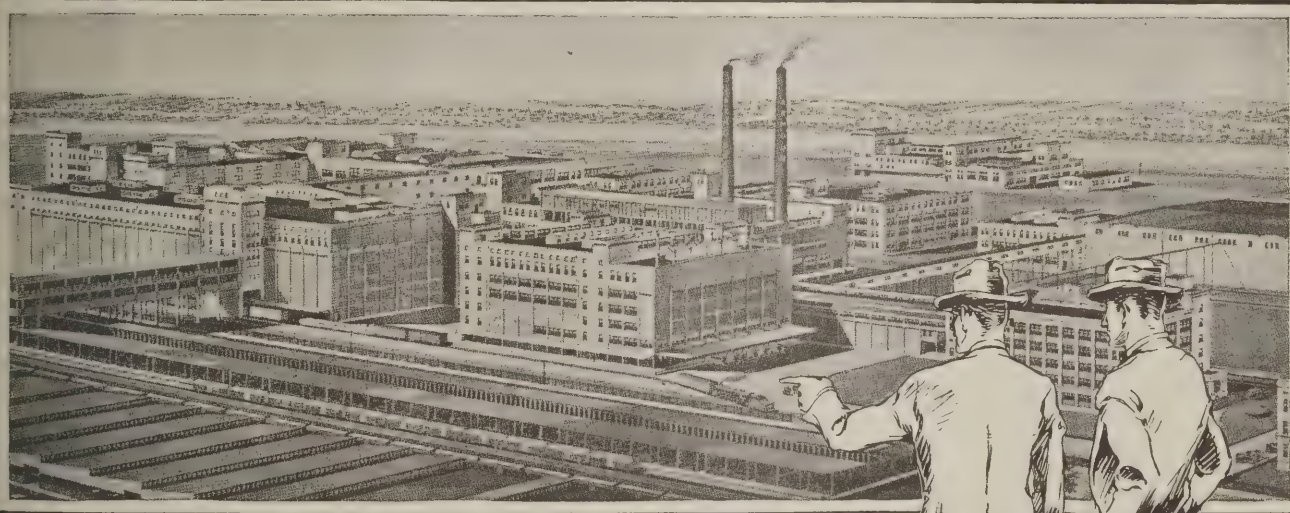
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Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. Architectural Acoustics. Booklet, 6x9 in., 24 pp. Illustrated Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

Architectural Service

Architectural House Planning Service Co., 20 S. 18th St., Philadelphia, Pa. Publishers of "Small Homes of Character" (\$1.00 postpaid), containing 50 examples of 4-, 5-, 6- and 7-room houses.

Home Owners Service Institute, Inc., 35 W. 39th St., New York City. "The Book of a Thousand Homes," Vol. I, complete details and description of 500 homes. Price \$3.00.

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Portland Cement Association, 111 W. Washington St., Chicago. A large number of publications are issued on the different uses of portland cement, under the following heads: Canals, conduits, sewers and drainage; farm uses; concrete products; roads, streets and alleys; structural concrete; technical data, tanks, etc., and miscellaneous subjects. "A Manual of Concrete Masonry Construction" is particularly recommended for the contractor and builder. It is a 32-page booklet, size 8½x11, and is sent free on request.

Band and Mitring Saws

The Tannetitz Works, 315 Front Ave., N. W., Grand Rapids, Mich. Special bulletins on variety saws, band saws, portable electric mitring machine and saw gauges will be furnished on request.

Block Machinery

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 35 sent on request.

Books on Building

Theo. Audel & Co., 72 Fifth Ave., New York City, N. Y. "Audel's Masons and Builders Guide," 4 vols., \$6.

McGraw-Hill Book Co., 370 7th Ave., New York City. "Hool & Johnson's Handbook of Building Construction," 2 vols., \$10.

Frank R. Walker Co., 536-C Lake Shore Drive, Chicago. Publishers of The Building Estimator's Reference Book, containing information regarding estimating the cost of every phase of building construction (price \$10); and of a new book entitled "Practical Accounting and Cost Keeping for Contractors," treating of contractors' bookkeeping and accounting systems and how to keep time and labor costs on the job (price \$2.50 postpaid). Books sent on approval to contractors writing on their business letter-head.

Boilers

U. S. Radiator Corp., Detroit, Mich. Complete data sent on request.

Borders for Floors

Wood-Mosaic Co., Inc., New Albany, Ind. Catalog showing parquet and floors in natural colors sent free on request.

Brick

American Face Brick Association, 1763 Peoples Life Bldg., Chicago.

"The Story of Brick." Third edition. Booklet, 7x9½ in., 55 pp. Illustrated. Presents the merits of face-brick from structural and artistic standpoints. Tables of comparative costs.

"The Home of Beauty." Fourth edition. Book, 8x10 in., 72 pp. Color plates. Presents 50 designs for small face-brick houses submitted in national competition by architects. Text by Aymar Embury II, architect. Price 50 cents.

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"A Manual of Face-Brick Construction." Booklet, 8½x11. Text-book on construction of the brick wall and various uses of face brick. Thirty-one colored plates of brick houses with plans. Price \$1.

"Architectural Details in Brickwork." Series 1, 2, 3, 8½x11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others \$1.50.

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Truscon Steel Co., Youngstown, O. Truscon Data Book. Catalog, 3½x6 in., 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

Concrete Engineering Co., Omaha, Neb. "Handbook of Fireproof Construction," "How to Use Ceco Lathing Materials" and "How to Save Concrete, Steel, Formwork and Labor by Using Meyer Steel Form Construction." These booklets, 8½x11 in., sent free on request.

International Steel & Iron Co., Evansville, Ind. Catalog on steel ceilings, catalog on store fronts and garages and circulars describing metal lath, coal chutes, fireplace dampers, etc., sent on request.

Calking Paste

Weatherproof Calking Co., 757 Washington Ave., N., Minneapolis, Minn. 24 pp. booklet describing their product sent on request.

Cellar Drainers

Penberthy Injector Co., 1260 Holden Ave., Detroit, Mich. 80 pp. catalog and 16 pp. miniature catalog on cellar drainers, automatic injectors, etc., etc. These catalogs are free and will be sent on request.

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Atlas Portland Cement Co., 25 Broadway, New York City, N. Y. "Atlas White and What You Can Do With It," printed in English, Italian, Portuguese and Spanish; "Atlas Handbook on Concrete Construction," "Building a Bungalow," "Information for Home Builders," "Stucco Questions and Answers," "Atlas White Portland Cement for the Concrete Block and Brick Manufacturer" and other books sent free on request.

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Concrete Products Equipment

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Concrete Block Mach. Co., 56 Columbia St., Newark, N. J. Literature sent on request.

Concrete Equipment Co., 530 Ottawa Ave., Holland, Mich., manufacturers of the "Utility" line of concrete machinery and molds for the manufacture of all kinds of concrete products. A descriptive catalog, which not only describes the equipment but also specifies weights, costs and selling prices of the products, is sent free upon request.

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Helm Brick Co., Cadillac, Mich. "Concrete for Beauty, Adaptability and Permanence." This is a combination handbook on the concrete production industry and catalog illustrating and describing the well known line of brick and block presses and various accessories for products plants.

Ideal Concrete Machinery Co., 5000 Springfield Ave., Cincinnati, O. New loose leaf catalog No. 35, 80 pp., illustrating and describing their complete line of concrete machinery. Contains detailed information for the manufacturer of molded concrete products. Sent free on request.

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Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "How to Use the Murphy Bed" describes its construction, operation and sizes; "Behind the Door," showing installation in private homes and its application to this type of building; "Specifications and Details," giving complete information for the preparation of all types of Murphy beds sent free on request.

Doors

Wheeler, Osgood Co., Tacoma, Wash. Monograph on Laminex construction sent free on request; also Catalog No. 31 and booklets on Laminex doors.

Doors—Metallic

Dahlstrom Metallic Door Co., 411 Buffalo St., Jamestown, N. Y. "Metal Door and Trim Catalog (Third Edition), 8½x11 in. Complete catalog of architectural shapes, styles and types of Dahlstrom standard construction doors.

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Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Dumbwaiters," pp., 8½x11 in. Describes in detail 14 standard types of dumbwaiters. Mailed on request.

Sedgwick Machine Works, 150 W. 15th St., New York City. Catalog containing descriptions and construction details, 4¼x8¾ in.; 70 pp. illustrated; sent on request.

Electrical Equipment

Frank Adam Electric Co., St. Louis, Mo. "Wiring the Home for Comfort and Convenience" with information and diagrams will be sent free. A Catalog No. 32, 7¼x10½ in. on panelboards; Bulletin No. 29, type P safety type panelboards and cabinets, 12 pp., 7¼x10½ in.; Bulletin No. 4x9 in., on fan hanger outlets and floor boxes, 16 pp.; Catalog No. 25 on knife switches and accessories, 32 pp., 7¼x10½ in., and Bulletin No. 27, new triumph residence safety type panelboards, 16 pp., 7¼x10½ in., containing complete wiring diagrams and specifications for average modern residences.

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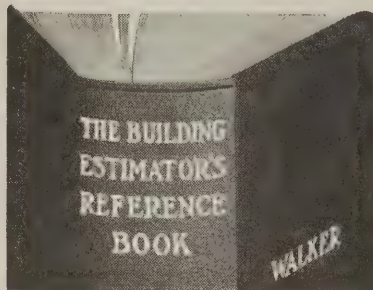
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"Lighting of Public Buildings." Bulletin, 6x9 in., 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

Elevators

Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Elevators," 24 pp., 8½x11 in. Contains helpful information for architects and contractors. Sent on request.

International Steel & Iron Co., Evansville, Ind. Elevator catalog sent on request.

Kimball Bros. Co., Council Bluffs, Ia. "Kimball Elevator," an illustrated catalog of hand power, sidewalk and garage elevators and dumbwaiters and electric passenger, freight and push button elevators; 36 pp., 8½x11 in.; sent free.

Richards-Wilcox Mfg. Co., Aurora, Ill. "Elevators" Booklet, 8½x11 in., 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 157 W. 15th St., New York. Catalog and descriptive pamphlets, 4¼x8½ in., 70 pp. Illustrated.

Fire Doors and Fire Door Hardware

Richards-Wilcox Co., Aurora, Ill. 60 pp. booklet, 8½x11 in.; flat track and round track types for sliding and swinging doors. Sent on request.

Fireproofing

The General Fireproofing Co., Youngstown, O. "Fireproofing Handbook," 64 pp., 8½x11 in. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-centering formless concrete construction.

Milwaukee Corrugating Co., Milwaukee, Wis. Brochure entitled "Metallic Construction for the Modern Home"; 16 pp. booklet with a non-technical story featuring fireproof construction for homes through the use of metal lath, etc.

Floor Surfacing Machinery

American Floor Surfacing Mach. Co., Toledo, O. "American Universal Contractor Broadside," "American Rapid Grinder Broadside," "American Handy Grinder Circular" and "American Base and Wall Polisher Catalog" each describing the particular machine mentioned sent free on request.

Wayvill Chappell & Co., Waukegan, Ill. Illustrated folder, 9x16 in. Electric Ballbearing Floor Surfacing (or Sanding) Machines. Made in four sizes. Ship on free trial. Describes in detail the construction, also lists all extras furnished with each machine. Also gives suggestions how to start in the floor surfacing business.

Illustrated folder, 8x8½ in. Electric Desk and Table Surfacing (or Sanding) Machines, with flexible shaft. Ship on free trial. Gives information about its construction and lists the extras furnished with each machine. Mentions the great variety of work the machine is adapted for.

Electric Rotary Mach. Co., 3825 W. Lake St., Chicago, Ill. Illustrated, 28 pp. booklet describing the process of sanding new and refinishing old wood floors, surfacing and polishing marble, terrazzo, etc.

Fox Supply Co., Brooklyn, Wis. Circular on scraping floors and proper method of sharpening floor scraping blades sent free on request.

National Sanding Mach. Co., 20 E. Jackson Blvd., Chicago. "The Lightning Electric Floor Surfer," 16 pp. catalog sent on request.

M. L. Schlueter, 224 W. Illinois St., Chicago, Ill. Free trial offer and information sent on request.

Triple A Mach. Co., 4601 E. Ravenswood Ave., Chicago, Ill. Full information upon request.

Flooring

Everlastest Flooring Co., Dept. N, 95 North St., Rochester, N. Y. Description of their product, opportunities in the business and method of estimating amount of materials and cost sent free.

Franklyn R. Muller, Inc., Waukegan, Ill. "Asbestone Flooring, the Floor You Like to Walk On," 16 pp. booklet sent on request.

Fold Away Dining Rooms

Fain Manufacturing Co., 313 Bank of Commerce Bldg., Norfolk, Va. "Fain Fold-Away Dining Room," 8½x11, sent on request. Will also send blue prints of efficiency apartment layouts if requested.

Frames, Sash

Andersen Lumber Co., Dept. D-3, Bayport, Minn. Interesting booklet for contractors, architects and dealers sent free on request.

Furnaces

Bovee Furnace Works, Waterloo, Iowa. Catalog No. 29, 16 pp., sent on request.

Hess Warming and Ventilating Co., 1208-R S. Western Ave., Chicago, Ill. "Modern Furnace Heating," a book on heating problems, and details of the Hess free plan service are sent on request.

Garage Door Hardware

Richards-Wilcox Mfg. Co., Aurora, Ill. 65 pp. catalog, 8½x11 in., completely describes all styles of garage door equipment. Sent free on request.

Gas Ranges

American Stove Co., St. Louis, Mo. Quick Meal Stove Co. Division, St. Louis, Mo. George M. Clark & Co. Division, Chicago, Ill. Direct Action Stove Co. Division, Lorain, O. New Process Stove Co. Division, Cleveland, O. Reliable Stove Co. Division, Cleveland, O. Dangler Stove Co. Division, Cleveland, O. Handbook on gas ranges for architects and builders. 9x12 in., 32 pp. Illustrations and specifications of 95 different types of gas ranges equipped with the famous Lorain Oven Heat Regulator. Also, the American Gas Association's instructions and specifications for the installation of gas in the modern building. Contains considerable information of value to architects and builders regarding equipment of the modern kitchen. Also, detailed drawings and description of the Lorain Oven Heat Regulator, a thermostatic device that registers and automatically controls the heat of the oven, thereby precluding any chance of baking failure.

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H. E. Holbrook Co., 444 Mass. Trust Bldg., Boston, Mass. Illustrated folder sent on request.

Nicholas Hardware Co., 123 Marion St., Oak Park, Ill. Catalog No. 10 showing complete line of builders hardware sent on request.

Richards-Wilcox Mfg. Co., Aurora, Ill. "Modern Hardware for Your Home," 34 pp. catalog, 8½x11 in., sent free to interested parties.

Sargent & Co., 52 Water St., New Haven, Conn.

"Details to Which Standard Hardware Can be Applied." Booklet, 6 pp., 9x12 in. Illustrated. Treats with diagrams, portions of doors and windows to which hardware can be applied.

Plane and Square Booklets.

Heating Specialties

Andrews Heating Co., 1585 Heating Bldg., Minneapolis. The "Heating Book" catalog contains full information and is sent on request.

Minneapolis Heat Regulator Co., 405 E. 28th St., Minneapolis, Minn. Booklets "Convenience of Comfort," "Dual Control," "Steam Control" and "Gas Fired Heating Plants sent free on request.

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C. H. & E. Mfg. Co., Milwaukee, Wis. Complete catalog showing saw rigs, hoists, pumps, elevators and mortar mixers sent on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. Catalog illustrating and describing different types of hoists together with complete specifications.

House Moving Equipment

La Plant-Choate Mfg. Co., 3114 First Ave., Cedar Rapids, Iowa. Special house moving magazine, "Successful House Moving Contractor," sent free on request.

Hydrated Lime

Wm. L. Urschel Lime & Stone Co., Toledo, O. Literature regarding their products will be sent free on request.

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The Celotex Co., 645 N. Michigan Ave., Chicago, Ill. Literature and information sent on request.

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Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "Murphy Ironing Boards," describing the built-in cabinet ironing board and dimensions of space required.

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The Fred J. Meyers Mfg. Co., Hamilton, O. Catalog No. 67 describing their products will be sent free on request.

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The General Fireproofing Co., Youngstown, O. "Herringbone Metal Lath Handbook," 8½x11 in., 32 pp. Illustrated. Standard specifications for cement stucco on Herringbone rigid metal lath and interior plastering.

Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book.

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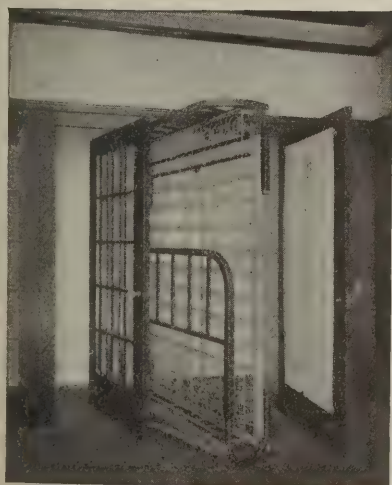
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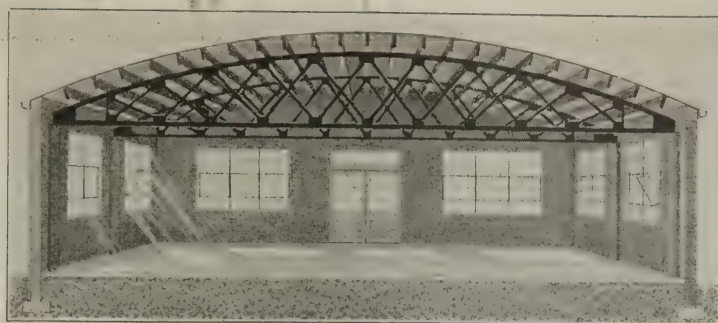
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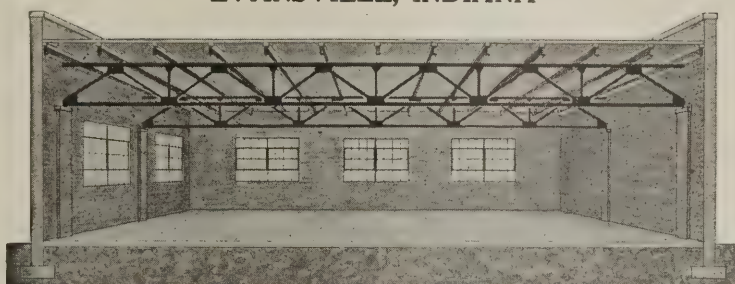
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Wallboard

Asbestos Shingle Slate & Sheathing Co., Dept. B, Ambler, Pa. Complete data on Linabestos wallboard sent on request.

Cornell Wood Products Co., 190 N. State St., Chicago, Ill. "Cornell Interiors," 24 pp. Illustrated booklet; also small pamphlet, "165 Uses for Cornell Wood Board," sent on request.

The Upson Co., Lockport, N. Y. "Interiors Beautiful" and "The Snow White Lining." These booklets sent free on request.

Water Softeners

Duro Pump & Mfg. Co., 103 Monument Ave., Dayton, O. Booklets, "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener," sent free on request.

Water Systems

Duro Pump & Mfg. Co., 103 Monument Ave., Dayton, O. Booklets "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener" sent free on request.

Waterproofing

The General Fireproofing Co., Youngstown, O. "Waterproofing Series A-507-9." Booklet, 8½x11 in., 42 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete.

Window Hardware—Casement

Casement Hardware Co., Chicago, Ill. "Casement Hardware." Catalog, 8½x11 in., 12 pp. Illustrations, specifications, detail drawings and table of sizes, etc., for all types of Win-Dor casement operators.

Booklet, 5½x8½ in., 24 pp. Illustrated. The story of casement windows and Win-Dor control written particularly for the owner. Free to readers of National Builder.

Architectural Drawings. Set of six scale drawings showing construction of wood casements for general types of construction in use, including detail for screen, Venetian blinds. Three-inch scale, set of six, 25 cents. Full size, 25 cents each.

Weatherstrip

Concrete Eng. Co., 1926 S. 52d Ave., Chicago Ill. Literature sent on request.

Diamond Metal Weatherstrip Co., 620 Kerr St. Columbus, O. Full information and literature request.

Hoffman Mfg. Co., Andrew, 906 Steger Bldg. Chicago, Ill. "Hoffman Casement Fittings." Architect's Portfolio, 8½x11 in., 30 pp. Loose leaf. Scale details for mill-work, installation, etc. in new and old work.

E. J. Wirfs, 106 S. 17th St., St. Louis, Mo. Booklet "The Home Comfort Weatherstrip" sent free on request.

Windows—Casement

Hoffman Mfg. Co., Andrew, 906 Steger Bldg. Chicago, Ill. "Hoffman Casements." Architect's Portfolio, 8½x11 in., 30 pp. Loose leaf. Scale details for mill-work, installation, etc., in new and old work.

Hope & Sons, Henry, 103 Park Ave., New York. "Catalog," 12¼x18½ in., 30 pp. Illustrated. Full size details of outward and inward opening casements.

David Lupton's Sons Co., Allegheny Ave. and Janney St., Philadelphia, Pa. "Casements and Double Hung Windows." Catalog, 2½x11 in. 44 pp. Illustrated. Shows new Lupton Casement and Double Hung Windows, with profuse illustrations and full details.

Windows—Steel and Bronze

David Lupton's Sons Co., Allegheny Ave. and Janney St., Philadelphia, Pa.

"Lupton Service—Products No. 11." Book, 8½x11 in., 192 pp. Illustrated. The full line of Lupton products described and illustrated. Separate chapter on "Designing Service." Many new types of steel sash for apartments, hotels, etc., shown.

"Catalog No. 110." 8½x11 in., 72 pp. Illustrated. A condensed version of the No. 11 general catalog. The new Lupton Projected Sash completely described.

"Air and Light in Machine Shops." Booklet, 6x9 in., 42 pp. Illustrated. The proper building layout and selection of the right types of steel sash for best results in daylighting and ventilating in machine shops.

Truscon Steel Co., Youngstown, O. "Truscon Steel Windows." Catalog, 8½x11 in., 80 pp. Illustrated. Contains complete data on all types of Truscon Steel Windows.

Woodwork

Curtis Companies' Service Bureau, Clinton, Ia. A series of five booklets, describing the principles of the Curtis line, are sent free to those interested. These booklets are "Permanent Furniture," "Interior Doors and Trim," "Entrance and Exterior Doors," "Stair and Stair Parts" and "Windows" and the general catalog "Architectural Interior and Exterior Woodwork Standardized."

Woodworking Machinery

American Saw Mill Machinery Co., 61 Main St. Hackettstown, N. J. Bulletin No. 79 gives details about their line.

W. F. & John Barnes Co., Rockford, Ill. Catalog and Bulletin 30-W sent free on request.

Crescent Machine Co., Leetonia, O. Catalog and various circulars illustrating and describing their different machines sent on request.

Gallmeyer & Livingston Co., Grand Rapids Mich. Literature regarding their various machine sent free on request.

Master Woodworker Mfg. Co., 612 Brush St. Detroit, Mich. Catalog on request.

Parks Ball Bearing Mach. Co., Knowlton and Langland Sts., Cincinnati, O. Complete catalog of woodworking machines sent on request.

Richards & Co., Inc., Battery Wharf, Boston Mass. "Cut Out a Nine-Room House in Nine Hours." "Don't Let the Dollars Slip Through Your Fingers," tells how every straight cut in the carpenter's trade can be made by one portable machine and the work of five carpenters done by one man and a helper.

Sidney Machine Tool Co., Dept. 703, Sidney, O. New bulletin sent free on request.

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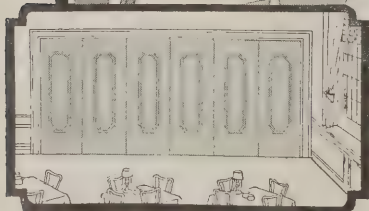
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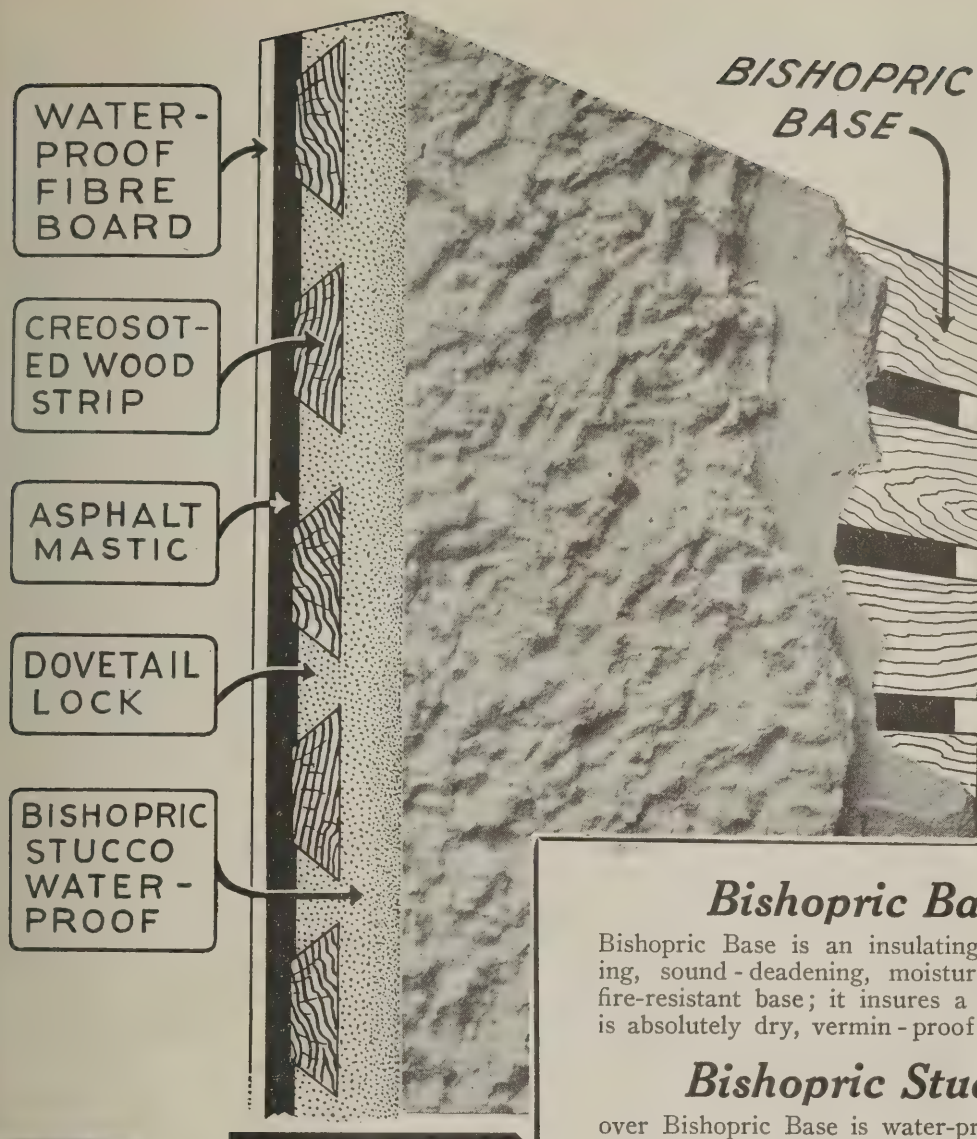
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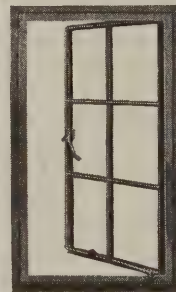
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THE dog days are generally blamed for that let-down feeling that causes many people to avoid tackling anything except fishing tackle. NATIONAL BUILDER, however, always has plenty of pep in reserve, so that whatever the season it is "On the Job" with new dollar-making ideas for its readers. The August issue will be a hot one.

There will be pictures and a story about a hotel building in the Southwest that is novel in plan and unique in decoration.

What is being done in one community to solve the "vanishing mechanic" problem will be described in an illustrated article about a trade school that turns out real workmen who aren't afraid to get a little mortar on their pants.

The Architects' Small House Service Bureau design for August will be a three-room cottage that should be popular, judging from the requests we have had for houses of this size. It will be described by

complete working drawings and details, by the Bureau, an exclusive feature of NATIONAL BUILDER.

A very exceptional apartment house, crowded out of this issue of NATIONAL BUILDER because of lack of space, will be shown in August.

There will be a story of a very unique market building in which stores are grouped around the market space in a central court. There are good ideas here for a similar building in almost any town.

The "House of the Month" is usually somewhat larger than the majority of houses illustrated in

NATIONAL BUILDER. For August, however, we are showing a six-room house with a knockout wallop that puts it in a class above many larger ones. The accompanying picture shows the back door in winter. Be sure that your subscription is paid up so that you won't miss seeing the front entrance and the other winter and summer views of this house in the August issue of NATIONAL BUILDER.



Don't you think from this snowy glimpse that the next "House of the Month" ought to help add "gusto" to the August issue of National Builder?

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Advertising: Space in the advertising pages is sold according to published rates, furnished on application. Copy must be in on the 15th of the month preceding date of issue if proofs are to be submitted for approval before publication. Last forms close on the 23rd of the month preceding date of issue. The publishers reserve the right to reject or revise any advertisement containing statements of doubtful authenticity or derogatory to any building material, accessory or equipment.

Mechanical Requirements: Type size of page, 7x10 in.; half-page, 3½x10 in. or 7x4½ in.; quarter-page, 3½x4½ in. or 7x2½ in.; eighth-page, 3½x2½ in. Screen required, 120 line; reversed plates must be stippled or Ben Day.

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The Japanesque character of the design is well marked in the entrance. The rough stonework, the bronze lantern, the brass inserts in the stucco panels of the hood, the iron door hardware and the small panes of glass in the windows, all are reminiscent of Japan



"Craftwood." The home of R. L. Boutwell, Manitou, Colorado. Designed and built by the owner

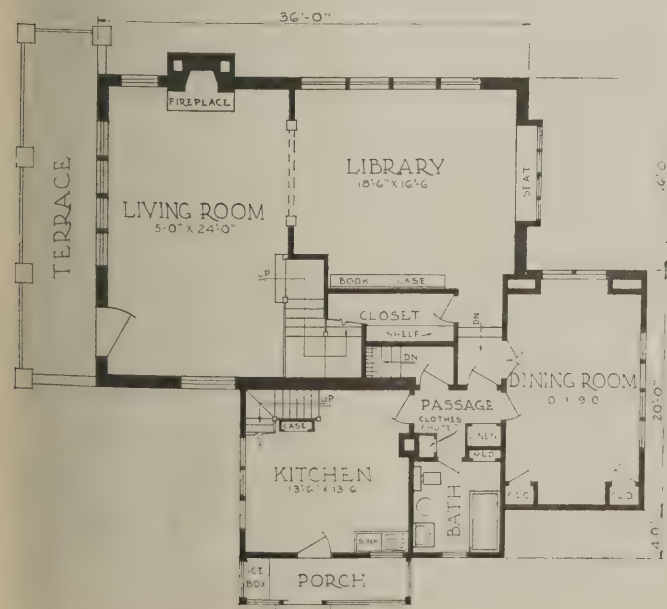
The HOUSE of the MONTH.

THE names Colorado Springs and Manitou are, of course, familiar to many, for the Pikes Peak Region is one of the most popular of American vacation sections. "Craftwood," the home of R. L. Boutwell,

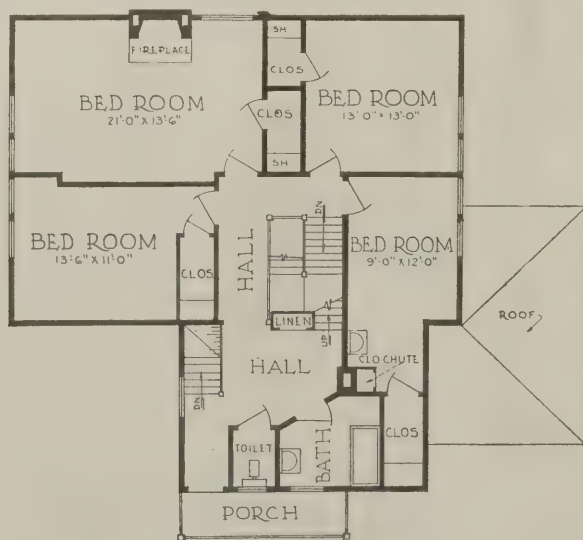
is known to many of these visitors, casually at least, for it is on one of the main highways traversed by sight-seeing cars, and the megaphone artists proudly point it out—their amateur architectural comment, how-

ever, being frequently of a kind to make the judicious grieve.

The owner, R. L. Boutwell, is, among other things, a craftsman who now and then turns his hand to house designing in col-



First floor plan



Second floor plan

laboration with professional architects. His own home represents both his ability to draw plans and elevations and his skill as craftsman and builder, for he planned every detail and executed many of the fittings.

The entrance terrace is enclosed by a wrought-iron railing set between masonry piers; it has a floor of gray cement inlaid with a black border. The front door of paneled oak has hand-wrought fittings of black iron and the hood under which you enter, an inset of three embossed copper panels in verdigris finish.

Simplicity and dependance on structural qualities for its charm is our immediate impression within. The ceiling beams, by the way, are solid timbers framed into the main cross beams and carry in their extension through the front wall, the overhang of the second and third stories. The casements, it should be observed, are set near the outer line of the wall and so give a wide ledge; they are larger than usual and are hung to swing in. Mr. Boutwell says that experience has led him to the conclusion that adequate weather protection is impossible with this kind of casement and if he built again he would make the unit a smaller one and swing it outward. The four sash in the bay window on the west side of the library are fixed, the panes being of leaded glass with insets of English painted glass representing the four seasons.

The dining room has a low vaulted ceiling of rough cast stucco painted dull gold, about the tone of old, gilded Spanish leather. The trim is finished in soft gray with a touch



Bird's-eye view showing the picturesque setting of the house

of blue outline here and there. The cupboards on either side of the sideboard niche have doors paneled with wavy mirror glass.

On the second floor are four bedrooms, each with a large closet. The bath and toilet are separate. There is a service stairs from the kitchen. The attic has storage space and

two bedrooms for servants or emergency use.

There is only one bathroom on the second floor, but the location of the toilet in a separate compartment goes far toward giving the conveniences of two bath rooms. Another bathroom on the first floor is useful as a downstairs toilet.—THEO. M. FISHER.



Leaded glass casements and stained wood ceiling in the library



The dining room has wainscoted walls and an arched ceiling



The Chateau Apartments. The Queensboro Corporation, Builders, New York. Andrew J. Thomas, Architect, 137 East Forty-fifth Street, New York City

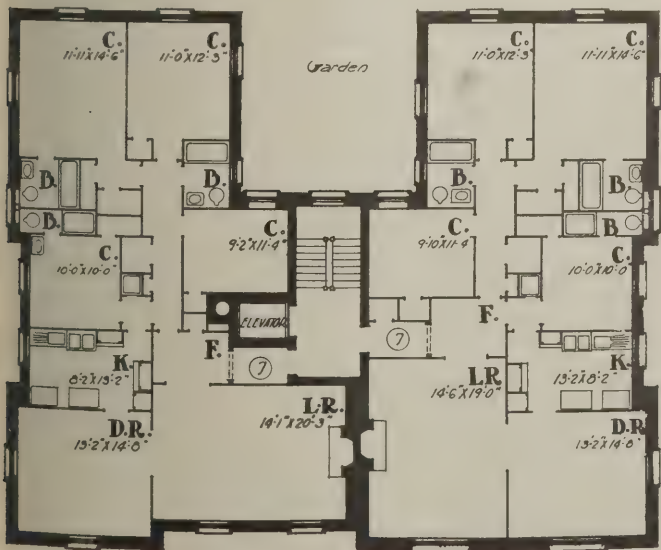
CREATING A COMMUNITY

By F. R. Howe, Vice-President, The Queensboro Corporation

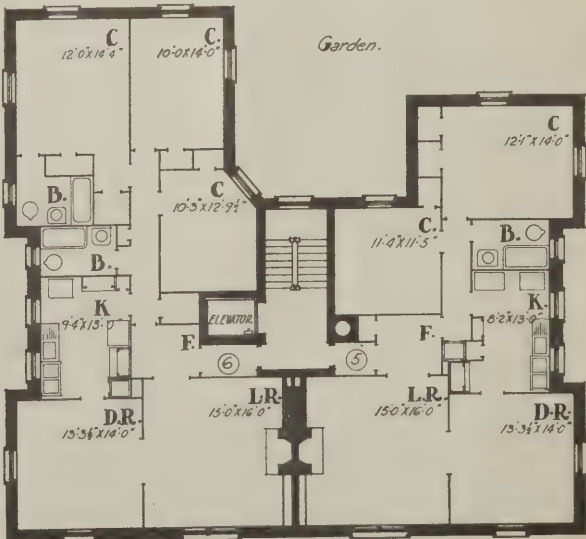
JACKSON HEIGHTS is a community of four or five thousand people who own and live in twelve hundred beautiful apartments surrounded by gardens and in juxtaposition to golf links and numerous tennis courts. An appalling project to contemplate in its inception, but as a gradual development it is understandable. From the beginning of this project about ten years ago,

architects, contractors, builders, decorators and landscape architects of the highest calibre have schemed to preserve the unity of family quarters, the outdoor features, and at the same time to conserve space. Although this is a community of apartment buildings, to describe one is not to describe all, because a great and pleasing variety of architectural style has been in-

troduced. However, to describe one is to present the possibilities inherent in the individual apartment and to show the development of this form of building plan. The buildings are arranged in groups of from eight to twelve units which occupy an entire block, facing two sides of it, and have a large central garden between the two rows. The Chateau apartment group is rep-



Typical floor plan of corner units



Typical floor plan of inside units



Picturesque roofs and an avoidance of "spotty" ornament are largely responsible for the superior quality of the designs

representative of this type.

The Chateau units are five stories high and have two suites on each floor. Between each unit is a wide space which affords a rear entrance and a walk from the street into the garden. It also insures a maximum of corner rooms and abundant fresh air and sunlight.

A typical suite in the corner units of the Chateau group is planned as follows: Two front rooms—a living room and a dining room, which open en suite; two baths, a kitchen, and three bedrooms. The kitchen is completely equipped with a sink, refrigerator, gas range, overhead clothes dryer,

dumb waiter, window box for cold storage in winter, broom and mop closet, kitchen cabinet, two laundry tubs, and ample closet and shelf space. The interior units offer similar conveniences but in some cases one bedroom is omitted.

The exterior of this group is of dark red brick with the steeply sloping roof of varicolored slate which is so frequently seen in the medieval French chateau. Thus, beauty, compactness and ideal usage of saved space have been combined to make the apartment a country house, an estate, and an easily managed home all in one.

This is the present-day tendency in and

near New York. The congestion of detached dwellings necessitates a large proportion of apartments. The Jackson Heights project has made the largest individual contribution, but builders of single groups are realizing the merit of the type and erecting the unit type of apartments everywhere in the vicinity of New York.

A feature which has been introduced with great success in the Jackson Heights apartments, and which relegates another important consideration to the builder, is tenant ownership of the suites. The suites are sold outright to tenants who automatically become stockholders in the corporation which



The kitchens are highly efficient in equipment and arrangement



A view looking into a garden court in the rear of the buildings

holds the title to the land and manages the houses and grounds. The owners are rendered a monthly bill which includes light, heat, upkeep, janitor service, garden upkeep, taxes, etc. This eliminates a multiplicity of small monthly bills and gives them the advantage of collective buying, production and management.

However, this confronts the builder with a new problem. The best material and labor must be put into construction work because the building is to be sold and not rented. It must be built for time, and all possible depreciation causes eliminated. Again, the building must be constructed at a minimum cost because outright sale prices must be low to compete with long and short term lease rentals. The builder must buy when the market is right; he must hire labor and do his building when little building is being done and the labor market is not too keenly competitive.

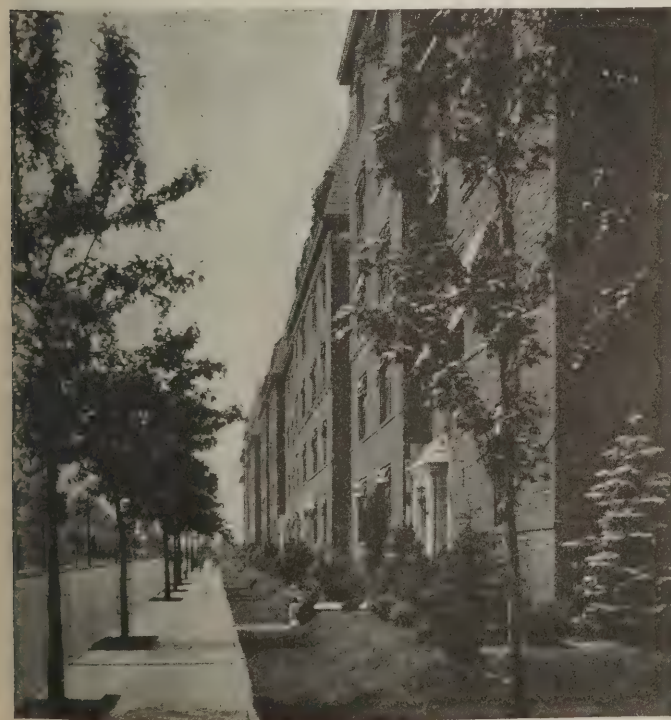
Among the many things that Jackson Heights has proved and established as facts are these, which are of special significance to the builder: (1) A high population capacity may be maintained without a sacrifice of the desirable features of a detached dwelling. (2) An apartment may be so planned that it has the space of a house and the convenience of a hotel. (3) Suites in an apartment may be sold at a reasonable profit and at a price that offers great advantages over rental or detached dwelling prices if materials are bought and labor is hired off the peaks of their respective markets.

Further, the builder's problem is to devise housing that will afford maximum space with minimum waste, that will provide fresh air, sunlight, play space for children and recreation facilities for adults. He cannot design the buildings but he can bear the



There is distinction in every line of these buildings

ideal in mind and use his influence and counsel to further its aims. The success of the Jackson Heights development demonstrates the soundness and worth of this advice.



A view looking down a street beside the group



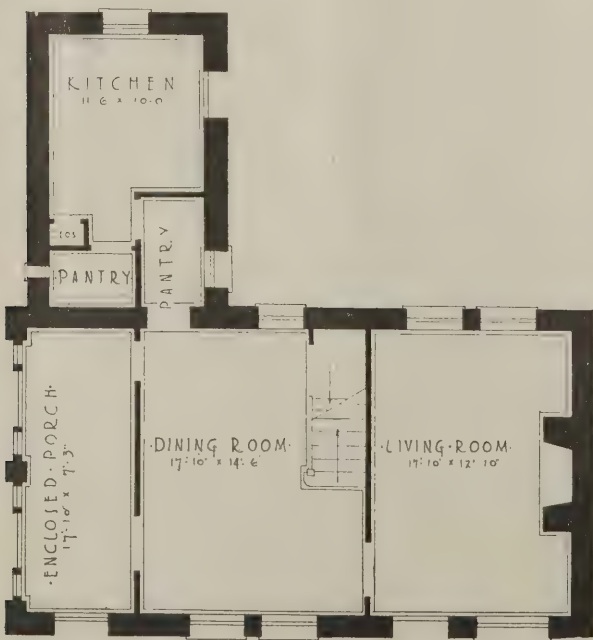
Sunken gardens and fountain groups instead of back yards



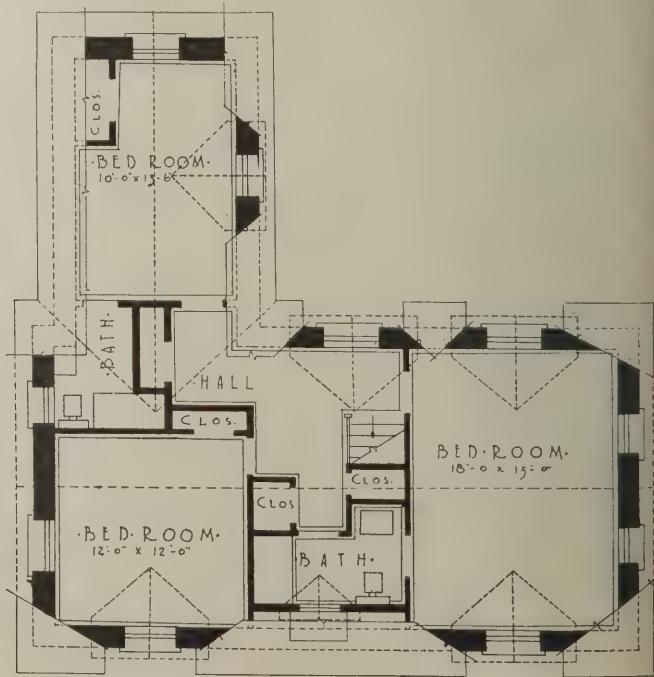
Home of Ralph Bixby, St. Louis. Ferrand & Fitch, Architects, Washington University, St. Louis

A FRENCH FARMHOUSE in ST. LOUIS

THIS house is the outcome of the observations of Mr. Ralph Bixby during his service in France with the A. E. F. One of the houses in which he was billeted was an ancient farmhouse which so attracted him that he made photographs and drawings of it, which, upon his return to his home in St. Louis, he turned over to Ferrand and Fitch architects, for the purpose of adapting th



First floor plan



Second floor plan

house for use as an American home.

The construction follows that of the original house, rough stone walls, slate roof, half-timbered dormer gables, leaded glass and all. Ten years from now, when shrubbery and the weather have had their turn, the illusion will be complete.

The entrance is directly into the living room, at one side of which is a huge fireplace. In the dining room we encounter an unusual feature in the steep main stair leading to the second story. We have become so accustomed to having the stair rise from the front hall or at least from the living room that we find it almost impossible to think of it in any other location. Digressions of this sort, however, seem to indicate that we are approaching the time when we will plan our houses as we may see fit without paying too much heed to what the other fellow thinks or does. Although the location of the stair is commendable, its steepness seems to be another matter. It is difficult to believe that its ladderlike pitch can be entirely satisfactory.

The enclosed porch is available for use as a living porch or as a breakfast porch. The kitchen is in a wing at the rear and has two pantries, one for storage and the other for service to the dining room. The basement stair is located under the main stair.

The second story contains three bedrooms, all of which have cross ventilation, the largest one having windows on three sides. There are two bathrooms, one accessible from the main bedroom and the hall and the other



Detail of the main entrance

in connection with the bedroom—above the kitchen. There are three closets opening from the hall, one for linen and the other serving the main bedroom.



Rear view showing the kitchen wing



Apartment House at Jacksonville, Florida. The Better Homes Company, Builders. Marsh and Jakelbye, Architects, West Building, Jacksonville

AN EIGHT-APARTMENT BUILDING

THE very small apartment suite consisting of about three rooms is always a popular one among married couples without children, business women and the like who often look on additional rooms as the source of unnecessary housework and expense in furnishing. In such cases the small suite usually commands practically as much rental as a larger one.

The apartment building which illustrates this article is of this type. It consists of eight three-room suites, each consisting of a combination living room and dining room, a bedroom and bath and a kitchen. In small apartments like this, a wall bed in the living room provides emergency sleeping quarters and its omission seems ill advised.

The plan is well suited to the corner lot on which the building is placed, as it permits a street frontage for three of the apartments on each floor. In this particular case even the apartments located in the rear inside corner are not "blind" ones, as the depth of the unoccupied portion of the lot and the pleasant outlook prevent them from being considered undesirable.

The entrance to the building is thru an

archway into an open passage leading to the public hall which contains the stair-



Detail showing texture of stucco

way. Under the main stair is a stairway leading to the basement which contains the heating plant and the laundries. From the public halls there are two entrances to the apartments, one opening into the living room and one into the kitchen.

Each apartment contains three rooms. Dining rooms are not provided, one end of the living room being used for this purpose. At one corner of the living room is a plaster archway opening into an alcove which is enclosed with glass—sun parlor fashion—on two sides. The bedrooms open directly into the bathrooms, which have tile floors and built-in tubs and are heated by gas heaters. The kitchens are located in the middle of the building, away from the outer walls and are lighted and ventilated by means of air shafts. Flues in the walls between the kitchens lead to the garbage incinerators in the basement. There is a row of garages at the rear of the lot for the use of tenants.

The exterior design is quite pleasing in its setting of trees and shrubbery. Some of the detailing is particularly good, especially the wall ventilators and the entrance arch. The brackets supporting the balcony

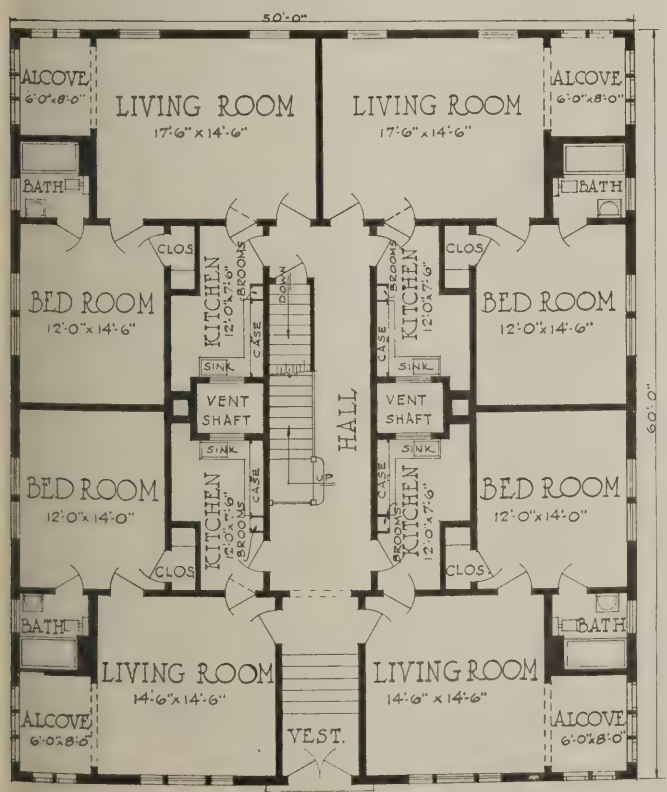


Detail of entrance

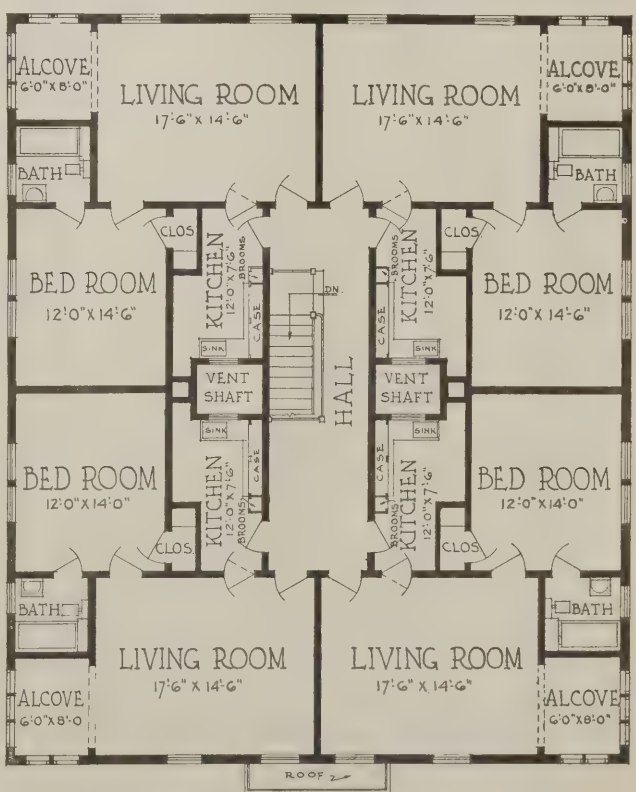


Detail at corner

above the entrance and the stucco flower boxes at the corners, however, seem a trifle heavy and out of character with the remainder of the work. Much of the effectiveness of the design is due to the play of light and shade on the stucco surfaces of the rough textured walls. The tile copings and the planting around the entrance add touches of color to the design.



First floor plan



Second floor plan



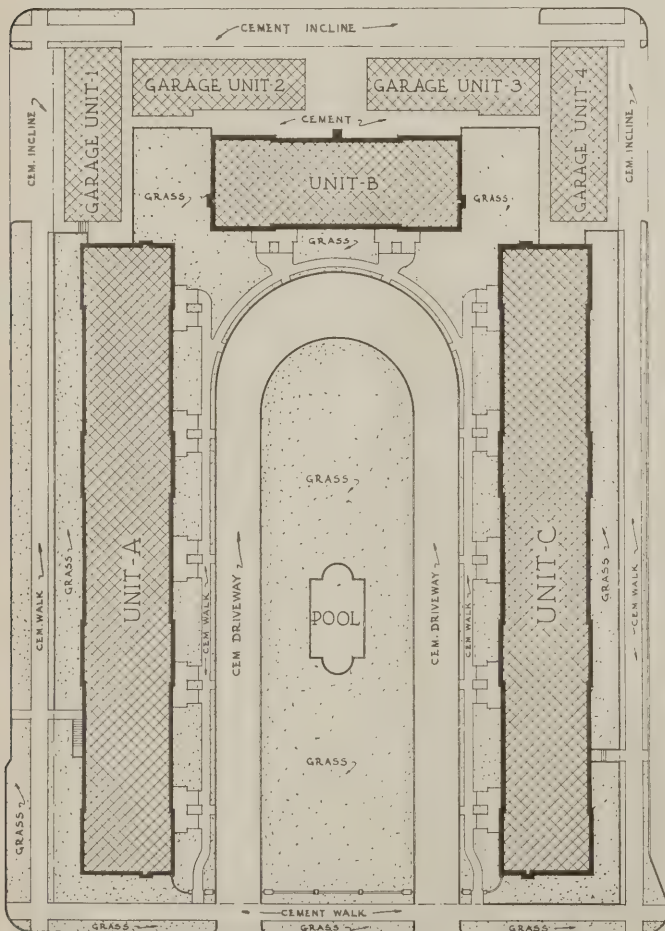
Hawthorne Square Apartments, Seattle, Washington. Murdock and Eckman, General Contractors, Seattle. Lawton and Modenhour, Architects, Seattle

GROUP TYPE APARTMENTS

THIS apartment group is unique in that the arrangement of the individual apartments resembles that of an ordinary two-

story house. That is, the living portion is in the first story and the sleeping rooms are upstairs. The fact that these apartments

resemble individual houses is made evident by the very interesting design of the exteriors where a certain picturesque and indi-



Block plan showing grouping of units



The entrances are dignified by the use of wrought-iron railings



Group of units at the side of the court



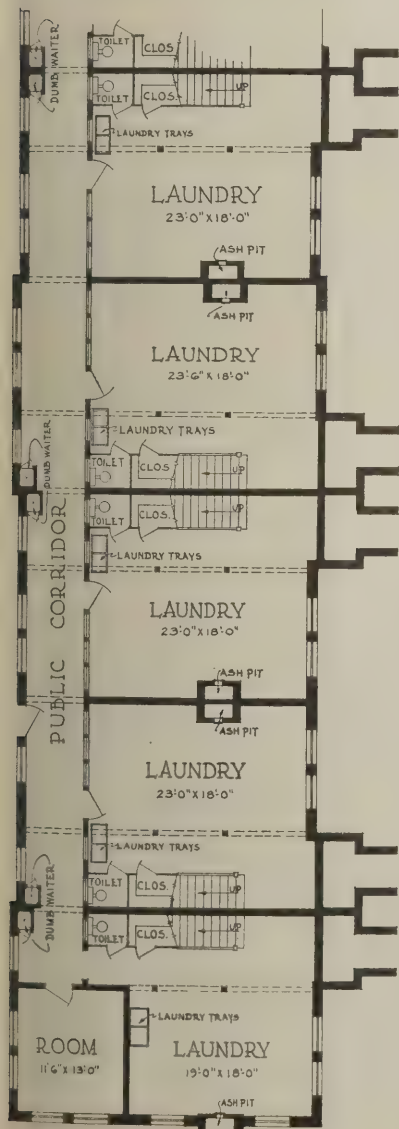
Four units are grouped at the rear of the court

Individual character is expressed in the varied roof lines and in the pleasantly irregular breaks and projections of the walls.

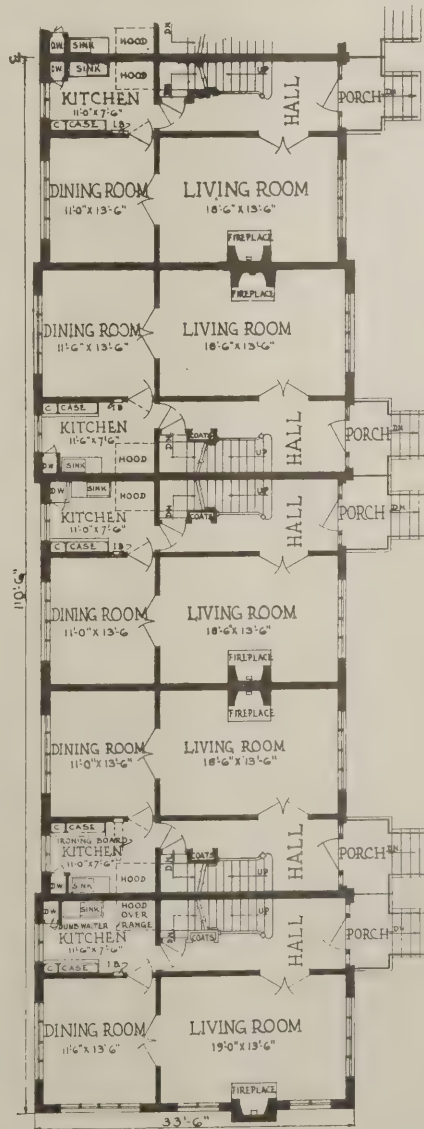
The buildings are grouped around a spa-

cious court that contains a sunken pool and shrubbery, affording a pleasant outlook from the principal rooms. At the rear of the group are twenty-four individual garages—

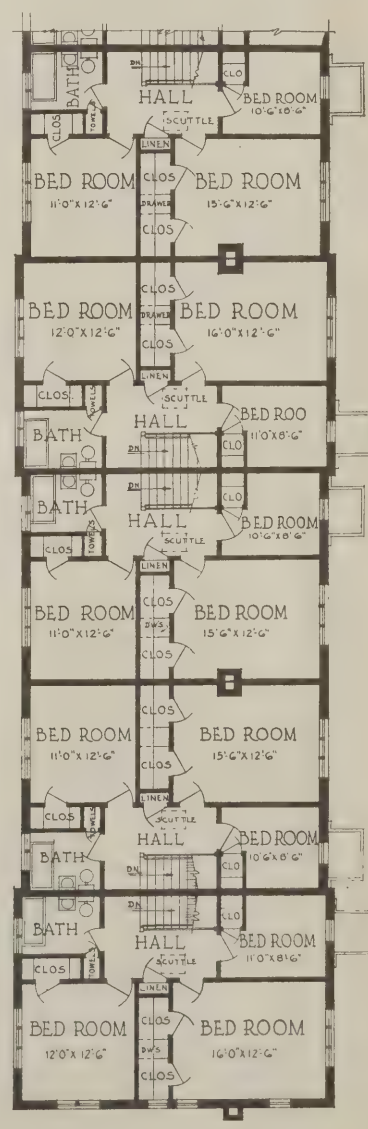
one for each apartment. A feature of note is the use of face brick throughout the buildings without cheapening the less important portions as is usually the case. Econ-



One-half basement, Units A and C



One-half first floor, Units A and C



One-half second floor, Units A and C



View showing a typical kitchen. Note shelves above sink

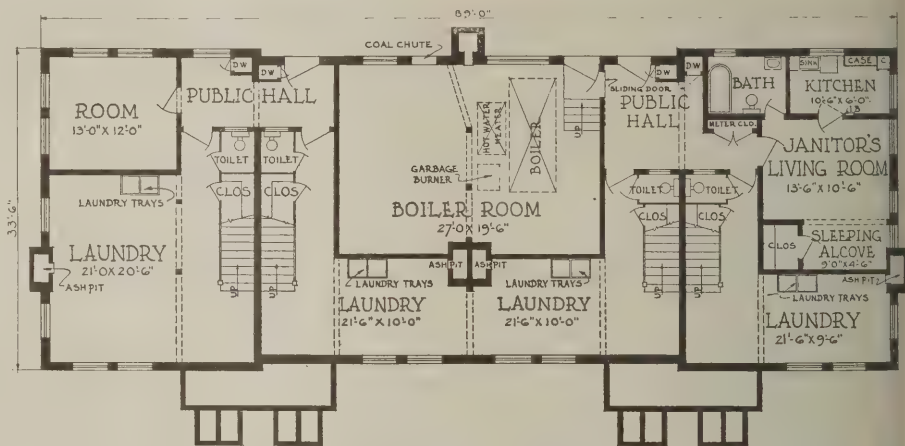


Glimpse of one corner of a living room showing fireplace

omy of that sort is often overrated.

Each of the Units A and C, as shown in the block plan, contain ten apartments, and Unit B has four. In referring to the plans, note that only half of each floor for Units A and C are illustrated, the other half being exactly similar, but reversed. The basement plan of Unit B is shown complete, as it is not symmetrical around the center line. The arrangement of the upper floors of Unit B is similar to those of Units A and C, except that only the first two apartments on each side of the center line are used. It will be noted that a particular advantage of this type of plan is that such groups may be built in sections if desired, completing the development as the need arises.

Each apartment is alike in size and arrangement except that they are alternately reversed. Each apartment has a private laundry, storage closet and toilet, in the basement. The heating plant is located in the basement of the building at the rear of the court. Service corridors in the base-



Basement plan for Unit B

ments with dumb waiters to each apartment simplify deliveries.

The construction is of brick veneer and the equipment is of the latest type. Electric ranges in the kitchens, metal weather strips

on all windows, an abundance of electric outlets, finished basement, garbage burner, oil fired boilers and other modern appliances are provided for the comfort and convenience of the tenants.



The garages are grouped at the rear of the buildings



The garages form an interesting group when viewed from the court



Duplex house of Mrs. Lucy E. Sellers, Alhambra, California. Ernest Irving Freese, Architect, 4675 Hollywood Boulevard, Los Angeles

A MINIATURE in OLD IVORY

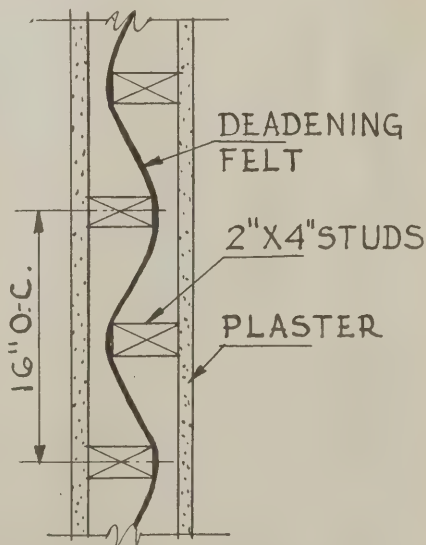
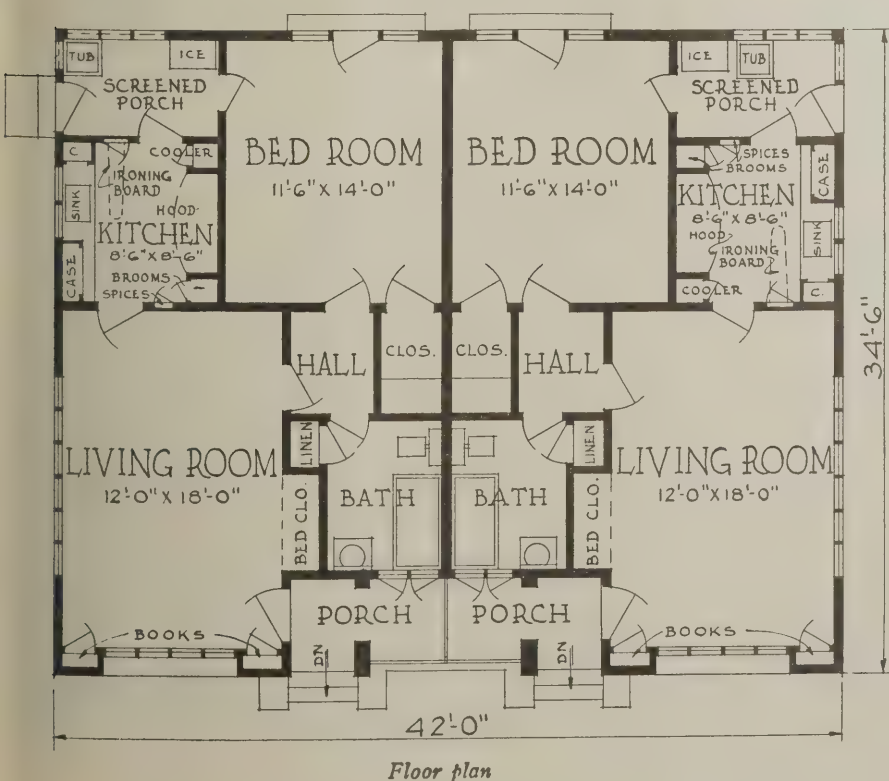
It is not often that an architect gets an individual commission for a small one-story frame dwelling; therefore, in the present instance, when Ernest Irving Freese was engaged by a practical wee grandmother from the Middle West to design, plan and have built for her in Alhambra a small,

work-saving, income-producing home, a duplex, combining economical construction with charm and substantiality, the task was undertaken with zest.

It is a gem in old ivory and green trim that fits in perfectly with its high-class environment and commands the instant at-

tention and admiration of every passerby. Added dignity is given by the wide, heavy siding, specially cut for this job.

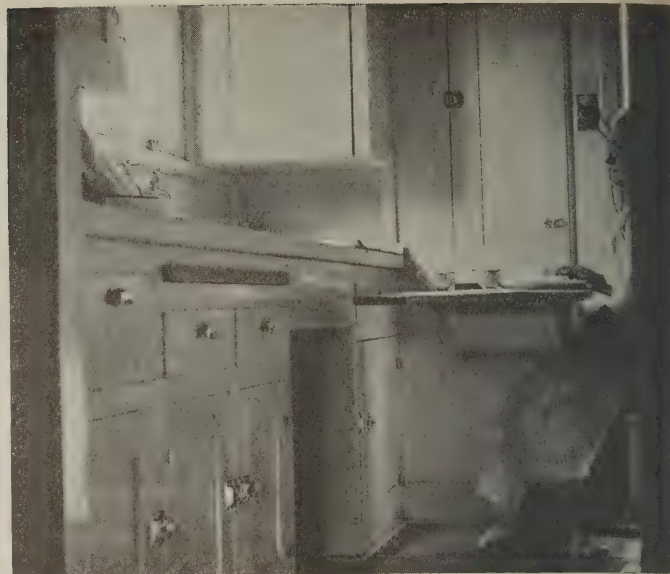
The living room may be converted into a commodious dining room and the book cases into china cabinets. Or, at night, when the disappearing wall bed in the closet behind



Detail of sound-deadened partition showing how the studs are staggered with deadening felt loosely woven or bagged between. This type of construction is said to be quite efficient in preventing the passage of sound thru a wall



Flower boxes are built-in beneath the deeply recessed windows



There is a folding, built-in breakfast table in the kitchen

the double door is let down, an ideal bedroom is provided.

A feature of the house is the little interior hallway, giving private entrance to bedroom proper and bathroom. The bathroom gets the morning light, which was specially requested, and the high-placed windows, tho in the front and on the ground floor, insure full privacy.

In the kitchen there is a range hood like

that of a hotel kitchen which carries the vent thru the roof, equalizing the temperature of the room and eliminating kitchen odors and steam.

The bed room has one exit to the screened porch and thence, either to the kitchen or the side entrance. Also it has a French door flanked by casements opening into the garden.

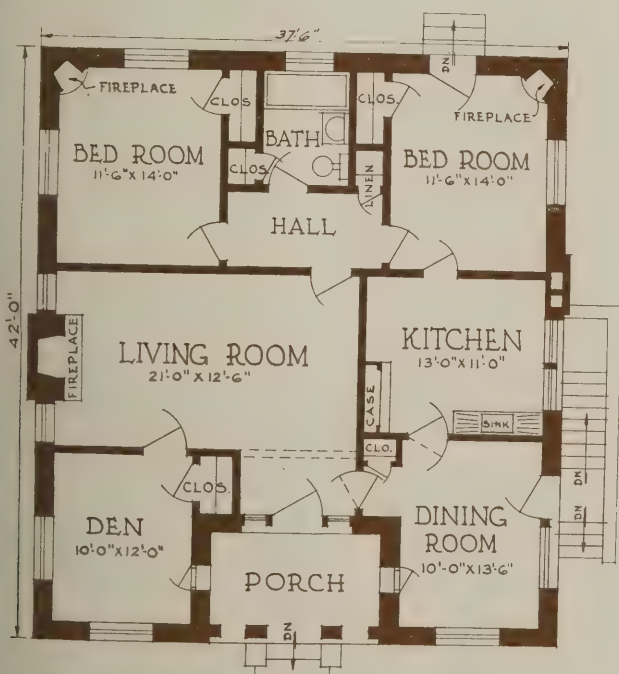
All woodwork is cut down to a minimum.

Spidermold goes around the casing and cornice and forms a cap for the base. Note that the ironing board and the laundry tray in the north part of the house are not those of the south side reversed, which would give a left-hand board and poorly lighted tray, but are specially planned for their respective positions. This structure is frequently referred to locally as being one of the best-built houses in town.



The simplicity of the rear is perhaps more attractive than the front of the house

NATIONAL *home* BUILDER



For naturalness of expression this house nears perfection. Ordinarily cobblestones are an abomination, but here they have been used very effectively and by using very wide mortar joints satisfy the eye as to their stability.

The local color of the stone is a soft brown and it is laid up with brown colored mortar to match the color of the stucco used for the wall surface of the entrance porch. In general appearance the house conforms to the old adobe houses of the district.

The plan is compact and unusual. The small fireplaces in the corners of the bed rooms were simple to build and give the rooms an air of distinction.

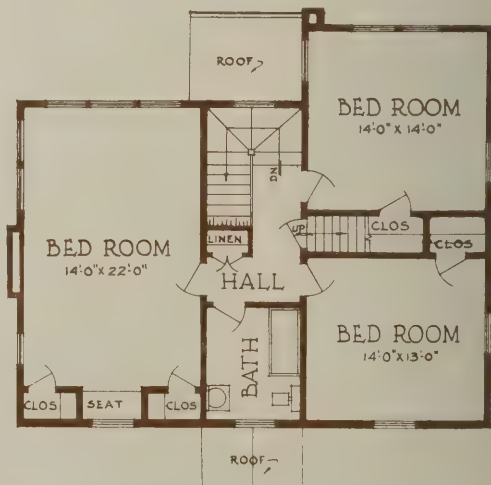
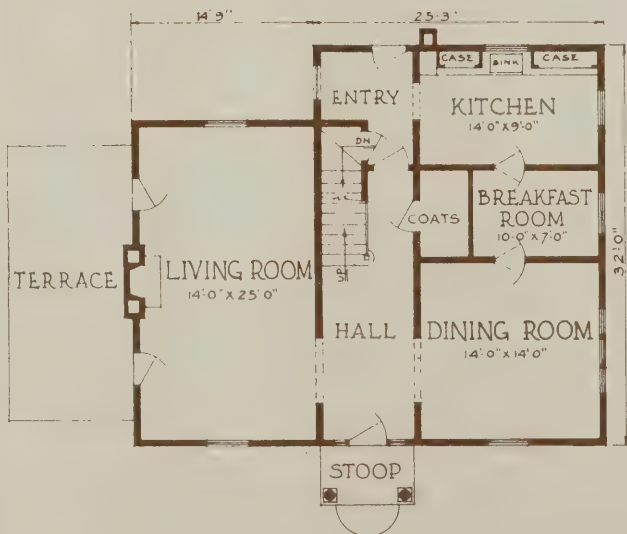
HOUSE OF C. H. KIRKLAND, EL PASO, TEXAS

O. A. Thorman, Architect, El Paso



Only a few years ago certain definite localities were expected to yield all that was worth while in good looking houses. Nowadays there are no boundaries, the newest states are apt to be as fertile in this respect as are the original thirteen.

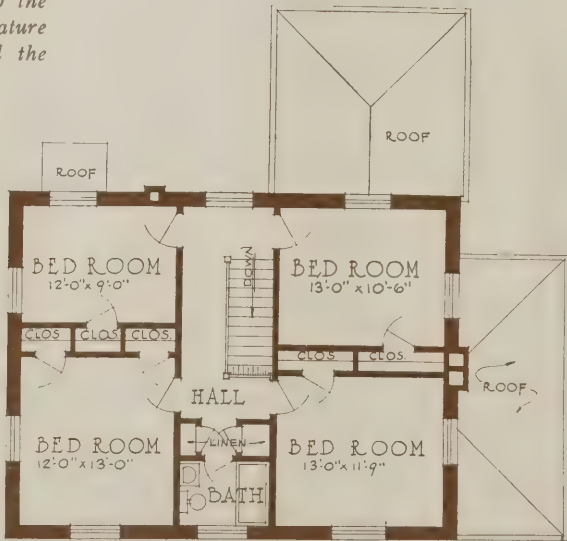
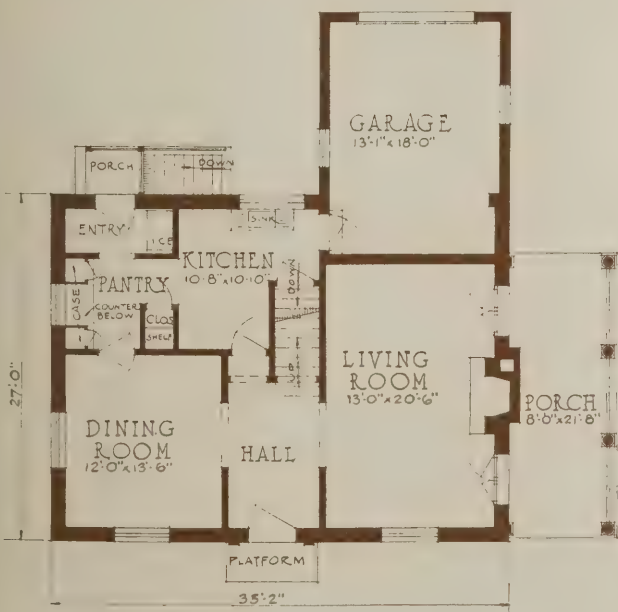
Here, for instance, is a Colonial house that as far as proportion and detailing are concerned, might belong to New England instead of being located as it is in what only a few years ago was the Indian Territory.



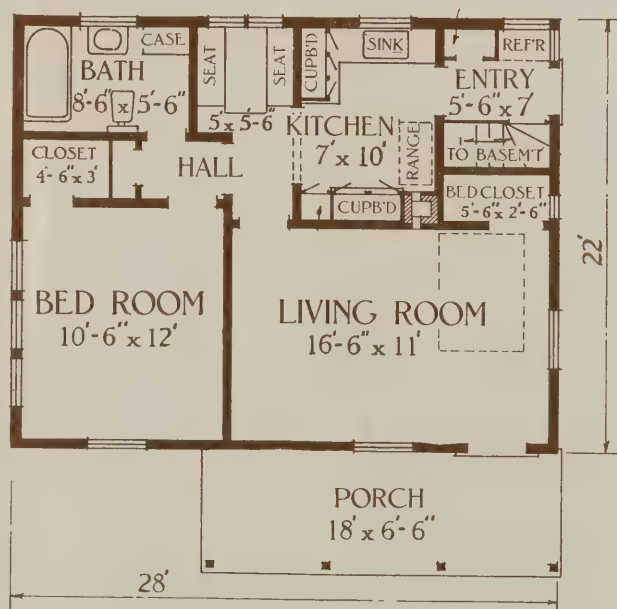
HOUSE OF W. F. WALKER, TULSA, OKLAHOMA
Designed and built by the owner



This is one of a series of houses built by the Cyrus Crane Willmore Organization, Incorporated, of St. Louis, Missouri. The walls are of Colonial red brick set off by white trim. The well designed entrance and cornice are features to be noted. There is an attached garage with a direct entrance to the kitchen. Vaporized gasoline is of such a penetrating nature that a more distinct separation between the garage and the house is usually considered advisable.



HOUSE IN UNIVERSITY PARK, ST. LOUIS
Preston J. Bradshaw, Architect,
International Life Building, St. Louis



Although but three rooms are provided in this plan, the provision of a bed closet in the living room, and the very convenient location of the dining alcove, gives the house the efficiency of a much larger one.

The design of the house is exceptionally distinctive and homelike. It is a good example of what may be done to provide a wide front porch without spoiling the appearance of the composition. The coursed shingle roof accentuates the horizontal lines of the house and offer contrast to the smooth stucco wall surfaces.

A THREE-ROOM BUNGALOW

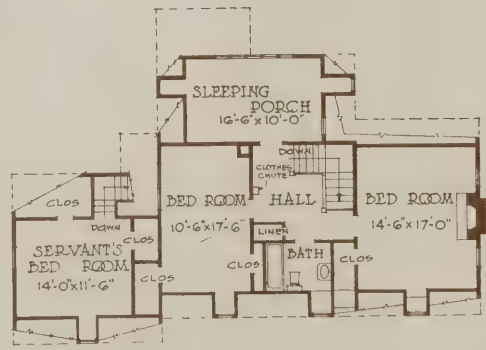
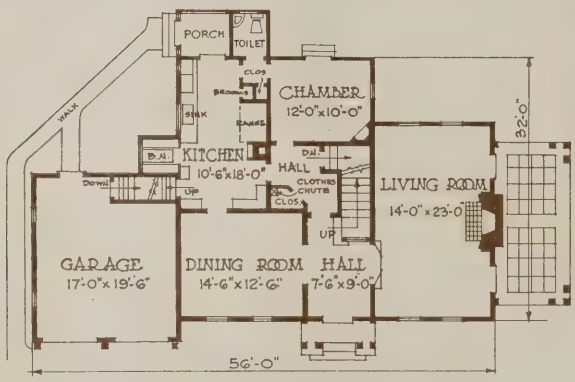
E. W. Stillwell, Architect
California Building, Los Angeles



This is a type of house that has been developed from the old farmsteads of the early Dutch settlers of Long Island. The low eaves and the homelike simplicity of the style make it very popular and effective.

The railing above the garage entrance is interesting, the dormers are well spaced and the entrance is attractive. Wide shingles were used for the finish.

The attached garage is a feature of the plan, as is a billard room located in the basement. The living room floor is dropped two steps below the main floor. There is a spare bed room on the first floor and a sleeping porch opening from the second story hall. A maid's room with separate stair is located above the garage.



HOUSE OF MRS. J. MANN, PORTLAND, OREGON

DeYoung and Roald, Architects, Spalding Building, Portland



This is a house built by an architect for his own use. It is of hollow tile construction throughout. Even the floors and ceilings are of hollow tile with reinforced concrete joists.

The floor plan is unusual and suggests the English type of plan. The living room is pleasantly irregular with a fireplace in one corner and alcoves at the ends. One of the alcoves takes the place of a dining room. There are two bed rooms in the first story and two in the second.



FIREPROOF HOUSE AT RAVINIA, ILLINOIS
Lawrence Buck, Architect, 64 East Van Buren Street, Chicago



Generally speaking, this is a well designed Dutch Colonial house. The fly in the ointment, however, is the fact that the original design was not followed in the gable overhang and in the width of the dormer. The dormer is too near the edge of the roof at the gables and the roof should not have been projected so far beyond the gable wall.



HOUSE AT WHITE PLAINS, NEW YORK

Designed and built by V. Green Construction Company,
45 West Thirty-fourth Street, New York



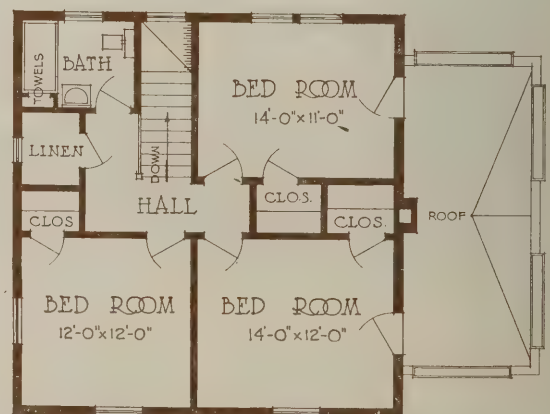
HOUSE IN JACKSONVILLE, FLORIDA

The Better Homes Company Builders, Jacksonville,
Marsh and Jackelbye, Architects, West Building, Jacksonville

This is one of five houses built from the same basic floor plan. The other four designs are illustrated on page 73.

Although the plan is almost perfectly square, it does not give the impression of being boxlike. Both the entrance and the porch are well detailed and well proportioned.

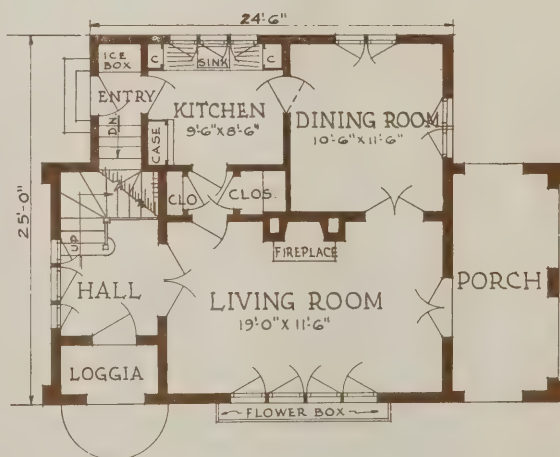
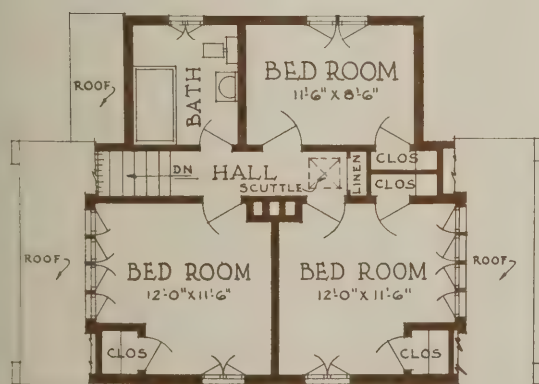
The store room opening from the kitchen and the location of the stair in the corner of the living room should be noted.





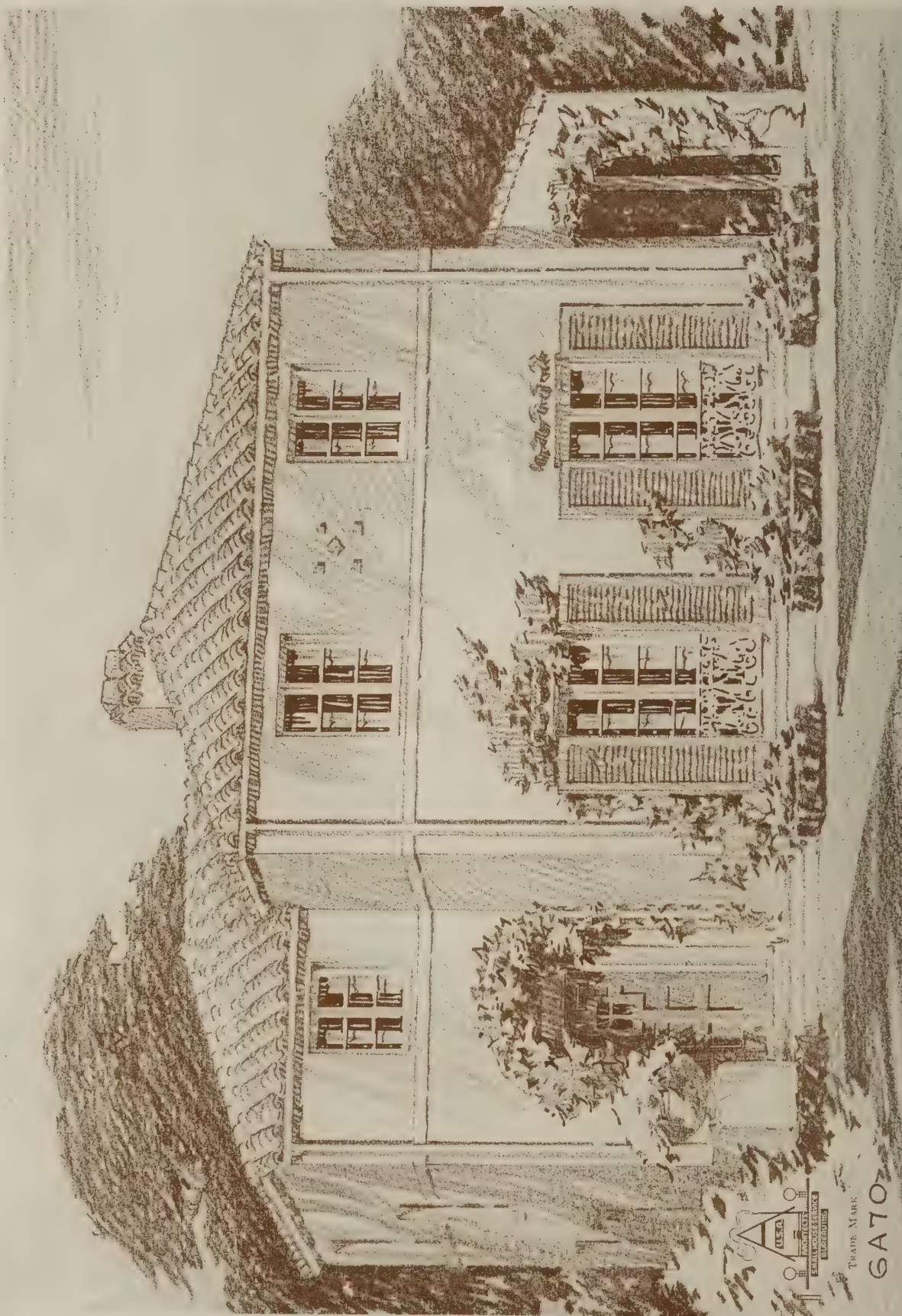
This house is quite similar to the one shown on page 46 of the April issue of *National Builder*. Note, however, how the awning and the setting of this house improves the appearance. The substitution of a hip roof for the dormer of this house is not so pleasing as the flat roof of the other one.

The loggia entrance is unusual and effective. The plan is compact and well arranged upstairs and down.



DESIGN NUMBER 6-B-4

Architects' Small House Service Bureau,
1735 Stout Street, Denver, Colorado



Although rather severe in its lines, this house is rendered very attractive by the color in the details. The roof color is repeated in the tile hoods above the French doors, and the entrance door could repeat the color of the full length blinds. Flower boxes could be added if desired

Complete Working Drawings and Details

Color May be Used to Enliven This 6 - Room Italian House

House No. 6A70, designed especially for National Builder by The Architects' Small House Service Bureau, Northwestern Division, Inc.

© 1924 by N. B. and A. S. H. S. B.

THE Italians have a way of throwing together the simple elements of walls and roofs, which, under the pleasant sun of their Southern skies, have a beauty of a most distinctive quality. The means they have used to get architecture into their homes have been of such an elementary and simple quality, and the results have been so fine, that more and more we are coming to follow their processes. In the little home shown this month there is a bit of Italian home building flavored with the immutable laws of the American housewife.

Structurally the house is of the type which an architect calls masonry bound—which is another way of saying that the outside walls are of masonry. In this case they are of tile and the surface is finished with stucco. For anyone whose taste permits a deviation from the established plain stucco surface, this house will give an opportunity for the widest range of fancy. The stucco surface may not only be of a texture to satisfy the individual taste, but it may be colored, and it is enlivened also by the little tile canopies above the windows. There is a tile roof to complete the color note.

At the door, which is reached through a terrace, there is an arched trelliswork, over which one can well imagine flowering vines. As you step into the

house you can see thru an archway into the living room. This room is remarkable in respect to the amount of clear wall space which it affords. Even so, it is extremely well lighted. In the front wall the windows come down practically to the floor level with wrought-iron gratings before them. Full length shutters complete the effect.

The stairway, which goes up out of one corner of the living room, is located in such a way that it serves as a combination stairway, permitting the housewife to go from the kitchen to the second floor or from the living room.

The kitchen has an unusual array of cupboards, a dining alcove, and a broom closet. The dining room is large, being about 13 feet wide by 13 feet 6 inches deep. There is a porch at the side, but the character of the design is such that the porch might very well be placed at the rear.

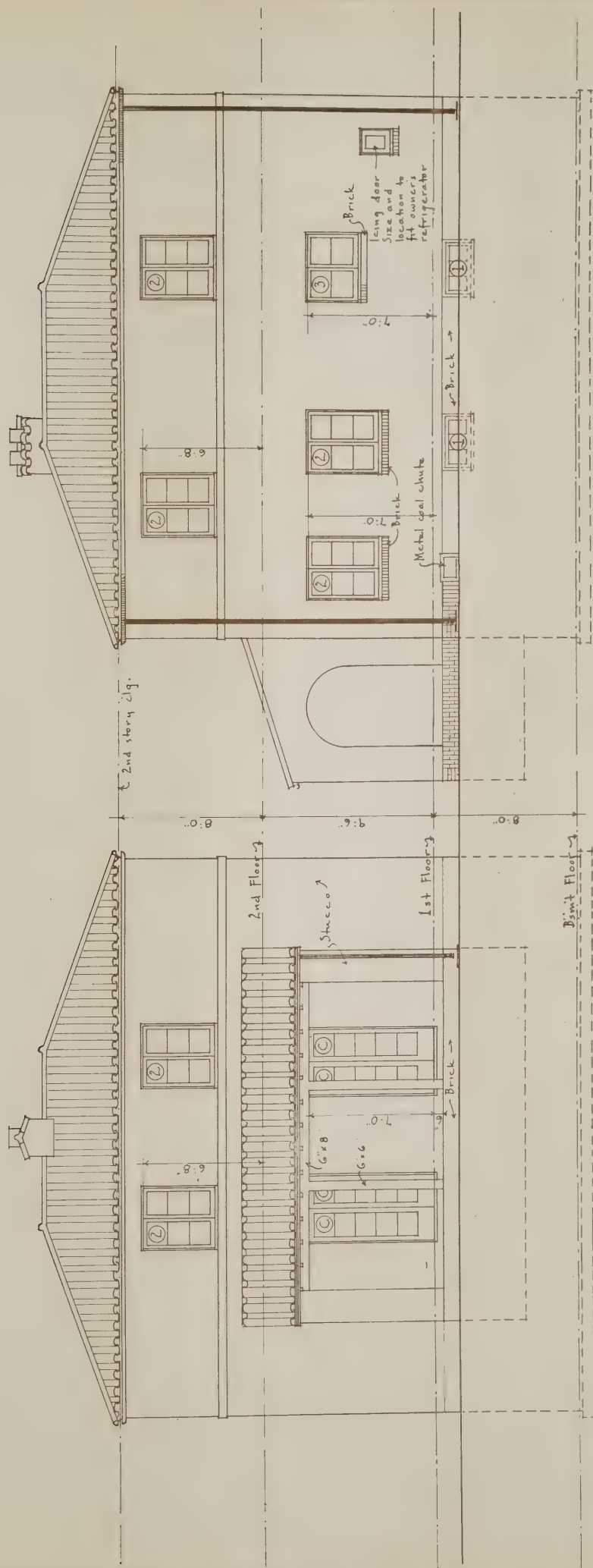
Upstairs there are three bedrooms with large closets for each one and a bathroom with a built-in tub.

The house should be reversed for an east facing lot. It can be accommodated on a 40-foot lot if the porch is built at the rear. Otherwise 50 feet should be allowed.

(The regular price of the blue prints for this house is \$30.50. To NATIONAL BUILDER subscribers \$15.50.)

ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 65 and 66. These drawings are on a scale of $\frac{1}{4}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau, subscribers for "National Builder" desiring blue prints of the original of these plans, which are drawn on the scale of $\frac{1}{4}$ inch to the foot, are entitled to a 50 per cent discount off the Bureau's standard price, as stated in the last paragraph above. Orders should be addressed to "National Builder" for authenticating the purchaser as a bona fide subscriber, but checks should be made out to The Architects' Small House Service Bureau. Duplicate sets of blue prints are \$3.00 each; specifications are \$2.50 a set, and extra quantity surveys are \$3.00 a set.

HOME PLAN FOR	NATIONAL BUILDER-JULY, 1984	6A70	SHEET NO. 2 OF 5
THE ARCHITECT'S SMALL HOUSE SERVICE BUREAU NORTHWESTERN DIVISION, INC. - HOME OFFICE MINNEAPOLIS -			



SIDE ELEVATION

REAR ELEVATION

MATERIALS	ELECTRIC WIRING SYMBOLS
CONCRETE	CEILING OUTLET
BRICK	DROP CORD
WOOD	BRACKET
PLASTER	BASE PLUG
	SWITCH
	3 WAY SWITCH
	GAS OUTLET
	PUSH BUTTON
	BELL OUTLET
	BUZZER

HOME PLAN FOR NATIONAL BUILDING - July, 1924

6A70

SHEET NO. 4 OF 5



QUANTITY SURVEY for HOUSE No. 6A70

EXCAVATING		RE-ENFORCING STEEL			
20 cubic yards.....		16— $\frac{3}{8}$ rods 8'.....		16—2x10-14 second floor joist.....	
BACK FILLING		15— $\frac{3}{8}$ rods 8'6".....		13—2x10-16 second floor joist.....	
0 cubic yards.....		5— $\frac{3}{8}$ rods 20'6".....		13—2x10-14 second floor joist.....	
FOUNDATION		40— $\frac{3}{8}$ rods 8'.....		2—2x10-16 doubles	
f 12" concrete, 52 cu. yds. gravel.		ORNAMENTAL IRON		2—2x10-14 doubles	
210 sax cement.....		2 arear grates 3 ft. x 1 ft. 6 in.....		3—2x10-12 headers	
f 9" concrete, 41 cu. yds. gravel,		2 pc. rail 3 ft. 6 in. x 2 ft.....		850 ft. com. bds. second floor sub-	
166 sax cement.....		STUCCO		floor	
f 12" tile, 24500 CBM tile, 18 cu.		260 sq. yds. stucco on tile.....		1030 ft. 13/16x1 $\frac{1}{2}$ second floor fin-	
yds. mortar		ORNAMENTAL VASE		ish floor	
f 9" tile, 19000 CBM tile, 13 cu.		1 ornamental vase 2 ft. 6 in x 1 ft.		324 lin. ft. 2x4 second floor partition	
yds. mortar		10 in.		plates	
FACE BRICK		TINWORK		90—2x4-8 second floor partition	
500 face brick.....		148 lin. ft. gutter.....		studs	
$\frac{1}{4}$ cu. yds. mortar.....		5 outside meters.....		3—2x10-12 opening doubles.....	
00 brick wall ties.....		1 inside meter.....		940 ft. D & M attic floor.....	
0 lbs. mortar color.....		3 gutter ends.....		8—2x6-6 second floor ceiling joist...	
TILE INSERTS		6 nipples		16—2x6-14 second floor ceiling joist..	
1—6x6 tile		6 elbows		13—2x6-16 second floor ceiling joist..	
4—4x4 tile		6 offsets		13—2x6-14 second floor ceiling joist..	
25 pc. curved tile inserts.....		6 shut offs.....		4—2x6-12 second floor ceiling joist	
CEMENT FLOOR		6 strainers		headers	
5 cu. yds. gravel.....		40 gutter hangers.....		64—2x6-12 rafters	
4 cu. yds. sand.....		100 lin. ft. conductor.....		1—2x8-18 ridge rafters.....	
67 sax cement.....		18 conductor hooks.....		5—2x8-14 hip rafters.....	
6 cement spatter blocks.....		22 lin. ft. flashing tin.....		1400 ft. com. bds. roof sheathing.....	
TILE WALLS		12 lin. ft. chimney flashing.....		25—2x4-18 scaffold and extras.....	
27000 CBM tile.....		2 sheets sheet tin.....		8—2x6-14 scaffold and extras.....	
19 cu. yds. mortar.....		150 tin shingles.....		3—2x8-16 scaffold and extras.....	
TILE ROOF		LUMBER		4—2x10-12 scaffold and extras.....	
12 $\frac{1}{2}$ squares roofing tile.....		7—6x6-7 posts		124 lin. ft. 2x8 wall plates.....	
3 finials		1—6x10-8 girder		INSULATION	
14 lin. ft. valley.....		2—6x10-16 girder		750 ft. vegetale fibre—second floor	
13 squares 1 ply roofing.....		2—2x4-8 girder ribbon.....		ceiling	
70 lin. ft. hip roll.....		4—2x4-16 girder ribbon.....		3 rolls felt for floors.....	
TILE FLOOR		8—2x10-6 first floor joist.....		2 rolls water proof for first floor.....	
66 sq. ft. ceramic tile.....		16—2x10-14 first floor joist.....		CAULKING	
32 lin. ft. cove base.....		13—2x10-16 first floor joist.....		13 mul. wd. frames.....	
LATH		13—2x10-14 first floor joist.....		4 double door frames.....	
10360 lath		2—2x10-16 doubles		2 single door frames.....	
9 yds. metal lath over furnace.....		2—2x10-14 doubles		WEATHER STRIPPING	
PLASTER		3—2x10-12 headers		11 mul. casements No. 2 16x14-6L...	
9 yds. plaster on metal lath.....		3—2x10-14 basement stair horses.....		1 mul. casement No. 3 18x16-4L...	
740 yds. plaster on wood lath.....		4 ft. 2 in. plank clean out cover.....		1 mul. casement No. 4—14x12-6L...	
18 yds. Keene's cement.....		108 lin. ft. 2x4 basement partition		2 pr. double doors No. B—1 ft. 10	
CHIMNEY		plates		in. x 7 ft.....	
2700 com. brick.....		30—2x4-7 basement partition studs..		2 pr. double doors No. C—1 ft. 10	
100 fire brick.....		360 ft. D & M basement partition		in. x 7 ft.....	
14 sq. ft. hearth tile.....		shtg.		1 single door No. D—2 ft. 8 in. x	
180 inside face brick.....		320 lin. ft. 1x3 bridging.....		6 ft. 8 in.....	
58 lin. ft. 8x12 flue tile.....		900 ft. com. bds. first floor subfloor		1 single door No. A—3 ft. x 7ft.....	
20 fire clay.....		1120 ft. 13/16x1 $\frac{1}{2}$ first floor finish		LINTELS	
2 $\frac{1}{2}$ cu. yds. mortar.....		floor		11 lintels for 4 ft. opening.....	
1 cast iron ash dump.....		216 lin. ft. 2x4 first floor partition		1 lintel for 3 ft. opening.....	
1 throat and damper.....		plates		1 lintel for 4 ft. 6 in. opening.....	
1 angle 4x3x5/16-4 ft.....		64—2x4-9 first floor partition studs..		4 lintels for 4 ft. opening.....	
2—8x10 clean out door.....		4—2x10-16 stair horses to second		2 lintels for 3 ft. opening.....	
2—8" thimbles		floor		MILLWORK	
5 yds. metal lath.....		4—2x6-6 porch girder.....		Frames:	
1 tile cap.....		2—2x8-18 porch girder.....		5 basement frames 10x12-3L-1 $\frac{1}{2}$	
RE-ENFORCED CONCRETE		16—2x4-8 porch ceiling joist.....		11 mul. casement frames No. 2 16x	
For Front Steps and Porch		16—2x6-10 porch rafters.....		14-6L-1 $\frac{1}{2}$	
2 cu. yds. gravel.....		118—1x2-18 wall stripping.....		1 mul. casement frame No. 3 18x16-	
1 cu. yd. sand.....		1200 lin. ft. grounds.....		4L-1 $\frac{1}{2}$	
20 sax cement.....		8—2x10-6 second floor joist.....		1 mul. casement frame No. 4 14x12-	
				6L-1 $\frac{1}{2}$	

Sash and Windows:

- 5 cellar sash 10x12-3L-1½
 11 pr. sash No. 2 16x14-6L-1½
 1 pr. sash No. 3 18x16-4L-1½
 1 pr. sash No. 4 14x12-6L-1½

Storm Sash:

- 5 cellar storm sash 10x12-3L-1½
 11 pr. cellar storm sash No. 2—
 16x14-6L-1½
 1 pr. cellar storm sash No. 3—18x
 16-4L-1½
 1 pr. cellar storm sash No. 4—14x
 12-6L-1½

Screens:

- 5 cellar screens 10x12-3L-1½
 11 pr. screens No. 2—16x14-6L-1½
 1 pr. screens No. 3—18x16-4L-1½
 1 pr. screens No. 4—14x12-6L-1½

Outside Door Frames:

- 1 dr. fr. size "A" 3 ft. x 7 ft.-1¾
 1 dr. fr. size "D" 2 ft. 8 in. x 6 ft.
 8 in.-1¾
 2 double door fr. "B" 3 ft. 8 in. x
 7 ft.-1¾
 2 double door fr. "C" 3 ft. 8 in. x
 7 ft.-1¾

Outside Doors:

- 1 door No. "A" 3 ft. x 7 ft.-1¾
 1 door No. "D" 2 ft. 8 in. x 6 ft.
 8 in.-1¾ C 121
 2 pr. doors No. "B" 1 ft. 10 in. x
 7 ft.-1¾
 2 pr. doors No. "C" 1 ft. 10 in. x
 7 ft.-1¾

Storm Doors:

- 1 st. door No. "A" 3 ft. x 7 ft.-
 1½
 1 st. door No. "D" 2 ft. 8 in. x 6
 ft. 8 in.-1½
 2 pr. st. doors No. "B" 1 ft. 10 in.
 x 7 ft.-1½
 2 pr. st. doors No. "C" 1 ft. 10 in.
 x 7 ft.-1½

Screen Doors:

- 1 sc. dr. No. "A" 3 ft. x 7 ft.-1½
 1 sc. dr. No. "D" 2 ft. 8 in. x 6
 ft. 8 in.-1½
 2 pr. sc. dr. No. "B" 1 ft. 10 in. x
 7 ft.-1½
 2 pr. sc. dr. No. "C" 1 ft. 10 in.
 x 7 ft.-1½

Shutters:

- 2 pr. shutters for doors No. "B"
 1 ft. 10 in. x 7 ft.

Outside Millwork:

- 172 lin. ft. cornice
 1 special entrance trim
 28 lin. ft. porch fascia
 28 lin. ft. porch soffit
 28 lin. ft. inside fascia
 2—8 ft. porch columns
 1 lattice frame 2 ft. x 8 ft.

Interior Doors:

- 2 basement doors 2 ft. 6 in. x 6 ft.
 6 in. 5xP-1½
 2 doors No. "E" 2 ft. 8 in. x 6 ft.
 8 in.-1½—C-305
 6 doors No. "F" 2 ft. 4 in. x 6 ft.
 8 in.-1½—C-305
 3 doors No. "G" 2 ft. x 6 ft. 8 in.-

- 1½—C-305
 3 doors No. "H" 2 ft. 6 in. x 6 ft.
 8 in.-1½—C-305
 1 door No. "J" 1 ft. 8 in. x 6 ft.
 8 in.-1½—C-305-4 P

Jambs:

- 2 jbs. 2 ft. 6 in. x 6 ft. 6 in.
 2 jbs. No. "E" 2 ft. 8 in. x 6 ft.
 8 in.
 6 jbs. No. "F" 2 ft. 4 in. x 6 ft.
 8 in.
 1 jb. No. "G" 2 ft. x 6 ft. 8 in.
 1 dbl. jb. No. "G" 4 ft. x 6 ft. 8 in.
 3 jbs. No. "H" 2 ft. 6 in. x 6 ft. 8 in.
 1 jb. No. "J" 1 ft. 8 in. x 6 ft. 8 in.

Interior Trim:

- 5 sides basement sash trim 10x12-3L
 11 sides mul casement trim No. 2—
 16x14-6L
 1 side mul. casement trim No. 3—
 18x12-4L
 1 side mul. casement trim No. 4—
 14x12-6L
 1 side dr. trim "A" 3 ft. x 7 ft.
 1 side dr. trim "B" D 2 ft. 8 in.
 x 6 ft. 8 in.
 2 side dbl. dr. trim "B" 3 ft. 8 in.
 x 7 ft.
 2 side dbl. dr. trim "C" 3 ft. 8 in.
 x 7 ft.
 4 side dr. trim 2 ft. 6 in. x 6 ft. 6 in.
 4 side dr. trim No. E 2 ft. 8 in. x
 6 ft. 8 in.
 12 side dr. trim No. F 2 ft. 4 in.
 x 6 ft. 8 in.
 2 side dr. trim No. G 2 ft. x 6
 ft. 8 in.
 2 side dbl. dr. trim No. G 4 ft. x
 6 ft. 8 in.
 6 side dbl. dr. trim No. H 2 ft. 6
 in. x 6 ft. 8 in.
 2 side dbl. dr. trim No. J 1 ft. 8
 in. x 6 ft. 8 in.
 1 flight basement stairs
 1 flight main stairs
 1 flight grade stairs
 1 scuttle door
 1 scuttle door jamb
 1 scuttle door trim
 1 linen cabinet
 1 medicine cabinet
 1 utility door
 1 utility door jamb
 1 utility door trim
 2 book cases
 1 mantel shelf
 1—4 ft. kitchen cabinet
 1—6 ft. 6 in. kitchen cabinet
 1 table
 1 seat
 1 meter cabinet
 1 drain board
 480 lin. ft. base
 480 lin. ft. base shoe
 480 lin. ft. base mldg.
 126 lin. ft. ceiling cove
 284 lin. ft. picture mldg.
 20 lin. ft. closet shelving
 20 lin. ft. closet hook strip
 14 lin. ft. closet clothes pole

- 40 lin. ft. band mldg.
 24 lin. ft. threshold
 4—7 ft. astrogals for 1½ drs.
Exterior Painting:
 3 gal. trim paint
 1 gal. oil
 1 gal. cement paint
 1 gal. screen paint
 1 gal. sash paint
 ¼ gal. shutter paint
 1 gal. Japan
 1 gal. turpentine
Interior Painting:
 12 gal. white paint
 8 gal. enamel
 5 gal. filler stain
 3 gal. shellac
 10 gal. varnish
 3 gal. floor shellac
 6 gal. floor varnish
 2 gal. oil
 1 gal. Japan
 1 gal. turpentine
 1 gal. alcohol
 4 doz. sheets sandpaper
 3 lb. steel wool

HARDWARE

- 5 cellar sash sets
 13 casement sash sets for pairs
 18 storm sash sets
 18 screen sash sets
 1 front door set with butts
 1 rear door set with butts
 4 double door sets with butts
 2 single storm door sets
 4 double storm door sets
 4 double screen door sets
 2 single screen door sets
 2 sets of shutters hardware for pairs
 1 floor hinge
 2 push plates
 2 basement door sets
 1 double door set with butts
 12 inside lock sets with butts
 22 door bumpers
 4 doz. clothes hooks
 4 stair rail brackets
 1 pr. hinges for scuttle door
 4 fraction stays for utility door
 1 pr. ornamental butts
 1 cupboard turn
 1 cupboard turn
 2 pr. ornamental butts
 1 blind catch
 8 drawer pulls
 8 pr. ornamental butts
 3 blind catches
 4 drawer pulls
 5 cupboard turns
 12 pr. ornamental butts
 7 cupboard turns
 5 elbow catches
 3 drawer pulls
 1 bin pull
 1 set castors
 1 pr. ornamental butts
 1 cupboard turn
 1 bracket for drain board
 600 lbs. assorted nails
 6 lbs. assorted brads
 1 coal chute



The home of the Architects and Builders Exchange, Denver, Colorado

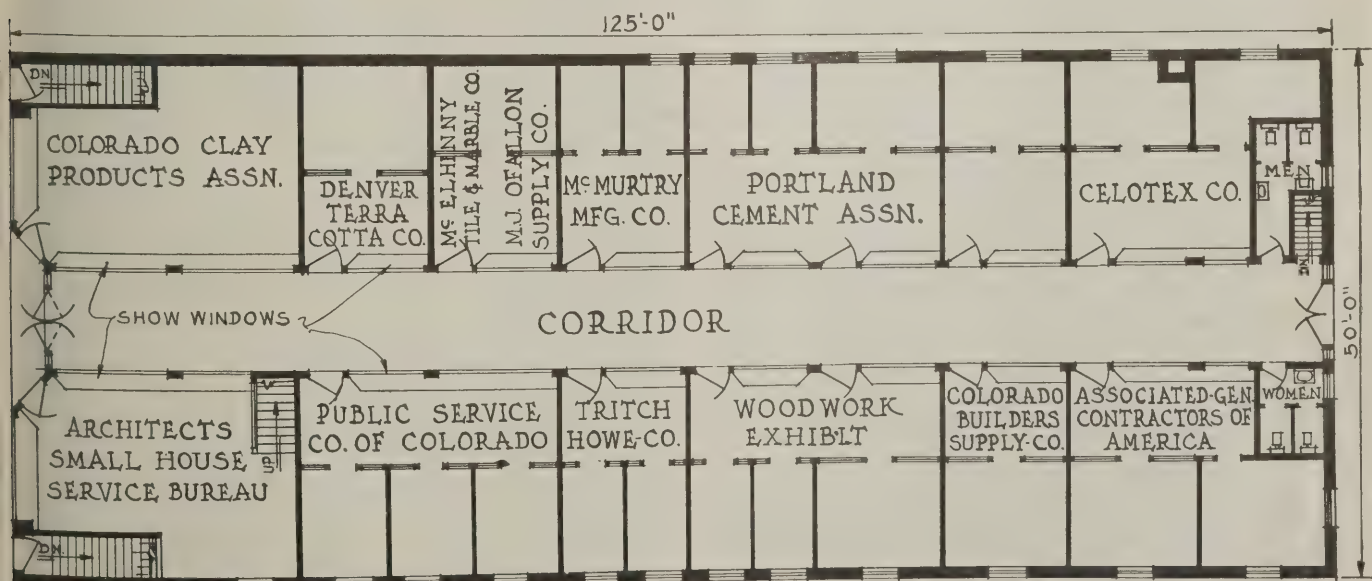
AN INSPIRATION to HOME BUILDERS

THE Architects and Builders Exchange, at Denver, Colorado, originated by Mr. C. S. Lambie, a Denver contractor, is a good example of how the construction industry can serve prospective builders. The man who intends to build, can,

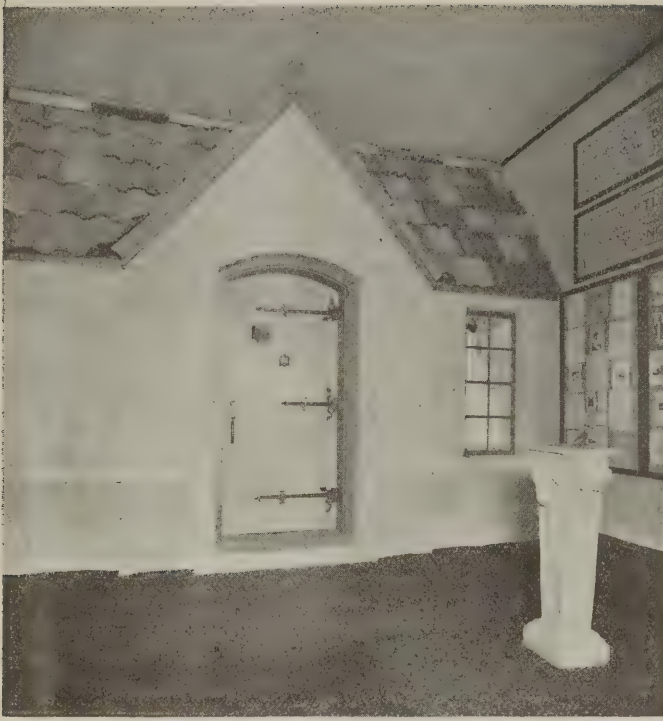
by a visit to this building, see plans, samples of materials, built-in features, and can, without leaving the building arrange for the construction of his project. Housed under one roof is the Mountain Division of The Architects' Small House Service

Bureau, Inc., several building material exhibits, and a branch of the Associated General Contractors of America, everything that is required to give service to the man who wants to build.

The exterior of the building is laid in



First floor plan



A replica of a small house entrance forms the background of the Portland cement exhibit



This is the reception room with models and plans to entertain prospective home builders

dark red brick, with limestone and wood trim. The offices on the second floor occupy only the front part of the building, thus permitting the installation of skylights in the rear so that the exhibits may be adequately displayed in natural sunlight. Above the entrance are mural decorations, illustrating various phases of the building industry and bearing the insignia of The Architects' Small House

Service Bureau and the Associated General Contractors of America.

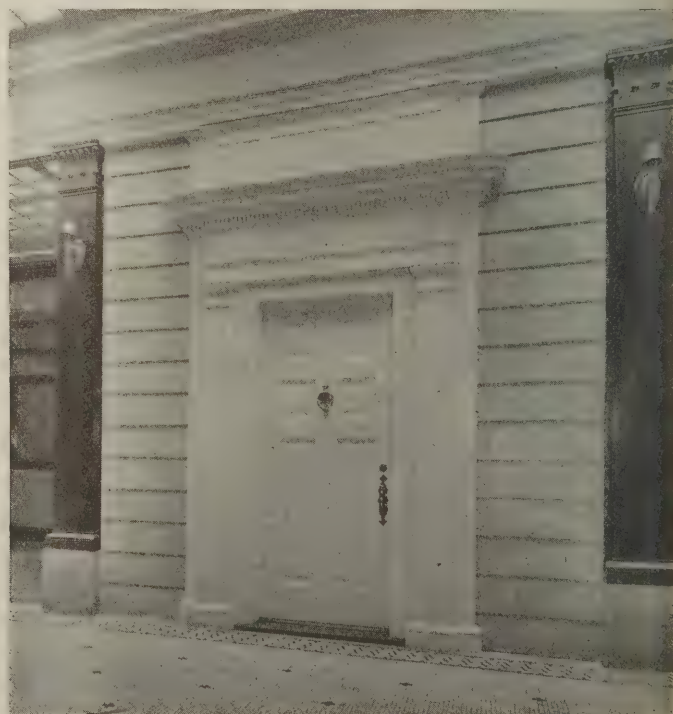
Entrance to the building is through double doors in the center, leading to a hall which runs the entire length. The various exhibits open off this central hall as shown on the plan. By the illustrations it is seen that the exhibitors have taken pains to give the prospective builder the logical impression of how each portion of

his construction will appear when completed, thus preventing many possible disappointments and disputes between contractors and their clients.

The interior construction is of the post and girder type with a row of 6 by 6 posts spaced about twelve feet apart down each side of the corridor. These posts support lines of 6 by 12 girders which in turn carry the ceiling joists and skylight construction



The built-in seats and table show how attractive a dining alcove can be



A feature of the lumbermen's display is an attractive entrance doorway



In this exhibit are shown the latest types of plumbing equipment and of wall and floor tiling



Here are shown household appliances ranging from a gas fired heating plant to an electric iron

above the corridor.

At the rear are toilets for men and for women and a stair leading to the boiler room in the basement. There is a double door opening to the alley at the rear end of the corridor. These doors are faced with mirrors on the corridor side.

The second story offices along the front of the building are reached by a stair rising from the front portion of the corridor. Stairs on opposite sides of the street front lead to a restaurant in the forward portion of the basement.

In most of the exhibit booths the walls and ceilings are plastered and are finished with a picture mold near the ceiling, just as the rooms of a house would be treated. This, of

course, is a minor detail, but it indicates the completeness with which the home atmosphere is invited for the influence of visitors. In the brick exhibits the walls are built up of paneled brickwork showing various types of brick and the possibilities of the various bonds and jointing.

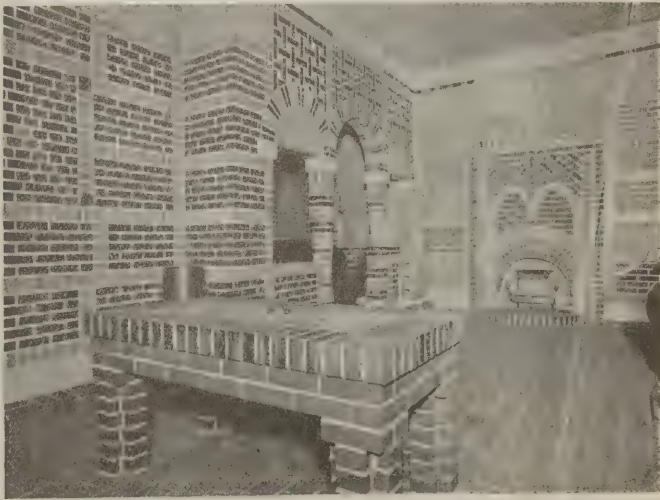
The entrance corridor or arcade is a particularly attractive feature lined with dark colored marble pilasters along each side. A very airy and pleasing effect is due to the skylight above the corridor and the lines of tall vases or plant jars filled with growing things, along the side walls.

The most of these exhibits have an attractive appearance that is commendable. This is no doubt largely due to the fact

that in many cases they were designed by members of the Architects' Small House Service Bureau. In other cases, however, the exhibits apparently "just grew," with a result that the prospective home builder is apt to be either repulsed by the unfavorable impression that he receives, or he develops into a half-hearted prospect who is difficult to sell. When it is recognized that many of the visitors to a building material exhibit are women, and are therefore likely to be sold on appearances as well as on account of suitability or mechanical perfection, the opportunity to gain favor by an attractive presentation should not be underestimated. A few dollars wisely spent in this way, almost invariably pay attractive dividends.



This is the office of the Rocky Mountain branch of the Associated General Contractors of America



Brick in every shade and variety of pattern is displayed in this exhibit



BUILDING OF WILLIAM J. CONVERY AND SONS, TRENTON, NEW JERSEY

J. Osborne Hunt, Architect, Hunt Building, Trenton

This design is an example of using old forms in a thoroughly modern and vigorous manner. There is nothing new in the forms of the moldings, but their placing and arrangement gives them a new meaning. The framing of the windows with a simple architrave with a deeply cut molding marking the edge of the opening is a simple and effective treatment

A REMODELED STORE BUILDING

MANY remodeling jobs never deceive anyone. That is, the execution is often of such a half-hearted and timid nature that they are easily recognized for what they are. This is probably due to the fact that many architects and builders are not really interested in this type of work and pay scant attention to its design.

The Convery Building, however, indicates a conscientious effort to transform an old building into a modern one by submerging the old work entirely. The front of the original building was destroyed and replaced

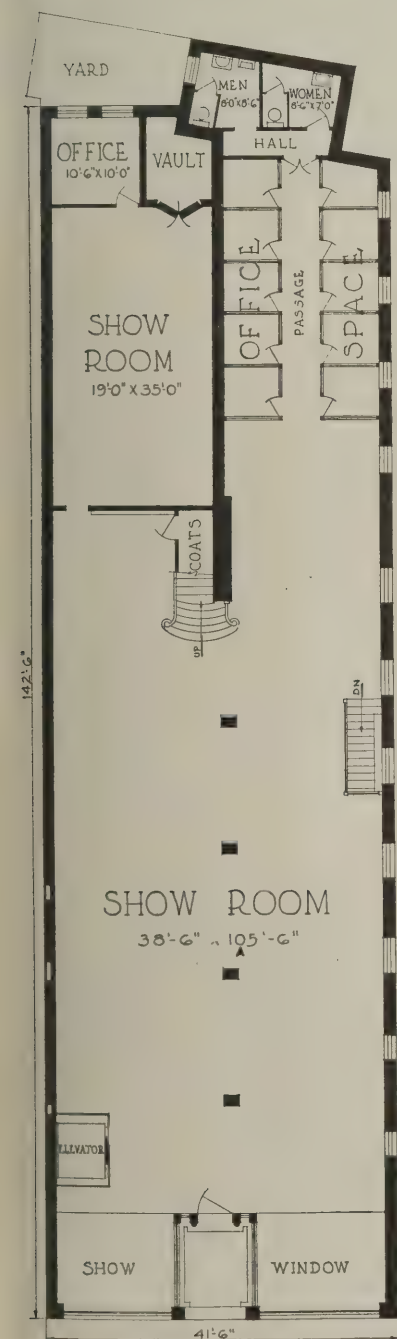
by a very dignified and simple yet interesting front of cut stone. The result is to every intent and purpose a new building, carefully designed and appropriate to its use.

It appears that originally there were two separate buildings divided by a party wall and extending about two-thirds the depth of the lot. In a later alteration these two buildings were thrown together by penetrating the party wall, and in the final remodeling the rear portion was carried up the full four stories and the new front was provided.

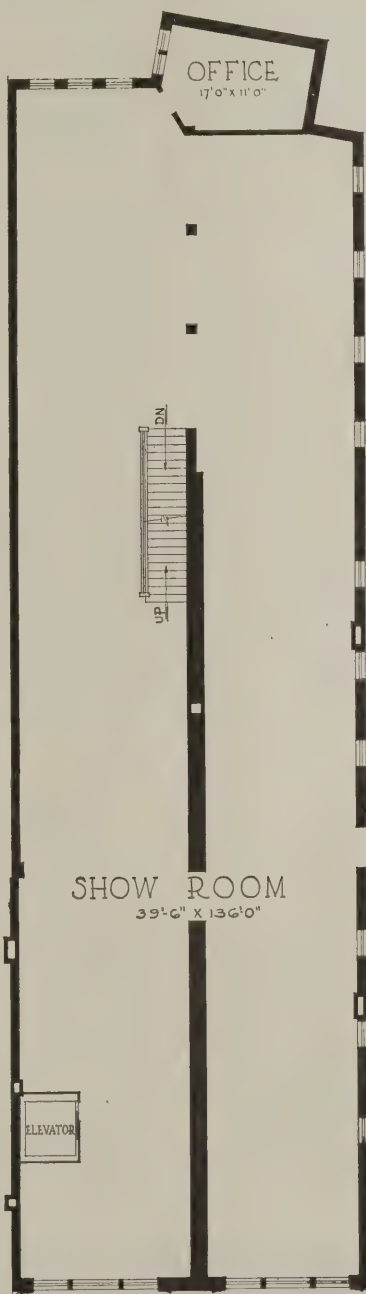
At the rear of the first floor are the gen-

eral offices, a special show room, a private office, a fireproof vault and the toilets. The main show room at the front has a wide stair to the second story and another stair to the basement. An elevator near the front serves all four stories.

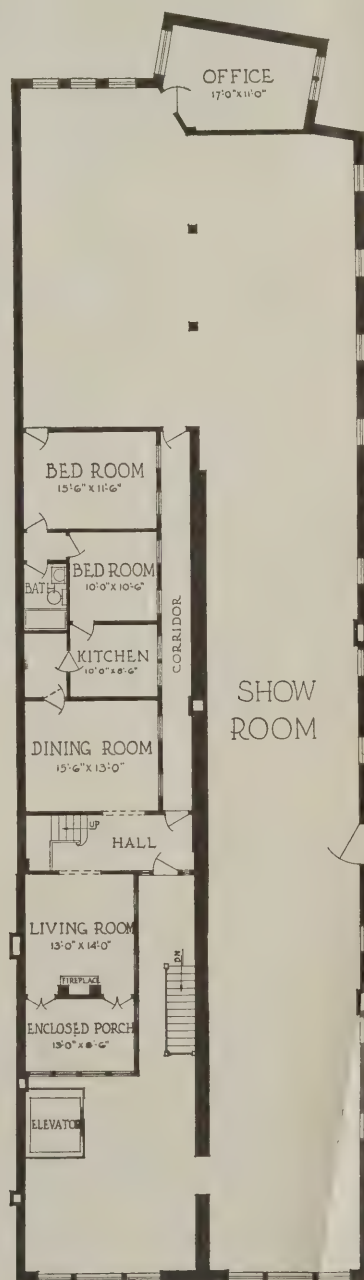
The second and third stories are similar, both consisting of two show rooms, partly separated by the old party wall and having an office at the rear. The fourth story contains a complete model house layout so that furniture and interior decorations may be judged by their appearance in actual rooms.



First floor plan



Second floor plan



Fourth floor plan



School at Indian Head, Maryland. Donn and Deming, Architects, 808 Seventeenth, N. W., Washington, D. C.

A SCHOOL in the COLONIAL STYLE

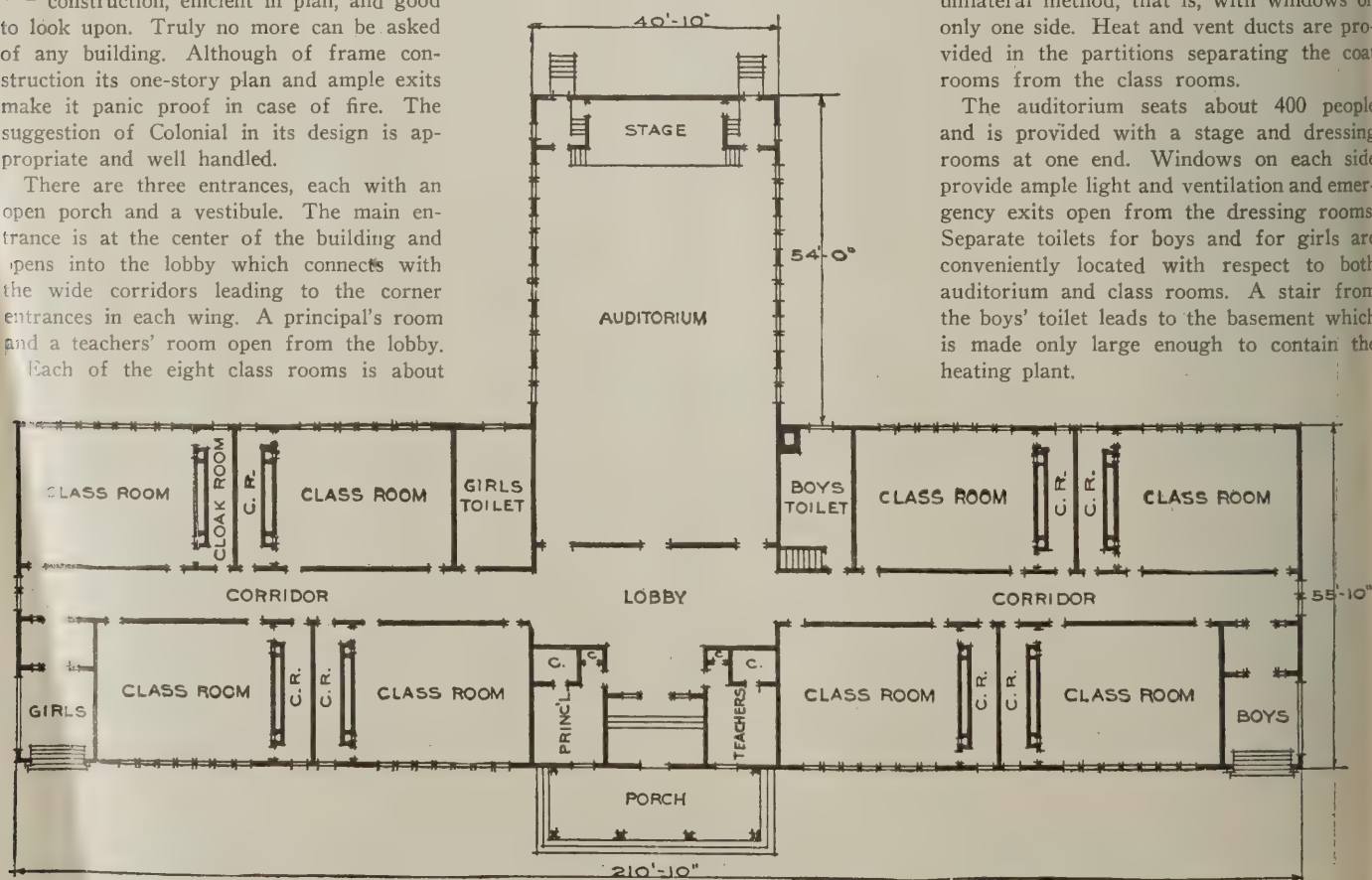
HERE is a school house that is simple in construction, efficient in plan, and good to look upon. Truly no more can be asked of any building. Although of frame construction its one-story plan and ample exits make it panic proof in case of fire. The suggestion of Colonial in its design is appropriate and well handled.

There are three entrances, each with an open porch and a vestibule. The main entrance is at the center of the building and opens into the lobby which connects with the wide corridors leading to the corner entrances in each wing. A principal's room and a teachers' room open from the lobby.

Each of the eight class rooms is about

24x32 feet in size and is lighted by the unilateral method, that is, with windows on only one side. Heat and vent ducts are provided in the partitions separating the coat rooms from the class rooms.

The auditorium seats about 400 people and is provided with a stage and dressing rooms at one end. Windows on each side provide ample light and ventilation and emergency exits open from the dressing rooms. Separate toilets for boys and for girls are conveniently located with respect to both auditorium and class rooms. A stair from the boys' toilet leads to the basement which is made only large enough to contain the heating plant.



The well disposed exits insure safety in case of fire

FIVE DESIGNS from ONE PLAN

THE same basic floor plan was used for the four houses shown on this page and for the house which, together with the plan, is illustrated on page 56.

The variations in the designs are obtained by the use of different materials and by changing the type of roof in each case. While these differences are simple, they result in avoiding the sameness that often prevails when several houses are built from the same plan.

These houses form a portion of a total of more than eighty homes that have been erected by the Better Homes Company of Jacksonville, Florida, during the past few years.

The company's president, Mr. W. D. Shelly, has four axioms for home builders and he says everybody who contemplates building a home should follow them. They are:

1. Consult an architect. No matter how long you have planned or dreamed about your home, no matter how definite your ideas may be, an architect is needed to give the house the proper proportions and that final esthetic touch, that artistic arrangement of trellises, grilles, balconies, that give perfection of design. An architect is necessary. If you must economize, reduce the size.
2. Use only the best materials. That policy pays, and for a home that is meant to last, nothing is too good.
3. Do not start to build until all plans are complete in every possible detail. In that way you eliminate the expense and trouble of alterations and your pains are rewarded in the perfection of arrangements.
4. After the contract is let, take your wife and leave town, thereby saving yourself money and everybody trouble.



A hip roof and well detailed white trim against stained shingles distinguish this house



Here is one in stucco with a snubbed gable and brick trim



Brickwork, stucco, and half-timber are combined in this one



Another stucco house but with a plain gable and a different type of entrance



Fig. 1—Here is a type of construction that is literally of the soil

ADOBE HOUSE CONSTRUCTION

I—Making the Adobe Brick

TRAVELERS through the West, especially in New Mexico, in the vicinity of Albuquerque and Santa Fe, are struck with the simple beauty of some of the houses they see there. These houses seem to have been designed in the process of building, they are entirely free from the often seen studied attempts at architectural effect, yet their appeal is such that one cannot help admiring their very simplicity. Any one who has seen them standing out on the bare desert, in the fierce glare of a midday sun cannot fail to be impressed with the manner in which their simple style suits the location. Any other kind of house, a Dutch Colonial, for example, would seem out of place.

Several requests for information about adobe construction led Roy M. Singer, National Builder's construction editor, to gather the data and make these pictures "on the job" in New Mexico.

These houses, for the most part, are built of adobe, or desert clay, made into blocks and set in the wall somewhat after the fashion of bricks. The word "adobe" is taken from the Spanish "adobar" which means "to plaster." Its origin, however, is Egyptian whence it came to Spain through Arabia. The Spaniards introduced

it into Mexico from which place it came over the border into our own country.

Adobe brick, called "dobies" by the men who make them, are varied in size, the average being about 11 by 9 by 4 inches although they range in size from 18 by 9 by 4 inches to 9 by 6 by 4 inches, the latter being the dimensions of that class of brick generally known as "terrone," which will be described later.

Clay for the manufacture of adobe brick is found in the arid and semi-arid regions of the Southwestern part of the United States as in New Mexico, Arizona and Texas, and in the states of Chihuahua and Sonora in Mexico. It is composed of quartz, clay, and sometimes contains a cal-



Fig. 2—Mixing the adobe clay with straw and water



Fig. 3—Dumping the mixed clay into the mold

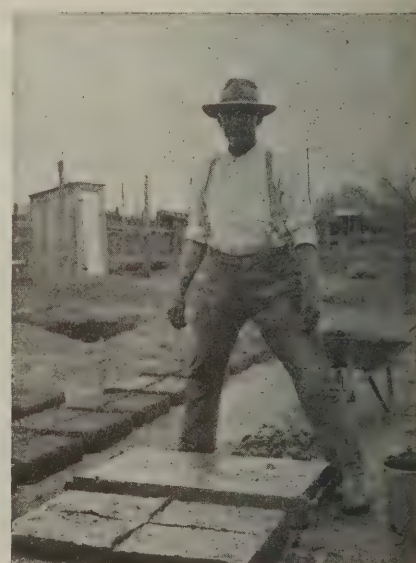


Fig. 4—The filled mold, ready for lifting

areous material, all mixed together in an extreme state of fineness. Roughly, it may be described as a sandy clay, sometimes containing traces of lime. Its origin, about which there seems to be considerable diversity of opinion, may have been through the action of streamis, wind blows, or the disintegration of clay shales or slates. Suffice to say it is a very sticky material, as anyone who has had the misfortune to walk through a moist bed of it knows.

The sand content of adobe clay is important when the clay is to be used for making brick. If the clay is deficient in sand, the bricks are liable to crack after



Fig. 5—Adobe brick set out to dry in the sun after being molded



Fig. 6—After a few days the brick are set on edge and allowed to dry further

drying, somewhat after the manner of a too rich concrete where too great a proportion of cement has been used. Where the clay does not contain enough sand some should be added. How to tell when to add sand, or how much to add can best be told by an old "dobie man."

It should be understood that adobe houses are suitable only for climates where the rainfall is exceedingly light and where heavy frosts do not occur. A certain lack of cohesion between the particles

which make up the adobe clay makes it very liable to disintegrate under the action of water, and in a rainy climate it would be only a short time 'ere the house would be literally washed away.

There are two classes of adobe brick: The true "dobie" made by mixing the clay with straw and water, and the terrone or "terrone" made by cutting the grassy topsoil into blocks about 9 by 6 by 4 inches, allowing these blocks to dry in the sun, and setting them in the wall, grass and

all, just as they are dug out and dried. The grass roots which penetrate the terrone help to bind it together in the same way as the straw holds the adobe intact.

The true "dobie" is made by mixing the adobe clay with straw and water, and molding it into large blocks, ranging in size from 11 by 9 by 4 inches to 18 by 9 by 4 inches. The nine-inch dimension denotes the thickness of the wall, this being about the average, although 11-inch walls or even thicker, are sometimes used. Often the material for the dobies is taken right out of the site where the house is to be built, thus killing two birds with one stone by making the excavation for the basement and digging the adobe clay at the same time.

The first step in the process is to dig away the surface soil to a depth of about a foot until the true clay is reached. Then water is poured into the hole to soften the clay and the man who is doing the mixing steps right into the pit with bare feet, and with a hoe, digs out the clay until he has a batch of semi-mixed material before him. Then straw is dumped upon this partially kneaded mass of clay and if it be not



Fig. 7—Lifting the mold from the mass of clay



Fig. 8—Scraping off the dust from the bottom of the bricks



Fig. 9—A typical adobe mold and molder



Fig. 10—An improved mold with block on the inside to form a key for holding the stucco (see Fig. 12)

available, stable manure, with most of the foul material removed, is used. The proportion of straw and clay are, by volume, about one part of straw, packed fairly loose, to anywhere from 10 to 20 parts of clay. When the straw is dumped into the pit the mixer tramps it into the clay with his feet and turns the clay over and over with the hoe until by continued tramping and turning the straw is well distributed throughout the mass (See Fig. 2). It is important that this mixing be done in mild weather for even a slight frost may so affect the process that the brick will crumble soon after being set in the wall.

After mixing, the clay is wheeled to the moulding place where it is formed into shape. The forms (See Fig. 9) are simply bottomless and coverless boxes made with two partitions so that one mould makes four adobe brick (moulds for making two brick at a time are also used). A wire strung across the box or a handle nailed to the side allows the mould to be lifted easily. A good view of the mould showing the wire handle will be seen in Fig. 4.

A recent improvement in the manufacture of adobe brick is the mould shown in Fig. 10. This mould has a tapered block or two fixed on the inside so that when it is lifted a groove is left in the adobe (See Fig. 12). This groove forms a lock for the plaster which is used to coat the wall after the adobes are laid.



Fig. 12—Adobe brick with plaster lock made in the mold shown in Fig. 10



Fig. 11—The cured adobe brick are stacked as shown here

In moulding the adobes it is well to select a dry spot so that after being set in the sun for a few days there will not be any likelihood that the adobe will have to be broken in order to move it or that a large amount of material will adhere to the underside.

Before the form is laid on the ground the adobe moulder takes a rag, soaks it in water and wets the inside of the form all around so that it can be easily pulled up after the spaces are filled with clay. Then the form is set on the ground and the clay dumped into it directly from the wheelbarrow. The same rag used to wet the inside of the form is then soaked in water and wrung out over the clay in the mould. The mixer then gets busy with his hands, mixing the clay again, forcing it into the corners of the mould and then smoothing off the top. The surplus is scraped off with the hands and dumped ahead of the mould to be used in making the next batch (See Fig. 4). Then the rag is again soaked in water and wrung out over the

clay in the mould, the top smoothed off, and the mould lifted (Fig. 7) and set over the little pile of surplus scraped off from the preceding batch, and the process repeated.

In Fig. 5 is shown a batch of adobe brick setting out in the sun to dry after being moulded. They are allowed to remain so for from three days to a week. Then they are turned on edge and the dust knocked off the bottom with a stick or steel rod (see Fig. 8) and they are allowed to remain in this position anywhere from two weeks to one month. Fig. 6 shows the adobes on edge, drying in the sun. After they have dried sufficiently the adobes are stacked as shown in Fig. 11. Notice that they are placed on edge and the top layer laid flat as a protection for those below.

As regards the durability of adobe as a building material, Fig. 13 shows a section of the front elevation of a mission at Albuquerque, New Mexico, said to be over 200 years old. The outer coat has broken away from the wall, showing the "dobies" underneath, a few of them cracked but the majority as sound and solid as the day they were laid.

This is the first article of a series of two. The final installment which will appear in the next number of NATIONAL BUILDER will treat with the manner of construction of adobe houses and will be illustrated by several photographs of construction details made "on the job."

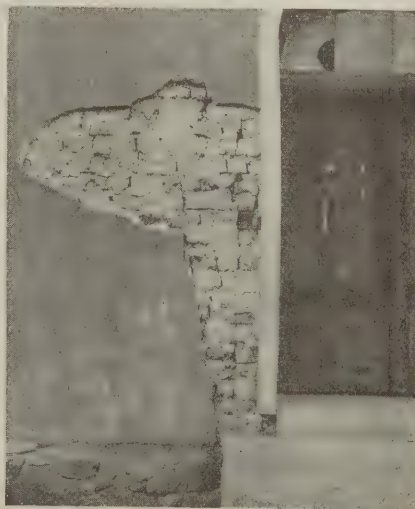


Fig. 13—A section of an adobe wall in an old Spanish mission, said to be over two hundred years old. Although the plaster has broken away, the wall underneath is sound

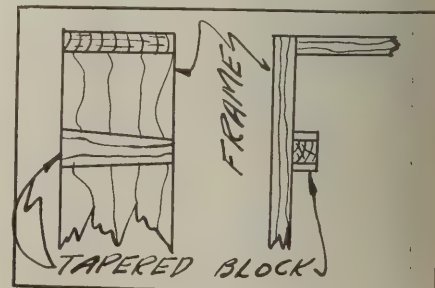


Fig. 14—Sketch showing manner of building mold for casting plaster lock



This looks a little different from the ordinary contractor's mill, doesn't it? The doors at one end are raised above the grade to make loading and unloading easier, and at the other end provision has been made for caring for a motor truck

SUCCESS THROUGH CO-OPERATION

Terre Haute Homebuilders Association Have Developed
a Successful Building Business Through the Co-operation
of Several Local Investors

WEBSTER'S DICTIONARY defines co-operation as "the act of operating jointly with another or with others" or, in the larger sense of the word, working together. It would seem that an organization that bore the above definition in mind would

be bound to succeed, for working together means everyone doing his own share of the work in the way it should be done and at the same time trying as much as possible to help the other fellow with his job.

About three years ago the Terre Haute Home Builders' Association started in business as general contractors. They did not have very many jobs to begin with but it took only a short time before they came to the fore as one of the leading home builders of Terre Haute. Today they are capitalized

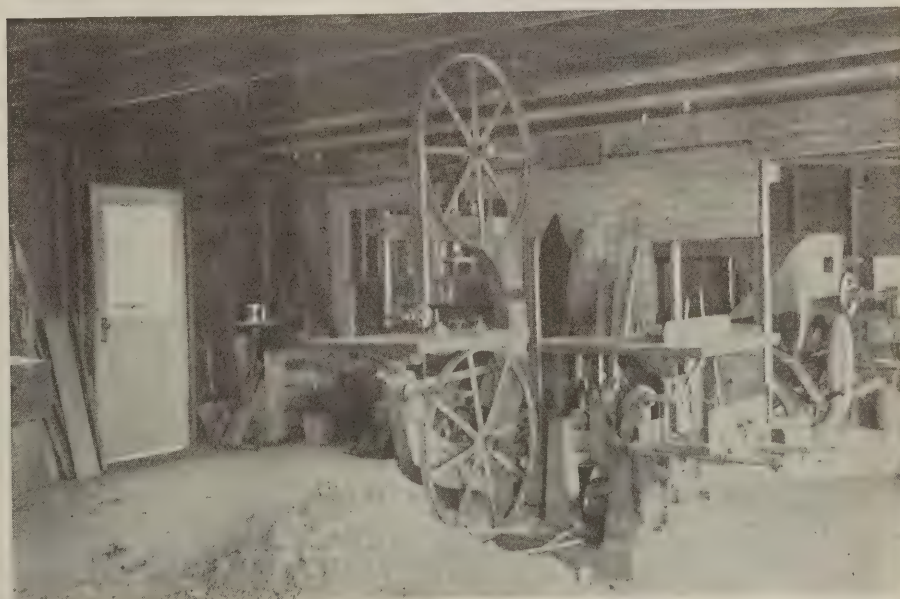
at a half-million dollars and have one apartment job under way which is estimated at \$140,000.

