



HOLLOW wall of Dunstone (concrete) in new style gas service station at Holland, Mich.

AMERICAN BUILDER and BUILDING AGE, with which are incorporated National Builder, Permanent Builder, and the Builder's Journal, is published on the first day of each month by the

SIMMONS-BOARDMAN PUBLISHING CORPORATION

105 West Adams Street
Chicago, Ill.

NEW YORK
30 Church Street

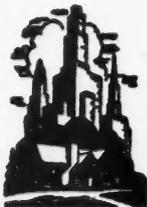
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Subscriptions price in the United States and Possessions and Canada, 1 year, \$2.00, 2 years, \$3.00, 3 years, \$4.00; foreign countries, 1 year, \$4.00, 2 years, \$7.00, 3 years, \$10.00. Single copies 25 cents each. Address H. E. McCandless, Circulation Manager, 30 Church Street, New York, N.Y.

Member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulation (A. B. C.)

[A Simmons-Boardman Publication]

AMERICAN BUILDER

and Building Age

NAME REGISTERED U. S. PATENT OFFICE AND CANADIAN REGISTRAR OF TRADE MARKS

MARCH, 1937

59th Year

Vol. 59—No. 3

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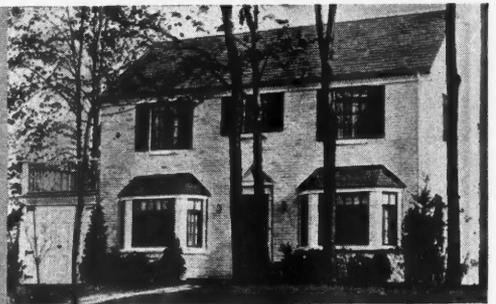
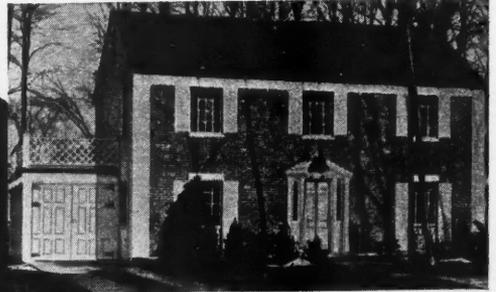
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*Why Wm. J. Levitt uses
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PUBLISHER'S PAGE

\$3,600 A Year Per Family

EVERY American family should have an income of \$3,600 a year, said William Green, president of the American Federation of Labor, recently. The *American Builder* agrees. Everybody agrees. And yet how to increase family incomes of less than \$3,600 a year is really what all the important current controversies regarding government and business policies are about. It is what the controversy regarding "packing" the United States Supreme Court is really about. We all agree concerning *what* should be the *objective* of government and business policies. We disagree about *how* this objective can and should be attained.

Let us consider some *facts*. The total national income in 1936, according to Secretary of Commerce Roper, was about 60 billion dollars. There are more than 30 million families. Divide the former figure by the later, and we find that the average income *produced* per family in 1936 was *less than \$2,000*. Plainly, you cannot provide an income of \$3,600 for *every* family out of a total production *averaging* only \$2,000 per family even if you make the income of every family the same.

MR. GREEN'S statement unintentionally calls attention to the fallacy that vitiates almost every current so-called "progressive" or "liberal" project for providing an "abundant life for all." They assume that all that is necessary is to redistribute the *present* national income by transferring to the "underprivileged" a large part of the incomes now received by the rich and well-to-do. But if you redistributed the present national income *equally* among all families it would obviously provide an income of only \$2,000 for *every* family. Then in order to increase it to \$3,600 for *every* family you

would have to increase the total national income *80 per cent*. That would make the total national income 108 billion dollars—or 48 billion dollars more than in 1936 and 28 billion dollars more than even in 1929, the most prosperous year in our history.

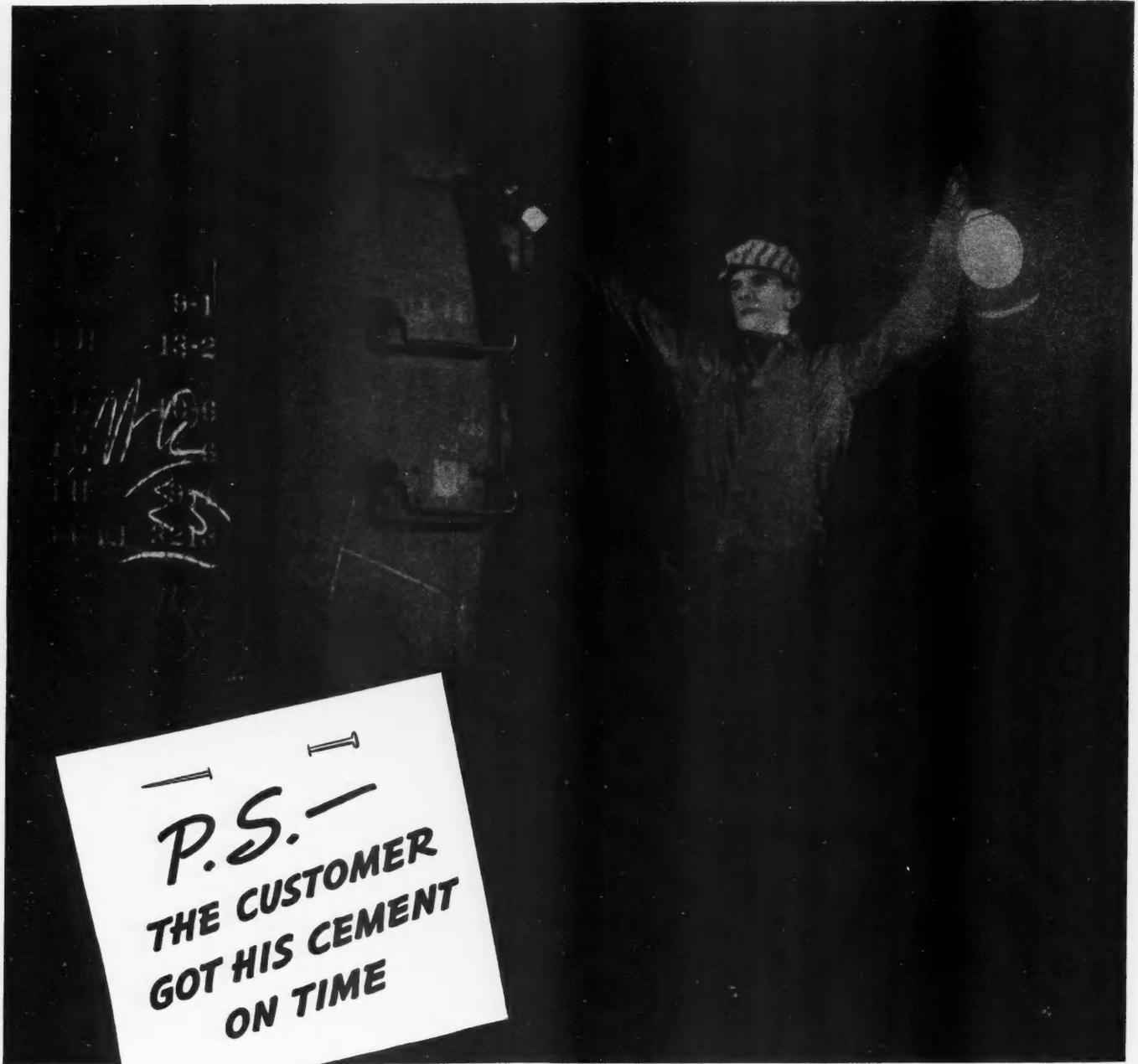
THERE are a *nominal* way and a *real* way in which the total national income can be increased. It can be *nominally* increased 80 per cent, or to an average of \$3,600 per family, merely by advancing both wages and prices 80 per cent. But the only *real* way to increase it to an average of \$3,600 per family, *is by increasing the total production of all commodities 80 per cent*. *Real* income is what money income will buy; and there is *no way whatever* in which to increase average income *per family* excepting to increase the amount of food, clothing, housing, and other necessities, comforts and luxuries *produced* per family.

Average income per family produced in 1929 was \$2,700. This can be far surpassed in future. Income can be made more than \$3,600 for *every* family—but not by any or every scheme of *redistribution* that may or can be tried, because you simply *cannot* distribute or redistribute more than is produced.

Some redistribution of income is desirable, but the only solution of the problem of increasing the *real* income of every family to \$3,600 a year or more is a huge increase of production. This will be hindered, not promoted, by policies, whatever their source, that curtail the amount of work done by labor and the amount of capital invested in means of production.

Samuel O. Dunn

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● A Minnesota customer who had run short of cement called our Duluth office one Saturday afternoon. It was closed, so he tried the plant.

"I think Mr. Rudd can help you," said the operator. "He's working in the laboratory this afternoon."

So, during the next twenty minutes Ray Rudd, laboratory man, divorced himself from his test tubes

and became a service man. And he did such a good job that the customer went to the trouble to write us about it.

We mention this incident to illustrate this point:

Whenever any of us here at Universal Atlas can help you, you'll find us ready to pitch in and do it. We realize that, aside from getting good

uniform cement—and perhaps some technical information—your further interest is in getting the cement when you need it.

That is where service comes in.

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Cutting Our Own Throats?

THE prospective buyer of homes today is being greeted by a barrage of facts and fancies concerning higher home prices. Some of the things he is hearing are true. Others are gross exaggerations.

It is pleasant to enjoy a period of rising prices and, to a certain extent, it is a help in the psychology of selling. But this can go too far. The men of the home building industry may well ask themselves whether they are not engaged in a pleasant game of throat cutting, with themselves the victims of the knife.

It is difficult to ascertain how much the prices of finished homes including land have advanced over 1936. Obviously it varies widely in communities and among builders, but the traveled observer cannot help but note that the sale price of the completed house and land has in many communities been shoved up from 20 to 40 percent, depending on what the builder thinks the traffic will bear. There is the rub. How much *will* the traffic bear? And is that the right approach to the subject.

Killing the Goose

Following the World War there was a phenomenal rise in building prices that culminated in sky-high peaks in 1920. A nice little revival had been getting under way in 1919, but in the fall of 1920 home building practically stopped. It was a buyers' strike and it stayed in effect until costs came down, which they did in 1921. The following year construction volume again resumed on a basis of much lower costs.

Building men should realize that the general public already feels that the price of the average completed home is far too high. This widespread feeling has given rise to the constantly recurring talk of prefabrication. It has also given great impetus to a demand for government subsidies or outright government construction of low-cost homes. If the public felt in 1935 and '36 that home costs were already too high, what will the reaction be when it finds another drastic rise has taken effect? Will there be a buyers' strike? Or will this be all that is needed to give the prefabricated home the "push" it needs to get a real volume foothold? Or will the outcry against high home costs be so great that legislators in Washington will have ample ammunition to help them put across a subsidized government building program?

Perhaps these questions can be easily answered—al-

though we do not think so. Perhaps there is no cause for alarm. But even so, there is a further matter for thoughtful building business men to consider. That is the simple modern business axiom that in greater volume there are higher profits. It is the practice of this axiom that has built up the giant automotive, radio and refrigeration industries, to mention only three. It is a principle that should apply to homes.

Instead of asking, "What will the traffic bear?" builders of homes should ask themselves, "How can I supply a good home to the mass market? How can I reach the millions of Americans who are buying refrigerators, radios and automobiles? How can I serve the 71 percent of the families of the country who cannot afford to spend more than \$25 to \$30 a month for housing?"

Bruce A. Wilson, educational director of the Federal Housing Administration, in his recent talks before lumber dealer conventions, has brought out some excellent points concerning modern American business methods and modern merchandising. He has pointed out the amazing record of the refrigeration industry which, during the depression years when home building practically stopped, brought out a new and expensive product and ran up sales of five-and-a-half million units to the same customers that the building industry serves. The outstanding point to consider, however, is the price of the average refrigerator dropped from \$380 to \$99. He traced similar developments in stoves, showing how these had been made better looking, automatic, insulated and a variety of new materials put into them—and at the same time prices lowered.

The automobile industry is, of course, the outstanding example. This last season when home costs were shooting upward, automobile manufacturers brought out new models which on the whole were lower in price. The auto industry has consistently fought for *volume* at a lower price.

Who Throws First Stone?

Naturally, when anyone talks of high prices in the building industry he is open to criticism. The first remark practically every individual makes is that someone else or some other group has raised prices but he has been very sensible about his product or service. The "buck" is passed somewhat as follows:

The contractor says his high prices are due to sharp

increases in labor and materials. All he wants is a fair profit—and a small one at that. He complains about a host of specific lumber and material items that have advanced recently. He blames manufacturers and dealers.

But the lumber dealer says that the prices of materials that go into a house have advanced only slightly, and furthermore, even if they did go up, the effect on the total cost of a house would not be great. He says that the largest part of the increase in the retail price of a house is due to the larger profit the contractor is now figuring in.

Others blame the high price of the finished home to the higher cost of real estate and commissions. Some say that subcontractors now enjoying a little prosperity are tacking on too much in the way of overhead and profit. Most everyone except the unions says labor costs are too high and cite certain trades in the large cities that are getting what they term fabulous sums. The real estate men say that high taxes and high interest rates are the cause of high home costs. They also criticize "inefficient distribution methods."

Thus it goes down the line, everyone pointing out that every other group is responsible for the increase. The net result, however, is that the home owner is already paying much more for the same house than he did in 1936 in most communities, and will probably have to pay a great deal more this coming summer. What is more, the present outlook is that home costs will soon pass the 1929 levels and will go on to still more dizzy heights.

American Builder does not attempt to suggest a solution to this problem. But it does point out that the industry should take stock and consider what it is doing. If we are engaged in a process of cutting our own throats, something should be done about it before it is too late. Certain it is that every building man should bear in mind that the products or services he sells are in competition not only with new materials and new processes in the building industry but are also in keen competition with other claimants for the consumer's dollar, such as the automobile industry. It would be an interesting study for someone to show the number of bank accounts that were being built up as the down payment on a home which have instead gone into the purchase of an automobile.

WRITE YOUR CONGRESSMAN TODAY!

If you are interested at all in the business of repairing and modernizing homes and business buildings—as so many builders, dealers and manufacturers are—you should plunge into the fight now for the extension of Title I of the National Housing Act. This law, under which repairs and remodeling have been encouraged and more than half a billion dollars of loans made up to Jan. 1, expires on the first of April unless extended by act of Congress. Federal Housing Admin-

istrator Stewart McDonald has publicly stated that he is not urging such legislation because he believes that FHA backing of modernization work is no longer needed and that he has heard nothing from the men of the building industry to indicate that there is any substantial demand for another extension of this part of the National Housing Act.

Many readers of this publication have probably assumed that Title I would be continued. They and their property owning clients have enjoyed so much benefit from these FHA sponsored repair and modernization loans at low interest rate that they have doubtless figured that everyone would be for the proposition of renewing the Act, and that the necessary amendment would be automatically taken care of. To these it will come as something of a jolt that the Administrator is not asking Congress to authorize the extension of the repair and remodel activities which up to this time have been such a large part of the Housing Administration's work.

So, if you favor the extension of Title I, NOW is the time to write to Washington and say so!

Early in February this publication, together with a delegation of leading manufacturers, bankers and trade executives, called on Housing Administrator McDonald and Senator Robert Wagner, chairman of the Senate Banking and Currency Committee, to urge their co-operation in securing extension of Title I, so that this important work financed by private capital might be continued. The group pointed out to these officials that billions of dollars worth of modernization and repair work is yet needed in this country and that millions of men are still unemployed. They also pointed out that, contrary to the general belief, if Title I of the National Housing Act is allowed to expire banks will not be able to make loans for this type of work, because of banking regulations and legislation; and that the program of modernization and repair will collapse. Forty-six of the forty-eight states have adopted special legislation in order that the banks might operate under the National Housing Act, and these state laws are so worded that, with the expiration of Title I, they automatically expire.

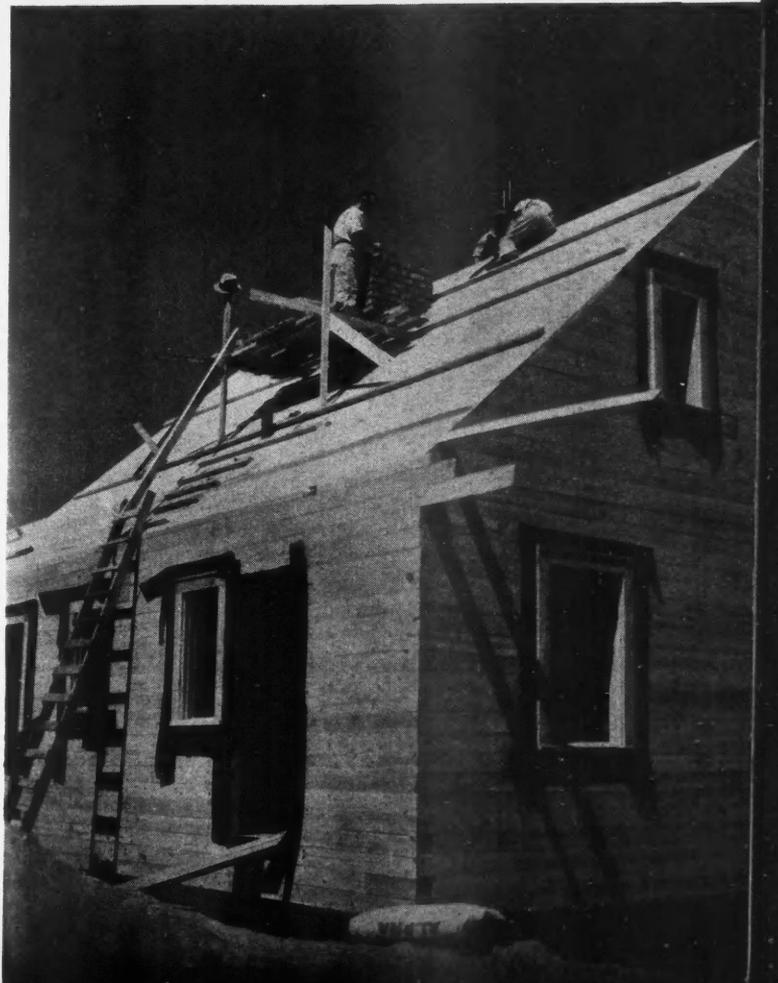
Title I of the National Housing Act was designed especially to put men back to work and restore public confidence, at the same time raising the standards of living and making it possible for an ordinary home dweller to improve his home on easy term financing. The Federal Housing Administration program, it is estimated, has created the equivalent of at least one year's work for two million men, and, bearing in mind that *less than 15 per cent* of the available modernization work has been touched, it seems that this helpful and constructive governmental sponsorship should be continued.

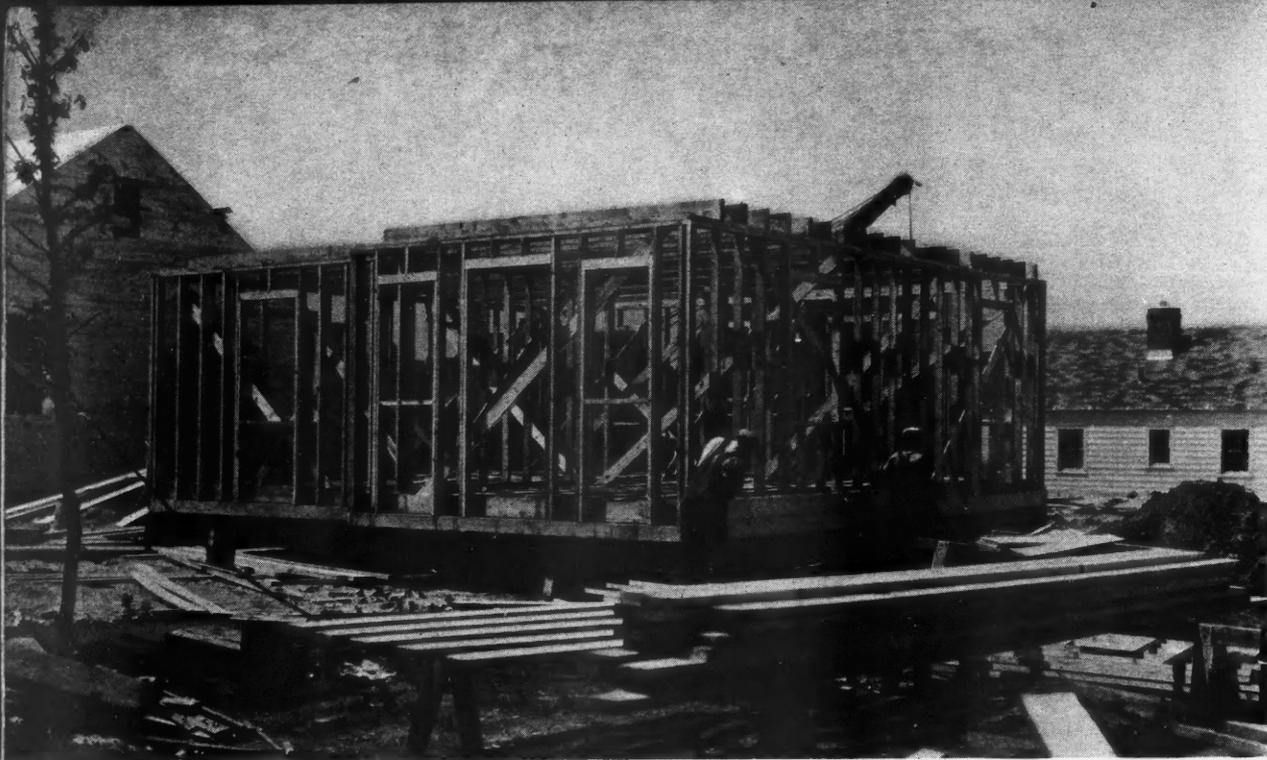
So we say—write your Congressman or Senator today! A bill to extend Title I for two years has been introduced and is now in committee. If the voters want this to be enacted they must make their wishes known.



The People Want Small Homes

THE biggest, richest market for builders today is in the small home field. People want small homes—people are talking about small homes. A great national program to popularize a small home building program is under way, sponsored by the Federal Housing Administration, prominent manufacturers and their co-operating dealers. Public interest in this subject is a challenge to the building industry. It is a challenge that is being met, as the following comprehensive article and series of small home designs demonstrate.





ON-THE-JOB construction picture shows the little Colonial house illustrated on opposite page. Construction features include 4x6 sills; 6x8-inch first floor girder; first and second floor joists 2x8 on 16-inch centers, doubled under bearing partitions; 2x6 rafters 20 inches on centers together with 1x6 collar beams.



VOLUME sales are helped by attractive signs such as this.

SUCCESSFUL

Builders of

SKEPTICAL builders have heard so much loose and often misleading talk about low cost houses that they rightly regard the subject with suspicion. Yet, common sense shows that there is a huge untouched market for homes where the price can be brought down within the means of low income groups of people.

American Builder believes that the demand for low cost houses is a challenge to its readers. The demand must be met or the double threat of prefabrication or government competition to subsidize housing will be furthered.

To show conclusively that low cost homes can be built and a fair profit earned, it is only necessary to consider the operations of Realty Associates, Inc., whose office is in Brooklyn, N. Y., and who have three active home developments on Long Island. The president of this company, Frank Fox, and his able vice-president and construction superintendent, Harry D. Burchell, have made low cost homes a reality. Their latest development, Hillside Heights, was started in midsummer last year and in six months had built and sold 160 houses, ranging in cost from \$2,500 to \$4,500. Another development featuring attractive Colonial homes is in progress at Hewlett Point Park, where houses are priced at slightly under \$5,000. In Stewart Manor South, another development, the price range is slightly above \$5,000. These prices include cost of

land and all improvements, landscaping and a complete house ready for occupancy.

Realty Associates have found that young couples constitute a large part of their prospective customers. In Hillside Heights, the lowest priced development, the age of the largest group of purchasers was between 25 and 30. Two-thirds of their sales were made to purchasers whose ages were between 25 and 40.

Another interesting fact about the purchasers of homes at Hillside Heights is that 41 per cent had incomes between \$1,500 and \$2,000. Ninety-one per cent had incomes under \$3,000.

The officials of Realty Associates have found, as have other builders elsewhere, that they must set out to produce a low cost house that falls within the price range the mass of buyers can afford. This means that the house cannot have all the luxuries and high priced specialties featured in the women's magazines. But it does not mean that a sound, comfortable, livable modern house cannot be built within the means of people of lower income.

The most spectacular of the Realty Associates projects is the low cost development at Hillside Heights near Mineola, L.I. The inspiration for this project was received from the Federal Housing Administration's program for low cost houses, for which plans and specifications were drawn up and widely circulated to builders throughout the country.

THIS is one of the popular low-cost Hillside Heights homes designed by Architect Benj. Driesler, Jr., which can be carried by the purchaser for about \$30 per month. There is space for two future extra bedrooms in the attic.



Small Homes

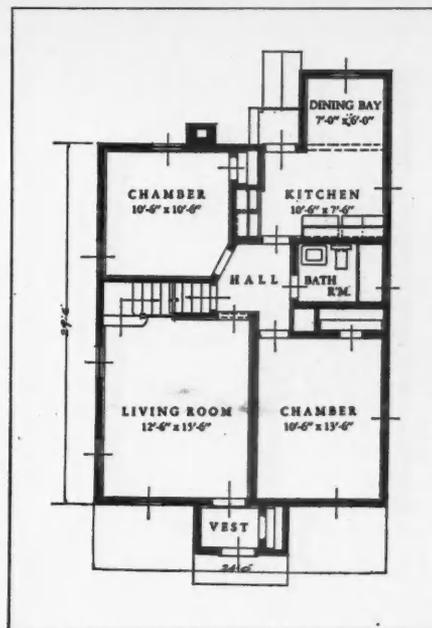
Thousands of builders have received the data on these low cost houses as published in *American Builder* and as circulated in folder by FHA. Only a few have acted on them. One of the first was Realty Associates. They took immediate steps to start such a project.

Helpful co-operation was received from the Federal Housing Administration in planning the development. Architect Benjamin Driesler, who has done many hundreds of designs for Realty Associates, took the FHA low cost house plans and adapted them to local conditions. They were made practical and salable, and given attractive Colonial exteriors. The houses were placed on good sized lots of 45 x 100 feet, which have since been increased to 50 x 100 feet.

The basic Hillside Heights house plan was a little four-room Colonial, 27 x 25 feet in size (published in the August 1936 issue of *American Builder*) which was sold for \$2,500 on a 40 x 100 foot lot. This \$2,500 house was made the basis for extensive advertising and publicity which brought out thousands of people.

However, when people compared this house with others available at a little more money, it developed that the more completely equipped houses with basements sold better. As a result, by far the majority of sales at Hillside Heights have been for houses with full basements and with second stories that can be finished and used. Thus, the price range has edged upwards, with many of the sales in the \$3,500 class.

WITH over-all dimensions of only 24'x29' 6", this plan provides a comfortable, livable house at low cost. It is placed on a plot 45x100'. Cost key is 1.016-130-788-34-16-13



The Hillside Heights advertising uses the phrases, "Sponsored by" and "Inspired by" the Federal Housing Administration. Financing is on the FHA twenty-year plan and the costs are clearly stated to the prospective buyer in the following fashion for a house that sells for \$3,550 on a plot 45 x 100 feet:

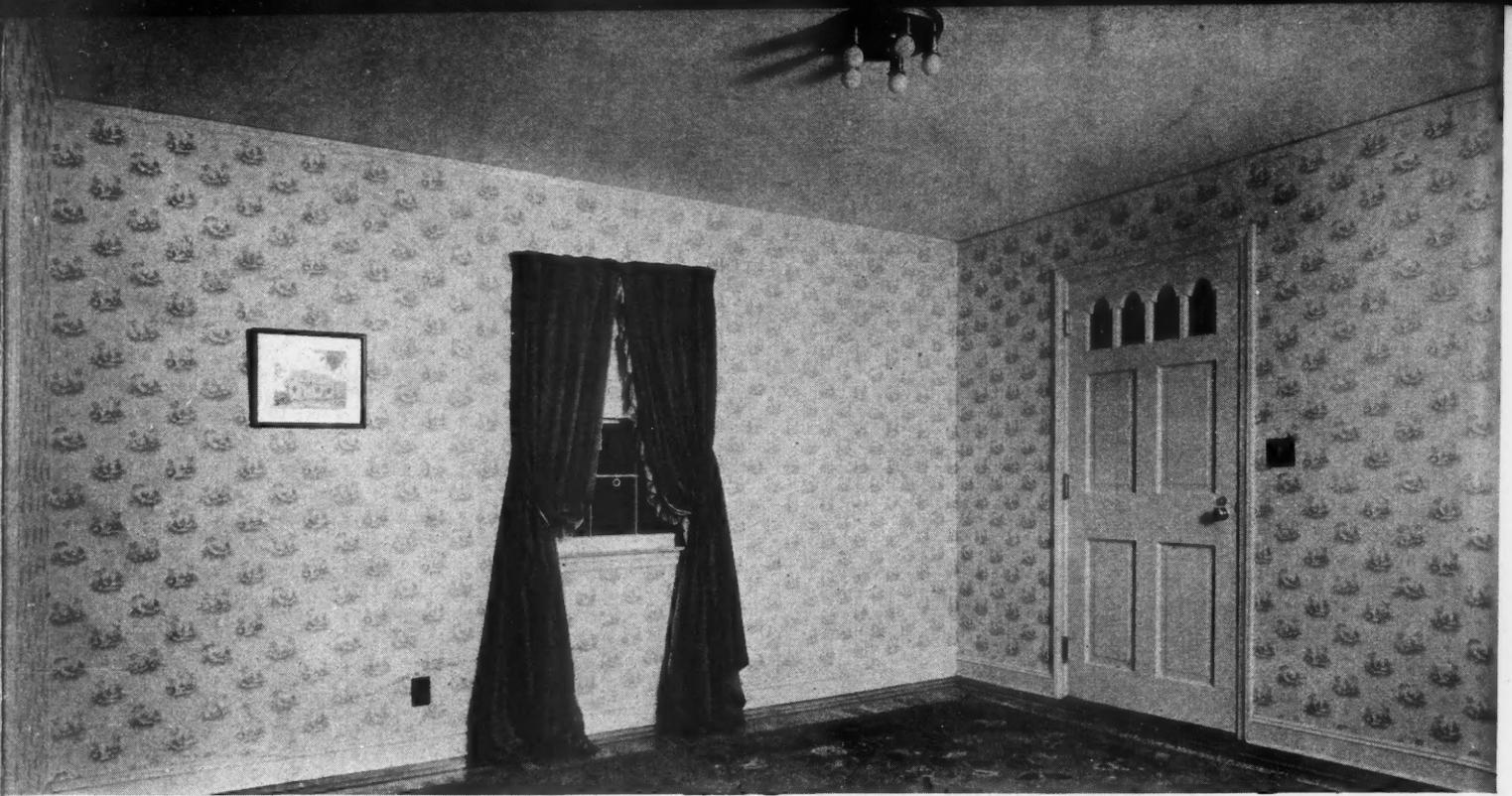
Down payment\$ 750
Balance due on 20-year FHA mortgage.....2,800

Monthly Payments

Principal and interest\$20.80
Taxes 8.12
Water 1.00
Fire insurance42

Total monthly payment\$30.34

It is obvious that on a low cost house such as featured at Hillside Heights, the profit on the individual house must be kept at a reasonable figure. However, the fact that there are ten good prospects for a \$3,500 house to one for a \$7,000 house makes the sale much easier and surer, and makes possible a volume that increases profits at a desirable rate.



LIVING room of the lowest priced Hillside Heights model. Decoration and trim are simple, cheerful, attractive. This living room is 12'6" x 15'6".

BATHROOM of the low cost house at left has tile floor, wall-paper walls, Standard white plumbing fixtures.

Profit on land is, of course, an important item in a project such as this. It is estimated that the average cost of a Hillside Heights lot is \$670. This consists of approximately \$560 for improvements and \$110 for land, which is purchased at \$1,000 an acre.

Realty Associates have apparently found that there is more profit in the higher priced houses. The average sale price of the first 100 houses was \$3,218. It is estimated that the average building cost of these houses was \$2,345, which indicates an average profit on each sale of a little more than \$200.

A study of costs of the first 100 houses indicates the following breakdown:

Excavation, masonry	\$ 365
Framing, carpentry, flooring	270
Lumber and trim	525
Plaster	200
Heating, plumbing	285
Sheet metal and roofing	140

Rough and finish hardware	50
Wiring and fixtures	70
Interior and exterior paint	125
Special items including range, linoleum, shades, medicine cabinet, planting, permits, water and gas service, etc.	215
Supervision and overhead	100
Total construction cost	\$2,345

Low cost houses in Hillside Heights are made possible by careful planning that eliminates unnecessary extras. Equipment is complete but not unnecessarily expensive. All buying of materials and equipment is done through a purchasing department. Houses are done under conditions approaching mass production so that operations are standardized. Each operation is sublet to subs who become proficient in their line as each job is repeated and eliminate waste motion.

In the first model \$2,500 house at Hillside Heights, the heating plant consisted of a small hot water boiler located in the kitchen. In later models, with a basement, a low priced pipeless furnace of the recirculating type, with register placed in the center hall, was used.

Following suggestions from the FHA, the Hillside homes have been improved in construction quality so that they are comparable with many much more expensive houses. Diagonal sheathing is used on the walls, all openings are double studded, fire stops are included, copper flashings are provided and attics are fully finished.

An attractive appearance is given the developments by varying the exterior designs and materials somewhat. In addition, the arrangement of the houses has been staggered. This, coupled with the variation in placing of the designs, gives a variety and interest that has proved a great aid to sales. The day of monotonous rows of houses closely resembling each other is apparently past—even in the lowest cost bracket.

The following brief outline of materials and equipment gives an indication of the way in which the low cost Hillside homes are built:

FOUNDATION—High quality 8" concrete placed in steel forms which are used over and over.

(Continued to page 130)



Good Designs Sell at a Premium

AMERICAN BUILDER'S ever popular design section features this month a group of unusually timely and interesting low cost houses. But they are more than just low cost houses. They are houses of quality architectural design that sell at a premium.

THE houses on this page and those immediately following are the work of Architect Benj. Driesler, Jr., who created them for the low cost home development of Realty Associates, Inc. They have sold quickly and at a price that shows that good design pays a premium.



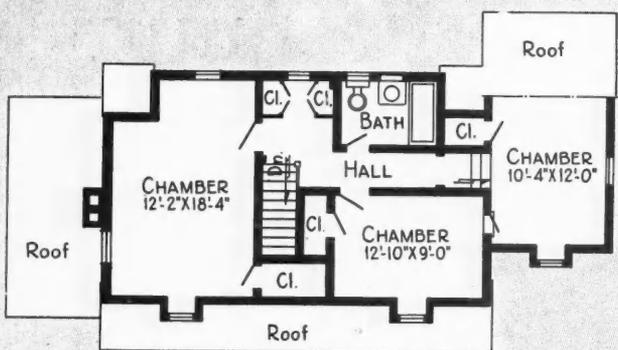


6-ROOM COLONIALS WITH ARCHITECTURAL CHARM

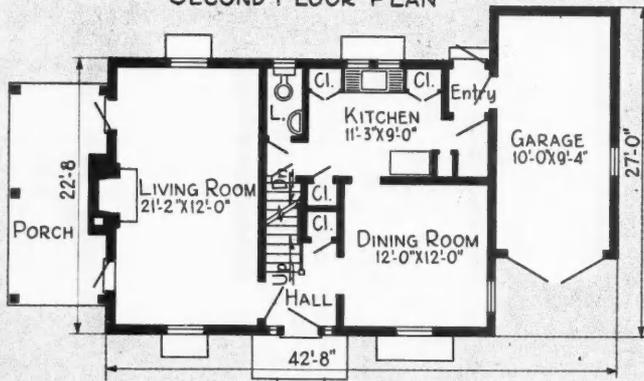
THE three homes on these pages are part of the "Cape Cod" development of Realty Associates at Hewlett Point, L.I. All the houses in the section have an attractive Colonial quality inside and out. Several variations of the same plan are shown. Popular features include the attached heated garage and the open porch with French door leading to it from the living room.

Cost Key is 1.764-136-704-31-20-20

DESIGNED by Benj. Driesler, Jr., of 162 Remsen Street, Brooklyn, N.Y., these houses feature poured concrete foundations, select oak floors, 3x8 floor joists, slate roofs, Armstrong linoleum, Colonial staircase, shutters, heavy Colonial doors throughout, copper gutters, leaders and flashings, copper storage tanks, ample closet space, lavatory and shower on first floor, scientific kitchen cabinets.



SECOND FLOOR PLAN



FIRST FLOOR PLAN



THE open porch with French doors leading from living room is an attractive feature of this Dutch Colonial located at Hewlett Point, L.I.

65

CLEAN cut Colonial lines make "The Falmouth" designed by Benj. Driesler and illustrated below a popular house.



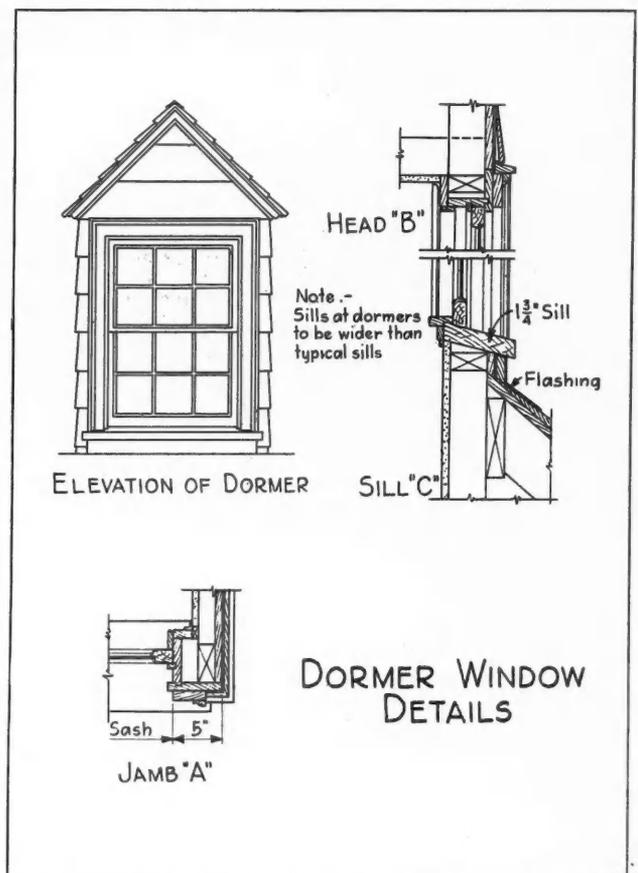
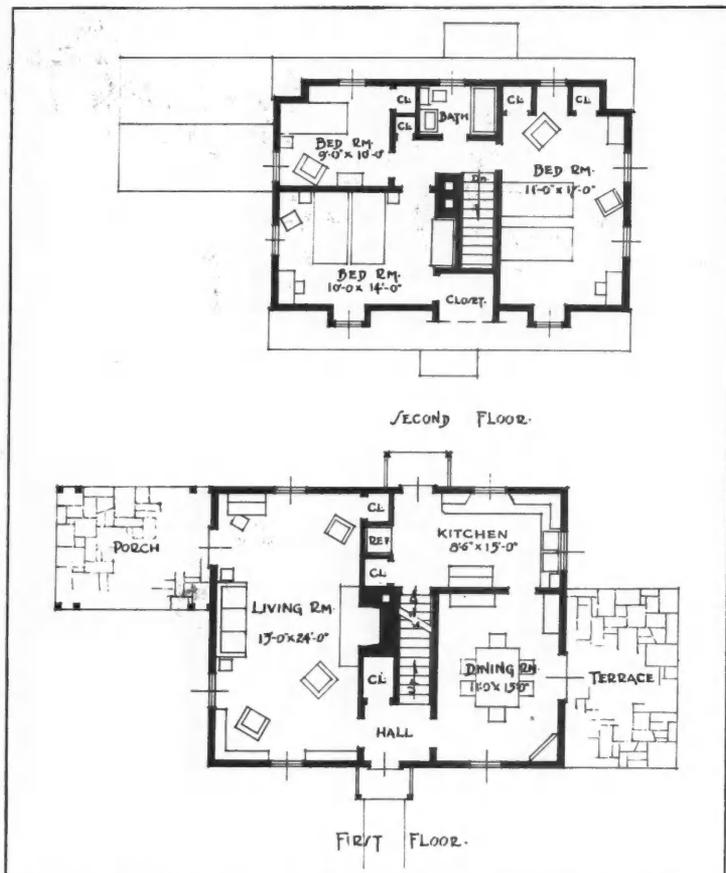


NORWALK MODEL HOME—6 ROOM COLONIAL

William J. Harrison, Builder; Alfred W. Grant Architect

THIS WELL-PROPORTIONED little Colonial house was opened as a model home this year in Norwalk, Conn., featuring up-to-date materials and equipment including winter air conditioning. There is a good sized living room 13 by 24 feet, which has French doors leading to an open porch. There are 3 bedrooms and bath. The latticed entrance detail is unusual and attractive.

Cost Key is 1.604—114—800—34—17—14



**SPECIFICATIONS FOR
NORWALK MODEL HOME**

AIR CONDITIONING—Dail Steel Products Co. Dailaire winter air conditioner, with humidifier, filters, thermostatic control. Delco oil burner.

INSULATION— $3\frac{5}{8}$ " Rockwool, Metal weatherstripping and brass saddles on all exterior doors.

MILLWORK—Morgan Colonial doors and interior trim. Morgan kitchen cabinets.

HARDWARE—Colonial hardware by Norwalk Hardware Co.

WALLPAPER—Richard E. Thibaut, Inc., N. Y.

SEPTIC TANK—Nustone Products Co.

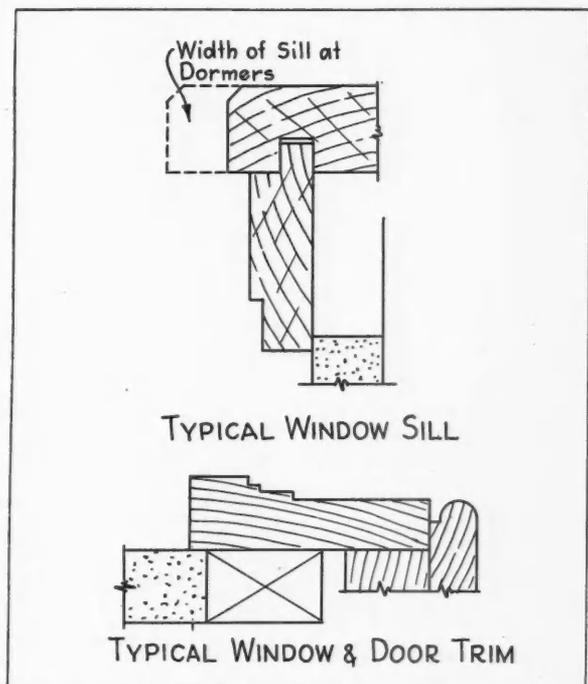
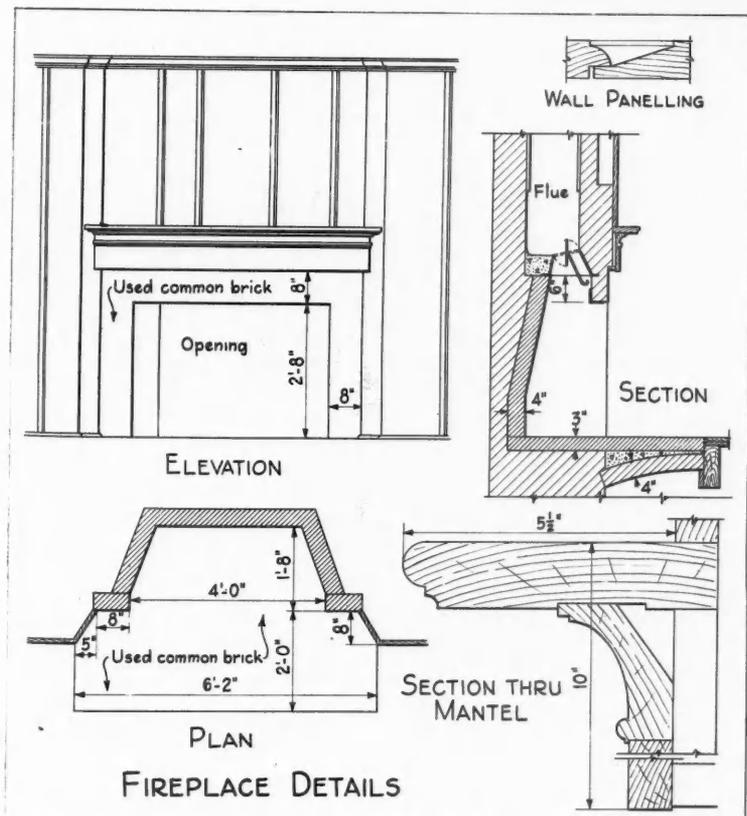
PAINTING—Kitchen and bathroom 3 coats Devco & Reynolds oil paint. Other rooms Muresco. Exterior walls 2 coats Cabot's double white. Exterior sash and door 4 coats oil paint. Roof, Cabot's creosote stain.

BATHROOM FIXTURES—Standard Sanitary Manufacturing Co. Cabinet by United Metal Box Co.

HOT WATER HEATER—Hotzone water heater by the Welsbach Co.



THE LIVING ROOM, above, has an attractive fireplace, slightly recessed, with paneled wall. The kitchen features ample built-in cabinets with flush doors. Details of fireplace and trim below.





