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AMERICAN BUILDER

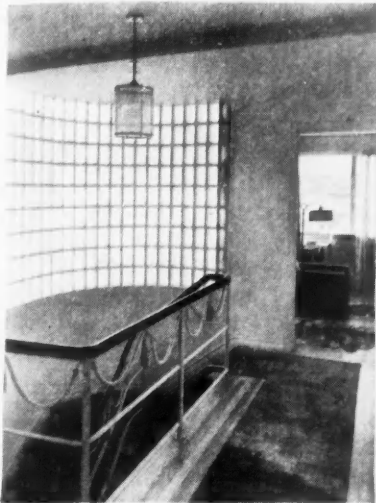
and Building Age

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MAY, 1937

59th Year

Vol. 59—No. 5



GLASS block panel lights stairs in moderne style San Francisco house—decorative, safe, smart.

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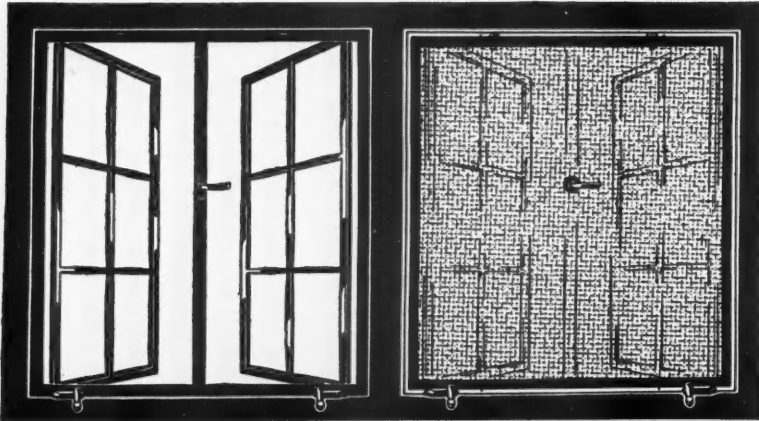
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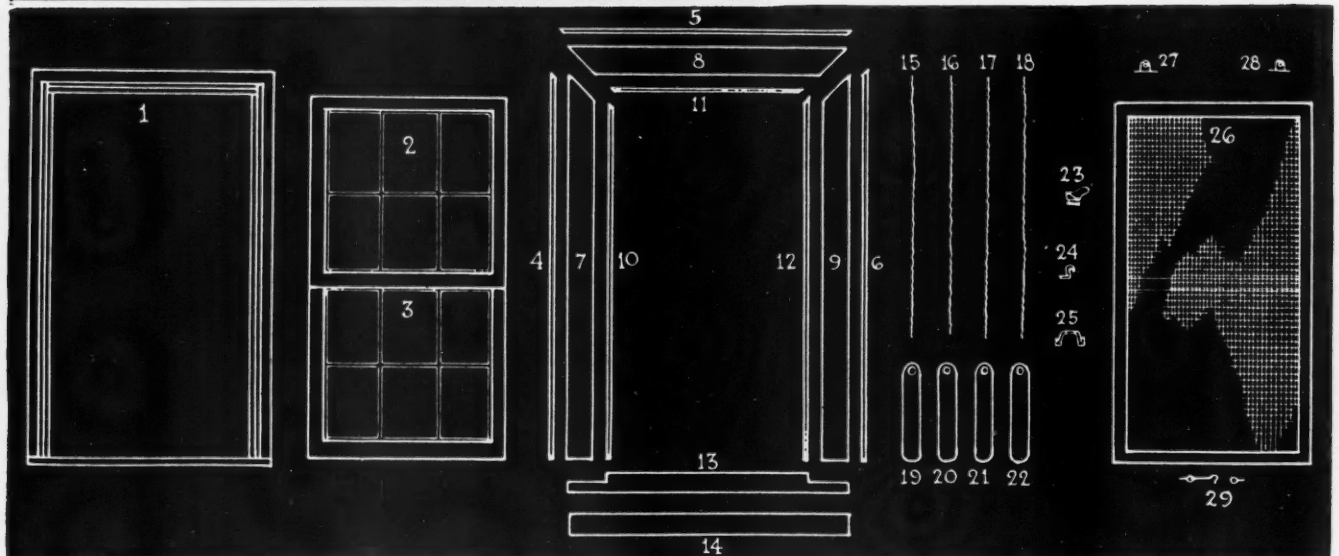
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PUBLISHER'S PAGE

Causes of Present Discontent

NOT only the well-to-do but the masses have more of necessities, comforts and luxuries than a quarter century ago, and incomparably more than a century ago. And yet the masses are more discontented.

Why this seeming paradox? It is because the capitalistic system has created *desires* for things that must be *bought* faster than it has increased the *incomes* required to buy them.

Not long since a vast majority of houses were merely shells consisting of walls, roofs and partitions. A modern "house" includes furnace, plumbing, bathroom, electrical fixtures and many other things.

Not long since in most communities there were almost no forms of expensive diversion. Now there are automobiles, movies, radios, baseball and football games, country clubs, night clubs—innumerable means and places of diversion that have destroyed taste for the inexpensive.

BUSINESS has provided countless new comforts and luxuries, and by its advertising and sales methods created desire for them among all classes. In this process it has increased the incomes of all classes, but not enough to provide many with enough purchasing power to buy all they have been taught to desire.

And now come men persuasively appealing for the support of the masses by telling them that government can and should adopt policies that, by taking from those who have and giving to those who have not, will enable the "have-nots" to buy all the things they have been taught to want.

Is it any wonder, when politicians, labor

leaders and business thus join in stimulating desires and demands, that there is a revolutionary movement for providing an "abundant life" for all?

THE objective of the movement is healthy. Its economics and some of its methods are not. Business wants the masses to have much more income because this would benefit business as well as the masses. But the national production and income last year averaged less than \$2,000 per family. That much could not possibly be so redistributed as to enable each family to have the kind of housing, automobile, radio, movies and other comforts, luxuries and diversions that politicians, labor leaders and business are all telling it to desire and demand.

What is the answer? Business should spare no effort to turn the present mass movement into constructive channels. Its effort should be, (1) to beat politicians and labor leaders at their own game by educating all the people to realization that *largely increased production per worker and per capita* is indispensable to providing largely increased purchasing power per family; and (2) to achieve, in spite of all opposition, the increase in production essential to this increased family purchasing power.

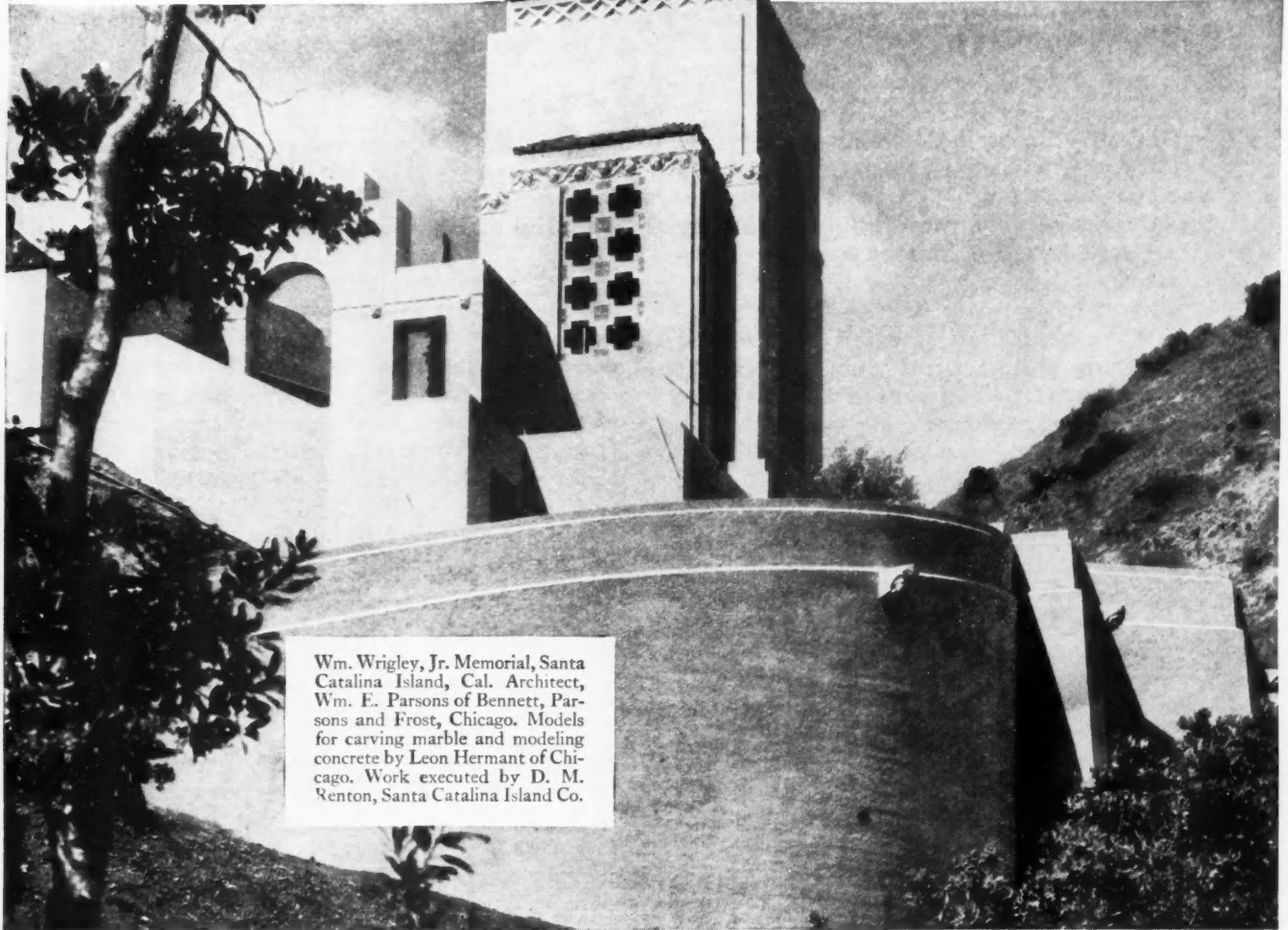
Popular discontent is the stuff that revolutions are made of—but revolutions may be either destructive or constructive. Business need not fear a revolution—if business intends to make sure it is a constructive one.