According to Mr. Frank P. Walters, secretary of the association and manager of the building department, this surprising success is due to co-operation, not only of the men who control the organization and do the work but also of outside parties who are financially interested.

The business was started as a general contracting concern but realizing the possibi-



One of the woodworking machines. Note that it is located where plenty of light is available

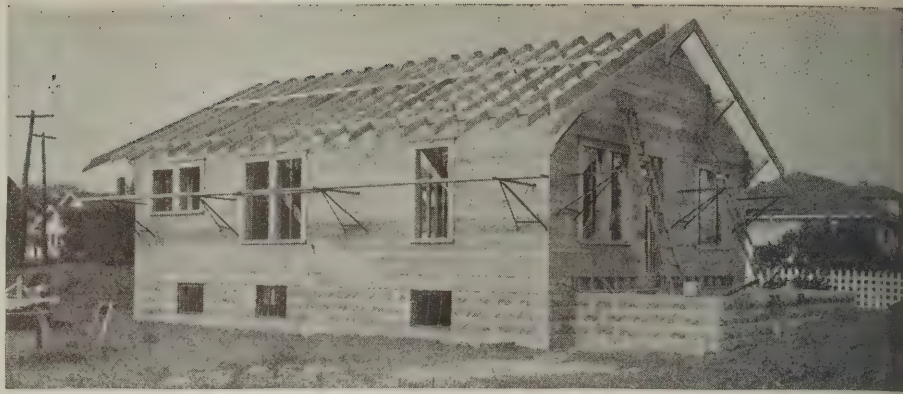


View of interior of the mill showing band-saw and combination woodworking machine

ties in building homes for sale the officers decided to take advantage of this opportunity and did build and sell several small houses. Building homes for sale made the organization feel the need of a real estate department and this was organized. Next came an insurance department and finally a savings and loan association. All are run on a co-operative basis with stockholders of various occupations and interests.

For instance, among the stockholders are several sub-contractors who bid on the work being done by the Association. If they should be awarded a job it is to their interest to do the job as well and as economically as is possible, for their dividends from stock in the Association are dependent upon the profits made. Mechanics in several trades employed on building construction are also stockholders and as they have an interest in the profits on the job upon which they are employed it is to their advantage to put forth a little extra effort and to make the job a little bit better than is ordinarily done. Of course, no preference is shown to stockholders when awarding contracts for this would be poor business policy but all other things being equal it is likely that a stockholder would be favored.

An interesting item in connection with the



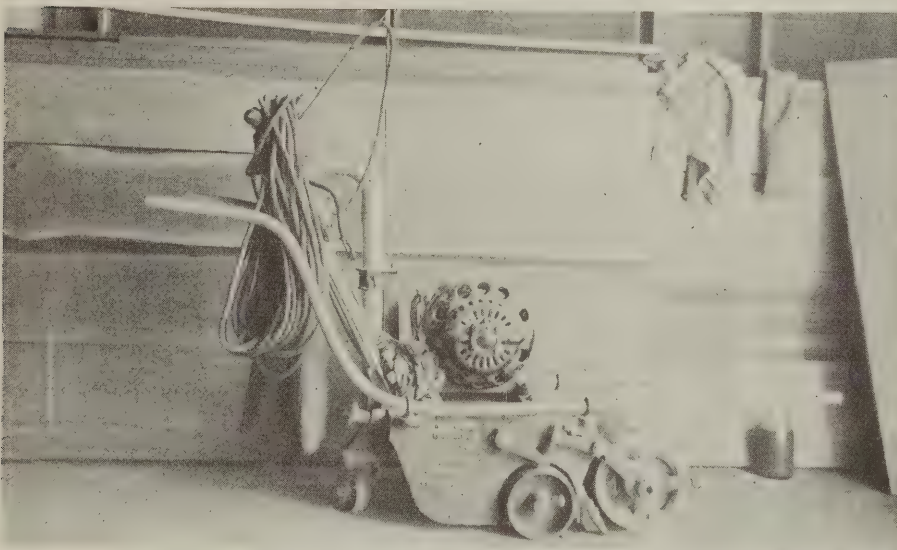
One of the smaller buildings under construction. This represents just a little more than one week's work

success of this organization is the confidence they have placed in labor saving machinery. They operate their own mill, a view of which, together with some illustrations of the interior is given here. This building is designed to provide storage space for a truck when the growth of the business warrants such a purchase.

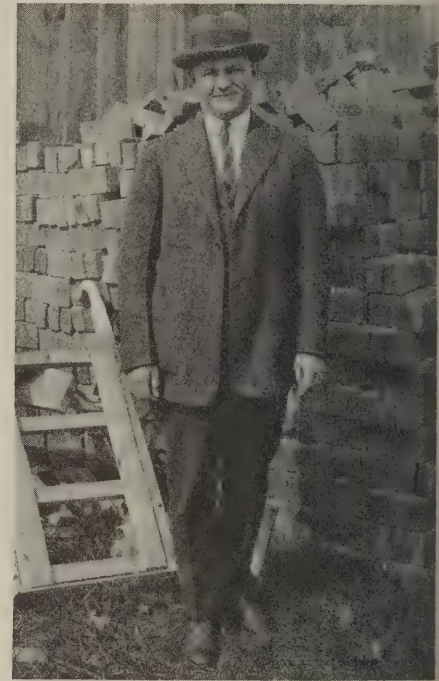
Notice that the doors on the left-hand side of the building do not come down to the grade. This is because the floor at that section has been raised so that the loading

and unloading of trucks is made easier.

The officers of the association are as follows: Dr. C. R. LaBier, president; Russell M. Guller, vice-president; John Hines, treasurer, and Frank P. Walters, secretary and manager of the building department.



This floor surfacing machine was equipped with home-made handles to help carry it up and down stairways



Frank P. Walters, secretary of the Terre Haute Homebuilders Association



A view of the \$140,000 apartment building under construction. This building was sold under the co-operative plan, each apartment being purchased by a different individual. All apartments were sold before the job was started

A Couple of Novelties

By Dale R. Van Horn

ONE of the most successful builders I know once said: "When I started out it was with more nerve and the determination to play square than anything else. Not a dollar to call my own; not a home to live in."

"But I did have a rather vivid imagination and as soon as I got on my feet I reserved a part of my mentality for the polishing up and finishing of ideas in the rough. Sometimes I carried an idea for as long as ten years only to find that, in the end, it was not practical and must be discarded. On the other hand some would require 'soaking' only a few days. People may say not to have too many irons in the fire, but it isn't wise to stake your all on only one."

There are a thousand and one things the "free lance" builder can turn into money. Take for instance the idea "churches." It is often passed up because one sometimes thinks the field is restricted. There are not more than three or four churches in a small town or village. They are usually built for durability and they seldom burn down. Yet the buildings do gradually wear out, or the congregation in time finds that the original structure is inadequate or lightning may strike. One man I know of builds churches only, and by means of a systematic filing and press-clipping service he is able to keep pretty close tab on all prospects in the state.



The remainder of this church will be built when funds are available

With credentials he then visits a prospective congregation, best foot foremost, and usually lands the job.

Another factor one often has to contend with is the lack of adequate finances. A congregation may want to build years before the necessary sum is in hand. All right. This man then sells the idea of building the church in units. He suggests the idea of basement first, covered with an adequate roof. Then, as additional funds come in, the building is finished. Some congregations do not take to the idea kindly. Others do. Witness the photo herewith. This church, the "Faith Nazarene Church," did this very

thing. First they selected the location. When this had been paid for they proceeded to finish off the basement and to use this for all services until the time comes when the church of their dreams comes into being. And, once you have done the first unit, it is only a matter of waiting, for you will in all probability get the second unit.

Once a congregation has decided to build in units, then it will be easier to sell better materials and better service than if the whole building were to be built at once when only the utmost economy could prevail.

A TERRACE ENCLOSURE

Perhaps the greatest single touch of individuality in evidence about the home at the left is the living hedge which has been planted about the two edges of this terrace. The long strip of living green is broken at intervals by brick piers surmounted by concrete flower boxes and when kept trimmed the effect is in harmony with the straight lines of the home, yet more pleasing than an ordinary wall would be.

Certain precautions, however, must be taken when such a plan is to be carried out. Concrete close to roots, except in very damp places, tends to dry the roots out. In this case the floor extends down about two feet, almost as far as the shrub roots penetrate. Therefore, when planting, special soil was used.

A trench two feet wide and two feet deep was excavated first and the earth carted away. This was filled with clay mixed with richer soil—the clay being used to help hold moisture. After being tamped down and allowed to settle with soaking, the hedge was then planted in the usual way. For the first summer extreme care and frequent use of the garden hose prevented the survival of all but two of the plants. Now they seem to thrive and the result is simple and pleasing.



Brick piers with a hedge between form a terrace enclosure

On the Job with the Construction Editor



With John H. Thalman
and B. L. Hilliard, Little
Rock, Arkansas



On the Job With J. W.
Chisholm, South Port-
land, Maine



On the Job With H.
Velton, Sioux Falls,
South Dakota



On the Job With J. C.
Campbell, San Antonio,
Texas



On the Job With John
Hougard, Jacksonville,
Florida



On the Job With Ed-
gar Stephens, Cairo,
Illinois



On the Job With H.
A. Schubert, Knox-
ville, Tennessee



With A. Mattson and C.
Kolkvist, Hartford, Con-
necticut



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Gene Ragozzino, Mt.
Vernon, New York



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Rhode Island



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den, Massachusetts



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N. Brown, Albuquerque,
New Mexico

On the Job in Portland, Me.

Foundations for Small Buildings

WE hear considerable these days about efficiency in concrete construction, modern methods, labor saving devices, and other phrases descriptive of advances in the building industry. Upon investigation, however, we generally find that the job under discussion is a big one where

in putting up small buildings as is spent on the erection of large ones the saving on the hundred smaller jobs, would undoubtedly be far greater than that on the one large job.

A. A. Turner, a contractor of Portland, Maine, who specializes in foundation work for small buildings is a firm believer in the above doctrine and it will readily be seen by the illustrations shown here that Mr. Turner has put considerable time and

gregate. Concrete of standard proportion was mixed by hand in a mixing box and poured directly from the box into the forms. Due to the fact that a considerable amount of heavy field stone was used, the gravel for the concrete was selected a little finer than ordinarily.

It is interesting to note the construction of the mixing box and the method of using it. First of all, it is shallow, and therefore the mixing is easy; second, it is light and therefore easily moved about; and, third, it is set up on horses so that the men mixing the concrete are not required to work with their backs bent. This, as anyone who has mixed concrete by hand knows only too well, is a decided



View of the formwork. Note its simple construction and also the method of bracing the corner



The heavy field stone were dumped in the forms and the space around them filled with concrete

complicated machinery is employed and hundreds of men are at work. Somehow or other the small job has been neglected and considered as something to be left to get along as best it might in the old-fashioned way. However, for every big job there are a hundred or more smaller ones and if as much time and trouble were taken to improve the methods employed

study into the business of building concrete foundations.

The job described here was considered too small for the use of a mixer and therefore all concrete used was mixed by hand. As considerable heavy field stone was to be had adjacent to the site of the building this stone was used in the foundation together with the regular small sized ag-

improvement over the old method of mixing on the grade level.

The method of procedure in building a foundation is a logical one, each step following the other in an orderly procession. After the footings are laid the forms are set up, and then fresh concrete is dumped into the forms to about a one-foot thickness. Upon this "cushion" of concrete the heavy stone, which have previously been placed around the forms, are dumped in, another layer of concrete is poured over the stones and then another layer of stones are dumped in. Since the gravel used in the concrete is finer than is ordinarily used the mixture will flow around the heavy stones and fill up the crevices, bonding the stones tightly to make a solid masonry wall.

This method is particularly suited to small structures without basements.

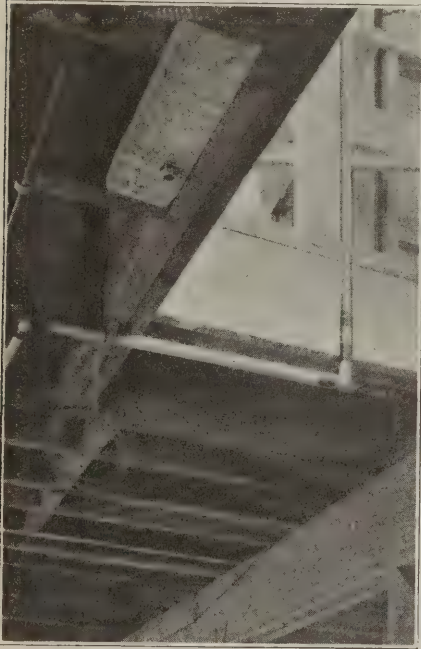


The mixing box is set up knee-high and the concrete poured directly from it to the forms

On the Job in El Paso, Texas.

Non-Leaking Speaking Tubes

IN buildings of the cheaper class contractors who install the speaking tubes often do a poor job. The joints are sometimes poorly fitted and often very loose,



These speaking tube joints are taped to make them leak-proof and to prevent them from coming apart

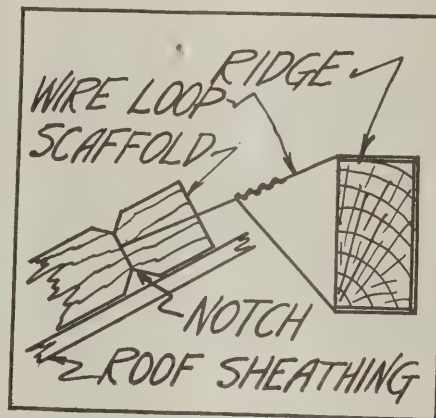
resulting in a leaky line and a tube which does not function properly. Very little extra care is required to do a good job. It takes but a short time to fit the joints properly and to tape them as shown in the illustration above. Wrapping tape about the joints will not only make the line leak proof, but also will be insurance against the line breaking at the joints, as sometimes happens. Since speaking tubes are generally covered up in partitions it is no small matter to make repairs in case a break occurs. Taping the joints, as shown here, will go a long way to make the job a permanent one.

A Roofer's Scaffold

IN the illustration to the right is shown a type of roofer's scaffold used by George Beaudette, of El Paso, Texas. When in place it forms a safe and easy place upon which to work. This kind of scaffold with several horizontal members gives the workman a sense of security that he might

not otherwise have and thus allows him to work without fear of accident.

The arrangement is held with wire, as shown in the sketch, wound around notches in the scaffold piece and wrapped around the ridge to hold the scaffold in place. If it is desired, rope may be used instead of wire but it would seem that wire is the safest thing to use since rope may be accidentally cut by a blow from a hatchet or a falling object.

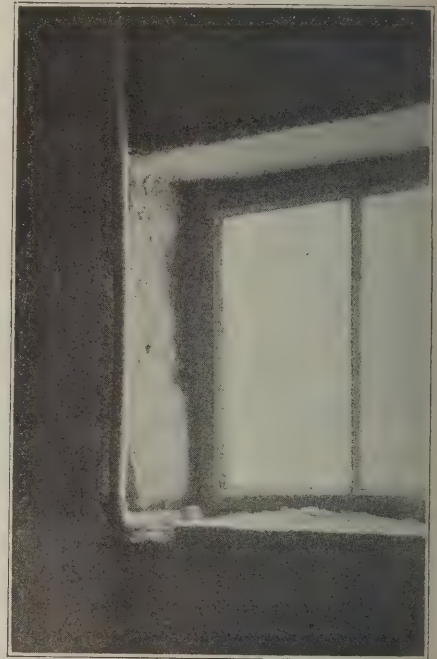


Sketch showing how scaffold is held in place

Pipe Outlet at Window Frame

SOMETIMES it becomes necessary to lead pipes outside of buildings as in the case of providing a sprinkler outlet for watering the lawn. Seldom, if ever, is provision made for a thimble when the foundation is being poured, and in order

to bring the pipes outside the building it becomes necessary to drill through the entire thickness of the wall. We may, however, take a tip from this El Paso, Texas, contractor who, when it becomes necessary to provide an outlet for a pipe, uses the junction of the window frame and the wall as the point to bring it through. It



This pipe is brought thru the wall at the window frame, thus making it unnecessary to drill thru the entire thickness of the foundation

is necessary then, to drill only a short distance through the foundation as shown in the illustration.



View showing workmen on roof. Note the absolute freedom from restraint provided by this scaffold

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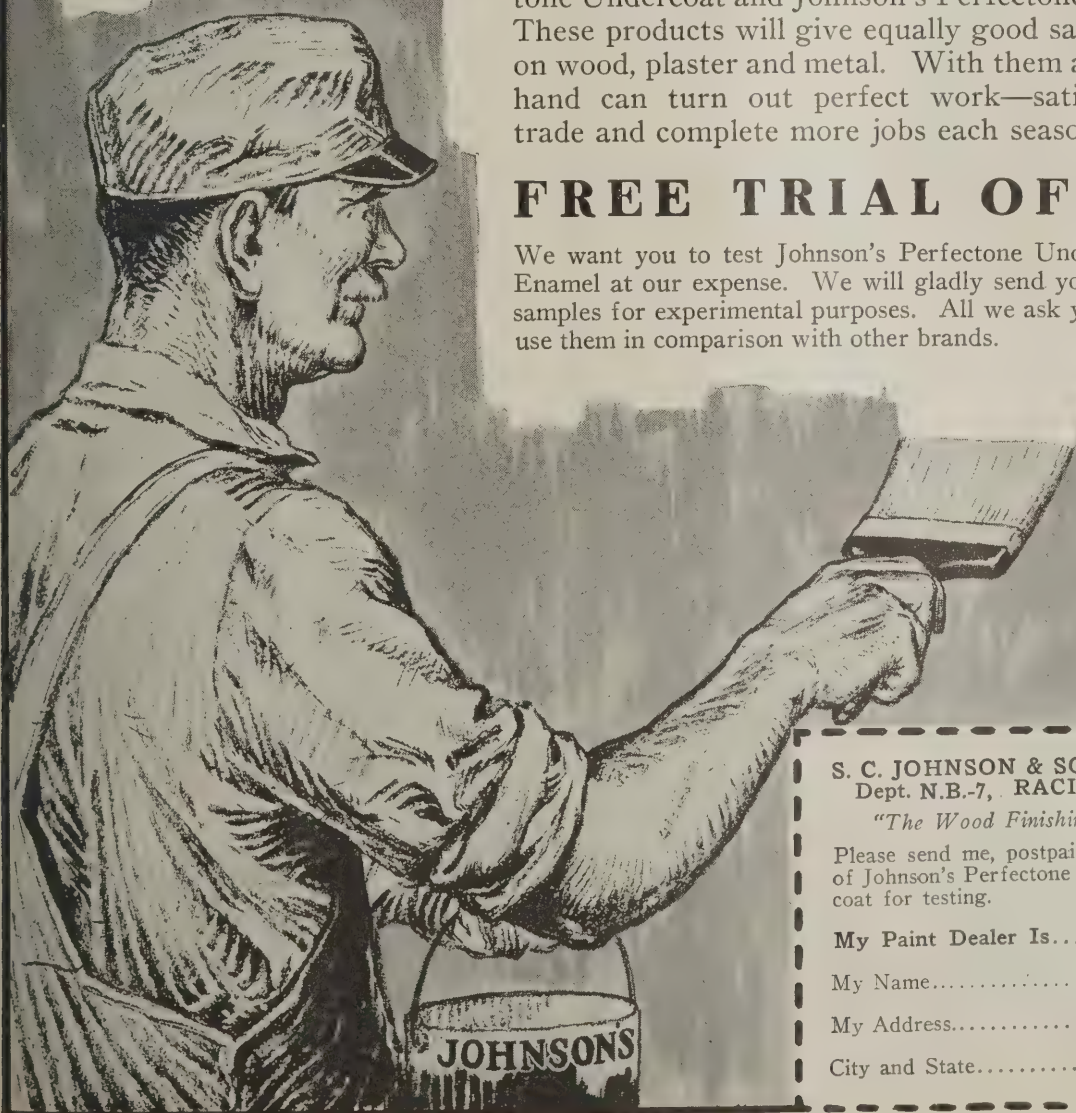


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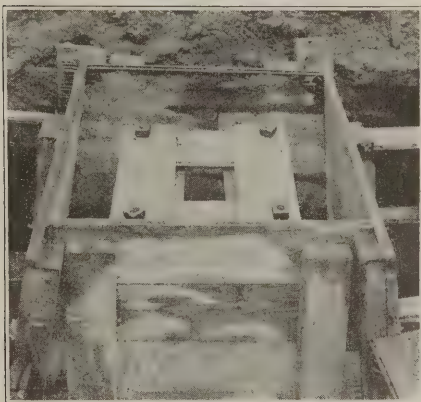
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On the Job in Daytona, Fla.

Setting Bolts in Concrete

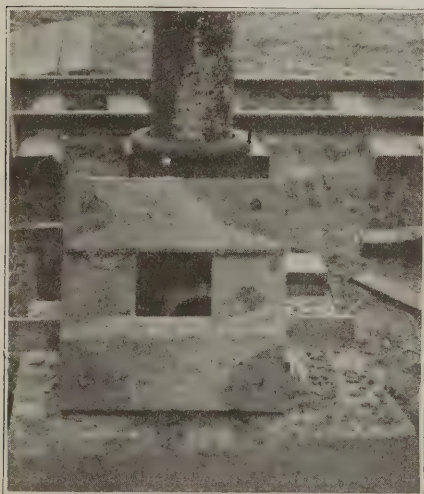
IT sometimes becomes necessary to set bolts in concrete, to be used as fastenings for machinery or posts, and some contractors may be puzzled as to how to do this in the cheapest and most satisfactory manner. There are many ways of locating these bolts and although the writer cannot express himself as being



The bolts are shown here in place in the form

sure the method described below is the cheapest and most satisfactory manner, it is, nevertheless, the most efficient he has yet seen for the purpose.

Four short pieces of 1x4 are nailed in the shape of a square as shown in the first illustration and the location of the bolt holes accurately determined. Next, the holes are carefully bored and the bolts inserted, and then the whole arrangement



This is the wood square used to hold the bolts in the forms

is set in the form as shown in the second illustration. Two cross-pieces nailed in the forms serve to hold the square in place while the concrete is being poured. After the concrete has set the nuts may be unscrewed, and the square lifted off. The bolts will then be found to be securely anchored in the concrete and set at the required distance from each other. Even if the square shifts in the form the bolts will be at the required distance apart from each other.

The distance in the concrete to which the bolt should be sunk depends entirely upon the object that is to be fastened. Heavy machinery which may be subject to strong vibrations should be fastened with large-diameter bolts sunk deeply in the concrete; light objects, such as posts, etc., need not be so securely held. In general, it may be said that bolts should be long enough to be buried in the concrete a distance of from four to twelve inches, depending upon the object to be held in place. Under no circumstances should the distance be less than four inches. If the bolt is run thru a heavy washer it will be more securely anchored than if no washer is used.

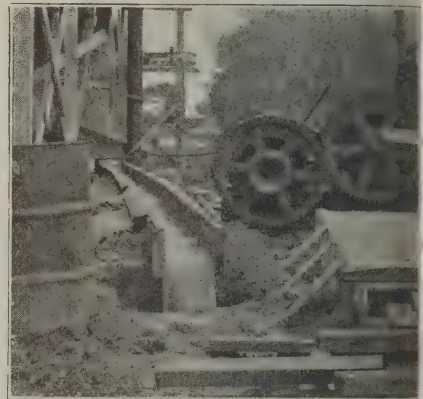
Credit for this idea belongs to W. P. Richardson & Company.

An Inexpensive Flume

WHERE water is to be led away to a sewer outlet from the place where it is being pumped, some kind of conduit or flume is required to carry it off. Some contractors use sheet metal pipes of large diameter and others have different schemes

for doing the work, but it would seem that this Daytona, Florida, contractor had a good idea for doing the job in an inexpensive manner.

He built a simple box flume as shown in the illustration and lined it with ordinary roofing paper. This made the whole arrangement leak proof and prevented the water from running all over the place. The flume was given a pitch of about one



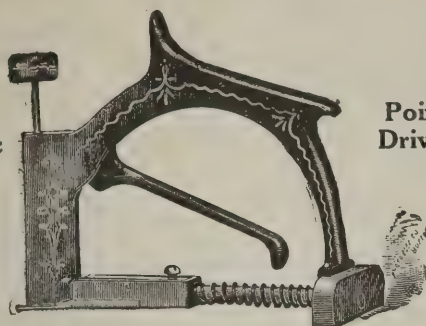
View of the discharge end of the flume showing method of constructing flume

inch in every six feet which was sufficient to provide for a steady flow of water from the pump. The box was approximately twelve inches square.

In many cases where the amount of water is small, a couple of planks nailed together V-fashion, would probably do the trick and perhaps the lining could be omitted, although its use is an insurance against puddles which may or may not be of consequence.



View of flume at pump where water was delivered to it from below. The flume leads off to the left

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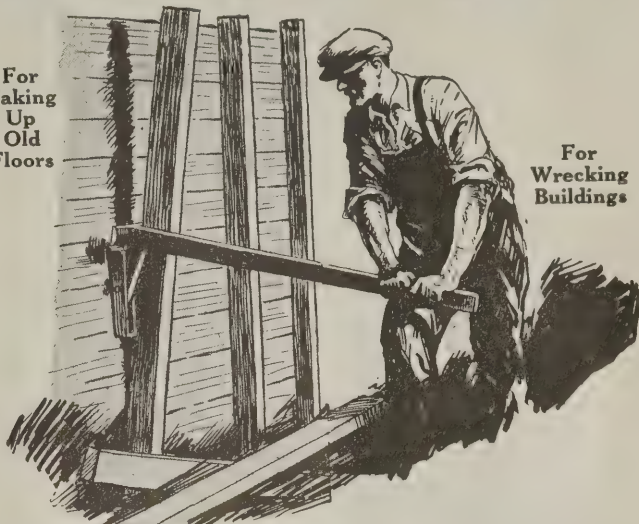
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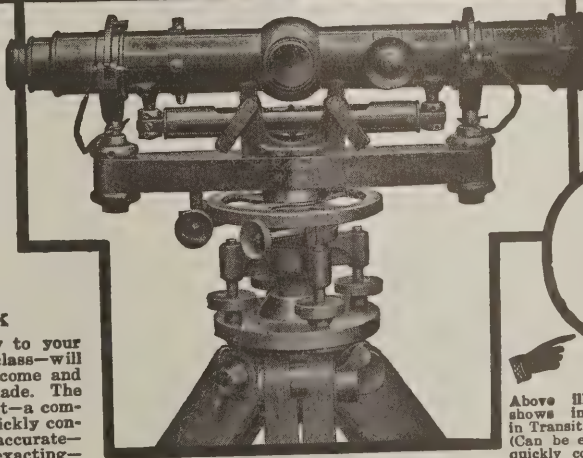
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On the Job in Cheyenne, Wyo.

Framing for False Beams

OSCAR MOODY of Cheyenne, Wyoming, had a client who wanted false beams, exposed for about one inch, in the living room of a new house which he was building. As will be seen from the photograph and the accompanying sketch, the means of providing the exposed false beams was a very simple matter. Short pieces of 2x4 were set between the joists



Illustration showing false beams showing thru ceiling. The lath are already in place

as shown in the sketch and to these 2x4s, spaced about 4 feet on centers, was nailed a 1x10 board. The 2x4 was so located between the joists that when the board was nailed to it the under side of the board was at the same level as the lower edge of the joist. Then a 2x6, which formed the exposed beam, was nailed to the board.

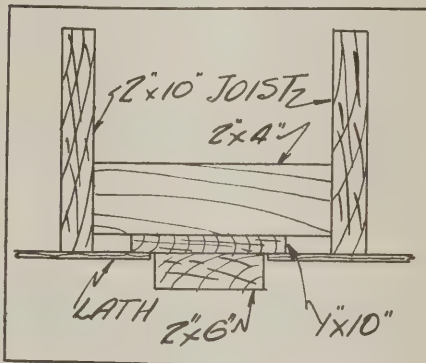
Since the face of the board is at the same level as the lower edge of the joists the lathing can be carried straight across. The projection of the 1x10 beyond the 2x6 allows for a projection to which the ends of the lath can be nailed. It is necessary, of course, that these false beams suit the length of the lath, otherwise it will be quite a job to cut all the lath used in the ceiling to the proper length.

A similar method might be used to provide a solid nailing for cased beams built of several members in the usual manner.

Leveling Floor Girders

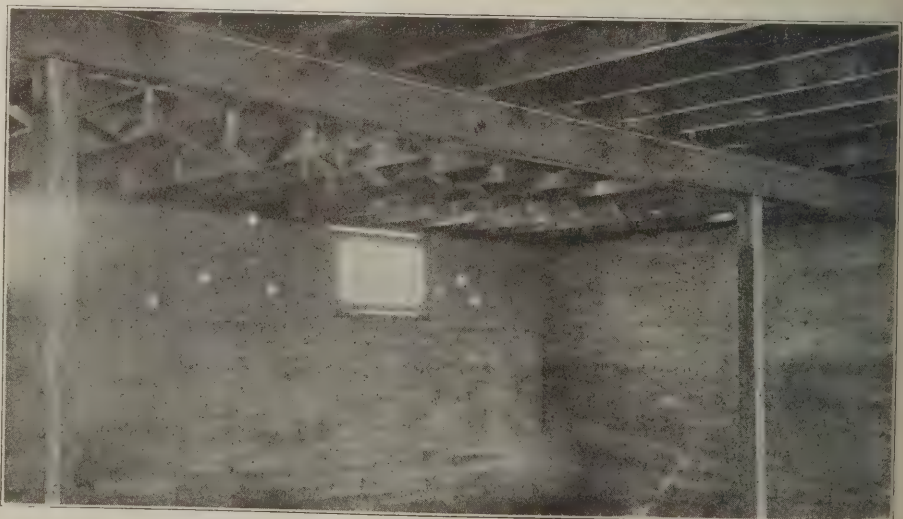
ONE of the many contributory causes to squeaky floors are improperly leveled floor girders. While not directly responsible, they do, nevertheless, throw the floor off from a level plane which is the theoretical ideal of a properly laid floor. It therefore behooves contractors to pay some attention to this item and to keep the top face of the floor girder level.

There are many ways of doing this but the method shown here, used by Holly and Lutz of Cheyenne, Wyoming, seems to be a simple and easy way of doing it well. Two points are set at the proper



Sketch showing manner of fixing false beams to joists

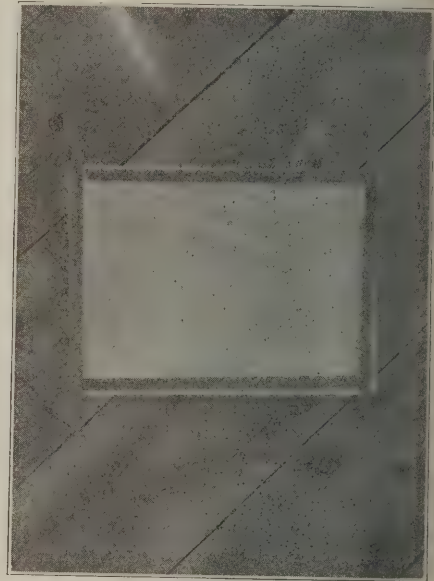
height with a level at the beginning and end of the girder and a piece of chalk line stretched across the two level marks. The girder may then be either jacked up and wedged, or lowered, until the edge is equidistant from the chalk line throughout the length of the girder.



In this illustration the chalk line shows the girder to be slightly out of level

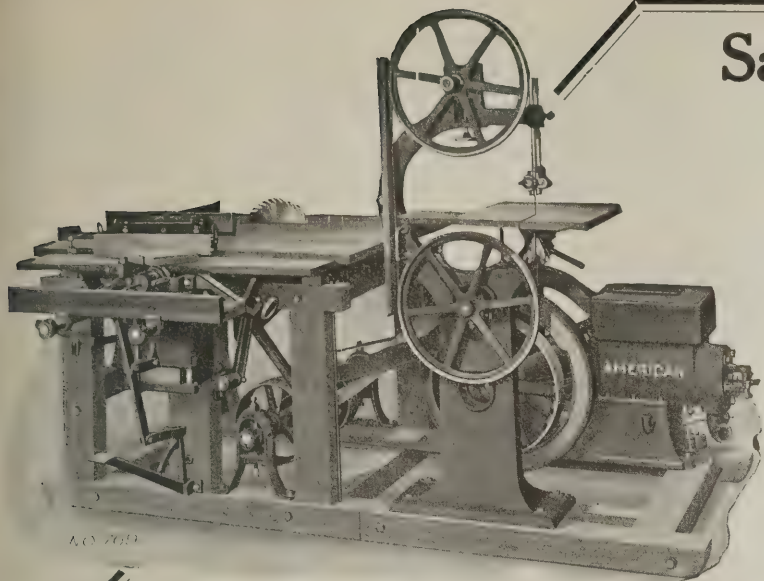
Plans That Can't Be Lost

MANY and many a time plans have been lost and work delayed until a new set could be sent out from the office. This Cheyenne, Wyoming contractor however, is taking no chances. As will be seen from the illustration, he has tacked the plans upon the wall, using a few strips of wood to hold them in place. Of course this means that whoever wishes to consult the plan



These floor plans are nailed to the building so that they won't be lost

must come to the place where the plan is located, but considering the fact that everyone on the job knows where he can find the plan, this is not as great a disadvantage as it may appear.



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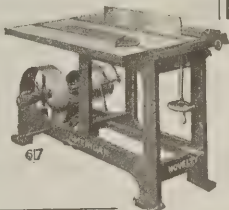
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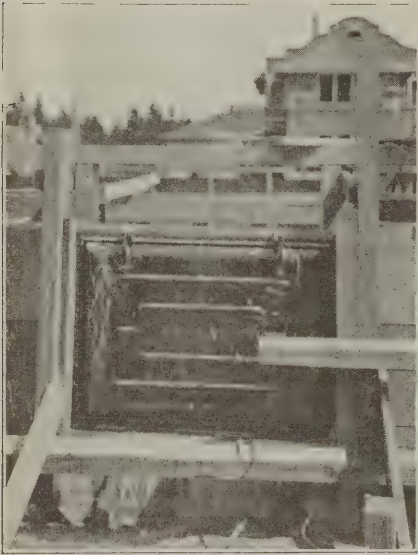
Setting Coal Chute in Foundation

THERE are two methods of setting a coal chute in a concrete wall: The first is setting it in the forms before the concrete is poured and the second is leaving

the chute in the forms and allow the concrete to flow around it, thus making a perfect fit. The chute can be held in place by cleats as shown in the sketch.

This photograph was made on a job being done by Geo. A. Riggs of Portland, Oregon.

laid on the ground and held in place by stakes as shown in the illustration at the bottom of this page. With these 2x4s as a guide the excavation for the footing is made. Then the top form, consisting of the short pieces of vertical 2x4s, the 1x6 side forms, and the top cross pieces is set



The coal chute in place in the forms

an opening in the wall and fitting the coal chute in the opening after the concrete has set. One method seems to be about as popular with builders as another.

The method of providing an opening in the wall and fitting the chute to the opening has some decided disadvantages. It is no easy job to fit a coal chute if the opening is a bit too small or too large. If too small, the concrete has to be chipped to the desired dimensions and this is disagreeable and expensive work. As the writer sees it, the easiest way is to set

Guide for Sawing Large Timbers

CUTTING a heavy timber by hand is a hard job, as any one who has had to do it will tell you. Some carpenters not used to this kind of work sometimes have trouble in making a straight cut and for those men, this idea, furnished by the carpenters employed by the Bingham McClelland Company of Portland, Oregon, may prove of some assistance. When cutting a heavy timber, a small piece of scrap is tacked on the top of the piece to serve as a guide for the saw and to keep the cut in a straight line. This hint should be especially useful when a one-handed saw is used.

Formwork for Shallow Foundations

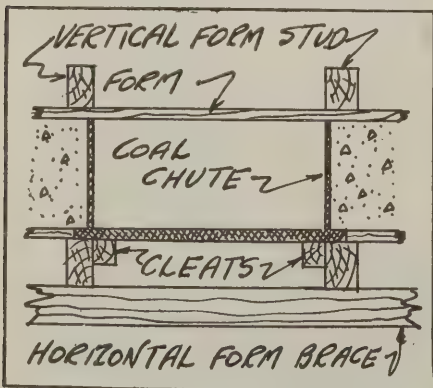
FOR buildings such as small garages of out-buildings where only a low foundation wall is required, this formwork, used by Hiller Brothers of Portland, Oregon, would seem to be as simple and inexpensive as can be built. It is constructed of a double row of vertical 2x4s, held at the top by short crosspieces and prevented from spreading at the bottom by the long 2x4s which make one side of the form. A 1x6 board on the inside face of the 2x4s is the only other lumber required.

To build this form the long 2x4s are

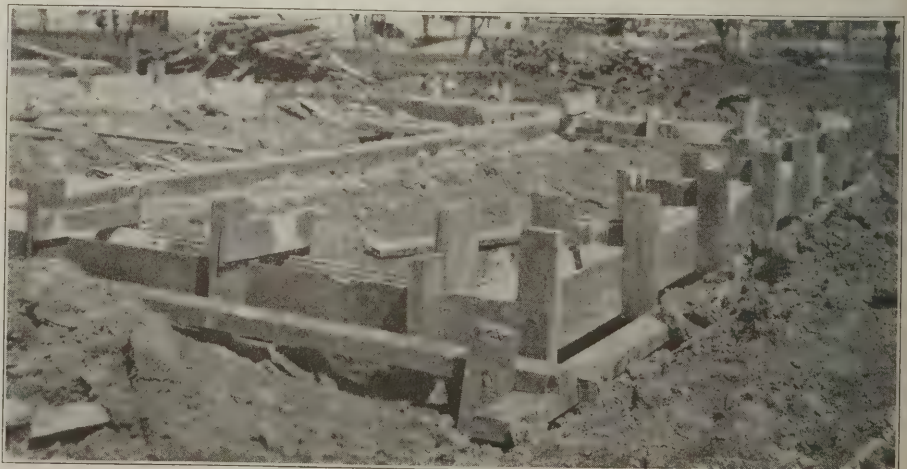


Top view showing shape of forms

between the long 2x4s already staked in place. This top form may be built beforehand and placed as a unit to save the labor of building it up each time it is used. It is held in place by toe-nailing the short 2x4s to the long pieces on the ground. The lower edge of the 1x6 and the bottom of the short 2x4s come to the same level as the under side of the long 2x4s. A comparatively dry mix should be used lest the concrete flow out of the forms at the opening.



Sketch showing method of holding coal chute in forms



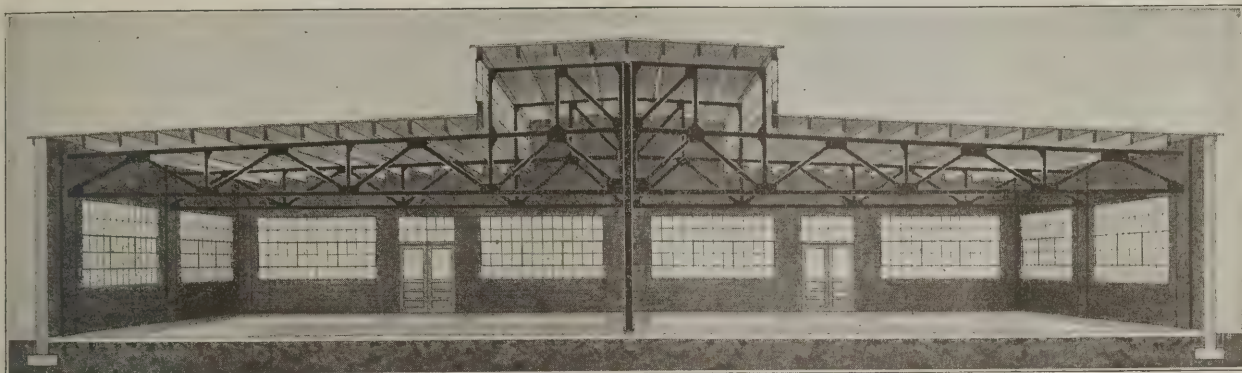
General view showing manner of building forms at the corners

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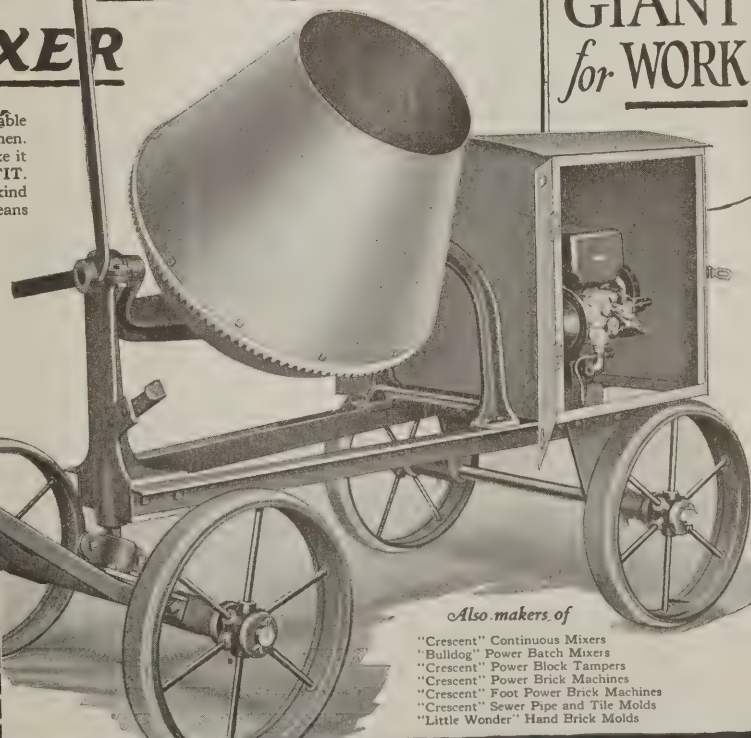
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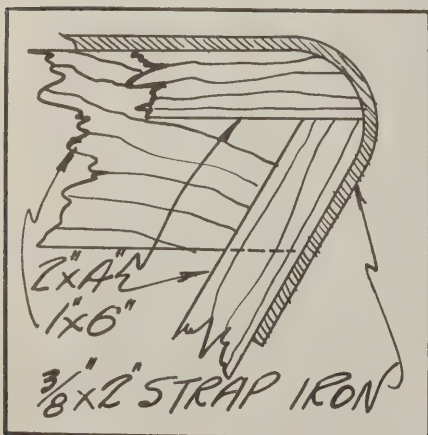
On the Job in San Diego, Cal.

A Lumber Hoist

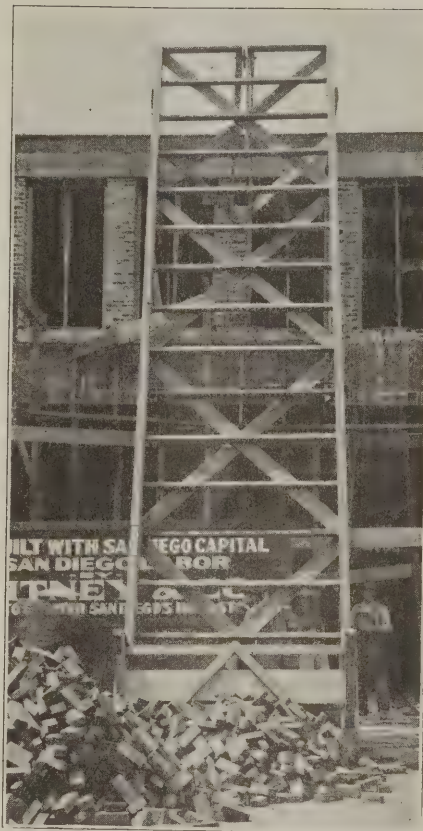
E. E. KEYES, a contractor of San Diego, California, claims to have a money saver in the lumber hoist shown here. Instead of handing lumber from one floor to another, as is commonly done on jobs of moderate size, this lumber hoist was built with the idea of doing the work in a more efficient fashion. It was operated from the same engine used to run the material hoist. Such a piece of equipment as this can be very easily made by



Illustration showing construction of elevator car



Sketch showing manner of protecting corners of elevator car



View of the elevator. The car is shown at the bottom

any contractor who finds need for it. This hoist can be made on the job by regular carpenters, and once built, it can be



Front view of car showing construction of details

knocked down and moved, and then re-assembled. The size of the members used depends, of course, upon the height to which the hoist is to be built and upon the weight of the material it is desired to elevate at each load. For the job shown here, this hoist was called upon to lift at one time, three joists, their dimensions being 3x12x22, a load of about 1500 or 1800 pounds. The main verticals were built of 4x8, the horizontal bracing of 2x4 and the diagonal bracing is of 1x8 material.

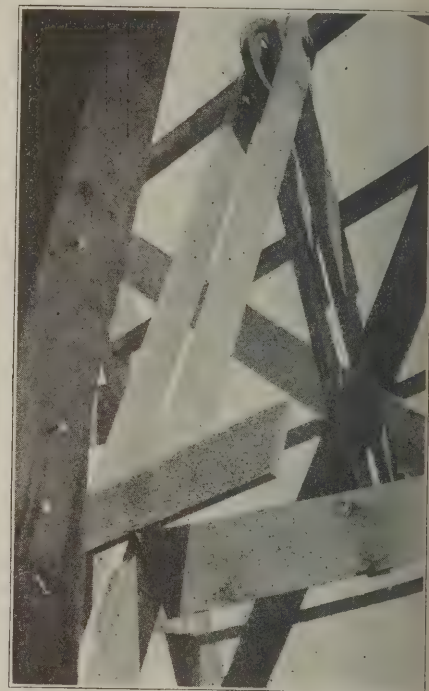
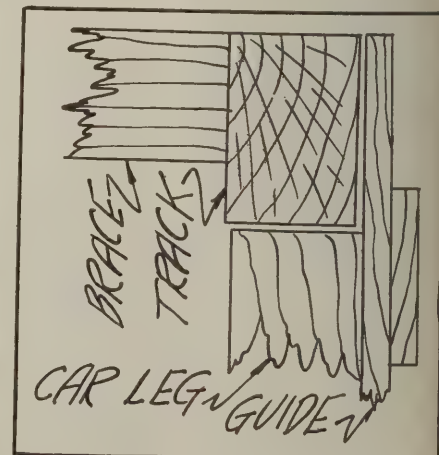


Illustration showing manner of holding pulley. The elevator bracing is seen to the right



Sketch showing manner of guiding car on elevator track



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Kinks from the Job and Office

By V. L. SHERMAN

Concrete Lintel Form

THE concrete lintel form shown in Fig. 1 is submitted by W. O. W., of Abilene, Texas. "I have found this form to be a time saver both in construction and disman-

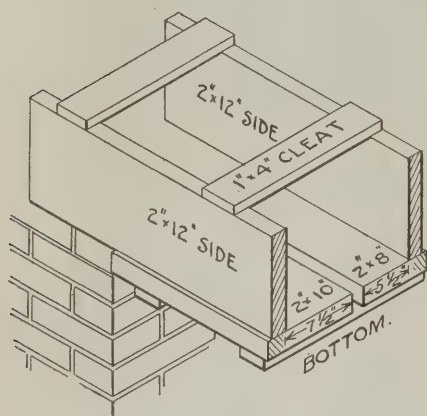


Fig. 1—Simple lintel form

ting. I make the forms in two pieces, using 2x12-inch for sides. On one of these I spike a 2x10-inch piece and on the other a 2x8-inch for the bottom. The top and bottom are fastened with cleats, and no wiring is used. I have used this method for five years."

Office Rail Gates

THE elevation and section shown in Fig. 2 is submitted by B. R. of Momence, Illinois. His letter reads: "I wanted to find you a photograph of the grape arbor but have not succeeded." (In garden framing we much prefer a photograph.—Ed.) "The blue print I am sending is one of the first pairs I built. The gate as shown is only one-half.

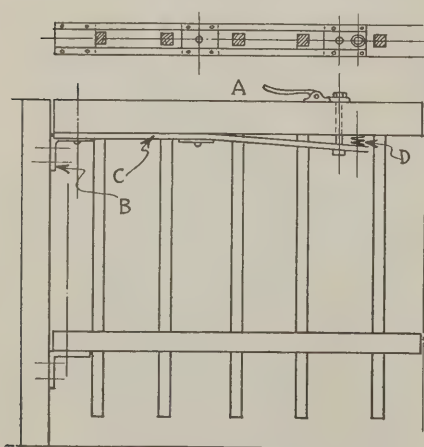


Fig. 2—Automatic locking office gate

It is placed with the top rail at the usual height and conforms to the rest of the rail. It is made for convenience, quiet operation, and self-closing. For the latter purpose you will notice that the lower hinge is centered farther in than the top one. There are rubber plug cushions at the butt end of the upper rail to ease the motion and bring the gate to slow speed so when it swings back past the center the locking strips C will slip up into place without jolting.

"The lever A lying along the rail operates the strips C against the action of the spring D, the strips release themselves from the edge of the hinge plate B and the gate can be swung open—all in one natural operation."

Damp Proofing Shingles

WE have a query from W. R. S. as to the possibility of preserving shingles on a summer cottage located in timber. W. R. S. states that he has noticed the clean condition of the shingles where rain has washed over them from a galvanized iron surface. What he wishes to know is whether or not a spray of zinc chloride and sodium carbonate would not have an equal effect as preservative. At present all but a small portion of the roof is mossy. The protected surface lies just below a galvanized iron flue-saddle.

W. R. S. would also like to know why white paint on a house standing among birch trees will turn yellow.

Cover the Old Shingles with Roofing

A. G. H. writes: "I have made a mistake with my own house and wish to let others know about it so they may avoid doing the same thing. A few years ago my shingle roof began to leak, being old and weather worn. I decided to put on some good 3-ply roofing instead. So I began to remove the old shingles. This proved to be a slow tiresome job as I had to pull out all the nails. After I had the roofing on I soon found I had made a mistake. Every summer the second story of my house becomes so hot it is impossible to sleep or live up there.

"If you leave the old shingles on when re-roofing you will have a warmer roof in the winter and a cooler roof in the summer. The shingles left on prevent up draft thru the sheathing that is so common when a basket roof is covered with ready roofing of any sort."

Combination Ditch Digger and Stump Puller

H. W., of Door County, Wisconsin, has sent in the photograph of the combination ditch digger and stump puller.



Fig. 3—Combination ditch digger and stump puller

The photograph shows it ready for use to clear swamp land. The close-up shows steel cables on three drums. The two end ones can be used to pull stumps or to anchor the machine. The gasoline engine supplies the power which can be applied to any one of the three. This machine is homely and home-made, as was the mixer shown in these pages some time back, but it does the work.

(In sending in photographs, send in clear ones, otherwise a perfectly good kink is apt to wind up in the wastebasket.—Ed.)

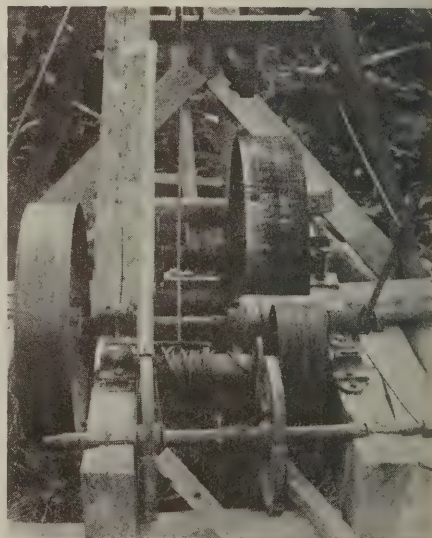
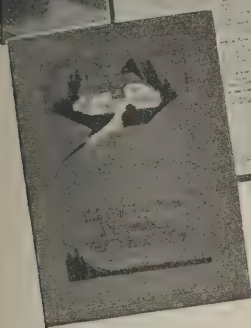
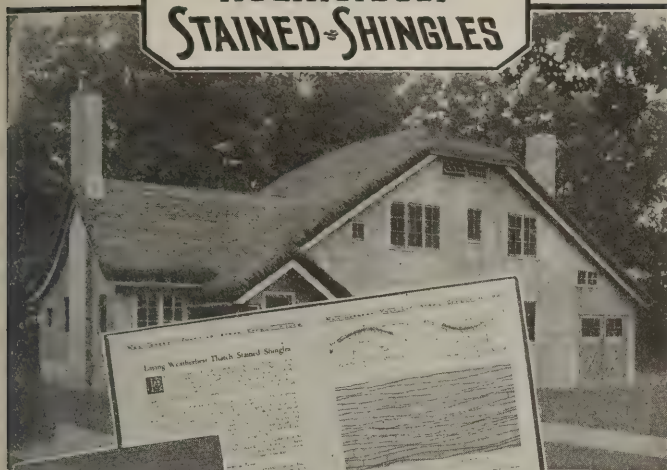


Fig. 4—Close-up of steel cables

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STAINED SHINGLES**



Architect Homer W. Harper has made telling use of WEATHERBEST Weathered Straw color Stained Shingles for the thatched effect roof on the above home, owned by Judge Frank Hammond of Benton Harbor, Michigan.

An Illustrated Book on Thatched Straw Effect Roof Construction

EVERY contractor, builder or designer of homes will find interesting and valuable information in this new WEATHERBEST book.

How to get the irregular, wavy lines of shingle exposure in thatched roof effects; how to secure the graceful curve at eaves, rakes, hips, valleys and ridge; what is necessary to insure the shingles lying smooth and snug, not only when first laid, but for long years of service as well—all this and more is covered in detail, fully illustrated with photographs and detailed drawings.

Whether for thatched effect roofs, for ordinary roofs, or for sidewalls, WEATHERBEST Stained Shingles are the right choice for both initial economy and low upkeep. They are 100 per cent edge-grain British Columbia Red Cedar and are stained separately so that each shingle gets its full share of color and creosote preservative.

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A Combination Rule

A. B. R., of Albany, California, writes: "In laying studs and openings in a building my square would very often be at the other end of the building, so I made

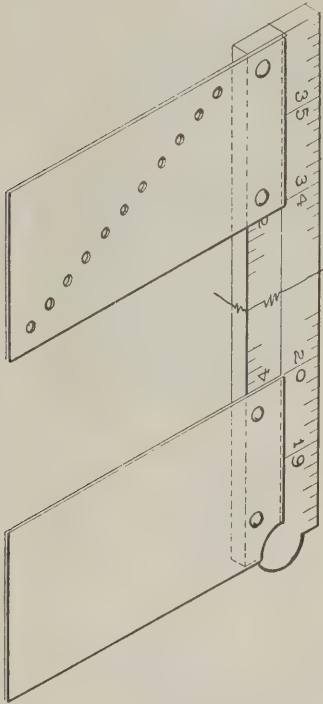


Fig. 5—Combination folding rule

two aluminum plates, 2x3¾ inches, and bolted them to my pocket rule as shown in the sketch, Fig. 5. This shows spacing for studs 16 inches on centers. The holes punched in the end plate are for marking locks on doors."

Siding Calculation with the Steel Square

D. L. S., of Indianapolis, adds to his earlier comments on siding by showing a

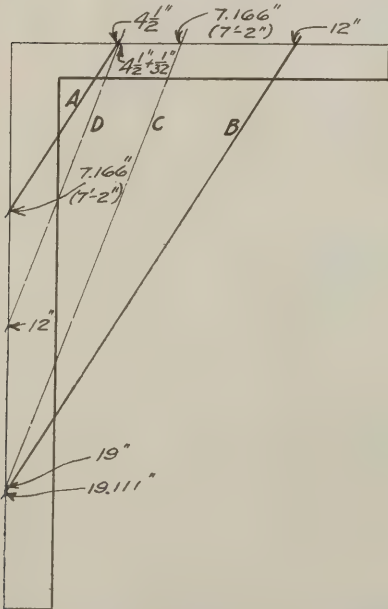


Fig. 6—Siding calculations on steel square

method of siding calculation with the steel square (see Fig. 6) and he writes that it is "the first article, so far as I know, on getting all siding calculations with the square.

"Today our windows are often of different heights and it takes some figuring to even do a good job of siding. Supposing our longest frame from top to bottom is 7 feet 2 inches. Place your square on the 7 2/12 on the blade and 4 1/2 on the tongue. Keeping it parallel, slide it up to 12 on the tongue, and you will read a little under 19 2/12 on the blade at the other end. Or 19 pieces of siding will be required. Placing the square again at 19 on the blade and 7 2/12 on the tongue, slide it parallel down to 12 on the blade and it will read about 1/32 over 4 1/2 on the tongue, giving the exact spacing."

Easy Jack Rafter Cuts

THE jack rafter cuts of E. P. McC. has brought out a note and sketch (Fig. 7) from J. L. B., of Maplewood, New Jersey: "I would like to submit my method of laying out which is much shorter. In the sketch A to B gives the plumb cut. Then mark on the opposite side of the tongue at D. Square across at B and D. Lay the tongue on the edge of the rafter and mark line E. The cheek or side cut will be from B to C."

A supplementary sketch, Fig. 8, aims to show the principle of the cut. Notice the line running to the left from the point B which is parallel to the rim of the hip.

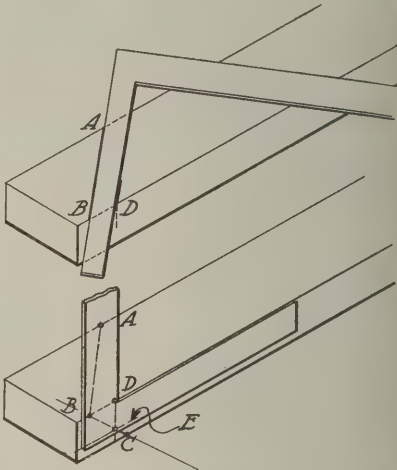


Fig. 7—Obtaining plumb and side cuts on jacks

Send in Your Kinks

Don't forget that the "Kinks" Editor pays five dollars for each Kink that he uses. He makes his own drawings, but send clear sketches to guide him.

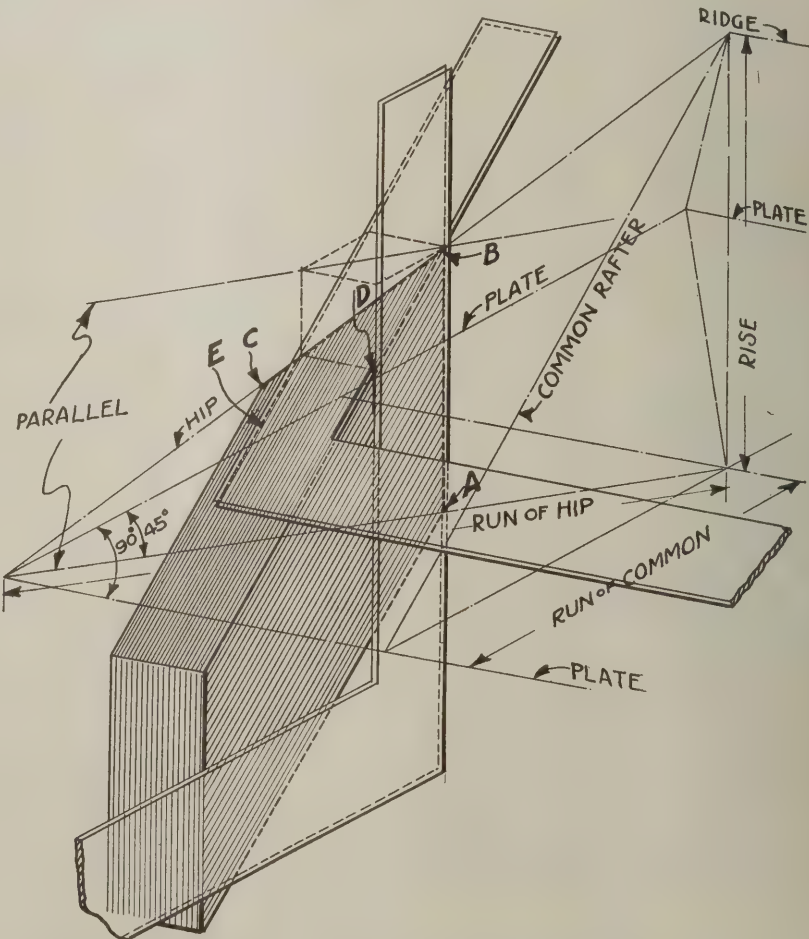


Fig. 8—Perspective of jack rafter cuts

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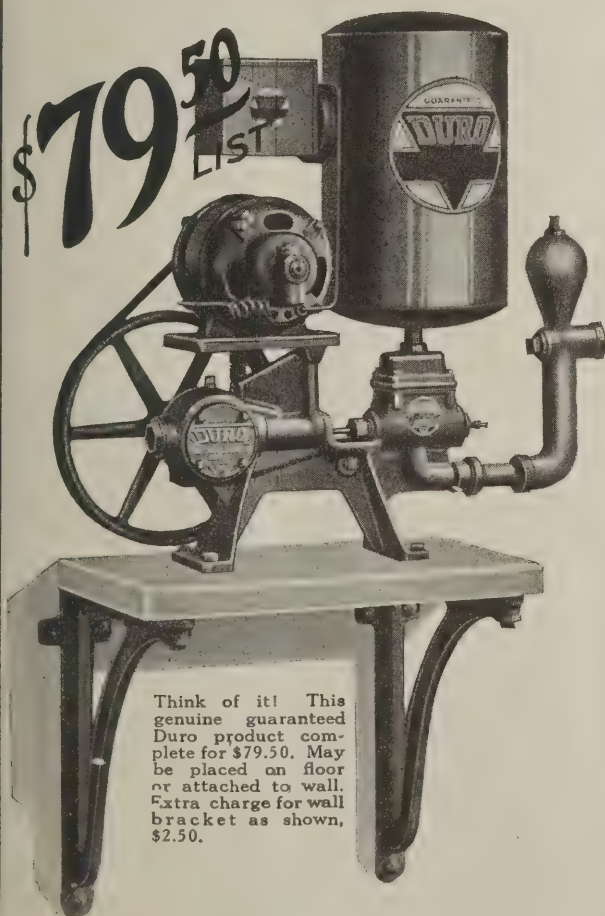
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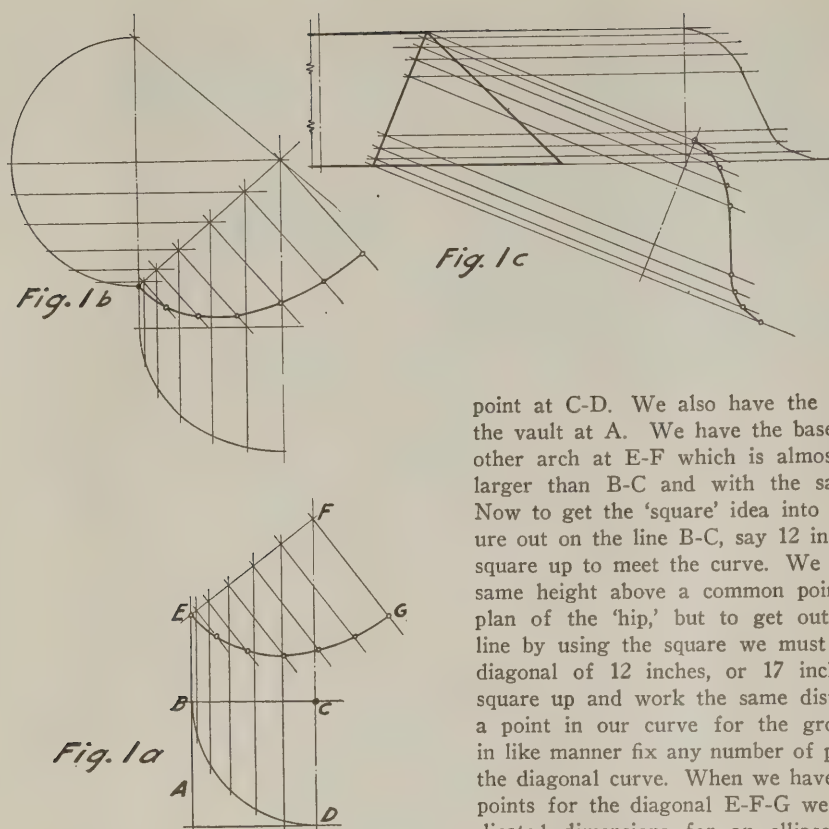


Fig. 9—Intersection developments in vaulted roofs

Intersecting Vaults

A. N. P., of El Cajon, California, comes forward with a solution to a former query by A. B. H. It concerned "drafting out hip rafters, if they can be so called, where one dome or vault intersects another. Or in a church with dome ceiling where arches and windows intersect the dome of the main building." A. N. P. writes: "This is a problem that in some form or other is faced by every active workman. A. B. H. calls them 'hip rafters' and thereby gives us a key to the solution. Let us keep that idea in mind, take the steel square in hand, and see if we can draft it out in a way that we may understand the 'why' and remember the 'how' of the drafting. Two things we want to know are the length and the shape of the rib where two vaults come together (groined) and this is determined by the character of the common curve—just as the hip or valley depends on the common rafter.

"Take two vaults, each a semi-circle. Let A, Figure 1a, represent one-half the window or similar part of main building. B-C is the run and C-D is the rise of the curves to be joined in the plane E-F. And since the vaults are similar the plane of the hip or valley or groin is 45 degrees. Its length or run will be the diagonal of a square with the side B-C. The rise must be the same as C-D to conform to the same elevation.

"Now we have the springing points of the arches at the level B-C-E-F and the highest

point at C-D. We also have the curve of the vault at A. We have the base for another arch at E-F which is almost a half larger than B-C and with the same rise. Now to get the 'square' idea into it, measure out on the line B-C, say 12 inches, and square up to meet the curve. We want the same height above a common point in the plan of the 'hip,' but to get out on that line by using the square we must take the diagonal of 12 inches, or 17 inches, then square up and work the same distance for a point in our curve for the groin. And in like manner fix any number of points for the diagonal curve. When we have laid out points for the diagonal E-F-G we have indicated dimensions for an ellipse and we can make handy use of it here.

"In Fig. 1b is shown two vaults of unequal widths joined in a common groin. Fig. 1c shows how the same principle would be employed to lay out the hip rafter in a curved tower roof."

Protecting Composition Shingles

J. E. N. submits the sketch, Fig. 10, with the following description, noting also that it is for "supporting and protecting the projecting edges of the shingles."

"The accompanying sketch shows an eaves strip made from a 4-inch piece of No. 26 gauge galvanized iron. This strip is placed on the lower edge of the roof sheathing and around the gables to support the shingles.

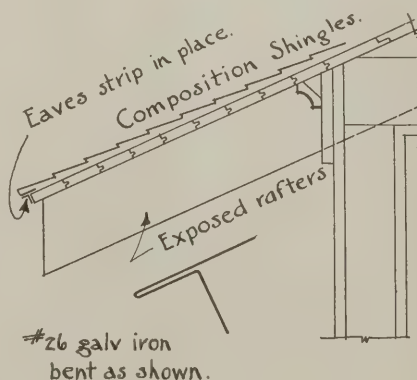


Fig. 10—Composition shingle protector

It is easily made, requires but little time to install, and is well worth the cost on any building where composition shingles are used."

A Home Built Bandsaw

ALONG with the ditch digger we wish to present the following from J. W. of Hampton, Minnesota, with sketch, Fig. 11. I am sending you a kink which I have worked out, tried out, and found satisfactory in every way. The whole band saw is built of scraps which I had. The shaft and boxes come from an old line shaft. The lower pulley is put on the shaft the same way that a circular saw is put on and is built of two 1-inch boards nailed together. The upper one is put on with two collars, one on each side, and wedged tight and true.

"The best way to make these pulleys is to saw them round and then put them

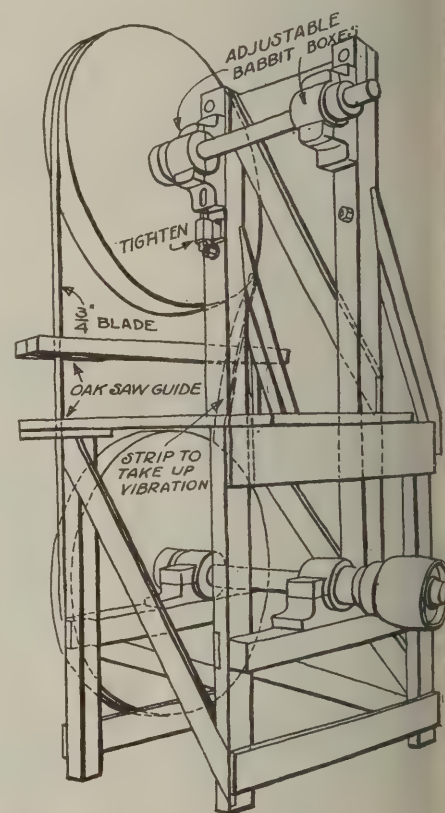


Fig. 11—Band saw built from scraps

on the lower shaft. Hook on the power and hold a chisel against pulley the same as you would on a lathe. In this way you are sure the pulleys will be true. The wood makes an ideal pulley for the band and requires no covering. When I move this rig from one job to another and don't care to take the time to bolt it down, just lay a couple of boards from one bottom brace to another and lay a few stones or some other heavy material on the boards. This holds it very nicely."

Attractive, Strong and Indestructible

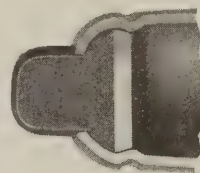


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GRIFFIN *Pressed Steel* DOOR STOP

The remarkable strength in these one piece, pressed steel Door Stops gives them unlimited endurance. Through long years of constant abuse and banging, the rubber bumper stays right in place.

Fastened with three round head screws that are wrapped and packed with each Door Stop.

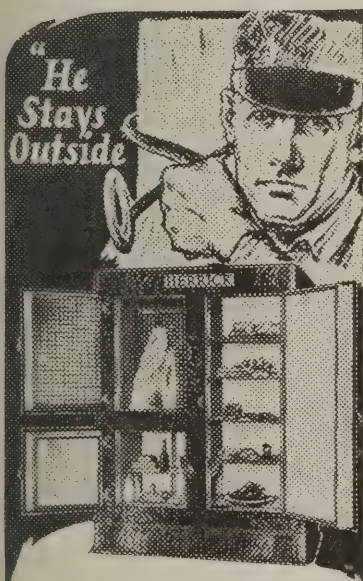


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To the men who build to sell—you can install no single feature that will appeal to the housewife more strongly than will a Herrick outside icing refrigerator. The mere fact that you have installed these refrigerators will give your prospects a feel-

ing of confidence that will make the sale easier and cheaper.

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For the Builders' Library



"The Building Estimator's Reference Book," by Frank R. Walker, has been revised and brought up to date in the fifth edition just from the press. The merits of the former editions are too well known for the book to require words of praise here. The new edition is said to be completely revised from cover to cover with all material prices and labor wage scales brought up to date. As in former editions, costs are itemized so that the estimator may substitute local prices and wages where necessary. The book contains more than 1600 pages, 4½ by 6½ inches with many illustrations and is flexibly bound. The Vest-Pocket Estimator, published in conjunction with the larger book, is 2¾x5 inches in size, has 97 pages, and is said to contain all of the information that the estimator needs for every-day use. The larger book is used for detailed estimating. The books are published by Frank R. Walker Company, Chicago, are priced at \$10 for the two and are not sold separately.

"House Painting: Glazing, Paper Hanging and Whitewashing," by Alvah Horton Sabin, M.S., D.Sc., is a book of instruction and advice written for the amateur. It deals with the elemental phases of the subject and avoids technical discussions, but enters quite fully into the practical details of painting and varnishing, including formulas for use in mixing paints. Both exterior and interior work are covered and there are chapters on floor-finishing, glazing, papering, whitewashing, kalsomining, etc. The purpose of the book is stated in the preface to be, "to tell simply and plainly the use of preservative coatings of one kind and another for the protection and ornament of common houses." 160 pages, 5x7¼, cloth, price \$1.50. Published by John Wiley & Sons, Inc., New York.

"Early American Ornamental Cornices," by Aymar Embury, II, is the title of number 2, volume 10, of the White Pine Series of Architectural Monographs. In this monograph, which is part one of a two-part dissertation on the subject of early cornices, the author points out that while the early American carpenter-architect did not have much actual knowledge of classic precedent, he nevertheless succeeded in imparting a degree of interest to his handiwork that is seldom met with in these days of machine moldings and measured drawings. His sound sense of proportion and fitness often led him to accomplish successfully that which another more scholarly hand might fumble. 16 pages, 8½ by 11, with 15 halftone reproductions. Prepared for publication by Rus-

sell F. Whitehead, 150 East Sixty-first Street, New York City.

"The Smaller House" is said to be the first book devoted to the smaller English house since the war. As the preface points out, the book is significant in that, by means of the examples illustrated, one may discern a subtle, sometimes radical, influence at work on the more recent houses. When post-war



Reduced illustration from "The Smaller House"

and pre-war houses in England are compared, one is impressed less by differences of form or character than by a certain clarity of thinking that seems to have developed in the houses of the nineteen-twenties. For instance, a closer relationship between kitchen and dining room seems to be becoming established. Trespassing on the main hall and thru important rooms to accommodate the service of meals is apparently not so readily accepted with the matter-of-fact complacency of pre-war days when servants were more common. In America, the use of the word "smaller" in the title would be considered somewhat misleading when applied to a book in which a number of the houses illustrated contain ten or more rooms. There are, however, some really "smaller" houses, including bungalows, that are very illuminating. A short essay on bungalows, written by Kenneth M. B. Cross, is interesting and informing. 191 pages, 9¾ by 12, almost all of which are illustrated. Published by the Architectural Press, 27-29 Tothill Street, Westminster, London, England. Cloth bound and priced at \$7.20, postpaid.

"Water Supply to Buildings," Vol. 240, 293 pages, 189 illustrations, \$2.50.

"Practical Heat and Ventilation," Vol. 241, 313 pages, 108 illustrations, \$2.50.

"History of Architecture and Ornament," Vol. 303, 651 pages, 377 illustrations, \$4.50.

"Concrete, Reinforced Concrete, Stone and Brick Construction," Vol. 315, 264 pages, 124 illustrations, \$2.50.

"Estimating Building Construction, Specification and Contract Writing," Vol. 346, 344 pages, 32 illustrations, \$2.50.

These are said to be among the latest additions to the volumes of the International Library of Technology which are made up of instruction papers comprising the various courses of instruction for the students of the International Correspondence Schools. The clarity and comprehensive scope of these books has given them a high degree of popularity among those who are actively concerned with the "how" of doing things. The books are 6x9 inches in size, bound in cloth, stamped in gold and completely indexed.

"Homes of Character," by Robert L. Stevenson, architect, is a plan book containing 100 of the author's designs for houses. Most of the designs are for six-room houses and many of them have actually been built, as is shown by halftone reproductions of photographs. The designs are considerably above the average of those commonly illustrated in plan books, many of them being prize winning houses from competitions. Each design is accompanied by a brief description; 120 pages, 8x11, with more than 300 illustrations, bound in boards; the price is \$1. Published by R. L. Stevenson, 101 Tremont Street, Boston.

"Contractors' Accounting Practice," by William M. Affelder, is a book intended to embrace all factors of construction accounting practice. The author is comptroller of the Thompson-Starrett Company and has had twenty years of experience in the construction industry. He should therefore know whereof he speaks. The book follows thru all phases of contractors' accounting practice from the inception of operations to the completion of the job. Itemized work sheets are shown and the systems are said to be adaptable to either large or small organizations. Attention is also given to the procedure for subcontractors, owners, and architects. Cloth binding, 386 pages, 5¾ by 8½. Price \$5. Published by The Ronald Press Company, New York.



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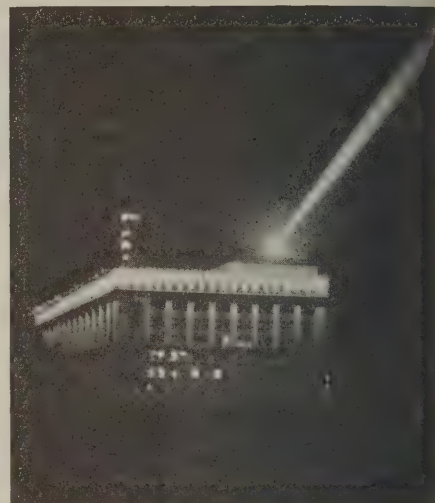


Photo by "P. & A."

Left: The greatest thrill of the recent aerial circus at the navy flying field at Lakehurst, New Jersey, was furnished by Lieutenant Alfred J. Williams when going at 100 miles an hour he shot his machine thru the open door of the giant hangar in which the Shenandoah is housed and emerged with the speed of a projectile from the other end, as the photo shows. He flew through the hangar at a height of about 50 feet. Right: Every night this giant searchlight on the Union Trust roof, Cleveland, throws its 300,000,000 candle power beam into the clouds. The beam rotates slowly, and on clear nights may be seen for 125 miles



© Underwood & Underwood

Photo by "P. & A."

Left: This photograph shows the new Union Station in Chicago beginning to take form. With the coming of good weather, work is going to be pushed to complete this sixty-five million dollar structure. Right: The first modern concrete structure in the East to be demolished, according to D. S. McBride, cement expert, is the recently erected Wilbur Chocolate building in Philadelphia, now being razed. Both the concrete and the job of demolishing it were found harder by the workers than had been expected

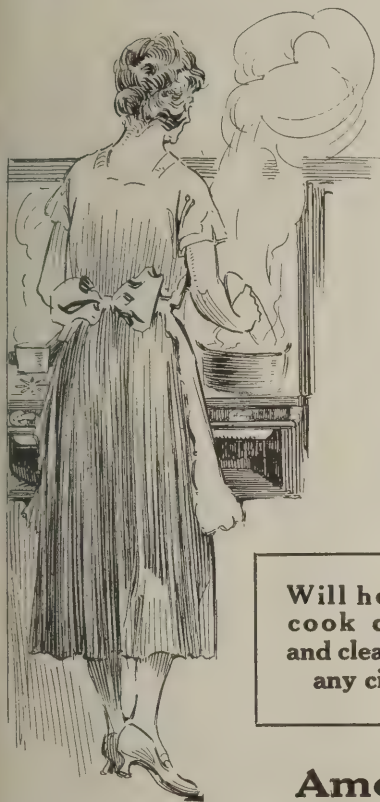


Photo by Gilliams Service

Photo by Gilliams Service

Left: This building, known as the Goetheanum, was erected at Dornach, Switzerland, by adherents of the new "Anthroposophical" philosophy, preached by Dr. Rudolph Steiner. Last year the Goetheanum was burned down by incendiaries and is being rebuilt in fire-proof concrete. The photograph at the right shows the striking wood carving being done inside one of the domes

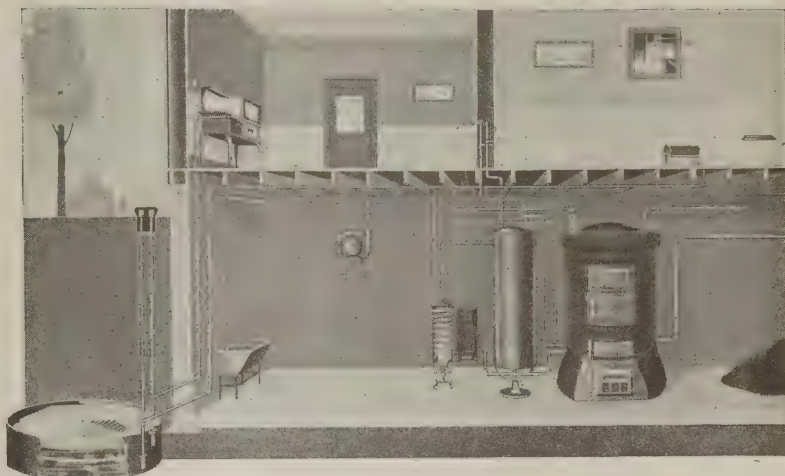
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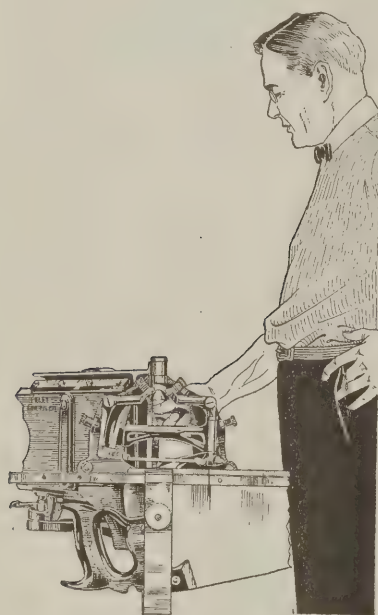
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FOLEY Hand Saw Filers, manufactured and guaranteed by The Foley Saw Tool Company of 3617 Portland Avenue, Minneapolis, in sharpening hand saws, automatically feed and file every other saw tooth, after which the saw is removed, reversed, and the operation repeated from the opposite side. This duplicates the principle of hand sharpening with the machine-like ac-



Foley hand saw filer

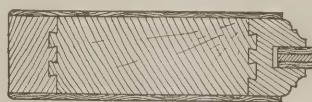
curacy and speed which is so essential, where quantity is combined with quality.

Foley machines automatically feed the saw teeth, one or more at a time, as is desired, and, by the use of a standard six or seven-inch slim or double extra slim taper file inserted in the file holder, will sharpen the average hand saw in less than five minutes, and the average band saw in less than ten minutes, it is claimed. Foley filers may be operated by either hand or power, and give a uniform alignment and evenness of shape and size to teeth difficult to obtain by hand. There is but one adjustment to accommodate the different widths in saws and to regulate the set on the saw. The set wheel may be reversed on its support, to give different alignment, so as to provide for hand, band, or meat saw setting. Set wheels are made to correspond with the number of saw teeth points to the inch, and are marked accordingly. Circulars describing this practical saw tool may be had upon request.

Fir Doors Stand Severe Tests

"LAMINEX" doors, made by The Wheeler-Osgood Company of Tacoma, Washington, are constructed of cross-sections of fir, so divided and reinforced, the manufacturers assert, as to check and equalize the natural expansion and contraction of wood from natural and artificial causes. Cement is used as a cohesive, and the finished doors dried under such tremendous pressure as to become virtually a solid mass.

The results of much research work by The Wheeler-Osgood Company, and of tests made on Laminex doors by the Forest Products Laboratories of the University of Washington School of Forestry, are contained in a pamphlet issued by the company, which will be furnished free to any inquirer. The tests, which were made on these doors, were designed to demonstrate their unusual solidity and their resistance to heat and moisture. In one test Laminex doors were baked for twenty-four hours at a high temperature, and yet careful weights and measurements, made before and after the test, showed that there was no perceptible effect upon veneers



Cross-section of "Laminex" door stile showing dovetailed core blocks

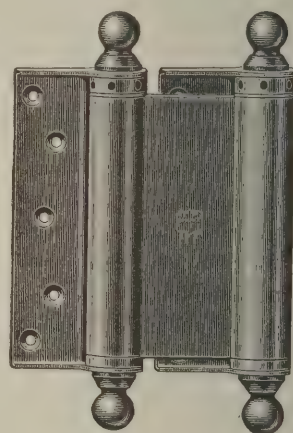
and joints, and that the total loss in moisture was not greater than one pound, thirteen ounces, and less, in the majority of cases.

A second test consisted of soaking Laminex doors in a vat of water, which was maintained at 65 degrees F. for a period of twenty-four hours. This water test showed no effect on the veneers and joints of the doors, and in no case was the increase in weight from moisture more than three pounds, two ounces, while the average was less.

While these tests give conclusive evidence of their resistance, Laminex doors have been subjected to even more stringent conditions, according to a letter received by the Wheeler-Osgood Company from one of their customers in Nashville, Tennessee. During a fire in the warehouse, where some of these doors were stored, they were subjected to both intense heat and great moisture from the streams of water played upon the fire. None of the Laminex doors afterward showed the slightest signs of giving way, blistering or buckling.

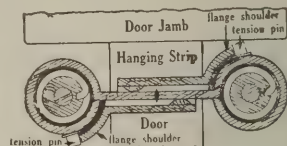
An Improved Hinge Spring

HINGES are to doors what steps are to houses—an elemental necessity, and conspicuous only by their absence. In the new Bommer Spring Hinge, an improved prod-



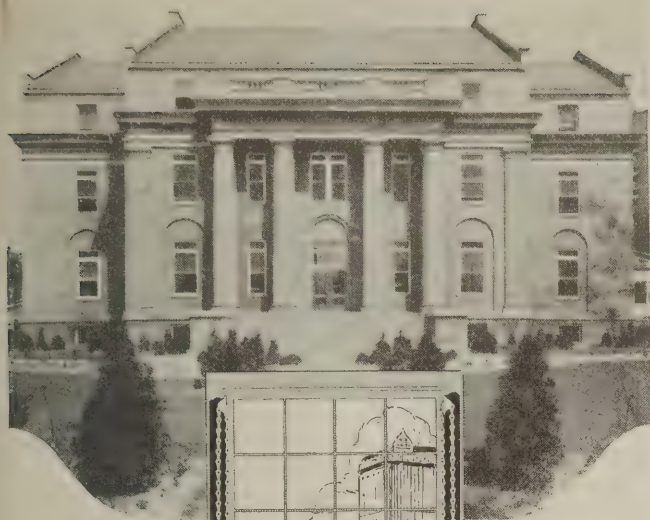
Bommer three-leaf type spring-butt hinge

uct of The Bommer Spring Hinge Company, 251 Classon Avenue, Brooklyn, New York, noticeable changes have been made in the three-leaf type spring-butt hinge. This is double-acting, with the barrel and connecting-plate integral and made of a thick, strong plate of metal, formed into a contour giving great surplus strength and preventing weakness. The web and barrel are heavier, and the barrel longer than formerly. The springs are of large diameter and unusual length, made of the best oil tempered steel wire to

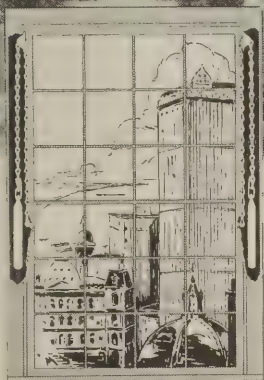


The barrels and their connecting plate are integral and made of strong metal

give great resilience and power and to keep the hinge from going lame. The flanges have raised edges which serve to indicate the depth of the mortise, and which have a door aligning mark on upper and lower edges. This is a time-saver for the carpenter, especially when double acting doors are hung, as with these hinges, it is said, the door can be opened all the way and fastened to the wall.



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Sectional View
showing installa-
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Fig. 1—Cottage type of house before remodeling



Fig. 2—Showing what an entrance porch, shutters, and a new chimney top can do



Fig. 3—Completely altered by a wing at the left and a sun parlor at the right

"Better Homes from Old Houses"

UNUSUAL, valuable and extremely practical is a book containing suggestions and diagrams for remodeling old houses, which has recently been published by The Barret Company, 40 Rector Street, New York, New York. In this book, whose purpose, according to the foreword, is to suggest alterations in old-style or uninteresting houses, six types of houses are shown; namely, the Cottage, the American Farm, the Bay Window, the Square Hipped Roof, the Mid-Victorian and the old Colonial Cottage. Each one of these types is taken through a series of five alterations, showing alterations which range from inexpensive changes in porches and dormers to complete remodelings, with corresponding ranges in price. Even the least expensive suggestion effects a remarkable change in the appearance of the house.

Three views of the cottage house are illustrated here, in order to demonstrate visually what may be accomplished by a builder in changing the emphasis of a house. Fig. 1 shows the general acceptance of the modified "L" construction of the cottage house, the starkness of its proportions unredeemed. Fig. 2 shows the change wrought by the simple addition of a porch, shutters and a new chimney pot. The estimated cost of these changes is about \$200. Fig. 3 shows the same house completely altered by the addition of a wing

at the left, giving a dining room and another bedroom and a sun parlor opening from the living room at the right. These alterations amount to about \$4500, exclusive of painting. An additional cost of \$1000 must be figured if it is desired to stucco the house.

The information contained in this book is not only a guide to better building but is a selling aid for both builder and dealer, who, by co-operating with The Barret Company in getting this book into the hands of the home owner, will not only increase his business but gain a name for himself, through his work, as a better builder. Books may be secured by writing The Barret Company at 40 Rector Street, New York.

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BEAVER Products Company, Incorporated, of Buffalo, who manufacture "Vulcanite" roofing, have added to the available data on roofs and roofing materials some interesting information, designs and suggestions, in their book "Style in Roofs." Architects and builders know that the relation of colored roofs to houses is a matter which must be approached carefully, and, for this reason, the houses shown in this book will be of interest.

The book itself, prepared in collaboration with prominent architects and exterior decorators, has, beside the carefully chosen designs, an interesting discussion of the relation of the roof to the house, or to the business and industrial build-

ing, and may be secured upon application to the Beaver Products Company, Inc., Dept. O-3, Buffalo, New York.

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A FREQUENT cause of irritation on construction jobs occurs from the inability of the different contractors on the job to identify, beyond question, ladders, scaffolding and other similar equipment which is used and brought to the job by practically all the different trades. And this fact has lead the Everhot Manufacturing Company, 621 South Tenth Avenue, Maywood, Illinois, to add a practical branding tool to their stock for distribution. This tool is in reality a portable outfit, with a large pre-heating chamber and generating cup, spring handle and special alloy steel tube connecting fuel tank with burner. These may be secured in different size tank capacities, and with soldering tips, electrician's cup, ladles and flame spreaders, for use as soldering irons in addition to their use in branding. It only takes from 5 to 7 minutes to heat the Everhot to the desired temperature, after which it will maintain this temperature until the fuel chamber needs refilling. For branding purposes it is possible to secure interchangeable number and lettering systems in three sizes with holders, or brands of any shape and size will be made to order. Further particulars can be obtained from the manufacturers.



Roofs of houses in different styles, which are reproduced in full colors in "Style in Roofs," published by the Beaver Products Company, Inc., Buffalo, New York, Dept. O-3



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It's our first elevator door installation and has been in continuous operation since 1906. Many larger installations have followed it; methods of construction have been materially developed and improved; but through it all we can point with pride to the first fruits of our toil because it possessed that element of distinction which is only achieved through an earnest desire to produce the best in a given piece of work. That is still our motive force and Dahlstrom Elevator Inclosures today possess that same element of distinction as in days gone by.

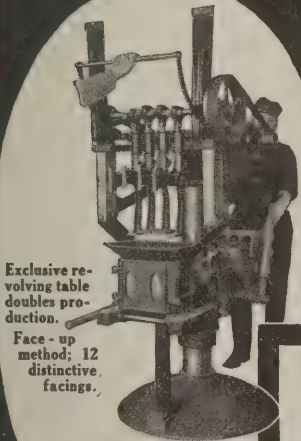
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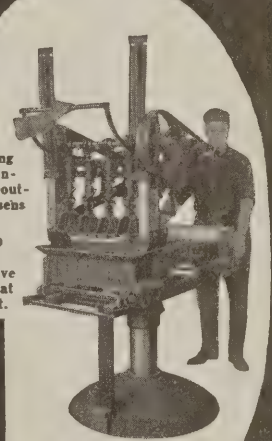
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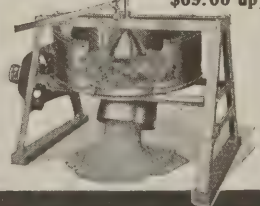



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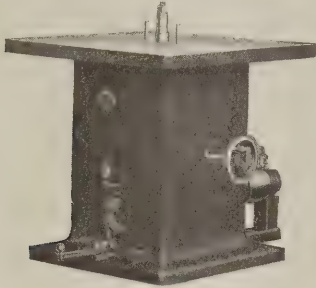

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A NEW self-contained, ball-bearing, reversible, single spindle shaper is being marketed by The Crescent Machine Company of Leetonia, Ohio. It is especially



Belt-driven shaper

adapted for work where extreme accuracy and durability are necessities, particularly in the higher classes of irregular molding operations and for continuous use in quantity production where uniform output and low cost of operation are important considerations.

This spindle shaper is solidly constructed, with the base cast in one piece, and a heavy cylinder serving as a housing for the cage which carries the spindle, making a rigid base casting and insuring a steady running machine at all times.

By means of a handwheel and bevel gears attached to a screw provided with end thrust bearings, the spindle may be raised seven inches above the top of the table or dropped entirely below it. A detachable spindle may be secured at little additional cost.

A heavy-ribbed cast iron table, planed perfectly true and securely bolted to the base, makes a quiet, steady running machine, free from vibration. There is a simple and convenient adjustment for taking up wear, and another for controlling the machine. An attractive and interesting folder concerning this new spindle shaper is issued by The Crescent Machine Company and may be secured upon request from them.

House Models Have Many Uses

MODEL houses, designed for the use of lumber dealers, particularly, and builders in general, for demonstrating the completed appearance of wooden houses, have been designed for quantity production and at reasonable prices by the



Cutout model for a one-family house

Architectural House Planning Service Company, 20 South 18th Street, Philadelphia. These models make unusual advertising novelties. They are constructed 1/8-inch to the foot, and are printed on a stiff grade of paper which forms a folder, with the various elevations on the inside, and the outside left blank. A test model is also enclosed in the folder, on which one may practise before attempting to construct the colored model. Full directions for putting together are included, while a box surrounds a blank space where the dealer may stamp his name.

If successful in establishing the use of the models for lumber houses among lumber dealers and contractors and builders in general, the service will be extended to include stucco, brick, etc. Full information may be secured by writing the Architectural House Planning Service Company.

Additions to Donley Line

DONLEY Brothers Company of Cleveland, Ohio, have added two specialties to the line of Donley Devices which are particularly interesting to the builder and architect. These are a 12-inch bar strainer of extra heavy type, for use in drainage inlets using sewer pipe, and a cast iron flue thimble, for insertion in chimneys where the stove or furnace pipe enters. The strainer described above was designed to meet a demand for a heavier strainer than the market afforded, and is made, according to Donley Brothers, as heavy as is justifiable for use with vitrified.

The flue thimble is made in two sizes, 6 and 7 inches, reckoned by the corresponding size of stove pipe. These thimbles were also produced to meet the demands of Donley customers. Further information may be gained by addressing Donley Brothers Company, Cleveland, Ohio.

Analysis of 7-S Type Concrete Mixers

A FIRM of consulting engineers were recently employed by The Leach Company of Oshkosh, Wisconsin, to make a survey of concrete mixers of the 7-S type, and to analyze present designs in relation to construction, service conditions and other salient points, from the buyers' angle. This was done in order that the Leach mixer might incorporate all possible advantages in its design. Some immensely interesting suggestions are contained in the report of these consulting engineers, which has been published by The Leach Company, and may be secured from them upon request.

It was found, for instance, that there was a great variation in the kind and position of the mixing blades or paddles.

The advantages and disadvantages of the different varieties are described. The size of the charging hopper and height of the frame are of equal consideration. In fact, each part is thoroughly discussed and the whole report is a constructive analysis of the 7-S type of mixer, of the utmost

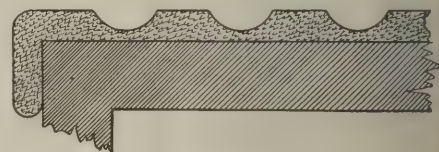


"Leach 7-S Type" concrete mixer

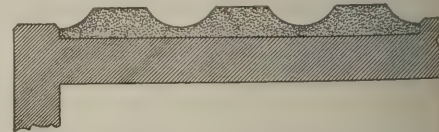
importance to users. It will be furnished free to inquirers by The Leach Company.

Long Wearing Rubber Stair Tread

WRIGHT Rubber Products Company, of Racine, Wisconsin, are manufacturers of a rubber stair tread, which is said to combine long wearing qualities with attractive appearance. The union of these two important factors in stair coverings, in a product which is also sanitary, non-slippery and noiseless, is important. This tread comes with smooth or corrugated surface, and is designed for all possible uses: in factories,



Wright rubber tile with corrugated surface cemented on metal stair

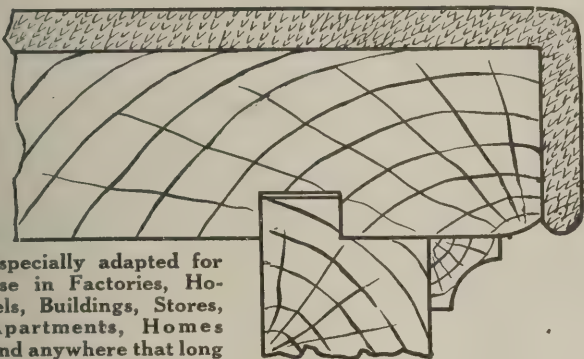


Rubber stair tread in strip for use with metal, terrazzo, or marble recesses

hotels, stores and office buildings, apartments, homes and hospitals—anywhere, in fact, where long wear and safety are desirable. One especially pertinent point, which is claimed for this tread, is that the services of an expert are not required to put it down, as the work can be done by any carpenter. The Wright rubber stair tread, it is understood, can be cemented and nailed to old stairs as well as to new.

Further information regarding colors, sizes, etc., may be secured by writing the manufacturers, Department N.B.-6.

WRIGHT RUBBER STAIR TREAD



Especially adapted for use in Factories, Hotels, Buildings, Stores, Apartments, Homes and anywhere that long wear and safety is desired.

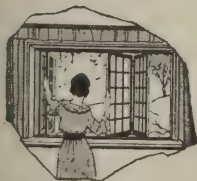
Wright Rubber Stair Tread is long wearing, non-slippery, sanitary, noiseless and attractive. May be had either smooth or corrugated surface to be used with or without brass nosing. Any carpenter can install it. Can be both cemented and nailed. Comes in 3 foot 6 inch and 18 inch lengths. Can be applied over old as well as new stairs.

Write for Illustrated Booklet

WRIGHT RUBBER PRODUCTS CO.
Dept. N.B. 7 Racine, Wisconsin



Chariton High School, Chariton, Iowa.
Wm. Gordon, Des Moines



HOFFMAN CASEMENTS

are particularly adapted to forced ventilation, for with our top and bottom fastenings we make a tighter joint in frames than any other window, thus giving you a perfectly weather tight job.

When sash are open slightly at center, but still remain in contact with side jambs, a flue is formed which draws out impure air at top, replacing with fresh air at bottom, with no direct draft.

Write for complete details and illustrated booklet.

ANDREW HOFFMAN MFG. CO.
906 Steger Building Chicago, Illinois

"Save Floor Space by Utilizing Wall Space"



Solving A Problem of A Room Without the Use of Floor Space Fain "FOLD-AWAY" Breakfast Room

Q The home or apartment of today demands a Breakfast Room. The Fain "FOLD-AWAY" unit solves this problem in a compact, neat form, allowing full freedom of floor space.

The Fain "FOLD-AWAY" Breakfast Room is shipped in its entirety, fully assembled and ready to install. It may be used in the wall or on its face. Folds up when not in use. Table 4'6"x2'6". Sturdily built, well reinforced, perfectly balanced—and low in price.

Due to the tremendous demand already created, thirty to sixty days shipping notice is requested.

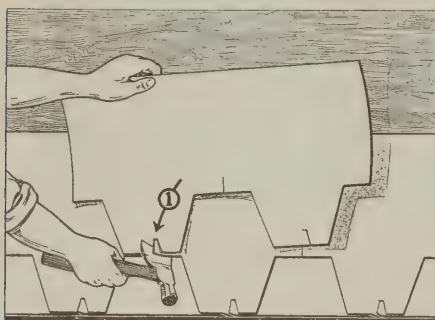
Write for Illustrated Folder, Price and Details

Fain Manufacturing Co.
313 National Bank of Commerce Building
NORFOLK, VIRGINIA

New Type of Strip Shingle

CYCLONE Strip Shingle, a new product of the Ford Roofing Products Company, 2341 South La Salle Street, Chicago, is, as its name indicates, so solidly constructed and attached as to be impervious to winds, and stormproof in general. Two thicknesses everywhere, with a 6-inch head lap and a 5-inch side lap, give great storm and weather resistance. Locked down at the butt, they cannot blow up to widen the weather drive or reduce the effectiveness of the weather back. Nor can they curl or cup, it is claimed.

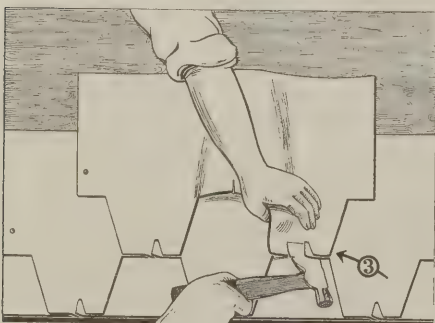
In addition, the manufacturers believe that they have the most economical and fastest laid shingle in the world. It is laid in five operations, three of which are illustrated. By using a lather's hatchet and following the five operations, it is said that one will obtain greater speed



Locking the strips together

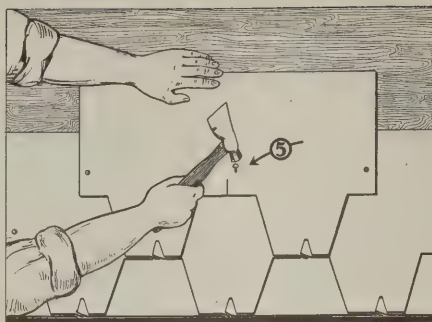
than ever believed possible. The first operation is shown in Fig. 1. The second operation consists of laying the shingle strip flat and nailing it with one nail at the left edge. The third operation is shown, and the fourth, which is not illustrated, consists of placing a nail at the right edge. The positions of the nails placed in the second and fourth operations are indicated in Fig. 5.

Efficiency and economy are not the



After the first nail is driven

only claims advanced for these new strip shingles. Offered in natural, non-fading red, green and blue-black, their simplicity of design add artistic excellence to the buildings they roof. All of which add



Showing the position of the nails

merit to any shingle in the eyes of the contractor and builder. A sense of security and permanence, however, comes to the householder who knows that his roof is not only architecturally good but solidly and permanently constructed. The words "blow the roof off" are not mere figures of speech in this country. The Ford Roofing Products Company will gladly send complete information about these shingles to any one interested.

Wider Use of Private Gas Plants

PPRIVATE Gas Plants are proven things in various parts of Ohio and Michigan, as well as in the surrounding states, but a wider territory will be appealed to in the future by the American Heating and Lighting Company of Morenci, Michigan, who for thirty years have manufactured and distributed the Clark Gas Plant.

Their machine is operated by a small $\frac{1}{8}$ h. p. motor and fan, consuming about as much electricity as an ordinary electric bulb. The fan forces the air out over the gasoline, which is buried in the ground outside the building, the vapor returning through the pipes connected to the heating and lighting equipment. The operation of this gas machine is as simple as can be. There are no valves, and once in ten years is sufficient for oiling.

The gas may be used in factories, laboratories, and homes, anywhere, in fact, that any kind of gas may be used. Radiant-fires, gas stoves, lights, laundry stoves, and water heaters are some of the equipment which is sold by the American Heating and Lighting Company for use with their gas. The only change necessary from the ordinary, is a special gas burner. The gas produced is said to be superior to city gas, and costs about half, and the installation of this machine requires no advance in insurance rates. Where electricity is not available there is a weight-driven blower, and these machines may be installed in houses with or without basements.

The American Heating and Lighting Company have printed an interesting booklet which shows many houses where

these machines have been used over long periods of time. It may be secured from them upon inquiry to Dept. N. B.

Improved Combination Woodworker

ANEW planer guide, manufactured by the Buffalo Forge Company, of Buffalo, New York, consists of a slide whereby the planer guide is moved forward and backward in a slot or groove, and is locked in position by means of one thumb screw. This saves time and makes for simplicity and accurate adjustment. This new woodworker has a positive drive of the pinion and gear pulley type, with the pulley pinion cast in one piece while the main shaft pinion is keyed to the shaft.

The following equipment is furnished with each machine: a $\frac{3}{8}$ -inch handsaw; 10-inch rip saw; $8 \times \frac{3}{4}$ -inch emery wheel; 6×3 -inch safety planer head; wrench for planer head; belt for rip saw and planer; bandsaw guide; emery wheel guard; guard for shaft; extension for drill.

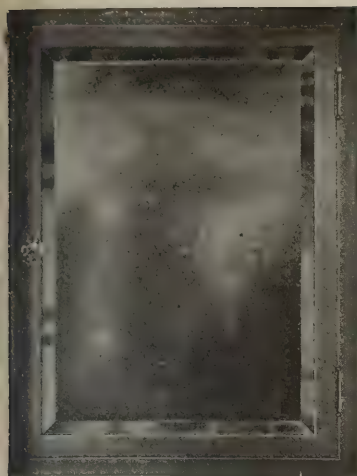
Other important features of this machine



Improved combination woodworker

consist of tight and loose pulleys and a handy belt shifter. The pulley for the jointer and the lower bandsaw wheel are connected to the drive shaft by means of jaw clutches. This means that different parts of the machine may be run independently of each other with resulting savings in power and wear on bearings.

The jointer is fastened on the same spindle as the saw. A screw and handwheel adjustment are used to make both sides of the jointer table adjustable. These tables are each 6 inches wide and 24 inches long, allowing for very accurate work. The drive shaft may be mounted to an electric motor or gas engine. The maximum power needed is about 1 to 2 h.p. for the bandsaw and up to 3 h.p. for the rip saw, depending on capacity and feed. The drive shaft should be run at about 700 r.p.m.



"STEEL MAID" MEDICINE AND BATHROOM CABINETS

These cabinets are made of cold rolled, stretcher leveled, full finished furniture sheet steel and are given a durable pure white enamel finish that will not change color, chip, crack, or peel.

"Steel Maid" cabinets are electrically welded, will stand heat or moisture better than cabinets made of wood. They remain free from dust, vermin and foreign odors, and cannot be excelled in either style, construction or finish.

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Alden, Erie Co., N. Y., U. S. A.



Every Home a Live Prospect

The average home owner may not know what the Penberthy Automatic Cellar Drainer is or does, but most of them have experienced the discomfort, inconvenience and expense of flooded basements and would be quite willing to exchange a few dollars for such a device that insures against the repetition of such an occurrence.

You make more money selling and installing a Penberthy Cellar Drainer than on a back water trap—and you give your customer something he can depend upon, absolutely.

Your jobber sells them

Penberthy Injector Co.

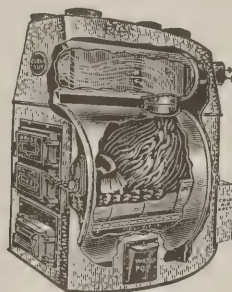
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1244 Holden Ave. Detroit, Mich.

Canadian Plant, Windsor, Ont.



Reg. U. S. Pat. Off.



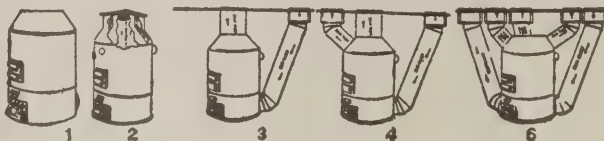
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THE DIAMOND
WEATHER WAY STRIPPING

A PERMANENT BUSINESS THE YEAR ROUND. DEMAND CREATED

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COLUMBUS, OHIO.

NATIONAL BUILDER'S Guide to Manufacturers' Catalogs

Literature supplied to Contractors, Architects and Builders for reference purposes

Illustrated and descriptive books and circulars giving complete information about all building materials, accessories and equipment advertised in NATIONAL BUILDER

Acoustics

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. Architectural Acoustics. Booklet, 6x9 in., 24 pp. Illustrated Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

Architectural Service

Architectural House Planning Service Co., 20 S. 18th St., Philadelphia, Pa. Publishers of "Small Homes of Character" (\$1.00 postpaid), containing 50 examples of 4-, 5-, 6- and 7-room houses.

Associations

Portland Cement Association, 111 W. Washington St., Chicago. A large number of publications are issued on the different uses of portland cement, under the following heads: Canals, conduits, sewers and drainage; farm uses; concrete products; roads, streets and alleys; structural concrete; technical data, tanks, etc., and miscellaneous subjects. "A Manual of Concrete Masonry Construction" is particularly recommended for the contractor and builder. It is a 32-page booklet, size 8½x11, and is sent free on request.

Band and Mitring Saws

The Tannewitz Works, 315 Front Ave., N. W., Grand Rapids, Mich. Special bulletins on variety saws, band saws, portable electric mitring machine and saw gauges will be furnished on request.

Block Machinery

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 35 sent on request.

Books on Building

Theo. Audel & Co., 72 Fifth Ave., New York City, N. Y. Audel's Masons and Builders Guide," 4 vols., \$6.

Frank R. Walker Co., 536-C Lake Shore Drive, Chicago. Publishers of The Building Estimator's Reference Book, containing information regarding estimating the cost of every phase of building construction (price \$10); and of a new book entitled "Practical Accounting and Cost Keeping for Contractors," treating of contractors' bookkeeping and accounting systems and how to keep time and labor costs on the job (price \$2.50 postpaid). Books sent on approval to contractors writing on their business letter-head.

Boilers

U. S. Radiator Corp., Detroit, Mich. Complete data sent on request.

Borders for Floors

Wood-Mosaic Co., Inc., New Albany, Ind. Catalog showing parquet and floors in natural colors sent free on request.

Brick

American Face Brick Association, 1763 Peoples Life Bldg., Chicago.

"The Story of Brick." Third edition. Booklet, 7x9¼ in., 55 pp. Illustrated. Presents the merits of face-brick from structural and artistic standpoints. Tables of comparative costs.

"The Home of Beauty." Fourth edition. Book, 8x10 in., 72 pp. Color plates. Presents 50 designs for small face-brick houses submitted in national competition by architects. Text by Aymar Embury II, architect. Price 50 cents.

"Bungalow and Small House Plans." Booklets 8½x11 in., 50 pp. Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3-, 4-, 5-, 6-, 7- and 8-room houses. Price 25 cents each, \$1 for the set.

"A Manual of Face-Brick Construction." Booklet, 8½x11. Text-book on construction of the brick wall and various uses of face brick. Thirty-one colored plates of brick houses with plans. Price \$1.

"Architectural Details in Brickwork." Series 1, 2, 3, 8½x11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others \$1.50.

"Orienting the House" is an illustrated booklet with a sun dial chart and explanation for placing the house with reference to light and shade. Sent for 10 cents.

"Two Apartment and Double House Plans in Face Brick" contains 14 very attractive designs of duplex and double houses showing 28 plans of five to six rooms each. Sent for 25 cents.

"The Home Fires," a beautiful 48-page booklet giving full instruction as to the best method of building fireplaces; shows 20 original fireplace designs, also 25 halftones of more elaborate designs by well-known architects, which will be helpful to the builder who wishes to plan his own fireplace. Sent for 25 cents.

Building—Steel Products For

Truscon Steel Co., Youngstown, O. Truscon Data Book. Catalog, 3½x6 in., 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

Concrete Engineering Co., Omaha, Neb. "Handbook of Fireproof Construction." "How to Use Ceco Lathing Materials" and "How to Save Concrete, Steel, Formwork and Labor by Using Meyer Steel Form Construction." These booklets, 8½x11 in., sent free on request.

International Steel & Iron Co., Evansville, Ind. Catalog on steel ceilings, catalog on store fronts and garages and circulars describing metal lath, coal chutes, fireplace dampers, etc., sent on request.

Calking Paste

Weatherproof Calking Co., 757 Washington Ave., N., Minneapolis, Minn. 24 pp. booklet describing their product sent on request.

Cellar Drainers

Penberthy Injector Co., 1260 Holden Ave., Detroit, Mich. 80 pp. catalog and 16 pp. miniature catalog on cellar drainers, automatic injectors, etc., etc. These catalogs are free and will be sent on request.

Cement—Portland

Atlas Portland Cement Co., 25 Broadway, New York City, N. Y. "Atlas White and What You Can Do With It," printed in English, Italian, Portuguese and Spanish; "Atlas Handbook on Concrete Construction," "Building a Bungalow," "Information for Home Builders," "Stucco Questions and Answers," "Atlas White Portland Cement for the Concrete Block and Brick Manufacturer" and other books sent free on request.

Louisville Cement Co., Inc., Speed Bldg., Louisville, Ky. "Brixment." Booklet, 7½x5 in., 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

Sandusky Cement Co., Dept. T, Cleveland, O. "Medusa White Cement Book" sent on request.

Clothes Closet Fixtures

Knap & Vogt Mfg. Co., Grand Rapids, Mich. Booklet, "Plans for Modern Clothes Closets," sent on request.

Concrete Products Equipment

Anchor Concrete Machinery Co., 534 Dublin Ave., Columbus, O. They offer free to concrete products men their interesting "Hand Book on Concrete Products." Included in the book are articles by such leaders of the concrete products industry as Harvey Whipple, secretary of the American Concrete Institute and editor of Concrete; and Wallace R. Harris, president of the National Concrete Products Association and editor of Concrete Products.

Concrete Block Mach. Co., 56 Columbia St., Newark, N. J. Literature sent on request.

Concrete Equipment Co., 530 Ottawa Ave., Holland, Mich., manufacturers of the "Utility" line of concrete machinery and molds for the manufacture of all kinds of concrete products. A descriptive catalog, which not only describes the equipment but also specifies weights, costs and selling prices of the products, is sent free upon request.

J. B. Foote Fdy. Co., 16 Front St., Fredericktown, O. New 40-page catalog on "Money Making Machinery."

Helm Brick Co., Cadillac, Mich. "Concrete for Beauty, Adaptability and Permanence." This is a combination handbook on the concrete products industry and catalog illustrating and describing the well known line of brick and block presses and various accessories for products plants.

Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, O. New loose leaf catalog No. 35, 80 pp., illustrating and describing their complete line of concrete machinery. Contains detailed information for the manufacture of molded concrete products. Sent free on request.

Derricks

Sasgen Derrick Co., 3101 W. Grand Ave., Chicago, Ill. Circular N2 with illustrations and descriptions sent on request.

Door Beds

Concealed Bed Corp., 430 Garland Bldg., Chicago, Ill. Literature and "Landing the Job" plan sent on request.

Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "How to Use the Murphy Bed" describes its construction, operation and sizes; "Behind the Door," showing installation in private homes and its application to this type of building; "Specifications and Details," giving complete information for the preparation of all types of Murphy beds sent free on request.

Doors

Wheeler, Osgood Co., Tacoma, Wash. Monograph on Laminex construction sent free on request; also Catalog No. 31 and booklets on Laminex doors.

Doors—Metallic

Dahlstrom Metallic Door Co., 411 Buffalo St., Jamestown, N. Y. "Metal Door and Trim Catalog" (Third Edition), 8½x11 in. Complete catalog of architectural shapes, styles and types of Dahlstrom standard construction doors.

Drawing Instruments

American Blue Print Paper Co., 445 Plymouth Court, Chicago, Ill. 32-page booklet. Catalog "B" describing their Simplex line sent free on request.

Drawing Materials

A. S. Aloe Co., 615 Olive St., St. Louis, Mo. New 132-page illustrated catalog of drawing materials, engineering supplies, tapes, etc.

Dumb Waiters

Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Dumbwaiters," 20 pp., 8½x11 in. Describes in detail 14 standard types of dumbwaiters. Mailed on request.

Sedgwick Machine Works, 150 W. 15th St., New York City. Catalog containing descriptions and construction details, 4¼x8¼ in., 70 pp., illustrated; sent on request.

Electrical Equipment

Frank Adam Electric Co., St. Louis, Mo. "Wiring the Home for Comfort and Convenience" with information and diagrams will be sent free. Also Catalog No. 32, 7¼x10½ in. on panelboards; Bulletin No. 29, type P safety type panelboards and cabinets, 12 pp., 7¼x10½ in.; Bulletin No. 30, 4x9 in., on fan hanger outlets and floor boxes, 16 pp.; Catalog No. 25 on knife switches and accessories, 32 pp., 7¼x10½ in., and Bulletin No. 27, new triumph residence safety type panelboards, 16 pp., 7¼x10½ in., containing complete wiring diagrams and specifications for average modern residences.

General Electric Co., Schenectady, N. Y. "Wires and Cables." Booklet, 8x10½ in., 85 pp. Illustrated. Four bulletins in a binder, describing wires and cables in general, conductor insulated with vulcanized rubber compound, varnished cambré and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.

Just off the press. The latest edition of our general catalog. Send for it.



There is a Kimball Elevator built for every requirement. Light dumb waiters or heavy elevators, lifting upwards of 30,000 pounds, high speed passenger elevators, hand-power and electric elevators of all sizes and types are built and installed by

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Are Sanitary, Durable, Fire-proof, Germ-proof. Made from sheets of specially prepared steel and stamped into ornamental designs. Send us a rough sketch of rooms showing all off-sets, etc., and we will prepare, without any charge, a drawing showing how the ceiling will look when erected, and forward same together with a lump price for material delivered f. o. b. your railroad station. Our large Catalog showing our complete line of Ceilings and Walls sent free on request.

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

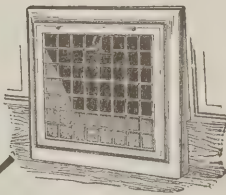
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Myers Water Systems are pumping the water supply for thousands and thousands of homes, farms, public and private institutions. Some are being pumped by hand, others are being operated by wind power, while many are connected up with a gasoline engine or an electric motor. Each one in its particular field is giving enduring satisfactory service, and its installation has brought profits and more business to the dealer who installed it. To find out more about them is but to drop us a line for catalog, information and trade prices.

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Manufacturers for over Fifty Years of MYERS HONOR-BILT PUMPS for Every Purpose
WATER SYSTEMS-HAY and GRAIN UNLOADING TOOLS - BARN FACTORY and GARAGE DOOR HANGERS - STORE LADDERS, ETC.



“They Sell Homes”
By Their
Economy and
Lasting Service



The Sign of Quality

NO STREAK Registers are GUARANTEED not to discolor walls, which assures economy of decorating for you and the Home Owner.

The initial cost is insignificant compared to the saving. For example, the usual life of the wall decoration is three years and the average cost \$18.00 per room, or \$6.00 per room per year.

The life of decorations, using NO STREAK Registers, is seven years and the cost per room per year, \$2.60, which is a saving of \$3.40 per room, or \$27.20 for an 8 room house each year.

Our guarantee to prevent discoloration assures you of this saving and will sell your homes.

Specify the Only No Streak register manufactured because the cost is no more than other registers.

Useful Booklet and Souvenir Mailed on Receipt of This Coupon

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Rock Island, Ill.

R. I. Register Co. You may send Free Book and complete information.
Name..... Town..... State..... N. B.

NATIONAL BUILDER'S Guide to Manufacturers' Catalogs

"Electric Fans." Folder, 6 pp., 3¼x6 in. Illustrated. Describes line of electric fans, giving catalog numbers, voltages and frequencies.

"Reliable Wiring Devices." Catalog, 3x4½ in., 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptacles, switches, rosettes, cutouts and fuses for miscellaneous devices.

"Lighting of Public Buildings." Bulletin, 6x9 in., 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

Elevators

Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Elevators," 24 pp., 8½x11 in. Contains helpful information for architects and contractors. Sent on request.

International Steel & Iron Co., Evansville, Ind. Elevator catalog sent on request.

Kimball Bros. Co., Council Bluffs, Ia. "Kimball Elevator," an illustrated catalog of hand power, sidewalk and garage elevators and dumbwaiters and electric passenger, freight and push button elevators, 36 pp., 8½x11 in. Sent free.

Richards-Wilcox Mfg. Co., Aurora, Ill. "Elevators." Booklet, 8½x11 in., 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 157 W. 15th St., New York. Catalog and descriptive pamphlets, 4¼x8½ in., 70 pp. Illustrated.

Fire Doors and Fire Door Hardware

Richards-Wilcox Co., Aurora, Ill. 60 pp. booklet, 8½x11 in.; flat track and round track types for sliding and swinging doors. Sent on request.

Fireproofing

The General Fireproofing Co., Youngstown, O. "Fireproofing Handbook," 64 pp., 8½x11 in. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-centering formless concrete construction.

Milwaukee Corrugating Co., Milwaukee, Wis. Brochure entitled "Metallic Construction for the Modern Home;" 16 pp. booklet with a non-technical story featuring fireproof construction for homes through the use of metal lath, etc.

Floor Surfacing Machinery

American Floor Surfacing Mach. Co., Toledo, O. "American Universal Contractor Broadside," "American Rapid Grinder Broadside," "American Handy Grinder Circular" and "American Base and Wall Polisher Catalog" each describing the particular machine mentioned sent free on request.

Wayvell Chappell & Co., Waukegan, Ill. Illustrated folder, 9x16 in. Electric Ballbearing Floor Surfacing (or Sanding) Machines. Made in four sizes. Ship on free trial. Describes in detail the construction, also lists all extras furnished with each machine. Also gives suggestions how to start in the floor surfacing business.

Illustrated folder, 8x8½ in. Electric Desk and Table Surfacing (or Sanding) Machines, with flexible shaft. Ship on free trial. Gives information about its construction and lists the extras furnished with each machine. Mentions the great variety of work the machine is adapted for.

Electric Rotary Mach. Co., 3825 W. Lake St., Chicago, Ill. Illustrated, 28 pp. booklet describing the process of sanding new and refinishing old wood floors, surfacing and polishing marble, terrazzo, etc.

Fox Supply Co., Brooklyn, Wis. Circular on scraping floors and proper method of sharpening floor scraping blades sent free on request.

National Sanding Mach. Co., 20 E. Jackson Blvd., Chicago. "The Lightning Electric Floor Surfer;" 16 pp. catalog sent on request.

M. L. Schlueter, 224 W. Illinois St., Chicago, Ill. Free trial offer and information sent on request.

Triple A Mach. Co., 4601 E. Ravenswood Ave., Chicago, Ill. Full information upon request.

Flooring

Everlastestos Flooring Co., Dept. N, 95 North St., Rochester, N. Y. Description of their product, opportunities in the business and method of estimating amount of materials and cost sent free.

Franklyn R. Muller, Inc., Waukegan, Ill. "Asbestone Flooring, the Floor You Like to Walk On;" 16 pp. booklet sent on request.

Fold Away Dining Rooms

Fain Manufacturing Co., 313 Bank of Commerce Bldg., Norfolk, Va. "Fain Fold-Away Dining Room," 8½x11, sent on request. Will also send blue prints of efficiency apartment layouts if requested.

Frames—Sash

Anderson Lumber Co., Dept. D-3, Bayport, Minn. Interesting booklet for contractors, architects and dealers sent free on request.

Furnaces

Bovey Furnace Works, Waterloo, Iowa. Catalog No. 29, 16 pp., sent on request.

Hess Warming and Ventilating Co., 1208-R S. Western Ave., Chicago, Ill. "Modern Furnace Heating," a book on heating problems and details of the Hess free plan service are sent on request.

Garage Door Hardware

Richards-Wilcox Mfg. Co., Aurora, Ill. 65 pp. catalog, 8½x11 in., completely describes all styles of garage door equipment. Sent free on request.

Gas Producers

American Heating & Lighting Co., Morenci, Mich. Information and literature sent on request.

Gas Ranges

American Stove Co., St. Louis, Mo. Quick Meal Stove Co. Division, St. Louis, Mo. George M. Clark & Co. Division, Chicago, Ill. Direct Action Stove Co. Division, Lorain, O. New Process Stove Co. Division, Cleveland, O. Reliable Stove Co., Division, Cleveland, O. Dangler Stove Co. Division, Cleveland, O. Handbook on gas ranges for architect and builders. 9x12 in., 32 pp. Illustrated and specifications of 95 different types of gas ranges equipped with the famous Lorain Oven Heat Regulator. Also the American Gas Association's instructions and specifications for the installation of gas in the modern building. Contains considerable information of value to architects and builders regarding equipment of the modern kitchen. Also detailed drawings and description of the Lorain Oven Heat Regulator, a thermostatic device that registers and automatically controls the heat of the oven, thereby precluding any chance of baking failure.

Hardware

H. E. Holbrook Co., 444 Mass. Trust Bldg., Boston, Mass. Illustrated folder sent on request.

Nicholas Hardware Co., 123 Marion St., Oak Park, Ill. Catalog No. 10 showing complete line of builders hardware sent on request.

Richards-Wilcox Mfg. Co., Aurora, Ill. "Modern Hardware for Your Home." 34 pp. catalog, 8½x11 in., sent free to interested parties.

Sargent & Co., 52 Water St., New Haven, Conn.

"Details to Which Standard Hardware Can be Applied." Booklet, 6 pp., 9x12 in. Illustrated. Treats with diagrams, portions of doors and windows to which hardware can be applied. Plane and Square Booklets.

Heating Specialties

Andrews Heating Co., 1585 Heating Bldg., Minneapolis. The "Heating Book" catalog contains full information and is sent on request.

Minneapolis Heat Regulator Co., 405 E. 28th St., Minneapolis, Minn. Booklets "Convenience of Comfort," "Dual Control," "Steam Control" and "Gas Fired Heating Plants" sent free on request.

Rock Island Register Co., Rock Island, Ill. "Registering Satisfaction," 16 pp. booklet, sent on request.

Hoists

C. H. & E. Mfg. Co., Milwaukee, Wis. Complete catalog showing saw rigs, hoists, pumps, elevators and mortar mixers sent on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. Catalog illustrating and describing different types of hoists together with complete specifications.

House Moving Equipment

La Plant-Choate Mfg. Co., 3114 First Ave., Cedar Rapids, Iowa. Special house moving magazine, "Successful House Moving Contractor," sent free on request.

Hydrated Lime

Wm. L. Urschel Lime & Stone Co., Toledo, O. Literature regarding their products will be sent free on request.

Insulation

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, O. "Specifications and Working Details," Booklet, 7¼x10½ in. Illustrated. Contains plainly written instructions for the use of stucco, stucco base, plaster base and insulation base.

The Celotex Co., 645 N. Michigan Ave., Chicago, Ill. Literature and information sent on request.

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. "Johns-Manville Service to Power Users." Catalog, 8½x11 in., 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data. "Making Comfort an Economy," describing Johns-Manville Housline.

E. J. Wirfs, 106 S. 17th St., St. Louis, Mo. Booklet, "Strip of One Hundred Uses," sent free on request.

Ironing Boards

Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "Murphy Ironing Boards," describing the built-in cabinet ironing board and dimensions of space required.

National Mill & Lumber Co., U. S. Express Bldg., N. Y. City. Literature sent on request.

Iron, Wire and Bronze Work

The Fred J. Meyers Mfg. Co., Hamilton, O. Catalog No. 67 describing their products will be sent free on request.

Lath, Metal and Reinforcing

The General Fireproofing Co., Youngstown, O. "Herringbone Metal Lath Handbook," 8½x11 in., 32 pp. Illustrated. Standard specifications for cement stucco on Herringbone rigid metal lath and interior plastering.

Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book.

Levels

A. S. Aloe Co., 615 Olive St., St. Louis, Mo. "Be a Bigger Builder" free on request.

The L. Beckmann Co., 100 Adams St., Toledo, O. Complete catalog of engineering instruments sent on request.

Warren - Knight Co., 136 N. 12th St., Philadelphia, Pa. Illustrated catalogs and pamphlets, descriptions and specifications about "Sterling" transits and levels sent on request; also pocket note book containing full instructions and illustrations for modern practice in leveling sent free on request.

David White Co., Inc., 902 Chestnut St., Milwaukee, Wis. Catalog and descriptive folders sent free on request.

Wissler Instrument Co., 601 N. Broadway, St. Louis, Mo. 32 pp. booklet describing their convertible level sent on request.

Lime Products

The Woodville Lime Products Co., 622 Madison Ave., Toledo, O. Eight page booklet, "The Superior Putty Coat Finish," contains information for the contractor on hydrated lime for white or finish coat plaster and directions for use. Also literature on lime for all building uses.

Lumber

Long-Bell Lumber Co., Kansas City, Mo. "Experiences in Home Building," "Saving Home Construction Costs," "The Perfect Floor," "The Post Everlasting" and "Poles That Resist Decay" sent free on request.

Medicine Cabinets

Bennett Mfg. Co., Alden, N. Y. Free folder sent on request.

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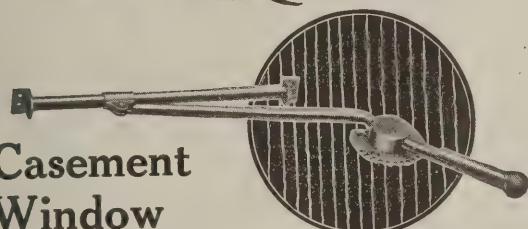
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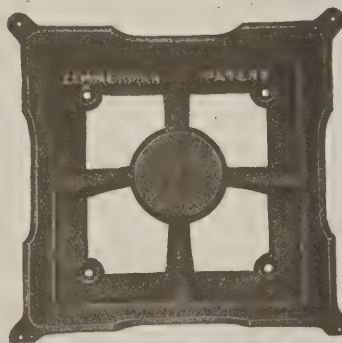
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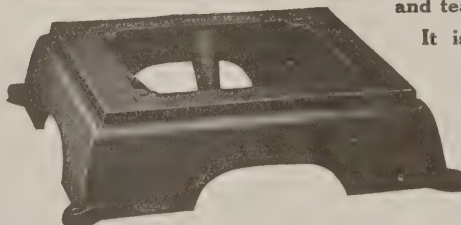
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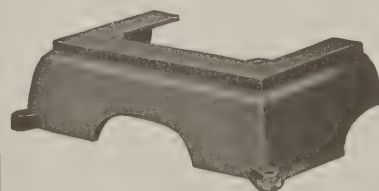
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Hess Warming & Ventilating Co., 1207 S. Western Ave., Chicago, Ill. 20 pp. booklet describing their line of Snow-White Steel Cabinets and Mirrors will be sent on request.

Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "Murphy Steel Medicine Cabinet" describing its construction and detail of space required.

White Steel Sanitary Furniture Co., Dept. 23, Grand Rapids, Mich. Full particulars sent on request.

Metal Ceilings

Edwards Mfg. Co., 430 Eggleston Ave., Cincinnati, O. Large catalog showing complete line of ceilings and side walls sent on request.

W. C. Hopson Co., Grand Rapids, Mich., 64 pp. Illustrated catalog No. 22. "Interior Decoration" sent on request.

Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book, sent free on request.

Millwork

Curtis Companies Service Bureau, Clinton, Iowa. "Architectural Interior and Exterior Woodwork, Standardized," Book, 9x11½ in., 240 pp. Illustrated. This is an architects' edition of the complete catalog of "Curtis Woodwork" as designed by Trowbridge & Ackerman. Contains many color plates.

"Better Built Homes," Vols. XV-XVIII incl. Booklet, 9x12 in., 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects for the Curtis Companies.

"Curtis Details," 20 sheets, 17½x22 in. Illustrated. Complete details of all items of Curtis woodwork for the use of architects. All literature distributed on recommendation of Curtis dealers.

Mixers

A. S. Aloe Co., 615 Olive St., St. Louis, Mo. "The Concrete Road to Success" sent free.

American Cement Machine Co., Keokuk, Iowa. Description and literature sent free on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. 48-page catalog describing features and also showing illustrations and specifications of various size mixers; also illustrations of mixers in operation.

Helm Brick Co., Cadillac, Mich. Helm Concrete Mixer catalog sent free on request.

Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, O. New loose leaf catalog No. 35, 80 pp., illustrating and describing their complete line of concrete machinery. Contains detailed information for the manufacturer of molded concrete products. Sent free on request.

The Jaeger Mach. Co., 250 Dublin Ave., Columbus, O. Complete catalog free on request.

Koehring Co., Milwaukee, Wis. "Concrete, Its Manufacture and Use," 207 pp. book, 4¾x7¼ in. This is a complete treatise on the use of concrete, including over 39 pages of valuable tables relating to quantities of material required for various construction work. Also 24 pp. "Dandie Light Mixer Catalog," and 4 pp., 6½x3½ in. folder on their various equipment.

Raber & Lang Mfg. Co., 829 Mill St., Kendallville, Ind. Circular No. 42 on the Bull Dog Tilter Concrete Mixers sent on request.

Rommel Mfg. Co., Kewaskum, Wis. 4 pp. circular describing their products sent on request.

Mortisers

Colgan Machinery & Supply Co., 102 Hayden Bldg., Columbus, O. Folder describing their products sent on request.

Nails

The F. A. Neider Co., Inc., Augusta, Ky. Samples and literature sent on request.

Ornamental Metal Work

Fred J. Meyers Mfg. Co., Hamilton, O. Their catalog No. 67 describes their products in detail.

Ornamental Molds

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 30 sent on request.

Paints

The New Jersey Zinc Co., 160 Front St., New York City, N. Y. "Painting Specifications" covering old and new work; exterior and interior work; plaster and cement surfaces; cement and concrete floors. "Mapaz Handbook" booklet containing various paint mixing formulas, also full information on Mapaz, sent on request.

Partitions

Richards-Wilcox Mfg. Co., Aurora, Ill. "Partitions," Booklet, 7x10 in., 32 pp., Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

Planing Mill Equipment

Markwell Mfg. Co., Inc., 178 Franklin St., New York City. Catalog sent on request.

Plumbing

Hardin-Lavin Co., 4531-41 Cottage Grove Ave., Chicago. The "Handy Man Book" contains time and money-saving ideas, plans, practical kinks, etc., and is sent for 25 cents.

B. Karol & Sons Co., 808 S. Kedzie Ave., Chicago, Ill. Catalog free on request.

Porch Bases

S. Cheney & Son, Manlius, N. Y. Illustrated catalog showing utility, sizes and prices sent on request.

Pumps

C. H. & E. Mfg. Co., Milwaukee, Wis. Complete catalog showing pumps, saw rigs, hoists, elevators and mortar mixers sent on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. Catalog describing 3 and 4-in. trench pumps also contains detailed views of construction.

Duro Pumps & Mfg. Co., 103 Monument Ave., Dayton, O. Booklets, "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener," sent free on request.

F. E. Meyers & Bro. Co., Ashland, O. Catalog on request.

Refrigerators

Herrick Refrigerator Co., 102 River St., Waterloo, Iowa. Catalog sent on request.

Reinforced Concrete

The General Fireproofing Co., Youngstown, O. "Self-Sentering Handbook," 8½x11 in., 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforced material.

Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book sent free on request.

Truscon Steel Co., Youngstown, O. "Shearing Stresses in Reinforced Concrete Beams," Booklet, 8½x11 in., 12 pp.

Roofing

Asbestos Shingle Slate & Sheathing Co., Dept. B, Ambler, Pa. Service sheets 15x20 in. showing application of Ambler asbestos corrugated roofing and sheathing to wooden-frame and steel-frame buildings. Back of this sheet gives specifications and valuable tables. Sent free.

Beckman-Dawson Roofing Co., 830 F. C. Austin Bldg., Chicago, Ill. Literature and samples sent on request.

Certain-teed Products Co., 1 Pershing Sq., New York City. Literature and information sent on request.

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. "Johns-Manville Building Materials," Book, 8½x11 in., 100 pp. Illustrated. A comprehensive catalog of various types of roofing for all forms of construction. Details of wall, floor and ceiling insulation; asbestos wood for fireproof construction, waterproofing, etc.

"Johns-Manville Asbestos Shingles," Booklet, 8½x11 in., 24 pp. Illustrated. This booklet is profusely illustrated in colors, showing some very artistic blends of asbestos shingles with various types of architecture. Contains many valuable suggestions for the architect.

New Jersey Zinc Co., 160 Front St., New York City, N. Y. "Standing Seam Horse Head Zincing" booklet outlining the adaptability of this roofing for many types of building. Sketches showing how roofing is applied sent on request.

H. M. Reynolds Shingle Co., Grand Rapids, Mich. Literature describing their products sent on request.

The Richardson Co., Lockland, O. Booklet "Roofs of Distinction" sent free.

Vendor Slate Co., Easton, Pa. Catalog on various colored slate for roofing and garden walks sent on request to anyone interested.

Weatherbest Stained Shingle Co., Inc., 145 N. Main St., North Tonawanda, N. Y.

"The Construction of Weatherbest Thatch Roofs," Booklet, 8x11 in., 16 pp. Illustrated. A well written, carefully prepared book giving in detail the proper construction for securing the Thatch Effect roof by the use of WEATHERBEST Stained Shingles. Contains full-page reproductions of WEATHERBEST homes and drawings showing detail of roof construction.

Various Pamphlets. Illustrated. Each pamphlet exemplifies some specific quality of WEATHERBEST Stained Shingles used for roofs and side-walls.

Roofing—Metal

Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book, sent free on request.

Sash Chain

Chain Products Co., Cleveland, O. Architect's Specification File, A. I. A., Classification 27-A1, gives data on sash installations. Sent on request.

Sash Cord

Samson Cordage Works, Boston, Mass. "Catalog," 3½x6¼ in., 24 pp. Illustrated. Covers complete line of rope and cord.

Saws

Huthers Bros. Saw Mfg. Co., Rochester, N. Y. Complete information and prices sent on request.

Saw Filer

Foley Saw Tool Co., 3617 Portland Ave., Minneapolis, Minn. Prices and folder sent on request.

Saw Rings

C. H. & E. Mfg. Co., Milwaukee, Wis. Complete catalog showing five sizes of saw rigs, hoists, pumps, mortar mixers and elevators sent on request.

Scaffold Brackets

Elite Mfg. Co., Ashland, O. Literature sent on request.

The Steel Scaffolding Co., Evansville, Ind. Data on "Trouble-Savers" sent on request.

Scaffolds—Steel

The Steel Scaffolding Co., Evansville, Ind. Catalog and descriptive bulletins illustrating uses of scaffold brackets, adjustable trestles, roof brackets, mason and stuccoer's scaffolds, ladder jacks, etc.

Schools—Correspondence

Chicago Technical College, 237 Chicago Tech. Bldg., Chicago. Two books. "How to Read Blue Prints," containing a trial lesson in plan reading for builders, are sent free on request.

Screening

Gilbert & Bennett Mfg. Co., Dept. B, 1st Natl. Bank Bldg., Chicago, Ill. Booklet with samples and blue prints on porch plan sent free on request.

Screen Factory Equipment

Markwell Mfg. Co., 178 Franklin St., New York City, N. Y. Complete catalog illustrating modern equipment mailed on request.

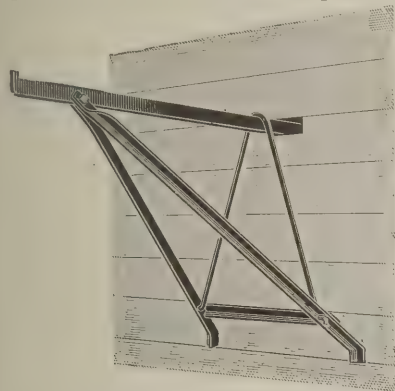
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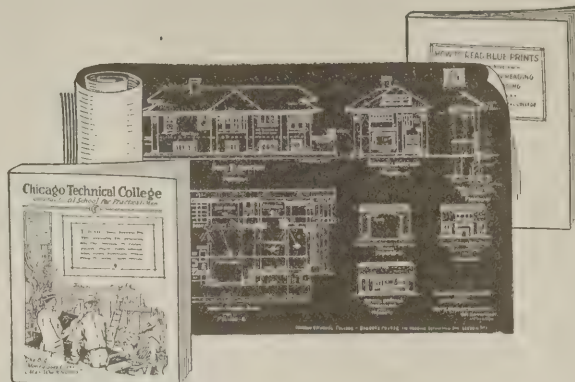
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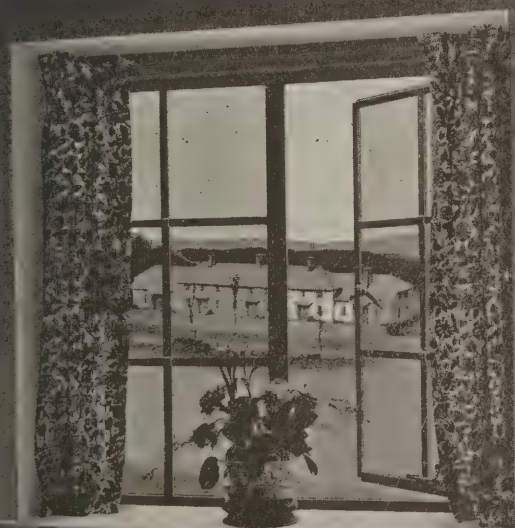
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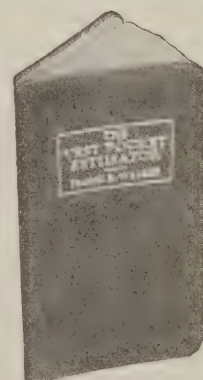
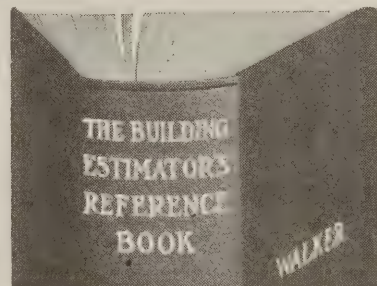
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NATIONAL BUILDER'S Guide to Manufacturers' Catalogs

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Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, O. "For All Time and Clime." Booklet, 6x9 in., 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

The Celotex Co., 645 N. Michigan Ave., Chicago, Ill. Literature and information sent on request.

Sheathing Paper

Brown Co., Portland, Me. Booklets covering their various papers sent on request.

Sheet Metal Products

Milwaukee Corrugating Co., Milwaukee, Wis. General Catalog No. 15, 272 pp. book, of interest to building supply dealers, hardware dealers, sheet metal workers, contractors, architects and engineers.

Shingles

Beaver Products Co., Buffalo, N. Y. Two books, "Style in Roofs" and "How to Re-roof," sent free on request.

Ford Roofing Products Co., 2341 S. LaSalle St., Chicago, Ill. Information sent free on request.

H. M. Reynolds Shingle Co., Grand Rapids, Mich. Literature on their shingles sent free on request.

Weatherbest Stained Shingle Co., N. Tonawanda, N. Y. Literature sent on request.

Shingles—Galvanized

Cortright Metal Roofing Co., Philadelphia, Pa. Booklet "Concerning That Roof" sent free on request.

Spouting

New Jersey Zinc Co., 160 Front St., New York City, N. Y. "Once in a Lifetime," booklet describing the lasting qualities of conductors and gutters made from Horse Head zinc.

Stair Treads

Wright Rubber Products Co., Racine, Wis. Illustrated booklet sent on request.