APARTMENT COTTAGE

Built in Berwyn, Illinois, by
Home Builders Co., Chicago

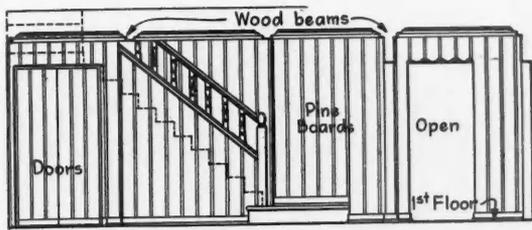
Cost Key is 1.057-95-(560)-(24)-14-9

FOR a young couple or two elderly people who desire the compactness and convenience of an apartment and at the same time live in their own house, this cozy three-room cottage is an ideal solution. A good sized living room, with dinette alcove overlooking an enclosed paved court, occupies most of the first floor; the closet for a folding bed allows guest accommodation. One large bedroom, bath and plenty of storage space are on the second floor. There is no basement, a heater room being provided.

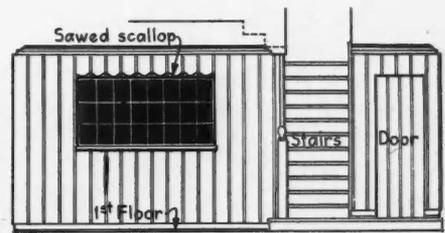
THE VIEW at the immediate right shows the kitchen as seen looking through the dinette from the living room; the other view is from the kitchen into the dinette. A feature is the attractive paneling shown in the drawings on the opposite page.

An interesting construction detail is the first floor treatment—a concrete slab on cinders over which the joists were placed so as to give about a two-inch clearance forms an air chamber under the first floor. This air space is used as a heating return duct and keeps the floor warm and dry. Ludowici-Celadon glazed roof tile, Fenestra steel sash and Bondex exterior paint among materials used.

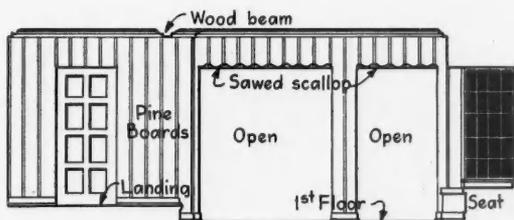




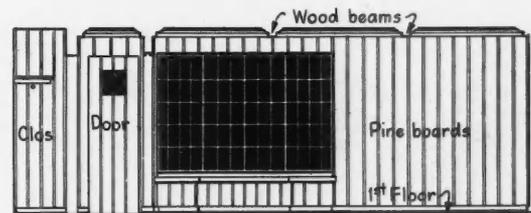
EAST WALL OF LIVING ROOM



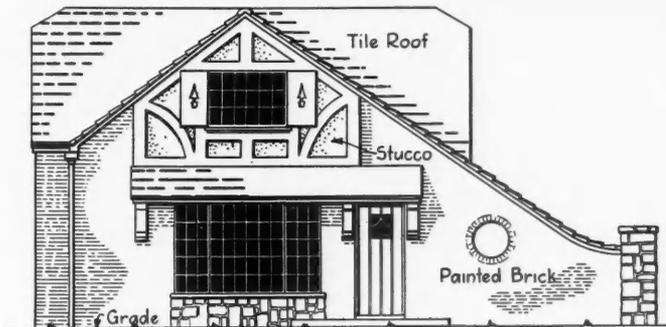
NORTH WALL OF LIVING ROOM



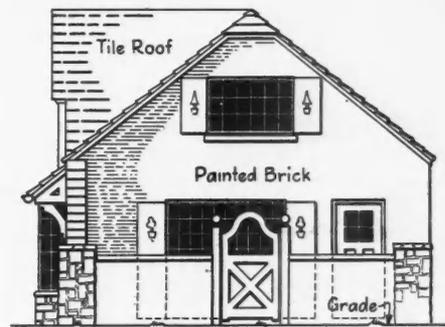
SOUTH WALL OF LIVING ROOM



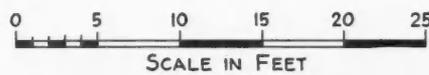
WEST WALL OF LIVING ROOM



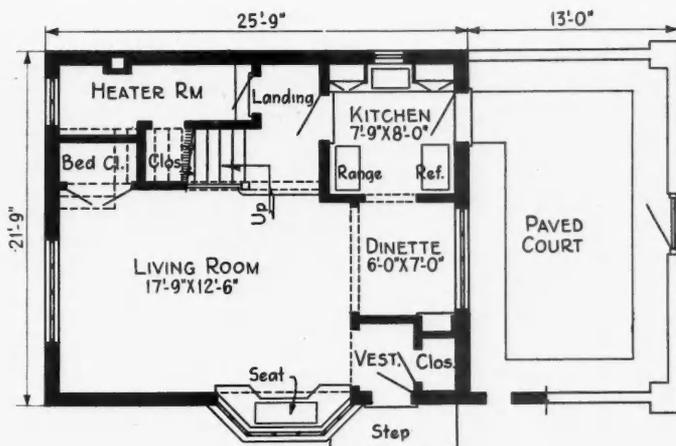
FRONT ELEVATION



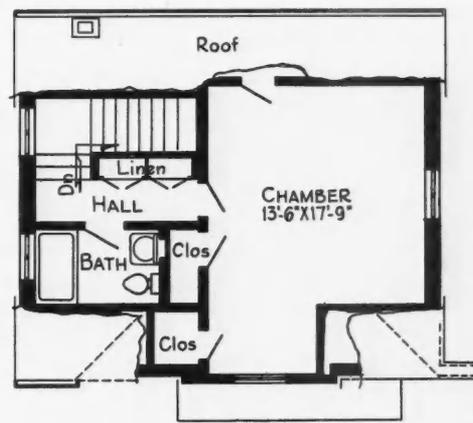
SIDE ELEVATION



SCALE IN FEET



FIRST FLOOR PLAN



SECOND FLOOR PLAN

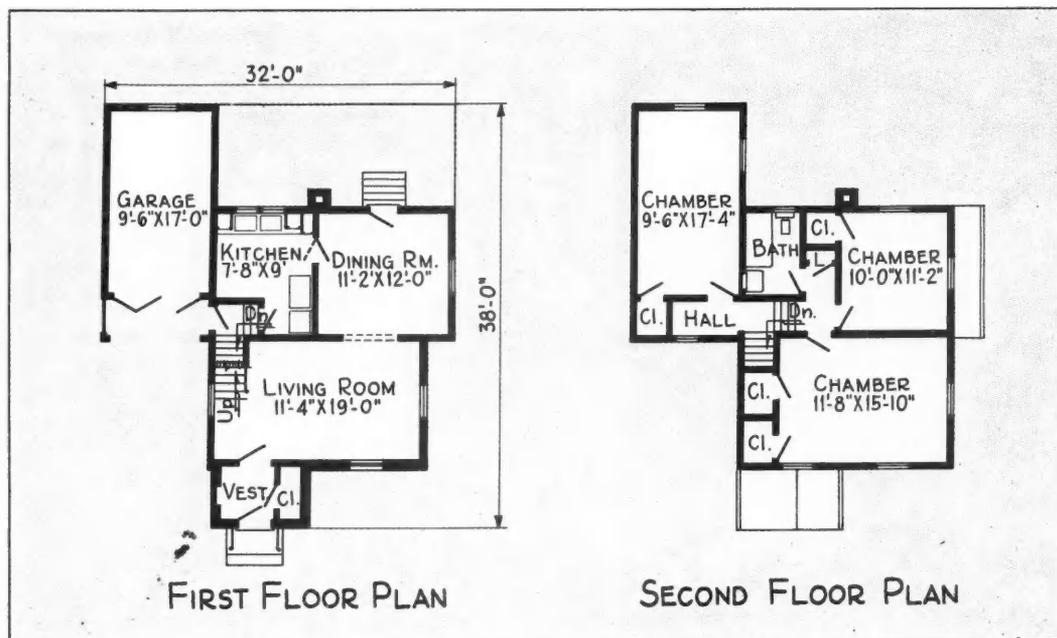


"NEW ENGLAND VILLAGE" 5 & 6-ROOM COLONIALS

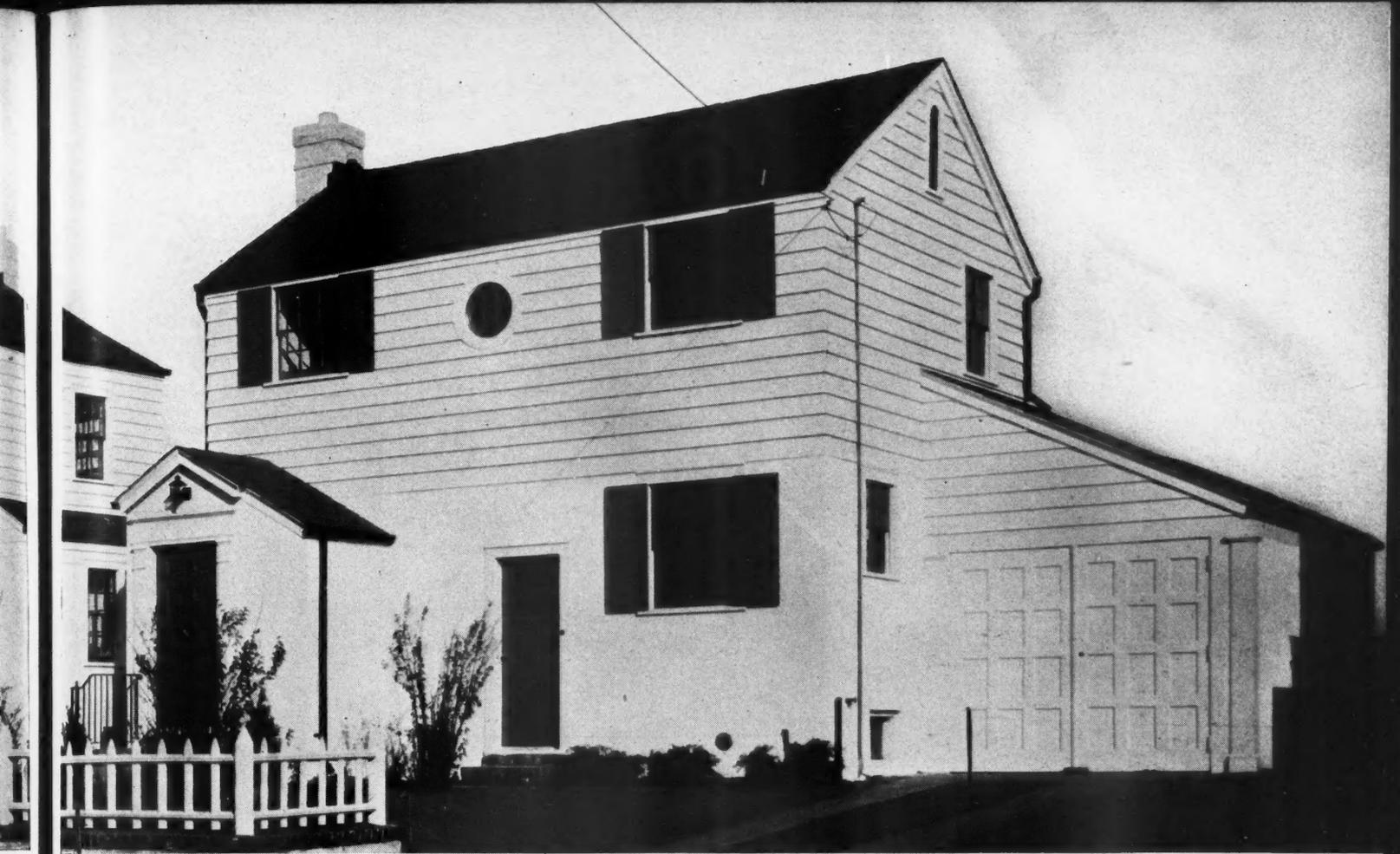
W. R. Gibson, Builder
Louis S. Weeks, Architect

THE LATEST project of The Gibson Corporation, which has built more than 3,000 homes on Long Island, is a "New England Village" located in Valley Stream. The above street of nine houses was opened in October, and another street of nine more is now under construction. The houses are of pure white, contrasted with shutters and doors of deep red or blue. Houses are placed on the lot in pairs so that garages, which do not need light or air on the side,

Cost Key is 1.403-140-544-25-25-10



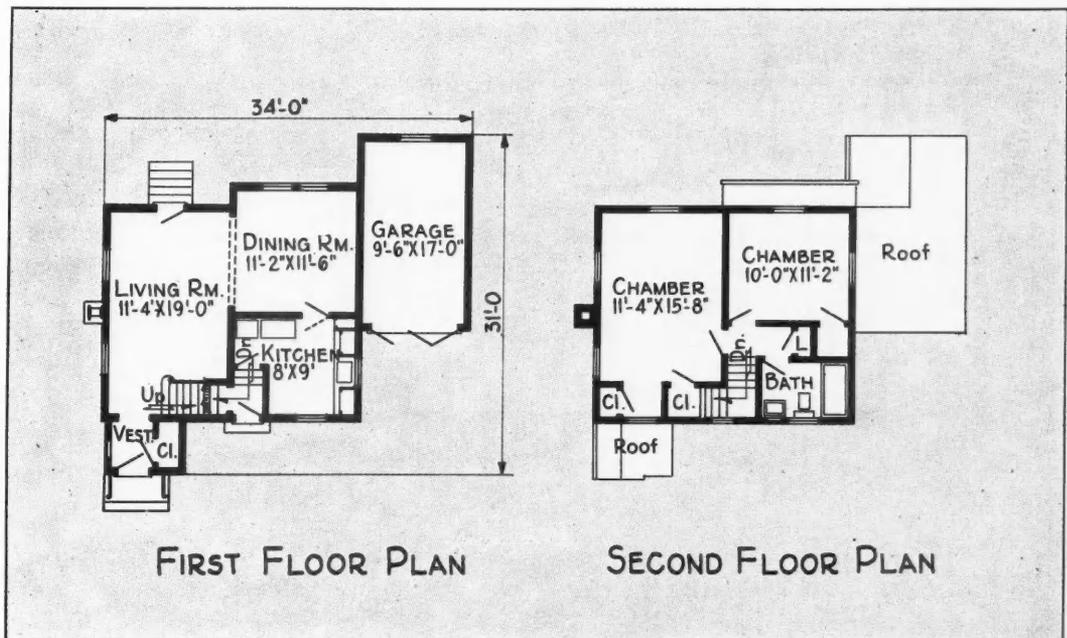
FLOOR PLAN of
typical 6-room
model shown on
street above.



are placed close together, and more space is allowed on the other side where living quarters are. Floor plans of the houses are compact and follow the current trend toward putting the living quarters at the rear, with French doors leading out upon a terrace, lawn or garden. Specifications include 10-inch poured concrete foundations; 3 by 8-inch first-floor beams on 16-inch centers; diagonal sheathing; Bangor slate roofs;

Kohler plumbing fixtures; Weil-McLain boilers; copper hot water tank; brass plumbing; copper leaders, gutters and flashings. They are financed by 20-year FHA guaranteed mortgages held by the Dime Savings Bank. The total interest and carrying charge to the owner is 5½ percent. They can be carried by the home owner for approximately \$40 per month, including interest, insurance, taxes, water and amortization.

Cost Key is 1.271-130-528-24-20-10



FLOOR PLAN of typical 5-room model shown above.

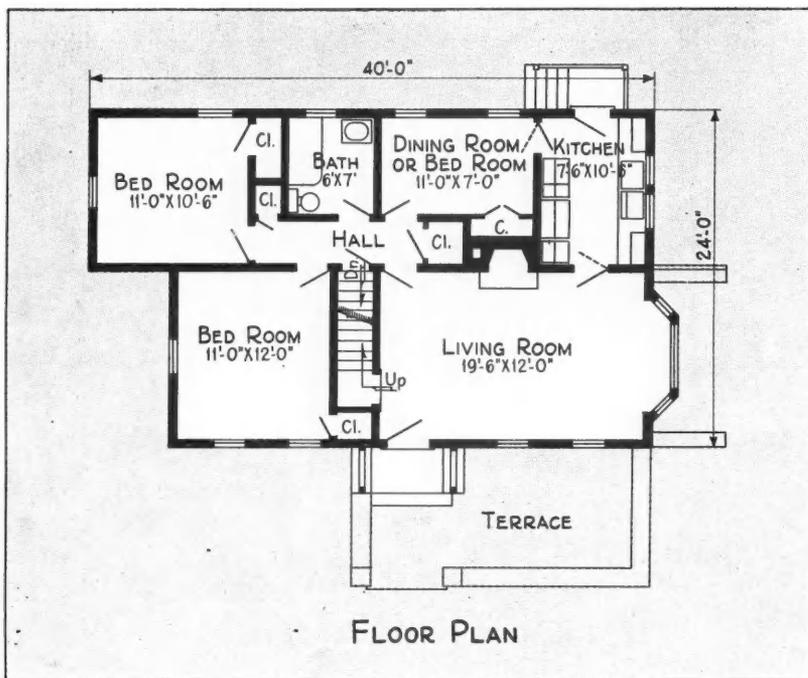


INVITING LATTICED DOORWAY—MODERN PLAN

ARCHITECT Walter B. Kirby and contractor William P. Varian of Glenbrook, Conn., have here produced a small house with an especially attractive exterior and a good modern plan, with a cubic content of only 15,668 cubic feet. They have produced a house with a large living room, two good bedrooms and bath and a room that can

serve as either dining room or a third bedroom. There is an added garage in basement. A bedroom and additional bath were later added to the second floor. The exterior is of cedar shingles painted white, with black shutters and a gray shingle roof. The living room is pine paneled. The kitchen arrangement is very compact.

Cost Key is 1.134—132—920—39—15—13



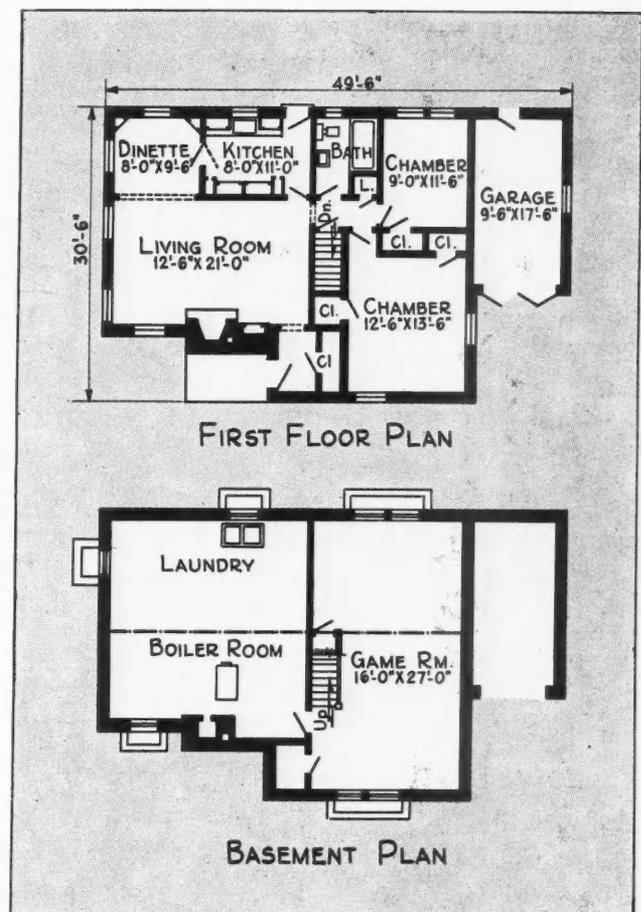
EQUIPMENT and materials include a Capitol oil burning boiler with Petro oil burner and built-in Taco heater, American radiators, Morgan millwork, U. S. Gypsum mineral wool, Royalite rubber tile floors in kitchen and bathrooms. Size is 34x24 feet, plus 6 foot ell.



WHITE BRICK 5-ROOM BUNGALOW

THIS is one of the popular Driesch homes at Westbury, L. I., designed by Fred Burmeister, architect. The exterior is of common brick, the roof of slate. The floor plan has a large living room with an attractive dinette separated by an arched opening. The garage is attached to the house and made a part of the design. Floor plan is compact, convenient.

Cost Key is 1.344-160-1079-46-19-18

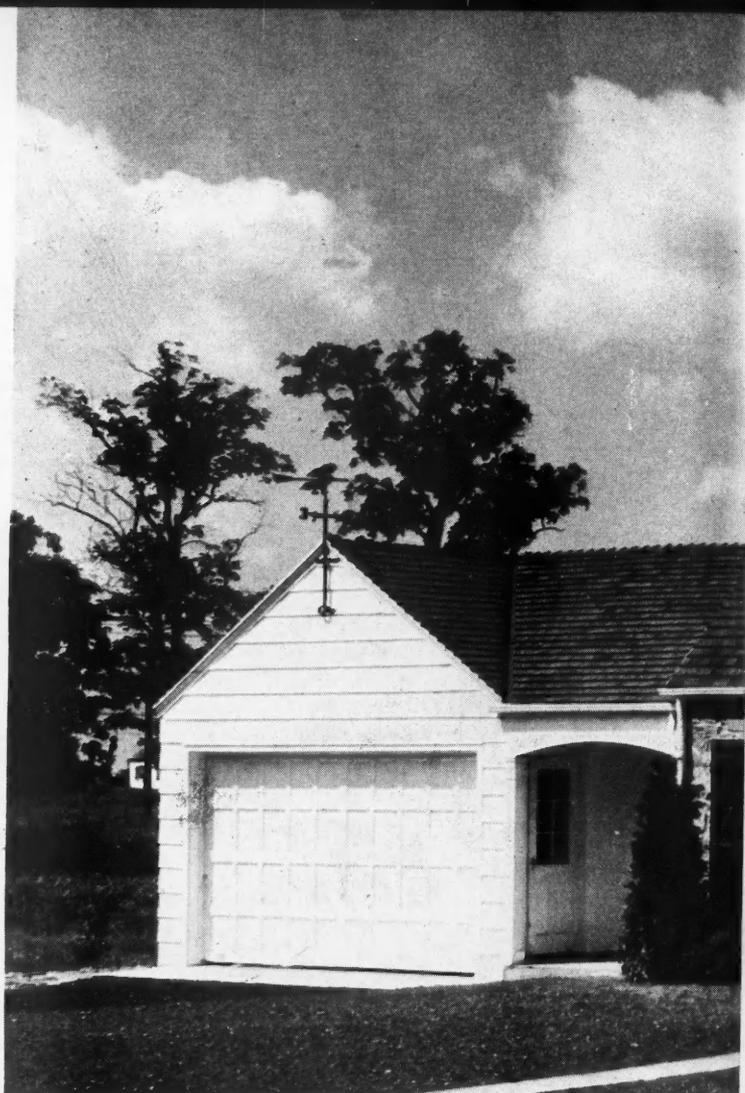


COUNTRY COLONIAL 1st FLOOR BEDROOMS

SOMETHING about the good proportions and careful detailing of this Colonial house puts it in a class by itself. It was built by Homecraft Builders in the Mayfair Acres development near White Plains, N. Y., and was one of the best received and most popular designs of 1936.

THE BROAD ANGLE of the gables, the nice proportions of the attached garage and the unusually fine dormer help achieve this charming effect. It is a comparatively inexpensive house but has many features which are found in the higher brackets.

Cost Key is 2.060-188-1216-52-24-26

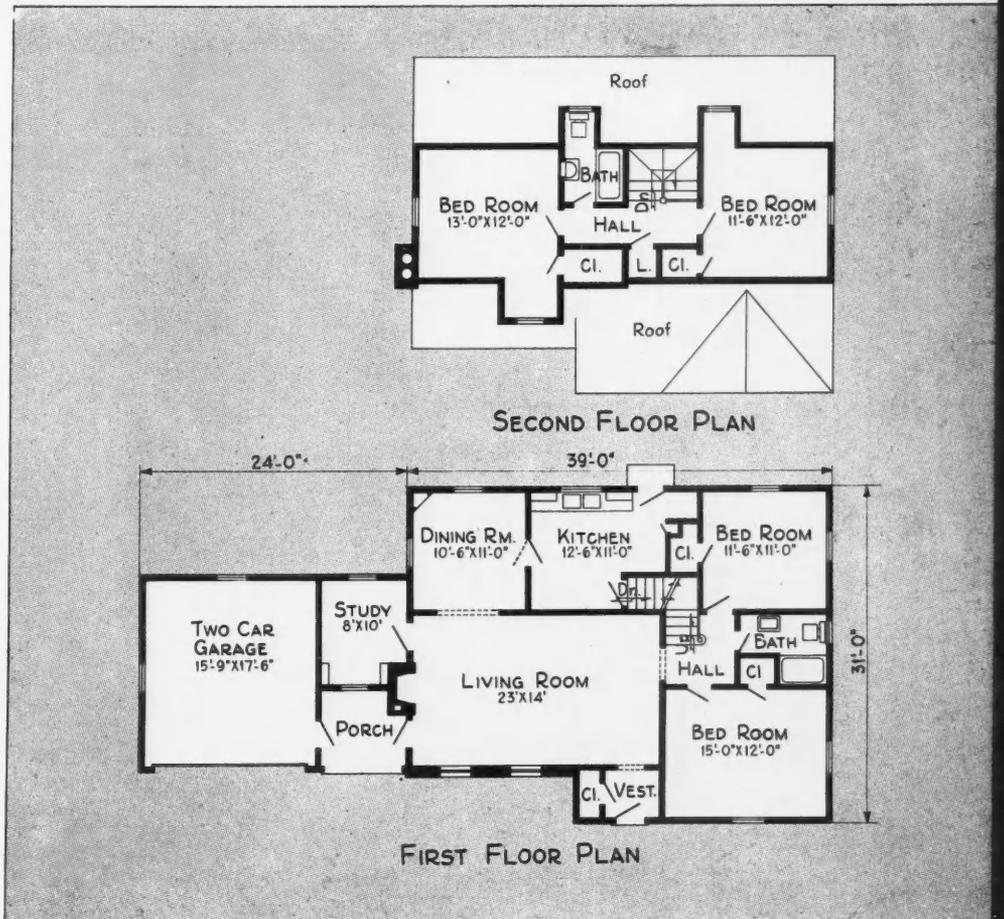


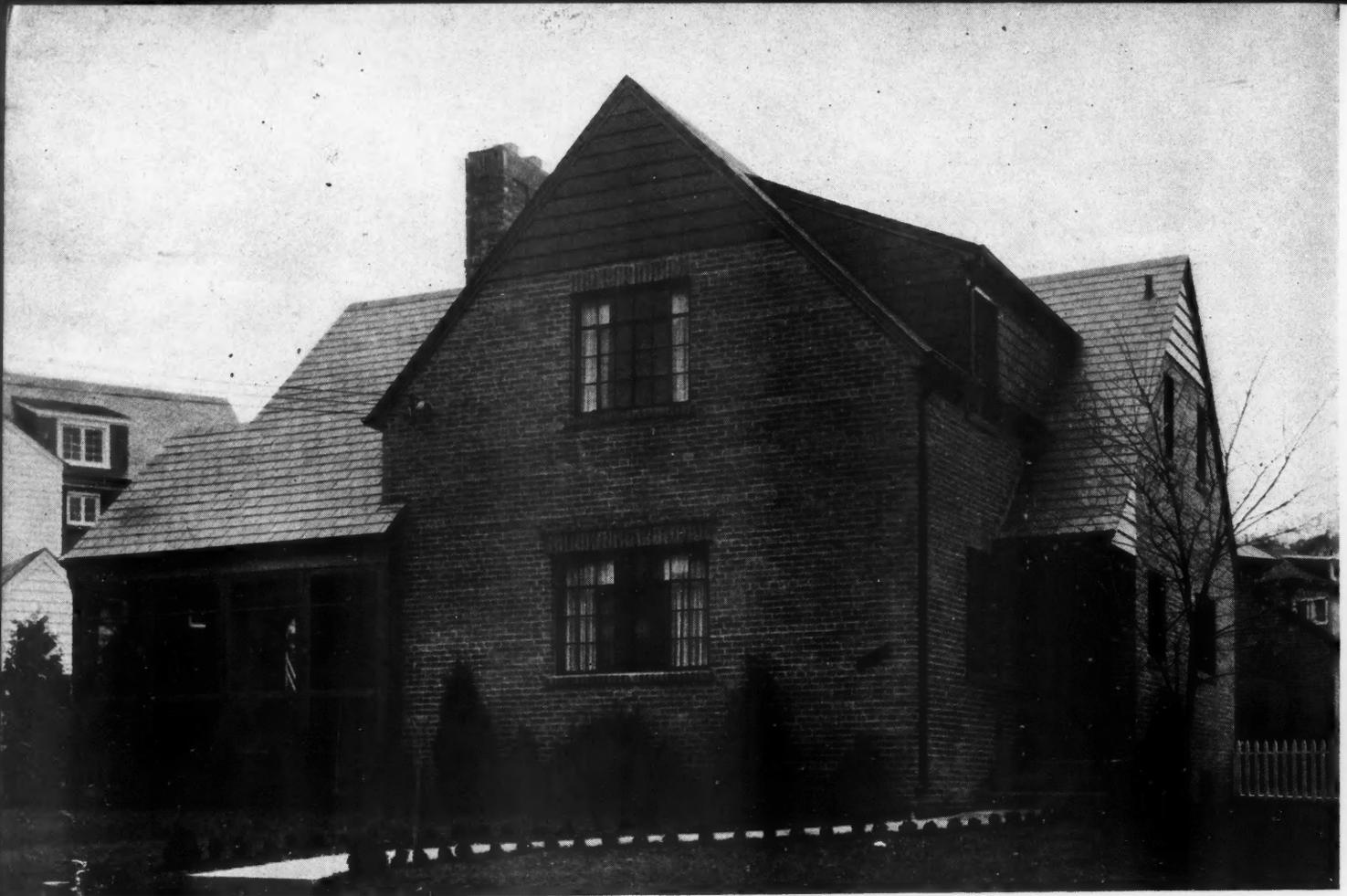


4 BEDROOMS AND STUDY

FOR a small family this house is ample without finishing the two bedrooms and bath upstairs. The two bedrooms and bath downstairs are well arranged. The small study or office off the living room is a feature desired by many people. A two-car garage is provided and connected by an open porch that is architecturally very well done and also practical.

SPECIFICATIONS include Reynolds fire-safe joists and precast floor slabs, a Reynolds air conditioning system with oil burner, Curtis Silentite windows, 18-inch Perfection red cedar shingles on roof laid $5\frac{1}{2}$ inches to weather. Side wall shingles are No. 1, 24-inch shingles. Interior woodwork, doors, stairs, trim by Curtis.

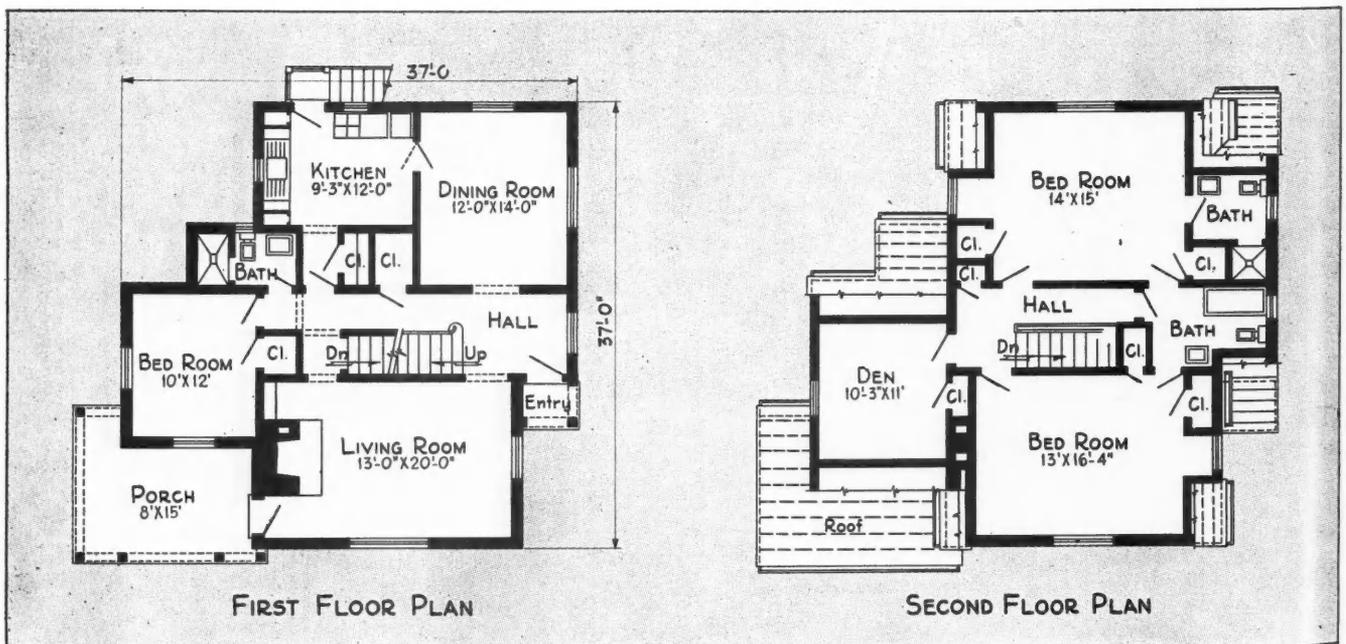




WIDE CIRCULAR HALL; ATTRACTIVE PORCH

Cost Key is 2.086—148—1072—46—24—19

THIS Washington, D. C., house was built by Charles Sturbitts, master builder, who has done many fine homes in that city. The floor plan and exterior are interesting and unusual, and the house has a spaciousness and charm that make it very attractive. The large screened porch opening off the living room is a good feature. The rooms, halls and closets throughout are large and well arranged, and there are three bedrooms. This was built in 1935 and opened for public inspection as a model home.



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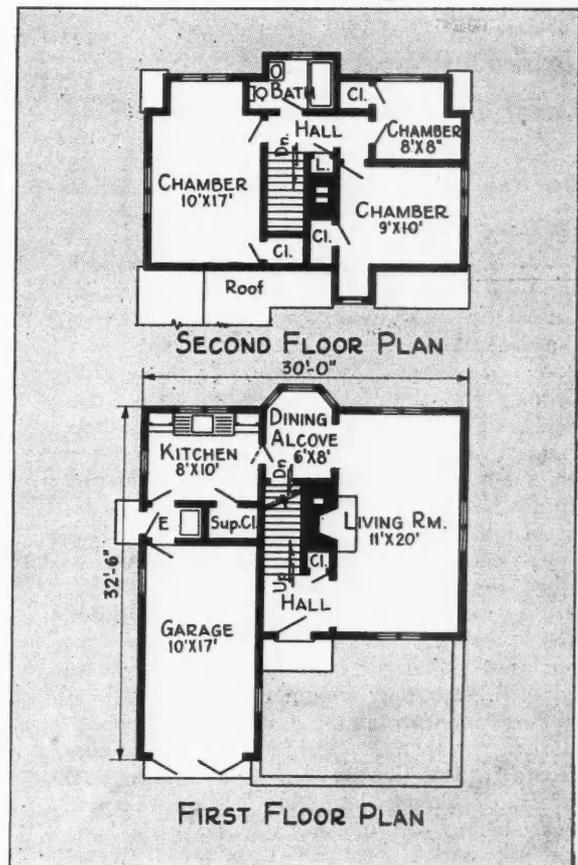
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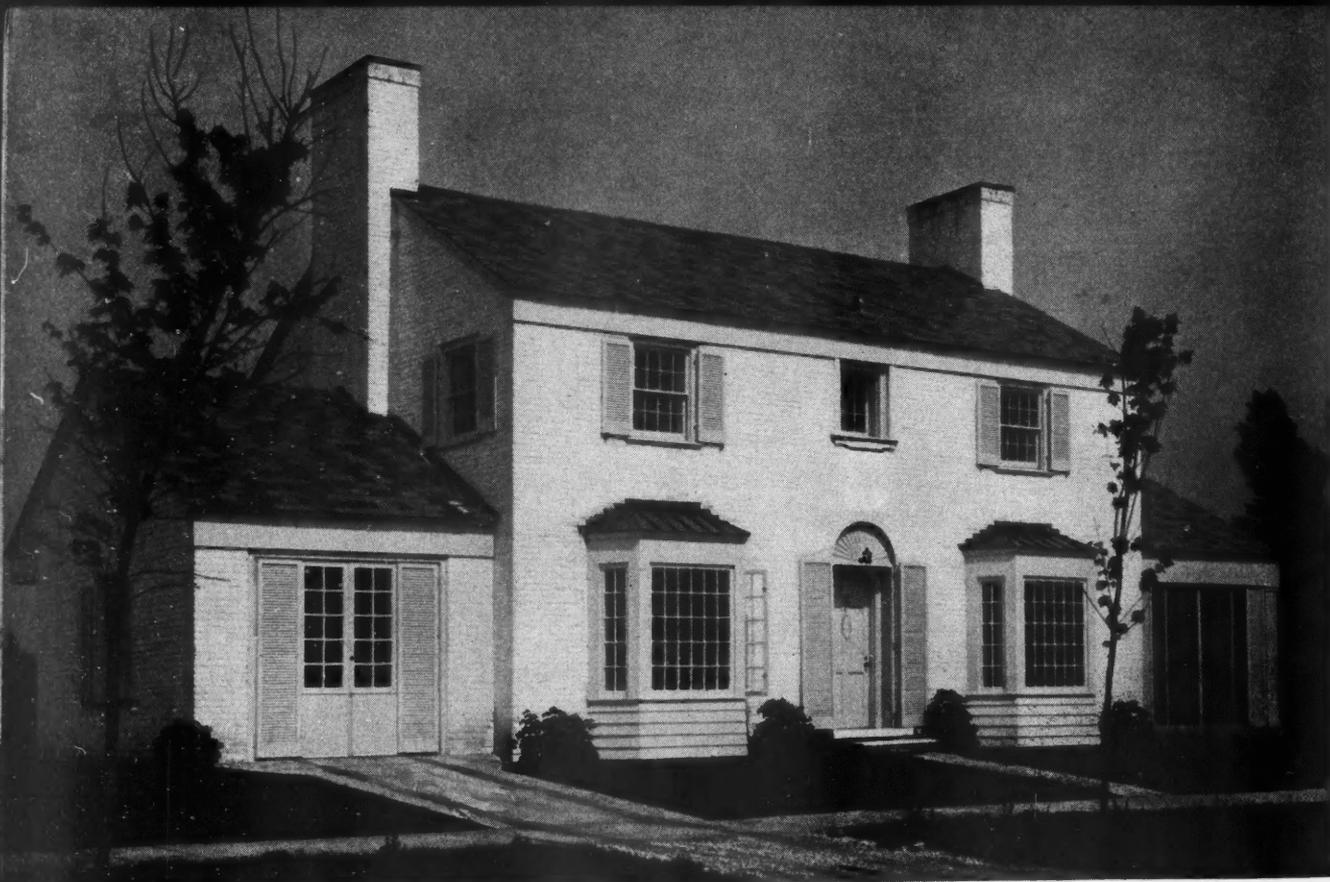
COTSWOLD TYPE MARBLEHEAD HOME

Cost Key is 1.457-128-474-22-19-12

MODEL Homes, Inc., of Boston, designed and built this Cotswold English-type house and achieved an attractive effect at reasonable cost. The exterior is of Mecca brick, with roof of asphalt mineral-surface shingles. The house is insulated with rockwool, has a forced warm-air heating and conditioning system, with an oil burner.



THIS firm has made an arrangement with the local newspaper whereby many of its houses are published, together with the floor plans. This one appeared in a recent issue under the headline, "You Can Build and Own This Home for Only \$58.90 Monthly." Model Homes, Inc., also offer to sell complete plans and specifications of the house for \$5.



COMPACT GEORGIAN COLONIAL

Campbell Realty Co., Beverly Hills, Chicago, Builders

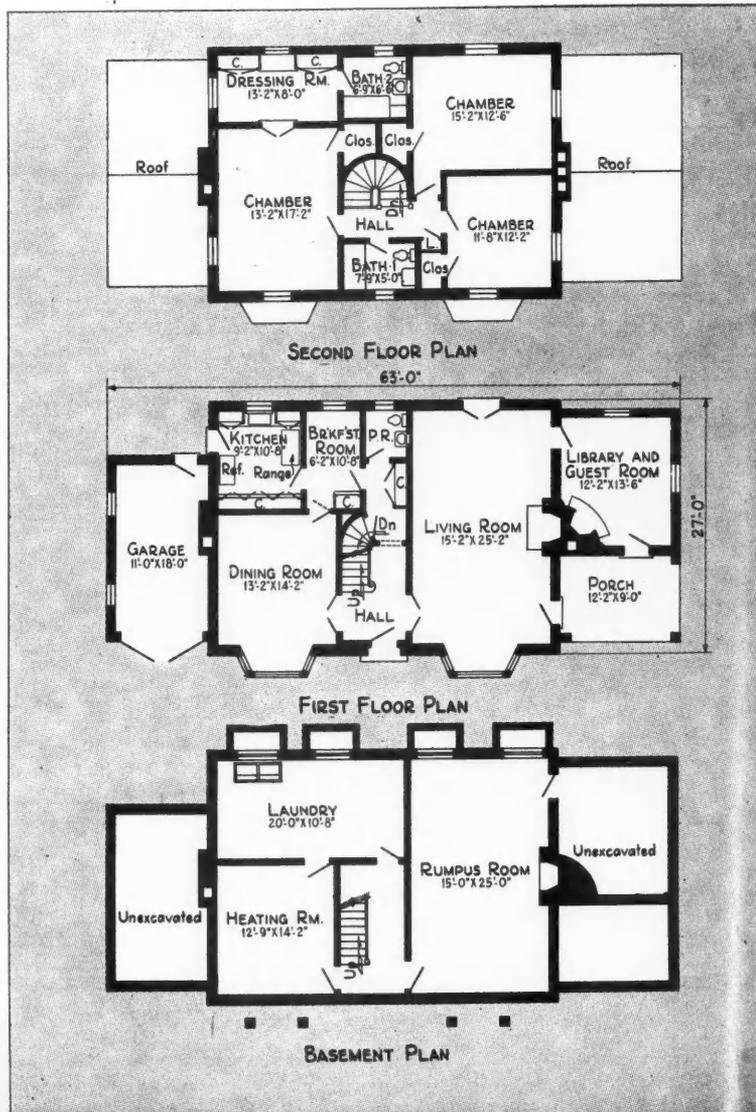
Jerome Robert Cerny, Inc., Lake Forest, Ill., Architects

Cost Key is 2.353—192—1026—45—31—23

AMONG the more imposing houses built for sale in Chicago last year, this Georgian Colonial presents one of the units erected by the Campbell Realty Company in the again active Beverly Hills section of that city. Dignity and simplicity of design have been achieved by the architect, J. R. Cerny. Attractive bays, porch and garage wings and chimneys give a balanced exterior. The full length blinds on the garage doors are an unusual method of disguising this feature.

The center hall plan has been worked out to allow maximum efficiency. Basement stairs are convenient for access to rumpus room. The library will serve as a fourth bedroom; the enclosed porch off this room and the living room is a good arrangement.

Pine paneling in the library, three wood-burning fireplaces, plenty of kitchen cupboard space, Bryant gas-fired winter conditioning, Celotex insulating lath on walls and four inches of Columbia rock wool over ceilings, and Lightolier fixtures are featured.



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EXTENS

Plan For a Modern Basement

Sloping Ground Offers Opportunities for Attractive Basement Entrances but May Require Efficient Drainage

By **LYMAN M. FORBES**

Architectural Drawings

by **George W. Murison, Jr.,**

and **Matt Sumner**

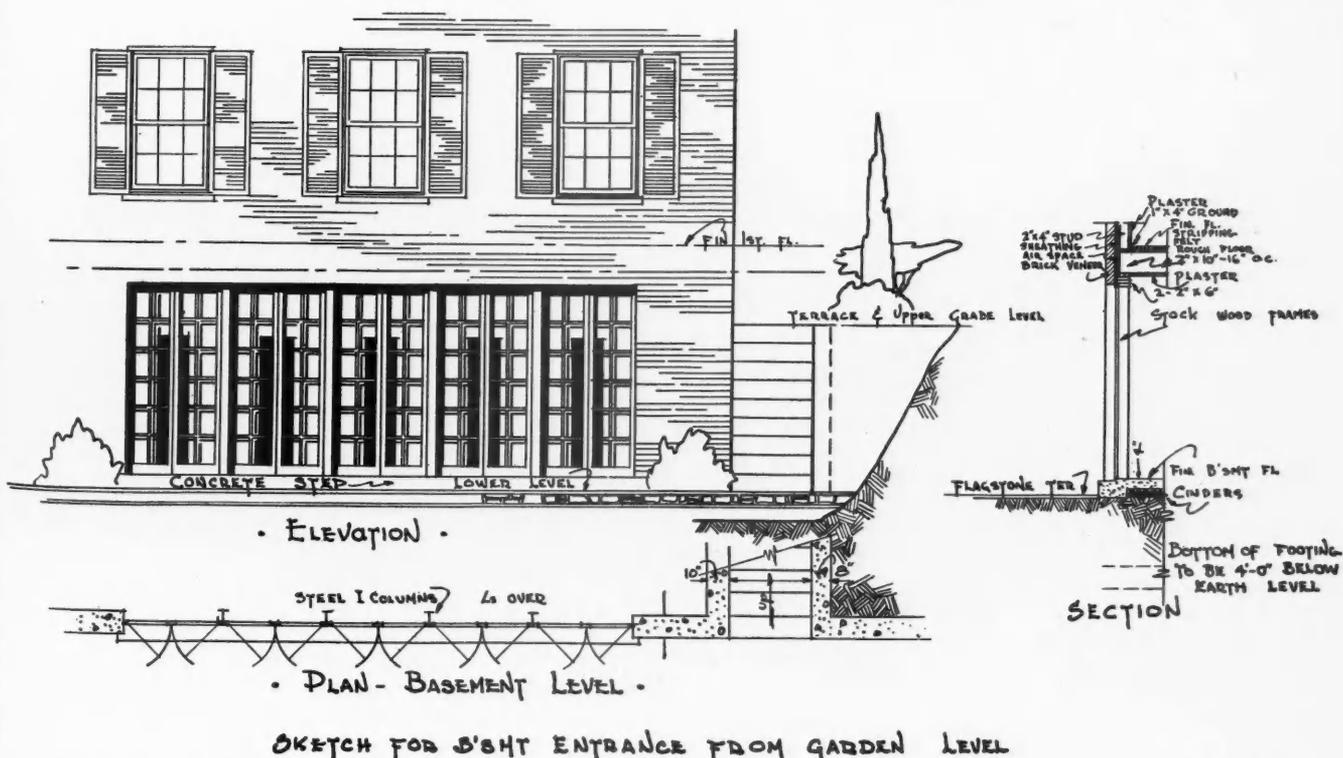
HOMES erected on sloping ground frequently offer opportunities for using varying levels to good advantage by placing the basement, or floor of an attached garage, at the grade level of the front, back, or side yard. Some unique and attractive outside entrances to basements and attached garages can be developed on sloping ground in ways that will give the house an appearance of having an added story. Accompanying architectural renderings suggest the use of concrete terraces and steps on sloping ground. They add considerably to the appearance of these houses and simplify some of the special problems of outside drainage that may be encountered.