Samuel O. Dunn

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CONCRETE FOR PERMANENCE . . . AND BEAUTY

Wm. Wrigley, Jr. Memorial



Wm. Wrigley, Jr. Memorial, Santa Catalina Island, Cal. Architect, Wm. E. Parsons of Bennett, Parsons and Frost, Chicago. Models for carving marble and modeling concrete by Leon Hermant of Chicago. Work executed by D. M. Renton, Santa Catalina Island Co.

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AND BUILDING AGE

Carpentry Instruction Urged for the Public Schools

ALWAYS one thing or another to pester and annoy; just a short time back a shortage of work, and now a shortage of skilled workmen! Young carpenters are needed, but very few are being trained. Real opportunities lie ahead for intelligent young building trades mechanics, but very few are being given the necessary encouragement and chance for instruction that would bring them into the building industry. As a result there are many communities today where there are no competent young carpenters to look after needed repairs and improvements or to sponsor and handle new construction.

This is a situation that is giving the retail lumber and supply dealers in these communities a great deal of concern. They see their sales limited and local building enterprise stunted for lack of active go-ahead building men.

Opportunity for High School Manual Training Courses

The remedy may be right at hand in the manual training department of the local high schools. Almost every school these days has such a department, but the courses offered may not be as practical and helpful to meet today's building industry needs as they might be. *American Builder* suggests that retail lumber dealers ought to take the lead and exert their influence by calling on the school superintendent, getting personally acquainted with the type of instruction being given in the present manual training courses, and, if desirable, strengthening the work in carpentry and other building trades lines.

A competent carpenter of actual building experience ought to be on the teaching staff in every high school. Drafting and plan reading ought to be taught. Active and ambitious young men ought to be encouraged to see the opportunities for earnings and advancement through knowledge and experience gained on the job—in close contact with men and materials—as preferable to routine clerkships of the "white collar" type.

The building industry has a big work to do in the next decade; it will offer the best opportunities for creative employment. Our public schools should check over their courses right now to put them in line for the training that this rising generation of builders needs.

RENT VERSUS OWNING COSTS

ATYPICAL American home rented for the past twenty years has averaged about eleven different rental prices in that period and the tenant has paid high rents in more years than he has paid low rents since 1917, a study by the United States Building and Loan League has revealed.

Seven of the changes in rent costs, those coming in 1919, 1920, 1921, 1923, 1924, and again in 1935 and 1937, were upward, whereas only four of them, first in 1926, and then in 1931, 1932, and 1933, were drops. Taking a particular house as an example and assuming that the same family rented it for the twenty years 1915-1934, the building and loan financiers figure that for the money paid out in rents, beginning with \$30 a month in 1915 and following the ups and downs of the market, the same family could now own a \$5,000 house and lot free of debt after paying off a mortgage month by month. They could have included \$500 in repairs and modernization during the period and paid estimated taxes and insurance on the building, all within the sum paid for rent.

From the standpoint of the family choosing between renting and owning nowadays, the experience of the past cycle of rise and fall in costs and values is of more than academic interest. At least two step-ups in rents on the average dwelling have taken place in the course of the present cycle of activity and rising cost of living, and conditions are not such as to generate the thought that they will stop there.

Turning to apartment rents, as contrasted with one-family home rent, the League Committee finds even greater likelihood that more and more frequent rent increases will be slapped on for several years yet. Thus, a family living in the same apartment for the past twenty years will have experienced considerably more than eleven changes in the rental, and by far a majority of them upward.

The house used by the committee as an example of its cost to a renting family and what it would have cost an owner-occupant family was in Chicago. Rentals paid by a family living in this small home from 1915-1934 (the end of the low-rent part of the past cycle), starting with \$30 a month, and varying according to the scale of rent

risers and falls worked out for this particular city, were summed up at \$9,193. The figure is conservative, because rents are figured from 1925 on, the year when the leveling off began. The family paid as low as \$23 a month by 1933, as compared with a high of \$58.75 a month in 1924, the year of the last rise.

Now consider the case of a family which bought this house in 1915, at a sale price of \$5,000, with a down payment of \$1,750. The rest of the money borrowed from a savings and loan institution at total cost, interest plus extras, of 6.5 per cent, and paid back in monthly installments of \$33.30, would be cleared off in 11 years and 7 months; and the cost to the owner would be \$4,629. Adding an outside estimate of \$2,300 for taxes and insurance to the entire cost of the home, and allowing \$500 for maintenance over the twenty years, the owner would pay out \$9,179, as compared with accumulated rent receipts of \$9,193.

And, besides, this owning family has a free-of-debt house, good for probably 20 years more of life, with which to face an era of rising rents for their leasing neighbors.

CODES SHOULD PERMIT WELDING

IN view of the cheerful forecasts about what is going to happen in the form of new construction, some attention should be given immediately to the building codes which make no provision for the use of welding in building construction. Here is a process that frequently offers marked advantages to the builder, but in most cities is legislated against simply by not being mentioned in regulations which govern the erection of public and private buildings, regulations which were drafted before welding was successfully applied in this field.

A curious situation has developed. Practically all large fabricators and erectors of structural steel have welding equipment, and practically all of them do some welding in the assembly of structures that are subject to more severe loadings than will ever be encountered in buildings, structures that are not subject to regulation. Yet with all their knowledge of welding, with all their experience in safe procedures and inspection, the opportunity to apply the process in building work is nil, not because it is forbidden, but because it is not permitted.

In twenty-four states the American Welding Society code, or codes which are substantially the same, have been adopted locally; and within the past two years over one hundred structures had been welded. And there have been no failures of welded buildings.

All this is history—but it needs this reviewing because construction activities are on the upgrade and the way should be opened for welding to be used where it is wanted. The National Electric Manufacturers Association Welding Section has recently been asked to cooperate in the revision of several municipal building codes; but it is not logical to allow welding in only a few cities. This permission ought to be universal.

THE FIGURES ON TITLE I

WITH the expiration of Title I of the National Housing Act on March 21, the emergency phase of Federal Housing Administration activities came to an end. From now on, this government agency is to concentrate its efforts on the long-range objectives of its program—the improvement in housing standards and conditions, and the maintenance of a sound system of home finance.

Under Title I, modernization and repair notes numbering 1,407,656, amounting to \$537,319,490, as of March 27, were insured. Since the lending institutions have thirty days in which to report Title I loans, it is likely that the final figures will be increased by some millions of dollars. In addition, it is estimated that the better housing campaigns sponsored by the Federal Housing Administration have generated over \$2,000,000,000 worth of modernization and repair work which does not show in its own records. Careful check-ups have disclosed that for every dollar of repair work insured, approximately \$4 have been spent on jobs paid for in cash or financed by other methods.