Steel Construction

International Steel and Iron Co., Dept. 21, Evansville, Ind. "Garage Illustrations" showing 50 modern buildings sent on request.

Steel Stamps

The R. D. Swisher Mfg. Co., 411 S. Clinton St., Chicago, Ill. Folder B-3 sent free on request.

Store Fronts

Detroit Show Case Co., 1655 Front St., Detroit, Mich. "Full Size Details," 5 pp. folder, 8½x11 in., containing full size details of sill covers, transom bar covers, head and side jamb covers, ventilated sash, kalamein mouldings, corner bars and division bars, bulkhead constructions, brass thresholds, kickplates, copper paneling—all in various sizes and shapes.

Booklet, entitled "Store Fronts," 8½x11 in., 24 pp., explaining fully the store front question in terms the contractor will understand.

Booklet, entitled "A Few Suggestions for Your New Store Front," 16 pp., 8½x11 in., for the contractor and merchant showing various designs and ideas for both new fronts and the remodeling of old fronts. All sent free on request.

Stoves

American Stove Co., 228 Chouteau Ave., St. Louis, Mo. Catalogs and data on special Lorain equipment for schools sent on request.

Stucco

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, O. A booklet, "For All Time and Clime," contains working details and specifications and is sent free.

Franklyn R. Muller, Inc., Waukegan, Ill. Illustrated booklets describing their magnesite stucco sent free on request.

Stucco Bases

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, O. "Specifications and Working Details." Booklet, 7¾x10½ in. Illustrated. Contains plainly written instructions for the use of stucco, stucco base, plaster base and insulation base.

Stucco—Exterior

Rocbond Co., Harrisburg, Pa. "Homey Homes" sent on request.

Stucco—Magnesite

Muller & Co., Franklyn R., 250 Madison St., Waukegan, Ill. "Everlastic Magnesite Stucco." Booklet 8½x11 in.

Surveying Instruments

American Blue Print Paper Co., 445 Plymouth Court, Chicago, Ill. 32 pp. booklet Catalog "B" describing their Simplex line sent free on request.

Tiles and Mosaics

Charles F. Lorenzen & Co., 521-523 W. Monroe St., Chicago, Ill. Their catalog No. 200 shows many designs and contains complete descriptions. It is sent free on request. A folder on andirons, grates and fireplace furnishings is also available.

Tool Branding Equipment

Everhot Mfg. Co., 621 S. 10th Ave., Maywood, Ill. Descriptive circular sent on request.

Tools—Mechanics

The James Swan Co., Seymour, Conn. Literature sent on request.

Transits

Kolesch & Co., 138 Fulton St., New York City, N. Y. Literature and full particulars regarding their product sent on request.

Warren-Knight Co., 136 N. 12th St., Philadelphia, Pa. Catalogs and pamphlets about "Sterling" transits and levels sent on request.

Varnishes

S. C. Johnson & Son, Racine, Wis. "The Proper Treatment for Floors, Woodwork and Furniture." price 25 cents; also book on wood finishing sent free.

Wallboard

Asbestos Shingle Slate & Sheathing Co., Dept. B. Ambler, Pa. Complete data on Linabestos wallboard sent on request.

Cornell Wood Products Co., 190 N. State St., Chicago, Ill. "Cornell Interiors." 24 pp. Illustrated booklets; also small pamphlet, "165 Uses for Cornell Wood Board," sent on request.

The Upson Co., Lockport, N. Y. "Interiors Beautiful" and "The Snow White Lining." These booklets sent free on request.

Water Softeners

Duro Pump & Mfg. Co., 103 Monument Ave., Dayton, O. Booklets, "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener," sent free on request.

Water Systems

Duro Pump & Mfg. Co., 103 Monument Ave., Dayton, O. Booklets "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener" sent free on request.

Waterproofing

The General Fireproofing Co., Youngstown, O. "Waterproofing Series A-507-9." Booklet, 8½x11 in., 42 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete.

Window Hardware—Casement

Casement Hardware Co., Chicago, Ill.

Casement Hardware. Catalog, 8½x11 in., 12 pp. Illustrations, specifications, detail drawings and table of sizes, etc., for all types of Win-Dor casement operators.

Booklet, 5½x8½ in., 24 pp. Illustrated. The story of casement windows and Win-Dor controls written particularly for the owner. Free to readers of National Builder.

Architectural Drawings. Set of six scale drawings showing construction of wood casements for general types of construction in use, including detail for screen, Venetian blinds. Three-inch scale, set of six, 25 cents. Full size, 25 cents each.

Weatherstrip

Concrete Eng. Co., 1926 S. 52nd Ave., Chicago, Ill. Literature sent on request.

Diamond Metal Weatherstrip Co., 620 Kerr St., Columbus, O. Full information and literature on request.

Hoffman Mfg. Co., Andrew, 906 Steger Bldg., Chicago, Ill. "Hoffman Casement Fixtures." Architect's Portfolio, 8½x11 in., 30 pp., Looseleaf. Scale details for mill-work, installation, etc., in new and old work.

E. J. Wirfs, 106 S. 17th St., St. Louis, Mo. Booklet "The Home Comfort Weatherstrip" sent free on request.

Windows—Casement

Hoffman Mfg. Co., Andrew, 906 Steger Bldg., Chicago, Ill. "Hoffman Casements." Architect's Portfolio, 8½x11 in., 30 pp. Looseleaf. Scale details for mill-work, installation, etc., in new and old work.

Hope & Sons, Henry, 103 Park Ave., New York. "Catalog," 12¼x18½ in., 30 pp. Illustrated. Full size details of outward and inward opening casements.

Windows—Steel and Bronze

Truscon Steel Co., Youngstown, O. "Truscon Steel Windows." Catalog, 8½x11 in., 80 pp. Illustrated. Contains complete data on all types of Truscon Steel Windows.

Woodwork

Curtis Companies' Service Bureau, Clinton, Ia. A series of five booklets, describing the principal items of the Curtis line, are sent free to those interested. These booklets are "Permanent Furniture," "Interior Doors and Trim," "Entrances and Exterior Doors," "Stair and Stair Parts" and "Windows" and the general catalog "Architectural Interior and Exterior Woodwork Standardized."

Woodworking Machinery

American Saw Mill Machinery Co., 61 Main St., Hackettstown, N. J. Bulletin No. 79 gives details about their line.

W. F. & John Barnes Co., Rockford, Ill. Catalog and Bulletin 30-W sent free on request.

Gallmeyer & Livingston Co., Grand Rapids, Mich. Literature regarding their various machines sent free on request.

Master Woodworker Mfg. Co., 612 Brush St., Detroit, Mich. Catalog on request.

Parks Ball Bearing Mach. Co., Knowlton and Langland Sts., Cincinnati, O. Complete catalog of woodworking machines sent on request.

Richards & Co., Inc., Battery Wharf, Boston, Mass. "Cut Out a Nine-Room House in Nine Hours"; "Don't Let the Dollars Slip Through Your Fingers"; tells how every straight cut in the carpenter's trade can be made by one portable machine and the work of five carpenters done by one man and a helper.

Sidney Machine Tool Co., Dept. 703, Sidney, O. New bulletin sent free on request.

Crescent Machine Co., Leetonia, O. Catalog and various circulars illustrating and describing their different machines sent on request.

NATIONAL BUILDER

August 1924



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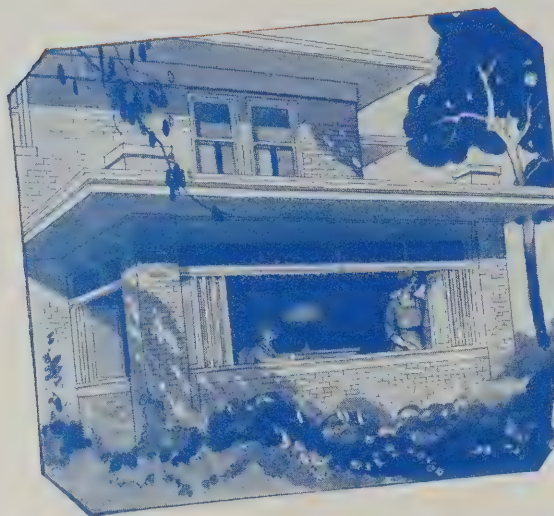
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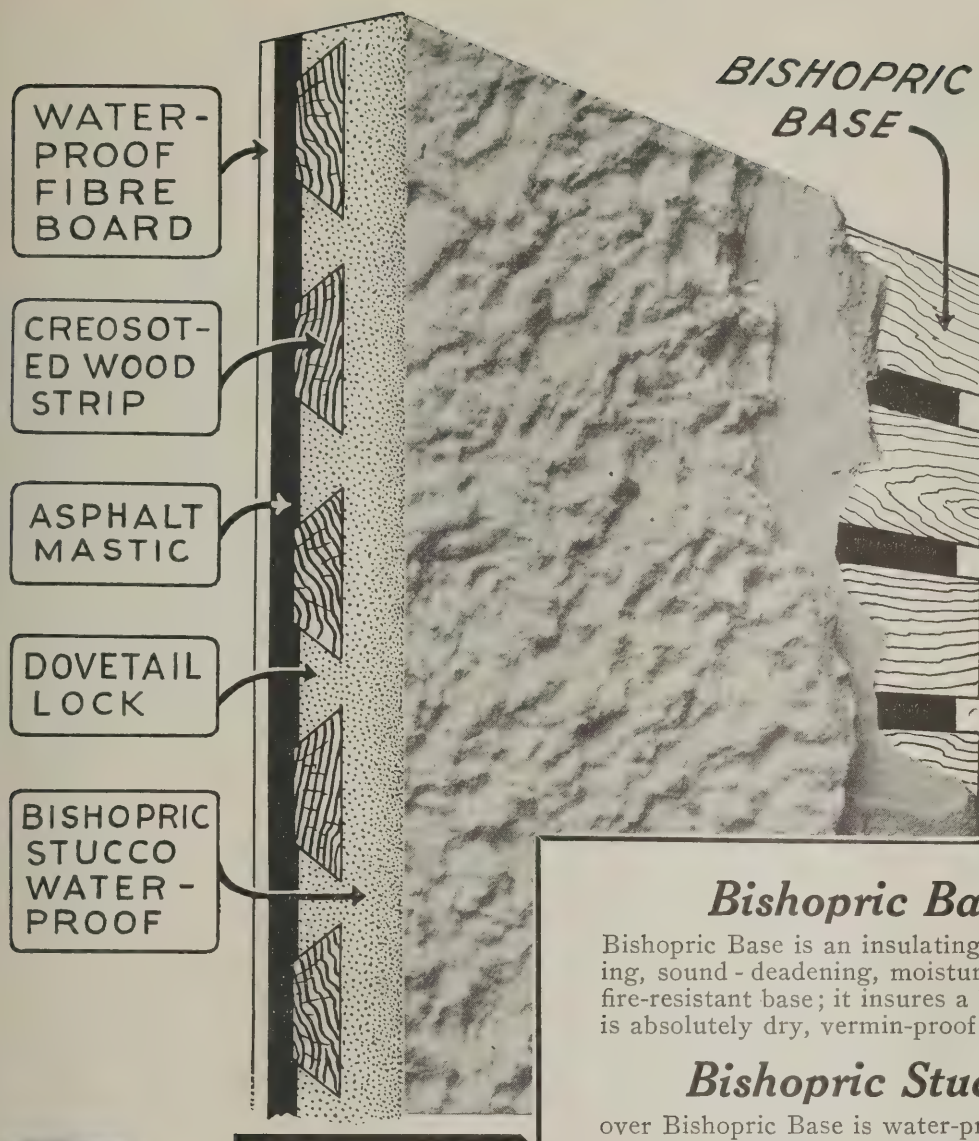
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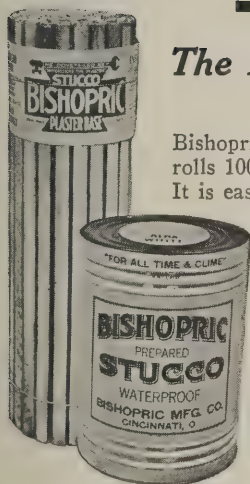
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September: First Call for Fall Building

IN September the fall rush starts. Builders and architects are busy on new projects which, in most cases, means that they are searching for new ideas to help solve their problems. The September issue of NATIONAL BUILDER will be crammed full of definite information and proven facts, some of which will be useful to you, both in the office and out on the job. If the subjects outlined below don't strike you, some of the others of the September issue will.

There will be pictures and a description of a two-story apartment house that is built of cement and concrete throughout. The plan is compact and the elevations are clean cut and attractive. The use of cast cement trim in this building is particularly interesting.

In the Northwest, where lumber is plentiful and structural steel is difficult to obtain, heavy timbers, of sizes unimaginable by Eastern builders, are used. The construction editor has written an illustrated story describing a combination timber and concrete building in which timbers twelve inches

wide by thirty-two inches deep are used for girders on a fifty-foot span, their ends resting on reinforced concrete columns.

Whether or not you are keen about Dutch Colonial houses, you will get a lot of pleasure and probably profit out of examining the one shown in The Architects' Small House Service Bureau working drawings for the September NATIONAL BUILDER.

Perambulating houses are getting quite commonplace. Nevertheless, when a two-story brick building turns around a corner, some fine points of rigging the lines and pulley blocks are involved. Both architects and builders should read

the September article describing such an operation. You can never tell just when you may need this sort of information and real "dope" on the subject is almost unavailable.

From a joke and a byword, the subject of lightningrod protection is now raised to the dignity of a science. Read the article on lightning protection in the September issue of NATIONAL BUILDER.



This photograph shows a portion of a very distinctive row of small shops in a Western city. To see the remainder of the development, be sure that your subscription is paid up so that you won't miss receiving the September National Builder containing the complete story with illustrations

NATIONAL BUILDER is a journal for the contractor, architect and builder. It is published on the first of each month by the Trade Press Publishing Corporation, 542 South Dearborn Street, Chicago, Ill., to whom all communications concerning subscriptions, contributions or advertising should be addressed.

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Renewals: Instructions for renewal, discontinuance or change of address should be given three weeks preceding date of issue. Both old and new addresses should be given. Subscribers wishing to discontinue their subscriptions must notify the publisher upon date of expiration.

National Builder is a charter member of both the Audit Bureau of Circulations and The Associated Business Papers, Inc.

Contributions to the editorial pages will be accepted solely on their merits and paid for at the regular space rates. Contributions of timely nature must be in on the 15th of the month preceding date of issue.

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Mechanical Requirements: Type size of page, 7x10 in.; half-page, 3½x10 in. or 7x4½ in.; quarter-page, 3½x4½ in. or 7x2½ in.; eighth-page, 3½x2¾ in. Screen required, 120 line; reversed plates must be stippled or Ben Day.

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Not a small part of the interest of this house is due to the sunken garden along the front of the living room extension. Note the appropriateness of the shingled verge board

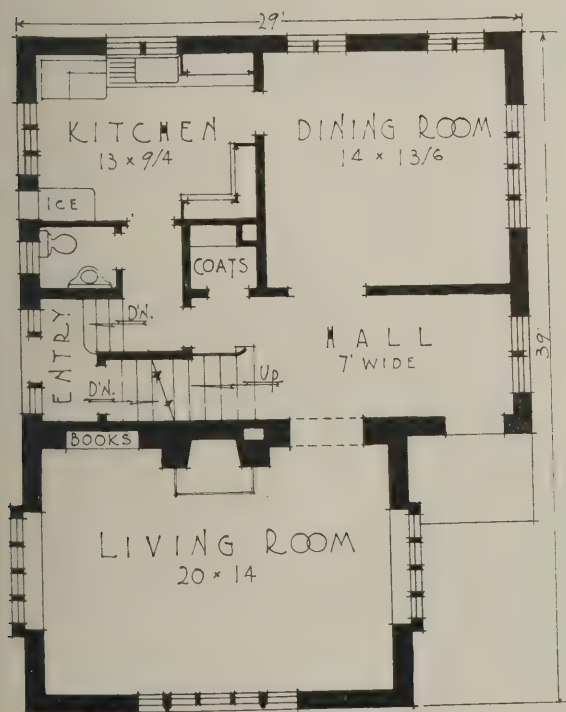


House of Mr. F. I. Raymond, River Forest, Illinois. Charlie Greenwood, Builder, Chicago. Meyer and Cook, Architects, Chicago

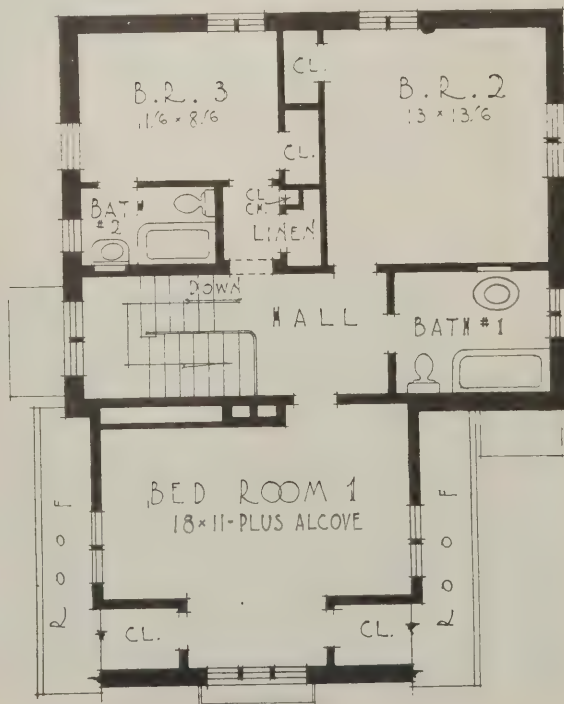
The HOUSE of the MONTH.

HERE is a house that has personality. Without being blatant, it stands out as a distinct contribution to small house architecture in America. In

style it is flavored by French and English influence, yet it is neither. It is an American home, modern in appearance and full of vitality without being boist-



First floor plan



Second floor plan



The start of the main stair, showing the wrought-iron railing

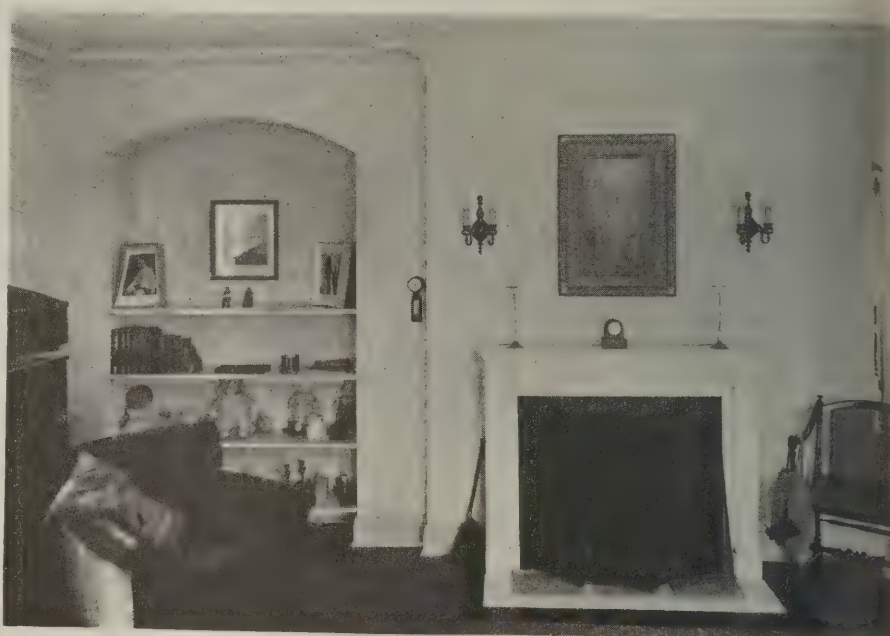


Vista from dining room, looking thru the hall and into the living room

erous, restrained rather than flashy.

The steeply pitched roof with irregular shingles laid at random exposures is the important feature of the design. The shingles are stained a rich brown to harmonize with the deep reds and browns of the brick walls. If one cared for the obvious, it might be called the "House of the Seven Gables"—for there are seven of these features, producing a very picturesque and interesting skyline. Twin gables are often criticised as impractical because they form snow-pockets, but if well flashed they need give no concern on this score. A scattering of stonework and heavy timber lintels add interest to the walls.

The location of the living room gives it a commanding position with windows on three sides. The main stair is partly enclosed, making it possible to mask the rear portion of the hall. The downstairs toilet is convenient to both the basement and the first floor and its location assures privacy. Two baths are provided in the second story; one for the maid and the other a general bath serving the other two bedrooms. Note that all bedrooms have cross ventilation and that the main bedroom has windows on three sides. The furred-out space at the



A glimpse of the living room showing the mantel and bookcase

chimney could be utilized for shallow closets if desired. The rear porch is a later addition, not contemplated in the original plans.

It is a good example of how an afterthought may be introduced into a design without destroying the quality of a composition.



A view of the rear showing the added porch



The house in winter. Note the garage in the distance



Apartment house designed and owned by Frank E. Wetherell, Architect, Des Moines, Iowa

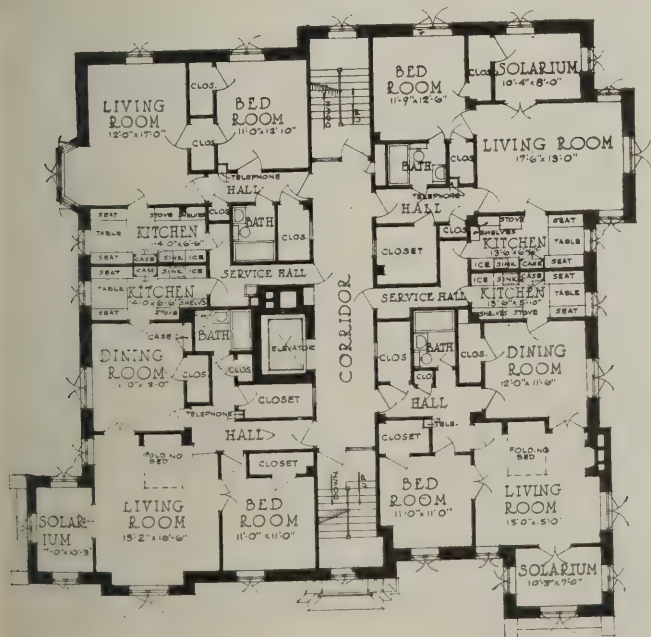
APARTMENT at DES MOINES, IOWA

THOSE interested in the unusual in apartment buildings will find much to study in this building at Des Moines, Iowa, designed by F. E. Wetherell, a local architect, and built as his private investment. It is "different" not only in eleva-

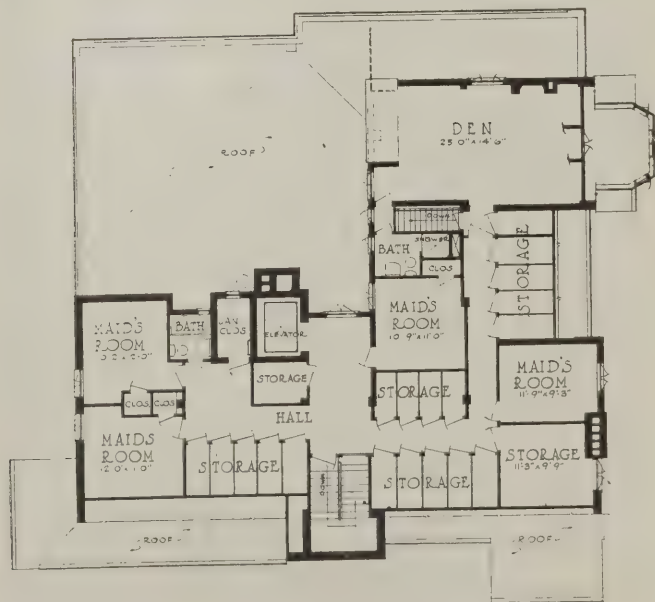
tion but also in plan and is a good study of handling the problem of a building on a sloping site. The method of treating the elevator pent house is also worthy of notice.

Reinforced concrete furnishes the struc-

tural support, the walls being brick for the first two stories and hollow tile covered with stucco for the remainder. The face brick is red, laid in white mortar and the stucco is white. On the roof the tile are mingled in shades of red, yellow,



Typical floor plan



Plan of the attic floor



A fireplace in one of the typical apartments



A glimpse of the living room in the owner's apartment

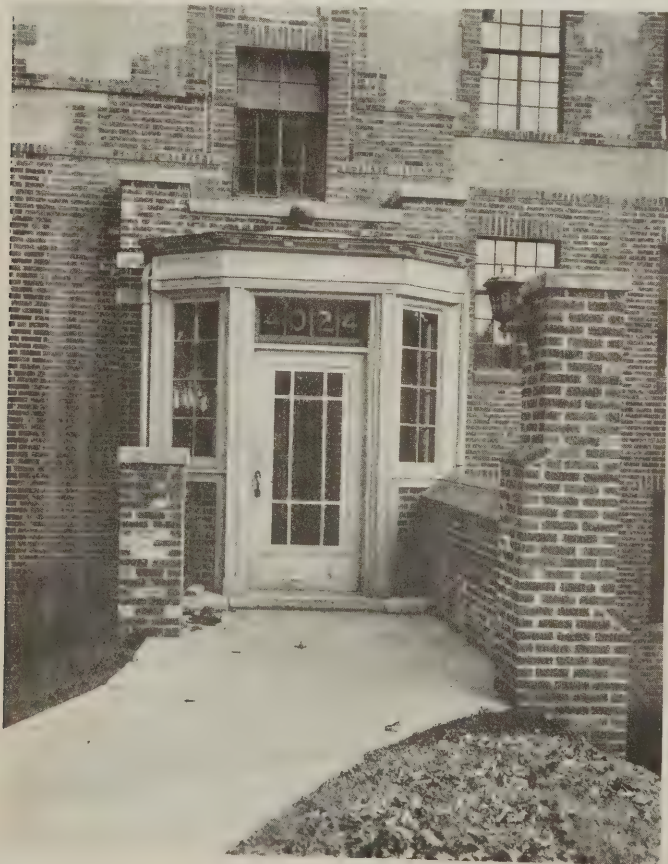
and green to produce a mottled effect. Cut stone trim has been used sparingly.

There are twenty apartments in the building, varying in size from three to five rooms each. Two stairways and an

automatically operated elevator provide adequate access to all floors. It is interesting to see the amount of closet room provided in all apartments.

In the attic no space has been wasted.

A part of it has been partitioned off to make a den for the owner's use, access to which is obtained through his apartment. The rest has been divided into storage closets for the tenants and into



The west entrance



The south entrance



Plaster grotesques add interest to the owner's living room



Telephone cabinets are provided in each apartment

maid's rooms. There are two bathrooms, one with shower, on this floor.

The most modern devices for home convenience have been installed. Telephone closets, electric stoves, large amounts of shelving and cabinet space in the kitchen,

all go to make the apartments provide the greatest possible comfort and ease for the tenants.

In order to lessen the fire hazard, installation of combustible materials has been avoided wherever it was reasonably

possible to do so. Brick and tile walls, terrazzo floors, steel sash, and metal trim were used.

Here is a good example of what can be accomplished when one desires to erect a substantial building that will endure.



A corner of a typical breakfast room



A corner of a typical kitchen



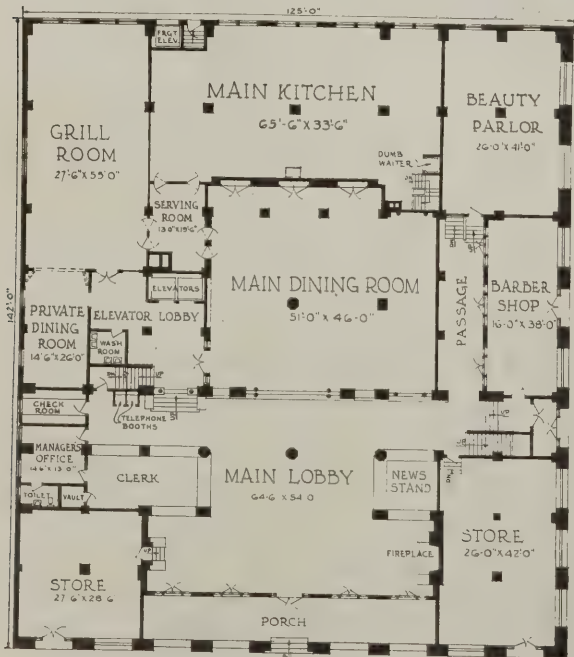
Franciscan Hotel, Albuquerque, New Mexico. Trost and Trost, Architects, El Paso, Texas

A HOTEL in the PUEBLO STYLE

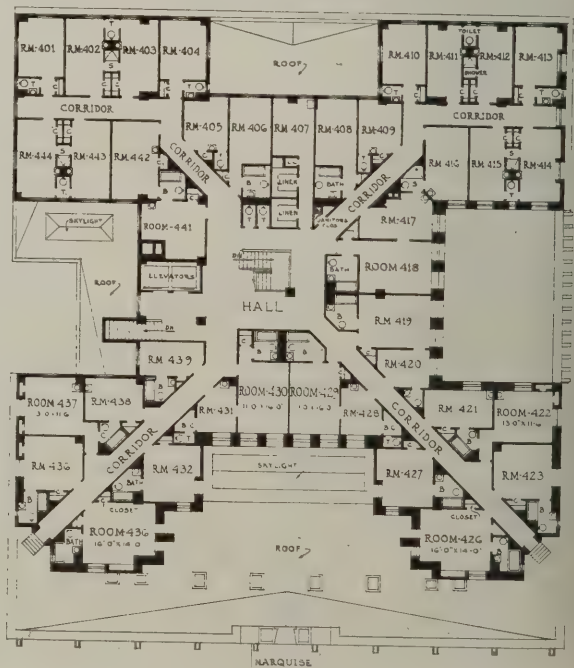
THE Franciscan Hotel at Albuquerque, New Mexico, is a good illustration of the fact that it is not necessary to stick

to the commonplace in the design of large buildings. Not only the exterior, but also the interior and plan of this building are

a departure from the usual design one is accustomed to see. A bold application of the Pueblo style



First floor plan



Fourth floor plan



Ladies' parlor on mezzanine floor. The ceiling beams are peeled logs, decorated with Indian motives in brilliant colors

of architecture characterizes the exterior and the color scheme is light gray stucco with brightly painted blue sash, and dark stained logs over the porch on the second floor. The tall recesses for the windows in the central part tend to emphasize the height of the structure.

The plan is novel in that the corridors lead diagonally from a central hall instead of running parallel to the walls. In a building of this shape, corridors laid out

in this fashion mean a saving in floor space since they form a hypotenuse of a triangle in which the other two sides would be corridors laid parallel to the walls.

Inside the building, bright colors have been lavishly, but not offensively, used, and the effect produced is a cheerful atmosphere of which one is aware as soon as he enters the lobby. The main lobby

is separated from the street by an enclosed porch, and upon entering one gains a view clear across the room and into the gaily decorated dining room which is separated from the lobby by wide arches.

The illustration showing the ladies' parlor on the mezzanine floor will give some idea of the decorative scheme.

Trost and Trost, of Albuquerque, New Mexico, and El Paso, Texas, were the architects.



A corner of the main lobby



A corner of the dining room



*Club House of the Charles W. Fish Lumber Company, Elcho, Wisconsin. Wolf, Sexton, Harper and Trueax, Architects
7 West Madison Street, Chicago*

A COMMUNITY CLUB HOUSE

ALTHOUGH the community club idea, which received so much publicity during the World War, is not called to our attention so frequently as formerly, the movement is by no means dead nor even dormant. As a matter of fact, every year sees the establishment of more and more of these important factors in the development of our social life. The fundamental idea

behind the movement is too valuable to be lost, offering as it does a common meeting point for "shirt sleeve" and "white collar," for "Judy O'Grady and the Colonel's Lady," and therefore making for a better understanding all around.

The community club which illustrates this article adjoins the block of business buildings located at Elcho, Wisconsin, and de-

scribed in the June issue of NATIONAL BUILDER. The exterior of the club house differs from the remainder of the group in that wide siding is used for the finish instead of the novel treatment of prepared roofing and wood strips used for the other buildings of the group. The general lines of this building, however, are similar to those of the others, and as variegated as-



A stone wall encloses the wide terrace along one side of the building



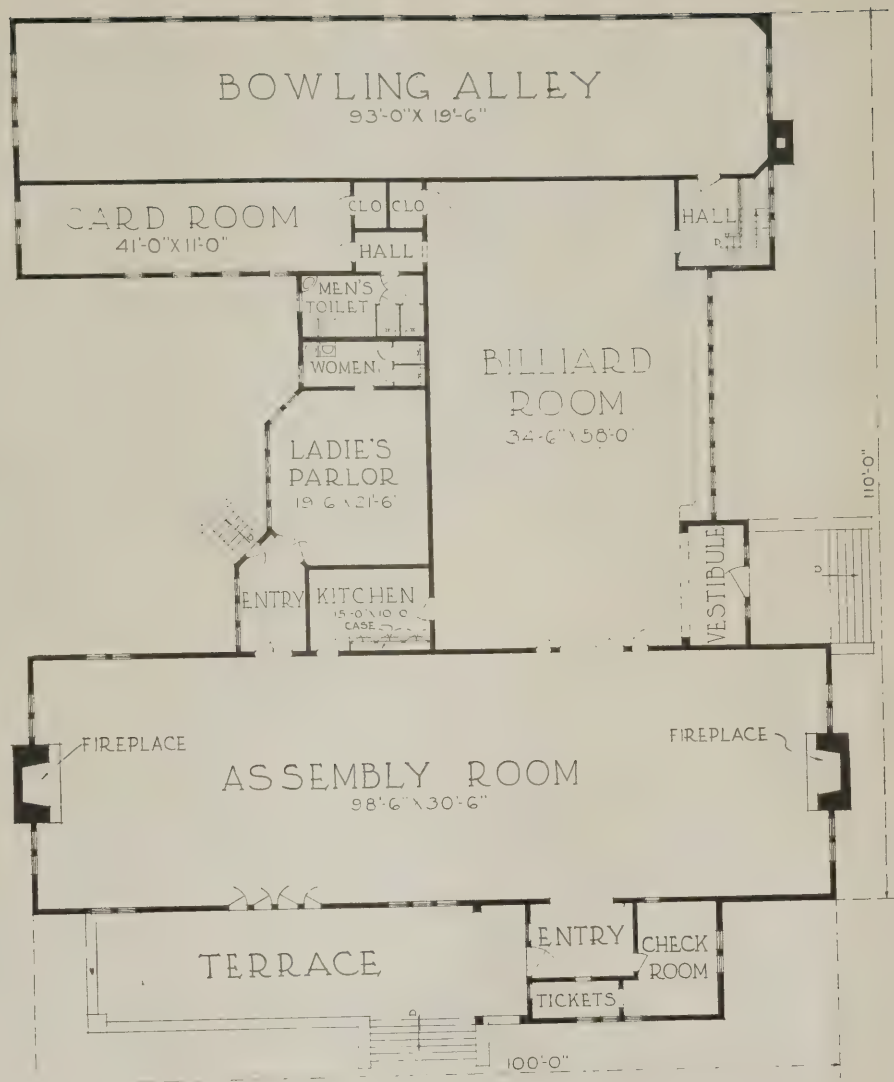
The main entrance is in a corner at one end of the terrace

shalt shingles are used for the roofs in both cases, the group effect is maintained.

There are two main entrances to the building, one leading into the assembly room, and the other into the billiard room. The assembly room entrance is through an entry opening from the terrace. A check room and a ticket booth for use on special occasions are provided in connection with the entry. The billiard room entrance is through a vestibule which opens from a platform and steps leading from the side street. A minor entrance opening into the ladies' parlor and the assembly room, has steps leading to the court formed by the projection of the two wings at the rear of the building.

The assembly room or community hall is the most important room in the building. It is more than thirty feet wide and almost a hundred feet long with a high ceiling running part way up the slope of the rafters. The arrangement of this room is such that it obtains light and ventilation from four sides, and French doors from the wide terrace add to the feeling of spaciousness. At each end of the room are high stone fireplaces which, together with the wide panel strips of the walls and ceiling, add a certain domestic touch to a room that would otherwise appear too large and barnlike.

French doors lead from the assembly room to the billiard room, the walls and ceiling of which are finished with beaded ceiling. This room is lighted by a bank of windows occupying almost the entire wall space along one side. In the corner, at one end of the billiard room, are doors opening into small halls which lead to the bowling alley on one hand and to the card room on the other. The bowling alley is finished with beaded ceiling like the billiard room and is lighted by windows on three sides. It contains three standard bowling alleys with space for spectators at one end. The hall to the bowling alley contains a stair leading to the basement which contains the boiler room and water plant. Showers for men and for women are provided in the basement. The hall to the



The plan is spacious and well arranged

card room or smoking room opens into the men's toilet room at one side. A toilet room for women opens from the ladies' parlor. The kitchen opens into both the assembly

room and the billiard room. It was designed for serving only light lunches and refreshments and therefore was kept small in size and simple in arrangement.



Stone fireplaces are provided at the ends of the assembly room



The billiard room is lined with stained wood ceiling

BUILDING an EXPOSITION

By John Y. Dunlop

THE British Empire Exhibition at Wembley Park, London, is unique in the use of permanent materials for exhibition and amusement structures. Concrete harder than rock, steel that will last for generations, and stout and seasoned timbers—all play a part in the construction.

The tons of concrete used in these buildings were made on the site, most of it being in the form of three-inch concrete blocks with cement facing. The aggregate employed was not always the same, with the result that variation in tints are to be seen in the different buildings. Interest is imparted by using blocks with corrugated surfaces for the plinth courses and other important positions.

The Palace of Engineering and the Palace of Industry are probably the largest concrete buildings in the world, each having a floor space of about half a million square feet which is divided into bays by piers and arches of reinforced concrete. The lower part of the roofs, which are also concrete, is carried on open concrete roof trusses which are built with an expansion joint on each rafter.

The use of color in the minor buildings is striking, to say the least. Many of the groups of little kiosks make the rainbow seem tame; here is one of green and gold; close by is another of sky blue and white, and opposite is one of scarlet and green.



A view down one of the main courts showing the Palace of Engineering at the right

The tall lamps are of orange, black, and yellow and in many cases the colors are almost intoxicating in their variety and vigor.

The upper portions of the dance halls and tea rooms have deep friezes picturing out-door life in which the colors are blue, red, green and orange in dazzling lines.

Perhaps this thrill of color and novelty reaches its climax in the great bandstands where pillars of scarlet and gold rise from among thousands of bright green seats.

The entire color scheme seems to be based on this striking jazz motif; everything is bizarre, unexpected, gorgeous.

In the Burmah group of buildings an effort has been made to reproduce the native style. Nowhere has this been more successfully accomplished than in the entrance to the Burmah pavilion and its approaches. The patience and skilful craftsmanship which is the outcome of an ancient tradition, and the weird cults of the romantic gateway and temple-like pavilion. The structure is of teakwood and exhibits the characteristic carving of the Burmese wood carvers to great advantage. The work was executed in Burmah and put together by native workmen at Wembley. A romantic effect is given by the bells which ring as in Burmah. These bells hang far up in the carved pagodas where the sun shines almost fiercely on their shining metal and, as the winds blow, music, which sounds strangely sweet and fairy-like, is made among the bells.



In many of the home exhibits opportunities have been taken to build model houses showing early and artistic construction and furnishings



The Cyprus Pavilion reflects the native traditions in its domes and arches and in the contrasting bands that encircle the building, accentuating the horizontal lines. The influence of both Byzantium and Asia is well marked in the native architecture



The Burmah Pavilion, with its elaborate native architecture, has an Eastern grace and lovely dignity admirably set off by the surrounding garden. Every detail of this decoration is made of teak carved by native craftsmen of Rangoon and Mandalay



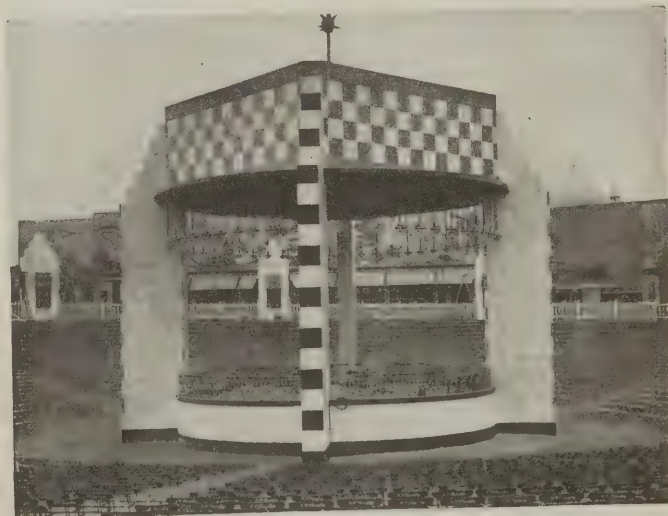
In this gateway to the Indian Pavilion is seen brightly colored mosaic decoration around the deeply recessed entrances. Brickwork in intricate patterns in the minarets, and window grilles of stone carved with a delicacy that suggests lacework



One of the entrances to the Palace of Engineering, which is heralded as being the largest all concrete building in the world. Even the rafters of the glass roof are of concrete. The absence of decoration adds to the apparent size of the building



The amusement buildings are built in a style that may well be known as "thrill" architecture. Here is an open air cafe with brightly colored piers supporting a tall frieze with hunting scenes painted in a very broad and eye compelling fashion



In the bandstands are found the very apogee of fantastic color and architectural form; the very latest ideas in splashes and dashes of color, in angles and cubes, checkerboards and squares. This type of decoration is described as hilarious but not chaotic



Rowe Market, San Diego, California. Lincoln Rodgers, Architect, San Diego

A COMBINATION MARKET and SHOPS BUILDING

THE Rowe Market at San Diego, California, designed by Lincoln Rodgers, a San Diego architect, illustrates a good example of the so-called "California market building." This is a store building with shops on the street frontage and a market inside, a design which permits utilization of all the lot area.

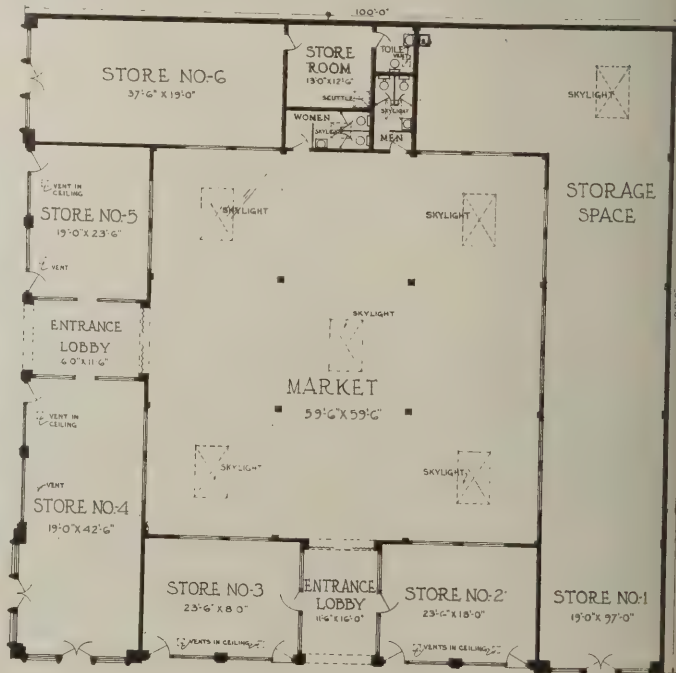
Six stores, two public toilets and a large central market space almost 60 feet square have been laid out on a 100 foot square lot. In order that an opportunity would be provided for a selection of various kinds of businesses as tenants the stores were built in different sizes so that they might suit the requirements of the different busi-

nesses. They are also arranged so that they may be further subdivided should occasion require.

Light brown stucco was used for the walls, red tile for the roof, and the wood-work painted in light tints. Gaily colored awnings furnish an added decoration and help to give the final "Spanish" touch.



A detail of one of the corner stores



The floor plan. Note that the entire building is under roof with skylights above the market space



Hospital for Girls' Vocational School, Tullahoma, Tennessee. C. K. Colley, Architect, Nashville

A SMALL PRIVATE HOSPITAL

THIS hospital is small enough to escape from the complications that usually beset, or are forced on, larger ones. The exterior is of native stone with wood trim and a slate roof and exhibits a very pleasing domestic feeling that is surely more appropriate than is the cold, almost scientific, feeling that pervades most hospital designs.

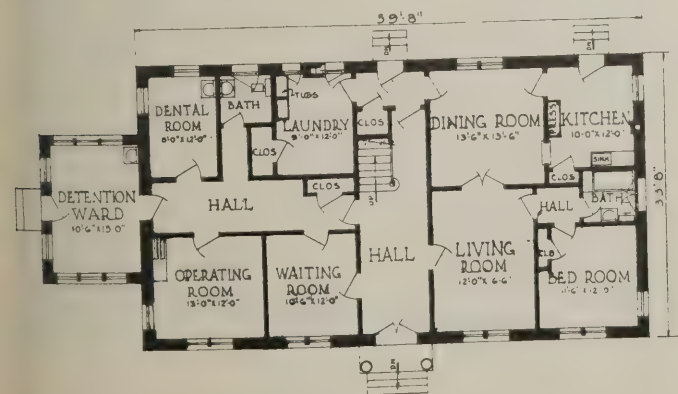
The entrance is through French doors into a central hall with the stair and rear entry at the opposite end. At one side of the main hall are clinical rooms, and on the other side, the resident physician's apartment. A side hall extends from the main hall and provides communication for

the rooms in this portion of the building. The waiting room may be entered from either of the halls, and there is a toilet room opening from the side hall. The dental room is located in one corner and the operation room is in another, both of these rooms having cross-lighting. The detention ward is located in a porch or pavilion at this end of the building. It may be entered from either the side hall or from a separate outside entrance. Windows on three sides assure ample light and ventilation for this ward. A laundry containing a large closet opens from the rear entry.

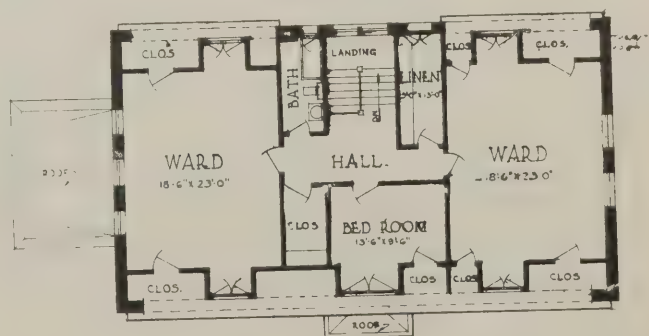
The resident physician's apartment con-

sists of four rooms. The living room is separated from the dining room by French doors, and a door at one corner opens into a compact hall which leads to the bed room and the bath. The kitchen has a separate, outside entrance and the dining room has an additional door into the rear entry.

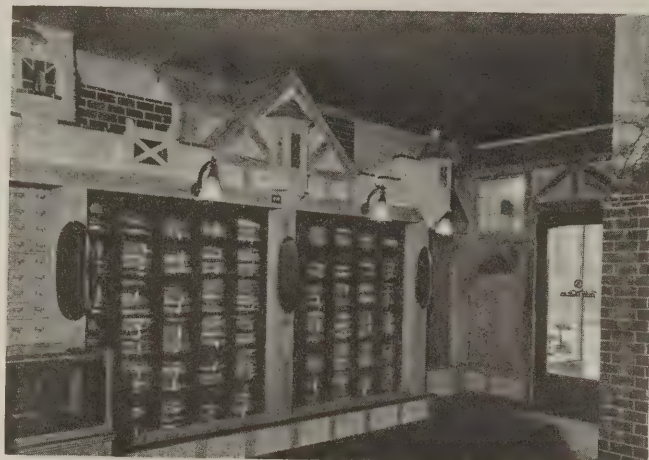
The second story has a wide central hall separating the wards at each end. The wards have ample closet space and are provided with windows on three sides. There is a separate bed room for the nurses, and large closets for storing linen and other supplies. The one bath on this floor seems hardly sufficient.



First floor plan



Second floor plan



Interior views of the Providence store showing a characteristic treatment of the space above the wall cases

Ingenious Shops Solve a Practical Problem

*Illustrating the point that
practical limitations may
often be turned to ad-
vantage*

*Truly Warner, Inc., Owners
Starratt & Van Vleck,
Architects
New York City.*



Exterior of one of the Boston stores

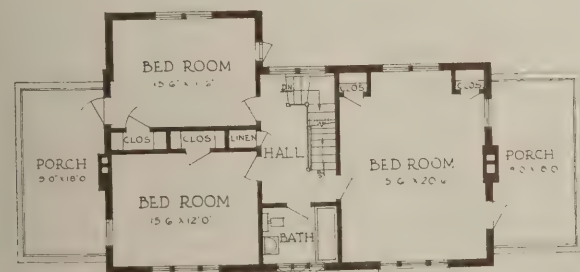
For practical purposes the height of a hat case should not be more than seven feet six inches from the floor. This leaves a considerable space above the case to the ceiling which, in most cases, is used as storage for hats. This did not appeal to Mr. Warner, of Truly Warner, Inc. He felt that his stores should have an individual and artistic effect and the idea of using this space to give the effect of a half-timbered village street was evolved. Stucco on metal lath has been used, backed by stud partitions. The wood has been adzed to give the effect of the original; slate has been used on the roofs—usually Old English color combination.

For the exteriors, heavier timbers have been used and the adzing done more boldly. In all of the later stores gable fronts are used. Sometimes it is necessary to rent the next floor above to get this effect, in which case this space is used as a storage room.



The space is wired and a light behind each tiny window gives reality to the effect

NATIONAL *home* BUILDER



Much of the interest of this Colonial house is due to the English bond in which the brickwork is laid.

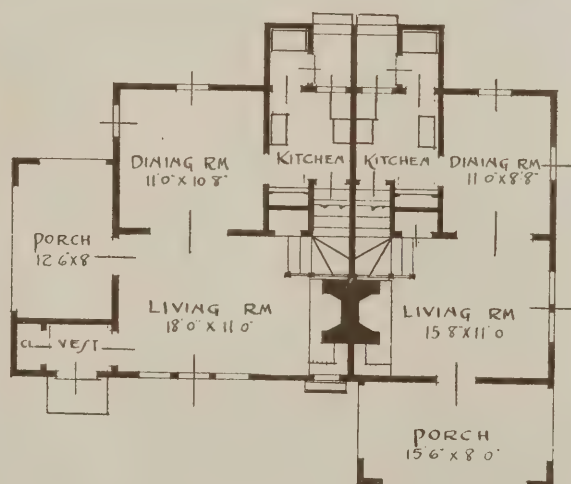
The garage repeats the general character of the house and, by its position or placing, extends the lines of the composition.

The design of the entrance is good, but the workmanship displayed in the curved pediment is faulty. The combined curves are not tangent and are "flat" in places. An improvement would result if the heavy dormer were omitted.

The relation of the kitchen to the entry and pantry is well worked out and will repay study.

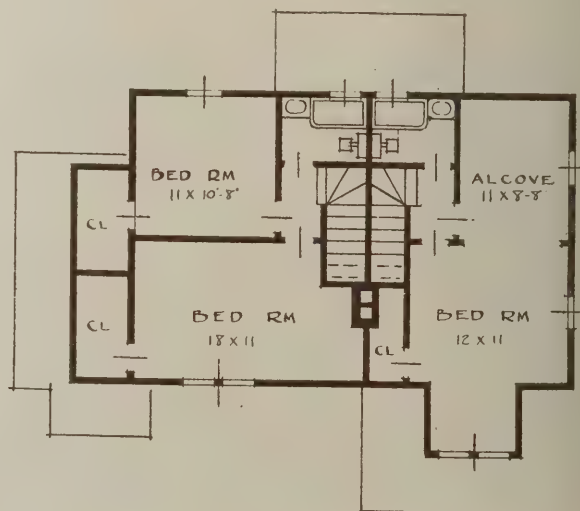
HOUSE FOR C. A. NAEGELI,
MAYWOOD, NEW JERSEY

Harry Lucht, Architect, Cliffside, New Jersey.



The English style seems peculiarly adapted to two-family houses because its picturesqueness permits the provision of two separate entrances without too evident indication that the house is a double one.

The rough stucco, the flagstone walks and the broken roof lines of this house, form a very appropriate combination. It would be difficult to devise a more compact and livable plan. Both the kitchens and the bathrooms are placed back to back and one above the other, thus economizing in plumbing.



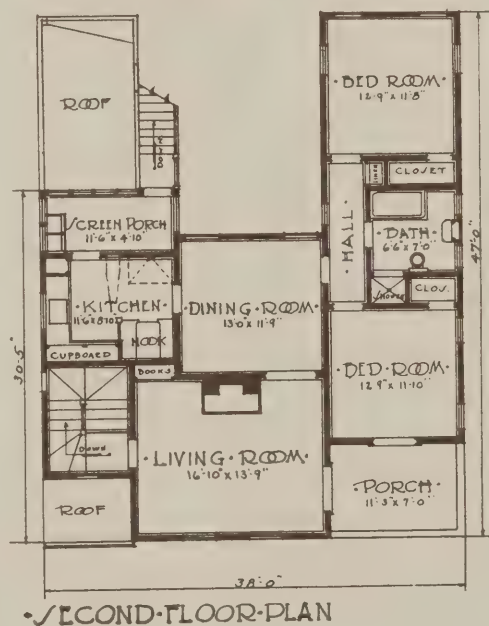
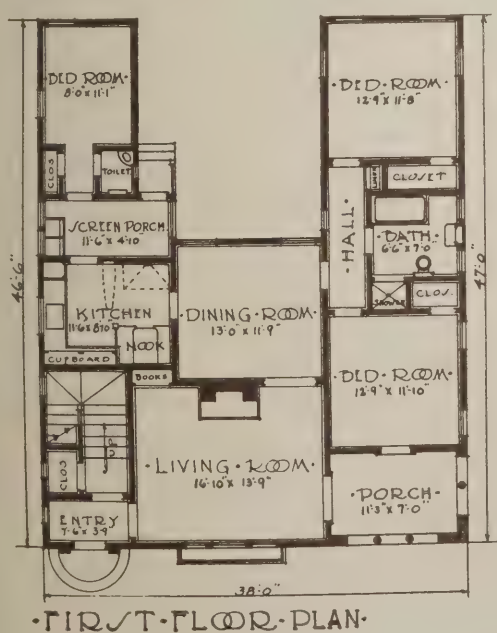
TWO-FAMILY HOUSE AT YONKERS, NEW YORK

Joseph Emmet Kelly, Architect, 28 North Broadway, Yonkers.

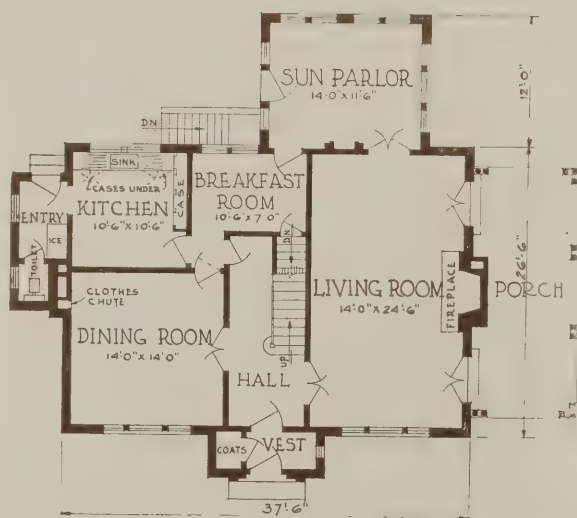


Here is a two-family house of Spanish type that combines dignity with picturesqueness. Although a purist would condemn the single entrance for its failure to indicate the double plan, the design as a whole is unusually attractive.

The rooms are of good size and are well disposed for light and ventilation. Note the location and arrangement of the maid's room opening from the screen porch on the first floor.

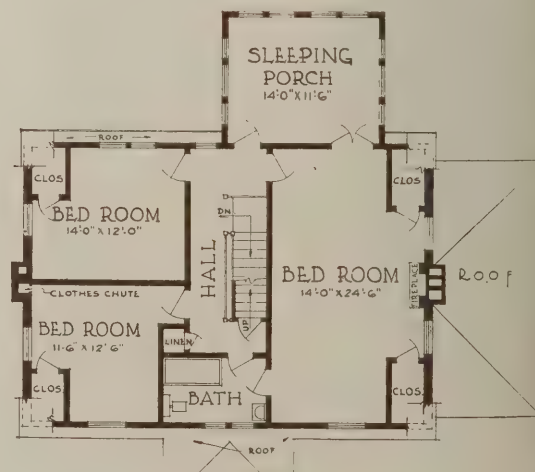


TWO-FAMILY HOUSE IN LOS ANGELES
Designed by Floyd A. Dernier, Los Angeles, California.



For those who admire Dutch Colonial houses yet cannot become reconciled to a gambrel roof, this variation offers a way out. The straight pitched roof is as thoroughly steeped in tradition as are gambrel-roofed ones, and is easier to build.

The provision of a breakfast room accessible from the kitchen and the hall is a feature of this plan. The location of the clothes chute in the chimney is ideal, reducing the hazard in case of a basement fire and eliminating the complications that usually beset an effort to find a location that does not interfere with other features of the plan.

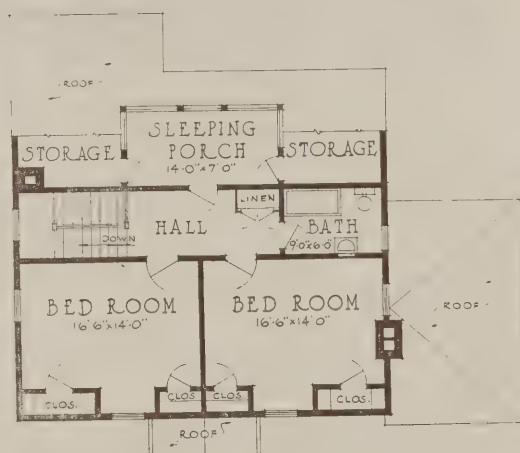
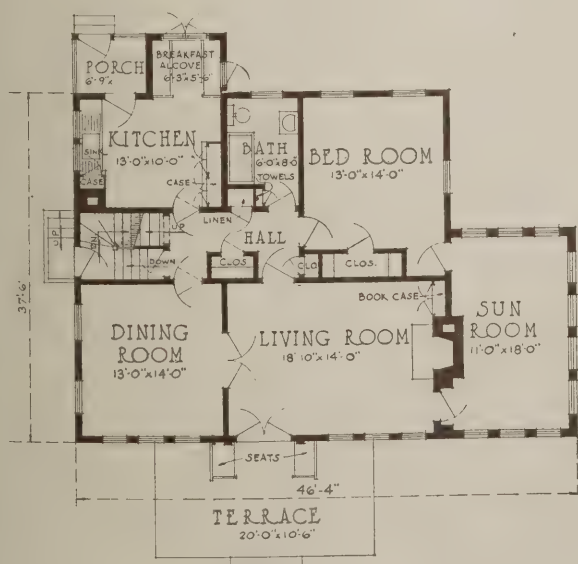


HOUSE OF MR. W. A. GOODNER, TULSA, OKLAHOMA
Architect unknown.

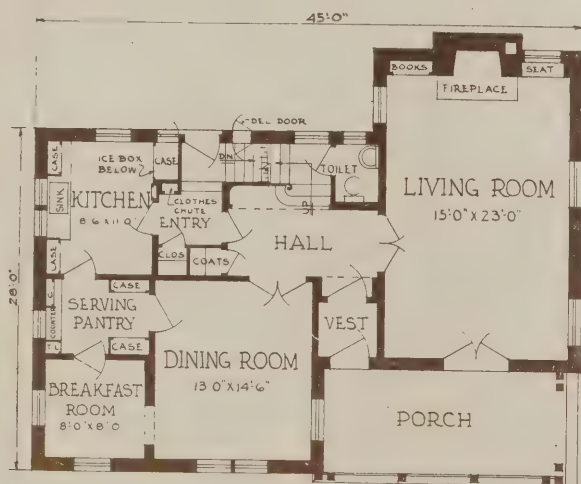


Although it would prove difficult, if not impossible, to find an old Colonial house to furnish a precedent for this modern one, the fact remains that this design has an unmistakable Colonial feeling that is more convincing than that exhibited in many houses that stick close to the type forms of the old work, but lose its spirit.

A first-story bath and bedroom, the location of the main hall and stairway, a breakfast alcove from the kitchen and a second-story sleeping porch built into a dormer, are features of the plans.



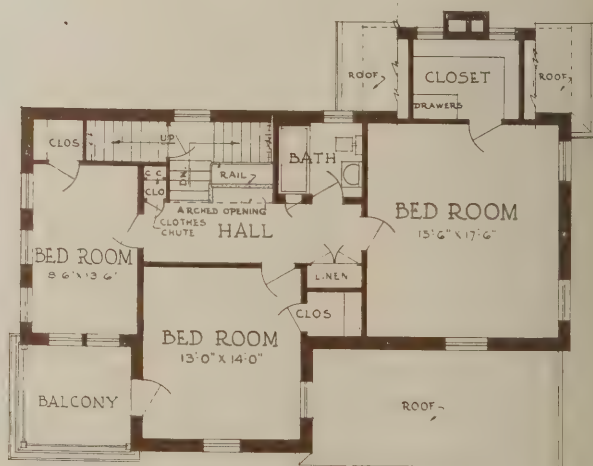
HOUSE OF MR. J. E. FAIRCHILD, KNOXVILLE
Barber and McMurry, Architects, Knoxville, Tennessee.



HOUSE OF MR. J. F. FERTIG, MILWAUKEE
 Clas, Shepherd and Clas, Architects, Milwaukee, Wisconsin.

This is one of those houses that seems to give promise of a distinctive American style. In some ways it reflects the influence of the so-called Western type of design while in others—the porch columns and the muntined windows for instance—it leans to Colonial. Then, too, the living room extension and the tall chimney seems English. Taken in all it is a successful design, conglomerate, but not scrambled.

Although open porches and serving pantries for small houses are becoming almost obsolete, here is a case where both have been included with good effect.

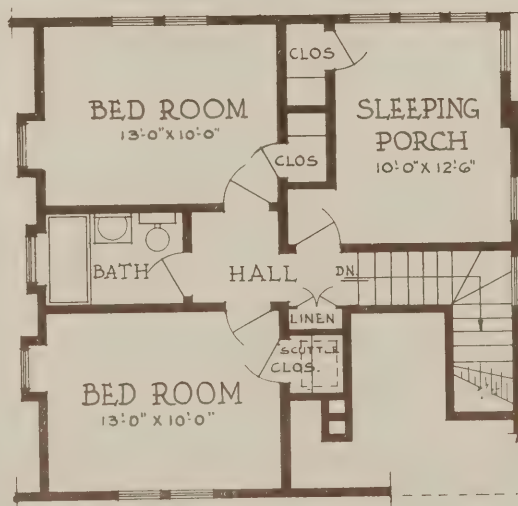
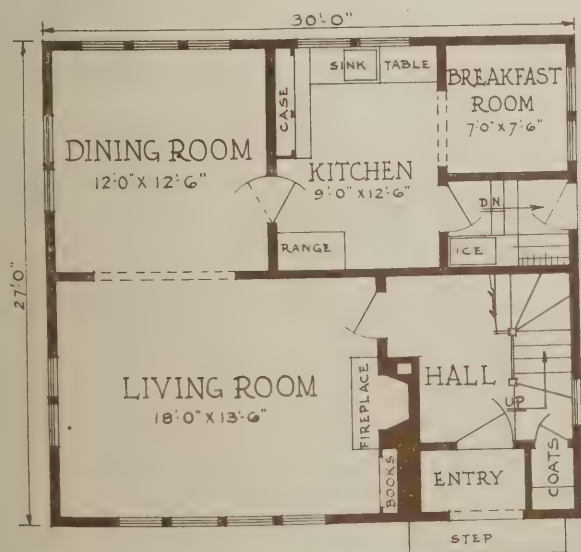




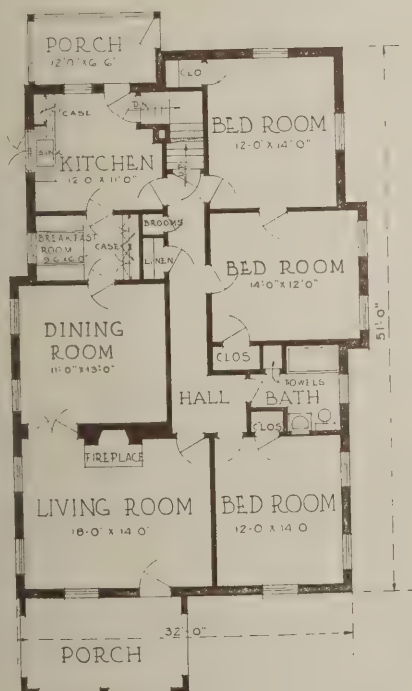
Cropped gables are often subject to adverse criticism, but there is something about a high pitched roof that seems to demand this treatment.

In plan this house is almost square, but the design of the room relieves any feeling of severity on this account. The arched entrance and the tall chimney are important elements in the design.

A door between the kitchen and the front hall would be considered an improvement by many.



HOUSE OF MR. T. A. MURPHY, DES MOINES
L. W. Kranert, Architect, Des Moines, Iowa.



The bungalow style has suffered sorely at the hands of its friends. Proponents with more enthusiasm than skill have forced so many monstrosities into the public view that to many people the very mention of bungalow arouses a snort of contempt.

Examples such as the one shown on this page, however, should be of considerable value in illustrating the possibilities that are inherent in the style. Their design is simple, pleasing and homelike. It is interesting in design and economical in construction, and it should be carefully studied by anyone who is interested in this type of building.

Some would object to the use of shingles on the piers at the corners of the porch, because of the consequent loss of structural significance. Perhaps the use of the arched openings would be criticised for the same reason. It is difficult to draw conclusions in such cases, but in this design the end seems to justify the means.

The combination breakfast room and pantry is a convenient and practical feature of the plan, as are the towel closet in the bathroom and the broom closet and the linen closet in the hall.

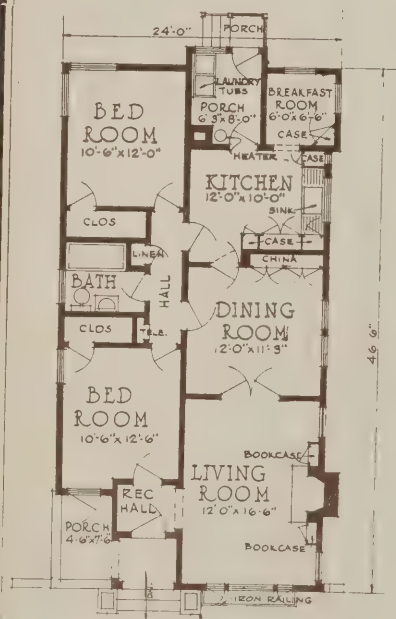
HOUSE OF MR. G. V. KEISTER, KNOXVILLE

Barber and McMurry, Architects, Knoxville, Tennessee.



Here are two designs that form part of a development in which one basic floor plan is used. As is indicated by the illustrations, the differences in the designs are slight yet they are sufficient to give variety and interest to the individual houses. Much of the decorative effect of the houses is due to the use of wrought iron for railings and gates. Short walls and driveway gates bind the houses together and cause them to appear larger.

A vestibule gives entrance to either the front bedroom or the living room and also provides a wind break. As there is no basement, the laundry tubs are located on the rear porch.



HOUSES AT OAKLAND

R. C. Hillen, Designer and Builder, Oakland, California.

COMPLETE WORKING DRAWINGS AND DETAILS

Five Closets Help to Make This 3-Room House Efficient

*House No. 3A15, Designed Especially for National Builder
by The Architects' Small House Service Bureau, Inc.*

© 1924 by N. B. and A. S. H. S. B.

THIS is an English cottage. The things that make it English are the treatment of the roof, the bay window, the balance of the whole design, but giving it a name like this would not add any quality to the plan which would make it desirable if it were not already desirable in itself.

You can obtain any number of plans for three-room houses that provide the bare bones of living. For the person who wishes a complete home of this type without any additional space, it is hard to see how a more satisfactory arrangement could be made. It is true that additional space for two or more bedrooms can be obtained in the second story by a simple revision of the stairway, but the plan is a completed whole as it stands.

You enter the house through a covered porch in which there is a built-in wooden seat, and then through a little entry with a vestibule and coat closet into the living room. You can also go from the entry into the kitchen.

The kitchen has everything in it that may be desired, built-in cabinets, sink, drain boards, table, range,

a platform refrigerator which can be iced from the rear entry, and a place for a dining alcove. The rear entry is reached from the kitchen and is connected to the basement stairway.

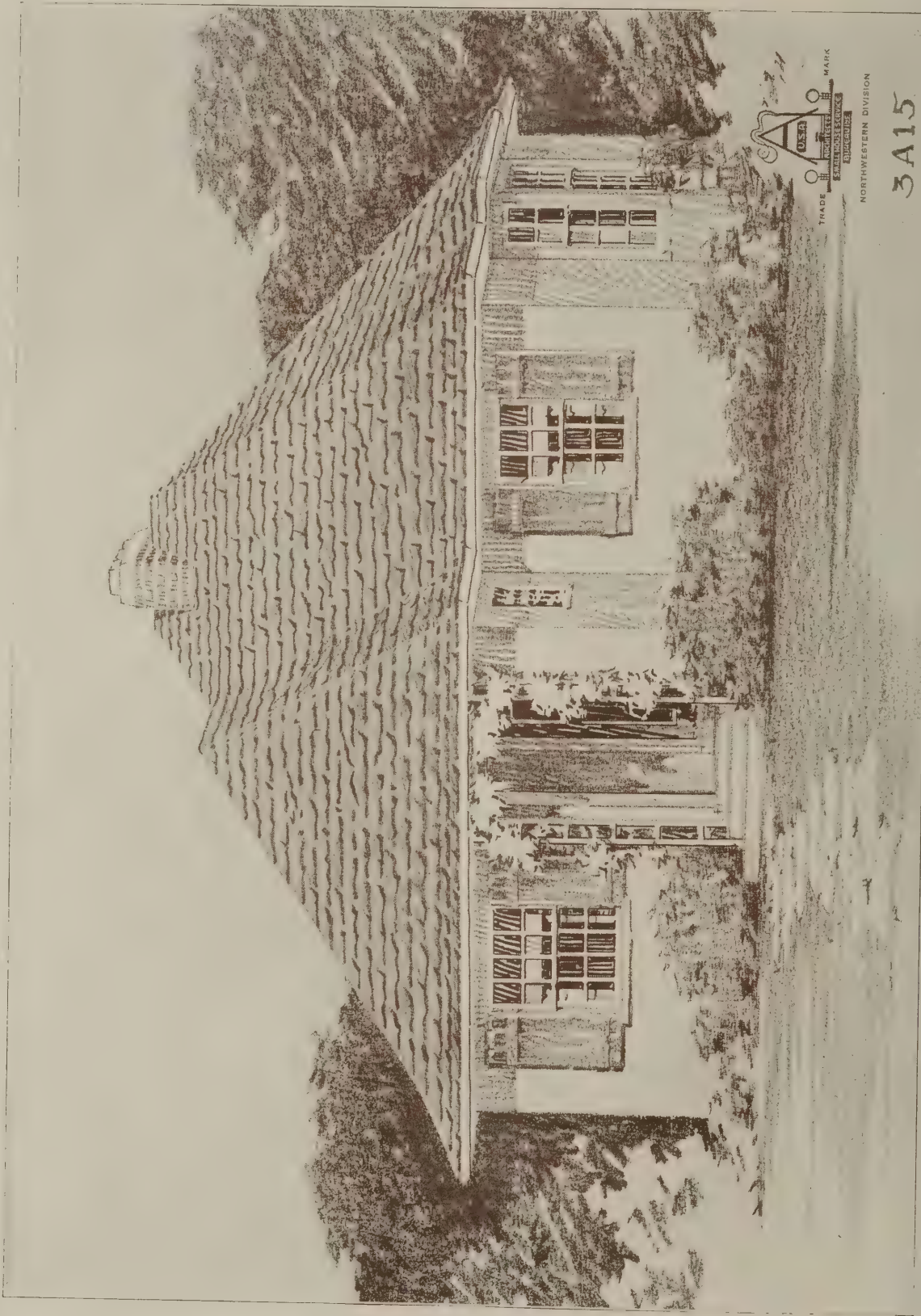
In the living room there is a fireplace that is more than eight feet wide, a monumental fireplace. Across the room in direct balance with this is a bay window. To increase the accommodations of the house a closet bed is devised to open into the living room, and there is a full-sized bedroom to be reached from the hall opening off the living room. A modern bathroom completes the accommodation of the first story.

The basement contains a laundry, furnace room, coal bin, and space for the storage of vegetables and fruits.

The construction of this design is of stucco on metal lath with wood frame. The foundations are of concrete.

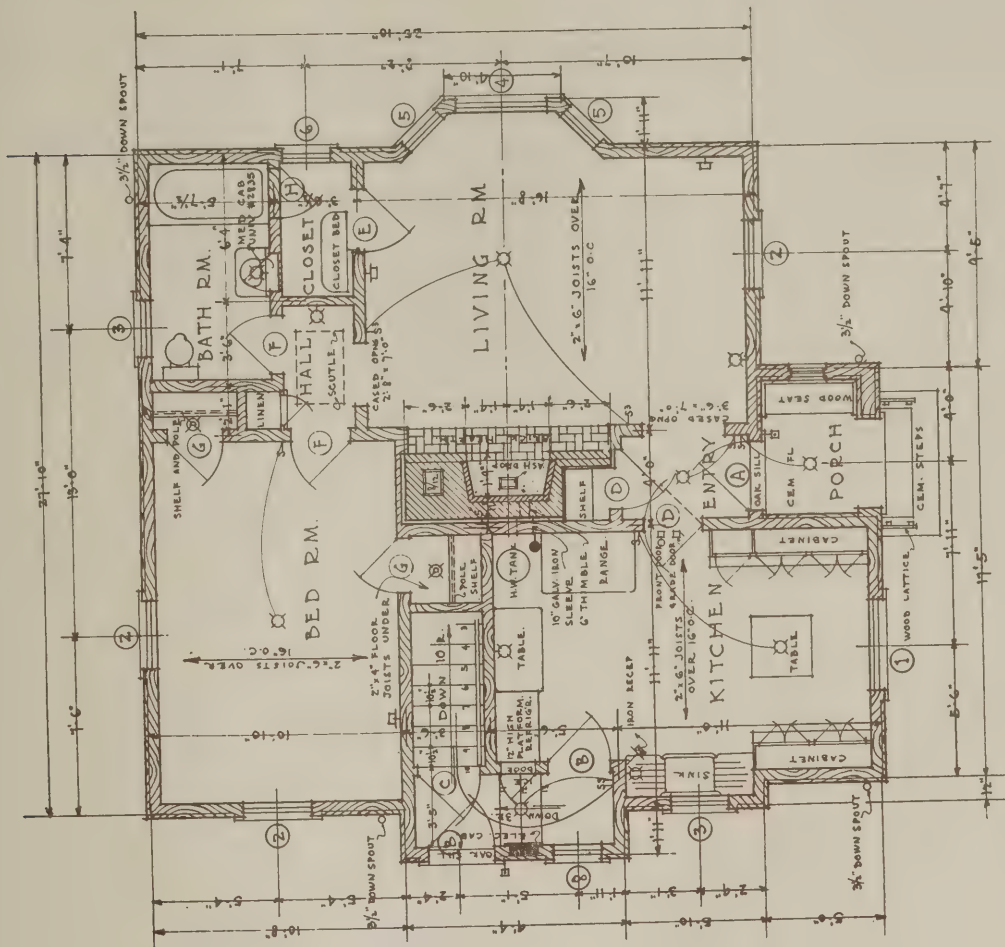
It is designed to face west or north. It can be reversed for other facings. It can be accommodated on a forty-foot lot.

ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 65 and 66. These drawings are on a scale of $\frac{1}{8}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau these working drawings are made an exclusive feature of NATIONAL BUILDER. They represent special designs created for the benefit of NATIONAL BUILDER subscribers and they are bought and paid for on that basis. They have never before been published in any book or magazine. The Architects' Small House Service Bureau was retained by NATIONAL BUILDER for this service because it represents the highest authoritative architectural service pertaining to small houses to be found anywhere. The Bureau is a national association of experienced architects of standing who are interested in promoting good design and construction rather than in obtaining monetary profit. The combined experience and skill thus made available to builders of small houses is approached by no other agency.



Although small in size this house represents something more than a "honeymoon cottage." For a small family it would provide a real home; slightly, comfortable and easy to keep in order

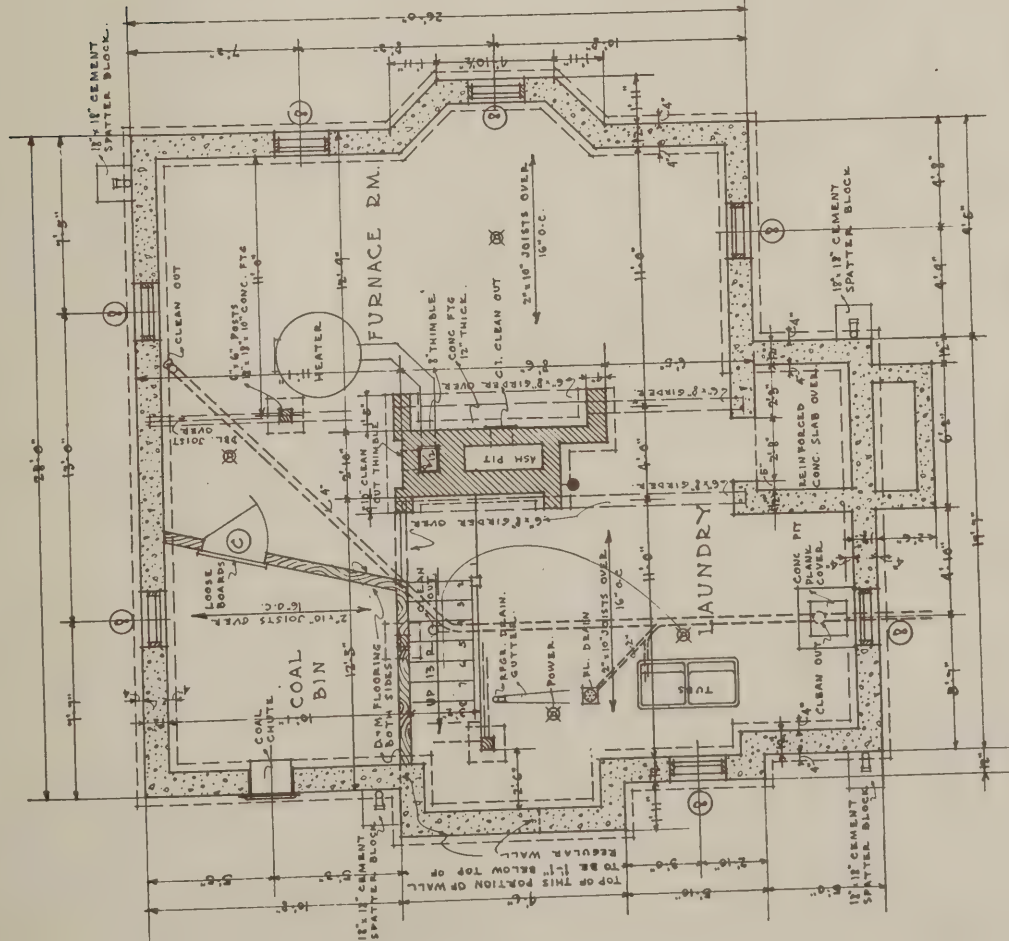
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2	D	2'-6" x 7'-0" x 1'-0"	-
1	E	2'-8" x 7'-0" x 1'-0"	-
2	F	2'-6" x 6'-8" x 1'-0"	-
2	G	2'-4" x 6'-8" x 1'-0"	-
1	H	2'-0" x 5'-0" x 1'-0"	ONE PANEL ACCESS DOOR



FIRST FLOOR PLAN.

SCALE 1/4" = 1'-0"

3	2	10 x 12	2'-10 1/2" x 4'-6"	"	"	"
2	3	"	"	8 x 9	2'-4" x 3'-6"	"
1	4	"	"	10 x 12	5'-2 1/2" x 5'-7"	"
2	5	"	"	10	9 x 12	1'-10 1/2" x 5'-7"
1	6	"	"	4	10 x 12	2'-0 1/2" x 2'-6"
1	7	SASH	6	10 x 12	2'-10 1/2" x 2'-5"	1 1/4"
8	8	"	"	3	7 x 9	2'-1" x 1'-2"



BASEMENT PLAN

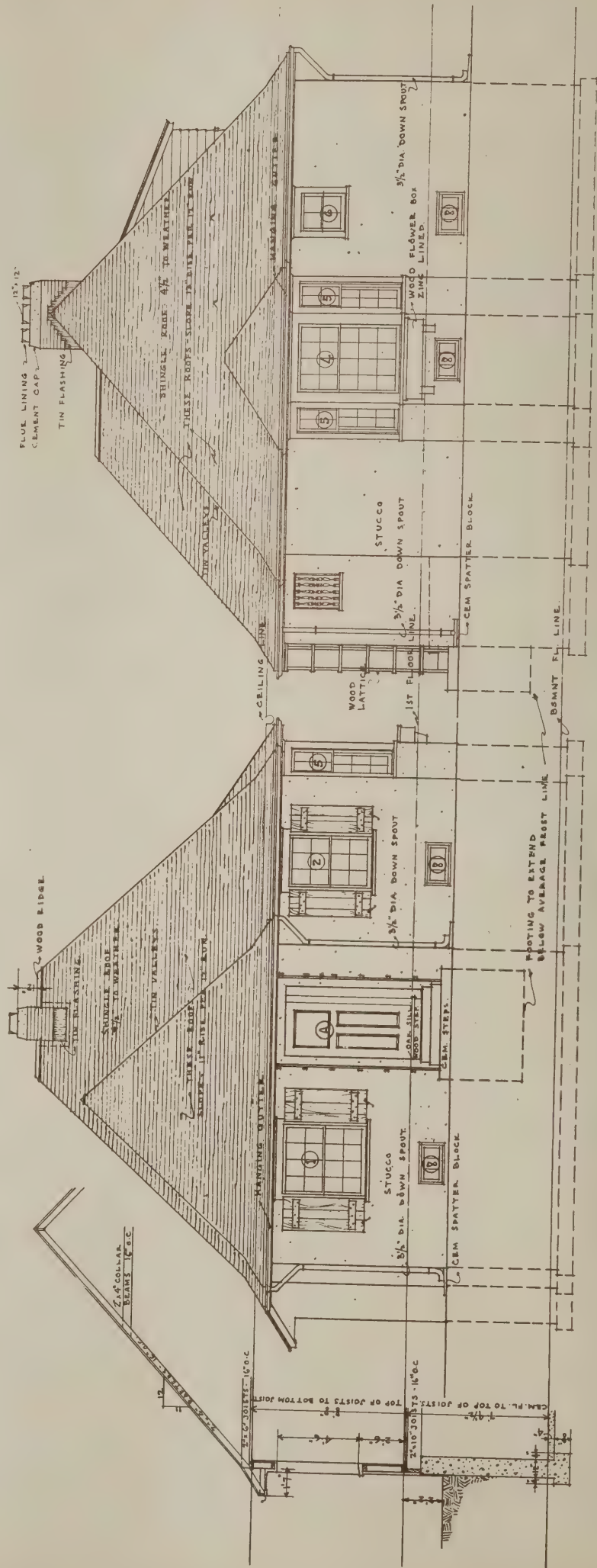
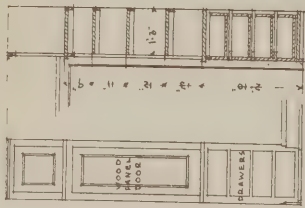
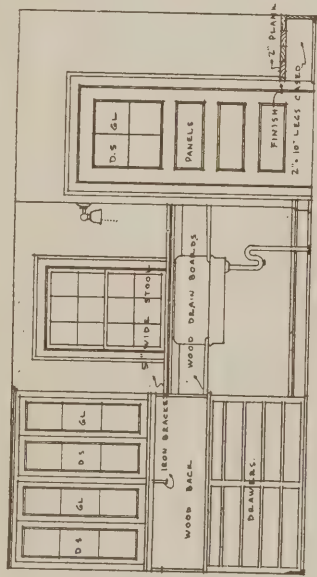
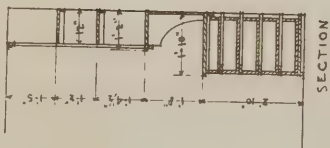
HOME PLAN FOR NATIONAL BUILDER-- AUGUST, 1924

SHEET NO:
1 of 4

Stock numbers refer to moldings in Universal Millwork Design Book No. 20. In case these moldings cannot be procured, others of similar design and size may be substituted. Provide for screen and storm sash for all exterior openings except fireplaces. Bottom rail of storm sash to have vent

Dimensions are taken to outside of foundation walls, to outside of studs on exterior walls and center of studs for partitions. When concrete may be alone. Provide concrete block or lead-bearing hollow tile. Where building ordinances permit, foundation walls may be 9" thick (with 20 x 30 footings) except in case of stone which shall be 16" thick

MATERIALS	ELECTRIC WIRING SYMBOLS
CONCRETE	CEILING OUTLET
BRICK	DROP CORD
WOOD	BRACKET
PLASTER	BASE PLUG
	SWITCH
	BELL OUTLET
	Buzzer
	PUSH BUTTON
	GAS OUTLET
	3-WAY SWITCH



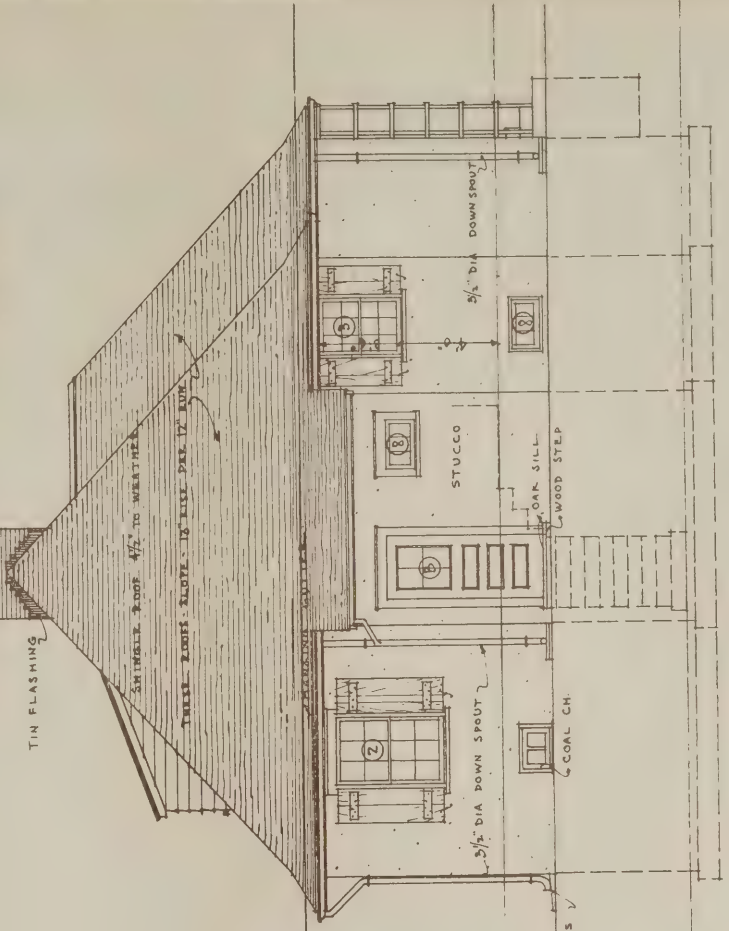
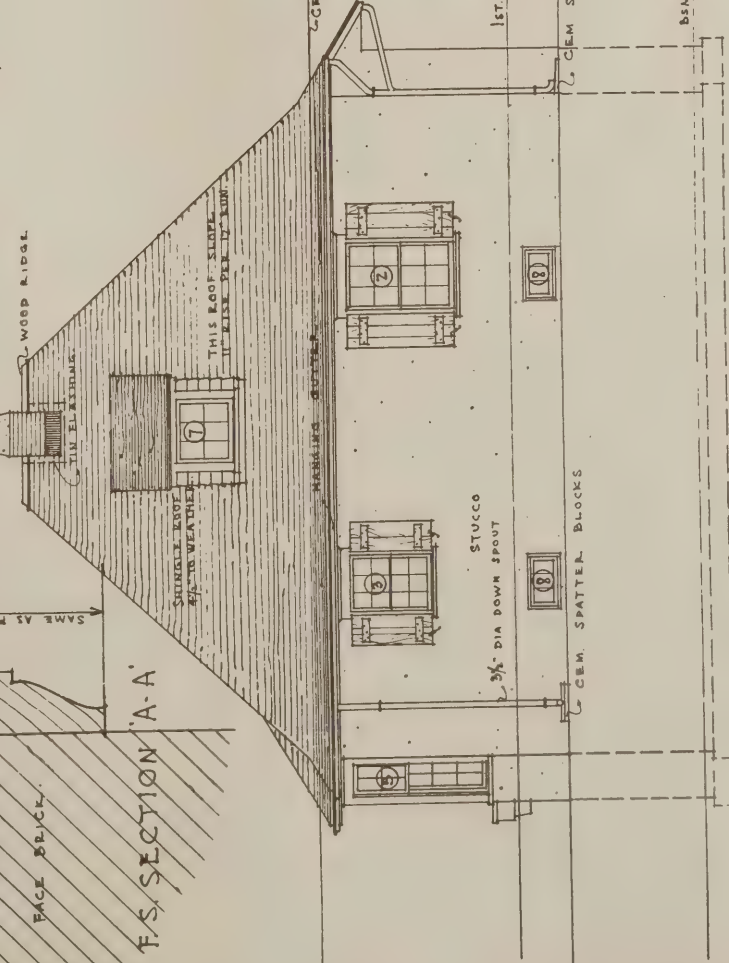
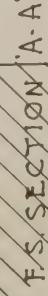
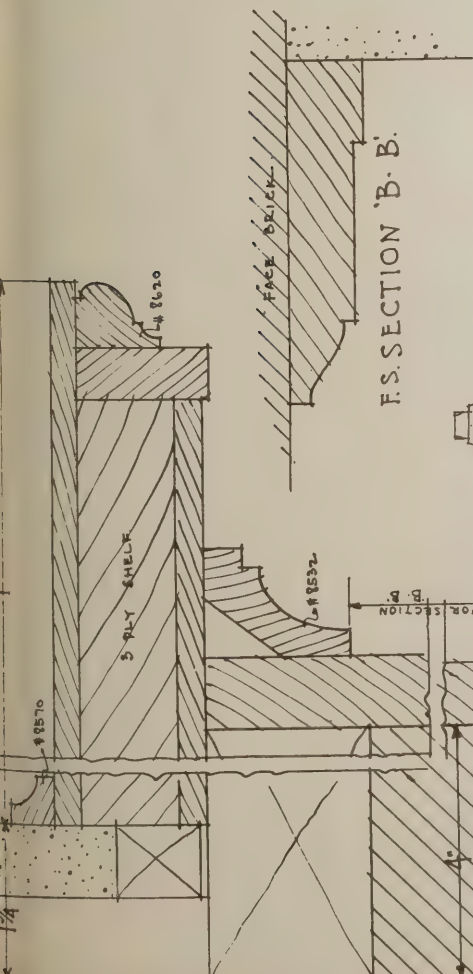
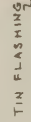
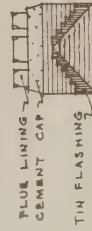
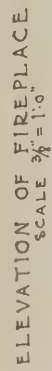
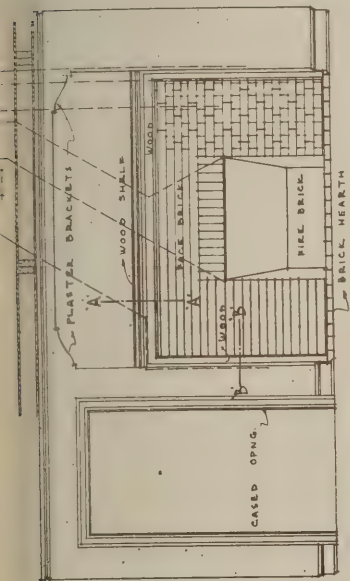
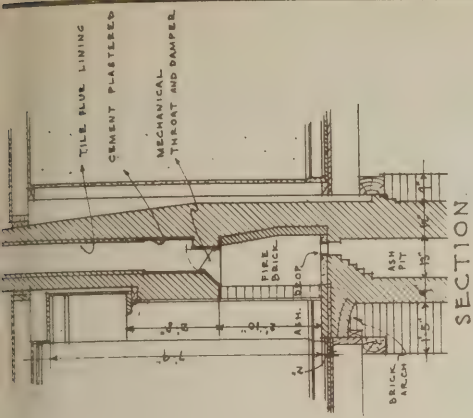
SECTION.

FRONT ELEVATION.

SCALE $\frac{1}{4}" = 1'.0"$

SIDE ELEVATION.

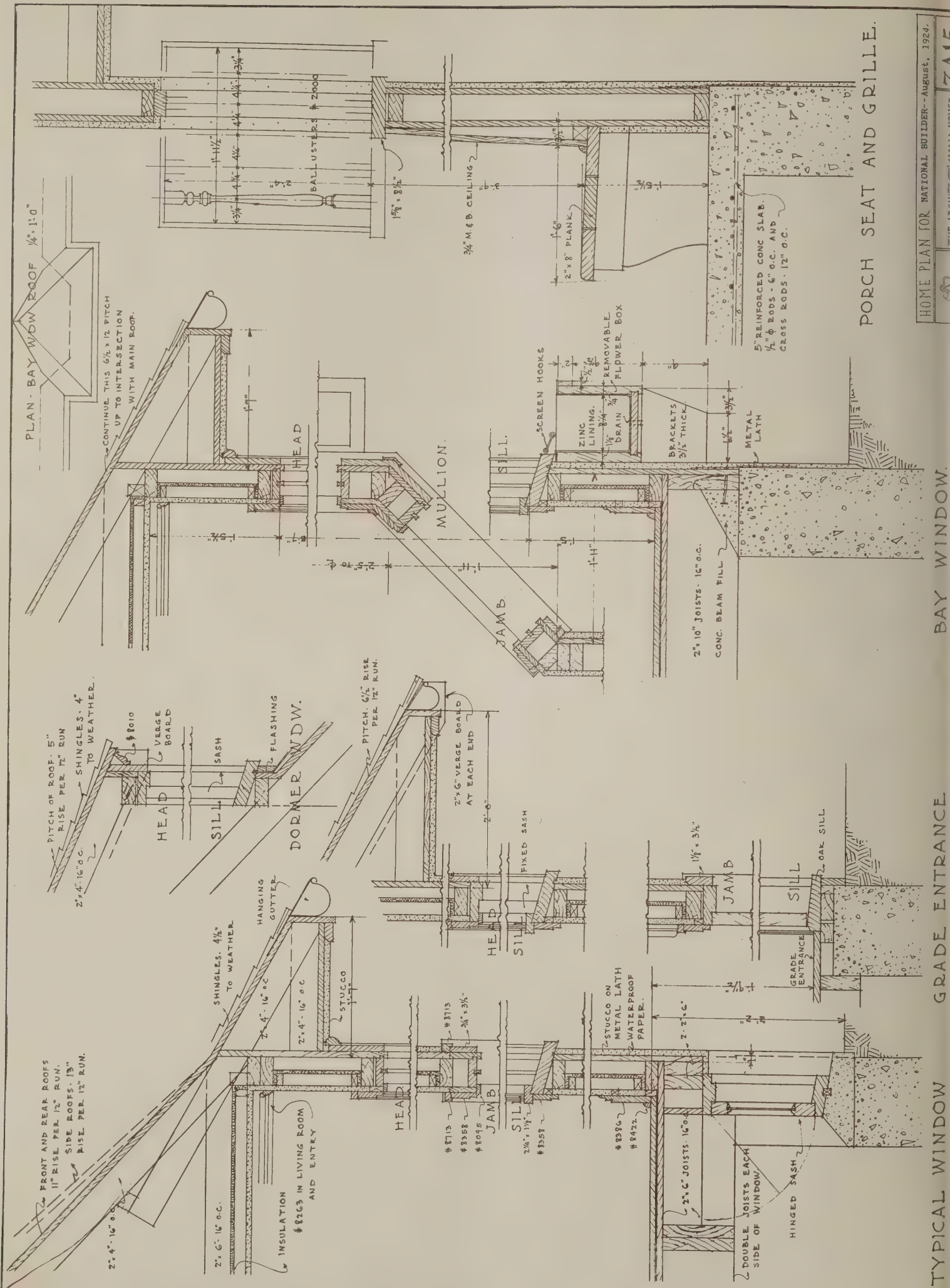
SCALE 1/4" = 1'.0"



REAR ELEVATION.

SCALE $\frac{1}{4}" = 1'0"$

SIDE ELEVATION:



Quantity Survey for House No. 3A15

Designed Especially for National Builder by The
Architects' Small House Service Bureau, Inc.

See pages 59 to 64, inclusive, for description, perspective, complete working drawings and details

EXCAVATING 195 cu. yds. BACK FILL 45 cu. yds. CONCRETE FOUNDATION If 12" concrete, 53 cu. yds. gravel, 214 sax cement. If 9" concrete, 40 cu. yds. gravel, 162 sax cement. If 12" tile, 25700 CBM tile, 19 cu. yds. mortar. If 9" tile, 19000 CBM tile, 15 cu. yds. mortar. CEMENT FLOOR 5 cu. yds. gravel. 3 cu. yds. sand. 49 sax cement. 4 cement spatter blocks. REINFORCED CONCRETE ½ cubic yards gravel. ¾ cubic yards sand. 5 sax cement. REINFORCING STEEL 8¾ rods 6'0. 12¾ rods 4'6. STUCCO 163 sq. yds. stucco on metal lath. LATH 9 yards metal lath over furnace. 6300 wood lath. 150 sq. yds. metal lath for exterior PLASTER 450 sq. yds. plaster on wood lath 9 sq. yds. plaster on metal lath. 14 sq. yds. Keene's cement. TILE FLOORS 45 sq. ft. ceramic tile. 25 lin. ft. cove base. CHIMNEY 2460 common brick. 120 face brick. 60 fire brick. 14 sq. ft. hearth tile. 120 inside face brick. 56 lin. ft. 8x12 flue tile. 20 lbs. fire clay. 2½ cu. yds. mortar. 1 cast iron ash dump. 1 throat and damper. 1 angle 4x3x5/16—4'0. 2—8x10 clean out doors. 1—8" thimble.	1—6" thimble. 3 yds. metal lath. 1 cement chimney cap. LUMBER 3—6x6-7 posts. 1—4x4-7 posts 2—6x8-16 girders. 2—2x10-12 girders. 3—2x10-14 stair horses. 2—2x6-12 landing framing. 6 ft. 2 in. plank cleanout cover. 54 lin. ft. 2x4 basement partition plates 14—2x4-7 basement partition studs 180 ft. D & M basement' partition sheathing 13—2x10-11 first floor joist. 15—2x10-12 first floor joist. 7—2-10-14 first floor joist. 7—2x10-14 first floor joist. 5—2x10-16 first floor joist. 5—2x10-10 first floor joist. 4—2x10-16 headers and doubles. 70 lin. ft. 2x10 box sill. 800 ft. com. bds. 1st floor subfloor 1050 ft. 13/16x1½ first floor finish floor 200 lin. ft. 1x3 bridging. 372 lin. ft. 2x4 1st floor partition plates 109—2x4-9 first floor partition studs 13—2x6-12 1st floor ceiling joists 15—2x6-12 first floor ceiling joists. 14—2x6-14 first floor ceiling joists. 5—2x6-16 first floor ceiling joists. 5—2x6-18 first floor ceiling joists. 875 ft. D & M attic floor. 900 lin. ft. grounds. 372 lin. ft. 2x4 outside wall plates 110—2x4-8 outside wall studs. 11—2x4-14 opening doubles 4—2x4-12 opening headers. 3—2x4-10 dormer plates. 2—2x4-16 dormer studs. 1500 ft. shiplap wall sheathing 50 ft. siding for dormer. 4—2x4-16 dormer rafters. 10—2x4-16 rafters. 9—2x4-5 rafters. 47—2x4-18 rafters. 20—2x4-16 rafter ends and look outs 1—1x6-12 ridge rafter. 14—2x4-12 collar ties 1610 ft. com. bds. roof sheathing. 12¾ M shingles. 25—2x4-10 scaffold and extras. 8—2x6-14 scaffold and extras.	4—2x10-12 scaffold and extras. 3—2x8-14 scaffold and extras. MILLWORK Frames: 8 sash frames 7x9-3L-1¾. 1 sash frame 10x12-6L-1¾. 1 wd. frame 10x12-16L-1¾. 3 wd. frames 10x12-12L-1¾. 2 wd. frames 8x9-12L-1¾. 1 wd. frame 10x12-20L-1¾. 2 wd. frames 9x12-10L-1¾. 1 wd. frame 10x12-4L-1¾. Windows: 8 sash 7x9-3L-1¾. 1 sash 10x12-6L-1¾. 1 wd. 10x12-16L-1¾. 3 wd. 10x12-12L-1¾. 2 wd. 9x9-12L-1¾. 1 wd. 10x12-20L-1¾. 2 wd. 9x12-10L-1¾. 1 wd. 10x12-4L-1¾. Storm Sash: 8 st. sh. 7x9-3L-1¾. 1 st. sh. 10x12-6L-1¾. 1 st. sh. 10x12-16L-1¾. 3 st. sh. 10x12-12L-1¾. 2 st. sh. 8x9-12L-1¾. 1 st. sh. 10x12-20L-1¾. 2 st. sh. 9x12-10L-1¾. 1 st. sh. 10x12-4L-1¾. Screens: 8 screens 7x9-3L-1¾. 1 screen 10x12-6L-1¾. 1 screen 10x12-16L-1¾. 3 screens 10x12-12L-1¾. 2 screens 8x9-12L-1¾. 1 screen 10x12-20L-1¾. 2 screens 9x12-10L-1¾. 1 screen 10x12-4L-1¾. Shutters: 1 pr. shutters 10x12-16L-1¾. 3 pr. shutters 10x12-12L-1¾. 2 pr. shutters 8x9-12L-1¾. Outside Door Frames: 1 dr. fr. 3'0x7'0-1¾. 1 dr. fr. 2'8x6'8-1¾. Outside Doors: 1 dr. 3'0x7'0-1¾ No. 1240. 1 dr. 2'8x6'8-1¾—No. 970. Storm Doors: 1 st. dr. 3'0x7'0—1¾. 1 st. dr. 2'8x6'8—1¾.
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Screen Doors:

- 1 sc. dr. 3'0x7'0—1½
1 sc. dr. 2'8x6'8—1½

Outside Millwork:

- 160 lin. ft. cornice
2 flower box brackets
1 entrance step
1 grille frame and grille 2'0x2'6
1—4'0 wood hall seat
20 lin. ft. cove.

Interior Doors:

- 1 dr. 2'8x6'8—1¾—No. 970
2 lattice frames 1'6x9'0
1—4'6 flower box
2 dr. 2'6x6'8—1¾—No. 720
2 dr. 2'6x7'0—1¾—No. 1103
1 dr. 2'8x7'0—1¾—No. 1103
2 dr. 2'6x6'8—1¾—No. 1103
2 dr. 2'4x6'8—1¾—No. 1103
1 dr. 2'0x3'0—1¾ 1 P
1 icing door

Jambs:

- 1 jamb 2'8x6'8
2 jambs 2'6x6'8
2 jambs 2'6x7'0
1 jamb 2'8x7'0
2 jambs 2'6x6'8
2 jambs 2'4x6'8
1 jamb 2'0x3'0
1 jamb for icing door
1 jamb 2'8x7'0
1 jamb 3'6x7'0

Interior Trim:

- 8 sides trim 7x9-3L
1 side trim 10x12-6L
1 side trim 10x12-16L
3 sides trim 10x12-12L
2 sides trim 8x9-12L
1 side trim 10x12-20L
2 sides trim 9x12-10L
1 side trim 10x12-4L
1 side dr. trim 3'0x7'0
1 side dr. trim 2'8x6'8
2 side dr. trim 2'8x6'8
4 side dr. trim 2'6x6'8
4 side dr. trim 2'6x7'0
2 side dr. trim 2'8x7'0
4 side dr. trim 2'6x6'8
4 side dr. trim 2'4x6'8
2 side dr. trim 2'0x3'0
2 side dr. trim for icing door
2 side dr. trim 2'8x7'0
2 side dr. trim 3'6x7'0
1 flight basement stairs
1 flight grade stairs
1 mantle shelf
1 scuttle door
1 scuttle door jamb
1 scuttle door trim
1 utility door
1 utility door jamb
1 utility door trim
1 medicine cabinet No. 2835

- 1 linen closet
2 drain boards
1—5'0 cabinet
1—6'6 cabinet
1 table
1 meter cabinet
350 lin. ft. base
350 lin. ft. base shoe
350 lin. ft. base molding
62 lin. ft. ceiling cove
114 lin. ft. picture molding
40 lin. ft. band molding
18 lin. ft. closet shelving
16 lin. ft. closet hook strip
12 lin. ft. closet clothes rod
6 lin. ft. threshold

Insulation:

- 1050 ft. ½" vegetable fibre or equal
for outside walls
700 ft. ½" vegetable fibre or equal
for ceiling

Paper:

- 2 rolls rosin for floors
3 rolls felt for walls
3 rolls felt for roof

Weather Stripping:

- 8 sash 7x9-3L
1 sash 10x12-6L
1 wd. 10x12-16L
3 wd. 10x12-12L
wd. 8x9-12L
1 wd. 10x12-20L
2 wd. 9x12-10L
1 wd. 10x12-4L
1 dr. 3'0x7'0
1 dr. 2'8x6'8

Caulking:

- 2 single door frames
1 coal chute
19 single frames

Tinwork:

- 136 lin. ft. gutter
35 gutter hangers
4 gutter ends
9 outside miters
4 inside miters
4 nipples
4 elbows
4 strainers
4 offsets
4 shut offs
40 lin. ft. conductor
8 conductor hooks
1 flower box lining
30 lin. ft. flashing tin
48 lin. ft. valley tin
116 lin. ft. hip roll
12 lin. ft. ridge roll
3 finials

Interior Painting:

- 10 gal. white paint
8 gal. enamel

- 5 gal. filler stain
2 gal. shellac
8 gal. varnish
2½ gal. floor shellac
5 gal. floor varnish
2 gal. oil
1 gal. turpentine
1 gal. alcohol
3 doz. sheets sandpaper
3 lbs. steel wool
½ gal. cement floor paint

Exterior Painting:

- 5 gal. trim paint
2 gal. boiled oil
½ gal. body paint
37 gal. shingle stain
¾ gal. sash color
¾ gal. screen paint
½ gal. shellac
1 gal. japan
1 gal. turpentine

Hardware:

- 7 cellar sash sets
10 sash locks
10 sash lifts
19 storm sash sets
19 screen sash sets
6 sets shutter hardware for pairs
1 front door set with butts
1 rear door set with butts
2 storm door sets
2 screen door sets
1 floor hinge
2 push plates
10 inside lock sets with butts
1 icing door set
800 lbs. nails
6 lbs. brads
1 coal chute
330 lbs. sash weights
2 hanks sash cord
13 door bumpers
3 doz. clothes hooks
2 doz. picture hooks
1 pr. hinges for scuttle door
4 friction stays for utility door
1 pr. ornamental butts } medicine cabinet
1 cupboard turn }
2 pr. ornamental butts } linen closet
4 drawer pulls }
2 cupboard turns }
9 pr. ornamental butts }
5 cupboard turns } kitchen cabinet
4 elbow catches }
4 drawer pulls }
1 bin pull }
1 set bin castors }
20 drawer pulls }
4 pr. ornamental butts } kitchen cabinet
2 cupboard turns }
2 elbow catches }
2 drain board brackets
1 pr. ornamental butts } meter cabinet
1 cupboard turn }



Fig. 1—Three adobe houses on the outskirts of Albuquerque, New Mexico. They seem to have grown right out of the ground

ADOBE HOUSE CONSTRUCTION

II. Construction Details for Adobe Houses

THE previous article of this series of two dealt with the manufacture of the adobe brick, this one will treat with the erection of adobe houses. All the photographs were made by the writer in order to show the manner in which these houses are built. The method of building is, in many instances, somewhat crude as compared with our modern standards but it must be remembered that the materials available for this type of construction are themselves crude and that the adobe house, built generally in somewhat isolated spots, has behind it the momentum of tradition which is indeed difficult to overcome. In Mexico one finds adobe houses being built today in the same manner in which they were built two or three hundred years ago. The method of framing, the kind of scaffolding used, the way the plastering

of the outside walls is carried out—"Tomas" of today does it exactly in the same fashion as the "Tomas" of two hundred years ago. Adobe construction was a native art dating back for many centuries and was the result of having to utilize the materials at hand for the purpose required. In America, however, people living in that part of the country where adobe construction is possible have been quick to adapt it to their needs. They have introduced new methods into the manner of framing partitions, prepared roofing is used instead of a four-inch layer of adobe, and in some instances reinforced concrete lintels are used over window and door openings. From a casual inspection it would seem that the one weak point in native built houses is the lintel. The one departure from the old method of building the native houses

appears to be the introduction of sawed lumber for lintels instead of logs. It is evident, in many instances, that the natives had little idea, if any, of the weight a lintel is called upon to bear, and many of the native houses present a sorry aspect due to the deformation of a lintel too weak to support its load, and a resulting crack in the wall. This is true only of those adobe houses recently built; the older ones were constructed with log lintels strong enough to bear many times the weight of the wall above. The method of constructing an adobe house is peculiar in that the inside partitions are built first and the walls of the house built around them. In the modern houses a concrete foundation is laid in the ordinary manner and the interior framing set upon it. (See Fig. 2.) Refer now to Fig. 12. This is a close-up of the framing



Fig. 2—The start of an adobe house. The partitions are erected before the walls



Fig. 3—An adobe house with walls erected. Note weather protection at top course

shown in Fig. 2. It will be seen here that several short studs are nailed to the sill and project about six or eight inches above the rough floor. These are base blocks and are built into the wall in order to have something to which the wood base used for inside trim may be nailed. It is customary to nail these blocks to the girder and build the wall about them rather than set them into the wall as the work proceeds.

On the studding which bears against the wall the reader will notice projecting boards laid horizontally and nailed to the stud at intervals of about five feet. These boards are located so that they will come at joints in the adobe wall. They are built into the joint and furnish the means of anchoring the stud to the wall. Fig. 10 shows a bolt used to anchor a partition. It is set in a joint between two adobe brick and carries a heavy washer to prevent it from slipping thru as the nut is tightened on the inside. When the wall is plastered the washer and the bolt head will be covered. Note that the washer is countersunk into the wall.

The mortar used for laying up the brick may be either the plain adobe mud or the adobe mud mixed with lime. The adobe mud is slow setting and if there is danger of frost, lime is generally added to hasten the set. It also makes a better and stronger job. A peculiarity of native construction illustrated by Fig. 10 is the fact that no mortar is ever placed in the vertical joints unless the wall is to remain unplastered. The manner of laying the brick is to spread a bed of mortar, lay the adobes on this bed



Fig. 5—Water is led away from the wall until the downspout is placed

and then spread another bed of mortar over the layer just put down, continuing in the same fashion until the wall is as high as desired. There is a very good reason for this: the fact that the vertical joint, unfilled with mortar, furnishes a good key for the plaster which is later applied to the wall after the fashion of stucco.

Fig. 9 shows a wall where the vertical joints have been filled. This wall is not built of true adobe, but of terrone, which accounts for the size of the smaller brick. Where the vertical joints are filled, as shown here, nails are driven into the brick (flat-headed shingle nails, two in each brick, projecting about an inch out from the wall), in order to hold the plaster to the wall.

Native scaffolding, used to build the high part of the wall, is simple indeed and is illustrated in Fig. 6. The wall brackets are supported by the pole and are not directly fastened to the wall. Originally the brackets were made from the same material as the poles and were tied together with thongs instead of being made of sawed lumber and nailed. This type of scaffold, with modifications might be well adapted by any contractor who found the need of a scaffold which could be erected without damaging the face of a wall.

As has been stated previously, one of the chief weaknesses of native built adobe houses is the lintel. In Fig. 6 the lintel over the window opening was a piece of 2x8. The more modern type of lintel is the one shown in Fig. 11. It is built of two pieces of 2x6, separated with 2x4 blocks, and is set in the wall with the 2x6 on edge as shown in Fig. 7. Notice that a wood plate has been set in

the wall under the lintel to give it a firm bearing. If the weight above the opening is exceptionally heavy the lintel may be built up of more than two members, or of members having a cross-section greater than 2x6. In some recent buildings the writer has seen reinforced concrete lintels, cast in place.

In order to hold the window and door frames in place, jamb-blocks are used. They are not set in the wall in the same manner as for brick buildings but are nailed to the frame before the wall is laid. This is illustrated in Fig. 9. Window sills may be of wood, as shown in Fig. 7, or of concrete cast in place, the formwork for which is shown in Fig. 8. There were no sills required on the old adobe houses for the simple reason that there were no windows. In Fig. 5 there is also shown the formwork in place for a concrete coping. It will also be noticed in this illustration that wire lath has been placed on the lintel to furnish a bond for the plaster.

The sheet-metal affair near the coping is a "canale." In the old houses the canales were hollowed-out pieces of wood which extended out far enough from the building to keep the water off the wall as it drained from the roof. Here, however, a downspout will be used. The board leading from the canale is only placed temporarily to keep the water away from the unplastered wall in case of rain.

The last step in the construction of an adobe house is plastering the outside walls. Here is where a decided change has been evolved by the modern builder. Formerly, ordinary adobe mud was used for plastering



Fig. 6—Native scaffolding. The pole is not fastened in the ground but its pointed end keeps it from slipping

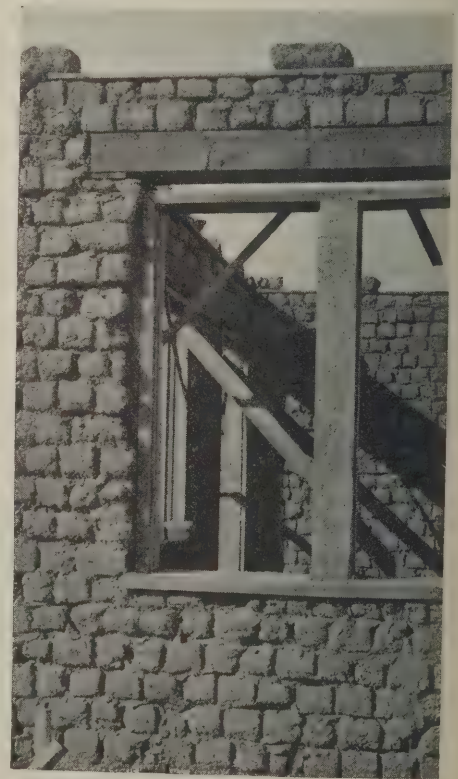


Fig. 7—Built-up lintel in place. Note that a wood plate is provided to give it a firm bearing on the wall

August, 1924



Fig. 8—Formwork for concrete sill. The cement sacks were used to block the window opening

the walls. When rain came it washed considerable of the plaster off the wall, requiring that another coat be applied. This accounts, in part, for the impression one gets regarding the fact that walls of the old adobe houses seem thicker at the bottom than they are at the top. The rain, washing down the wall, carried the sediment with it, taking it from the top and depositing it below. Thus when a coat of plaster was applied over the entire wall it added to the thickness of the already thickened portion of the wall below as well as to the washed away section at the top.

While adobe mud is cheap, it cannot be said to be durable when used as exterior plaster. Therefore, a more permanent coat such as cement stucco had best be applied to a wall where permanence is desired. It has been found that, while the adobe brick furnishes a good bond for adobe mud plaster, it is not as well suited for providing a



Fig. 9—Jamb block for holding door frame

bond for cement stucco. Therefore, instead of a natural bond, some artificial means must be provided such as allowing the vertical joints to remain free of mortar, as described before, driving nails in the adobe, or, in particular work, using chicken wire or wire mesh, nailed to the adobe, to reinforce the stucco coat.

The adobe house has been lifted out of the rut of the common-place. For people who live in lands where it can be built it furnishes a means of providing excellent living quarters at reasonable cost. In the spring



Fig. 10—Bolt used for holding partition. Notice that the adobe thru which it passes has been chipped so that the bolt head will be covered by the stucco

of 1924, adobe brick, 11x9x4 inches were selling in Albuquerque, New Mexico, for \$35.00 per thousand, delivered on the job. As regards the architectural effects obtainable with this material, the illustration of the finished houses shown in this article shows what can be done. When well-built, an adobe house is a well insulated house, due to the quality and thickness of its walls. The manner of building it is simple, the cost is reasonable, the architectural scheme, when properly handled, beautiful—what more can one ask?

Several requests for information about adobe construction led Roy M. Singer, National Builder's construction editor, to gather the data and make these pictures "on the job" in New Mexico.



Fig. 11—A built-up lintel consisting of two 2x6s nailed together with short separating blocks



Fig. 12—A "close-up" of the framing shown in Fig. 2. The wings projecting from the stud at the extreme right fit into the wall and serve to hold the partition



Albert Pike Memorial Temple, Little Rock, Arkansas. John H. Thalman, General Contractor. Stern and Mann, Architects, Little Rock

STONE VENEERING a BRICK BUILDING

IN Little Rock, Arkansas, the building of the new Albert Pike Memorial, to house the Arkansas Grand Lodge of the Ancient and Accepted Scottish Rite of Freemasonry, offers not only something of interest for contractors but also some hints on carrying on a job involving the erection of heavy stonework and the stone veneering of a brick building.

Having outgrown their quarters, the Scottish Rite Bodies decided to expand their existing building to such dimensions

as would satisfy their present and future needs. The original building, a brick structure, was 100 feet wide and 140 feet long but by the purchase of an additional 160 feet of ground adjacent to the property already owned, provision was made for increasing the length of the building to 300 feet. This was decided upon in order that the whole assembly would appear as a single building. The plans included remodeling the original building to conform to the general architectural scheme of the new portion.

The original floor levels were maintained and therefore it was not necessary to make any radical changes in the interior of the old building. The new building, however was to be built of limestone and therefore it became necessary to veneer the existing brick building with the

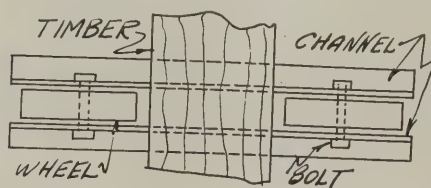
same material. The veneering was the last thing done, thus permitting the erection equipment used for the new addition to be utilized again.

Two derricks were used. One, a heavy gallows-frame, was used to lift the heavy column sections and cornice pieces into place. This gallows frame was equipped with wheels at the base, operating on a steel rail and permitting lateral movement of the frame. An electric motor furnished power for hoisting.

For erecting the smaller and lighter pieces, used in veneering the old build-



Wheels at base of derrick



Method of supporting derrick on wheels



Wall tie used to hold stone veneer



No special work was required in building this car as it was only necessary to set the derrick on a rectangular frame, holding it to the frame as shown in the

In holding the stone to the wall, a simple method was used. Steel anchors, one inch wide and one-eighth inch thick, bent

Stern and Mann, of Little Rock, Arkansas, were the architects in charge of the work, John H. Thalman was the general contractor, and Hilliard Brothers the contractors for the cut stone work.



Side view showing old building



View of the stiff-leg derrick used to hoist stone

HOLLOW TILE SILO CONSTRUCTION

THAT a silo is absolutely necessary to economical farming practice has been demonstrated time and again by experiment stations all over the country. In a number of instances it has been shown that with a silo a farmer saves 10 cents or more on every pound of butter fat produced, 40 cents on 100 pounds of milk, \$1.00 on 100 pounds of beef and \$1.50 on 100 pounds of mutton. On an all-dry ration (no silage at all) other experiments have brought out that it takes on an average .39 of an acre to produce 100 pounds of beef, .26 of an acre when part silage is used and .13 of an acre with all silage and cotton-seed meal or oil meal.

Silos are constructed today with many materials and under several methods. Some are good, some are not so good and some are no good at all, and considering the investment a farmer makes when he builds a silo it is well for him to investigate in order to assure himself that he is getting his money's worth when he buys.

In this article we illustrate a silo of hollow tile, and the method of building it. This silo, being tight, should keep silage perfectly; the dead air spaces between the walls of the tile should resist frost, and the smooth glazed interior walls allow even and rapid settling of the si-

lage. This silo is built with a gambrel roof, which permits filling four to eight feet above the wall, thus allowing a full silo to remain after settling.

In building the silo foundation the wall should be carried below the frost line and should have a footing on hard clay, shale, or rock.

In laying out the foundation trench, the easiest way is to drive an iron rod into the ground where the center of the trench is to be, boring a hole at one end of a piece of 1x3 to fit the rod, and driving two large spikes through the 1x3 so that when it is used as a compass, the spikes will scratch the outlines of the trench on the ground.

The foundation trench may then be dug and the concrete poured. When laying up the tile, the joints on the inside face of the silo should be washed thoroughly with a thin mixture of pure cement and water, applied with a brush. This will serve to smooth them and make them tight, and is a hint well worth following. If the inside and outside faces of the wall are wiped with a cloth soaked in linseed oil it will be found that the mortar will not stick readily and can be easily wiped off when the silo is finished.

In order to strengthen the silo, steel-band reinforcing is used. Reference to

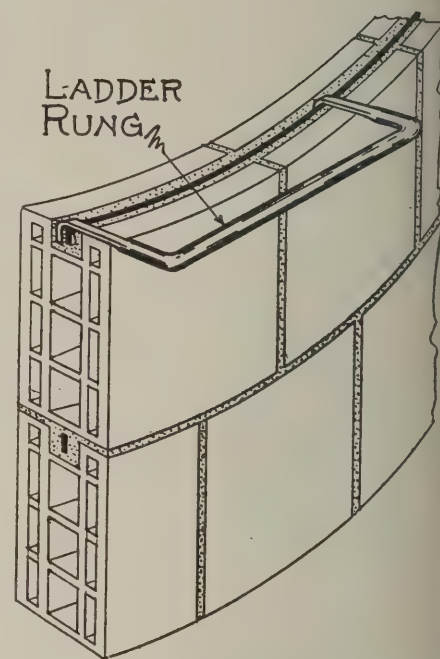


Fig. 2—Method of building-in ladder rungs

Fig. 6 will show how these bands are set in the wall. About two feet of the bands should be bent around the jamb-post, as illustrated. The bands must be pulled tightly if they are to do the work required of them. These bands should be kept away from the sides of the channel in which they rest so that when the channel is filled with cement the band will be completely imbedded, as shown in Figs. 2 and 3.

Small pebbles, set between the band and the wall of the channel may be used for this purpose.

The rafter ties are to be set as shown in Fig. 3, with the hook under the reinforcing steel, before the mortar is poured in the

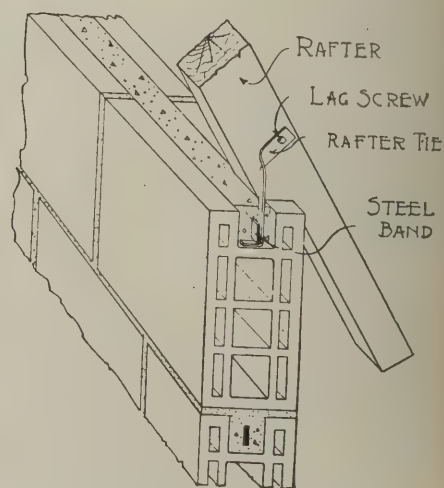


Fig. 3—Rafter ties for roof



Fig. 1—A hollow tile silo on a farm

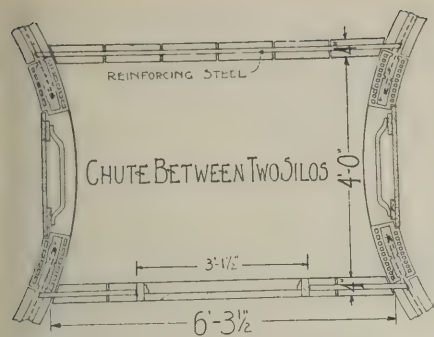


Fig. 4—Section showing how to build chute between two silos

channel of the top course of tile. Space the ties by measuring the distance around the silo and divide this by the number of rafters, there being two more rafters than the diameter in feet; that is, a 10 foot silo has 12 rafters, etc.

The method of putting on the roof

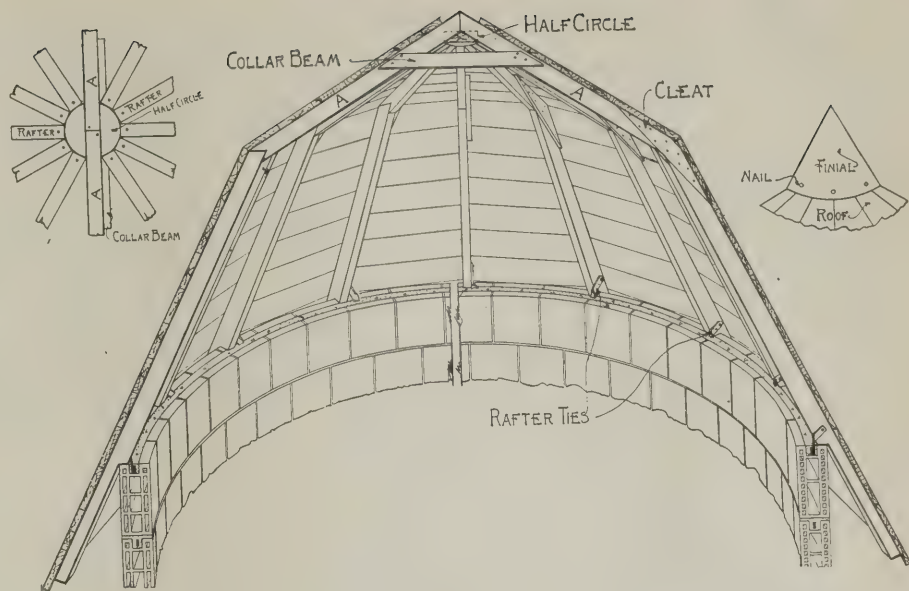


Fig. 5—Details of roof construction

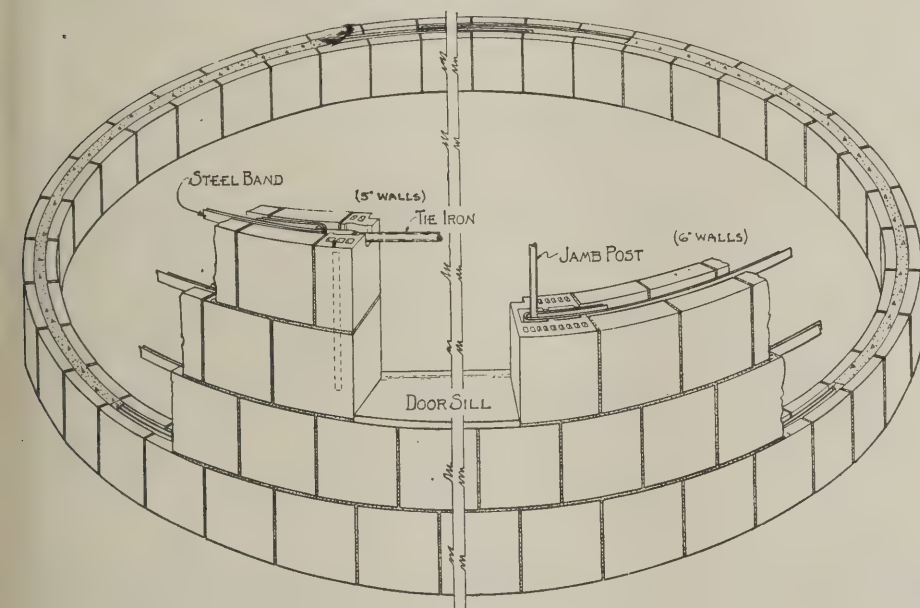


Fig. 6—Horizontal section showing steel band reinforcing and jamb post

frame is shown in detail in Figs. 3 and 5. The two long rafters marked A should be put up first and the half circles and collar beams nailed to them. The remaining rafters may then be nailed at the

top to the half circles as shown in Fig. 5. In placing the finial, galvanized nails should be used and spaced so that each will strike a rafter when driven.

Where more than one silo is to be built it will be found convenient to build the chute between them. This is best done as illustrated in Fig. 4. The chute walls, which are built of hollow tile, are reinforced with steel bands, as shown, in a manner similar to the silo reinforcing.

A valuable addition to a silo is a feed room. This feed room is built between the barn and the silo and forms a work-room for the men engaged in feeding and protects them in inclement weather. The layout and recommended dimensions for various sized feed-rooms are illustrated in Fig. 8. Notice that the location for the chute is fastened to the silo with steel bands. This detail is the same as that shown in Fig. 4.

When erected, this type of silo should prove a valuable accessory to the farm equipment and, if properly built, should last a lifetime.

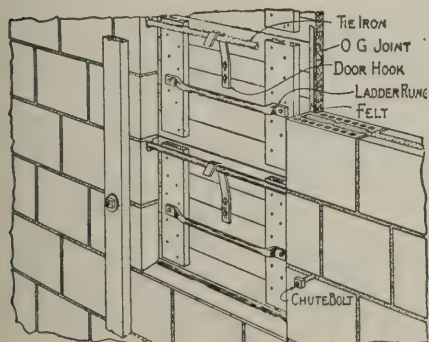


Fig. 7—Details of door construction

FEED ROOM SIZES			
No.	A	B	C
1	6'-0"	10'-0"	3'-0"
2	6'-0"	10'-0"	3'-0"
3	6'-0"	10'-0"	3'-0"
4	10'-0"	12'-0"	3'-0"

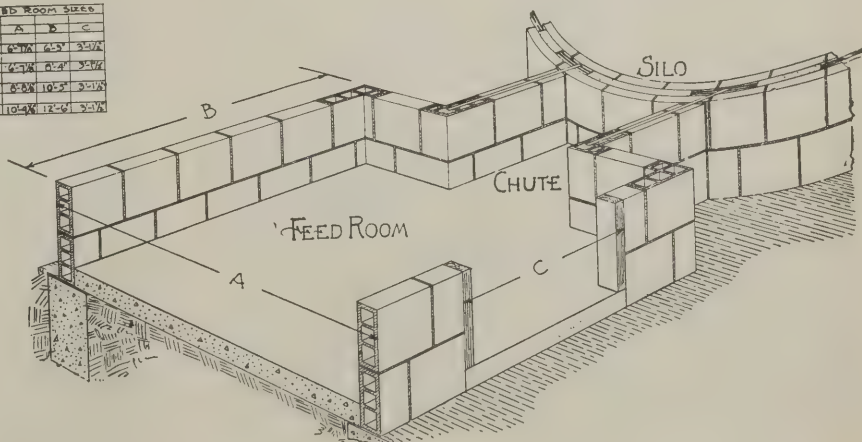


Fig. 8—Sketch showing dimensions and layout of silo and feed-room



The Isaac Delgado Central Trades School, New Orleans, Louisiana

A PRACTICAL TRADE SCHOOL

TO the young men who seek a trade as a means of making a livelihood, the Isaac Delgado Central Trades School offers an open door of opportunity. It is a free public school, in which the student has a choice of twelve standard trades which are taught by expert practical men who have been selected not only for their skill but also for their ability to impart training. Each shop is well equipped with the latest machinery and tools. The trades taught are: cabinet making, carpentry, electrical wiring, interior decorating, machinist, pattern making, plumb-

ing, printing, sheet metal work, sign painting, tailoring and stewardship. The mathematics taught with the trade is called "trade mathematics" because only the necessary calculations required in the trade are taught.

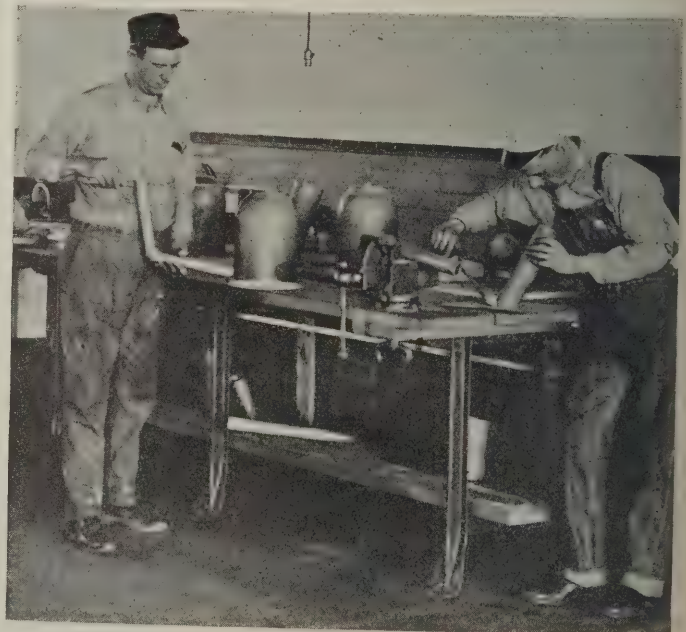
An important factor in the institution is the vocational guidance department. Frequently students are enrolled who have not yet decided what trade they are suited for. In this class they are given a tryout at several trades under the supervision of experienced instructors. Almost without exception the student makes his own selection

in a short time and is then transferred to the shop where his trade is taught.

The school building is well lighted and ventilated and comfortably heated in cold weather. It is located next to the city park, and street cars pass the door. The campus provides plenty of room for outdoor sports and a beautiful auditorium is used for entertainments and student gatherings. Every effort has been put forth to make the school as attractive as possible to the young man who would learn a trade. It provides every facility for the young man to become a use-



*Some examples of the sheet-metal work students' handicraft.
Note the practical examples*



Two of the students in the plumber's class getting practical instructions in lead-pipe work

ful, producing citizen.

It is one thing to train a student and another proposition entirely to hold him in the city where his training was received. The possibilities of higher wages, the desire to move, and many other reasons all go to rob a city of many valuable tradesmen. For this reason a novel scheme has been adopted at the school for illustrating to the students the advantages of remaining in New Orleans.

In the large court about which the school is built, a map of the district surrounding the city has been laid out in white cement so that it is visible to anyone looking out of the windows which open on the court. The city, the harbor, docks and the adjacent territory are all outlined and their possibilities indicated so that the students have constantly before them the reminder that there is no need to travel to find opportunity.

In commenting on the practical worth of the school the director, Mr. H. G. Martin, has this to say:

"The question of 'How much is the school worth in dollars and cents to industry' is a question almost impossible to answer, and I can give only a vague illustration of what I would consider a mathematical estimate of its value. Taking the bricklaying course as an example. Cases were frequent this past year of bricklayers and plumbers being offered a bonus of \$5 per day with an assurance of three months continuous employment if they would leave a local contractor to go elsewhere. This would mean that for one short season a journeyman bricklayer would be worth approximately \$350 over and above the standard pay. Considering that a properly trained apprentice or trade school graduate is worth half of that for the same short period, would it not be reasonable to assume a valuation of \$1000 per man, as he is a permanent asset to the contractor, and



This is a map of the district around New Orleans, laid out in cement in the courtyard of the school to give the students an idea of the opportunities offered by staying in the place where they received their training

that this would be saved in five seasons of three months shortage each?

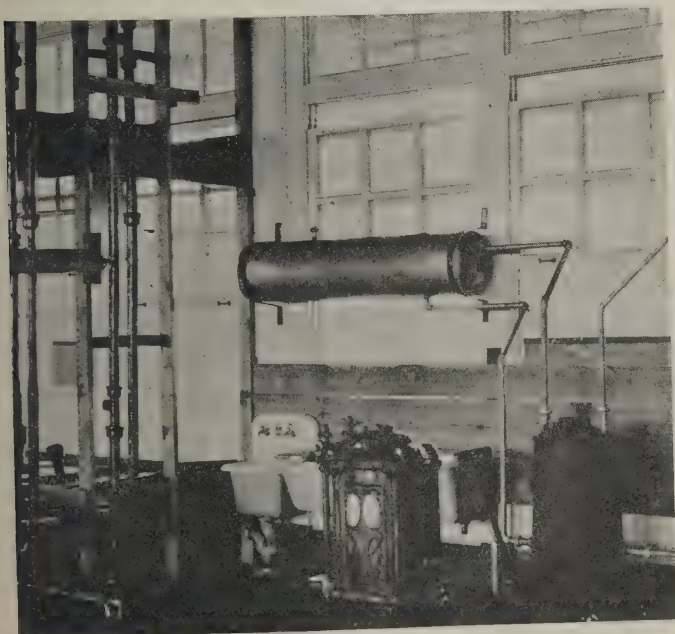
"Similar illustrations could be given for other trades. You will note that I am considering this from the mutual viewpoint of the apprenticeship and trade school training. From the trades school viewpoint an additional valuation might be considered in view of the fact that the employer saves the cost of the elementary mistakes made in the first year of apprenticeship.

"The question is constantly asked, 'Why is the American boy not entering trade life, and particularly the building trades?'

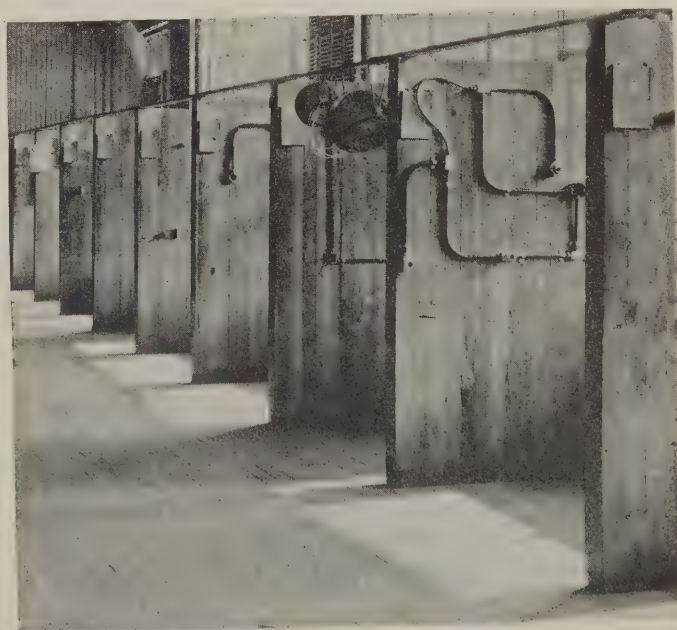
"One cause is that the opportunities for commercial courses of training have greatly improved and increased in the last several years, and the advertising has been very effective in influencing the lives of girls and boys. Both private and public institutions have advertised these courses and have laid

particular stress upon the fact that the commercial vocations will bring young women and men in closer contact with the commercial and industrial executives than other vocations. They thus come to know what is more or less the truth that the higher positions in business are usually given to the office man rather than to the producer. We can readily expect this when we consider that our production workers having never paid sufficient attention to the matter of contact with the other lines of life have not used the best salesmanship in selling their vocations.

"I do not believe that the average boy avoids the trades as an evasion of hard or dirty labor, but have been lead to believe by my experience that he desires opportunities to go to the top in both business and society, with a position that carries with it opportunity, due honor and true dignity."



A view of the classroom for heating students



The electric wiring class' quarters

BUILDING COLUMN TESTS

By Allen P. Child

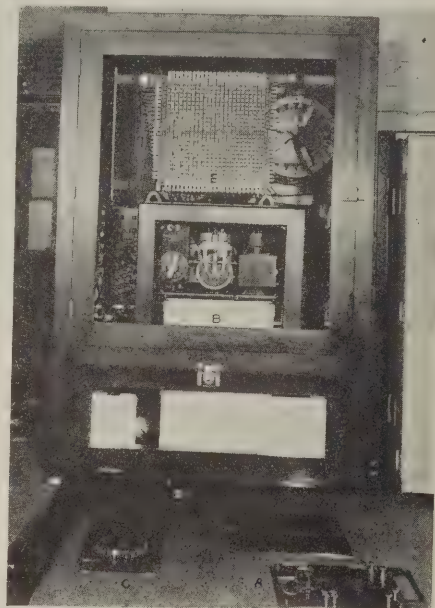
THE strength of a building depends in a great measure upon the construction of the columns which support one floor above another and it has been with a view toward ascertaining the ultimate resistance against fire as well as against impact and sudden cooling from water streams, that tests have been carried out by the Bureau of Standards. Experience as to the ability of columns to support loads when exposed to fire is limited because of the number of unknown variables involved in actual fires. This condition has resulted in the existence of wide differences in municipal codes and regulations regarding the protection of columns against fire. This series of tests was made so that the information obtained might be used to base requirements which would more properly cover the subject of protection.

A working load of approximately 100,000 pounds, for which the columns were designed, was maintained constantly during the test on the column and the length of time the column withstood the combined load and fire exposure determined the efficiency of the column or its covering.

The fire exposure was produced by placing the column in the chamber of a gas fired furnace in which the temperature rise was regulated so as to conform with a predetermined time-temperature relation. The temperature of the furnace and the test column measurements of the deformation of the column due to load and heat were taken. The column was loaded and exposed to fire for a predetermined period in the fire and water tests and at the end of the period

the furnace doors were opened and a hose stream applied to the heated column.

Before covering or testing the columns they were examined for straightness and



Instrument used for measuring temperatures

evenness of bearing. In placing the coverings and concrete columns the work was planned to reproduce as nearly as possible actual building operations and the form was supported within a staging extending to the top of the test column. The floor of the staging was used for a platform from which the concrete was placed. The tile and brick as well as gypsum block coverings were also placed in a manner duplicating building practices by workmen familiar with the methods used.