A seasoned contractor builder, before beginning work on any home that is to be erected on land where sewers have been laid, will remove one or two manhole covers from the street into which the house is to drain, and will measure depth of the sewer or sewers at that point.

This preliminary precaution may save considerable grief after the house is completed, for it will show maximum depth to which the basement can be excavated, whether house sewers should be trapped to prevent back flows, and whether a sump pump may be required.

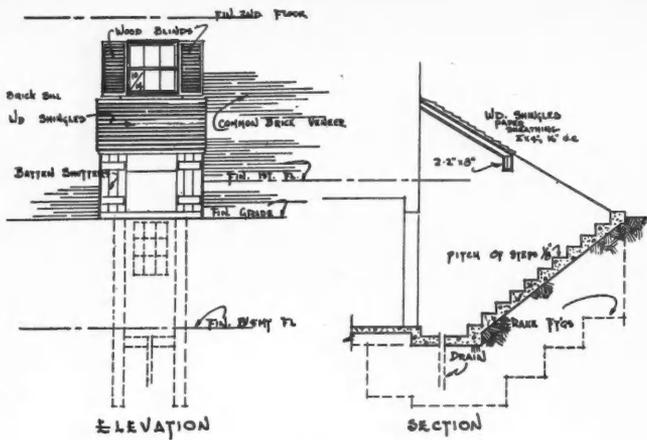
The elevation at the bottom of this page suggests the use of considerable glass in one basement wall of a house built on sloping ground. Windows of the basement recreation room in this house afford a direct view of the yard. The outside approach is a flagstone or concrete terrace. This unique and effective use of glass provides natural light for the basement. Stock wood sash has been used. This treatment calls for use of a sturdy beam above the basement windows to support the bearing wall above.

The basement excavation has been cut into sloping ground, so that only three foundation walls are in direct contact with the soil. The elevation shows an outside concrete stairway to the higher ground level. This house might have another grade entrance on the other side, and probably an inside basement entrance, depending on location of the heating plant, laundry, and type of fuel used.

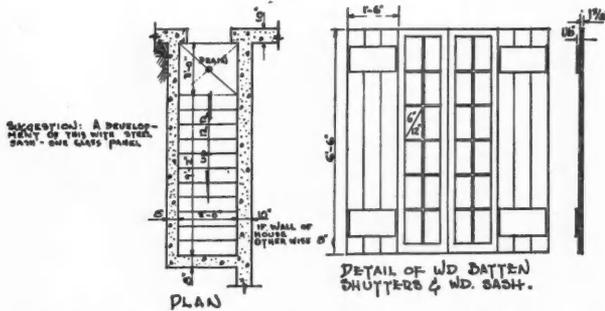


SKETCH FOR 8'x12' ENTRANCE FROM GARDEN LEVEL

EXTENSIVE use of glass in this foundation wall provides natural light for basement recreation room, and gives appearance of added story.



HATCHWAY DET. ENTRANCE



NOVEL treatment of basement hatchway, with double shutters. An inside pair of shutters is glazed, and protected by outside battens of wood.

The elevation, section, and plan at the top of this page shows a new and unique treatment of an old-style basement hatchway, which has been converted into an attractive and efficient outside entrance, suitable for houses on either sloping or level ground.

This hatchway has a roof section that projects from the side of the house. The outer edge is supported by two 2x8" joists that rest on a plate built into stud walls that form sides of the hatch. The supporting beam and rafters of this roof projection are boxed in with sheathing so they may be exposed on the under side, or may be covered with beaded ceiling, plywood, structural insulation board, or other suitable material. The upper side is covered with materials used on the main roof. The color scheme and design of the hatchway quite naturally should be in keeping with the house. Colonial effects predominate in the illustrated design, and make a fitting supplement to shut-

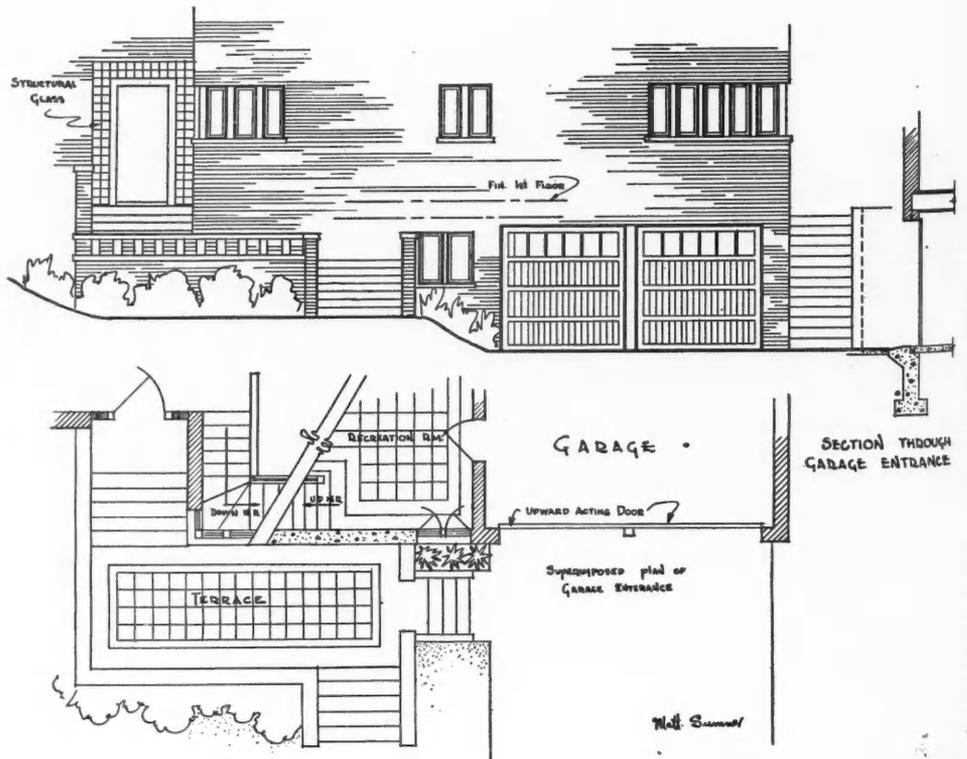
ELEVATION of moderne house, with attached garage built on basement floor level. Concrete terraces lend size to the house, and simplify outside drainage.

tered windows and other details of this house. The concrete stairway shown in the plan is built with rake foundations below the side walls. A double cover is used for the opening. The lower covers consist of two 12-light wood sash, each mounted on long strap hinges. The outer cover consists of two wood battens, made of tongue and groove stock, held firmly in place with screws. The wood batten shutters can be laid over the glass shutters to keep out rain and snow, or can be opened to admit light into the basement. This double shutter arrangement eliminates some of the need for a doorway at the foot of the stairs. Headroom under the projecting roof section depends on position and depth of the cement steps. A drain is suggested for the landing at the bottom of the stairs, which is slightly below level of the basement floor.

The elevation on this page shows the front of a "moderne" house, built on sloping ground, with an attached garage adjoining a basement recreation room. A wide driveway provides ample parking space in front of the garage. Steps lead up from the driveway and sidewalk to a concrete terrace on the first floor level. This terrace, 5" thick on a cinder fill (same construction as basement floor), gives the house an appearance of greater size, provides better drainage, and reduces hydrostatic pressure on the basement floor and foundation walls.

The arrangement shown in this elevation assures easy access to the house from the outside. Inside access to the garage is by way of a stairway from a front entrance hall. This stairway also serves the basement recreation room. A grade entrance is suggested in back of the house. Two windows are set into the foundation wall to provide outside light for the recreation room.

The average homeowner takes only ordinary precautions against fire in an attached garage. He probably never suffered a fire loss, so the problem seems rather remote. When the need for fire-safe isolation is suggested, he is more apt to be concerned with the inconvenience of having oil and gas fumes leak into



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the house from his garage. A properly constructed garage ventilator will take care of fumes, and is an added protection against monoxide hazards.

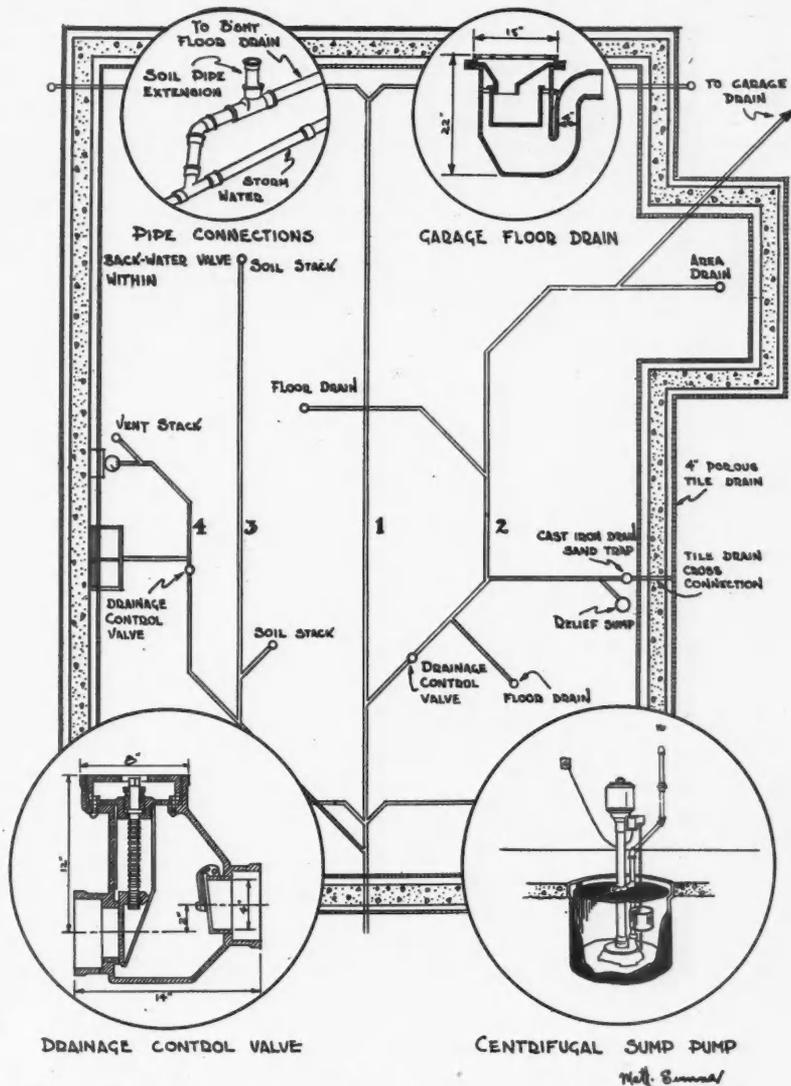
Fire laws must be complied with, and local building codes covering construction of attached garages should be studied carefully. Typical code requirements have been met in the illustrated plan, which calls for solid brick inside walls, a ceiling of metal lath and plaster, and a steel access door. Inside walls may be whitewashed, coated with cement paint, or a cement wash.

The plan on this page shows a complete drainage system for a house built on low ground, with details of valves, drain traps, and sump pump. Porous drain tile has been installed outside of the footings. A fill of crushed stone, gravel, or coarse cinders, is suggested outside the foundation walls, where difficult drainage problems must be met. This fill would take care of surface water that might run down sloping ground and seep in beside the foundation wall.

Outside foundation walls should be thoroughly waterproofed if seepage is expected to build up hydrostatic pressure. A coating of hot tar on the outside wall is a standby. A waterproof membrane, consisting of a coating of tar, a layer of felt, or burlap, and a second coating of tar, is more efficient. Copper-armored waterproofed paper, reinforced with sisal fibre, is highly recommended for outside waterproofing, and may also be used on foundation walls to keep moisture out of sills. A highly efficient waterproofing method that will resist slow seepage is to use integral mixed concrete in which Portland cement is ground or mixed with a waterproofing agent. Where a masonry wall extends below grade, a parge of waterproof cement may be applied on the outside.

In case a basement recreation room is to be finished, dampness tests should be made, especially in existing buildings, to determine whether moisture-resisting floor and wall-coverings should be used, and whether floors and inside walls should be waterproofed or treated. A simple moisture test can be made by forming a putty ring 6" in diameter by 1/2" high at each corner and in the center of the room. Put a teaspoonful of granulated anhydrous calcium chloride in a watch crystal inside each ring. Cover the putty with a piece of thin glass and press it onto the putty until the ring is sealed. If the floor is damp, the calcium chloride will be at least partially dissolved after 12 hours. If excessive moisture is present, the walls and floors should be treated from the inside. A Portland cement paint is recommended for walls, and floors should be covered with two or three coats of special coating that combines waterproofing properties and considerable resistance to abrasion. The floor surface should be etched with dilute muriatic acid, washed and dried before the coating is applied. This treatment makes the concrete slightly porous so that it will hold the coating.

Linoleum should not be laid in direct contact with moist walls or floors. Special water-resistant tile should be used. All cracks should first be filled with a mixture of Portland cement and plaster of Paris. Irregularities should be leveled off with a prepared filler. A coat of



COMPLETE and ideal residential drainage system. Numbered sections in the above diagram are explained in accompanying text.

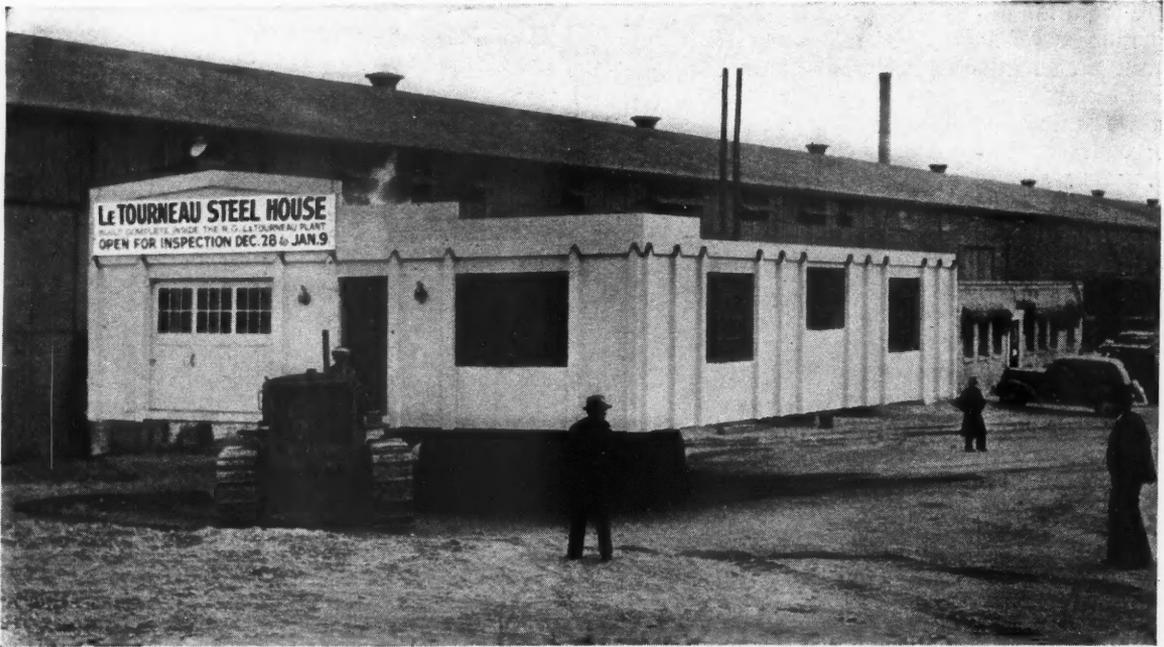
special primer is then applied, after which the tile is laid in a waterproof asphalt cement.

In the event walls are to be covered with structural insulation board, insulation board plank, plywood, gypsum board, or imitation tile, the inside wall should be waterproofed, and horizontal furring strips attached. Spacing of furring strips will depend on strength of the material with which the wall is covered, and will vary from 16 to 48".

The plan on this page shows an ideal inside and outside drainage system. Cast-iron pipe is recommended for use under the basement floor because of its durability and strength. If there is any likelihood that sewers may back up into the basement, either hand valves or automatic traps should be installed.

An unfortunate experience of an architect illustrates the need for traps on sewer drains. He was commissioned to design and build a house for a family whose members departed for a European vacation while it was under construction. The contractor completed the job, the architect inspected and OK'd it two days before the clients returned. Upon their arrival he took them to the new home, swelling with pride over his work, but when they entered the front door, a nauseous stench drove them from the house. In a two-day interval between the final inspection and clients' arrival, a heavy storm caused sewers to back up, with

(Continued to page 130)



Factory-Made All-Steel House

BUILT complete, decorated, ready to move into, a full-size, five-room, electrically-welded steel house with garage incorporated was mounted on a semi-trailer and rolled out of the R. G. Le Tourneau grading machinery plant at Peoria, Illinois, recently.

There was coal in the two-ton hopper, the furnace was going and the house was comfortably warm. The 16-wheel trailer, towed out of the factory by a Caterpillar tractor and along the roadway by a 1½-ton truck, had no trouble with its 41-ton load.

On a space leveled off in the front factory yard, just as a homesite would be leveled, the 32 x 44 foot house was gently set down by a tractor crane which took hold of the three steel rings on the roof, lifting it while the trailer rolled out from under. Within a few hours water, sewer and electric connections were made; drapes were up, floors carpeted, each room appropriately furnished, and the house was ready for occupancy.

This house is the first of a number of similar cottages for Le Tourneau employes that are to be built complete inside the factory, it is predicted. When the next five houses, on which construction has started, are finished,

the six dwellings are to be launched on the Illinois River, which flows past the factory, and towed on their own bottoms across to a Le Tourneau colony site.

These are believed to be the first all-steel houses ever built, as well as the first houses to be completed ready for occupancy inside a factory. The first house has asbestos board ceilings and living room walls, and wooden doors, but the dwellings now under construction and all future houses are to be entirely steel except for plumbing fixtures and rock wool insulation between the wall sheathings and between ceiling and roof.

Production methods, which are being perfected on the five houses now building, will permit completing future houses with the economy, precision and speed employed in manufacturing scrapers and other Le Tourneau equipment. It is estimated that with present available space and facilities one house can be finished every three weeks.

In constructing these houses the floor is built upside down and in two sections. The floor plates are laid on a concrete and steel platform of the exact ground area of the house, 32 x 44 feet. These plates are ¼" x 96" x 44". The floor is built in two sections, two plates being tacked

together into one half, two into the other. Atop these plates 6" junior I beams are set crosswise at intervals of 2 feet and welded to the floor plates. Then 12" junior channels are placed along the outside edges, welded to the plates. Two girders, each consisting of two junior I beams welded together, run the length of the floor. Water and soil pipes are installed, and fitted. The whole underside is then painted with a primer coat of non-corrode paint and with a black asphalt coat of non-corrode paint. The two halves are turned over, tacked together; then beads are laid down the 44' length of the three joints between the four plates, making the entire floor structure a solid unit. This then

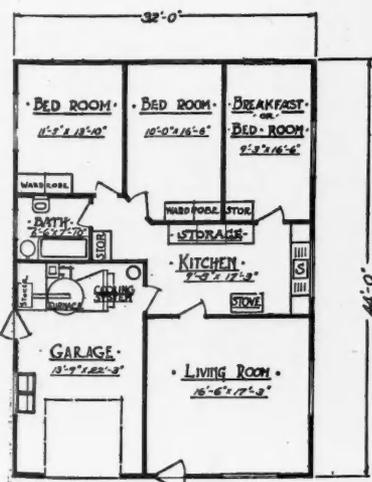
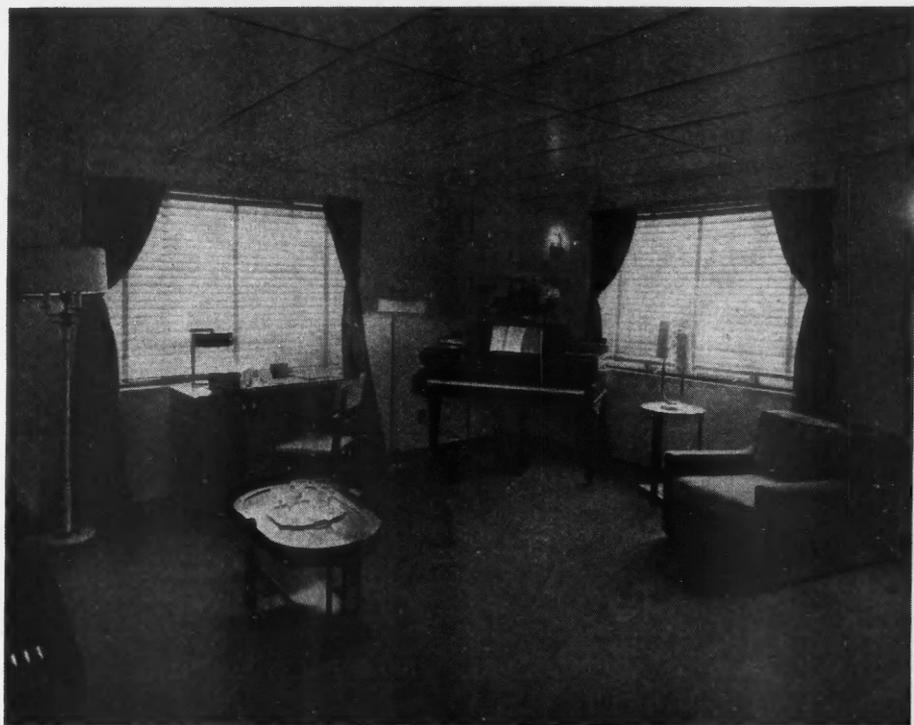


is given a primer coat of non-corrode paint, as is every other metal surface in the house whether exposed or concealed.

The floor structure completed, it is lifted off the platform and the roof is then built on the same foundation rightside up. First the ceiling plates of No. 10 gauge steel 48" x 22" are laid and tacked together. Six-inch junior I beams and 12" channels are welded to these plates. The ducts for the heating and cooling system are installed and as the No. 10 gauge roof plates are laid on, rock wool is blown in to fill the 6" interval between roof and ceiling. Similarly the 4" space between the two steel sheaths of both the exterior and interior walls are filled with rock wool. About 4 tons of this insulation is used.

In the meantime the walls have been under construction on another jig. Sheets of No. 10 gauge plate 48" x 96" are used, being bent to form a box-type rigid section. These sections are so fitted together that the largest distance between braces is 21 1/2".

When the wall sections are completed they are set up in place on the floor structure and welded to it. Then the roof is laid on, welded in place. When plumbing and lighting fixtures and outlets and heating and cooling plant have been installed and the house is decorated inside and out it is ready to move out. It is jacked up, a trailer wheels under it, the rear wall of the factory slides open and house rolls out. Under special permit, this dwelling can travel the highways for any distance, readily moving 100 to 200 miles over night to be in place the next morning ready for occupancy as soon as water, sewer, and electric connections have been made.



FLOOR PLAN

How to Succeed as a Construction Foreman

By J. DOUGLAS WILSON*

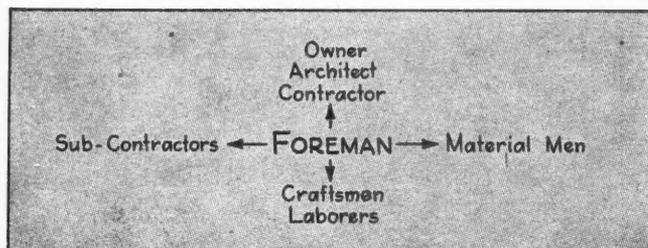
THE least noticed but most important man on a construction job is the foreman!!

Architects, designers, contractors, inspectors—all of these have their place and responsibility. Without them—and an owner to pay the bills—no construction job would ever be started. But, when the actual time of construction begins, the scene changes and the all-important foreman takes charge.

Who is the foreman? On a small job, the contractor often acts in that capacity. A large job may have a superintendent, who, in turn, will have several foremen under him. In any case, however, the foreman is the man who actually plans and supervises the construction work for his particular craft.

What does the foreman do? To whom is he responsible? How much authority does he possess? Does he have to be skilled? What does he know? How much he know? These are all-important questions that need to be answered if one is to get a good picture of the work and responsibilities of the construction foreman.

Considering his relationship to all persons concerned in the construction of a building the foreman occupies a peculiar place, as suggested in the diagram:



The foreman must look to the contractor or superintendent for definite instructions; the owner and architect are also often on the job to discuss construction or location problems. Also, with no authority over the sub-contractors, the foreman finds it necessary to work with these men daily. The same is true of the material men who come to the job to check on their materials. Under the foreman are the skilled craftsmen and laborers—the only group for which he has actual authority. Certainly the foreman must have a sympathetic understanding of human relationships; know how to get along with people, not only in terms of giving orders, but also in receiving instructions; and, in addition, working out problems with individuals where no authority of any kind exists.

It is probably in the realm of human relationships that the foreman is most valuable, although it is here that his abilities are the least noticeable to the average person who passes by a construction job day after day; and sees it grow easily and smoothly often without apparent direction.

In a very real sense the foreman is the executive on the job. He must have ability to analyze his job; then organize the work; delegate the numerous different jobs to others and then efficiently supervise the workers who

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The material in this article was based on the results of several conferences of building trades foremen, conducted by the author.

have been deputized to take charge of the different jobs. Analyze, organize, deputize, supervise: these four abilities mark the real executive.

A difficult question to answer is how to know whether a person is a good foreman. Certain qualifications cannot be discovered until the man is on the job. Recommendations of previous employment and experience may be secured. If necessary an examination could be given. But whether in the light of information on a recommendation blank, the foreman's own statement as to previous experience, or the results of an examination, certain qualifications must be looked for. What are they?

What Are the Qualifications of a Good Foreman?

Knowledge of construction would no doubt be given first as of paramount importance. This implies a knowledge of blue-print and specification reading and layout work. However, the best man, in this regard, would not make a good foreman if he did not have the ability to give intelligent orders. Even with these abilities, unless the foreman can get along with his men, the job will slow down and mistakes will occur. Personality must be considered a strong factor when considering the qualifications of the ideal foreman.

The question of whether he needs to be a good craftsman is debatable. There is, of course, no arguing the fact that craftsmanship ability is worthwhile and valuable. Ability to handle men and organize work however is far more important than craft skill if it becomes a matter of choice.

Numerous prescribed methods of construction are written in the building ordinance and referred to in the specifications through a simple statement such as "all construction must conform to the requirements of the building ordinance." The foreman must, therefore, be well acquainted with the general requirements of the building ordinance.

Due to the many problems in construction which are constantly arising, such as late deliveries of material, new construction problems, changing weather conditions, the shifting of men from job to job, changes in the blue-prints, errors in the plans—certainly the foreman must be a good planner.

What constitutes good planning on a construction job? The following items are suggestive:

1. The foreman studies to see how the work should best be done.
2. He places his men to the best advantage; has each man do what he can do best.
3. Workers are not changed around too often.
4. Work jobs are planned in advance.
5. The foreman has extra jobs "up-his-sleeve" for emergencies that arise through changes in plans; failure of material to arrive, etc.

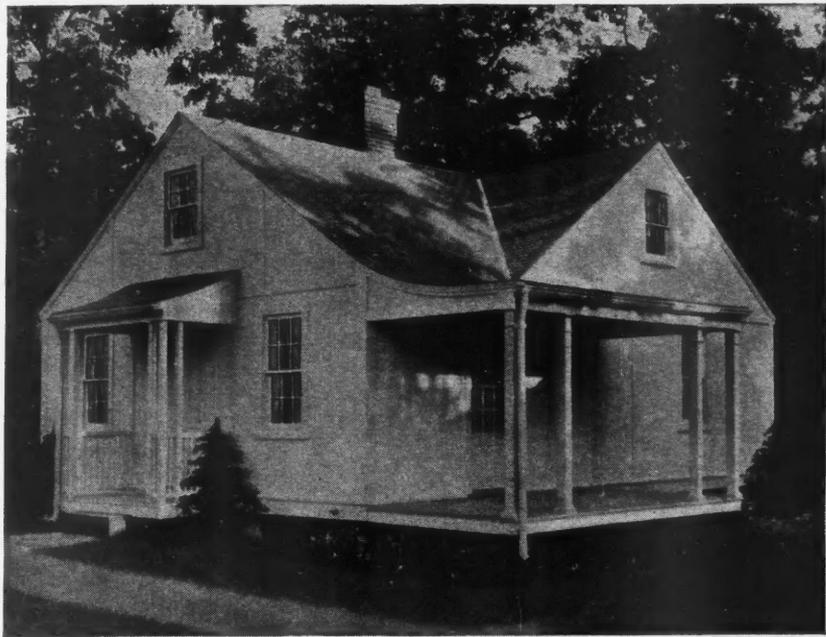
What Does the Foreman Actually Do?

What does the foreman actually do? Giving orders and directing men would cover the foreman's daily activities from the average individual's viewpoint. An analysis of his work, however, reveals many other responsibilities. Materials must be ordered,

(Continued to page 132)

Practical Pre-fabrication Method for Builders

**Standard Sections of 2x4's
and Building Board Built in
Shop. All Framing Members
Detailed and Cut in Advance
with Power Saw**



ONE of the "Precision-Built" prefabricated houses at College Park, Md.

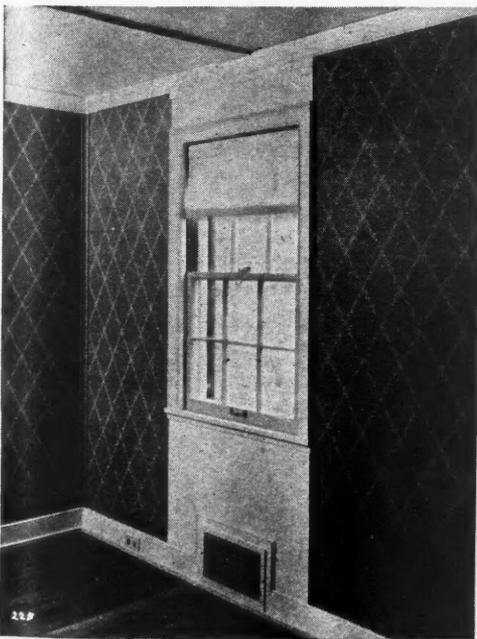
A METHOD for building low cost houses by constructing standard wall sections in a local workshop has been developed by F. Vaux Wilson, vice president of The Agasote Millboard Company of Trenton, N.J. This system may appeal to builders and lumber dealers because it uses standard lumber, building board and other building products and the work is all done locally.

In addition to building the sections in advance, all framing members are detailed and cut to exact size with a power saw. This method of building wall sections and cutting framing members in a shop reduces labor in the field and, it is claimed, greatly reduces the cost of the house.

Development of the Homasote "Precision-Built" home, as it is called, is the result of several years of study by Mr. Wilson and The Agasote Company to meet the

threat of prefabrication by firms that wish to upset the ordinary channels of distribution. The method is particularly designed to produce livable houses in the \$3,000 to \$5,000 class. A number of houses have been built and the system has been ruled acceptable for mortgage insurance by FHA.

Of major importance in this type of work is the complete detailing and advance planning of the job. The blue prints prepared by The Agasote Company for a number of standard small homes show not only the usual architectural details but, in addition, complete framing and joist and rafter spacing diagrams, indicating the location, size and type of cut of each member. Reproduction of a typical blue print page of the roof framing details is shown in Figure "C". The same careful planning is done for the first floor joists and girders and for the ceiling joists and girders. The detail drawings



PANEL JOINT comes at window and is concealed by additional layer of building board.

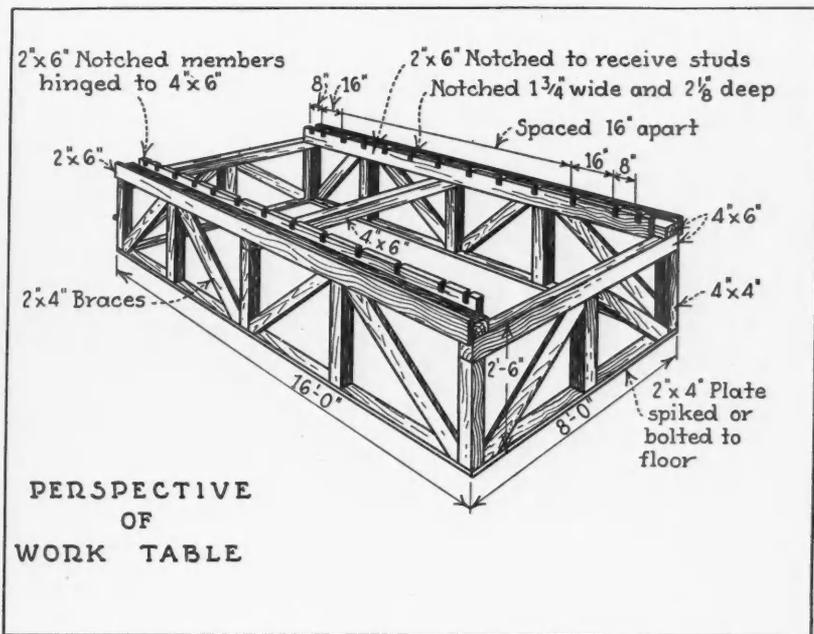


FIGURE A—This Jig or worktable is used in building wall sections. It is 16 ft.x8 ft. with guide strips placed to automatically locate studs on 16-in. centers.

CUTTING SCHEDULE FOR SHOP FOREMAN				
RAFTERS, HEADERS AND RIDGES HOME No 110				
OUT OF	LUMBER	LENGTH	CUT	MARK
4	2"x6"	10'	4 Pcs. 2'-4 3/4"	No 3
			4 Pcs. 3'-11 3/8"	No 7
			4 Pcs. 3'-1 3/4"	No 8
6	2"x6"	10'	6 Pcs. 9'-9 1/8"	No 9
6	2"x6"	14'	6 Pcs. 9'-9 1/8"	No 9
1	2"x6"	16'	6 Pcs. 4'-0 1/2"	No 6
			1 Pc. 11'-3 1/2"	No 2
			1 Pc. 3'-2 7/16"	No 4
1	2"x8"	10'	1 Pc. 1'-1 7/16"	No 5
			48 Pcs. 15'-6 3/4"	No 1
			1 Pc. 8'-1 1/4"	No 10
2	2"x8"	16'	1 Pc. 16'-0"	No 11
			1 Pc. 15'-7 3/8"	No 11

FIGURE B—A cutting schedule similar to the above is made up for all the framing members, stating the size, number required and piece to be cut from. This is used by the operator of the power saw in cutting all framing members in the shop.

clearly show the exact cut required for each member so that the power saw operator is able to do this work rapidly and accurately. When these pieces are cut they are lettered by the saw operator in accordance with the number shown on the plan.

Careful and clear marking of the lumber is of great help in sorting, trucking and erecting.

Under the procedure suggested by Wilson, construction of the wall sections and cutting of the framing lumber is started at the same time as the excavation. Thus by the time the foundation is in, the pre-cut floor joists should be ready to deliver to the job. The first floor joists are set and the sub-flooring laid before the wall sections are delivered.

Construction of the precision-built wall sections is simple and rapid. A "jig" or worktable 16 by 8 feet, as illustrated in Figure "A," is recommended. This worktable has guide strips applied on the long sides to locate the top and bottom plates of the wall sections. At right angles to these, guide strips for the studs, which are set 16 inches on centers, are placed. All that is necessary is to drop the studs into place and nail the top and bottom plates to it.

Wall sections up to 14 feet long are built on this table, using single sheets of Homasote board. The studs are quickly placed in position and the exterior building board nailed in place with 6D cement-coated nails. The wall section is then turned over. Where doors and windows occur the jacks and headers are then inserted and nailed to the plates. Electrical wiring is then installed and enough wire left coiled at the top and bottom of the sections to make connections. Provision is also

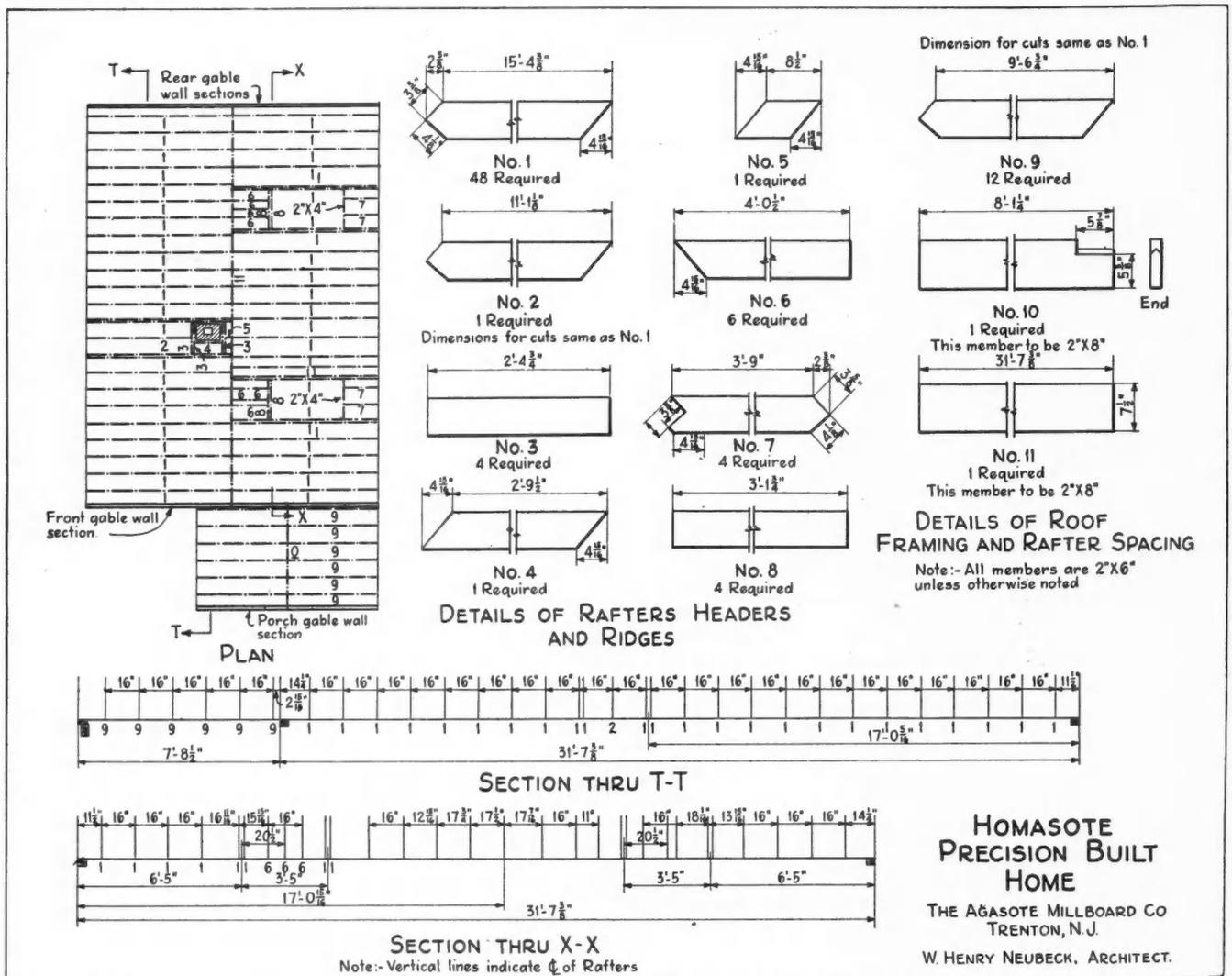


FIGURE C—TYPICAL EXAMPLE of method used to detail rafters, headers and ridges. Each type of member is numbered and shown on framing plan, at left. Exact cut for each member is indicated for use of power saw operator.

made at this time for piping or other work concealed in the wall sections.

The next step is to apply a waterproof glue, mixed to a consistency of thick cream, to the studs and plates and apply the interior building board. The board is driven solidly in place with a block of wood and hammer and nailed at all edges. Doors and windows are carefully marked and cut out with a power saw. Window frames are then inserted and the wall sections are ready for transportation to the job. Construction detail of a typical wall section is shown in Figure "E." The wall sections vary in size, although a study shows that for the average house they reduce to a small number of standard arrangements.

Wall sections are delivered by truck and set directly upon the wood platform and spiked in place. The bottom plate of the wall section has been previously rabbeted to receive the drip cap, as shown in Figure (Continued to page 144)

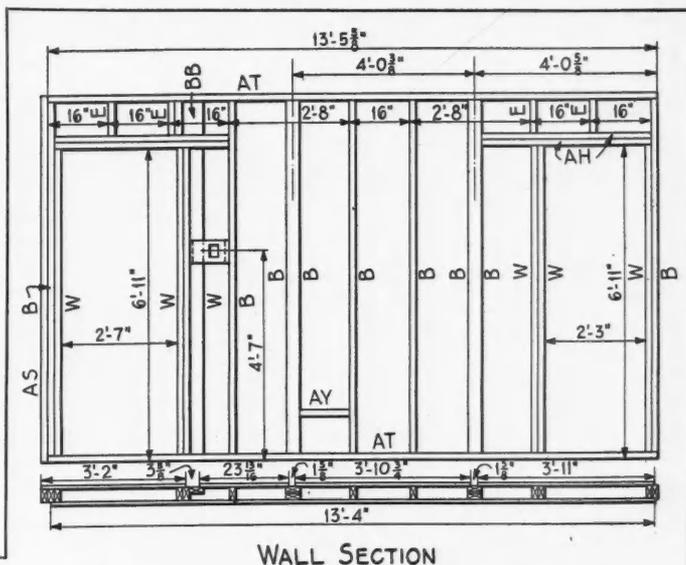


FIGURE D—DETAIL of a typical wall section built of 2x4's and building board and set up in the shop. One sheet of building board covers entire panel exterior.

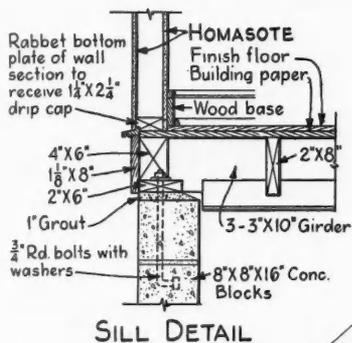


FIGURE E—TYPICAL sill detail showing how wall panel rests on 4x6 sill. Bottom plate of wall section is rabbeted to receive drip cap.

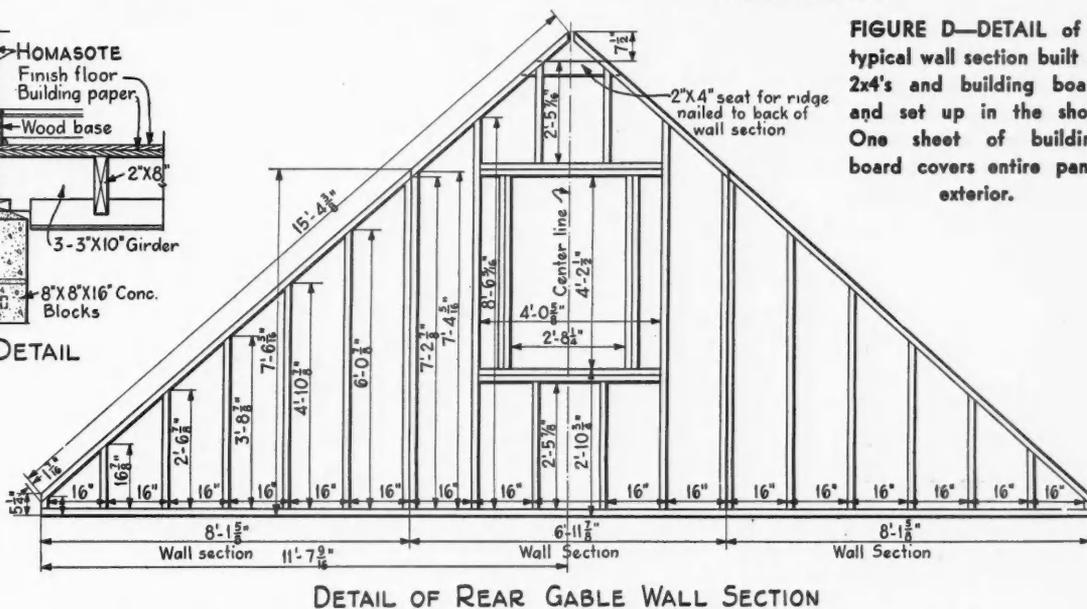
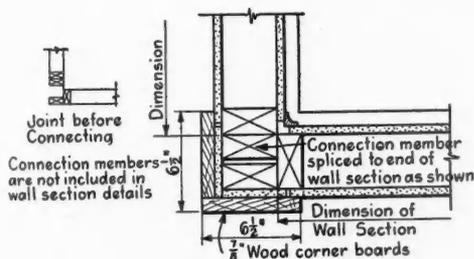
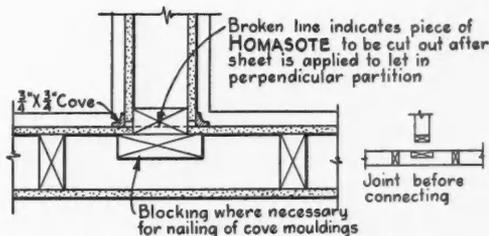


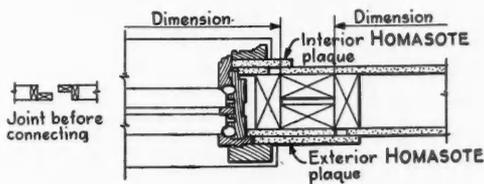
FIGURE F—TYPICAL gable detail built in shop in 3 sections of standard 2x4's and building board.