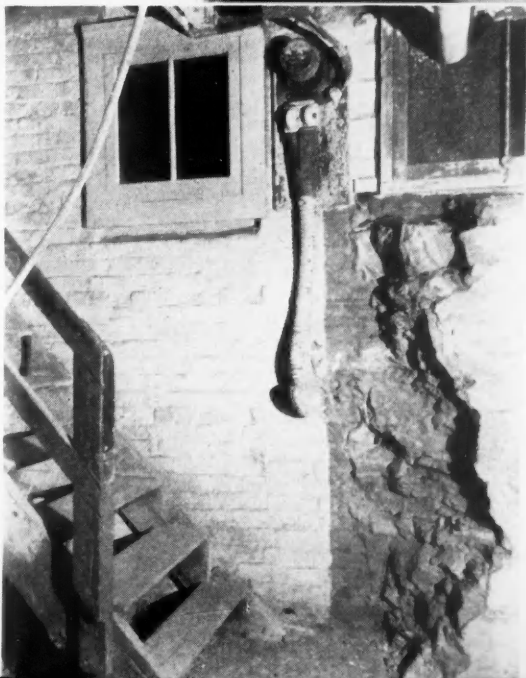
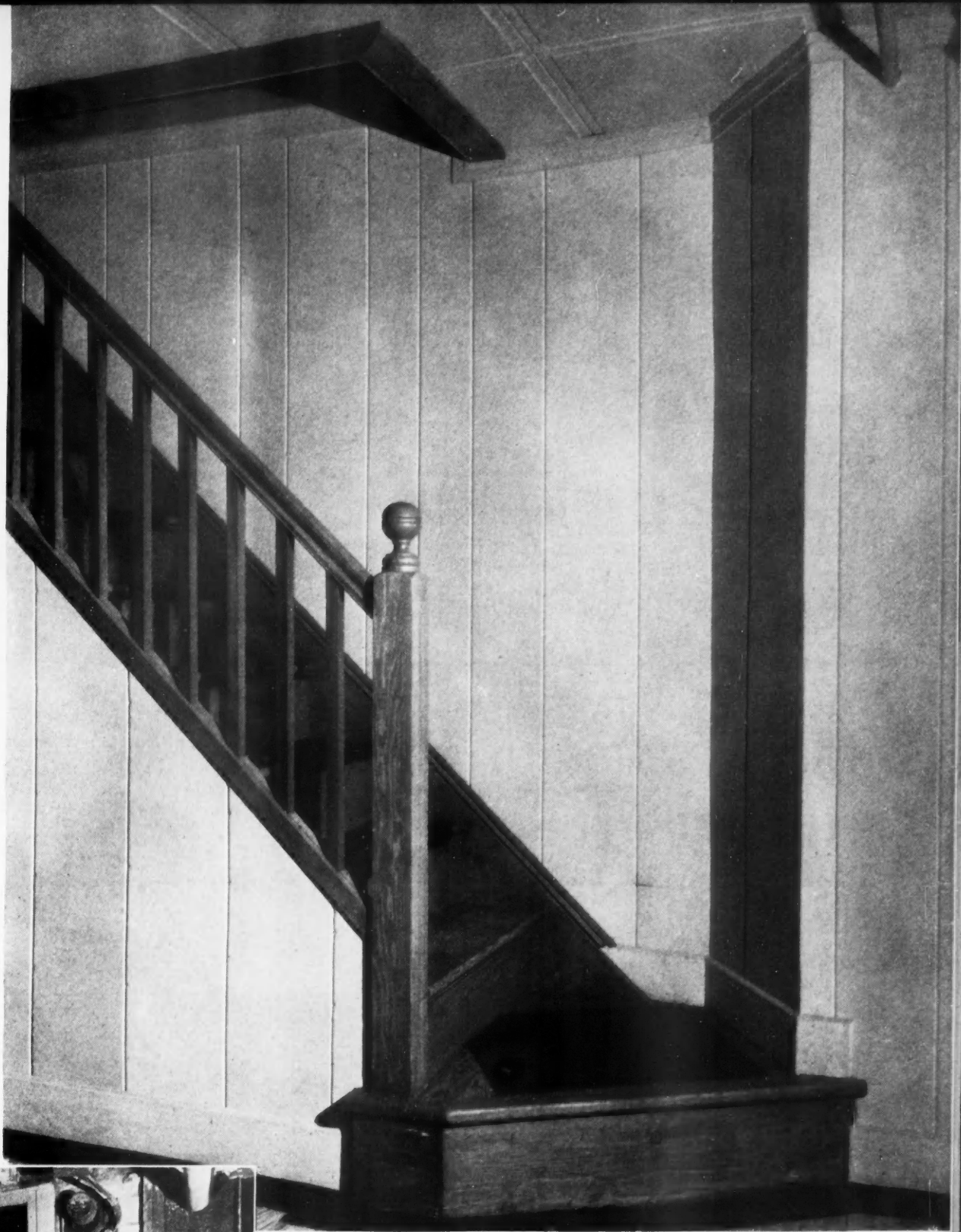
Title I was primarily an emergency measure, put into effect in the midsummer of 1934, to relieve unemployment and to provide a quick stimulant to the prostrate building industry while the home construction program was getting under way. At that time, confidence and activity in the building construction and equipment industry were at a low ebb. Millions of homes and other properties had fallen into a state of disrepair during the depression, unemployment in the building trades was widespread, business concerns in the field were doing a minimum of business, and at the same time thousands of banks and other lending institutions were unable to find sound loans in which to invest their funds.

Today shortages of skilled construction workers are being reported in many localities and statistics are available to show the improved conditions of concerns engaged in the building and allied industries. That lending institutions have found Title I a source of profit is indicated by the fact that 6,399 have reported making insured modernization and repair loans.

Nearly 1,000,000 homes have been improved with the proceeds of notes insured under the modernization credit plan. In addition, 250,000 two-family houses and apartments were improved by such loans, as well as 150,000 other properties, including business and industrial buildings, hotels, hospitals, orphanages, colleges, churches and farms. Through March 20, insurance claims paid under Title I, less collections, repossessed properties and notes reinstated amount to \$4,769,930.

Originally \$200,000,000 was made available by Congress for losses on modernization and repair loans insured under Title I. It is thought that after all claims for insurance under Title I have been liquidated at least \$75,000,000 of the amount available for such losses will not be needed. FHA has made a fine record under Title I; it is a job well done.

A STUDY in basement steps that would hardly be believable if the camera did not say it is so. Decorative insulating board gives the modernized stairs that attractive look. The work was done by Home Remodeling and Building Company of New York, from plans by Architect A. E. Klueppelberg.