The furnace and accessory equipment used were designed specially for this work. A carriage and travelling crane transferred the columns from the storage bay to a location in the furnace where it was attached to the head of a loading ram and lowered into position. The special hydropneumatic ram maintained a constant load during the test and developed characteristic deformation at the failure point. Water maintained at a required pressure by an air compressor was the operating medium. The chamber of the testing furnace was 7 feet square and 12 feet in height. Two shallow pits underneath received the falling material and carried off the water applied in the fire and water tests. Two stationary and two movable brick walls suspended in structural steel frames from overhead beams by trolleys comprise the sides of the furnace. The movable walls are pulled open by a motor-

driven hoist. Four flues carry off the products of combustion and the walls are provided with mica-glazed observation holes which make it possible to observe all parts of the test column.

Four primary blast burners heated the furnace and were so arranged that the flaming gas was discharged from corners of the bottom of the chamber upward and toward the adjacent corners. In the fire and water tests, water was applied to three sides of the column by moving the nozzle back and forth at a distance of about 20 feet from the column center.

The temperature measurements were made by the thermo-electric method and the instruments for accomplishing the measurements were arranged at one point for convenience in observation. During the time of exposure to the fire through the eight hours or more of the test, or up to the point of failure, a series of temperature and deformation measurements were recorded which gave data on the furnace temperatures, the column temperatures, the compression and expansion over a definite gage length, the total depression or expansion of the column measured at a point above its heated portion and the lateral center deflection. The duration of the fire periods varied from 22½ minutes to one hour and that of the subsequent water application from one to five minutes.

As the intensity and duration of fires in buildings depends a great deal upon the character and amount of combustible material in the building construction as well as its contents the results of these tests



Wood column before fire test



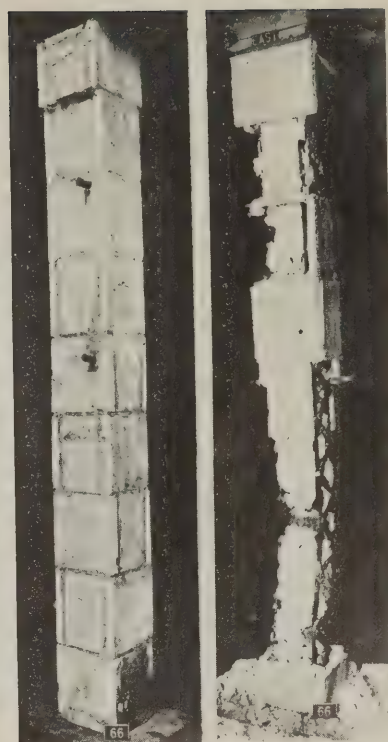
Wood column after fire test



Brick protection before and after tests



Concrete column before and after test



Gypsum protection before and after

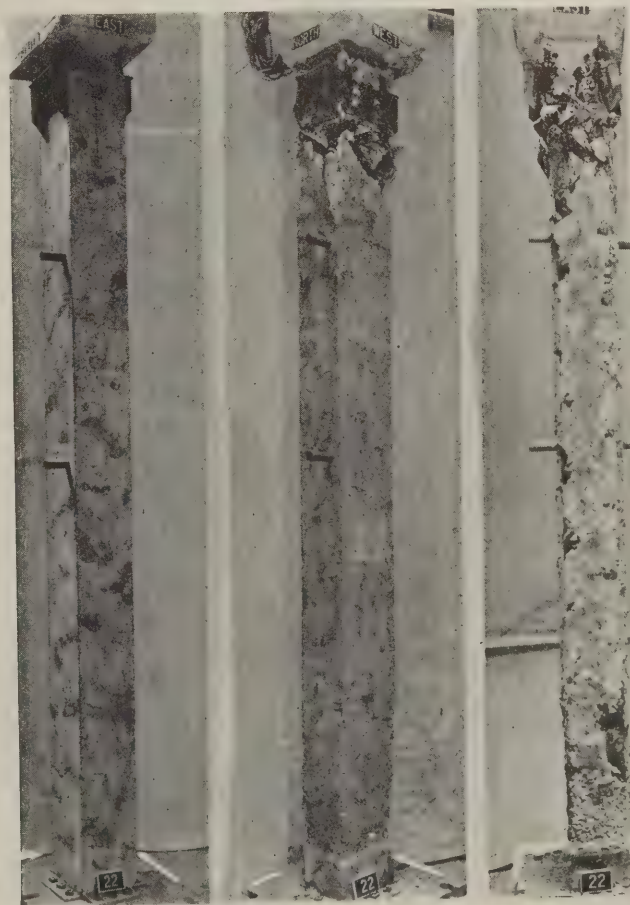
will be of value in that the fire resistance periods were derived under exacting conditions in point of test columns, test con-

ditions and interpretation of results and it is claimed that the results demonstrate that the types of columns and protections to

which the tests pertain are adequate for the resisting of building fires having a corresponding duration.



Plaster on metal lath protections before and after fire tests



Columns before test, one day after and thirty-two days after test

YOU CAN'T GET AWAY WITH IT!

These pictures are more forceful than words in showing that nature stands ready to exact full penalty for violation of her laws governing strength and stability.



Photo by "P. & A."

A structural iron worker was killed and two men injured when a derrick buckled and dropped a fifty-ton girder in the presence of two hundred spectators in Chicago. The girder crashed a distance of two floors, resulting in a mass of twisted and bent steel. Police and construction authorities have started an investigation.



Photo by "P. & A."

While a crew of men were working on a four-story structure at Spokane, Washington, recently, the entire framework began to sway and collapsed to the ground, killing one of the workers and seriously wounding another. The State of Washington is making an investigation to determine responsibility for the collapse.

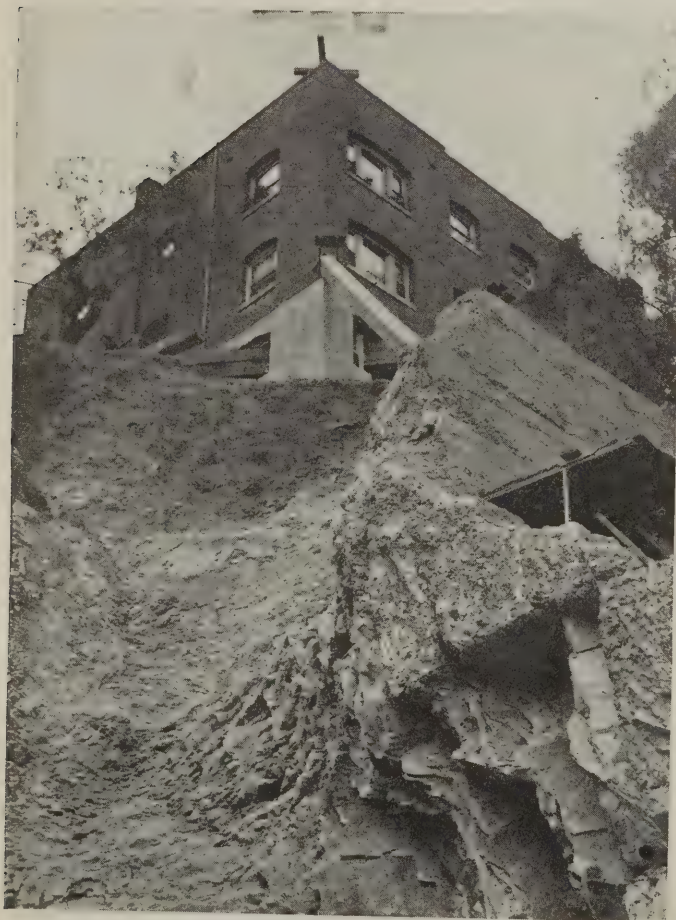


Photo by "P. & A."

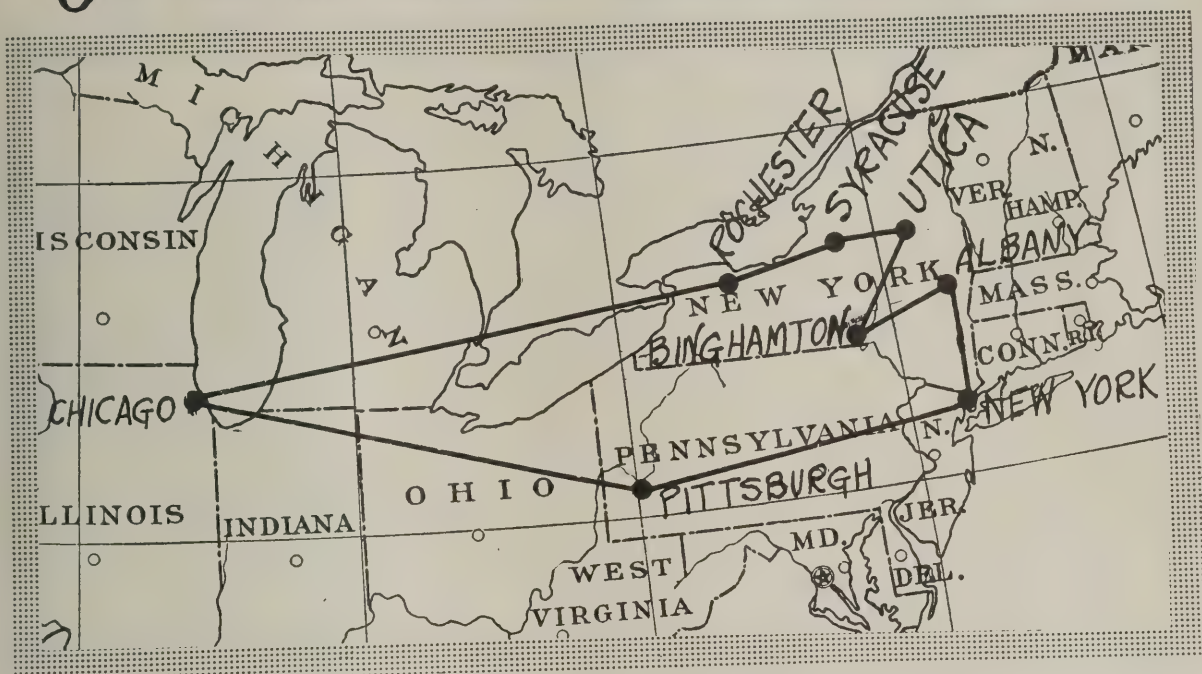
A Los Angeles apartment house has become a modern leaning tower of Pisa as a result of an adjacent landslide. Steam shovels had been excavating beside the structure when the land slid from beneath, leaving the building with only a fragile support.



Photo by "P. & A."

Under a sliding mass of splintered timbers and tons of earth and rock four men went to their deaths May 24, and ten were injured more or less seriously in the collapse of heavy staging in an excavation at 121 West Forty-sixth Street, New York City.

On the Job with the Construction Editor



WENT East this time. Smoky Pittsburgh, little old New York, then upstate on the New York Central. There was considerable construction work going on in the towns I visited and from all indications there seems to be no building slump in New York state. Pittsburgh seems to be short on bricklayers, lathers, and plasterers, and the same appears to be the case for central New York. Most of the building runs to residences and apartments, with the exception of New York City where the usual amount of skyscraper construction is in progress.

One of the newest up-town buildings is the 23-story American Radiator Company building designed by Raymond W. Hood. The building is quite narrow as buildings go and this facts seems to make it look taller. The outstanding feature, though, is its color—black brick with gold trim. Against a background of white buildings it certainly stands out prominently.

Central New York is an interesting place. When they hear the word New York, most people generally think only of that part of it around Manhattan Island, but, take it from one who has been there, there is a whole

lot more to New York state than the part where the subways operate.

Albany, Binghamton, Utica, Syracuse and Rochester are a live group of up-state cities where I picked up a lot of interesting "On the Job" dope as well as a bunch of other material for the profit of NATIONAL BUILDER

readers. You'll see the results soon in these pages. So long 'till next month.

Ray E. Singer.



On the job at Rochester, New York, with the building crew of Geo. Wegman's Sons Co.

On the Job in Tucson, Ariz.

A Rack for Steel Reinforcing

ON page 27 of the May issue of NATIONAL BUILDER was shown the method used by a Huntington, West Virginia, contractor to keep his steel reinforcing from being mixed together. The method he used was the simple one of driving stakes in the ground and placing the steel rods of different sizes between the stakes, thus keeping them separate.

Where working space is at a premium, however, some other method must be devised and the one shown here, used by a Tucson, Arizona, contractor, may help out a brother builder who is forced to work in a place where storage space is not plentiful. Heavy racks, built of 4x6 as shown in the illustration, were used to carry the rods and to keep the different sizes separated. At intervals of about two



This rack for holding reinforcing rods may be easily dismantled and moved from job to job

feet holes were bored in the rack and one-inch rods stuck in the holes for pegs upon which the rods could be placed. Notice that the diagonal legs of the rack are fastened at the top with a collar, and that they are prevented from spreading by heavy 2x10 ties fastened at the bottom. It should not be attempted to build this rack of light members, as the weight it is called upon to carry is a big one.

It should not, however, be so heavy that it will be difficult to move around. The size of the members depends, of course, on the amount of rods the rack will be called upon to hold, and the height to which it is to be built. As regards the means of holding the members of the rack together, it is recommended that bolts be used instead of spikes. Spikes are liable to work loose but bolts may be depended upon to hold the rack together if they are drawn up tightly.

Protection from the Heat

WE people who live in the eastern part of the country have a hard time getting through the severe winters and are always glad when summer time rolls around so that we can be comfortable again. To those who live in some parts of the west, however, the opposite is the case; the winter months are delightful, but some days in the summer time can not exactly be called comfortable on account of the heat.

E. C. English of Tucson, Arizona, who was building the new Tucson high school, did not intend that his workmen should be uncomfortable because of the heat and as an aid to keeping off the sun's rays from his job office he built it with a double roof as shown. By means of this double roof a generous air space was provided which tended to keep the office consider-



A convenient method for supporting a steel oil drum

Rack for Holding a Steel Drum

THE drum rack shown here may appeal to some contractors as a labor saver in that when it is desired to draw liquid from an almost empty drum the laborer will not have to tip the drum in an effort to get out the small amount of remaining liquid.

This rack is made with 3x4 legs and a 2x4 base; 1x4 are used for the diagonal braces.



The double roof helped considerably to keep this shack cool in the summer time

August, 1924

On the Job in Philadelphia, Pa.

Ornamental Joints in Rough Masonry Walls

IN REGIONS where stone abounds, this material is often used for building up walls of houses. It makes as good and solid a wall as any other type of masonry and where it may be had close to the



Rough wall

building site it probably works out cheaper in cost than any other material.

In the East many of the newer buildings, especially around Philadelphia and Germantown, Pennsylvania, are built of stone. Sometimes the joints are left rough, as shown in the first illustration, occasionally they are slightly raked out, and often they are finished as shown below, the effect being a series of white lines which tend to make the joints sharp and distinct instead of irregular and indistinct.

Fisher and Miller, builders of Philadelphia, Pennsylvania, secure this white line effect in the following manner. The wall is laid up without any attempt at finishing the joints and is so left until the entire roughing in of the building has been completed. Then the joints are com-



Finished wall

pletely filled with gray cement and pointed so that the cement in the joints comes fairly flush with the face of the wall. While the gray cement is still fresh, a thin coating of white cement (about $\frac{1}{8}$ inch to $\frac{1}{4}$ inch thick) is smeared over the joint and allowed to stand over night. The next morning the ragged edges of the white lines, formed by laying on the white cement, may be trimmed with a pointing trowel and the effect shown here secured. It is important that the pointing with gray cement and the application of the white cement be done on small areas of the wall instead of attempting to point the entire wall first and then apply the white cement to the joint. This is because it is absolutely necessary that the white cement be applied while the under coat of gray cement is still fresh so that a good bond between the two may be secured. If the two cements are not well bonded the white cement will not adhere to the wall and will, in time, drop off.

Scaffolding for Stucco Work

IN ERECTING scaffolding for a brick veneer or frame building most contrac-

tors fasten the scaffold directly to the wall. They allow the scaffold to remain until the job is completed and then remove it, filling up the holes later that were left in the wall after the staging was removed.

The type of scaffold shown here does away with patching and is especially applicable to stucco walls where patching is difficult and produces unsightly results. Added to its convenience is its simplicity, the ease with which it may be constructed and the measure of safety it affords the men working upon it. The writer first saw it in Philadelphia, Pennsylvania, on a housing project being developed by Alexander R. Alessi, a builder of that city.

The vertical post consists of a 2x4, resting on a plate on the ground, held at the top by struts nailed to the window frame. The projections which carry the planks are 1x4, nailed to the 2x4 posts. All the lateral bracing required is furnished by the planks themselves which are held by being toe-nailed to the projecting arms. This scaffold might be improved by diagonal bracing and it might be well to use a few 1x6 diagonals between the posts if the scaffold is to be carried any higher than shown here.



Illustration showing scaffolding in place

On the Job in Los Angeles, Cal.

Platform for Steel Workers

HERE is shown a small platform built to assist the steel worker in bringing the next girder to a bearing on the column to which it is attached. It is built from



This platform gives the steelworker a place to stand

odds and ends picked up on the job.

Escherich Bros., of Los Angeles, California, were the contractors on whose job this photograph was taken.

Ornamental Caps

WHERE two wood floor-girders are to be butted together at a column it becomes necessary to set a cap on the column so that the girders may have sufficient bearing.

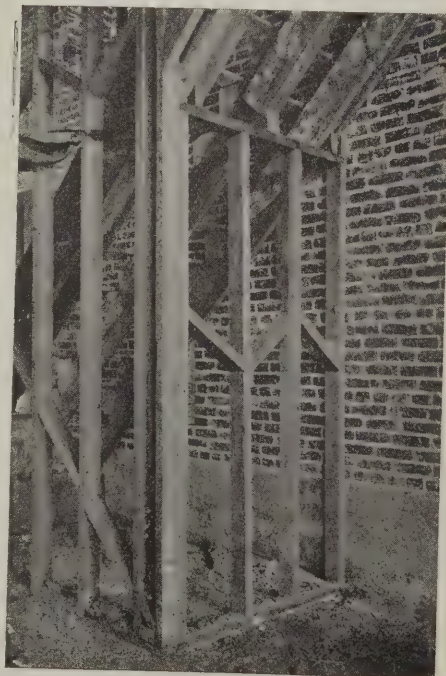
J. Harvey McCarthy, who was erecting a high-grade studio and shop building in Los Angeles, California, had the column caps for this building sawed as shown in the illustration. These caps and the exposed girder will be stained and will form a part of the decoration of the interior when the building is completed.



Ornamental column cap to form part of support for floor

Support for Stair Stringers

HERE is a view showing how Preston S. Wright, of Los Angeles, California, made a partition do double duty. On the interior of a building which he was erecting, a long heavy stair was required on account of an unusually large ceiling height. To build this stair correctly one of two designs could have been used: the first, requiring extra heavy stringers, and the second, providing a means of intermediate support somewhere along the length of the stringer. Cutting an extra



Furring partition supports stair stringers

heavy stringer is hard and expensive work but providing the intermediate support involved only the use of four extra 2x6s, built up under the stairway as shown.

In order to give the stringers a good bearing on the supporting partition, blocks were cut to fit the space between the bottom of the stringer and the top of the plate. Notice also that the stringers are reinforced near the center with an extra thickness of 2x6, and that bridging has been used in the supporting partitions to provide additional strength to the vertical members by preventing them from bending under a load. The space under the stairway will not be wasted since by installing small doors between the studs it can be used as a storage closet.



One plank and a few scraps make this stairway

Another Kind of Temporary Stairway

THIS Los Angeles, California, contractor has a new idea in providing a temporary stairway. A plank a few blocks and some short pieces of boards put together as shown in the illustration, are the only materials required. Everything except the plank can be picked up from the waste pile.

JOHNSON'S WOOD DYE

For Artistically Coloring All Wood

JOHNSON'S WOOD DYE is entirely different from the many wood stains and tints on the market. With it inexpensive soft wood such as pine, cypress, fir, birch, etc., may be finished so they are as beautiful and artistic as hardwood. It brings out the beauty of the grain without raising it in the slightest.

Johnson's Wood Dye goes on easily and quickly without a lap or a streak. It dries in four hours and will not rub off or smudge. You will find Johnson's Wood Dye a big help in working out color schemes in stained woods. Johnson's Wood Dye is made in 17 beautiful shades, all of which may be lightened, darkened or intermixed. Full directions on every label.

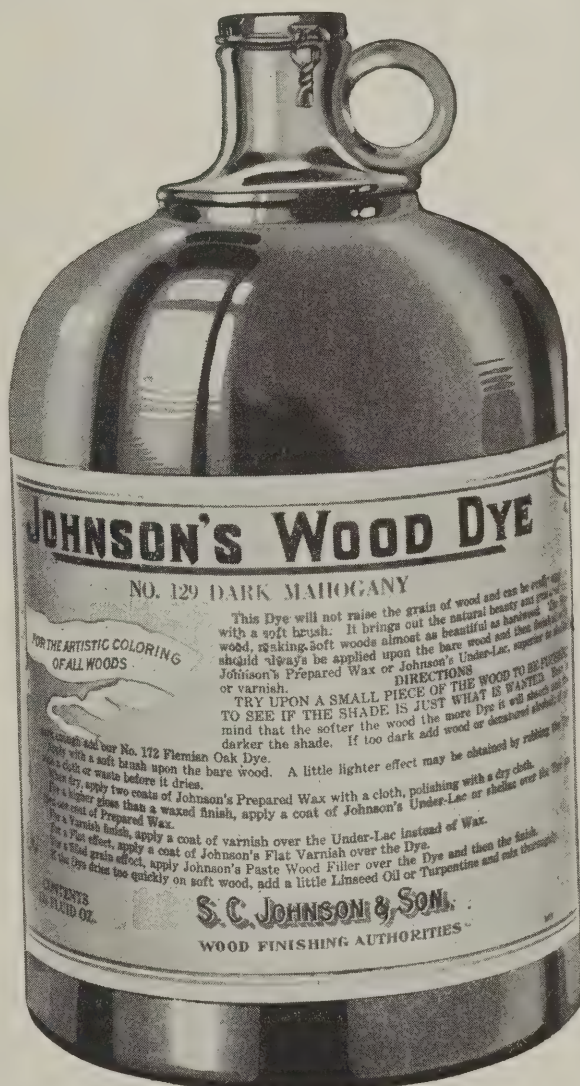
Johnson's Wood Dye is a *dye* in every sense of the word. It contains no finish whatsoever. Like most first class products, it answers one purpose only—it dyes the wood—the finish must be applied over it. We recommend Johnson's Varnishes or Johnson's Polishing Wax for a finish over Johnson's Wood Dye.

Johnson's Wood Dye always run uniform as to color—there is no variation whatsoever.

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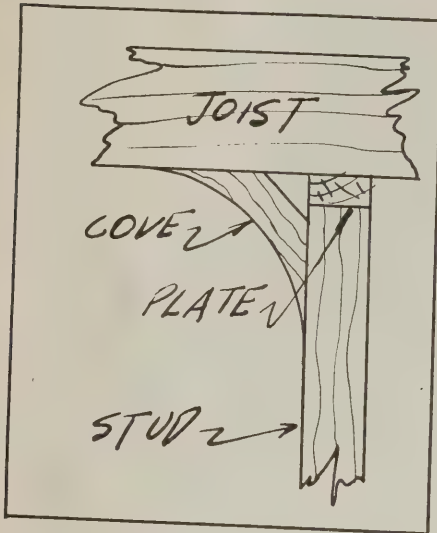
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When writing advertisers please mention National Builder

On the Job in Milwaukee, Wis.

Framing for a Coved Ceiling

A COVED ceiling adds a great deal to the pleasing effect of a living room or dining room and is really not as expensive to install as most builders think.



Sketch showing construction detail

At any rate, John Hacker of Milwaukee, Wisconsin, who was building a house to sell, figured that the advantage of having the coved ceiling as a selling point was well worth the cost of building it.

His method of building up the cove was simple indeed, as will be seen from the



Cove pieces in place at the junction of wall and ceiling

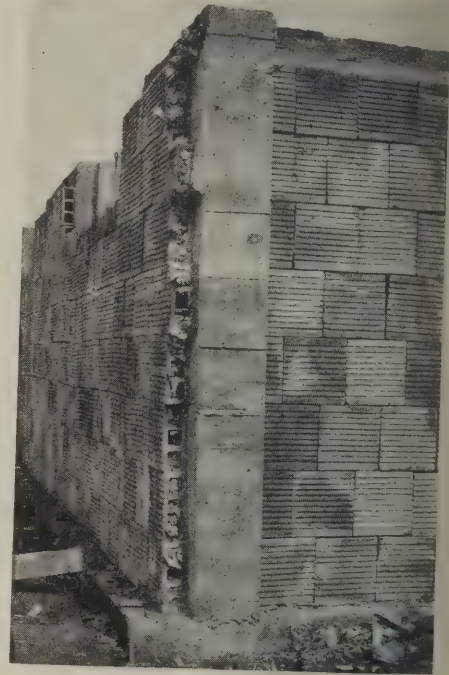
accompanying sketch and photograph. He sent some 1x6 boards to the mill and had them cut at an angle on the ends and to a curve on one side, and then set these pieces as shown, one end on a stud and the other on the joist of the floor above. When the lather comes in to do his work he will form the cove with lath as he works from the ceiling down to the wall. If it is not convenient to have these pieces cut in a mill the ends may be cut with a hand saw and the curve chipped out with a hand-ax, after being marked on the piece with a templet. Any irregularities in the curve, if they be not too great, can be taken care of by the plasterer.

Damp-Proofing with Hollow Tile

HERE is a damp-proofing stunt that some contractors and builders may have overlooked. In building a school in Milwaukee, Wisconsin, hollow tile was specified as a lining for the basement walls. The air-spaces in the tile were considered an efficient aid in keeping the dampness out.

When building the forms for this foundation they were made four inches wider than the foundation width in order to accommodate the four inch thick hollow tile. The tile were set in the foundation against the inside form and the concrete poured behind. It is supposed that the corrugations on one side of the tile will hold them to the foundation, while those on the other side will be used to form a means of holding the plaster. In places, such as at corners, where it was neces-

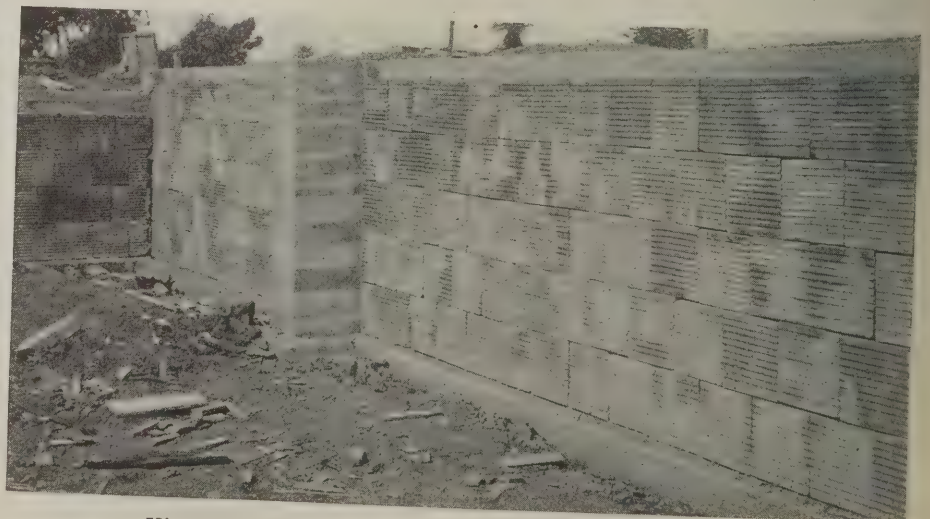
sary to expose the ends of the tile, the holes were stuffed with paper to prevent the concrete from running into them. Not only did this save considerable concrete which might have been wasted, but



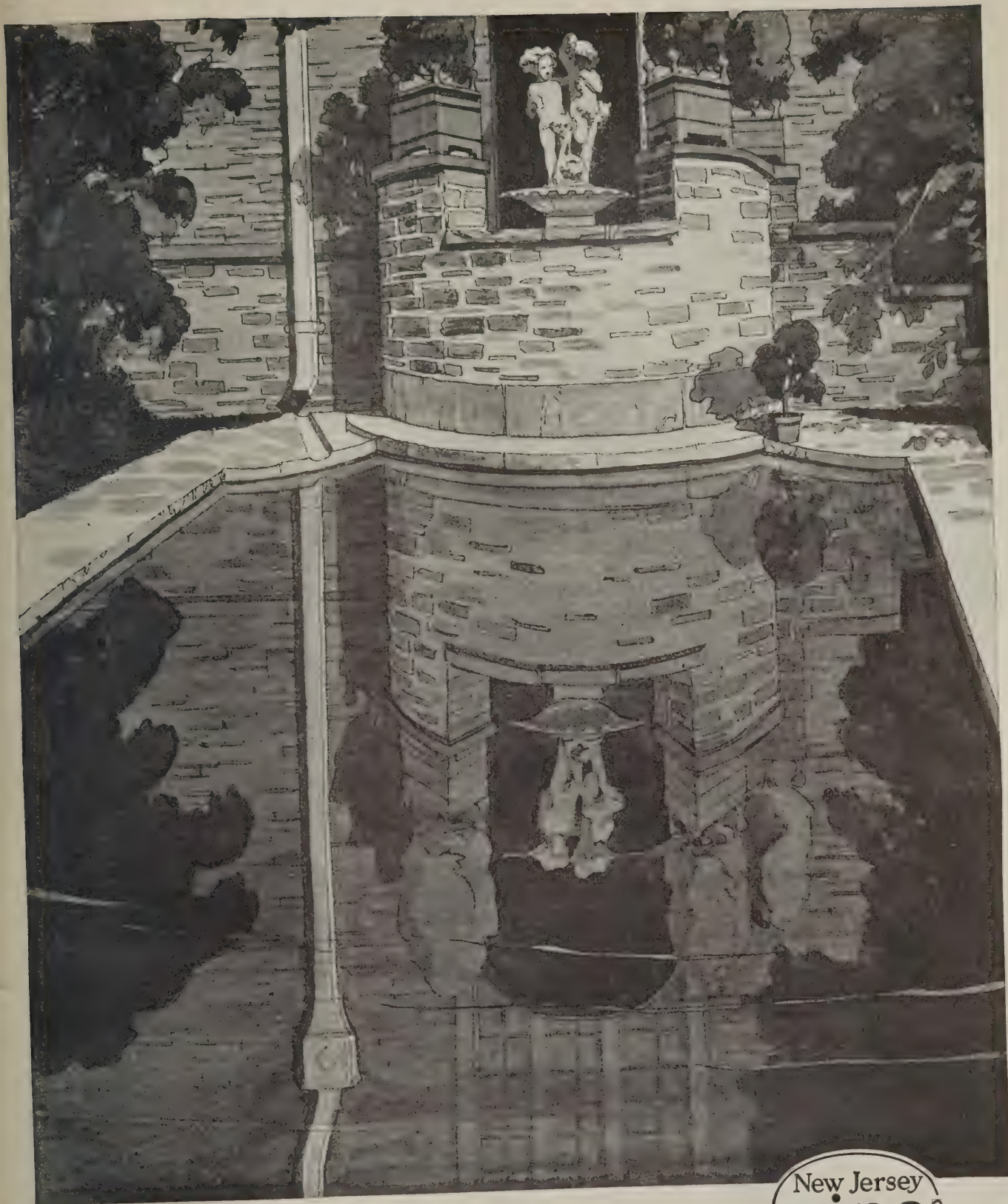
The end tiles were stuffed with paper to prevent the concrete from running in

also it prevented the filling up of the hollow space upon which the damp-proof feature of this kind of construction is dependent.

John L. Stanage, of Milwaukee, Wisconsin, was the contractor on whose job these photographs were taken.



View of the wall showing hollow tile damp-proofing in place



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On the Job in Sioux Falls, S. Dak.

Soldier Course Corners

SOLDIER courses, or courses of brick on end, are often used as belt courses in wall ornamentation. Where the soldiers are allowed to run clear around the build-

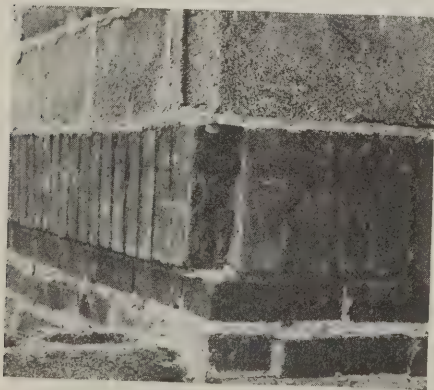


This corner is correctly built and will stand

ing, the corners should be handled as shown in the illustration here, made on a job being done by John Shilt in Sioux Falls, South Dakota.

Instead of allowing the soldier course go clear around the corner, it is stopped just short of the corner and the header and stretcher arrangement built up as shown. This makes a good strong corner and detracts little, if anything, from the general ornamental scheme.

If the soldiers are allowed to continue clear around the building it becomes necessary to set a brick on end at the building corner. When this is done there is always the danger that the thing shown in the lower illustration might occur. Here a vertical brick has been knocked



The effect of setting a soldier at a corner. It takes only a slight blow to knock it out of place

from the corner by a plank, carried by a passing laborer. The danger that the brick may be knocked out is not near as serious as what might have happened if the soldier course were at the top of a building and the brick had fallen out.

As will be readily noted from the illustration, a brick set on end has very little bearing at its base, especially if it be projected, and consequently very little mortar acts to bond it in place as compared with the brick laid, as shown in the first illustration. Where brick are laid flat they have a considerably firmer base and a larger area of base on which the mortar acts to bond the brick to the wall. A comparison of the areas of the end of a brick and the face will illustrate this point.



An unsafe scaffold leg. It is liable to slip

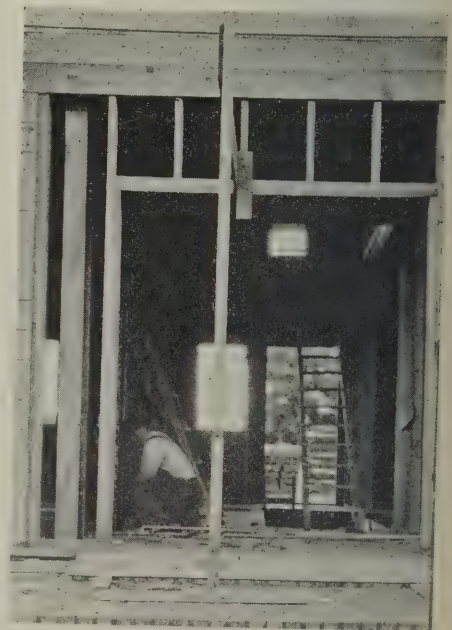
Safety First in Scaffolding

EVERY year there are hundreds of men killed on construction jobs and thousands injured. Authorities say that the number could be greatly reduced if only contractors and mechanics could be taught the value of watching and preventing unsafe construction. It is a sad fact but nevertheless a true one that the greater majorities of casualties are the result not of unavoidable accidents but of downright carelessness, and that most of them could have been prevented if the proper precautions had been taken.

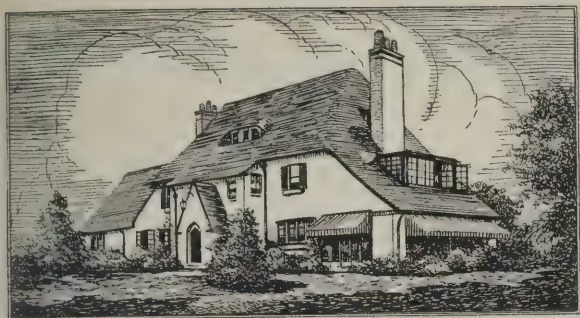
A great number of accidents occur as a result of improperly erected scaffolding. This is true not only of large jobs but of small ones as well. Scaffolding for small buildings should be carefully erected and one of the points to be carried in mind is the manner in which the posts rest on the ground. They should never be allowed to rest directly on the soil, for if it rains and the surface of the ground becomes slippery they are liable to slide and bring down the whole scaffold and everyone working on it.

The Carlson-Snitkey Company of Sioux Falls, South Dakota, watch this point very carefully and require that a foot plate be set under all scaffold posts whether they rest on soil, brick or what not. This plate need be only a piece of scrap, but it may mean the difference between safety and danger for the men working above.

In the inspection of various jobs in different parts of the country the writer has noticed a common fault, the fact that little attention is paid to the base upon which the scaffold legs rest. Just why this general indifference should exist is hard to say but it is hoped that this article will bring the item in question before a goodly number of contractors with a resulting correction of a long standing fault, and a consequent reduction in the number of accidents which occur from this cause.



A safe scaffold leg. The plate underneath provides a firm base to which the leg may be nailed



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The contractor or builder who builds with ASBESTONE Magnesia Stucco erects monuments to his business integrity, that will endure for generations. Buildings that will be a source of pride to him as well as their owners and a constant recommendation of the quality material and skilled workmanship used in their construction.

The high quality of materials used in ASBESTONE give it many times the strength of ordinary stuccos and elasticity to withstand the severest strains. Its unvarying quality is insured by daily laboratory tests and its moderate price especially recommends it to the builder who wants high grade construction within a price limit.

The new ASBESTONE book is out. Ask your dealer or write us for it, and for samples in color tints and pebble dashes.

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Reynolds Shingles are made with absolute and enduring protection as their first consideration.

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On the Job in Seattle, Wash.

Sleeper Floor Construction for Small Homes

SLEEPER floor construction is nothing new for industrial or store buildings but it has a use in the small home as is illustrated by these photographs made on a residence being erected by John Zwickey of Seattle, Washington. It is customary, in most residences, to lay a cement floor in the basement in order to do away as much as possible with the dampness one generally finds in rooms below the grade level. However, where a part of the basement is to be given over to a billiard room, dance floor, etc., something else besides a cement floor is required, and here is where the sleeper type of construction comes in.

The sleepers are ordinary 2x4s set on edge and leveled to the proper elevation before the concrete is poured. The rough wood floor may be laid directly on the sleepers.

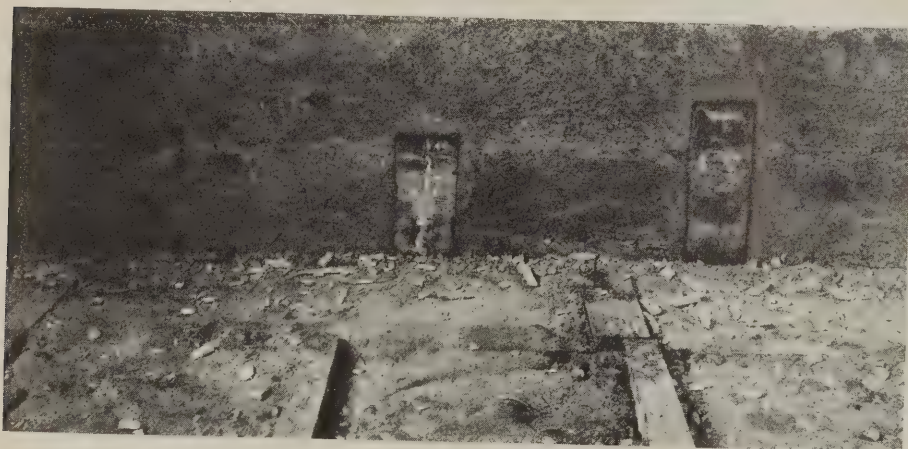


Sleepers set in the concrete floor

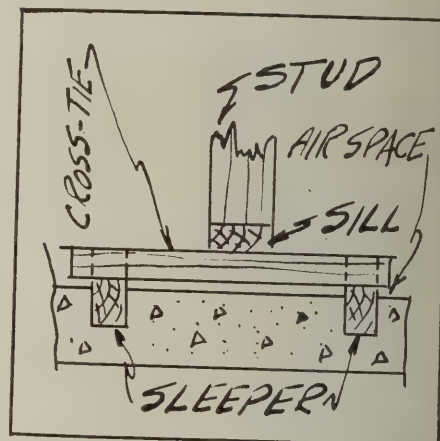
proofness as a cement floor, but it also permits the laying of a finished wood floor. For best results, the concrete should not be poured level with the tops of the sleepers but should be stopped an inch or so below in order that an air

space may be left between the concrete floor and the rough wood floor.

John Zwickey of Seattle, Washington, was the contractor on whose job these photographs were made.



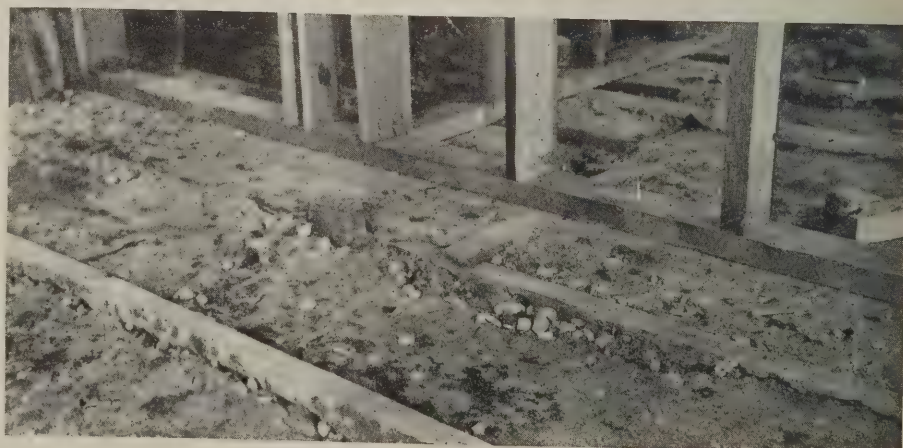
Base-blocks set in foundation wall



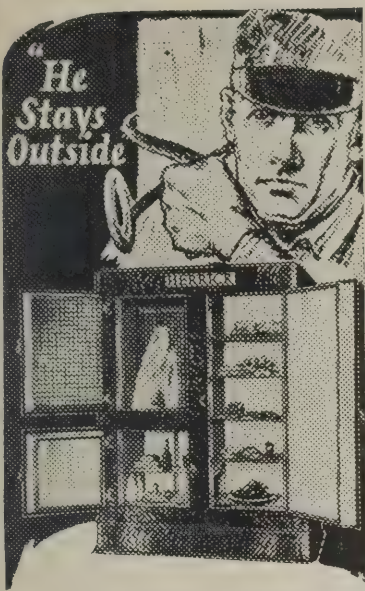
Construction detail

Where it is necessary to carry a partition across a sleeper floor parallel to the sleepers, it is well to set cross-ties in the sleepers, as shown in the sketch. These cross-ties serve as a place to which the partition can be anchored by driving nails through the partition sill and into the cross-tie. As foundations are now generally built of concrete, provision for nailing casing is made by setting blocks in the forms before the foundation is poured. These blocks should be nailed to the face of the inside form so that when the form is removed they will be in the face of the foundation wall.

This sleeper floor construction has several points in its favor. Not only does it provide the same degree of damp



Method of anchoring partition to sleepers



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The advantages of outside icing are so practical, so obvious, that it has passed the modern convenience stage and is now classified as a practical necessity.

That contractors may have definite information on this subject we have prepared blue prints that cover the installation of Herrick outside icing refrigerators. These blue prints are small, they will just fit his vest pocket, and with them he can at once plan or give definite figures on the installation of the feature that insures refrigeration satisfaction. These blue prints are free to contractors, architects or builders and they are not only worth having, but may save you from embarrassments or confusion should some customer ask you concerning outside icing.

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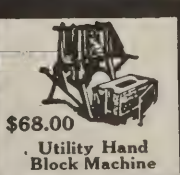
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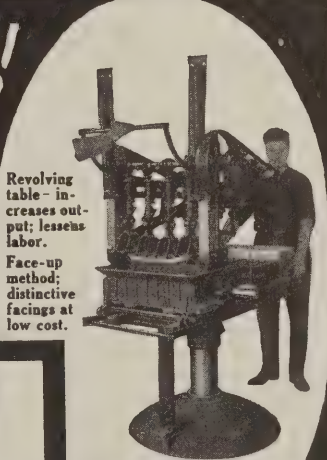


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Face-up method; 12 distinctive facings.

THE NEW UTILITY POWER MACHINE—for Light-Weight Block.



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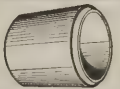


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Produces more plastic Concrete; quicker, cheaper.
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Insures Better, Stronger and More Plastic Concrete at Lower Cost.
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Kinks from the Job and Office

By V.L. SHERMAN

Form for Increasing Wall Heights

J. R.B., of Yonkers, New York, solved the problem of increasing all heights as he shows in the following letter: Referring to Fig. 1. "This kink might be useful to a brother builder in case he runs up against the same problem I did. I had occasion to increase the height of a concrete retaining wall, and as the low side showed a drop of about 12 feet, it required in the ordinary way considerable form bracing. I finally thought of the scheme shown in the sketch.

"The wires are placed in the slots and twisted tight for the first course. At this course they are for the sole purpose of retaining plumb sides. After a course is poured and has taken its set, the wires are cut and the form slightly spread and removed. From now on the wires serve a double purpose. They support the form on the course already poured and keep the form plumb. With several of these forms on hand a considerable amount of wall can be laid, as they may be removed from the pour while it is quite green.

"Faster work can be if the concrete is mixed at about the same consistency used when making concrete blocks; that is, as

dry as possible. Joints can be broken and if care is taken a very good looking job can be done."

A Kink for Prepared Roofing

IF this scheme works as well as its proponent says there will be a great number of interested parties. The letter which follows is from A. R., of Sheboygan, Wisconsin: "I found a good time saver for applying rubberoid or slate surface roofing. The roofing usually comes in rolls with tar for the joints and laps. I find it a nuisance to get the tar to the right temperature to make it flow properly, and also it is nasty stuff to handle.

"By applying gasoline at all joints and laps you can get an A No. 1 joint and a waterproof job. I take a one-gallon gasoline can and just pour it *lightly*, and keep going from one end to the other. After it is nailed it sort of vulcanizes the joints. It works fast and makes much nicer work. On a 15,000 square foot factory job, which has been down a year, I have not had a single leak."

As gasoline acts as a solvent we would caution anyone in his first try.

Another Letter on Wall Plaster Coloring

THE Clinton Metallic Paint Company of Clinton, New York, submit the following letter on wall plaster coloring which is much to the point:

"Referring to your recent letter regarding some satisfactory method of coloring the last coat of interior wall plaster, a responsible manufacturer of wall plaster suggests the following formula:

300 pounds Sand.

100 pounds Plaster Paris.

50 pounds Hydrated Finishing Lime.

20 pounds Clinton Colonial Buff No. 700.

"These materials must be thoroughly mixed together before water is added and wet mixing must be continued until the mass is free from spots and streaks of color. Machine mixing is advised.

"Even if these precautions are observed there is difficulty in producing a wall surface of perfectly uniform color, due to the general tendency of all coloring materials to follow the trowel or float used in surface finishing. Unless owner and architects will accept slight irregularity of surface color, we advise against the use of colors in interior wall plaster. *Some architects and owners desire this irregularity of color tone.*

"We might say that for coloring interior rough plaster, the following formula was used in a residence at Washington, D. C.:

24 quarts Washed Sand.

16 quarts White Finishing Lime.

3 quarts (4 pounds) Clinton Colonial Buff No. 700.

"The sand was rather coarse and dark in color. Surface was finished with cork float. The result—a rich deep cream color."

Auto Pits

THE writer of this letter, B. L. L., does not agree to the use of pits in automobile work. "I notice on page 80 of the NATIONAL BUILDER for June 'A New Method of Building Service-Station Pits.' Now I do not want to be a rain maker or a joy killer, but from past experience let me advise auto repair men and builders, too, to keep out of pits when it comes to repairing automobiles. Newspapers frequently publish accounts of men and women killed by carbon monoxide gas while running motors in the garage and very often the men are found under the car on the floor of the garage. Even if the victim feels the first symptoms and starts for open air he is quite likely to faint and fall to the floor. Then he is a goner, for that is where the gas settles. Build tressled runways but cut out the pits."

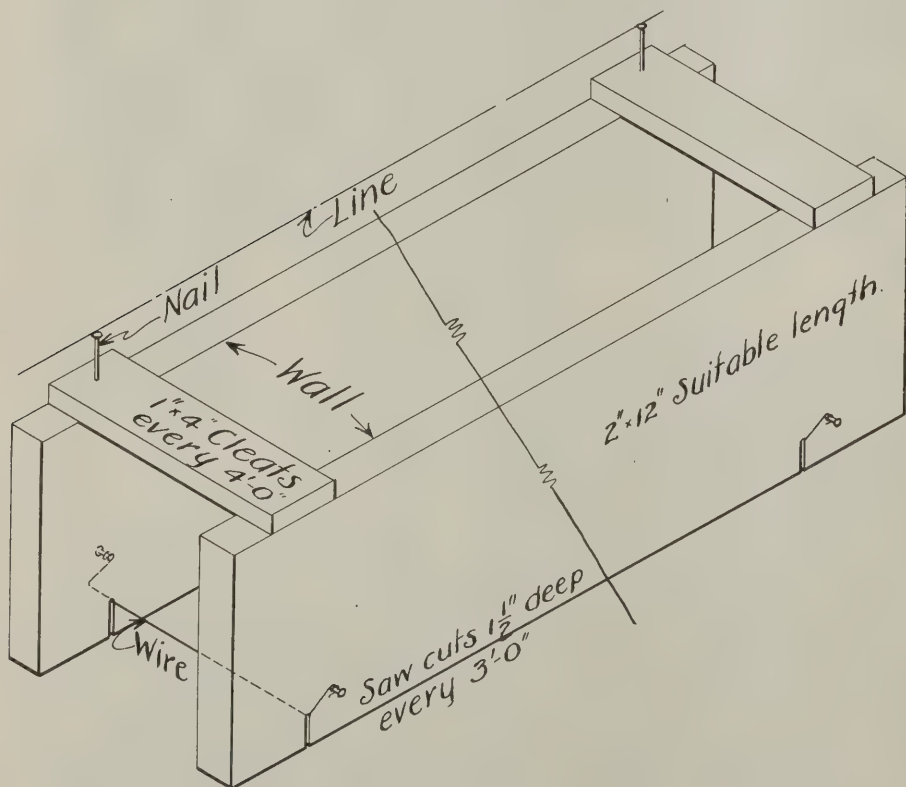


Fig. 1—Novel concrete form



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Our
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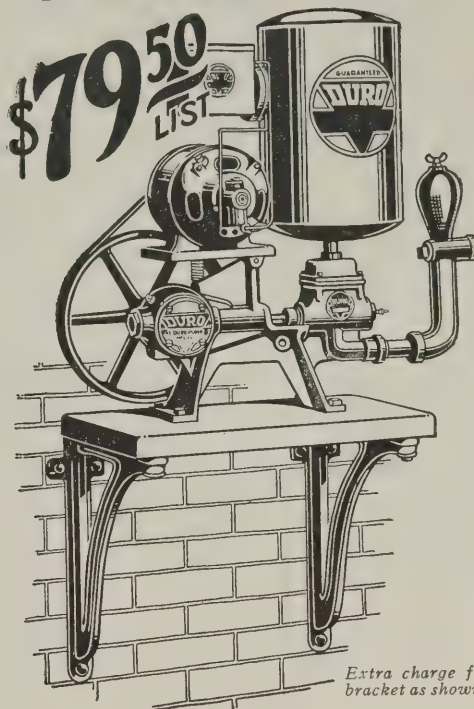
Store Fronts
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Sidewalk Lights
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Extra charge for wall
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Another step forward! The new Duro Electric Water Lift was designed particularly for Contractors and Builders who have been using the old-type water motors in popular-priced houses.

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When you point out to the prospect the Duro Electric Water Lift installation and explain just a few of its many advantages over the troublesome water motor you will have done much to decide the sale of the house. The Duro Electric Water Lift enables your client to truly enjoy his home by providing hot and cold rainwater under strong pressure, at all times—unfailing.

Advantages of the Duro Electric Water Lift

1. Economical and efficient.
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Duro Water Softeners are priced as low as \$175

Convenient Yardage Scale

WE publish herewith another of the scales submitted by W. F. S., of Newark, and referring to Fig. 2.

"Very often it is desired to compute the number of cubic yards in long, narrow, shallow excavations. The depth is then usually given in inches and the width and length in feet. The chart herewith has been developed purposely to take care of excavations of that kind. The depth, column A, is given in inches, while the width, column B, and length, column D, are given in feet. Simply run two zigzag lines across the chart as indicated by the dotted lines and the number of cubic yards is instantly given in column E.

"For example, the dotted lines drawn across the chart show that if we have an excavation 6 inches deep (column A) by

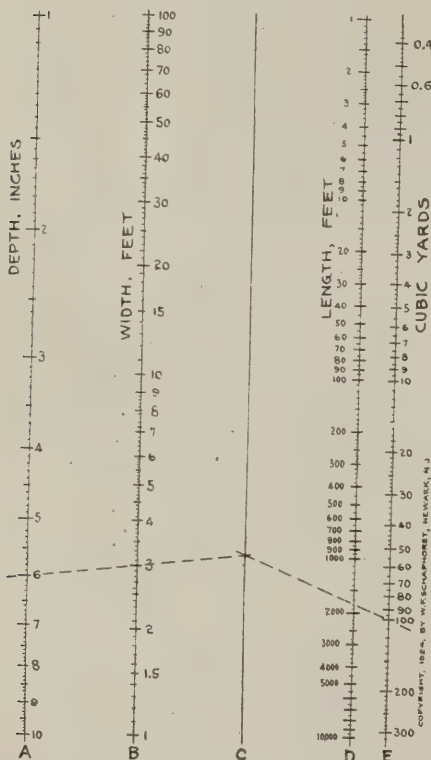


Fig. 2—Yardage scale for trenching

3 feet wide (column B) and 1800 feet long (column D), the number of cubic yards will be found to be exactly 100. Merely run a straight line through the 6, column A, and the 3, column B, and locate the intersection in column C. Then from that point of intersection run through the 1800, column D, with another straight line and the intersection with column E gives the answer as 100 cubic yards.

"But that isn't all. The chart will also take care of deep excavations. Thus if the depth is 60 inches instead of 6, the same dotted line will give the answer as 1000 cubic yards instead of 100. That is, if a digit is added in column A a digit must also be added in column E. Like-

wise if a digit is added in column B a digit must be added in column E. Thus the same dotted line would show that for an excavation 60 inches deep by 3 feet wide and 1800 feet long the number of cubic yards would be 1000. Or, if the depth is 6 inches, width 300 feet and the length 1800 feet, you will have to add two digits in column E because two digits were added to column B, thereby giving us 10,000 cubic yards in column E. It is therefore evident that this chart will easily take care of almost any rectangular excavation and it will give results that are surprisingly accurate."

Stress in Slings

INDICATING Fig. 3, R. O. K. writes that he has seen some failures in slings which seemed to indicate thorough lack of common sense on someone's part and ventures the following: "When I was in high school the physics professor used to get the laugh on the class by suspending two weights in tandem. For effect he would have the upper weight a little heavier than the lower, and perhaps the cord between the suspension point and the upper weight would be a trifle weaker than the one between the upper weight and the lower. Then he would lift the lower weight in his hand and ask the class which of the two cords would break when he dropped it. Of course we all said the upper cord would part, as it carried both weights. When he dropped the weight the lower cord would let go and he would explain that the inertia of the upper weight relieved the strain on the upper cord and saved it.

"Now when it comes to slings and the angles of the cord, just think of lifting any ordinary package by the string the grocer tied around it. If the weight is not too little and the knot does not slip you may have an even chance of getting it home without the string breaking. This is not because the string is poor but because the small angle of the sling puts a multiplied stress in it which it cannot stand. The forces act just reverse to the toggle. The sketch, Fig. 3, shows what a sharp increase there is in the strain on sling lines as the angle of the lines decreases."

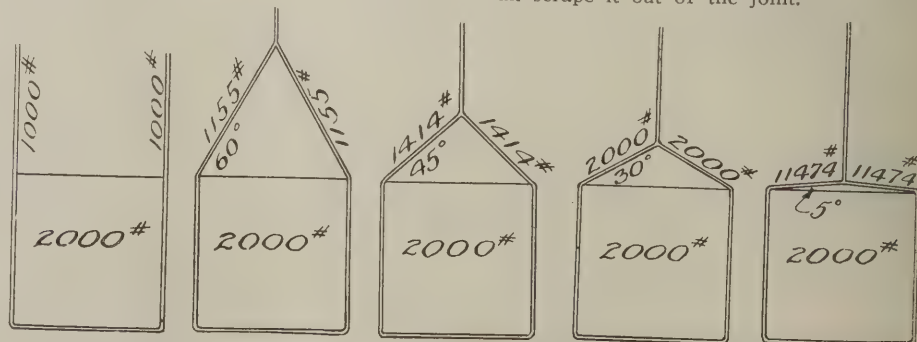


Fig. 3—Diagram showing sharp increase in chord stress with diminishing angle

A Joint Raker

REFERRING to Fig. 4, C. R. D., of Beardstown, Illinois, writes: "Secure a block of wood $\frac{7}{8}$ x3x8 inches. Soft wood is preferred. Shape one end to fit the hand. Cut a notch 1 inch square in the other end, and then cut this end on a bevel

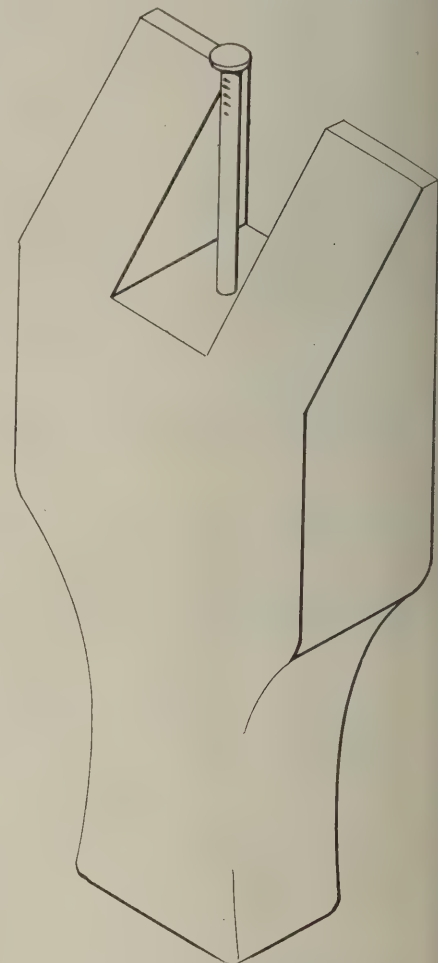


Fig. 4—Handy joint raker

as shown. Drive an 8d. nail in the center of the notch and let the nail stand out to conform to the depth of the joint required. When the nail becomes worn remove, drive in a small wooden plug and place another nail.

"I have used this tool for several years and find it a very simple and effective raker. It cleans the joints nicely."

The function of the nail is to cut the mortar while the teeth on either side of the nail scrape it out of the joint.



A room where you want it. Folded out of the way when not in use — the Fain FOLD-AWAY

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The breakfast room is an important part of the home or apartment of today. Yet the value of floor space is so great that, while the owner or tenant wishes it, there is no space for it in the plans. But now that is overcome with the Fain FOLD-AWAY Breakfast Room.

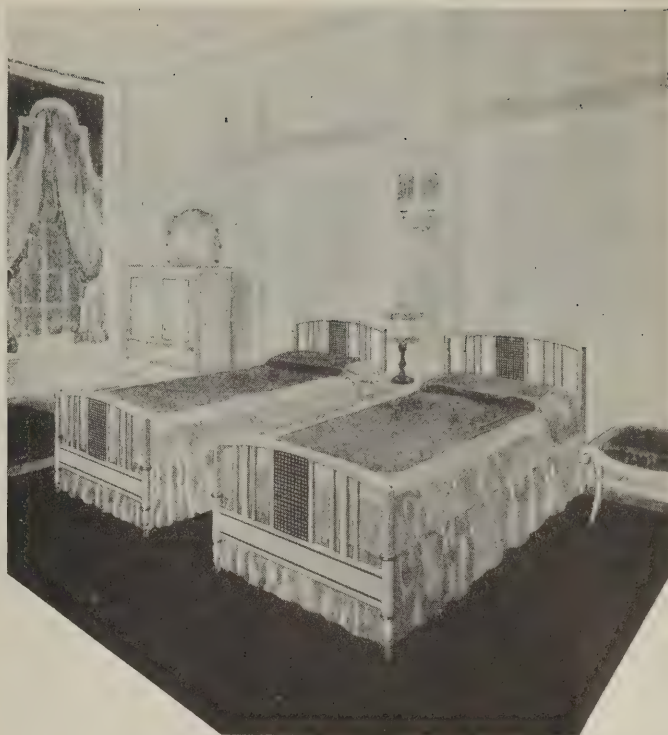
Here is a unit that may be used as a cabinet or recess type that folds readily into its small space allowing full freedom of the entire room. On the face of the wall or in the wall, it admirably serves its purpose as a cozy breakfast room where one may serve with all the dignity and comfort of a real dining room. It is shipped in its entirety, ready to install, and is the lowest priced room, the only unit of its kind in the world! When not in use it is automatically folded back into the cabinet.

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The plan recommends the installation of Concealed Beds, which are much different than the ordinary folding beds usually hung on doors. Concealed Beds take up much less closet space. They are as comfortable and as good looking as the products of the largest of steel bed manufacturers, so widely advertised. The space into which they fold is concealed, whether the bed is up or down, so that no one need know a folding bed is being used.

When you build on a speculative basis, you can still use the "landing the job" plan to good advantage. Concealed Beds enable you to build houses with larger rooms. They have many other attractive points which appeal to the buyer, and help you sell the houses you build.

This "landing the job" plan is a workable idea, which you can turn to your profit. It will be sent to you free, together with the Concealed Bed catalog, at your request. It will be a valuable addition to your files.

Write for it today.

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Additional sleeping and closet accommodations, which every woman appreciates, are provided by Concealed Beds, at very little additional cost. One or two should be installed in every house you build. They help you sell it readily. They prove you are up to date, and therefore help give the impression that the entire house is well built. Recommend Concealed Beds for the next home you build for others; put them in the next house you build for yourself.

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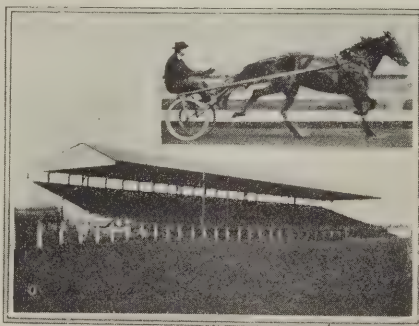
The Fair Grounds

FOR the last two years I had meant to visit the Central States Fair just north of Aurora, Illinois, but until the other day had been remiss. Two friends of mine take their recreation in training and driving horses. They buy on speculation and train in anticipation, so when they asked me to join them early for a drive to Aurora I had found a good excuse for spending the day with them at the fair grounds.

As their interest centered around the horses and I was asked to pay for my trip by listening to their harangues and taking some snap shots, we will start with the race track which lies at the west end of the grounds. The track is very wide, and well graded and pitched, but there is a pond along the pole on the back stretch that needs draining. The barn accommodations are excellent, within easy reach of the gates and railroad branch, and the entire outer rail, except in front of the grandstand, is "cyclone" fence. The grandstand is concrete with much greater capacity than the average half-mile track. It is located almost midway of the stretch, giving the horses plenty of room after scoring. A feature of the layout is a baseball diamond located directly in front of the stand. A large section of the rail and fence are removable to permit play, and the home plate is located on the track. The back-stop screen rises just back of where the judges' stand is placed during the racing. The grand stand provides the ball fans with the best sort of view and shelter.

Now we will go back to the entrance. We had driven north along the highway paralleling the interurban, and had come to a long stretch of lawn and trees backed by an

wide and green and inviting. The fences were wired birch posts, and I couldn't see a imposing entrance of five stucco columns. To the left, back of shrubs and trees, was a large log building marked Forestry. To the right was a large white house marked Administration. And a little below, present but unobtrusive, was a filling station. The first impression was one of consistency. The approach to the Central States Fair was wide and green and inviting. The fences were wired birch posts, and I couldn't see a



Concrete stand facing north. Section of fence at judges' stand removed for baseball

board fence or any barb-wire. There was a tunnel underneath the interurban tracks leading toward the river.

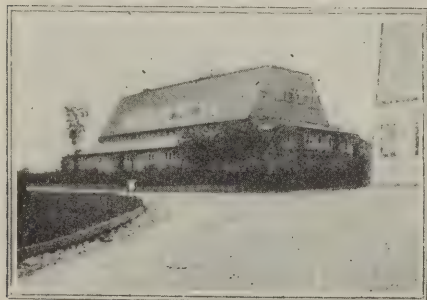
Beyond the entrance was a long open sward with a band stand at the far end, and beyond the bandstand the lawn rose in a bank to the edge of an immense concrete swimming pool. From the entrance we could see the lighting towers, diving platforms, chutes, and the spray from the fountains.

At the left we came to the Forestry Building. Its odd roof over the long log frame

seems attractive rather than odd. The entrance is wide and deep, and being set into the building gives a dark coolness. This building, together with the entrance and the Administration Building, makes a great showing from the highway.

To the rear and beyond the Forestry Building are four large exposition buildings. All are set well back across the lawns as you will note from the photographs. These four buildings are matched at the right hand of the entrance with others of the same type. But back beyond these at the right, between them and the race track, is a large open pavilion. This building for stock is well roofed to give coolness and provide loft space. Not a bad idea to put the track barns to one side of the railroad branch and the pavilion to the other with well guarded crossings.

In front of the pavilion and back of the swimming pool is the space allotted to amusements. This section was the last to be erected, (showing it of secondary consideration to the managers), and is not yet completed. A long article could very well be written on the building of the permanent features. The switch-backs, merry-go-rounds, and other structures must be safe. Their construction is interesting. A merry-go-round with a domed roof was being built, the roof supported on laminated rafters in bee-hive form. The weight and thrust was carried to concrete anchors in the earth, and the fitting and carpentry was excellently done. In fact a few minutes after we reached the grounds one of those early morning miniature tornadoes came down the fields and the wind and rain sent all loose objects on their way. No harm was done to the unfinished structures.



The Forestry Building is a long rakish structure built of logs



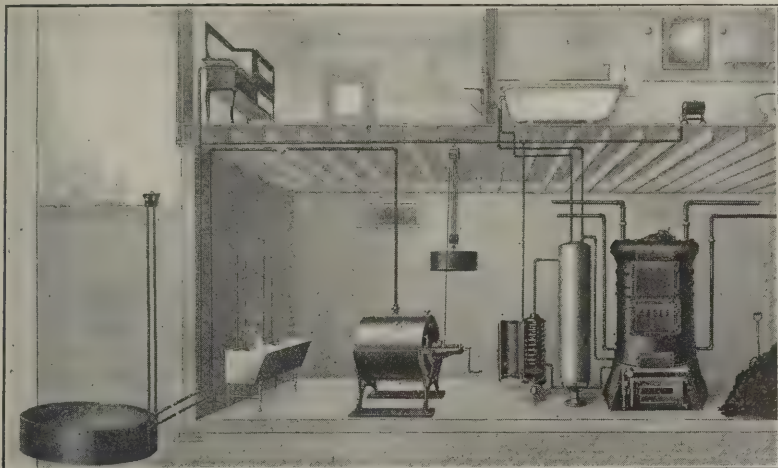
Main entrance. Ramp guard rail at left for tunnel under interurban tracks



Front of Forestry Building. Birch trim for the lawns and plenty of bird houses

No Matter Where it is Located, Every House Can Now Have Gas for Cooking, Heating and Hot Water

How many times have you heard—"If it only had gas I would seriously consider the property"? A statement like that is a knockout, too, because we all know every woman who has ever cooked or heated water with gas, would consider any other method too inconvenient to even think about. You can overcome that objection now. The machine we manufacture produces a gas that is safer, cleaner, cheaper and hotter than any natural or coal gas. There is absolutely no smoke or odor, it is easily installed, never gets out of order, lasts a lifetime and the insurance rates remain the same.



This is a typical installation, showing the weight blower instead of electric blower. The whole machine is automatic—not a valve of any description in it—and a child can operate it with perfect safety. We have yet to hear of an accident caused by this machine.

The Clark Gas Producer

offers unlimited opportunities for contractors. In our home town of 1800 people we have 69 homes using our gas. This one instance demonstrates the sales possibilities and gives you an idea of the money that can be made selling and installing this wonderfully efficient and economical machine.

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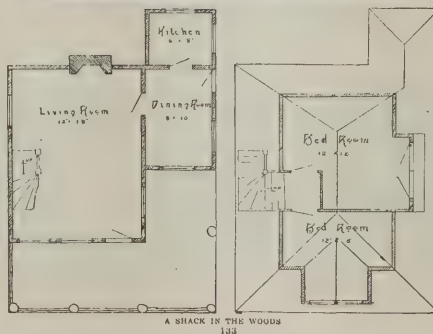


"Selected Monuments of French Gothic Architecture" is a selection of 100 plates from the archives of the French Government Commission of Historic Monuments. The original work was compiled early in the twentieth century by a committee of eminent archaeologists and architects who were charged with the responsibility of placing before the world the most interesting portion of the voluminous collection of measured drawings, renderings and photographs which had been accumulating since the commission began its work in 1830. Five volumes of 100 plates each were published under the title, "Monuments Historique," and to these were added two volumes of the cathedrals of France, bringing the total to 650 plates. These volumes have long been out of print and therefore were made unavailable to the majority of designers. In selecting subjects for the present book, the editors have endeavored to choose examples that are best suited to become inspirations for use in designing office buildings, schools and other buildings, rather than churches, though to the church architect, the material should also be of great value. There is a short foreword and brief description of each plate, written by John V. Van Pelt. 100 plate pages, 9 by 12, bound in boards. The price is \$6. Published by the Pencil Points Press, Inc., New York City.

"Architectural Designs for a Small Hospital" is a reprint showing selected examples from among the designs submitted in a recent nation wide competition for the plans of a small hospital having a capacity of from thirty to forty beds. In addition to the nineteen designs illustrated, members of hospital staffs and architects throughout the country have contributed to the book much informative advice and suggestions for the arrangement and equipment of institutions of this type. 104 pages, 8½ by 11¼, paper binding, price \$1. Published by The Modern Hospital Publishing Company, Chicago.

"The Lumber Industry" (Census of Manufacturers—1921) including lumber and timber products, planing mills, and wooden packing boxes, compiled in co-operation with the United States Department of Agriculture, Henry C. Wallace, secretary, and Forest Service, W. B. Greeley, forester, can be procured from the Superintendent of Documents, Government Printing Office, Washington, D. C. The price is 10 cents.

"Bungalows, Camps and Mountain Houses," compiled by William Phillips Comstock, is the third edition, revised and enlarged, of a book containing a large variety of designs for houses, many of which are suitable only for summer use, while others are adapted for permanent residence. Camps, hunting lodges and log cabins are also shown as suggestions for vacation dwellings. There is an article by



Reduced specimen page from "Bungalows, Camps and Mountain Houses"

C. E. Schermerhorn, A. A. I. A., architect, which contains many valuable pointers on bungalow planning. In his preface the compiler says: "Good points in a plan were considered even more important than an attractive exterior." He may be said to have leaned backward in this respect, as many of the exterior designs for bungalows are commonplace and some are hideous. Some of the designs, however, are quite interesting and a few are exceptionally meritorious. A section devoted to bungalows in Porto Rico and another to camps, lodges and log cabins are perhaps the most valuable features of the book. 160 pages, 7½x10, with 245 illustrations, and bound in cloth, the book sells for \$2.50. Published by the William T. Comstock Company, New York.

"Standard Practical Plumbing," by R. M. Starbuck, is the seventh edition of this authoritative work. The new edition is

said to be a thorough revision of former editions together with considerable additions to both text and illustrations. While all of the general features of plumbing are covered, much of the space is devoted to practical problems out on the job. In the new matter is included a chapter on examinations for plumbers and fitters, and a chapter on features of government plumbing. The book has considerable value to architects and builders as well as tradesmen. Published by the Norman W. Henley Publishing Company, New York. 432 pages, 6x9, with 364 illustrations. Bound in cloth, the price is \$3.50.

"Practical Accounting and Cost Keeping for Contractors," by Frank R. Walker, seems to treat practically everything required by the contractor to keep his records complete. Different systems of book-keeping and accounting to suit the individual requirements of both large and small concerns; timekeeping; "extra" work, "day" work and other records; checking materials; submitting bids; drawing up contracts; and methods of keeping accurate labor and material records for use in estimating—are among important features that are treated in detail. The book is written by a man who is himself a contractor, and therefore qualified to discuss the subjects with authority and in familiar terms. The book contains 169 pages, 8½ by 11, is bound in cloth, contains more than 300 illustrations. It is published by Frank R. Walker Company, Chicago, and is priced at \$2.50, postpaid.

"Compendium of Building Data," by J. Soman, B.S.C.E., is a book of designing charts and building data that is the outgrowth of fifteen years of experience and development of time-saving aids in his work as a structural designer and engineer. By means of graphs all of the drudgery involved in the engineering calculation of ordinary simple structures is avoided and the problems may be readily solved by sight. In its few pages, the book comprises surprisingly complete designing data on timber, masonry, steel and concrete. Although based on the New York building code, the data may usually be applied elsewhere. The book is not intended to take the place of technical knowledge or sound engineering experience, but even the novice will find its principles easy to understand and apply. 18 pages, 8x11, most of which are charts or tables; paper bound. Published by Jval Publishing Company, 581 East 170th Street, New York City. Price \$1.

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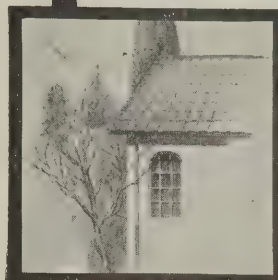
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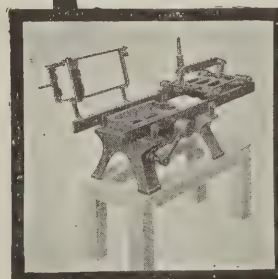
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Of General Interest



"P. & A. Photo"

At the left is a view of Lorain, Ohio, where scores of these buildings were ripped from their foundations during the recent storm. Right—Electricians donated their services at San Diego recently and wired a building for a children's home in a few hours



"P. & A. Photo"



Photo by Kadel & Herbert

The float shown at the left was entered by the students in the Department of Architecture as part of the 1924 celebration of the annual Engineering Day at the University of Illinois. Right—Dr. John Alton Harriss, Special Deputy Police Commissioner, had this novel log cabin made at his home on Riverside Drive, New York City. Rare scenic effects give the exact atmosphere that exists in the forests



"P. & A. Photo"

Left—On this excavation job in Los Angeles it is necessary to provide the workmen with ropes and alpenstocks to avoid their being dashed to death in the abyss below. Right—Eleven persons were injured in New York when a derrick mast on a new building snapped off and girders weighing ten tons crashed thru each floor of an adjacent hotel

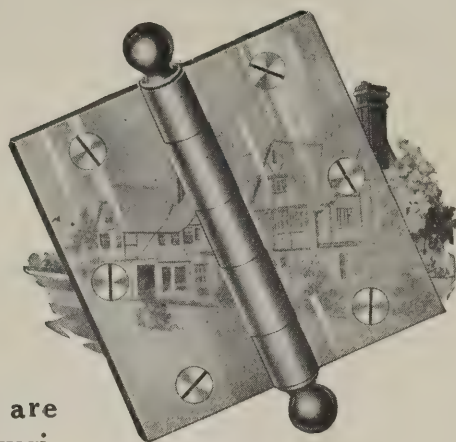


"P. & A. Photo"

GRIFFIN—

the hinge that lends a quiet touch of refinement to the charm of the most modern appointments—and so smoothly performs its service of silence that it never intrudes upon its surroundings.

Griffin Hinges are made in a wide variety of sizes and designs — each butt wrapped in moisture proof paper and packed one pair in a box with screws to match.



We Also

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Kimball equipment in your buildings means service and safety for the occupants. In no other place is service more essential than in a hospital, where life itself is dependent on quick action. Buildings equipped with Kimball Elevator Machinery are served at a lower cost of upkeep and by fewer shutdowns than is generally the case.

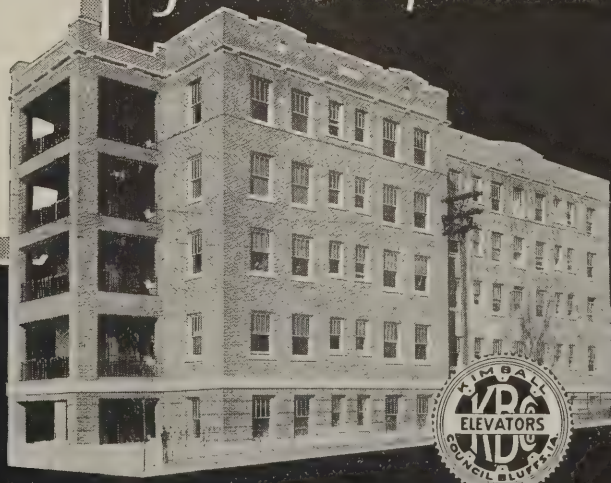
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for every requirement*



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Among the Manufacturers

New Devices Methods and Improvements

in the Building Industry

Hard Maple—Where and Why?

USERS of lumber will find valuable information in the inviting booklet, "Hard Maple in the Industries," published by the Northern Hemlock and Hardwood Manufacturers Association, Oshkosh, Wisconsin, and the Michigan Hardwood Manufacturers Association, Cadillac, Michigan.

It tells what woods will best serve a given purpose and the basic reasons which should govern their choice.

"Exact information on the comparative strength values of wood has," according to the book, "become available only within the last few years. The results of these tests have made it necessary to revise many conceptions which had been popularly held as to the comparative strength of different woods and as to the manner in which woods act under different strains.

"It is the purpose of this booklet to provide a quick and easy reference to the technical facts regarding hard maple, its structure, properties and behavior in use. This information will serve as a better basis for the selection of wood and for the design of wooden products.

"The official strength tests made by the United States Forest Products Laboratory at Madison, Wisconsin, are used as the basis of the tabulations on mechanical properties as given in this booklet.

"Incidentally, you will find much technical information concerning other northern hardwoods, birch, beech and rock elm, and other woods of commerce, which have frequently been used where considerable strength is required."

The booklet mentioned is 6 by 9 inches in size, contains 60 pages, and is attractively printed in two colors throughout. It is sent free.

Pipeless Furnaces

IN A BOOKLET issued by the Monitor Furnace Company, Cincinnati, Ohio they introduce their latest achievement, a new model "Caloric" pipeless furnace.

This booklet tells the practical advantages the Caloric system of heating offers the home owner, and in a two-page illustration describes in detail the interior and exterior construction of this furnace. Other illustrations and diagrams show

Caloric construction versus imitation, and the Caloric patented double inner casing.

The manufacturers claim that these furnaces can be installed in either old or new buildings in one or two days. This booklet will be furnished by the Monitor Furnace Company upon request.

Will Sand, Wax, Polish, Dust, or Scrub Floors

A HANDY waxer and polisher is now on the market which has a number of convenient features for doing this work



The new "American" waxer and polisher

in an easy, efficient way without the use of a motor. It consists of a shot-filled canvas bag and an outer covering having a Wilton carpet bottom for polishing. A long handle clamps securely to the tongue of the bag and cover.

A special waxing pad is furnished which is spread with wax (like butter on bread) and placed under the canvas bag and cover, which weighs ten pounds, after a piece of cheese cloth has been wrapped around it. The waxer is then passed back and forth over the floor by means of the handle, securing an even coating of wax without hard labor or stooping. The waxing pad is then removed and the polisher passed over the floor, which

speedily produces a high lustre finish.

The long handle and thinness of the bag makes it easy to wax and polish under furniture and radiators, and the fine sheet with which the bag is filled protects the furniture from impact or abrasion. The flexible weight also enables the tool to get into grooves and all irregularities of the floor. By using a sheet of sand paper under the bag, it is possible to take out stains from old floors and smooth them up before waxing. This device grips whatever is placed under it without clamping or any other attachments, and will sand, wax, dust, polish, etc. more evenly than is possible by hand.

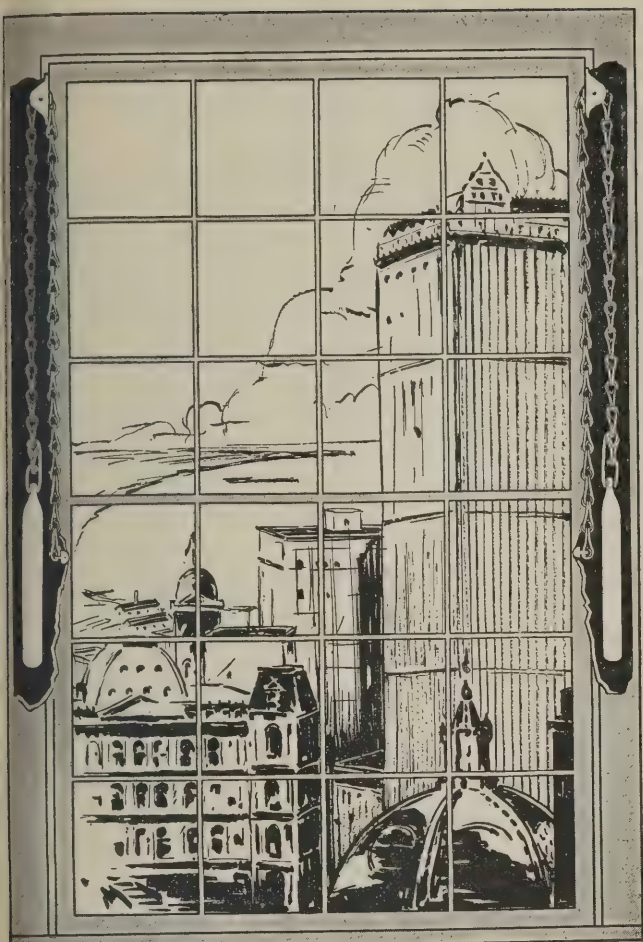
This tool is also effectively and conveniently used for dusting hardwood floors and for waxing linoleum. It is a labor saver when used for scrubbing floors. No kneeling or stooping is necessary and water won't hurt the polisher. This is a very practical, inexpensive device which will certainly lighten the labor of caring for wood floors and be useful in any home.

The trade name of this handy, new item is the "American" Waxer and Polisher. More information and prices may be had by writing to the manufacturers, the American Floor Surfacing Machine Company, 519 South Saint Clair Street, Toledo, Ohio.

Genasco Latite Shingles

A FOUR-COLOR booklet, illustrating Genasco "Latite" Shingles, has just been issued by the Barber Asphalt Company, Land Title Building, Philadelphia, Pennsylvania. It describes their complete line of shingles, including Genasco Latite Sealbac (Individual), Extra Heavy Individual, Strip and Genasco Giant Strip Shingles.

The illustrations in this booklet show the patented key device used to lock Genasco Latite Shingles on the roof and to hold each shingle firmly and flatly against its neighbors. This invention, the manufacturers claim, explains why these shingles cannot be blown off the roof and why rain can't get through them. The manufacturers further claim that Genasco Latite shingles are classed as "fire-safe" by municipalities having most stringent fire-safety building laws. Copies of this booklet, which is 6 by 9 inches in size, will be furnished free to contractors, architects and builders.



Chained For Life

—with “Roller Bearing Links.” Hodell sash chain properly installed is a permanent job. Architects know they have specified a complete job when life long chain is included.

The special link reduces friction to a minimum—no kinking, no noise and no stretching. Strong and durable it will outlast any building without rusting.

There is no replacement cost. It outlasts sash cord and poorer grades of sash chain. Architects should send for the Hodell Specification File A.I.A. Classification 27ai, also see Sweets.

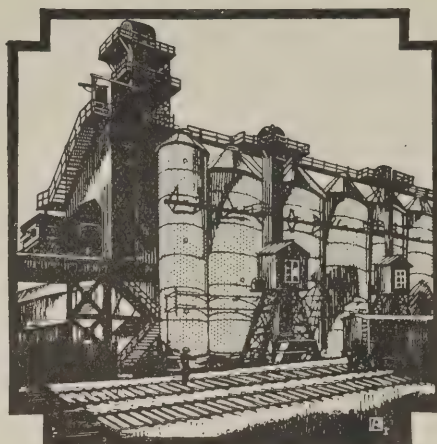
Hodell
SASH CHAIN

THE CHAIN PRODUCTS CO

Established in 1886

Cleveland

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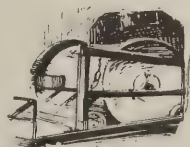


Selected materials result in “The BEST Glass”

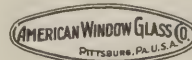
CHEMICALS of only the highest quality are accepted for use in the manufacture of American Window Glass Company's glass.

Silicates, lime and soda are unloaded from railroad cars directly into a battery of reinforced concrete bins, where they are stored under ideal conditions until used, daily tests being made to insure the detection of any inferior material. These bins accommodate a sufficient reserve supply to maintain production during transportation delays and other contingencies.

The entire process of manufacturing “The BEST Glass” is conducted on scientific principles. The largest melting furnaces in the world, an improved mechanical process of drawing and blowing and a new method of flattening are a few of the features which impart to this machine-made glass a quality which is uniform and which is assured by the highest standard of quality grading.



“The BEST Glass” is identified by the elliptical trade mark on every box of the genuine. Send Today for Complete Specification Sheet and Samples.



(This is the first of a series of advertisements describing the production of “The BEST Glass.” Watch for those which are to follow.)

AMERICAN WINDOW GLASS CO.



World's Largest Producer of Window Glass

GENERAL OFFICES: PITTSBURGH, PA. BRANCHES IN PRINCIPAL CITIES

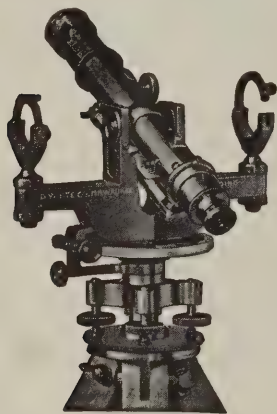


When writing advertisers please mention National Builder

Two Instruments in One

THE combination level and transit, manufactured by the David White Company, Inc., 902 Chestnut Street, Milwaukee, Wisconsin, should be of special interest to builders.

The manufacturers claim that as a level it gives excellent service in setting columns, stay bracing, testing the plumb of a building, running a straight line, etc., and that it has the same accuracy as found in the highest price instruments; and that as a transit, highway depart-



Two instruments in one—transit and level

ments have found it especially valuable in reconnaissance work, and in giving excellent service on building construction and all short distance work.

Because its vernier reads to five minutes, which is not close enough for surveying, this instrument is not recommended for that purpose.

It is of simple sturdy construction, thus assuring a long life of steady, dependable service.

Home Study Course for Builders

MANY of NATIONAL BUILDER's readers have come up from the ranks and have learned the contracting and building business by experience. NATIONAL BUILDER, however, is constantly receiving requests from many of its subscribers asking where they can learn more about the technique of building, realizing that the school of experience is an expensive one and that often formal training, when taken and assimilated by the right man, will help to shorten the period of apprenticeship and enable one to understand more intelligently the underlying principles of good building and, therefore, eventually to make more money.

These inquiries are always referred to the Chicago Technical College, 118 East 26th Street, Chicago, Illinois, for this institution offers a course for builders which is worth investigating—"The Builders'

Course." It contains thirty-one lessons: The first thirteen lessons of the course are devoted to the study of several complete sets of blue print building plans; the next eighteen lessons, to estimating. In the latter part of the course the student studies specifications and blue prints of a two-flat building, a brick cottage, an apartment, a hospital, residence and factory.

The Builders' Course is arranged so that the student can take it as a complete course, including both Plan Reading and Estimating, or can take either of these subjects as a separate course.

A short course in practical arithmetic has also been prepared and arranged for students who have not had much school training and for men in the building lines who want to brush up on the subject in connection with their study of Plan Reading and Estimating. This course in practical arithmetic contains twelve lessons, and may be had at a slight additional cost.

Booklets containing further information about this course may be had from the college upon request.

Linoleum-Covered Outdoor Dance Floor

JUST before the Democratic national convention opened its session in New York City, a hurry call was sent out for the erection of a huge dance floor down in historic old Washington Square, which was to be a vital part of the city's entertainment for the visiting delegates.

To cover this giant platform, 3,000 square yards of Certain-teed linoleum were required and this was laid under most trying circumstances. Seven men did the job during the first convention days, keeping at the task through incessant, heavy rains.

On the opening night, over 10,000 delegates and visitors attended the city's

"garden party" in the square, and 2,000 pairs of feet danced continuously on the linoleum-covered floor.

In addition, a number of fire drills and police drills were held on this platform. Following this initial "party," the beautiful old square was thrown open to the public for dancing and other entertainments, through the remaining nights of the convention. Officials declared themselves highly satisfied with the type of service provided by the Certain-teed linoleum covering.

It is believed by those who constructed the mammoth dance platform, that this is the first time a large linoleum floor covering has been laid out in the open without any protecting shelter.

Plaster Grip Is Labor and Money Saver

TO TAKE the place of wood furring strips in a plaster wall, the Hommel Manufacturing Company, 416 23rd Street, Oakland, California, manufacture Bull Dog Plaster Grips. The body of this grip is made from galvanized nail wire, bent at the end, and slides through a metal spacer which automatically fixes the wire uniformly $\frac{3}{8}$ -inch from the wall. This distance cannot be varied, it is stated, however the grips are applied. Eighteen inch chicken wire is used instead of laths and when furred away from the house and stretched by the Bull Dog staple, the reinforcing is placed in the exact center of the plaster. The reinforcing is completely buried in the plaster, which flows around all parts of the grip and sticks to it. It is claimed that this new method passes inspection requirements, is endorsed by building inspectors, and that it saves both nails and wooden lath, as well as considerable in labor. The Hommel Manufacturing Company will gladly send literature upon request.



An outdoor dance floor covered with 3000 square yards of Certain-teed linoleum

Heat and cold can't get through Celotex



This big, broad building lumber has the insulating value of cork. When the walls and roof of a house are sheathed with Celotex, fuel bills are a fourth to a third less than they are in an un-insulated house.

From your point of view, Celotex is most satisfactory, too. When you have sheathed a house with Celotex—all boards are 4 feet wide and 8 to 12 feet long—the job has been done quickly and finally. There is no insulating material to add—no weather-proofing is needed.

A Celotex wall is more rigid than one sheathed with wood lumber and more economical both for you and for the owner.

A sample of Celotex and full information about it and its uses—for sheathing, roof insulation, plaster base—will be mailed upon request to Dept. D-8, The Celotex Company, 645 N. Michigan Ave., Chicago, Ill. Canadian Representatives—B. & S. H. Thompson & Co., Ltd., Montreal and Toronto.

CELOTEX

INSULATING LUMBER

There is a use for Celotex in every building

ROCBOND

Exterior Stucco
A Good Half Inch

Covers Every Building Need

From buildings of large proportions to small suburban homes, ROCBOND Exterior Stucco fills practically every requirement for a permanently dependable and adaptable exterior building material.

Builders who want to be absolutely certain that their stucco jobs are properly constructed should use ROCBOND Stucco. There are no "comebacks" on Rocbond construction.

Rocbond Stucco combines quality and service at economical cost.



Has extraordinary Structural Strength and Unusual Flexibility.
Is Weather and Fire Resisting.
Has a Wide Variety of Stone Surfacing Combinations.
Works Easiest Under the Trowel.
Spreads Long and Freely.
Every Bag Contains the Same Uniform Quality.

Rocbond Stucco is made by a Company with substantial business responsibility.

The Strongest Selling Line the Dealer Can Handle

N.B.

Sign and mail
Coupon
NOW!

Four Plants—Write the one nearest you
THE ROCBOND COMPANY

Van Wert, Ohio
Cedar Rapids, Iowa

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THE ROCBOND COMPANY:
Please send me "Homey Homes."
No obligation is assumed.

Name..... Town.....

When writing advertisers please mention National Builder

Paine Miracle Doors

THE Paine Lumber Company, Ltd., Oshkosh, Wisconsin, has just issued a catalog describing their line of "Paine Miracle Doors." This book contains illustrations, descriptions, specifications and representative installations.

Some of the illustrations are in color, and show the various and attractive ways in which these doors may be finished. These examples also show a number of charming effects obtained through the use of different finishes and backgrounds.

Paine Miracle Doors are made in both hard and soft woods and their construction is described in some of these illustrations.

The book is furnished free to contractors, architects and builders. It is 8½ by 11 inches in size.

Elevators, Dumb Waiters

A NEW edition of the general catalog of Kimball Brothers Company, Council Bluffs, Iowa, has recently been published. In the introduction is given a brief history of this company and its policy. Illustrations show many of the products which this concern manufactures, among them being: hand elevators, electrically operated garage, sidewalk, passenger, freight and push-button elevators; ash hoists, and dumb waiters.

The book suggests many points to be considered in the selection of elevators and what should be included in the specifications. It contains 36 pages, is 8¼ by 11 inches in size, and is sent free to contractors, architects and dealers interested in elevator equipment.

Building a Business with Builders

TOO many advertising and merchandising campaigns of building materials leave the man in the trade as a secondary consideration. This is not so with the Celotex Company, 645 North Michigan Avenue, Chicago, Illinois, for this company has just issued a 16-page illustrated booklet, 10 by 13 inches in size, entitled, "Volume and Profit for the Retail Lumber Dealer," which describes the company's merchandising plan for 1924. "The first Celotex advertising," this booklet states, "appeared in the building trade journals. There has never been any interruption of that advertising. It has increased constantly in size of space and in number of publications."

For the man who is interested in the details of this campaign, the various papers used are listed and illustrated, and sample Celotex advertisements reproduced. Celotex samples, and rack to distribute literature, a poster for retail yards,

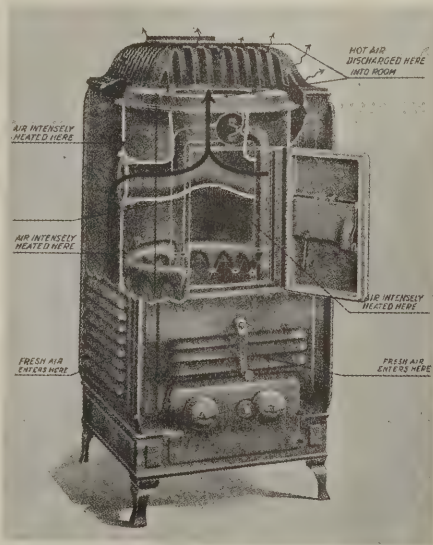
lantern slides, architect's specifications, photographs of Celotex buildings, and dealer electrotypes, for local use are described in full details.

Men in the building business wishing to coordinate their own selling efforts with the Celotex program will be supplied with this booklet upon request.

Providing Heat for Cellarless Houses

THERE is no country in the world where houses are heated as comfortably in winter time as in this one. This has all been brought about through the development of the central heating plant, which, as a rule, is located in the basement.

However, the high cost of excavating



The Heatrola looks like a cabinet phonograph and is not a jarring note in the home furnishings

and of constructing basement walls and floors has made economical heating in winter a serious problem, particularly in the small house.

At the same time, a fetish for basements is leading many contractors and builders to erect houses perched high off the ground, as if they were on stilts, producing an effect which destroys their beauty, which is obtainable in a house only with low, long horizontal lines.

The Estate Stove Company of Hamilton, Ohio, are manufacturing what they call the Estate "Heatrola," which "does the work of a furnace, uniformly heating every room of the average small house. Its double air-circulating system is said to give it unusual efficiency and its fuel economy feature makes it inexpensive to operate.

"Its method of heating is extremely simple. Air is drawn into the Heatrola

through the openings in the sides. The air is heated by passing over the hot surfaces of the firepot, drum, and other internal parts of the heater, and by passing through the large chamber which extends through the drum of the heater directly over the fire. By means of an enameled vapor tank, this air is humidified, so that as the air passes out through the top of the Heatrola, it is not only heated and sterilized, but moistened as well.

"The heating capacity of the Heatrola is attested by the fact that it is satisfactorily heating houses of 8,000 cubic feet and more, these figures being based on two complete changes of air every hour. The Heatrola discharges 16,000 cubic feet of moist, warm air every hour, and burns any kind of coal—also wood."

In order to visualize to the contractors and their prospective customers how economically a cellarless house can be built and how attractive it can be, the Estate Stove Company had the Lake Division of the Architects' Small House Service Bureau design and plan a group of modern cellarless houses to be heated by the Heatrola. Sketches, plans and descriptions of these houses are contained in a booklet entitled, "Six Modern Cellarless Houses," which sells at 25 cents per copy.

Makers of "Horse Head" Zinc Expand

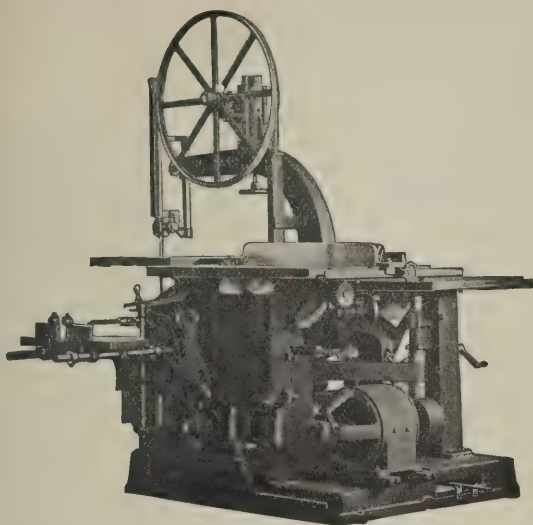
IT HAS been learned that the New Jersey Zinc Company is building a rolling mill at Palmerton, Pennsylvania, for the rolling of zinc sheets.

The decision has been the result of a long and deliberate consideration and a thorough analysis of the field. Many requests have come from the trade for such a service, and it is believed that the entry into the field of a company such as the New Jersey Zinc Company will be well received by the industry.

For a number of years this company has been building up a national prestige by supplying the trade with strips, rolled from zinc slabs. A large percentage of this production has been utilized by fabricators of spouting and gutters and in standing seam roofing.

It is expected that the New Jersey Zinc Company, within a short time, will be a large producer of corrugated and plain zinc sheets, and will supply the trade with standard sizes and gauges in addition to the narrower strips and ribbons now made by this company.

It will be of interest to the trade to know that this new plant will be centrally located, and served by trunk line connections, so it will be in a position to make shipment to any point. The executive offices of the New Jersey Zinc Company are located at 160 Front Street, New York, New York.



Each CRESCENT machine must measure up to the high standard of efficiency established during years of service in thousands of shops and factories throughout the world. The CRESCENT line is the result of years of skillful efforts continuously devoted toward the perfection of wood working machines that are substantial, efficient, practical, and entirely satisfactory to users who know quality and who demand it in their wood working equipment.

Ask today for catalog giving complete description of our line of band saws, saw tables, shapers, variety wood workers, jointers, planers, planers and matchers, table cut off saws, swing saws, disk grinders, borer, hollow chisel mortisers, universal wood workers.

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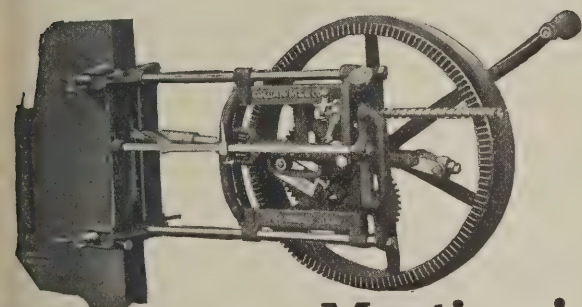
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If not satisfied after ten days' trial, return machine at our expense and get your money. Send today!

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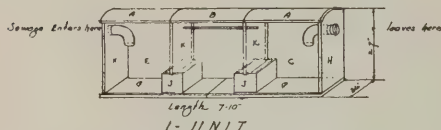
Colgan Machinery & Supply Co.
108 Hayden Bldg., Columbus, Ohio.



Advice on Sewage Disposal

THE Research Department of the United Cement Products Company, Indianapolis, Indiana, has issued, for free distribution "Health Bulletin on Sewage Disposal."

"The purpose of this bulletin," it says, "is to enlighten the country to the real need for sanitary sewage disposal—to



Individual unit of the "Perfection" septic tank

show its people how important it is from a health viewpoint."

For sewage disposal without sewers they recommend in this bulletin their "Perfection" septic tank. The construction of this tank is said to provide for the most thorough bacterial digestion. The material used in the manufacture, and its treatment, are claimed to be such as to provide a positively proven water-tight structure. This tank is made in various sizes to meet many requirements—1, 2, 3, 4, 5-unit systems and larger. The capacity of a single unit tank is 44 cubic feet; 5.44 cubic feet per person tributary to the tank, equal to caring for 330 gallons of sewage, or 41.2 gallons per person, every 24 hours (8 persons estimate). It is provided with a cover, made in three sections, each one of which can be readily pried open. For ventilation there is provided a $\frac{3}{8}$ -inch galvanized gas pipe to take care of the gases from the entrance chamber to the outlet chamber, thus allowing the middle or breeding chamber to attain a condition permitting the most perfect housing for the bacteria, providing thorough bacterial action.

The location of a septic tank must be carefully considered. It should be placed from 20 to 50 feet from a well, spring, or source of water supply used for domestic purposes, and not less than 5 feet from any lot line or closer than 10 feet from a dwelling.

The proper disposal of the effluent is of utmost importance, for a septic tank effluent is not pure and may be dangerous to health. For proper purification, it is explained, the effluent should discharge into subsoil containing a sufficient amount of ordinary farm drain tile. Twenty to 50 feet of tile per person using the tank, laid 12 inches below surface 10 feet apart, will make an irrigating field ample to dispose of the effluent in average soil. The discharge can, of course, be made upon ground surface when feasible, or into a river, stream, pond or lake. For this lat-

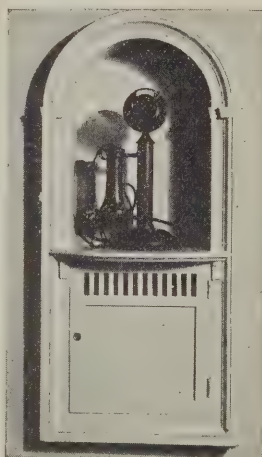
ter disposal the permission of the health authorities is necessary, in most states.

This bulletin is free.

Built-in Cabinet for Phone

EVERY architect and contractor who plans and designs houses has to worry sooner or later over where to put the telephone. Too often it is misplaced where it is either inconvenient or becomes a jarring note in the decorative scheme of the house or apartment.

Mr. H. D. Phoenix, an architect in Syracuse, New York, has worked out a built-in cabinet for the telephone which will appeal at once to architects and contractors, because of its attractive design and its practical features. This cabinet brings the telephone and the bell-box to one location as a unit. It provides for the concealment of the bell-box—unsightly



Cabinet bringing telephone and bell-box to one location as a unit

at best—in the lower part of the cabinet. The swing front to the bell-box covering makes the contents easily accessible, and the grille or fretwork in the door renders the bell signals as clearly audible as though the bells were exposed. The bell-box case will also house most telephone directories.

In the Phoenix phone cabinet the telephone takes on to itself a distinctive and pleasing artistic effectiveness, and because the cabinet may be had in different woods, to meet all specifications, and because of its attractive design, it will fit into any house or apartment in practically any architectural style.

The cabinet will fit into any old or new wall or partition of not less than 3 inches thickness, and between studs 16 inches on centers. The opening in the wall is approximately 12 inches in width and $29\frac{1}{2}$ inches in height, with the circle top.

A descriptive circular sent free on request by the Phoenix Manufacturing Co., 419 Union Building, Syracuse, New York, gives further information and illustrations.

Revise Booklet on Wiring

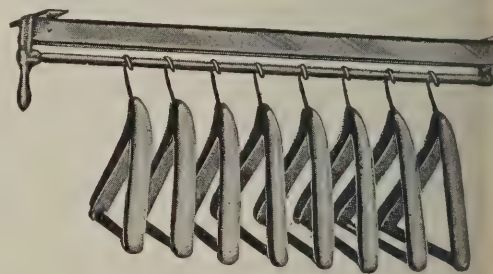
THE third edition of "Handy Wiring Tables and Illumination Data," has been recently revised and published by the Westinghouse Electric and Manufacturing Company. This 52-page booklet contains detailed directions for accurately laying out the wiring for an industrial or commercial lighting system, and, for this reason, is of particular interest to architects, builders, electricians and electrical dealers. An interesting feature of the publication is a table of the present standards of desirable illumination for various classes of service, giving the range of foot-candles most desirable for illumination in practically every branch of industry where artificial light is used.

Practical electrical definitions at the beginning of the book are followed by wiring formulae and tables, together with illumination classifications. A complete table of foot-candle values for lamps of different wattage, in areas of different size, is included. Various types of commercial luminaries manufactured by the Westinghouse Company, East Pittsburgh, Pennsylvania, are described and pictured.

Equipment for Clothes Closets

ARCHITECTS, contractors and builders figuring on how to best utilize limited clothes closet space will be interested in Knappe & Vogt Manufacturing Company's clothes closet fixtures. These fixtures are attractive in appearance and multiply the closet space usable for clothes.

They consist of a trim nicked bar which slides easily on noiseless roller bearings. A large number of clothes

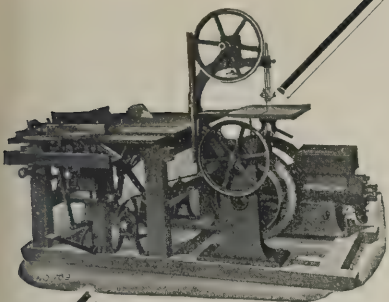


Fixtures which multiply clothes closet space

hangers can be accommodated on the sliding bar and the entire wardrobe may be pulled out into the light and air of the room for inspection and selection of garments.

It is claimed that by using these fixtures over \$500 worth of space can be saved in the construction of a \$10,000 house.

Knappe & Vogt Manufacturing Company, Grand Rapids, Michigan, will furnish further information upon request.



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This American Portable Variety Woodworker is letting hundreds of contractors figure low on jobs. And clear up bigger profits, too! No slow hand sawing for them. No waiting on the nearest shop for special jobs. Instead they have a complete woodworking plant right at hand. Four men can work at it at once.

This one machine may be used as a rip, cutoff, or 20-inch scroll saw, as a dado, gaining, grooving, rabbeting, tenoning, or boring machine, as a jointer or planer, a matcher, molder, or sander, and as a hollow chisel mortiser.

Our Bulletin No. 80 describes in detail this and other time-saving "American" machines. Write for it.

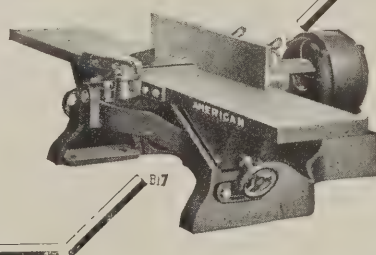
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NATIONAL BUILDER'S Guide to Manufacturers' Catalogs

Literature supplied to Contractors, Architects and Builders for reference purposes

Illustrated and descriptive books and circulars giving complete information about all building materials, accessories and equipment advertised in NATIONAL BUILDER

Acoustics

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. Architectural Acoustics. Booklet, 6x9 in., 24 pp. Illustrated Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

Associations

California Pine Association, 458 Call Bldg., San Francisco, Calif. Booklet, "Pine Homes," containing information regarding White and Sugar Pine, sent free on request.

Portland Cement Association, 111 W. Washington St., Chicago. A large number of publications are issued on the different uses of portland cement, under the following heads: Canals, conduits, sewers and drainage; farm uses; correct products; roads, streets and alleys; structural concrete; technical data, tanks, etc., and miscellaneous subjects. "A Manual of Concrete Masonry Construction" is particularly recommended for the contractor and builder. It is a 32-page booklet, size 8½x11, and is sent free on request.

Band and Mitering Saws

The Tannewitz Works, 315 Front Ave., N. W., Grand Rapids, Mich. Special bulletins on variety saws, band saws, portable electric mitering machine and saw gauges will be furnished on request.

Block Machinery

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 35 sent on request.

Books on Building

Theo. Audel & Co., 72 Fifth Ave., New York City, N. Y. "Audel's Masons and Builders Guide," 4 vols., \$6.

Frank R. Walker Co., 536-C Lake Shore Drive, Chicago. Publishers of The Building Estimator's Reference Book, containing information regarding estimating the cost of every phase of building construction (price \$10); and of a new book entitled "Practical Accounting and Cost Keeping for Contractors," treating of contractors' bookkeeping and accounting systems and how to keep time and labor costs on the job (price \$2.50 postpaid). Books sent on approval to contractors writing on their business letter-head.

New 64-pp. book, "How Practical Forms Increase Contractors' Profits"; 100 illustrations. Free to contractors.

Boilers

U. S. Radiator Corp., Detroit, Mich. Complete data sent on request.

Borders for Floors

Wood-Mosaic Co., Inc., New Albany, Ind. Catalog showing parquet and floors in natural colors sent free on request.

Brick

American Face Brick Association, 1763 Peoples Life Bldg., Chicago.

"The Story of Brick." Third edition. Booklet, 7x9½ in., 55 pp. Illustrated. Presents the merits of face-brick from structural and artistic standpoints. Tables of comparative costs.

"The Home of Beauty." Fourth edition. Book, 8x10 in., 72 pp. Color plates. Presents 50 designs for small face-brick houses submitted in national competition by architects. Text by Aymar Embury II, architect. Price 50 cents.

"Bungalow and Small House Plans." Booklets 8½x11 in., 50 pp. Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3-, 4-, 5-, 6-, 7- and 8-room houses. Price 25 cents each, \$1 for the set.

"A Manual of Face-Brick Construction." Booklet, 8½x11. Text-book on construction of the brick wall and various uses of face brick. Thirty-one colored plates of brick houses with plans. Price \$1.

"Architectural Details in Brickwork." Series 1, 2, 3, 8½x11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others \$1.50.

"Orienting the House" is an illustrated booklet with a sun dial chart and explanation for placing the house with reference to light and shade. Sent for 10 cents.

"Two Apartment and Double House Plans in Face Brick" contains 14 very attractive designs of duplex and double houses showing 28 plans of five to six rooms each. Sent for 25 cents.

"The Home Fires," a beautiful 48-page booklet giving full instruction as to the best method of building fireplaces; shows 20 original fireplace designs, also 25 halftones of more elaborate designs by well-known architects, which will be helpful to the builder who wishes to plan his own fireplace. Sent for 25 cents.

Building—Steel Products For

Truscon Steel Co., Youngstown, O. Truscon Data Book. Catalog, 3½x6 in., 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

Concrete Engineering Co., Omaha, Neb. "Handbook of Fireproof Construction" "How to Use Ceco Lathing Materials" and "How to Save Concrete, Steel, Formwork and Labor by Using Meyer Steel Form Construction." These booklets, 8½x11 in., sent free on request.

International Steel & Iron Co., Evansville, Ind. Catalog on steel ceilings, catalog on store fronts and garages and circulars describing metal lath, coal chutes, fireplace dampers, etc., sent on request.

Calking Paste

Weatherproof Calking Co., 757 Washington Ave., N., Minneapolis, Minn. 24 pp. booklet describing their product sent on request.

Cellar Drainers

Penberthy Injector Co., 1260 Holden Ave., Detroit, Mich. 80 pp. catalog and 16 pp. miniature catalog on cellar drainers, automatic injectors, etc., etc. These catalogs are free and will be sent on request.

Cement—Portland

Atlas Portland Cement Co., 25 Broadway, New York City, N. Y. "Atlas White and What You Can Do With It," printed in English, Italian, Portuguese and Spanish; "Atlas Handbook on Concrete Construction," "Building a Bungalow," "Information for Home Builders," "Stucco Questions and Answers," "Atlas White Portland Cement for the Concrete Block and Brick Manufacturer" and other books sent free on request.

Louisville Cement Co., Inc., Speed Bldg., Louisville, Ky. "Brixment." Booklet, 7½x5 in., 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

Sandusky Cement Co., Dept. T, Cleveland, O. "Medusa White Cement Book" sent on request.

Clothes Closet Fixtures

Knap & Vogt Mfg. Co., Grand Rapids, Mich. Booklet, "Plans for Modern Clothes Closets," sent on request.

Concrete Products Equipment

Anchor Concrete Machinery Co., 534 Dublin Ave., Columbus, O. They offer free to concrete products men their interesting "Hand Book on Concrete Products." Included in the book are articles by such leaders of the concrete products industry as Harvey Whipple, secretary of the American Concrete Institute and editor of Concrete; and Wallace R. Harris, president of the National Concrete Products Association and editor of Concrete Products.

Concrete Block Mach. Co., 56 Columbia St., Newark, N. J. Literature sent on request.

Concrete Equipment Co., 530 Ottawa Ave., Holland, Mich., manufacturers of the "Utility" line of concrete machinery and molds for the manufacture of all kinds of concrete products. A descriptive catalog, which not only describes the equipment but also specifies weights, costs and selling prices of the products, is sent free upon request.

J. B. Foote Fdy. Co., 16 Front St., Fredericktown, O. New 40-page catalog on "Money Making Machinery."

Helm Brick Co., Cadillac, Mich. "Concrete for Beauty, Adaptability and Permanence." This is a combination handbook on the concrete products industry and catalog illustrating and describing the well known line of brick and block presses and various accessories for products plants.

Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, O. New loose leaf catalog No. 35, 80 pp., illustrating and describing their complete line of concrete machinery. Contains detailed information for the manufacture of molded concrete products. Sent free on request.

Derricks

Sasgen Derrick Co., 3101 W. Grand Ave., Chicago, Ill. Circular N2 with illustrations and descriptions sent on request.

Door Beds

American Bed Corp., 18th to 19th Park Ave., St. Louis, Mo. Complete information sent on request.

Concealed Bed Corp., 430 Garland Bldg., Chicago, Ill. Literature and "Landing the Job" plan sent on request.

Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "How to Use the Murphy Bed" describes its construction, operation and sizes; "Behind the Door," showing installation in private homes and its application to this type of building; "Specifications and Details," giving complete information for the preparation of all types of Murphy beds sent free on request.

Doors

Wheeler, Osgood Co., Tacoma, Wash. Monograph on Laminex construction sent free on request; also Catalog No. 31 and booklets on Laminex doors.

Doors—Metallic

Dahlstrom Metallic Door Co., 411 Buffalo St., Jamestown, N. Y. "Metal Door and Trim Catalog" (Third Edition), 8½x11 in. Complete catalog of architectural shapes, styles and types of Dahlstrom standard construction doors.

Drawing Instruments

American Blue Print Paper Co., 445 Plymouth Court, Chicago, Ill. 32-page booklet. Catalog "B" describing their Simplex line sent free on request.

Drawing Materials

A. S. Aloe Co., 615 Olive St., St. Louis, Mo. New 132-page illustrated catalog of drawing materials, engineering supplies, tapes, etc.

Dumb Waiters

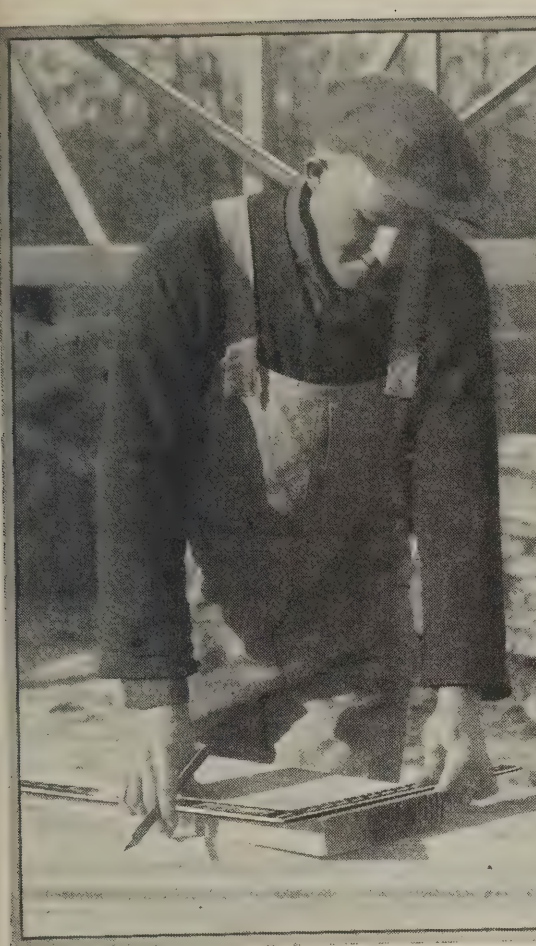
Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Dumbwaiters," 20 pp., 8½x11 in. Describes in detail 14 standard types of dumbwaiters. Mailed on request.

Sedgwick Machine Works, 150 W. 15th St., New York City. Catalog containing descriptions and construction details, 4¼x8¼ in., 70 pp., illustrated; sent on request.

Electrical Equipment

Frank Adam Electric Co., St. Louis, Mo. "Wiring the Home for Comfort and Convenience" with information and diagrams will be sent free. Also Catalog No. 32, 7¼x10½ in. on panelboards; Bulletin No. 29, type P safety type panelboards and cabinets, 12 pp., 7¼x10½ in.; Bulletin No. 30, 4x9 in., on fan hanger outlets and floor boxes, 16 pp.; Catalog No. 25 on knife switches and accessories, 32 pp., 7¼x10½ in., and Bulletin No. 27, new triumph residence safety type panelboards, 16 pp., 7¼x10½ in., containing complete wiring diagrams and specifications for average modern residences.

General Electric Co., Schenectady, N. Y. "Wires and Cables." Booklet, 8x10½ in., 85 pp. Illustrated. Four bulletins in a binder, describing wires and cables in general, conductor insulated with vulcanized rubber compound, varnished cambré and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.



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NATIONAL BUILDER'S Guide to Manufacturers' Catalogs

"Electric Fans." Folder, 6 pp., 3¼x6 in. Illustrated. Describes line of electric fans, giving catalog numbers, voltages and frequencies.

"Reliable Wiring Devices." Catalog, 3x4½ in., 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptacles, switches, rosettes, cutouts and fuses for miscellaneous devices.

"Lighting of Public Buildings." Bulletin, 6x9 in., 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

Elevators

Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Elevators," 24 pp., 8½x11 in. Contains helpful information for architects and contractors. Sent on request.

International Steel & Iron Co., Evansville, Ind. Elevator catalog sent on request.

Kimball Bros. Co., Council Bluffs, Ia. "Kimball Elevator," an illustrated catalog of hand power, sidewalk and garage elevators and dumbwaiters and electric passenger, freight and push button elevators, 36 pp., 8½x11 in. Sent free.

Richards-Wilcox Co., Aurora, Ill. "Elevators." Booklet, 8½x11 in.; 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 157 W. 15th St., New York. Catalog and descriptive pamphlets, 4¼x8¼ in., 70 pp. Illustrated.

Fire Doors and Fire Door Hardware

Richards-Wilcox Co., Aurora, Ill. 60 pp. booklet, 8½x11 in.; flat track and round track types for sliding and swinging doors. Sent on request.

Fireproofing

The General Fireproofing Co., Youngstown, O. "Fireproofing Handbook," 64 pp., 8½x11 in. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-centering formless concrete construction.

Milwaukee Corrugating Co., Milwaukee, Wis. Brochure entitled "Metallic Construction for the Modern Home;" 16 pp. booklet with a non-technical story featuring fireproof construction for homes through the use of metal lath, etc.

Floor Surfacing Machinery

American Floor Surfacing Mach. Co., Toledo, O. "American Universal Contractor Broadside," "American Rapid Grinder Broadside," "American Handy Grinder Circular" and "American Base and Wall Polisher Catalog" each describing the particular machine mentioned sent free on request.

Wayvill Chappell & Co., Waukegan, Ill.

Illustrated folder, 9x16 in. Electric Ballbearing Floor Surfacing (or Sanding) Machines. Made in four sizes. Ship on free trial. Describes in detail the construction, also lists of extras furnished with each machine. Also gives suggestions how to start in the floor surfacing business.

Illustrated folder, 8x8½ in. Electric Desk and Table Surfacing (or Sanding) Machines, with flexible shaft. Ship on free trial. Gives information about its construction and lists the extras furnished with each machine. Mentions the great variety of work the machine is adapted for.

Electric Rotary Mach. Co., 3825 W. Lake St., Chicago, Ill. Illustrated. 28 pp. booklet describing the process of sanding new and refinishing old wood floors, surfacing and polishing marble, terazzo, etc.

Fox Supply Co., Brooklyn, Wis. Circular on scraping floors and proper method of sharpening floor scraping blades sent free on request.

National Sanding Mach. Co., 20 E. Jackson Blvd., Chicago. "The Lightning Electric Floor Surfer;" 16 pp. catalog sent on request.

M. L. Schlueter, 224 W. Illinois St., Chicago, Ill. Free trial offer and information sent on request.

Triple A Mach. Co., 4601 E. Ravenwood Ave., Chicago, Ill. Full information upon request.

Flooring

Everlastbests Flooring Co., Dept. N, 95 North St., Rochester, N. Y. Description of their product, opportunities in the business and method of estimating amount of materials and cost sent free.

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Bovee Furnace Works, Waterloo, Iowa. Catalog No. 29, 16 pp., sent on request.

Hess Warming and Ventilating Co., 1208-R S. Western Ave., Chicago, Ill. "Modern Furnace Heating," a book on heating problems and details of the Hess free plan service are sent on request. Also ask for folder "100% Heat."

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Richards-Wilcox Mfg. Co., Aurora, Ill. 65 pp. catalog, 8½x11 in., completely describes all styles of garage door equipment. Sent free on request.

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American Heating & Lighting Co., Morenci, Mich. Information and literature sent on request.

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Richards-Wilcox Mfg. Co., Aurora, Ill. "Modern Hardware for Your Home." 34 pp. catalog, 8½x11 in., sent free to interested parties.

Sargent & Co., 52 Water St., New Haven, Conn.

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Plane and Square Booklets.

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Andrews Heating Co., 1585 Heating Bldg., Minneapolis. The "Heating Book" catalog contains full information and is sent on request.

Minneapolis Heat Regulator Co., 405 E. 28th St., Minneapolis, Minn. Booklets "Convenience of Comfort," "Dual Control," "Steam Control" and "Gas Fired Heating Plants" sent free on request.

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The Celotex Co., 645 N. Michigan Ave., Chicago, Ill. Literature and information sent on request.

Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. "Johns-Manville Service to Power Users." Catalog, 8½x11 in., 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data. "Making Comfort an Economy," describing Johns-Manville Housline.

Ironing Boards

Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "Murphy Ironing Boards," describing the built-in cabinet ironing board and dimensions of space required.

Iron, Wire and Bronze Work

The Fred J. Meyers Mfg. Co., Hamilton, O. Catalog No. 67 describing their products will be sent free on request.

Lath, Metal and Reinforcing

The General Fireproofing Co., Youngstown, O. "Herringbone Metal Lath Handbook," 8½x11 in., 32 pp. Illustrated. Standard specifications for cement stucco on Herringbone rigid metal lath and interior plastering.

Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book.

Levels

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Warren-Knight Co., 136 N. 12th St., Philadelphia, Pa. Illustrated catalogs and pamphlets, descriptions and specifications about "Sterling" transits and levels sent on request; also pocket note book containing full instructions and illustrations for modern practice in leveling sent free on request.

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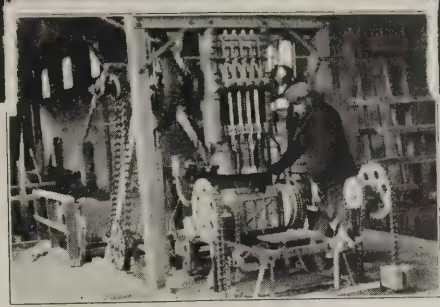
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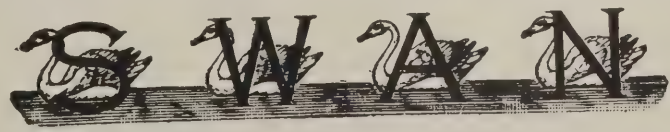
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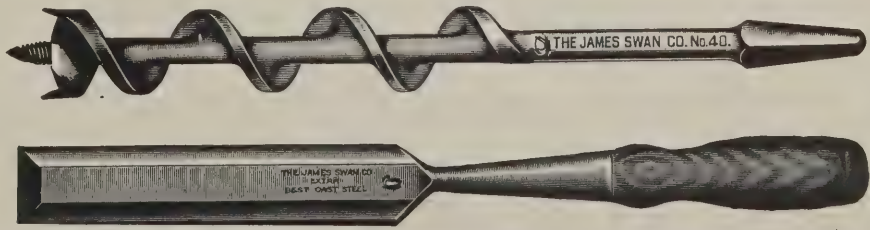
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Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book, sent free on request.

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American Cement Machine Co., Keokuk, Iowa. Description and literature sent free on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. 48-page catalog describing features and also showing illustrations and specifications of various size mixers; also illustrations of mixers in operation.

Helm Brick Co., Cadillac, Mich. Helm Concrete Mixer catalog sent free on request.

Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, O. New loose leaf catalog No. 35, 80 pp., illustrating and describing their complete line of concrete machinery. Contains detailed information for the manufacturer of molded concrete products. Sent free on request.

The Jaeger Mach. Co., 250 Dublin Ave., Columbus, O. Catalog No. 24, "A Mix a Minute," free on request.

Koehring Co., Milwaukee, Wis. "Concrete, Its Manufacture and Use," 207 pp. book, 4¾x7¼ in. This is a complete treatise on the use of concrete, including over 39 pages of valuable tables relating to quantities of material required for various construction work. Also 24 pp. "Dandie Light Mixer Catalog," and 4 pp. 6½x3½ in. folder on their various equipment.

Raber & Lang Mfg. Co., 829 Mill St., Kendallville, Ind. Circular No. 42 on the Bull Dog Tilter Concrete Mixers sent on request.

Rommel Mfg. Co., Kewaskum, Wis. 4 pp. circular describing their products sent on request.

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Colgan Machinery & Supply Co., 102 Hayden Bldg., Columbus, O. Folder describing their products sent on request.

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The F. A. Neider Co., Inc., Augusta, Ky. Samples and literature sent on request.

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Fred J. Meyers Mfg. Co., Hamilton, O. Their catalog No. 67 describes their products in detail.

Ornamental Molds

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 30 sent on request.

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The New Jersey Zinc Co., 160 Front St., New York City, N. Y. "Painting Specifications" covering old and new work; exterior and interior work; plaster and cement surfaces; cement and concrete floors. "Mapaz Handbook" booklet containing various paint mixing formulas, also full information on Mapaz, sent on request.

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S. Cheney & Son, Manlius, N. Y. Illustrated catalog showing utility, sizes and prices sent on request.

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Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. Catalog describing 3 and 4-in. trench pumps also contains detailed views of construction.

Duro Pumps & Mfg. Co., 103 Monument Ave., Dayton, O. Booklets, "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener," sent free on request.

F. E. Meyers & Bro. Co., Ashland, O. Catalog on request.

Refrigerators

Herrick Refrigerator Co., 102 River St., Waterloo, Iowa. Catalog sent on request.

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Delco-Light Co., Dayton, O. New architects' and builders' booklet on Frigidaire No. NB-9 sent free on request.

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The General Fireproofing Co., Youngstown, O. "Self-Sentering Handbook," 8½x11 in., 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforced material.

Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book sent free on request.

Truscon Steel Co., Youngstown, O. "Shearing Stresses in Reinforced Concrete Beams," Booklet, 8½x11 in., 12 pp.

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New Jersey Zinc Co., 160 Front St., New York City, N. Y. "Standing Seam Horse Head Zincing," booklet outlining the adaptability of this roofing for many types of building. Sketches showing how roofing is applied sent on request.

H. M. Reynolds Shingle Co., Grand Rapids, Mich. Literature describing their products sent on request.

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Vendor Slate Co., Easton, Pa. Catalog on various colored slate for roofing and garden walks sent on request to anyone interested.

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Elite Mfg. Co., Ashland, O. Literature sent on request.

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The Steel Scaffolding Co., Evansville, Ind. Catalog and descriptive bulletins illustrating uses of scaffold brackets, adjustable trestles, roof brackets, mason and stuccoer's scaffolds, ladder jacks, etc.

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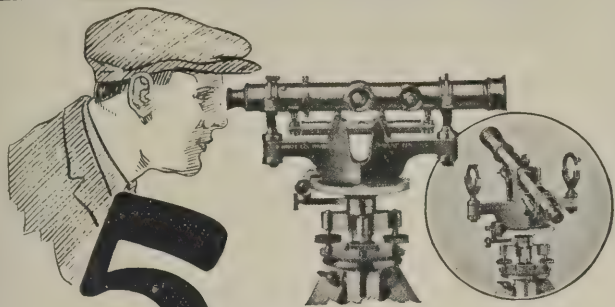
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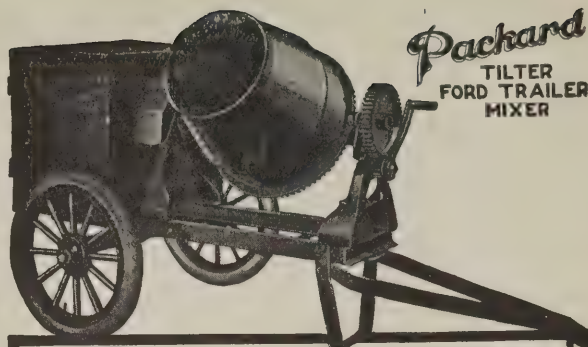
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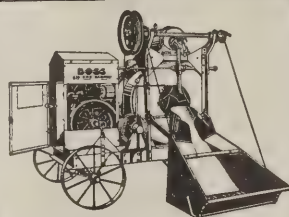
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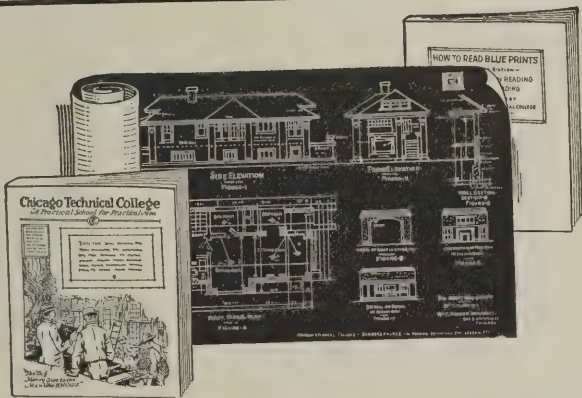
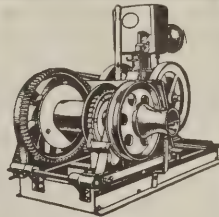
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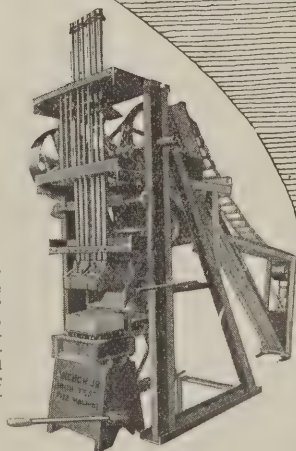
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Brown Co., Portland, Me. Booklets covering their various papers sent on request.

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H. M. Reynolds Shingle Co., Grand Rapids, Mich. Literature on their shingles sent free on request.

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Booklet, entitled "A Few Suggestions for Your New Store Front," 16 pp., 8½x11 in., for the contractor and merchant showing various designs and ideas for both new fronts and the remodeling of old fronts. All sent free on request.

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Stucco

Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, O. A booklet, "For All Time and Clime," contains working details and specifications and is sent free.

Franklyn R. Muller, Inc., Waukegan, Ill. Illustrated booklets describing their magnesite stucco sent free on request.

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Bishopric Manufacturing Co., 3 Este Ave., Cincinnati, O. "Specifications and Working Details," Booklet, 7¼x10½ in. Illustrated. Contains plainly written instructions for the use of stucco, stucco base, plaster base and insulation base.

Stucco—Exterior

Rocbond Co., Harrisburg, Pa. "Homey Homes" sent on request.

Stucco—Magnesite

Muller & Co., Franklyn R., 250 Madison St., Waukegan, Ill. "Everlastic Magnesite Stucco." Booklet 8½x11 in.

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American Blue Print Paper Co., 445 Plymouth Court, Chicago, Ill. 32 pp. booklet Catalog "B" describing their Simplex line sent free on request.

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Warren-Knight Co., 136 N. 12th St., Philadelphia, Pa. Catalogs and pamphlets about "Sterling" transits and levels sent on request.

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Cornell Wood Products Co., 190 N. State St., Chicago, Ill. "Cornell Interiors." 24 pp. Illustrated booklets; also small pamphlet, "165 Uses for Cornell Wood Board," sent on request.

Water Softeners

Duro Pump & Mfg. Co., 103 Monument Ave., Dayton, O. Booklets, "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener," sent free on request.

Water Systems

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Waterproofing

The General Fireproofing Co., Youngstown, O. "Waterproofing Series A-507-9." Booklet, 8½x11 in., 42 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete.

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Casement Hardware. Catalog, 8½x11 in., 12 pp. Illustrations, specifications, detail drawings and table of sizes, etc., for all types of Win-Dor casement operators.

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Hoffman Mfg. Co., Andrew, 906 Steger Bldg., Chicago, Ill. "Hoffman Casement Fixtures." Architect's Portfolio, 8½x11 in., 30 pp., Looseleaf. Scale details for mill-work, installation, etc., in new and old work.

Weatherstrip

Concrete Eng. Co., 1926 S. 52nd Ave., Chicago, Ill. Literature sent on request.

Diamond Metal Weatherstrip Co., 620 Kerr St., Columbus, O. Full information and literature on request.

Windows—Casement

Hoffman Mfg. Co., Andrew, 906 Steger Bldg., Chicago, Ill. "Hoffman Casements." Architect's Portfolio, 8½x11 in., 30 pp., Looseleaf. Scale details for mill-work, installation, etc., in new and old work.

Hope & Sons, Henry, 103 Park Ave., New York. "Catalog, 12¼x18½ in., 30 pp. Illustrated. Full size details of outward and inward opening casements.

Window Glass

American Window Glass Co., Pittsburgh, Pa. Literature sent on request.

Windows—Steel and Bronze

Truscon Steel Co., Youngstown, O. "Truscon Steel Windows." Catalog, 8½x11 in., 80 pp. Illustrated. Contains complete data on all types of Truscon Steel Windows.

Woodwork

Curtis Companies' Service Bureau, Clinton, Ia. A series of five booklets, describing the principal items of the Curtis line, are sent free to those interested. These booklets are "Permanent Furniture," "Interior Doors and Trim," "Entrances and Exterior Doors," "Stair and Stair Parts" and "Windows" and the general catalog "Architectural Interior and Exterior Woodwork Standardized."

Woodworking Machinery

American Saw Mill Machinery Co., 61 Main St., Hackettstown, N. J. Bulletin No. 79 gives details about their line.

W. F. & John Barnes Co., Rockford, Ill. Catalog and Bulletin 30-W sent free on request.

Gallmeyer & Livingston Co., Grand Rapids, Mich. Literature regarding their various machines sent free on request.

Master Woodworker Mfg. Co., 612 Brush St., Detroit, Mich. Catalog on request.

Parks Ball Bearing Mach. Co., Knowlton and Langland Sts., Cincinnati, O. Complete catalog of woodworking machines sent on request.

Richards & Co., Inc., Battery Wharf, Boston, Mass. "Cut Out a Nine-Room House in Nine Hours," "Don't Let the Dollars Slip Through Your Fingers," tells how every straight cut in the carpenter's trade can be made by one portable machine and the work of five carpenters done by one man and a helper.

Sidney Machine Tool Co., Dept. 703, Sidney, O. New bulletin sent free on request.

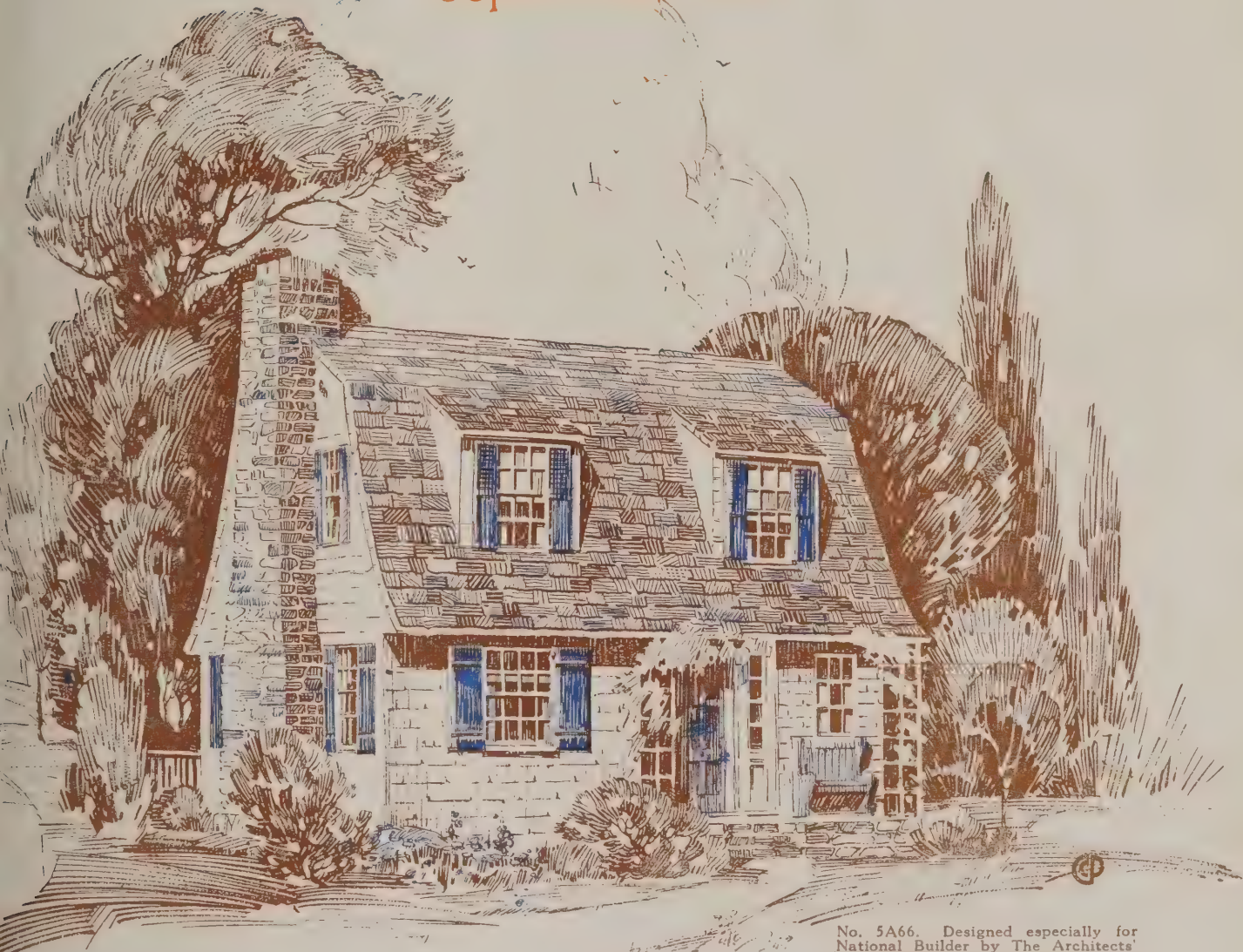
Crescent Machine Co., Leetonia, O. Catalog and various circulars illustrating and describing their different machines sent on request.

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September 1924



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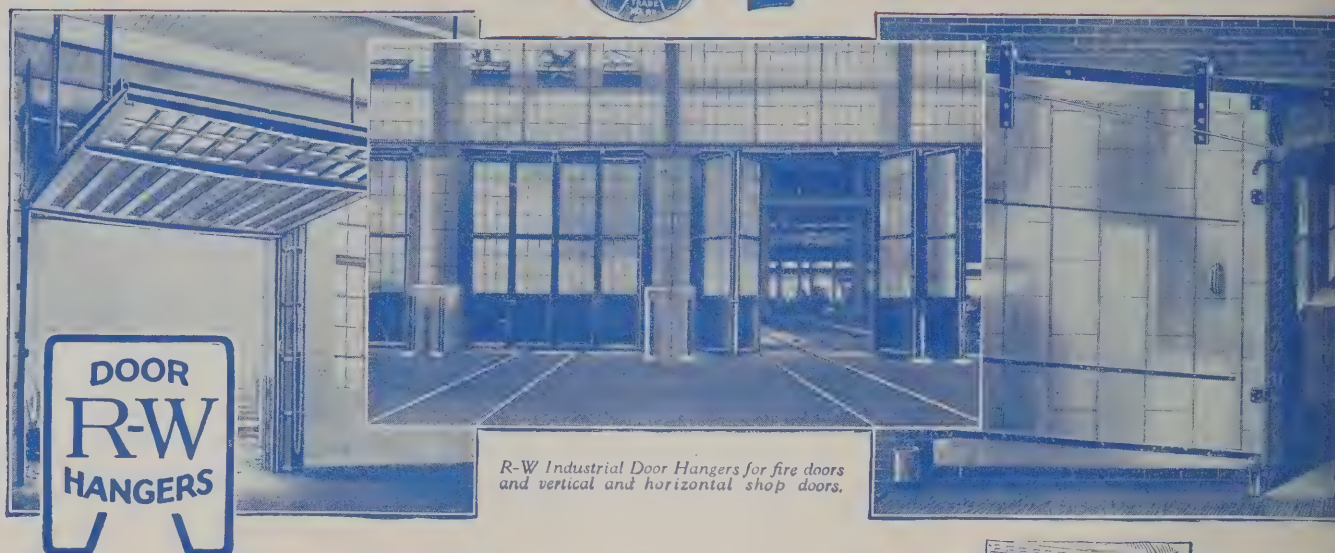
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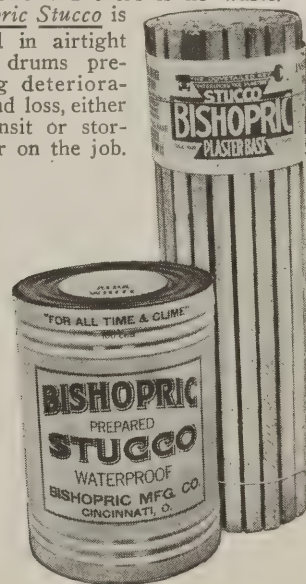
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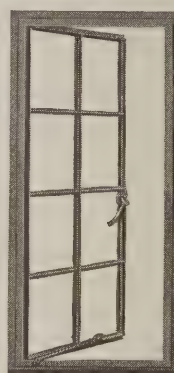


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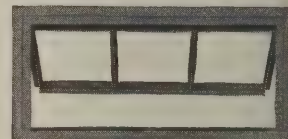
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TOOT-TOOT: LET'S GO!