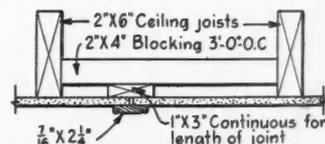
DETAIL OF EXTERIOR CORNERS



DETAIL OF INTERIOR WALL INTERSECTION



DETAIL OF WINDOW JAMB



SECTION THRU CEILING JOINT

FIGURE G—FOUR important "Precision-Built" details. TOP, LEFT, shows treatment of exterior corners. TOP, RIGHT, indicates interior wall intersection construction. BOTTOM, LEFT, shows a typical wall detail at window. BOTTOM, RIGHT, shows method of handling ceiling joints where large building board panels come together.

A Modern Face for Old Theatre

THEATRE modernization has been a particularly active field of operation which has recently extended to all sections of the country. With new theatres again being built, the older playhouses have been forced to dress up their appearances in a modern manner. Broad areas in vivid color flooded with brilliant light have become important decorative elements inasmuch as the evening hours are the most important from a business standpoint.

The alteration of the Lee Theatre of Clinton, Mo., a community of 6,000 population, from a typical antiquated facade to a neat modern exterior is illustrated on these pages. "Before" and "after" pictures show such a remarkable change in appearance that a "Believe It or Not" title might well be used in connection with the two views.

However, the only major structural changes were the removal of the old cornice and the application of Masonite Tempered Presdwood. Also the second floor window openings were closed, the marquee reduced in size, the entrances relocated and the lobby redecorated with Masonite Quarterboard, using the smooth and screen sides of the board in alternating panels.

The color scheme of the remodeled front is in deepening shades of rose set off by panels of sulphur yellow and black enameled base and trim. Polished aluminum mouldings of the clip-on type join the panels of Presdwood. The black silhouette name letters stand out from the face of the center panel and have lights concealed in the rear; these, together with the neon tube lighting on the marquee, flood the front and make it a most colorful and attractive sight in the town square business section.

The method of exterior panel application is similar to that on other types of commercial buildings. The drawings on the following page give details for using pressed-wood direct on masonry as well as on furring strips.

Where the board is applied over solid backing, as in drawings No. 1 and No. 2, the board may be given a reasonably heavy coat of a high melting point asphalt. The melting point should be approximately 250 to 280 degrees, to pre-

vent any possibility of the asphalt bleeding or running. Any board cement used should be of waterproof type.

The application of the Presdwood to furring strips (drawing No. 4) may be made using 4d. casing head nails or brass countersunk head screws, each spaced approximately 4 to 5 inches apart through the body of the board, and 3 inches apart around the edges.

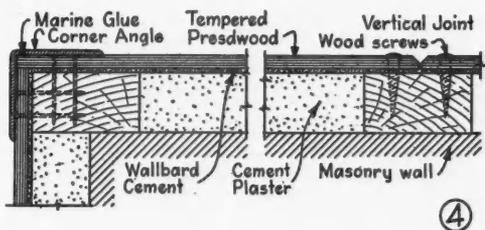
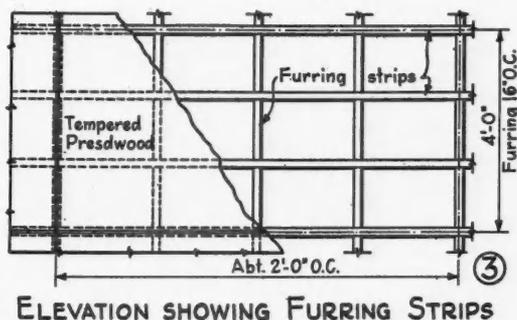
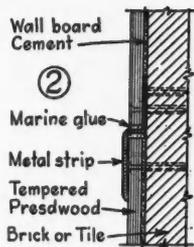
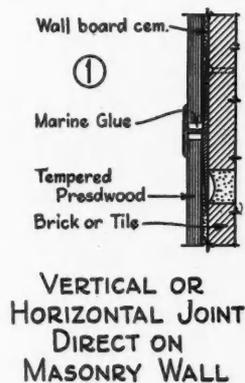
Joints of the board can be taken care of either with extruded aluminum moulds, stainless steel moulds, or slightly beveling the edge of each board to produce a shallow V-joint. If the metal mouldings are used, the joints should be thoroughly sealed with waterproof marine glue. The glue may be applied to each side of the metal mouldings prior to its application, or the edge of the board may be coated in the case of the V-joint. All joints should be made directly over wood supports.

As a fire precaution, as well as obtaining a more satisfactory job, the space between the furring strips should be filled with cement plaster flush with the surface of the strips (See drawing No. 4). In this treatment it is possible to combine both mechanical attachment, and an adhesive to hold the board in place.

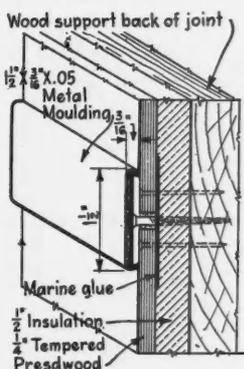
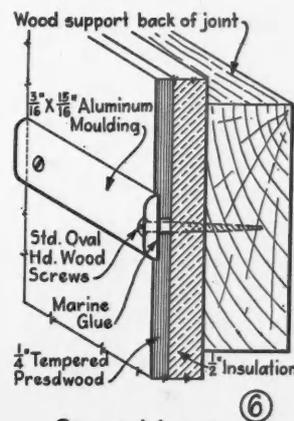
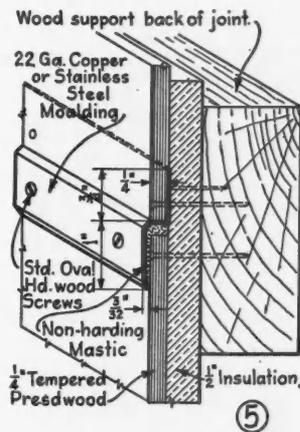
Lee Theatre remodeling costs were less than \$2,000. Robert Boller of Kansas City was the architect.



BEFORE view of this Clinton, Mo., theatre shows a building of the style typical in many communities where these relics of the nineties are still sound within but sadly in need of a face-lifting. Heavy cornice and drab exterior are not in keeping with today's standard of showhouses.



METAL MOULDINGS FOR BOARD APPLIED OVER INSULATION



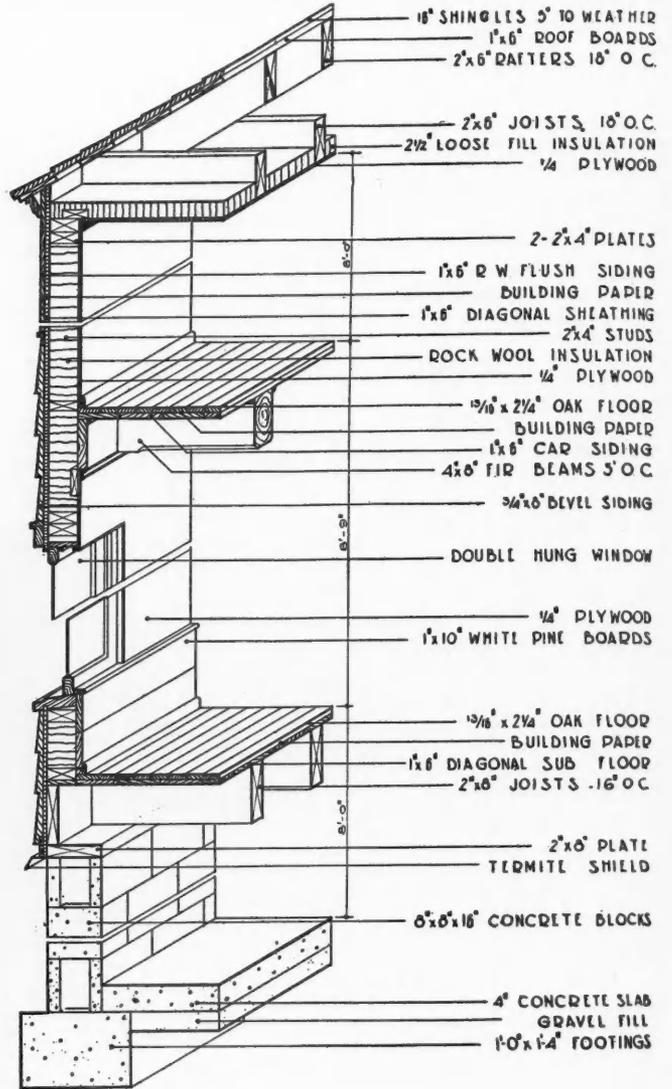
AFTER a treatment of broad, colorful surfaces, brightly lighted at night, the structure has been given new business character at reasonable cost. The drawings above illustrate details of applying the pressed-wood panels as used on this and similar types of commercial buildings.

Cost Analysis of an All-Wood House*

Purdue Housing Research Project,
House Number 5; McNally & Quinn,
Architects; Roland Powell, Builder;
Nat. Lumber Mfrs. Assn., Sponsor

By C. PAUL ULMER

Technical Assistant Purdue Housing Research Project



TYPICAL WALL AND FLOOR SECTION

THE architectural design of House No. 5 on the Purdue Housing Research Campus is based upon Early American precedent which no doubt meets the ideas of many people who desire a small house. In construction the house is of a type which has been commonly used for many years, except for the replacing of interior plaster with plywood.

The general contract cost of this house was \$4,986, exclusive of the cost of the land, grading, general site development, and architect and other fees.

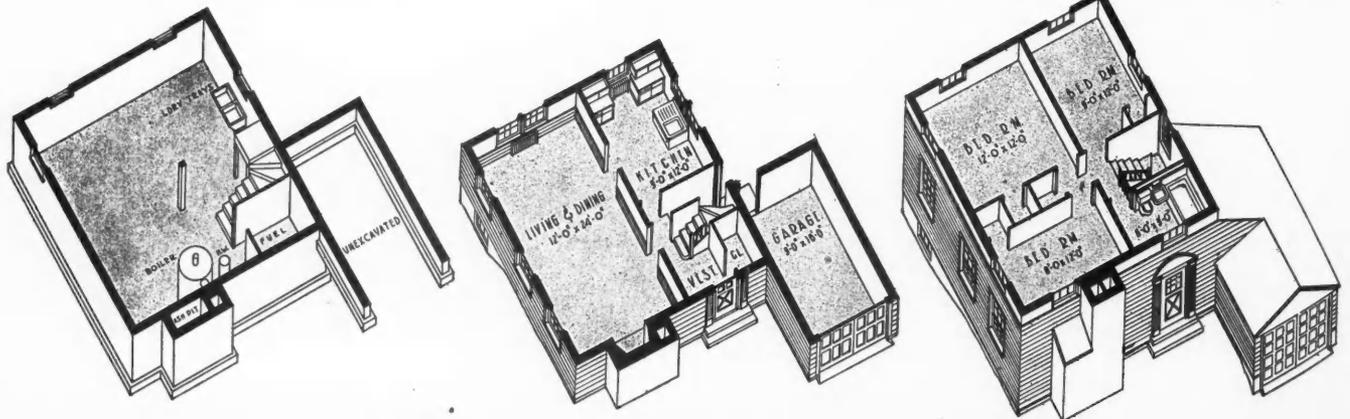
Construction work was begun on April 1, 1936. The house was substantially completed July 31, 1936. Con-

*Reproduced by permission from "Home Information" Bulletin Better Homes in America, Purdue Univ., Lafayette, Ind.

struction covered a period of 122 days.

The site was level and free from trees, stumps or brush. The basement was rough excavated to a depth of about 4 feet, using horses and a scoop. Finish excavation and a trench 16" x 10" for footings were dug with pick and shovel. Ninety-six cubic yards of earth were moved at a cost of \$0.51 per cubic yard.

Concrete footings 16" x 10" were poured in the trench, without the use of forms. The mix was specified as 1 part cement, 3 parts sand and 5 parts stone or gravel. The quantity of No. 6 premixed gravel used indicates the mix to have been about 1:10. The same type of



footing used for the basement walls was used also under the garage walls where there is no basement. The footings required six cubic yards of concrete which cost \$7.77 per cubic yard or \$0.28 per lineal foot of footing.

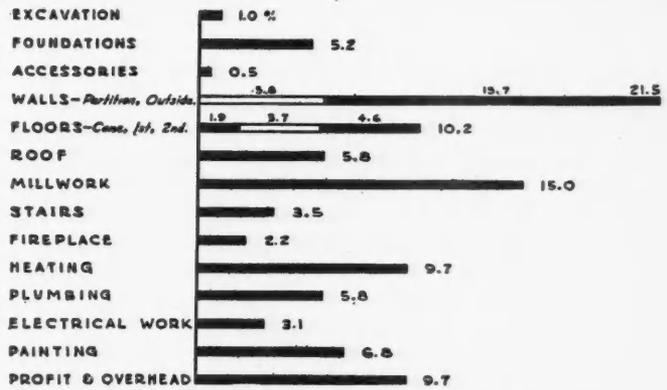
Basement walls were concrete blocks of standard 8" x 8" x 16" size laid up with prepared mortar. Full size and half size corner blocks were used. The mortar was mixed with No. 3 sand, water being added in small quantities to bring the mix to a correct working consistency. The entire basement wall of 740 square feet was laid up complete to the sill line in one day. This day's work included 28 hours by skilled masons, 15 hours by mason's helpers, and 10½ hours by unskilled labor. Foundations under the garage walls were laid similarly and to a height of 3'4" to the sill line.

The exterior of the basement walls below grade were damp-proofed by the addition of two coats of asphalt emulsion brushed on. Damp-proofing covered 433 square feet of wall and cost \$0.026 per square foot.

In all 860 square feet of concrete block wall were laid. This work cost \$0.226 per square foot. Where damp-proofing was applied the total cost of the wall was \$0.252 per square foot. The inside surfaces of the walls were unfinished.

Post and girder construction was used in the basement as a support for the first floor joists and bearing partition. The girder was composed of three 2" x 10" planks spiked together. Joist bearing strips, 2" x 4", were spiked on both sides of the girder near the bottom. The girder was supported at either end by the walls and at the center by a 6" x 6" fir post resting on a concrete footing. The post and girder installed cost \$10.90.

ANY information as to plans and specifications for this house may be obtained by addressing McNally & Quinn Architects, 10 South LaSalle Street, Chicago, Illinois.



Relative Cost Percentages of Construction

Concrete floors in the basement and garage were 4" thick and laid without reinforcement. The concrete specified was the same as for the footings. The mix attained however, was 1:5. The basement slab was laid on a 4" gravel fill which cost \$0.03 per square foot. The fill under the basement floor was laid directly on solid earth. The

HOUSE No. 5 CONSTRUCTION COST SUMMARY
PURDUE HOUSING RESEARCH PROJECT

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Labor	Material	Labor & Material	Profit & Overhead	Sub-Total	Total Cost	Percent of Cost
EXCAVATION			\$ 48.40		\$ 48.40			\$ 48.40	1.0
FOUNDATIONS	FOOTINGS		8.80	37.80	46.60		46.60		
	WALLS		71.85	132.85	204.70		204.70		
	GIRDER & POST		2.70	8.20	10.90		10.90	262.20	5.2
CONCRETE FLOORS	FILL	BACKFILL	11.20	8.95	20.15		20.15		
	CONCRETE WORK	MIXING & POURING	18.25	57.30	75.55		75.55	85.70	1.9
ACCESSORIES	STEPS, ETC.		12.70	11.35	24.05			24.05	0.5
OUTSIDE WALLS	FRAMING		48.00	87.85	135.85		135.85		
	SHEATHING		41.70	84.10	125.80		125.80		
	SIDING	FLUSH & BEVEL	117.90	185.65	303.55		303.55		
	INSULATION		8.40	34.35	42.75		42.75		
	INTERIOR FINISH	PLYWOOD & BOARD	58.95	116.05	175.00		175.00	783.05	15.7
PARTITIONS	FRAMING		30.10	35.05	74.15		74.15		
	WALL FINISH	PLYWOOD & BOARD	76.95	135.20	212.15		212.15	286.30	5.8
1ST FLOOR	FRAMING	JOIST, SUB-FLOOR, ETC.	23.30	45.25	68.55		68.55		
	WOOD FLOORING		25.05	39.85	64.90		64.90		
	LINOLEUM	LINOLEUM & BASE	8.85	42.05	50.90		50.90	184.35	3.7
2ND FLOOR	FRAMING	JOIST, SUB-FLOOR, ETC.	34.30	74.80	109.10		109.10		
	CEILING FINISH	PLYWOOD & BOARD	7.30	16.25	23.55		23.55		
	WOOD FLOORING		29.95	50.30	80.25		80.25		
	LINOLEUM	LINOLEUM & BASE	2.25	13.90	16.15		16.15	228.85	4.6
ROOF	FRAMING	JOIST & RAFTERS	27.50	90.60	118.10		118.10		
	ROOFING	SHINGLES, FLASHING	24.75	58.60	83.35		83.35		
	CEILING FINISH	PLYWOOD	20.70	54.75	75.45		75.45		
	INSULATION		1.80	9.45	11.25		11.25	288.15	5.8
MILLWORK	DOORS	COMPLETE	54.90	229.75	284.65		284.65		
	SASH	COMPLETE	55.80	150.00	205.80		205.80		
	TRIM	MOLDS, SHELVING, ETC.	30.85	4.70	35.55		35.55		
	CABINETS	KITCHEN & BATH	8.10	76.00	84.10		84.10		
	SCREENS	COMPLETE	12.15	64.00	76.15		76.15		
	SHUTTERS	COMPLETE	8.55	56.85	65.40		65.40	781.65	15.0
	STAIRS	1ST STORY	FRAME & FINISH	53.55	84.50	138.05		138.05	
HEATING	CHIMNEY †	BRICK WORK	28.25	38.50	66.75		66.75		
	FUEL BIN	FRAMING	4.95	11.65	16.60		16.60		
	ROUGH	STEAM PIPE, ETC.	28.15	25.45	53.60	18.90	72.50		
	FINISH	FURNACE & RADIATORS	21.40	227.80	249.20	85.80	335.00	484.35	9.7
FIREPLACE	CHIMNEY †, MANTEL		33.20	75.45	108.65		108.65	108.65	2.2
PLUMBING	ROUGH		40.65	54.95	95.60	28.85	124.45		
	FINISH	FIXTURES & FITTINGS	17.55	110.00	127.55	28.60	156.15	290.60	5.8
ELECTRICAL	ROUGH		25.50	35.10	60.60	18.25	78.85		
	FINISH	PLATES, FIXTURES	6.00	51.60	57.60	17.20	74.80	153.65	3.1
PAINTING	EXTERIOR	3 COATS	45.00	38.55	83.55	48.10	131.65		
	SHUTTERS, SCREENS	3 COATS	21.00	0.10	21.10	17.10	38.20		
	INTERIOR	STAIN, SHELLAC, WAX	70.50	29.20	99.70	57.45	157.15	336.00	6.8
TOTALS			\$1943.80	\$2228.10	\$4171.90	\$ 329.75		\$4501.65	
General Contractor's Overhead and/or Profit								\$ 484.35	9.7
GRAND TOTAL AND CONTRACT PRICE								\$4986.00	100.0

* Profit and overhead included in material cost.
† One-half chimney cost charged to heating and one-half to fireplace

BREAKDOWN OF LABOR COST
HOUSE NO. 5 PURDUE HOUSING RESEARCH PROJECT

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Labor Classification	Total Hours	Wage /hr.	Cost	Job Cost	Sub-Total	Total
EXCAVATION	BASEMENT	PICK & SHOVEL	Common	50	.40		\$ 20.00		\$ 48.40
		TEAM & MAN		16½	1.00		16.50	36.50	
	FOOTINGS	PICK & SHOVEL	Common	20½	.40			11.90	
FOUNDATIONS	FOOTINGS	CONCRETE WORK	Common	22	.40			8.80	\$ 93.38
	WALLS	MASONRY	Mason	85	1.30	42.00			
			Mason's helper	15	.80	22.00			
			Common	16½	.40	6.60	60.00		
		DAMP-PROOFING	Common	8½	.40		3.40		
		BACKFILLING	Mixed	17			7.85	71.85	
	GIRDER & POST	FRAMING	Carpenter	3	.90			2.70	
CONCRETE FLOORS	FILL	SHOVEL WORK	Common	28	.40			11.20	\$ 29.45
	CONC. SLABS	MIXING & POURING	Common	18½	.40	7.40			
			Skilled	7	.75	5.25	12.65		
			FINISH	Skilled	7½	.75		5.60	
ACCESSORIES	STEPS, ETC.		10½					12.70	
OUTSIDE WALLS	FRAMING	SILLS, PLATES, STUDS, ETC.	Carpenter	46	.90	41.40			
			App. Carpenter	12	.40	4.80	46.20		
			Carpenter	2	.90		1.80	48.00	
	SHEATHING		Carpenter	36½	.90	32.85			
			App. Carpenter	20½		8.85		41.70	
	SIDING	FLUSH BOARDS	Carpenter	64	.90		57.00		
		BEVELED SIDING	Carpenter	67	.90		60.30	117.00	
	INSULATION	INSTALLATION	Common	21	.40			8.40	
	INTERIOR FINISH	PLYWOOD & BOARD	Carpenter	65½	.90			58.95	274.05
	PARTITIONS	FRAMING	STUDS, PLATES, ETC.	Carpenter	41	.90	36.90		
			App. Carpenter	5½	.40	2.20		39.10	
WALL FINISH		PLYWOOD & BOARD	Carpenter	85½	.90			76.95	116.05
1ST FLOOR	FRAMING	JOIST, BRIDGING, ETC.	Carpenter	18½	.90	16.65			
			App. Carpenter	2½	.40	1.00	17.65		
			Carpenter	4½	.90	4.05			
			App. Carpenter	4	.40	1.60	5.65	23.30	
	FLOORING	HARDWOOD	Carpenter	22	.90	19.80			
			App. Carpenter	7½	.40	3.00	25.05		
		SANDING	Carpenter	2½	.90	2.25			
			App. Carpenter	7½	.40	3.00	25.05		
LINOLEUM BASE	Carpenter	6		6.00					
LINOLEUM	Skilled	3	.75	2.25	8.85	38.90	57.20		
2ND FLOOR	FRAMING	EXPOSED BEAMS	Carpenter	17½	.90		15.75		
			Carpenter	11½	.90		10.35		
			Carpenter	6	.90	5.40			
	App. Carpenter	7	.40	2.80	8.20	34.30			
	CEILING FINISH	PLYWOOD	Carpenter	8	.90			7.20	
	FLOORING	HARDWOOD	Carpenter	26	.90	23.40			
			Carpenter	3½	.90	3.15			
		App. Carpenter	8½	.40	3.40	29.05			
		Carpenter	2		1.10				
		LINOLEUM	Skilled	1½	.75	1.15	2.25	32.20	73.70
ROOF	FRAMING	JOISTS, RAFTERS, ETC.	Carpenter	19	.90	17.10			
			App. Carpenter	5½	.40	2.30	19.40		
			Carpenter	9	.90		8.10	27.50	
	ROOFING	SHINGLES	Carpenter	27½	.90			24.75	
	CEILING FINISH	PLYWOOD	Carpenter	23	.90			20.70	74.75
INSULATION	INSTALLATION	Carpenter	2	.90			1.80		
MILLWORK	DOORS	SET FRAMES	Carpenter	18	.90		16.20		
			Carpenter	48	.90	38.70	54.90		
	WINDOWS	SET FRAMES	Carpenter	17	.90		15.30		
			Carpenter	45	.90	40.50	55.80		
	TRIM	CEILING & CORNER MOLD	Carpenter	21½	.90		19.60		
			Carpenter	12½	.90		11.25	30.85	
	CABINETS	SET CABINETS	Carpenter	9	.90			8.10	
	SCREENS	HANGING & HARDWARE	Carpenter	13½	.90			12.15	
	SHUTTERS	HANGING	Carpenter	9½	.90			8.55	170.35
	STAIRS	1ST STORY	ROUGH	Carpenter	16	.90		14.40	
FINISH			Carpenter	43½	.90		39.15	53.55	
BASEMENT	COMPLETE		8	.90			7.20	60.75	
HEATING	CHIMNEY	MASONRY	Mason	14½	1.20	17.40			
			Mason's helper	11½		8.60	26.00		
		SCAFFOLDING	Carpenter	2½	.90		2.25	28.25	
	FUEL BIN	FRAMING	Carpenter	5½	.90			4.95	
			STEAM PIPE	Steam fitter	17½	.90	15.75		
	PIPE & FITTINGS		Helper	31	.40	12.40		28.15	
			Steam fitter	6½	.90	5.85			
			Helper	11	.40	4.50	10.35		
			Steam fitter	6½	.90	5.85			
			Helper	12	.40	5.20	11.05	21.40	82.75

* One-half labor cost charged to heating and one-half to fireplace

garage was back filled to the required elevation and allowed to settle for two weeks before the gravel fill was placed and the slab poured.

The floors covered an area of 642 square feet and required 8 cubic yards of concrete. The cost was \$9.44 per cubic yard or \$0.117 per square foot. With the fill the cost per square foot of the completed floors was \$0.147.

Concrete steps at the front door were built on a foundation of concrete blocks. At the kitchen entrance a 3 foot square concrete slab 4" thick was poured on earth and between forms as a walkway to the garage. These items cost \$24.05.

A termite shield of 20 gauge galvanized iron was laid over the masonry wall extending beyond the wall edge 4", the outer two inches being bent downward at 45°. A 2" x 8" plank sill was laid over the metal and embedded in cement grout, but not bolted to the foundation wall.

Balloon type wood framing was used. The studs, 2" x 4", No. 1 Yellow Pine, extended from a plate nailed over the sub-floor of the first story to a double plate at the eaves on which the roof rafters bear. Studs were set 18" center

FIVE houses erected for the purposes of research by the Purdue Housing Research Project were completed within the first six months of 1936. The house described herein is House No. 5.

to center to present proper spacing for the interior finish of 36" wide plywood sheets. Headers or lintels over the door and window opening were doubled 2" x 4"s and 2" x 6"s. Second floor joists were carried on 1" x 4" ribbon strips notched into the wall studs. Blocking was provided between studs as required to form a backing for the plywood finish.

Framing of the outside walls including the garage required 1,700 board feet of lumber and cost \$0.06 per square foot of gross wall area.

No. 2 Yellow Pine, 1" x 8", ship-lap sheathing was applied diagonally and solid over the outside of the studing. The quantity required to cover 1,600 square feet of surface was 2,300 board feet. This indicates a discrepancy of 30 percent between the board feet of lumber purchased and used. Of this, 12.6 percent was due to the difference in nominal and actual size of the lumber and the lap and 17.4 percent to waste in cutting and diagonal application. On the basis of 1,600 square feet covered the sheathing cost \$0.078 per square foot.

Siding was used as an exterior

NEXT MONTH the Reinforced Concrete house designed by Burnham Bros. & Hammond, Inc., Architects, built by Charles Gambsky Co., Contractors and sponsored by the Portland Cement Assn. will be presented in a similar cost analysis.

HOUSE NO. 5 BREAKDOWN OF LABOR COST CONTINUED

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Labor Classification	Total Hours	Wage nr.	Cost	Job Cost	Sub-Total	Total
FIREPLACE	CHIMNEY*							28.25	
	FINISH	MANTEL	Carpenter	5 1/2	.90			4.95	33.20
PLUMBING	ROUGH	EXCAVATION	Common	5	.40		2.00		
		SOIL PIPE	Plumber	18	.90	16.20			
			Plumber's helper	16	.40	6.40	22.60		
		WATER PIPE	Plumber	12	.90	10.80			
			Plumber's helper	5	.40	2.00	12.80		
		GAS PIPE	Plumber	2 1/2	.90	2.25			
		Plumber's helper	2 1/2	.40	1.00	3.25	40.65		
	FINISH	FIXTURES & FITTINGS	Plumber	13 1/2	.90	12.15			
			Plumber's helper	13 1/2	.40	5.40		17.55	58.20
	ELECTRICAL	ROUGH	BX CABLE	Electrician	19	1.00		19.00	
SWITCH BOXES			Electrician	5	1.00		5.00		
FUSE BOX			Electrician	1 1/2	1.00		1.50	25.50	
FINISH		SWITCHES & PLATES	Electrician	2	-1.00		2.00		
		FIXTURES	Electrician	4	1.00		4.00	6.00	31.50
PAINTING	EXTERIOR	PRIME COAT	Painter	15	1.00		15.00		
		2ND COAT	Painter	15 1/2	1.00		15.50		
		3RD COAT	Painter	14 1/2	1.00		14.50	45.00	
	SHUTTERS INTERIOR	SCREENS, ETC.	Painter	21	1.00			21.00	
		STAIN WALLS & CEILING	Painter	7	1.00		7.00		
		FILL & STAIN FLOORS	Painter	8 1/2	1.00		8.50		
		SHELLAC WALLS, CLG., FLOOR	Painter	34	1.00		34.00		
		WAX WALLS, CEILING, FLOOR	Painter	21	1.00		21.00	70.50	136.50
TOTAL LABOR COST									\$1343.80

* One-half labor cost charged to heating and one-half to fireplace

BREAKDOWN OF MATERIAL COST

HOUSE NO. 5 PURDUE HOUSING RESEARCH PROJECT

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Material Used	Quantity	Cost	Job Cost	Sub-Total	Total	
FOUNDATIONS	FOOTINGS	CONCRETE MATERIALS	Cement	25 sacks	\$ 18.75			\$	
			No. 6 Gravel	3130 lb.	15.55				
			Mixer		8.50		37.80		
	WALLS	MASONRY	Prepared Mortar	18 sacks	11.70				
			Cement	6 sacks	4.50				
			No. 3 sand	5000 lb.	2.50				
			8"x16" Conc. Block	990	106.65	125.85			
			DAMP-PROOFING	Asphalt Emulsion	10 gal.		7.50	132.85	
	GIRDER & POST	FRAME	6"x6" fir	8 lin. ft.	1.45				
			2"x10" & 4" No. 1 Y.P.	150 bd. ft.	6.75		8.20	178.85	
CONCRETE FLOORS	FILL	FILL MATERIALS	Gravel	17890 lb.			8.95		
			CONCRETE SLABS	CONCRETE MATERIALS	Cement	53 sacks	39.75		
					No. 6 Gravel	31650 lb.	15.80		
	Mixer		1.75		57.30	66.25			
ACCESSORIES	STEPS, ETC.	Miscellaneous					11.35		
OUTSIDE WALLS	FRAMING	TERMITE SHIELD	20 Gauge G.I.	120 lin. ft.		10.00			
		SILLS	2"x5" No. 1 Y.P.	216 bd. ft.	8.65				
			Prepared Mortar	2 sacks	1.30	9.95			
		STUDDING, ETC.	2"x4" No. 1 Y.P.	1475 bd. ft.	59.00				
			16 & 8d Nails	200 lb.	9.00	68.00	87.95		
		SHEATHING	1"x8" No. 2 Y.P.	2280 bd. ft.	82.10				
		Nails	50 lb.	2.00		84.10			
	BUILDING PAPER		2 rolls			7.50			
	SIDING	T. & G. FLUSH BDS.	1"x6" Redwood	737 bd. ft.	55.25				
			Belt Coarse	72 lin. ft.	2.90				
			W.P. Quoins	43 bd. ft.	14.20				
			Crown Molds		9.50				
Nails			23 lb.	1.00	82.45				
			23 lb.	1.00	85.70	178.15			
INSULATION	LOOSE TYPE	Rock Wool	1510 lb.			34.35			
INTERIOR FINISH	PLYWOOD & BOARD					116.05	508.10		
PARTITIONS	FRAMING	STUDS, PLATES, ETC.	2"x4" No. 1 Y.P.	807 bd. ft.	32.30				
			16 & 8d Nails	55 lb.	2.75		35.05		
	WALL FINISH	PLYWOOD & BOARD					135.25	170.25	
1ST FLOOR	FRAMING	JOISTS, ETC.	2"x8" No. 1 Y.P.	585 bd. ft.	22.40				
			Nails	12 lb.	.60	24.00			
			SUB-FLOOR	1"x6" No. 2 Y.P.	555 bd. ft.	59.00			
			B'dg. Paper	1 roll	1.25	31.25	45.25		
	FLOORING	HARDWOOD	1 1/4"x2 1/4" Oak	478 bd. ft.	80.00				
			Nails	5 lb.	.25	39.85			
			LINCLEUM BASE	1"x2" T. & G Pine	150 bd. ft.	7.50			
			LINOLEUM	Std. Gauge	12 sq. yd.	34.55	42.05	81.90	127.15
2ND FLOOR	FRAMING	JOIST, ETC.	2"x8" No. 1 Y.P.	243 bd. ft.		9.70			
			FIR BEAMS	2" & 4"x5" Fir	358 bd. ft.		33.75		
			SUB-FLOOR	1"x6" No. 2 Y.P.	285 bd. ft.	10.60			
				1"x6" Car Siding	363 bd. ft.	19.40			
				Paper and Nails		1.25	31.35	74.80	

HOUSE NO 5 BREAKDOWN OF MATERIAL COST CONTINUED

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Material Used	Quantity	Cost	Job Cost	Sub-Total	Total
2ND FLOOR Continued	CEILING FINISH	PLYWOOD					16.25	
	FLOORING	HARDWOOD	1 1/2"x2 1/4" Oak	247 bd. ft.	20.55			
			1 1/2"x2 1/4" Maple	106 bd. ft.	16.20			
			1"x3" E. G. Pine	144 bd. ft.	12.95			
			Nails	10 lb.	50	50.20		
		LINOLEUM BASE	1"x3" T. & G. Pine	50 bd. ft.	2.50			
	LINOLEUM	Standard Gauge	4 sq. yd.	11.40	13.90	64.10	155.15	
ROOF	FRAMING	JOISTS, RAFTERS, ETC.	2"x6" No. 1 Y.P.	1612 bd. ft.		64.50		
		SHEATHING	1"x6" No. 2 Y.P.	725 bd. ft.		26.10	90.60	
	ROOFING	SHINGLES	1b Cedar Shingles	38 bdles.	48.45			
		Galv Nails	26 lb	2.25	50.80			
	FLASHING	Metal				7.80	58.60	
	CEILING FINISH	PLYWOOD					54.75	
	INSULATION	GRANULATED TYPE	Rock Wool	14 bags			9.45	213.40
MILLWORK	DOORS	FRAMES, DOORS, GAR. DR.	W.P Fir Panels	16		190.75		
		HARDWARE	Bronze			39.00	229.75	
	WINDOWS	FRAMES, SASH, WEIGHTS	White Pine	16		135.00		
		HARDWARE	Bronze			7.00		
		LOUVRE	Copper Back			8.00	150.00	
		TRIM	Molds, Sheiving, etc				4.70	
		CABINETS	Kitchen & Bath	5			76.00	
	SCREENS	DOOR AND WINDOW		16		45.00		
			Storm Door	2		15.00		
			Hardware			4.00	64.00	
	SHUTTERS		Pine				56.85	581.30
STAIRS	1ST STORY	ROUGH	2"x8" No 1 Y P			4.50		
	FINISH	Oak & Cypress				80.00	84.50	
	BASEMENT	COMPLETE	Yellow Pine				30.45	114.95
HEATING	CHIMNEY *	MASONRY	Common Brick	1030	13.90			
			Prepared Mortar	6 1/2 sacks	4.25			
			Cement	1 sack	.75			
			No. 3 sand	2265 lb.	2.15			
			Flue tile	14	15.55			
			Cleanout	1	1.60	38.20		
		SCAFFOLDING	2"x4" No. 1 Y.P.	32 bd. ft.		1.30	39.50	
	FUEL BIN	FRAMING	2"x4" No. 1 Y.P.	64 bd. ft.	2.55			
			1"x6" No. 2 Y.P.	100 bf. ft.	3.00			
			Coal Chute	1	5.80		11.65	
PIPE & FITTINGS	STEAM PIPE	1 1/2 to 2" Steel Pipe				25.45		
EQUIPMENT		Furnace, etc			120.00			
	Radiators				100.80	220.80	297.40	
FIREPLACE	CHIMNEY *						39.50	
	FINISH	BRICK WORK	Fire Brick & Clay	150	10.25			
		Damper, etc.	3 pes.	10.70	20.95			
	MANTEL	Cypress	4 pes	15.00	35.95	75.45		
PLUMBING	ROUGH	SOIL PIPE, ETC.	Std. C.I.			29.65		
		WATER PIPE	3/4" G.C.I.		15.00			
		1/2" G.C.I.		7.20	22.20			
	GAS LINE	Black Pipe			3.10	54.95		
	FINISH	FIXTURES & FITTINGS	Tub, Lav., Sink—Steel					
		Wat. Closet—Vit. China			86.70			
		Laundry Tubs			3.30			
		Gas Water Heater			15.00	110.00	164.95	
ELECTRICAL	ROUGH		BX Cable	610 lin. ft.	20.70			
			1/2" Conduit	10 lin. ft.	2.25			
			Outlet Boxes	54	5.06			
			Transformer	1	1.60			
			Fuse & Switch	1	5.50		35.10	
	FINISH		Switch & Plates	13	2.45			
			Duplex Outlets	21	4.55			
			Door Bells	2	.95			
			Fixtures	15	43.65		51.60	86.70
PAINTING	EXTERIOR	PRIME COAT	Tung Oil	3 gal.	12.00			
			Lead & Oil	1 gal.	2.45	14.45		
		2ND & 3RD COATS	Lead & Oil	1 1/2 gal.	3.70			
		Mixed Paint	7 1/2 gal.	20.40	24.10	38.55		
	SHUTTERS	SCREENS, ETC.	Mixed Paint	3 gal.			9.10	
	INTERIOR	FLOORS, WALLS, CEILINGS	Wax	2 1/2 gal.	8.15			
			Filler	20 lb.	3.40	11.55		
Shellac			6 gal.	11.40				
		Stain	2 1/2 gal.	6.25	17.65	29.20	76.85	
TOTAL MATERIAL COST							32928.10	

* One-half materials and cost charged to heating and one-half to fireplace

finish and was applied after the sheathing had been covered with tar paper. An area of 934 square feet below the sills of the second story windows was covered with 3/4" x 8" redwood beveled siding, exposed 6" to the weather. Redwood, 1" x 6", tongue and grooved boards were used on the remaining wall area of 530 square feet. For the 1,500 square feet of surface covered the cost of the siding was \$0.17 per square foot.

Painting the exterior cost \$0.07 per square foot.

The outside walls were insulated with 2 1/2 inches of loose fill rock wool, held in place between the studs by tacking to the sheathing. Insulating 1,315 square feet of wall cost \$0.033 per square foot.

Plywood in general was used as the interior finish. White pine, gum, birch and fir, 3 ply, 1/4" thick and in 6 foot lengths were used except in the case of fir where 8 foot lengths were obtained. All plywood was nailed securely to studs and blocking.

The living room walls have a two-foot wainscot of 1" x 10" V joint (Continued on page 138)

COST BREAKDOWN BY TRADES

1. Excavation and backfill, \$68.55, 1.4%; 2. Masonry, \$507.35, 10.2%; 3. Lumber and supplies, \$812.35, 16.3%; 4. Millwork, \$630.80, 12.6%; 5. Plywood and interior finish, \$322.25, 6.5%; 6. Carpenter Labor, \$826.75, 16.6%; 7. Insulation, \$54.00, 1.1%; 8. Hardware, \$50.00, 1.0%; 9. Linoleum, \$49.35, 1.0%; 10. Heating, \$400.00, 8.0%; 11. Plumbing, \$290.60, 5.8%; 12. Electrical work, \$153.65, 3.1%; 13. Painting, \$336.00, 6.7%; 14. Profit and/or overhead—general contractor only, \$484.35, 9.7%; Total, \$4,986.00, 100.0%.

FRONT COURT of the 1212 Grant Avenue apartments completed recently in New York City by Samuel Minskoff. Floor plan on following page shows unusual arrangement which provides extra light in every room. Horace Ginsbern, architect.



Double-Court Apartments

LESSONS learned during the depression are playing a large part in the planning of new apartment buildings. Those now being built are stressing economy of design, economy of operation, maximum light and air in every room, maximum comfort and convenience. The 50-apartment building illustrated on this and the following two pages is a typical illustration of a large volume of work now being done in certain parts of New York City, particularly the Bronx. It was built by Samuel Minskoff, one of the most active operators in this type of work in the country. The design of the structure was by Architect Horace Ginsbern, but purchase of all materials and equipment and control was in the hands of the builder.

Extra Daylight in Every Room. Automatic Elevator, Oil Burner, Incinerator, Reduce Operating Costs

This building, like most of the current crop of Bronx apartments is six stories in height and is served by one automatic elevator. This automatic feature eliminates the need for an elevator operator, which is an important item in maintenance.

Another feature this building has in common with a large number of other new apartment buildings in the New York area is its corner windows. These admit maximum amount of light and air, and in conjunction with the double-court arrangement of the building pro-



6-STORY, 50-family apartment building at 1212 Grant Avenue, New York City. Samuel Minskoff, builder.

BELOW: Attractive arched opening separates dinette from the well equipped kitchen.



vide an unusually good exposure for practically all the rooms. The corner window idea seems to have caught the fancy of a great many builders, so much so that the idea is probably being overdone.

Study of the floor plan on page 98 shows how skillfully this building, which is located at 1212 Grant Avenue in the Bronx, has been laid out to take advantage of a corner site and make use of every inch of space. The front and rear courts almost cut the building in two. This arrangement allows light and air in many rooms which ordinarily would not be so served and also permits a large window in the hall.

The elevator and stairs are centrally located and the amount of area used for halls is remarkably small considering the size of the building and the efficiency of its operation.

Apartments in the building are called 2½, 3½ and 4½-room units. This is another new development in apartment practice, most of the builders building small apartments ranging from 1½ to 4½ rooms in size.

Another very important feature of this structure that reduces operating costs is the incinerator which is indicated on the plan at the left end of the hall. There is an incinerator opening on each floor which is reached by means of a small service room opening off the hall. This service room has a tile floor and a tub with hot and cold water. Tenants deposit their own garbage and rubbish which drops immediately to the fire chamber in the basement. This does away with practically all waste and garbage collection by the janitor, the only work involved being the cleaning of ashes from the incinerator about once a week.

Janitorial work is further reduced by the use of an oil burner which eliminates expensive labor that was formerly involved in apartment operation.

"Anaconda Copper Products sell these homes for us . . .

100% rustproofing is certainly what the home-buyer wants"

—Geo. W. Statzell, Inc.



Two of the many popular copper-roofed homes in Colonial Park development, Springfield, Pa. Their rustproof construction attracted crowds and led to quick sales.

Philadelphia suburban project features Anaconda Copper in advertising—drew 8,167 visitors opening day

THE Springfield Land Company has had convincing proof of the "sale-ability" of Anaconda Economy Copper Roofing and other non-rust products for the home!

The houses shown here were a success from the start. Designed right, built right, advertised on the basis of their permanence, they were eagerly seen and bought at prices which assured the profit to which the builders were rightfully entitled. *Their 1937 program at Colonial Park will feature similarly-built 3-bedroom, 1-bath homes at \$8500.00.*

Let us tell you about Anaconda products—especially about the copper roofing—lighter weight (10 oz. per sq. ft.) narrower sheets (13¾" between seams). What Anaconda Copper did for these builders it can do for you.

87238

Colonial Park Homes have complete installation of ANACONDA METALS for:

- Roofing—10 oz. Economy Copper (Standing seam)
- Gutters—16 oz. Copper
- Spouts—16 oz. Copper
- Window Flashings—"Electro-Sheet" Copper, Kraft-backed
- Copper Tubes for Hot and Cold Water Lines
- Copper Tubes for Entire Heating System
- All Valves and Fittings

Anaconda Copper



THE AMERICAN BRASS COMPANY, General Offices: WATERBURY, CONNECTICUT
Offices and Agencies in Principal Cities • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

2½ 3½ 4½-Room Apartments with Corner Windows, Dropped-Floor Living Rooms, No Waste Space, Very Popular.