New Homes Inspire Old-Home Remodeling

16 Enamel Stock Pages of Selected Home Designs Suggest Attractive Building and Modernizing Motifs



EARLY AMERICAN IN BRICK, BOARDS AND BATTENS

Designed and Built by Irvin A. Blietz of Chicago

Located in Evanston, Illinois

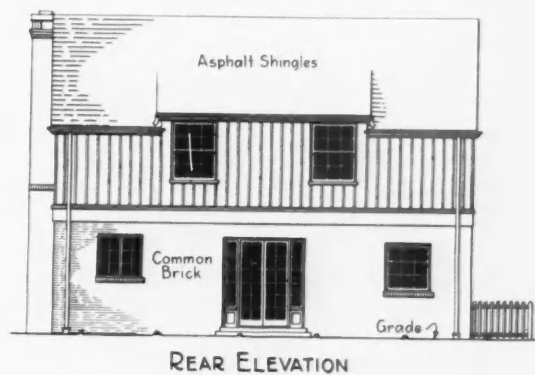
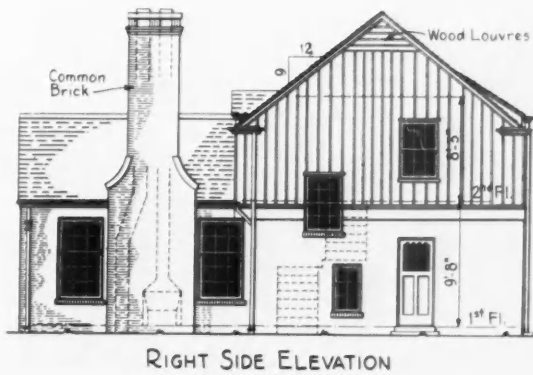
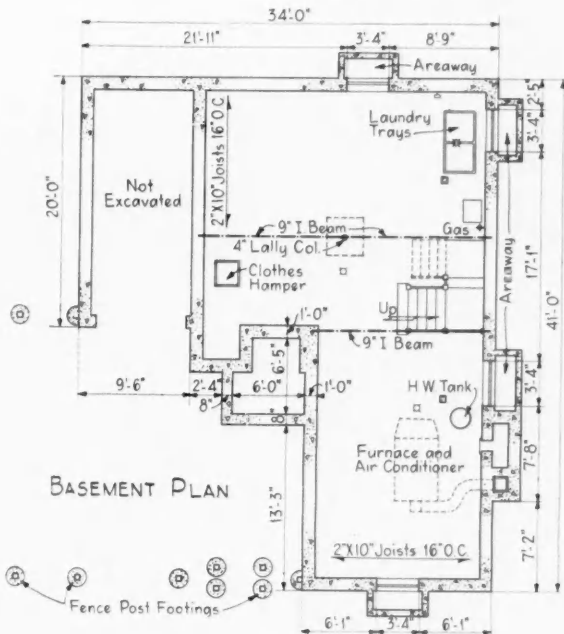
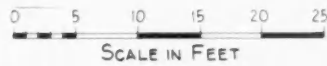
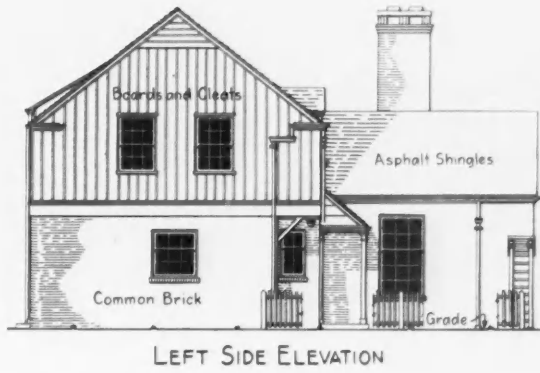
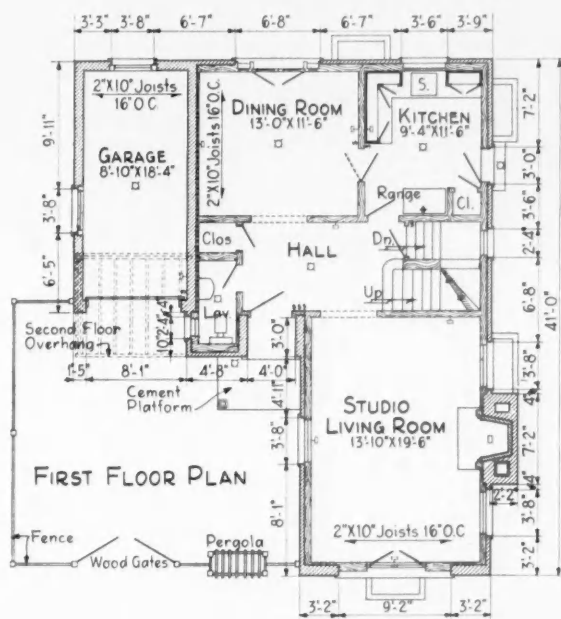
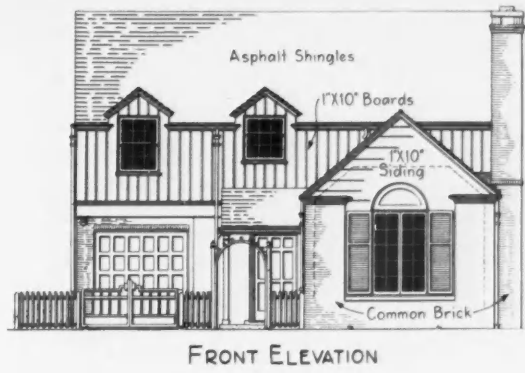
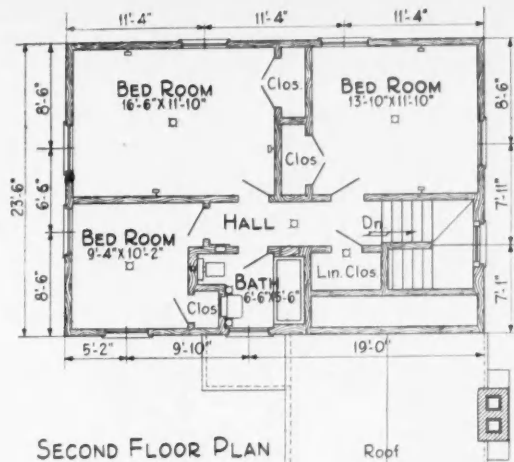
Cost Key is 1.750—150—840—37—24—15

AN UNUSUAL handling of plan and exterior in Early American style is found in this front cover house. The wing containing a studio type living room features a double casement window with wide decorative shutters. Garage entrance is protected by a second floor overhang which also reduces the prominence of the door. Picket fenced doorway, a feature of increasing popularity with Colonial houses, is well detailed; construction drawings of the pergola are shown in the Shopcrafter's Corner.

Plans and elevations appear on the opposite page. The high ceilinged living room has good wall space and is well lighted. French doors and side windows in dining room overlook the rear terrace; kitchen has an efficient U-shaped plan. Three bedrooms, bath and closet space are compactly arranged on 2nd floor.

Materials include exterior walls of common brick painted with Tamtex white below and Y.P. vertical boards and battens above, Balsam-Wool and USG rock wool insulation, 3-coat plaster on Rock-lath, gas-fired forced air heating, and Barber-Colman garage door.







ATTRACTIVE GEORGIAN HOME ON WOODDED SITE

L. Morgan Yost, A.I.A., Wilmette, Ill., Designer and Builder

Cost Key is 2.306—219—988—45—33—21

A CLEAN CUT modern style has been given to the traditional Georgian form of this 7-room house to make it very attractive. Horizontal lines are repeated in the muntins, belt course, quoins and entrance hood. Attached garage is placed at an angle to the house, which is located on a winding street; this gives a more open effect to the front yard. Center hall type plan has been laid out for good

access; a small service hall connects closets, basement stairs, lavatory, breakfast room, kitchen and grade entrance. Large recreation room features a wood-burning fireplace. For outdoor living there is a porch off living and dining rooms; above this, a sun deck is reached from the master bedroom. Closet space and bath arrangement are well planned for convenience.

OUTLINE SPECIFICATIONS

FOUNDATION: 12" poured concrete walls on 24" footings. Walls completely water-proofed.

FLOORS, Basement, Garage and Porch: 5" concrete on cinder bed.

STRUCTURAL STEEL: "I" beams and lally columns.

SEWERS: Foundation drain tile to insure dry basement. Separate storm and sanitary sewers. Catch basin. Lead water service.

CONSTRUCTION: Select common brick veneer, Bondex painted, over wood frame and 13/16" Insulite Bildrite sheathing. Lumber, No. 1 yellow pine.

INSULATION: 4" U.S.G. rock wool above second floor ceilings.

MILLWORK: Special design of clear white pine.

STAIRS: Oak treads, birch risers. Birch railing.

ROOF: Bird handmade asphalt shingles over heavy felt and solid wood sheathing.

GUTTERS: Fir gutters.

SHEET METAL: All downspouts and conductor head copper. Entrance hood Armco iron.

FLOORS: All floors of clear oak over sleepers laid on deadening felt over sub-floors.

LATH AND PLASTER: U.S.G. Rocklath throughout. Corners reinforced with metal lath. Garage ceiling metal lath. Three coats U.S.G. gypsum plaster throughout. Cement plaster in garage and basement.

HEATING: Rudy oil fired winter conditioner with full automatic controls. Bettendorf burner.

PLUMBING: Square tub by Standard, remain-

der Kohler. All fittings chromium on solid brass. Bathroom lavatories vitreous china. Kitchen sink with spray and duo-strainer.

ELECTRICAL: All wiring in steel conduit. Radio antenna in attic and outlets in living room and recreation room.

FIXTURES: Chase brass. Lumiline fixtures in bath No. 1.

WATER HEATER: Fully automatic Par-X gas heater.