NEXT month NATIONAL BUILDER is going to give its readers a trip to Florida. It is seldom that we permit ourselves to splurge in this way, but we've found a development down there that we think puts everything else of the kind in the shade, and we believe that our readers should see it. Therefore, the October NATIONAL BUILDER will devote the largest share of its space to pictures, plans and descriptions of this feature.

As a hint of what is to come, here is an outline specification of the development: the site embraces some 2500 acres of land on which more than six hundred houses have already been built; there is a complete business center even down to a fire station; a hotel based on the design of the summer palace of the Moors adjoining the Alhambra in Spain, and a golf club house that would make a pill puncher out of a wooden Indian.

The buildings appear to have been designed on the spot rather than over the drafting board; they are sincerely Spanish in character, but modified by a somewhat careless, freehand quality that gives them a human and natural effect that is a pleasant relief from the sophisticated "design" of most of our so-called Spanish houses.

Therefore the October issue of NATIONAL BUILDER will be a valuable reference work on the Spanish style and, in view of the growing popularity of this style throughout the country, is a tool that you can't afford to do without.



The October National Builder will be full of pictures like this

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Fifty or a hundred years hence this house will still be in good taste. A good design has no age, thus proving that economic grounds, if none other, are sufficient reason for building really attractive houses

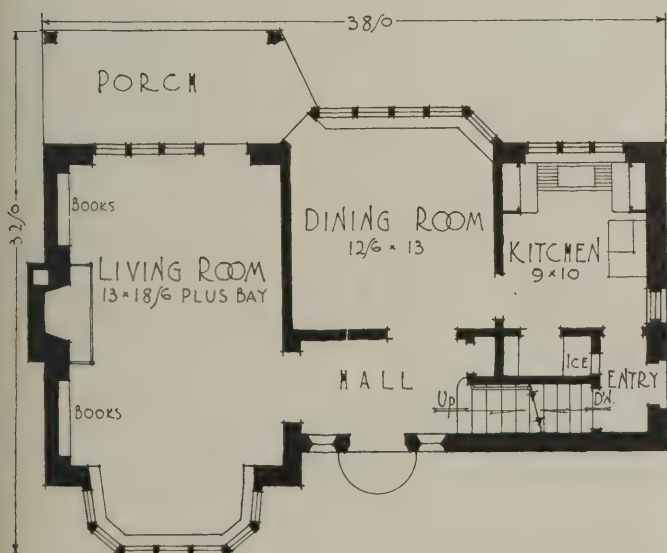


House of A. G. Terry, Evanston, Illinois. Lowe and Bollenbacher, Architects, 108 South La Salle Street, Chicago

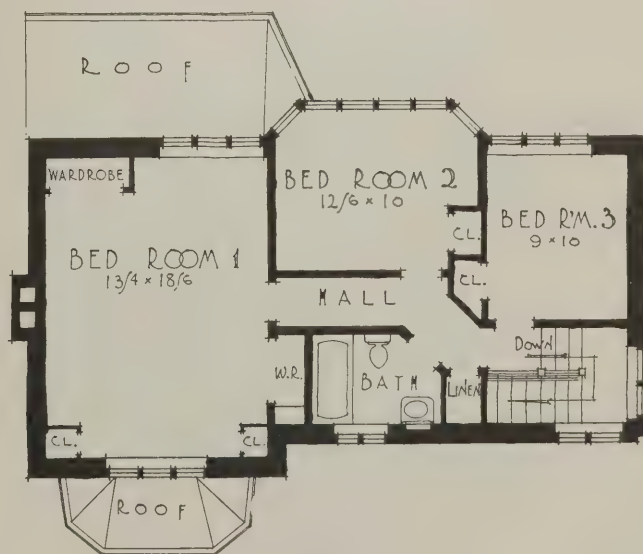
The HOUSE of the MONTH.

IT would be quite easy for one to work himself into a fine frenzy discussing the type of ark-itek and jerry-builder who excuses his deficiencies in design by saying "I give the people what they want." Fortunately, however, the activities of these gentry are being checked by the newspapers, popular magazines, advertisers and

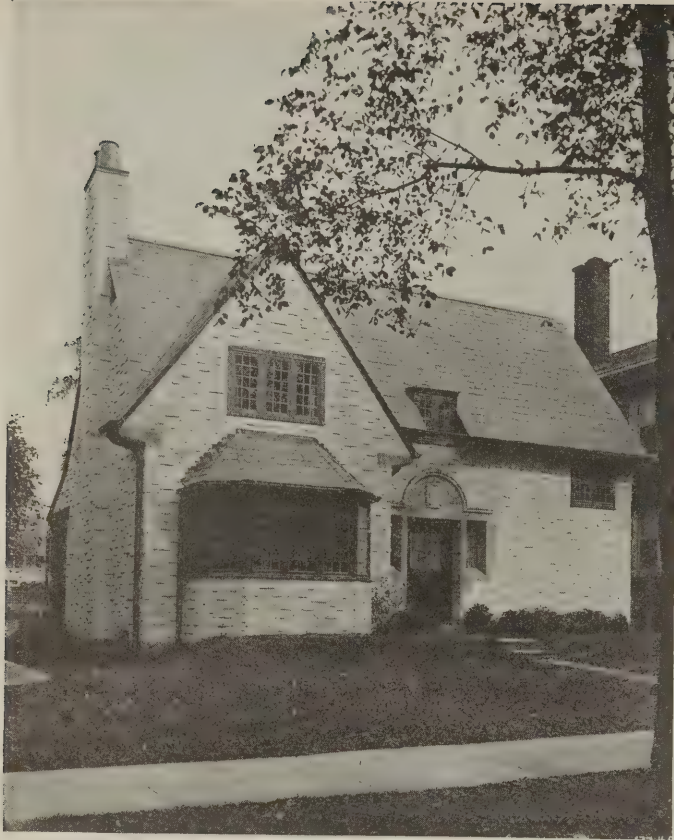
other agencies that are exerting a powerful influence on public taste, with the result that in the few years since the war we have progressed further in the development of a real appreciation of small house architecture than we did in the hundred years following the Colonial period. To prove this, consider your own



First floor plan



Second floor plan



A view of the front from another angle. Note the sparkling effect of the irregular brickwork



The exposed stonework at the entrance and the real beams of the ceiling add interest to the hall

town, wherever it may be and regardless of size, compare the houses of the nineteen-twenties with those built even ten years ago and note the trend toward simplicity and refinement that marks our later houses.

The house that illustrates this article is an apt example of recent tendencies with respect to small house architecture. Here the materials are of the simplest, but they are handled with such skill and good taste that the result is a house that is distinctive

in appearance without being obtrusive; simple without being dull or commonplace.

The walls are of common brick, stained white and laid in a rather irregular manner, but not to the extent that the apparent carelessness becomes displeasing. The entrance is of cut stone, vigorous in design and carefully detailed. The roof is of slate and all of the windows are casements glazed with leaded glass. The window stools are of quarry tile, easily cleaned and proof against

damage from water.

The plan speaks for itself as an example of economical and compact arrangement, disproving the rather threadbare assertion that an attractive design bespeaks a poor plan. Note that six rooms of good size are obtained within a ground area of only a trifle more than seven hundred square feet, and that the windows are placed to overlook the front and the garden at the rear, rather than the adjacent houses.



At the rear of the house, the upper portion of the bay and the gables are slated. The woodwork is stained and the gutters are painted black



The bay window and the stained paneling along the fireplace wall of the living room make an unusually distinctive and attractive interior



Apartment and store group of the Security Realty Company, Los Angeles. Balch and Smithley, Architects, Los Angeles

An APARTMENT and STORE GROUP

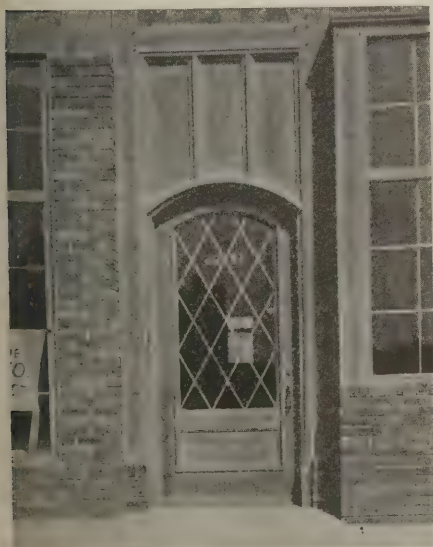
IT HAS often been said that the expense of erecting an attractive looking building is no greater than that of putting up an ugly one; the difference lies in the arrangement of the materials used. Upon second thought this statement would appear to be quite logical. Given two buildings of the same floor plan and with exterior walls of the same height, approximately the same quantity of materials will be required for each. By the proper ar-

range of the materials, one may be made attractive; by an improper handling of materials the other may be made ugly.

The development illustrated here is located in Los Angeles, California. Balch and Smithley, of that city, are the architects, and the Security Realty Company, the owners. The buildings are three in number, and they consist of a group of stores, an apartment building and a garage. The style of architecture is English, and the

entire group is so designed as to provide an economical layout for the plot and at the same time present an exterior such as would attract a high class of tenants.

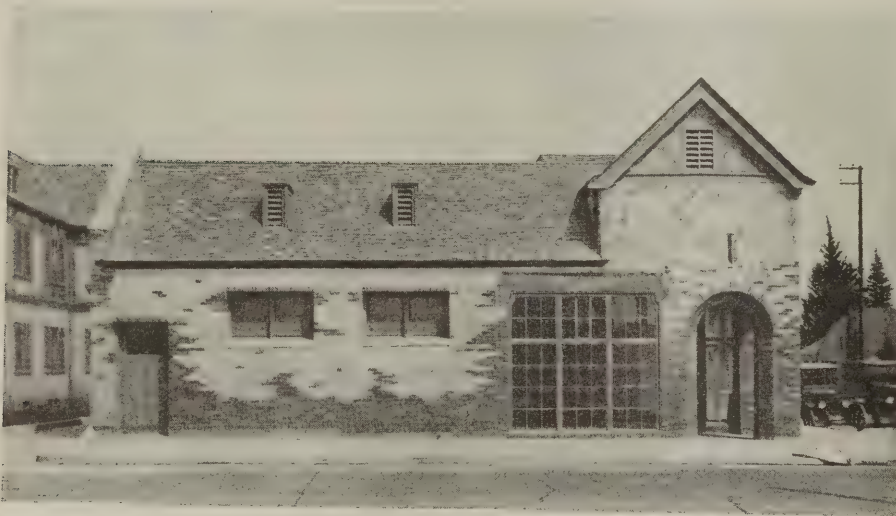
While the illustrations shown here give a good idea of the lines of the buildings, and some of the details, they do not present the pictures in their most attractive light, since most of the beauty is lost due to the absence of color. Seen under a bright California sun, this development is



Individuality is added to each store by making its entrance different from the others



A view showing five stores forming the left-hand portion of the group

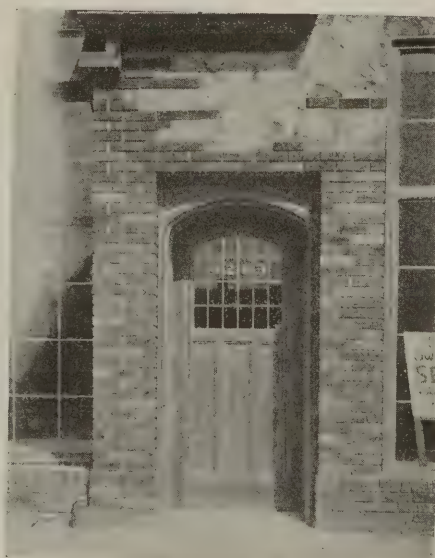
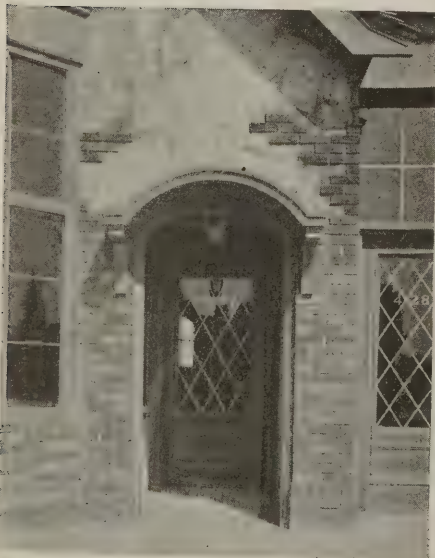


A view showing the end of the corner store

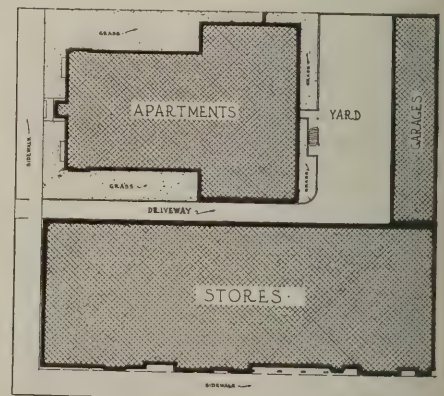
so attractive that one cannot help slowing up to get a better view.

The brick is a warm reddish brown with an occasional buff colored brick to heighten the color. Seen from a distance, the brick-work appears to be a dark orange. For the stucco, a color approximately buff, but somewhat lighter, has been used, and the stucco applied in a manner which left a rough finish to the wall. The woodwork is painted a reddish brown, and treated to give the appearance of having aged. Vari-colored wood shingles, laid in waves, are used for the roof. It may be said that the color scheme has been as carefully worked out as the plans and elevations.

The materials used for the different buildings have been varied. In the stores, hollow tile was used for the exterior walls, but the apartment is of frame construction. Pilasters in the front elevation are



The glazing of doors and show windows is of leaded plate glass



Plot plan showing the grouping of the stores, the apartment house, and the garages. In this layout, three desirable features for the modern storekeeper have been provided, viz.: a place for his shop, an apartment where he may live, and space for his motor-car



A view showing seven stores forming the right-hand portion of the group

not brick veneered hollow tile, but are solid masonry, as this form of construction is probably less troublesome to erect for small, load-carrying portions of wall. The roof is carried on wood trusses.

It is interesting to note the arrangement of the buildings on the lot. The ground area is 150x137, the 150-foot length fronting on Beverly Boulevard and being designed for the store. On this plot of ground there have been placed eleven stores, nine garages and sixteen apartments. The store building is rectangular in shape, 150 feet long, occupying the full street frontage, and 50 feet deep, thus providing for stores of a fairly generous depth. In order that the requirements of various businesses could be suited, the stores were laid out in different widths, the narrowest being nine feet and the widest 22 feet. Show-window space has also been varied where it was pos-



A view showing the picturesque irregularity of the store group



Plan showing a typical plan for the apartment and the garage



The courses of shaped tiles in the roof of this old house are repeated in the gables, thus relieving the plain surface

TILE and SLATE HUNG HOUSES

By John Y. Dunlop

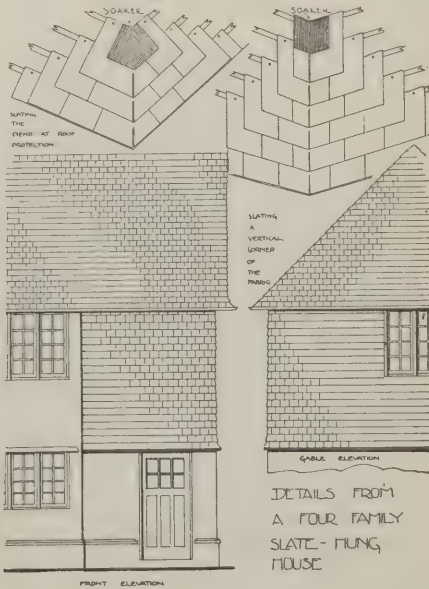
TILE and slate hung walls were originally confined to the gables of cottages, where the simplicity of the method and its appropriateness in lending picturesque effects were considered desirable qualities. Later on, the use of these materials was extended to take in the entire

upper portion of the walls, thus resulting in a first story of brick or stucco and a second story of tile or slate. Just why this very effective method of construction is not more generally used in America is not clear. In England, for instance, it has long furnished a favorite

means of gaining variety and interest, and although it is slowly coming into use in our country, it is not so generally used here as its merits warrant. In America, slate is easily the leader over tile for this purpose, as the demand has not yet progressed to the point where



Upper story of slate, broken by stucco panels



Detail of house at the left



The angles of the bay window, and the exposed corners of the upper story of this house, are formed with special-shaped tile to insure weathertight joints



Here only the front gables are slated, the other gables and walls being of stucco. This treatment indicates one way to obtain variety in a wall surface



In this house the joint between the roof and the gable is made with cement mortar and the gable window is flashed with sheet metal. See detail on opposite page



At the end of this house, the upper story projects considerably beyond the lower story and the overhang is carried on a stucco cove springing from the lower wall



Slate is used for the second story walls and the roof of this house, with stucco for the first story. Note the hood above the gable window and the flare at the junction of the two materials



The flare forms a watertable at the junction of the lower walls and the upper one, thus throwing the drip clear of the lower walls and introducing a strong horizontal line at this point



Looking down the court. The sash and frames are white, the blinds green and the shingles "natural" color

A CALIFORNIA BUNGALOW COURT DEVELOPMENT

VISITORS to Southern California cannot help but notice the bungalow court developments peculiar to that section of the country. They cover the entire range as far as style of architecture is concerned,

English, Spanish, the so-called "Western style" and several others which defy attempts at pinning them down to conform to a certain convention.

The buildings which compose the developments are, as their name implies, bungalows, and are built around an open court which fronts on the street. The court is generally landscaped effectively so that the combination of a picturesque style of building and a well designed landscape, which includes groups or banks of brilliantly hued flowers, is indeed appealing. Just why this type of development has not prospered in the Middle-West or in the East is hard to say, but it is in Southern California, where it seems to have taken hold strongest, and where the best examples of it are to be seen.

The bungalow development illustrated here is located in San Diego, California. It is called Marybella Court and was built for Horace B. Day as an investment proposition. M. Trepte and Son, of San Diego, were the general contractors and the design is by Walter Trepte, a member of the firm.

The plot of ground upon which the development stands is a corner lot, only 100 feet square, and on this plot there have been erected living quarters for

eight families, in addition to three garages which may be rented by tenants occupying the bungalows. There are nine buildings on the lot: seven single bungalows, one duplex bungalow and the garage



Detail of a doorway. The planting adds much to the picture



View between buildings. The cement floor is carried from wall to wall

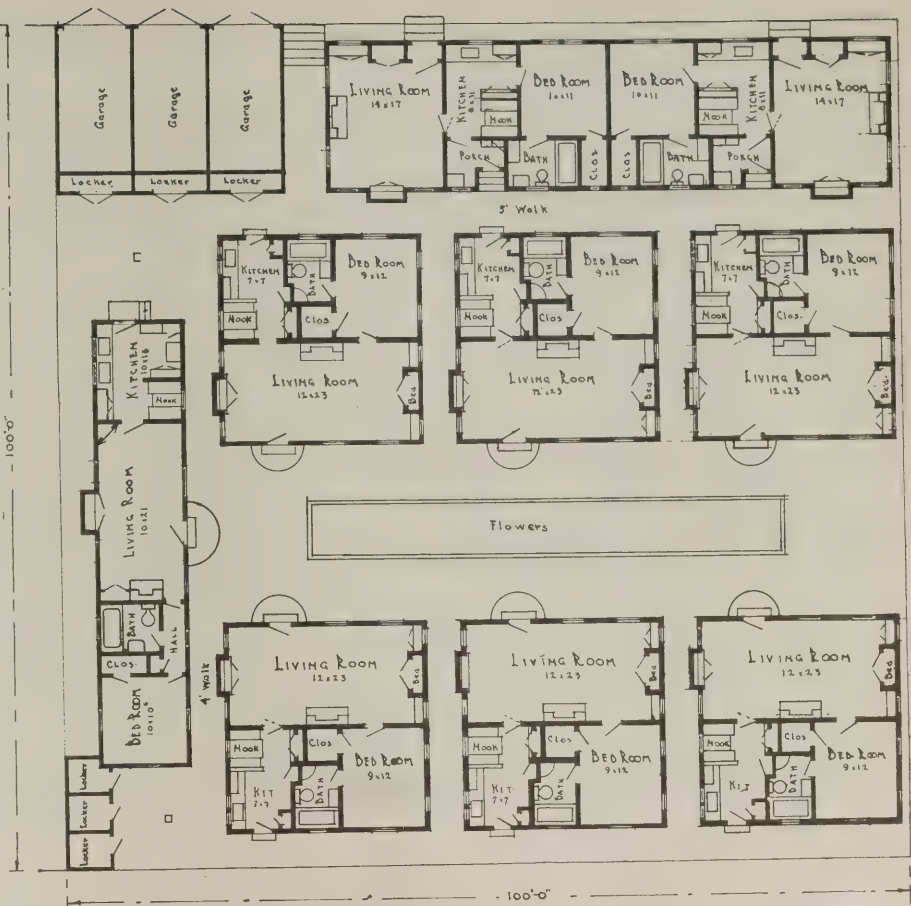
building. Notwithstanding this fact there is still plenty of room for light and air to reach all parts of all the buildings.

The arrangement as shown on the plot plan provides for six bungalows facing on a 20-foot court, with another, set across the court at the rear of the lot. The duplex bungalow is placed on the corner and occupies about two-thirds of the street frontage, the garages taking up the balance. As will be seen from the illustrations, the court is effectively landscaped, a fact which goes far to enhance the appearance of the buildings. Bushes and flowers have been planted where the need for them seemed to be apparent and as time goes on the growth of the green things will make the court a thing of beauty indeed.

Uncolored shingles have been used for the walk. They will not be stained but will be allowed to "weather" naturally. The window sash and frames are white, and the shutters and doors green. Everything seems to have been designed with a view towards avoiding the unnatural and no attempt at studied effect has been made.

As regards plan, these bungalows provide the utmost in convenience for the space they occupy. Each contains three rooms and bath, and another room may be added at will by the use of the folding bed which is placed in each one of the bungalows opening on the court.

Because of space requirements all of the buildings are not built from the same plan but have been designed with a view to making them fit on the plot in an attractive arrangement. Those six which open on the court are of the "square-plan" type, the duplex bungalow is composed of two rectangular units, and the building at the end of the court is long and narrow in shape



The layout and plans. Note that notwithstanding the fact of the buildings being shaped differently, the size of the respective rooms have been kept approximately the same

since the available lot area remaining at the rear of the court was of that shape. Taking into account the diversity of plans used it is interesting to see that the respective rooms in the various buildings have been made to supply approximately the same number of feet of floor area.

To those who have heard much about

this type of building but have not seen it at first hand this development will undoubtedly prove of interest since it represents good practice in the design of the bungalow court. There seems to be no good reason why this type of development should not succeed in other parts of the country as well as in California.



View of a corner in the court. The flowers add an attractive touch of color



One of the buildings on the street front. The sign is not painted, the letters being cut in the wood



Apartment Building in Portland, Oregon. Charles W. Ertz, Architect, 651 Pittock Block, Portland

AN ALL-CONCRETE APARTMENT BUILDING

THIS apartment, at Portland, Oregon, designed by Chas. W. Ertz, a Portland architect, is interesting, not only from the standpoint of design, but also because of the fact that it is constructed entirely of concrete. This material was

used throughout the entire structure. The brick are made of cement, the exterior ornaments are cast of the same material, the rear walls are constructed of concrete, and cement stucco was used at the base and for the panel between the first and second floors. The cornice at the top is of wood, with a sheet metal gutter, and sheet metal roofing tile, used for the portion of the roof, was exposed to view from the street.

The brick are a mingled red with a rough texture, the color range being from dark orange to light brown. The water-table, base, stucco panels, and ornaments are white, as are the sills and the brick around the edge of the ornamental panels. White mortar was used, and the sheet-metal tile were painted a subdued red.

All apartments contain one room, with bath and dressing closet, and a dining kitchen, except the two apartments in the rear which are laid out to include an additional bed-room.

The living-rooms are all of good size, the average area being about 250 square feet. As will be seen by reference to the plan the separate apartments are well laid out, a noteworthy point being that all refrigerators may be filled from the corridor. In the apartments which do not con-



Cast cement balusters give a balcony effect at the bottom of the panels



The entrance is dignified by the well detailed cast cement columns and the marquee



Stucco, contrasting brick and cast cement form interesting panels

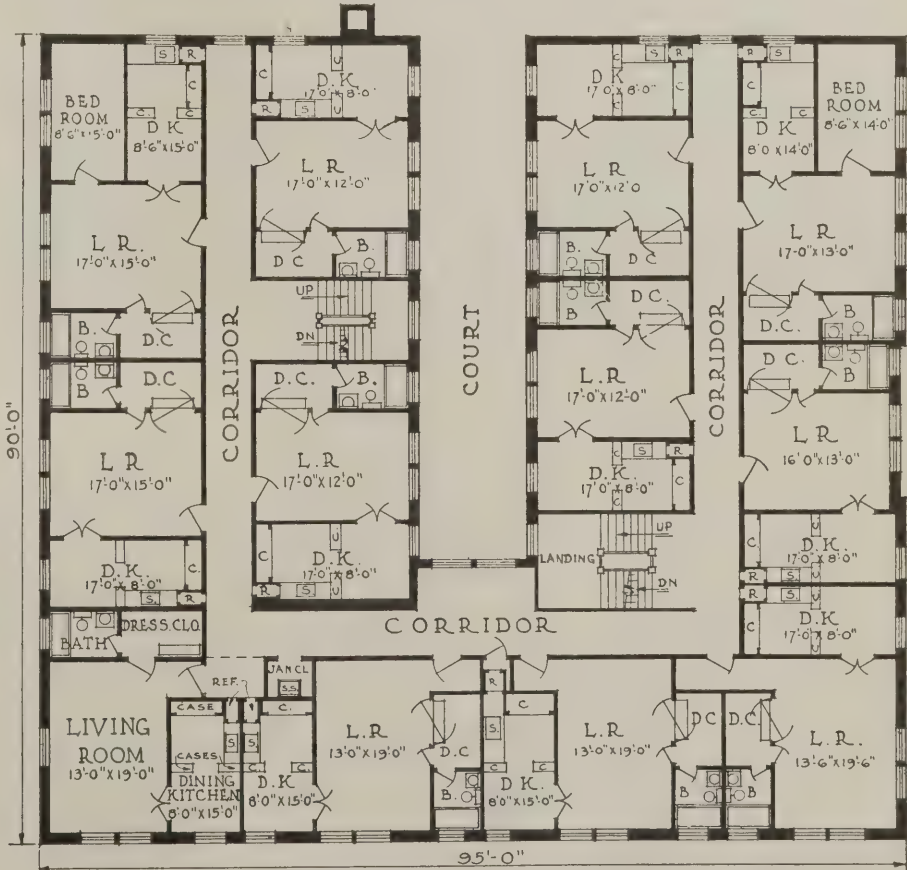
tain a bed-room, a disappearing bed has been installed. The bed closet has been made large enough so that it may be also used as a dressing closet, and the bathroom entrance is through the bed closet,

a most desirable arrangement for a one-room apartment when company is to be entertained.
It will be seen that there are two stair-landings. One of these leads to the front entrance and the other to the rear. The

entrance and the other to the rear. The fact that they are located in separate wings of the building is well worth notice since this means that two separate exits are provided in case of fire.



The court walls are of plain unfinished concrete allowing form marks to show



Typical floor plan above basement



From the standpoint of appearance, the doors are the weak point in most garage designs. In the above group, however, the garage doors, with their carved astragals, are made attractive features

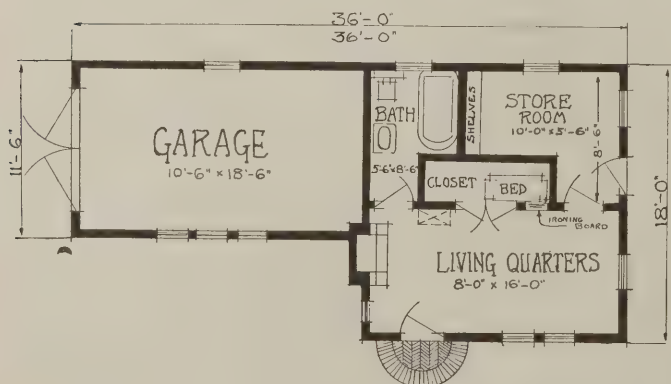
A PAGE of GARAGES



In this detached garage, the designer, Ernest Irving Freese of Los Angeles, has used a high pitched roof and clapboarded walls, conforming to the treatment of the house, and thus bringing the two into relation

There are three types of garages in common use; the attached type forming a part of the house; the detached type built as a unit by itself, and the combined type with provision made for servants' quarters, and so forth.

The attached type has several points in its favor. For one thing, it is cheaper, as one wall does double duty where the house and garage join. It is usually more conveniently accessible from the house, and the grouping usually results in a more attractive composition, adding to the interest and the apparent size of the design. Such groups, however, should be designed with care to overcome the increased fire hazard and to prevent gasoline odors from penetrating the house. The detached garage at the rear of the lot is always popular. If the materials and style conform to that of the house, the effect is usually pleasing. The garage and servants' quarters are often combined to form an interesting group. This type is popular in the South where colored help is used.



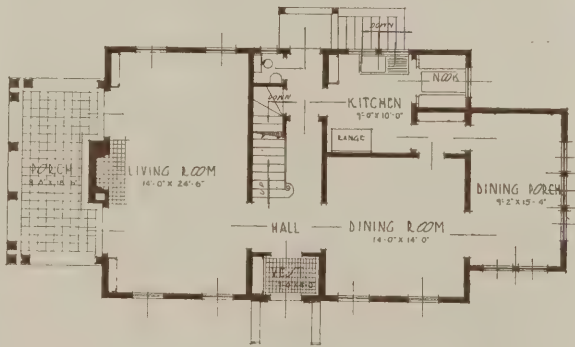
This very attractive combination garage and servants' quarters designed by M. L. McCune of Tulsa, Oklahoma, contains a complete bathroom, a wall bed, a fireplace and even a built-in ironing board



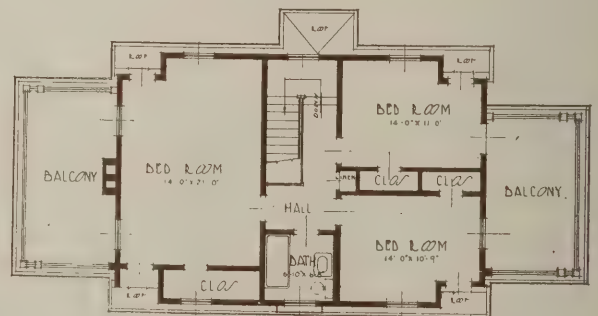
Here is another house designed by an architect for his own use. It is one of the most attractive small houses that we have ever shown. The huge chimney and the beautifully detailed entrance are responsible for much of its worth. Inside, there are only three rooms and a dining alcove, but there is no waste space and a gate-leg table makes the dining alcove practicable.



HOME OF E. A. GYLLECK, ELGIN, ILL.
E. A. Gylleck, Designer and Builder



In general appearance, all Dutch Colonial houses resemble one another, but slight differences in the form of entrances and porches, windows and cornices mark individual houses just as variety in mouths and noses, eyes and ears produce distinction in persons. The Dutch Colonial house shown on this page is a case in point; in general form it is one of the family, but by reason of the careful detailing, it attains a distinctive appearance.

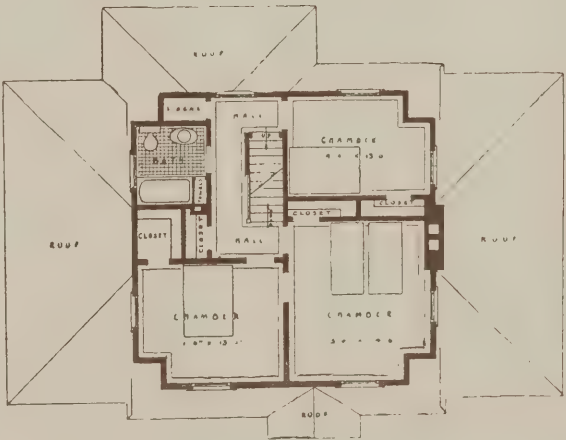
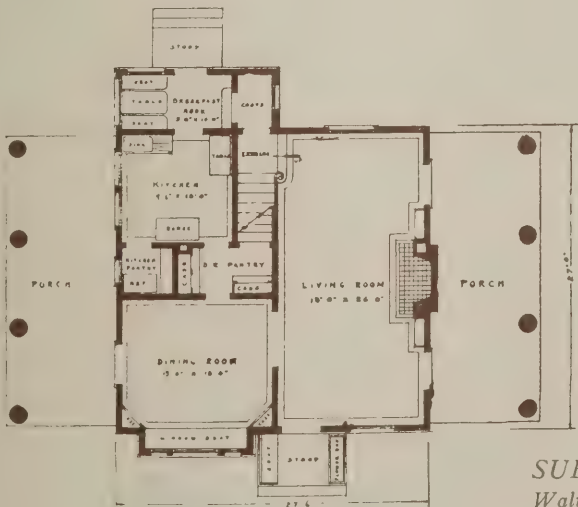


HOUSE OF F. W. FYFE, WILMETTE, ILLINOIS

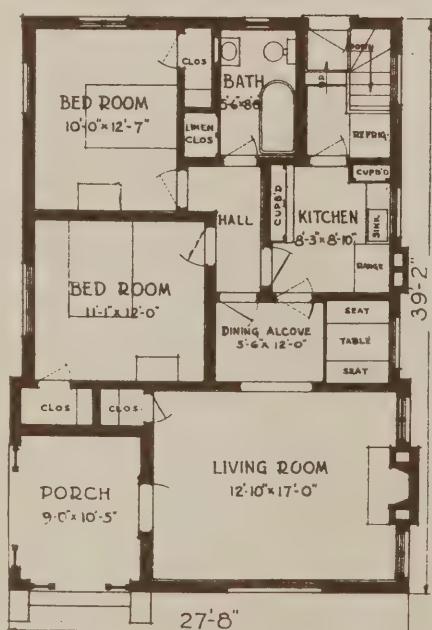
C. W. Lampe and Company, Architects, Chicago



Although it has a simple roof instead of a gambrel, this design also belongs to the Dutch Colonial family and has many ancestors among the old houses on Long Island. The fat porch columns violate the ordinary rules of proportion, but for some reason this form of column seems peculiarly suited to houses of this type. Thus showing that a sense of fitness, rather than rules, governs skilled designers.



SUBURBAN HOUSE IN MENANDS, NEW YORK
Walter H. Van Gyuysling, Architect, Albany, New York



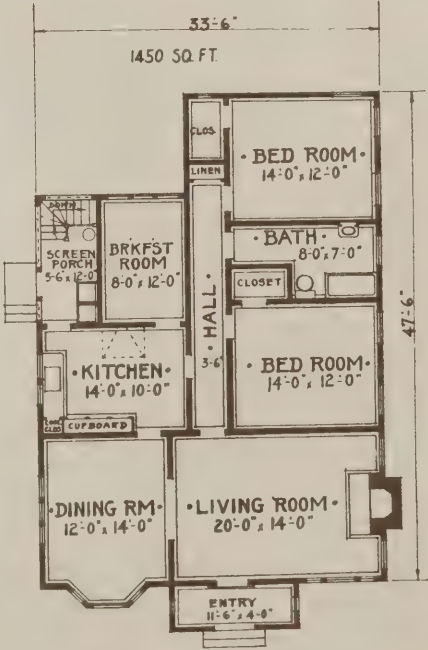
A Spanish style house with a colorful tile roof and gayly colored awnings represents the ideal home to many people. The accompanying house is of this type with broad wall surfaces and splashes of color in the roof and the awning, and in the shutters and the brick steps leading to the entrance. At the rear is the garage, which, although it has a flat roof, has a tile hood along the front to match the house. A regular dining room has been eliminated by providing a dining alcove with built-in table and seats instead.

A SPANISH STYLE BUNGALOW IN DENVER

*Mountain Division, Architects' Small House Service Bureau,
Denver, Colorado*



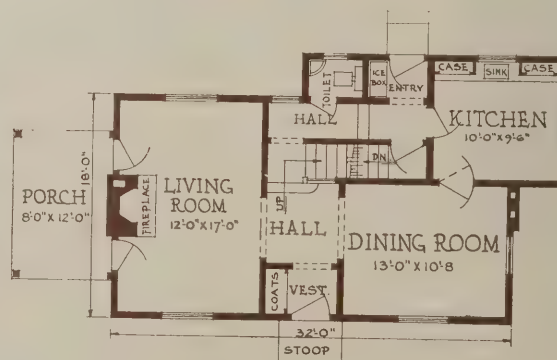
The little one-story house of English style shown in the above illustration constitutes a very practical and attractive home, with many charming features. The house is of frame construction, finished outside with light cream cement-stucco. The front gable, it will be seen, is treated in half-timbered effect, with an overhang that corresponds in its extension with that of the window bay below. The entrance is designed with a small enclosed vestibule, the open doorway to which is framed with red brick. The wood trimming is painted in dull brown, and the roof is of green-stained shingles.



AN ENGLISH-STYLE BUNGALOW IN LOS ANGELES
Floyd A. Dernier, Architect, Los Angeles



Here is the prize winning design in a recent competition for a small house in central New York. It offers additional proof that the man of moderate means need not be denied a well designed house simply because his finances are restricted. This house might be called a mingling of Colonial and Italian, as suggestions of both styles may be traced in its design. The second floor plan and another house built from the same plans are shown on the opposite page.

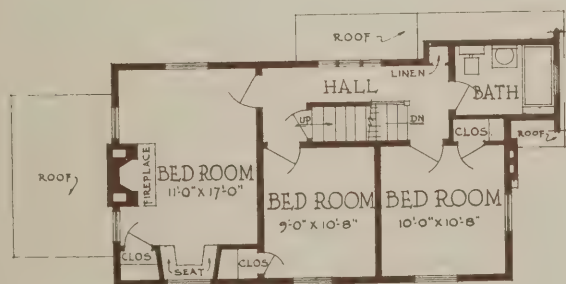


STUCCO HOUSE AT UTICA, NEW YORK

Stanley A. Pennock, Architect, Utica



This house was built from the same plan as the one on the opposite page, with stained shingles substituted here for the stucco finish of the other one, and with slight variations in the details to make them conform to the different material used for the finish. The design is reminiscent of the earliest Colonial work such as that of some of the oldest houses in Salem and Plymouth, Massachusetts. The plans for these two houses are worthy of study, particularly with regard to the location and arrangement of the stair.



SHINGLED HOUSE AT UTICA, N. Y.

Stanley A. Pennock, Architect, Utica

COMPLETE WORKING DRAWINGS and DETAILS

A Five-Room Dutch Colonial House That Has Personality

*House No. 5A67, Designed Especially for National Builder
by The Architects' Small House Service Bureau, Inc.*

© 1924 by N. B. and A. S. H. S. B.

THERE are, apparently, as many different kinds of Dutch Colonial houses as there are Dutchmen, and the personality of one may be much more interesting to you than others.

Here is a Dutch Colonial that, as far as plan goes, is in a class by itself. It is especially devised to make the most of the garden end of the house, for the dining room and terrace have been placed at the rear. One can readily imagine the pleasure of sitting at the table in a dining room with windows on three sides. This has been arranged so that, with the greatest ease, it is possible to convert the adjacent terrace into an outdoors dining porch.

This plan has been devised to meet a great many requirements that housewives have laid down for us. First, there is a hallway at the entrance large enough to make a commodious entry-way. Then there is a generous coat closet with a lavatory, and opening off the coat closet is a small toilet room. The stairway to the second story mounts from the hallway. This is a combination stairway, permitting one, when occasion demands, to slip into the kitchen without passing through the rest of the house.

The living room, which is about 13 feet wide

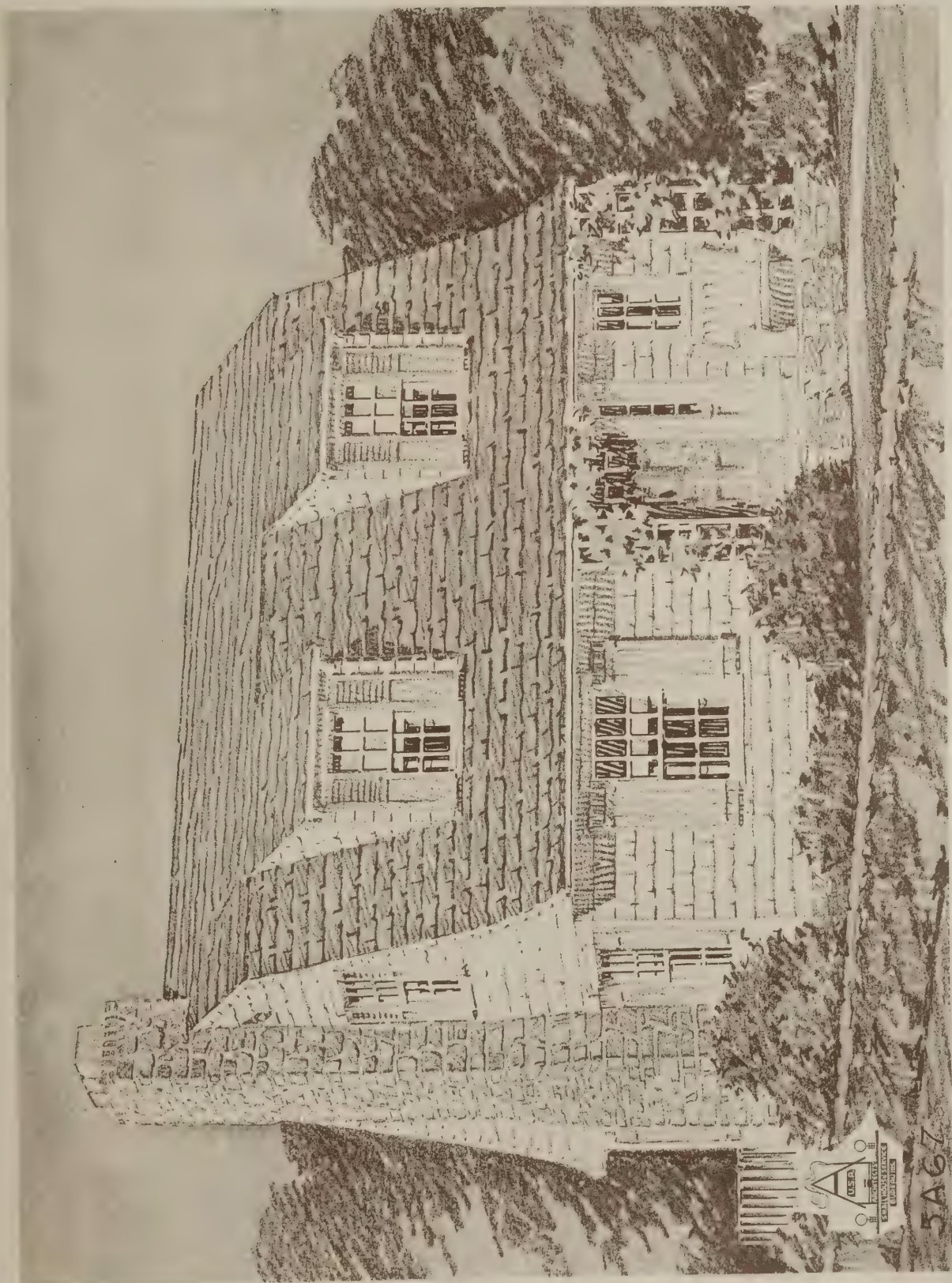
by 22 feet deep, has a fine Colonial fireplace, and is lighted extremely well. A French door leads from the rear of the living room to the open terrace.

In the second story there are two good bedrooms, one extra large with two closets, and the usual bathroom. If it were desired to put a sleeping porch on the roof over the dining room, that would be easy to do.

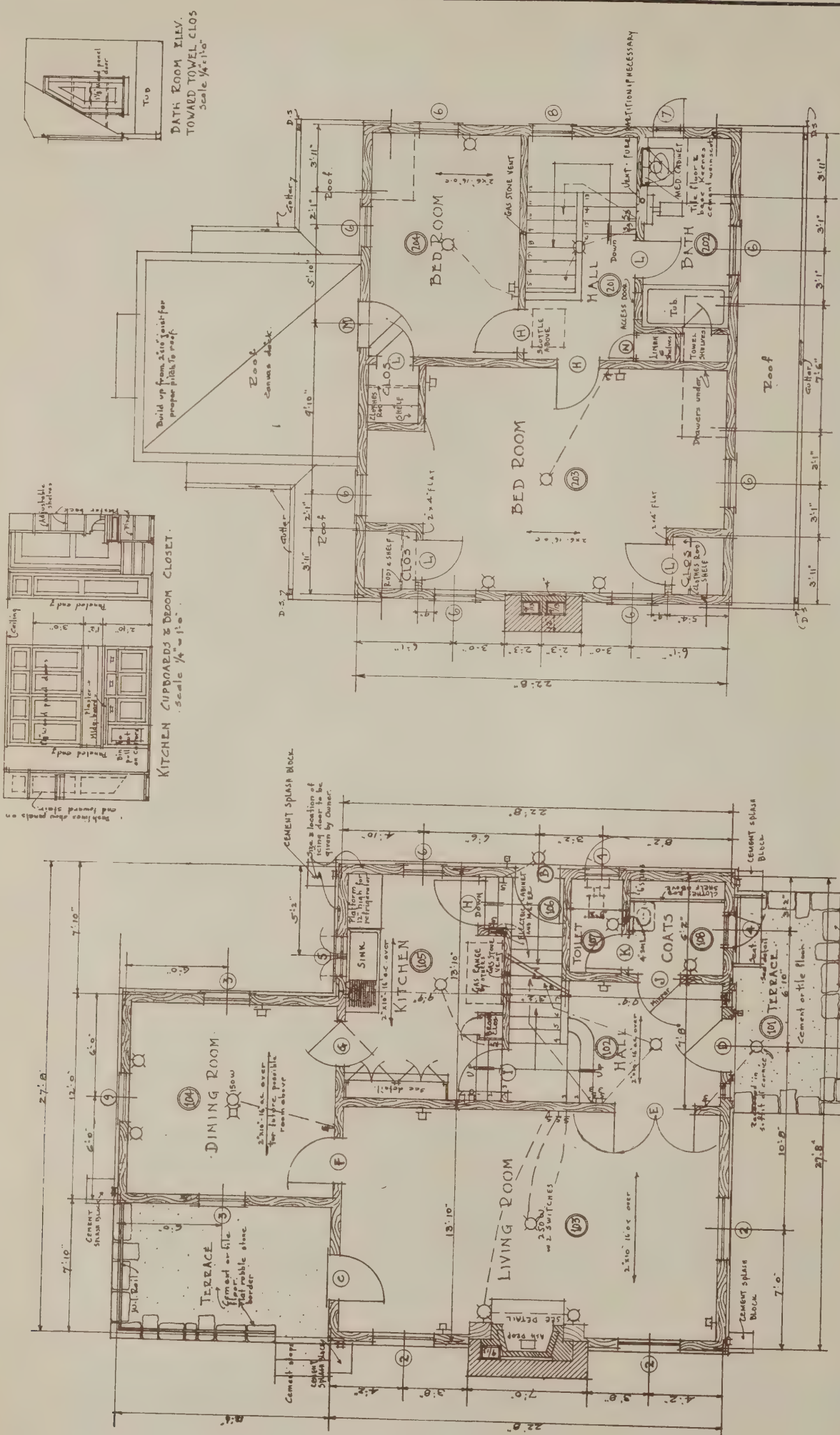
The exterior has the quality of the Colonial houses of eastern Pennsylvania. Like those old houses, this design calls for a stone foundation wall, a stone terrace and chimney stack. Of course, it will not always be easy to obtain stones for this purpose, and under such circumstances brick could be used very well indeed. If stone is used, it ought to be of the rough-hewn type that we call rubble work.

The side lighted front door with the seat beside it, the solid wooden shutters at the windows, and the extended eaves where the roof breaks down over the first story contribute to the finely balanced flavor of the design. We consider this one of the most skillfully treated little Dutch Colonial houses that we have had the pleasure of showing to our readers.

ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 65 and 66. These drawings are on a scale of $\frac{1}{8}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau these working drawings are made an exclusive feature of NATIONAL BUILDER. They represent special designs created for the benefit of NATIONAL BUILDER subscribers and they are bought and paid for on that basis. They have never before been published in any book or magazine. The Architects' Small House Service Bureau was retained by NATIONAL BUILDER for this service because it represents the highest authoritative architectural service pertaining to small houses to be found anywhere. The Bureau is a national association of experienced architects of standing who are interested in promoting good design and construction rather than in obtaining monetary profit. The combined experience and skill thus made available to builders of small houses is approached by no other agency.



This little shingled house, with its stone chimney and an entrance stoop should appeal to those who like real Dutch Colonial houses



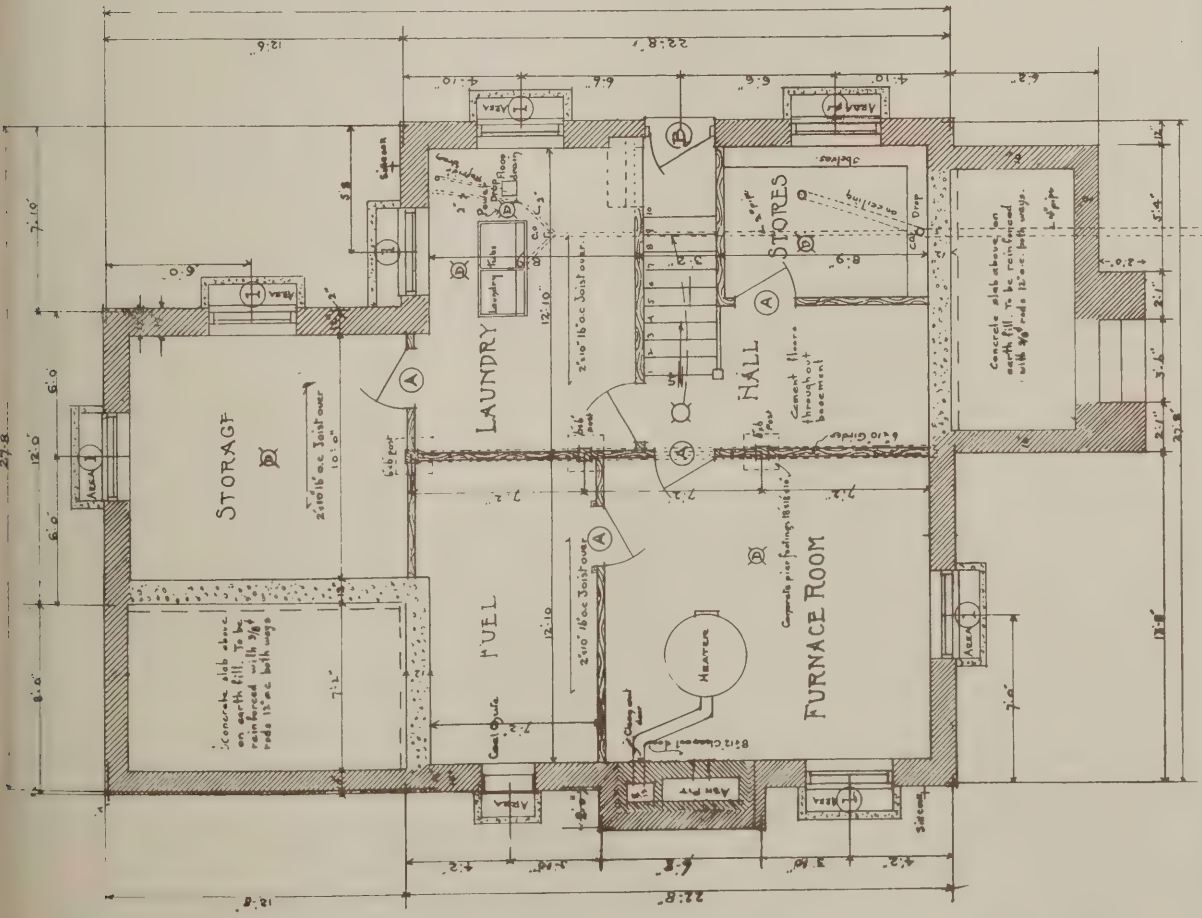
SECOND FLOOR PLAN.
Scale 1/4"=1'-0"

FIRST FLOOR PLAN.
Scale 1/4"=1'-0"

MATERIALS		ELECTRIC WIRING SYMBOLS	
CONCRETE		CEILING OUTLET	
BRICK		DROP CORD	
		3 WAY SWITCH	
		GAS OUTLET	

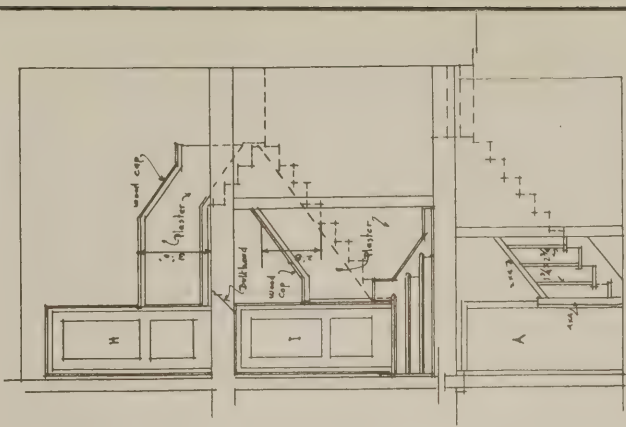
Check numbers refer to mouldings in Universal

Dimensions are taken to outside of foundation walls, to tops of sills on exterior walls and center of studs

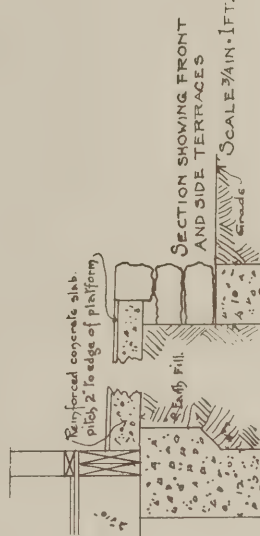


SCHEDULE OF DOORS			
Quantity	Type	Size	Remarks
4	A	2'6" x 6'6" 1/2"	#120 pine 5' x panel
1	D	2'8" x 6'8" 1/2"	See Elev. 4th fl. D.S. cl.
1	C	2'8" x 7'0" x 1 1/2"	#904 D.S. Glass
1	D	3'2" x 7'0" x 1 1/2"	See Elev. PLAIN P.G.
1	F	2'2" x 5'7" x 1 1/2"	#1605 D.S. Glass
1	F	1'2" x 6'7" x 1 1/2"	Simple 1605
1	G	2'8" x 7'0" x 1 1/2"	#1102 2 panel
3	H	2'6" x 6'6" x 1 1/2"	"
1	I	3'6" x 6'6" x 1 1/2"	"
1	J	2'6" x 7'0" x 1 1/2"	"
1	K	3'2" x 6'6" x 1 1/2"	"
4	L	3'2" x 6'6" x 1 1/2"	"
1	M	3'8" x 6'6" x 1 1/2"	See Elev. 8th fl. D.S. cl.
1	N	1'4" x 6'8" x 1 1/2"	#1102 2 panel

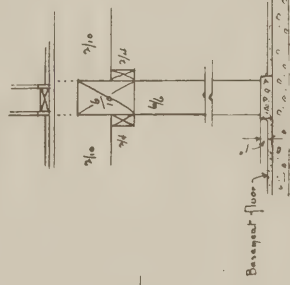
SCHEDULE OF WINDOWS			
Quantity	Type	Size of opening	Remarks
1	1	12' x 14'	5' x 1' 5" 1 1/2" SEE DETAIL
3	2	10' x 14'	3'8" x 5' 1/2" 1 1/2"
2	3	12' x 14'	2'10" x 5' 1/2" 1 1/2"
2	4	7' x 12'	1'6" x 3'6" 1 1/2"
1	5	6' x 10'	1'4" x 3'0" 1 1/2"
8	6	9' x 12'	2'7" x 4'6" 1 1/2"
1	7	8' x 12'	1'8" x 2'5" 1 1/2"
1	8	8' x 12'	1'8" x 2'5" 1 1/2"
1	9	10' x 14'	2'10" x 2'10" 1 1/2"



STAIR SECTION
Scale 1/4" = 1'-0"



SECTION SHOWING FRONT AND SIDE TERRACES
Scale 3/4" = 1'-0"



SECTION SHOWING POST AND GIRDER
Scale 3/4" = 1'-0"

HOME PLAN FOR RATIONAL BUILDING--September, 1924

THE ARCHITECTS SMALL HOUSE SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
- NORTH OAKS, ILLINOIS -

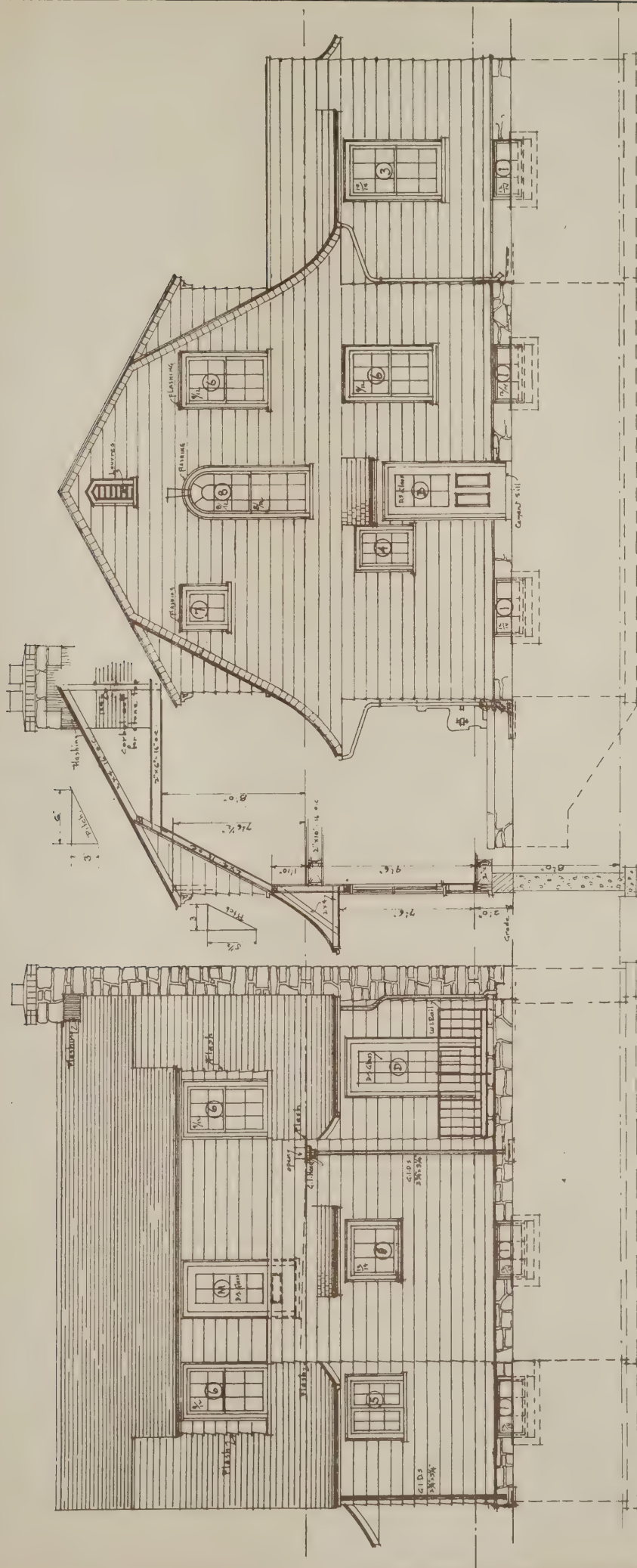
PLAN NO
5-A-67
SHEET NO
1 OF 5

Block numbers refer to mouldings in Universal Millwork Design Book No. 1. In case these mouldings cannot be procured, others of similar design and finish may be substituted. Provide the screen and storm sash for all exterior openings except ice door unless otherwise noted. Bottom rail of storm sash to have vent.

Dimensions are taken to outside of foundation walls, to outside of studs on exterior walls and center of studs for partitions. Foundation walls shown concrete may be stone. Brick concrete block or load bearing hollow tile. Where building ordinances permit, foundation walls may be 9" thick (with 20-45 footings) except in case of stone which shall be 16" thick.

MATERIALS	ELECTRIC WIRING SYMBOLS			
CONCRETE	CEILING OUTLET	3 WAY SWITCH	1	1
BRICK	DROP CORD	GAS OUTLET	1	1
WOOD	BRACKET	PUSH BUTTON	1	1
PLASTER	BASE PLUG	BELL OUTLET	1	1
PAINTS AND FINISHES	SWITCH	Buzzer	1	1

Note: Outside figures are taken to face of 12" concrete wall. Slope walls, main house overhanging concrete walls 2 inches. For terrace walls the face of concrete and stone are the same.



RIGHT SIDE ELEVATION.
Scale 1/4"=1'-0"

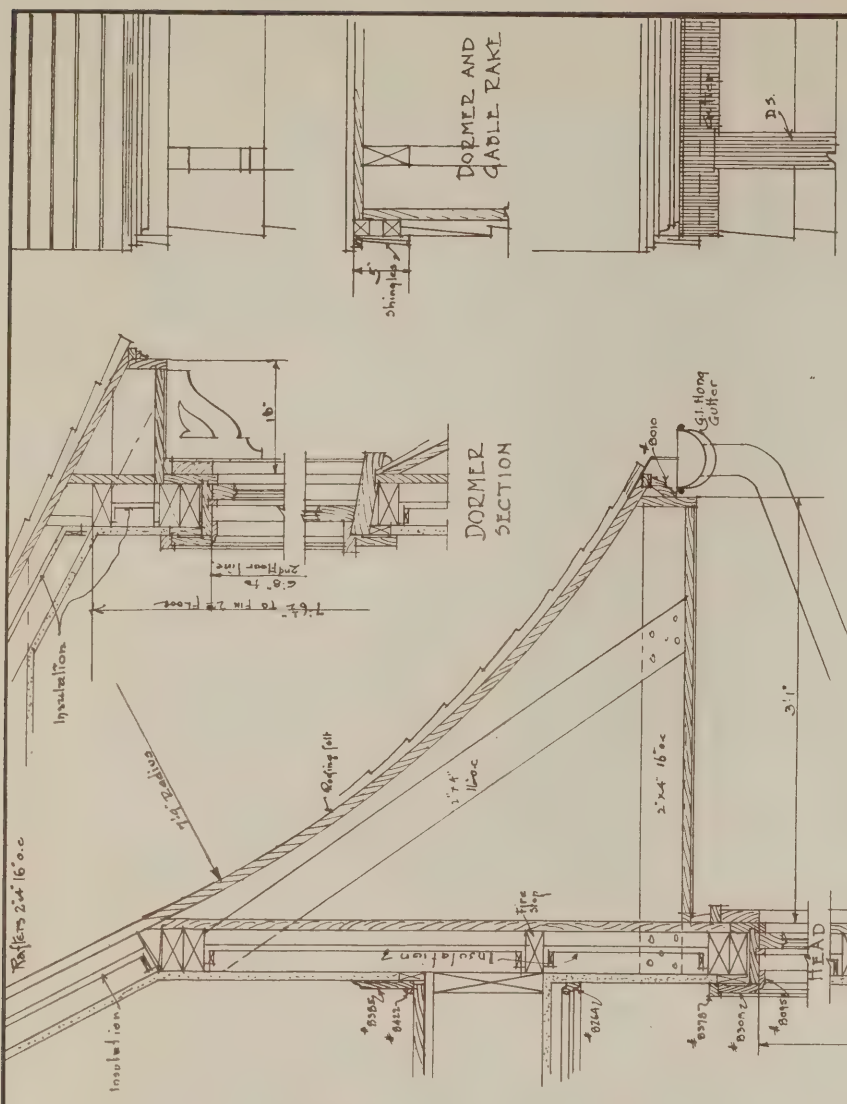
REAR ELEVATION.
Scale 1/4"=1'-0"

HOME PLAN FOR NATIONAL BUILDER—September, 1924

THE ARCHITECTS SMALL HOUSE
SERVICE BUREAU
NORTHWESTERN DIVISION INC.
HOMES, OFFICE, MINNEAPOLIS

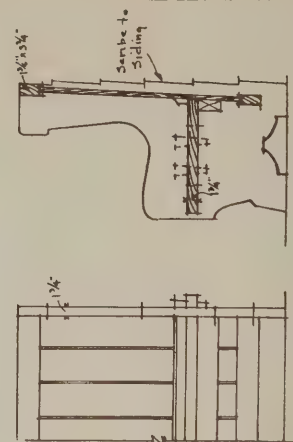
PLAN NO.
5-A-67

SHEET NO.
4 OF 5

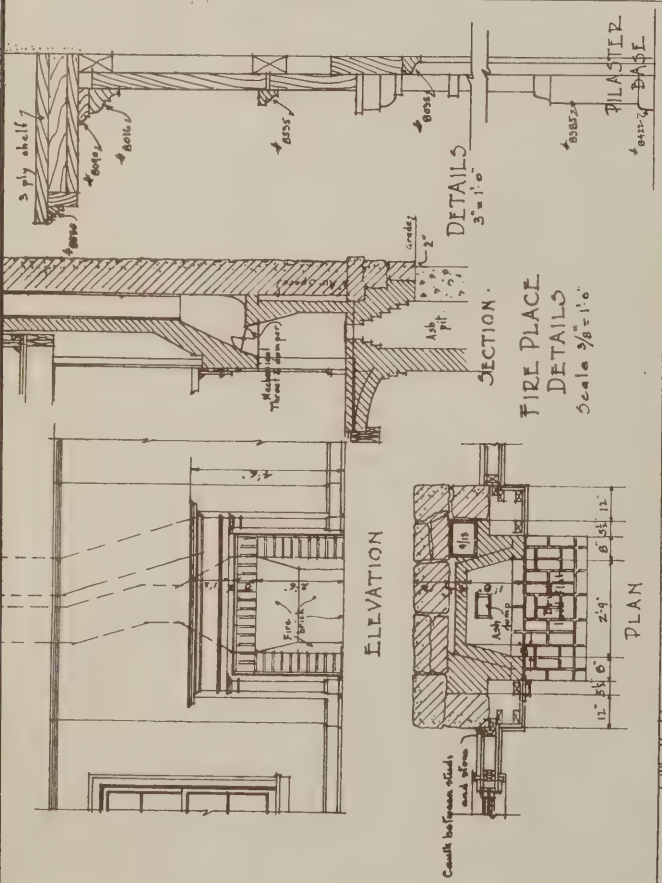


DORMER AND GABLE RAKE

DORMER SECTION



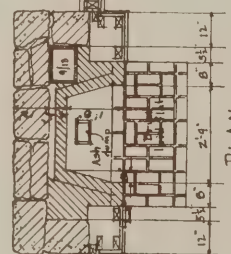
SEAT
Scale 3/4\"/>



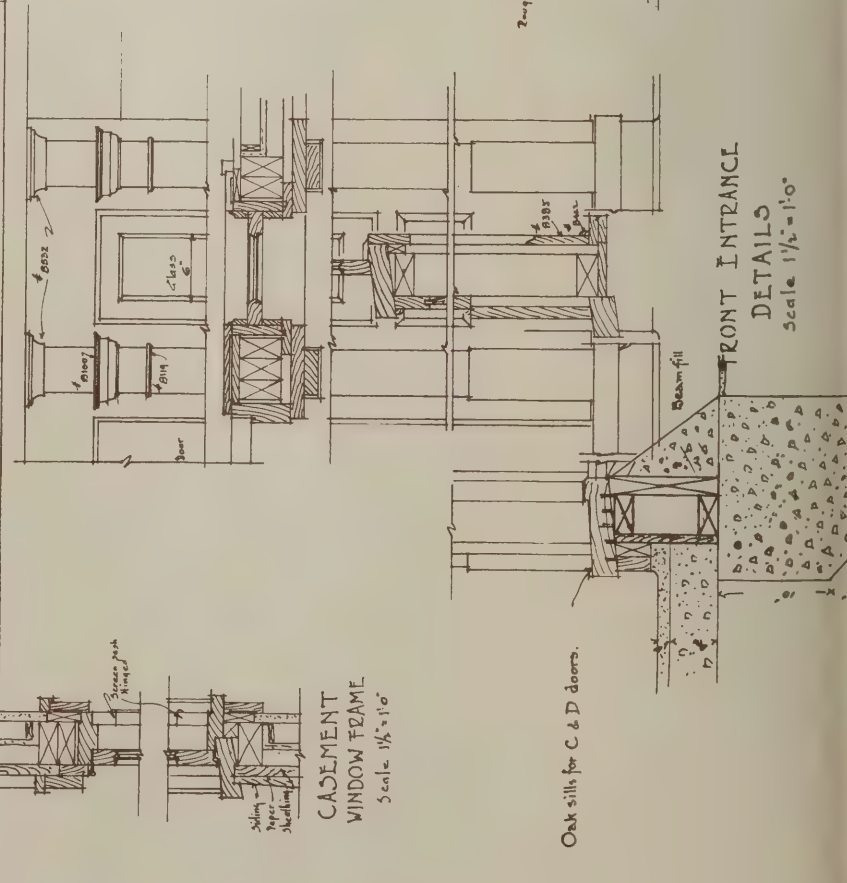
FIRE PLACE
DETAILS

Scale 3/8\"/>

ELEVATION



PLAN



FRONT ENTRANCE
DETAILS

Scale 1 1/2\"/>

CASEMENT
WINDOW FRAME

Scale 1 1/2\"/>

Oak sills for C. & D. doors.

QUANTITY SURVEY for HOUSE No. 5A67

EXCAVATING		65—2x4-7 basement partition studs..	1 casement fr. 8x12-4L-1½
180 cu. yds.		740 ft. D & M basement partition sheathing	1 wd. fr. 8x12-19L-1½ round head..
BACKFILL		11—2x10-12 first floor joist.	1 sh. fr. 10x14-6L-1½
60 cu. yds.		38—2x10-14 first floor joist.	Windows:
FOUNDATION		4—2x10-14 doubles	7 sash 12x14-3L-1½
If 12" concrete, 52 cu. yds. gravel,		3—2x10-16 headers	3 wds. 10x14-6L-1½
210 sax cement.		6—2x10-12 box sill	2 wds. 10x14-12L-1½
If 9" concrete, 42 cu. yds. gravel,		900 ft. bds. first fl. subfloor.	2 sh. 7x12-9L-1½
170 sax cement.		1090 ft. 13/16x1½ first fl. finish floor	1 pr. sh. 6x10-6L-1½
If 12" tile, 24900 CBM tile, 19 cu. yds. mortar.		300 lin. ft. 1x3 bridging	8 wds. 9x12-12L-1½
If 9" tile, 19200 CBM tile, 15 cu. yds. mortar.		226 lin. ft. 2x4 first fl. partition plates	1 sh. 8x12-4L-1½
170 sq. ft. stone.		63—2x4-9 first fl. partition studs.	1 wd. 8x12-19L-1½ round head.
CEMENT FLOOR		4—2x10-18 stair horses.	1 sh. 10x14-6L-1½
5 cu. yds. gravel.		6—1x4-12 ribbon.	Storm Sash:
4 cu. yds. sand.		11—2x10-12 future second fl. joist over dining room.	7 st. sh. 12x14-3L-1½
55 sax cement.		38—2x10-14 second floor joist.	3 st. sh. 10x14-6L-1½
5 cement spatter blocks.		4—2x10-14 doubles	2 st. sh. 10x14-12L-1½
REINFORCED CONCRETE		3—2x10-16 headers	2 st. sh. 7x12-9L-1½
1½ cu. yds. gravel.		222 lin. ft. 2x4 second fl. partition plates	1 pr. st. sh. 6x10-6L-1½
½ cu. yd. sand.		65—2x4-8 second fl. partition studs.	8 st. sh. 9x12-12L-1½
13 sax cement.		10—2x6-16 second fl. ceiling joist.	1 st. sh. 8x12-4L-1½
REINFORCING STEEL		12—2x6-22 second fl. ceiling joist.	1 st. sh. 8x12-19L-1½
13—¾ rods 7'6		10—2x6-12 roof joist over dining room	1 st. sh. 10x14-6L-1½
9—¾ rods 12'0		372 lin. ft. 2x4 outside wall plates.	Screens:
7—¾ rods 12'0		32—2x4-12 wall studs.	7 screens 12x14-3L-1½
13—¾ rods 6'0		100—2x4-11 wall studs.	3 screens 10x14-6L-1½
CHIMNEY		36—2x4-10 wall studs.	2 screens 10x14-12L-1½
1800 common brick.		160 lin. ft. 2x4 dormer plates.	2 screens 7x12-9L-1½
280 sq. ft. rubble stone.		50—2x4-5 dormer studs.	1 pr. screens 6x10-6L-1½
100 fire brick.		28 lin. ft. 1x6 ribbon rafters.	8 screens 9x12-12L-1½
120 inside face brick.		200 ft. D & M roof sheathing over dining room.	1 screen 8x12-4L-1½
14 sq. ft. hearth tile.		30—2x4-14 rafters.	1 screen 8x12-19L-1½
58 lin. ft. 8x12 flue tile.		20—2x4-9 rafters.	1 screen 10x14-6L-1½
20 lbs. fire clay.		20—2x4-9 rafters.	Shutters:
2 cu. yds. mortar.		30—2x4-10 rafters.	3 pr. shutters for 10x14-16L wds.
1 cast iron ash dump.		30—2x4-16 rafters.	4 pr. shutters for 9x12-12L wds.
1 throat and damper.		4—2x4-12 headers.	Louvre:
1 angle, 4x3x5/16—4'0.		1600 ft. bds. roof sheathing.	1 louvre frame 1'0x2'6
2—8x12 clean out doors.		12 M shingles for roof.	1 louvre screen 1'0x2'6
1—8" thimble.		1850 ft. shiplap.	1 louvre st. sh. 1'0x2'6
2—6" adjustable thimbles.		1900 ft. siding.	2 louvre frames 1'0x1'0
5 yds. metal lath.		25—2x4-14 scaffold and extras.	2 louvre screens 1'0x1'0
LATH		8—2x6-16 scaffold and extras.	2 louvre st. sh. 1'0x1'0
9 yds. metal lath over furnace.		4—2x8-12 scaffold and extras.	Outside Door Frames:
9000 wood lath.		4—2x10-14 scaffold and extras.	1 dr. fr. 2'8x6'8—1¾
PLASTER		650 ft. com. bds. second fl. subfloor.	1 dr. fr. 2'8x7'0—1¾
9 sq. yds. plaster on metal.		820 ft. 13/16x1½ second fl. finish floor	1 dr. fr. 3'2x7'0—1¾
632 sq. yds. plaster on wood.		420 ft. ¾x4 ceiling.	1 dr. fr. 2'3x6'8—1¾
16 sq. yds. Keene's cement.		500 ft. D & M attic floor.	2 side light frames 1'0x6'8—1¾
TILE FLOORS		CANVAS ROOFING	1 icing door frame.
50 sq. ft. ceramic tile.		160 sq. ft. canvas roofing.	Outside Doors:
24 lin. ft. cove base.		MILLWORK	1 dr. 2'8x6'8—1¾
LUMBER		Frames:	1 dr. 2'8x7'0—1¾—No. 984
3—6x6-7 posts.		7 frames 12x14-3L-1¾	1 dr. 3'2x7'0—1¾
1—4x4-7 posts.		3 frames 10x14-16L-1¾	1—2'3x6'8—1¾
1—6x10-16 girder.		2 frames 10x14-12L-1¾	2 side lights 1'0x6'8
1—6x10-8 girder.		2 casement fr. 7x12-9L-1¾	1 icing door.
2—2x4-16 girder ribbon.		1 double casement fr. 6x10-6L-1¾	Storm Doors:
2—2x4-8 girder ribbon.		8 wd. fr. 9x12-12L-1¾	1 st. dr. 2'8x6'8—1¾
3—2x10-14 stair horses.			1 st. dr. 2'8x7'0—1¾
3—2x4-16 shelf supports.			1 st. dr. 3'2x7'0—1¾
6—1x12-16 shelves.			1 st. dr. 2'3x6'8—1¾
4 ft. 2-in. plank clean out cover.			2 st. sh. for sidelight 1'0x6'8.
222 lin. ft. 2x4 basement partition plates			Screens:

1 sc. dr. 2'8x6'8—1¾

1 sc. dr. 2'8x7'0—1¾

1 sc. dr. 3'2x7'0—1¾

1 sc. dr. 2'3x6'8—1½	1 flight hall stairs	26 storm sash sets
Outside Millwork:	1 flight main stairs with rail	26 screen sash sets
198 lin. ft. cornice	440 lin. ft. base	7 sets shutter hardware for pairs
38 lin. ft. cap cornice	440 lin. ft. base shoe	2 doz. screen buttons
1 special front entrance trim	440 lin. ft. base molding	1 front door set with butts
1—4'0 seat	120 lin. ft. ceiling cove	1 side door set with butts
Interior Doors:	234 lin. ft. picture molding	2 rear door sets with butts
4 doors 2'6x6'6—1¾—No. 720	26 lin. ft. closet shelving	1 icing door set with butts
1 pr. drs. 2'4x7'0—1¾—No. 1605	26 lin. ft. closet hook strip	4 storm door sets
1 dr. 2'8x7'0—1¾—No. 1605	26 lin. ft. closet clothes rod	4 screen door sets
1 dr. 2'8x7'0—1¾—No. 1102	52 lin. ft. chair rail	4 angles for seat fasteners
3 dr. 2'8x6'8—1¾—No. 1102	12 lin. ft. threshold	1 floor hinge
1 dr. 2'6x6'4—1¾—No. 1102	7 lin. ft. astrogal	2 push plates
1 dr. 2'6x7'0—1¾—No. 1102 mirror	ORNAMENTAL IRON	1 double inside door set with butts
1 dr. 2'2x6'4—1¾—No. 1102	1 section of rail 7'3x2'3	16 inside lock sets with butts
4 dr. 2'2x6'8—1¾—No. 1102	1 section of rail 9'0x2'3	24 door bumpers
1 dr. 1'4x6'8—1¾—No. 1102	WEATHER STRIPPING	4 stair rail brackets
Jambs:	7 sh. 12x14-3L	3 doz. clothes hooks
4 jambs 2'6x6'6	3 wds. 10x14-6L	960 lbs. assorted nails
1 jamb 4'8x7'0	2 wds. 10x14-12L	440 lbs. sash weights
1 jamb 2'8x7'0	2 sh. 7x12-9L	3 hanks sash cord
1 jamb 2'8x7'0	1 pr. sh. 6x10-6L	1 coal chute
3 jambs 2'8x6'8	8 wds. 9x12-12L	6 lbs. brads
1 jamb 2'6x6'4	1 sh. 8x12-4L	1 pr. hinges for scuttle door
1 jamb 2'6x7'0	1 wd. 8x12-19L	1 pr. ornamental butts } towel
1 jamb 2'2x6'4	1 sh. 10x14-6L	1 cupboard turn } cabinet
4 jambs 2'2x6'8	1 dr. 2'8x6'8	1 cupboard turn } medicine
1 jamb 1'4x6'8	1 dr. 2'8x7'0	1 pr. ornamental butts } cabinet
Interior Trim:	1 dr. 3'2x7'0	4 friction stays for utility door
7 sides trim 12x14-3L	1 dr. 2'3x6'8	6 drawer pulls for nest of drawers
3 sides trim 10x14-16L	CAULKING	1 pr. ornamental butts } meter
2 sides trim 10x14-12L	26 single frames	1 cupboard turn } cabinet
2 sides trim 7x12-9L	4 single door frames	2 cupboard turns } broom
1 side trim fr. pr. sh. 6x10-6L	2 side light frames	2 pr. ornamental butts } cabinet
8 sides trim 9x12-12L	1 icing door frame	11 pr. ornamental butts }
1 side trim 8x12-4L	1 chimney	7 cupboard turns }
1 side trim 8x12-19L circle head	INSULATION	4 blind catches } kitchen
1 side trim 10x14-6L	1700 ft. ½" vegetable fibre or	3 drawer pulls } cabinet
1 side dr. trim 2'8x6'8	equal for outside walls	1 bin pull
1 side dr. trim 2'8x7'0	750 ft. ½" vegetable fibre or equal	1 set castors
1 side dr. trim 3'2x7'0	for ceiling	4 doz. picture hooks
1 side dr. trim 2'3x6'8	3 rolls felt for roof	EXTERIOR PAINTING
2 side dr. trim 1'0x6'8	4 rolls felt for walls	10 gal. body paint
1 side icing dr. trim	3 rolls felt for floors	4½ gal. trim paint
8 sides trim 2'6x6'6	TINWORK	2 gal. boiled oil
2 sides trim 4'8x7'0	27 lin. ft. ridge roll	36 gal. shingle stain
2 sides trim 2'8x7'0	1 finial	2 gal. cement paint
6 sides trim 2'8x6'8	50 lin. ft. flashing for canvas roof	1 gal. screen paint
2 sides trim 2'6x6'4	50 lin. ft. counterflashing canvas	1 gal. sash paint
2 sides trim 2'6x7'0	roof	½ gal. shellac
2 sides trim 2'2x6'4	9 lin. ft. chimney flashing	5 lbs. putty
8 sides trim 2'2x6'8	1 overflow box	2 gal. japan
2 sides trim 1'4x6'8	100 lin. ft. flashing tin	1 gal. turpentine
1 scuttle door 2'0x3'0	200 tin shingles	¼ gal. metallic paint
1 scuttle door jamb	96 lin. ft. hanging gutter	3 gal. canvas deck paint
1 side trim 2'0x3'0	25 gutter hangers	INTERIOR PAINTING
1 nest of drawers for bed room	18 gutter ends	12 gal. white
1 towel cabinet	6 nipples	8 gal. enamel
1 utility door	6 strainers	5 gal. filler
1 utility door jamb	6 offsets	3 gal. shellac
1 utility door trim	6 elbows	8 gal. varnish
1 medicine cabinet	6 shutoffs	3 gal. floor shellac
1 meter cabinet	64 lin. ft. conductor pipe	3 gal. floor varnish
1 broom cabinet	18 conductor hooks	2 gal. oil
1 6'0 kitchen cabinet	HARDWARE	1 gal. japan
6 lin. ft. ice box riser	7 cellar sash sets	1 gal. turpentine
6 lin. ft. nosing	14 sash locks	1 gal. alcohol
1 mantle shelf	14 sash lifts	4 doz. sheets sandpaper
1 flight basement stairs	3 single casement sash sets	3 lbs. steel wool
1 flight grade stairs	1 double casement sash set	

A GARDEN HOUSE

THE garden or summer house shown endeavors to combine the Tudor effect with modern construction.

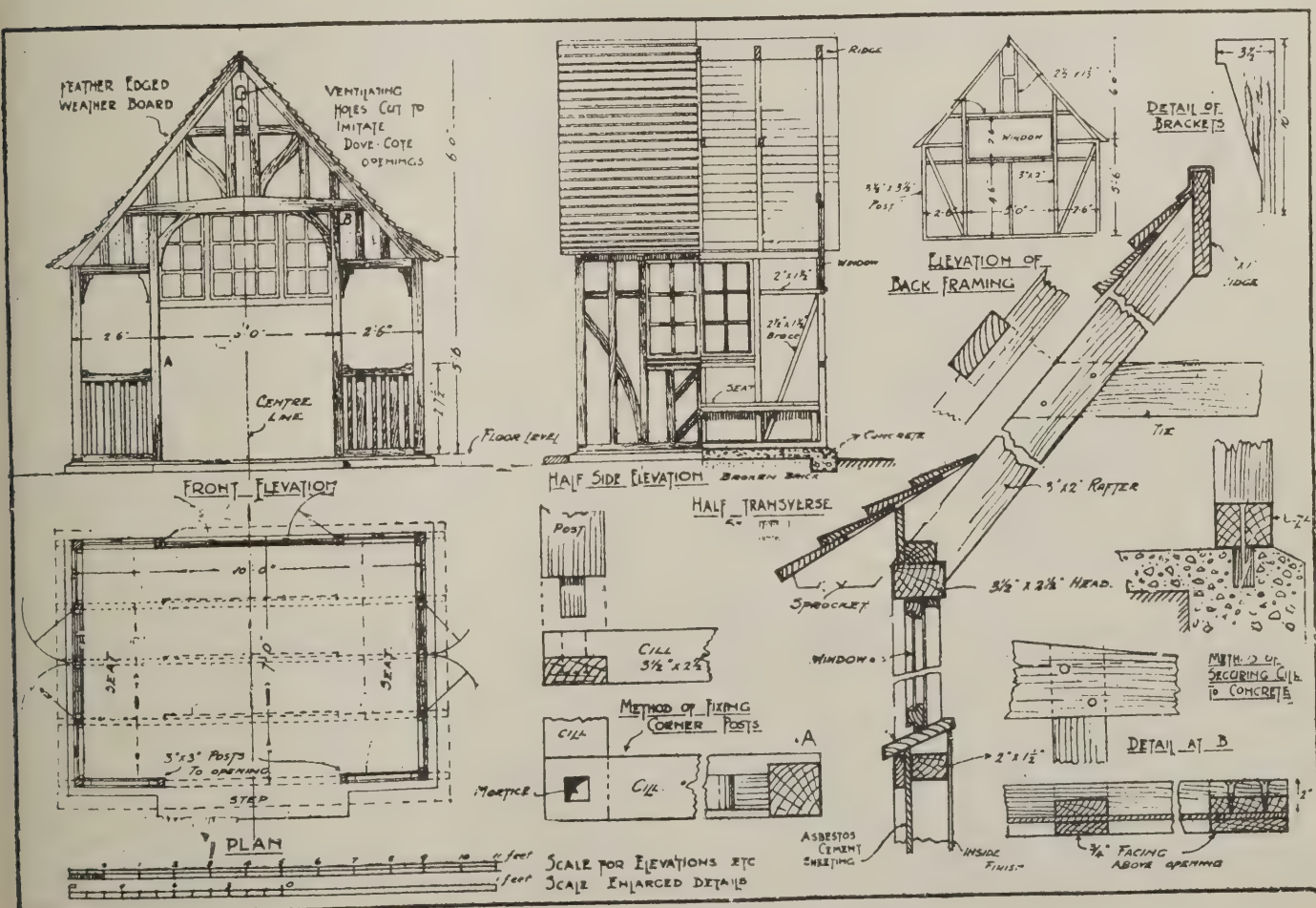
Broadly speaking, it is a simple framework covered on sides with asbestos-cement sheeting, roofed with feather-edged weather boarding, and finally given the appearance of a Tudor-like erection—for its purpose, this constructional sham is excusable. Though, if desired, the spaces could be filled in with brickwork or could be lathed and stuccoed.

The desired effect would be more readily acquired if old oak fencing or paling posts were utilized for this sham half-timbered work, care being taken not to plane up any surfaces, but rather to finish off after sawing with a draw knife.

The sides and backs could be fitted with windows or not, but they help to prevent draughts when the wind is in the wrong direction, at the same time giving a bright outlook in any direction. Seats as shown could be added, or the whole space left clear for the more easily adjustable deck-chairs.

The front aspect of the garden house should be south to southwest, and an additional surrounding shelter of trees would enhance its effect.—T. S. R., in the Illustrated Carpenter and Builder, London.

Perspective sketch showing the garden house



Detail drawing showing the construction of a garden house



Station at Moline designed by the engineering department of the Rock Island Railroad. C. H. Lorenz Company, Builders, Moline

BUILDING the NEW STATION at MOLINE

THE first impression one receives of a city as he enters it for the first time is that given by the railroad station through which he passes on his way from the train to the street. If it be an old dilapidated building the impression received is not a good one, but if it be an attractive structure, the visitor is put in a pleasant frame of mind as soon as he en-

ters the city. In their new station at Moline, Illinois, the Chicago, Rock Island & Pacific Railroad has taken into account the value of first impressions and have done their best to provide a pleasing and comfortable haven for travelers.

Railroad stations are an investment for the corporation who builds them. One sees no skimping on various items or sub-

stitution of inferior materials for those of a better quality which cost more but do not appear to a casual observer as being any better than that offered at a lesser price. It should be remembered that low maintenance costs must be taken into account, as perhaps no other type of building is called on to bear the hard usage and abuse that unthinking travelers give to public

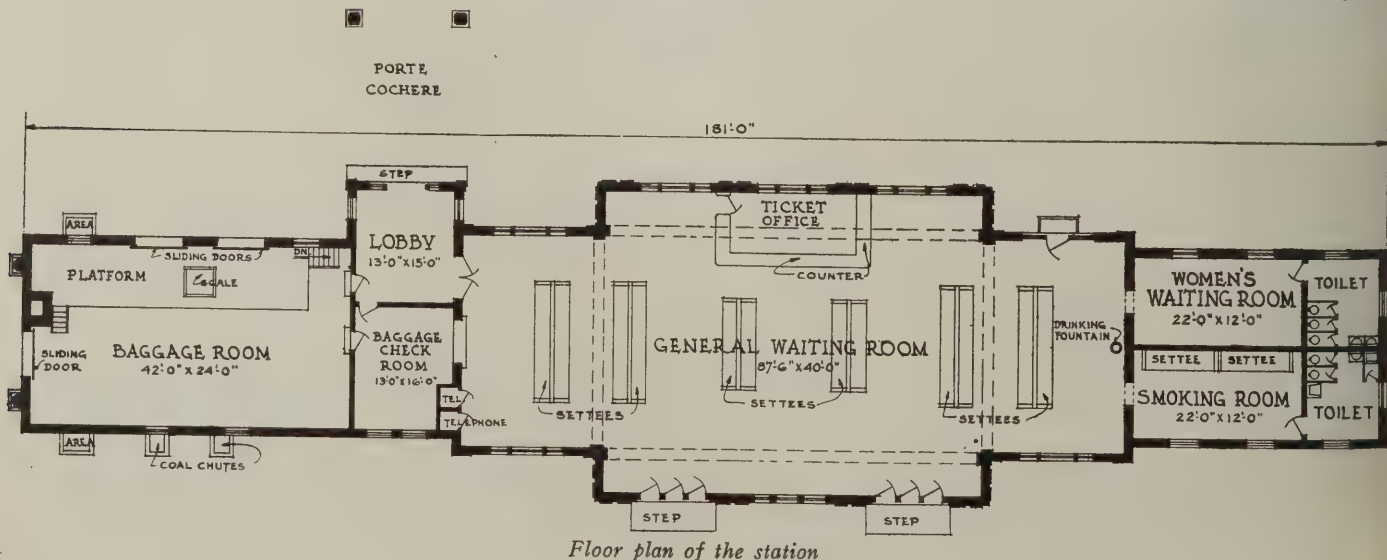




Fig. 3—Templet used in forming curve



Fig. 4—View showing station under construction

waiting rooms and similar places.

The new station at Moline, Illinois, affords an excellent example of solid construction. It is built not only with a view to providing the best possible accommodations for travelers but also with an idea to build a station that will endure for some time to come.

The complete station consists of two buildings separated by a concourse: One devoted to passenger traffic and the other for handling freight and express. Both buildings rest on a concrete foundation and are of brick and hollow tile construction, with red brick laid in white mortar for the exterior walls. The exterior trim is terra-cotta of a color and finish resembling limestone. Sash in the passenger station are of wood, but in the baggage and freight rooms steel sash are used. Red clay tile is used for the roof covering. In order to protect passengers

alighting from vehicles in the rain, a porte cochere was erected on the street side of the building covering the walk leading to the waiting room lobby.

The construction of these buildings provides a few hints which may be of interest to builders. One thing of interest is the painters' scaffold shown in Fig. 6. Ladders were built in the ordinary manner and at the tops platforms were nailed, supported from the ladder stringers by diagonal braces. Thus a working platform which could be easily moved was provided and when it became necessary to furnish a scaffold, two of these platform ladders were used to carry the scaffold plank.

The wall between the waiting room and baggage room which was carried above the roof was rounded at the top, as illustrated in Fig. 3, in order to fit in with the general architectural scheme. In

building up this rounded wall a templet of wood, framed to the required radius, was used to guide the mason. Thus an exactly true curve was obtained.

In the baggage rooms, where considerable rough usage was to be expected, all partitions were set on a concrete curb. The curb forms were of wood, held with steel clamps, and to fix the partition to the base, $\frac{3}{4}$ -inch bolts, set about 3 feet on centers, were set into the concrete.

Although plenty of working area was available, the concrete and mortar plants were laid out adjacent to each other between the two buildings in order to cut down the amount of wheeling of materials. A one-bag mixer, operated by a gasoline engine, mixed the concrete.

The building was designed by the engineering department of the Rock Island Railroad and the C. H. Lorenz Company were the general contractors.



Fig. 5—View showing platform canopy



Fig. 6—Detail showing painters' ladders



Remodeled apartment building in New Haven, Connecticut. Jacob Weinstein, New Haven, Architect

APARTMENTS for OLD RESIDENCES

Showing the Possibilities of Old Houses as Modern
Income-Producers

IN times generally referred to as the "good old days" they not only built well but also they built large. The one-room kitchenette apartment was unknown then and for whoever had the money to build a home one of the prime requirements was space, and plenty of it. Whether the planning of some of the old mansions was economical in the use of hall space or the arrangement of rooms, that is not for the writer to say. The builders, however, knew what they wanted and where they wanted it, and how much of it they wanted, and with a fountain pen in one hand and a check book in the other they went about getting it.

This article is not intended as a diatribe against the manner in which our ancestors planned their houses; far from it. It must have been a pleasure indeed to roam around in the large halls and to enjoy the privacy afforded by separate apartments and suites. Today, however, only the very rich can afford such large rooms and wide spaces. The rest of us must be content with more modest quarters.

In New Haven, Connecticut, there was just such an old house as described above, a photograph of which is reproduced here.

The original plan of the first floor is also shown. As built by the owner, there were eleven rooms, three baths, a large reception

hall, and a big front porch on this floor. Off the reception hall opened a 20 by 34-foot 6-inch living room, a 14-foot 6-inch



View of the old residence before remodeling

by 13-foot 6-inch retiring room with toilet and wash room, a dining room, 15 feet by 20 feet; and a large housekeeper's hall. The housekeeper had a private suite, with bath, while the servants were afforded a gathering place and a room to entertain guests of their own in the servants' hall. The pantry was 8 feet wide and 14 feet long—as large as many a bedroom built nowadays.

As time went on, apartment buildings began to put in an appearance in the neighborhood. They came in one by one, slowly, but surely, until finally what was once an exclusive residence street became a street devoted to apartment houses, only a few of the old residences surviving. Property values increased; what had once been residence property, was now income property and the old-time houses, with their large halls and big rooms, could not be rented out at a sufficient sum to pay a return on the increased ground value. It behooved the owner, then, to seek a means of collecting more revenue, and that is the point of our story.

The old house was in good condition, too good, in fact, to wreck and so it was decided to remodel it instead. A comparison of the two illustrations will show that in the remodeled house the lines of the original building have been retained although the elevation is entirely different as regards the kind of materials used.

Brick veneer was the type of construction decided upon and the color scheme was to



The entrance is dignified and interesting

be red brick laid in white mortar, with wood trim, painted white.

The front of the building was brought forward to the limit of the old porch, and in the rear an extension was added, bringing out the width. The original dining-room chimney was retained but the other was wrecked. The reception hall was converted to the public hall of the new building and access to it is had through a vestibule built in the front extension. Architecturally, the approximate lines and design of the old building were retained. An inspection of the illustration showing the remodeled building will show that the dormers on the original building were kept intact.

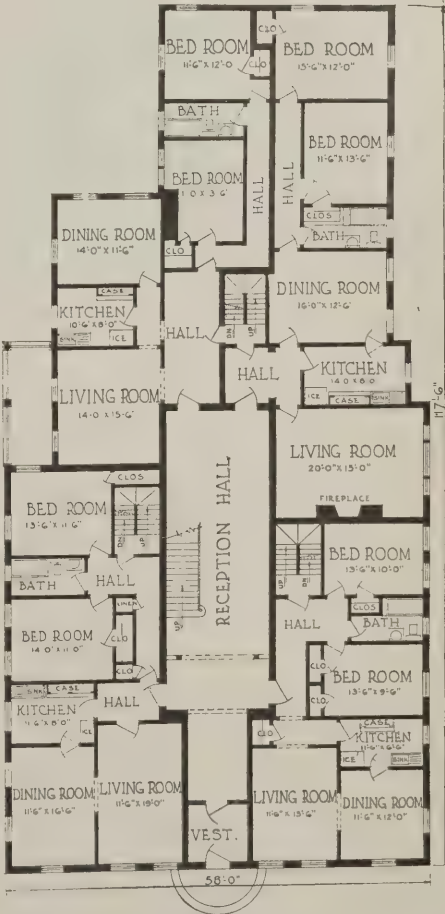
Let us now see what use has been made of the floor space in the new plan. The original partition lines were retained but the large rooms were sub-divided into four apartments of five rooms each. Nothing has been lost in convenience in the new arrangement. True, the rooms are no longer vast, but they are comfortably large and the layout is good.

This example would seem to show that old buildings, though designed for conditions unsuited to present-day needs, may nevertheless be converted to good use and made to pay a return commensurate with their increased value, provided good judgment in the matter of design is exercised in remodeling them.

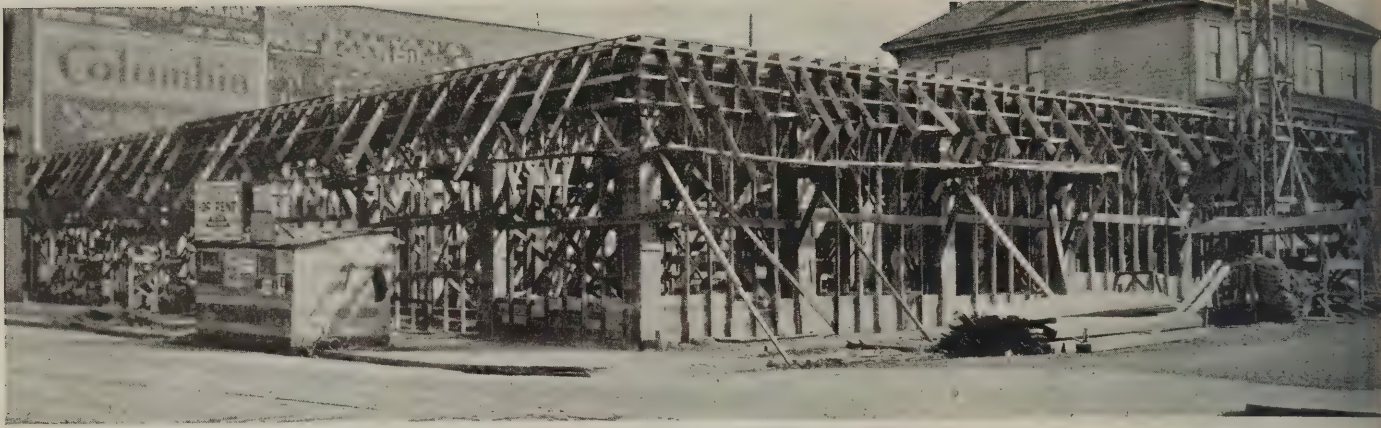
Jacob Weinstein of New Haven, Connecticut, was the architect who planned the alterations.



Plan before remodeling



Plan after remodeling



A general view of the job showing all formwork still in place

COMBINATION TIMBER and CONCRETE BUILDING



Close-up of formwork. The parapet is braced by diagonals attached to the shores

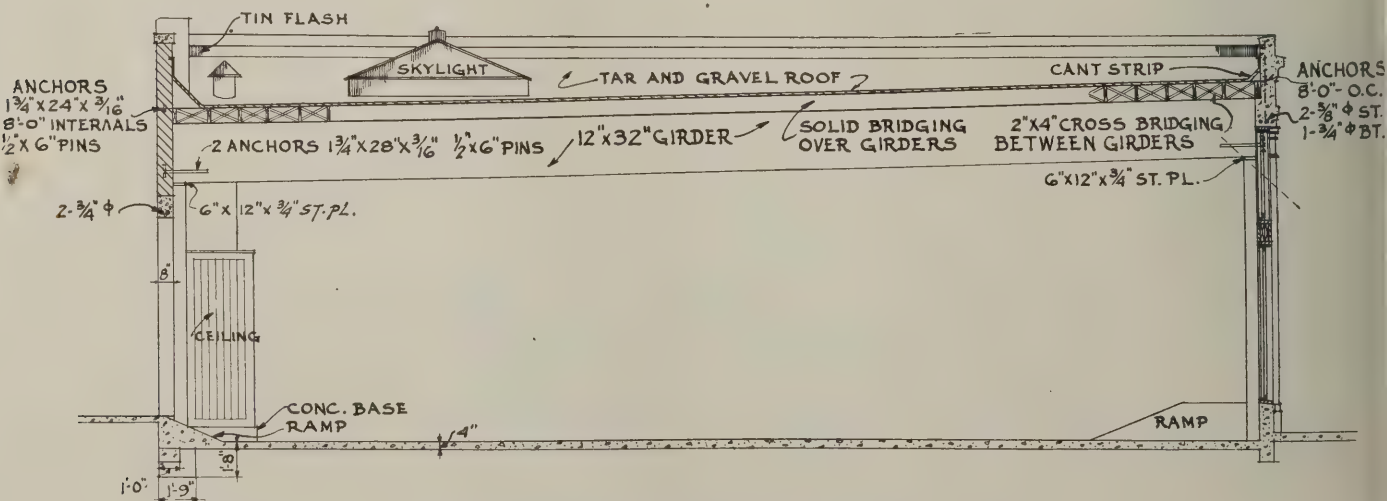
IN traveling through different parts of the country one observes that the choice of materials favored by builders often varies. In some cities steel is used freely, in others concrete seems to be the most popular and in some localities timber is used more than either concrete or steel.

This preference is not without reason for there is good cause behind it. It is generally a matter of cost. In some parts of the Southwest, far removed from the source of steel supply but adjacent to a concrete plant, concrete is used in preference to steel because there are no expensive freight charges to pay. In the Northwest, where lumber is plentiful, heavy timbers, of sizes unimaginable by Eastern builders, are used.

Take, for example, the building illustrated here, an automobile showroom being erected at Portland, Oregon. This building is a semi-"fireproof" structure,



Formwork at show-window bulkhead. The side-form cleats are held at the top by a piece running across the bulkhead



Cross-section thru the building showing details of construction. The girder is anchored in the wall by means of extra-heavy pin-anchors



Method of supporting girders temporarily

re walls built of concrete and the roof ordinary wood joist construction. Because of the purpose for which the building was to be used, a clear floor space, uninterrupted by columns, was desirable, and it was necessary to carry the roof, which was of 50-foot span, on girders.

Because Portland is distant from steel



Formwork for the side wall

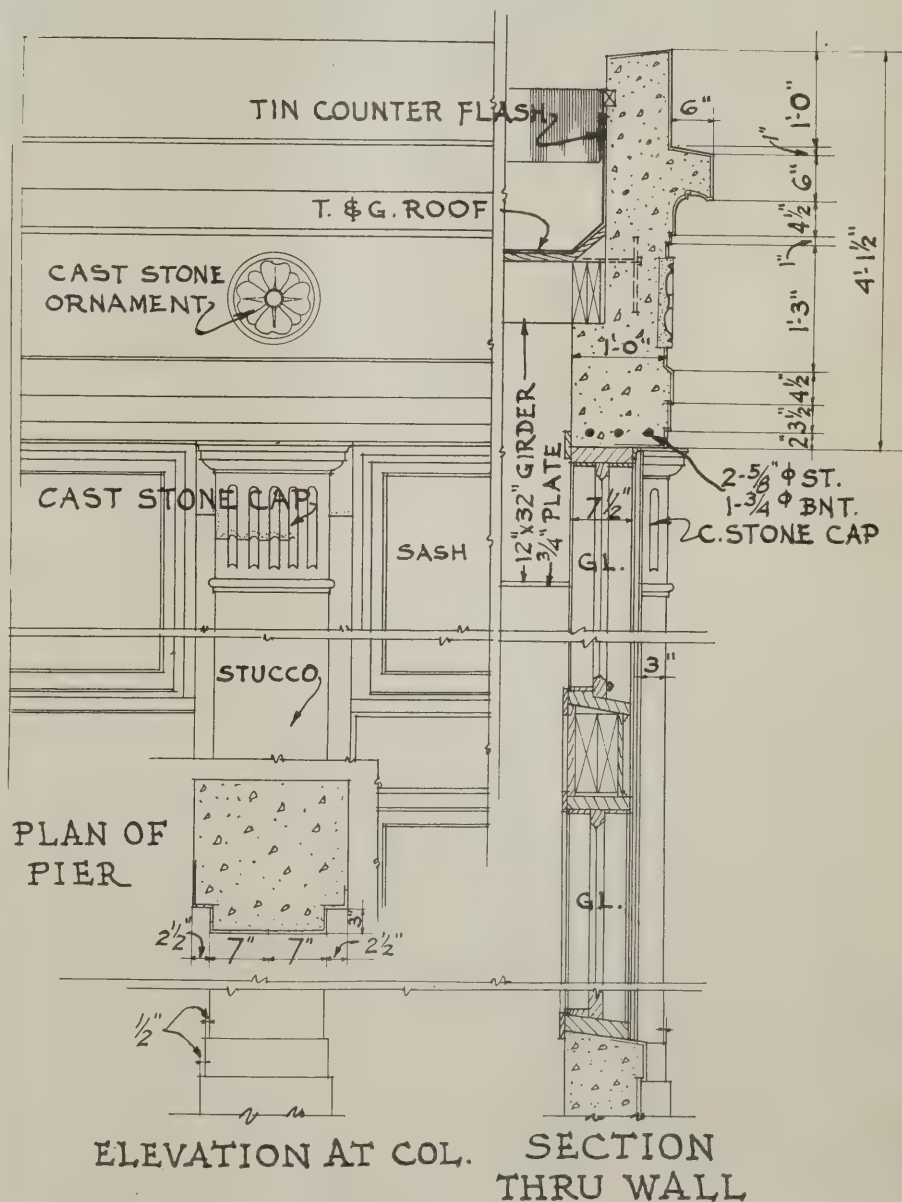
production centers, that material would prove to be expensive. Portland, however, is in the center of a great timbering country and so heavy timber girders were installed. These girders were 12 inches by 32 inches, a size seldom seen in the East. Such a dimension was necessary, however, on account of the long span of the roof. Construction details are shown in the sketch.

In order that the girders would be firmly set in the wall they were placed on temporary shores before the concrete was poured and supported in place until the wall was strong enough to carry them. As a protection against the girders slipping they were anchored in place with two extra-heavy pin anchors at each end. These anchors were nailed to the girder after it was lifted into place so that when pouring began they were imbedded in the wall.

In order to secure tasteful ornamentation at low cost it was decided to use cast concrete ornaments. The front wall, including the cornice, was cast monolithically, provision being made for the later installation of the cast rosettes and column caps. The entire front wall is concrete, from the bottom of the show window bulkhead to the top of the parapet wall.

Tin flashing and counterflashing were used at the roof line. The counterflashing was nailed to a 1x2 strip set in the back of the parapet wall and set in a groove in the wall above the strip. After placing the flashing, the groove was pointed with cement mortar, thus making a good water-tight job.

Harold D. Marsh, of Portland, Oregon, was the architect and Green and Green the general contractors.



Details of cast-in-place concrete ornamentation on front and side wall



Illustration showing the house being turned

TURNING a TWO-STORY HOUSE AROUND a CORNER

IT would seem that there is no end to the many different ways of carrying on house moving jobs. Each job presents new problems and each problem seems to be different

from any other one the contractor has tackled. Little difficulty is encountered in moving small buildings; some of them may be pulled along on trucks by a motor vehicle, but when big buildings are to be moved, that's where the fun begins.

Brick buildings require more care in moving than frame, because they are less flexible and considerably heavier. A small amount of distortion of the shoring and cribbing will not materially injure a frame building except to crack the interior plaster, but it takes only the slightest unevenness in the cribbing to crack the wall of a brick house.

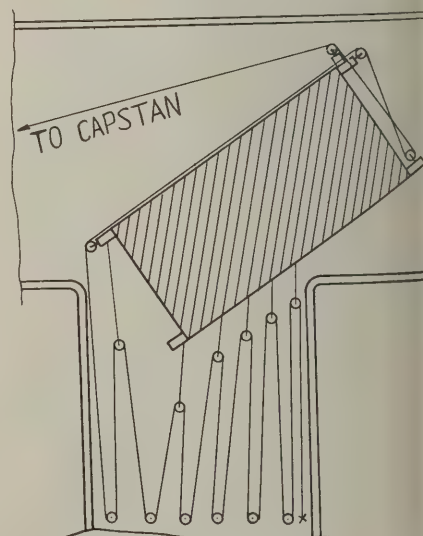
This is the fear always uppermost in the mind of the housemover, that for some reason or other something will happen to one of the shoring units to throw it out of level with a resulting crack in the wall. When a building cracks while being moved the job becomes an extremely hazardous one due to the fact that one of the sections may break further and get out of control. Notwithstanding all the dangers to be contended with, there is money to be made in the housemoving business for the man who knows his work.

The job illustrated here required moving

a two-story brick building, over 50 feet long and 25 feet wide, several blocks, and required that the building be turned around two corners. Turning a building of this size in a narrow street is no small job, and the way it was done provides an interesting story



This view shows the house in place on its new foundation



Suggested rigging for an operation of this sort



Since no means of holding the load line pulley was available they were fastened to stakes driven into the pavement

Before moving it off the lot the house was blocked up and set on rollers in the usual manner, and was moved off the lot into the street on a diagonal line. It was then moved down the street to the corner.

Here considerable difficulty was encountered due to the narrowness of the street and the presence of large trees and a telegraph post at the curb intersections. The width of the street upon which the house was traveling was considerably less than the length of the house and the street into which the house was to be turned was narrower than the first. To swing the house around without moving the telephone pole or cutting down the trees presented a nice little problem.

Inasmuch as the street into which the house was to be turned was quite narrow, the cribbing on which the rollers were carried was built up high enough above the curb for the rollers to clear, and was extended over the sidewalk, thus providing a larger turning radius than if the cribbing had been confined entirely to the street between curbs. It was only the fact that the turning radius could be so increased that made the job possible, because of the narrowness of the street.

In the illustrations showing the house at the corner notice how the mid-portion extends over the curb. Building up cribbing in this manner really amounted to widening the street since it did away with obstruction offered by the curbs. Some clever manipulation was required to come between the tree and the telephone post, but this was accomplished without damage to either.

The rigging for turning the house consisted of several lines so that the load each line was called upon to bear was such that would not overstress the cable. Pulleys were so fixed that the diagonally opposite corners of the building were pulled in different di-

rections at the same time. This permitted the front end to be drawn forward at the same time the rear end was swung around and acted to turn the building in a manner similar to swinging it on a pivot. When turning the corner the rollers under the building were forced from the straight line to a diagonal by pounding them with a heavy maul.

In using rigging of this sort it is essential that the longitudinal timbers upon which the load is carried be firmly braced and held apart by heavy timber separators. These separators should be strong enough to withstand bending as the tendency is to bend them when the load line acts to pull the ends of the longitudinal timbers together. This sep-

arator should preferably be the same cross-section as the longitudinal timbers.

Even though the manner of rigging the cable was such that it tended to swing the house, the matter of turning the rollers was one of greater importance and had it not been carefully attended to the house might well have been pulled off the cribbing. The rollers settle the direction of movement. Turning them to make the house turn is just as important as turning the front wheels of an automobile to make it take a corner.

At the building the pulleys were fastened to the longitudinal timbers with heavy chains, but at the other end of the line they had to be carried on heavy steel stakes driven into the pavement. This was necessary, since no other means of holding the pulleys was available.

An ordinary capstan, operated by two horses, furnished the power for moving. The capstan was anchored in a man hole, at some distance from the house. An additional piece of equipment in the way of a cable reel was provided. By its use the cable was reeled up as it came from the capstan, thus preventing kinking. A kink in a steel cable is the first step towards a break and with the cost of steel cable in mind as well of the possibility of having it break under load, it behooves every contractor to prevent kinking as much as possible.

This job was wholly successful, as will be seen by the illustration showing the building standing on its new location. The foundation was in place before the building was brought to the site and when this photograph was taken all that remained to be done was to lower the house to the foundation and remove the timbers.

Joseph P. Kwiatkoski of Chicago, Illinois, was the contractor in charge of the work.



A view at a corner. Note that the tool box is set on the building and so carried along with it

MONOLITHIC SILO CONSTRUCTION

By W. G. Kaiser

WHEN buying a silo the farmer should take into consideration the probable number of years of service he can expect from the various types from which choice may be made. The silo that lasts only a few years is usually most expensive in the end, no matter how low priced it may have seemed when new. A good way to arrive at the real cost of a silo is to figure it on a yearly basis and divide the first cost by the life of the silo in years.

A good silo must exclude all air and retain the natural moisture in the silage. It must allow the silage to settle freely and uniformly, thus preventing the formation

of air pockets. It must be able to withstand severe windstorms, even when empty. It must above all be able to withstand fire, which is one of the most serious dangers with which the farmer has to contend.

The capacity of the silo is of course determined by the number of animals to be fed. The diameter, however, should be such that at least a two-inch depth of silage can be fed each day. Convenience in feeding is the first consideration when the silo is located.

Where the services of a reliable concrete silo contractor can be had, it is desirable

to have the silo built by him under contract. In a great many cases the actual cost of a silo built under contract in this way is no greater than it would be if the owner built it himself. The contractor will be able to invest in a good set of the regular commercial metal forms, and still keep the cost per silo low by using them on a number of jobs.

To lay out the area to be excavated for the foundation a sweep pivoted at the center of the silo is used. If the ground is firm so that the earth walls of the excavation will stand without caving, no form other than the earth will be necessary for the outside of the silo below ground level. If, however, the ground will not stand up, thus making it necessary to use outside forms, a circle should be described by the sweep considerably larger than the diameter of the silo, so that the excavation may be sloped to give ample room for setting up outside forms. A foundation pit in loose ground where outside forms for the concrete are necessary is shown in Fig. 1. Note that the floor is about four feet below the ground level, insuring that the bottom of the foundation will be below frost line. The height of the silo above ground is also reduced by this much. The depth of the silo below ground is seldom over five feet, as it would be difficult to throw out the last of the silage from a greater depth.

Floor and footing are placed in one operation. If the ground on which the silo is built is not firm, the footings should be widened to four feet and reinforced. Vertical reinforcing rods are placed in the footing to tie into the walls.

Concrete is most readily and uniformly mixed by machine and the labor of hand mixing is thereby avoided. Many excellent small power mixers are now on the market, the power usually being supplied by a gasoline engine attached to the mixer. Machine mixing should continue for at least one minute after all materials have been placed in the mixer and concrete should be deposited in the forms immediately after mixing. The least amount of mixing water which will secure a concrete plastic enough to flow readily around the reinforcing rods gives best results. Concrete must be well settled into the forms and spaded in order to secure a smooth, dense wall.

The proper proportions of cement, sand and pebbles to be used in the silo are:

For foundation and floor.....	1:2½:5
For the walls.....	1:2½:4
For the roof.....	1:2:3



A monolithic reinforced-concrete silo on the farm. The opening at the top is where the silage is taken in

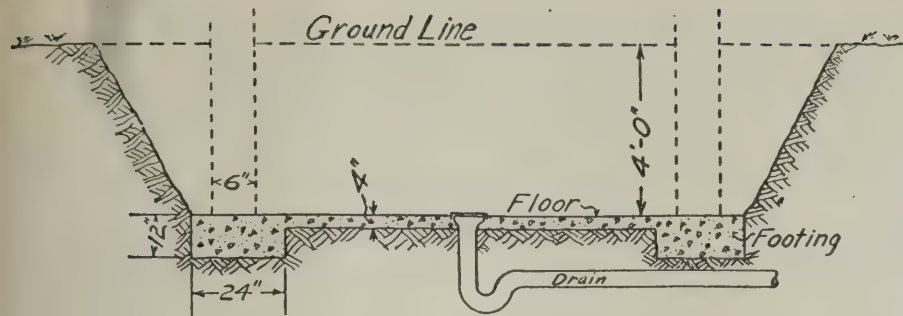


Fig. 1—Detail of foundation and floor

All the materials are proportioned by volume, a sack of cement being considered one cubic foot. All sand and pebbles should be clean, and water should in general be of a quality fit for drinking for best results.

After floor and footing have been in place 24 hours, construction of the silo walls may begin. Before these are started

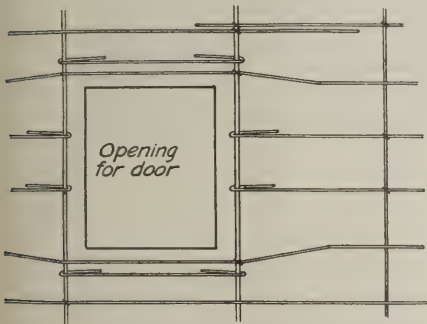


Fig. 2—Form of reinforcing for intermittent type of door

and before starting each days run of concrete, the top of the previous days run should be cleaned and a paint of cement and water mixed to the consistency of cream applied. This painting insures a good bond at the joint.

As the walls are placed, care must be taken to keep the forms truly vertical. The procedure to be followed each day is as follows:

- Raise outer forms to within four inches of the top of the old work.
- Splice vertical rods where necessary.
- Attach horizontal rods to vertical reinforcement.

Raise, space, level and plumb inner forms. Place concrete for new course.

Reinforcement is necessary in any silo to prevent the pressure of the silage from bursting the walls. As the pressure is greater near the bottom of the silo, more reinforcement must be used at this point. Spacing of horizontal reinforcing rods for various sizes of silos is shown in the table. Vertical reinforcement consists of 3/8-inch or 1/2-inch steel rods, spaced 30 inches apart, regardless of the size of the silo. Various forms of woven wire mesh may replace the steel rods, but ordinary woven wire fencing should not be used for this purpose.

Concrete silos may be equipped with two

types of doorways—intermittent and continuous. As either type is satisfactory, choice is largely a matter of individual preference. A form for the intermittent type of doorway opening is shown in Fig. 2, for the continuous type in Fig. 4. The arrangement of reinforcing rods at the doorways is shown in Figs. 2 and 4. Note that when horizontal rods are necessarily omitted at intermittent doorway openings, these must be added above

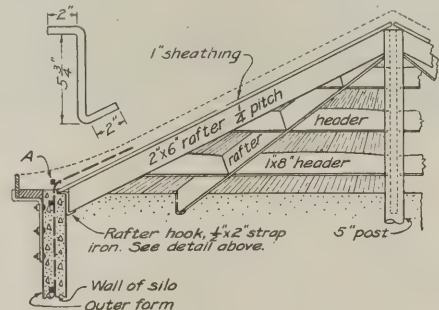


Fig. 3—Details for formwork for concrete roof

and below the door, in order to give the walls the same strength against bursting.

Chutes to protect the doorways and prevent silage from scattering are best built of fireproof concrete. Two and one-half feet square inside is a convenient size. Commercial silo forms provide for building concrete chutes monolithic with the walls. In other cases enough steel tie bars should be left projecting from the wall to tie the chute to the silo. Ladders in these chutes may be formed by setting U-shaped rungs of 1/2-inch steel bars in holes formed by tapered

wooden plugs placed in the chute forms. Concrete for the upper courses of the wall can be raised in large buckets or receptacles designed especially for this purpose. It is hoisted by means of a rope and pulley by horse-power or by a drum hoist, which is sometimes attached to the small concrete mixers.

The forms for supporting a concrete roof are shown by Fig. 3. The cornice forms are 1x6-inch boards cut or bent to the proper curves and supported by the outer form at intervals of about five feet. An opening for filling the silo is framed in the roof with wooden forms. When finishing the top of the silo wall, an offset two inches wide and one inch deep is left to support the lower end of the roof form boards. The thickness of the roof and its reinforcing depend on the diameter of the silo.

The roof joists are held to the silo by means of steel hangers, of which a detail is shown in Fig. 3. A five-inch post at the

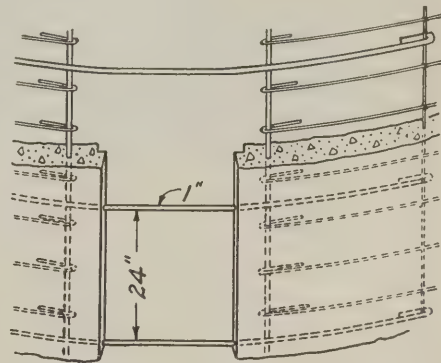


Fig. 4—Form of reinforcing for continuous type of door

center furnishes support from below. It is interesting to see the manner in which the roof is tied to the silo wall. This is accomplished by allowing the wall reinforcing to run above the cornice for about two or three feet, and then bending it into the roof so that it is imbedded in the concrete when the roof is poured. Note in Fig. 3 that a rod, running around the silo, is tied to the wall reinforcing at the point where the roof begins. The function of this rod is to prevent a break at this point.

SPACING OF HORIZONTAL REINFORCING RODS
FOR SILOS OF VARIOUS INSIDE DIAMETERS

Distance in Feet Down from Top of Silo	10-foot Diameter 3/8-inch Round Rods	12-foot Diameter 3/8-inch Round Rods*	14-foot Diameter 1/2-inch Round Rods*	16-foot Diameter 1/2-inch Round Rods*	18-foot Diameter 1/2-inch Round Rods*	20-foot Diameter 1/2-inch Round Rods*
	Inch	Inch	Inch	Inch	Inch	Inch
Top 5 ft.	24	24	24	24	24	24
5 to 10	24	24	24	24	24	24
10 to 15	24	18	24	24	24	24
15 to 20	18	16	24	18	18	16
20 to 25	16	12	18	16	14	14
25 to 30	14	10	16	14	12	12
30 to 35	12	9	14	12	10	10
35 to 40	10	8	12	10	9	8
40 to 45	9	7	11	9	8	7 1/2
45 to 50	8	6 1/2	10	8 1/2	7 1/2	7

*If square rods are used increase spacing 30 per cent, but in no case should spacing be greater than 24 inches.



Hitting on all six

LIGHTNING PROTECTION

By R. S. Moulton

Assistant Secretary, National Fire Protection Association

LIGHTNING rods and lightning rod salesmen are still regarded as more or less of a joke by a considerable proportion of the population of this country. This is an unfortunate misapprehension for modern lightning rods properly installed do afford a very considerable degree of safety from lightning damage, being credited with an efficiency of 99 per cent or better.

Five hundred people are killed and twelve hundred injured by lightning in

the United States every year. Lightning is the cause of a tremendous yearly destruction of valuable property.

If every country building in the area subject to lightning were equipped with a system of lightning conductors properly installed and maintained the destruction of life and property by lightning and fires from lightning would be negligible. There are a few fire causes against which so reliable a defense is available and, according to the best available statistics, no life has

ever been lost in a building equipped with a modern lightning protection system.

Benjamin Franklin's well known kite experiment in 1752 was directly responsible for the origin of the lightning rod. In 1753 Franklin erected on his house in Philadelphia the first lightning rod, and shortly after this installed rods on the houses of a number of his friends. The direct hit of a bolt of lightning on one of these rods convinced those who saw it of the value of this form of protection.



This farm house was rodded but the barn was not. Lightning struck the barn. The ensuing fire destroyed the house as well as the barn. Lightning rod protection must be complete to be effective

Franklin had great difficulty, however, in securing general recognition for his lightning rods and it was a century later before they began to be generally used in this country. When they did come into use they were largely promoted by unscrupulous agents who installed almost any sort of a system of lightning conductors with little or no regard for the actual requirements of protection. In those days the state of knowledge about lightning did not permit the efficient installations that we have today, but these unscrupulous agents did not take advantage of the knowledge that was then available. They put up flimsy rods often without any ground connections at all, these being worse than useless. Sometimes, finding that their victims did not have ready cash to pay for the installations, they accepted a small cash payment and a note for the balance. It is reported that in many cases these notes were raised and when presented for payment through local banks the victim found that he was out of pocket several hundred dollars. It is natural that these unscrupulous practices created a popular prejudice that still persists to a considerable extent today, though it may be said that the present day lightning rod salesman is doing a great deal to overcome the bad influence of his predecessor of fifty years ago.

To prove the efficiency of lightning rod protection the case of the Washington Monument is frequently cited. The monument is well equipped with lightning conductors. Prior to their installation it was more or less damaged by lightning on several occasions, but since the complete protection has been installed the monument has been struck at least eight times and has not suffered the slightest damage. The United States Bureau of Standards has made a complete survey of comparative fire losses in rodded and unrodded buildings. A summary of this data is presented below.

State	Years	Rodded	Unrodded
Illinois	1915 to 1921	30	2,840
Wisconsin	1914 to 1921	58	2,319
Kansas	1918 to 1921	10	687
Ohio	1917 and from		
	1919 to April 1, 1922	21	647

Most or all of the losses on rodded buildings noted in this tabulation were undoubtedly due to seriously defective or improperly installed systems.



A direct hit

There are certain fundamental principles which must be observed in installing a system of lightning conductors:

1. All points of a building most likely to be struck by lightning should be provided with rods. The rod points should be high enough above the structure to obviate danger of fire from the flash. One rod placed at the highest point of a building is not sufficient to protect the building.

2. The conductors from the rod points should be arranged to offer the least possible obstruction to the passage of a stroke between the point and the ground. The most direct path is generally the best and there should be no sharp bends or loops for the lightning to jump across. From each point there should be at least two widely separated paths to the ground for the lightning to follow. Insulation of the conductor from the building is not necessary.

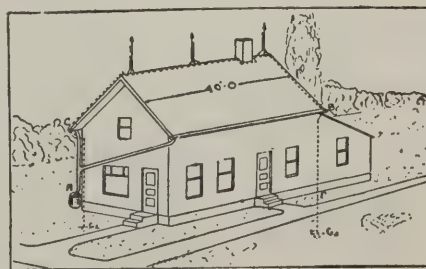
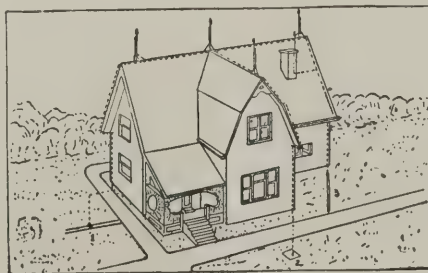
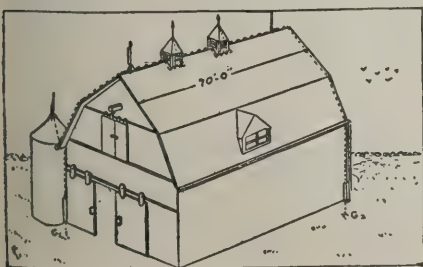
3. Grounding of the conductors should be thorough and permanent. If a water pipe enters the building, at least one conductor should be connected to it at a point just outside the foundation wall. If the ground is moist clay or other soil of similar character as to electrical conductivity, the conductor can be driven into the

ground for a depth of at least ten feet to make the ground connection. Where the soil is largely sand, gravel or stones, and thus liable to be dry in the summer, more extensive artificial ground connections are necessary. The ground connections should be distributed about the outside of the building.

4. Since a lightning conductor system as a general rule is expected to remain in working condition for long periods with little attention, the mechanical construction should be strong and the materials used such as are not readily subject to rust or corrosion (copper, for instance, being one of the most desirable materials for this purpose).

Detailed information for the protection of life and property against lightning may be obtained without charge from the National Fire Protection Association, 40 Central Street, Boston, Massachusetts.

Lightning rods are now generally put on as an after-thought, but they should logically constitute a part of the original equipment of the building. There would be many advantages in having the lightning conductors installed during the erection of the building, having the work under the control of the general contractor and the architect.



Typical arrangements of lightning rods on various types of buildings

A DIFFICULT EXCAVATING JOB

Combination of Clay, Rock, and Water Offers Unusual Difficulty in Putting in Foundations for a Four-Story Building

SOME excavating jobs are difficult because the material to be excavated is too soft, and therefore hard to handle, some are expensive such as blasting out rock, and some are discouraging where the presence of ground water makes steady work impossible. Any one of the above mentioned are enough to give a contractor plenty of trouble, but where all three are encountered on the same job, considerable difficulty is bound to result. The excavation for the four-story addition to the Wolf-Wiles & Company Building at Lexington, Kentucky, affords an excellent example of how one contractor put over a job that offered some real problems in the matter of keeping work going.

The site of the job was on Main Street and at this location there is a rock outcrop five or six feet below the surface. The soil is red clay and not hard to handle unless it is wet. It would have been a straightaway job of excavating the top soil and blasting out the rock if it were not for the fact that the line of demarkation between the top-soil and the rock was exceedingly irregular and therefore, because of occasional outcroppings of the rock, the steam shovel was liable to find itself digging in rock where it expected to find soil. To further complicate matters, several springs kept pouring water into the excavation, making the pit a difficult place

in which to work.

In order to clear out the water, a pump, hooked to a gas engine was installed and a



H. Gwyn, superintendent of construction for Louis des Cognets & Company

pipe was run from the pump in order to reach places in the excavation where it was required to remove the water. Another pipe was run from the pump to the street level

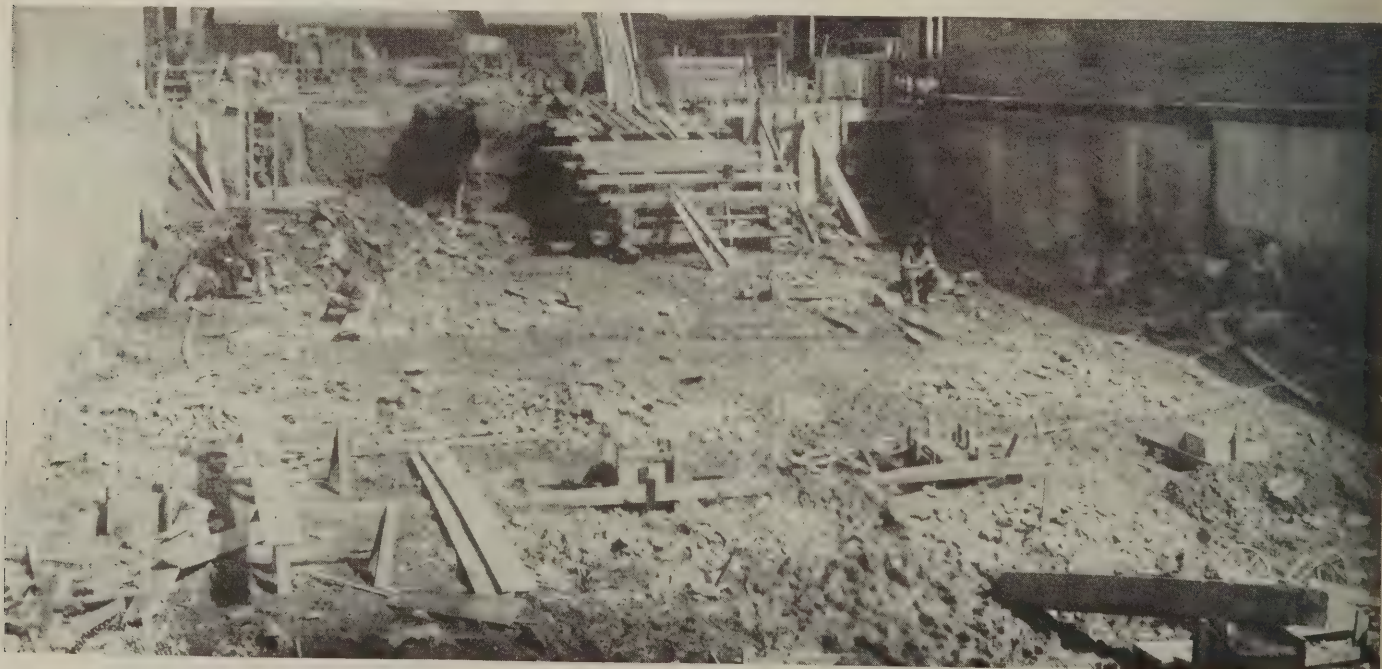
and the water was disposed of by pouring it into the city sewers. This arrangement served to keep the site fairly clear of water.

A steam shovel was used for excavating the top soil and as the first one and one half feet of top-rock was loose and easily broken, it was taken out with the shovel in the same manner as the top soil. When the rock was hard and difficult to work, a hand drill, supplied with power by an air compressor, was used to drill holes in the rock to provide entrance for steel wedges.

When the progress of the work permitted loading directly to the street level, no wagons were taken into the pit. They were loaded standing on the street grade, notwithstanding the fact that the street grade was almost ten feet above the bottom of the excavation. The steam shovel was used in taking out all the material to be excavated, instead of leaving a dirt incline for running the shovel out of the pit and then removing the incline with hand labor.

A temporary timber incline was built to permit the removal of the shovel after all the material had been excavated.

Placing the concrete for the foundation in the rear part of the lot was a real job on account of the water which seemed to be more troublesome here than anywhere else. Not only was it hard to build the forms, but also the problem of delivering concrete



General view showing runway by means of which the shovel was taken up to the street level. Notice the piles of excavated rock scattered about the site



Concrete foundation formwork. Notice the water at the bottom of the picture

a bucket of water.

Louis des Cognets & Company of Lexington were the contractors for the excavating and the foundation, and H. Gwyn was the superintendent in charge of the work.

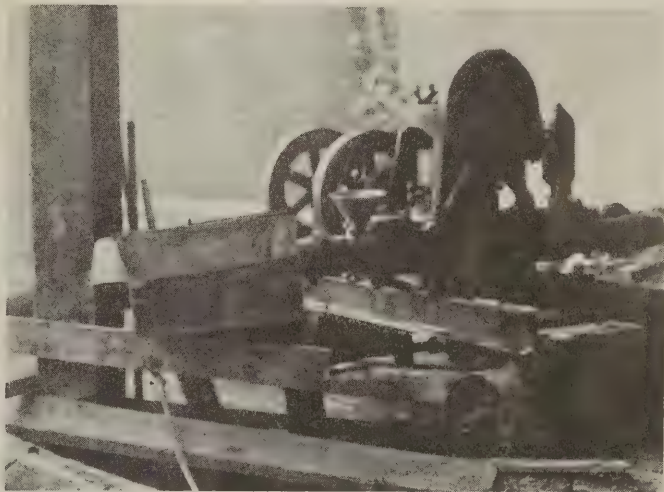
Public Liability

IF a general contractor lends equipment to a sub-contractor and if a public liability accident occurs, then, if the sub-contractor be not financially responsible, the general contractor could be held. It is dangerous practice for one contractor to lend equipment or tools to another.

It may also cause a joint suit to be started against the owner, architect and general contractor, which is very often the case. Every general contractor should insist on a certificate of insurance from the sub-contractor, for both compensation and public liability, before the contracts are signed.—(Bulletin, Associated Building Employers of Michigan.)



Air compressor used to furnish power for the air drills



Pump used to lift the water to the street level

to them had to be solved. Operating the pumps and confining their activity entirely to the place where the forms were being set kept the place dry enough for men to work in and as the job was not large enough to warrant the installation of a chute delivery system the mixer was moved to the rear of the adjacent lot and the concrete wheeled to the forms and dumped in. The pumps were kept going during the time pouring was in progress so that the water would not get into the forms and thus make too wet a mix. A fairly dry mix was poured to do away with the danger of the concrete being weakened by an excess of water leaking in from outside the forms.

The concrete foundations were poured as the work progressed and were finished on the inside with a thin cement plaster coating, applied with a finishing trowel immediately after the forms were removed, and smoothed down with a wide brush which was kept wet by occasionally dipping it in



Loading ten feet above the excavated grade



A general view of the job. The building is set up off the street grade and a retaining wall built at the sidewalk to carry the terrace

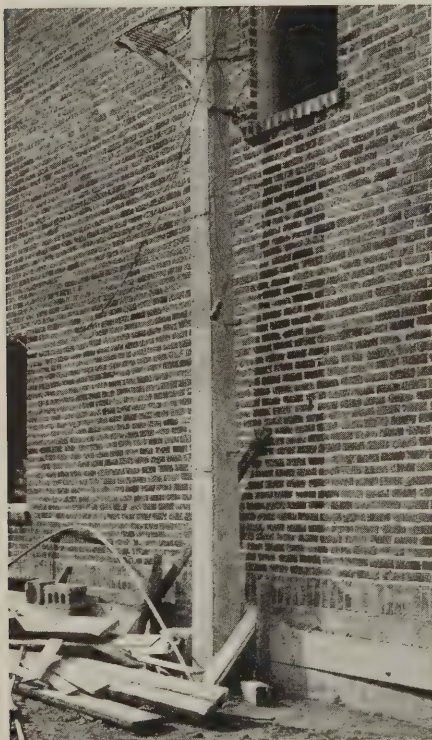
APARTMENT HOUSE BUILDING in RICHMOND, INDIANA

SOME New Yorkers have a habit of referring to small towns in the Middle West as "the sticks," a desolate region where nothing grows but tall pine, and a place where motor cars and electric lights are still

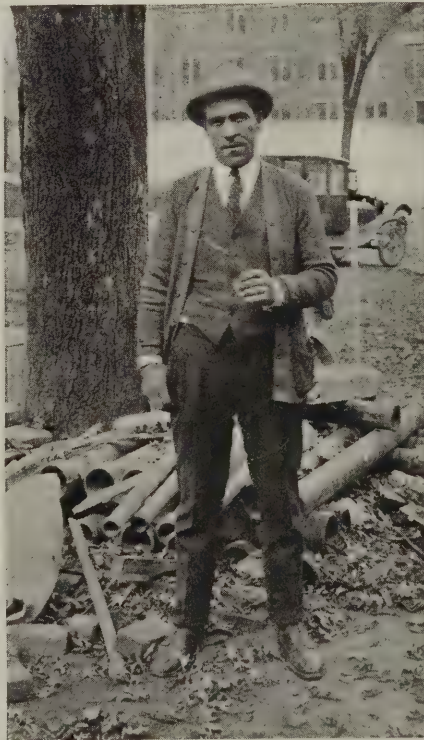
a curiosity. It might surprise some of these residents of Manhattan if they were to take a trip through some of our middle Western towns. Far from being backward, they are right up with the times and they do things

in a very modern fashion.

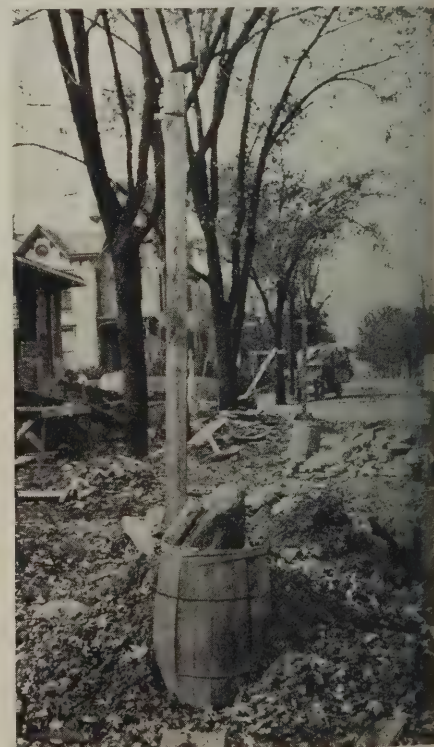
This will not be hard to prove after the reader has glanced through this article, which treats with a Richmond, Indiana, apartment building. The contractor was



Red electric bulbs were used for danger signals at night



C. W. Fry, contractor of Greenville, Ohio, who did the job



Electric wires were carried on 2x4s held to ballasted barrels



The riser forms were nailed to ears projecting from the stringers

C. W. Fry, of Greenville, Ohio. The building is a two-story structure, each apartment occupying two floors. As is generally done in this type of building, the living rooms are located on the first floor and the sleeping rooms on the second.

It is of the court type, and built on a corner. Thus plenty of light is afforded all tenants since the large proportion of the rooms open either on the street or on the large central court. Red brick, laid-up in white mortar, was used for the walls, and metal roofing tile for the roof exposed to view from the court and the street. The rest of the roof was of the flat type.

Where materials are piled in the street red lamps are generally set on the piles at night to warn approaching vehicles of an obstruction. Instead of ordinary smoky kerosene lamps as are generally used, this contractor provided red electric lights which gave off a bright red ray, easily seen from

a distance, instead of a dim light visible only when close to it. A very simple affair was used for poles upon which to string the wires. A ten-foot length of 2x4 was nailed inside an empty lime barrel and the barrel filled with stones. The weight of the stone-filled barrel was heavy enough to overcome the pull of the wires at the top of the 2x4.

In building up the cement steps, 2x10s were used as riser forms, since the step was quite wide. As it was difficult to nail the 2x10s to the one-inch thick stringer pieces, the triangle cut out of the stringer was toe-nailed to it, projecting out, and the riser forms nailed to these triangles. Small blocks, nailed to the stringers to bear against the base of the riser forms, held them securely at the bottom edge and pieces of scrap lumber were used to hold the top edges in line. When the riser forms were removed, the triangles and blocks were not carelessly thrown aside but were nailed to the side form so that they would not be lost and new pieces have to be cut in building up the next flight of steps.

The illustration showing the concrete mixer used in building up the sidewalks shows a good layout for this kind of work. Notice that the sand is dumped on one side of the mixer and the stone on the other so that both can be readily shoveled into the drum. This simplified the labor involved in charging the mixer, since the aggregates do not have to be wheeled.