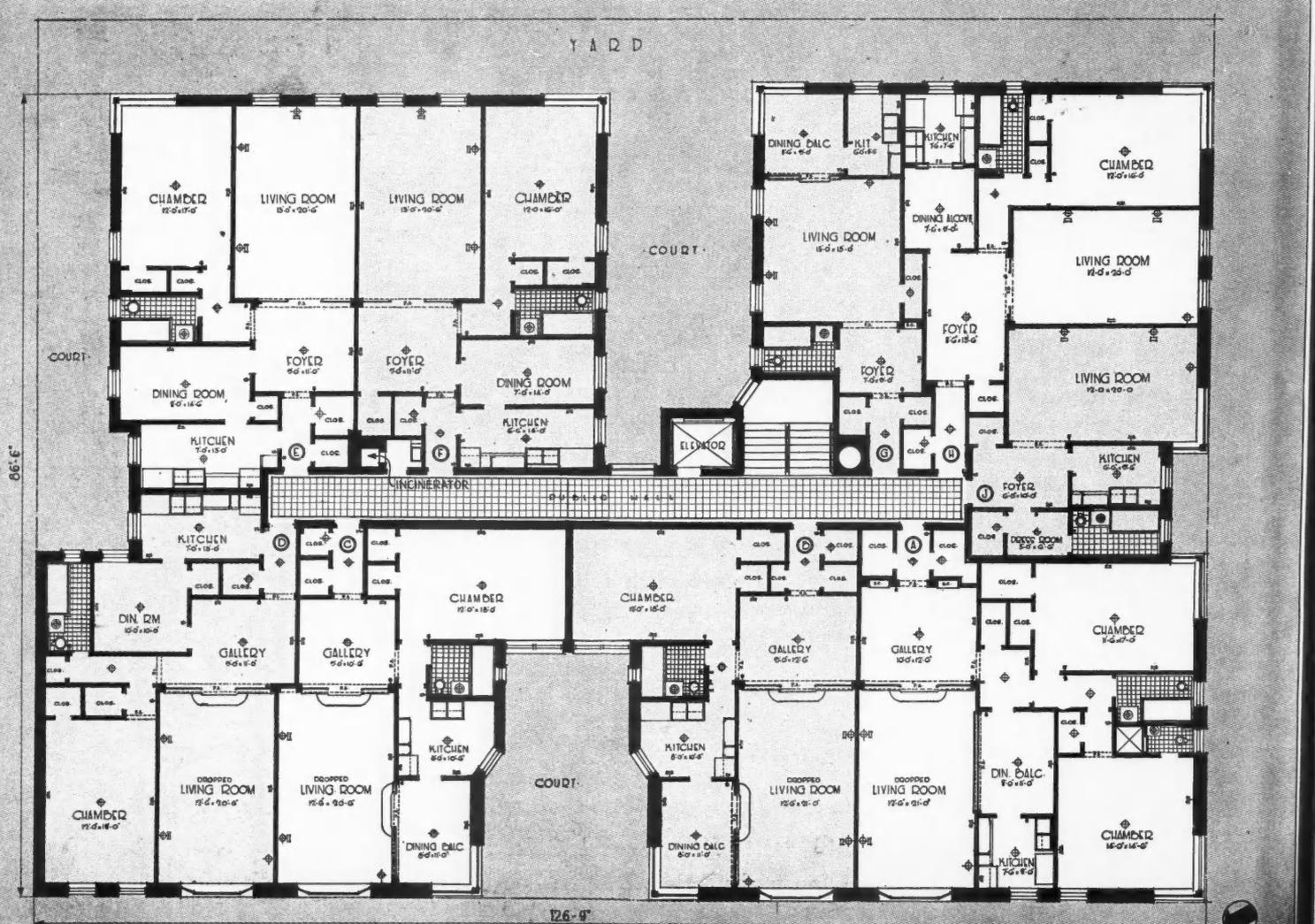


THE DINING balcony with corner windows, shown at left, is one of the popular features. Floor plan below illustrates effective manner in which double-court arrangement brings light into every room. There is a minimum amount of waste space in this arrangement.

The individual apartments are attractive, spacious and well equipped. Most of the living rooms are dropped, giving an impressive and spacious effect. In a number of cases a dining balcony which is separated from the living room by an ornamental iron railing is provided. The kitchens are modern and compact with the latest types of equipment. Interior finish of the apartments is kept very simple. There is very little trim. Radiators are concealed in the walls beneath the windows.

A partial list of products and materials includes the following:

- STEEL BUCKS AND DOORS—Atlantic Metal Company.
- STORE FRONTS—Kawneer Company.
- RANGE—Royal gas stove by J. Rose and Company.
- INCINERATOR—Kerner Incinerator Company.
- OIL BURNER—Enterprise Manufacturing Company.
- BOILER—Titusville Iron Works.
- ELECTRIC EQUIPMENT—Cole Electric Products Co.
- ELEVATOR—Otis Elevator Company.
- LIGHTING FIXTURES—Lightolier.
- CONCEALED RADIATORS—National Radiator Company.
- PLUMBING FIXTURES—Crane.
- HARDWARE—Lockwood Hardware Company.
- MEDICINE CABINETS—United Metal Box Company.



TYPICAL FLOOR PLAN

1217 - GRANT AVE.



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**Built as a TRUCK
But Serviced as
a TRUCK . . . and
at Rock-Bottom Service Costs!**

● Let no one deceive you as to the **ECONOMY** of the service the nearby International dealer or Company-owned International branch will render you on your International Trucks. First, the *service-free* mileage from Internationals will surprise you. That's *quality*. We have in mind one man whose International was run into by another truck and put into the shop. His comment was, "Gosh, that spoils a swell record. That truck had gone *70,000 miles without a wrench on it!*"

But, when you *do* need service, International Truck dealers and branches provide all-truck service at low cost . . .

with *International original parts also at a gratifyingly low price*. International owners are satisfied, and they stay satisfied. Choose an *International Truck* and get low-cost hauling that means just that.

International Trucks and Service and the long experience of International Harvester are in easy reach of truck users everywhere.

Consult any International Truck dealer or Company-owned branch and select your trucks from the International complete line. Sizes range from Light-Delivery trucks to powerful Six-Wheelers.

INTERNATIONAL HARVESTER COMPANY
(INCORPORATED)
606 So. Michigan Ave. Chicago, Illinois

INTERNATIONAL TRUCKS

Handling the Summer Load

**A Paper From
the Research Department of
the University of Illinois**

By V. L. SHERMAN

Department of Mechanical Engineering
Lewis Institute of Technology, Chicago

THE Federal Housing Administration's policies have brought about the most important advance in home building through the change in the attitude of the new homeowner. This change is most noticeable in the prospective owner's mind even before construction is under way. Instead of approaching the subject with a sort of speculative optimism he becomes pretty hard-headed. He looks on the matter with the eye of a security buyer, thinking of the years to come, the uninterrupted budgeting, the advantages of substantial construction, and the state of the property twenty years hence. This young generation has the advantage of having grown up while communities were rapidly changing, suburbs growing, large "additions" sometimes prospering, sometimes going to seed. And they are not ignorant of the various reasons. They want no speculation for themselves. One of them recently picked a suburban locality for building because a large railroad planned well ahead for improved train service. He had calculated the type of future owner in that locality.

It is not to be supposed that prospective owners of this sort, and especially the younger and more curious ones, are going along in entire ignorance of one of the greatest changes in residential work. They are hopeful but not gullible. When air conditioning is mentioned these days, or summer cooling, general terms are not enough. They ask, "Just what do you mean by summer cooling?" "Does the air conditioning extend beyond the cold weather?" "Is this equipment expected to do all the work for heating or this for cooling without insulated construction?"

"JUST WHAT DO YOU MEAN BY SUMMER COOLING?"

The writer, fortunately and unfortunately, is on several mailing lists. Now, he has used a warm-air system of his own layout for eleven years with entire satisfaction. The firm installing it insisted he was crazy and did not want to guarantee results. He is on their mailing list. Every so often he is informed that unless their trained experts are chosen to do this or to do that dire results are to be expected. Wonder how many of their customers they have on that mailing list.

Let's follow a little further because it is just as well to clear away the rubbish before we talk of summer cooling. Another letter comes from a firm which insists that air conditioning "recognizes that dry, stuffy heat, stagnant and polluted

air is not a fit substitute for an ideal atmosphere." Quite a point. But their system "completely conditions the air by: "Warming it to the proper temperature. "Humidifying it to the proper degree. "Filtering out dirt, dust, bacteria, and foreign matter. "Circulating the air throughout the entire house, insuring even distribution of heat, and providing healthful ventilation the year round."

Healthful ventilation is certainly a part of air conditioning, but providing healthful ventilation the year round does not suffice for a system that "completely conditions the air." There is no mention at all about summer cooling.

Going further we have the statement of another concern that by applying their apparatus to an existing system we can have winter air conditioning and summer cooling for a price shockingly low. Just how much of this sort of thing does one suppose any intelligent home builder would believe?

This newer generation knows that summer cooling has to do with wall and roof insulation, rapid air-change through the night hours, awnings, dehumidification, refrigeration. Such words are not so mysterious to them. They recognize and define them through association. Through the last few years so much has been done along this line and right under their noses that this prospective class of homeowners are becoming a little hard boiled. And the more hard-boiled they become the better pleased will be the makers of really substantial equipment.

Mention has been made of the work done by the research departments of equipment builders. And it has also been shown that because they want to know and judge the facts impartially before making any promises

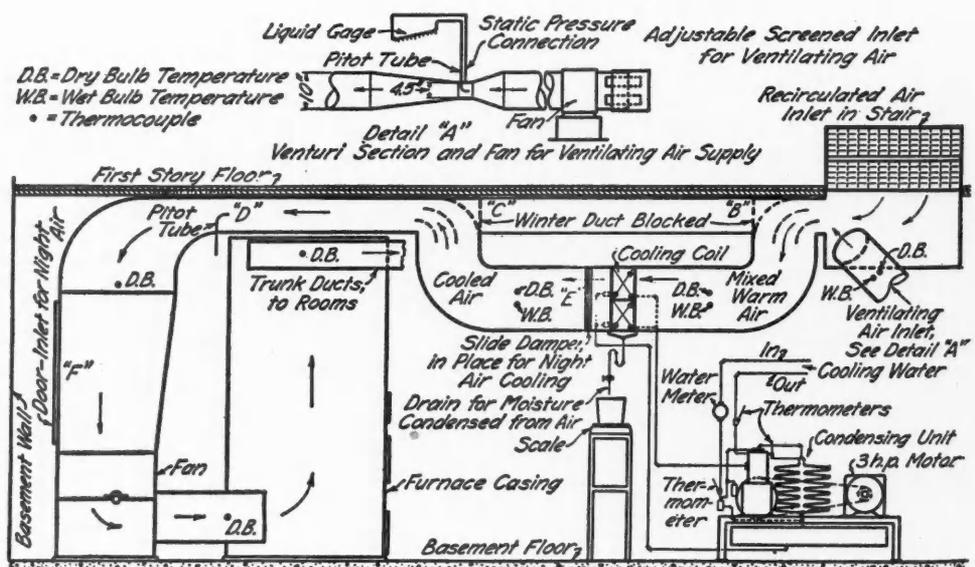
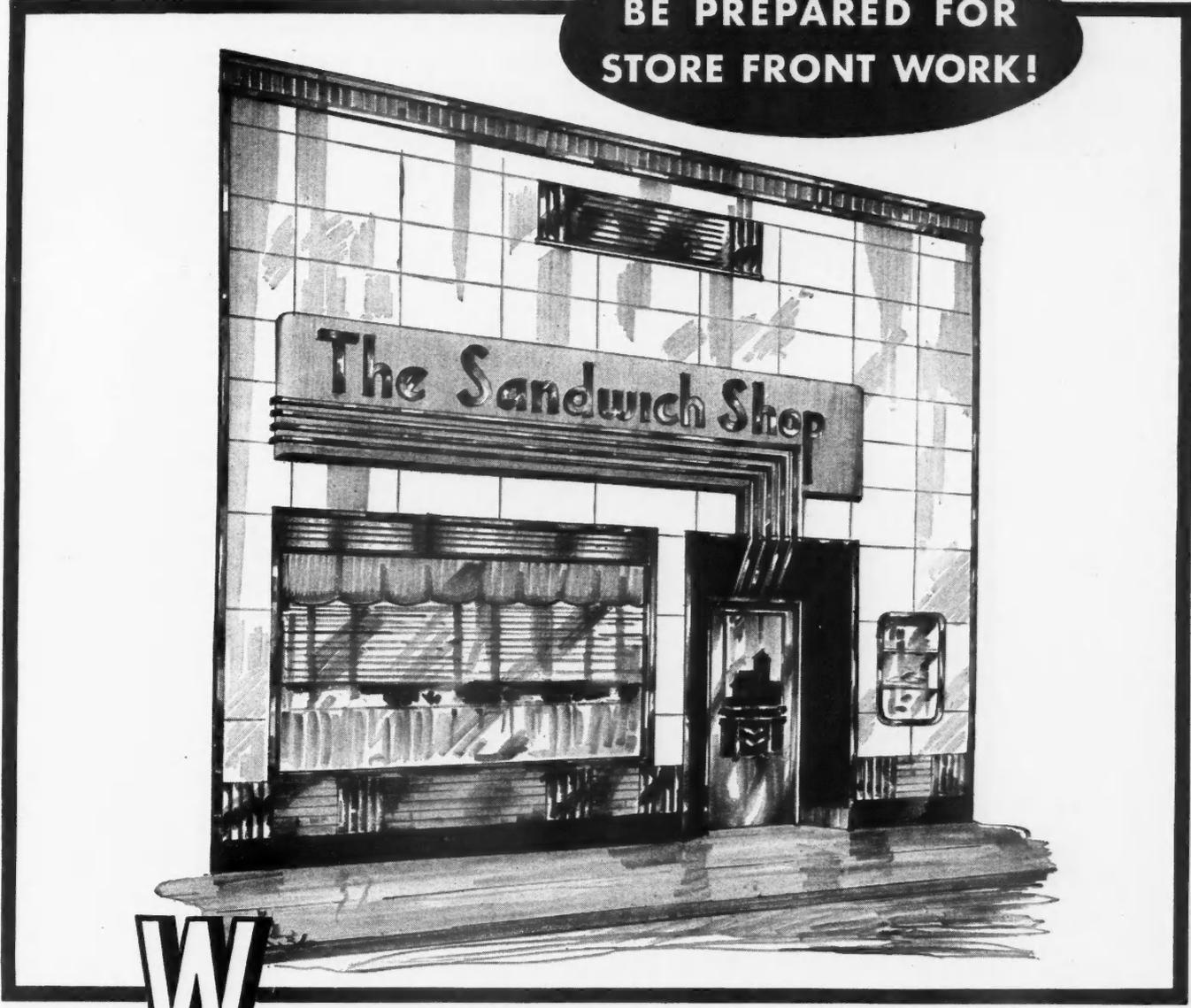


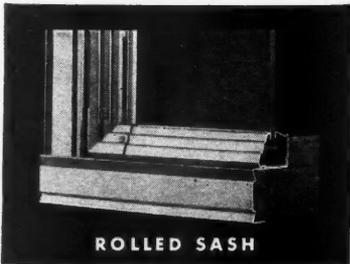
FIG. 3—Diagram of cooling plant with mechanical refrigeration. Taken from Univ. of Illinois Bulletin No. 13, Vol. XXXIV.

**BE PREPARED FOR
STORE FRONT WORK!**



W

**RITE FOR FULL SIZE DETAILS OF ZOURI
SECTIONS — AVAILABLE FOR EVERY TYPE
OF STORE FRONT**



ROLLED SASH



EXTRUDED SASH

Architects and builders everywhere are profiting by renewed activity in the store front field... since aggressive merchants in every line are demanding better store fronts than ever before.

ZOURI is well equipped to furnish up-to-date rustless metal members, which mean so much in the appearance of any type of front. Complete, harmoniously designed construction is available in both rolled and extruded types... including sash, bars,

awning and transom bars, and a wide variety of modern mouldings for jambs, sills, pilasters, and other uses. Awning Bars, include the new Recessed, Concealed and Hood types. Entrance Doors, Metal Signs, and special architectural metal work are also furnished. Furnished in bronze, alumilite, and stainless steel.

Write Zouri Store Fronts, Niles, Michigan, for full size details. SEE THE 12 PAGE ZOURI CATALOG IN THE NEW SWEET'S.

ZOURI STORE FRONTS

MECHANICAL EQUIPMENT FOR 20-YEAR FINANCED HOUSES

they help to carry on extended research. It is true they are not in business for their health, but they like to be in a healthy business. They willingly lend a hand in research projects that may seem remote from their interests knowing that a any definite information along these lines broadens the field and adds to their fund. And they know that the first-hand acquaintance with their equipment under strict test conditions is a very proper introduction.

In the University of Illinois Bulletin of October 13, 1936, are the "papers presented at the first annual conference on air conditioning." This was held at the University on May 4th and 5th of last year. Among the papers is one on "Research in Summer Cooling at the University of Illinois" by M. K. Fahnstock. Mr. Fahnstock is research assistant professor of mechanical engineering. A weighty title and a weighty job. It may be said that this is only one of numbers of papers on projects at this school, and that such projects are carried on at other research stations, but the point to be made is that completeness of information is a necessity to the research worker. His findings would be worth little to himself if the information were incomplete. The manufacturer, too, needs complete information.

Figures 3, 8, and 10 are taken directly from the bulletin to point out the extent of the information. The house used in this work is the "research residence," a house which is a home. The first floor space allotted for this summer cooling project was 7300 cu. ft., the second floor was 6870 cu. ft. Three different cooling plants were installed and studied during the course of the studies. They were ice, mechanical refrigeration, and city water.

Quotations in part are not usually a good thing, but it seems better in this case than not to refer to the paper at all. Comparatively little can be offered here, but what is offered is intended to point to the efforts to gain all helpful data. The diagrams are only three out of thirteen, but these few will easily prove the point.

In Figure 3 is shown an elevation of the plant for cooling with mechanical refrigeration. The return-air grille at the upper right combines with the ventilating air inlet just below to furnish the mixture for the cooling coil which is placed in a duct below the winter duct. The latter is blocked. From the cooling coil the cooled air passes directly to the fan chamber which is placed at the cold-air intake at the furnace casing. Just above and to the left will be noticed a door for the inlet of night air. The ducts to the rooms leave the top of the furnace casing.

Notice the detail "A" at the top of the diagram. This shows how well the amount of ventilating air is gaged. And for its condition wet-bulb and dry-bulb readings are taken before this air reaches the mixing box. A study

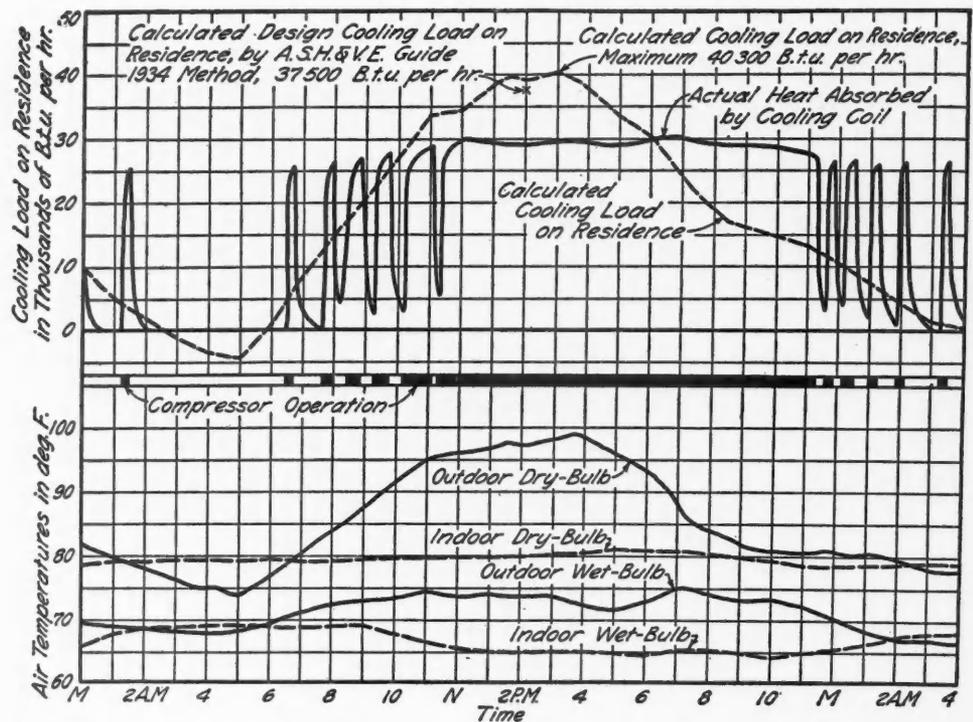


FIG. 8—Actual and calculated cooling load on residence and air temperatures, Test No. 7-34, June 27, 1934; no night air cooling, using mechanical refrigeration. Taken from Univ. of Illinois Bulletin No. 13, Vol. XXXIV.

of this diagram is well worth while, remembering that the whole is a search for definite and pertinent information, as to just what cooling equipment must be expected to meet, what can be expected of certain of the units parts. Nothing is allowed to slip by unnoticed.

It is hard to imagine equipment being placed in ideal operating conditions. To test equipment built for home conditions under ideal conditions would give the engineer a perfect gage on its capacities only under those conditions. To find out what happens under conditions which are not ideal is more to the point.

Figure 8 shows a twenty-four hour section of readings for June, 1924, for the same "research residence." Across the top a dotted curve shows the calculated cooling load in British thermal units per hour. The peak at 2 P.M. is just at 40,000, just before the out-door dry-bulb hits 99 degrees with a wet-bulb reading of 74 degrees with corresponding indoor readings of 80 and 65 degrees. This means dropping the heat content of the air from about 37 to 30 Btus per lb. and the moisture from about 85 to 70 grains per lb. The compressor operating periods are indicated by the blacked portions of the middle line. No night air cooling was used in this.

In Figure 10 we find additional night-air cooling and the use of water from the city mains in cooling. Also at the top we have the indoor and outdoor effective temperatures. These effective temperature readings depend on the combination of wet and dry-bulb readings as they react to our state of feeling. Some claim they are not dependable at all, but within logical ranges they give a satisfactory scale. No two people seem to have the same reactions, but, over the average, effective temperature readings seem to score well. The second set of curves from the top indicate indoor and outdoor relative humidity percentages. Notice the jumpy state of all the readings with the jump in the mercury between 7 and 9 A.M., and how the cooling coil goes to work. This was a typical

Tip on the How and Why of "BRADLEY BRAND" Oak Flooring

Here are four close-ups which show you at a glance how "BRADLEY BRAND" standards follow through from forest to finished floor.

In these you see fundamental "reasons why" for the inherent quality which distinguishes "BRADLEY BRAND" hardwood flooring itself . . . quality reflected in years of splendid service, fine appearance and owner satisfaction.

Yet, behind Bradley's standards are more than adequate timber resources and modern equipment. These are essential, but equally important are the factors of long establishment, intelligent study of trade and builders' requirements, research, and the *intention* to make a better product.

It is in these respects, too, that Bradley qualifies: as a pioneer operation (since 1901) . . . by constant improvement through experiment and testing under conditions of practical use . . . and through painstaking policies which have established "BRADLEY BRAND" as the standard of comparison in hardwood flooring.

"BRADLEY BRAND" hardwood flooring includes standard strip and "Nail-Seated" stock in Oak and Beech; also Oak Plank Flooring in both V and flush-joint design, the latter including plugs and butterflies, if desired. Available through local distributors everywhere.

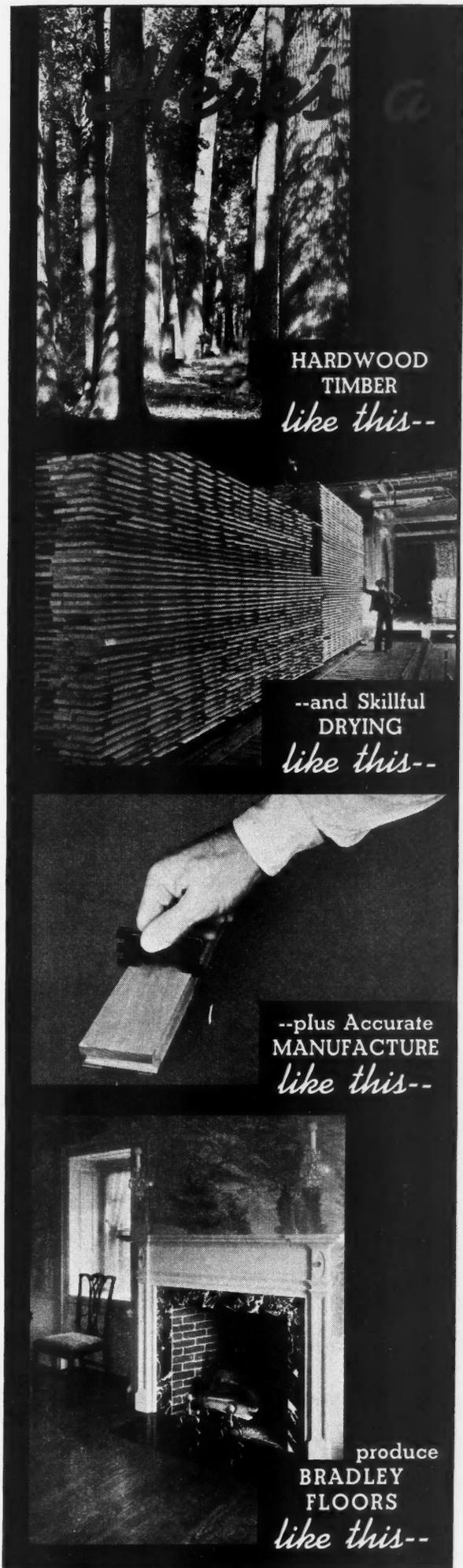
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BRADLEY

LUMBER SALES CO.

WARREN, ARKANSAS



HARDWOOD
TIMBER
like this--

--and Skillful
DRYING
like this--

--plus Accurate
MANUFACTURE
like this--

produce
BRADLEY
FLOORS
like this--

HEATING-AIR CONDITIONING-PLUMBING AND WIRING

hot day in August but the values are all down for anyone to examine.

Again, the purpose in bringing these diagrams into these pages is not to elaborate on the paper printed in the "engineering bulletin" of the University of Illinois but to emphasize the fact that a great deal of work has been done in research in summer cooling, that considerable is done at the universities where the younger generations are more or less aware of what is going on, probably helping it to go on. Since there never is any particular secret about the work, except protection against the spread of misinformation, it seems reasonable to suppose that anyone selling "summer cooling" should be prepared to present his case fully to the buyer, not merely by implication but by fact. That he should be definite in his terms of description.

Summer cooling loads are more of a question than simply ventilation. It is true that proper ventilation at the right times does afford considerable relief. Such cooling is advocated and is provided by substantial equipment builders. But this is not a heat load so much as it is a power load. The addition of refrigeration takes up the real summer cooling load, and this is as much a real load as the heating load through the winter.

The summer cooling load is a generally recognized factor nowadays. Its relief is not supposed to be just in the hands of a refrigerating unit, but through the combination of such factors as insulation of walls and roof, double glazing, awnings and blinds, controlled ventilation, and dehumidification besides. There are other factors, of course, and they are all considered by the manufacturers of real equipment.

But the time is here when few prospective home owners are quite so haphazard about the ultimate results of a long-term loan that they will accept mechanical equipment at any other than a substantial estimate. A good home and a twenty future years are sobering influences but the younger people are glad to consider them. They will have substantial equipment.

Plans Study of Insulation Problems

THAT the millions of dollars to be spent on insulation materials in home construction may result in serious monetary losses and grave damage to builders' reputations unless more extensive research is undertaken to establish scientific knowledge of the value of many new insulation materials and correct standards for their application is the opinion of Col. W. A. Danielson, chairman of the Committee on Research of the American Society of Heating and Ventilating Engineers. Col. Danielson has announced the inauguration of a broad investigation to study new insulation problems, the need for which has been intensified by the rapid growth in building operations. The reason for this study is the increasing use of humidified air in homes during the winter months which is confronting architects, engineers and manufacturers of building insulation with a perplexing problem of adapting their products to new and little understood conditions directly resulting from the growing popularity of indoor weather-making.

Paradoxical as it may seem, insulating materials, while highly effective in keeping out cold, are often subject to attack from within by humid air which penetrates the insulation or finds its way between spaces and condenses inside the wall. Besides impairing the efficiency of the insulation, such effects as freezing and thawing of this condensate may inflict permanent damage.

Seriously concerned over the situation, the Committee on Research of the Society is instituting a broad co-operative research project to solve the problem.

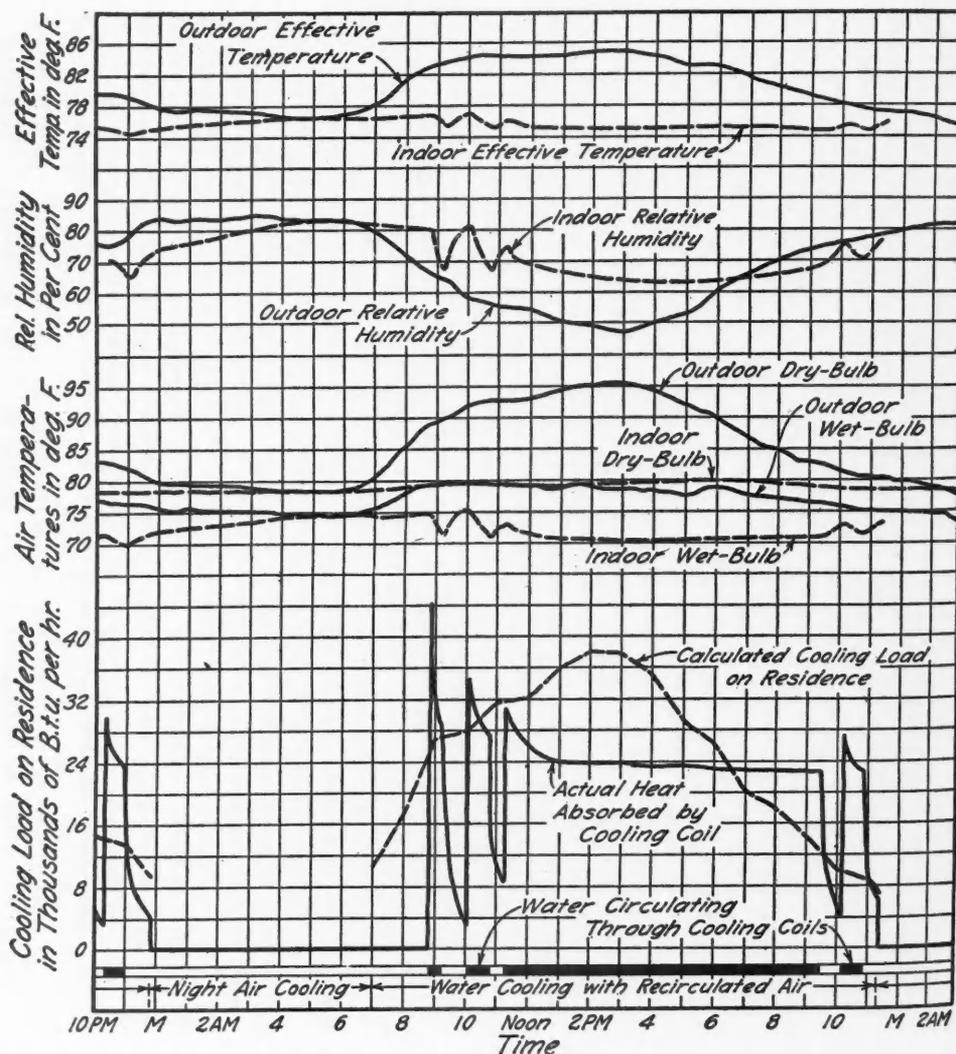


FIG. 10—Actual and calculated cooling load on residence and air temperatures, Test No. 13, Series 1-35, August 2, 1935; with night air cooling, cooling plant using water from city supply mains. Taken from Univ. of Illinois Bulletin No. 13, Vol. XXXIV.

NOW BARBER-COLMAN
PRESENTS...
The "RADIO DOOR"
IN A SIMPLIFIED FORM...
AT A NEW LOW PRICE

**RELIABLE!
SELECTIVE!**

The Barber-Colman Model "C" Radio Control has two important advantages. First, it is entirely reliable in operation—contacts are of adequate size and are closed with sufficient pressure to assure a complete circuit, accidental or malicious operation is impossible, and all parts are durably made for trouble-free service. Second, this Radio Control is selective — i. e., the frequency used in each installation will assure privacy of control (others cannot open your garage, and vice versa). Check these vital factors when considering any so-called "radio" control!



MADE BY THE
MANUFACTURERS
OF THE
Barcol
OVERdoor

**METHOD OF
OPERATION**

Speaking technically, the purpose is to produce an alternating current of desired frequency in the receiver circuit, which will vibrate a tuned reed with sufficient amplitude to actuate a relay controlling the door operator (and the light switch). To accomplish this, vibrator-governed direct current pulses at the desired frequency are sent through the transmitting coil. The resultant changing magnetic field induces an alternating voltage in the receiver circuit when the transmitting coil is directly over the receiving coil. The use of low frequencies prevents operation by lightning or stray electrical impulses. Complete details of the apparatus are given in our circular on "Model C Radio Control". Send for it.

BARBER-COLMAN COMPANY
ROCKFORD • ILLINOIS



LOOK FOR
THIS MARK

Consider the magic convenience of the "Radio Door"! It opens or closes the garage doors from a control button **in the car** . . . turns on and turns off garage and driveway lights. It's a **protective safeguard**, too, against some of the hazards of modern city and country life. **Now available** at a price within the reach of the average car-owner!

TRANSMITTER

A small box mounted under the hood on the dashboard of the car. Controlled by a push-button near driver's seat.

TRANSMITTING COIL

Mounted snug under one running board. Durable. Weatherproof. The receiving coil is set on, or buried in, the driveway.

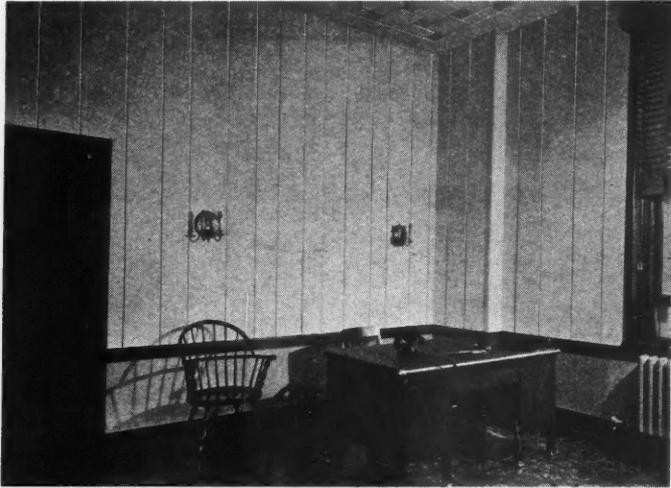
RECEIVER

A small box, like the Transmitter, mounted on the wall of the garage and connected to the motor-driven door operator.

Write for
FURTHER INFORMATION

BEAUTY and COLOR News of the Month

Built into this office... **Building Activities and Meetings**



with **TEMLOK DE LUXE**

BEAUTY—combined with the practical comfort of efficient insulation and noise quieting! That's what Armstrong's Temlok De Luxe brings to this attractive office. The walls are finished with Temlok De Luxe Planks in white. Temlok De Luxe Tiles in white and ash are used on the ceiling. And the smooth texture of its surface is an added attraction to the eye.

In whichever form it is used—Temlok De Luxe or Temlok Insulating Board or Lath—Armstrong's Temlok furnishes efficient insulation for walls and ceilings. Temlok De Luxe, available in boards, panels, planks, and tiles, is made in six beautiful *factory-finished* colors—white, ash, cream, green, walnut, and coral. It is quickly installed by cementing or nailing—its low cost helps to win contracts.



MAIL COUPON TODAY FOR FULL DETAILS

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Please send me complete information about the new Temlok De Luxe Interior Finishes.

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TEMLOK DE LUXE
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FHA Debenture Guarantee Extended for Two Years

PRESIDENT Roosevelt recently signed a joint congressional resolution extending for two years authority for Federal guarantee of the debentures issued by the Federal Housing Administration in exchange for home mortgages foreclosed. Administrator McDonald declared that this action turns on the "green light" for a home construction drive throughout the country.

Construction Maintains Steady Increase

FOR the 37 eastern states covering all classes of construction, F.W. Dodge Corporation reported a January, 1937, total of \$242,844,000 as compared with \$199,695,700 for December, 1936, and \$214,792,800 for January, 1936. This represents a gain of more than 20 per cent in construction during January as contrasted with the figures for December, 1936; the January, 1937, total likewise was some 13 per cent better than the figure for January, 1936. Each major geographic district registered a gain over December totals, except New England, the Central Northwest and the New Orleans district (Louisiana and Mississippi). Gains over January, 1936, were scored in all principal territories except New England, the Chicago district (Northern Illinois, Indiana, Iowa, Southeast Wisconsin), the Central Northwest, Kansas City district (Kansas, Western Wisconsin, Oklahoma and Nebraska), the New Orleans territory and Texas.

The January, 1937, construction total for the 37 eastern states as a whole included \$78,423,700 for residential building, \$95,968,900 for non-residential building and \$68,451,400 for public works and public utilities. The residential figure was 20 per cent greater than the December, 1936, figure and more than doubled the total of \$37,439,500 shown for this class of construction during January, 1936. Gains in residential building over a year ago were shown for each major area east of the Rockies without exception—the most pronounced gains occurred in Metropolitan Area of New York, Pittsburgh territory (Ohio, Western Pennsylvania, Kentucky and West Virginia), Middle Atlantic States and Southern Michigan.

Industries Meet on Low Cost Demonstration Homes Program

THE first step in co-ordinating the activity of units in the small home building field was taken at a meeting at the Raleigh Hotel, attended by more than 70 representatives of building material and home products industries which was called by Dr. Wilson Compton, secretary and manager of the National Lumber Manufacturers Association, to develop co-operation in the small home demonstration program, launched recently by the lumber industry under the sponsorship of the FHA.

This program has for its purpose the construction of 1,000 small home units in 1,000 communities, to show that it is possible to build attractive, comfortable homes in a price range of \$2,000 to \$4,500. Over 500 building material dealers in as many localities have signed "count me in" pledges to participate in the program, making a total of 1,060 houses already assured.

Bruce Wilson, director of Education in the FHA, reviewed the activities of this organization in the small home field, saying that the present campaign is the mainspring of their 1937 promotion.

Frank Carnahan, secretary of the National Lumber Dealers Association, through which lumber dealers are co-operating in the construction of the demonstration homes, urged all persons and industrial groups having substantial interests in the small homes market to get behind the present drive.

I. N. Tate, president of American Forest Products Industries, Inc., spoke of the subject before the conference as "more house for the dollar," and emphasized "delivering the finished structure" and "making the house easy to buy."

The gathering included the field of housing and public group interests such as chambers of commerce and the Government.

A co-ordinating committee was appointed to develop ways and means for the participation in this program of all units in the building material and home products industry.



**"STEP ON IT—LADY!
 ... SURE IT WAS ONLY
 PLACED YESTERDAY BUT IT'S
 MARQUETTE HIGH EARLY
 STRENGTH CEMENT"**

All set—and ready! The job finished—in 24 hours or less. Marquette **HIGH EARLY STRENGTH** Cement insures a concrete unequalled. And in one-seventh the time—compared with regular cement! And its use further insures a more satisfactory job . . . to the owner, who repairs or improves without undue loss in time and the consequent loss of money . . . to you, the contractor, because such complete satisfaction encourages more jobs . . . and you have time for more jobs.

High Test!

**Marquette
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**MARQUETTE
 HIGH EARLY
 STRENGTH
 PORTLAND CEMENT**

The bugaboo of lost jobs and disturbed construction schedules is dispelled with the knowledge of Marquette **HIGH EARLY STRENGTH** Cement. That job delaying objection has been removed, and hundreds of long needed construction repairs and improvements are started daily. Marquette **HIGH EARLY STRENGTH** Cement action is quick and the result permanently satisfactory. You'll find its use actually multiplies jobs. Thousands of examples to convince and guide you. Write for further information.

MARQUETTE CEMENT MANUFACTURING CO.
CHICAGO MEMPHIS
 MEMBER PORTLAND CEMENT ASSOCIATION

Examples of money made by time saving construction are included in a useful booklet. As an aid to you, it is important. Send for it!

MARQUETTE CEMENT MANUFACTURING CO.

Marquette Building, Chicago, Illinois

Please send me, without cost or obligation, a copy of your 72-page User's Manual on Marquette High Early Strength Portland Cement.

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Company

Address

City.....State.....

AB-73

**SAVE MONEY
AND SELL
HOMES WITH
BATHE-RITE**

Modern



SHOWER CABINETS

Easy and economical one man installation without muss or fuss! Your master plumber sells and installs **BATHE-RITE Shower Cabinets!**

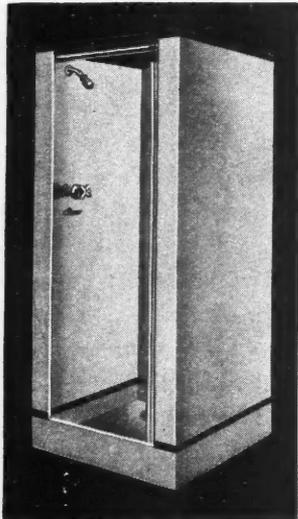
BATHE-RITE has popularized shower cabinets by pricing them within everyone's reach!

Now, every home owner can enjoy the ultimate in healthful bathing facilities. **BATHE-RITE** Cabinets provide the luxury of the finest shower—at costs no higher and usually lower than other equipment.

Here's sales appeal for the home builder! For new buildings, or remodeling work, in bungalow or mansion, this modern shower cabinet always becomes a center of attraction.

BATHE-RITE Shower Cabinets sell more homes—and make more satisfied home owners!

PRACTICAL MODELS FOR EVERY TYPE OF BUILDING



MODEL CF—\$73.50 and up—for popular price installations

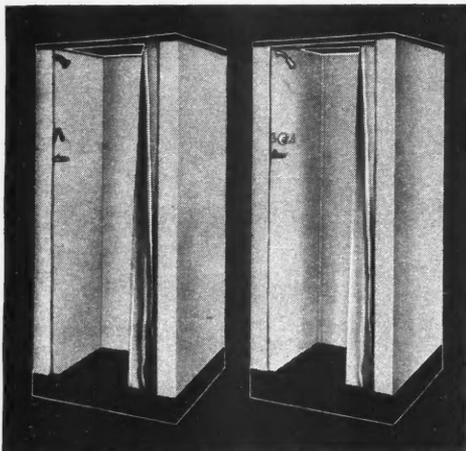
BATHE - RITE FEATURES

Special leakproof and waterproof construction. Instantly regulated, water-saving shower head. Solid brass fittings, polished chromium finish. Built to last for years. Roomy, full-size bathing comfort in minimum-size space. Easy for entry and exit. Smooth inside surface for quick cleaning. Practical designs, smartly styled, handsome baked enamel finish.

Models come in a complete price range for residences, summer homes, camps, apartments, all types of commercial and industrial buildings. **BATHE-RITE** fits the plans of owners, contractors, architects. It's the Modern Shower Cabinet for every American builder!

MILWAUKEE STAMPING CO., MILWAUKEE, WIS.

**BATHE-RITE
SHOWER CABINETS**



MODEL A—\$34.85
—for lower price installations

MODEL D—\$55.50 and up—for medium price installations

WRITE FOR NEW CATALOG—mailed to you from our factory without cost or obligation! Get specifications, prices and full information on Modern Shower Cabinets. Note type of building for particular application details. You will find this material most helpful in making plans.

Residential Use of Steel Windows Grows

THE trend toward use of steel windows in homes, as well as in larger structures, is definitely indicated by figures for the steel window industry, compiled by the Metal Window Institute of America.

These figures show that the proportion of steel window shipments to total building contracts has increased 400 per cent in the last ten years. It is reported that the most marked increase has taken place in the field of residential, apartment and similar construction, since practically all new industrial buildings have, for several decades, been equipped with steel windows.

Launch Electric Water System Sales Program

A FIVE-YEAR promotional program for the sale of electric water systems was launched by the Electric Water Systems Council following a four-day meeting, Jan. 9-12, at the Hotel Sherman, Chicago. A goal of 250,000 electric water systems to be sold in 1937 was set. Sales in 1936 totaled 149,000 units as compared with 77,000 in 1934 and 50,000 in 1932.

With improving business conditions, increasing farm income and rapid extension of power lines, it is believed that enterprising dealers in 1937 will have an unprecedented opportunity to sell and install electric water systems as well as supplementary equipment, including complete farm bathroom and kitchen units.

Build Spectacular Timber Ski Jump

THE tallest free standing ski jump structure in the United States was built at Soldiers Field, Chicago, during January and the first week of February, 1937, for the Central United States Ski Association annual competition. This spectacular structure was built in record time and utilized timber strengthened by Teco connectors.

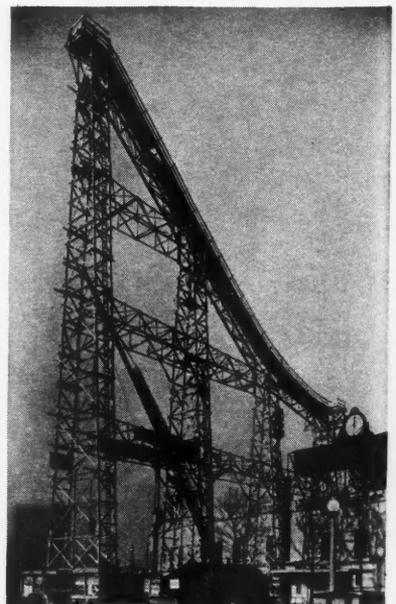
The ski jump structure consisted of two sections, a timber tower and truss section outside and on top of the stadium at Soldiers Field, supporting a curved runway descending from a height of 180 feet to an 8 foot jump-off at an elevation of 92 feet, and a fan-shaped curved lower timber trestle section supported on the steps of the stadium and descending to the ground elevation inside the stadium.