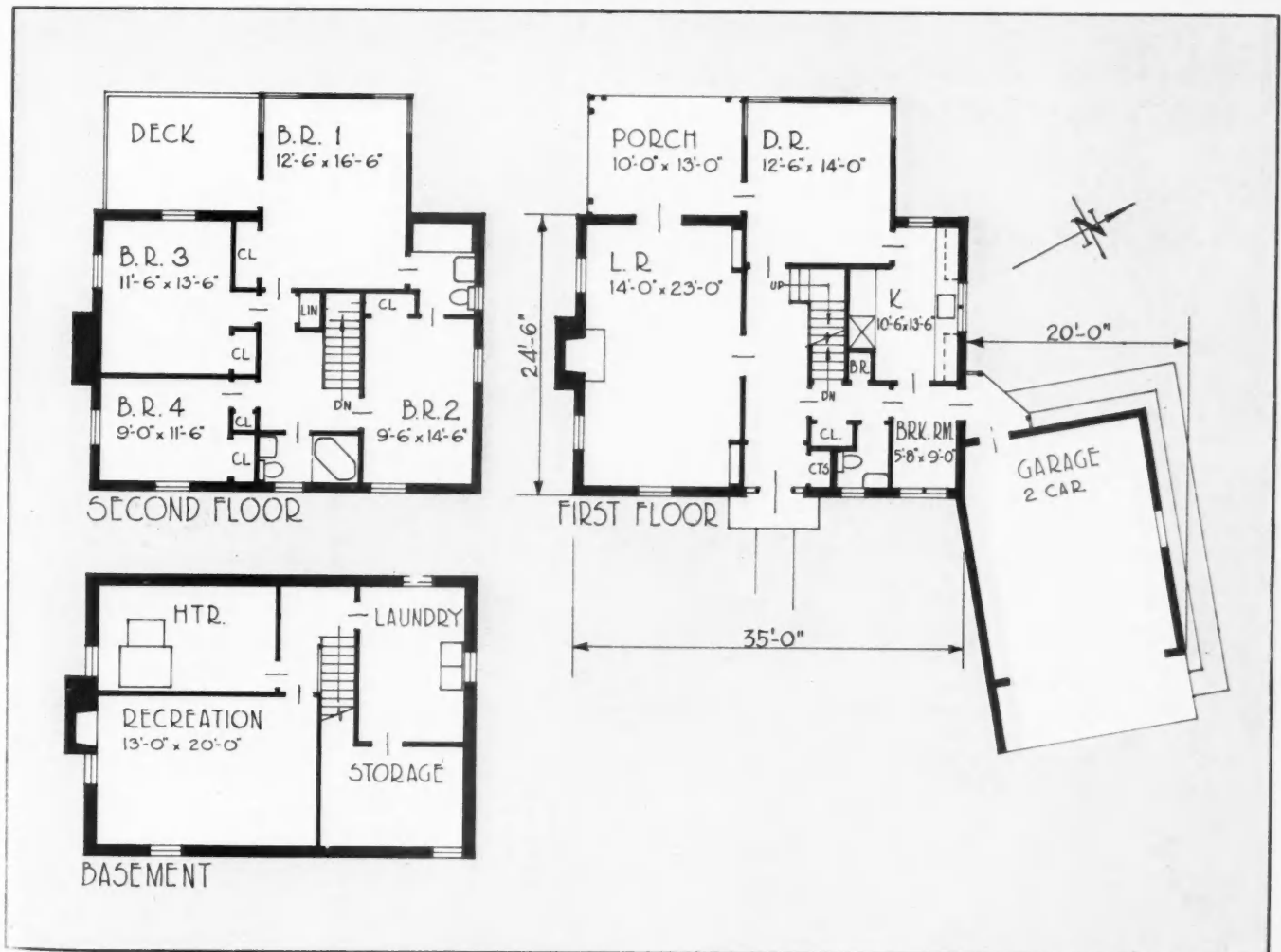
GLASS: Libbey-Owens "A" quality.

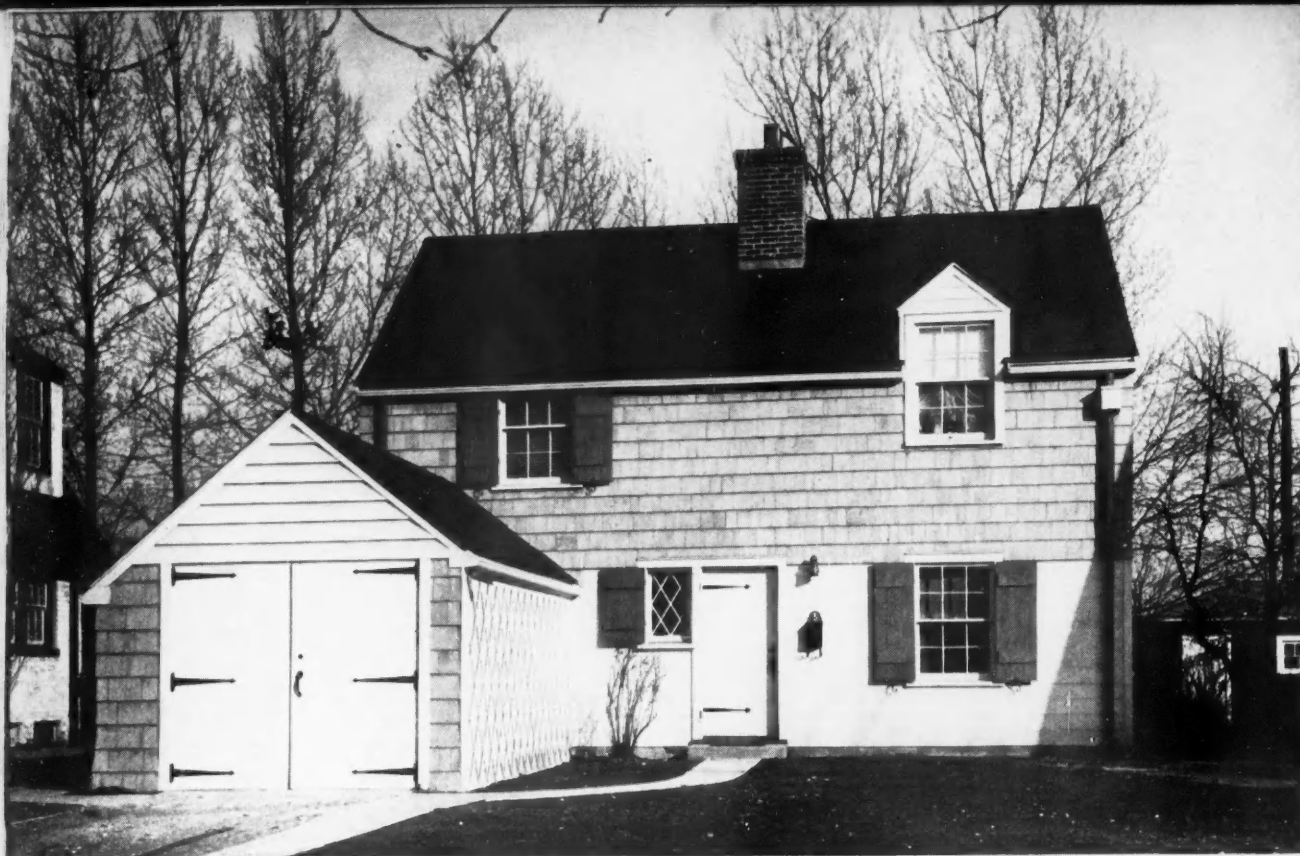
WEATHERSTRIPPING: Zinc and bronze on windows and doors. Doors have interlocking brass thresholds.

LINOLEUM: Armstrong with inlaid stripe.

HARDWARE: Sager solid polished brass trim and faces. Stanley steel butts. Chromium plated in baths and kitchen.

THE wooded site of this house overlooks a ravine to the rear and side. Attached garage has been placed to the front and is treated as a service court wall. The principal rooms take advantage of the location—dining room and master bedroom wing, as shown at the right, each have two sets of modern corner windows for adequate light and pleasant garden views.