The item involved in wheeling aggregates is an important one on any job, no matter how small the building may be. In large work, involving the construction of tall, reinforced-concrete buildings where thousands of yards of aggregates are used, the wheeling of a load two extra feet becomes multiplied by thousands and the cost of this two feet of extra wheeling may represent quite a sizable figure. For this reason, concreting plants on big work are as carefully planned as the building itself. On smaller work, although the final figure represented

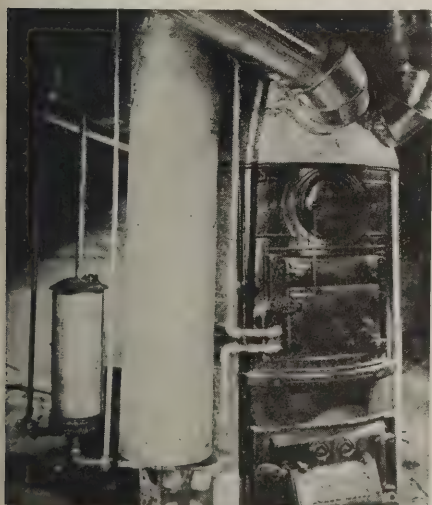


After use they were tacked to the stringer forms to prevent their being lost

by this waste labor may not be large, nevertheless the proportion of waste labor to necessary labor is approximately the same, and the per cent of profit suffers in the same degree. There is no reason why small concreting layouts should not be as carefully considered as larger ones.

In the basement the heating apparatus was built in a central group, so that as much of the basement as possible was clear and a minimum amount of piping was necessary. Notice in the illustration that the hot water tank is connected both to the furnace firepot and a hot-water heater. In the winter when the furnace is operated it will heat the water as well as furnish heat for the house, and in warm weather, when the furnace is not needed, the water will be heated by the gas heater shown to the left of the tank.

The few "kinks" illustrated here are well worth consideration.



All heating units were compactly arranged in one group



The aggregates for the mixer were dumped directly adjacent to it so that no wheeling was required



A general view of the job showing forms in place for the walls

MONOLITHIC CONCRETE WALLS

WE have all heard of concrete foundations, but it may be interesting to know that in some parts of the country they carry the concrete a little higher and use it for building walls, thus doing away with brick entirely. This method of construction, which means the use of monolithic concrete walls, is best adapted to that part of the country where the variation in temperature is not great, as on the Pacific coast or in the South. A considerable temperature variation might result in cracks in the wall, due to expansion and contraction of a large wall surface. Builders in climates where the seasons change from summer to winter with

a corresponding change in temperature, which sometimes occurs suddenly, have been slow to adopt this type of construction, but it seems to be in general favor on the Pacific Coast for tall buildings as well as for those of two or three stories in height.

The job illustrated here is one of the buildings for the State Normal School group at San Francisco, California. It is built with concrete foundations and monolithic concrete walls, the roof being carried on steel trusses. The trusses are not carried on the wall but are supported on steel columns running up from the foundation level.

This is a precaution worthy of commendation since it provides for holding the roof in place no matter what happens to the walls. Thus, even if the strength of the wall is lowered due to expansion cracks there will be no danger of the roof collapsing and the building being destroyed.

All the mechanical equipment on the job

was a power saw for cutting the form lumber, a concrete mixer, a self dumping concrete bucket and a receiving hopper. An old chain-drive motor truck was used to run the hoist. The truck was blocked in place and the chains running from the transmission to the rear wheels were changed to run from the transmission to a drum mounted on the truck, upon which was wound the hoisting line.

Concrete was mixed on the ground and dumped from the mixer to a chute which dropped it to the hoisting bucket. It was then carried to the top of the tower and automatically dumped into a receiving hop-



Scaffolding details



Detail of runway



View at top of tower

per, whence it was distributed around the job by means of ordinary size steel buggies.

A study of the concreting plant will show it to be as compact and efficient as such a plant for this kind of job can be made.

The plant consisted of a one-bag batch mixer, wood hoisting tower, hoisting bucket and storage hopper. The mixer was located adjacent to the hoisting tower and about eight feet above it so that the concrete flowed to the hoisting bucket by gravity. A wood chute, built on the job, carried the concrete directly from the mixer to the bucket. Inasmuch as one batch was too large amount for a single buggy load a storage hopper had to be provided at the top of the tower. The arrangement at the top was such that the hoisting bucket dumped automatically when it reached a certain height, discharging into a steel chute which led to the storage hopper. The concrete was then drawn from the storage hopper to the buggies and distributed over the structure.

Scaffolding was built up on 4x4 posts and



View of the top of the scaffolding showing false frames set in place to allow for window opening



The truck in the foreground furnished the power for operating the hoist

the putlogs were carried at one end by a diagonal brace running up from the mid-point to the post, and at the other end by a 2x4 ledger nailed to the wall formwork. It was run all the way around the job so that the unloaded buggy could be wheeled around the wall and thus not interfere with a loaded buggy coming from the mixer. A man wheeling a buggy-load of concrete came from the mixer to the place where the buggy was dumped, then continued around the wall until he returned to the mixer, where another batch was waiting. It was a continuous mechanical process, working almost like a piece of machinery.

It is interesting to note that the runways over which the buggies were wheeled were not built solidly of planks as is generally done. They were built of 1x6 laid across joists and spaced about 1½ inches apart so that material dropping from the buggies would fall through the cracks instead of remaining on the scaffold and causing someone to slip and fall. The scaffold was carried up by raising the putlogs to a higher level. The runway was built in sections so that it could be easily and quickly moved.

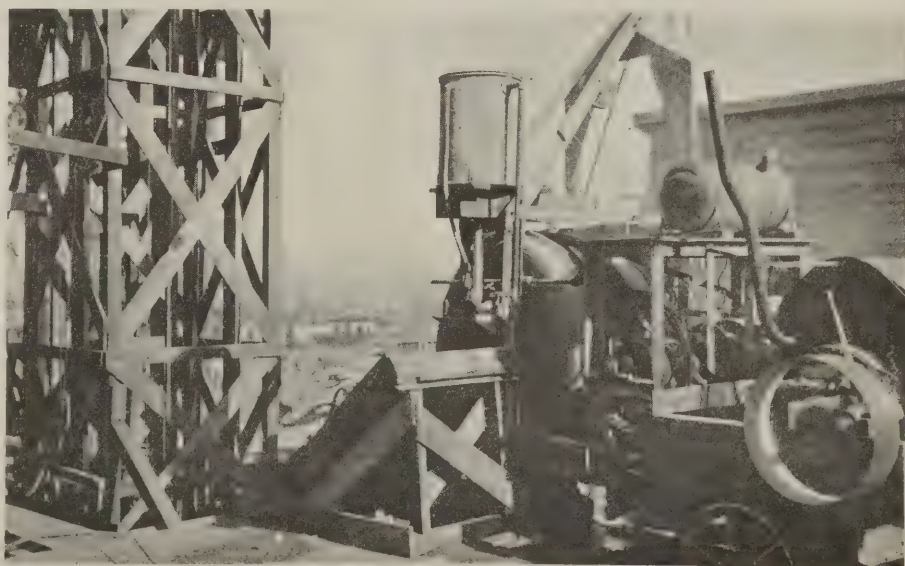
Thus when the wall was filled to the level

of the scaffold the runway sections were taken down until the scaffolding was raised to the new level. Then they were lifted into place and set on the putlogs as before. Building the runways in sections resulted in a

considerable saving in expense since it would have been necessary to tear them apart and put them together again every time the scaffold was raised had they not been so constructed.

Provision for window frames was made by setting false frames in the form to allow for the proper sized opening. These frames were braced against the form uprights to insure their remaining level in the forms. Diagonal bracing at the corners was used to prevent the tops from sagging.

As regards the cost of this kind of construction, the writer has never had an opportunity to make a comparison between a building of this type and a similar size building with brick walls. Taking into account the cheap labor used in building the forms and pouring the concrete, as compared with expensive labor used in erecting brick walls, surface indications would tend to show this monolithic type of construction somewhat lower in cost than brick.



A view of the distributing system at the mixer showing the compactness of the plant layout

On the Job in Utica, New York

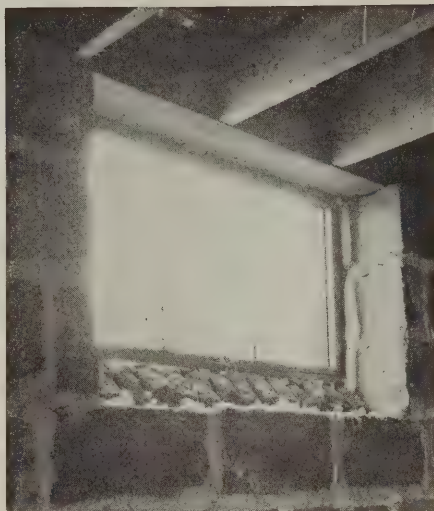
Patch for Broken Plate Glass Window

IT SOMETIMES happens that it is inconvenient to repair broken plate glass windows immediately and the application of a temporary patch becomes necessary. For this purpose the arrangement illustrated here will be found to fit the bill. It consists of two 1x10 boards, one on the outside and the other on the inside, over the break in the glass, and both bolted together by means of narrow diameter bolts running through the crack. Since the boards are quite wide they lap over the crack considerably on each side, and if securely bolted, they may be depended upon to hold the glass firmly.

For such a patch as is described here it is essential that the boards cover every part of the crack for its full length, and that they be bolted together as tightly as the bolts can be drawn. If they are only loosely held together, a slight jar or puff of wind will cause the plate to drop out of the frame, endangering the safety of passersby. It would be well also to anchor the boards at the ends if this be possible. In this case the vertical pieces were tacked to the frame at the top, thus ending to make the whole arrangement more solid.



An emergency method of holding a broken plate



The inside of the sill will be finished off with cement mortar

Brick Sills for Basement Windows

CLARENCE SNYDER, a contractor of Utica, New York, has a way of handling brick basement sills that may appeal to brother contractors in other parts of the country. In the illustration shown here the foundation walls are cement block and the window is one of the steel type that are coming into vogue for basement sash.

In setting the brick sill, the mason chips each brick so that a triangle is cut off at the end and then lays the brick on the foundation long side down. Cement mortar is then used to cover the inside of the sill and to fill the opening between the window frame and the top of the sill in order to make a good tight job. The cement is carried over the brick and on to the exposed foundation to finish the inside of the sill off smooth and to prevent dust and dirt from accumulating in the crevices.



It costs little to install this base for a heating plant

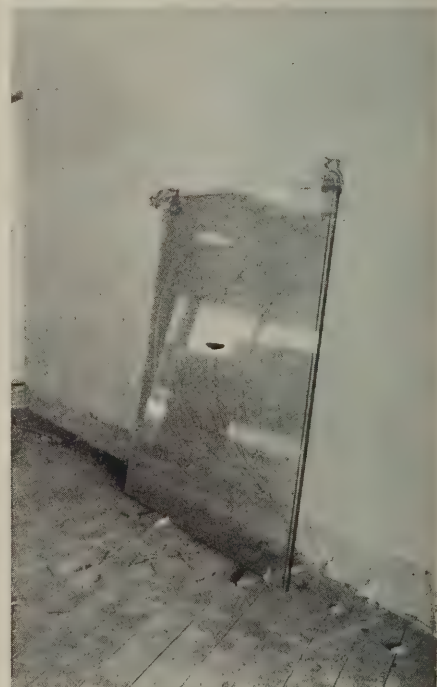
Concrete Base for Heating Plant

WHERE concrete floors are laid in basements it is customary to set the heating plant directly on the floor, it being considered that the thickness of the floor is such that it will support the plant without danger of accident. This is alright where the ground is solid but for soft ground, or in places where considerable moisture abounds, it may be profitable to build a separate foundation for the heating plant as does this Utica, New York, contractor. The concrete base is about twice as thick as the floor which will be built around it, thus preventing its punching through the floor in case the soil beneath is softened and sinks away slightly.

Storing Glass

WHEN storing glass, it is always advisable to set it on edge, as shown here. Never allow the full edge to rest on the base as the plate is then liable to crack. It is best to set the glass on blocks, thus allowing it to bear on two points instead of the entire edge.

This photograph was made on a job being done by Kamp Bros. at Utica, New York.



Small blocks are set at the base and pads of paper at the top

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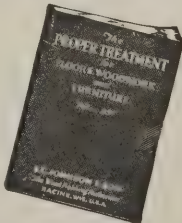
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On the Job in Knoxville, Tenn.

Metal Flower Box Brackets

FOR brick walls this metal flower box support may be used to good advantage. The brackets extend into the wall, and the end is bent to form a hook which sets into the masonry joint. About two inches should be allowed for the hook so that the bracket will be in no danger of breaking out of the wall.



This bracket is held firmly in the wall

For the brackets shown here, strap iron $\frac{1}{4}$ inch thick and two inches wide, was used, and the bracket built up of two pieces held together by rivets. One rivet is located at the end of the bracket, where it is bent up to hold the flower box, and the other where the bracket enters the wall.

J. M. Kerr, of Knoxville, Tennessee, was the contractor on whose job this picture was taken.

To Pile Cut Stone

IT is essential, on jobs where cut stone is to be used for trim, that the stone be protected from damage as much as possible, and this responsibility generally rests with the stone setter. Not only is it necessary to prevent breaking and chipping but also, in order to save time, it is well to pile the stone so that it may be readily handled without undue damage.



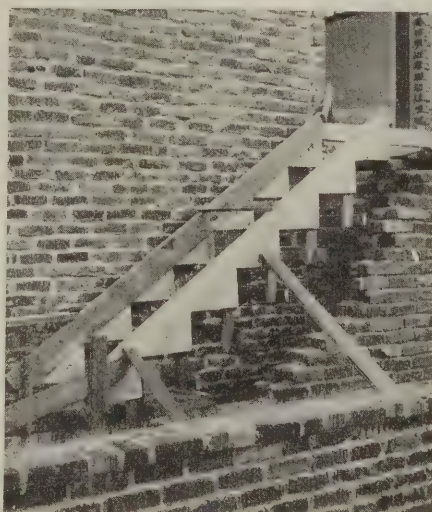
Wood strips are used between each of these pieces of stone

John Oman, Jr., a stone contractor of Knoxville, Tennessee, piles flat stone as shown in the illustration. He sets a piece of board between the stones at each end so that there is a one-inch space between. When the time comes to move the stone a bar may be slipped into this opening, the stone tilted and then lifted, instead of having to force the bar between two stones lying one upon the other, and possibly chipping the edge.

Formwork for Concrete Steps

THIS simple formwork used by B. T. Thomas, a contractor of Knoxville, Tennessee, provides an easy method for building up concrete steps. Everything is shown in the illustration except the riser and tread forms.

It will be seen that reinforcement for the



This formwork is simply and easily built

stringer has been provided to prevent it from sagging and thus throwing the treads out of level. The stringers were cut out of 1x12, and a 2x8 was used for the reinforcement. The riser forms will be held against the horizontal pieces attached to the verticals which project downward from the stringer. No form will be used for the treads, as they will be finished off as the concrete is placed and leveled from the tops of the riser forms.



This type of scaffold can be used only for the base of the wall

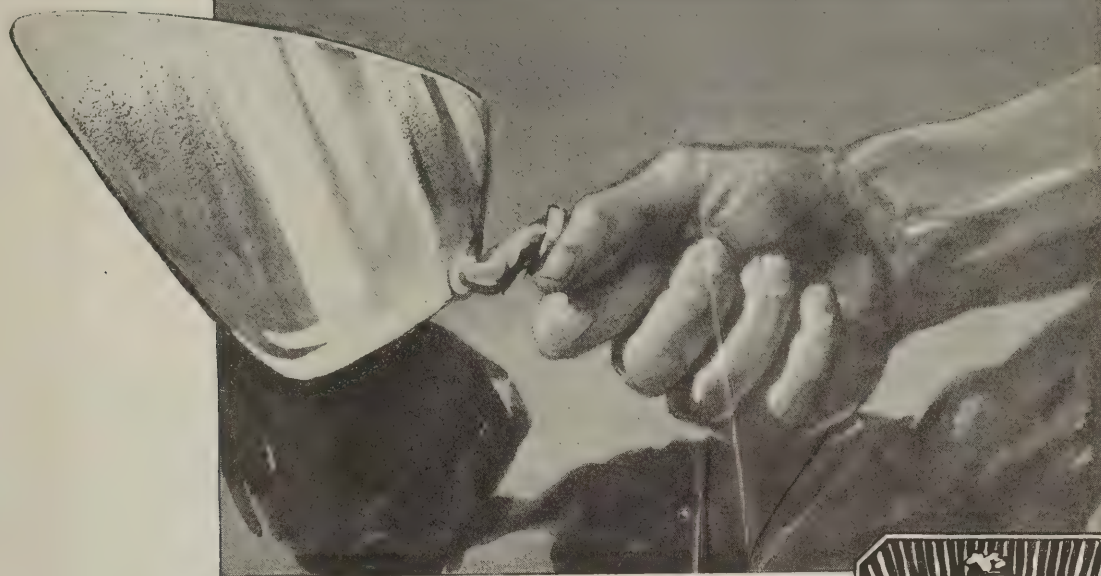
Low Pointer's Scaffold

WHEN it becomes necessary to erect a low scaffold for pointers this idea, used by J. M. Dunn and Son, of Knoxville, Tennessee, may well be adapted. It consists of two 2x12's, set on end, with a cleat across the top to keep the falls from slipping. Notice that cross-pieces have been nailed to one of the planks so that the men can come down to the ground without having to lower the scaffold.

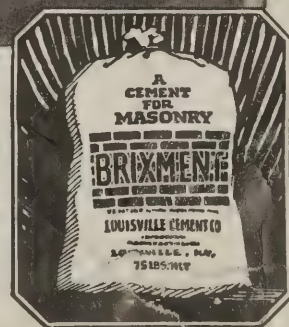
This is a much less expensive way of providing such a scaffold than the usual method of suspending it from the roof. Of course, this stunt can be used only where no great height range is required. For those conditions it works fine.

It has the advantage over a suspended scaffold in requiring only a short amount of rope, and it will not sway as would a scaffold suspended on long falls.

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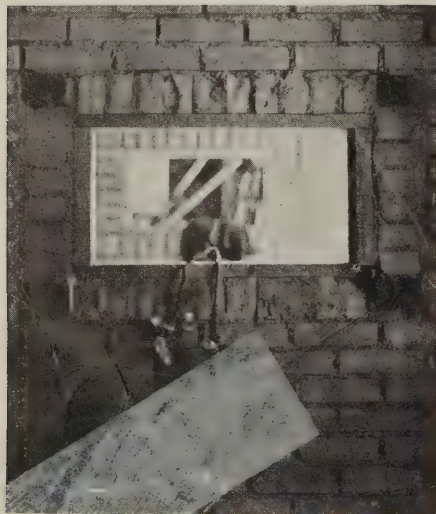
BRIXMENT

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On the Job in Binghamton, N.Y.

Holding Bell Wires Together

IN apartment buildings where several bell wires come to a single point in the hallway there is generally a mess of tangled



Wires taped together at mail-box

strings that require several minutes to straighten out before anyone of them can be connected to its proper push button.

Such, however, is not the case on the job of M. Heiter, a Binghamton, New York, contractor. Beginning at the level of the hall floor, all wires are taped together in a single strand and at the ends of each wire a piece of cardboard is attached showing where it comes from. This

little stunt greatly simplifies the work of connecting the wire to the pushbuttons and prevents a great deal of wasted time on the part of the electrician.

Combination Cobblestone and Concrete Wall

MANY a builder has had occasion to erect a retaining wall for the purpose of holding an embankment or preventing a fill from slipping. The usual method is to build forms and pour concrete in them in a manner similar to pouring an ordinary house foundation. This makes a good, solid wall but generally it is not much of an ornament; quite the contrary, for the average retaining wall is an eye sore.

Here, however, is a method of building retaining walls which makes not only a useful but also an ornamental structure. Instead of building a double form and pouring concrete between the form walls, only a single form, that at the rear of the wall, is erected. The front wall form is laid down piece by piece as the wall goes up.

In building the wall the rear form is set up, and then the first plank of the front form is set in place. The cobblestones are laid against the front form and then concrete is poured in the space between the stones and the rear form. This process is continued until the walls are built to the desired height. Then after the concrete has set the front form is removed and the joints between the stones pointed with mortar.

To secure a good looking wall it is desirable that the stones be graded; that is, selected of various sizes so that the smaller stones can be set in the spaces between the larger. Also, it is not well to set several large stones close together if a good texture is to be obtained. Patches of large or small



Formwork for face of wall

stones stand out and tend to break the uniformity of the wall. A wall containing patches of the same sizes of stones will appear spotty and uneven.

These photographs were made on a job being done by F. A. Bauman, a Binghamton, New York, contractor.

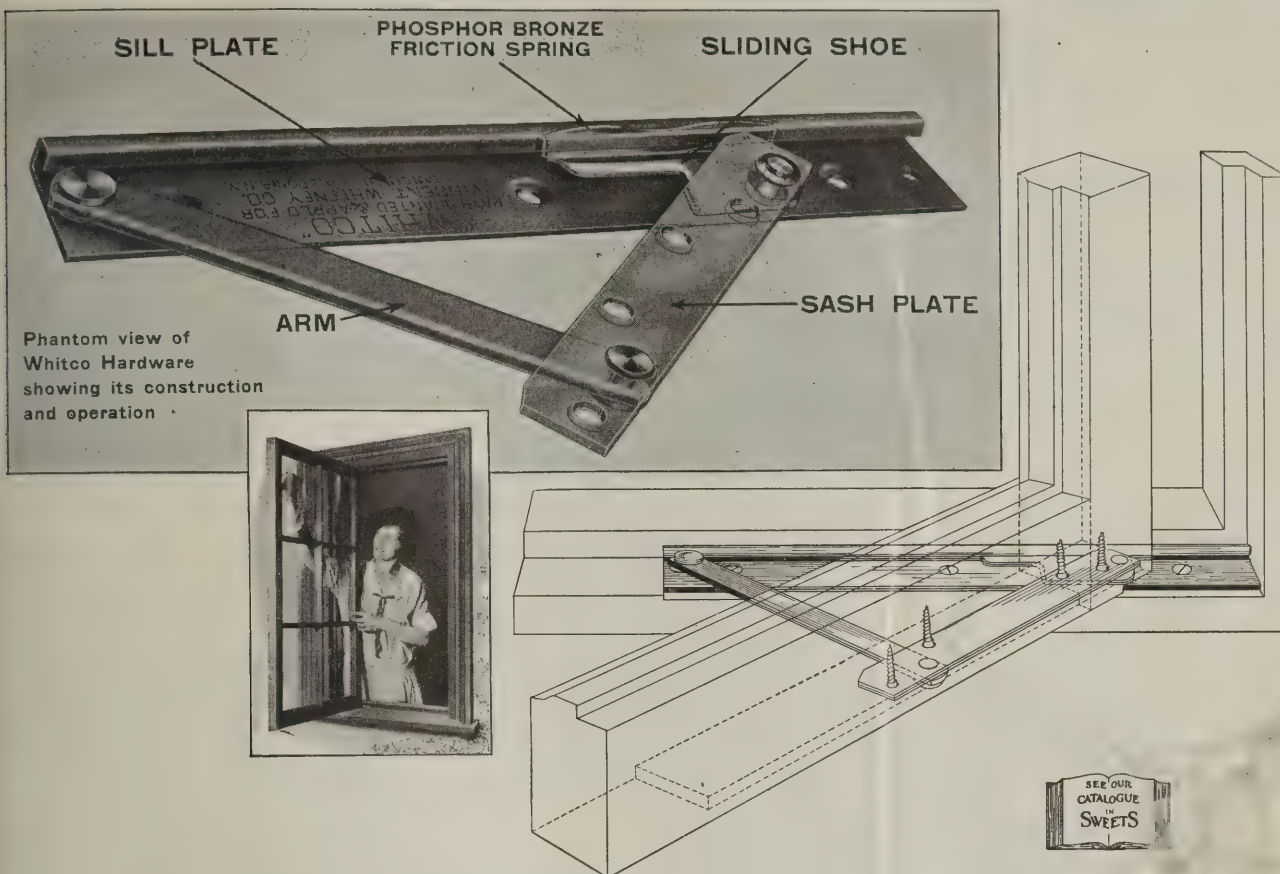


Face of wall



Rear of wall

STANDARDIZE ON WHITCO HARDWARE FOR CASEMENTS AND TRANSOMS



WHITCO—The Easy Hardware

WHITCO is the simplest casement and transom hardware:

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One size fits all sash.

WHITCO can be applied to a single sash, a pair of sash, or to multiple sash in wide openings without mullions.

WHITCO is ideal for transoms.

A set consists of two pieces, one the reverse of the other.

Any set may be used to swing a sash either to the right or to the left.

The detail above shows the application of WHITCO to the bottom of a casement sash swinging out and to the left.

Turn the page upside-down and you see its application at the top of a casement sash swinging out and to the right.

Turn the page sidewise and you will see it on one side of a transom swinging in from the top or out from the bottom.

Could anything be simpler—or better?

In specifying casement hardware, just say "WHITCO." In ordering just say how many sash. There is nothing more to do. No special sash or frame detail is required. No special finish need be considered, as WHITCO is entirely concealed.

We shall be glad to send full information regarding Whitco Hardware on request.

Retail price, per set in Solid Brass . . . **\$2.25**

In Rust-Proofed Steel (Brass trimmed) **\$1.75**



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You can buy Whitco from your Hardware Dealer

On the Job in Kansas City, Mo.

Simple Mason's Scaffold

F. A. TAYLOR, a Kansas City, Missouri, contractor, has a simple method of building mason's scaffolds. About eight feet on centers, 2x10's, are set upright and braced diagonally in two directions. A 21x10 ledger board running the length of the scaffold is used to support one end of the putlog, the other being carried by the wall. As the wall is carried up a second ledger may be placed higher



This scaffold may be easily raised

upon the vertical posts to support the putlogs at the next level. The scaffold planks upon which the bricklayer stands are 2x10 and the putlogs 2x8. One-inch thick material, picked up around the job, may be used for the diagonal bracing.

Carrying a Hose Line Across the Street

WHEN it becomes necessary to carry a hose line across the street, the ordinary method is to lay it on the pavement between two planks so that vehicles rolling over will not bear upon it. This is not always satisfactory, however, since often the planks bear against the hose and crush it.

The Quality Builders, of Kansas City, Missouri, use a crotch made of two 2x4's



Hose carried in this manner will last a long time

and carry the hose above the pavement, allowing vehicles to pass below. This method absolutely prevents damage to the hose and is a good idea for the contractor who seeks to cut down his equipment maintenance costs. After this manner of use the 2x4's may be used for some other purpose.

Handling Window Frames

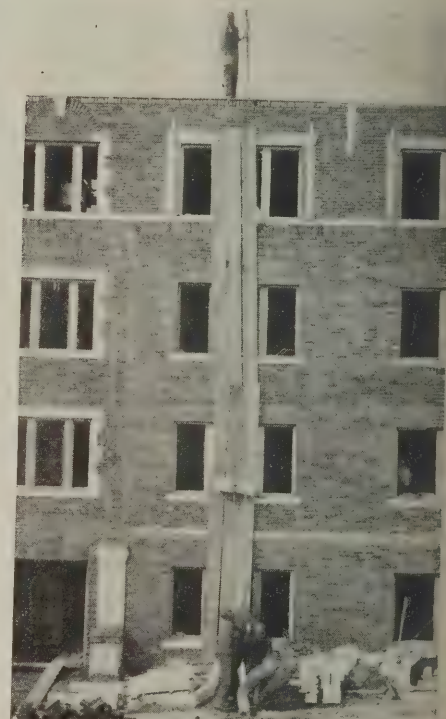
MANY a cuss word has been used on account of the difficulty in handling



These frames may be easily handled

heavy window frames. Here, however, are some frames made in a Kansas City, Missouri, mill which may go a long way to clear the air of much of the blue smoke.

Since most of the trouble in handling frames comes from the difficulty in getting hold of them, the mill ships these to the job with a projecting ear at the sill. This projection affords a means of gripping the frame and assists greatly in handling it easily, and when the frame is in place it takes but a moment to saw off the projecting piece.



There will be no ugly scars in this wall

Protection for a Finished Wall

IT sometimes occurs that finished walls are damaged by hoisting materials up over the outside of the building. A piece of cut stone going up the wall may bump and chip a piece of trim, leaving an ugly mark which cannot be removed.

The McCandless Miller Company, of Kansas City, Missouri, take no chances on anything like this happening on their jobs. When hoisting material up the outside wall, the space where the object is liable to hit the wall is protected by planks. These planks may be held to the window frames to keep them in place.

The "Master" Woodworker

MODEL No. 10 "A PORTABLE ELECTRICALLY DRIVEN WOODWORKER"

Capacity Model No. 10—Cross Cuts 2" thick. Rips 2" thick. Dadoes 13/16" wide, 2" deep.

The Fastest and Most Accurate Bench Woodworker on the Market. "Not a Saw" but a "Complete Woodworker." "Runs from a Lamp Socket." 12 Machines in One

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Will handle 80% of all the work in most Cabinet, Pattern or Carpenter Shops. Fitting, dadoing, trimmin, sawing, jointing, planing is done more accurately on the MASTER than by any other machine.

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On "Inside Finishing" the MASTER will make every cut necessary or house building, besides housing out stair strings, mouldings, etc. It can be connected on a lamp socket. It will rip and cross cut 2" faster than any machine **THREE TIMES ITS WEIGHT.**

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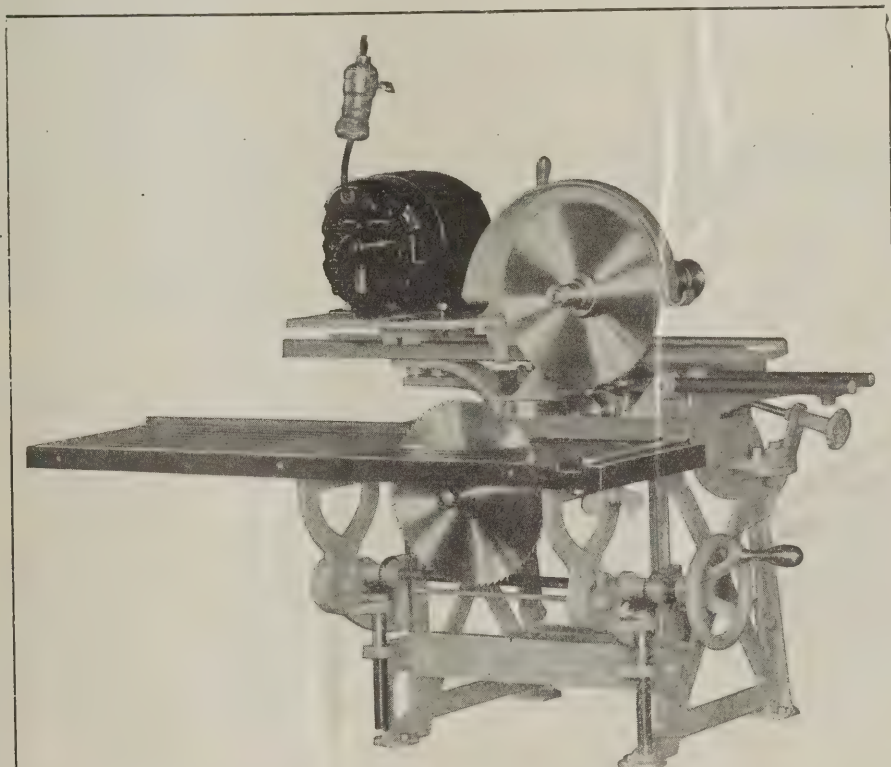
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The Master Woodworker Is Built in Four Different Sizes (Exactly of the Same Design)

All Operations are duplicated on all Models according to the size, horse power and capacity, each model being designed to meet the particular requirements of the Woodworking Trade.

We Manufacture Four Models but Only One Design—"THE MASTER WOODWORKER"

IN THE SHOP OR ON THE JOB IT IS EVERYTHING ITS NAME IMPLIES

"THE MASTER"

Model No. 10, Master Woodworker, fully equipped with 7" cross cut saw, 7" rip saw, wrench, oil can, cable, electric switch, rip saw gauge, saw guard, saw fences, endless leather belts, pulleys and tools; 4" jointer, 1/2 H. P. motor, absolutely complete, wired ready to operate—crated for shipment. Cash price, \$50.00 with order, balance \$200.00, cash on delivery.....\$250.00
Time proposition—\$80.00 with order, balance in 12 monthly payments of \$15.85 each, including brokerage and interest.....\$270.00
Model No. 10, complete length over all, 34", width over all, 22". Weight complete, 160 pounds; shipping weight, complete, 180 pounds. Weight and size include 4" jointer. All machines taken down in three parts by removing three bolts, the heaviest part to carry is 50 pounds. Machine set up, ready to run in two minutes. Catalog on Request.

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On the Job in San Francisco, Cal.

Framing a Large Opening

THIS illustration, made on a job being done by C. S. Allred of San Francisco, California, shows a large opening in the wall of a small house.

To stiffen the wall, diagonal bracing is provided between the studs, and double studs are set both at the corners and at the ends of the opening. The lintel over the opening consists of a 2x10 joist, reinforced with 2x4 blocks which run from the top plate to the plate just over the

and for those building in a locality where there is a possibility of earthquakes or wind storms it furnishes that "ounce of prevention" which may prevent destruction of the house.

Saddle for Hanging Vent Pipe

IN building up lines of sheet-metal vent piping the contractor is sometimes hard put for a method of supporting the line at



This saddle may be built from scraps

the base. Some support is necessary since the bands holding the pipes to the joints or to the walls can hardly be depended upon to keep them from slipping downward.

G. W. Morris, a San Francisco, California, builder, uses the method shown here. A saddle was built of three short pieces of wood, the two vertical pieces being 1x4 and the horizontal piece 2x4, and swing from the joists. Where an elbow occurred in the line the pipe was carried in the saddle. Since sheet-metal pipe is not heavy, this arrangement may be depended upon to carry the load.



The bracing and heavy lintel help to strengthen the wall

opening. Two 2x4s are used for the top plate.

In erecting exterior walls with large openings such as this, it is essential that bracing be provided at the side of the opening and a heavy lintel at the top. Any opening in a wall tends to weaken it, hence it is well to use a few extra pieces of 2x4 to do a good job.

Bracing a Building Corner

THIS San Francisco contractor is taking no chances on having his building brought down by an earthquake. As may be seen from the illustration, the corners have been stiffened by diagonal bracing consisting of short pieces of 2x4 set between the studs. They are carried down in a straight line from the ceiling to the sill.

This method of strengthening a corner is not as expensive as it might appear



2x4 bridging used for bracing a wall corner



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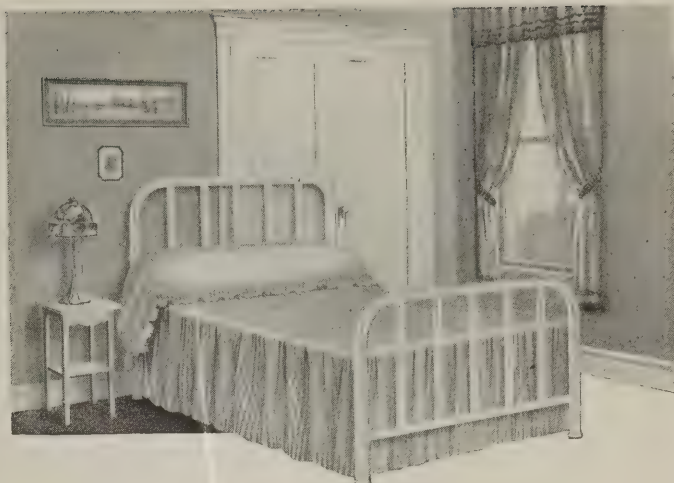
Q The most useful article is that which can be applied in the most forms. The Fain "FOLD-AWAY" Breakfast Room serves its purpose as admirably in the dining or living room, in the kitchen or on the porch. And it may either be built into the wall or used as a cabinet.

Truly, the house of today is incomplete without the Breakfast Room and this folding innovation has met with such tremendous favor because of its compactness, its low price, its ease of installation and operation and the sturdiness of its construction. In old or new homes, in apartments or in homes that are being converted into apartments, the Fain "Fold-Away" Breakfast Room is a unit that offers the utmost in utility and economy.

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WHEN you lose a home building job, isn't it generally because your estimated cost of the house (with the number of rooms wanted by Mr. and Mrs. Prospective Home Builder) was too much for their pocketbook?

Now you can land these jobs, by showing Mr. and Mrs. Prospect how they can have the convenience of additional rooms *without the usual additional cost*: how they can have the convenience of a nursery, or sewing room, or den, or library, or music room, or any other of the one or two rooms which people always want, but never seem to be able to afford, by installing Concealed Beds.

How you can make Concealed Beds work for you in landing jobs which you now lose, and in selling the buildings which you put up on a speculative basis, is told plainly and truthfully in our famous "Landing the Job" folder, the story of how an Indiana contractor recommended Concealed Beds, and landed the job which he would otherwise have lost.

This story has helped other contractors get business—it will help you. The folder will be sent free, if you will write us today.

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The Concealed Bed (Holmes roller type) shown here can be easily rolled from its closet to any part of the house. It has a patented locking device that prevents the bed folding when it is occupied—no side wings are necessary. It has full standard coil springs, the corners are protected so as not to mar the furniture or woodwork, and it has large wood rollers which are guaranteed not to scratch the finest finished floors. Ask for catalog when you write for the "Landing the Job" folder.

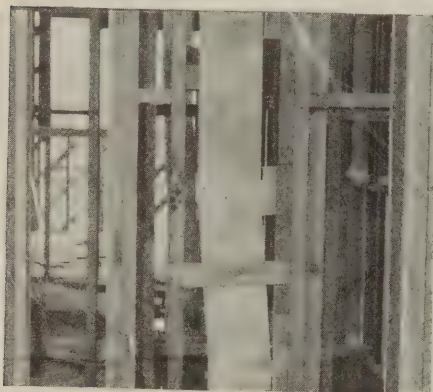


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On the Job in Hollywood, Cal.

Bends in Concrete Vent Pipe

WHERE concrete vent pipe is used it sometimes becomes necessary to make an angle in the pipe in order to avoid an obstruction. This is best done, as illus-



Blocks hold this vent solidly at the bend

trated here, showing the method used by a Hollywood, California, contractor.

The end of the pipe is chipped to the required angle and then blocked in place between the partition studs. The blocks

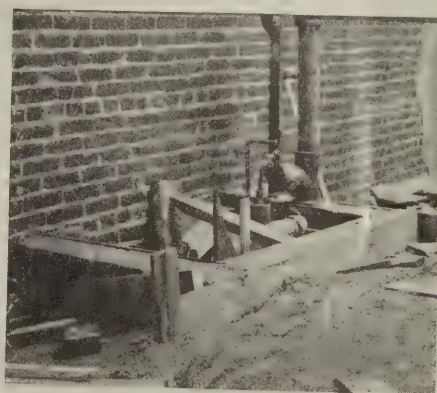
should be tapered to fit the angle to which the pipe is bent. This allows the pipe to be slanted between the stud and the blocks hold it firmly in place.

No Interruption Here

HERE is a method for building a scaffold without blocking the driveway which it spans. The illustration, made on a job being done by Ley Brothers in Hollywood, California, is self-explanatory.

Foundation for Toilet Partition

THERE will be no leaks in this partition installed by A. W. Potter, contractor of Hollywood, California. A concrete foundation has been installed as a base for the partition and the top of the foundation will come above the cement floor which will be installed later. A drain in the floor will connect to the sewer outlet in order to lead off any water which may accumulate. A few bolts set in the concrete will furnish a good means of tying the partition to the base.



There will be no leaks here

Formwork for Round Concrete Columns

THIS job called for round concrete columns, cast in place, and it may be interesting to see what kind of forms were used. For the length of the column, 2x2's were set vertically and held by yokes as shown. The yokes are made in two pieces and held together with cleats. When it is time to take down the form, the cleats are ripped off the yokes, the yokes taken down and then the long pieces of 2x2 removed, a simple process.

A. B. Crist of Hollywood, California.

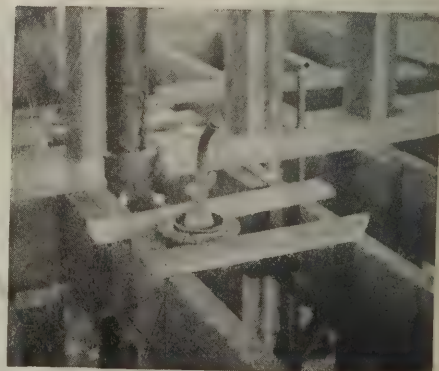


The collars hold the long pieces together

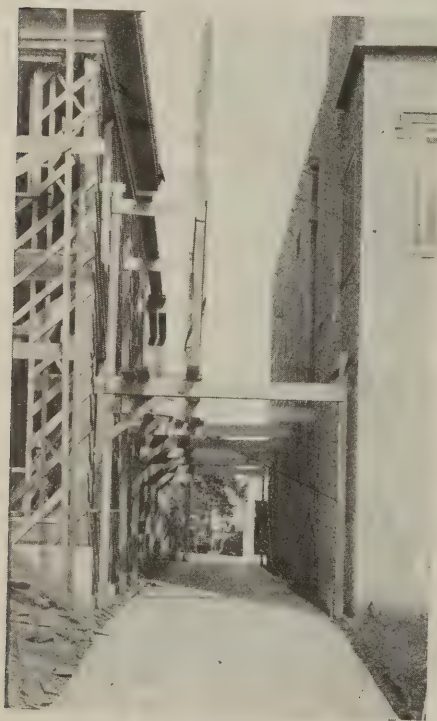
was the builder on whose job this illustration was made.

Hanging Soil Pipe

IN this case, the soil stacks were erected before the floor was in place. Since the elbow shown in the foreground was laid parallel to the joists, it could not be supported on them; hence two short cleats were set across the joist to catch the lip at the end of the elbow and thus furnish the required support until a more permanent method of holding it could be installed.



Two cleats hold the ends of this waste pipe



This scaffold allows the machines to go through

Attractive, Strong and Indestructible



STRONG, sturdy, indestructible—GRIFFIN Door Stops are drawn from one piece of cold rolled steel. They are seamless and without sharp corners or edges to catch clothing or tear dust cloths. A metallic disc "knurled" into position, holds the solid rubber bumper firmly in place. They are made in all of the GRIFFIN Hardware Finishes, harmonizing with interior appointments of modern homes or buildings.

GRIFFIN *Pressed Steel* DOOR STOP

The remarkable strength in these one piece, pressed steel Door Stops gives them unlimited endurance. Through long years of constant abuse and banging, the rubber bumper stays right in place.

Fastened with three round head screws that are wrapped and packed with each Door Stop.



GRIFFIN MANUFACTURING CO.

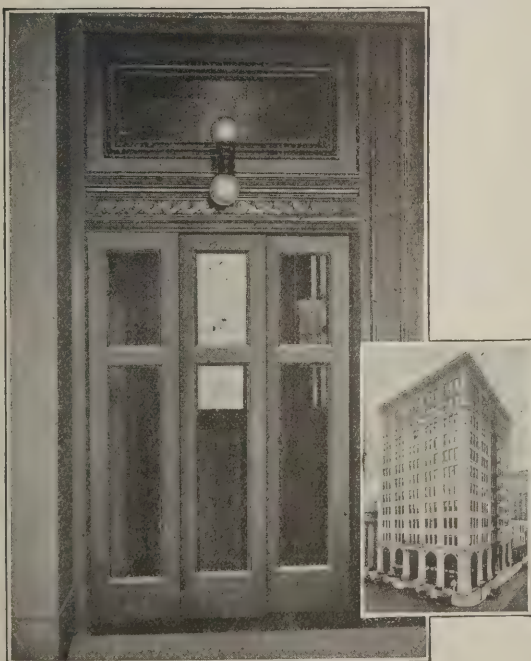
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It's our first elevator door installation and has been in continuous operation since 1906. Many larger installations have followed it; methods of construction have been materially developed and improved; but through it all we can point with pride to the first fruits of our toil because it possessed that element of distinction which is only achieved through an earnest desire to produce the best in a given piece of work. That is still our motive force and Dahlstrom Elevator Inclosures today possess that same element of distinction as in days gone by.

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Kinks from the Job and Office

By V. L. SHERMAN

A Handy Pull Bar

WE have at hand a letter from D. V. H., the Nebraska contributor containing two kinks which refer to Figs. 1 and 2. Fig. 1 shows a pull bar acting on the principle of the crutch and related to escape-ment in what is called kinematics. Of course the bar is merely a lever, but in attaching the hinge you place a limit on the stroke and operate at regular intervals.

"A friend uses this arrangement in the shop or other buildings when a heavy load is to be removed forward or backward a short ways. It consists of a hickory pole slightly more than 2 inches in diameter and about 6 feet long. A long hinge is attached at the lower end with the free end pointed and sharpened. The pole has a sharpened bolt driven into the lower end.

"The object to be pulled (such as a loaded wagon) is attached with a rope just above the hinge and the pole moved forward until the hinge straightens. The

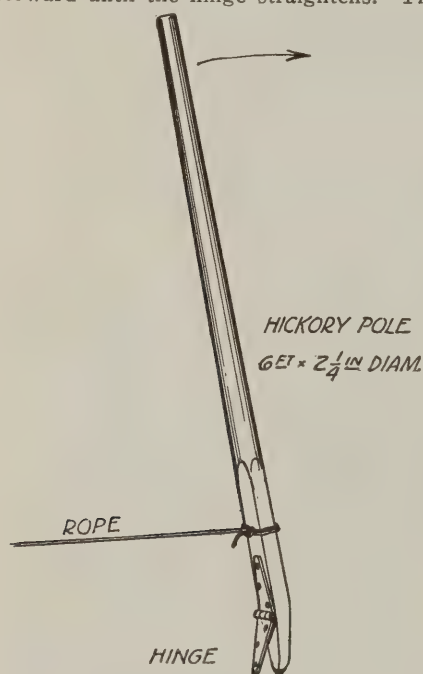


Fig. 1—Hickory pull bar worked on the crutch principle

pole is then moved backward on the hinge and stepped forward again for another pull. Each stroke nets a movement of about 5 inches with a leverage of about 5 to 1."

An Emergency Hot Water Heater

THE second kink from D. V. H. (Fig. 2) is an emergency heater which seems to partake of the flash boiler. There is

plenty of heat in one spot and if the circulation isn't good you are likely to find it out.

"Fig. 2 shows how a neighbor heats water for the bath during summer months when there is no fire in the furnace. A heavy strip of sheet iron is bent to form a part cone about 6 inches in diameter

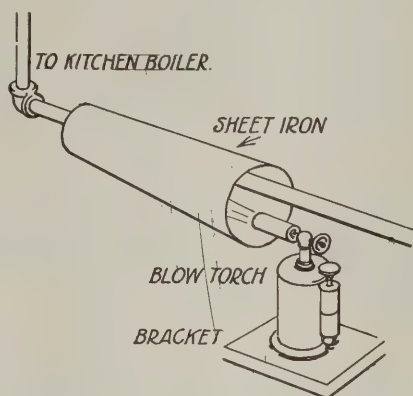


Fig. 2—Emergency heating device

and 3 feet long. This is placed over the return pipe from the furnace. A small bracket is placed below at one end for a gasoline blow torch. The flame from the torch shoots into the sleeve and the water in the range boiler is quickly heated. Ordinarily thirty minutes use of the torch will heat the boiler of water.

"To make it more efficient the sheet iron can be lagged, though both ends should be left open to permit an even flow of heat."

Overburned Lime Is Cause of "Popping" in Plaster

LIME which has been overburned or which has been burned during hydration is the cause of popping in plaster, tests made at the Bureau of Standards have shown. In this type of failure small particles appear to expand and push themselves out of the plaster, leaving tiny holes. In extreme cases these holes may be sufficiently large or numerous to be unsightly. It has been shown that popping will not be serious if the lime is ground fine enough to pass a No. 50 sieve, as in that case the lime will be completely hydrated during the mixing and application, or else the particles of defective lime will be too small to cause noticeable holes.

These tests were made in co-operation with the National Lime Association, the Contracting Plasterers Association and the International Plasterers Union. It was found that, with the possible exception of sand, coarse impurities other than overburned lime did not cause popping.

Repairing Damaged Roof Slates

THE following from L. S. B. refers to roofing repairs in connection with Fig. 3. "Every carpenter should be fairly well versed in kinks for laying slates. At least he should know their repair as an obligation to his regular customers.

"In removing the shingle a 'ripper' can be made by a blacksmith using a leaf from an old vehicle spring, 18 to 20 inches long. This is already flat tapered and may be sharpened to cut a nail. The 'ripper' shown has a crescent formed at one end and has cutting edges, forward and back, to hook around a nail or cut straight forward. The opposite end is formed to a short stub for knocking the nail back and out after severing.

"Fig. 3 indicates a section of damaged roofing where two shingles have been removed with the ripper. The following descriptions give two methods for their safe replacement:

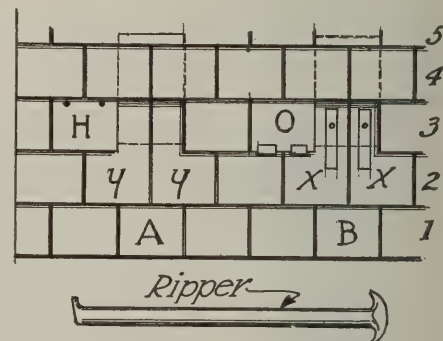
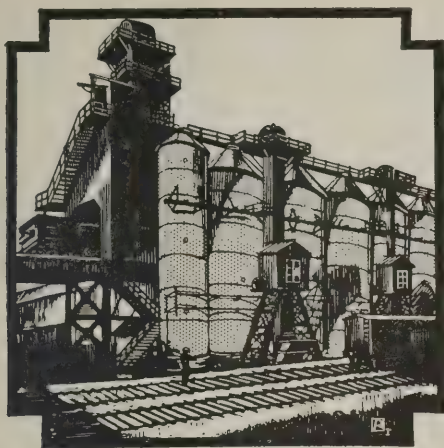


Fig. 3—Diagram for slate roof repairs

"The dotted line on shingles y, y indicate the upper edge of the shingle A in the 1st course. In placing the new shingle over the y, y space it is pushed up or tapped up under the shingles in the 4th course and on 3 inches to the dotted line under the 5th course. Then it is nailed directly through the top of the shingle close up to the butts of the 4th course as shown on shingle H, using waterproof headed nails and colored putty.

"For a counter sunk hole to nail through lay a shingle over space to cover, scratch line at the edge of the 4th row, punch the hole with a quick tap on a nail from the under or smoother side.

"The second, or old English, method of securing slates is shown in Fig. 3 at slates x, x. Here, strips of metal (copper preferred) are nailed as indicated. After insertion the strips are formed over the butt.



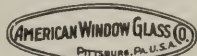
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(This is the first of a series of advertisements describing the production of "The BEST Glass." Watch for those which are to follow.)

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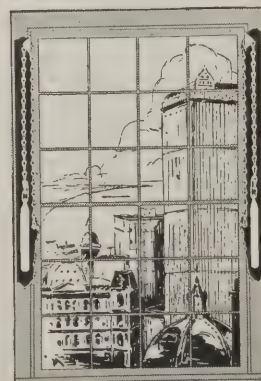
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Sectional view showing installation of Hodell Sash Chain

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Novel Beam Construction

FIG. 4 is submitted by N. N., of Kansas City, Missouri, and has to do with beam construction. "Instead of plaster 'Celotex' was used. This was decorated after all other work had been completed, but before the protecting paper had been removed. The partitions were made as

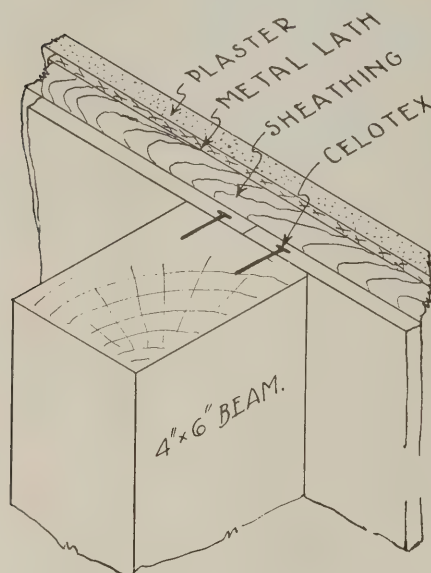


Fig. 4—Novel beam construction

shown in the detail. The beams after being dressed and stained were covered with a thickness of building paper before the 'Celotex' was applied. The sizes of the beams used were 6x6 inches in the corners and 4x6 inches in the straight wall.

"After the entire room had been completed the building paper was cut away, close to the 'Celotex,' leaving the woodwork clean, altho other work had been going on in the room. This gave the room a pleasing appearance, as the 'Celotex' seemed to have been fitted into the spaces between the beams instead of nailed behind them."

Protection at Gable End of Roof

L. S. B., of Peoria, Illinois, who contributed generously in former times, returns with a couple of kinks which he authorizes as an old timer. The first is shown in Fig. 3 which is on a preceding page, due to the fact that we play a sort of hide-and-seek game with the advertising pages and like eating hot biscuit and molasses, it's hard to make the durned thing come out even. Fig. 5 shows the pattern and the fold for a gable end protector. The letter follows: "Occasionally annoyance is created by rain water running over the gable of a house and especially the gable end of a flat seamed tin roof covering a veranda having no end gutter. The water frequently creeps over the cornice moulding of such a veranda,

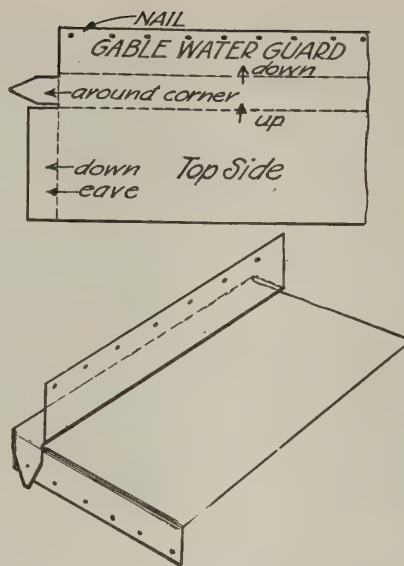


Fig. 5—Gable water guard, pattern and folded

streaking and discoloring it. The contractor should insist that the roofer form a neat guard from the material used for the roof. On an ordinary roof the raised height may be 1 inch. The guard is made by cutting tin strips 10 inches wide the length of the gable. This strip is laid near the gable, soldered side up, with seams pointing to the eave. The folds allow sufficient metal as shown in the lower sketch, Fig. 5.

"This method is much less trouble than tinning over a wood strip (as I have frequently seen done). In fact, if the tinner is not prepared with a roll of tin, or makes strips on the job, he cannot cover wood and solder the perpendicular inside seams with any degree of safety. After the first hard freeze and thaw nothing but the pitch of the roof will save every seam along this line from leakage."

A Homemade Centrolinead

HERE is a drafting room kink submitted by D. C., of Claremont, New Hampshire, and refers to Fig. 6. "I am sending a practical but inexpensive centrolinead for draftsmen's use. I have found it accurate enough for all ordinary office

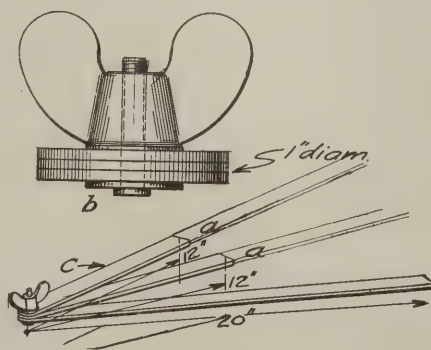


Fig. 6—A simple centrolinead made from reglets

work and believe it will serve a good purpose in your columns. For perspective drawings some such instrument is very often necessary.

"Get three reglets, 1/16 inch thick, from some printing plant. If necessary sandpaper them until the edges are smooth. Leave one of them about full length; 20 inches for the long and 12 inches for the two shorter arms are convenient for ordinary work. Bore the ends for a brass thumb screw and washers as shown, and assemble with the short arms up.

"In using place two strong pins some 6 or 8 inches apart and equally distant from the edge of the sheet. Open the short arms to a rather wide angle. Let them bear against the two pins with the long arm resting across the sketch to be made. Locate your horizon line and draw in lightly. Adjust the long arm to coincide with the horizon line. Swing this arm with the two shorter arms still bearing against the pins and see if your perspective vanishes too quickly. If so, open the guide arms to a wider angle, or *vice versa*. A few trial adjustments will give the desired results. Of course a centrolinead is only used when the vanishing point is inconveniently distant from the figure to be drawn."

Deformed Nails for Narrow Forms

L. L. M., of Seattle, believes in training his nails to sit up so he may pat them on the head more easily. Not a bad idea at all. We call attention to Fig. 7 and his letter:

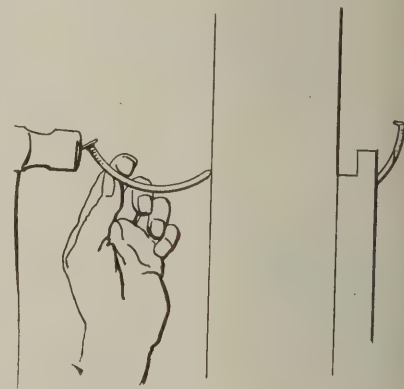
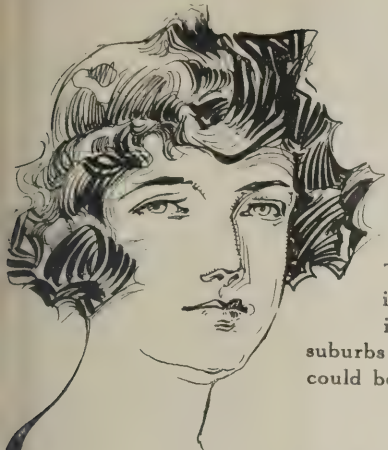


Fig. 7—Bending nail before spiking

"I have noticed quite frequently that carpenters have difficulty nailing the boards on the inside wall when building forms. Many of them, when using tongue and groove or shiplap, overcome the difficulty by nailing the top of the board. This is good when the spacing between form walls is 6 inches or more. If it is less, I hold the nail against the stud and give it a light tap with the hammer, bending it as in Fig. 7, and drive it into the board as shown."



for Cooking She Wants Gas

There is no question about the efficiency of gas for cooking and heating water. It is the quickest, most convenient method and when a woman has used it for years, it seems indispensable for her daily work in the kitchen. Many homes in the suburbs and districts just beyond the city or village limits that are not reached by city gas could be sold easily if a

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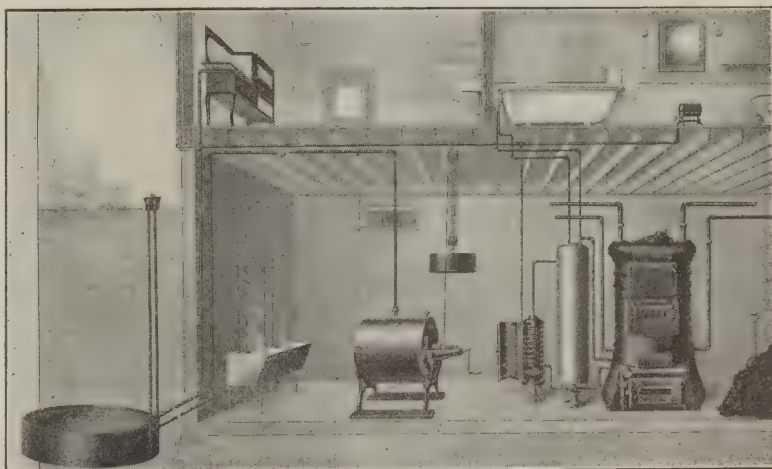
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Brightening a Dark Corner

THE contributions this month contained an unsightly lot from two or three who showed more generosity than discretion. Plans all the way from filling the fore peak of a prancing tractor with concrete to building houses over Christmas trees. After shuffling over about thirty of these we picked up a magazine to ease our mind. It happened to be a woman's magazine and by bad fortune we opened to a page showing a children's sandpile box properly framed with seats at the sides just like a table. Did you ever see a youngster that would stay outside of the sand pile? So we dropped the magazine and resumed.

The next letter was this and its idea put us in mind of a big window cut into a stair hall where we used to sit and watch up the road for the gang to go swimming.

"A rather roomy space under a stairway in an old house was found to be of little value because it was a dark corner. To put a small window in the outside wall was possible but difficult to plan on account of the stairs. After some study a good sized triangular opening was cut as in Fig. 8, and a casement window was fitted opening in the middle. This flooded the dark corner with light, adding greatly to the ventilation of the space and the room. The cosy corner was now fitted with a couch and a small desk. In a pinch a member of the family can sleep there.

"The treatment of the outside of the triangular opening is interesting. A tiny roof projection of triangular form was built with properly stained shingles. A climbing vine of quick growth was trained up a narrow trellis on either side, and the entire effect really added to the appearance of the house."



Fig. 8—Triangular light for dark corner under stairs

A Knock and a Boost

FROM time to time letters come admonishing contractors in the matter of flue sizes, especially for fireplaces. We hesitate to publish such letters generally because so many features must be considered in connection with the flue. However,

we have here a note from L. K. L., of Fish Creek, Wisconsin, together with a photograph of a house showing the stone base and brick chimney as built. This is reproduced in Fig. 10.

In parenthesis we may say that photographs are sometimes copied for reproduction if not clear enough for publication. This is not the art department, and ideas score higher than pictures. We are "doing our stuff" up in the Wisconsin woods this summer, and a little extra time spent on "kinks" doesn't mean much anyway.

"A six-inch flue may be undreamed of by some builders, but it isn't altogether uncommon in this neighborhood in the newer chimneys. The fireplace is field-

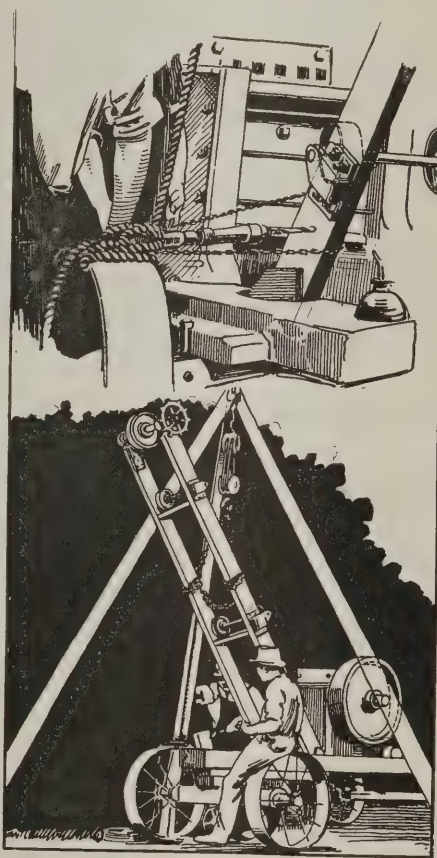


Fig. 9—Converting a stone crusher and frame into a belt conveyor

stone well laid up and handsome from the inside. The appearance is rather apologetic from the outside with the stack like appearance and flat shoulders. If it were not for the height of the chimney the living room would often fill with smoke. There are a number of such fireplaces and chimneys hereabouts where some of the masons forget the curling of the air currents in chimneys. A smaller sectioned flue of the round type would give better results.

"Perhaps the town has better mechanics than masons, for one contractor is converting a rock crusher and frame into a belt conveyor, bucket type. The hefty wheel will give a steady moment to the

drive. The conveyor is built of the two members as shown in the lower sketch in Fig. 6. These are bolted together with two cross members, with a pivoted shaft at the lower end carrying an old sprocket and a pulley. The free end also carries a

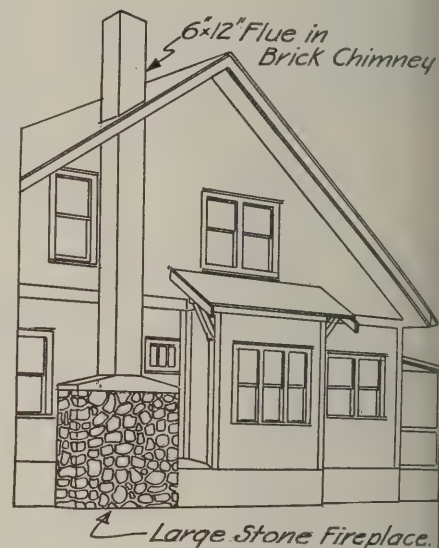


Fig. 10—Sample of small flue. Redrawn from a photograph

shaft and pulley, and the mate to the lower sprocket. Two intermediate shafts with pairs of smaller pulleys are mounted just above the cross members in bearings refitted from an old job, but which carry on as well as though designed for this one. The upper part of Fig. 9 shows the drilling of the frame with an ordinary brace and light tackle. The job is neat and strong."

The Reason for Wood Preservatives

THE editor of this department wishes to add one or two more paragraphs to close the pages. It is Saturday, June 29, and following a stormy morning we have read of windstorms throughout Iowa and Illinois. Just about quitting time, with a small gale blowing, there was a tremendous crash across the way. A 60 or 70 foot ex-elm standing back of some shops had fallen across the sidewalk and tangled up traffic and transmission. The trunk had broken at the butt and fallen like a stack. The collapse of that ancient tree suggested the danger of collapse in thousands of other lifeless trunks embodied in structures everywhere.

As the cells of the wood deteriorate, become punky, decay or are eaten away, strength declines, and its safety cannot be determined. Whether the timber is under or above ground we can't determine its value. We wish to commend the work in offsetting these conditions by the American Wood-Preservers' Association, and to call attention to their little publication, the *Wood Preversing News*.

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Please send set of large samples showing WEATHERBEST colors, literature showing lower cost of WEATHERBEST Stained Shingle Sidewalls and book on WEATHERBEST Thatched Effect Roof Construction.

For the Builders' Library



"Light and Work," by M. Luckiesh, is a book that traces the influence of light in its relation to the evolution and adaption of mankind. The first portion of the book deals with natural light, the remainder with artificial light, all of which leads up to the economic discussions which seek to prove that artificial light has within recent years become a formidable competitor of daylight. The scope of the book is wide, summarizing the results of recent important experiments and investigations relating to the ideal quality and quantity of light to be desired, and the influence of color, intensity, etc. The book should prove a valuable and practical assistant to lighting specialists, employers, architects, builders and others interested in problems of lighting. There are 312 pages, 6x9, with many charts and illustrations, bound in cloth; the price is \$4. Published by D. Van Nostrand Company, 8 Warren Street, New York.

"Steel and Timber Structures," edited by George A. Hool and W. S. Kinne, assisted by a staff of fifteen specialists, is one of a series of six related volumes intended to provide a reference work covering thoroughly the design and construction of modern engineering structures. Each volume is complete in itself without reference to others in the series. The present volume deals with buildings, roof trusses, short-span steel bridges, timber bridges and trestles, steel tanks, chimneys, structural steel fabrication, erection and estimating and data on various materials. The reputation of the author is a sufficient voucher for the practical value of the book. Published by McGraw Hill Book Company, Inc., 370 Seventh Avenue, New York. There are 695 pages, 6x9, with many illustrations. Bound in cloth; the price is \$6.

"Architectural Details," by Louis Rouillon and Charles G. Ramsey, is an outgrowth of the authors' experience as Director and Instructor in Architectural Drafting, respectively, in Mechanics Institute, New York. The book is designed to fill a need for an "adequate textbook for the use of these students. * * * It is also designed to meet a demand from architects, builders and homemakers for definite and comprehensive information upon building construction details." There are 131 pages, 11 by 8, mostly plates. Published by John Wiley and Sons, Inc., New York. Bound in cloth; the price is \$3.

"Estimating Building Costs and Appraising Buildings," by Frank E. Barnes — In addition to estimating data covering the costs of the so-called "finished" portions of a building, this book recognizes that an estimator should be thoroughly familiar with methods of installing the various kinds of building material and with the design and erection of falsework and other temporary construction. Therefore, detailed descriptions are given of the installations of many kinds of material, and a limited amount of designing data has been included. In an acknowledgment, the author refers to many experts, manufacturers, valuation engineers and general contractors who aided in collecting the data and information. The book has 310 pages, 4½ by 7, is illustrated, and flexibly bound. Published by McGraw-Hill Book Company, 370 Seventh Avenue, New York. Price, \$5.

"Gothic Ornaments" is a reprint of a selected portion of the voluminous collection of plates originally prepared by Augustus Pugin from examples of Gothic detail selected by him "from various ancient buildings in England and France." Although first published almost a hundred years ago, "Pugin" still remains without a peer as a reference work for workers and designers of Gothic details. The new edition contains ninety-two plate pages, and although this is a considerable abridgment of the original work, the revision has produced a thoroughly practical reference book at a comparatively moderate price when compared with the present day cost of the original work. Published by C. W. Kuehny, 3558 Bosworth Road, Cleveland, Ohio. Size 8½ by 11 inches, bound in cloth, the price is \$7.50.

"The Art of Lettering," by Carl Lars Svensen, is a book for the student of lettering. It differs from most books of this sort, however, in that both the mechanics and the art of lettering are treated. That is, the author not only shows us how to make scores of different styles of letters, but, by many examples of grouping and composition, he also shows us how and when to use them. Besides pen letters there are examples of stone and bronze inscriptions. The book should prove valuable to anyone who has occasion to use hand lettering. There are 136 pages, 8 by 10½, 96 of which are full page plates. Bound in cloth, the price is \$3.50. Published by D. Van Nostrand Company, 8 Warren Street, New York City.

"Elementary Studies in House Painting," by F. N. Vanderwalker, is a text book designed for use in practical trade schools where boys and young men are trained to be journeymen house painters and decorators. It is a simple, orderly, progressive book, "taking nothing for granted and assuming that the student knows not even the most simple detail. The whole object in this writing is to assist in the making of a thoroughly trained, capable and reliable journeyman." The book has been prepared by a committee of experts, men who are actually engaged in the business of painting and who have been trained in the trade. Then, too, manufacturers and other interested parties have contributed much valuable information based on the findings of their research departments backed up by practical experience. Its practical worth and the soundness of its advice should therefore be unquestioned. As a text book for use in its field, this work should rank supreme. There are 294 pages, 6x9, illustrated, and cloth bound. Produced under the direction of the International Association of Master House Painters and Decorators of the United States and Canada.

"Home Owner's Handbook," by Austin C. Lescarboua, managing editor of The Scientific American, is one of those books designed for the information of the general reader who is interested in the "how and why" of building construction. The range of subjects treated is comprehensive, and even the experienced builder will glean much practical knowledge from its pages. In addition to construction, there are chapters on legal phases, repair, interior decoration, household equipment and laying out and planting grounds. There are 494 pages, 5x7, illustrated, cloth bound. The price is \$2.65. Published by Munn and Company, 233 Broadway, New York.

"The Book of Gardens and Gardening," edited by Reginald T. Townsend, is a reprint of selected articles culled from the pages of back numbers of "Country Life." There are descriptions of back-yard gardens as well as the elaborate ones of great country estates both here and abroad. The text contains much practical advice, and is generously supplemented by reproductions of photographs and sketches. Although this book is intended for the general reader, builders and architects should find its contents interesting. 106 pages, 10 by 13, with many illustrations, bound in boards. Published by Doubleday, Page and Company, Garden City, New York. Price, \$2.50.

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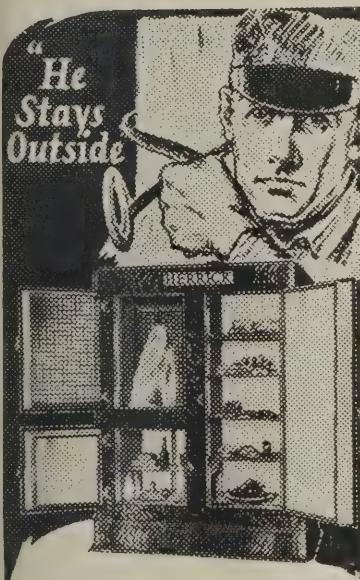


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A New Steel Window

AMONG recent announcements of interest to lumber and building supply dealers is that of a new Fenestra steel window for small buildings, such as private garages, barns, filling stations, small shops, rear of stores, high ends of basements and other installations calling for a moderately priced standardized steel window.



The new Fenestra steel window as used in private garages

Retail sales, according to the manufacturers, the Detroit Steel Products Company, Detroit, Michigan, will be handled exclusively through dealers in the same manner as those of a companion product, the Fenestra basement window. In addition to selling brighter and more usable basements, Fenestra dealers will now sell more light and ventilation for small semi-industrial buildings—especially residential garages, of which there is a large and ever increasing number.

From the standpoint of design, this new window possesses all of the advantages of steel window construction. Besides more light and ventilation (the sash or ventilator forms the entire upper half of the window) it is opened and closed with ease, is absolutely fireproof and affords more than the customary amount of protection against intrusion.

It is manufactured in one standard size, for an opening, 3 feet 4½ inches wide and 3 feet 7½ inches high over all, and is sold as a complete unit, including frame, sash, cam latch, stay-bar and a priming coat of paint. Over all dimensions indicate clear openings, with ½-inch allowed all around for proper anchorage to the building.

The sash is held open by means of a notched stay-bar at a 20, 40 or 60 degree opening. The design of the sash and the length of the stay-bar cause very little projection into the building even when the window is wide open. Weathering, at all points between the frame and sash, is of the double flat contact type which insures adequate protection under all weather conditions.

It is adapted to all types of construction—brick, tile, concrete block, poured concrete and frame, and in each case permits an easy, economical installation. Over all dimensions make it particularly well suited to concrete block construction. It is two and a half blocks wide and six blocks high, with a stone or cement sill.

Fireplaces Both Decorative and Practical

COLONIAL Fireplaces, manufactured by the Colonial Fireplace Company, 4603 Roosevelt Road, Chicago, are designed to meet two needs, the decorative and the practical. Too often fireplaces are items of decoration only, never meant for use, though it has long been an Anglo-Saxon axiom that the center of the home is the hearth. The majority of house



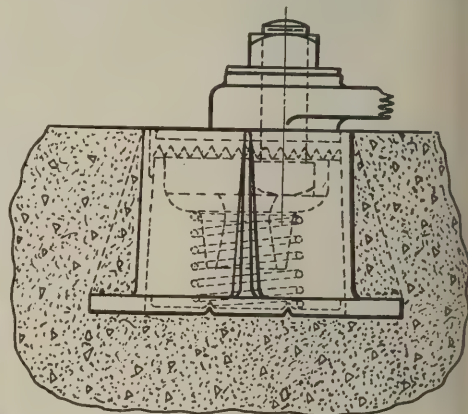
A standard design fireplace by the Colonial Fireplace Company

plans nowadays show fireplaces. The important thing, according to the Colonial Fireplace Company, is to get the right kind of a fireplace in the house. They manufacture a wide range in variety, design and price, and, in addition, provide a damper which, they claim, is the only damper made which provides for expansion and contraction within itself.

They publish an interesting leaflet showing designs and construction details which contains valuable information for contractors, architects and builders and which may be had upon request.

Adjustable Bolt Insert for Concrete

AN ADJUSTABLE bolt insert for fastening machinery and other equipment to cement floors, building walls, or ceilings, is a new addition to the Westinghouse line. The adjustable construction of this particular bolt divorces it from the disadvantage usually attending the use of bolts embedded directly in concrete. The bolt-carrier of this new insert



Sectional view showing the function of the adjustable bolt insert

is T-slotted to take the head of a standard machine bolt, and is of sufficient length to permit a ½-inch movement of a bolt from the center, thus allowing adjustment of the bolt position after the concrete has set. The housing and carrier have teeth which mesh to prevent any change in position after adjustment, and before the bolt has been tightened. The mesh is kept in place by a sheet metal plate at the back of the housing. Inquiries may be directed to the Westinghouse Electric and Manufacturing Company, East Pittsburgh.

The "Red Devil" Line

THE eleventh edition of their catalog has just been issued by Smith and Hemenway Company, Incorporated, Irvington, New Jersey, manufacturers of tools and hardware specialties, such as glass cutters, trimmers, box openers, glaziers' tools, nail pullers, pliers, nippers, star drills, wrenches, vises, washers, spur climbers, water heads, etc. Two hundred pages are devoted to a display of and complete information about the "Red Devil" line. This book, 4 by 6¾ inches in size, is completely indexed and can be had upon request from the company.

Flooring Facts That Will Bring You Business



Everlasbestos Floor in Factory Lunchroom

An Everlasbestos Floor is the most sensible floor for factory offices, lunch rooms, rest rooms; stores, schools, churches, clubs; kitchens, bathrooms and enclosed porches of homes.

It will stand up against hard service for years without showing wear.

Is the most inexpensive of permanent floors.

The most sanitary—no dirt-collecting seams—no dust—easy to clean.

It presents a fine, attractive appearance when laid; is comfortable and fire-resisting.



Laid like cement $\frac{3}{4}$ " to $\frac{1}{2}$ " thick. Hardens in 24 hours. Can be laid in one piece with cove base or wainscot. Bonds with any foundation. Good man can lay 200 sq. ft. per day. Valuable Instruction Manual free with order. Colors Red, Buff, Gray. Shipped in bags ready for use. Shipping weight $4\frac{1}{2}$ lbs. per sq. ft.

Steady Business for Masons

Goods contracts are easy to secure with Everlasbestos Floors in new or old buildings. Each job is a recommendation for many others.

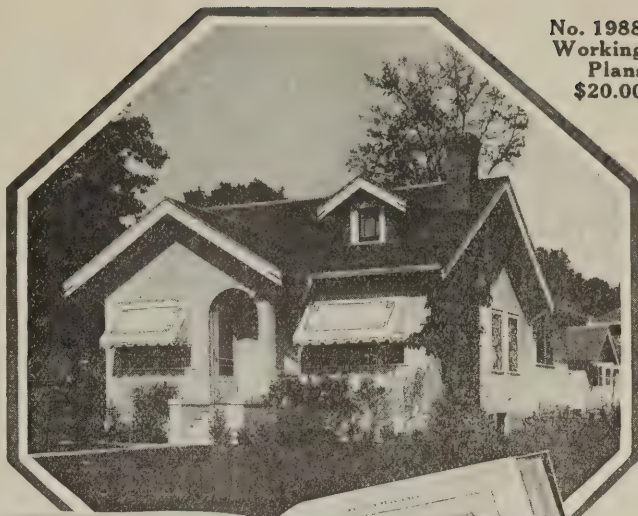
The work is indoor, year-round, steady and profitable.

Readily laid by any good mason, bonds with any foundation, sets over night—can be rounded onto wainscoting if desired—choice of three colors.

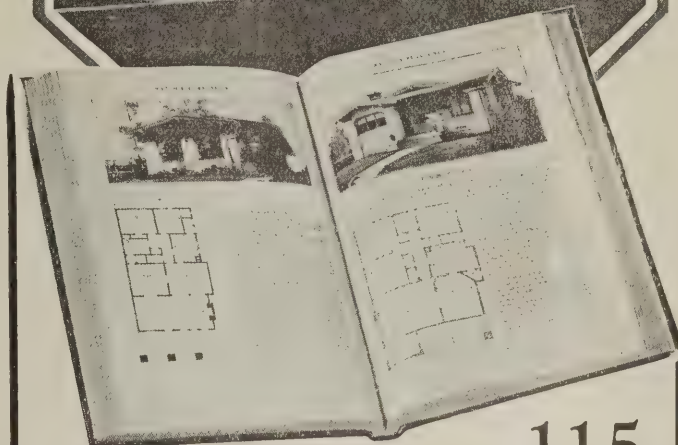
Satisfaction Assured

A good job assured by superior ingredients used and perfected Manual of Instructions for laying. Write for description and sample. Everlasbestos Flooring Co., Dept. N, 95 North St., Rochester, N.Y.

Everlasbestos Flooring



No. 1988
Working
Plans
\$20.00



115 Approved and Tested Bungalow Plans

CONTRACTORS!

This big 144-page book contains 115 plans of artistic bungalows—from the small 3-room bungalow of moderate cost, to the large 7-room bungalow in brick, frame or stucco. Each plan has been tested—a beautiful photo and floor plan of each design are shown. There are bungalows for every taste and for every pocketbook. This book will aid you in interesting new customers.

Build from Tested Plans

The plans offered in this valuable book have been "tested"—homes have been built from them and proven accurate in every detail. Contractors and carpenters can use Keith's plans with the fullest confidence that every detail has been proven by practice, that possibilities for costly mistakes have been eliminated, and that they will make possible the maximum economy of materials and labor, thereby helping

the builder to obtain contracts. Building from Keith's well thought out plans saves you time, worry and money. Special rates on blue prints offered to contractors.

Keith's Magazine

This magazine, nationally known for 25 years, contains in each issue valuable ideas and suggestions for building, decorating and furnishing homes of every character. New developments in construction methods, new styles of architecture, new things in interior decoration are pictured, described and discussed in detail. Single copies, news-stands, 25c.

Special Offer

We will send you this splendid Bungalow Plan Book and enter your subscription to Keith's Magazine for one year all for \$2.50, or, sent C.O.D. See coupon. Plan Book and Two Years' subscription, \$3.75.

KEITH CORPORATION, Minneapolis, Minn.

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Send me at once a copy of Keith's Bungalow Plan Book and Keith's Magazine for one year for which I agree to pay postman \$2.50 plus a few cents postage on delivery of book. Money back if not satisfied.

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Address.....

City..... State.....

"The Fastest Fitted Lock in the World"

PRACTICALLY every contractor and builder has wished at some time or another that some means could be devised to eliminate the troublesome mortising and gouging necessary in installing the ordinary lock set. The Dexter Lock and Latch have been perfected by the National Brass Company of Grand Rapids, Michigan, to do away with this old annoyance.

Dexter Locks and Latches are tubular in form and can be installed simply by boring four holes—a process which takes but a few minutes. The average workman can install four complete sets in an hour. The tremendous saving in time and labor is obvious.

A further advantage obtainable with the Dexter set is that the lock can be placed at any desired height independent of the latch. Many people now favor placing the lock six inches or so above the latch because of the greater convenience this location affords.

The mechanism of the Dexter Lock set is simplicity itself. The latch is operated by a powerful compression spring which is practically indestructible and gives a much more positive action than the old type of flat spring which required so many incidental parts. The latch bolt and hub are made of cast brass which is easily three times as strong as cast iron.

The skeleton keys that easily open the ordinary lock set cannot operate the Dexter Lock—a feature which will make it doubly popular in apartment buildings and other places where extra security is desirable.

In view of the many advantages offered by this new latch set, it is not surprising that contractors throughout the country are rapidly adopting it as a standard installation.

New Heater Combines Convection and Radiation Methods

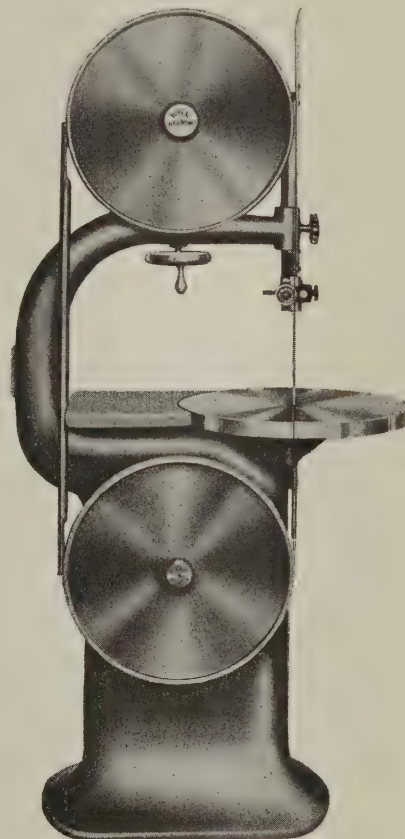
A NEW electric heater, known as the Solar Glow, suitable for use as a room heater and as an auxiliary heater in extremely cold climates has been recently placed on the market by the Westinghouse Electric and Manufacturing Company. The heater is a combination of both the convection and radiation type, for, in addition to heating through the utilization of air currents, radiation is effected from a buffed copper reflector placed around the heating element. This combines the uniform heating ability of the convection heater with the cheerfulness of the radiant type.

The Solar Glow heater has a cast iron frame, faced with statuary bronze. It is finished on the sides and back in antique

bronze so that it may be placed in any part of the room as well as inside a fireplace. The heating element, designed for operation on standard domestic circuits, consists of wire coils staggered in a one-piece porcelain unit and protected by a removable guard. The heat is regulated by a conveniently located switch, giving three different degrees of temperature control.

A New Band Saw Device

A NEW band saw device has been designed by The Porter-Cable Company. This is a two-speed arrangement for their 20-inch motor driven band saw, which, it is claimed, will practically double the usefulness of this type of saw, converting it into a dual ma-



Porter-Cable Company's 20-inch motor driven band saw

chine for use in both wood and light metal cutting. The motor is housed in the base, the drive mechanism runs in oil and is ball-bearing throughout, while all danger from belts or open gears has been eliminated.

This new arrangement is not an attachment, but is specified and built right into the machine. Band saws so designed are suitable for aluminum and brass cutting, for sawing hard rubber and fibre in scroll designs, and for all intricate cutting requiring accurate work. Full information concerning this practical new device may be secured by addressing The Porter-Cable Company, 1708 Salina Street, Syracuse, New York.

New Karol Book Shows Progress of Plumbing

PROGRESS in bathroom, kitchen and laundry equipment and plumbing supplies is strikingly shown in the new catalogs this year. Never before have they so well illustrated the luxury and the convenience that the American people enjoy.

This reflection is called forth by the new catalog of B. Karol and Sons Company of Chicago, just coming from the press. In addition to the beautiful quality equipment in the latest patterns for bathrooms of every size—built-in tubs, showers and lavatories that are the last word in construction and patterns—it presents some important new features. One is a new style mixing faucet for lavatories, sinks and laundry tubs. It insures the mixing of the water to any desired temperature.

The growth of B. Karol and Sons Company is one of the outstanding features of the history of Chicago business. This concern was founded thirty-five years ago by the late B. Karol, whose name is indelibly associated with the development of modern plumbing equipment. The business well exemplifies the steady extensions of trade radius by merit of product. The company occupies its own thoroughly modern office building at Kedzie and Polk streets.

On Oak Floors

PRACTICAL data on oak flooring, and how and where to use it, is given in a booklet published by the Oak Flooring Bureau, 1014 Ashland Block, Chicago, Illinois.

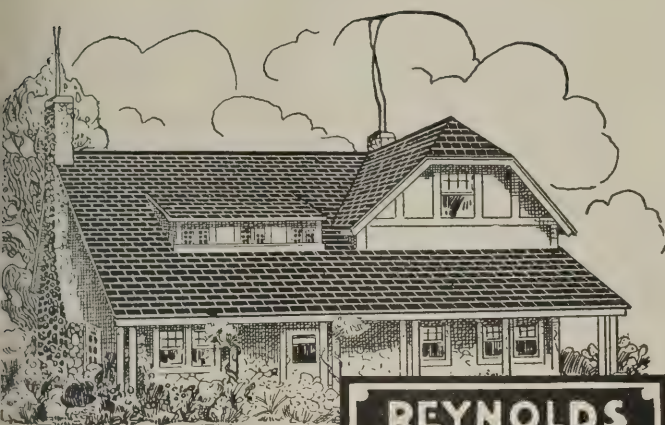
This booklet, 3½ by 6¼ inches in size, contains grading rules, data on standard thicknesses and widths, information on laying oak flooring, and the scraping, finishing, and proper care of oak floors. It is free.

Fourth Edition Concrete Dope Book

USERS of "The Concrete Dope Book" will be interested to learn that the fourth edition is now ready. In announcing it, the authors state:

"The selection of tables, figures and data has been made with extreme care, so that the information will be concise, understandable and useable. No effort has been made to delve into engineering problems, but instead we have confined ourselves to the contractor's every-day work."

The book is compiled and published by W. H. Stewart, Station "A," Waterloo, Iowa, and is sold for twenty-five cents a copy.



**REYNOLDS
SHINGLES**

Don't Neglect the Overhead

In any business, the man who fails to watch overhead is very liable to find supposed profits turned into losses at the end of the year.

In building or remodeling as well, the choice of the roof covering is just as important.

For nearly a quarter of a century, REYNOLDS SHINGLES AND ROOFING have provided a safe, durable, beautiful and economical overhead for every type of building.

Take up the question of overhead with your lumber dealer—he knows what we mean.

H. M. Reynolds Shingle Company
"Originator of the Asphalt Shingle"
 Grand Rapids, Michigan



Kosmortar is "prepared mortar." But prepared mortar is far from being Kosmortar. Specify by name—

Kosmortar,
 the Ideal Cement
 for Masonry.

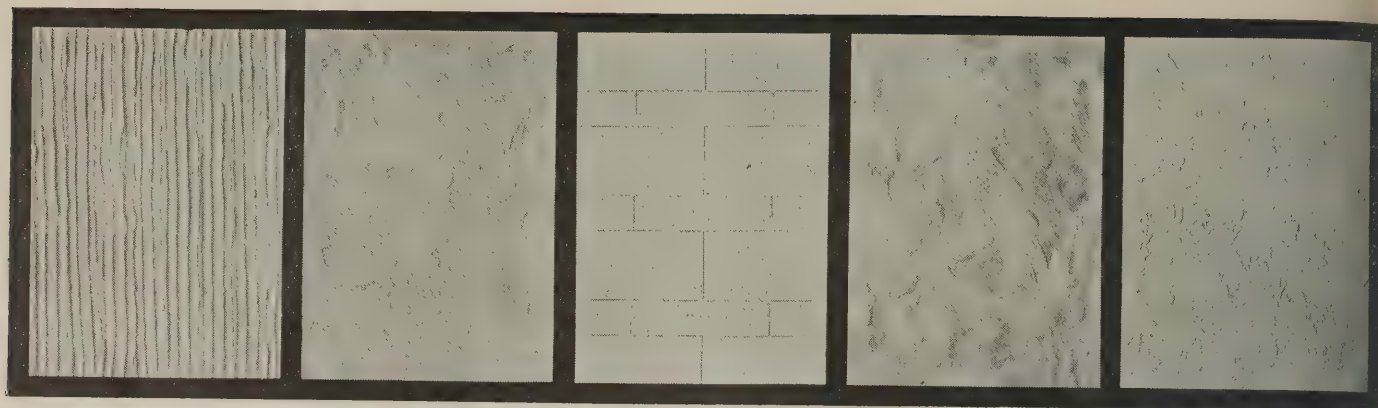
Ask Your Dealer
 or Write Us

Kosmos Portland Cement Co.
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Sales Office
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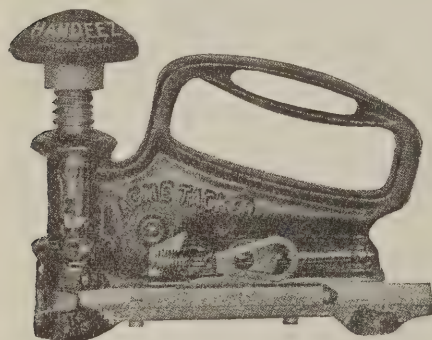




Different finishes obtainable on wallboard by using a new decorative gypsum product called "Textone"

Convenient Equipment for Making Screens

THE Markwell Company, 178 Franklin Street, New York, New York, are manufacturers of a particularly timely line of screen equipment. A clamping bench, built entirely of metal and amply braced and trussed, makes it possible to eliminate many of the difficulties formerly attendant on laying out different sizes of frames. Measuring, boring and dowelling may all be done while the material is in clamp, it is claimed, by means of this bench. A screen wire stretcher, which makes a convenient and quick device for stretching



Screen tacker made by the Markwell Company

wire screen, is also manufactured by the company. This device stretches the wire and holds it while tacking, and is operated entirely by foot, working faster and better than many home made devices now in use.

While stretched, the wire may be tacked with an Automatic Screen Tacker, also manufactured by The Markwell Company, who claim that it enables one, by a slight pressure of the hand, to drive a broad flat double pointed staple into hard or soft wood eight times faster than by the hammer and tack method. The last tool to complete this set is a molding and mitre cutter, which cuts both ends of a strip smooth in less time than it takes to drop it into a mitre box, and does it right every time, it is stated. This tool is also operated by foot, and its method of operation is extremely simple.

Further information may be secured from The Markwell Company.

Two New Gypsum Products

INTERESTING effects may be obtained on wallboard by using a new decorative material called "Textone", developed and produced by the United States Gypsum Company. It was designed originally for use with fireproof gypsum wallboard, but equally successful surfaces in tints, or in blended colors and in antique plaster effects, may be produced, the manufacturers assert, on any wallboard with Textone. Textured finishes, grained, stippled or mottled finishes, as well as stone, leather, fabric or bark effects, can be secured by using this dry powder, which is mixed with water at the job, and applied by brush in a single coat after the wall is sized. Spreading freely, it dries slowly enough to permit stippling and it is estimated that one pound of Textone covers about one and one-half square yards for medium stipple, while a pound of Textone size will suffice for approximately seventy-five square yards.

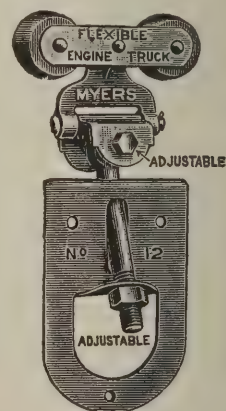
One-coat tinted effects are secured by the addition of pigment colors thinned in turpentine, or dry colors dissolved in water, added to Textone before application. Polychrome effects may be obtained with Textone Glaze, a special oil medium developed for use over a Textone foundation coat, to emphasize the texture. The glaze is tinted with pigments, ground in oil, or with japan.

"Gyp-Lap," an exterior sheathing of rigid sheets of pure gypsum encased in tough fibre casing thirty-two and forty-eight inches wide and from six to ten feet long, is another new product of this same company. Its construction permits it to be sawed or nailed like lumber and, it is said, to insulate heat and cold, to be windproof and not to warp. It is also a firestop. The United States Gypsum Company have found Gyp-Lap economical to use, as it saves time and money, and at the same time effects a reduction of

20 per cent in the dead load of a building. G. P. Gebhart, Consulting Engineer at Armour Institute, Chicago, made some tests on Gyp-Lap showing the solidity of its construction, and on a frame of two by four inch studs, spaced sixteen inches on centers—similar to actual wall construction—and nailed securely at top and bottom, a deflection of only one and one-quarter inches occurred at a pull of nine hundred pounds.

New-Way Door Hangers

DOOR hangers are inconspicuous parts of building, but like the small word that ruined a nation, small things of this kind often ruin many buildings. A reputation which has been built by national advertising and by sound manufacturing has made The Myers New-Way Giant



A part of the Myers door hanger equipment

Door Hanger, a synonym for quality, according to the manufacturers, for nearly fifty years.

An unusually complete trade catalog has been compiled by this company, The F. E. Myers & Brothers Company, of Ashland, Ohio, from which the above illustrations is reproduced. Full and complete information for builders or dealers and this catalog may be secured by writing the company.



Cornerstones of Your Business Reputation

Well built, comfortable, attractive homes that endure the stress of weather and time, are the cornerstones on which your business reputation will be founded.

The unvarying high quality of ASBESTONE Everlasting Magnesia Stucco has been proven by over eighteen years of successful use by leading contractors and builders. Made only of the very best materials—the high tensile strength and elasticity of ASBESTONE assure a permanent and unmarred surface.

The contractor who builds with ASBESTONE may be assured that he is getting the absolute best at a very moderate price.

Ask your dealer or write us for samples in color tints and pebble dashes. Ask for our new ASBESTONE book.

FRANKLYN R. MULLER
Inc.

Madison Street

Waukegan

Illinois



The Profit that Can be Yours

There are hundreds of new buildings being planned in your locality at this moment. And every one of those buildings must have a roof. Think of the thousands of square feet of roofing it will take to cover those roofs.

There is a tremendous profit right within your grasp. Through acquiring an AMBI Concrete Roofing Tile Machine at a comparatively reasonable investment you will be enabled to manufacture beautiful, permanent, fire-proof AMBI Tile. Here is a glowing opportunity to become identified in a rapidly growing business.

Roofing—A Tremendous Industry

When you consider that million dollar concerns have been developed through making roofing material alone you will realize the tremendous possibilities in the manufacture and sale of AMBI Tile. Every house has a roof—and millions and millions of square feet of roofing must be produced to cover them.

AMBI Concrete Roofing Tile can be made in four attractive shapes. Every one of those shapes can be made on AMBI equipment in a variety of colors and tones to meet every artistic and architectural requirement. And the operation of the AMBI Concrete Roofing Tile Machine is simplicity itself. An unskilled operator can produce uniform, perfect AMBI Tile with practically no training.

You have an opportunity right now to become identified in one of the fastest growing industries in the world. Grasp it! There is an AMBI outfit suited to every locality whether large or small.

American AMBI Corporation

220 West 40th Street

New York City

Valuable territory open for reliable agents

Write for prices on MBI Imported Cement Colors and AMBI Color Mill. Complete line of accessories, including molds for special forms

AMBI
TRADE MARK

Fill in and Mail this Coupon Now!

American AMBI Corporation
220 West 40th Street
New York City

Please send me without obligation complete information regarding the AMBI Concrete Roofing Tile Machine.

Name _____

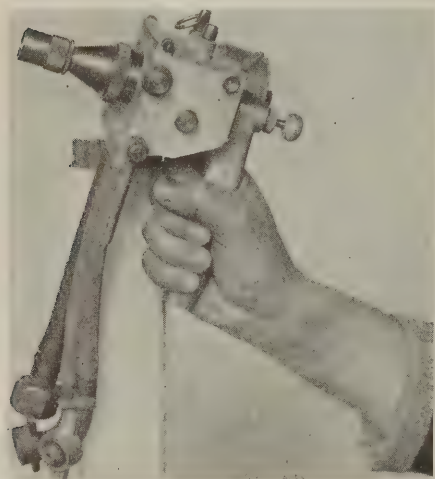
Address _____

A M B I
CONCRETE ROOFING TILE MACHINE

For Applying Metal Coatings

THE Metals Coating Company of America, 495 North Third Street, Philadelphia, Pennsylvania, has developed what is known as the MetaLayer Schoop Process—a process and apparatus for simultaneously melting, atomizing and applying to any surface, coatings of any of the commercial metals.

It is claimed that through the use of this process coatings of molten metal may be attached to all or any part of any sur-



The MetaLayer machine for applying metal coatings

face regardless of its character, its size, its position or its location, and that the coatings may be applied to work either before or after fabrication and to any reasonable thickness desired, either for the purpose of decoration, protection from corrosion or chemical action, or for increasing dimension or weight, or altering shapes, or repairing defects in surfaces, and that the successive coatings of different metals, regardless of their melting temperatures, may be applied.

The MetaLayer, weighing three and one-half pounds, is connected to standard acetylene and oxygen cylinders and to a supply of compressed air, consuming, while in use, approximately fifteen cubic feet of the gases per hour and 50 cubic feet per minute at 50 pounds pressure of the air. Metal in the form of standard gauge wire is automatically pulled from a reel into the rear of the gear case and fed uniformly and continuously at a rate of from 12 to 24 feet per minute to the muzzle of the short barrel, where it enters into a continuous reducing flame zone developed from the gases and air and is there melted and blown at a velocity of about 3,000 feet a second (equal to the speed of a rifle bullet) in a very fine spray onto the surface being coated. Standard commercial wires, of suitable B & S gauge are used in the MetaLayer.

This company also manufactures the

"Gravitas," which uses metal in the form of dust, with which zinc, aluminum, tin and lead are usually handled, as well as the "Mass Coating Machine," a combination of either one of the above, with a specially constructed rumbling barrel and with which articles weighing from a fraction of an ounce up to ten pounds each may be treated in lots of approximately one hundred pounds at a time.

The Metals Coating Company of America will be glad to furnish further information upon request.

Four Weights of Sheathing Paper

SHEATHING paper is one of those things that because it is not often seen is usually taken for granted. It is covered up in the finished house and the owner is not conscious of its existence.

But as in most things, there is a difference, even in sheathing paper. To show just how different "Bermico" sheathing paper is, the manufacturers, The Brown Company, Portland, Maine, have prepared for distribution a folder, size 6¼ by 3½ inches, which describes Bermico not merely in words and pictures but contains as well samples of this well known sheathing paper in four different weights.

Bermico, it is explained, is sold in 36-inch and 40-inch rolls. The 36-inch rolls being the standard size and the 40-inch a special size. Every roll is guaranteed to contain 500 square feet. The different weights are Bermico A, which is the lightest and runs about 25 pounds to the roll; AA, which runs 30 pounds to the roll; AAA, 40 pounds to the roll, and AAAA, 60 pounds to the roll.

The samples enable you to see and to demonstrate to your customers just how tough and durable Bermico sheathing paper is. The manufacturers state that it is made only from spruce wood fibre—clean and tough, that it contains absolutely no filler, is sized with rosin, is weather-proof and non-porous and really insulates a building against the cold air of winter and the heat of summer.

The folder described is sent free on request to contractors, architects and builders.

New General Electric Cover Interlock

THE General Electric Company now has on the market a cover interlock for use with its CR-7005 and CR-7006 magnetic starting switches. This device is designed particularly for use on starting switches installed in textile mills, wood working shops and other places where inflammable dust or "flyings" are present. The interlock makes it necessary for the operator to keep the cover tightly closed in order to operate the switch, thus minimizing the possibility of combustion following an ac-

cumulation of dust or "flyings" inside the switch box.

The device consists of two contacts which complete the circuit only when the cover of the starting switch is tightly closed. The starting switch thus cannot operate until the cover is snapped tightly shut and contact made. The possibility of any inflammable dust accumulation inside the switch is in this way greatly reduced.

Economical and Efficient "Header Backer" Tile

"NATCO" Header Backer tile, manufactured by the National Fireproofing Company, Fulton Building, Pittsburgh, Pennsylvania, is especially designed for backing up brick and stone walls in buildings of skeleton construction, and in load bearing walls where its use, it is estimated, makes possible a saving of twenty-five per cent of the dead load, in addition to a remarkable saving in labor, mortar and structural steel.

Header tile is designed for bonding the



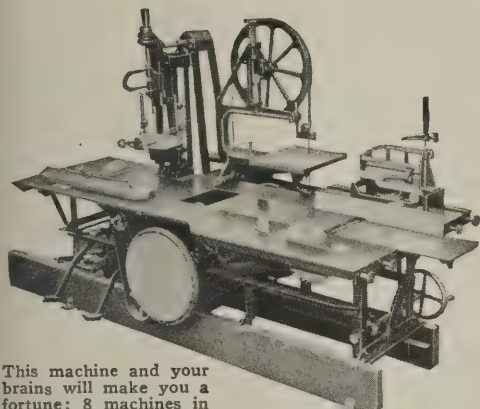
Showing how Natco header backer tile is employed to back up a stone wall

header courses of face brick to the tile backing, while the backer tile is a rectangular tile for backing the stretcher courses of brick, and is cut to various heights for proper bonding with different thicknesses of face brick and mortar joints, thus assuring a dry, insulated wall, without mortar joints through it. It is found that this type of wall offers great resistance to cold, heat and moisture, and the interior tile, which is scored, forms an ideal base for plastering.

Some of the peculiar advantages of this construction, according to satisfied users, are ability to work to any story height without cutting or use of slabs; full bearing for floor joists; decreased dead loads, compared to brick backing; suitable heights for proper bonding; minimum number of units to handle and rapidity and simplicity of construction at jams and corners and on walls of multiple thickness.

Take Your Choice

Which of these machines for your shop?



Planing Mill Special
\$550

This machine and your brains will make you a fortune; 8 machines in 1; does everything in woodworking; guaranteed 10 years.

In the complete Parks line there is a woodworker that exactly fits the needs of your shop.

A big combination machine—or separate machines for individual drive—or a small handy variety worker for the shop or out on the job—choose *your* payroll-reducer from the Parks line.

Any carpenter can double and treble his business without increasing his payroll—if he will get a Parks!

We are shipping Parks machines all over the country to builders who are cashing in to the limit on their opportunities. Send for new complete catalog.

The Parks Ball Bearing Machine Co.

Knowlton and Langland Street Cincinnati, Ohio
Canadian factory: 200 Notre Dame East, Montreal, Can.



22-inch band saw, tilting table, tension adjustments, upper and lower saw guides.

Jewel, \$75

The Parks line includes

- Bandsaws
- Shapers
- Mortisers
- Planers
- Sanders
- Jointers
- Lathes
- Swing Saws
- Separate and Combination Woodworkers

WOODWORKING

PARKS

MACHINES

CARPENTERS & BUILDERS



JUST READY!

Inside Trade Information for Carpenters, Builders, Joiners, Building Mechanics and all Woodworkers on—Care and Use of Tools—How to Use the Steel Square—File Saws—Make All Kinds of Joints—Draw and Read Plans—Write Specifications—Make Estimates—How to Frame Roofs and Houses—Lay Out Work—Put in Foundations—Full Instruction on In and Outside Building Work—Stair Building—Saw Mill Work—Practical Painting—Thousands of Short-Cuts that save time and money—information usually obtained only by hard experience.

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Occupation.....

Employed by.....

Reference..... 9 T 196

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BRICK



Audel's Masons & Builders Guides—just ready! They give information in handy form for Bricklayers, Plasterers, Tile Setters and all Cement Workers. Easy to use, showing 2067 illustrations, plans and working methods. Contain best approved outlines of work and materials, including instructions on how to lay out and figure various jobs. 1100 pages of inside practical information that will increase your range of knowledge. A working companion for the journeyman; ready reference for the boss builder; a practical instructor for the house builder.

AUDEL'S MASONS & BUILDERS GUIDES

Four helpful, pocket-size, flexible books. The 2067 pictures, graphs, and diagrams clearly illustrate each point. The 1100 pages are clearly printed, easy to read. A progressive course of study for practical application to every day problems.



4 VOLS. COMPLETE \$6

BRICK-PLASTER-CONCRETE-TILE

These Guides cover fully and completely:—Brick laying, tools, materials, bonding, mortars, designs, setting frames, foundations. Tile setting, hollow tile, wall, roofing, setting beds, mosaic. Concrete mixing, placing, re-inforced work, stucco, waterproofing. Plastering in all its branches, wall board, Stone Masonry and Steel Construction for Masons. Estimating.

FREE EXAMINATION COUPON

Save mistakes—save work—save materials—solve your problems! It will pay you to send in this coupon NOW! Examine AUDEL'S Masons Guides on Free Trial.

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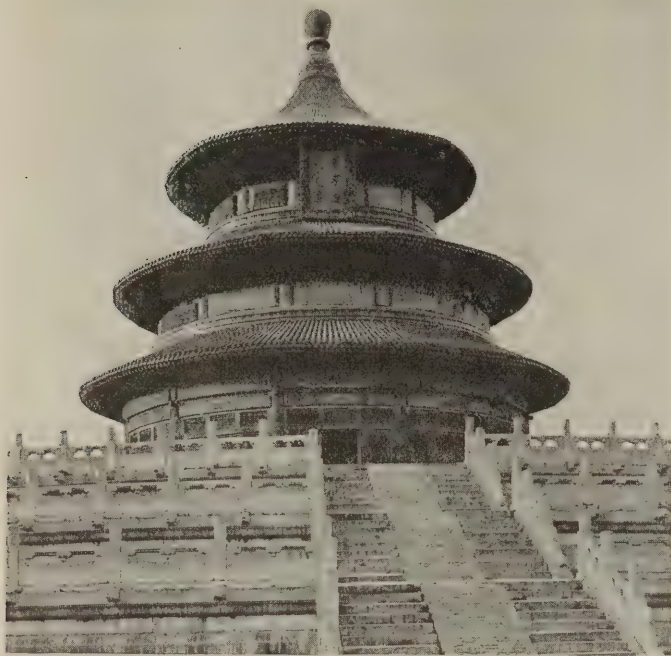


Photo by Ewing Halloway, New York. A close-up of the Temple of Heaven, Peking, China, built in the thirteenth century



Photo by Underwood and Underwood. This arcade in Los Angeles is said to be the only glass covered street in the world



"P. & A. Photo." The finest bath houses in the world have been constructed at Deauville. They are of concrete decorated with colored tile, and contain superior modern conveniences



"P. & A. Photo." It was on the site of Astoria, Oregon, that the Lewis and Clark expedition in 1805 reached the Pacific and the city is the theme of Washington Irving's "Astoria." Photo shows the business center rebuilt after the fire of December, 1922



Photo by Underwood and Underwood. A new skyscraper at a historic old address. Number 26 Broadway as it is today. View of the just completed new Standard Oil Building, facing Bowling Green. Note the stepbacks to conform to the new zoning act

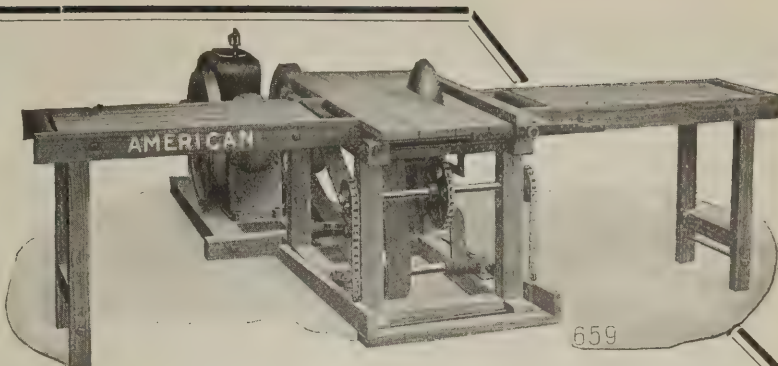
A Reliable Heavy Duty Rip and Cut-off Saw

This rugged machine is designed to rip and cut off heavy timbers such as are used in bridge and dock work, heavy framing and in making concrete forms.

The saw is moved forward by the treadle. The extension tables may be detached and the legs collapsed for convenience in moving.

Guide rails are supplied which may be used either at the rear or front sides of the extensions as convenience dictates.

The substantial steel ripping guide is adjustable to any position on the table. A clamp screw holds it in place. The swinging



iron frame which carries the saw is locked securely in place when ripping is being done.

The design and construction of this rugged machine makes for quick, accurate work and long life under hard conditions of use.

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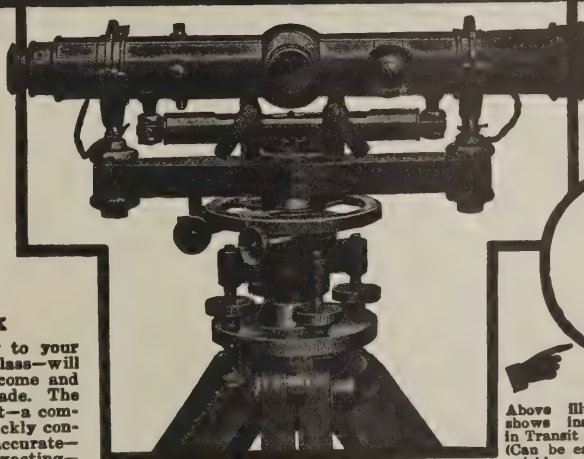
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Johns-Manville, Inc., 294 Madison Ave., New York, N. Y. Architectural Acoustics. Booklet, 6x9 in., 24 pp. Illustrated Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

Associations

California Pine Association, 458 Call Bldg., San Francisco, Calif. Booklet, "Pine Homes," containing information regarding White and Sugar Pine, sent free on request.

Portland Cement Association, 111 W. Washington St., Chicago. A large number of publications are issued on the different uses of portland cement, under the following heads: Canals, conduits, sewers and drainage; farm uses; correct products; roads, streets and alleys; structural concrete; technical data, tanks, etc., and miscellaneous subjects. "A Manual of Concrete Masonry Construction" is particularly recommended for the contractor and builder. It is a 32-page booklet, size 8½x11, and is sent free on request.

Band and Mitring Saws

The Tannewitz Works, 315 Front Ave., N. W., Grand Rapids, Mich. Special bulletins on variety saws, band saws, portable electric mitring machine and saw gauges will be furnished on request.

Block Machinery

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 35 sent on request.

Books on Building

Theo. Audel & Co., 72 Fifth Ave., New York City, N. Y. "Audel's Masons and Builders Guide," 4 vols., \$6.

Frank R. Walker Co., 536-C Lake Shore Drive, Chicago. Publishers of The Building Estimator's Reference Book, containing information regarding estimating the cost of every phase of building construction (price \$10); and of a new book entitled "Practical Accounting and Cost Keeping for Contractors," treating of contractors' bookkeeping and accounting systems and how to keep time and labor costs on the job (price \$2.50 postpaid). Books sent on approval to contractors writing on their business letter-head.

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U. S. Radiator Corp., Detroit, Mich. Complete data sent on request.

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Brick

American Face Brick Association, 1763 Peoples Life Bldg., Chicago.

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Truscon Steel Co., Youngstown, O. Truscon Data Book. Catalog, 3½x6 in., 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

Concrete Engineering Co., Omaha, Neb. "Handbook of Fireproof Construction." "How to Use Ceco Lathing Materials" and "How to Save Concrete, Steel, Formwork and Labor by Using Meyer Steel Form Construction." These booklets, 8½x11 in., sent free on request.

International Steel & Iron Co., Evansville, Ind. Catalog on steel ceilings, catalog on store fronts and garages and circulars describing metal lath, coal chutes, fireplace dampers, etc., sent on request.

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Atlas Portland Cement Co., 25 Broadway, New York City, N. Y. "Atlas White and What You Can Do With It" printed in English, Italian, Portuguese and Spanish; "Atlas Handbook on Concrete Construction," "Building a Bungalow," "Information for Home Builders," "Stucco Questions and Answers," "Atlas White Portland Cement for the Concrete Block and Brick Manufacturer" and other books sent free on request.

Louisville Cement Co., Inc. Speed Bldg., Louisville, Ky. "Brixment." Booklet, 7½x5 in., 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

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Knap & Vogt Mfg. Co., Grand Rapids, Mich. Booklet, "Plans for Modern Clothes Closets," sent on request.

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Anchor Concrete Machinery Co., 534 Dublin Ave., Columbus, O. They offer free to concrete products men their interesting "Hand Book on Concrete Products." Included in the book are articles by such leaders of the concrete products industry as Harvey Whipple, secretary of the American Concrete Institute and editor of Concrete; and Wallace R. Harris, president of the National Concrete Products Association and editor of Concrete Products.

Concrete Block Mach. Co., 56 Columbia St., Newark, N. J. Literature sent on request.

Concrete Equipment Co., 530 Ottawa Ave., Holland, Mich., manufacturers of the "Utility" line of concrete machinery and molds for the manufacture of all kinds of concrete products. A descriptive catalog, which not only describes the equipment but also specifies weights, costs and selling prices of the products, is sent free upon request.

J. B. Foote Fdy. Co., 16 Front St., Fredericktown, O. New 40-page catalog on "Money Making Machinery."

Helm Brick Co., Cadillac, Mich. "Concrete for Beauty, Adaptability and Permanence." This is a combination handbook on the concrete products industry and catalog illustrating and describing the well known line of brick and block presses and various accessories for products plants.

Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, O. New loose leaf catalog No. 35, 80 pp., illustrating and describing their complete line of concrete machinery. Contains detailed information for the manufacture of molded concrete products. Sent free on request.

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Sasgen Derrick Co., 3101 W. Grand Ave., Chicago, Ill. Circular N2 with illustrations and descriptions sent on request.

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American Bed Corp., 18th to 19th Park Ave., St. Louis, Mo. Complete information sent on request.

Concealed Bed Corp., 430 Garland Bldg., Chicago, Ill. Literature and "Landing the Job" plan sent on request.

Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "How to Use the Murphy Bed" describes its construction, operation and sizes; "Behind the Door," showing installation in private homes and its application to this type of building; "Specifications and Details," giving complete information for the preparation of all types of Murphy beds sent free on request.

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Wheeler, Osgood Co., Tacoma, Wash. Monograph on Laminex construction sent free on request; also Catalog No. 31 and booklets on Laminex doors.

Doors—Metallic

Dahlstrom Metallic Door Co., 411 Buffalo St., Jamestown, N. Y. "Metal Door and Trim Catalog" (Third Edition), 8½x11 in. Complete catalog of architectural shapes, styles and types of Dahlstrom standard construction doors.

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A. S. Aloe Co., 615 Olive St., St. Louis, Mo. New 132-pp. illustrated catalog of drawing materials, engineering supplies, tapes, etc.

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Energy Elevator Co., 210-218 New St., Philadelphia, Pa. Illustrated catalog, "Dumbwaiters." 20 pp., 8½x11 in. Describes in detail 14 standard types of dumbwaiters. Mailed on request.

Sedgwick Machine Works, 150 W. 15th St., New York City. Catalog containing descriptions and construction details, 4¼x8¼ in., 70 pp., illustrated; sent on request.

Electrical Equipment

Frank Adam Electric Co., St. Louis, Mo. "Wiring the Home for Comfort and Convenience" with information and diagrams will be sent free. Also Catalog No. 32, 7¼x10½ in. on panelboards; Bulletin No. 29, type P safety type panelboards and cabinets, 12 pp., 7¼x10½ in.; Bulletin No. 30, 4x9 in., on fan hanger outlets and floor boxes, 16 pp.; Catalog No. 25 on knife switches and accessories, 32 pp., 7¼x10½ in., and Bulletin No. 27, new triumph residence safety type panelboards, 16 pp., 7¼x10½, containing complete wiring diagrams and specifications for average modern residences.

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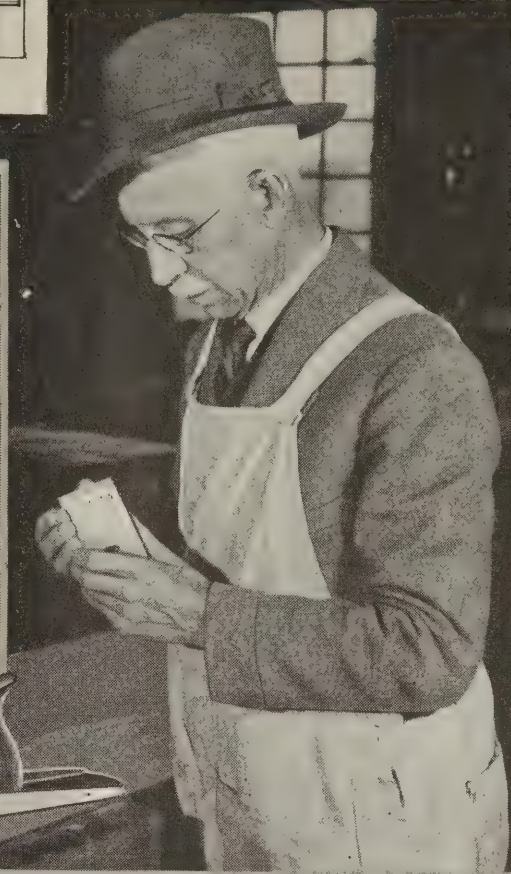
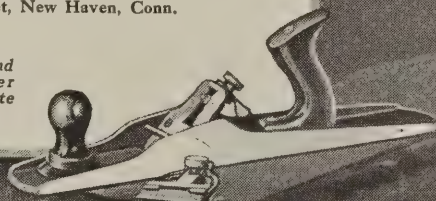
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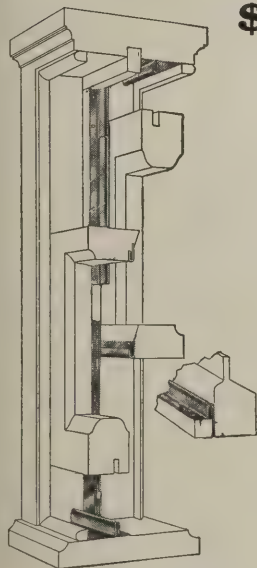
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Richards-Wilcox Co., Aurora, Ill. "Elevators." Booklet, 8½x11 in., 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

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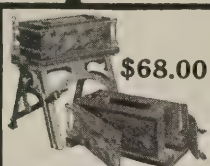
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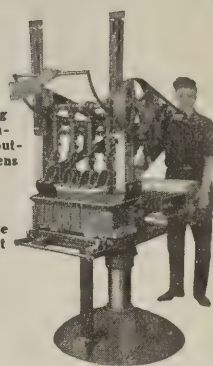
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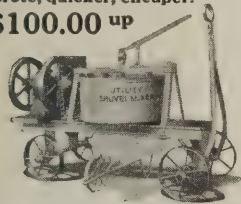


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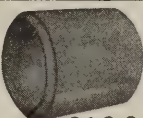
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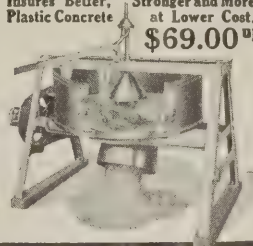


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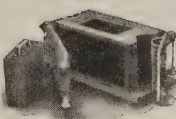


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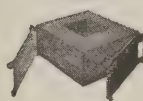
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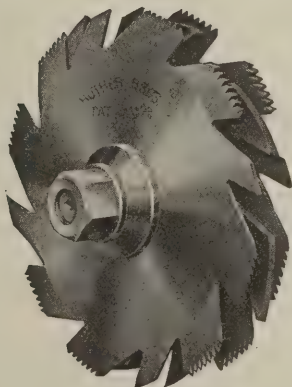


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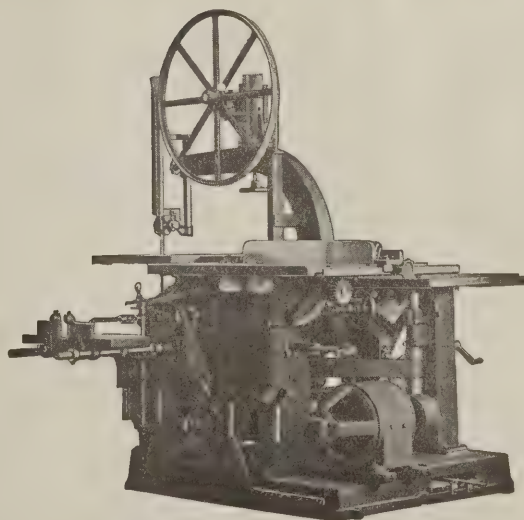


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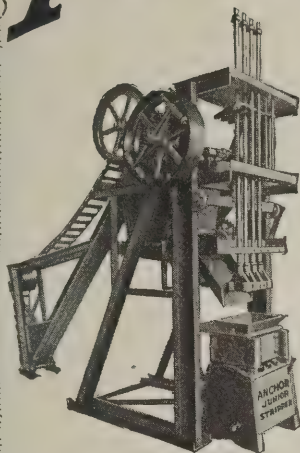
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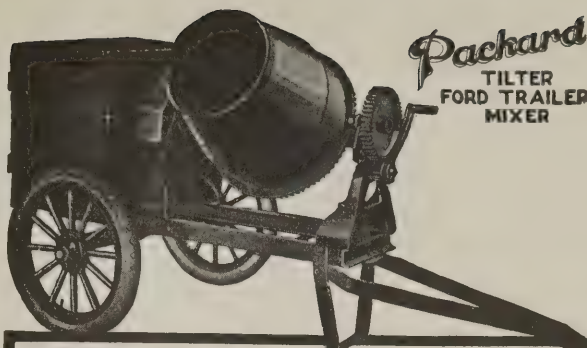
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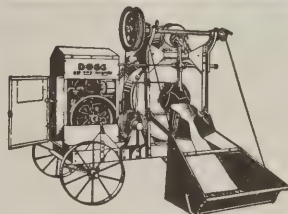
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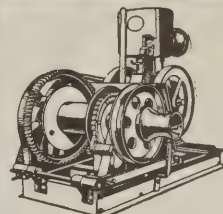
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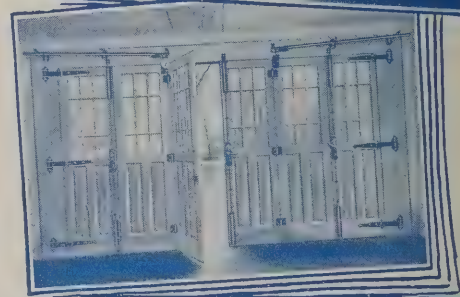
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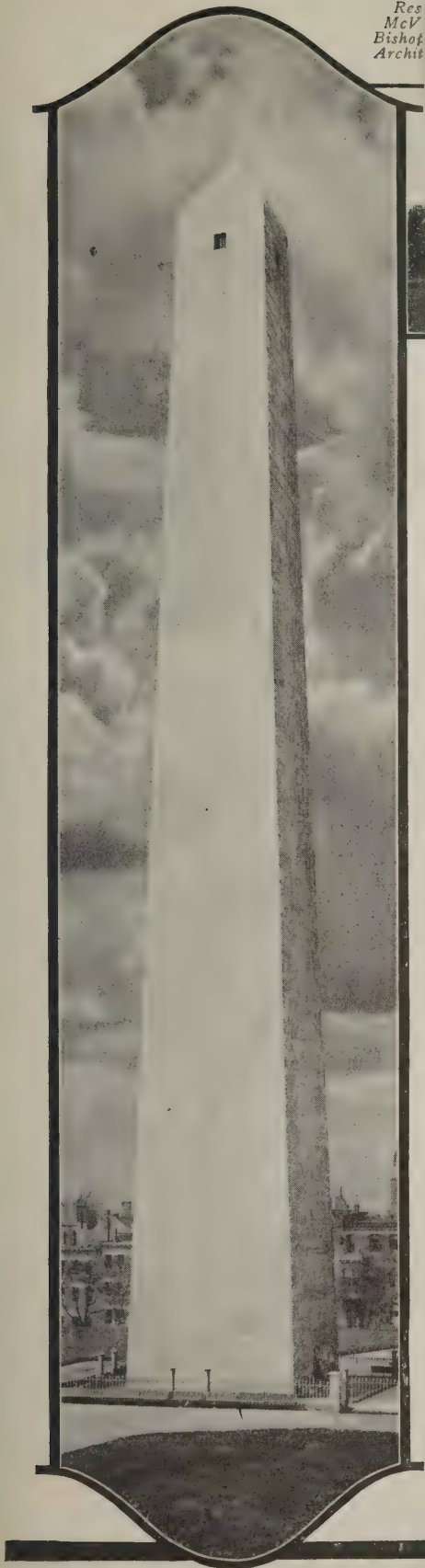
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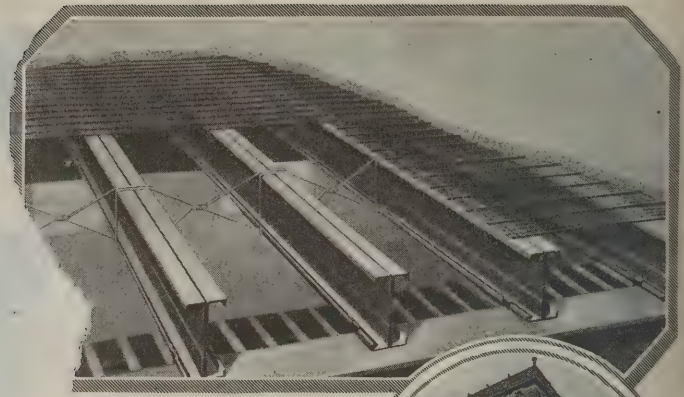
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Announcement



On pages 8 to 11 of this issue of National Builder appears an announcement of the amalgamation of National Builder with Building Age. This, then, is the last issue of National Builder under its present name, but beginning with the November issue, Building Age and National Builder, together with the Builders' Journal and Permanent Builder, will combine their resources to serve the building field in a manner never before made possible.

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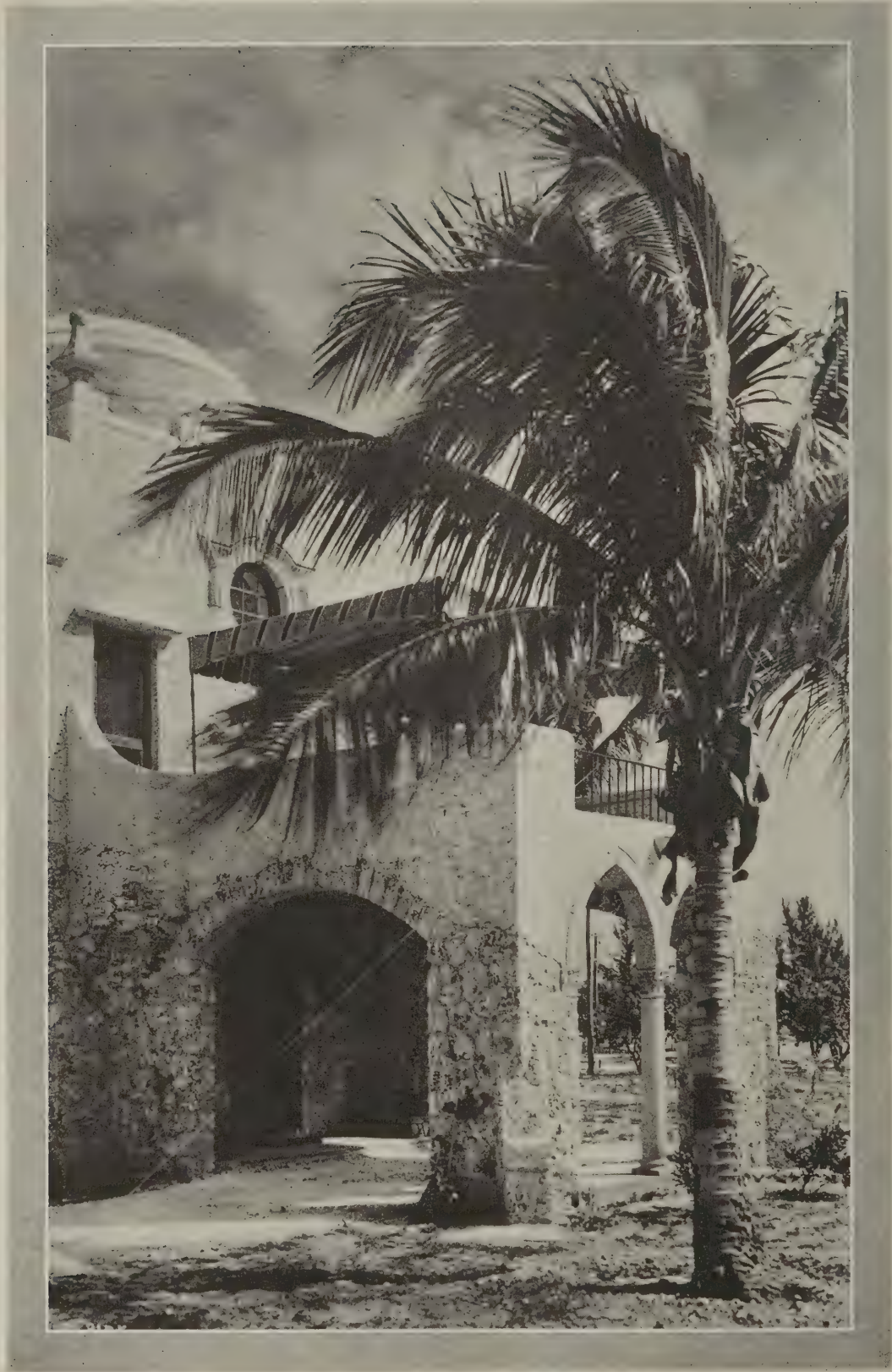
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This glimpse of the entrance to the Peabody house shows a "castle in Spain" made real. With such surroundings as this, it is no tax on the imagination to feel the very atmosphere of Old Spain. Note the dome, decorated with colored cement, appearing above the parapet of the main wall



House of Don Peabody, Coral Gables, Florida. W. C. De Garmo, Architect, Miami, Florida

The HOUSE of the MONTH.

IN both size and appearance, this is one of the most important houses that have been built at Coral Gables, Florida, during the progress of the development of that very unique and successful suburb—a fairly complete story of which appears in this issue of NATIONAL BUILDER.

The Peabody house, like the other houses at Coral Gables, is built of native coral stone and stucco on concrete block construction. No attempt has been made to obtain a highly finished job, but rather a sort of hand-made quality such as is exhibited by the irregular joining of the stone and the stucco surfaces.

The style of the house is that interesting type of Span-

ish which is modified by Moorish influence. Brightly colored awnings, tile hoods, tinted stucco and painted woodwork add notes of color, and wrought iron railings and cast cement trim are effectively used.

The main entrance is into an octagonal hall, extending through two stories and covered with a semi-circular dome. A balcony at the second story level, and wall seats and a fountain in the first story, are other features of interest in the hall. The servants' quarters are on the first floor level and are entered by means of a gallery leading from the rear entry. There are two bedroom suites in the second story, each consisting of two rooms with bath and sleeping porch.



First floor plan

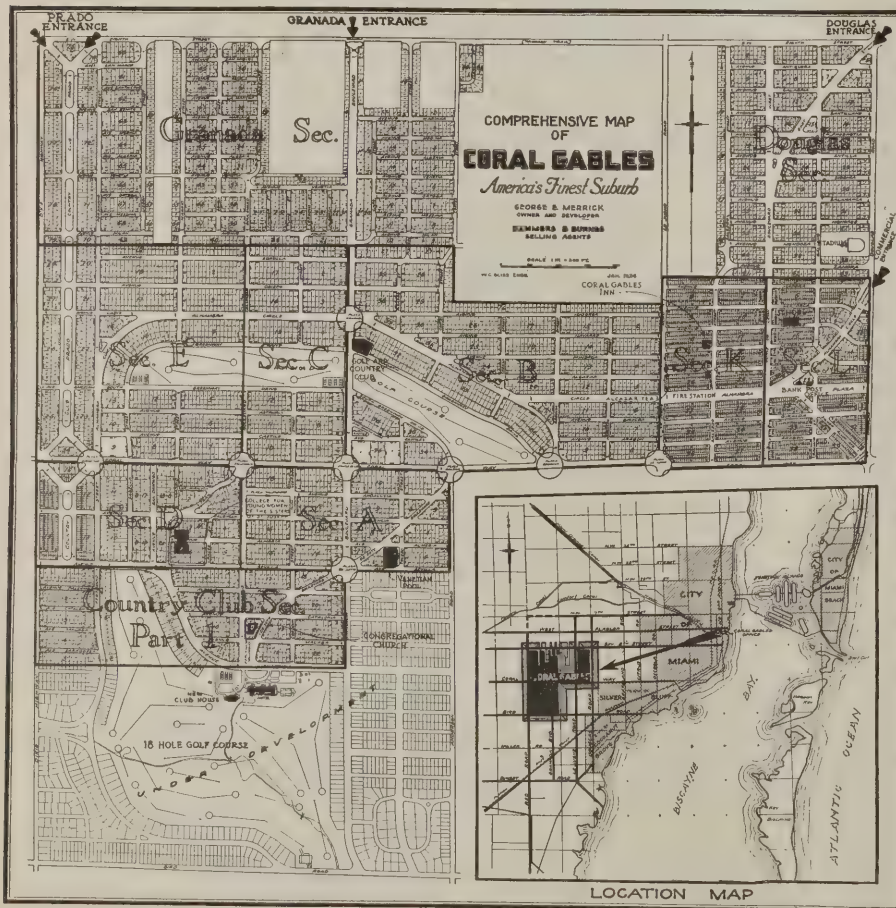


Second floor plan



Spacious loggias and patios, coral stone and stucco, tile roofs and awnings are inseparable with Coral Gables homes

THE STORY of CORAL GABLES



Coral Gables is located four miles southwest of Miami, Florida. From a 160-acre beginning, it has grown until it covers almost 3000 acres. Millions of dollars have been spent in its development and even greater improvements are contemplated or are under way

THE history of Coral Gables begins about thirty years ago in a New England parsonage where, on a winter night, the minister sat listening to the tales told him by an old friend who had recently returned from a visit to Florida. The traveler painted his word-picture of the land of flowers with such telling strokes that the minister could not erase it from his mind, and eventually—disregarding his circumstances, traditions, previous method of living and environment—he, together with his large family, arrived in Miami, then a village of less than 500 people.

His sole and entire capital, the result of years of frugal ministerial savings, was less than a thousand dollars. This meager fund, however, sufficed to finance the purchase of 160 acres of land a few miles southwest of Miami, and, forsaking the erstwhile retiring cultured life of the student and literary man, the minister plunged determinedly into the (to him) unknown world of tropical fruit and vegetable growing. Through the long pioneering years this practical idealist held fast to his vision of faith in the destiny of this land of his choice and before his death he saw his dreams of the future take form.

From the 160-acre beginning, added to through the years, Coral Gables has grown in extent until it now comprises well onto 3,000 acres. In 1921, Mr. George E. Merrick, a son of the minister-pioneer began to develop the property as a residential suburb of Miami. Inheriting his father's temperament as a practical-dreamer, one of that rare breed that has the clarity of vision



The plazas are beautified with seats and fountains and enriched by full grown palms

to make dreams come true, Mr. Merrick pictured a distinctive American suburb that would be a worthy reflection of the architectural enchantment of Old Spain.

Coral Gables as it is today, with all its charm and air of maturity, represents only a partial fulfillment of this great concept. Although it is a suburb of unsurpassed distinction, character and beauty, compelling the admiration of all who see it, and has attracted country-wide attention, both by reason of the extraordinary scope of the improvements and by the consummate artistry of the work, it is yet in the making. Perhaps, indeed, it may continue to develop indefinitely, the passing years only serving to unfold new triumphs of beauty and charm. In any event, its influence on the development of suburbs and small towns is bound to be felt throughout the nation.

In developing Coral Gables, Mr. Merrick has gathered together a staff of experts of exceptional ability. Such men as Denman Fink, member of the U. S. Government Committee of Twenty-One American Artists; Frank M. Button of Chicago, landscape architect of national reputation; Max Keller, utility engineer, and other prominent engineers and specialists of wide experience are identified with the development. Among the architects who have designed the buildings at Coral Gables are Richard Kiehnel, M. L. Hampton, H. George Fink, W. C. DeGarmo, Harold Hastings Mundy and L. D. Brumm. The fact that so many minds have been actuated to work together in producing so uniformly brilliant an achievement as Coral Gables speaks well for the guiding genius of the development, as well as promising much for the future of American architecture.

The architectural style of the buildings at Coral Gables is unmistakably of Spanish derivation, Spanish that in many cases is strongly flavored with Moorish—sometimes even with Venetian—yet always modified and adapted to its setting and to modern ways of living. Here will be found no dry as dust copying but rather a type of architecture that is in keeping with its setting and its time. In other words, these buildings have that "live" quality that results only when designers have a thorough familiarity with the style in which they are working. Some of the men engaged in this work have made special tours of Spain gathering impressions for use at Coral Gables.

Out of the hundreds of houses at Coral Gables no two are alike. Each house is a

distinct individual both in plan and elevation. Basic plans on which a score or more changes in elevation are rung by means of shifting a porch here and a dormer there, have no place in the program of Coral Gables. All of the houses bear a strong family resemblance, but there are no twins.

Building restrictions at Coral Gables have been devised to fully protect property owners, but without embodying onerous clauses of an irritating rather than a helpful nature. Building lines, costs of houses, type of materials and so forth are fully covered to insure a standard of living and of building that cannot be controlled except through well studied restrictions. Zoning regulations are employed to regulate the uses to which property may be devoted, thus preventing infringement of the areas devoted to homes. There is nothing, however, that will prevent the building of a modest home—there are large areas where cost restrictions are as low as \$4,000—but an owner who can expend \$10,000 or \$75,000 for a home will naturally select a district where higher cost restrictions assure the erection of homes of a similar nature. An important restriction wisely provides that the design of any building proposed for Coral Gables must first be approved by a regularly constituted board of architects before the building may be erected. Thus, uniformity of style and quality are assured and the interests of the community are guarded for all time.

The financing of the development at Coral Gables is by means of bond issues which are largely held by insurance companies and banks throughout the country. Under the terms of these bonds no money is released for use at Coral Gables until the improvements for which the bonds were issued are



The Granada entrance is built of coral stone



The Venetian Lake



The Parker Art Printing Association Building

actually under way and safely headed toward completion. Indicative of the far-sighted policy of the development program is a clause in each sale contract whereby it is provided that five per cent of the proceeds of the transaction must be assigned to a perpetual improvement fund which is devoted to the building and maintenance of streets and parks. The home building plan includes the financing of construction for the individual, and the advantage of buying on reasonable terms by means of extended payments.

The buildings at Coral Gables are built by the Coral Gables Construction Company acting as the general contractor supervising other contractors who are awarded contracts for individual buildings. For instance, a house may be built by the Markley Construction Company, it furnishing its own sub-contractors, but all coming under the supervision of the Coral Gables Construction Company. In this way uniformity in quality is assured and as all materials are ordered through the Coral Gables Construction Company, lower prices are obtained because of the volume of materials bought at one time. This plan has been found to effect large savings in building through economies in labor and material costs, financing of construction and other savings beneficial to home-buyers that are made possible by group building.

Stucco and native coral stone are pre-eminent in the general scheme for the design of Coral Gables' buildings. Most of

the buildings are of concrete block construction finished with stucco, but with a generous use of coral stone and brickwork to add variety to the surfaces. In some cases, such as the enormous gateways, coral stone



The Arcade Store

has been used alone with very effective results, but in general it is used as an aid rather than as a means. Coral stone is a native product that abounds on the site of Coral Gables. When first taken from the ground it is so soft that it may be easily

cut with a knife, but it hardens quickly on exposure to the weather and within a few months it becomes very hard and durable. Its surface texture is granular and somewhat pitted so that it has some resemblance to travertine. In combination with stucco it is harmonious and effective when properly used. Timberwork, with carved chamfers and other simple embellishment is a feature of many of the buildings, as is the use of wrought iron, cast cement, ornamental tile and other appropriate details. The roofs are of tile, which, in most cases, was obtained from Cuba where the recent destruction of many ancient buildings has made available a quantity of old, weathered tile of beautifully variegated hues.

Color at Coral Gables is predominant without being garish. Brilliant hues that under a different sky or in another setting would prove distracting or even crude, are harmonious and satisfying when applied in the semi-tropical surroundings natural to this locality. In an article on stucco, on another page of this issue of NATIONAL BUILDER, Mr. Paist tells us of the use of color in connection with this material. This, however, is but one note in the symphony of color that plays upon the senses at Coral Gables. Here are highly modulated tile roofs with all of the bloom and texture that characterize an oriental rug; the native coral stone in tones of amber and old ivory; wood trim of dull blue or sage green; stained timberwork touched with designs in chrome yellow, Italian blue and Chinese



The Parish House of the Community Church



The New Grammar School

red; touches of vermilion, sienna and emerald about a gable; and in a doorway hints of bright orange and that purple which is the color of new grapes. The gaily colored awnings; rose, old blue, saffron, henna, lemon yellow, sage green—seemingly in every hue of the rainbow—are used as accents in the color scheme. As used here, awnings become of prime importance as decorative features, and flaunt their gorgeous charm from every balcony and porch, from every window and terrace. Then, too, there is nature's coloring; the intense blue of the sky, the green of tropical foliage, and the soft vividness of the flowers that complete the whole. Coral Gables as a whole may be compared to a gigantic painting into which an artist has poured all of his knowledge of color and left nothing to chance.