The trestle section consisted of a series of framed bents spaced 15 feet apart and braced in pairs longitudinally to form towers. These towers used 6 by 6 inch columns, 2 by 6 inch bracing and 6 by 12 inch caps, and supported 2 by 10 inch joists and one-inch sheathing.

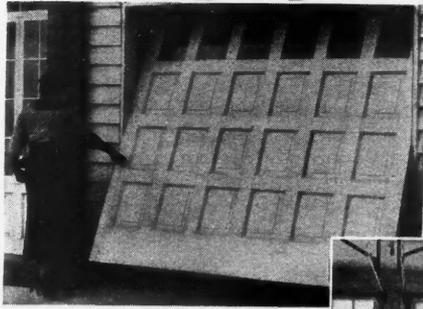
The tower and truss section consisted of timber towers of approximate heights 180, 140 and 105 feet resting on the paved area in front of the south entrance to the stadium, and a fourth timber tower approximately 46 feet in height resting on the upper promenade of the stadium. All towers were designed free standing in planes normal to the center line of the project but mutually self-supporting in planes parallel to the center line of the project.

Plans for the lower section of the structure were provided by the Chicago Lumber Institute, Mr. Leo Kramer, manager. The design and shop details for the tower and truss section were prepared by the Timber Engineering Company of Washington, D.C. This design was prepared under the general direction of E. A. Randall, consulting structural engineer, of Chicago.

TALLEST ski jump built of timber in Chicago.

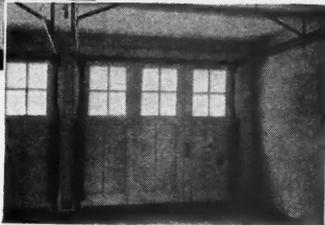


JOIN THIS Happy Throng



**ON ITS
PARADE
TO
PROFIT**

Many a contractor is making extra money installing this popular door equipment. Your dealer carries it—you need not invest except as needed.



It's mighty nice to pick up a good day's pay—or more—for a few hours work. Frantz makes this possible with "Over-the-Top" Door Equipment. The public is "sold" on overhead doors and there's no hesitancy when they learn how Frantz holds down the cost by using the old doors and by doing away with excess trackage, weights, pulleys, cables and chains. You carry no stock—the dealer does that—and shares the profit with you. You get *all* the profit on your labor. Once a sale is made, the convenience and beauty of this equipment means added sales. It's worth a try—See your dealer—or write today.

**FRANTZ MANUFACTURING CO.
STERLING, ILLINOIS**



The doors are joined into one

Hardware goes quickly into place

Track brackets quickly installed

Simple adjustments

**"OVER-THE-TOP"
DOOR EQUIPMENT**

"We want it remodeled like this . . . and use **WESTERN PINES***"



You won't be the first builder to hear that from a homeowner!

Plenty are showing their builders a Western Pine advertisement . . . and asking for a room like the one in the picture!

That's what this Western Pine advertising—in the popular home magazines**—does for you. It gets you more jobs . . . and better jobs!

Thousands who see Western Pine advertising are ready to listen and agree to a job of knotty paneling or enameled woodwork . . . or a linen closet or bookshelves . . . of one of the Western Pines.

This all makes the selling end of your job easier. For when people are familiar with a good product . . . know it and respect it through its advertising . . . you need only mention its name to get their interest nailed down tight!

These famous softwoods come in grades for every job, indoors and out . . . for exterior trim and siding, doors, sash, screens . . . cupboards, shelves, paneling, mantels, and staircases. Western Pine Association, Yeon Bldg., Portland, Oregon.

**Better Homes and Gardens, American Home, House Beautiful, Sunset, American Magazine, Saturday Evening Post, Time, Popular Homecraft and HOME OWNERS' CATALOG.



*IDAHO WHITE PINE

*PONDEROSA PINE

*SUGAR PINE

These Are The Western Pines



YOUR CUSTOMERS ARE "CASEMENT CONSCIOUS"

American home-buyers today want casement windows in their homes. Andersen Wood Casements are ideal for you because they lend distinctive beauty to any home, and harmonize with any style of architecture.

Superior Andersen Construction Features

Andersen Wood Casements overcome objections heretofore found with both wood and metal casements. Air leakage is stopped by bronze weatherstrips and special leakproof frame construction. Inside screens. Underscreen operator.

Extension hinges permit easy washing.

Removable double glazing reduces heat loss through the glass 60% and controls condensation. All wood parts are protected against decay, termites and moisture with Andersen Chemical Preservative Treatment.

Complete Assembly Reduces Installation Costs

Andersen Wood Casements are delivered on the job accurately and completely assembled. They are easy to install, eliminating both time and labor.

MAIL THIS COUPON FOR INFORMATION

ANDERSEN FRAME CORP.
Bayport, Minnesota

AB-37

I would like complete details and a demonstration on Andersen items checked below:

- MASTER FRAMES
- NARROLINE WINDOWS
- ANDERSEN CASEMENTS
- BASEMENT WINDOWS

Name.....

Address.....

Over 1,000 Complete J-M Sales Course

THE one-thousandth man to complete the merchandising training course of the Johns-Manville National Housing Guild plan of dealer-controlled consumer selling, launched a year ago, was among the class of 200 lumber yard owners, sales managers and salesmen taking this work in Cleveland last month.

This Cleveland class, which was composed of men from seven neighboring states and Canada, was the third regular two-weeks course conducted this year. The three schools, held at New York, Chicago, and Cleveland, have averaged more than 200 students per course.

Keen interest in the Housing Guild plan has been shown by Canadian lumber dealers, approximately 7 per cent of all enrollments to date having been from across the Canadian border.

Gar Wood Announces New Appointments

FRANK H. DEWEY, general manager of the air conditioning division of Gar Wood Industries, Inc., has promoted Don J. Luty to the office of assistant general manager. Norman Saylor has been appointed manager of the company's Detroit branch. Mr. Luty has been connected with the company for many years in the capacity of chief engineer. Mr. Saylor joined the air conditioning division of Gar Wood Industries, Inc., last year and since then has devoted his entire time to branch sales promotional work.

Insulite Reports 100% Sales Increase

THE Insulite Company, producer of structural insulation products, Minneapolis, Minn., has reported a better than 100 per cent increase in sales during the past year over 1935. This is considered a remarkable showing in view of the fact that the gain in building for the same period was 65 per cent.

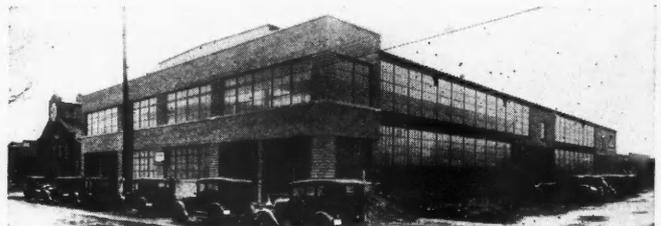
"Our 1936 showing is particularly gratifying to all members of the Insulite organization," says E. H. Batchelder, Jr., vice-president, "because our per cent of sales increase was greater than the per cent of gain in building volume. This indicates a growing trend toward greater use of structural insulation. It is noteworthy that the practice of selling insulaion board through lumber dealers exclusively is doing much to restore these dealers as a source of supply for insulation products."

New offices were opened in Detroit during 1936, and quarters in New York, Chicago, Minneapolis, San Francisco, and St. Louis were enlarged to take care of added work made necessary by growth of the company's field force of over 100 per cent, and the advancement of several sales officers to the executive staff from the ranks of seasoned employees. Branch offices are in charge of M. C. Juell, sales manager, Central and Western Districts, Chicago; M. G. Jensen, sales manager, Eastern District, New York City; E. A. Anderson, sales manager, Northwest District, Minneapolis; H. S. Cheney, sales manager, Pacific District, San Francisco; C. F. Heym, assistant sales manager, Southern District, St. Louis.

New Iron Fireman Building Completed

THE third unit of an expansion program that has doubled in twelve months the size of the Iron Fireman Manufacturing Company's Cleveland plant, the world's largest coal stoker factory, has been completed, adding 64,000 square feet of floor space to the plant.

On the first floor of the new unit, which is 109 by 333 feet in size, two stories high, are the punch presses and other manufacturing equipment and large stocks of materials. A tool room and facilities for shipment of repair parts and additional office space occupy the second floor.



LATEST addition to Iron Fireman's Cleveland plant.

MEDUSA-LITE



Recommended

PAINING ECONOMY



• Leading architects and builders recommend Medusa-Lite, the super flat wall finish, for painting economy. They will tell you that this is one super flat wall finish that gives an economical job without sacrificing beauty or quality. Medusa-Lite is thinned with water instead of expensive thinners. One coat brushed or sprayed on almost any interior surface including other paints, fresh plaster or concrete makes a beautiful wall. Medusa-Lite can be had in seven attractive pastel colors and white, the latter having 90% reflective value and unlike many interior white paints, does not turn yellow. This finish leaves no brush marks, cannot powder, peel or crack.

HERE'S A BOOK THAT YOU SHOULD HAVE

Every architect and builder should have a copy of the book "How To Paint Concrete, Stucco, Masonry and Other Surfaces." It tells how Medusa Floor Coating gives concrete floors a permanent, beautiful, abrasion-resisting finish in black, white or any of six colors. This book describes the best method of painting exteriors of concrete, stucco and masonry using Medusa Portland Cement Paint. All three of these products are recommended for painting economy—an economy that is accompanied by quality. Your complimentary copy of the book will be sent immediately upon receipt of the coupon below.

MEDUSA-LITE

MEDUSA PRODUCTS COMPANY
 Division of Medusa Portland Cement Co.
 1002 Midland Building, Cleveland, Ohio

Gentlemen: Please send me a complimentary copy of the book, "How To Paint Concrete, Stucco, Masonry and Other Surfaces."

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THE BEST 1/2 BAG MIXER BUY IS THE ONE THAT OUTSELLS THEM ALL!!



JAEGER

The Trailer with Timken Bearings, Pneumatic Tires and High Speed "Dual Mix" Drum

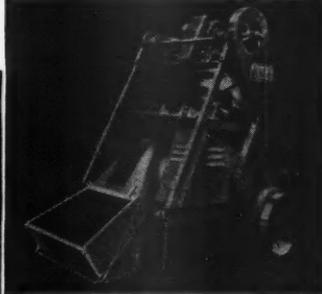
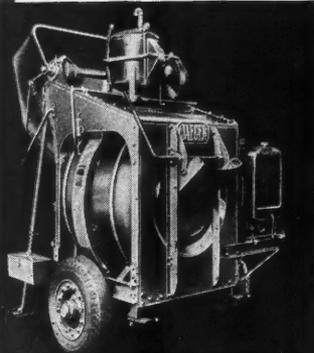
Don't be fooled by "streamlined" mixers that are no faster than five years ago.

The 1937 Jaeger gives you streamlined ACTION as well as looks—trails as fast as a new Ford V-8 on Timkens and Pneumatics—gives you double the mixing action and faster discharge with its patented "V" bottom Dual Mix Drum—will outwear any other type of tires, any other half-bag mixer we have ever built.

Get facts and prices before you buy. Use handy coupon.

Popular Price 5S End Discharge Trailer

Full one-bag capacity on most mixes. End discharge saves time, cuts costs.



7S and 10S SPEED KING Pneumatic Tire Trailers
 Fastest mixers ever built. End discharge advantages.

THE JAEGER MACHINE CO., 521 Dublin Ave., Columbus, O.

Send new Catalog, prices and terms on 1937 Model Jaeger Mixers for Concrete, Plaster, Mortar. Pumps Hoists

Name _____

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CORNER OF KITCHEN AFTER MODERNIZATION

CORNER OF KITCHEN BEFORE MODERNIZATION

Modern Kitchens by ELKAY

The kitchen is the very "Heart of the Home" and no home is really *modern*, unless the kitchen is right up to the minute in its equipment and appointments.

ELKAY STAINLESS STEEL KITCHEN SINKS

are designed to add that final touch of refinement, beauty, compactness, convenience and serviceability to the modern kitchen. They are "built-to-measure" to fit any requirements and specifications, assuring the ultimate in sanitation and a lifetime of service. Their silvery *stainless steel* surfaces are not affected by meat, vegetable or fruit acids, thus retaining their beauty and luster permanently and eliminating kitchen drudgery.

ELKAY engineers render expert Kitchen Planning Service to Architects and Builders. Send us your specifications and we will gladly submit plans and estimates without cost or obligation.



ELKAY MFG. CO.
4700 ARTHINGTON STREET
CHICAGO, ILLINOIS

Edward B. Root Joins Dailaire

DAILE Steel Products Company, manufacturers of Dailaire heating and air conditioning, has announced the appointment of Edward B. Root as heating engineer for Midwest states. Mr. Root has been associated with the heating industry for the past 15 years, and is active in various associations, the more prominent of which are the American Society of Heating and Ventilating Engineers and National Warm Air Heating and Air Conditioning Association.

For the past five years he has been an interested worker in the development of the school of air conditioning jointly sponsored by Michigan State College and The National Warm Air Heating and Air Conditioning Association and has also spent much time on the work of the Technical Code Committee.

Emslie Made General Manager of Weyerhaeuser Stained Shingle Division

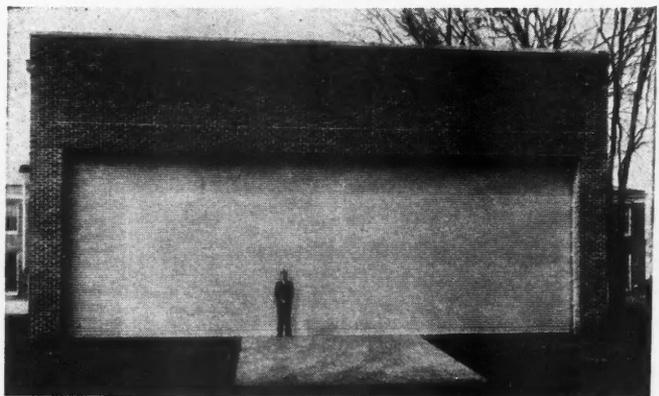
THE Weyerhaeuser Sales Company has recently increased the duties and responsibility of Mr. George Emslie, sales manager of their Stained Shingle Division, by placing him in charge of both the sales and production units of their stained shingle manufacturing business. Since 1935, when he came to St. Paul as sales manager, he has been actively engaged in the promotion of Weyerhaeuser shakes and shingles and has recently expanded his activities to include production as well.



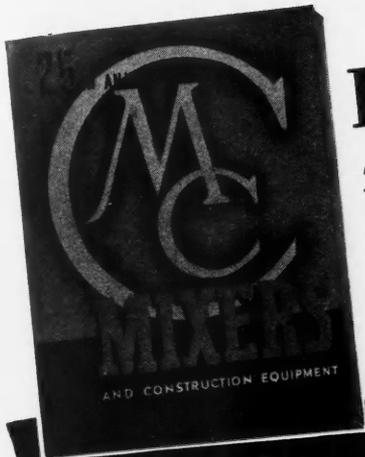
GEORGE EMSLIE

Make Changes in Eastern P.C.A. Staff

THE appointment of E. M. Fleming as regional manager of its eastern offices with headquarters in New York, and the naming of H. J. McDargh as southeastern regional manager, has been announced by W. M. Kinney, general manager of the Portland Cement Association. Mr. Fleming has been district manager at New York since March, 1935. Mr. McDargh, who will make his headquarters in Atlanta, Ga., has been district engineer at Indianapolis since 1934. Mr. Fleming joined the staff of the Association in 1926 and Mr. McDargh in 1924.



ABOVE: Interesting installation of a gigantic Kinnear steel rolling door in the Aeronautical Laboratory at the University of Alabama. It measures 46'8" wide x 16'1" high and weighs about 10 tons.

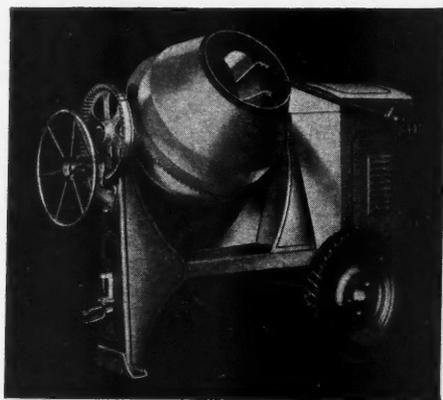


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The Most
Talked of
Book in the
Equipment
Field



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NEW CMC STREAMLINED MIXERS



New 3 1/2 S Wonder "Standard"

- Streamline Welded Steel Frame
- Timken Tapered Roller Bearings
- Pneumatic Tires for Speed Trailing

New CMC One-Bag 2-Wheel Trailer

- End Discharge gives ease of handling and roadability.
- Heavy Duty Pneumatic Tired Wheels with Timken Bearings
- Power Loader or Low Charger



Write For Catalog TODAY!

CONSTRUCTION MACHINERY COMPANY
Waterloo, Iowa

THE GOOD NEWS STILL

travels



MILLIONS OF PERSONS ARE READING ART-PLY ADVERTISEMENTS IN NATIONAL MAGAZINES

telling about

ART-PLY

THE INLAID PLYWOOD

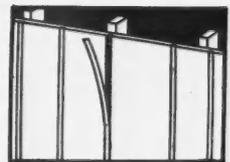
THEY CAN'T MISS the millions of messages appearing in such magazines as *Better Homes and Gardens*, *American Home*, *House and Garden*, *Sunset*, and *Architectural Forum*. Trade papers also are telling the big news about this new wall material for interiors.

ART-PLY is an innovation in three outstanding particulars: (1) Battens, or strips over joints, are eliminated. (2) Mouldings are inlaid flush with surface to form standard multi-paneled sections. (3) Joints between sections are concealed as well as sealed for insulation.

ART-PLY costs little more than plain plywood, and offers unlimited decorative possibilities. It is *real wood*—made from durable Douglas Fir—retaining all the beautiful, natural grain.

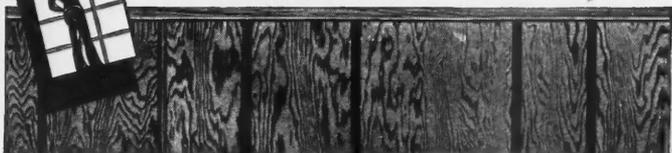
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423 Petroleum Securities Bldg.,
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538 W. 21st St., Houston, Tex.
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Economical to Use!

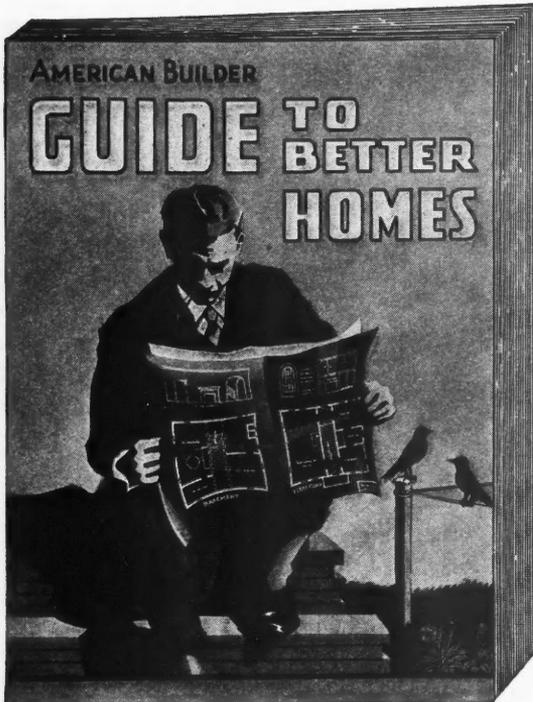
Joints are concealed as well as sealed with strip of inlaid *matched* moulding. Simple to put up, easy to handle. 32 sq. ft. go up at a time.



VANCOUVER PLYWOOD AND VENEER COMPANY
Vancouver, Washington, U.S.A.
Gentlemen—Please send me more information about ART-PLY.

Name
Address ABV-3

Just off the Press



ANOTHER NEW

It is axiomatic throughout the industry that whatever the *American Builder* editors put their hands to is a job mightily well done. In "*American Builder Guide to Better Homes*" they have surpassed themselves. In this, their latest contribution to the successful solution of the planning, construction and equipment problems of professional building men, they dramatize most nobly today's possibilities in Home Charm, Home Comfort, Home Economies and Home Builders' Profits. In doing so they have combed the field to get the very best Home Values the field affords.

HENCE

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Its homes are thoroughly representative of precisely the types that will be built in 1937. They embody all the latest developments. They range from one-room cabins to stately mansions, with the emphasis on those that come in between. They cover all the popular styles—Cape Cod, Colonial, French Provincial, English, Normandy, Dutch, Spanish, Modernistic and Tropical. There are frame houses, Shingle-sides, Homes in Brick, Concrete, Solid Masonry, Stucco, Frameless Steel, Steel Clad. There are Airconditioned and Insulated Homes, homes for every section and for every purpose.

This is a Book that Builders can show to their Clients with pardonable pride, and with every confidence that the mere showing will break down sales resistance and lead to quick decisions.

Get your FREE copy NOW while it yet has the bloom of youth!
See next page for details.

More than a Hundred ATTRACTIVE MODERN HOMES

are presented in its 194 pages. Under these Ten Chapter Headings:

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10. Plans for Little Homes

the Best Yet PLAN BOOK!

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Every home presented in "American Builder Guide to Better Homes" carries its Cost Key, the use of which is explained on page 8.

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30 Church Street, Renewal....
New York.

For the enclosed \$..... enter my
subscription for 1 year, \$2.....
2 years, \$3..... 3 years, \$4.....

**And include AT NO EXTRA COST
a copy of "AMERICAN BUILDER
GUIDE TO BETTER HOMES."**

Name

Street

City

State

Occupation

*This offer good only in United States,
Possessions and Canada*

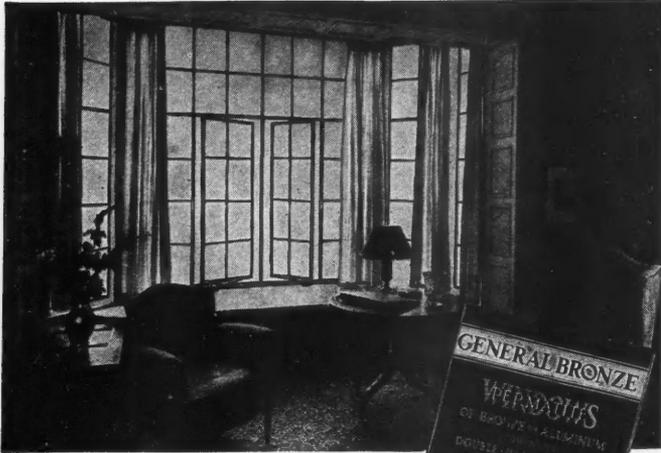
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**"American Builder
Guide to Better Homes"
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\$3 for two years or \$4 for three
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Your copy of the Plan Book,
will come to you by return
mail as our receipt for your
remittance.



Good Taste
always makes homes
EASIER TO SELL

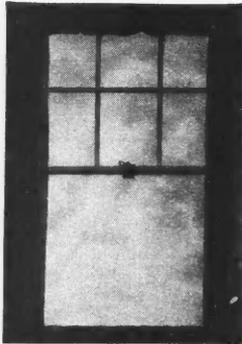
Windows of aluminum or bronze are features which give a house immediate eye value. The new patented Permatite Windows represent both eye value and real value. They cost less than half of former windows of comparable quality, yet are weather-tight, rattleproof, easy to operate. They are suitable for air-conditioned homes and are remarkably free from upkeep costs.

Let us send you a fully illustrated catalog giving complete construction details and specifications. You will find that these windows—both casement and double hung—are easy to handle and easy to install. You will see immediately why they make homes easier to sell.

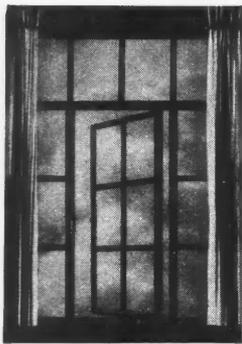
You are sure to need this book. We invite you to write for your free copy today. To save your time, use the coupon below.



Send
for this book!



PERMATITE



PERMATITE WINDOWS

Bronze or Aluminum • Casement or Double Hung

GENERAL BRONZE CORPORATION
34-19 Tenth Street, Long Island City, N.Y.
Please send us your FREE Specifications Book on Permatite Windows.

Name _____

Address _____

14

Chicago Home Show Plans Announced

PLANS have been announced for the National House and Garden Exposition to be held at the Coliseum in Chicago from May 8 to 16. The show will feature all that is new and practical in residential construction methods, building materials and home equipment, and will stress landscaping and gardening as important in residential beautification.

As planned, the exposition, which has already attracted a large list of exhibitors including building material manufacturers and household furnishers doing a nation-wide business, will be "a clinic for better construction in the interests of better homes and better buildings."

Plans are under way to make it the most outstanding home show ever held in America both in artistic presentation and diversification of exhibits.

Prominent among the organizations endorsing the exhibition and working for its success are the Portland Cement Association, the Brick Manufacturers' Association, the Illinois Master Plumbers Association, the Architects' Small House Service Bureau (Central Division), the Metal Lath Manufacturers' Association and the Garden Department of the Illinois Federation of Women's Clubs. The show is to be operated under the standards set by the Manufacturers' Housing Promotion Council.

The show will be under the management of John A. Servas, veteran exposition builder, who planned and staged the home exhibition held last year at the Coliseum.

Masonite Appoints Stromquist

WALTER G. STROMQUIST has been appointed assistant sales manager of the Masonite Corporation, following the resignation of C. E. Smock, who has been with Masonite for the past eight years, first as dealer salesman, then divisional sales manager and finally assistant sales manager.

Mr. Stromquist has been in charge of United States inland sales for Hawaiian Cane Products, Ltd.

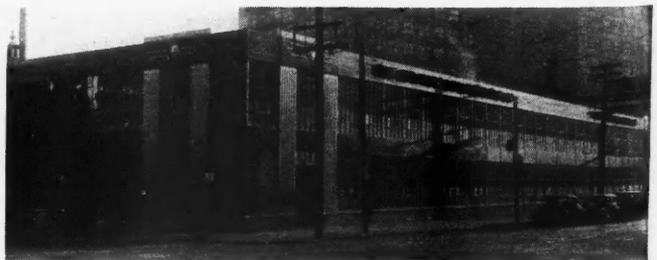
Ultra-Modern Plant Completed in Edwards Expansion Program

PARTICULAR interest has been expressed by all who have seen the new ultra-modern plant of The Edwards Manufacturing Company, Cincinnati, Ohio, producers of sheet metal building products, because of the very unusual features.

The new structure is made of glass and reinforced concrete, and enclosed with insulated steel and glass walls. There are no columns in the exterior walls which are virtually one continuous window in each of the two stories. William M. Carlton, chief engineer of The Edwards Company, explained that this was attained by setting the columns back in the building and cantilevering the floor and roof construction of the building. Mr. Carlton, who designed the project, said the type of construction was adaptable to industrial buildings of any number of stories in height.

Special efforts were made by The Edwards Manufacturing Company to improve the working conditions of its employees and the building was planned and executed to this end. The new structure, 50 by 200 feet, is the first unit of an ultimate building to cover the entire area owned by the company.

All elements of the building of a sheet metal nature were fabricated in the Edwards plant, including the insulated steel walls and the stainless features which embellish the exterior of the building, these including pilasters, stainless ornaments and stainless steel letters designating the name of the company.



MODERN plant of Edwards Mfg. Co., has insulated steel and glass walls.

WHAT sells houses faster . . . at better prices?

You already have several answers. But you are always looking for new features. Here is one:

A roof of Kenmar Copper Shingles

Why? Because your prospective buyers instantly recognize copper as the symbol of quality. Because Kenmar Copper Shingle Roofs are distinctive—modern—the roof of tomorrow! Note Kenmar Roof below.

Kenmar Roofs are easily applied—by any good carpenter. They outlive the mortgage. Are fire and lightning proof. And have many other advantages. They give you many new and convincing selling points.

Write today for complete data . . . and facts about quick sales and better prices other operators are getting with Kenmar-roofed homes.

The New Haven Copper Co., Est. 1849, Seymour, Conn.



BUILT TO STAND
Hard Service

Eight Features Give EXTRA STRENGTH

Users of Ro-Way Doors soon discover that they have a built-in stamina which keeps them running smoothly, even in hardest service. The first one installed in any neighborhood is a sure sales wedge to additional business. Talk these eight Ro-Way features:

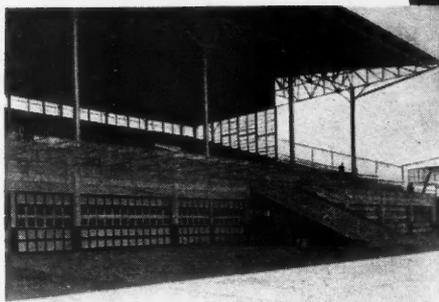
- 1 All joints are mortised and tenoned (not wood doweled).
- 2 All commercial and industrial Ro-Way Doors are made from Sitka Spruce—1 1/4" thick.
- 3 Panels are made of three-ply laminated fir, joined with special waterproof casein glue.
- 4 All sections are rabbeted to provide a ship-lap weather-proof joint.
- 5 All rollers are STEEL with double metal tread and full ball-bearing.
- 6 Unusually large corner brackets, measuring 11 1/2" long by 4 1/2" wide, are securely bolted to door.
- 7 Lock bars are burglar-proof, made from steel 3/4" thick by 1/2" wide.
- 8 Vertical and horizontal tracks are especially made of special steel and reinforced with angles.

RO-WAY
Over-Head Type Doors

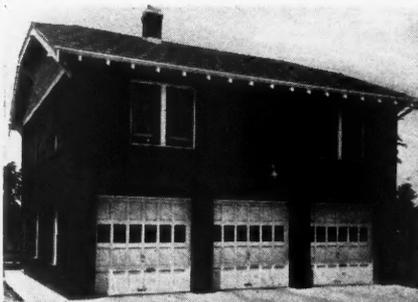
—are made in all Standard Sizes, as well as Special Sizes and Heavy Duty Doors with heavy tracking are available. Investigate the Ro-Way specially designed Torsion Spring High Lift Doors for use in public service stations. Also the Ro-Way low priced doors for residence garages.

Write for Ro-Way Door Folder and Price List

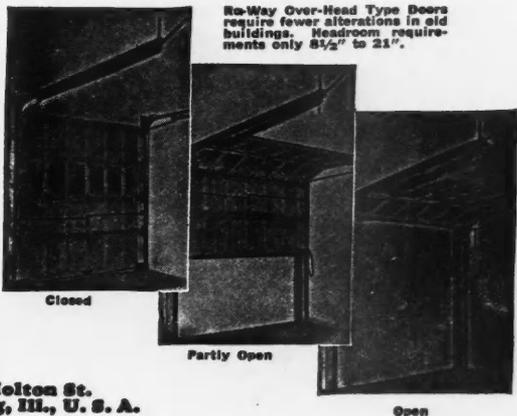
Rowe Mfg. Co., 741 Holton St., Galesburg, Ill., U. S. A.



Twenty-two Ro-Way Doors in Arlington Downs Grand Stand, Arlington, Texas. Large doors have center support tracks. Small doors have removable mullions.



Ro-Way Doors in a typical private garage installation at Miami, Okla.



Ro-Way Over-Head Type Doors require fewer alterations in old buildings. Headroom requirements only 8 1/2" to 21".

Closed

Partly Open

Open



Specify
**VICTOR IN-BILT
VENTILATORS!**

There is no equal

IN DESIGN ...

CONSTRUCTION OR PERFORMANCE

● If you want the best in ventilators for the homes you plan or build—specify Victor In-Bilt and omit the customary “or equal” in your specifications. From any standpoint you choose to make comparisons—including price—Victor In-Bilts completely outclass the field. From the smartly styled, streamlined grille to the rugged induction-type motor and super-quiet fan—automatic operation—unit construction—and telescopic sleeve—every detail has been engineered with but one idea—to provide *the best* in home ventilators.

COOKING ODORS HAVE NO PLACE IN THE MODERN HOME

Fresh, sweet, pure air to breathe in the home is not a luxury to be enjoyed by the few—but a comfort and health necessity for modern living. The cost of a Victor In-Bilt is trivial in proportion to the benefit it provides—and as a home deal closer it has more sales power per dollar than any kitchen feature you could use. Of course, you know that kitchens sell homes. And, Victor Ventilators sell kitchens.

VICTOR ELECTRIC PRODUCTS, INC.
786 Reading Road Cincinnati, Ohio



Compare Values!

● Get the facts about Victor In-Bilts. Check their many exclusive features and advantages and you'll agree "there is no equal." Bulletin No. 905-C gives full information. Clip coupon now.



CLIP COUPON—MAIL TODAY

VICTOR ELECTRIC PRODUCTS, INC.
786 Reading Road, Cincinnati, Ohio

Please send me your Bulletin No. 905-C, giving complete information on Victor In-Bilt Ventilation.

Name _____

Address _____

City _____ State _____

NEW PRODUCTS

FOR INFORMATION ABOUT any new product write American Builder Information Exchange 105 West Adams Street, Chicago, Ill.

Skilsaw Floor Sander

A NEW, efficient, dependable floor sander is being placed on the market by Skilsaw, Inc., Chicago, Ill.

The unit weighs 138 pounds. Sufficient weight is provided in the unit itself for fast, accurate floor sanding, thus eliminating the necessity for manual control or addition of weights to keep drum in constant contact with surface of the work. The powerful sanding motor produces an even flow of power which insures fast work on the toughest of jobs. Ample reserve power built into the motor insures long, trouble-free service.

The V-belt drive is quiet in operation. There is no loss of power in slippage. The frame of the tool is one piece steel construction with no bolts, nuts or rivets to loosen. All parts making up the sander are built to this frame, insuring rigid construction throughout the unit. The sanding drum measures 7 inches wide by 6¾ inches in diameter, and is covered with a resilient sponge rubber pad which prevents “pitting” of the floor. A feature of construction is the patented vice-like grip which holds the sandpaper to the drum; there is no possibility of paper coming loose.

Another exclusive feature in the Skilsaw floor sander is the method of collecting all dust resulting from sanding by the use of a separate vacuum system, mounted integral to the frame, independently motored by a universal motor. It picks up dust on both the forward and backward strokes. The dust intake aperture extends the length of the sanding belt, thus collecting all dust as it leaves the drum.

The handle of the unit is adjustable to the operator. No matter whether a tall or small man uses the Skilsaw floor sander, it can be adjusted for the comfort and convenience of the operator. The switch has 100 per cent overload capacity to insure freedom from frequent replacement. All moving parts are mounted on grease sealed ball bearings; the full seal bearing prevents dust from reaching the race and inducing quick breakdown of bearing.



NEW floor sander has separate vacuum system used for dust collecting.

Treatment for Dusting Concrete Floors

A NEW type of concrete floor hardener and dustproof for industrial plants, called Granitex, has been brought out by its inventors and manufacturers, The Truscon Laboratories of Detroit.

Granitex is neither a chemical hardener nor a paint; floors after treatment with it do not show a particle of dust. It is a penetrating material which fills the pores of the cement with a tough, wear-resisting binder. It not only binds down the surface, preventing sanding and dusting, but it acts as a cushion or buffer to absorb the shock of traffic, thereby saving the floor. Being free from pores, it does not absorb dirt. It is stainproof, oilproof and greaseproof.

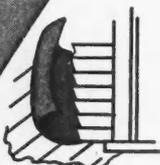
It is applied very simply, by merely pouring it over the concrete, or mopping it on, then squeegeeing or brushing out of the low places with a long handled brush.

**KEEP
OUT
OF THE
WET**

with
SISALKRAFT

Over Sheathing

Use Sisalkraft over all sheathing. Keeps out cold winds and moisture. Prevents infiltration of air. Use it as flashing around doors and windows. Easy to use. Can be formed into place readily.



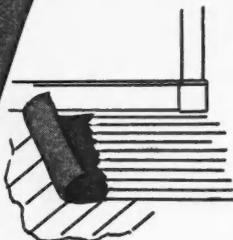
Under Roofing

Sisalkraft belongs under any kind of roofing. Remember, it's absolutely waterproof—two thicknesses of kraft paper held together and waterproofed with asphalt between.



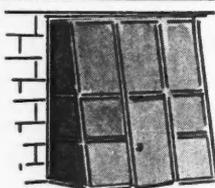
Over Floors

Put it under flooring, too, to prevent damp floors. And use it as temporary protection over new floors. It's plenty tough—tough enough to keep new floors *new*. The millions of inlaid sisal fibers keep it from tearing or splitting under wheelbarrow or hob-nailed shoes.



For Temporary Work

Build temporary shelters out of Sisalkraft. Keeps out cold winds and rain. Handy to put up—and it stays up. Can be used over and over again. Gives safe protection at low cost.



Covering Materials

Cover all delivered building materials with it. Protects against rain, dirt and small boys. Saves its cost in preventing damages. Use it also for curing concrete basements, floors and walks.



Get this new Book—

Our new book "The Importance of Building Paper" shows some new ideas in the use of paper. We'll be glad to mail you a free copy, and also send you a big sample of Sisalkraft.

THE SISALKRAFT CO.,
203-b W. Wacker Drive, Chicago



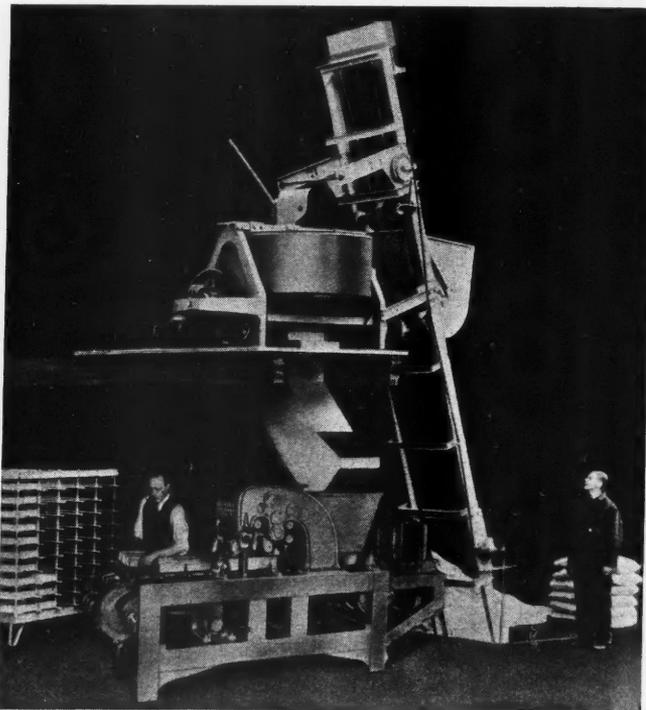
SISALKRAFT

New Standardized Dunbrik Plant

W. E. DUNN Mfg. Co. of Holland, Mich., pioneers in the engineering and construction of machinery for the production of masonry building units, has announced a new standardized production plant with many new features.

In operation of the plant, the dry raw materials enter a conveyor bucket at one end of the plant, are elevated and automatically dumped into a shovel type mixer where the proper water content is added by the operator from the ground floor through a measuring device, thereby assuring a uniform water content which is vitally essential to produce the greatest possible density and strength. The material, after mixing, is discharged into the hopper of the automatic Dunbrik machine where it passes on to a continuous, cast steel, machined traveling carrier consisting of a series of mold boxes which pass under a heavy tamping and troweling mechanism that tamps and trowels the material at 600 strokes per minute. The finished materials then are removed by an off-bearer to convenient racks that are removed to storage yard.

The head of the machine is a one-piece steel casting accurately machined. The moving parts are all roller-bearing equipped and each housed in a dust-proof, sealed grease reservoir, assuring smooth, quiet operation. All wearing parts are of a special hardened wear-resisting steel. Mold box compartments are all accurately machined, assuring accuracy of every dimension of the finished products. The machine is timed to produce 2,000 standard brick per hour or an equivalent amount in the larger sizes.



NEW concrete masonry building unit plant in operation.

The newest developments in this machine is in its extreme flexibility. Besides making the U. S. standard size brick of 8 x 3 3/4 x 2 1/4 inches, it can make many additional sizes up to a unit 12 x 24 inches. (See illustration on next page.) All these are in multiples of the standard brick, plus the usual half-inch mortar joint; and all these sizes can also be made in a 3 3/4 inch thickness, thereby enabling this plant to produce a masonry material to meet every construction need. A change of sizes is simple and quickly accomplished by the renewal of one divider blade. The size is increased to an 8-inch width or the removal of the second divider blade will permit the making of 12-inch widths. The lengths are varied by the removal of mold box ends which increases the length by 8-inch multiples.

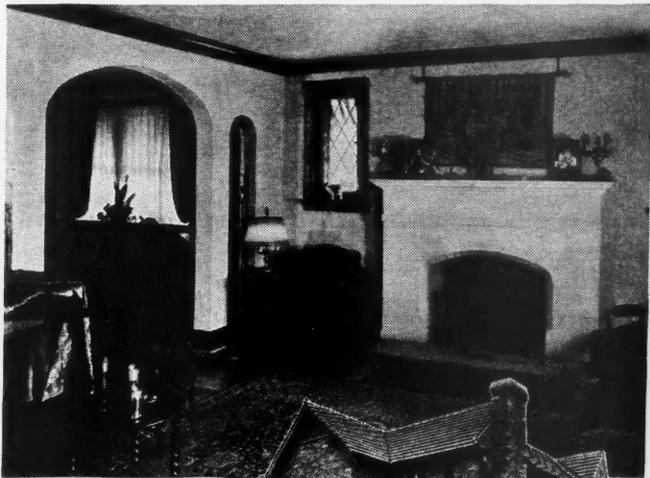
The handling equipment utilized in this plant has also been modernized. It now consists of all-steel, welded cars which

(Continued to page 122)

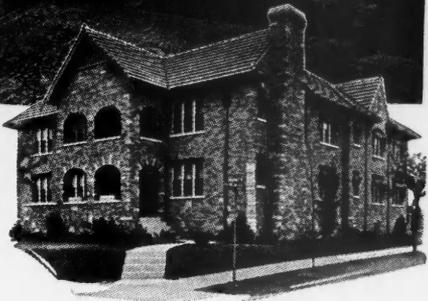
More homes

WITH

BRIGHTER, BETTER WALLS



Residence of B. H. Prater, St. Louis, Mo. — Plastering Contractor: Wenzil Andris — Hawk Spread White Finish Lime used for white coat.



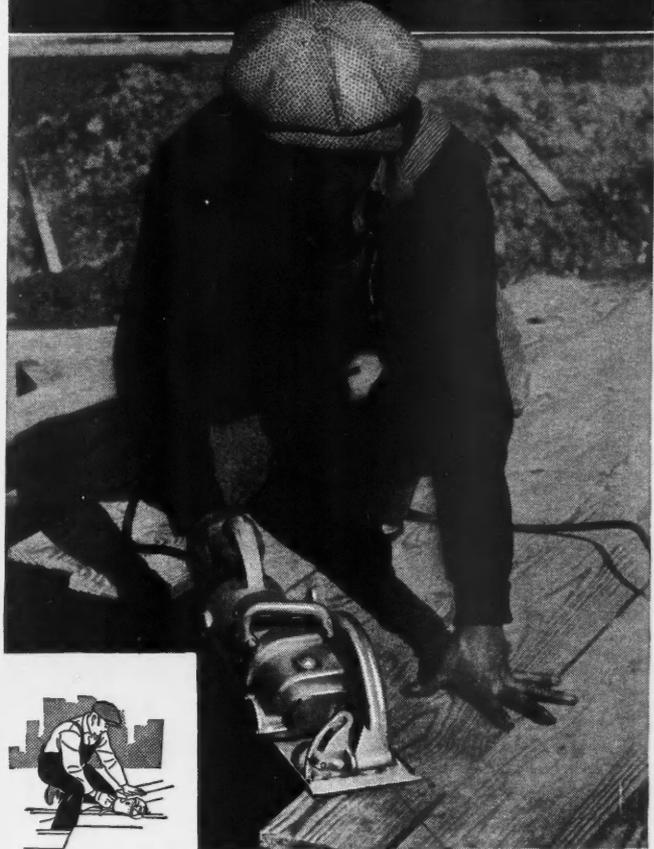
● The superior quality and beauty of walls plastered with Ohio Hydrate Finish Lime are immediately apparent—whether it's a modest residence or a lofty skyscraper. Hawk Spread and Ohio White Finish are highly plastic, easy-spreading limes—for durable, first class plastering. They are widely known as an ideal decorating base, and enhance the value of the property. Guaranteed to meet A.S.T.M. and U.S. Government standards, Ohio Hydrate Finishing Lime is made of 99½% pure dolomite. Write for specifications on lime plaster and stucco; also on lime for water-tight masonry mortar. The Ohio Hydrate & Supply Company, Woodville, Ohio.

OHIO PRODUCTS SOLD EVERYWHERE IN FAMOUS ZIG ZAG BAGS

Ohio White Finish—Hawk Spread White Finish—Ohio Rite-wall Fibered Lime Plaster—Ohio Sanlime Finish—Mastite Masonry Mortar—Ohio Masons Lime—Ohio Ground Lime.

Original **OHIO WHITE**
LIME FINISH

SKILSAW makes **PROFITS**
... because it **REDUCES** costs
and **SAVES** sawing time!



SAVES on cutting rough flooring, joists, studding, siding, bridging! Cuts off 222 ft. of ½ in. decking in only 12 minutes! Cuts out a 16-step stringer in only 10 minutes!



SAVES on cutting rafters! Makes bevel cuts for any pitch roof. Using a SKILSAW, the work can be ganged with a great saving in sawing time!



SAVES on trimming doors.—ready for hanging in only 7 minutes! Strips no thicker than shavings can be cut off with SKILSAW. Finishing blade leaves edges smooth as if sand-papered!