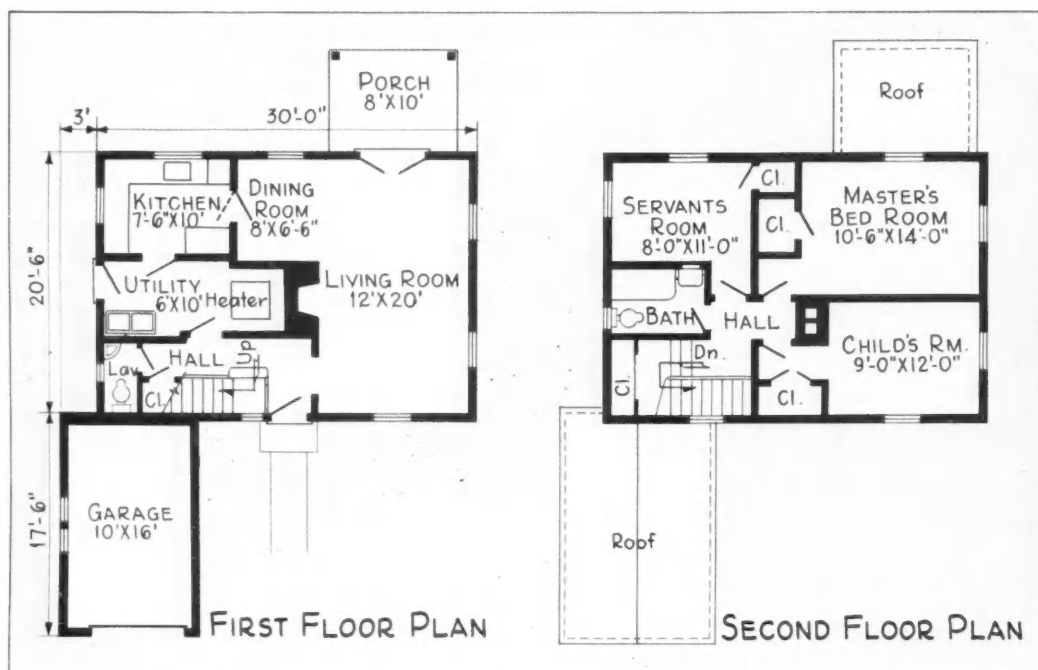


SIX ROOMS; ATTACHED GARAGE; NO BASEMENT

Located in Kenilworth, Illinois
L. Morgan Yost, Architect

Cost Key is 1.461-142-(615)-(28)-20-11

IN CONTRAST to the larger Georgian design on the preceding pages, Architect Yost has concentrated on space and construction economy in this charming Colonial cottage. The results are unique in compactness and livability. Combined living room-dining alcove gives a feeling of spaciousness to a house this size. Rear porch allows privacy for enjoyment of the garden. Plumbing and utility fixtures are grouped together. On the second floor, there are three bedrooms, bath and storage space; an unusual feature is wardrobe off the stair landing. Insulation above the second floor ceiling is 4 inches of J-M Rock Wool, Silvercote in the sidewalls. Reverse side of shiplap exposed for texture where used for first floor exterior walls and Weatherbest stained shingles above.



AN interesting feature is the island type construction under chimney, hearth and heater which consists of a 10-inch concrete wall around this area supporting a 4-inch slab; first floor joist framing runs from this support to outside walls. There is a 2-foot air space under first floor reached by an access door and having a sand fill on the bottom. Central location of Rudy gas-fired winter conditioner on the first floor allows short ducts.



CALIFORNIA FRAME-STUCCO BUNGALOW

Homes Inc., Los Angeles, Builder

N. P. Bengston, Designer

Cost Key is 1,969-212-(1963)-84-21-33

THE ATTRACTIVE modern California bungalow pictured above contains eight rooms and includes three master bedrooms, two tile baths, exceptionally large living room, cozy den, full tile kitchen, combination breakfast room and cocktail lounge, and well planned patio. Cubic contents are 25,600 cubic feet.

Some of the products and equipment are cedar 5-2 shingles, frame and stucco exterior, texture plaster in living room and den, grass cloth on dining room walls, Sanitas on bedroom walls, tile walls in kitchen and bathrooms, circular fireplace of modern design in living room, and unit heaters. There are oak plank floors in all rooms except kitchen, baths and laundry; kitchen has a linoleum floor laid in pattern and color to match tile on walls.

An interesting design feature is the use of decorative wood awnings above the corner windows of the dining room. A band of V-jointed horizontal siding between the windows helps to give a pleasing modern effect to the house.





4-ROOM BUNGALOW WITH DINING BAY

Cost Key is 1.157-138-(785)-(34)-16-15



THIS practical one-story house is one of the recent popular designs built in Hewlett Point Park, L.I., by Realty Associates. It is well proportioned and has a generous front porch that appeals to many people.

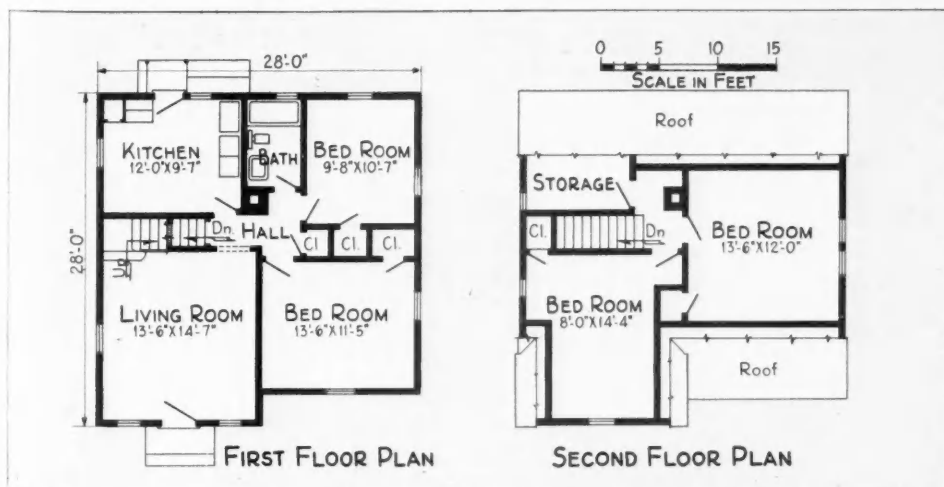
A boiler and utility room off the kitchen is an unusual and practical feature of this house. There is no basement. The utility room, however, serves as a back entrance for storage or work room or laundry. Another feature is the dining bay off the kitchen which provides an attractive room without demanding much additional floor space. The house shows careful study and a knowledge of practical building problems by Architect Benj. Driesler Jr.



28' x 28'—4 BEDROOMS

TWO exteriors of this little Hillside Heights Colonial are shown. This is one of the lower priced models of Realty Associates, and was designed for maximum economy. With a floor plan less than 28' x 28', four bedrooms have been provided, appealing to the large family.

Cost Key is 1.234—112—757—32—17—13



AN interesting variation in the Colonial design at top of page is shown above. Instead of wide siding, cedar shingles have been used over the lower part of the house. Vertical boards are used in the dormers. These are painted white, and contrast pleasantly with the gray shingles.

FLOOR plans of this low cost Hillside Heights house have been extensively studied for economical construction.



COMPACT COTTAGE TYPE HOME IN BRICK

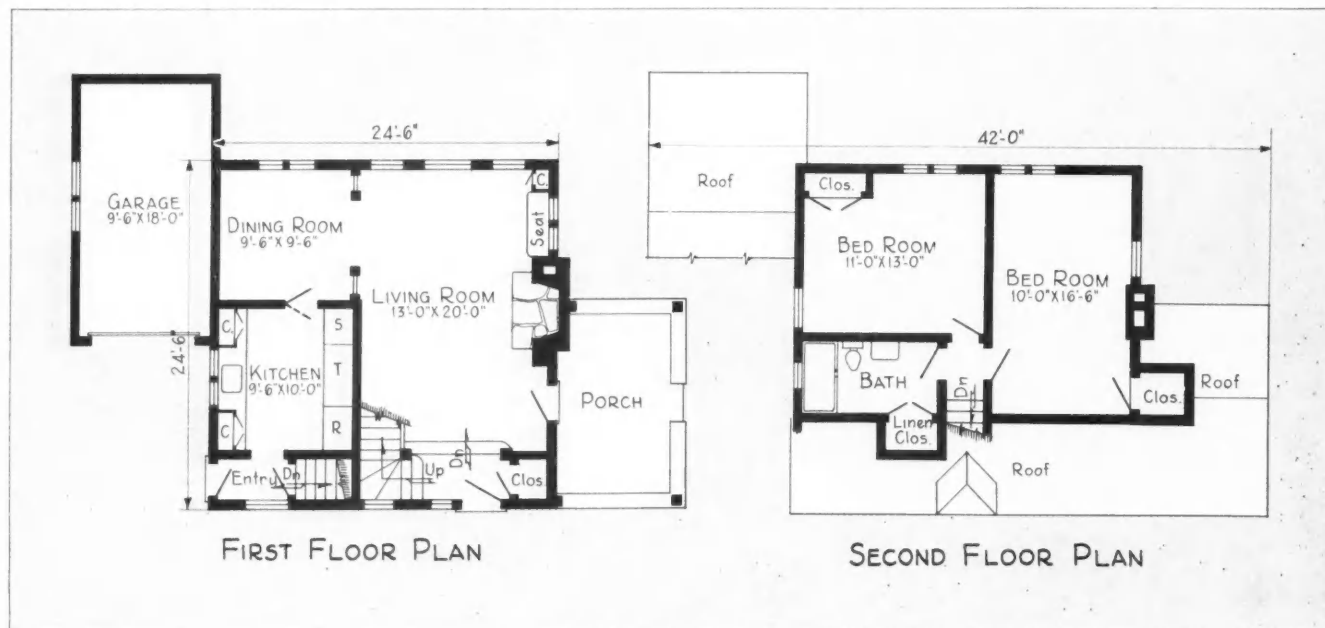
Built by Home Builders Co., Chicago

Cost Key is 1.447-140-624-27-16-14

THIS HOUSE which from the exterior appears to be quite small contains plenty of room for the enjoyable living of a family of three or four. There is no waste space and the rooms are ample. Living room level is two steps below the entrance landing; open side porch, fireplace, knotty pine walls and window grouping for garden view add to the effectiveness of the design. The kitchen is located to the front with rear entrance handy to the attached

garage. Dormer window lights the stairs to the second floor and upper hall.