Realizing that "seeing is believing," a large fleet of pullman motor busses plying between Coral Gables and the various branch sales offices throughout the state, was placed in operation last fall. This service transports interested persons to and from Coral Gables without charge, and it has proven to be one of the most successful advertising features yet conceived. Sales promotion work at Coral Gables also makes effective use of advertising space in newspapers and magazines. Forceful literature such as booklets and brochures are used extensively, and gain added interest from the fact that they are entirely a local product, being printed by the Parker Art Printing Association in its own Coral Gables plant. As examples of restrained yet forceful description, and of beautiful printing, these booklets are almost unique in real estate literature. They are lavishly illustrated in an artistic manner, and altogether cannot help but foster confidence in a prospective buyer and instill in him a desire to own

a home at Coral Gables. A local newspaper, the "Coral Gables Bulletin," is issued twice a month. It is well printed and fully illustrated, and contains news items and well written articles dealing with the suburb and its people.

Coral Gables stands as a splendid rebuke to those members of the building industry



Tropical shrubs and flowers

who confuse dull-wittedness with practicality and are therefore quick to condemn any idea that shows any degree of deviation from the beaten path. To such minds, beauty is a quality that should be rigidly excluded when considering the everyday business of building. Cheap, gaudy, flashiness, yes; but beauty, never! To such reactionists it should prove illuminating to learn that more than 600 houses have been built and sold within the three short years since this development was begun, and that more than seven million dollars worth of property was sold at Coral Gables during the six months period from October, 1923, to March, 1924, inclusive! It is all the more significant to note that the price of individual houses, including their lots, ranged from \$7,500 up to \$75,000, thus proving that an appreciation of beauty is in nowise dependent on the size of the bank account.

As an example of the magnitude of the development, consider the following data which cover the salient features of the program: Coral Gables covers approximately four square miles or about 2500 acres; more than 600 houses have been built; 65 miles of streets, avenues and boulevards built of crushed coral rock surfaced with asphalt, and 80 miles of cement sidewalk are completed and in use; three huge entrance gateways have been built, and three additional ones are planned; six imposing plazas are complete and at least ten more are proposed; more than 50,000 trees, shrubs and

flowering plants have been set out and 40,000 additional ones are under propagation in the nursery; the lighting system provides 28 miles of whiteway lighting of the most modern type besides 45 additional miles of intersectional street lighting; the water supply is taken from six deep wells, with four pumping stations and three water towers, and the water is distributed by more than 30 miles of four and six-inch mains. There is a modern motorized fire department, and a grammar school which is the first unit in an educational group that will comprise everything from a kindergarten to a high school. Recreation has not been slighted, as there is a nine-hole golf course with club house; a swimming pool—the Venetian Pool—is 200 by 300 feet in size, and provided with pavilions and dressing rooms; public tennis courts abound, and there is a completely equipped playground for children. Eighteen business buildings have been erected and there is a modern apartment house and a first-class hotel for visitors and temporary residents. Many additional buildings are under process of construction or proposed for the near future. Among these is a hotel to cost more than a million dollars; a \$250,000 college and boarding school for young women; an 18-hole golf course with a \$250,000 club house to supplement the present one which is also being enlarged; a bank and post office building to cost \$60,000; a \$100,000 church for the Congregational Society; scores of new homes, apartments and other features are being constantly added.

Briefly, in word and picture, the story of Coral Gables is told in these pages. Not the complete story, perhaps, for Coral Gables grows apace and although a part of the work of yesterday is before you, new achievements are revealed in the work of today and tomorrow.



A glimpse of a Coral Gables home



Wrought iron balconies and lanterns



A general view of a portion of the business district at Coral Gables

THE BUSINESS DISTRICT

THE business district of Coral Gables conforms to the same ideals of quality and distinction that govern the remainder of the development. Here, too, foresight has anticipated the future and a specific area has been set aside for use as a business district, beyond which buildings for commer-

cial use may not be built. Thus the integrity of residential neighborhoods is assured and the shopping district is centralized so that shopping is made convenient and avoids searching for scattered stores located on various streets.

The industrial section is also located in

this district. There are no factories in Coral Gables, but there are industries such as the printing plant, the cement products plant, the carpenter shop, the plumbing shop, warehouses for the storage of materials and supplies, and other local industries which it was necessary to take into account



Even on business buildings, awnings may play a decorative, as well as utilitarian, part



The Transportation Building is an example of the dignity to which a garage may attain

to the end that ample provision should be made for the welfare of the workers and also to prevent the encroachment of the tumult of industry on schools, churches, hospitals and residential neighborhoods.

The business section now contains eighteen business buildings occupied by thirty-four individual concerns, and many additional buildings are under construction or are contemplated for this section. Like the remainder of the development, the business

buildings maintain a high standard of design and fitness. The Transportation building and the Arcade store building are perhaps the most distinctive and interesting members of the group. These two buildings seem particularly consistent in design and detail and they entirely lack the appearance of being merely "adapted" to their use. The Alcazar Tea Room, the Parker Print Shop, the new Bank and Post Office, the fire department quarters, and other fine build-

ings in this section; all possess architectural qualities of a high order.

The materials and methods used in the buildings of the business section are similar to those used for the residences. Concrete block walls finished with colored stucco and gaily colored awnings are important features. Flat roofs are used but the parapets are made interesting and colorful by tile hoods, scalloped pediments and other appropriate details.



The fire department quarters is an important feature of the business section



The Coral Gables Inn. Martin L. Hampton and Ehmann, Architects, Miami, Florida

THE CORAL GABLES INN

HISTORICALLY, it is a long span from the Generalife, the summer palace of the Moors, near the Alhambra in Spain, to a modern hotel in an American suburb. This

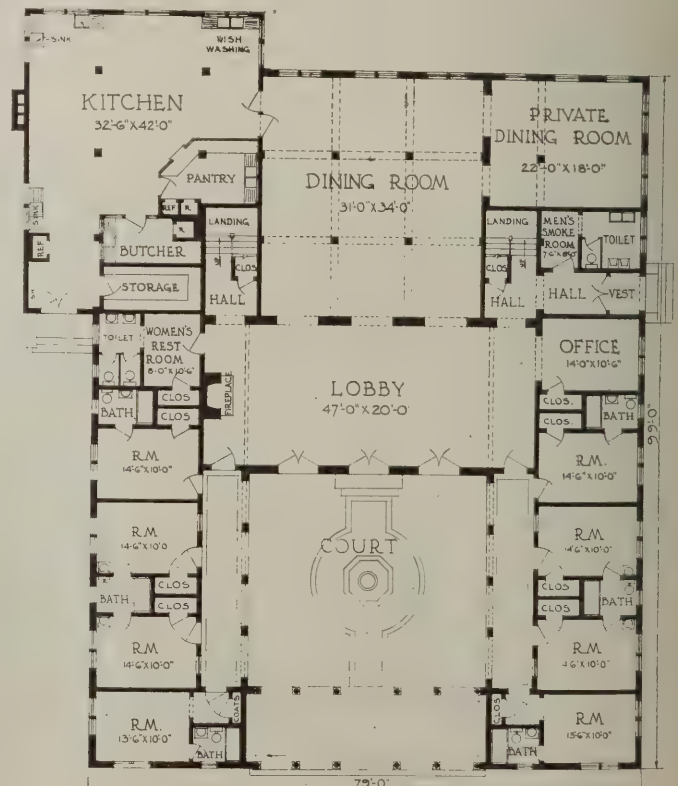
gap of seven centuries, however, has been bridged by the Coral Gables Inn, which, while truly reflecting the spirit of its Moorish prototype, also takes modern conditions

into consideration and welds the two influences into a completed whole that satisfies our eyes as well as our needs.

Much of the character of the design is



Looking through the arches of the courtyard



First floor plan

probably due to a trip through Spain made by Mr. Hampton—of Martin L. Hampton and Ehrmann, architects of the Inn—shortly before the building was designed. Therefore a mass of first hand knowledge of the style was made available for application to the problem with a result that the design is a convincing expression of the Moorish style without resorting to ordinary methods of copying. It is an imitation without being a counterfeit.

The Inn contains about fifty bedrooms and is grouped around a wide courtyard that is entered through an arcade along the street front. The courtyard is paved with terrazzo and is often used for dancing purposes. It is flanked on two sides by open corridors, above which are covered balconies communicating with the front bedrooms of the second story.

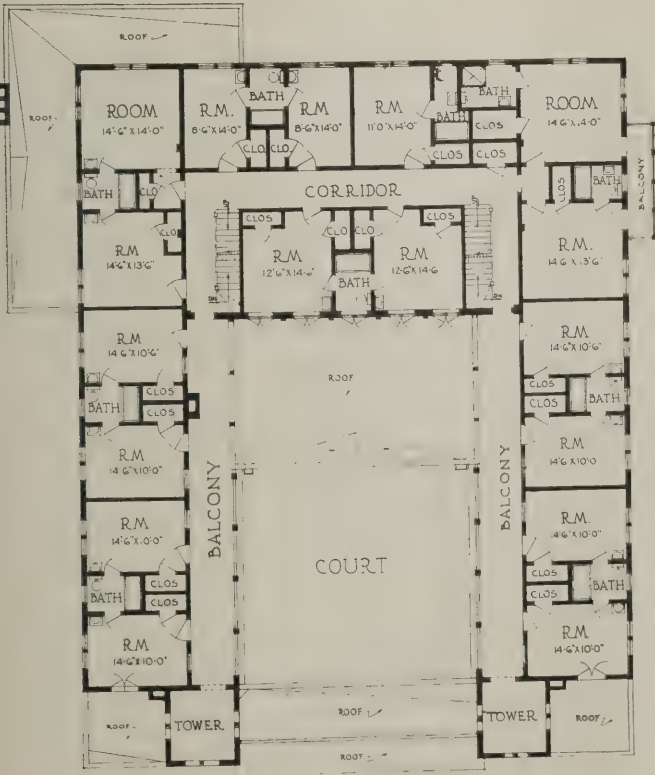
Arcaded towers at the ends of these balconies, and a hanging balcony of wooden construction at one corner of the building, above the private dining room, are other features of particular interest.

The Inn is located in the business district, but is only a stone's throw from the golf course and country club, the tennis courts and the Venetian swimming pool. Thus it is the hub of the suburb's social activities, not the least of which are the tea dansants held in the courtyard of the Inn.

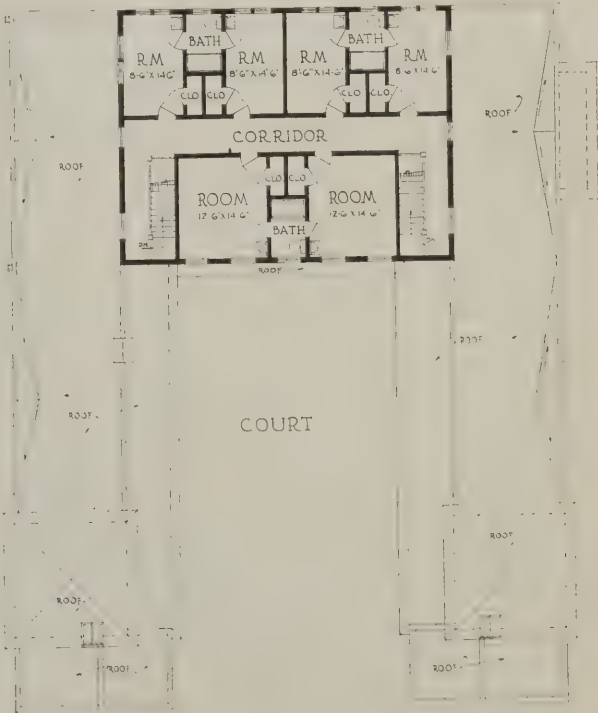
Although of prime importance in the development of the suburb, the Inn is destined to be only one of the smaller hotels at Coral Gables. A much larger hotel, to cost well over a million dollars, is already planned for.



This view of a portion of the Generalife, the summer palace of the Moors, is reproduced from "Picturesque Spain" by permission of Brentanos, the publishers



Second floor plan



Third floor plan



The Coral Gables Country Club. Hampton and Reimert, Architects, Miami

CORAL GABLES COUNTRY CLUB

ONE of the most interesting features of the Coral Gables development is the country club, consisting of a clubhouse and a nine-hole golf course, located in the heart of the residential area.

The clubhouse is located at the junction of two important boulevards and overlooks the golf course. In the rear is the Dansant with an open air dancing floor of terrazzo marble encircled by full-grown cocoanut palms.

Afternoon and evening dances held here are important events of the suburb's social calendar. At one side of the clubhouse is the tea garden, the two buildings being connected by a low wall.



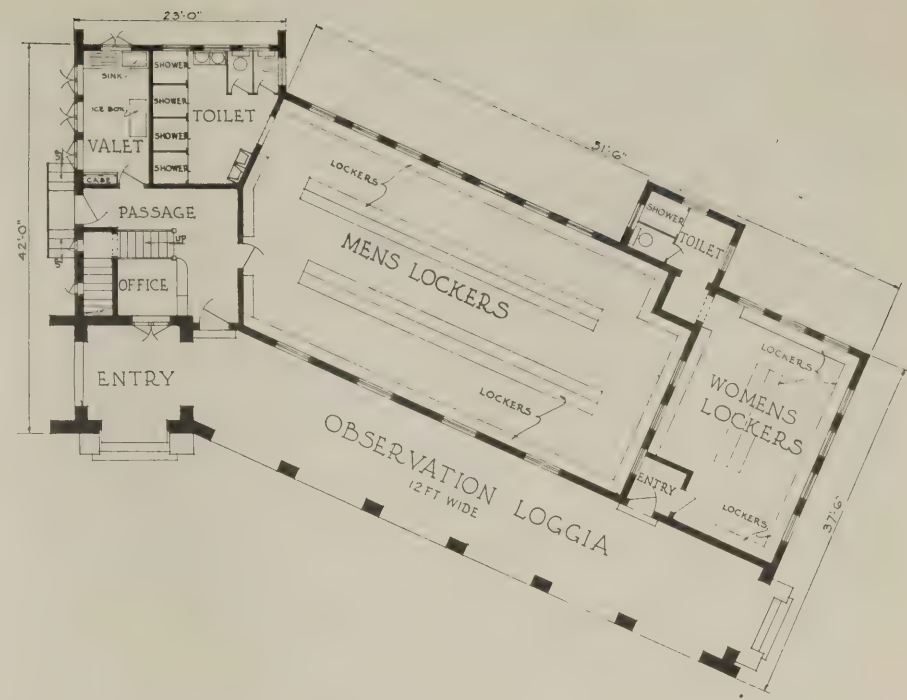
Light lunches and refreshments are served in the loggia overlooking the golf course

The clubhouse is designed in the Spanish style with an arcaded loggia running along one side overlooking the course. At one corner is an observation tower, with two stages, reached by a stair leading from the first floor. The tower is the most striking feature of the design, crowned with an arcade on all sides and carrying a scrolled pediment on one side and a niched tourelle at one corner. The lower portion of the tower forms the main entrance to the clubhouse and is marked by a tiled hood carried on heavy timber corbel brackets.

The arcaded loggia is a popular feature of the clubhouse. Here light refreshments and lunches may be enjoyed while watching the golfers on the course which spreads out along this side of the building. Either the valet's pantry, at one corner of the clubhouse, or the adjoining tea garden may be utilized in serving the patrons of the loggia. As an index of the attention paid to detail at Coral Gables, it is interesting to note that even the furniture of the loggia was evidently specially designed in the Spanish style. Separate lockers, each with toilet and showers in connection, are provided for men and women players.

The golf course is of nine holes, length 3,050 yards, par 35. It ranks with the best of courses and is under constant care. It is open to visitors on payment of a greens fee.

Owing to the growth in popularity of the clubhouse, it has been found necessary to add a new wing to accommodate the members and their guests. This new addition consists of a kitchen, a large dining room and two wide dining porches in the first story, and the second story will be given



First floor plan of completed portion

over to a spacious roof garden. Thus the dining capacity of the club will be increased to accommodate about 500 diners.

The new addition is located along one side of the open air dance terrace in such manner that one of the dining porches and the entire roof garden will command a view of the dancers. A feature of the building will be an outside stairway leading to the roof garden.

The construction of the club house including the new addition is of coral rock

and stucco on concrete blocks. The roofs are of tile and the ornamental details are of cast cement. The exposed woodwork is stained and wrought iron railings and brightly colored awnings add to the interest.

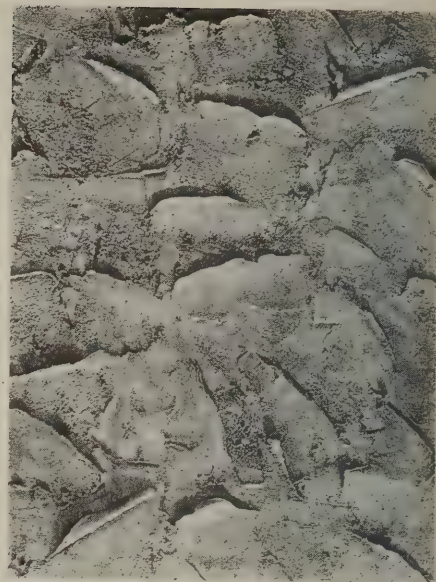
In addition to the present clubhouse and golf course, a new eighteen-hole course is under construction in another section of the development, and an elaborate clubhouse, to cost about \$250,000, is contemplated in connection with it.



At the left is shown the scaffolding of the new addition to the club house



A study in smooth and rough textured stucco. The lower portion of the wall is of coral stone



A combination of smooth and rough textured stucco

STUCCO—COLOR

By Phineas E. Paist, A. I. A.

MOST of us have been astounded by the change in "effect" of a building when we have been forced to use a different tile roof, a perhaps cheaper and different building material than we had first conceived or intended using on the building.

Carrying color to an extreme—try to imagine an all white building, an all blue building of the same tone as the sky—recall the "strange" effect of a plaster or cardboard model of a building before it was colored with the local color of its building material; and you will realize

that the color of any one unit in a development scheme bears exactly the same relation to its environment that a small motif in an Oriental rug does to the general color effect of the rug, or that the tone value of a bit of costume does to the complete ensemble of a painting.

As regards color of Coral Gables; Coral Gables is without doubt the most unique and interesting development in the South if not in America.

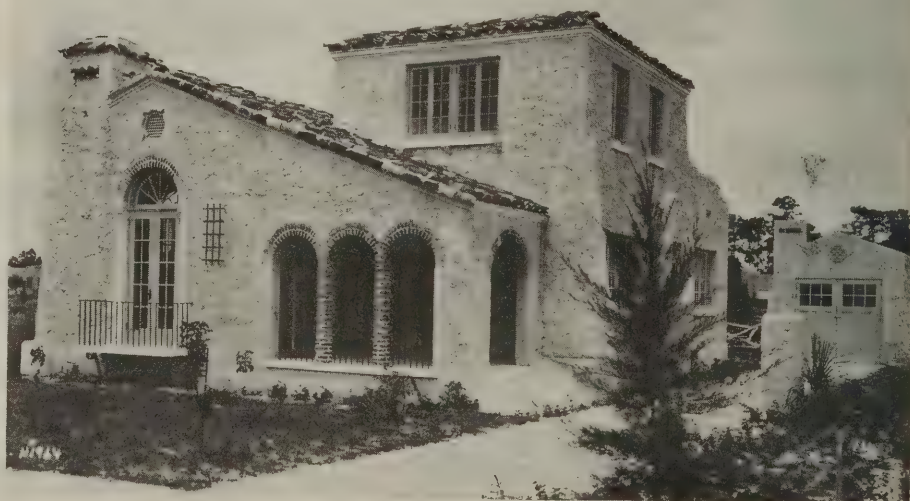
George Merrick, whose remarkable business instinct and strangely enough, whose

inner self is mixed with poetry (actual salable poetry) deserves commendation from architects, builders and material men for the opportunity of building a town, a designed town, architecturally harmonious, and a town intelligently *different* from the average horribly discordant aberrations that are usual in new developments. He has had the vision and has obtained results by holding control of all architectural and landscape schemes and finally of all of the local color of the town.

The local building materials of Coral



Rough, granular textures harmonize with the native coral stone

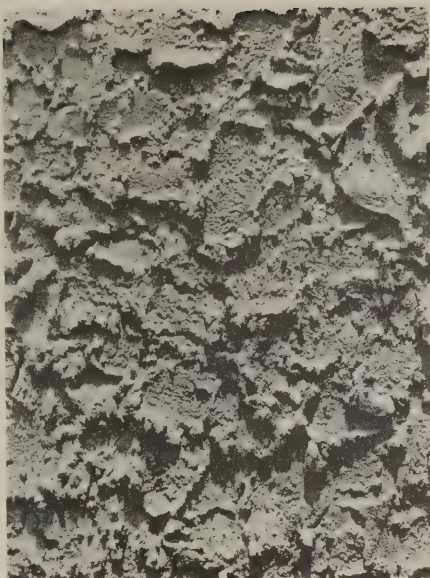


Rough textured stucco with brick trimmings give life to these wall surfaces. Variegated tile roofs and wrought ironwork help the effect

Gables are some local coral stone, some imported clay tile, but the great bulk of the building is of reinforced concrete and concrete block. Concrete block and burnt tile both require a facing material of stucco. Stucco is unusually applied without the added mixture of aggregates to give texture in color. Color is supplied by a colored wash as our grandfathers freshened up the barn or the chicken coop with tinted whitewash to imitate the more precious textures and colors of local stones or marbles (Venice is mostly built of brick, faced with a thin veneer of marble or stuccoed and colored).

To obtain the various modulated or weathered effects in stucco color, it is essential that the stucco itself shall have some natural texture, surface movement, or be applied with a genuine plastic technique. Eight years ago, Miami could only show smooth interior plaster stucco, the smoother the better in the plaster's language, or a variance "pebble dash" stucco. With the help and intelligent co-operation of Mr. John B. Orr, it has been possible to educate the local stucco men into an appreciation of the nature of the material they are using and to obtain "texture" in exterior stucco that lends itself to naturalistic and pleasing surfaces.

Stucco as applied in Coral Gables is unusually of a so-called "Spanish effect," which means that the scratch coat has been quickly and roughly troweled on about ½-inch thick, followed almost immediately with a texture finish applied as a second coat troweled upon with accidental thicknesses and surfaces uneven in effect. Sometimes this second coat is knocked down or brushed to give an old weather worn texture. In applying color to this stucco the effect tried for is that of an old building that has been colored many times and through time, or weathering, retains fragments of all of its old



Rough textures like this seem to fairly sparkle in the light

age colorings. Usually the first coat of color is of some deep rich color, well waterproofed and completely covering and filling all of the stucco. This is followed by half tone colorings either grey or possible subsequent stucco coloring, then by a high light color wash. The general effect of the building will show in the deepest interstices of the stucco the deep rich coloring, in the slightly higher spots, the half-tone color and, on the very high spots, or points of the stucco a high light color that will give the effect of a bleached or weathered color.

The colors used are dry ground colors. Proportions of color with the average medium colored house: two sacks of lime, three gallons of paste waterproofing or five gallons of liquid waterproofing, and one-quarter sack of grey cement are used to a barrel for color. Stucco color can be

considered permanent for a period of eight to ten years. The James Deering house shows no deterioration in that time; certain of the low walls and smaller buildings have weathered and changed color due to the proximity of the foliage and planting, or to the fact that purposely the first coat of color was thoroughly waterproofed and the second coat—usually of a different shade—was not waterproofed so thoroughly that time would modify or change the second coat or even flake it off and leave morsels of the first coat showing through.

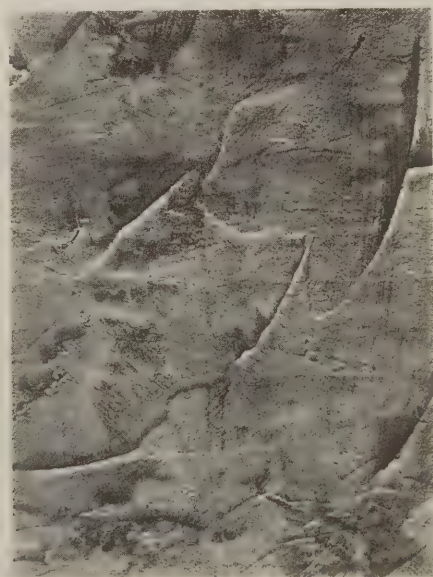
In Coral Gables we have endeavored to use zone coloring; that is, certain portions of the development will have full rich coloring, quite to the limit of our palette, while others will have grey zones; some streets have been worked from an almost pure white color, at one end, flushed up into the rich coloring of interior zones at the other end. Streets have been studied house against house, so as to lead in what may be called "a tone symphony from cold to warm colors."

In experimenting it has been found possible to obtain various color effects by studying the coloring of nature, the deep rich tawny red and the yellowish brown of the inside bark of the coconut tree, overlaid or highlighted with the purpleish grey of the outside bark; varied shells have possible combinations of color that are applicable to stucco color, very much so for the reason that the quality of their coloring is quite the same as that of whitewash, i. e., a basis of lime and color with a flat quality.

The color may be applied as herein suggested in three separate washes, or by a gang of painters working together on the same scaffold and flushing or ending the colors together; or the very much more expensive manner by mixing the color with the stucco itself.



Patches of brickwork, only partially covered with stucco, show through in this wall. Note the decorative frieze of colored stucco under the cornice



Fairly smooth in texture, but forming an irregular surface

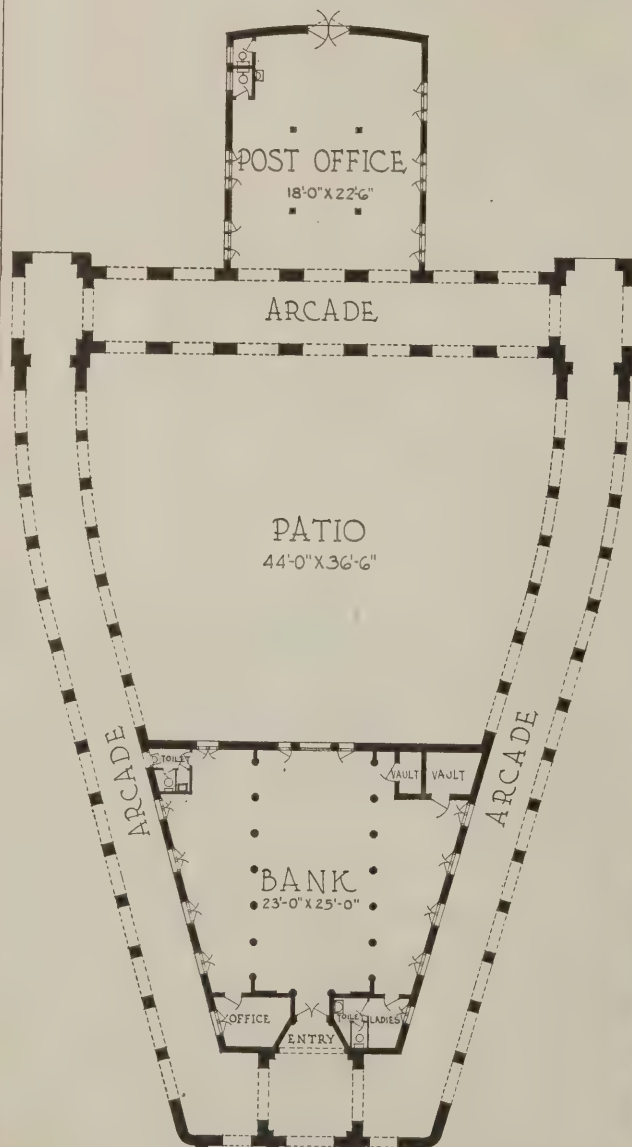


Sketch of Coral Gables Bank and Post Office. W. C. De Garmo, Architect, Miami

THE BANK and POST OFFICE

These buildings, now under construction in Coral Gables, stand on a triangular plot of ground formed by the intersection of two important streets, one of which borders a wide plaza. This dual purpose building is divided into two portions by an open patio which is to be developed as a public garden. A covered arcade surrounds both the bank and the patio and leads to the post office at one end. The entrance to the bank is marked by an arched gateway, richly ornamented, and located at the blunted apex of the triangle formed by the arcade. In the plan, the compartment formed by this gateway and the interior arches, is vaulted with a groined vault. The pavilion-like structures at the corners of the arcade, near the post office, are also arched, but the remainder of the arcade ceilings are of stained woodwork.

At the street level, the windows are appropriately guarded by wrought iron grilles which form a decorative as well as a protective feature. The ceiling of the banking room, between the two rows of interior columns, is made quite high to permit the use of clear-story windows to furnish adequate light for the interior.



Floor plan

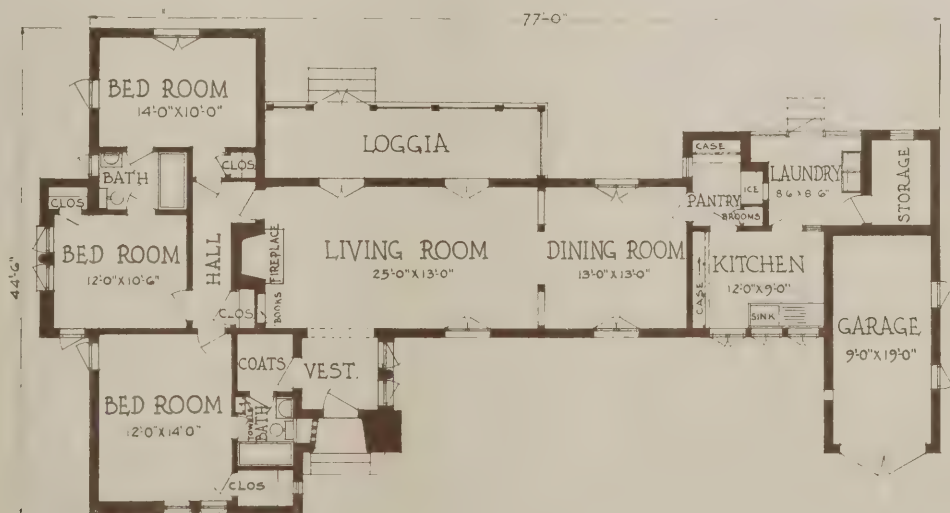


The Coral Gables Bank and Post Office under construction

NATIONAL *home* BUILDER

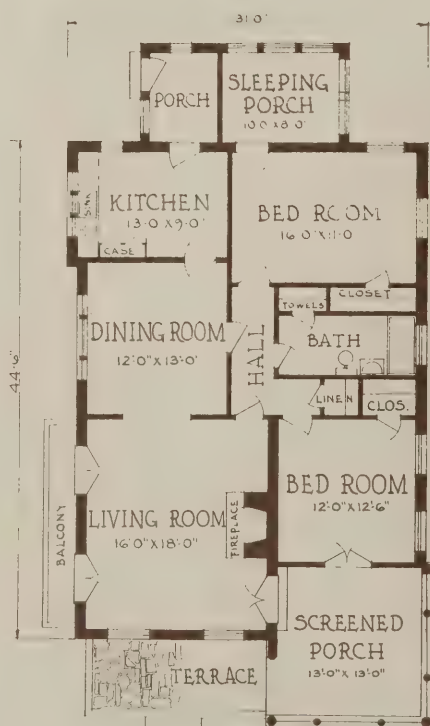


This bungalow may be said to typify the fitness and charm that characterizes all of the work at Coral Gables. The ornament of the upper portion of the chimney and of the arched windows is of cast cement and the lintel of the kitchen windows is of heavy timber edged with carved scallops. The attached garage, the loggia opening from the living room, the arrangement of the kitchen, pantry, laundry and storage room are features of interest in the plan. Note the convenient location of one of the bathrooms near the front entrance.



BUNGALOW AND GARAGE AT CORAL GABLES, MIAMI, FLORIDA

Kiehnel and Elliott, Architects, Miami, Florida, and Pittsburgh, Pennsylvania



History and architecture are, or used to be, inseparable. Just as the house on the opposite page suggests the occupation of Flanders by Spain, this one suggests the occupation of Spain by the Moors. This is particularly noticeable in the dome and the arcade of the porch. While these arches are not true Moorish arches (horseshoe shaped) nevertheless they seem to express the style, the star-shaped ornament above the center arch helps in this respect. Note how interest is sustained by the use of a tiled roof at the rear above the kitchen.

SPANISH A LA MOORESQUE AT CORAL GABLES

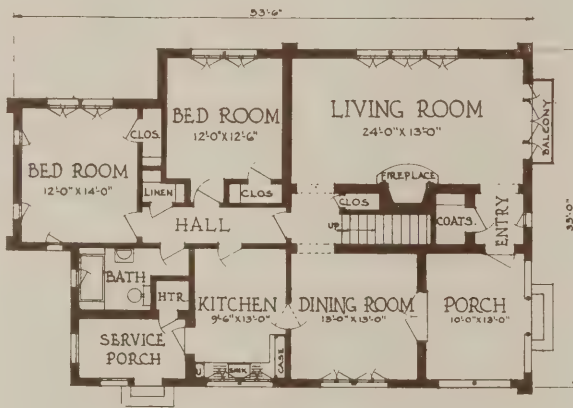
W. C. DeGarmo, Architect, Miami



At first sight, the crow-stepped gable of this house seems rather unusual for a Spanish design, but when we recall the Spanish occupation of Flanders we are reassured, as such gables are common in Flemish architecture and were probably introduced into Spanish buildings during that period. The oriel window, supported by the huge bracket, is unusual, as is the canopied hood of sheet metal. Note the peculiar form of the brick arches of the porch openings. The arrangement of this plan is particularly open, and well adapted to a Southern climate.



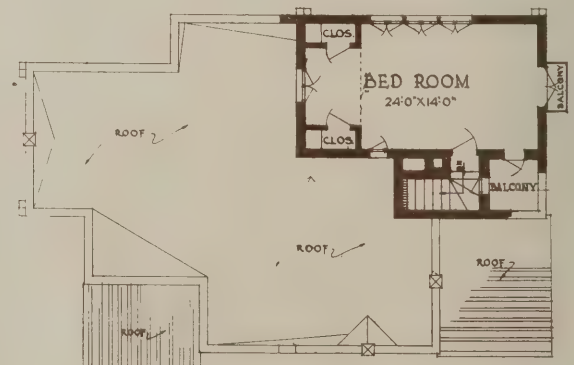
SPANISH A LA FLANDERS AT CORAL GABLES
W. C. DeGarmo, Architect, Miami



For a number of years certain sections of the South and the Southwest have been experimenting with a so-called "airplane" type of plan in which a single large, sleeping room is placed in the second story, thus making it possible to provide windows in each of the four walls of the room. This house in Coral Gables is an adaption of this type of plan, but one in which appearance as well as fitness has been considered. There are two bed-rooms on the first floor in addition to the second story one.

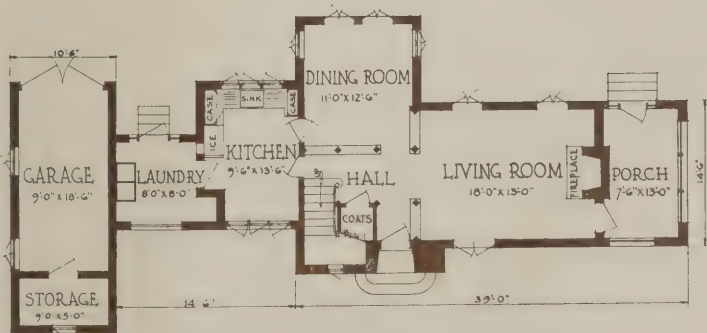
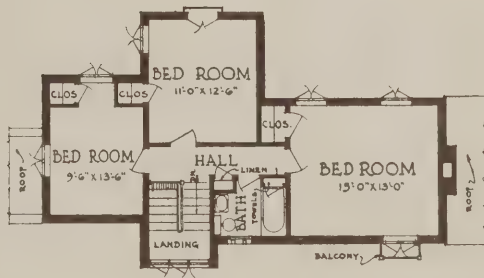
*AN AIRPLANE TYPE BUNGALOW
AT CORAL GABLES, FLORIDA*

W. C. DeGarmo, Architect, Miami





Much of the interest of the houses at Coral Gables is due to the character of the detailing which seems to have a sort of "freehand" character that apparently was born out on the job rather than in a drafting room. Take the detailing of this house, for instance, none of it seems to have been copied yet it has all of the characteristics of original Spanish work. In the plan, note that the living room, dining room and the hall are separated only by open arches. The garage wing has been reversed, with the entrance toward the street instead of as shown on the plan.



HOUSE AND ATTACHED GARAGE
AT CORAL GABLES, FLORIDA

Kiehnel and Elliott, Architects, Miami



Aside from its picturesqueness, this design is interesting because it demonstrates that an extremely long unbroken facade offers no difficulties to a competent designer. The columns of the window arcade and the lattice-like railings of the balconies are of cast cement, and the lintels of the porch and of the laundry are of heavy timbers painted to match the windows and doors. The heavy, squat chimney at one end is balanced by the "off center" position of the entrance and by the break in the roof level at the other end. The arrangement of the windows is well

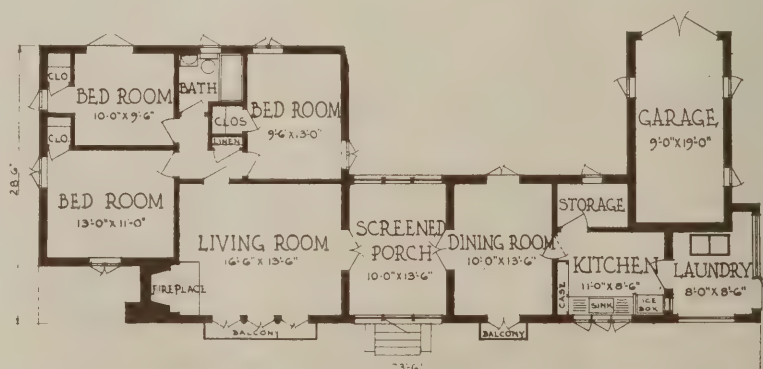
devised to preserve this balance.

The plan is an adaption of a type that is common in some rural districts of the South, in which an open "gallery" separates the important rooms of the house, thus providing for free circulation of air and forming a delightful outdoor sitting room in hot weather.

Note the compact arrangement of the three bedrooms, all with cross ventilation and grouped around the bathroom. There is an attached garage and a convenient storage room and laundry opening from the kitchen.

A SIX-ROOM BUNGALOW AT CORAL GABLES

Kiehnel and Elliott, Arch'ts, Miami

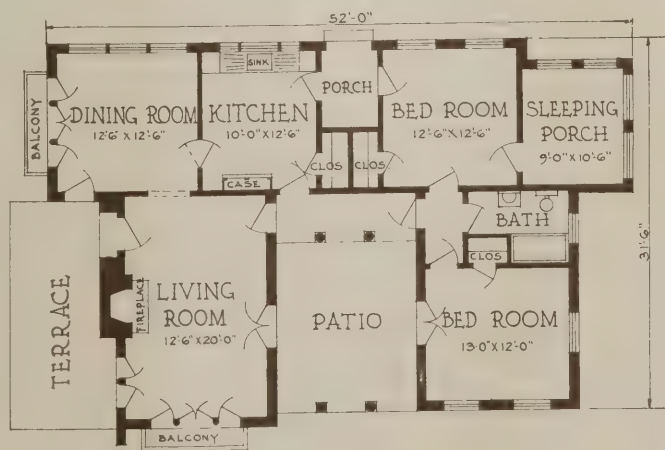




A building fresh from the hands of the workmen is of course at a disadvantage, but, with a well designed house such as this one as a basis, there need be no fear as to the final result when the grounds are properly planted. True enough, the eaves seem a little too high, and the arched openings a trifle stilted, but taken in all it is an attractive design. In connection with the high eaves, we must remember that ample roof space makes a house more comfortable in warm weather. The use of brick trim for

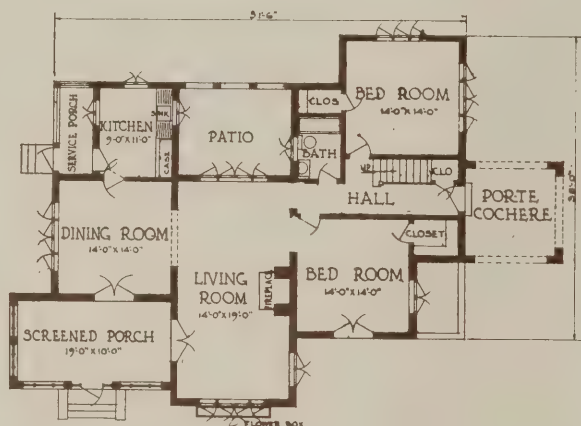
the arches is interesting. Note how the stucco is allowed to partially cover the brickwork in places.

This might be called an outdoor type of plan as there is an open terrace, a patio and a sleeping porch. Also, all of the rooms; the dining room, the living room, the kitchen and the bedrooms, have one or more outside doors. An arcaded walk across one end of the patio forms the connecting link between the living portion of the house and the bedroom wing.



A FIVE-ROOM BUNGALOW AT CORAL GABLES

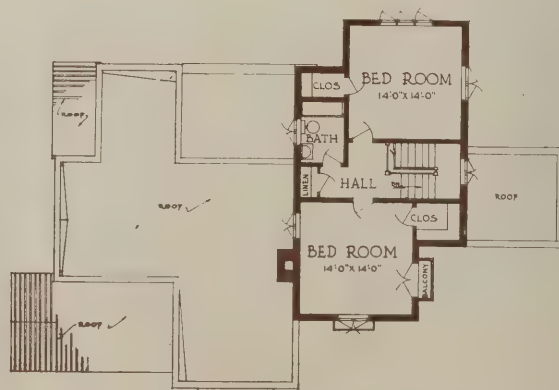
W. C. DeGarmo, Architect, Miami



Here is a house that seems to have grown through the years rather than to have been a completed whole in the beginning. It is one of those compositions that seems so easy of accomplishment until we try to design one, and then are brought to realize that studied carelessness like this offers the most difficult of problems. The building shown beyond the porte cochere is the garage, a separate building with servants' quarters in the second story. Note that the location of the screened porch is such that it may be used for dining purposes.

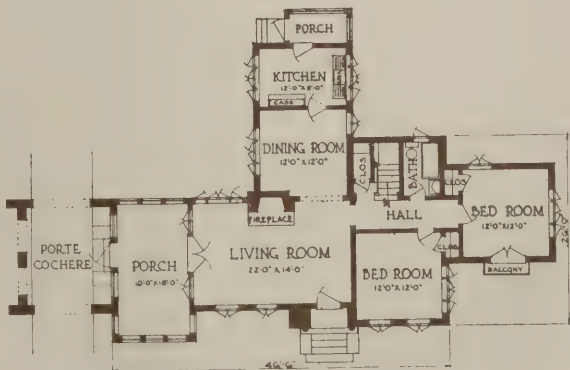
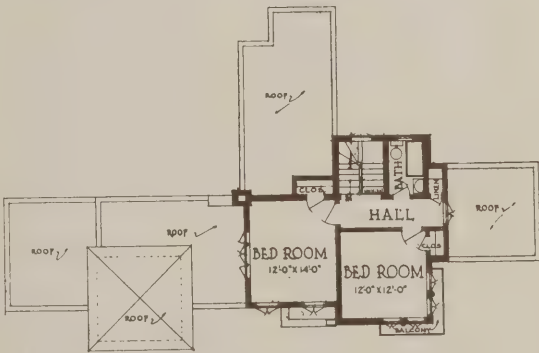
*HOUSE OF JEROME CARTY,
CORAL GABLES, FLORIDA*

*Martin L. Hampton and Ehmann,
Architects, Miami, Florida*



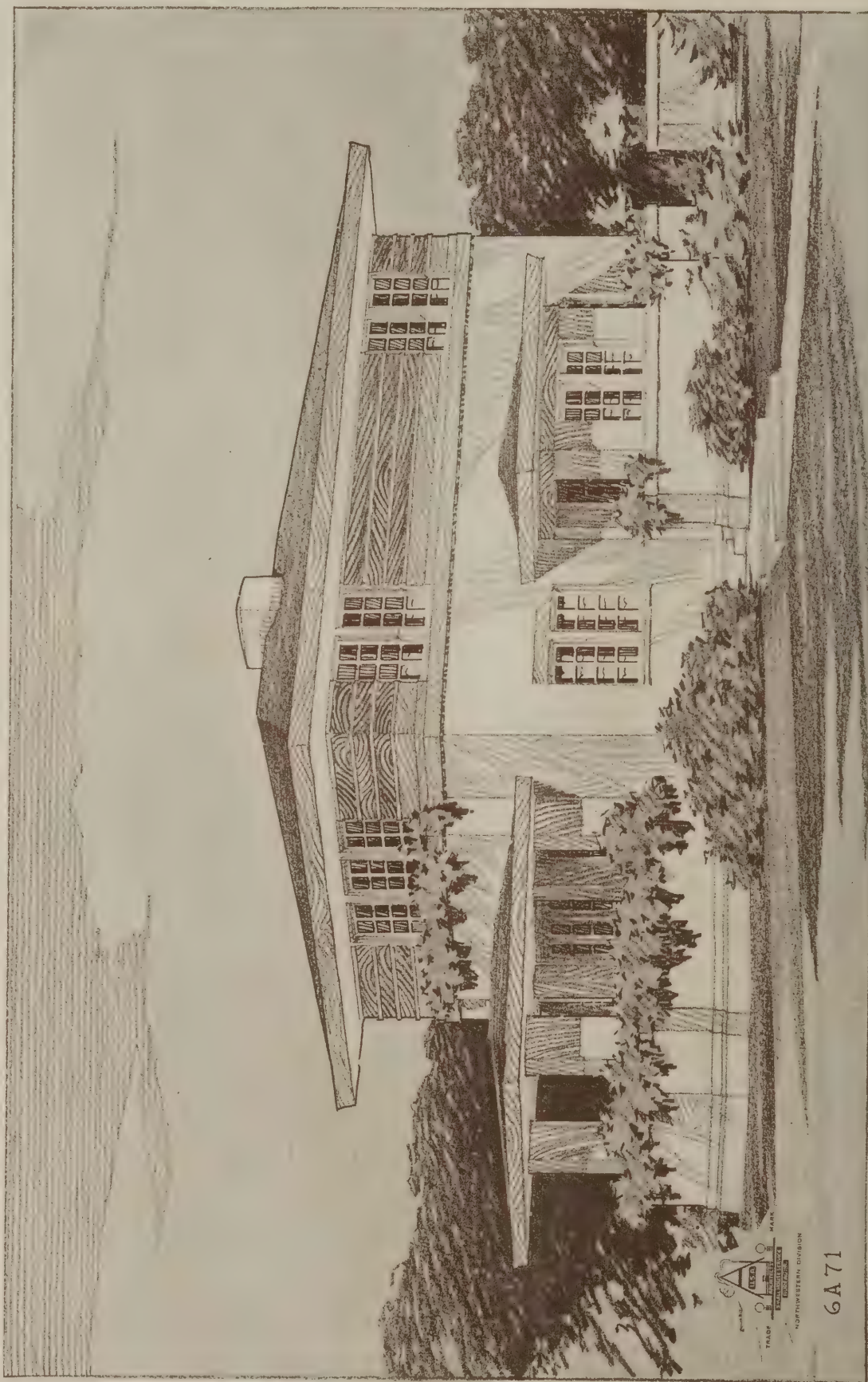


This house combines dignity and picturesqueness in a remarkable degree. Irregular in outline, there is a certain balance and relationship between the parts that give the composition "guts," so to speak. A sort of formal mannerism in the detailing helps in giving this effect. The combination of coral stone and stucco is shown at its best in this house where coral stone disappears beneath stucco only to reappear in another spot. The plan is spacious and well arranged, with two bedrooms and bath on each floor.



**HOUSE OF J. W. RICKETTS,
CORAL GABLES, FLORIDA**

*Martin L. Hampton and Ehmman,
Architects, Miami, Florida*



6A71

This style, call it what you may—"prairie type," "Frank Lloyd Wright," "Western"—admits of few qualifications on the part of its critics. One is either for it, wholeheartedly, or against it, strong! In any event, it represents an attempt to meet the demand heard in some quarters for a new style of architecture. Whether it really has any significance rests with the future

COMPLETE WORKING DRAWINGS and DETAILS

A Six-Room House Designed in the Manner of Frank Lloyd Wright

*House No. 6A71, Designed Especially for National Builder
by The Architects' Small House Service Bureau, Inc.*

© 1924 by N. B. and A. S. H. S. B.

ONE of the great American architects is undoubtedly Mr. Frank Lloyd Wright. Early in his career he designed small houses of striking individuality. They were noted for the open character of the plans and the spacious effects thus obtained. The exteriors were marked by strong horizontal lines and by a definite rectangular or "blocky" character. The house we show this month is somewhat in Mr. Wright's style, and we hereby make acknowledgments to him.

The construction is wood frame with stucco finish. The raised bands of stucco in the second story, as well as the other horizontal coursings, are extremely effective in reducing the apparent height of the building.

There are six rooms with a large open porch. One enters this house through a vestibule from which rises the stairway to the second story. There is a door leading into the kitchen and a cased opening leading into the living room. A monumental fireplace is a feature of this living room. It is set in an angle nook. Seats flank both sides. There are bookcases above the seats. Directly opposite the fireplace is an open porch which is reached through folding casement doors.

Opening off the living room is the dining room, which should be extremely effective with its great

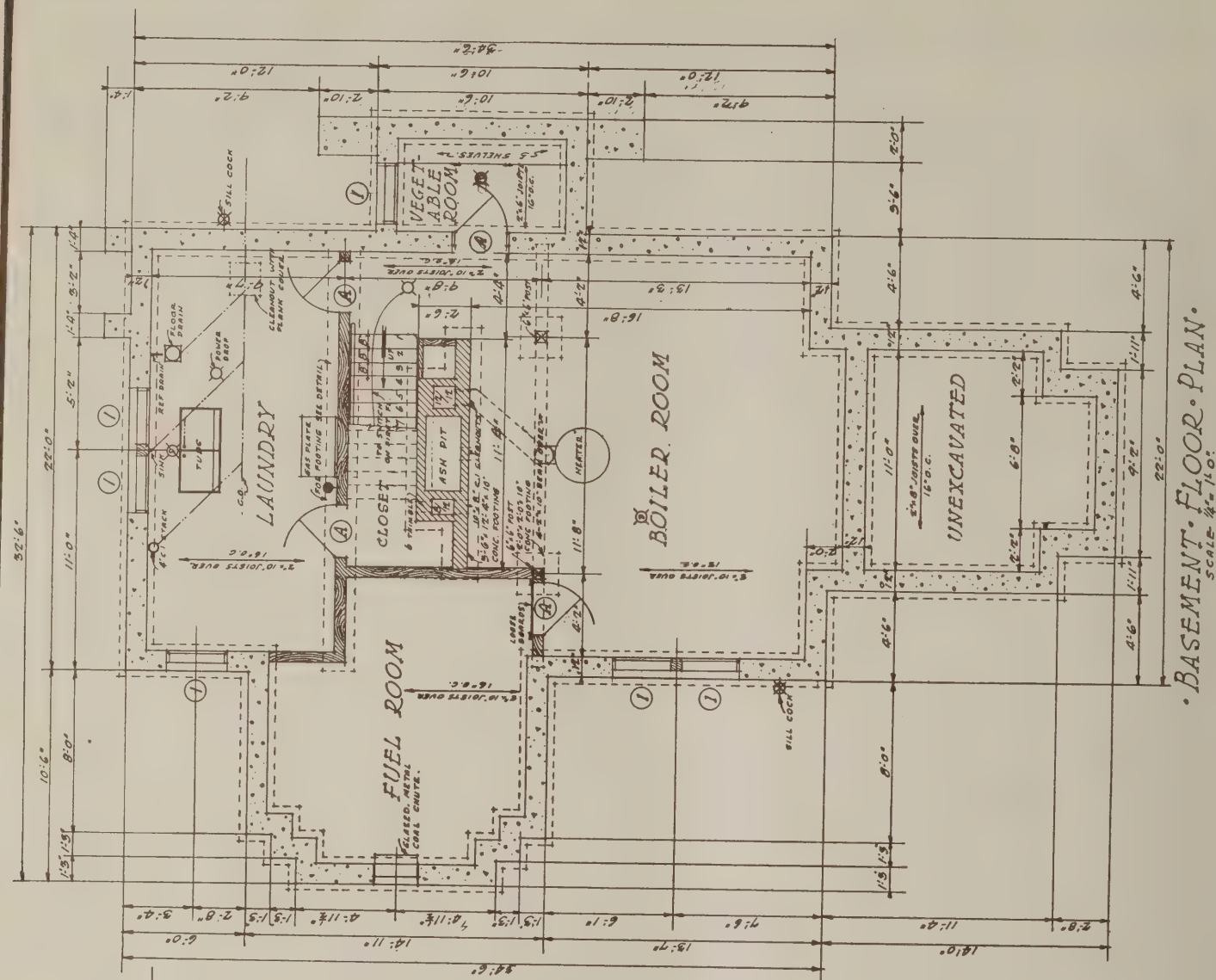
bay window and fine lighting. The kitchen is equipped with a dining alcove. One door from the kitchen leads to the service entrance, another leads to the combination stairway, and a third gives access to the basement.

It is not difficult to fancy with how much comfort and convenience one might live in a house planned like this one. For example, the kitchen quarters are distinctly detached from the living room and access to the second story gained by a combination stairway. This is a provision which many people find essential. With a kitchen window in the front wall of the house, the housewife who does her own work will feel that she has not as usual been given the least desirable place in which to spend the many hours that are required in the kitchen.

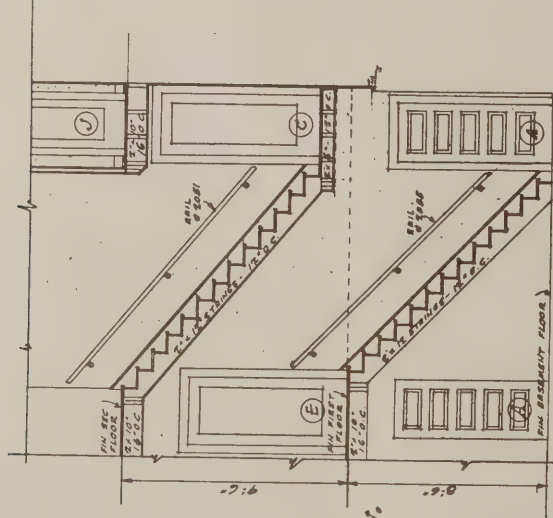
In the second story there are three excellent bedrooms, two of them with windows on three sides. Each one has abundant closet space. In the large bedroom there are two closets, one of these large enough for a dressing room. There is a generous linen closet. The windows of this house are of the casement type, swinging out.

This house will require a sixty-foot lot. It is designed for a south or east facing. The plans should be reversed for a west or north exposure.

ON the following pages are reproduced the complete working drawings and details for this house, and a complete quantity survey will be found on pages 65 and 66. These drawings are on a scale of $\frac{1}{8}$ inch to the foot. By special arrangement with The Architects' Small House Service Bureau these working drawings are made an exclusive feature of NATIONAL BUILDER. They represent special designs created for the benefit of NATIONAL BUILDER subscribers and they are bought and paid for on that basis. They have never before been published in any book or magazine. The Architects' Small House Service Bureau was retained by NATIONAL BUILDER for this service because it represents the highest authoritative architectural service pertaining to small houses to be found anywhere. The Bureau is a national association of experienced architects of standing who are interested in promoting good design and construction rather than in obtaining monetary profit. The combined experience and skill thus made available to builders of small houses is approached by no other agency.



BASEMENT FLOOR PLAN.
SCALE - $\frac{1}{4}" = 1'-0"$



DETAIL OF FOOTING.
FOR BEARING PARTITION.

SECTION • THRU • STAIRWAY.

SCHEDULE OF WINDOWS.				
QUAN.	TYPE	DESCRIPTION	NO. OF PIES OF	SIZE OF OPENING.
6	J	CELLAR BATH	2	14" x 12" 2-8" x 1-5" 19"
27	2	CASEMENT	8	14" x 12" 2-8" x 4-0"
2	3	"	8	12" x 10" 2-4" x 4-0"
2	4	"	8	16" x 10" 3-0" x 4-0"

QUAN	TYPE	SIZE	DESCRIPTION	REMARKS
4	A	2'-6" x 6'-2" $\frac{1}{8}$ "	5-CROSS PANEL	
2	B	1'-9" x 8'-1" $\frac{1}{8}$ "	# 1101	
1	C	2'-6" x 6'-2" $\frac{1}{8}$ "	# 1101	MOVABLE SECTION
1	D	2'-6" x 6'-2" $\frac{1}{8}$ "	# 1101	
1	E	2'-10" x 8'-1" $\frac{1}{8}$ "	# 1101	
1	F	2'-10" x 8'-1" $\frac{1}{8}$ "	SECTION	
1	G	3'-0" x 6'-8" $\frac{1}{8}$ "	SECTION	
4	H	1'-6" x 6'-8" $\frac{1}{8}$ "	SECTION	
1	I	2'-0" x 8'-1" $\frac{1}{8}$ "	# 1101	
3	J	2'-0" x 6'-8" $\frac{1}{8}$ "	# 1350	W/BLIND
3	K	2'-6" x 8'-1" $\frac{1}{8}$ "	# 1101	

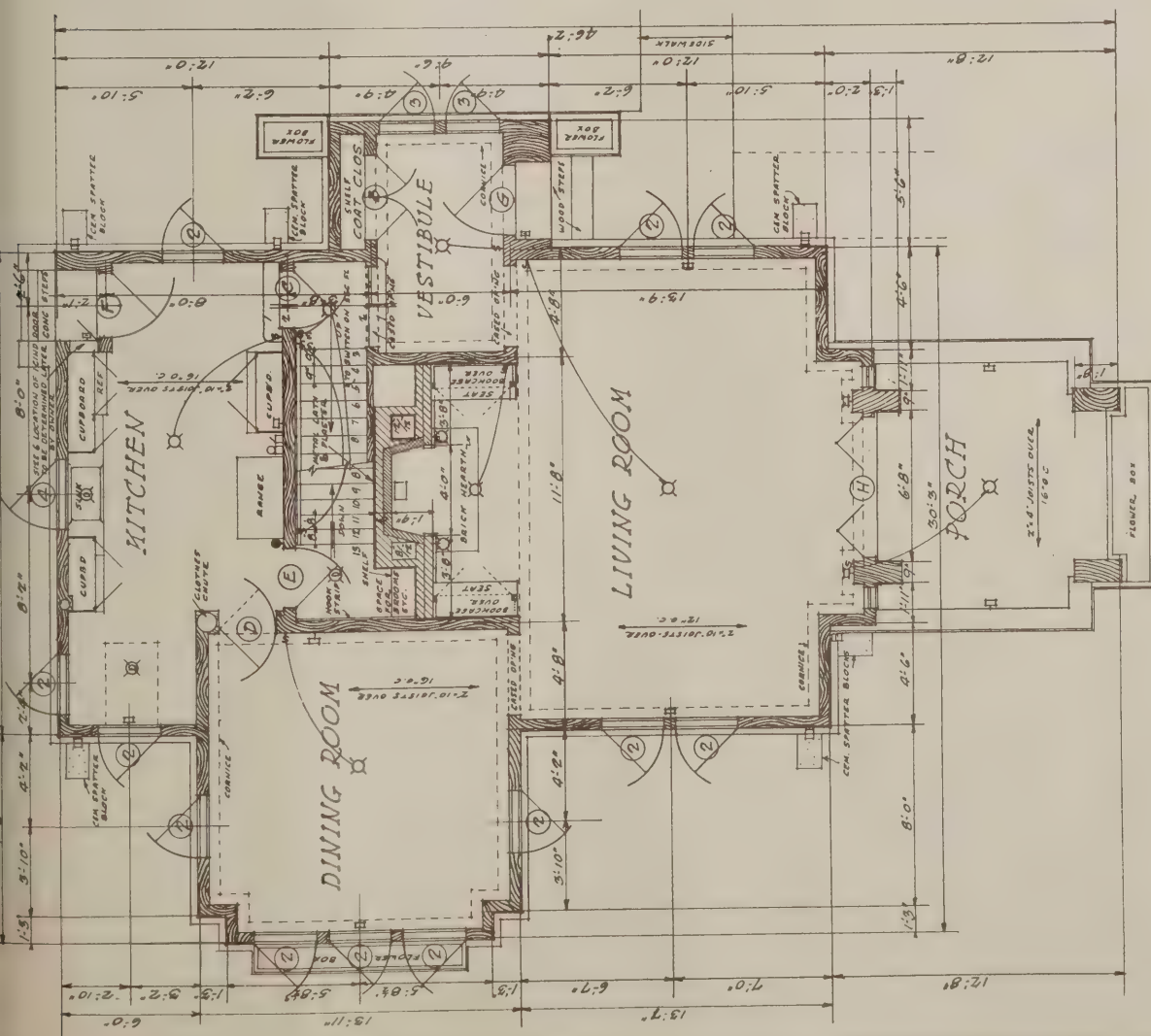


DETAIL OF POST.
FOOTING.
SCALE $\frac{1}{4}" = 1'$ INCH

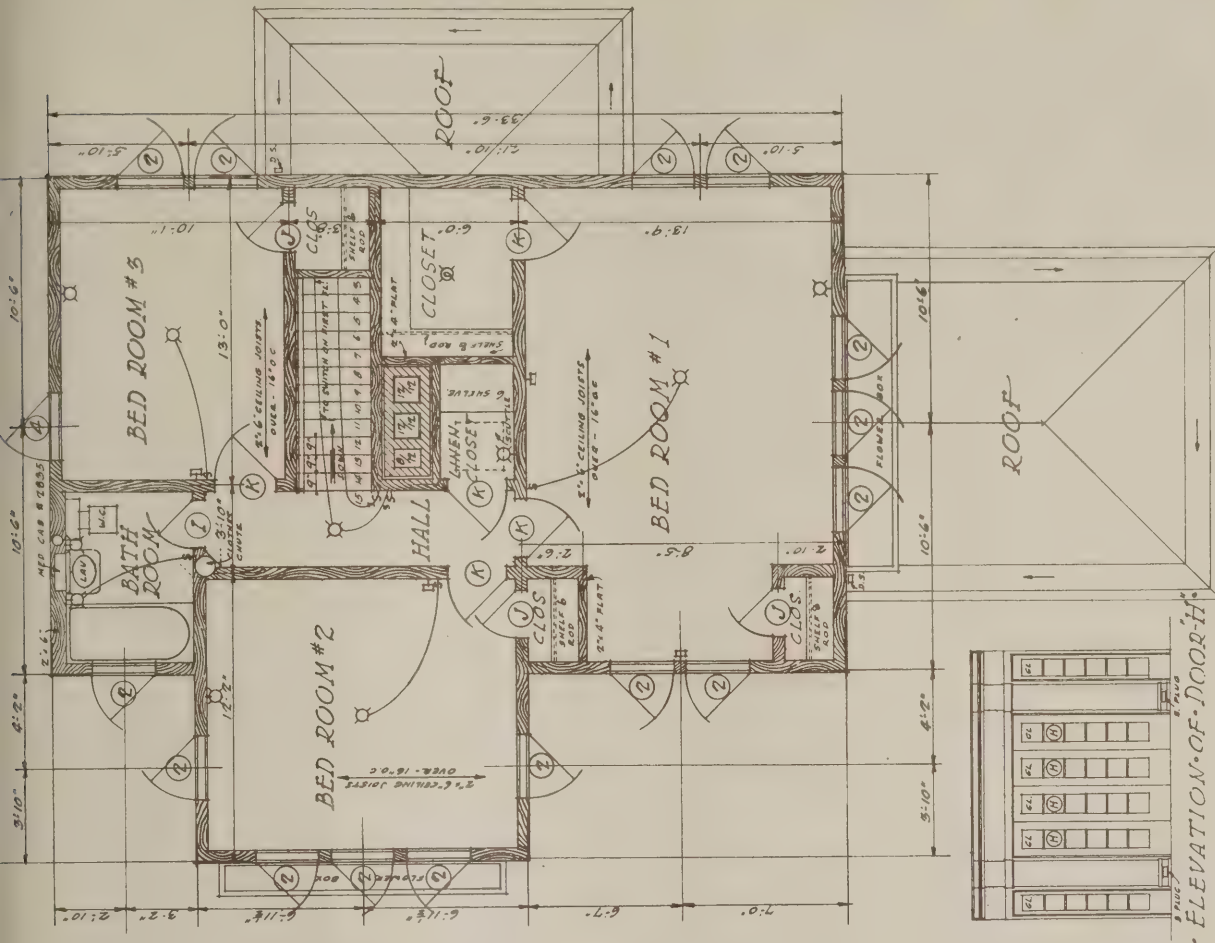
MATERIALS	ELECTRIC WIRING SYMBOLS
CONCRETE	CEILING OUTLET
BRICK	DROP CORD
WOOD	BRACKET
	3 WAY SWITCH
	GAS OUTLET
	PUSH BUTTON

Dimensions are taken to outside of foundation walls, outside of studs on exterior walls and center of studs for partitions.

Stock numbers refer to mouldings in Universal Millwork Design Book #20. In case these mouldings cannot be procured, others of similar design and size may be substituted.



• FIRST FLOOR PLAN •
SCALE 1/4" = 1'-0"



• SECOND FLOOR PLAN •
SCALE 1/4" = 1'-0"

MATERIALS		ELECTRIC WIRING SYMBOLS	
CONCRETE	.....	CEILING OUTLET	⊠
BRICK	▨	DROP CORD	⊞
WOOD	▨	BRACKET	⊞
PLASTER	▨	BASE PLUG	⊞
		SWITCH	⊞
		3 WAY SWITCH	⊞
		GAS OUTLET	⊞
		PUSH BUTTON	⊞
		BELL OUTLET	⊞
		BUZZER	⊞

Dimensions are taken to outside of foundation walls, to outside of studs on exterior walls and center of studs for partitions.
Foundation walls shown concrete may be done brick, concrete block or load-bearing hollow tile. Where building ordinances permit, foundation walls may be 9" thick (with 20's footing) except in case of stone which shall be 16" thick.

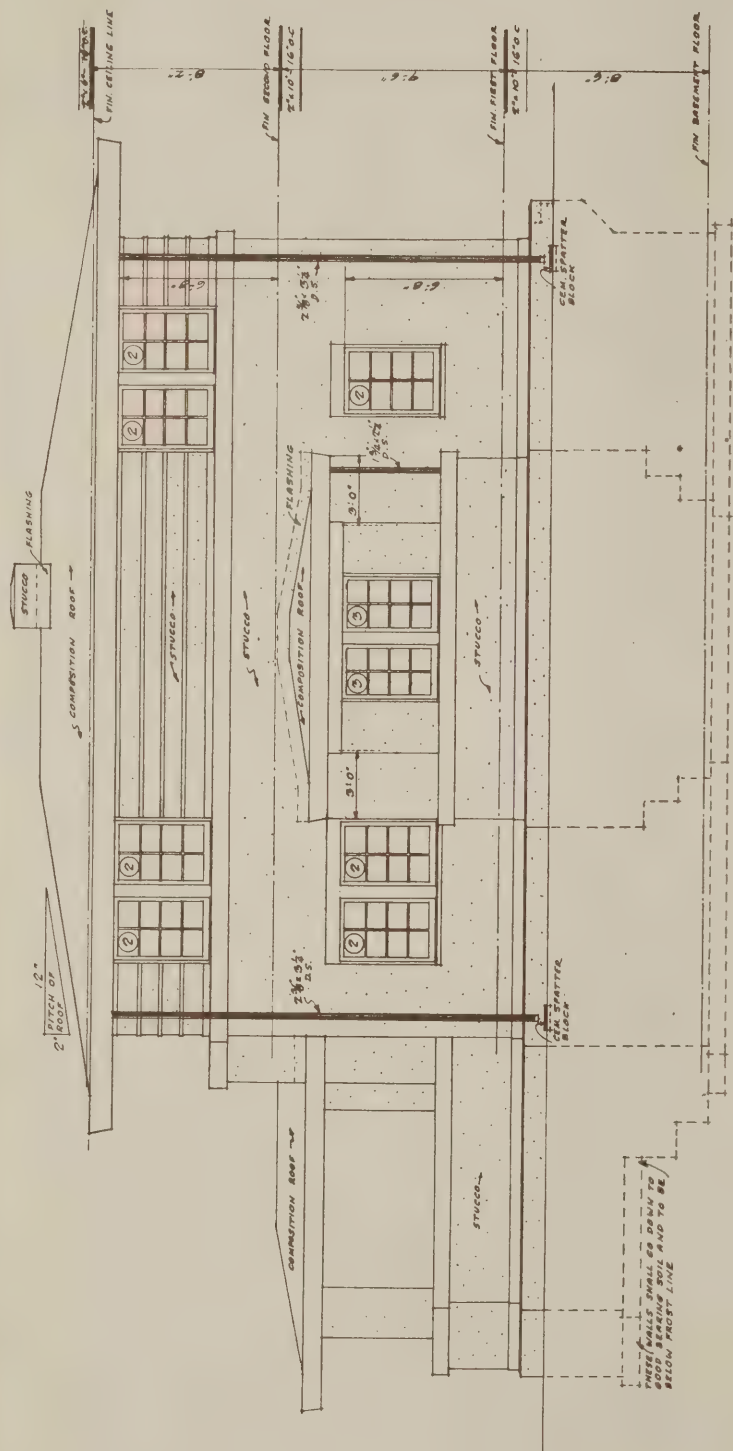
Stock numbers refer to moldings in Universal Millwork Design Book 20. In case these moldings cannot be procured, others of similar design and size may be substituted. Form sash for all exterior openings except ice door unless otherwise noted. Bottom rail of storm sash to have vent.

HOME PLAN FOR

10-11 SMALL BUILDERS—October, 1924

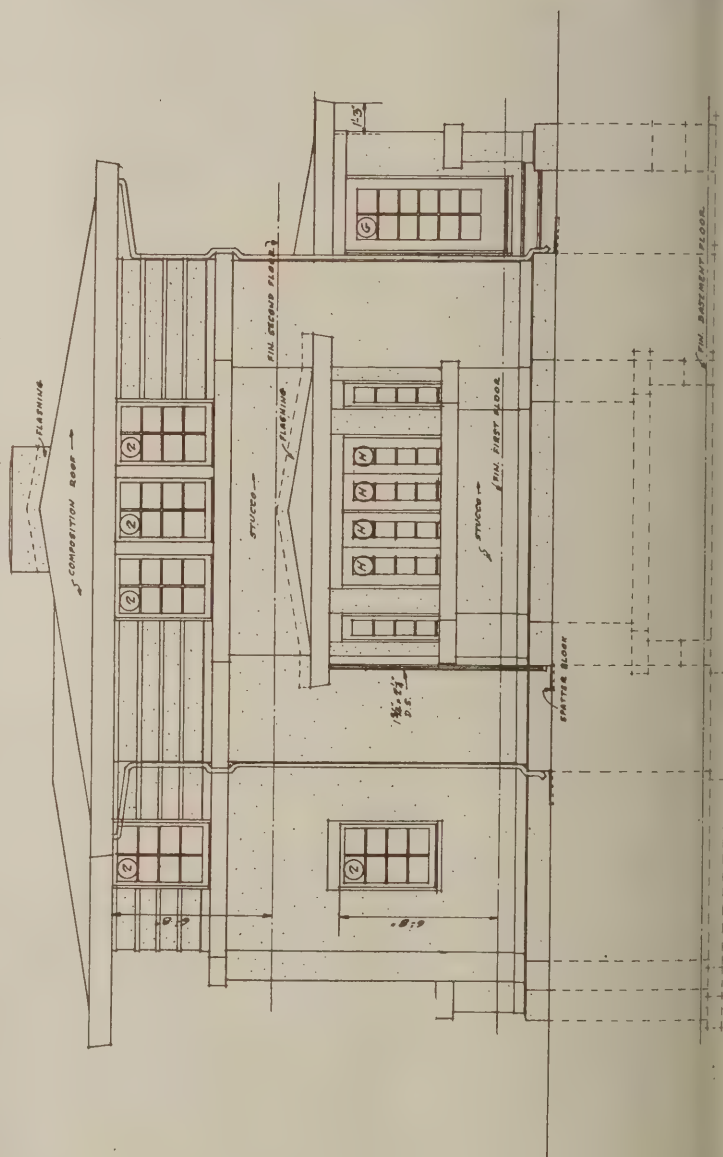
THE ARCHITECTS SMALL HOUSE SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
—CHICAGO, ILL.—
—ST. LOUIS, MO.—
—MINNEAPOLIS, MINN.—

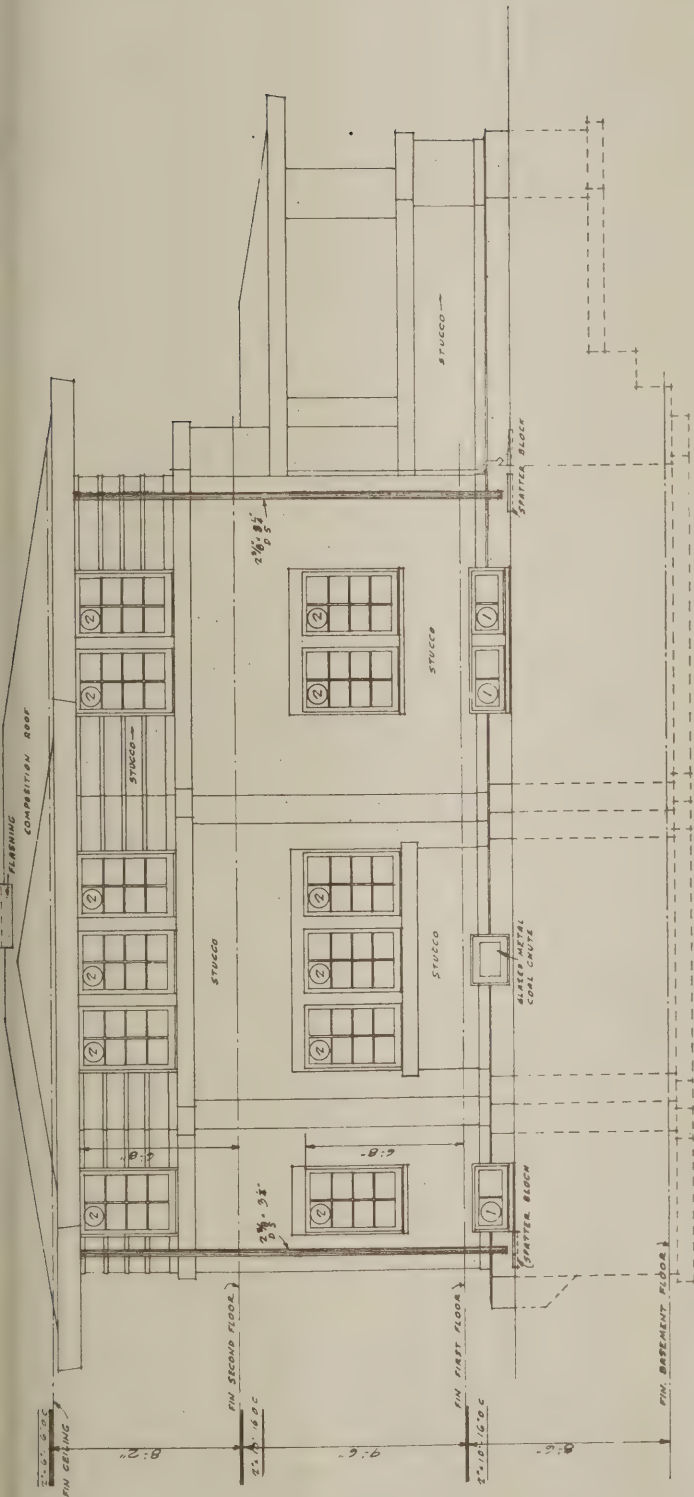
6A71
SHEET NO.
2 OF 5



FRONT ELEVATION.

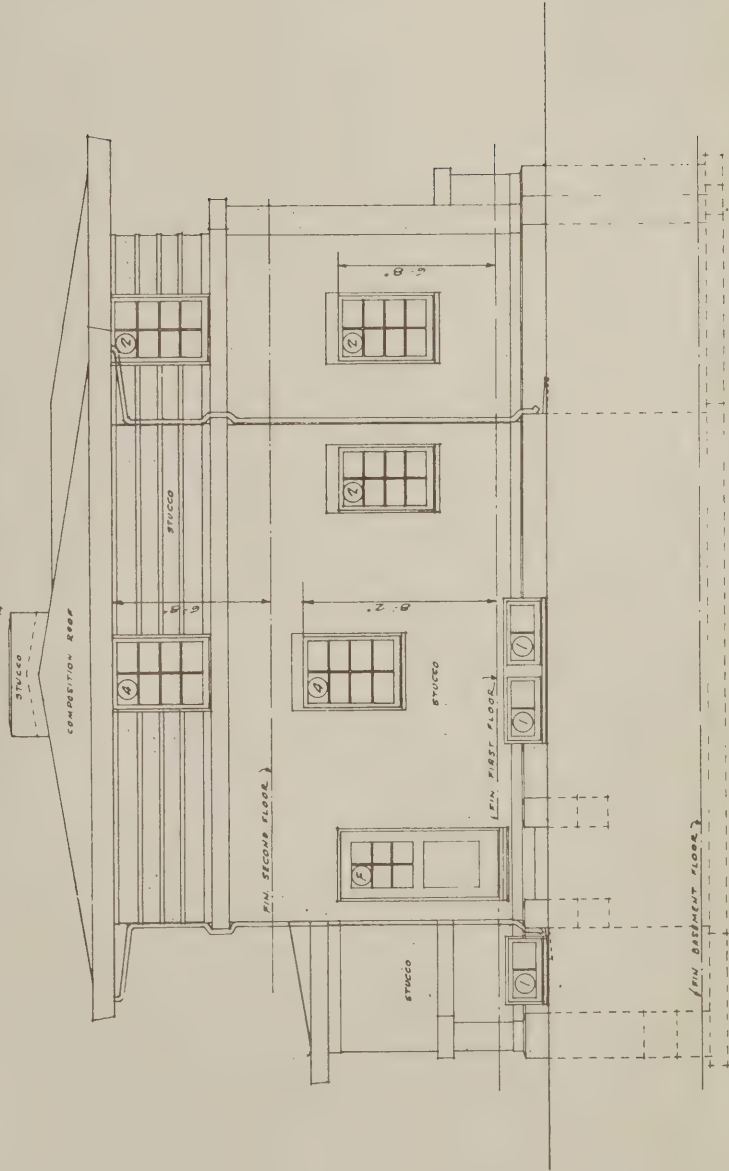
SCALE 1/8" = 1'.





REAR ELEVATION.

SCALE 1/8" = 1' 0"



SIDE ELEVATION.

SCALE 1/8" = 1' 0"

HOME PLAN FOR

6A71

THE ARCHITECTS' SMALL HOUSE
SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
"HOME SERVICE" BUILDINGS

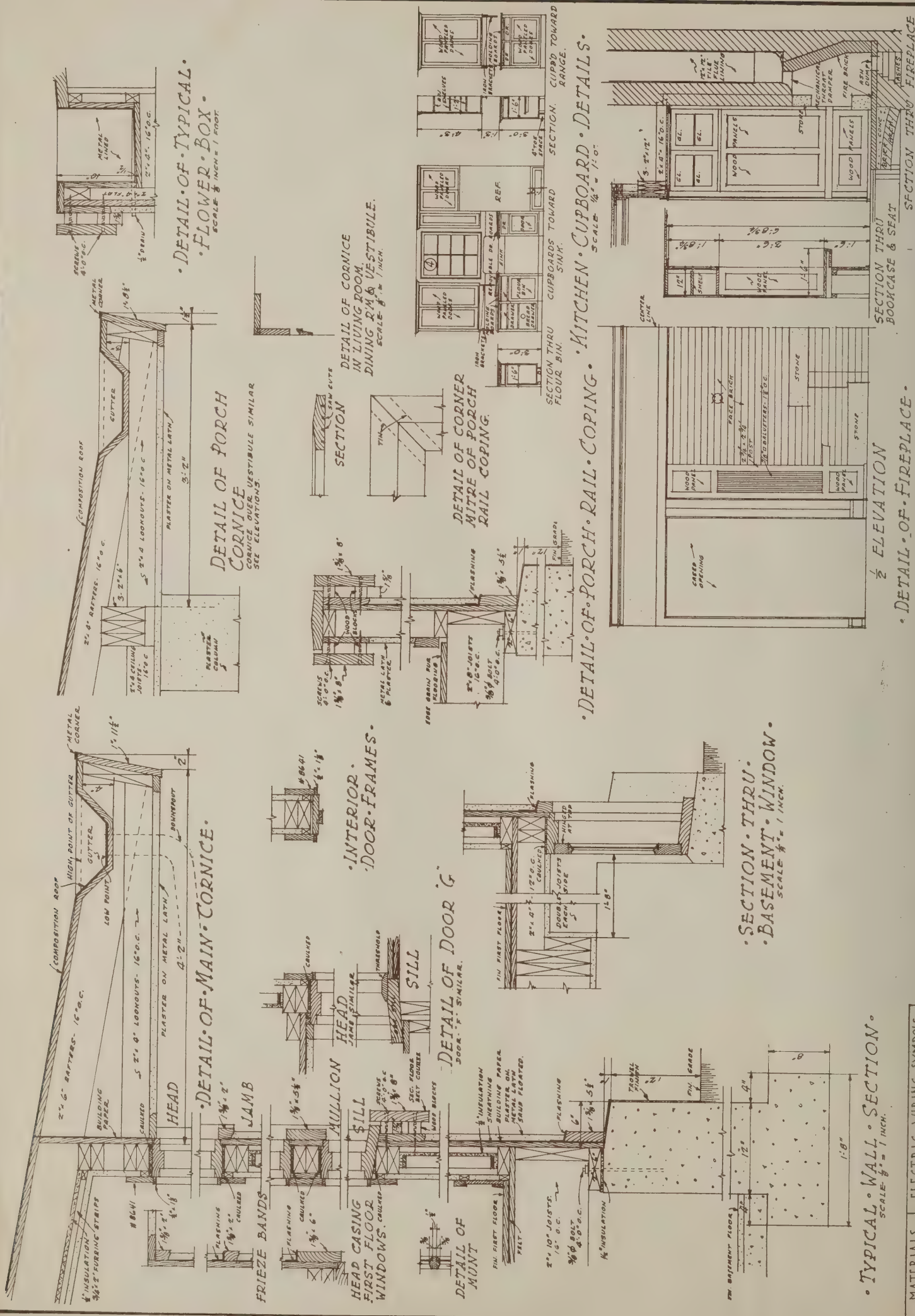
1000
DIVISION
NORTHWESTERN
DIVISION, INC.
NORTHWESTERN
DIVISION, INC.

HOME PLAN FOR

6A71

THE ARCHITECTS' SMALL HOUSE
SERVICE BUREAU
NORTHWESTERN DIVISION, INC.
"HOME SERVICE" BUILDINGS

1000
DIVISION
NORTHWESTERN
DIVISION, INC.
NORTHWESTERN
DIVISION, INC.



Stock numbers refer to moldings in Universal Millwork Design Book #20. In case these moldings cannot be procured, others of similar design and size may be substituted.

Dimensions are taken to outside of foundation walls, to outside of studs on exterior walls and center of studs for partitions. Foundation walls shown concrete may be stone, brick, concrete block or load-bearing hollow tile.

MATERIALS	ELECTRIC WIRING SYMBOLS
CONCRETE	CEILING OUTLET
BRICK	DROP CORD
WOOD	BRACKET
PLASTER	PUSH BUTTON
	3 WAY SWITCH
	GAS OUTLET
	PUSH BUTTON
	PUSH BUTTON

HOME PLAN FOR A NATIONAL BUILDER—October, 1924
THE ARCHITECT'S SMALL HOUSE
6A71
SERIAL

QUANTITY SURVEY FOR HOUSE

No. 6A71

Designed Especially for National Builder by The
Architects' Small House Service Bureau, Inc.

See pages 59 to 64, inclusive, for description, perspective complete working drawings and details

EXCAVATING 250 cu. yds..... BACK FILL 40 cu. yds..... FOUNDATION If 12" concrete, 60 cu. yds. gravel, 242 sax cement..... If 9" concrete, 47 cu. yds. gravel, 190 sax cement..... If 12" tile 29100 CBM tile, 21 cu. yds. mortar..... If 9" tile, 22000 CBM tile, 16 cu. yds. mortar..... CEMENT FLOOR 6 cu. yds. gravel..... 5 cu. yds. sand..... 68 sax cement..... 6 cement spatter blocks..... CHIMNEY 3600 common brick..... 150 inside face brick..... 20 sq. ft. hearth brick..... 100 fire brick..... 20 lbs. fire clay..... 10 lbs. mortar color..... 30 lin. ft. flue tile 8x12..... 60 lin. ft. flue tile 12x12..... 1—8" thimble..... 2—6" thimbles..... 1 angle 4x3x5/16—4'0..... 1 cast iron ash dump..... 1 throat and damper..... 4 cubic yards mortar..... TILE FLOOR 38 sq. ft. ceramic tile..... 23 lin. ft. cove base..... LATH 230 sq. yds. metal for stucco..... 11500 wood lath..... STUCCO 230 sq. yds. stucco on metal..... PLASTER 9 sq. yds. plaster on metal over boiler..... 820 sq. yds. plaster on wood lath..... 14 sq. yds. Keene's cement.....	LUMBER 2—6x6-7 posts..... 4—2x12-12 stair horses..... 4—2x10-20 girders..... 4 ft. 2 in. plank clean out cover..... 114 lin. ft. 2x4 basement partition plate..... 36—2x4-7 basement partition studs..... 380 ft. D & M basement partition sheathing..... 9—2x8-12 first floor joist..... 9—2x6-5 first floor joist..... 10—2x10-14 first floor joist..... 17—2x10-20 first floor joist..... 17—2x10-14 first floor joist..... 3—2x10-12 first floor joist..... 12—2x10-10 headers and box sill..... 3—2x10-14 doubles under partitions 1060 ft. com. bds. 1st floor subfloor 1200 ft. 13/16x1½ 1st floor finish floor..... 252 lin. ft. 2x4 first floor partition plates..... 74—2x4-9 first floor partition studs..... 4—2x12-16 stair horses..... 3—2x6-14 landing framing..... 9—2x4-12 porch ceiling joist..... 4—2x8-10 porch girder..... 2—2x10-12 porch girder..... 8—2x10-14 second floor joist..... 20—2x10-20 second floor joist..... 10—2x10-16 second floor joist..... 9—2x10-14 second floor joist..... 6—2x6-10 second floor joist..... 930 ft. com. bds. second floor sub- floor..... 1100 ft. 13/16x1½ second floor fin- ish floor..... 336 lin. ft. 2x4 second floor parti- tion plates..... 100—2x4-8 second floor partition studs..... 3—2x10-14 headers..... 1—2x10-6 step horses..... 12—2x6-22 second floor ceiling joist..... 12—2x6-18 second floor ceiling joist..... 5—2x6-22 second floor ceiling joist..... 10—2x6-14 second floor ceiling joist..... 3—2x6-12 headers..... 900 ft. D & M attic sheathing..... 423 lin. ft. 2x4 outside wall plates.....	124—2x4-18 outside wall studs..... 2790 ft. D & M outside wall sheath- ing..... 26—2x6-10 rafters..... 13—2x6-8 rafters..... 66—2x6-16 rafters..... 14—2x6-12 rafters..... 2000 ft. D & M roof sheathing..... 19 squares roofing..... 95—2x4-10 look outs..... 1300 lin. ft. grounds..... 25—2x4-16 scaffold and extras..... 8—2x6-14 scaffold and extras..... 3—2x10-12 scaffold and extras..... 4—2x10-16 scaffold and extras..... MILLWORK Frames: 2 single frames 14x12-2L-1¾..... 2 mul. frames 14x12-2L-1¾..... 8 single casement fr. 14x10½-8L-1¾..... 5 mul. casement fr. 14x10½-8L-1¾..... 3 triple casement fr. 14x10½-8L-1¾..... 1 mul. casement fr. 12x10½-8L-1¾..... 2 single casement fr. 16x10½-8L-1¾..... Windows: 6 sash 14x12-2L-1¾..... 27 sash 14x10½-8L-1¾..... 2 sash 12x10½-8L-1¾..... 2 sash 16x10½-8L-1¾..... Storm Sash: 6 st. sh. 14x12-2L-1½..... 27 st. sh. 14x10½-8L-1½..... 2 st. sh. 12x10½-8L-1½..... 2 st. sh. 16x10½-8L-1½..... Screens: 6 screens 14x12-2L-1½..... 27 screens 14x10½-8L-1½..... 2 screens 12x10½-8L-1½..... 2 screens 16x10½-8L-1½..... Outside Door Frames: 1 dr. fr. 2'10x6'8-1¾..... 1 dr. fr. 3'0x6'8-1¾..... 1 dr. fr. 6'0x6'8-1¾..... Outside Doors: 1 dr. 2'10x6'8-1¾..... 1 dr. 3'0x6'8-1¾..... 4 dr. 1'6x6'8-1¾.....
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Storm Doors:

1 st. dr. 2'10x6'8.....	
1 st. dr. 3'0x6'8.....	
4 st. dr. 1'6x6'8.....	

Screen Doors:

1 sc. dr. 2'10x6'8.....	
1 sc. dr. 3'0x6'8.....	.....
4 sc. dr. 1'6x6'8.....	.....

Outside Millwork:

2 side light frames 1'0x6'8.....	.....
2 side light 1'0x6'8.....	.....
2 st. sh. 1'0x6'8.....	.....
1—12'6 flower box.....	.....
1—12'0 flower box.....	.....
2—3'0 flower box.....	.....
2—9'0 flower box.....	.....
1 icing door frame.....	.....
1 icing door.....	.....
1 set entrance steps.....	.....
240 lin. ft. cornice.....	.....

Interior Doors:

4 doors 2'6x6'6-1 3/4—5XP.....	.....
2 doors 1'9x6'8-1 3/4—No. 1101.....	.....
2 doors 2'6x6'8-1 3/4—No. 1101.....	.....
1 door 2'10x6'8-1 3/4—No. 1101.....	.....
1 door 2'0x6'8-1 3/4—No. 1101.....	.....
3 doors 2'0x6'8-1 3/4—No. 1350.....	.....
5 doors 2'6x6'8-1 3/4—No. 1101.....	.....

Jambs:

4 jambs 2'6x6'6.....	.....
1 jamb 3'6x6'8.....	.....
2 jambs 2'6x6'8.....	.....
1 jamb 2'10x6'8.....	.....
1 jamb 2'0x6'8.....	.....
3 jambs 2'0x6'8.....	.....
5 jambs 2'6x6'8.....	.....
3 jambs 3'6x6'8.....	.....

Interior Trim:

2 sides single trim 14x12-2L.....	.....
2 sides mullion trim 14x12-2L.....	.....
8 sides single trim 14x10 1/2-8L.....	.....
5 sides mullion trim 14x10 1/2-8L.....	.....
3 sides triple trim 14x10 1/2-8L.....	.....
1 side mul. trim 12x10 1/2-8L.....	.....
2 sides single trim 16x10 1/2-8L.....	.....
1 side door trim 2'10x6'8.....	.....
1 side door trim 3'0x6'8.....	.....
1 side door trim 6'0x6'8.....	.....
2 side sidelight trim 1'0x6'8.....	.....
1 side icing door trim.....	.....
8 side dr. trim 2'6x6'6.....	.....
2 side dr. trim 3'6x6'8.....	.....
4 side dr. trim 2'6x6'8.....	.....
2 side dr. trim 2'10x6'8.....	.....
2 side dr. trim 2'0x6'8.....	.....
6 side dr. trim 2'0x6'8.....	.....
10 side dr. trim 2'6x6'8.....	.....
6 side opening trim 3'6x6'8.....	.....
1 medicine cabinet No. 2835.....	.....
1 utility door.....	.....
1 utility door jamb.....	
1 utility door trim.....	

Interior Trim:

2 clothes chute doors.....	
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2 clothes chute door jambs.....	
2 clothes chute doors trim.....	
1 scuttle door.....	
1 scuttle door jamb.....	
1 scuttle door trim.....	.....
1—3'0 kitchen cupboard.....	.....
1—4'6 kitchen cupboard.....	.....
1—3'6 kitchen cupboard.....	.....
2—3'8 seats.....	.....
2—3'8 book cases.....	.....
1 mantel shelf.....	.....
1 meter cabinet.....	.....
1 flight basement stairs with rail.....	.....
1 flight grade stairs with rail.....	.....
1 flight main stairs with rail.....	.....
580 lin. ft. base.....	.....
580 lin. ft. base shoe.....	.....
580 lin. ft. base molding.....	.....
160 lin. ft. ceiling cove.....	.....
330 lin. ft. picture molding.....	.....
30 lin. ft. hook strip.....	.....
40 lin. ft. closet shelving.....	.....
16 lin. ft. closet clothes rod.....	.....
12 lin. ft. threshold.....	.....
21 lin. ft. astrogals.....	.....
2 drain boards.....	.....

INSULATION

2100 ft. vegetable fibre or equal for outside walls.....	.....
800 ft. vegetable fibre or equal for 2d floor ceiling.....	.....
4 rolls felt for walls.....	.....
3 rolls rosin for floors.....	.....

WEATHER STRIPPING

6 sash 14x12-2L.....	.....
27 sash 14x10 1/2-8L.....	.....
2 sash 12x10 1/2-8L.....	.....
2 sash 16x10 1/2-8L.....	.....
1 dr. 2'10x6'8.....	.....
1 dr. 3'0x6'8.....	.....
4 dr. 1'6x6'8.....	.....

CAULKING

12 single frames.....	.....
8 mullion frames.....	.....
3 triple frames.....	.....
2 single door frames.....	.....
1 quadruple door frame.....	.....
2 side light frames.....	.....
1 coal chute frame.....	.....

TINWORK

16 lin. ft. chimney flashing.....	.....
230 lin. ft. gutter.....	.....
6 nipples.....	.....
6 strainers.....	.....
6 elbows.....	.....
6 offsets.....	.....
6 shut offs.....	.....
120 lin. ft. conductor.....	.....
18 conductor hooks.....	.....
40 lin. ft. flashing.....	.....
100 tin shingles.....	.....
1 clothes chute lining.....	.....
48 lin. ft. flower box lining.....	.....

EXTERIOR PAINTING

4 gal. trim paint.....	.....
1 gal. oil.....	.....
1 gal. turpentine.....	.....
1/4 gal. shellac.....	.....
1 gal. sash color.....	.....
1 gal. screen paint.....	.....
5 lbs. putty.....	.....

INTERIOR PAINTING

13 gal. white paint.....	.....
11 gal. enamel.....	.....
3 gal. shellac.....	.....
12 gal. interior varnish.....	.....
5 gal. floor shellac.....	.....
6 gal. floor varnish.....	.....
1 gal. boiled oil.....	.....
1 gal. alcohol.....	.....
1 gal. benzine.....	.....
4 lbs. putty.....	.....
3 doz. sheets assorted sandpaper.....	.....
3 lbs. steel wool.....	.....

HARDWARE

6 cellar sash sets.....	.....
31 casement sash sets.....	.....
37 storm sash sets.....	.....
37 screen sash sets.....	.....
1 front door set with butts and bolts.....	.....
1 side door set with butts.....	.....
1 rear door set with butts.....	.....
6 storm door sets.....	.....
6 screen door sets.....	.....
1 icing door set with hinges.....	.....
1 floor hinge.....	.....
2 push plates.....	.....
17 inside lock sets with butts.....	.....
24 door bumpers.....	.....
4 doz. clothes hooks.....	.....
8 stair rail brackets.....	.....
1100 lbs. assorted nails.....	.....
5 lbs. assorted brads.....	.....
1 coal chute.....	.....
1 pr. ornamental butts.....	} medicine cabinet
1 cupboard turn.....	
4 friction stays—utility door.....	.....
2 pr. ornamental butts.....	} clothes chute doors
2 cupboard turns.....	
1 pr. hinges for scuttle door.....	.....
4 pr. ornamental butts.....	} range cupboard
2 cupboard turns.....	
2 drawer pulls.....	
2 elbow catches.....	
2 iron brackets.....	.....
2 pr. ornamental butts.....	} ice box cabinet
1 cupboard turn.....	
1 elbow catch.....	
3 pr. ornamental butts.....	} kitchen cabinet
2 cupboard turns.....	
1 elbow catch.....	
5 drawer pulls.....	
1 set bin castors.....	
1 bin pull.....	.....
4 pr. sheaves.....	} book cases
8 lin. ft. track.....	
1 pr. ornamental butts.....	} meter cabinet
1 cupboard turn.....	

SOME PRINCIPLES of STAIR CONSTRUCTION

By H. T. Becker

IN a former article, which appeared in the May, 1924, issue of NATIONAL BUILDER, dealing with the elements of stair design, some principles were given governing the relations of treads to risers, the problem of headroom, the fundamentals of a beautiful balustrade, and the selection of a suitable type of stair for a given house.

When all these things have been taken into account, there is still the practical problem of building the stair—a problem of equal or greater importance than the design, and one which is not understood in far too many cases.

Stair construction may be delegated outright to a stair-builder, a specialist in this line; it may be ordered as "stair parts," and fitted together on the job; or it may be ordered as a complete stair, in which case it is fitted together at the factory and when received is ready to be assembled and installed. Each method has its advantages for certain cases.

In any of the methods, there are certain construction details which should be observed if the completed stair is to be a credit to its builder, and a satisfactory, handsome part of the house under hard and constant usage for many years. Whether you build the stair yourself, or have it built by sub-contract, or buy a complete stair from the factory, here are some of the things you should check up carefully before giving

the job your O. K.:

The good workman builds his stair almost entirely without the use of nails. Wood joints are by all odds more rigid, and will not pull apart or squeak as nailed joints will, sooner or later. Properly constructed, the stairs are just as much a part of the furnishing of a house as the bookcases, china closets and mantels. It is built as a unit and fitted into position afterward, just as a piece of furniture is. And good furniture, as you may know, is not nailed together. The pieces are fitted into each other and made secure by means of wedges and glue. Stairs should be built the same way.

Each riser should be tongued-and-grooved to the tread above it, and rabbeted for the tread below. Toe-nailing here is almost sure to result in split edges or unsightly nail-head holes, and the stair will be more likely to "give."

The treads and risers should be housed into the wall stringer, and made secure with glue and wedges tightly driven in from the under side, a vertical and a horizontal wedge at each side of each riser. The joints are thus drawn absolutely tight. Short glue blocks are sometimes glued in the under angle between treads and risers, where the width of the stair or the extra heavy service it must perform make extra strength necessary.

In the closed or curb string stair, both

strings should be housed out. The treads and risers have to be inserted from the back or under side of the stairway. This housing out of the stringers is rather a tedious matter when done on the job. Most builders consider it economical to get the factory-housed stringers. These are housed out accurately and smoothly by electrically-operated "routers," with the housing rounded out to accommodate exactly the nosing on the treads—and the machine does in a few minutes a job which would mean a half-day's carpenter labor. The joint between risers and face stringer in an open stair should be neatly mitred, so that no end grain wood shows.

In the best workmanship, balusters of an open string stair are always dovetailed into the tread. Toe-nailing offers no resistance to outward thrust, and the balustrade soon works loose. Dowelling of the balusters to the treads is a second choice, and is preferable to nailing. Dovetailing, however, is the only sound way. A small nail may be driven into the dovetailed portion of each baluster to further secure it to the tread. A loose molding matching the nosing should be used to cover the dovetailing. This molding and the nosing may be dowelled on, or they may be nailed with a few small nails. Nails are permissible here, since the nosing and molding are decorative rather than structural, and are not called upon to

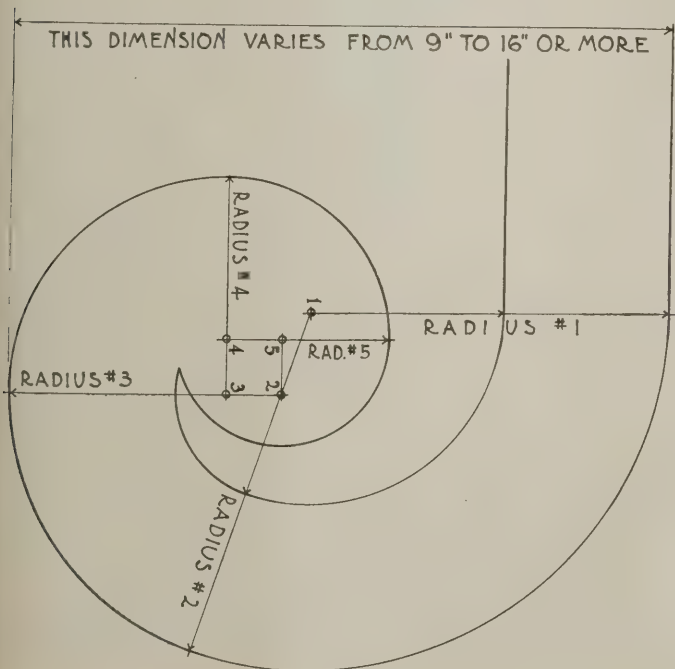
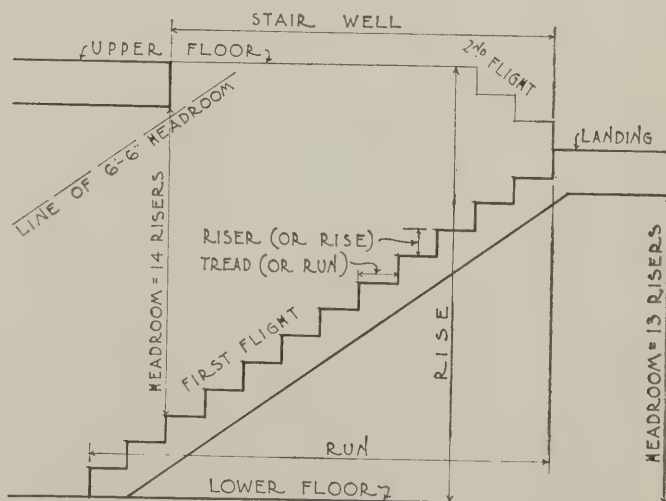


Diagram of method of forming a volute



STAIRS SHOULD BE LAID OUT ACCURATELY TO DETERMINE HEADROOM. THE OLD RULE OF "13 RISERS FOR HEADROOM" IS ALL RIGHT FOR ROUGH APPROXIMATIONS, BUT NOTE THAT THE DIAGRAM SHOWS THAT THE RULE IS NOT ALWAYS TRUSTWORTHY. A GOOD RULE FOR PROPORTIONING STEPS IS THAT THE PRODUCT OF THE WIDTH OF THE TREAD (NOT INCLUDING THE NOSING) MULTIPLIED BY THE HEIGHT OF THE RISER, SHOULD FALL BETWEEN 6 & 75. FOR INSTANCE, IF 10" TREADS ARE DESIRED, THE RISERS SHOULD BE NOT LESS THAN 7" NOR MORE THAN 7 1/2" HIGH. 7 1/2" SHOULD BE THE MAXIMUM HEIGHT FOR RISERS ON MAIN STAIRS, BUT BACK STAIRS MAY HAVE RISERS 8" OR 8 1/2" HIGH. ALL STEPS IN A STAIR SHOULD BE THE SAME SIZE

Diagram for designing stairs

bear a strain. Nosing and molding must of course be mitred together at the corners. They should not extend more than $1\frac{1}{4}$ in. beyond the face of the risers.

Around the well-hole of an open-string stair, the balustrade can be anchored directly to the floor. The balusters are run through the lathe and a pin turned at the base. These pins are fitted into holes bored into the flooring, spaced evenly and at the same distance apart as the balusters on the stair treads.

Anchoring the balusters on the curb string stair presents a different proposition. A shoe is used on the face stringer, and the balusters are spaced evenly along it—averaging two balusters for each tread—with fillet between, if the balusters are square. If they are round, the shoe should not be plowed out, but bored to receive the balusters. These methods assure a rigid, good-looking balustrade.

It might be well to bring out again the point mentioned in discussing stair design, that the face of the balusters should always line up with the face of the face stringer—without regard to the face of the plaster or the center line of the handrail—to insure the best effect.

Round starting newels and balusters on the starting tread may be dowel-pinned. Square starting newels and balusters should be anchored to the starting tread with a mortise-and-tenon joint, so that they will furnish a stable support for the balustrade and protection for the stairway.

Where there is an angle or landing newel, the face stringer should be tenoned to fit into a mortise in the newel. A notch cut into the corner of the stringer where it joins the newel will insure a snug connection. Notch the newels themselves over floor beams or headers and bolt them or screw them in place with lag screws. On the inside of the stairway, a cleat can be used to fasten the stringer securely to the newel.

Newels themselves are not usually made by the builder, but there are cheap ways and good ways of constructing them, so they should be selected with due consideration of how they are made. Solid newels are likely to check. Small round newels may be solid, if cored out inside, but square newels should be put together with one of the various kinds of miter, and with glue blocks inside. Nailed butt joints are not permissible in first-class stair work.

One of the diagrams shows a method of laying out a volute. However, for volutes, easings and goosenecks, stock material is advisable because of the greater accuracy of design and machining that is possible with highly specialized machines. These handrail turns and terminals are secured to the handrail by bolts and dowel pins, usually furnished with the item. Something that is often overlooked is the fact that any stock volute or gooseneck can be adjusted to line up with a balustrade of any pitch by simply beveling the edges where they meet to the proper degree. The cut

must be at right angles to the pitch of the rail in every case.

A discussion of stair construction is not complete without some notes about the carriage, or rough horses. These act as floor joists set at an angle, but are not connected to the stair. For the stair between walls, they count only as a steadying influence, and base for the lath and plaster; on the open stair, they do heavier duty. There should be not less than three 2x10 rough horses under every stair. The proper way to support the carriages is to run them into the headers at the first floor and at the landing above. All headers and trimmers around the stair should be doubled. Straight 2x4's may be used for rough horses. The support given is practically the same and they serve as a base for lath and plaster as well. They do not, however, lend themselves to use as temporary steps, as notched rough horses do.

The main advantage of using stair carriages has to do with the plastering, and the effect of the moisture on the finished stair. If the soffit or the stair is to be plastered, and no rough horses have been used, it is necessary to lath and plaster against the finished stair after it is in place. This method leaves a pocket in which the moisture from the fresh plaster can gather. Such construction is, of course, wrong, for no matter how good the stair is, it is very likely sooner or later to show the effect of this moisture by warping or opening up at the joints.



A combination stair that may be used from either the front or the rear of the house



This is a straight flight stair, partially enclosed between walls

Kinks from the Job and Office

By V. L. SHERMAN

A Removable Pier

THE following letter from E. A. D., referring to Figs. 1 and 2, has to do with a pier for a stony beach. In winter it is taken in on shore to avoid ice jams, and put out again for summer use.

"We build piers for camps up here on a pretty rocky beach. There is not much use in trying to drive spiles, and if we built these little piers that way the movement of the ice would knock them up on shore. But the piers must be strong

"When the first horse is anchored properly the poles are taken out with the second horse. The poles are attached temporarily to both horses, and the height of the second horse measured carefully as it rests on the bottom of the bay. The horse is then floated ashore and the legs trimmed to get the right height. This is again floated out, anchored by filling the basket with rocks, and the poles bolted in place. The third horse is done in the same way.

"The sleepers are securely spiked to the poles and dressed 2x6's make the walk.

day I stood and watched it. The whole first section would buck jump as the wave went over. It stood that first gale all right except that it was cock-eyed when it was over. We changed the position to point the pier into the waves (so they wouldn't hit sideways) and brought it in a few feet. There was very little damage."

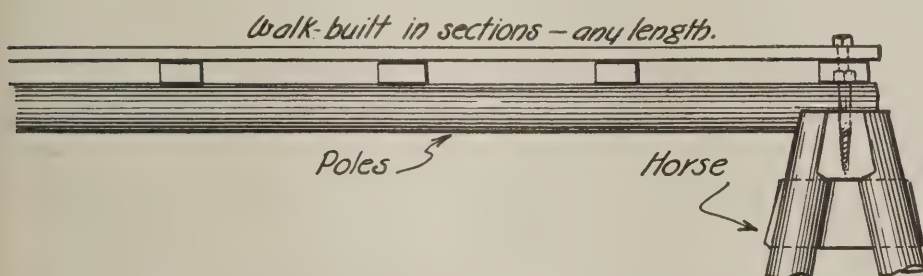


Fig. 1—Part of pier, showing stringer poles and section of walk

enough to stand a great deal of surf as they are exposed to heavy seas. To get around all this we have this method. We build horses of heavy timber and near the lower end of the legs frame a large basket or cradle which can be filled with stones. The drawing below shows the second one of these horses to go into the pier. The first one has been cut for the proper height, floated out to about a fathom depth and filled with rocks. The first horse in this case was double as the picture shows. Poles are used as stringers between the horses. A pair of poles, sleepers, and a walk are a unit.

In this way the poles, sleepers, and walk can be taken ashore as a unit, the baskets emptied and the horses taken ashore. This is done every fall. Or the pier can be moved at convenience. It is very handy.

"There is some caution that should be taken and I can explain it by giving my own experience. One pier I put in with the first horse on a shelf. It was at the 6 ft. depth but just where the bottom dropped off to a depth of nearly 20 feet. Now, when the waves were ordinary they would go under the walk, but when a gale was blowing the heavy seas would just reach the first horse as they broke. One



Fig. 2—Pier horse. Length of legs the last to be checked

A Stunt in Joining

"ENCLOSED is a kink for joining boards edge to edge," write W. E. M., and encloses Fig. 3. "This is used for mantel tops, wide seats, shelves, or wherever an extra wide board is required. The edges of the boards should be joined so as to make a good glue joint. Mark the edges

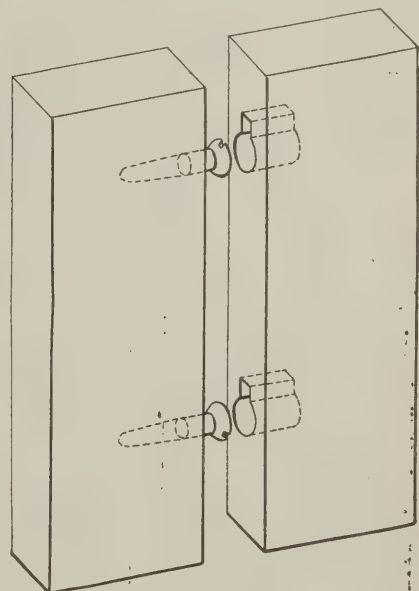


Fig. 3—Snug dowels from screws

of the boards for the screws from 8 to 16 inches apart as wanted. Turn the screws in the center of the edge of one of the boards leaving the heads to project $\frac{1}{4}$ or $\frac{3}{8}$ in. Bore holes to receive the heads in the center of the edge of the other board the same size as the screw heads and $\frac{3}{8}$ in. deep. Cut slots alongside the breadth of the screw diameter. The slots must be the same depth as the holes. Try the board together to see that they fit and that all of the screws enter the holes, then take apart and glue the edges. Put them together with the bottom piece held in a vise on the work bench. Hold the top piece down tight and drive it endwise causing the screws to enter the slots. If the work is done carefully, this makes a perfect glue joint. No clamps required. It can be smoothed and finished immediately without waiting for the glue to set."

Framing a Park Shelter

G. L. writes: "This last spring I had two park shelters to build. They are about 20x24 ft., unfinished and open to the rafters, but are very substantial as to framing, for they must stand very windy weather at times, and are expected to last a long time. Referring to Fig. 4, the foundation and floor are concrete, bedded in small rock and finished up to outside dimensions. Around the outer edge, except at the threshold, a 2x4, P, is bedded in under the plate, O. The framing consists of the posts, D (placed about 5 ft. centers at the ends and 6 ft. centers at the sides), which rest on the concrete and carry the plates, B, and the girts, F. The plates are 2x10 with a 2x4 above. The girts are 2x4 let into the posts. The rafters are stripped cedar, roughly faced to take the sheathing, and running a little less than 6 in. at the butt or rafter seat. At the edge of the plate the rafters are notched to take the wall sheathing which runs up tight under the roof sheathing.

"The posts, D, are rough and about 6 in. square. They are anchored to the sill, P, in the floor by means of the straps, R. Every second post, sides and end of the building are so anchored. The wall sheathing is undressed stock, placed up and down, with battens.

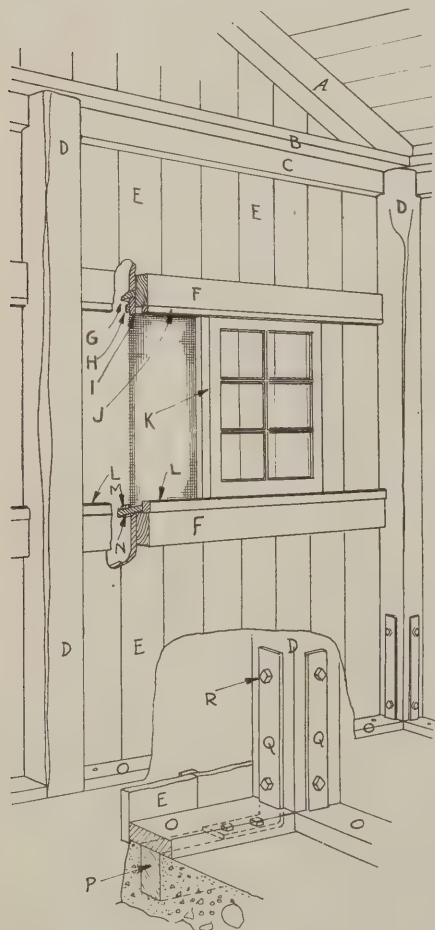


Fig. 4—Framing of the shelter wall, showing window

"The windows were to be made cheaply and to economize in space, so I arranged them to slide sideways, and put four sash at each end of the building, and four at

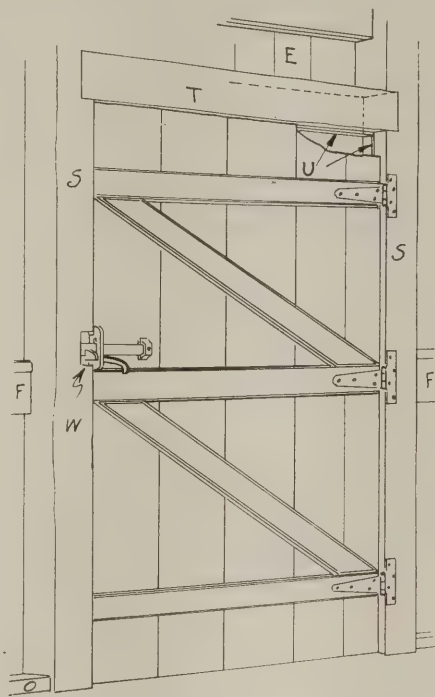


Fig. 5—Framing of shelter house door

the front, two either side of the door. As shown in the picture, Fig. 4, the sash, K, slides between the upper rail, J, and the lower rail, L. These are nailed to the girts. The strap, I, is also nailed to the girt, and the cap, G, separates it from the sheathing. The sill, N, is nailed to the lower girt. This sill is cut to sit around the sheathing and runs back the full length that the sash will slide. Screening was lathed to stop, sill and sheathing was cheaper and more renewable than complete screens. This is shown at H and M.

"When it came to the door I figured that, what with the children running in and out and slamming, I had better make the door and framing both solid enough to take the shocks. As is shown in the picture, Fig. 4, the two posts, S, are roughly 8x8 in. The header, T, is the same. These pieces are in the rough but very sound timbers. A stop, U, was run so as to let the door set in far enough so that the rails would be flush with the posts. Heavy hinges were used. The latch was pretty heavy, too, and sunk in the post opposite, as at W.

"As it stands now it will take more than ordinary physical abuse, and whatever repairs are necessary can be done very cheaply."

Renewing the Center Supports of a House

A. G. H. has this to say regarding renewing underpinning: "The settling down of the center of a house is always

due to poor center supports. [Some might differ with A. G. H. on this.—Ed.] To repair these is very important, otherwise floors and baseboards will separate, cracks will develop in the plaster, and doors and windows get out of true. Floors may become bumpy and uneven.

"To do the job properly secure a couple of jacks, and nail some 2x4's together to lift with, and set the jacks a short distance apart. It is often necessary to have two jacks, especially if the main beam which supports the floor joists is divided into two parts by the chimney.

"After the jacks are well tightened up the lifting is done very carefully, care being taken to keep both sides even. Only about one-half turn should be made each day. In this way the total lift, say 1 inch, is spread over a little more than a week, allowing plaster to regain its original position without cracking.

"As soon as the weight is taken off the old posts, these are sawed off near the floor and removed. Afterwards a concrete pier is put into these holes extending several inches out on the basement floor. These are given time to set thoroughly. Then pieces of asphalt roofing are put on top of the pier and the old posts, cut to proper length, are set in place, being wedged tightly. After this the jacks and supports are removed. This support should last as long as the rest of the building."

Cutting Rafter Segments

FIG. 6 is shown in reference to a letter from W. G. M., of Chadron, Nebraska. "Having occasion to build a curved barn roof I am enclosing a sketch illustrating my method of ripping the segments that made rafters for the job.

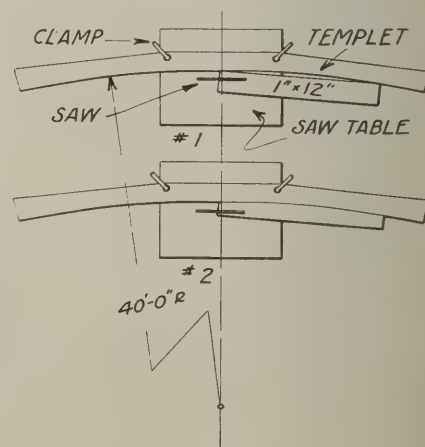
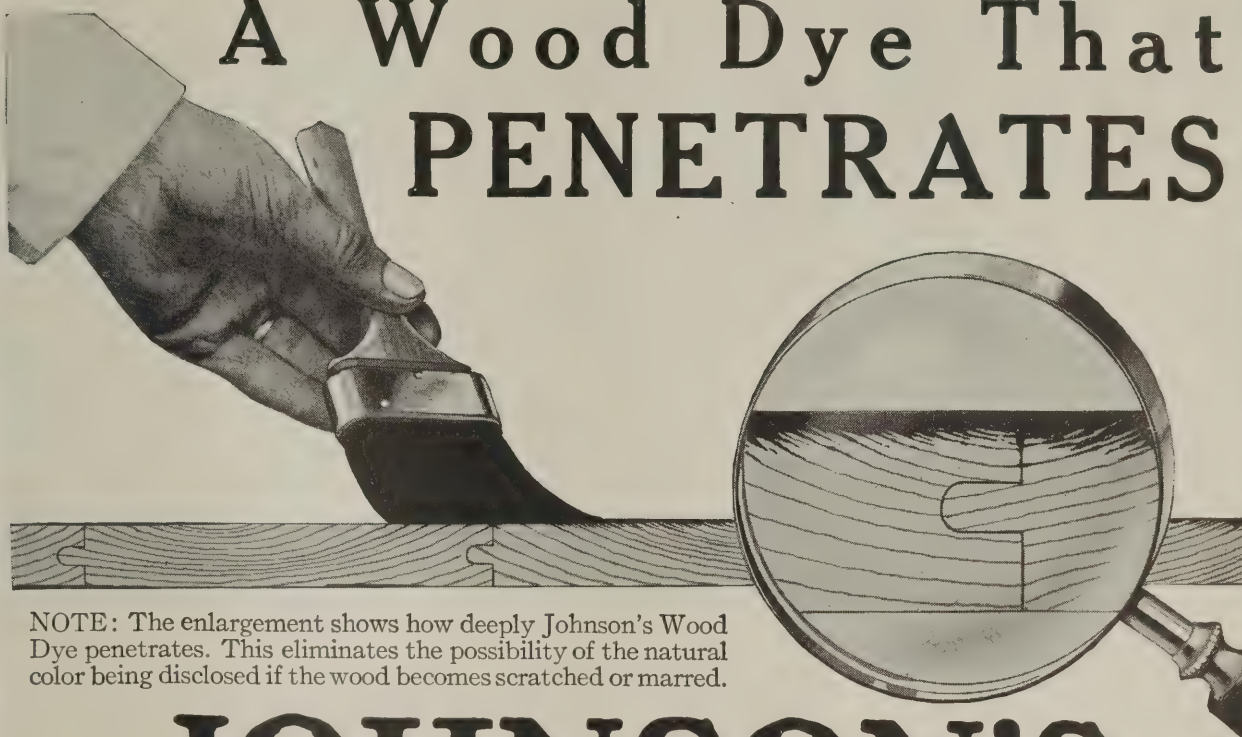


Fig. 6—Segment rafter cutting with templet

"I first made a templet with the radius and clamped same to a saw table, raised saw table until saw barely cut through stock, and could cut them very easily."

The two parts to Fig. 6 show the two cuts taken on a 1x12-in.

A Wood Dye That PENETRATES



NOTE: The enlargement shows how deeply Johnson's Wood Dye penetrates. This eliminates the possibility of the natural color being disclosed if the wood becomes scratched or marred.

JOHNSON'S WOOD DYE

Johnson's Wood Dye is for the artistic coloring of all wood. With it inexpensive soft woods, such as pine, cypress, fir, etc., may be finished so they are as beautiful and artistic as hardwood. Johnson's Wood Dye is very easy to apply—it goes on easily and quickly without a lap or a streak.

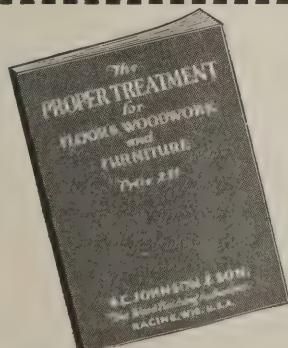
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No. 178 Brown Flemish
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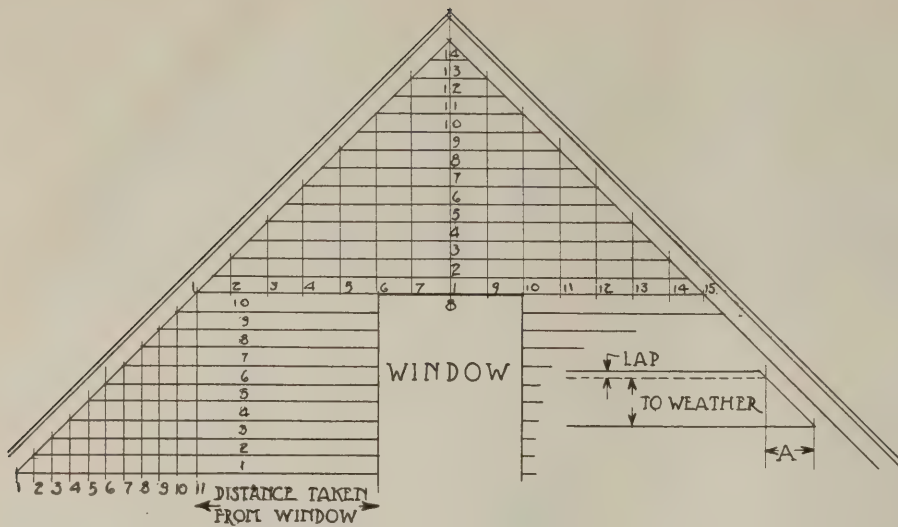


Fig. 7—Siding gable ends

Siding Gable Ends

BEING an old timer at the game," writes P. L., "I have observed many time-saving ways, and, being time savers, they have come in handy to keep my job. Siding a gable is a long and dangerous job for many carpenters, while the way I do it seems a most pleasant job in the carpenters' line. "As I show in sketch, Fig. 7, fit the siding directly over one window head first, making sure to take a straight piece, and getting an excellent fit. Now go down on the floor, or stay in the attic, and lay out the sidings on a pair of horses. Mark the width of the siding to be exposed to the weather on this first siding, squaring down intersection point at bevel to the bottom edge of the siding. This is marked A in the sketch. Take twice this distance, A, on the compass, marking siding to its full length, putting a number at every compass mark. These marks can then be transferred to the different pieces.

"The same operation can be followed in siding between frieze and window, only one must take the distance, A, and not double it as mentioned above. To check up, to see if the distance is exact, measure distance of siding directly over window from edge of window to point at frieze. Put this distance down on first siding and space off one more space than the amount of sidings used. If frieze is put on fairly straight all sidings will fit snug."

The Double-Bitted Ax

THE reply to a letter of inquiry by A. R. T. may be of general interest in that some of the arts are not as general as they used to be. A friend writes: "The double bitted ax is not meant for wood pile use. For the woodsman one edge is blunt, the other sharp. The first is used for hemlock and cedar, knots and with frost. A thin edge would be ruined."

A Tracing Safe-Guard

THE most dangerous man to box with is a novice, and an amateur wood chopper is one to give distance to. So a man who seldom needs to trace, but sometimes has to, should resort to any means to protect his work. W. M. sends the following suggestion:

"In the sketch enclosed, Fig. 8, A represents a triangle and B a strip of blotting

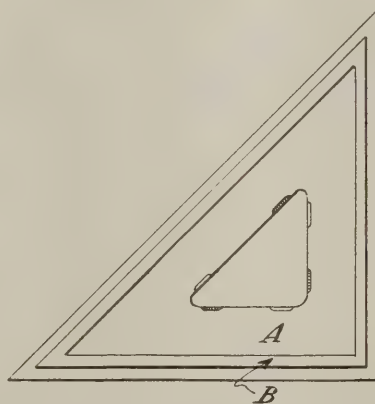


Fig. 8—Relieving triangle with blotting strips

paper. This strip should be about $\frac{1}{4}$ -in. wide and glued to the triangle about $\frac{1}{4}$ -in. to $\frac{1}{8}$ -in. from the edge. If a piece like this is placed on each side it will be found a great help when inking because the ink will not be able to run, and if the triangle is laid on fresh ink it will not spoil the line. Try it and see the difference when inking."

Log Cabin Construction

F. F. C. wants to have some real information on the construction of log buildings. He writes that he has seen some wonderful old work and some work

in the modern method that was not so wonderful. He would like to ask particularly about the settling of the structure during the first year or two, and about moss and cement chinking. The editor would like to turn this over to a real old timer who has had real pioneering experience along this line before there were so many new-fangled notions to confuse the issue.

Personalities, and Other Things

September 9, 1924.

My dear Jim:

You slipped into the September "Kinks" the information that I was "doing my stuff" up in the Wisconsin woods. Of course, there is no secret in the matter, but for most of us twelve weeks in the woods calls for some excuse or apology. Our old college text included "An Apology for Idlers," by Stevenson, a gentleman whom no one could accuse of loafing, but from whom we may all take a sound lesson in idling. As he says, "Extreme busyness, whether at school or college, kirk or market, is a symptom of deficient vitality; and a faculty for idleness implies a catholic appetite and a strong sense of personal identity." Do you get my drift? Another lighthouse builder and writer was Frank Hopkinson Smith, a man of catholic taste. I should like to think it possible to gain his repute as an artist, but I can't even raise a decent set of whiskers.

The point is that in the office or out the "Kink" department provides a sort of correspondence school wherein most of the advantages accruing to the experienced idler are set forth. The publishers should be given credit for their foresight in its provision. You may have noticed that many of the better magazines of all classes have recognized that the issues of our fertile minded neighbors are as interesting as the work of paid writers.

Twelve weeks in the woods reduces the stiffness in mind and body. Up here a lot of set notions are easily shed, and the contact with so-called "simple" folks makes idling worth while. The simple folks are the originators; and, "while others are filling their memory with a lumber of words, one-half of which they will forget before the week is out, your truant may learn some really useful art." My friend, Mr. Larson, is to build a small Norwegian log cottage, birch and sod roof, over against a hill and back of a little bayou in a trout stream. He will also build a small-boat, dyke and dock for picturesqueness. Do you think I'll lose any in helping now and then?

The bass are biting now for the fall season, but will be home in a couple of weeks.

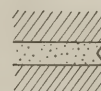
Sincerely,

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Raked Out



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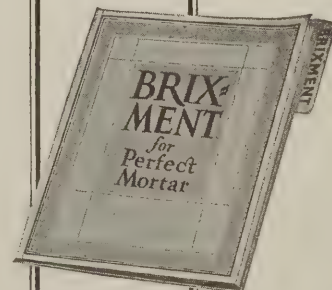
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On the Job in Pocatello, Idaho.

Formwork for Concrete Steps

R. L. POYNTER, a builder of Pocatello, Idaho, has a method of building forms for concrete steps which is especially applicable where the steps are wide. The advantage of this formwork is that no heavy stringers need be cut.



It is not necessary to cut expensive stringer forms for these concrete steps

The stringers are made of 1x12, which is much easier to cut than two-inch stuff. The riser forms are 1x8 and are prevented from bending by a 2x4 backing piece. The 2x4s are toe-nailed to the stringers.

The entire step may be cast as a unit and the treads finished before the forms are re-

moved. When the concrete has obtained its initial set the riser forms may be removed and the risers smoothed off with the finishing trowel.

A Batter-Board "Kink"

ON a large school job at Pocatello, Idaho, the H. W. Baum Company used wire for marking the foundation

Emergency Drill Press Fastening

HAVING to erect a drill press in a hurry this Pocatello, Idaho, contractor did it as shown in the illustration above. The drill press was mounted on a short plank and the plank held fast to a post by four joiner's clamps, two on each side. This provided a firm support so that the machine could be used to good advantage.

Making Exterior Trim on the Job

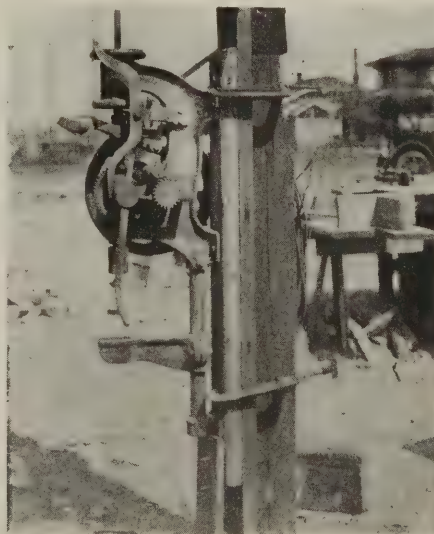
WHERE exterior trim is cast of concrete it may be made on the job to advantage provided sufficient room for curing it is available. A plaster of paris mould, a box, a tamp, and a husky man are all that is required.

The box is a simple affair, built so that the sides and ends may be removed when the tamping is completed. For a job of this kind several top pieces must be provided for the box to form a base upon which the piece of trim may rest while curing. Plaster of paris moulds are generally set in the bottom quired. For simpler ornaments the moulds may be of wood or sheet metal.

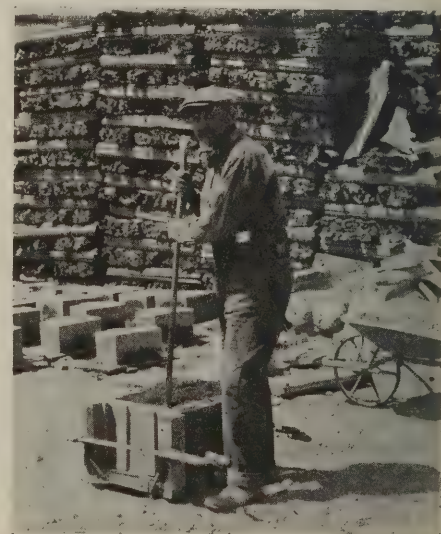
Notice that the sides of the box are held together with joiners clamps. When the clamps are removed, the sides of the box fall apart, thus making the removal of the moulded piece easy.



The notch at the top of the batter board holds the wire firmly in position



Wood finishers clamps were used in an emergency to fasten the drill press to this post



The tools required for making concrete ornaments are few in number and quite simple

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The opening of the new lumber manufacturing plants of The Long-Bell Lumber Company at Longview, Washington, has added Douglas Fir lumber and timbers to the list of Long-Bell trade-marked products.

This means that throughout the United States, builders can now obtain lumber and timbers of one or more species of wood bearing the Long-Bell trade-mark. It means that buyers, universally, can choose, by brand, lumber products that have been safeguarded in manufacture to meet that important requirement so long a standard in Long-Bell production—*maximum building value*.

The addition of Douglas Fir to Long-Bell products means, furthermore, that this manufacturer is now a

producer of the four most useful building woods—Douglas Fir, Southern Pine, California White Pine and Southern Oak.

Trade-marks on countless wares have long been an aid in buying. You prove this for yourself every time you buy food or clothing, household equipment or automobiles. The names or emblems of certain manufacturers are *guides* in selection.

The same significance of certain names on a great variety of merchandise, as well as on other building materials, is equally true with lumber. The Long-Bell trade-mark on lumber is an *identification* that assures protection to builders and stands for a service that every buyer of lumber has a right to expect.

*Douglas Fir Lumber and Timbers; Southern Pine Lumber and Timbers;
Creosoted Lumber, Timbers, Posts, Poles, Ties, Guard-Rail Posts,
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On the Job in Hartford, Conn.

Scaffolding for Repairing a Building Corner

HERE is a type of scaffold, used by a Hartford, Connecticut, contractor, in repairing a corner of a building. Its advantage lies in the fact that it may be constructed without blocking the sidewalk below. It is carried on two 6x6s which project from one of the window openings and rest on the sill. The weight of the



Inside view showing manner of support

Keeping Basements Dry

IN WET weather, water is apt to seep through foundations unless they are plastered on the inside or waterproofed in some other way. In the illustration shown here, made on a job of Meagher and Callahan of Hartford, Connecticut, a spare piece of gutter was used to carry the downspout water away from the foundation so that it would not come through the wall. This, of course, is only a temporary measure to be used until the drain is installed.



This piece of gutter carries the waste water away from the wall until the drain is installed

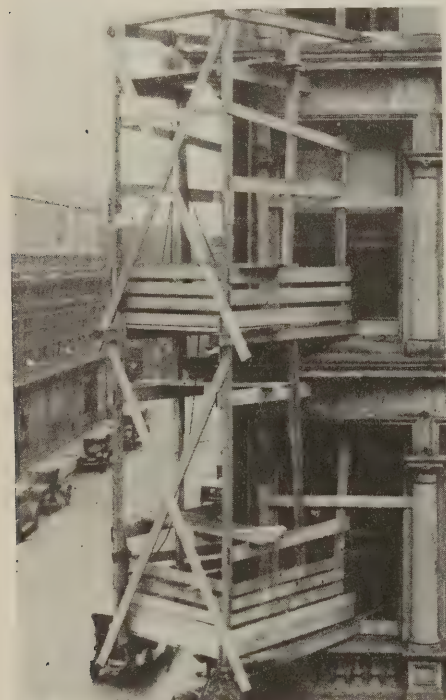
Protection for Concrete Walk

WHEN laying concrete walks in wet weather it is well to protect them in some fashion as does Thomas C. Healy, a Hartford, Connecticut, contractor. This method of protection is simple and inexpensive and is generally always at hand. This fact should recommend its use.

It consists of plain building paper,



A small amount of ordinary building paper and a few plank will protect a fresh-laid walk against damage by rain. The cost of this protection is small



Outside view of scaffold showing bracing

scaffold and workmen on the outside is balanced by the arrangement on the inside as shown in the illustration. Notice that cross-bracing and a foot plate have been provided for the two vertical members above the 6x6s, and that the two pieces below are held to the main scaffold support with cleats. These are two "safety first" precautions that it might be well to observe when erecting a scaffold of this sort.

A scaffold of this sort may be carried up along the wall of a building for any number of stories but where it is erected more than one story high the false work for each story should be supported independently in the manner shown rather than having the scaffold for one story dependent for support upon falsework below.

This is a wise safety precaution since it means that the scaffold at one story will stand even if something happens to the one below.

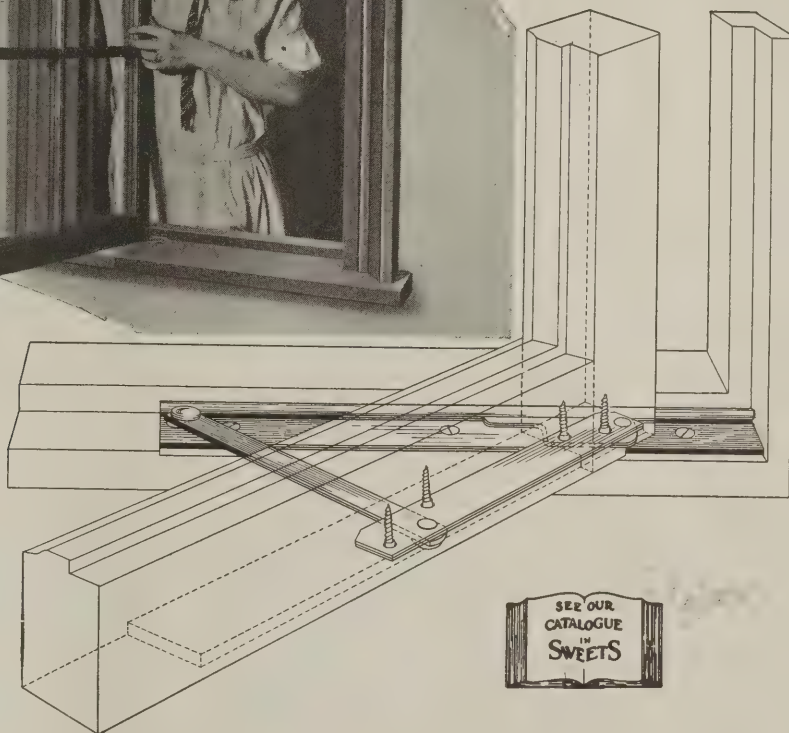
laid down over the walk and held in place by a few planks and boards. If freshly laid walks are not protected in some fashion in rainy weather the rain will destroy the surface of the walk; a heavy downpour may do so much damage that a new surface may have to be put on. Considering the small expense involved it would seem that the protection afforded is well worth the cost.

An owner is always well pleased with a smooth-finished walk and a pleased owner is the best reference a contractor can give. If a fresh-laid walk is damaged by a heavy rain the owner will most likely blame the contractor instead of the weather and will feel free to voice his opinion at every opportunity. Little details go a long way to make more business, and here is one worth watching.



This is the first of a series of pages illustrating and describing the many superiorities of Whitco Hardware.

Whitco— The Easy Hardware



Insures Longer Life to the Sash

The weak spot—and the place where sag is most likely to develop in a hinged sash, is at the joint between the stile and the rails, on the hinge side.

A sash fitted with Whitco Hardware has no weak point, and it cannot sag, because the heavy brass plate which extends across the corner joint at the top and at the bottom, not only supports both the stile and the rail, but adds to the strength and rigidity of the joint between them. This

brass plate is fastened to the sash by four screws, two entering the stile and two entering the rail. The weight of the sash is carried at a point well beyond the corner joint.

The diagram above shows this clearly. Study it in different positions and you will see how Whitco is installed: as it is, at the bottom of a casement sash; upside down, for the installation of Whitco at the top; and sidewise, for the installation of Whitco at the sides of a transom.

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On the Job in Oakland, Cal.

Contractor's Saw Rig

HERE is a contractor's saw rig with a few points worthy of notice. First is its compactness. It consists of a saw table, gasoline engine, and two horses which are used to carry the guide. Next is the apparently low cost of such a rig since a part of it may be made by the

cut made in the under side of the guide, and the job is done. It will work fine if it is kept well oiled. A more permanent job could be done if a grooved metal plate were fitted to the underside of the guide so that it would run on the T-iron.

N. Gaubert, an Oakland, California, contractor, was doing the job where these photographs were made. The materials re-

Scaffold Corner

HERE is shown a method used by Chas. Barkis, an Oakland, California, contractor for building a scaffold corner which requires only three posts, as compared with four as ordinarily used. Thus one post, and the time required to erect it, may be saved. The illustration shows how



Close-up of the saw showing construction details for the horses. Notice that they are fastened to stakes, thus holding them firmly



One vertical leg is saved by building the corner as shown here

carpenter. Last but not least is the manner in which the guides slide on the horses. A small length of T-iron is screwed to the top of the horses, a saw

quired for this outfit are always at hand on the ordinary job, and the "T"-iron may be purchased in any mill supply house at a moderate cost.

the post placed close to the building corner makes the scaffold as safe and stable as though four posts were used as is ordinarily done.



A general view of the plant showing saw, table, and engine



View showing light-weight "T"-iron

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FIRE BRICK—retains high temperatures essential to perfect and complete combustion of fuel; withstands intense heat. The only thing for oil burning.

LOW FIRE DOOR—easy to lift fuel, which is dropped just inside the door; no tunnel to firepot.

FRONT DRAFT DOOR—gives greatest effectiveness in "booming-up" fire. Chain operated from upper floor.

GRATE BARS—individually operated from outside; easy to rock gently or turn over.

LARGE ASH PIT DOOR—facilitates easy cleaning of ashes. Serves as draft door also.

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RECTANGULAR FIRE BOX—of highest efficiency. Maintains even depth of fire; same area at top as at base; no dead corners; firebrick lining and individually operated grate bars.

GRATES BURN ANY FUEL—hard or soft coal, coke, lignite, soft coal slack, wood, corn cobs, operated separately will clean any part of the fire without disturbing the rest of it.

RECTANGULAR ASH PIT—Smooth bottom, vertical sides, square corners. Your shovel reaches every part.

HIGH CAP STYLE—with pipes leading from sides. For low ceiling basements.

WATER PAN—placed high, where heat is strong, will evaporate the necessary amount for properly humidifying the air.