Let SKILSAW help you to out-bid and out-perform contractors who still depend on the slow, old-fashioned handsaw! Electric power at the saw handle will bring you added profits . . . will turn more bids into jobs . . . will save enough on the first job to pay for the tool!

SKILSAW has been the choice of builders for seventeen years because, model for model, it has more power, more construction refinements, more sawing applications. It is safe, accurate and durable. Operates from any A.C. or D.C. light socket. *Cuts wood, metal, stone and compositions.* 7 powerful sizes.

SKILSAW, INC.
3314 Elston Avenue, Chicago

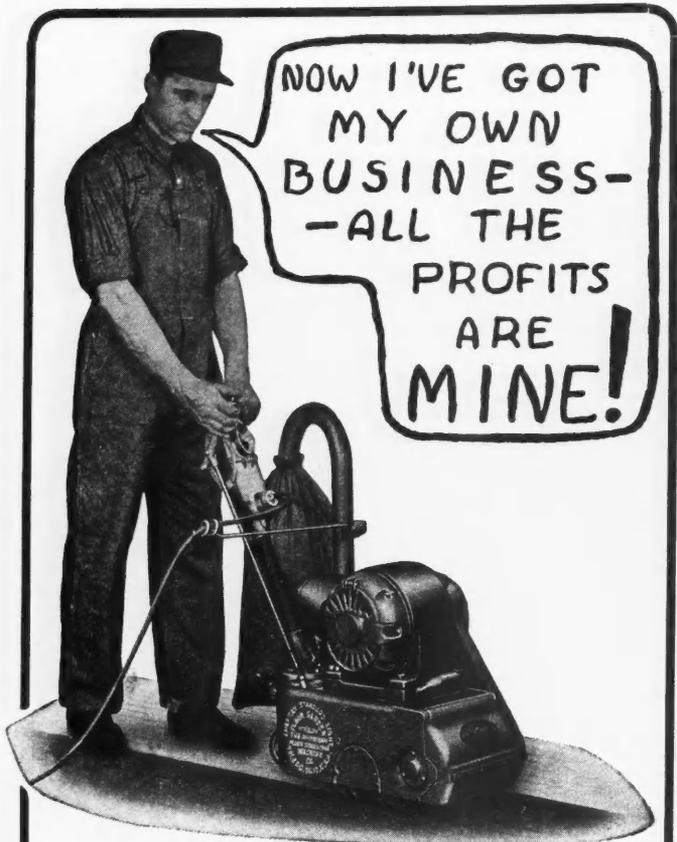
210 East 40th Street, New York
52 Brookline Ave., Boston
312 Omar Avenue, Los Angeles
2085 Webster Street, Oakland

Ask Your Hardware Dealer for a Demonstration and Write for Our Complete Catalog



SKILSAW CUTS YOUR SAWING COSTS IN HALF

(Continued from page 120)



I Make Big Money Surfacing Floors

Gosh Fellows! I might still be a carpenter's helper except for the fact that I read an ad similar to this by the AMERICAN people less than a year ago. I'm not hinting that carpentry isn't a fine and honorable trade—No Sir!—it is one of the best there is, but now I have my own little business—floor surfacing.

Floor surfacing is a dandy way to make a living and my American machine has made big profits for me. I don't need any helper—do all the work myself. My American floor sander is light enough to transport from job to job. Because of the exclusive features in American sanders, smooth control, perfect balance and a powerful motor, there isn't a fellow in town that can beat me sanding floors. I didn't know a thing about running such a machine last Fall but I caught on quickly—the American machines have smooth, easy controls.

Next month I'm also buying one of those American Spinner Edgers—no more handscraping for me. See the coupon at the bottom of this page—sign it, my friend, and get details, complete prices and circulars completely describing the features of American machines. The manufacturers of this swell floor sander will be glad to send you details without any cost or obligation whatsoever.

If you want to see and try one of these machines with your own hands, ask for a demonstration—it won't cost you a penny either.

The above is not a signed testimonial by any one American floor machine owner but is the actual comment of hundreds of new American machine users.

THE AMERICAN

FLOOR SURFACING MACHINE COMPANY
511 SO. ST. CLAIR ST. TOLEDO, OHIO

FOR PROFITS ON EDGES

Handscraping of edges is out! The American Spinner—a speedy disc type edging machine—sands the borders quickly to a beautiful finish, matching with the body of the floor. Sign and send in coupon and get information today and see how it will increase your profits.



COUPON

Gentlemen: Please send complete details, catalog and prices on the following

- American floor sander.
- American Spinner for Edges.
- Without cost, please arrange free demonstration.

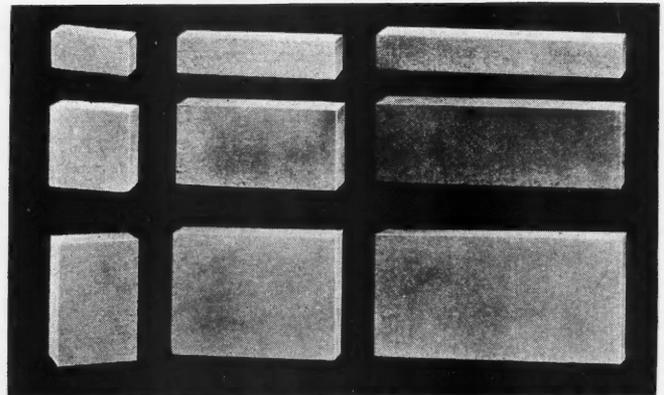
Name

Street

City State

THE AMERICAN FLOOR SURFACING MACHINE CO.
511 South St. Clair St.
Toledo, Ohio

are equipped with two rubber tired, ball bearing wheels and two steel supports on which the cars rest when not in movement. The loaded cars are handled by a light weight lift jack which is engaged into a pin at the front of car which then becomes a very flexible, easy moving truck that can be handled with full load by one man. This new transport system eliminates the use of the old fashioned, cumbersome, rigid track system or the use of heavy lift trucks.



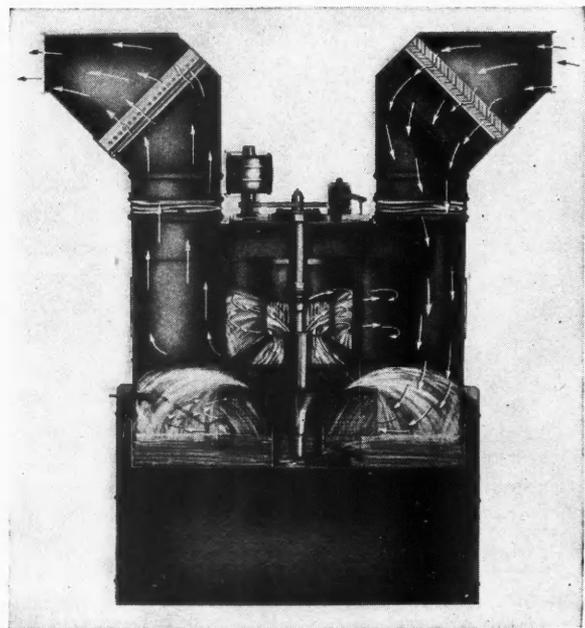
SOME of the different sized units made by new Dunbrik plant.

Washed Air Type Conditioner

THE Utica Radiator Corporation of Utica, N. Y., has entered the air conditioning field with a line of central plant units for residences and medium sized installations in restaurants, shops, theatres and manufacturing plants.

The Utica air conditioner is built on the hydro-air system of washed air control. There are four standard sizes, each one capable of variable capacities, by adjustment. The line ranges from 500 C.F.M. to 5400 C.F.M.; in terms of heating from 7500 BTU to 480,000 BTU, and in terms of cooling from 1½ tons I.M.E. to 20 tons I.M.E.

All units are alike except for size and capacity. The first offered is the Model 1 and Model 1X with C.F.M. capacity from 500 to 1500. By the addition of inexpensive parts a Utica unit becomes a summer cooling unit and dehumidifier, or a heating plant in conjunction with a warm air furnace or a split system with steam or hot water boiler. The Utica air conditioner can be installed to serve one cycle and then progressively added to season by season until the owner has a year 'round job of heating, cooling, humidifying, dehumidifying, circulation, induction of outside air and all with washed air control.



CUTAWAY view of new residential washed air conditioner.



Masonite Corporation
has the pleasure of announcing

2 NEW MASONITE PRODUCTS

MASONITE INSULATION SHEATHING BOARD

Smooth surface on both sides.

25/32 inch thick—the exact thickness for use with standard door and window frames.

50% more insulation value than regular 1/2-inch MASONITE insulation.

50% greater bracing strength.

More than 4 times the bracing strength of 8-inch ship-lapped sheathing.

Offers greater ease of handling and greater economy than regular 1/2-inch MASONITE STRUCTURAL INSULATION.

MASONITE CANEC INSULATION

A cane insulation board of high quality and efficiency for use where light-colored board is in demand.

These two new MASONITE Products will be announced to the public through national advertising during April, May, and June—just at the right time to reach summer building activity. Be sure you know all about them. Mail the coupon for FREE samples and complete information.

MASONITE

THE WONDER WOOD OF A THOUSAND USES
(A MISSISSIPPI PRODUCT)

MASONITE CORPORATION, Dept. AB-3
111 W. Washington St., Chicago, Ill.

I want to know all the details about the two brand-new MASONITE Products—MASONITE INSULATION SHEATHING BOARD and MASONITE CANEC INSULATION. Please send FREE samples and literature.

Name _____
Address _____
City _____ State _____



Why is
the **FINEST**

weatherstrip made?

MetaLane Weatherstrip has no equal in quality, appearance, efficiency and simplicity of application. It is made of a revolutionary, new material which, unlike that used in ordinary weatherstrip, does not discolor, oxidize or corrode. Its hard, silver-like finish is permanent. Because of these qualities, MetaLane Weatherstrip *always* maintains its efficiency. Windows slide easier on its smooth, hard surface. Application costs are lower because MetaLane Weatherstrip requires less fitting, less nailing and less time to install. Remember, MetaLane Weatherstrip costs no more than ordinary weatherstrip.

Install MetaLane Weatherstrip in the homes you build and in those you modernize. If your lumber dealer has not already stocked it, send for sample and further information.

MetaLane Weatherstrip is packed in units of correct size in individual, handy cartons for doors, windows and casements. Nails, accessories and instructions are included in every carton.



Monarch Metal Weatherstrip Corp.
Send me literature and sample of MetaLane Weatherstrip.

Name _____
Address _____
City _____
My Dealer _____

METALANE WEATHERSTRIP

MONARCH METAL WEATHERSTRIP CORP.
6332 Etzel Avenue, St. Louis, Mo.

HERE'S ONE WAY TO MOVE YOUR HARD-TO-SELL PROPERTIES



This distinctive floor in the Model Home of America, Atlantic City, N. J., is Armstrong's Plain Linoleum in many colors, designed by Eugene Schoen.

... Install Floors of Armstrong's LINOLEUM

DISTINCTIVE floors of Armstrong's Linoleum can be a big help in getting "white elephants" off your hands. The bright modern beauty of these floors has a powerful influence on customers. And when you say, "It's Armstrong's Linoleum," your sales story is doubly strong. Your prospects know that the name *Armstrong* stands for high quality in floors.

In your houses, special floors like the one above can be installed quickly and inexpensively. Or, if you prefer a standard pattern, there are more than 200, in five price groups, from which to choose. Armstrong's Linoleum is inexpensive to install. With reasonable care in rented properties, it will last for years and repay its low first cost many times over. Plan now to give your properties the added sales advantage of colorful Armstrong's Linoleum Floors. Send ten cents today for color-illustrated "Floors That Keep Homes in Fashion" and "Gay Floors for Basement Playrooms." Armstrong Cork Products Company, Building Materials Division, 1218 State St., Lancaster, Pennsylvania.



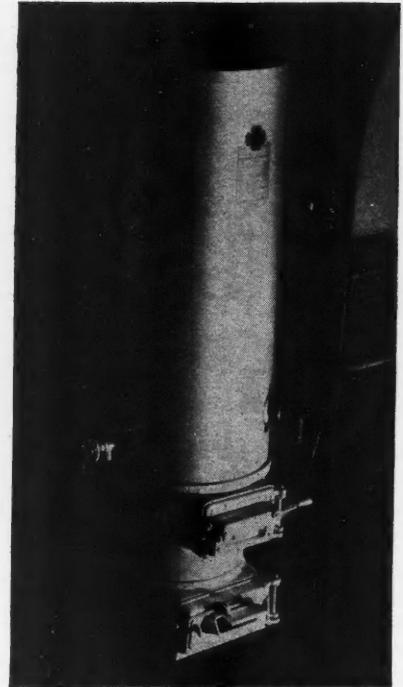
ARMSTRONG'S *Linoleum*
and RESILIENT TILE FLOORS
LINO TILE • ACCO TILE • CORK TILE • RUBBER TILE • LINOWALL • ACOUSTICAL CEILING

Coal Burning Water Heater

A NEW model coal burning domestic hot water heater, with re-designed rear flue outlet and an enlarged combustion chamber, has been developed by American Radiator Company laboratories after months of experiment on its Kolflash heater.

The newly designed heater, offered with or without self-contained jacketed storage tank and automatic regulator, is furnished in 16-inch diameter, size with either 30 or 40 gallon capacity. The large combustion chamber is reported to reduce firing to twice daily for ordinary household purposes. A three-quarter inch inlet water tube and an equal size hot water outlet are clearly marked for easy installation.

Especially made for home, stores, restaurants, etc., where water heating is not, at present, part of the complete system, the new model has a fuel capacity of 41 pounds and the grates are designed to efficiently burn low-cost pea coal. The heater is equipped with a removable ashpan and when installed without the automatic regulator the fire door is made with slide damper and manually operated draft door.

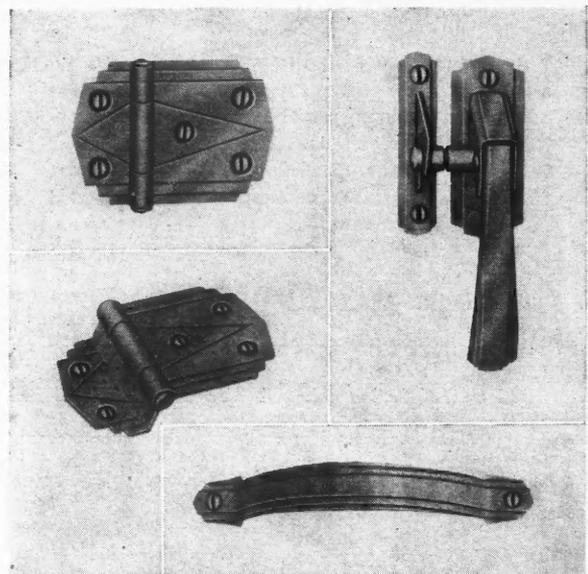


LARGE chamber on water heater requires coal firing only twice daily.

Matched Cabinet Hardware Sets

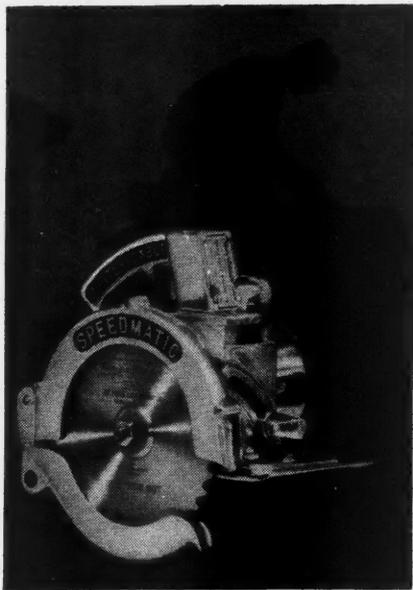
A NEW reversible kitchen cupboard catch is a featured addition to the cabinet hardware line manufactured by the National Brass Company, Grand Rapids, Mich.

A simple compressing of a spring will release the dog and allow it to be moved for left or right hand doors. This dog automatically resets itself in the new position. No mechanism is exposed to mar the beauty of the catch; only the smart design and sparkling chrome finish distinguishes it from others. New hinges and a drawer pull in the same smart styling are offered as companion items to form matched sets.



REVERSIBLE cabinet catch and matching hardware in new line.

LAND MORE JOBS and..
GET YOUR FULL PROFIT OUT OF THAT PEAK!



Your **BRAINS** and a **Speedmatic Saw** are a pair of 1937 winners—if you use them. Figure ahead and prepare against labor shortage—high costs—overtime payrolls. Investigate the actual savings you can make by using a Speedmatic, the dependable saw with guaranteed cutting speed. Built in three sizes, all adjustable for bevel and depth, Speedmatics are the most powerful, fastest cutting and easiest to handle saws you have ever seen. Let us prove this to you by a no obligation demonstration right on your own job. *You might as well use the best.*

**Contractor's
 Special Floor
 Sanding
 Machine**



A powerful 8" sander that gives 12"

performance. Hundreds now in use setting a pace others can't touch. Here's a sander that is really portable—operates from lighting circuit—yet develops 4 HP for fast smooth cutting. Selective speed—ballbearing—clean—easy to operate. *Ask for details.*

PORTER-CABLE MACHINE Co.

1721-3 No. Salina St.

Syracuse, N. Y.



Above is the *American Builder* building forecast for 1937. Be prepared to get your share and handle it at a good profit. The right equipment means a lot—PORTER-CABLE Machines are the right equipment.

**Mail coupon
 NOW. No
 obligation.**

Gentlemen: I am interested in... Send details Demonstrate

Name..... Street..... City..... State.....

MIAMI CABINETS

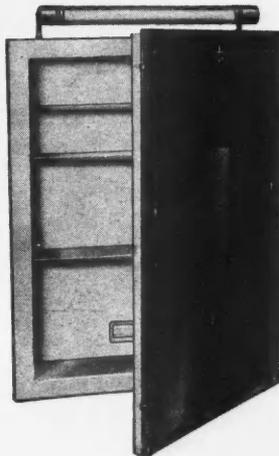
MIRRORS and ACCESSORIES

... for Modern Bathrooms



Illustration above shows one of the many MIAMI Cabinets fitted with the new, modern Tubular Light Brackets. Brackets are brass, finished in brilliant chromium. Shade is opal glass.

Miami Cabinet at right is fitted with the new, graceful Lumaline overhead Bracket. Cabinets can also be equipped with brackets on each side, instead of overhead.



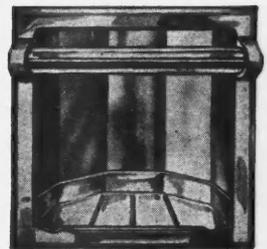
From this most complete line of modern bathroom cabinets and accessories . . . models for the modest bathroom to the very finest . . . you can supply every remodeling

or new building requirement. MIAMI designers and engineers will gladly co-operate with you on any unusual bathroom problem. Write for complete details.

See Our Catalog in Sweet's

**MIAMI CHROMIUM
 BATHROOM
 ACCESSORIES**

are forged brass, heavily nickered, then covered with chromium. Resist wear, retain their brilliance. Recessed and projection types—for every purpose.



No. 6004—Soap Dish and Grab Bar with self-draining tray.



No. 5001—Chromium Octagon Towel Bar.

MIAMI CABINET DIVISION · The PHILIP CAREY COMPANY, Middletown, Ohio.

Build a Better FIREPLACE this EASIER way



- ◆ will not smoke
- ◆ Circulates Heat

Your clients will be enthusiastic about a Heatilator Fireplace. They will like its trouble-free operation . . . the way it warms every corner of the room and even adjoining rooms. It saves fuel bills on cool spring and fall days . . . gives all the heat needed in mild climates.

◆ Easier to Build

You will find it much simpler to build a fireplace around the Heatilator. For it provides a correctly proportioned form around which the masonry is easily laid. Firebox, damper, smoke-dome and down-draft shelf are all built-in parts of the unit. It saves labor and materials. You can build any style fireplace around it . . . use any kind of masonry.

◆ Thousands in Use

The Heatilator Fireplace has been proved dependable in homes and camps all over the United States. It is the most efficient fireplace ever devised. You can safely recommend it.

◆ **New Low Prices.** Sold by leading building-supply and lumber dealers with stocks in principal cities for immediate delivery. Send coupon for details and new price list.

**MAIL
COUPON**

HEATILATOR COMPANY
753 E. Brighton Ave., Syracuse, N. Y.

Please send me complete Heatilator information and price list.

Name.....

Street.....

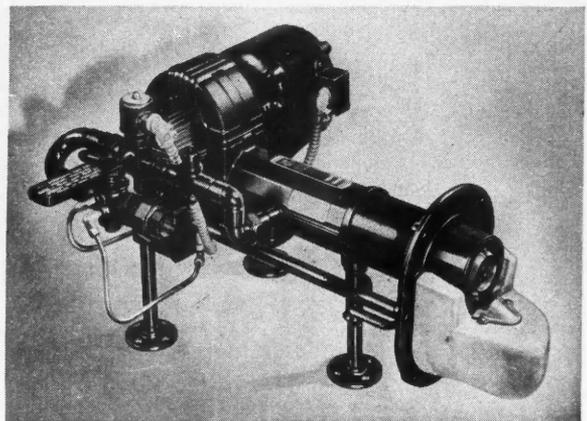
City..... State.....

Heatilator Fireplace

Pressure Type Gas Burner

PRESSURE type gas burners designed for home heating in areas where gas burning equipment is more advantageous to the consumer are now being produced by the Norge Heating and Conditioning Division, Borg-Warner Corporation, Detroit.

The new Norge gas burner, similar in design to the Norge oil burner, is the product of years of painstaking research and offers positively controlled heat, plus complete combustion. Variable weather conditions, wind, and chimney drafts, heretofore the chief obstacles to efficient heating with gas equipment, have been overcome in the Norge gas burner by means of a motor-driven blower which creates pressure within the burner that is higher than that produced by outside elements. Upon installation in the home, the Norge gas burner is adjusted for correct mixture of gas and air, furnishing clean, hot, economical heat at the same high efficiency, regardless of climatic conditions. Complete safety features are standard Norge equipment.



NEW Norge gas burner for home heating.

Tilting Arbor Saw

A NEW tilting arbor saw in its 1937 line is being offered by Walker-Turner Company, Inc., Plainfield, N. J.

This saw is ideal for handling heavy, awkward pieces, as the lumber is always in a horizontal position, regardless of the angle of the cut. The tilting unit, although heavy and rigid, is easily swung to any degree by a completely enclosed worm gear. The indicator mounted on the housing is absolutely accurate, and may be fully relied upon for depth of cut. A 10-inch adjustable blade with a cutting capacity of 3½ inches is standard equipment. The belt travel is always in a straight line, no matter to what angle the arbor is tilted. The guard is of latest design, offering full protection with a minimum of interference. Safety "kick back" pawls prevent the work from being projected back toward the operator. SKF ball bearings, mitre gauge, splitter and ripping fence combine with the other features to make this Walker-Turner tilting arbor saw outstanding in its price class.



TILTING arbor saw on which lumber is always horizontal for any cut angle.



SMITH 3 1/2-S on Pneumatic Tires!

Speed up your small concrete jobs with this fast Smith 3 1/2-S Tilter. It's light weight—well balanced—quickly portable from job to job. Just hook it behind your motor car or truck and travel at fast speeds. Equipped with shock absorbing spring mounted axle, roller bearings and a choice of either pneumatic tired wheels or cushion tired wheels.

And it's equally fast on the job! Designed like the famous Smith high-speed BOULDER DAM MIXERS with handy feed chute, famous "end-to-center" mixing action, and tilt and pour discharge through short 40-degree arc—all Smith big mixer features. Yet you pay no more than you would for inferior "tub" mixers.



Get this NEW BULLETIN!
It gives you a complete description of this fast Smith 3 1/2-S Trailer Mixer. Fill in the coupon and drop it in the mails. Other small Smith Mixers in 2 1/2-S, 5-S, 7-S, and 10-S sizes. Write for literature.

SMITH MIXERS

THE BOULDER DAM MIXERS

THE T. L. SMITH CO., 2849 N. 32nd St., Milwaukee, Wis.
Please send us a copy of the new Smith 3 1/2-S Bulletin.

Name

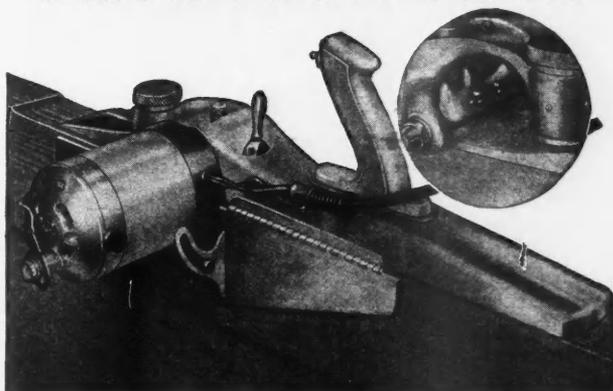
Address

★ FITTING DOORS ★ THE CARTER WAY



- A door being fitted and beveled with a Carter Power Plane.
- Mortise for lock being cut with a Carter Lock Mortiser.
- Mortises for butts being cut with a Carter Hinge Butt Router.

CARTER POWER PLANE



Planes any edge — doors, sash, transoms, etc., up to 2 5/16" wide — straight or bevel cut. It cuts extremely fast and work is always smooth and uniform.

Plane sharpens its own cutters. Used with stand that is furnished, it makes a high speed jointer for small work.

Power plane with all attachments comes packed complete in handy metal carrying case.

R. L. CARTER DIVISION
THE STANLEY WORKS

133 Elm Street, New Britain, Conn.

CARTER TOOLS

R. L. CARTER DIVISION
The Stanley Works
133 Elm St., New Britain, Conn.

... I would like to have you demonstrate the Carter Power Plane and other Carter Tools for hanging doors.
... Send me literature on these machines.

Name

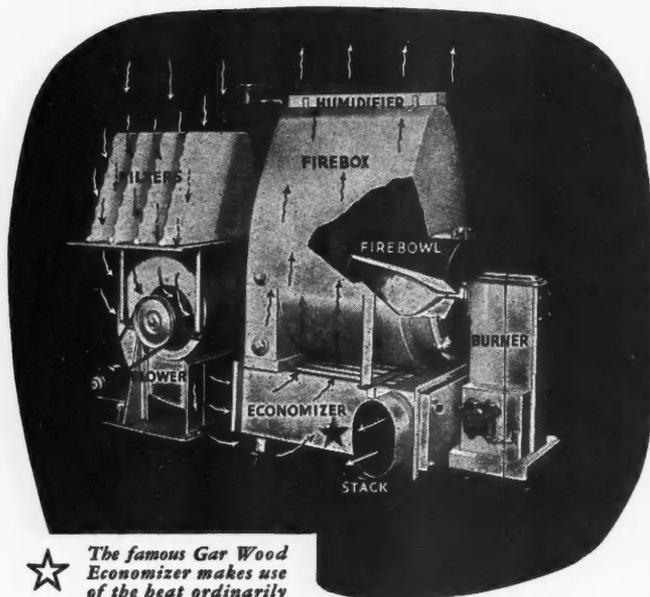
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THE HIGH EFFICIENCY

Gar Wood

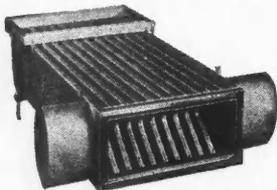
AUTOMATIC HEAT AND AIR CONDITIONING

ECONOMIZER



★ The famous Gar Wood Economizer makes use of the heat ordinarily wasted up the chimney.

- Amazing economy of operation is one of the main reasons for the popularity of Gar Wood Air Conditioning equipment.
- And a good share of this economy is due to the exclusive Gar Wood Economizer, which makes good use of the heat that is ordinarily wasted up the chimney.
- The Economizer is located between the firebox and stack outlet. Return air is discharged at high velocity, by the blower into the spaces between the Economizer tubes. This makes the innermost tubes fully as effective as those on the outside. Air is so light and can contain so little heat per cubic foot, that large volumes must be forced through the Economizer to carry away the heat. This air, being the cold air coming back from the returns of the system, is most effective for extracting the heat from the hot gas coming from the firebox. Thus the air is preheated and prepared for its final complete extraction of heat as it passes upward, around the scientific, "tear-drop" firebox.
- Gar Wood Tempered-Aire takes the guesswork out of air conditioning. Heating, filtering, ventilation, humidification and circulation are correct and fully controlled. Add these to Tempered-Aire economy and you get positive client-satisfaction. Owners say Gar Wood oil heat costs less than coal. Be sure all Tempered-Aire facts are in your files. Write for full details.



★ The Economizer, with its flat, thin flues, provides a tremendous heating surface in a very small space. It's an exclusive Gar Wood feature.



Air Conditioning Division

GAR WOOD INDUSTRIES, INC., DETROIT, MICHIGAN
Canadian Distributors: Engineering Laboratories, Ltd., Leaside, Ontario

SEE OUR EXHIBIT AT THE NATIONAL OIL BURNER AND AIR CONDITIONING EXPOSITION, MAR. 15-19, PHILADELPHIA, PA.

LETTERS from Readers on All Subjects

Facts, opinions and advice
welcomed here

Ready for Cost Key Estimating

Mishawaka, Indiana

To the Editor:

You may be interested to hear that we are just completing an estimate on labor and all materials for the "basic House" shown in A. W. Holt's "How to estimate the Cost-Key Way." We believe this method of estimating will be of considerable help to us and want to thank you for sending us this information.

LOWE LUMBER COMPANY

Likes Catalog Service

Lincolnton, Kansas

To the Editor:

Enclosed find a list of selected catalogs that we think that we can use. We think that this is a very fine service that you are rendering the readers of *American Builder* because there are some things that we would not know how to get the information on if it were not for the service that you are giving to the subscribers.

THE E. R. BURKHOLDER LUMBER CO.,
per W. R. Peterson

Dealer Wants Display Ideas

Westfield, N. J.

To the Editor:

We are constructing a new Colonial office building and at this time are planning our displays. Will you kindly advise if you have any new or novel displays, either built in or portable, or even display material that you would like to see worked in. Ideas for modern display would also be welcome. Our display room is about twenty feet square with a ten foot ceiling and we are planning a series of photo murals about two feet six inches high around the four walls above the displays which will be door height. It is our idea to have the photos portray home building, starting, for example, with logging and manufacturing scenes, then through construction stage to finished exteriors and interiors. Each photo used should be outstanding and we have often noticed such pictures in national advertising and literature of leading building material manufacturers and trade associations. If you have any such pictures we would greatly appreciate your sending a copy along to us as we are anxious to make this feature very outstanding.

We are also trying to develop an interior sign over our counter which would be about two feet six inches high (same as photo murals) and approximately fourteen feet long, featuring our company name with the wording "Quality Materials" in center, and then trade marks of national manufacturers whose material we sell, like Johns-Manville or United States Gypsum or Weyerhaeuser 4-Square. The idea would be to have the trade marks surround the wording rather promiscuously, sort of like stars in the sky. If your company has trade mark decalcomanias or just a copy in true color, we would ask that you forward same promptly so that we may incorporate in our sign. We would also welcome your suggestions or ideas for layout of such a sign.

A feature of our new office will be a Home Builders' Library. We hope you will send along to us any catalogs, literature or information of interest to the prospective home builder or modernizer.

We are sending this letter to several national manufacturers, trade journals and trade associations with thanks in advance for any co-operation you may give us.

J. S. IRVING COMPANY, Lumber Dealers
By George H. Riley, Jr., President.

PROOF!
 "We have used the DREADNAUGHT 8 on some difficult jobs -- jobs that other machines could not touch, and in every case we came out in fine shape and satisfied our customers."
L. A. BORGERT

The SANDER That Stands ALONE DREADNAUGHT 8

"Want to take this opportunity to mention that I am more than pleased with the DREADNAUGHT "8" sander. It has already paid for itself.

"We have used it on some very difficult jobs . . . jobs that other machines could not touch, and in every case we came out in fine shape, and satisfied our customers.

"Every wide-awake contractor, carpenter or builder should have one of these machines . . . I for one have found it a very profitable item."

L. A. BORGERT,
 CONTRACTOR AND BUILDER,
 ST. CLOUD, MINNESOTA

Cut your sanding costs in HALF. Get the facts on DREADNAUGHT 8—the sander that sands perfectly 600 to 2,000 sq. ft. of old varnished floor, without clogging sandpaper; or 1,200 to 3,200 sq. ft. of new floor in 8 hours. No dust with the DREADNAUGHT. You can get right up to the quarter round. Uses one-third to one-half less sandpaper. The product of 20 years of specialization, and sold on a 60-day money-back guarantee. Write for free demonstration or details.

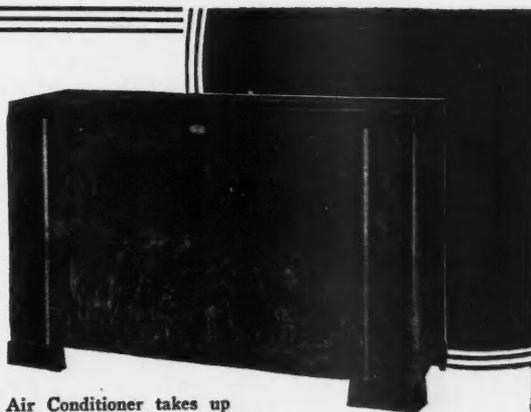
CLARKE SANDING MACHINE COMPANY
 Dept. A.M.-337, MUSKEGON, MICH.

Handles the Biggest and Toughest Floor-Sanding jobs at Lowest Cost per Square Foot. Uses from 1/3 to 1/2 less sandpaper.



Easily Portable, Weighs only 94 lbs. Operates from Ordinary Light Socket

Years Ahead IN DESIGN AND CONSTRUCTION



The Unit Air Conditioner takes up no more room than a grille-enclosed radiator. It is 24 inches high and 12 inches deep. Can be recessed.

Simplified Radiator Heat That Air Conditions

No Ducts No Registers No Grilles

ALL the economies of installation and heating efficiency of radiator heat, plus a simple, easy-to-install air conditioning feature. The one boiler furnishes both heat and hot water supply. Complete heating and air conditioning system costs no more than warm air. No ducts to fill up basement.

Radiators are the Burnham Slenderized which are 40% smaller and heat 40% quicker than conventional tube ones. Can be recessed between studs under window and not extend beyond wall.

Three Conditioner cabinets which are practically no larger than the usual grille-enclosed radiators will take care of a 7-room house. They filter-clean the air, heat, humidify and circulate it. Cabinets are very attractive in design. Each Conditioner has its own separate thermostat control. Also hand control for running fan to stir up dead Summer air.

Here at last is a simple, every way practical, low cost Air Conditioning system that any heating contractor can install. Send for full particulars.



Four-tube Slenderized Radiator is less than 5 inches deep. Can be recessed and left open, or a Burnham Panel Front used, giving both radiant and convected heat.



Any Burnham Boiler can be used. Oil, coal or gas.

Burnham Boiler Corporation

Irvington, New York Zanesville, Ohio

Representatives in All Principal Cities of the United States and Canada

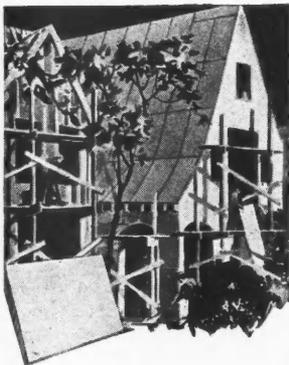
This panel
BEAUTIFIES
and
INSULATES
at the same time

FREE — use coupon below to secure full-color, illustrated literature on Panelized Insulation and other sales-building, money-saving materials and plans.

PANELYZED INSULATION has made an instant hit. It is actually Homasote with a new surface—which means that you can now panel a room with a material which has real beauty; at the same time you are adding high insulating efficiency and sound structural strength... Let us send you illustrations of the various colors—made direct from the product—and full descriptions of sizes and suggestions for use.

We also have a new, illustrated folder on Homasote Big Sheets (up to 8' x 14')—which should be in your files. Homasote is a big time- and labor-saver—for both exterior and interior use.

You will also want to know about the Precision-Built Home Plans—whereby you can build a 7-room house with full basement for approximately \$3500—qualified for FHA Mortgage. Write for free folder picturing 11 different houses—or send \$5 for a complete set of 27 blueprints covering all details.



WEATHER PROOF
HOMASOTE
INSULATING AND
BUILDING BOARD

AGASOTE MILLBOARD CO., TRENTON, NEW JERSEY

- | | |
|--|--|
| <input type="checkbox"/> Send FREE folders on | <input type="checkbox"/> Panelized Insulation |
| <input type="checkbox"/> Homasote Big Sheets | <input type="checkbox"/> Precision-Built Homes |
| <input type="checkbox"/> We enclose \$5 for 27 blueprints on Precision-Built Homes | |

Name.....

Address.....

Builders of Small Homes

(Continued from page 62)

FRAMING—Sills 4x6; corner posts built of two 2x4's and one 2x6; plates 2x4 lapped at all intersections; first floor girder 6x8"; floor joists 2x8", 16" o.c., doubled under bearing partitions; bridging 1x3" double spiked not less than 8' o.c.; ceiling joists and rafters 2x6, 16" o.c.; collar beams 1x6 or 2x4 every third rafter. The ribbons are 1x4 let into studs and spiked. All openings are double studded with jack stud and doubled 2x4 headers set on edge for openings not over 3' 4" in width, and double 2x6 set on edge or trussed when of greater width.

EXTERIOR WALLS—No. 2 white pine or redwood 7/8" x 10' beveled siding laid 8" to the weather. Wall shingles are 18" long red cedar applied 7" to the weather. Heavy felted building paper is used.

ROOFS—Asphalt square butt strip shingles applied over 24 lb. saturated tar felt.

FLOORS—No. 2 red oak 7/8" x 2 1/4" t. & g. In kitchen plywood is laid over rough flooring and then covered with Armstrong linoleum. Bathrooms have ceramic tiled floors laid over 3" cinder concrete.

PLASTER—Wood lath with three coats plaster. Sanitas washable wallpaper in kitchens and bathrooms.

PAINTING—Interior—2 coats lead and oil. Floors—3 coats shellac. Exterior walls and sash—2 coats lead and oil.

PLUMBING—Extra heavy cast iron soil pipes. Copper water pipes. Fixtures by Standard Sanitary Manufacturing Co.

HEATING—Thatcher pipeless furnace of recirculating type, or American Radiator hot water one-floor system. At extra cost, American Radiator Co. boiler and radiators with Jenkins valves are provided. Hot water is provided by a Boyton heater with 30 gal. galvanized iron tank.

* * *

Plan for a Modern Basement

(Continued from page 81)

the result that a 2" layer of muck and sewage covered the basement floor. The clients refused to accept the house.

Details of the drainage system shown in the accompanying diagram are worthy of study. Each unit of the system has been numbered. No. 1 shows a storm water line of cast-iron pipe, extending from the rain-water trap to a point 12" above grade, where downspouts enter the system. No. 2 shows the basement drainage line, of cast-iron pipe from Line No. 1. All flow drains, seepage tile drains, areaway drains, and relief sump are connected to this line. No. 3 shows a cast-iron drainage line, extending from 5' outside the basement wall line, and carried up above the high point of the roof. To this line are connected all soil stacks from sanitary fixtures above the basement. No. 4 shows the basement sanitary line, a cast-iron branch from Line No. 3, vented through roof, and to which are connected basement fixtures only.

An automatic and manually operated control valve is placed in the No. 2 line to prevent storm water from conductor lines back-flowing through floor drains and seepage tile to flood basement.

A drainage control valve, both automatic and manually operated, is placed in the No. 4 line to prevent street sewage back-flowing through basement fixtures and flooding basement.

A back-water drainage valve is placed at the base of

(Continued to page 132)

STUGGO SPRAYING MASONRY SURFACES NOW OFFERS BIG EARNINGS



This new machine and process completely solves the problem of permanently surfacing new or resurfacing old masonry buildings, walls, etc. It fuses a prepared waterproofed plastic mixture on any masonry surface.

It fills all cracks and checks and can be applied in any thickness desired and in 30 colors and shades. Fully proven by over ten years actual use under all conditions and every climate.



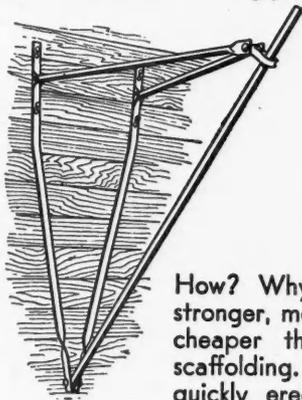
LARGE WAITING MARKET

Owners everywhere want to enhance present values and make their masonry buildings more attractive and livable. The better builders are striving for greater permanence, beauty and salability in their new construction. With Colorcrete stucco spraying, you can supply this waiting market and can offer permanent, colorful surfacing at amazingly low cost. Many operators report costs of 2c or 3c per sq. ft. and sell at from 4c to 7c. Some have paid for their equipment from first couple of jobs. Machine capacity over 300 sq. ft. per hour. Equip yourself now to cash in on this big waiting market and the big government modernization campaign opening up still greater possibilities for you.

Get the facts. The new Colorcrete books tell the whole story. Write today. It may mean business independence for you.

COLORCRETE INDUSTRIES, Inc.
505 Ottawa Avenue Holland, Mich.

Reliable Scaffold Brackets



SAVE
YOU
MONEY

How? Why? Because they are stronger, more dependable and cheaper than costly wooden scaffolding. Because they are quickly erected, quickly taken down. Because you can use

them on wood or stucco. No wonder they soon pay for themselves. Thousands of builders have used them for years.

Let us prove their value. Send for catalog—then ask us to ship first pair C.O.D. for your inspection and trial.

Reliable Jack Company, 1401 West Second St., Dayton, Ohio

RELIABLE
SCAFFOLDING BRACKETS

Make the Home Complete



Install a
PEERLESS damper

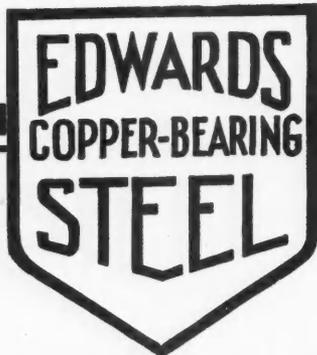
You wouldn't build a house without an outside door. But many builders fail to realize the importance of installing a PEERLESS DOME DAMPER in the fireplace. Peerless dampers not only insure a proper burning fireplace but seal the chimney flue when the fireplace is not in use, preventing unhealthful drafts and heat loss. This is very essential to the efficient operation of the heating plant and air conditioning units.

PEERLESS DOME DAMPERS are built of heavy stove plate cast-iron in all standard sizes and come in three models—Rotary, Poker or chain control. Write for details and prices.

OTHER PEERLESS PRODUCTS

Fireplace fixtures—ash dumps—coal windows—ash pit doors—garbage receivers, radiant gas heaters, Gas Conversion Burners and Stokers. Details and prices on request.

PEERLESS MANUFACTURING CORP.
1400 W. Ormsby Ave. Louisville, Ky.



THIS SHIELD

Assures Longer Service from EDWARDS METAL ROOFING

ACCCELERATED tests and actual experience of users prove that Edwards Copper-Bearing Steel Roofing resists the destructive action of the elements at least three times as effectively as steel sheets of the same thickness that have been produced without the protective copper content. Roofs of this material are still giving satisfactory service after 35 years exposure.

The trade mark shield shown above appears on every sheet of Edwards Copper-Bearing Steel Roofing. It assures the dealer and his customers added value out of all proportion to its price.

Write for Handy Catalog 92
and money saving prices.

THE EDWARDS MANUFACTURING CO.
542-562 Eggleston Avenue Cincinnati, Ohio

Install Tile-Tex



for

**LASTING
BEAUTY AT
LOW COST**

**FLEXIBLE
WALL TILE**

Tile-Tex Decorative Wall Tile is easily applied in old or new buildings. Made in a wide range of colors and gives a permanent wall of lasting beauty at low cost. Ideal for Bathrooms, Kitchens, Stores, Barber Shops, Beauty Shops, Public Buildings, Restaurants, Bars and Lobbies.

Tile-Tex is a unit-laid wall tile that will not craze, crack, warp or mar. Can be applied right over plaster walls or wall board.

Ask your dealer about Tile-Tex Wall Tile today—if he cannot supply you, write us for detailed information and price.

THE TILE-TEX COMPANY
1229 McKinley Avenue Chicago Heights, Illinois

Decorative WALL TILE
TILE-TEX
Resilient FLOOR TILE

Plan for a Modern Basement

(Continued from page 130)

the soil stack. It is of cast-iron, from 3" to 6" diameter, and is made with an accessible bronze metal balanced swing valve with rotating vanes on disc, for self-cleaning of valve seat. It prevents back-water flow to floor drains.

In the garage a drain and trap have been combined in a single unit. An inside deflector directs all dirt into a removable basket. The unit has a visible trap seal and 3" vent connection. Body of the drain is of cast-iron, painted or galvanized, with lateral flange cast to body, which anchors drain securely in cement slab. The strainer and frame are of cast-iron.

The automatic centrifugal sump pump shown takes excess seepage water from tile lines, and discharge from floor drains empty into the sump while the control valve on storm water line No. 2 is closed. A float control starts either a hydraulic or electrical pump and automatically removes water whenever it rises to within 6" of the floor level. This removal of water prevents moist walls, and avoids cracking or heaving of basement floor as a result of outside pressure.

* * *

Foremanship Training

(Continued from page 84)

workmen's time must be kept, men must be hired, and, unfortunately, some must be fired.