Built in Riverside, Ill., the construction featured such materials and equipment as select common brick in autumn tints, cedar shake roof, J-M Rock Wool insulation, Briggs Beautyware fixtures, Lochinvar heater, Fenestra casements, copper downspouts, gutters, and metal work slate walks and new chimes type door call.





BRICK FRONT CAPE COD; 5 ROOMS ON ONE FLOOR

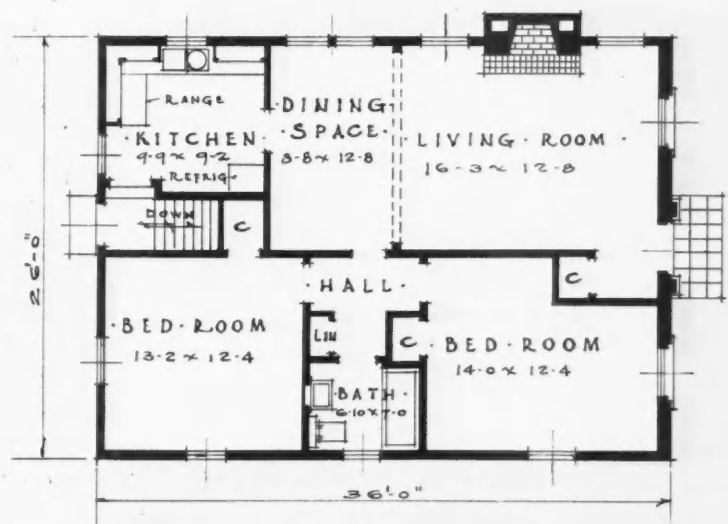
Built at Fort Wayne, Ind.

Noble W. Miller, Architect

Geo. A. Poag Co., Inc., Builder

Cost Key is 1.039-124-936-39-14-14

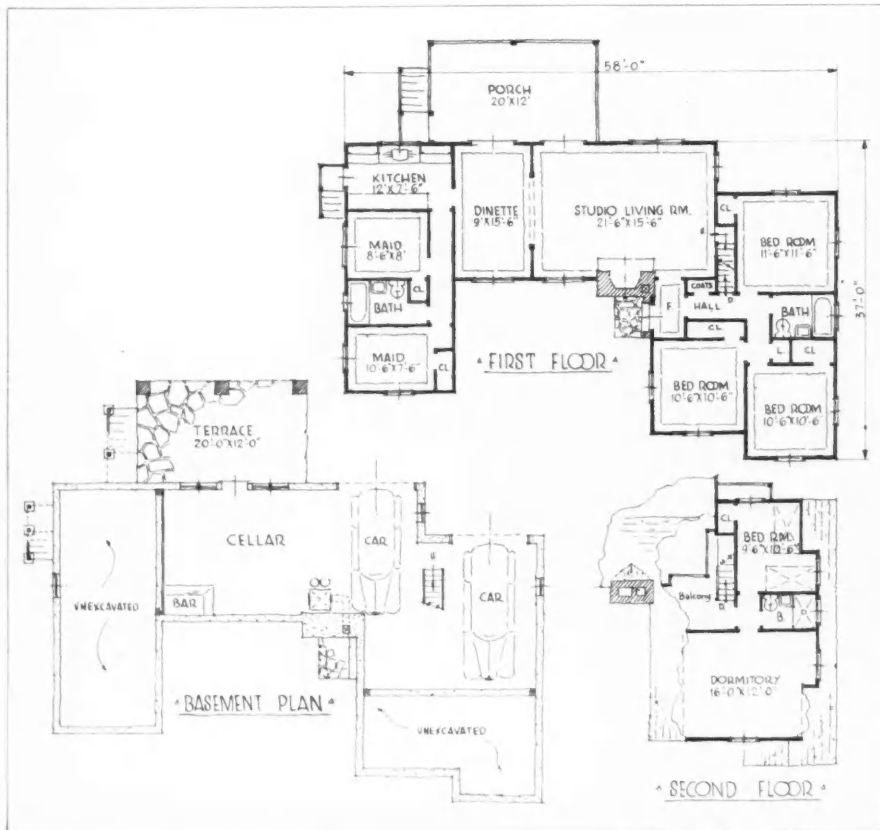
ONE of several good houses built by the Geo. A. Poag organization last year was this little brick veneer and wide siding cottage on North Highland Boulevard, Fort Wayne. It has a basement under the kitchen, dining room and living room only. Basement heating plant is Rybolt steel furnace. Standard Sanitary plumbing fixtures were used. Roofing is asphalt shingles. With overall dimensions of 26 by 36 feet, this house cubes 20,800 cu. feet.





COUNTRY HOME AT LAKE MOHAWK

Robert T. Crane, Architect; Arthur D. Crane Co., Builder



ATTRACTIVE country home, erected for Dr. and Mrs. Wilson D. Webb on the shore of Lake Mohawk in Sparta, New Jersey, can boast of ten spacious rooms, each arranged to obtain a maximum of light and cross ventilation, as well as a beautiful vista of the Lake and the surrounding countryside. Studio living room, with an adjacent dining nook, a kitchen, three bedrooms, two maid's rooms, two bathrooms, ample closet space, and a large sun porch occupy the first floor, while one bedroom, a dormitory, and a bathroom are on the second floor. A recreation room with a private bar, and garage space for two cars utilize available room in the basement. Plaster, crossbeams, shingles and rough cedar siding provide an attractive exterior; random width knotty pine boards, handhewn chestnut timbers and pecky cypress are a good combination for a rustic interior. Native fieldstone was used for the fireplace. Photo above shows the lake exposure, with upper sun porch, and equally popular nook underneath. Below is the courtyard side.



Inviting sun porch, which appears to extend directly over lake.



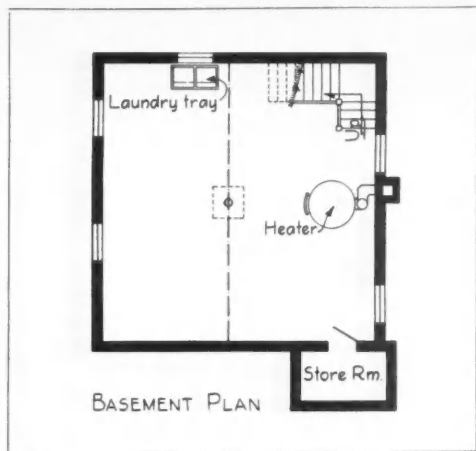
Studio living room, showing fireplace, open stairway and the balcony.



COMPACT
ENGLISH
25'x25'

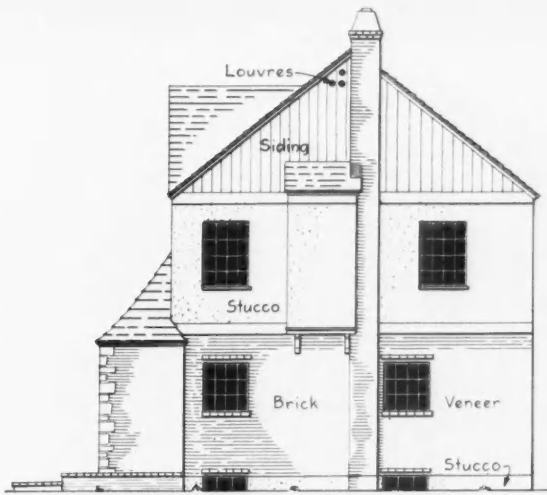
Arthur E. Allen,
New York, Architect
A. B. Wolosoff, Builder

Cost Key is 1.344-112-657-28-20-11

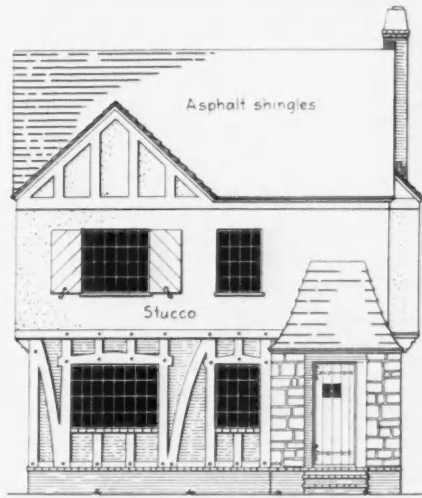


THIS House of the Month is one of the popular designs of Architect Arthur E. Allen of New York, who has designed many thousands of practical and successful homes for builders on Long Island and elsewhere. This particular floor plan was developed for Alvin B. Wolosoff and it proved one of the successful forerunners of the present building activity on Long Island. With a basic plan of only 25 ft. by 25 ft., the builder is able to provide 6 good rooms and bath, with ample light and sufficient closets. A number of variations in the exterior have been used, and one of these is shown on the opposite page. It is possible to face the house with the living room the long way towards the street, or to reverse the plan completely. Plans call for 12-in. concrete basement, 3 by 8 joists on 16-in. centers, 2 by 8 rafters on 16-in. centers. The slight overhang of the second story provides needed bedroom space.