AUTOMATIC DRAFT ACTION—automatically opens Direct Draft when fire door is opened, drawing off smoke and gases, preventing their escape into cellar when firing.

PERFORATED FIRE DOOR—sprays fresh air on fire, burning gases and smoke. Equipped with check-wheel.

AIR SUPPLY COLLAR—on either side, returns cooled air from first floor for reheating and re-circulation.

LOW CAP STYLE—for high-ceiling basements; permits pipes from top, most efficient.

DIRECT DRAFT—connects directly with chimney; at top of radiator, creates strong draft for emergency use.

SMOKE PIPE OUTLET—direct and straight, no crooked flues to clog and reduce heating efficiency.

CHECK DRAFT—admits air directly into smoke outlet, effectively checking fire. Operated from above by chain.

INNER CASING—creates double air-space around furnace. Insulates against loss of heat to basement.

INDIRECT SMOKE OUTLET—The heat goes to top of furnace and is saved, the cooler smoke settles and escapes at the bottom, no heat wasted.

CLEAN-OUT DOOR—Direct access to soot chamber at base of smoke pipe makes cleaning simple.

BOTTOM AIR SPACE—permits air supply to spread under and to all sides of radiator insuring equal distribution of air.

SMOOTH SQUARE SETTLING CHAMBER—Nothing to clog; the vertical sides prevent accumulation of soot to retard draft and reduce radiation of heat.

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For the Builders' Library



The Structural Engineer's Handbook, by Milo S. Ketchum, C. E., is the third edition, enlarged, of a book that "is intended as a working manual for the engineer, student and draftsman." It is a book that has been held in high esteem since the first edition appeared ten years ago, but it is not intended for the use of those who are untrained in applied mechanics and the calculation of stresses in structures. The data and tables are designed for the guidance of the experienced rather than as a handbook for the tyro. In addition to building construction, data on bridges, retaining walls, bins, stand-pipes and other structures are given. More than 130 pages of material have been added to the new edition and the book has been revised and partially rewritten. It is an important addition to the library of structural engineering. Flexibly bound, the price is \$7. There are 1065 pages, 6 by 9, with many illustrations and tables. Published by the McGraw-Hill Book Company, 370 Seventh Avenue, New York.

Drafting - Room Mathematics, by De Witt C. Pond, is a book designed to make clear the practical application of mathematics — particularly trigonometry — to problems often encountered by the architect and the builder. In previous books on engineering Mr. Pond has made himself an enviable position because of his facility in robbing complicated problems of their terrors and simplifying and making clear many heretofore ambiguous points. This book seems to do for drafting-room mathematics what the earlier books have done for engineering. Problems such as those concerning the dimensioning of buildings for irregular lots, plain instruction in trigonometry, the use of formulas and the use of the slide rule are given, together with data for the solution of many problems likely to arise in practice. There are 153 pages, 5 by 7½, with many illustrations, cloth bound. Published by Charles Scribner's Sons, 597 Fifth Avenue, New York City. Price \$2.50.

The Inventor's Manual, by George M. Hopkins, revised by A. A. Hopkins, is the third edition, revised and enlarged, of a book designed "to give the inventor and patentee some hints on patents generally, together with approved methods of bringing them to public notice. Bound in cloth, there are 138 pages, 5 by 7½. Published by the Norman W. Henley Publishing Company, 2 West 45th Street, New York City. Price \$1.50.

The Heating and Ventilating Guide, Volume 3, is prepared from the transactions of the American Society of Heating and Ventilating Engineers, the investigations of its research laboratory and the practice of its members. This, the third annual edition of the Guide, has been increased in size and usefulness by the addition of many important technical subjects. The purpose of the Guide is to assist "the architect, engineer and contractor in designing and producing the most effective installations for heating and ventilating various types of buildings.

. . . In every case the various chapters are the product of several specialists. . . . Briefly the points covered are: Consideration of the required system, the figuring of heat losses, choice of proper equipment for heating by steam, hot water or warm-air with various fuels, automatic heat control systems, ventilation, air conditioning, exhaust and collecting systems, and other related facts." Cloth bound, there are 458 pages, 6 by 9. Published by the American Society of Heating and Ventilating Engineers, 29 West 39th Street, New York City. The price is \$3.

Essentials of Drafting, by Carl L. Svensen, is the second edition, revised, of a textbook on mechanical drawing intended for use in trade, vocational and technical schools. It is apparently well suited to its purpose and fulfills a prefatory note which states that, "Theory and practice must be considered at the same time." In its field, mechanical drafting, it is of importance, but it has but slight application to architectural drawing. There are 194 pages, 6 by 9, fully illustrated. Published by D. Van Nostrand Company, 8 Warren Street, New York City. Bound in cloth. Price \$1.75.

Proceedings of the American Concrete Institute, Volume XX, is a book covering the proceedings of the twentieth annual convention of the Institute, held at Chicago last winter. Although this book is necessarily bulky, it is capable of producing much valuable information regarding concrete if one has the time to sift it out. Mechanical Equipment for Handling Concrete, Architectural Concrete, Making Good Concrete, A Demonstration in Making Trim Stone and Ornamental Concrete and Building Concrete Homes are among the chapters of particular interest to architects and builders. There are 835 pages, 6 by 9, bound in cloth and illustrated. Published by the American Concrete Institute, 1807 East Grand Boulevard, Detroit, Michigan.

The Colonial House, by Joseph Everett Chandler, is a revised edition of a book that tells more about Colonial architecture than does any other work of similar size. Mr. Chandler, an eminent Boston architect, here makes available to us an accumulated knowledge that is based on many years of experience in studying and working in the Colonial style. Old Colonial work is analyzed so that the reader is enabled to understand why the Colonial builders built as they did, and why, and wherein, much of the so-called Colonial work of our own times is deficient. Any designer of Colonial houses will find much value in this book. The text is informing and easy to read and is illustrated by many sketches. In addition, there are 134 plates made from photographs at the back of the book. There are about 300 pages, 7 by 10, bound in cloth. Published by Robert M. McBride and Company, 7 West Sixteenth Street, New York City.

Fundamentals of House Wiring, by George A. Willoughby, has the aim "to present the fundamentals of house wiring in such a manner that the book may serve as a text for student use or, in some cases, as a reference book in this field. The value of the ability to understand and make good electrical installations, to select good materials and to appreciate the duties of an electrical worker are points that are covered. Published by the Manual Arts Press, the price is \$1. There are 67 pages, 5 by 7½, fully illustrated and cloth bound.

Planning Your Home is a brochure containing numerous sketch plans and designs of small homes, together with some advice regarding home planning problems. Many of the illustrations are of houses that have actually been built. The designs are unusually attractive and the plans well thought out. Published by the Architects' Small House Service Bureau, Mountain Division, 1735 Stout Street, Denver, Colorado. There are 32 pages, 8 by 12.

Woodworking Machinery, by William Noyes, is a book designed to explain "how this, that or the other (woodworking) operation is accomplished by machinery." The book particularly concerned with the problems of teachers and students in trade schools, but it should also be of considerable value to practical mechanics. Bound in cloth, there are 144 pages, 5½ by 9, fully illustrated. Published by the Manual Arts Press, Peoria, Illinois. Price \$3.

Comparative Engineering Data

Cyclone Shingle

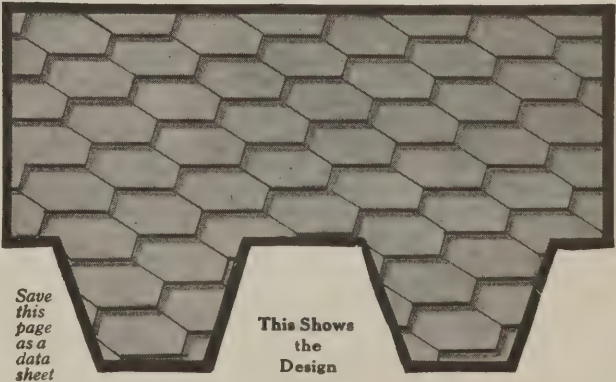
Type of Shingle	Thick-ness on Roof	Sqs. Laid Per Hour During Speed Test	Head Lap	Side Lap	No. of Shingles Per Sq.	No. of Nails Per Sq.	Locked-Down	Wt. Per Sq.	Design on Roof	Dimension of Shingle	Under-writers Label
<i>Cyclone Strip</i>	2- 3- 4-	2 1/4	6 7/10"	5"	72	216	Yes	200 Lbs.	Hex-agonal.	19.1" x 32" C	
10" Strip Shingle (4 in 1)	1 thick 2 " 3 "	1 1/4	2"	3 3/4"	112	560	No	200	Square Corner	10" x 32"	"C"
12 1/2" Strip Shingle (4 in 1)	2 thick 3 " 4 "	1 1/4	4 1/2"	3 3/4"	112	560	No	240	Square Corner	12 1/2" x 32"	"C"
12" Giant Strip Shingle (3 in 1)	1 thick 2 " 3 "	1 1/2	2"	4 9/16"	90	360	No	240	Square Corner	12" x 32"	"C"
Individu'l Shingle	2 thick 3 " 4 "	3/4	4 3/4"	2 5/8"	424	848	No	240	Square Corner	8" x 12 3/4"	"C"
Giant Individu'l Shingle Exposed 5"	1 thick 2 " 3 "	1	4"	4 3/4"	274	548	No	260	Square Corner	10" x 14"	"C"

Facts! If these figures look exaggerated to you—
“we are from Missouri and will ‘SHOW’ you.”

Write for particulars, prices and samples of the *Cyclone Shingle*. It is the most advanced step in the development of practical roofing made in a century.

A Postcard Will Bring Full Details

FORD ROOFING PRODUCTS CO.
2341 South La Salle St. : Chicago, Ill.



When writing advertisers please mention National Builder

Among the Manufacturers

New Devices Methods and Improvements

in the Building Industry

Cleaning Mortar from Used Brick

THE Lyon brick cleaning machine—using the same cleaning principle, but slightly different in general construction—has for some time been in successful operation.

The number of bricks that can be cleaned varies with the type of mortar that has been used.

According to the manufacturers, however, comparative tests show that two men on the machine can clean as many bricks as six or eight men can by hand.

The machine has two cutter heads, thus enabling two men to clean brick at one time.

The bricks are cleaned by being pressed against the side of the rapidly revolving cutter head. This action quickly removes the mortar and gives the brick a true flat surface.

Details of these cutter heads are shown in the photograph. The cutter head has 24 radial rods on which rotate several hundred star-shaped cutters and round washers of the same size. These cutters are staggered in the head so that the whole face of the brick is cleaned. The cutter head revolves about 500 r.p.m.

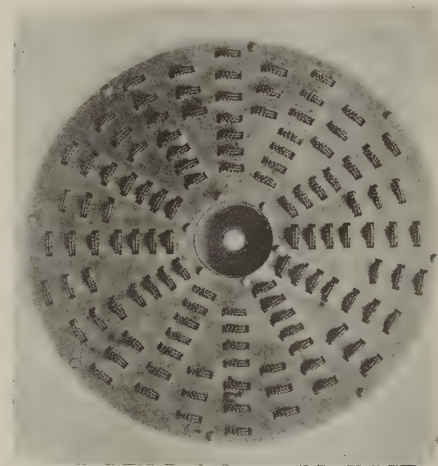
The rolling principle of the cutters gives them a long life and requires the minimum of power to operate. This rolling principle also prevents a sharp impact upon the brick, thus practically eliminating breakage. The head is so designed that the cutters may easily be replaced after they become worn.

The machine is mounted on a portable truck that can be backed up to a pile of bricks. Low seats are furnished so that the operator can be close to the pile.

A belt tightener is provided so that any

slack in the belt can be easily taken up.

A substantial engine housing protects the engine in stormy weather. The heads are also covered with substantial guards that also serve to collect the dust blown out of a chute at the rear. The machine is substantially constructed to withstand



Cutter head of brick cleaning machine

any hard usage to which it may be subjected on a house-erecting or construction job.

This machine is manufactured by the Lyon Iron Works, Greene, New York.

Three Level Operating Control on Koehring 21S Mixer

IN conformity with its well known policy of keeping in close contact with the contractor's problems and interests, the Koehring Company has brought out a three level operating control for its No. 21S Heavy Duty construction mixer when batch hopper equipped.

This is an innovation, a timely improvement, which should be welcomed by all contractors using this type of construction machinery, because it adds to the practicability of the mixer and consequently enhances its money value.

The contractor is privileged with a choice of any of the three distinct points of control, placed on three levels—bottom or ground control, intermediate, or overhead control.

The overhead platform, which is built into the mixer when this control is specified, simplifies the control problem when the mixer is set into a depression on the ground, or when using overhead bins.

An intermediate platform can be built around the mixer making the control point at the top of the batch hopper waist high to the operator. This intermediate platform lightens the task of handling the cement into the hopper by the operator.

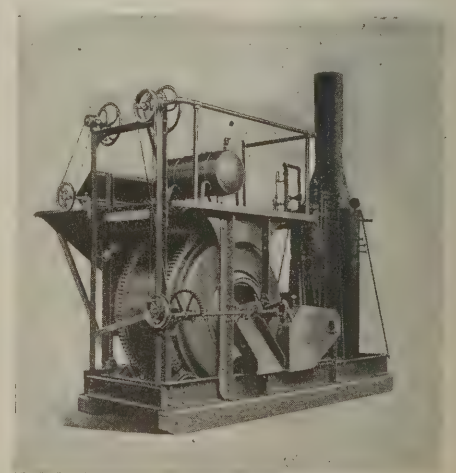
The ground control is used when the aggregates are discharged from an elevated bin into the batch hopper, and the operator operates it from the ground.

These three controls make the mixer adaptable to every conceivable job layout.

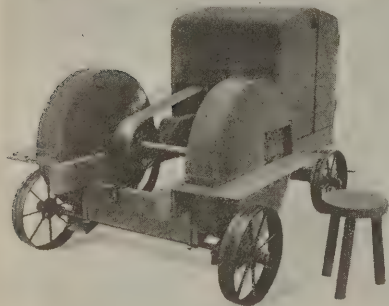
A cast steel pivoted, swinging type batch hopper gate, with an opening 11 inches by 20 inches, has also been installed on this mixer to replace the old sliding gate. Difficulty was sometimes experienced with the old type sliding gate, discharging the materials into the drum. The new swinging type affords no chance for the materials to lodge or clog in the opening thereby effecting faster charging. The materials can be charged into the drum in 15 seconds. The entire hopper is constructed of Number 10 and 12 gauge steel reinforced by heavy clip angles. It is hung off the channel uprights supported on the outer-side by heavy brace angles, making it a compact and serviceable unit.

The standard power charging skip can also be furnished if desired. The mixer is mounted either on skids or regular steel rim wheels. A choice of steam, gasoline or electricity is offered.

Complete information on this mixer or other mixers, pavers, gasoline cranes, draglines or shovels manufactured by the Koehring Company will be gladly and promptly furnished by addressing them at Milwaukee, Wisconsin.



Intermediate operating control Koehring 21S mixer



Brick cleaning machine



Inexpensive Conveniences
like Knappe & Vogt
Clothes Closet Fixtures
Will Win Many a Contract
for YOU

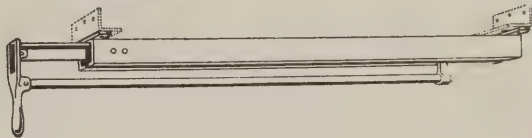
When you show prospective builders how easily Knappe & Vogt Clothes Closet Fixtures can be made a part of the plans for their homes—show them the increased comfort and convenience, the lower building costs and the unlimited capacity with half the space, you can close many a contract which may otherwise slip by.

Because home builders know that the contractor or builder who is ever seeking out greater conveniences for their comfort is a safe person in whose hands to place the building of their new homes.

Knappe & Vogt Clothes Closet Fixtures provide more closet space with half the usual size. Provide better storage and save building costs. Prevent wrinkling, sagging, crowding, tearing or soiling of garments. Permit instant inspection and selection in the light and air of the open room.

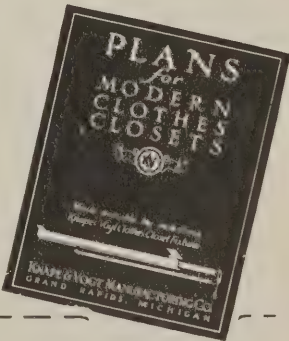
KNAPE & VOGT MANUFACTURING COMPANY
GRAND RAPIDS, MICHIGAN

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To contractors, builders and architects, and to others interested in building, we will gladly send, on request, our blue print folder of Clothes Closet plans, showing how easily Knappe & Vogt Clothes Closet Fixtures can be included in your building plans.



Knappe & Vogt Mfg. Co.,
Grand Rapids, Mich.

Please send me your free folder of blue prints showing how easily K. & V. Clothes Closet Fixtures can be installed and included in any building plan.

() Architect () Contractor
() Builder

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Concealed and Portable Bed

INCREASING efficiency in building, and the desire to use every available inch of space, has created a demand for the concealed bed.

To help meet this demand, and also by way of going a step farther, the American Bed Company have put on the market the Out-o-Site bed.

This can not only be concealed but is also portable. By which is meant that although the containing closet is put in one part of the house, the bed can be wheeled out and placed in any room. It is mounted on big rubber wheels and a light touch rolls it easily.

The Out-o-Site bed folds up to the smallest possible space—only 2 feet 1 inch by 4 feet by 6 feet 5 inches. Yet it opens to full double-bed size in one easy motion.

Heavy double wire springs, with heavy steel bands on each side—supported at each end by 22 helical springs, provide a perfect foundation for a good night's rest.

And the price is low.

Conveyor Carrier Patent

PATENTS have recently been granted on improvements in belt conveyor carriers made by the Stearns Conveyor Company, of Cleveland, which will do a great deal to increase the usefulness of conveyor machinery, according to Earl Stearns, president of the company.

The patents cover what are known as the Stearns Belt Conveyor Carriers. The shell of the pulley is made of pressed steel, extremely light in weight, and yet three times as strong as cast iron pulleys, and perfectly balanced. Edges are rounded so that there is no chance of their cutting the belt.

Inside of the shell, and held firmly in tapered ends, is a one piece tube chamber-out to receive two antifriction bearings. Inside of the bearings is a hardened steel shaft which is held stationary on brackets on the angle frame. This arrangement allows a space between the shaft and tube for a grease chamber, holding a plentiful supply of grease, the bearings and grease retaining washers forming the ends of the chamber.

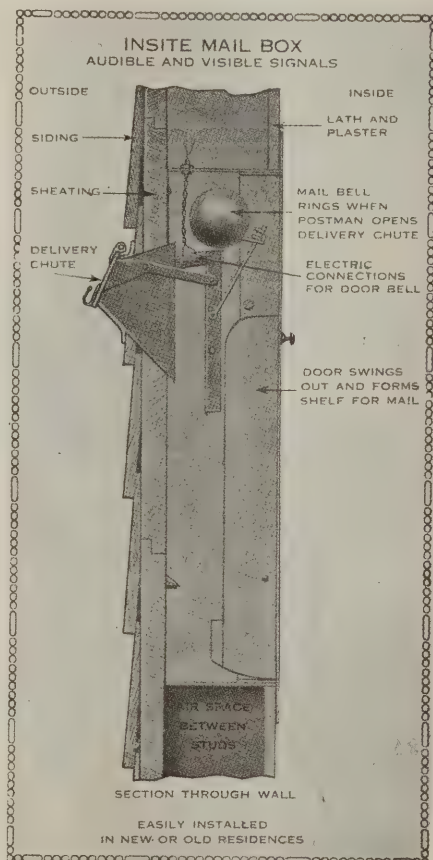
Grease is forced into the chamber and bearings at high pressure through the hollow ends of the shaft. It is the contention of the builders that this patented arrangement makes it possible for enough grease to be forced into the equipment to meet the requirements of a period of from six months to one year.

According to the builders this patented device has movable parts so arranged as to be properly lubricated at all times and kept free from dirt and grit. The arrangement is such as to require but very infrequent attention of an attendant.

Modern, Built-in Mail Box

THE unsightly, weather-beaten mail box hanging on the front of the home, is now being replaced by the convenient, roomy mail box that hangs between the walls of the home and delivers the mail inside.

The Insite mail box has the distinction of always having room for more mail, newspapers and magazines. As the postman opens the outside door the inside door automatically drops and forms a shelf for mail. This shelf, when filled, allows the surplus mail to overflow onto the floor. If away for a week or month,



Detail of Insite mail box

the box never chokes up. It is burglar-proof, weather-proof and rust-proof. Is easily installed in old or new homes. The manufacturers are the Insite Mail Box Company, 3313 Broadway, Fort Wayne, Indiana.

A New Price List

THE Hoffman Specialty Company has issued a new price list and discount sheet to the trade, effective September 15, 1924.

Several recent additions to the Hoffman line are catalogued for the first time in this revised price list.

Copy may be obtained by writing to the Hoffman Specialty Company, 25 West 45th Street, New York City—Attention of Sales Department "O."

Concrete Products Machinery and Equipment Catalogue

THE Besser Sales Company, Monadnock Building, Chicago, have prepared in attractive form, a catalogue describing and illustrating their concrete products machinery. Among these are block hand machines, block semi-automatic machines, block automatic machines, tile hand machines, tile semi-automatic machines, tile automatic machines, brick semi-automatic machines, brick automatic machines, mixers, partition tile machines, drain tile machines, cement silo stave machines, drain and sewer pipe molds, chimney block machines, lift trucks, boilers, gravel elevating equipment, conveyors, cars, crushers, rolls, screens and drag line hoist conveyors.

This catalogue is 9x11½ inches in size and may be had on request from the Besser Company.

Stuccotex

MANY people want to paint damp basements, damp concrete and masonry walls, damp building interiors, such as laundries, ice cream plants, etc., where there is an excess of moisture.

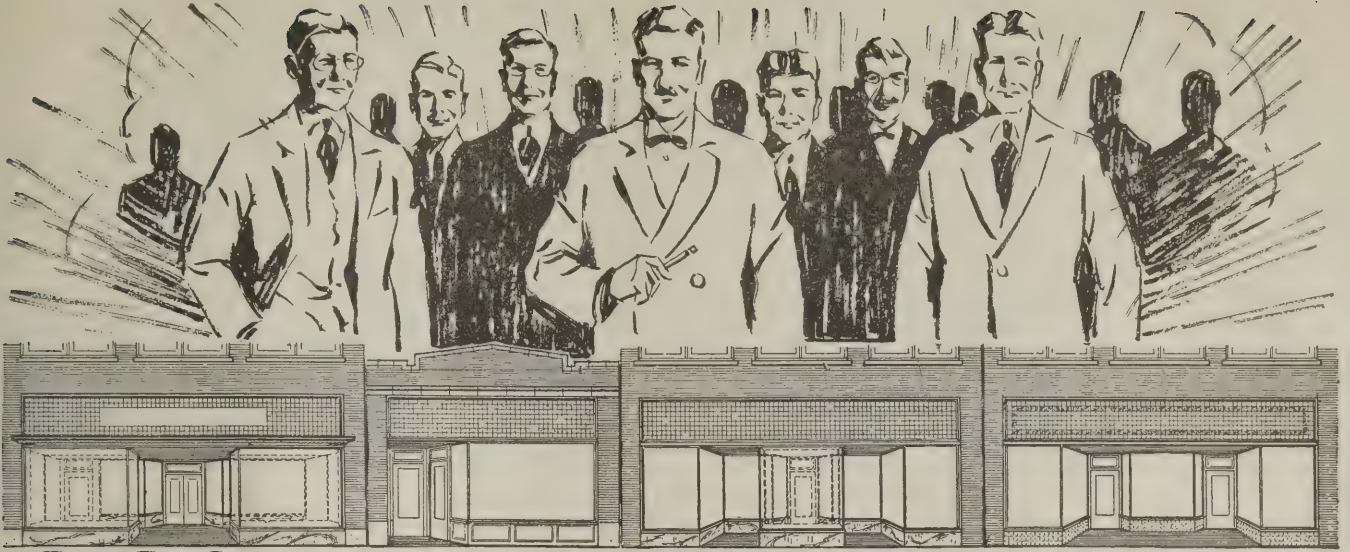
Every painter knows one cannot successfully paint a wet or damp surface. If the surface is thoroughly dry and the paint is good and the work is done in a workmanlike manner—then a good job of painting, varnishing or enameling will stand considerable moisture. But that is a different condition from that of painting a damp or wet surface with an oil paint.

The Truscon Laboratories have brought out a product for coating a damp or wet masonry. In fact, it can also be used on wood, although it is preferable for masonry. This material is not an oil paint, as we all know that no oil paint has ever been made which can be applied to a damp surface. This material is known as a hydraulic paint. It contains no oil whatever. It is produced in powder form and mixed with water much after the manner of calcimine or cold water paint.

This material is known as "STUCCO-TEX." It is put up in convenient size packages in such colors as white, cream, red, concrete gray, Bedford gray, portland gray, tile red.

It must be borne in mind that StuccoTex has no relation whatever to an oil paint, nor to a cold water paint. It is different from either of these. In the first place, it is usually used on cement and masonry surfaces, especially if they are wet, although it can be applied to a dry surface also. In the second place, it is an all inorganic material and non-perishable. It contains no glue, casein or vegetable oils.

Literature and full information on StuccoTex can be obtained from the Truscon Laboratories, Detroit, Michigan.



80% of the Merchants in your City need new Store Fronts — *Go After Them!*

Year by year as competition grows keener, every merchant is forced to use modern selling methods. The buying public avoids the poorly kept store and turns to the bright and up-to-date shop a block away. The metal store front has become an essential in a modern store.

Here is a big, unlimited market. There are not enough contractors to handle the business. Get into it while the field is open. The work is simple with

Desco methods and materials.

Write for our free book, which tells you all about Desco ideas and construction. Just clip the coupon, mail it to us and take this sure road to bigger profits.

*Write us for the name of the nearest "Desco" Distributor.
Additional information in Sweet's Catalog.*

DETROIT SHOW CASE COMPANY
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A complete stock of "Desco" construction materials carried in our New York City warehouse, 562 West 52nd Street.

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Without obligation on my part you may send me your book on "Desco" store fronts.

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When writing advertisers please mention National Builder

Ladder Bracket

SEAMAN Safety Brackets, recently put on the market by the Seaman Safety Bracket Corporation, Rochester, New York, will be welcomed by carpenters, painters, tanners and all other ladder users.

Aside from assuring safety, they are labor saving and convenient. They span windows, overcome the difficulties of wide cornices by holding the ladder out 14 inches, and make a 20 feet ladder do the work of a 24 foot ladder, because the user can stand on the top rung.

They also make a safe, handy place for hanging paint and fire pots, and can be used to hook over the ridge, leaving the ladder lying flat on the roof, for work in valleys, at chimneys and around dormers, etc.

Electric Dumbwaiter Machine

DIFFERENT from any dumbwaiter ever before made by the Energy Elevator Company, 214 New Street, Philadelphia, Pennsylvania, is the one here illustrated.

This electric lift is designed to carry loads up to 500 pounds at a speed of 50 feet a minute.

If the car travels one story, it is controlled by push buttons. But if there are intermediate stops, the controls are hand cables, passing down inside the hatch, accessible from each floor.

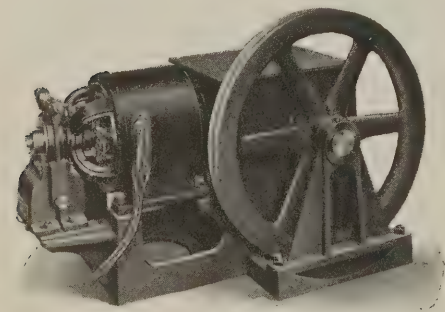
The steel shafts have phosphor bronze bearings and roller bearing thrusts. The hatchway terminal stops and the brakes are both electric and automatic.

The car is made of hardwood, any size required, but not over 3 feet square or 4 feet high; and can be made either platform or cabinet type as preferred.

The two steel suspension cables have a combined strength of 20,000 pounds.

The guides are wood.

According to the manufacturers, the high grade of material and sound construction principles which are embodied in this outfit insure the longest possible period of efficient dumbwaiter service.



Electric dumbwaiter machine

Announcement

THE Beckwith Machinery Company, Arch and Park streets, Pittsburgh, Pennsylvania, now represents the Anchor Concrete Machinery Company's line in the Pittsburgh territory. The West Penn Machinery Company of Pittsburgh has been dissolved and F. W. Wehrum, formerly with the latter firm, has joined the Beckwith force and will give special attention to Anchor products.

The E. B. Kelley Company, New York City, has just opened an office at 520 Arch Street, Philadelphia, Pennsylvania, and has taken on the Anchor line for the Quaker City territory. L. W. Cline, formerly with Staley & Morris Company, will have charge of Kelley's new office.

At both of these places complete Anchor equipment and a full line of repair parts for Anchor machinery will constantly be carried in stock.

Pressure Lubrication Insures Long Motor Life

ONE of the extremely vital factors contributing to the long life of a motor truck is an efficient system of lubrication. Operating, as it does, over long stretches of road, hour after hour, and carrying heavy loads—indeed, frequently overloaded—the strain on the engine is terrific.

Under such severe usage, unless the lubrication of the engine is perfect, intense heat is generated, with resultant harm to the vital parts, such as the bearings, pistons, cylinder walls, etc.

Truck purchasers, therefore, will do well to pay particular attention to the lubrication system of the engines in the trucks which they have under consideration, bearing in mind always that no method of lubrication is comparable to the pressure feed system for efficient results.

In this connection, it is significant to note that the largest truck engine manufacturers in the world have recently adopted pressure feed lubrication in their engines.

Republic engineers, with a background of many years of actual experience in meeting and solving truck transportation problems, have laid particular stress on the lubrication system installed in Republic engines, with the result that the present method for lubricating Republic engines is more than ample for any conceivable usage to which Republic trucks may be subjected.

All bearings, piston pins, timing gears—in fact, all movable parts in the engine—operate in a continuous bath of cool oil, supplied by pressure feed. There is absolutely no metal-to-metal contact, a film of oil separating the various surfaces which otherwise would come into contact and set up friction with resultant heat.

The oil is forced by a pump through

large oil leads to the parts requiring lubrication. Nothing is left to chance. The result is longer life for all parts of the motor and longer life for the oil itself, because it retains its lubricating qualities longer.

Furthermore, the Republic lubricating system assures a thorough cooling of the oil as it passes from the oil pump to the leads, because the oil line is carried upward on the outside of the motor.

The large oil reservoir is located in such a position that the oil pump is always submerged, no matter how steep the grade may be. In order to prevent metallic particles from entering the oil leads, the oil is screened before passing to the pump.

Floor Surfacing Machine

WAYVELL CHAPPELL & COMPANY, Waukegan, Illinois, manufacturers of floor surfacing machines, have spent over 16 years in making and constantly improving their product, the Automatic.

Every detail has been given careful thought. Where the manufacturers formerly used castings, they are now using steel; insuring accuracy of fit and lightness, as well as giving added strength to the machine.

Some of the leading features of the Automatic are its roller pressure regulator, Whitney silent high speed chain, SKF ball bearings, dustproof caps, vacuum dust collector, steel construction, rubber bumpers, carrying handles, adjustable wood slides, special clamping rollers, stationary roller shaft and force feed lubrication.

The manufacturers guarantee every machine against defect in material and workmanship for one year from date of shipment, and agree to replace, free of charge, any part which may become unfit for service because of original defects provided the damaged parts are returned to them with transportation charges prepaid.

Wayvell Chappell & Company will furnish further information on request.



Automatic floor surfacing machine

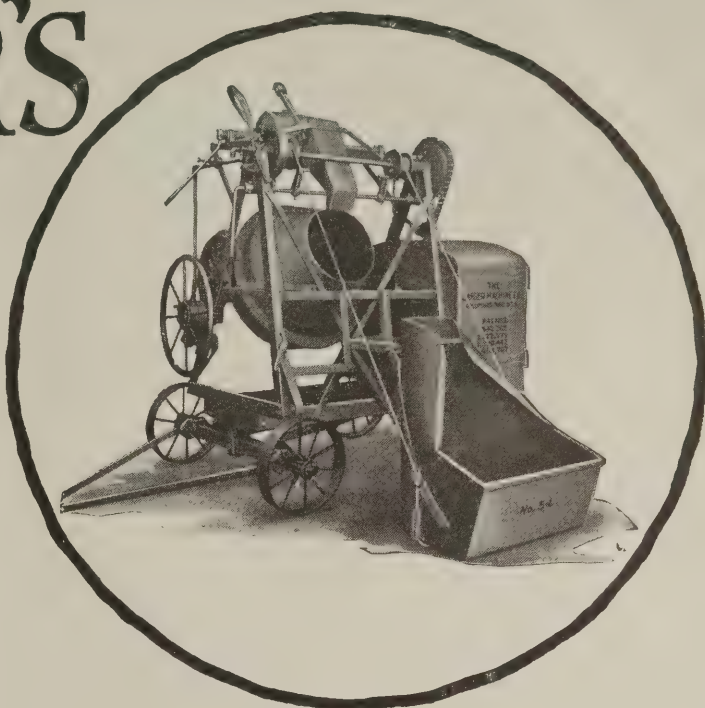
"Slate for the Roof" is the title of a book just published by the Vendor Slate Company, for distribution to architects, contractors, and builders. It tells of the many quarries owned and operated by this company throughout the country, and of their various productions.

Illustrations show the slate in its natural colors and color combinations, and some of its uses in building construction.

It is free, and may be obtained from the Vendor Slate Company, Inc., Easton, Pennsylvania.

JAEGER'S 5-L

**The Foremost
General-Utility
Concrete Mixer**



Built to Give the Utmost—In Service

CONTRACTORS—everywhere—welcome the new Jaeger 5-L as *the ideal "one-sack" concrete mixer*. Built with a capacity of 5 to 6 cu. ft. of mixed materials, it handles with ease a 1-3-5 proportion of unmixed materials. It is the concrete mixer that spells economy—in all concrete constructions operations—large and small.

Check up the many advantages it offers you. Notice its ample size Side Loader, conveniently placed to receive the load from the wheelbarrow. It has the tip-over Accurate Measure Water Tank that delivers just the right amount of water at just the right time. Its Gravity or Balanced Automatic Device for discharging the drum means quick, accurate dumping of the mixed materials—*and a speeding up of production.*

All these time and labor saving advantages are built around a genuine Jaeger "tilting drum." Jaeger design—Jaeger experience—and Jaeger thoroughness have gone into the making of this wonderfully efficient machine. It stands out as the foremost general utility, concrete mixer made.

Ask your dealer to demonstrate to you its definite time-saving, labor-saving and profit-making features.

The Jaeger Machine Company

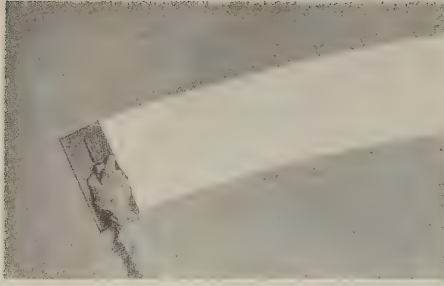
250 Dublin Avenue

Columbus, Ohio

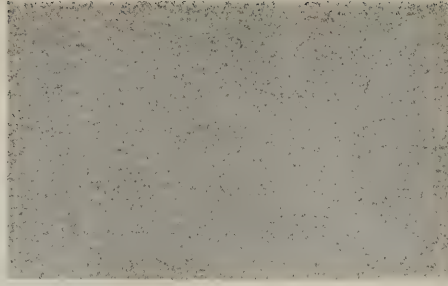
JAEGER

THE ORIGINAL TILTING DRUM MIXER

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Smooth finish



Sand finish.



Antique finish

Illustrations from "Studies in Lime"

How to Use Lime

"STUDIES IN LIME," published by the Kelley Island Lime and Transport Company, Leader-News Building, Cleveland, Ohio, resulted from a talk with a leading architect who, although equipped with all available literature on the uses of lime, expressed a real need for additional information.

It contains information on where lime can be used to advantage and how to use it in the building field. It is 8¾x11¼ inches in size and contains 46 pages.

Among the features of this book are the illustrations of Tiger Finish walls and ceilings, architectural details of cornices, and geometrical ceilings and specifications.

The drawings of cornices, and ceiling details, are made to a one-half scale and placed in loose-leaf form, so that they can be conveniently removed and slipped underneath the tracing cloth. The same care applies to the form in which the specifications on the use of lime are presented. Furthermore, these are double spaced on ledger paper for interlineation and ready erasure later, if desired.

"Studies in Lime" is offered by The Kelley Island Lime and Transport Company, in the sincere belief that it will be helpful to architects, contractors and builders—a book they will want to keep in their libraries or files for convenient and frequent reference.

Steel Kitchen Equipment

THE important part played by steel kitchen equipment in making practicable the small area devoted to kitchens in modern apartments is not often realized until one attempts to dispense with these space-saving devices. In fact, in many high class apartments, kitchens, as such, are omitted entirely and are replaced by built-in kitchen equipment located in a shallow closet with wide doors—wardrobe fashion—and providing a convenient, compact and entirely satisfactory means of preparing and serving meals.

At the bottom of this page are shown some of these devices as manufactured by the Majestic Steel Cabinet Company of 4223-31 Belle Plaine Avenue, Chicago, Illinois. This company also manufactures a stove section not shown in this group.

These sections may be purchased separately, and the refrigerator section may be arranged for front, rear or end icing, either right or left hand.

All Majestic equipment is made of heavy, high-grade furniture steel, electrically welded, and finished with three coats of white enamel, each of which is applied with an air brush and thoroughly baked on.

Further information, and catalog, will be gladly furnished by the Majestic Steel Cabinet Company.

New Booklet on Koehring Products

KOEHRING COMPANY, have just issued an illustrated booklet describing their complete line of products: pavers, trailers, construction mixers, Dandie light mixers, bar benders, bar cutters, gasoline cranes, draglines and shovels.

This booklet is planned in pocket size for handy reference, and contains a post card in the rear for the convenience of interested prospects.

The Koehring Company, 31st and Concordia Avenue, Milwaukee, Wisconsin, will be glad to supply a copy of this booklet to any interested person.

A Contractor's Mixer

A SERIES of tests recently conducted by the Robert W. Hunt Company, consulting engineers, on different makes of concrete mixers has created an intense interest among contractors, engineers and users of cement mixers.

The results of this remarkable series of tests are given in "The 7-S Mixer Book," just prepared for the Leach Company, Oshkosh, Wisconsin.

This book, 8½x11 inches in size, is illustrated and has 16 pages.

The Leach Company will be glad to send a copy of the book direct to anyone requesting it.



Some of the steel equipment manufactured by the Majestic Steel Cabinet Company

The "Master" Woodworker

MODEL No. 10 "A PORTABLE ELECTRICALLY DRIVEN WOODWORKER"

Capacity Model No. 10—Cross Cuts 2" thick. Rips 2" thick. Dadoes 13/16" wide, 2" deep.

The Fastest and Most Accurate Bench Woodworker on the Market. "Not a Saw" but a "Complete Woodworker." "Runs from a Lamp Socket." *12 Machines in One*

IN THE SHOP

Will handle 80% of all the work in most Cabinet, Pattern or Carpenter Shops. Fitting, dadoing, trimming, sawing, jointing, planing is done more accurately on the MASTER than by any other machine.

ON THE JOB

On "Inside Finishing" the MASTER will make every cut necessary for house building, besides housing out stair strings, mouldings, etc. It can be connected on a lamp socket. It will cross cut 2" faster than any machine **THREE TIMES ITS WEIGHT.**

CROSS-CUTTING

RIPPING

JOINTING

BORING

PLANING

GRINDING

MORTISING

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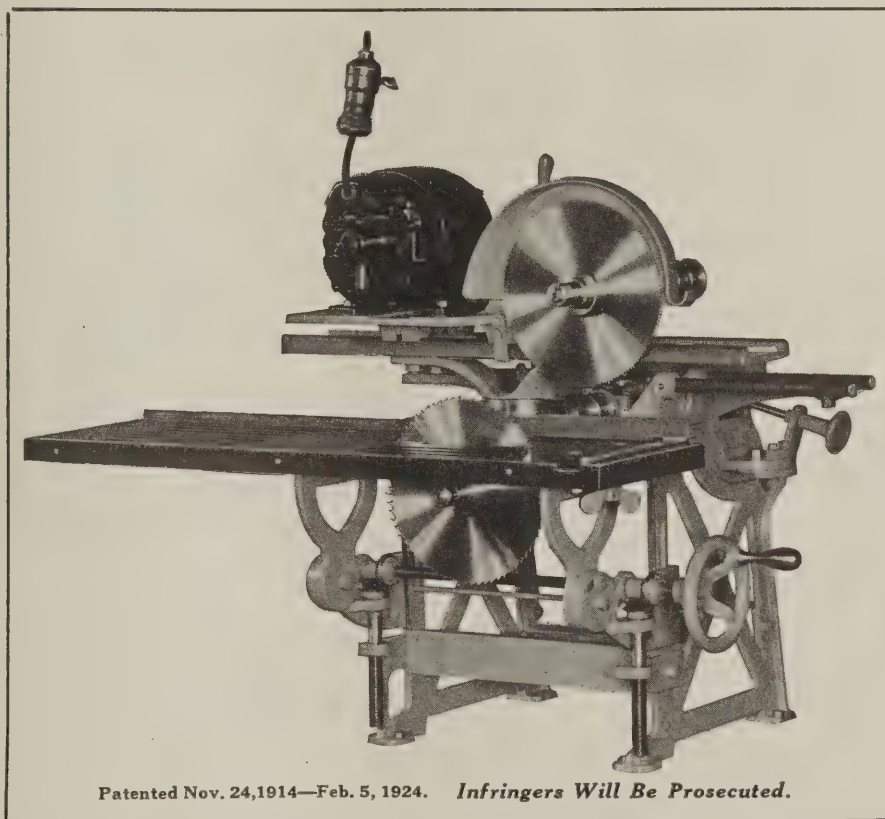
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California Pine Association, 458 Call Bldg., San Francisco, Calif. Booklet, "Pine Homes," containing information regarding White and Sugar Pine, sent free on request.

Portland Cement Association, 111 W. Washington St., Chicago. A large number of publications are issued on the different uses of portland cement, under the following heads: Canals, conduits, sewers and drainage; farm uses; correct products; roads, streets and alleys; structural concrete; technical data, tanks, etc., and miscellaneous subjects. "A Manual of Concrete Masonry Construction" is particularly recommended for the contractor and builder. It is a 32-page booklet, size 8½x11, and is sent free on request.

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Books on Building

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International Steel & Iron Co., Evansville, Ind. Catalog on steel ceilings, catalog on store fronts and garages and circulars describing metal lath, coal chutes, fireplace dampers, etc., sent on request.

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Weatherproof Calking Co., 757 Washington Ave., N., Minneapolis, Minn. 24 pp. booklet describing their product sent on request.

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Sandusky Cement Co., Dept. T, Cleveland, O. "Medusa White Cement Book" sent on request.

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Concrete Products Equipment

Anchor Concrete Machinery Co., 534 Dublin Ave., Columbus, O. They offer free to concrete products men their interesting "Hand Book on Concrete Products." Included in the book are articles by such leaders of the concrete products industry as Harvey Whipple, secretary of the American Concrete Institute and editor of Concrete; and Wallace R. Harris, president of the National Concrete Products Association and editor of Concrete Products.

Concrete Equipment Co., 530 Ottawa Ave., Holland, Mich., manufacturers of the "Utility" line of concrete machinery and molds for the manufacture of all kinds of concrete products. A descriptive catalog, which not only describes the equipment but also specifies weights, cost and selling prices of the products, is sent free upon request.

J. B. Foote Fdy. Co., 16 Front St., Fredericktown, O. New 40-page catalog on "Money Making Machinery."

Helm Brick Co., Cadillac, Mich. "Concrete for Beauty, Adaptability and Permanence." This is a combination handbook on the concrete products industry and catalog illustrating and describing the well known line of brick and block presses and various accessories for products plants.

Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, O. New loose leaf catalog No. 35, 80 pp., illustrating and describing their complete line of concrete machinery. Contains detailed information for the manufacture of molded concrete products. Sent free on request.

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California White & Sugar Pine Association, 405 Call Bldg., San Francisco, Calif. Literature sent on request.

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Sasgen Derrick Co., 3101 W. Grand Ave., Chicago, Ill. Circular N2 with illustrations and descriptions sent on request.

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American Bed Corp., 18th to 19th Park Ave., St. Louis, Mo. Complete information sent on request.

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Murphy Door Bed Co., 22 W. Monroe St., Chicago, Ill. "How to Use the Murphy Bed," describes its construction, operation and sizes; "Behind the Door," showing installation in private homes and its application to this type of building; "Specifications and Details," giving complete information for the preparation of all types of Murphy beds sent free on request.

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Wheeler Osgood Co., Tacoma, Wash. Monograph on Laminex construction sent free on request; also Catalog No. 31 and booklets on Laminex doors.

Doors—Metallic

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Milwaukee Corrugating Co., Milwaukee, Wis. Literature sent on request.

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Sedgwick Machine Works, 150 W. 15th St., New York City. Catalog containing descriptions and construction details, 4¼x8¼ in., 70 pp., illustrated; sent on request.

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"Lighting of Public Buildings." Bulletin, 6x9 in., 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

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International Steel & Iron Co., Evansville, Ind. Elevator catalog sent on request.

Kimball Bros. Co., Council Bluffs, a. "Kimball Elevator," an illustrated catalog of hand power, sidewalk and garage elevators and dumbwaiters and electric passenger, freight and push button elevators, 36 pp., 8½x11 in. Sent free.

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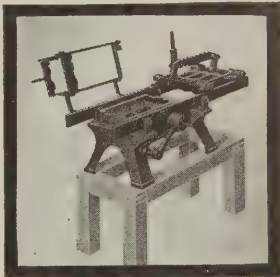


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Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book.

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American Cement Machine Co., Keokuk, Iowa. Description and literature sent free on request.

Construction Machinery Co., 111 Vinton St., Waterloo, Iowa. 48-page catalog describing fixtures and also showing illustrations and specifications of various size mixers; also illustration of mixers in operation.

Helm Brick Co., Cadillac, Mich. Helm Concrete Mixer catalog sent free on request.

Ideal Concrete Machinery Co., 5000 Spring Grove Ave., Cincinnati, O. New loose leaf catalog No. 35, 80 pp., illustrating and describing their complete line of concrete machinery. Contains detailed information for the manufacturer of molded concrete products. Sent free on request.

The Jaeger Mach. Co., 250 Dublin Ave., Columbus, O. Catalog No. 24, "A Mix a Minute," free on request.

Koehring Co., Milwaukee, Wis. "Concrete, Its Manufacture and Use," 207 pp. book, 4¾x7¼ in. This is a complete treatise on the use of concrete, including over 39 pages of valuable tables relating to quantities of material required for various



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Mortisers

Colgan Machinery & Supply Co., 102 Hayden Bldg., Columbus O. Folder describing their products sent on request.

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The Dow Co., Louisville, Ky. Literature sent on request.

Fred J. Meyers Mfg. Co., Hamilton, O. Their catalog No. 67 describes their products in detail.

Milwaukee Corrugating Co., Milwaukee, Wis. Literature sent on request.

Ornamental Molds

Ideal Concrete Machinery Co., 5002 Spring Grove Ave., Cincinnati, O. Catalog No. 30 sent on request.

Paints

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Partitions

Richards-Wilcox Mfg. Co., Aurora, Ill. "Partitions." Booklet, 7x10 in., 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, according and flush door partitions.

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Markwell Mfg. Co., Inc., 178 Franklin St., New York City. Catalog sent on request.

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Duro Pumps & Mfg. Co., 103 Monument Ave., Dayton, O. Booklets, "Duro Data Book," "How to Choose a Water System," "How to Select a Water Softener," sent free on request.

F. E. Meyers & Bro. Co., Ashland, O. Catalog on request.

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Herrick Refrigerator Co., 102 River St., Waterloo, Iowa. Catalog sent on request.

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Milwaukee Corrugating Co., Milwaukee, Wis. "The Milcor Manual," 64 pp., four-color book sent free on request.

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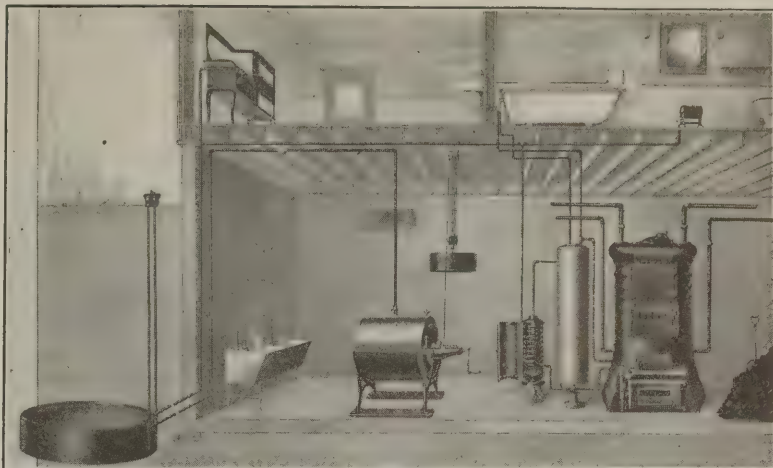
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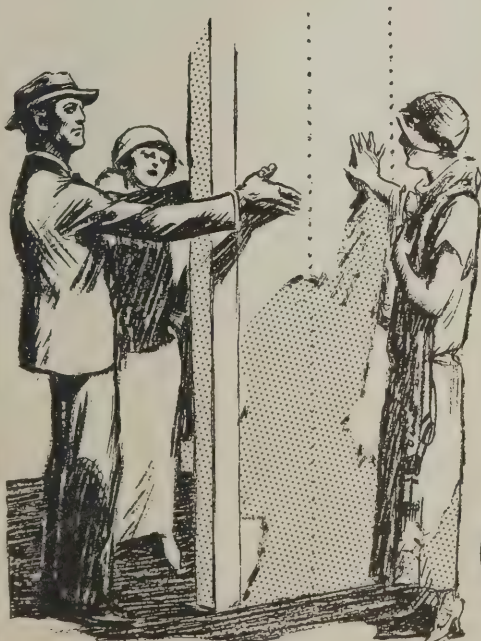
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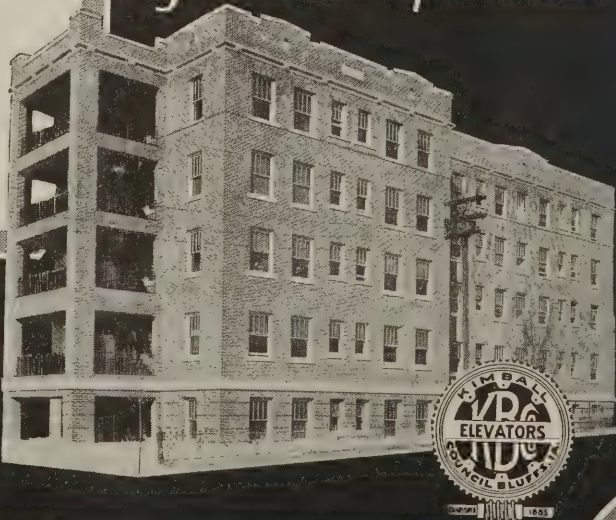
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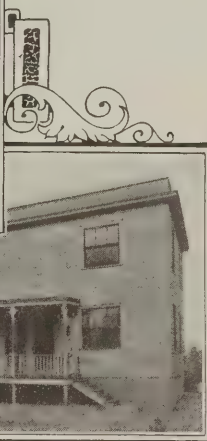
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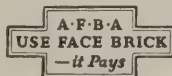
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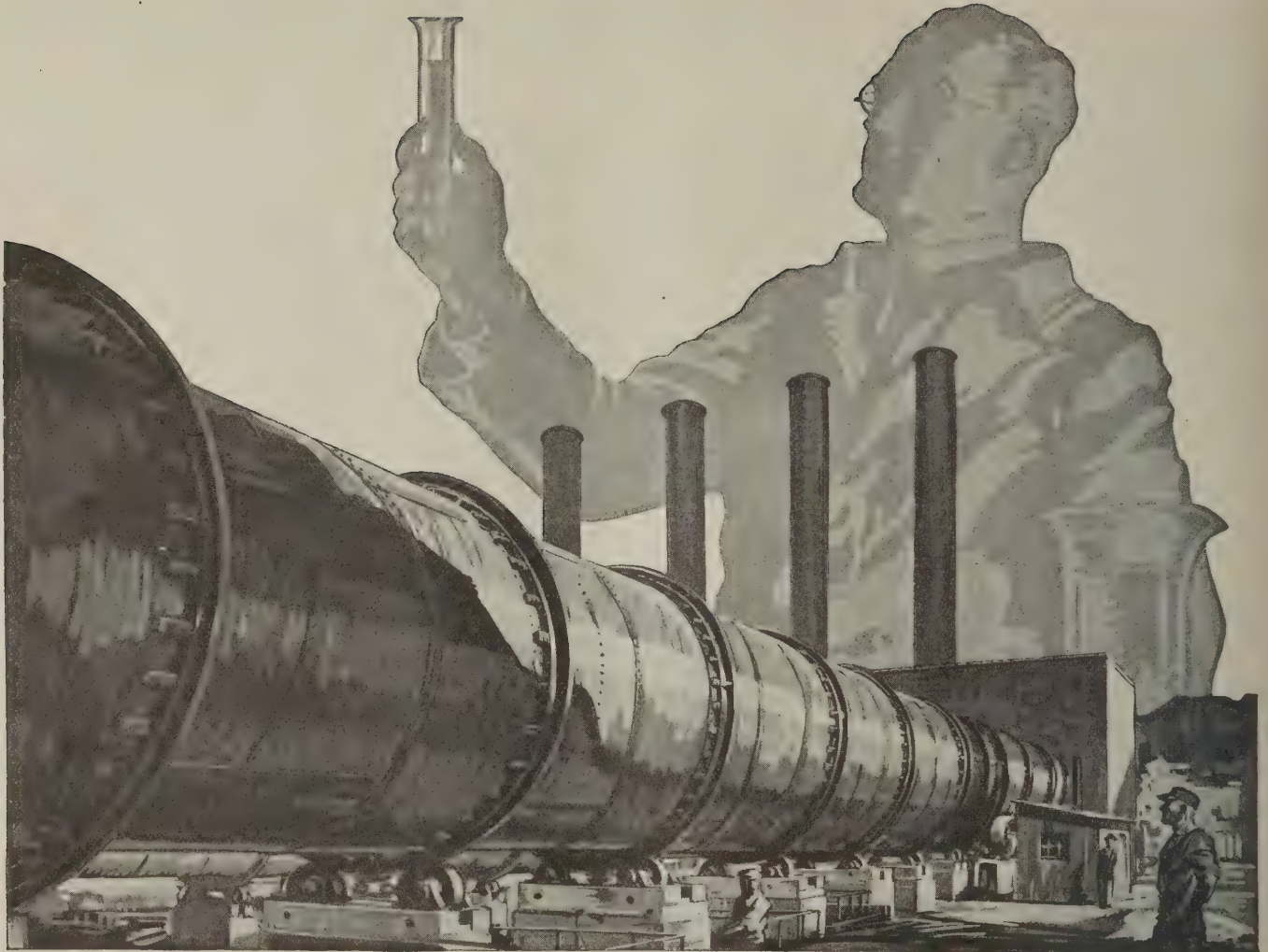
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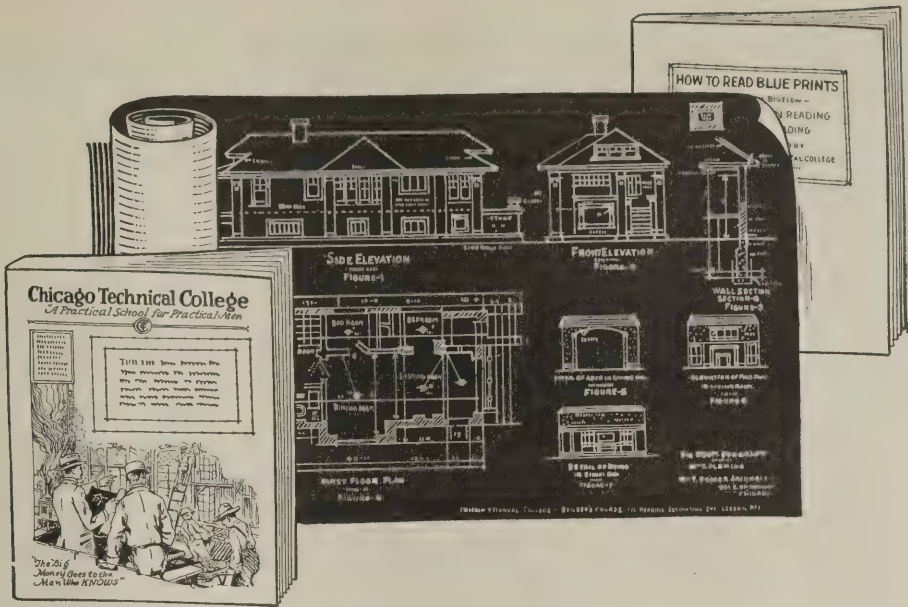
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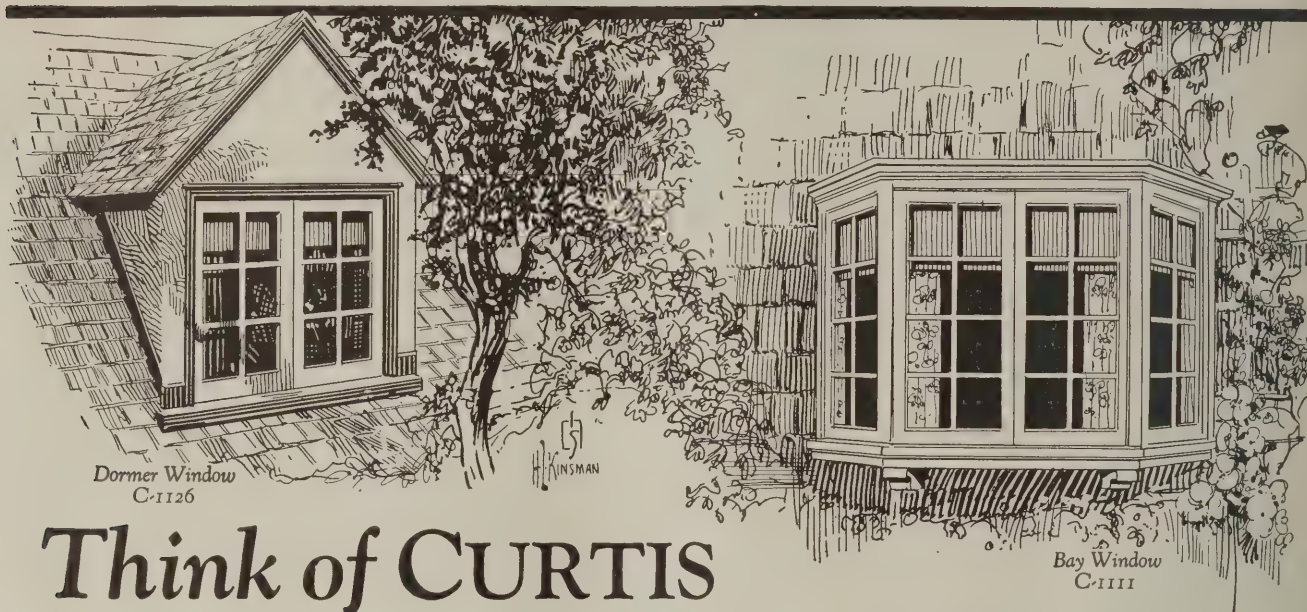
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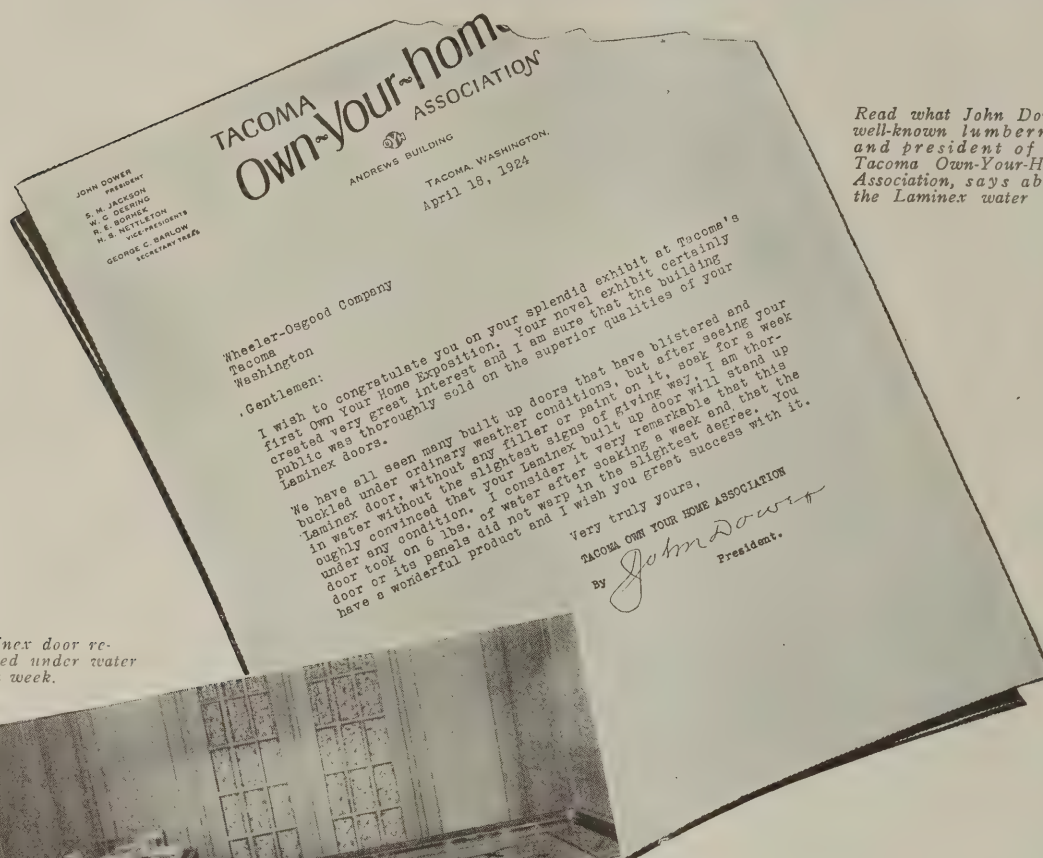
TO builders throughout the world, the *Certain-teed* Label has long stood for genuine building satisfaction.

Asphalt Roofing
Asphalt Shingles
Paints and
Varnishes
Gypsum Plaster
Gypsum Blocks
Linoleum

Certain-teed

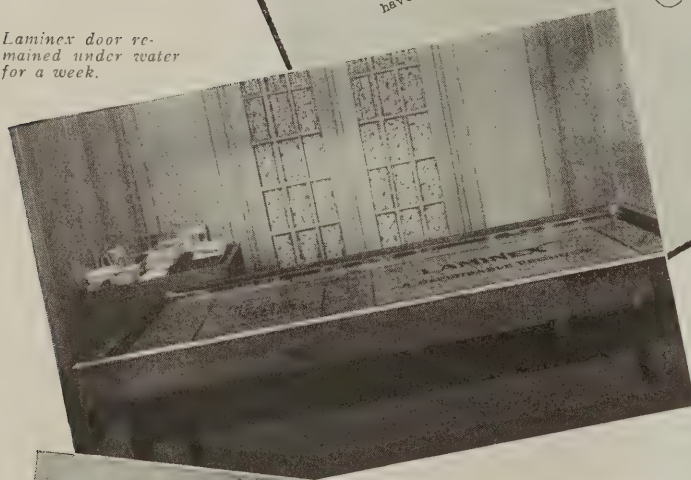
When writing advertisers please mention National Builder

Now a Laminex door absorbs 6 $\frac{1}{4}$ lbs. of water without warping or separating!



Read what John Dorwer, well-known lumberman and president of the Tacoma Own-Your-Home Association, says about the Laminex water test

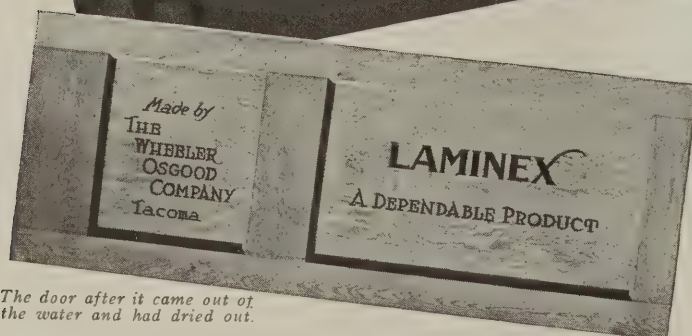
Laminex door remained under water for a week.



THINK of keeping a door under water for a week! What ordinary door could absorb nearly a gallon of water, dry out, and not show the slightest signs of warping, buckling, checking or separating?

Besides unheard-of scientific and accidental tests, over a million Laminex doors are now in use throughout the country—in climates where no built-up door ever successfully stood.

Look for our gold label replacement guarantee on every genuine Laminex door. If not obtained readily, write us for name of nearest distributor. Ask for architects' monograph.



The door after it came out of the water and had dried out.

The Wheeler, Osgood Company

Tacoma, Washington, "The Lumber Capital of America"

Sales Offices:
Chicago, Memphis,
Los Angeles,
San Francisco, Spokane



Manufacturers of
"Woco"
Douglas Fir Doors and
Fir Sash

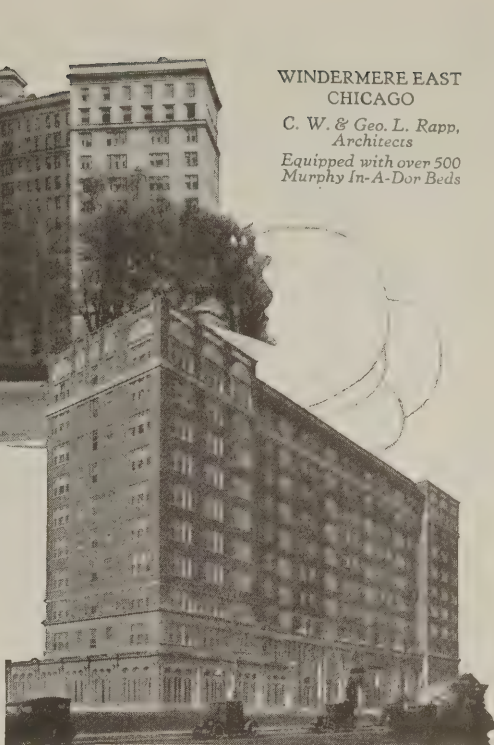
LAMINEX DOORS

WILL NOT SHRINK, SWELL OR WARP

When writing advertisers please mention National Builder



PENNSYLVANIA HOTEL APARTMENTS - PHILADELPHIA
Clarence E. Wunder, Architect
Equipped with 459 Murphy In-A-Dor Beds



WINDERMERE EAST
CHICAGO
*C. W. & Geo. L. Rapp,
Architects*
Equipped with over 500
Murphy In-A-Dor Beds

THE GATESWORTH - ST. LOUIS
Barnett, Haynes & Barnett, Architects
Equipped with 310 Murphy In-A-Dor Beds

Equipped with Murphy In-A-Dor Beds

How the largest Apartment Hotels in Chicago, Philadelphia and St. Louis provide extra bedroom space that costs nothing to build, decorate, heat and light.

One Murphy In-A-Dor Bed gives each apartment of these distinguished hotels the advantage of one more sleeping chamber than the owner had to build and the tenant has to care for.

By day the living room is a spacious place to lounge or entertain. At night, with the Murphy Beds swung easily into position, the same room has all the comforts of a bed chamber.

Murphy Beds are made in twin types and standard, full size 4' 6" x 6' 4". Simple in construction and operation, they require no special door for perfect concealment. They swing easily through a 3 ft. opening.

That Murphy Beds are made standard equipment in the finest and largest hotels in the country attests to their worth and the complete satisfaction of owner and tenants.

Our Technical Service Department is a clearing house of building ideas. Practical suggestions and valuable experience of builders throughout the United States is at the disposal of anyone planning a home. Write for details. No obligation.

THE MURPHY DOOR BED COMPANY

Offices and Display Rooms in All Principal Cities

22 West Monroe St., Chicago
1534 Blake Street, Denver
Crocker Building, San Francisco
1140-42 Hanna Bldg., Cleveland
204 Peach Tree Arc., Atlanta, Ga.
Chemical Bldg., St. Louis
1410 Kresge Bldg., Detroit, Mich.
Terminal Sales Bldg., Seattle
1114 Grand Ave., Kansas City

469 Fifth Ave., New York City
205 O'Connor St., Ottawa, Can.
220 N. St. Paul St., Dallas, Texas
309 Third Ave. N., Nashville
1807 S. Main St., Los Angeles
10 St. Antoine St., Montreal, Can.
Neff-Stiles Building, El Paso
319 Dryades St., New Orleans



By day this living room at Windermere East is a spacious place to lounge or entertain



At night, with Murphy In-A-Dor Beds swung into position, this same room becomes a sleeping chamber.

There is only one In-A-Dor Bed—THE MURPHY

When writing advertisers please mention National Builder



SINCE permanence is usually the prime objective in the selection of building materials, consider this: There is no more permanent metal for roofing and roofing accessories than Horse Head Zinc.

But if economy is the prime objective, then consider this:

Horse Head Zinc is the cheapest of all permanent metals in first cost, and the cheapest of all metals, permanent or temporary in up-keep cost and final cost.

It is the supreme material for conductor pipes, gutters, trim and standing seam roofing.

The New Jersey Zinc Company

*Established 1848
Products Distributed by*

The New Jersey Zinc Sales Company

(INCORPORATED)
NEW YORK • CHICAGO • PITTSBURGH • CLEVELAND • SAN FRANCISCO

Did you ever

see a more complete sales campaign behind a product like this?



The sign of a better built house

Here is an idea for a special window which can be placed in the wall in the cellar stairway to show that Johns-Manville Housline has been used. We will furnish you with placards telling that "this house is insulated with Housline." There is a space for your name as builder on each one. This is of considerable assistance to builders in selling their houses because this window plan is nationally advertised.

National advertising

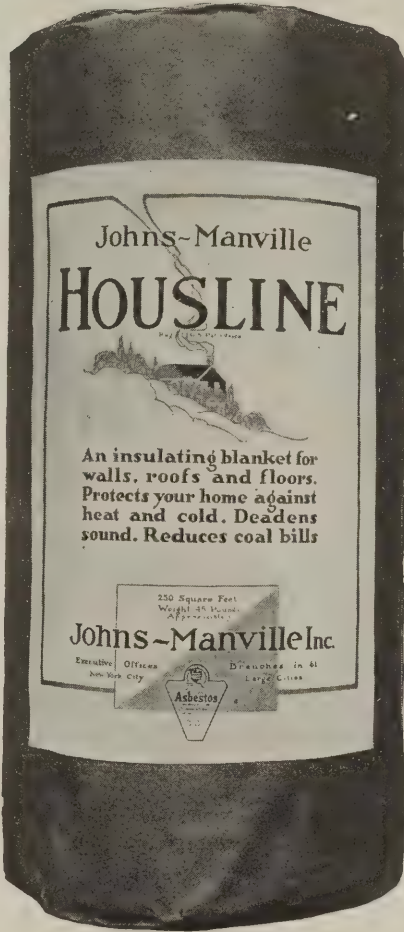
Johns-Manville is running full page advertisements in Literary Digest this year on Housline. These advertisements are building a reputation for builders who apply Housline and for dealers who sell it.



Consumers' booklet

This interesting sixteen page booklet, containing sample of Housline ought to be on every dealer's counter. We would be very glad to

send copies to any of your prospects, whose names and addresses you send us.

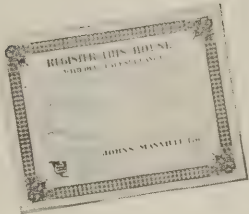


WHETHER you are a builder or a dealer, Johns-Manville Inc. is behind you in applying or selling every square inch of this "highest efficiency" building insulation.

JOHNS-MANVILLE Inc.
292 Madison Ave. at 41st St., N. Y. City
Branches in 62 Large Cities
For Canada: Canadian Johns-Manville Co., Ltd., Toronto

Register the house with us

This proves to your prospective customer that the house is completely insulated with Johns-Manville Housline, and is so registered with us. A remarkable sales asset!



Dealer ads.

Get some of these ads in your local newspaper. They'll get attention and bring good business. We will furnish you with the cuts and text free. The newspaper will insert your name.



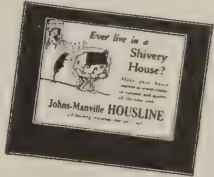
Kraft Sign

This very attractive sign can be used on houses while in course of construction. It immediately notifies passers-by that the house is being insulated with Housline.



Lantern Slides

A couple of these lantern slides shown in your local theatre, will bring your name before hundreds



of people, as a dealer in superior building materials.

Johns-Manville Housline

When writing advertisers please mention National Builder

Answer Here



I am interested in your Housline proposition. Please send me further details.

I am a { Builder Dealer

Name.....

Address.....

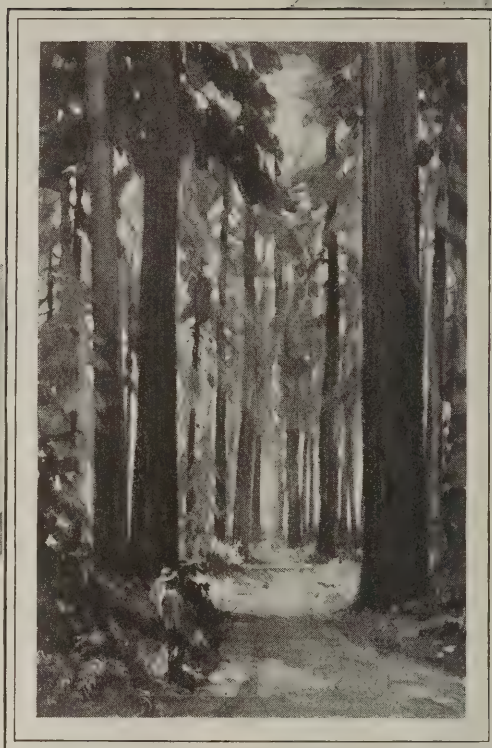
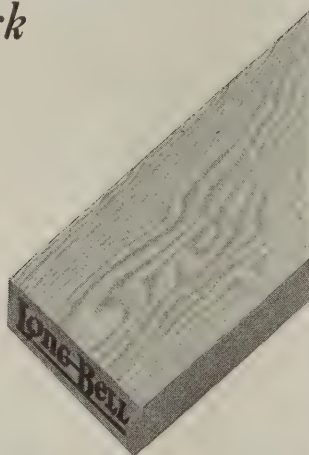
N. B. 9

Johns-Manville Inc.
292 Madison Ave.
New York City

Fir

with the Long-Bell
trade-mark

The trade-mark
"Long-Bell", will be found
on the end of the piece



FIR lumber and timbers meet varied home and industrial building needs—a wood of first importance in general construction.

With the recent opening of the new Long-Bell manufacturing plants at Longview, Washington, fir lumber and timbers have been added to the list of Long-Bell trade-marked lumber products.

For years, and still, the largest manufacturer of Southern Pine, The Long-Bell Lumber Company is putting behind this new product the experience of nearly fifty years as lumbermen.

Fir lumber and timbers bearing the

trade-mark, "Long-Bell," are safeguarded in manufacture to meet that important requirement so long a standard in Long-Bell production—*maximum building value*.

Satisfied users of Long-Bell trade-marked lumber products in the past will find the same uniform dependability in Long-Bell trade-marked fir products.

Fir Lumber and Timbers; Southern Pine Lumber and Timbers;
Creosoted Lumber, Timbers, Posts, Poles, Ties, Guard-
Rails, Piling; Southern Hardwood Lumber and
Timbers; California White Pine Lumber;
Sash and Doors; Oak Flooring

Ask your lumberman for Long-Bell
trade-marked lumber products

THE LONG-BELL LUMBER COMPANY
R. A. LONG BLDG. Lumbermen Since 1875 KANSAS CITY, MO.

Long-Bell
Trade Marked **L U M B E R**

K N O W T H E L U M B E R Y O U B U Y

When writing advertisers please mention National Builder



Celotex—Speed—Quality

There's no time and no material wasted in sheathing the walls and in insulating the roof with Celotex. It saws readily and nails direct to studs, rafters and headers.

The qualities of Celotex are even more surprising than the ease of handling it.

With the insulating value of cork, Celotex makes a house cool in summer and cheap to heat in winter. It cuts fuel bills a fourth to a third.

Celotex makes a stronger wall than wood sheathing and when in place generally costs less than the materials it has replaced.

Recommend Celotex to your clients. Give them better homes with less trouble to you.

Use Celotex as sheathing, as roof insulation, as plaster base. Give quality with speed.

Write for more complete information to Dept. D9, The Celotex Company, 645 N. Michigan Ave., Chicago, Ill. Canadian Representatives, B. & S. H. Thompson & Co., Ltd., Montreal and Toronto.

Celotex is a strong, rugged, weather-proof durable building lumber made from the long, tough fibres of cane. It is better than wood sheathing—equals cork for insulation.

Celotex is used for sheathing instead of wood; for plaster base, roof insulation, sound deadener and exterior finish.

Stock sizes: Thickness $\frac{1}{8}$ in.; width 4 ft.; lengths 8 ft. to 12 ft. Weight about 60 lbs. per 100 sq. ft.

CELOTEX

INSULATING LUMBER

THERE IS A USE FOR CELOTEX IN EVERY BUILDING

He wanted shingles that would curl! We couldn't supply him.

A New York State dealer in Ambler Asbestos Shingles had an odd experience recently. A gentleman, who later turned out to be a member of an artists' colony, inquired:

"Have you Asbestos Shingles?"

"Yes, indeed," replied our dealer, ready to explain their good qualities.

"Will they curl?" inquired the prospective customer.

"Heavens, no," responded the dealer confidently.

"Then I don't want them," came the unexpected reply of the property-owner. "I must have shingles that will curl."

He had in mind a very definite type of little house and he wanted it to look ancient and weather-beaten quickly. Curling shingles, he thought, would soon look slightly out of repair and give a cozy, artistic sort of appearance.

The market is full of flexible shingles that curl up quickly under the sun. But such shingles develop leaks with equal speed, they flake off, and their inflammable qualities place dwellings at the mercy of every spark and wind-blown ember.

Artistic Roofs That Endure

are produced with Ambler Asbestos Shingles, made in a wide range of beautiful subdued colors. Combining several of these colors produces a variegated effect that may be varied indefinitely to meet individual tastes. Shingles with broken-butt edges are the most recent development of Ambler Asbestos Shingles. Rugged weathered beauty, a deep shadow line—all that is needed to achieve picturesque, quaint-looking roofs—is obtainable with this latter type of Ambler Asbestos Shingles and with this is combined utility and moderate cost. These shingles will not curl; they can't burn and there is no surfacing treatment on them to flake off. They actually grow stronger with age.

If you are interested in roofs that eliminate repair expense, that will add to the resale value of the house and that combine utility and moderate cost with beauty, write us for samples and general information about Ambler Asbestos Shingles. Service Sheet on request showing approved methods for laying these shingles.

Asbestos Shingle, Slate & Sheathing Co.

Dept. B

Ambler, Penna.

Branch Offices:—Baltimore, Boston, Buffalo, Chicago, Cincinnati, Detroit, Cleveland, Minneapolis, New York, Omaha, Philadelphia, Pittsburgh, Washington, Wilkes-Barre; Toronto, Canada; Havana, Cuba.

Southwestern Distributor:—R. V. Aycock Co., Kansas City, St. Louis, Tulsa, Houston.

California Representative, J. A. Drummond: Los Angeles, San Francisco, Houston.

H. G. Sperry & Co., Utah, Idaho, Nevada & Washington Representative: Offices, Salt Lake City and Seattle.

F. T. Crowe & Co., Washington Representative: Offices, Seattle and Tacoma.

Other distributors throughout the country.



When writing advertisers please mention National Builder



The home of Harry Sharp, Esq., Brendenwood, Indianapolis. Robert F. Daggett, Architect. John Curry Construction Co., General Contractors. Richardson Multicrome Roof applied by Ralph R. Reeder & Sons

Note under the microscope how the long fibres of Richardson felt interlock to bind the Viskalt into an enduring weather-proof armor

Distinctive beauty marks the roof of this Indianapolis home

A roof with a wholly unique thatched effect of weathered brown adds the final touch of beauty to the country home of Harry Sharp, Esq., Brendenwood, Indianapolis.

This unusual roof was secured by trimming Richardson Super-Giant slate-surfaced shingles into different shapes and sizes; and by using them for the ridges and valleys as well as on flat surfaces.

The distinctive color of this roof—*weathered brown*—is found only in the Richardson quarries of Georgia.

The Richardson Multicrome Roof
This, however, is but one example of the beauty secured in the Richardson Multicrome Roof. Many color effects are possible—one to please every taste. The rare weathered brown, for instance, is attractive when applied with other

Richardson Shingles of jade green, tile red or black pearl. And the new opal roof is also greatly admired.

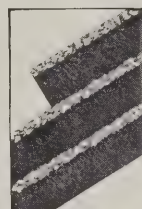
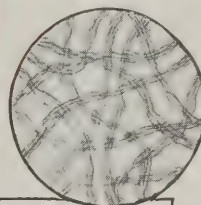
The Multicrome Roof is built of Richardson Super-Giant Shingles, extra large, extra heavy—to give greater beauty, longer endurance. The high quality of its inner materials, too, assures lasting beauty for this roof. Its base is sturdy Richardson felt, for fifty years recognized as the best. And the waterproofing is Viskalt—unusually durable because 99.8% pure bitumen, especially vacuum-processed.

Richardson Multicrome Roofs are economical to lay and equally good for new or over-the-old-roof jobs. Send coupon for samples.

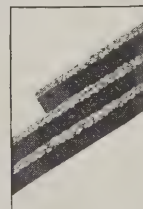
The RICHARDSON COMPANY
Lockland (Cincinnati) Ohio

Chicago New York City (1008 Fisk Building)
New Orleans Atlanta Dallas

The 50% greater thickness of this roof adds beauty of texture and years of endurance. Closely overlapping slate flakes further protect the sturdy Viskalt-saturated base against weather and fire hazards



**Richardson
Multicrome
Roof**



**Ordinary
Roof**

*[cross sections
equally enlarged]*

Clip and mail this coupon

The Richardson Company
Lockland, Ohio

Gentlemen:

Please send me samples of Richardson Super-Giant Shingles, your new booklet, and further facts about Richardson Roofing.

Name

Address.....

RICHARDSON ROOFING

LOK-TOP ASPHALT SHINGLES

(Patented)



Lok-Tops are especially adapted for use over worn out roofs—it isn't even necessary to remove the old shingles

Protection that's *locked* on your roof

There's no question about the weatherproofing which this shingle gives. It can't leak nor blow up because it is locked fast to the roof on all four corners. A special patented Lok holds it firmly on the roof in any weather.

The artistic pattern of Lok-Tops and their rich colors of green, red or blue-black slate give an unusually handsome roof. And the guaranteed quality of their inner materials makes this beauty *permanent*.

Lok-Top Asphalt Shingles can be easily applied over old wooden shingles as well as on a new roof. And they are approved by the Underwriters' Laboratories as fire resistant.

Ask your dealer or jobber about Lok-Top Asphalt Shingles. If they cannot supply you, write us direct.

The **RICHARDSON COMPANY**

Lockland (Cincinnati) Ohio

Chicago
New Orleans

New York City (1008 Fisk Building)
Atlanta

Dallas

Clip and mail this coupon

RICHARDSON ROOFING

© 1924, The Richardson Company

The Richardson Co.
Lockland, Ohio

Gentlemen: Please send me complete information on Lok-Top Asphalt Shingles.

Name

Address



Furnished apartment, Wardman Park Hotel, Washington, D. C. This 1200 room hotel is Herringbone construction throughout.

Free Forever From Unsightly Cracks

INTERIOR walls constructed with GF Herringbone retain their good appearance. Cracks, sagging and spalling of plaster are eliminated. Original beauty becomes a permanent thing.

The economies possible with Herringbone are worth noting. It is self furring and requires less plaster. Its rigidity makes it easily handled and erected. Labor costs are reduced. And due to the economies of volume production, Herringbone costs no more than ordinary "Key" lath.

You will find the "Herringbone Handbook" filled with usable information. We will gladly mail you a copy on request.



Other GF Materials

- Self-Sentering**—A combined form, lath and reinforcement.
- Trussit**—A reinforcement for solid partitions.
- GF Expanded Metal**—A concrete reinforcement.
- GF Steel Tile**—For concrete floors.
- GF Steel Lumber**—Used in place of wood joists and studs.
- GF Steel Channels**—For fireproof partitions and ceilings.
- GF Peds**—Spot grounds for attaching trim to concrete and plaster.
- GF Waterproofings**—For concrete and masonry.

Write for illustrated literature.

THE GENERAL FIREPROOFING CO., Youngstown, Ohio

Branches:

NEW YORK CHICAGO PHILADELPHIA BOSTON CLEVELAND LOS ANGELES ST. LOUIS OMAHA
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Dealers Everywhere : : : : : Export Department: 438 Broadway, New York City—Cable Address: "Genfire-New York"

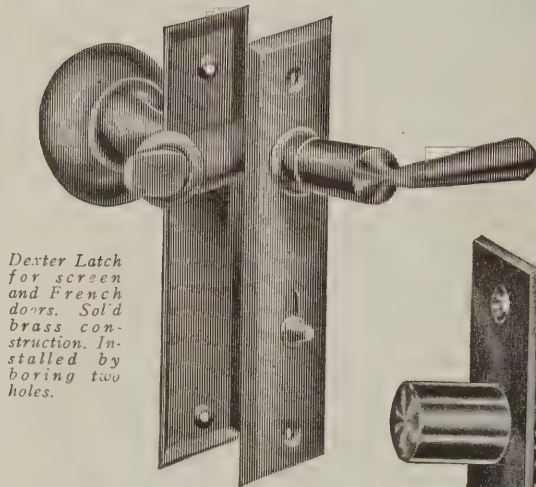
GF Herringbone Rigid Metal Lath

Approved by the Underwriters' Laboratories

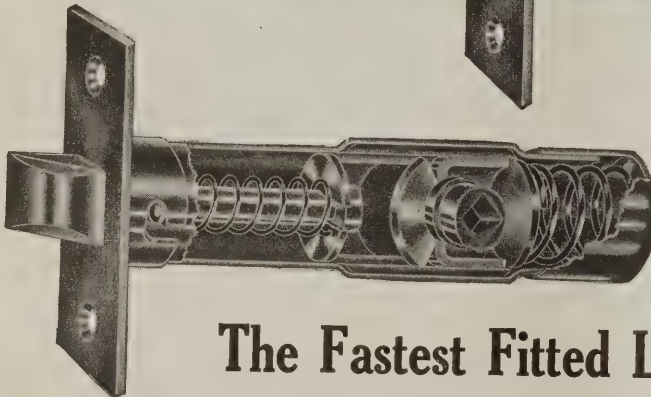
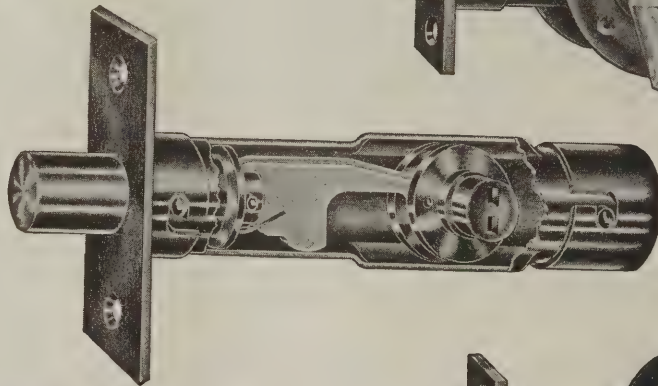
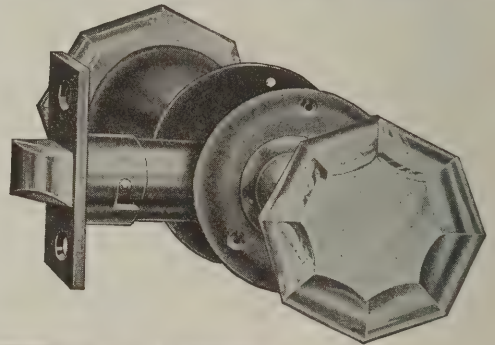
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DEXTER

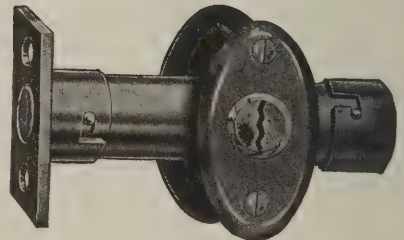
LOCKS and LATCHES



Dexter Latch for screen and French doors. Solid brass construction. Installed by boring two holes.



Latch bolt and knob of Dexter Latch are operated by compression springs. Latch hub and bolt are solid cast brass—three times as strong as cast iron.



The Fastest Fitted Lock in the World

In appearance and ease of installation, in safety and simplicity of construction, Dexter Locks and Latches offer greater advantages than any other type of lock set. Made in tubular form, they require no mortising nor gouging. Simply bore four holes and attach. Lock can be located where desired, independent of latch. Many handsome designs including models for screen and French doors.

Write for descriptive circular

If no dealer in your territory, your requirements will be taken care of direct from factory.



National Brass Company
Grand Rapids, Michigan

Made in Canada by Dexter Lock Co., Hamilton, Ont.

When writing advertisers please mention National Builder



Inexpensive Conveniences like Knapé & Vogt Clothes Closet Fixtures Will Win Many a Contract for YOU

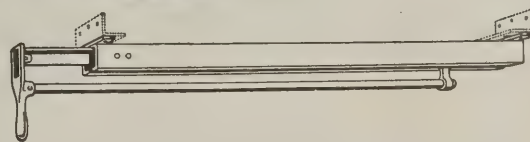
When you show prospective builders how easily Knapé & Vogt Clothes Closet Fixtures can be made a part of the plans for their homes—show them the increased comfort and convenience, the lower building costs and the unlimited capacity with half the space, you can close many a contract which may otherwise slip by.

Because home builders know that the contractor or builder who is ever seeking out greater conveniences for their comfort is a safe person in whose hands to place the building of their new homes.

Knapé & Vogt Clothes Closet Fixtures provide more closet space with half the usual size. Provide better storage and save building costs. Prevent wrinkling, sagging, crowding, tearing or soiling of garments. Permit instant inspection and selection in the light and air of the open room.

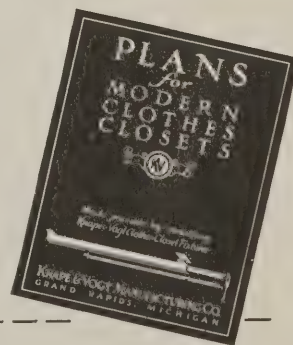
KNAPE & VOGT MANUFACTURING COMPANY
GRAND RAPIDS, MICHIGAN

When writing advertisers please mention National Builder



GET THIS FREE FOLDER

To contractors, builders and architects, and to others interested in building, we will gladly send, on request, our blue print folder of Clothes Closet plans, showing how easily Knapé & Vogt Clothes Closet Fixtures can be included in your building plans.



**Knapé & Vogt Mfg. Co.,
Grand Rapids, Mich.**

Please send me your free folder of blue prints showing how easily K. & V. Clothes Closet Fixtures can be installed and included in any building plan.

() Architect () Contractor
() Builder

NAME.....

STREET AND NO.....

CITY.....STATE.....



Forty homes for fifty cents

—homes of permanent materials that build permanent reputations for builders and contractors. Send fifty cents today for

"Plans for Concrete Houses"

This new book, just off the press, shows forty ideal homes ranging in cost from \$3,000 to \$10,000—the work of prominent architects in every section of the country.

Through advertising in the national magazines, this book is being brought to the attention of thousands of people who are looking for an ideal home at a moderate price.

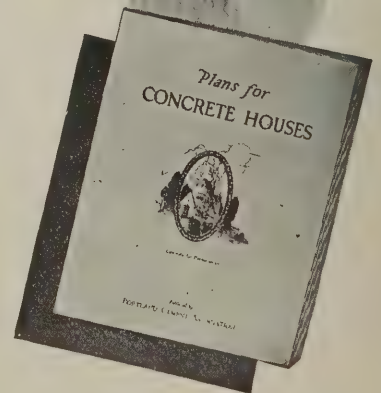
Through this book, and the house plan service back of it, you can get plans for wide lots and narrow lots; cottages, bungalows and two story houses; farm homes and city homes; houses with and without basements.

Remember, permanent materials build permanent reputations. Send fifty cents today for "Plans for Concrete Houses"—while you think of it.

PORTLAND CEMENT ASSOCIATION

111 West Washington Street, Chicago

A National Organization to Improve and Extend the Uses of Concrete
Offices in 29 cities



When writing advertisers please mention National Builder



California Pines Preserve the Lines that Impart Colonial Charm —

CALIFORNIA WHITE PINE
CALIFORNIA SUGAR PINE

A 200-year supply of these woods now stands in the region where our mills operate. Natural growth of standing timber, augmented by natural reproduction and re-forestation, assures a supply of these valuable building woods for all time.

California Pines are used more than any other wood for doors, sash, millwork and interior finish. Millions of doors and window sash and frames of California Pines are annually installed in the homes of America.



Send for this free booklet for additional information about California White Pine and California Sugar Pine.



ENAMELED in white, ivory or gray, California White Pine and California Sugar Pine preserve the charm of stately Colonial architecture.

These fine, soft woods take enamel and paint perfectly. The close, evenly spaced, delicately marked grain of these woods offers the decorator's brush a smooth, satiny surface, light in color, that requires less enamel and paint to obtain the most lustrous finish—an economy both of materials and of labor time.

Because California Pines are unusually free from resinous substances and "raised" grain, the whitest of white enamel retains its brilliancy without discoloration, and without checking, chipping or peeling off.

California White Pine and Sugar Pine permit the delicately moulded contours and sharp profiles of Colonial doors, sash, mantels, stairways and all interior woodwork, because these fine-textured soft woods cut readily either with or across the grain. Unusually free from warping and shrinking, these woods "stay put," thereby giving permanence to the purity of line and ornament in the architect's design.

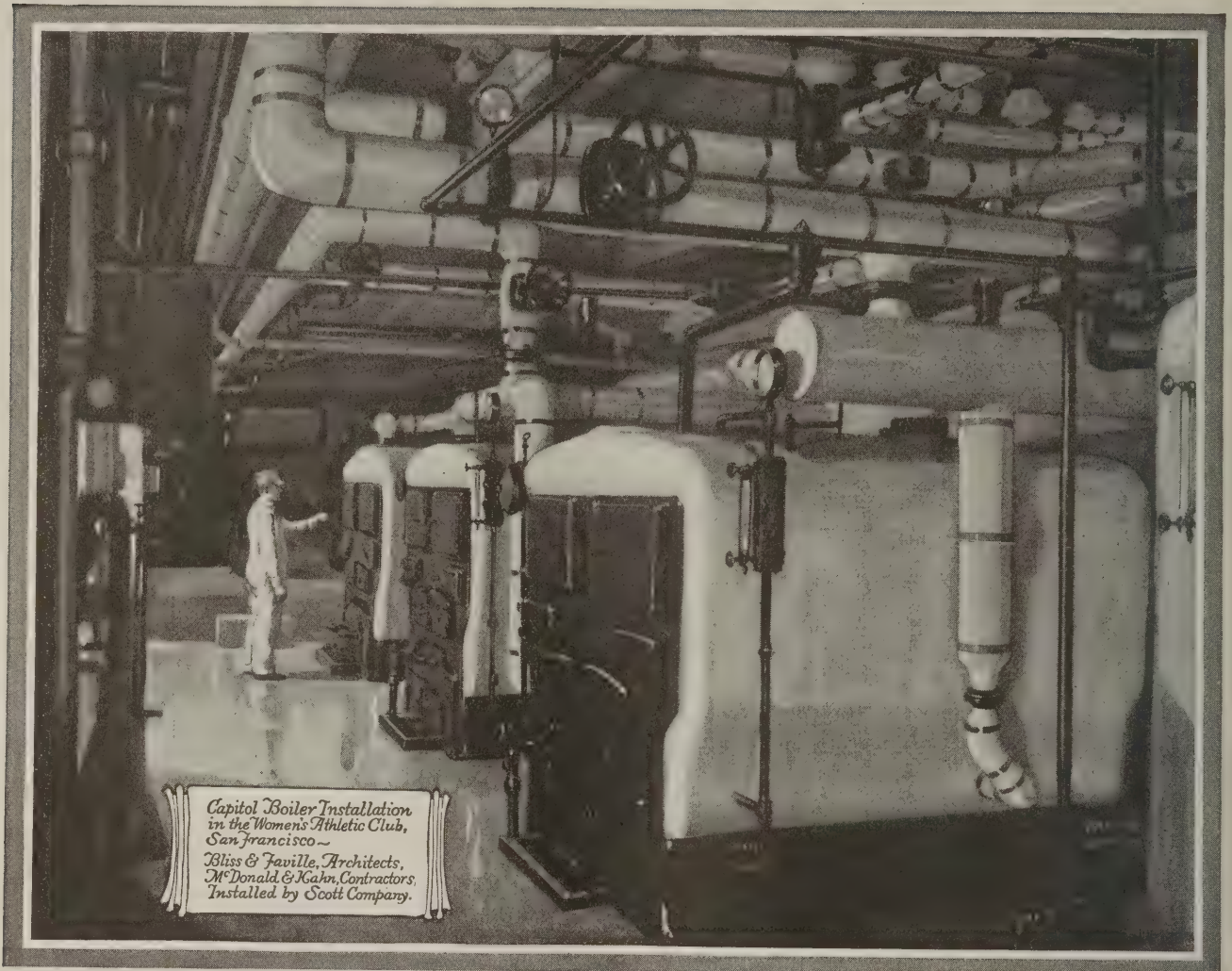
California Pine

ASSOCIATION
458 CALL BLDG. SAN FRANCISCO.

CALIFORNIA WHITE PINE • CALIFORNIA SUGAR PINE

CALIFORNIA WHITE FIR ✓ DOUGLAS FIR ✓ CALIFORNIA INCENSE CEDAR

When writing advertisers please mention National Builder



Capitol Boiler installations represent the finest expression of modern heating science. They are products of more than thirty years of sustained research work and a rigid standard of quality manufacturing.

Wherever you may find them—in small homes or large public buildings—Capitols perform with utmost economy and live up to every tradition of an honorable name.

In planning your new home you should, by all means, select a heating system of established reputation. If you place your faith in Capitol Boilers and United States Radiators there can be no question as to ultimate satisfaction.

Any heating contractor, architect or heating engineer will gladly confirm these statements. These specialists know the real worth of the Capitol name plate.

UNITED STATES RADIATOR CORPORATION

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*Springfield, Mass.
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*Denver
*Seattle
*Portland, Ore.

*Warehouse stocks carried at points indicated by star

Capitol Boilers

This advertisement appears in the Saturday Evening Post of September 6, 1924 and also in a large list of nationally known publications.

When writing advertisers please mention National Builder



How to Get Contracts ~at your own price

Are you working a territory where bids must be cut to the bone in order to secure contracts? Are you tired of taking jobs at prices that pay you mere wages? Then get into the store-front field.

Here's a branch of contracting that is not crowded. Contracts are readily secured at a profitable figure. The work is simple and can be handled by an inexperienced crew.

An hour or two of your time with our free

book on Desco methods will tell you how to enter this interesting and profitable business. Cut-throat competition will no longer cut into your profits. Tear out the coupon below and get into this branch of building while the field is open.

*Write us for the name of the nearest "Desco" Distributor.
Additional information in Sweet's Catalog.*

DETROIT SHOW CASE COMPANY
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Desco
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STORE FRONTS

A complete stock of "Desco" construction materials carried in our New York City warehouse, 562 West 52nd Street.

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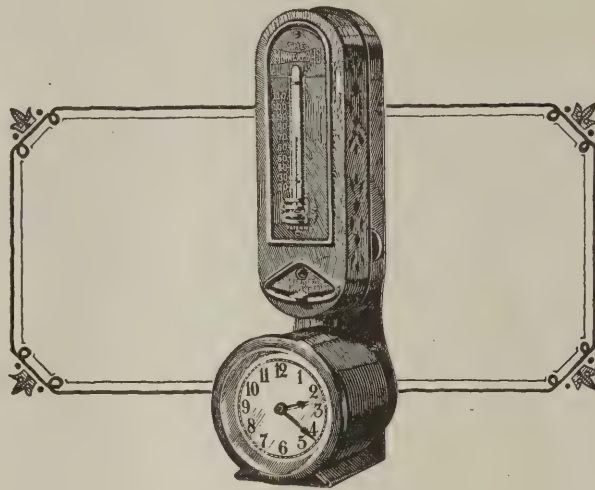
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Very often the only difference between a fast and slow-selling house can be found in the equipment installed. The Minneapolis Heat Regulator is regarded by millions as necessary equipment for which there is no substitute. They know either through experience or through our big national advertising that the Minneapolis means real heating comfort, convenience and economy—saving $\frac{1}{3}$ to $\frac{1}{2}$ on fuel. They know too that no home can be strictly modern without the Minneapolis.

The Minneapolis will help you win the confidence of the most skeptical buyer. You can sell your houses quicker, at better prices. Install the Minneapolis and make it a feature of each sales talk. Bring home the fact that the house is built for comfort and convenience—then prove it by pointing out the Minneapolis. That's the way to make quick sales, bigger profit.

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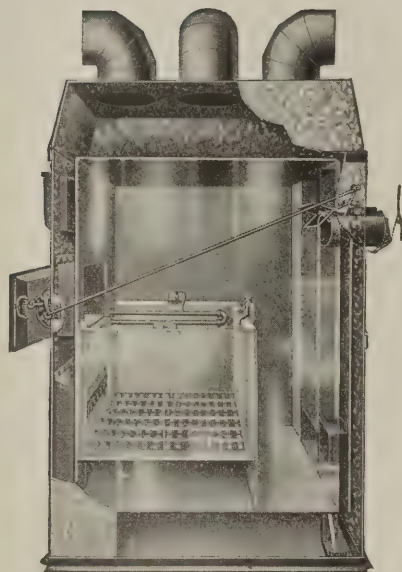
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"THE HEART OF THE HEATING PLANT"

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Welded Steel Radiator



"Every
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Furnace"

Guaranteed
Never to Per-
mit Escape of
Dirt, Soot,
Smoke nor
Gas to Rooms

THE Hess Welded Steel Furnace is the only furnace which permanently makes impossible the escape of dirt, soot, smoke, or gases to the living rooms of the house.

The fire box, ash pit, and smoke outlet are all enclosed within a large sheet steel radiator, having all seams and joints securely riveted and welded—*fused into one solid piece.*

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Write for "Modern Furnace Heating," a book of heating system information; comparing *ALL* methods and fully describing the Hess method.

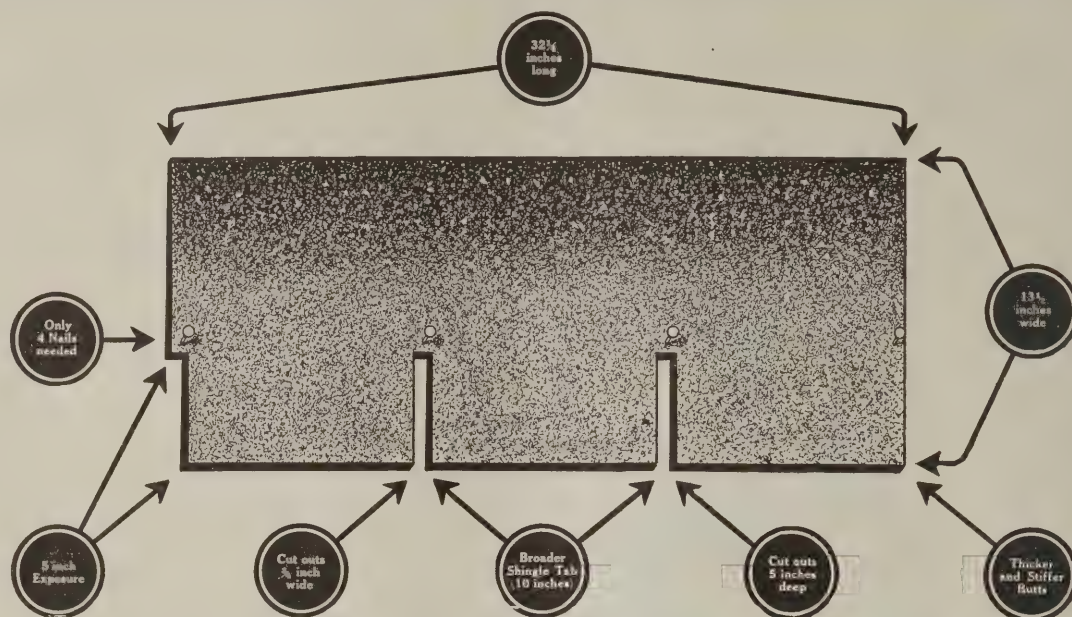
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HESS *Welded Steel* FURNACE



The Shingle That "Took"

SINCE we announced Winthrop Tapered Asphalt Shingles in strip form they have fairly leaped into popularity. You builders made this 3-in-1 Shingle. That is, requests constantly came to us for the famous WINTHROP Tapered Asphalt Shingle in this form. We have now expanded our facilities, perfected the machinery and produced the 3-in-1 Shingle.

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You can lay this 3-in-1 shingle with one half the nails. You can lay this shingle without chalk lines, and it spaces automatically. These features represent a big saving in labor.

The WINTHROP 3-in-1 Tapered Asphalt Shingles come packed in bundles, three bundles to a square. Use them for fall jobs.

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We want you to examine this shingle for yourself. Send for a sample; specify what color you wish—tile-red, sea-green or blue-black.

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Apartment Building at Oakdale and Pine Grove Avenues, Chicago. F. A. Anderson, Owner and Builder, Chicago. John A. Nyden, Architect, Chicago. All kitchens are equipped with Reliable "Angliron" Gas Ranges with Lorain Oven Heat Regulators. Below are shown the two types of Reliable Gas Ranges in use in the apartments.

Tenants Stay Longer Where Equipment is Most Modern

OWNERS of rented properties find that tenants remain longer if the equipment throughout is of the most modern type. Architects everywhere are aware of this fact, and are specifying for kitchens the most modern cookery appliances—Gas Ranges equipped with the Lorain Oven Heat Regulator.

They know that the big advantages of the Lorain Self-Regulating Oven appeal immediately to housewives. Lorain eliminates the bug-bear of "pot-watching." It insures uniform baking results. It makes possible the cooking of a Whole Meal at one time while the housewife is miles away. And it permits of the canning of fruits and tomatoes with entirely successful results.

Lorain-equipped Gas Ranges are approved and used by the leading cookery authorities of America. These remarkable stoves are used in thousands upon thousands of the finest homes, apartments, churches, hospitals, fraternal organization buildings and many other types of structures. They are used for cookery instruction purposes in over a thousand schools and universities.

Lorain-equipped Gas Ranges are made in every popular size, style and finish. Catalogs and data of special interest to architects gladly sent upon request. For specific data see pages 2315-24, 18th Edition Sweet's Architectural Catalog.

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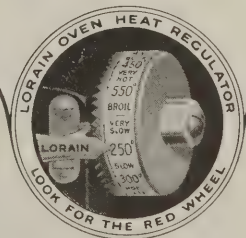
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No. 5381 Reliable Angliron Gas Range



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One easy turn of the Lorain Red Wheel gives the housewife a choice of 44 measured and controlled oven heats for any kind of oven cooking or baking

LORAIN OVEN HEAT REGULATOR

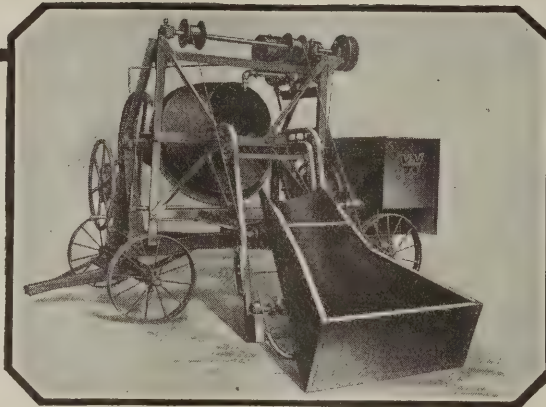
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Wonder "7's"
With Loaders, Tanks
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Wonder "4's"
With Loaders



COMPETING with practically all other Mixers manufactured, WONDER won the entire award for all side loader model mixers from the New York and Pennsylvania Department of Highways.

The superiority of design of the WONDER track-extension loader—the dependable Fuller & Johnson power unit and the bridge-like rigidity of WONDER general design were the deciding factors.

Our 1924 prices and catalog are both attractive. Yours for the asking.

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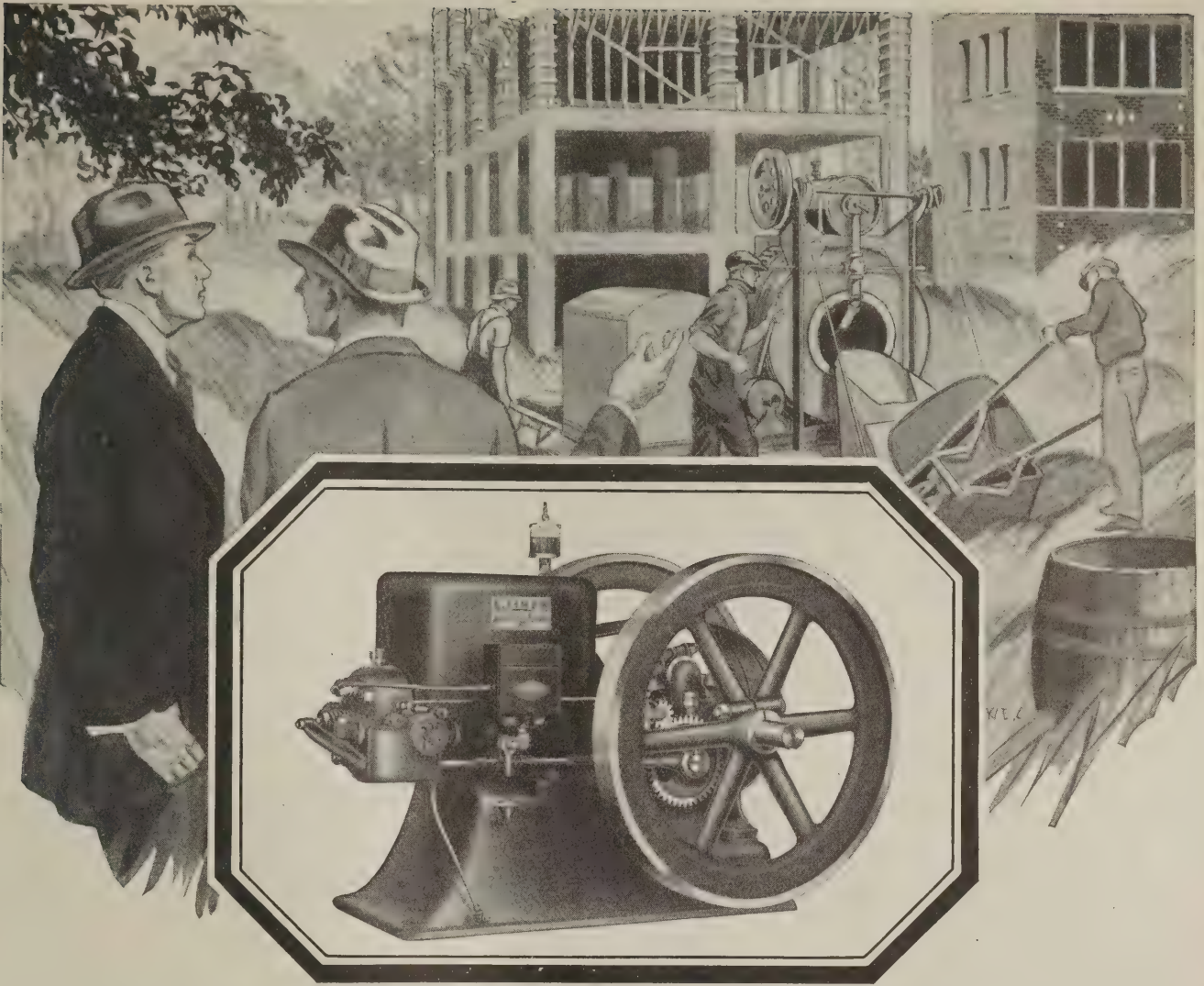
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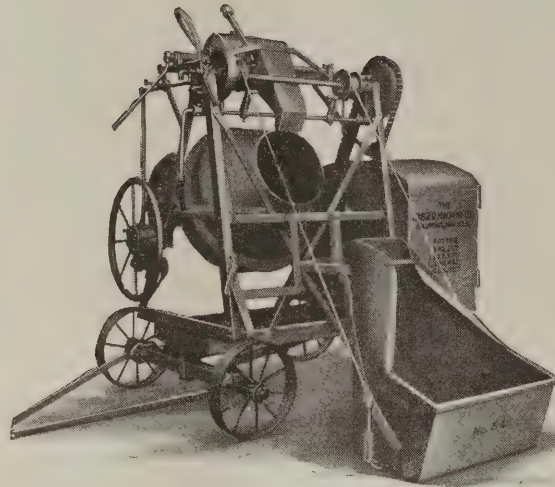
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Write us for the name of the distributor nearest you

THIS superior mixer is equipped with all of Jaeger's latest labor saving devices, including Side Loader, Tip-Over Accurate Measure Water Tank and the Gravity or Balanced Automatic Device for turning the drum to the discharge position. With these improved features the No. 5-L is the most efficient and economical concrete mixer of its size that you can buy. It is a complete, self-contained concrete producing unit that will be a money maker wherever used. Ask your dealer to show you this "one-sack" Jaeger Mixer. Notice the famous "Jaeger Tilting-Drum" that insures "A-Mix-a-Minute" speed. Have him to tell you all the facts about this splendid new addition to the Jaeger line.

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Home of Robert S. Moore, Menlo, California. Mr. Albert Farr, San Francisco, Architect. Medusa Stainless White Cement used for exterior stucco work. Medusa Waterproofed White Cement used in basement wall and cast-stone fountain. An excellent example of the all 'round usefulness of this perfect building material.

MEDUSA WHITE CEMENT

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The Sandusky Cement Company
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Manufacturers of Medusa Stainless White Cement (Plain and Waterproofed); Medusa Gray Cement (Plain and Waterproofed); and Medusa Waterproofing (Powder or Paste).

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9. White Pine preserves original accuracy and gives continuous service.
10. Made by largest exclusive standard frame manufacturer. The trade-mark is absolute protection.

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Andersen FRAMES

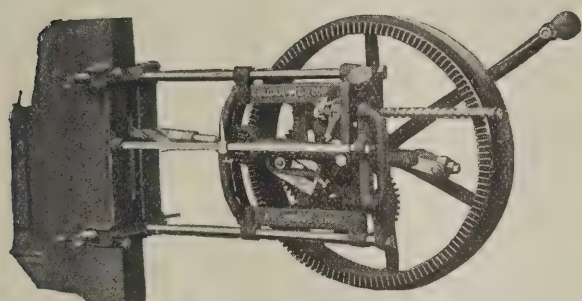
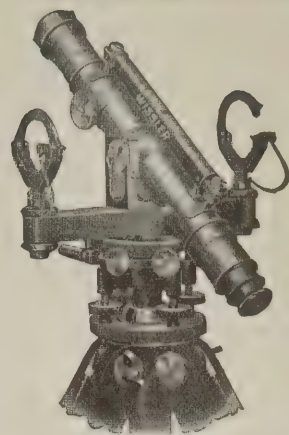
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Cuts a Perfect Mortise in a Minute or Two

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SAVE THE WAGES OF THESE SIX MEN!



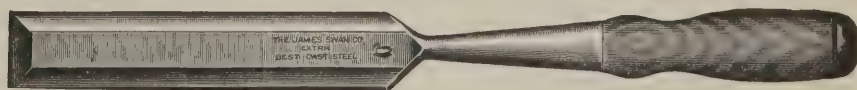
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Wonder Diaphragm Pumps

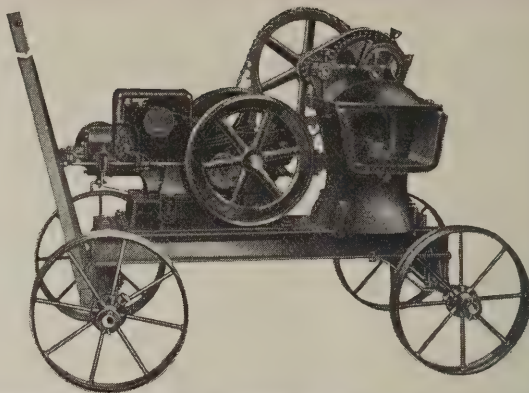
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Wonder Pumps by departure from the usual walking beam design, have accomplished advantages that are economically worth while.

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Literature illustrating and describing this design gladly sent on request. Write today.

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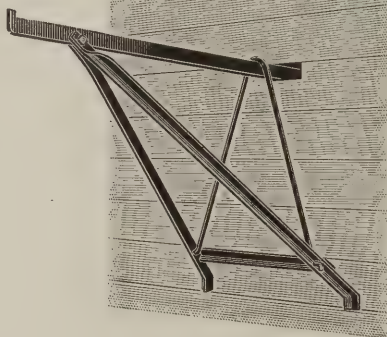
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**They Can't
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Absolutely the
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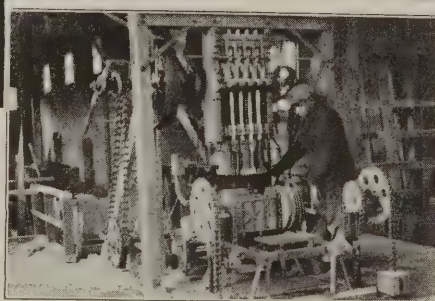
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Satisfaction guaranteed on "Trouble-Savers"

A CLASSY PERFORMER

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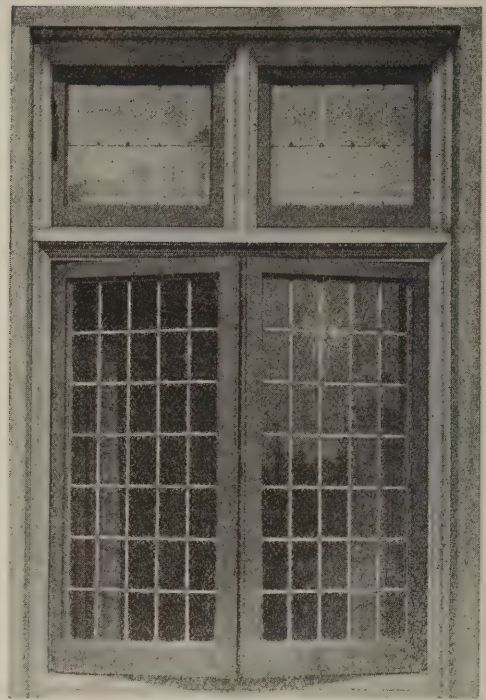
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HOFFMAN CASEMENTS are folding casement windows, not hinged to either jamb, free from binding, sticking and rattling. Installed to open either in or out, weather tight both ways. Suitable for typical use in any kind of building.

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Announcing the New MYERS

Self-Oiling Electric Water System

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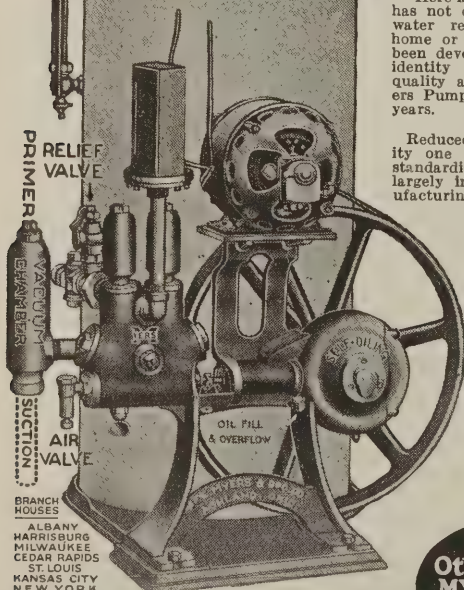
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Made in Two Sizes
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Gallons per hour

Here is a Myers Water System which has not only been developed to meet water requirements of the modern home or farm at a low cost but has been developed to maintain the trade identity and trade reputation for quality and dependability which Myers Pumps have enjoyed for so many years.

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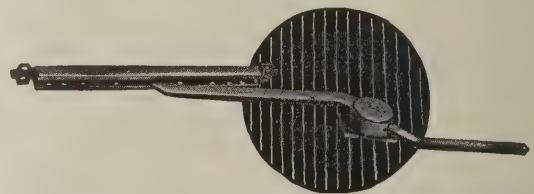
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Casement Window Operators

Win-Dor
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Have the Strength and Durability You Want

YOU know the kicks there have been about casement operators for outswung windows. Most of them rattle.

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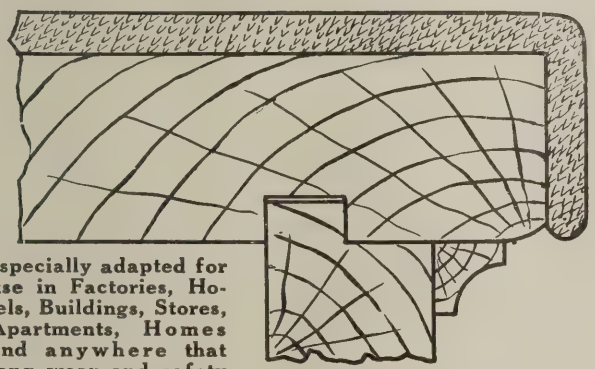
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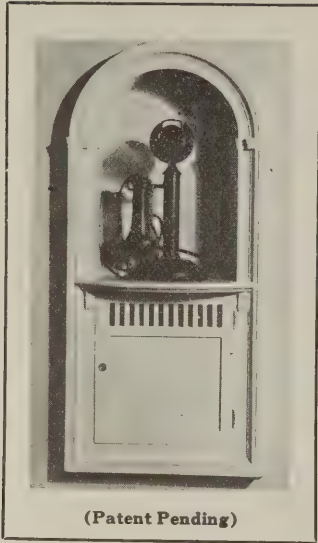
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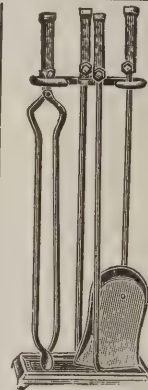
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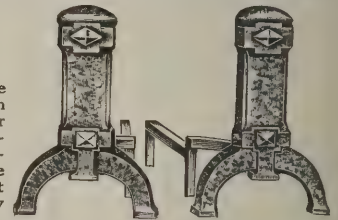


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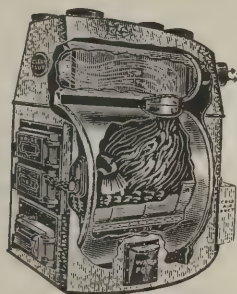
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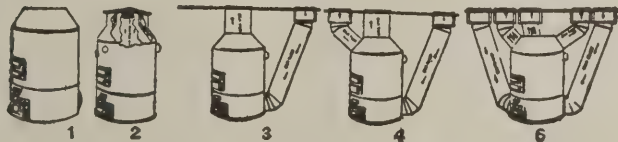
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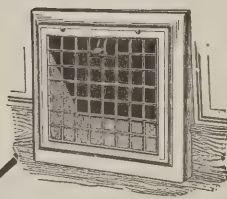
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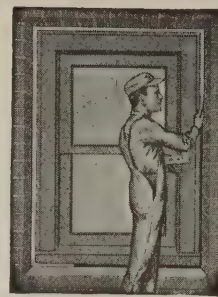
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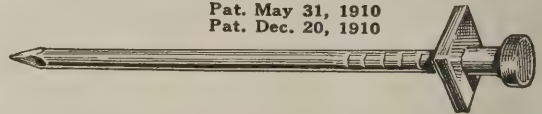
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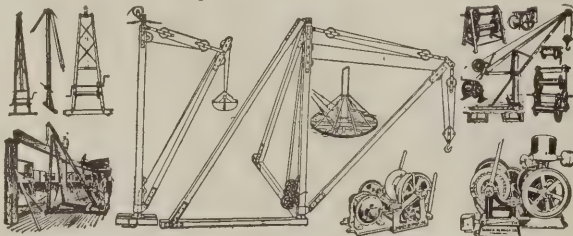


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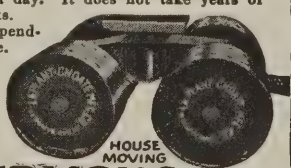
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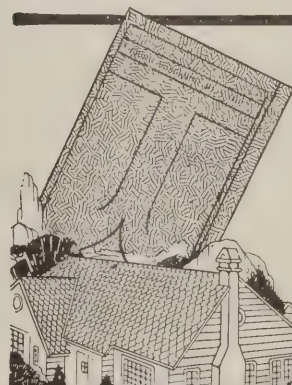
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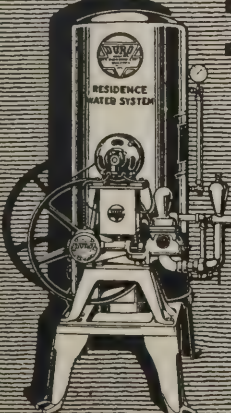
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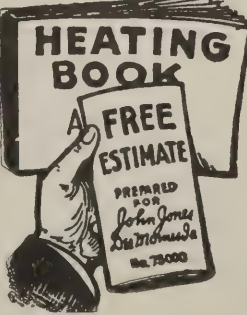
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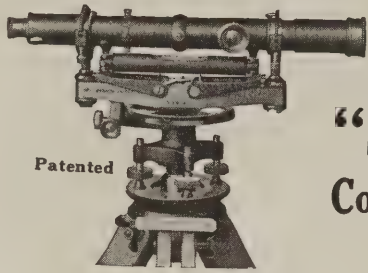
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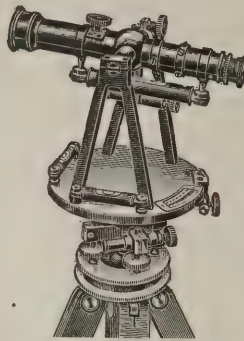
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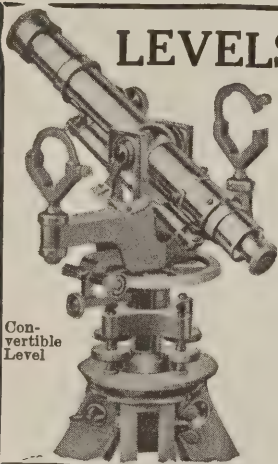
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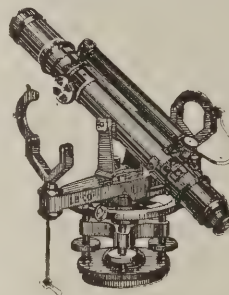
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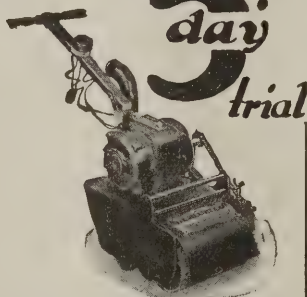
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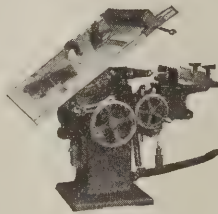
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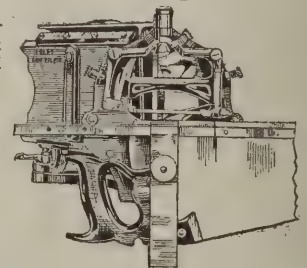


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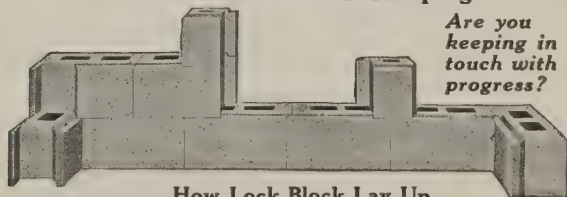
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Gentlemen: Three years ago I bought a set of 12 Reliable Scaffold Brackets, at a cost of \$55.00. It seems like quite a bit of money to put into staging, but after trying and testing them thoroughly, both my men and myself don't see how we ever got along without them.

The first job I used them on was a big warehouse 50x250, two story, and I assure you these brackets returned to me that \$55.00 and then some on the one job; and they have returned it time after time since then.

Very truly yours,

(Signed) T. C. BROWNE.

Stop building expensive and unsafe wooden scaffolds for every job. Reliable Steel Scaffold Brackets make rigid scaffolds—and stay up until taken down. They save all kinds of time, lumber and money. Give them a trial. There is a Reliable Scaffold Bracket for every kind of job. Pick out the kind you need most and order some today.

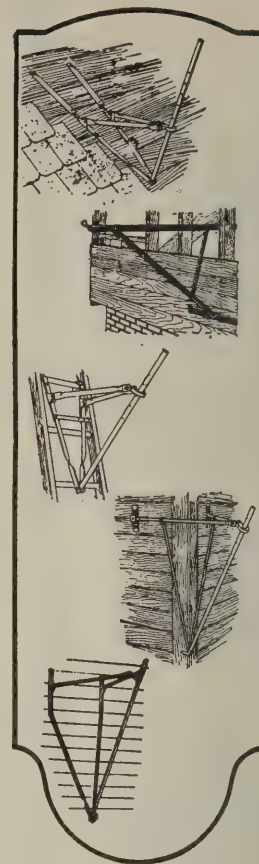
The illustrations (from top to bottom) show the Roofing Bracket, Hooktype Bracket, Ladder Bracket, Corner Bracket and Scaffold Bracket.

ELITE MANUFACTURING COMPANY

Dept. NB-9

Ashland, Ohio.

Reliable Scaffold Brackets
Patented Oct. 4, 1910
No holes to plug after they are removed



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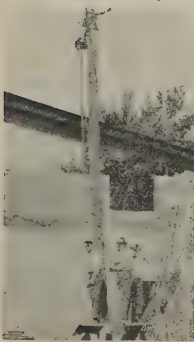
When writing advertisers please mention National Builder

38.0% Own Motor Trucks 29.9% Own Gasoline Engines

These figures show that NATIONAL BUILDER'S subscribers don't let any grass grow under their feet- or wheels- and they don't do anything on the job by hand that can be done better by machinery. They represent a ready-made market for manufacturers of all kinds of contractors equipment-

Building construction is like any other manufacturing business except in one respect: Instead of the job going to the factory, the factory is taken to the job.

Have you ever thought of building in this way? No matter what sort of a product you manufacture, it has a direct bearing upon your merchandising problem. You must look upon the contractor and builder in this light, otherwise



Engines are used to run derricks

you will fail to understand him and, as a result, fail to sell him your product.

Building construction is a manufacturing business because the completed building has to be fabricated out of raw materials assembled on the job. The entire building cannot be manufactured in the factory and delivered ready for use. It is not even possible to manufacture in the factory and ship it K.D. Such schemes have never proven satisfactory.

As a fabricating business, therefore, the contractor and builder is concerned with all the problems that confront the ordinary manufacturer. He has to buy tools, he must employ men to use them, he must supervise them in their work, and he must deliver the finished product on time.

Motor trucks and power equipment of all kinds are playing an increasingly important part in the work of the man whose business is building. Trucks help him to move the factory to the job with greater ease, at less expense, and in less time. In other words, they save him time, labor and money, and for that reason are earning a more and more important place in the building construction field.



The average truck is 1 1/4-ton capacity

38.0% of National Builder's subscribers own Motor Trucks. Some own more than one truck:

29.8% own 1 truck
5.4% own 2 trucks
1.7% own 3 trucks
1.1% own 4 trucks or more

Of all trucks used by these Contractors and Builders, the average truck is one of 1 1/4-ton capacity:

26.0% are of less than 1-ton capacity
43.0% are of 1-ton capacity
9.0% are of 1 1/2-ton capacity
12.0% are of 2-ton capacity
10.0% are of larger capacity than 2 tons

The average haul of truck owners is 5.6 miles, but this varies with the size of the community and other factors as follows:

2.9% have an average haul of less than 1 mile
15.9% have an average haul of 1 mile
20.3% have an average haul of 2 miles
15.5% have an average haul of 3 miles
20.8% have an average haul of 5 miles
17.9% have an average haul of 20 miles
6.7% have an average haul of 20 miles and over

The engines of these motor trucks are often harnessed to do other kinds of work than driving trucks, for there are many devices on the market which make this possible.

Nevertheless, 29.9% of National Builder's subscribers own individual gasoline engines.

These motors average 4.7 H.P. each, with a 3 H.P. motor, the most common of all sizes.



Stone columns are lifted by mechanical power

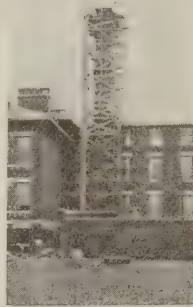
But one of the most important results of the use of trucks in building construction, which has a direct bearing upon the economics of the industry, is in the fact that the use of trucks enables the contractor and builder to broaden his territory.

With the motor truck, the contractor is able to get his men

from job to job with greater freedom and in quicker time, and he can, therefore, get more work done. He can carry on more jobs because he can rotate his men in more rapid order and he can haul foundation forms from job to job, move equipment, and transfer materials with the same facility that he can transport his crews.

Mechanical power is used by the contractor and builder in other work than transportation. Engines of all kinds are being used to do much heavy work on the job

which has heretofore been done by man power. Manufacturers of portable engines and electric motors have a big field before them in this industry. Motors for operating hoists or pumps, or for driving power machinery, will find a ready market among contractors and builders of the kind that read NATIONAL BUILDER. The Editorial character of



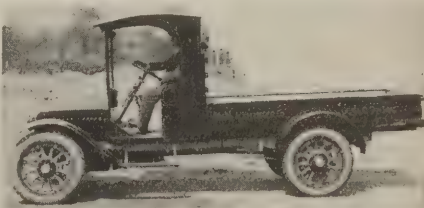
Power machinery is needed here

NATIONAL BUILDER, which is technical in nature, and which shows the *how* and *why*, as well as the *what* of better building, appeals to the contractor and builder who does the better class of work. That is another way of saying that NATIONAL BUILDER's readers are the big men in the industry. They are the quantity buyers and the permanent customers.

Are you selling these men? Do they know how good your products are? Naturally the most direct way to tell them is through the magazine upon whose editorial pages they depend for help in their business.

September is a big month in the contracting business throughout the country. Building materials and accessories are heavily purchased for fall and winter building, and after a prosperous spring and summer season, and with a good outlook for fall business such as we have this year, many a contractor and builder will purchase equipment now when he can afford it and is in a favorable frame of mind to buy it.

September is the time to bring selling pressure to bear upon him. Make a start by using advertising space in the September NATIONAL BUILDER. Last forms close August 23.



The average truck haul is 5.6 miles

Comparative Engineering Data

Cyclone Shingle

Type of Shingle	Thick-ness on Roof	Sqs. Laid Per Hour During Speed Test	Head Lap	Side Lap	No. of Shingles Per Sq.	No. of Nails Per Sq.	Locked-Down	Wt. Per Sq.	Design on Roof	Dimension of Shingle	Under-writer's Label
<i>Cyclone Strip</i>	2- 3- 4-	2 ¹ / ₄	6 ⁷ / ₁₀ "	5"	72	216	Yes	200 Lbs.	Hex-agonal.	19.1" x 32"	"C"
10" Strip Shingle (4 in 1)	1 thick 2 " 3 "	1 ¹ / ₄	2"	3 ³ / ₄ "	112	560	No	200	Square Corner	10" x 32"	"C"
12 ¹ / ₂ " Strip Shingle (4 in 1)	2 thick 3 " 4 "	1 ¹ / ₄	4 ¹ / ₂ "	3 ³ / ₄ "	112	560	No	240	Square Corner	12 ¹ / ₂ " x 32"	"C"
12" Giant Strip Shingle (3 in 1)	1 thick 2 " 3 "	1 ¹ / ₂	2"	4 ³ / ₁₀ "	90	360	No	240	Square Corner	12" x 32"	"C"
Individu'l Shingle	2 thick 3 " 4 "	³ / ₄	4 ³ / ₄ "	2 ³ / ₈ "	424	848	No	240	Square Corner	8" x 12 ³ / ₄ "	"C"
Giant Individu'l Shingle Exposed 5"	1 thick 2 " 3 "	1	4"	4 ³ / ₄ "	274	548	No	260	Square Corner	10" x 14"	"C"

Facts! If these figures look exaggerated to you—
"we are from Missouri and will 'SHOW' you."

Write for particulars and prices of the *Cyclone Shingle*. It is the most advanced step in the development of practical roofing made in a century.

**Mail the coupon
Now for full details**

FORD ROOFING PRODUCTS CO.
 2339 South La Salle St. : Chicago, Ill.

FORD ROOFING PRODUCTS CO., CHICAGO (309)

Please send me details of the *Cyclone* Shingle with prices and full particulars. **FREE** and absolutely without obligation.

Name.....

Address.....

Business.....

When writing advertisers please mention National Builder

July, 1924

**The New Straus Building
Chicago**

S. W. Straus & Co., Owners
Graham, Anderson Probst & White
Architects, Chicago
McNulty Brothers Company
Plastering Contractors, Chicago



Walls in the Straus Building have these Modern Concealed "Corner-Bumpers"

This Superior Construction Costs No More

AFTER erecting 80,000 lineal feet of Milcor Expansion Corner Bead in the First National Bank Building at Detroit, 175,000 feet in the Union Trust Building at Cleveland and 75,000 feet in the New Straus Building at Chicago, McNulty Bros. Co., well known Plastering Contractors, wrote us that—"the additional cost of this bead compared with other types of beads is fully offset by the cheaper cost of erection."

The "Expansion" Wings and the inconspicuous solid metal "Bumper" edge of this patented Bead, reinforce and protect both inner and outer corners of the room, making them the strongest parts of the wall instead of the weakest.

Blows and strains that would ruin ordinary corners have no effect upon corners protected with Milcor Expansion Bead. Wall corners so built will remain new. Precisely straight, true lines at all corners are made certain and a highly satisfactory effect is thus produced.

Leading architects and contractors endorse this Bead. Possibly you would like to inspect a sample and learn for yourself the many advantages that it offers. Shall we mail you one?

Furnished in Galv. Steel, Pure Zinc or Pure Copper. Write also for **The Milcor Manual** if you have not received your copy. A post card or the convenient coupon here is sufficient to secure it.

MILWAUKEE CORRUGATING COMPANY
Milwaukee, Wis. Kansas City, Mo. La Crosse, Wis. Minneapolis, Minn.

MILCOR

EXPANSION CORNER BEADS

Prevent Wall-Corner Cracks

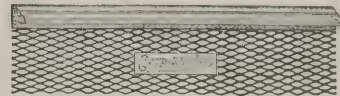
MILCOR

is the trade name for the complete line of Metal Building Products made by the Milwaukee Corrugating Company.

It is a pledge of quality. It represents sheet metal specialties at their best.

If you haven't already experienced the superiority of Milcor Products and the advantages of doing business with us, it will pay you to find them out soon.

With giant factories at Milwaukee and Branch Plants and Warehouses at Kansas City, Mo., and La Crosse, Wis., we are equipped to render prompt service to every part of the country. Try Milcor next time.



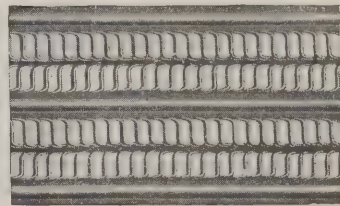
The Modern Milcor "Expansion" Metal Casing

takes the place of old-fashioned, clumsy, unsanitary, expensive wooden casing and results in the neatest, most artistic and permanent door-and-window trim ever developed. It positively eliminates cleavage cracks at the juncture of wall and casing. Three styles—available in Galv. Steel, Pure Zinc or Pure Copper. Sample on request.



Milcor "Expansion" Flush Base Screed No. 3

—designed for use wherever Portland Cement and Lime or Gypsum Plasters are to be joined. Its expanded metal wings reinforce both cement and plaster and bind them firmly together. By far the best Base Screed ever designed.



Milcor Stay-Rib Metal Lath No. 1

offers more strength and rigidity than any other metal lath—maximum economy and all the desired crackproof and fireproof qualities of ordinary metal lath. The unique Stay-Rib design permits scratching-in and doubling back—practically two-coat work—from the same scaffold, thus saving much in labor and mortar.

Beware of Imitations!

Because of the unprecedented success during the past few years of Milcor "Expansion" Corner Beads, imitations are now being attempted. "Expansion" Corner Bead was originated by the Milwaukee Corrugating Company and is fully covered by patents (June 13, 1922). We are the sole manufacturers. Beware of purchasing any similar expanded metal corner bead which may be an infringement on the original.

Milwaukee Corrugating Company, Milwaukee, Wis.

I would like to see a sample of Milcor "Expansion" Corner Bead—the original expanded metal bead.

Check one { I have NOT received "The Milcor Manual".
 { I have "The Milcor Manual" on file.

Name _____

Address _____ State _____

City _____

Mail the Coupon Today!

NB101

"This is the Stuff the Boys Like"

When you see a smiling laborer carrying bags of lime to the job, it's a safe bet every bag has our trade-mark stamped on it. He knows that every bag will be greeted with a smile from the men on the job because



spreads so easy it takes the back-breaking labor out of plastering.

There is every reason in the world why Urschelimelime should be good. It is made in a section of the country where the best finishing lime is made. It is made in the latest and most modern lime plant in the country, a plant that has installed every convenience and every piece of equipment that science has developed for the improvement of finishing lime.

Back of all this are Mr. Urschel and Mr. Nicholson with their 25 years' experience, their well-known ability and their determination to make and sell a product that will give absolute satisfaction in every particular.

**The William L. Urschel Lime
& Stone Co.**

Toledo, Ohio





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