The construction foreman's work can be divided into six divisions:

1. Problems pertaining to planning:
 - a. Plans job in advance.
 - b. Places men to best advantage.
 - c. Figures best way to do jobs.
2. Problems pertaining to materials:
 - a. Orders materials.
 - b. Checks on materials that are delivered.
3. Problems pertaining to record keeping:
 - a. Keeps time.
 - b. Keeps job progress reports.
 - c. Makes reports on accidents.
4. Problems pertaining to safety:
 - a. Sees that job is left "safe" at night.
 - b. Sees that scaffolding is constructed safely.
 - c. Renders first aid.
5. Problems pertaining to equipment:
 - a. Looks after equipment.
 - b. Provides sanitation.
6. Problems pertaining to personnel:
 - a. Hires men.
 - b. Discharges men.
 - c. Maintains harmony.
 - d. Acts as "go-between" (architect, contractor, owner, sub-contractor).

It must be evident on the basis of these things that a foreman has a very responsible position; has many personnel contacts to make and should therefore be carefully selected.

And now to discuss what is probably the most important and yet least considered phase of the foreman's work, that of giving orders and instructing workers how to do certain jobs that may be new to them.

The problem of whether the foreman should consider that he has the responsibility of training craftsmen and apprentices to do jobs with which they are not familiar will be discussed first. The old apprentice system has declined, in many trades there are no apprentices. How, then, are apprentices going to learn a trade? It is true that there are many educational institutions, such as trade schools and vocational departments of high schools that are doing a good job of apprentice training. The apprentice is still, however, limited in his knowledge; no good trade school is ever ambitious enough to state that it is making journeymen craftsmen. Nothing will ever take the place of job training. More and more, it is being recognized that the schools can do an excellent job in teaching the fundamentals of a craft to beginning apprentices and the technical phases of the trade to advanced

(Continued to page 134)

For
more
jobs



Sell



MARSH *Wonder Walls*

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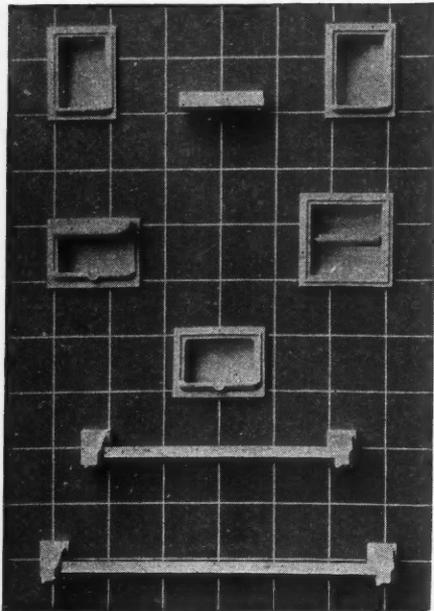
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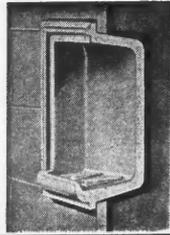
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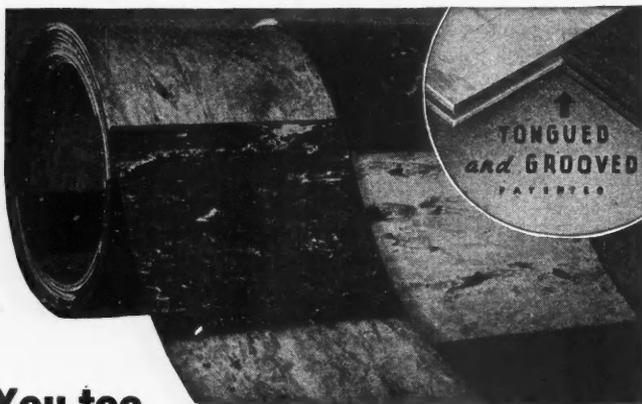
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—and at the same time give your customer the best there is in rubber floor covering plus the assurance that this job will not curl—warp nor lift at the edges because:

● SYRA-BORD is the only rubber floor covering with the patented tongued and grooved sides and ends which interlocks the joints securely—just like wood flooring—

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Servicised Products Corp.

6047 W. 65th ST. CHICAGO, ILL.



Foremanship Training

(Continued from page 132)

apprentices. In any case, there is much that will have to be learned on the job under the direction of a competent foreman or journeyman with whom the apprentice is working.

Job training is also vitally important today, because of the recent unemployment situation in the construction trades—the greatest drop in building for over 50 years! Many men who were once skilled have become “rusty” and will need some brushing up to get back into line. Surely the foreman has a responsibility to these men to issue intelligent orders and give clear instructions on how the different jobs are to be done.

Probably the first to list would be that of giving clear understandable orders. Orders are sometimes misunderstood because of difficulty on the part of the foreman to make clear what is wanted. The foreman sometimes assumes that the worker is familiar with the blue-prints, and therefore issues orders in a hurry without giving the craftsman time to read the plans and become acquainted with his particular job. Sometimes an experienced man is selected to do work for which he has not had sufficient background. In this case the foreman has erred in not finding out the capacity and ability of the craftsman. A foreman should observe the following basic suggestions in giving orders:

1. Orders should be clear and definite; in clear understandable terms.
2. The foreman should be sure he is right before giving instructions.
3. He should have some consideration to the man who may be timid.
4. He should never give orders in a hurry.
5. He should have it understood that orders are to be followed as given.
6. He should be sure the worker understands the order by having him repeat it back to the foreman.

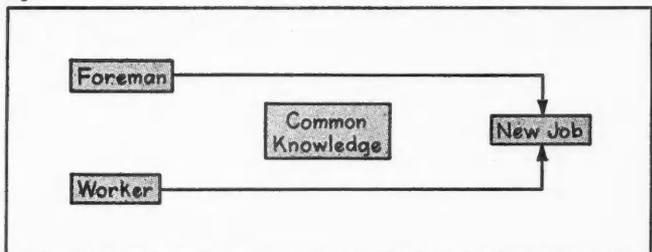
A scientific approach to the problem of how to teach a learner a new thing is being used by leading educators. In simple language, it is the procedure by which the learner is given the “overview” of the whole problem involved, even though he may be only doing a small part of it. Factory production, on a piece work basis, is the extreme situation, negatively, by which system the worker has no conception of how his part fits into the whole. On construction work, where the piece work basis is impossible, the good foreman will find his work greatly simplified in giving orders and instructions if he takes a brief time to give the picture of how the specific job fits into the whole. This procedure will, no doubt, be questioned as being unnecessary and taking too much time. The answer is that the broader a picture the craftsman has, in terms of what he is doing, the fewer mistakes he will make, and at the same time the job will be done in shorter time.

Poor and faulty instruction results in some of the following: 1. Poor work; 2. Waste of time; 3. Waste of material; 4. Mistakes are made by the worker; 5. Job slows down; and 6. Discontent is created; men lose confidence in foreman.

There is a definite procedure to follow if the foreman wants to be sure that the worker whom he is “instructing” is ready to receive the new knowledge. This is illustrated in the following diagrams.

Poor or Improper Procedure of Instructing

Fig. 1



Explanation:

The foreman outlines the new job to the worker, assuming that the worker is listening and understands what is to be done and the need for doing it. If the path through “common knowledge” is not taken, the worker may not give attention, or he may not understand the instructions; consequently he will not be able to

(Continued to page 136)

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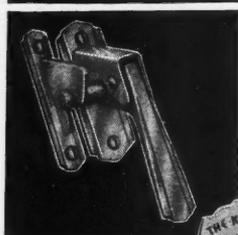
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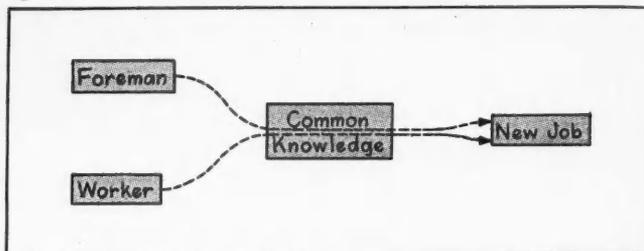
Foremanship Training

(Continued from page 134)

do the job. Because of this he is often blamed when the fault really lies with the foreman.

Proper Procedure of Instructing

Fig. II



Explanation:

In this method of instructing the foreman starts with the worker where he is; leads him through the field of common knowledge and carries him on to a proper understanding of the new job.

Note: The term "common knowledge" means that there is some information or fact that is common to both the foreman and the worker. The teaching "trick," for the foreman is to discover what this information is so that he can use it as the foundation for describing the new job.

HOW GOOD A BOSS AM I?*

Often times the foreman knows more about his men and their ability than he knows about himself. The following is suggested as a check-up sheet so that a foreman can rate himself as to his abilities and characteristics.

I Personal Preparation	Write grade here:
Do I know my job?	8
II Personal Qualification	
Do I keep my head when things go wrong?	5
Do I ever admit that I don't know?	5
Am I "set in my ways" or do I welcome new ways to do things?	6
III Giving Orders	
Have I outlined the work of each man so that he knows exactly what I expect of him?	7
Do I take time to show the man how to do new work and then check to see if he is doing it properly?	7
IV Job Planning	
When a mistake is made do I discover the cause?	6
Would the job run smoothly if I were sick?	10
V Material Problems	
Do I make sure the men know the value of the material they use?	7
VI Personal Problems	
Do I appreciate good work and praise the men once in a while?	6
Do I overlook occasional mistakes?	6
Do I "bawl a man out" or make him feel I am giving him some friendly advice when correcting him?	5
Do I stand up for a man when he has blundered and explain to him what he did wrong?	6
Am I as courteous to my men as to those who are of equal or superior authority?	5
Do I fire a man without good reason or fair warning?	6
Will I accept suggestions from my men and give them credit for making them?	5

Note: A score of 100 is impossible. The perfect boss or the perfect workman has not been discovered yet!

* These check-up characteristics were adapted from FOREMEN'S BULLETIN No. 37; Vol. 2. Published by American Rolling Mills Company, Middletown, Ohio.

It is evident that the job of foreman is a responsible one. Certainly, he should be given much credit for possessing abilities and constructional knowledge, without which a job would go "haywire." Planning the work, reading blue-prints and specifications, ordering materials, abiding by ordinances, keeping the job moving, hiring and firing men, giving orders and instructions, keeping the job safe for the worker, maintaining harmony, and lastly keeping himself up to date on the new things in industry—the foreman is due for recognition by all members of the construction industry.

The foreman must realize that he has a responsibility of job training that cannot be dodged. Failure to do this means that he is adding to his own work. He would not be a foreman unless he had the proper technical knowledge, learned by actually working at the trade. He must also study the problems of human relationships: how to get along with men, how to give orders, how to "instruct" apprentices and green men.

The foreman is the backbone of the construction industry—more power to him!

Contractors and Floor Men Are Switching To REID-WAY PROFESSIONAL

Here's the floor surfacing machine you have been looking for. It does superior work without excessive weight, bulky design or unnecessary mechanical gadgets. The Reid-Way Professional "8" has ONLY TWO MOVING PARTS (sanding drum and separate vacuum motor)—an exclusive feature. There are NO GEARS, BELTS, CHAINS or PULLEYS. In fact, there is practically nothing in this outstanding sander to go wrong and cause maintenance expense. And only Reid-Way is so designed that it will work directly up to the quarter-round on EITHER SIDE of the machine. The Reid-Way excels in every respect.



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The Dome Damper is built into this Circulator Fireplace

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Cost Analysis All-Wood House

(Continued from page 94)

white pine boards applied horizontally, and white pine plywood in 6 foot lengths above the wainscot to the ceiling. The master bedroom is finished with birch plywood. A second bedroom is finished with douglas fir plywood and the remainder of the house except the entry hall is finished with unselected gum. Where 6 foot lengths of plywood were used pieces 2 feet long were added at the bottom around the room to complete the coverage. Cypress boards, 1" x 8" V-jointed and applied vertically, were used as the finish for the entry hall and the stair hall.

Labor to apply the wood finishes averaged \$0.049 per square foot. The cheapest plywood applied cost 5½ cents per square foot and the most expensive cost 18 cents per square foot. With labor included the cost of the wood finish varied from \$0.104 per square foot to \$0.229 per square foot of net wall area. The average cost computed on the basis of the total cost of all finish woods applied and the 1,167 square feet covered was \$0.149 per square foot. Finishing the surfaces with stain, shellac and wax cost \$0.034 per square foot.

The total cost per square foot of the completed outside wall section is computed from the items shown above, viz: framing \$0.06; sheathing \$0.078; siding \$0.17; exterior painting \$0.07; insulation \$0.033; plywood @ 5½ cents, \$0.104; plywood finishing \$0.034. The total cost was \$0.549 per square foot. On the basis of the use of plywood at 18 cents per square foot the total cost was \$0.674.

Partition Walls

Partitions were framed a story at a time. No. 1 Yellow Pine studs set 18" center to center were used with a single plate at the bottom and a double plate at the top. All partitions parallel to the joists were framed with 2" x 4" studs set flatwise. Plates used in this case were 2" x 4" sawn in half. Bearing partitions were framed with 2" x 4" studs set in the usual manner. Partition framing cost \$0.076 per square foot for a gross wall area of 973 square feet. Wall finish on the partitions was the same plywood materials as described under outside walls, the minimum cost being \$0.104 and the maximum cost \$0.229. Stain, shellac and wax used as a finish cost \$0.034 on each side or \$0.068 for both sides.

The total cost of the partition walls is shown to have been \$0.352 per square foot for a wall section with fir on both sides. The maximum cost was \$0.506 where the plywood was birch on one side and gum on the other.

First Floor

Joists for the floors were 2" x 8" No. 1 Yellow Pine spaced 16" center to center. Doubled joists and blocking were used under partitions and a continuous 2" x 8" at the outside ends to form the box sill. Cross bridging between joists was 1" x 4" No. 2 Yellow Pine. One row of cross bridging was used in each span. A sub-floor of 1" x 6" No. 2 Yellow Pine laid diagonally covered an area of 506 square feet and extended to the outside edge of the floor joists. The cost of the first floor framing and sub-floor was \$0.125 per square foot.

Finish flooring, except in the kitchen, was 1½" x 2¼" select oak nailed to the sub-floor. Building paper was laid between the sub-floor and the finish floor. The area covered was 360 square feet which, including sanding, cost \$0.167 per square foot.

In the kitchen tongue and grooved boards ¾" x 3" No. 2 Yellow Pine, were laid over the sub-floor as a base for the linoleum. This cost \$0.12 per square foot. Light-weight felt was cemented to the wood base and standard gauge linoleum was cemented over the felt. Ninety-six square feet or 10% square yards of linoleum were required at a cost of \$0.38 per square foot or \$3.40 per square yard.

The ceiling in the basement was unfinished, therefore the cost per square foot of the first floor construction exclusive of the section covered by linoleum was: framing and sub-floor \$0.125, hardwood \$0.167, hardwood stain finish \$0.034, or a total of \$0.325; that covered by linoleum was framing and sub-floor \$0.125, linoleum wood base \$0.12, linoleum \$0.38, or a total of \$0.625.

Second Floor

Framing of the second floor, except that over the living room, was similar to the first floor and shows a cost of \$0.148 per square foot including the sub-floor.

The framing over the living room portion was built of exposed

(Continued to page 140)

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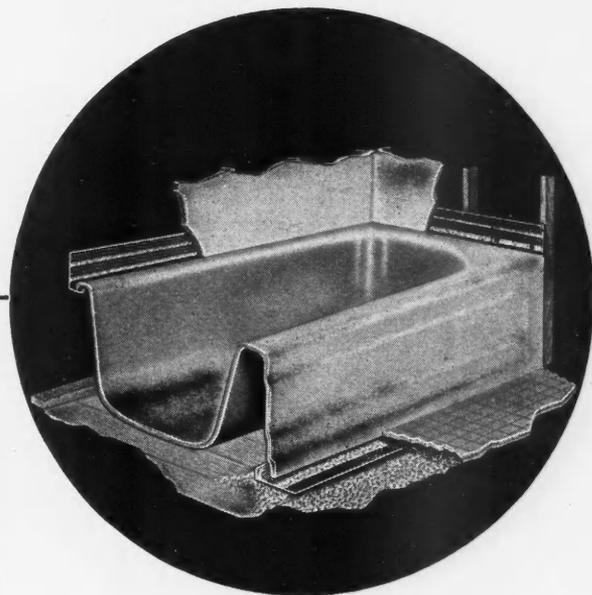
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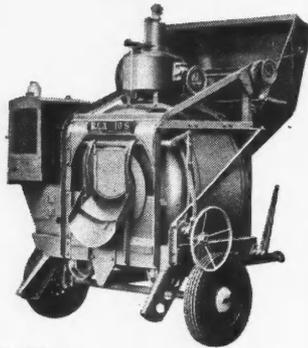
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Cost Analysis All-Wood House

(Continued from page 138)

fir beams, 4" x 8" with chamfered bottom edges. The beams were spaced 36 inches on centers. The sub-floor above was V-joint car siding with the V-joint side exposed in the living room. This framing cost \$0.251 per square foot.

Three types of flooring were used. Select oak was used to cover 186 square feet of floor and cost \$0.167 per square foot. Clear maple was used on 115 square feet and cost \$0.204 per square foot. The remaining 108 square feet of floor area was covered with edge grain yellow pine at a cost of \$0.183 per square foot.

The bath room floor covered in the same manner as the kitchen floor showed the same costs per square foot as the first floor linoleum: i. e., tongued and grooved wood base \$0.12, linoleum \$0.38.

Ceilings attached to the second story floor joists, except over the living room, were unselected gum plywood, stained, shellaced, and waxed. This plywood installed cost \$0.129 per square foot and the finishing cost \$0.034.

The total cost per square foot of the various second second floor sections were as follows. The exposed beam section above the living room where maple flooring was used; framing and sub-floor \$0.251; maple flooring \$0.204; finishing flooring \$0.034; finishing ceiling \$0.51; or a total cost of \$0.54. For the same section where oak flooring was used the cost was \$0.503 per square foot. Floor sections having a plywood ceiling below and pine flooring above the joists cost per square foot; framing \$0.148; pine flooring \$0.183; plywood ceiling \$0.129; finishing flooring \$0.034; finishing ceiling \$0.034; or a total of \$0.528. Where oak flooring was used the total cost per square foot was \$0.512. Where linoleum was used the cost was \$0.81 per sq. ft.

Roof

The roof section for the purpose of cost analysis is assumed as all construction from and including the ceiling finish of the second story to and including the shingle surface.

Ceiling joists and roof rafters were 2" x 6" No. 1 Yellow Pine set 18" center to center. Rafters were butted at the ridge and notched over the plate at the eaves. All rafters were tied together at the ridge with 1" x 6" collars. Roof sheathing consisted of 1" x 6" boards 9" on centers for shingle nailing. The ratio of the roof pitch is 12 horizontal to 7 vertical. The cost of the roof is computed on the basis of square foot area of the horizontal projection. The cost of the roof framing was \$0.17 per square foot.

Shingles were red cedar, 16 inches in length, laid 5 inches to the weather and with a Boston ridge. Cost of shingling was \$0.115 per square foot of horizontal projection area.

The fir plywood ceiling of the second story cost \$0.104 per square foot and its finishing cost \$0.034 per square foot.

Granulated rock wool 2½" deep was placed between the ceiling joists over the second story ceiling for insulation purposes. Its cost was \$0.021 per square foot of ceiling area.

Metal work on this house was a small item and consisted of metal shingle flashing at the junction of the garage roof and the house and metal flashing at all projections through the roof and at the chimney and roof. Gutters were not used.

The total cost of the roof section is the sum of the costs mentioned above. This total is \$0.444 per square foot of horizontal projection.

Millwork

Exterior doors were 1¾" pine, stock, paneled and glazed. Interior doors were 1¾" pine with fir panels. Doors were 6'8" high. Door frames were rabbeted to permit bearing for the plywood and nailing at the edge. A pair of wooden swing-out type stock doors, paneled and glazed, size 1¾" x 4' x 7' were used at the garage entrance.

Windows were double hung, 1¾" white pine, stock sash glazed 2 lights high, 3 wide and hung with weights and cords. Window frames were of white pine and rabbeted.

Screens were 1½" white pine, stock, with 16 mesh copper wire. Window screens were one-half the opening size. Combination screen and storm doors were furnished at exterior doors.

No interior trim was used around doors and windows. Base mold was 1½" x ½" with rounded edge; and ceiling mold 1¼" x 1¼", cavetto. Shelving was ¾" yellow pine and clothes rods were of wood 1½" in diameter. A half circle louvre with wood slats

(Continued to page 142)



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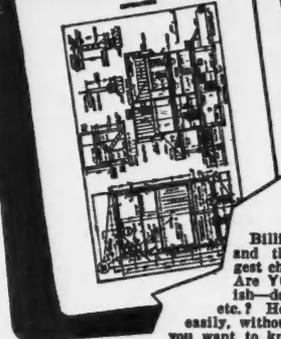
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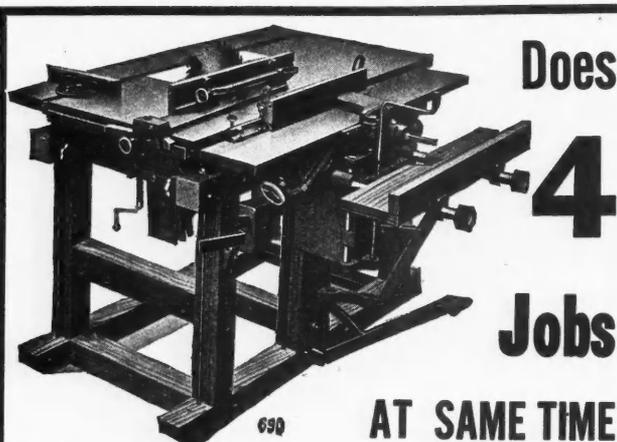
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Cost Analysis All-Wood House

(Continued from page 140)

backed by copper wire was furnished to vent the attic.

Hardware was bronze finish, except in the kitchen and the bath where nickel was used. The main door is furnished with a mortise lock and bolt set. Inside door sets are standard lock sets. One pair of butts were used on inside doors and one and one-half pair on outside doors. Rubber tipped stops were used for all doors. Windows have one pair of lifts and one fastener. Hooks and eyes were used to secure the screens.

Shutters for windows were non-operating, stationary slat type.

Kitchen cabinets were of wood, stock manufacture and consisted of two upper units and two lower units with counters. Counter tops were 1 1/8" maple. The medicine cabinet in the bath room was of wood with wood shelves and a door with mirror.

The entire cost of the millwork installed and complete as listed above including hardware was \$751.65.

Stairs

The main stairway was framed with yellow pine stringers and sub-treads. Finished treads, newell post, rails and turned spindles were of red oak. Risers and skirt boards were cypress. Risers, treads and skirt boards were glued in place. The stair cost was \$138.05.

The basement stair was also framed with yellow pine. The portion from the first floor to the landing at the kitchen entrance is finished with yellow pine risers and treads. The stair, from landing to basement, was built with 2" plank treads and without risers. The cost of the basement stair was \$37.65.

Heating

The arrangement of the chimney construction indicates that one-half of its cost should be charged to the heating system and the other half to the cost of the fireplace. The chimney rests on a concrete block foundation which in turn is supported on a 10" poured concrete footing. Both flues are lined with 12" x 12" x 24" clay tile. The chimney required 2,060 common brick which were laid up with prepared mortar. Two cast iron flue cleanouts open into the basement. One-half of the cost of the chimney was \$67.75. The cost of a fuel storage bin is also charged to the heating cost. The frame partitions and wall type coal chute cost \$16.60.

The house is heated by a one pipe steam system. The steam is produced by a hand fired coal burning boiler located in the basement. The boiler is a round, insulated, jacketed type, operating on 1 pound to 2 pound steam pressure and is equipped with a pressure regulator, pressure gauge, and safety valve. The boiler has a 96,000 B. T. U. per hour maximum output with a maximum recommended load of 400 square feet of equivalent direct radiation.

Each room is warmed with cast iron sectional tube type radiators equipped with air vents and shut-off valves. Radiators in all rooms are located under windows.

Pipe and fittings were black steel varying from 2 1/2" to 1" in size.

The cost of this system was \$400.00. Including the chimney and fuel bin the entire cost of the heating system was \$502.05.

Plumbing

Rough plumbing consisted of 4" and 2" standard weight cast iron soil pipe, 3/4" and 1/2" galvanized steel pipe water supply lines and 3/4" black pipe for gas lines. One vent was installed for the bath room fixtures. There are two floor drains in the basement. The soil line has one cleanout but no house trap. Two hose bibs are provided for exterior use. The rough plumbing cost \$124.45.

The fixtures, exclusive of the water closet, are of pressed steel with acid resisting porcelain enamel finish. They consist of a 5-foot recessed tub with rim seat, 20" x 24" lavatory and a 25" x 42" roll rim sink with duo-strainer. The water closet is vitreous china. Fittings for fixtures are chromium finish. The laundry tray is of the two-part, cement type. Domestic hot water is supplied from a 20 gallon range boiler installed in the basement. Water is heated by a coil heater which is not automatic in operation. The heater is vented to the chimney. The cost of the finish plumbing work was \$166.15.

The total plumbing cost was \$290.60.

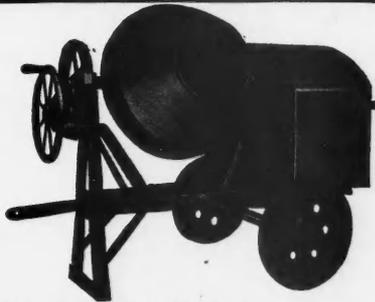
Electrical Work

Underground electrical service enters the house through 1 1/2" iron conduit which terminates at a 4 panel fuse and switch box. From this point all wiring was done with BX armored cable, two.

(Continued to page 144)

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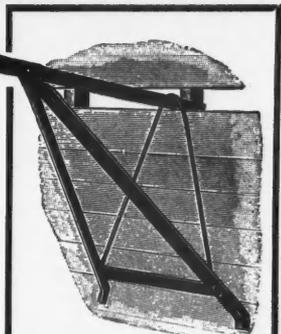
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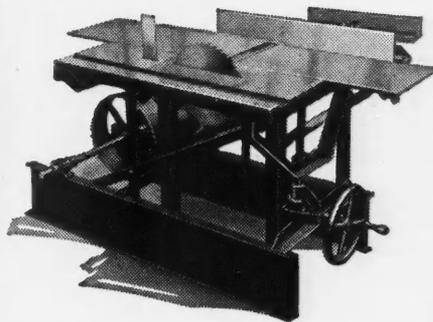
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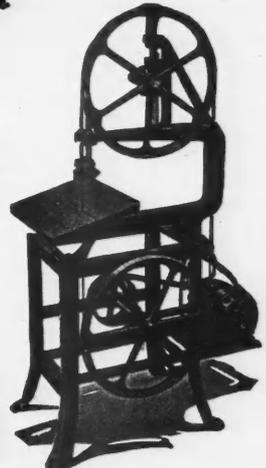
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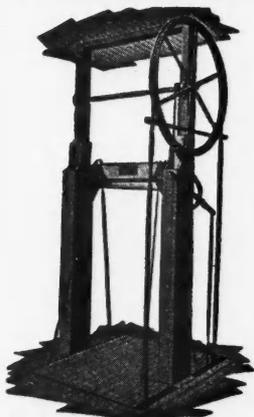
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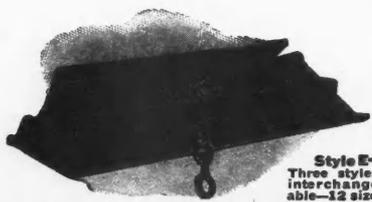
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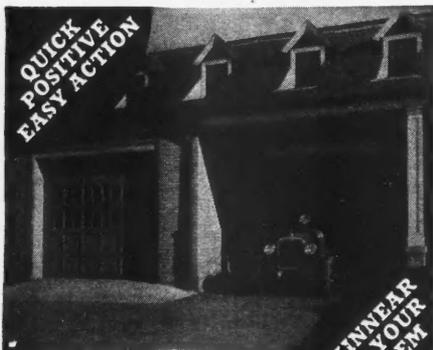
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Cost Analysis All-Wood House

(Continued from page 142)

and three conductor. Bushings were not used. Special outlet boxes had to be supplied for outlets installed in the 2" partitions. Both front and kitchen doors have push buttons connected to one buzzer located in the kitchen. Roughing in of the electrical work for 15 ceiling and 18 convenience outlets, 13 switches, 1 buzzer and 2 push buttons; a total of 49 outlets, cost \$78.85.

Ten lighting fixtures of plain design cost \$43.65. All switch and outlet cover plates were of brass. The finish electrical work including fixtures cost \$74.80.

The total electrical work cost \$153.65.

Painting

Exterior painting consisted of one prime coat and two finish coats of prepared paint. The exterior painting cost \$0.07 per square foot for 1,876 square feet covered.

Interior walls, ceilings and floors, except the kitchen, were stained and filled in one operation. Shellac and waxing were added. For finishing 4,700 square feet of walls, ceiling and floors, the cost was \$0.034 per sq. ft. The total cost of interior finishing was \$157.15.

Square Foot and Cubic Foot Costs

Square foot and cubic foot costs of houses offer only a quick rule of thumb or rough approximation of the cost of a structure. Their usefulness is limited to an approximate comparative cost of houses of similar construction and equipment to that from which the figures were obtained. When conditions vary in any particular, due allowances must be made if the figures are used to arrive at the approximate cost of other new construction.

Based upon the total area of the basement, first floor and second floor the cost per square foot of House No. 5 was \$2.72. This figure is based upon the contract cost of the house, \$4,986.00, and a gross area of 1,836 square feet. The gross area was taken as the space enclosed within the lines of the outside face of the walls of the basement, first story, second story and garage. Since basement construction is less than that for living spaces above it can, if desired, be assumed to cost about one-half as much. The basement area is 543 sq. ft. Upon the basis of the total area of the first and second floors and garage and one-half the area of the basement the cost per sq. ft. was \$3.18.

The cubic content is the space enclosed within the outer surfaces of the outside walls, a plane six inches below the basement floor, and the outer surfaces of the roof. In arriving at the cost per cubic foot the basement may be included at either its full or one-half of its full cubage. Using the full cubage of the basement the cost was \$0.28 per cubic foot. The cubic contents being 17,800 cubic feet. If the cubic contents of the basement is assumed to be one-half of the actual, the cube is 15,790 cubic feet and the cost \$0.31 per cu. ft.

Practical Prefabrication

(Continued from page 87)

"E." Experience has shown, says Mr. Wilson, that the best erection method is to place the 1½ by 8-inch fascia board first and then the drip cap before the wall sections are set in place. The ½ by ½-inch groove in the bottom of the wall sections fits over the drip cap to make a tight connection and at the same time eliminate any error in truing the wall sections. A continuous 2 by 4 plate is nailed along the top of the wall sections at the second floor level, and from this point on the construction goes ahead in conventional manner.

Recommended for the exterior is a sand finish composed of an oil paint base. This finish resembles stucco and is applied directly to the building board. The inside walls may be either painted or wall papered. The "dry construction" method minimizes warping or cracking so that the interior finish stands up well. A method for eliminating batten strips has been developed by designing the wall sections so that joints come at windows or doors. At these points an additional thickness of Homasote is glued above and below the opening. This is given an attractive finish and is called a "plaque." An interior treatment of this kind is shown in the illustration on page 85.

Prefabrication of this type recommends itself to builders and lumber dealers because it keeps the work entirely in their home town and with materials carried by local lumber dealers.

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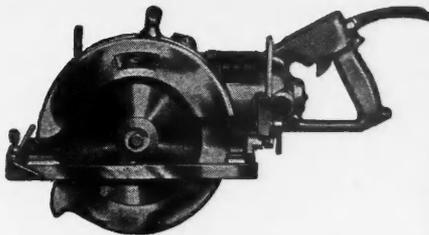
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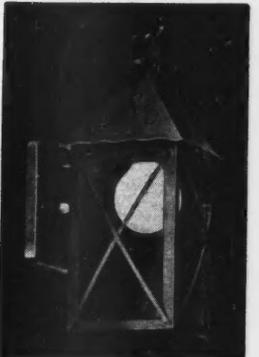
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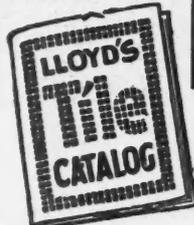
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SPECIAL SERVICES

999—Modern Basements—A library of planning data on modern basements, both new construction and old homes modernized. Builders, architects, dealers requesting this service will receive a big selection of design books, material and equipment catalogs needed when planning basement layouts and selecting mechanical equipment to be located in the basement.—**AMERICAN BUILDER MODERN BASEMENT SERVICE**, 105 W. Adams St., Chicago.

373—Technical Training Offered—Illustrated 4-page folder describes home study courses for men who wish to become building foremen or contractors. A sample lesson demonstrates the "Blueprint Method of Instruction." A lumbermen's course is offered for men who wish to become lumber yard managers or estimators.—**CHICAGO TECHNICAL COLLEGE**, 118 E. 26th St., Chicago, Ill.

374—Modern Store Designs—"Portfolio of Zouri Store Fronts" presents 15 designs illustrating the use of Zouri members in modern rustless metals styled in the modern manner. These designs include 3 food stores, 3 apparel stores, 4 shoe stores, 3 drug stores and 3 restaurants.—**ZOURI STORE, FRONTS** Niles, Mich.

375—School Designs—"Modern Schools," an 8-page portfolio of public schools as built in California, "A Pictorial Review of Earthquake Resistive Wood Frame Schools." This pamphlet, dated December 1936, is marked No. 6 of a Series, which was undertaken to provide facts and technical assistance to those persons concerned with the problems of school design and construction.—**NATIONAL LUMBER MANUFACTURERS ASSN.**, Washington, D.C.

376—Manufacturing Profits—"Modernized Materials, Construction, Appearance, Distribution, All at Lower Costs" is a new handbook for those ambitious to get into the concrete products business for volume capacity and profits. Opportunities are analyzed and recommended production equipment is illustrated and described.—**W. E. DUNN MFG. CO.**, Holland, Mich.

377—Concrete Reinforcing—"Reinforced Concrete Joist Construction" is a 28-page handbook for the architect and engineer. Safe load tables are included for both 20-inch and 30-inch wide forms in depth, ranging from 6 inches to 14 inches. The arrangement of the tables is such that at considerable saving in time and labor, the

designer may readily select the total depth of floor and the number and size of reinforcing bars required for a given combination of load and span.—**CONCRETE REINFORCING STEEL INSTITUTE**, 201 N. Wells St., Chicago, Ill.

378—Modernizing—"New 1937 Edition, 101 Practical Suggestions for Home Improvements." This well-known J-M book of modernization suggestions has been re-written and re-illustrated, and again is a gold mine of helpful information; 32 pages of stimulating pictures, many of them in full color, before and after photographs, detail drawings and easily understood how-to-do-it text.—**JOHNS-MANVILLE**, 22 E. 40th St., New York City.

379—Oak Floors—"How to Lay, Finish and Care for NOFMA Oak Floors," a sales-building consumer booklet of 32 pages, vest pocket size, giving condensed specifications for oak flooring, nailing and floor finishing of various types.—**NATIONAL OAK FLOORING MANUFACTURERS ASSN.**, Memphis, Tenn.

380—Painting and Finishing—"169 Helpful Hints for Home Makers," a 32-page booklet giving household hints, home modernization ideas and color combination suggestions.—**THE CHI-NAMEL PAINT & VARNISH CO.**, 43 E. Ohio St., Chicago, Ill.

381—Sisalkraft—"The Importance of Building Paper," an informative 12-page booklet setting forth the numerous important uses of good building paper—Sisalkraft—for various uses in building construction. Sisalkraft for backing up stucco, for use under brick or stone veneer, for protecting insulation, for use under hardwood floors, under roofing, sealing around nails, for dust-proofing coal bins, for temporary protection, for concrete curing, for protecting materials and for farm use are all covered in an interesting way.

"New Ideas in Poultry Housing," a third and enlarged edition of this popular booklet, has also been recently issued.—**THE SISALKRAFT CO.**, 205 W. Wacker Drive, Chicago.

382—Zonolite—New illustrated broadside featuring the insulation uses of Zonolite with record of comparative tests of fuel savings in Zonolite-protected houses. Thirty-eight per cent of the fuel bill every month was the average saved in one Detroit test. Zonolite for insulating and acoustical plaster, for air duct construction and roof blocks also covered.—**ZONOLITE CORP.**, 1135 Fisher Bldg., Detroit, Mich.

383—Capitol Rock Wool Insulation—"We Live But Once," a business-getting mailing piece with post card attached, for use by insulation contractors. Two companion pieces also available, "I Can't Imagine Why I Waited So Long" and "I Thought It Would Cost a Fortune to Insulate, But It Won't Cost Me a Cent!"—**STANDARD LIME AND STONE CO.**, 2004 First National Bank Bldg., Baltimore, Md.

384—Bronze and Aluminum Windows—"Permatite Windows, Casement and Double Hung" is a 36-page handbook giving window sizes and complete details of these windows and their installation in various type walls. Standard specifications are included for both casement and double-hung windows of bronze and aluminum.—**GENERAL BRONZE CORP.**, Long Island City, N.Y.

385—Cellular Steel Floors—"Wiring Robertson Cellular Steel Floor"; complete explanation, including 37 details, photographs, catalog sections and installation information. Explains method of making a Robertson uoor electrically available for lighting, telephone and call system wiring.—**ROBERTSON MFG. CO.**, Pittsburgh.

386—Douglas Fir Plywood—"Facts About Douglas Fir Plywood," new information on the uses, finishing, strength, etc.; 12 pages, full illustrated, with photographs and drawings.—**DOUGLAS FIR PLYWOOD ASSN.**, Tacoma Bldg., Tacoma, Wash.

387—Teco Timber Connectors—A new 12-page handbook presents the Teco toothed rings, split rings, shear plates and spike grids, and how they are used for making strong connections in heavy timber work.—**TIMBER ENGINEERING CO.**, Div. of National Lumber Manufacturers Assn., 1337 Connecticut Ave., Washington, D.C.

388—Kinneer Wood Rol-Top Doors—New 8-page data sheet presenting architectural design suggestions for garages and garage doors, together with complete mechanical specifications and details of the Kinneer wood Rol-Top door.—**THE KINNEAR MANUFACTURING CO.**, Columbus, Ohio.

389—Electric Switches—"Safety Starting Switches for Motor and Lighting Circuits," Catalog No. 7, is a loose-leaf portfolio of 68 pages, with price supplement, presenting a very complete line of safety switches, service equipment, manual and magnetic motor controllers, master devices and circuit breakers.—**THE ARROW-HART & HEGEMAN ELECTRIC CO.**, Hartford, Conn.

390—Store and Factory Illumination—"Permaflector Lighting," Catalog No. 38 dated January 1937, is a big portfolio of 72 pages presenting detailed information regarding all types of lamps, reflectors, and lighting equipment for display windows, retail shops and stores, offices, public buildings and commercial structures.—PITTSBURGH REFLECTOR CO., Pittsburgh, Pa.

391—Sump Pumps—"The New Myers Centrifugal Sump Pump," a new data sheet on this equipment with specifications for pump, inlet, outlet, motor, automatic control, etc.—THE F. E. MYERS & BRO. CO., Ashland, Ohio.

392—Radio Controlled Garage Door Operator—"Open and Close Your Garage from Your Car by Radio Control," an 8-page two-color circular which contains clear description of this modern garage door control.

"The Barcol Overdoor" is a companion circular describing the Barber-Colman upward-acting garage door and presenting complete specifications.—BARBER-COLMAN CO., Rockford, Ill.

393—Badger Septic Toilets—"A Necessary Betterment for Sewerless Homes," an interesting booklet giving full particulars of the Wemsco cylindrical iron septic tanks and of the Chem-O-Let self-draining indoor toilet.—WESTERN METAL SPECIALTY CO., 3043 N. 30th St., Milwaukee, Wis.

394—Shallow and Deep Well Water Systems—Bulletin No. 7000 describes the Paul deep and shallow well water systems for farm and suburban homes. It is a 20-page handbook full of useful information.—THE FORT WAYNE ENGINEERING & MANUFACTURING CO., Fort Wayne, Ind.

395—Electric Kitchen Ventilators—Catalog FB-45 is a 48-page handbook carrying pictures and complete data on kitchen ventilators, attic ventilators and ventilating fans and blowers for general purposes.—ILG ELECTRIC VENTILATING CO., 2850 N. Crawford Ave., Chicago, Ill.

396—Electric Fans—"Emerson Fans for 1937," a 26-page handbook giving detailed specifications of an extensive line of exhaust fans, ceiling fans and portable fans.—THE EMERSON ELECTRIC MFG. CO., St. Louis, Mo.

397—Air Conditioning System—"The Hold-Heet System of Home Air Conditioning," a 14-page booklet with complete, yet simple, understandable explanation of all air conditioning functions; 20 diagrams with hook-ups and installation data. Important information for every home owner and builder regardless of the type of air conditioning equipment he may purchase.—RUSSELL ELECTRIC CO., 332 W. Huron St., Chicago, Ill.

398—Holland Air Conditioner—"Holland Filtered Air Conditioner," a new 4-page folder presenting the Holland filtered air conditioner. Model No. 135 for homes of

ordinary size; Model No. 165 for larger homes.—THE HOLLAND FURNACE CO., Holland, Mich.

399—Perfection Oil-Burning Water Heaters—"Hot Water in Every Home" is an attractive 8-page booklet describing oil-burning water heaters for use with piped water systems.—PERFECTION STOVE CO., 7670 Platt Ave., Cleveland, O.

400—Oil-Burning Space Heaters—Portfolio of information on three modernly styled oil-burning space heaters, Models C, F and R. This equipment is offered as "a central heating plant for the home, a piece of fine furniture that heats, humidifies and distributes helpful, uniform warmth throughout the home."—THE LONERGAN MFG. CO., Michigan City, Ind.

401—Adjustable Ironing Board Cabinets—"The Adjusto Cabinet Ironing Board," a new booklet describing the advantages of these improved ironing boards and cabinets.—WESTERN PINE MFG. CO., Ltd., Spokane, Wash.

402—Cabinet Ironing Boards—"Ironing Made Easy," an effective little folder showing details of the Howard adjustable cabinet ironing board. Also larger data sheet showing construction details of several types of these cabinet ironing boards.—THE CHINOOK MANUFACTURING CO., Seattle, Wash.

CONTRACTORS' EQUIPMENT

403—The Sawmaster—New 4-page folder giving specifications of this portable simplified machine, a companion machine to the Master Woodworker.—MASTER WOODWORKER MFG. CO., 600 Brush St., Detroit, Mich.

404—Miller Labor Saving Bracket—Information regarding this improved Grip-Tite scaffold bracket which is lighter and stronger than steel.—THE MILLER CO., Honey Creek, Wis.

405—Heston & Anderson Woodworking Machinery—Catalog No. 11 is a 26-page port-folio, with supplementary price list, giving numerous large illustrations of

equipment and accessories comprising the H & A quality line—band saws, saw tables, wood lathes, shapers, jointers, cut-off saws, etc.—HESTON & ANDERSON, Fairfield, Ia.

406—Portable or Bench Type Woodworking Machinery—"Boice-Crane Industrial and Homecraft Power Tools" is a 40-page catalog listing 20 models of ten types of portable bench woodworking machinery.—BOICE-CRANE CO., 1730 Norwood Ave., Toledo, Ohio.

407—Tractors—"Precision Methods Used by International Harvester Company in Building TracTracTors," a large 64-page brochure, strikingly illustrated, showing how precision manufacturers carried on in the production of International crawler tractors.—INTERNATIONAL HARVESTER CO., Chicago.

408—Four Wheel Drive Trucks—"The Modern FWD High Speed Four Wheel Drive" is a 16-page catalog giving the very interesting mechanical details of the Four Wheel Drive trucks and tractor-trucks comprising this line of powerful haulage equipment.—FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis.

409—Material Handling Elevator—Information regarding the O.K. portable elevator designed as a time and labor saver for builders.—O. K. CLUTCH & MACHINERY CO., Columbia, Pa.

410—Wheelbarrows and Concrete Carts—"Lansing Equipment for Contractors" presents illustrated descriptions of concrete mixers, mortar mixers, hoists, concrete carts and wheelbarrows.—LANSING CO., Lansing, Mich.

411—Portable Electric Lighting Plants—The Iron Horse generator for electric light and power is described in a new broadside in two colors offered by—JOHNSON MOTOR CO., Waukegan, Ill.

412—Electric Light Plants—Onan alternating current electric plants are featured in new data sheets; available in sizes 350 to 10,000 watts. Illustrated folders also describe the Onan safety saws which are both gasoline and electric driven.—D. W. ONAN & SONS, Minneapolis.

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(March, 1937)

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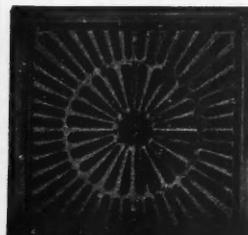
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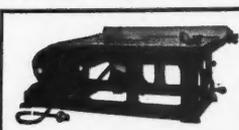
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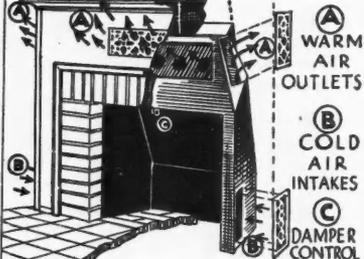


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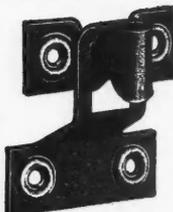
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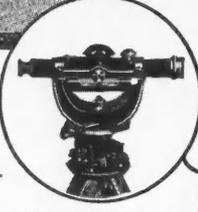
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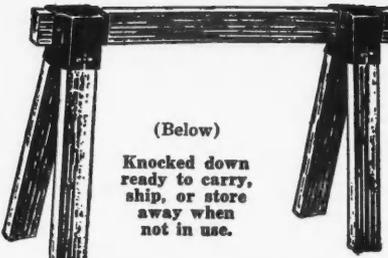
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