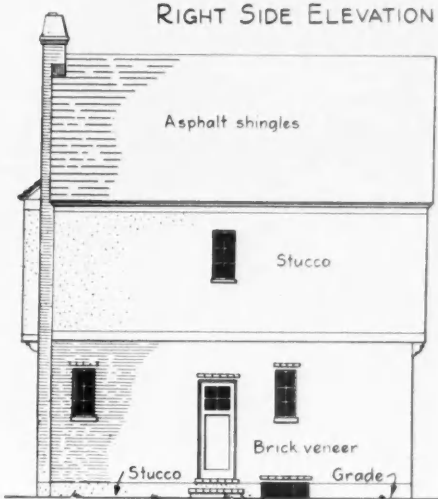




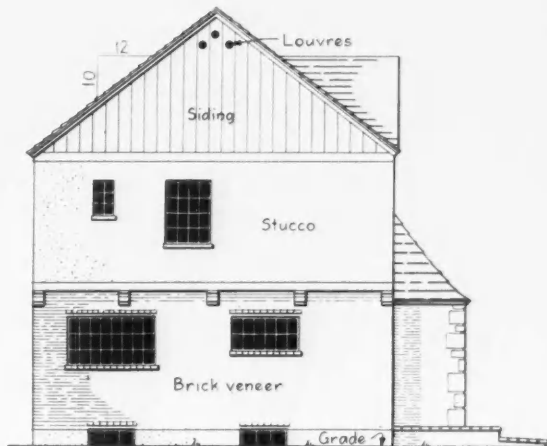
RIGHT SIDE ELEVATION



FRONT ELEVATION



REAR ELEVATION



LEFT SIDE ELEVATION



AN ALTERNATE design with center entrance.



KITCHEN is light, cheerful, well equipped.



NEW JERSEY COLONIAL HOME OF SIMPLE CHARM

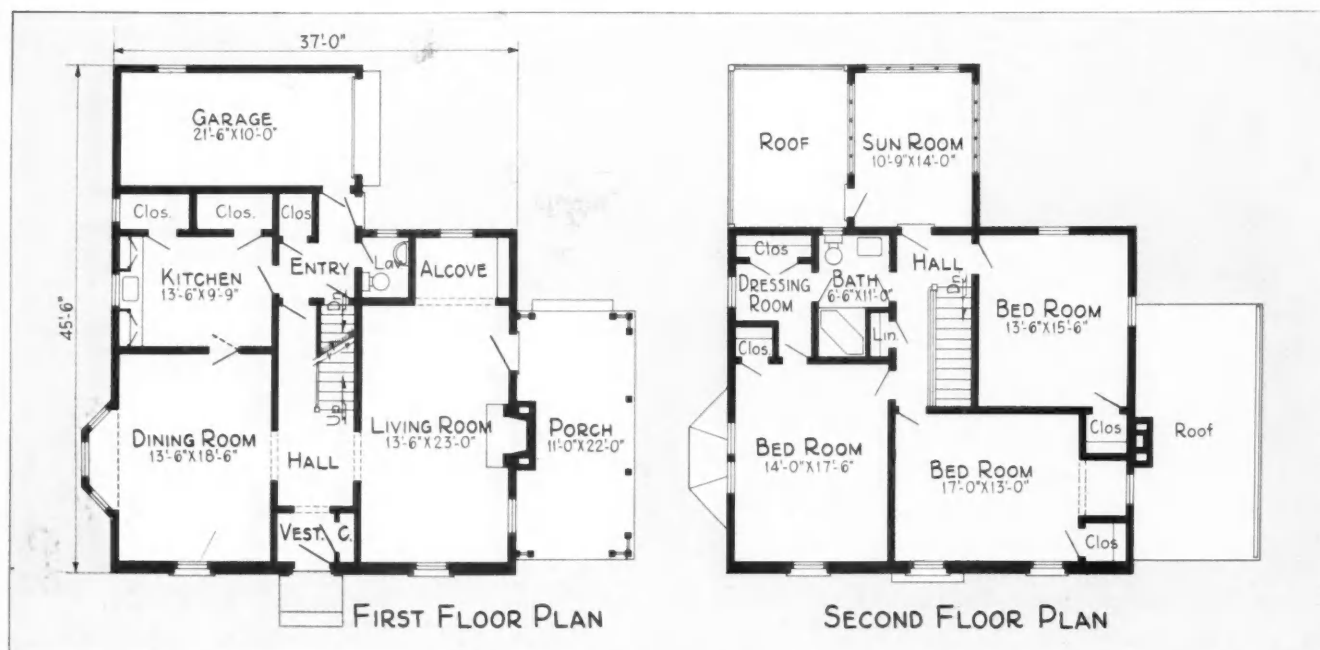
John Decker, Scotch Plains, N. J., Architect

Charles K. Wrage, Dunellen, N. J., Builder

Cost Key is 2.358—
150—1036—44—31—30

THE SIMPLICITY of the Colonial style and efficiency of the plan are noteworthy in this dignified home. Screened living porch and book alcove off living room are appreciated features. The garage is placed at the rear with direct access to the back entry. Above, half of the sun deck is enclosed and can be used as a heated sun parlor in winter. Copper and brass have been used extensively—

roof is Kenmar copper shingles, 12-inch, 32 gauge, with oxidized finish and 6-inch spacing; plumbing is brass throughout; flashings and leaders are of copper. Clapboard and whitewashed brick, Insulite lath and rock wool insulation, cinder block foundations and oil-fired steam heating are some of the other products used. The house contains approximately 30,000 cubic feet.



Plan For A Modern Basement

A Discussion of Attractive Finishes and Effects on Ceilings, Floors and Walls of Basement Recreation Rooms

By **DANA DODGE CORROUGH***

SELECTION of suitable finishes or coverings for the floors, walls, and ceilings of basement recreation rooms is a very interesting task, because of the variety of materials available, and the many attractive effects than can be obtained. This discussion presupposes that the basement space to be finished has been provided with efficient drainage, and has been dampproofed (so that expensive damage will not be caused by flooding), and that a clean satisfactory heating unit is in place.

A basement recreation room may be created and installed in either a new house or an old one, to suit specialized requirements, such as the hobby of an owner, or may be designed with the idea of suiting or pleasing practically anyone, so that a house will be more attractive to prospective buyers. Hobbies may involve the use of special materials, as in the case of

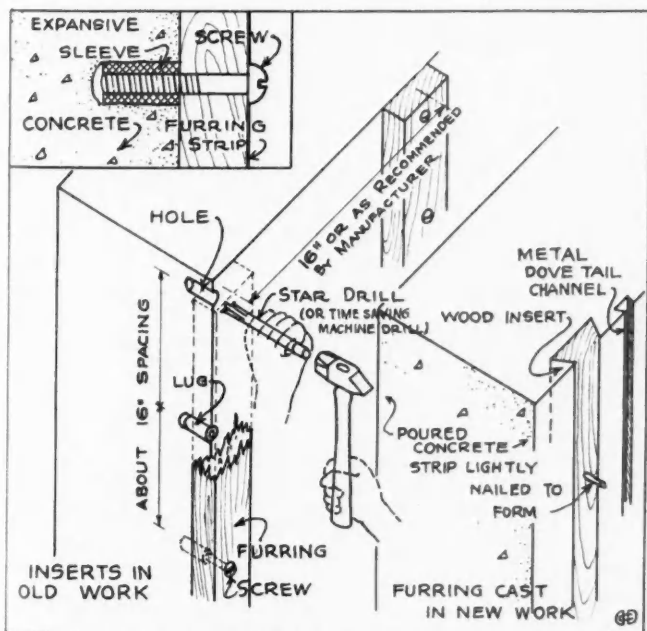
** Dana Dodge Corrough, a licensed architect, is a member of the Illinois Society of Architects, has been Assistant Building Commissioner of Highland Park, Illinois for the past twelve years, and is engaged in private practice.*

an owner who might want to put on amateur theatricals, with the result that special lighting equipment and acoustical materials would be desired. In the use of sound-deadening material care must be taken that the sound is not made too flat and dull by the use of an excessive amount of the material. Another owner might want a children's play room where warmth and bright colors would be essential. Still another might want a work-shop, a study, athletic equipment, special racks or cabinets for hobby displays, or a bar and suitable fixtures for whoopee. Special effects that please one owner might not appeal to others.

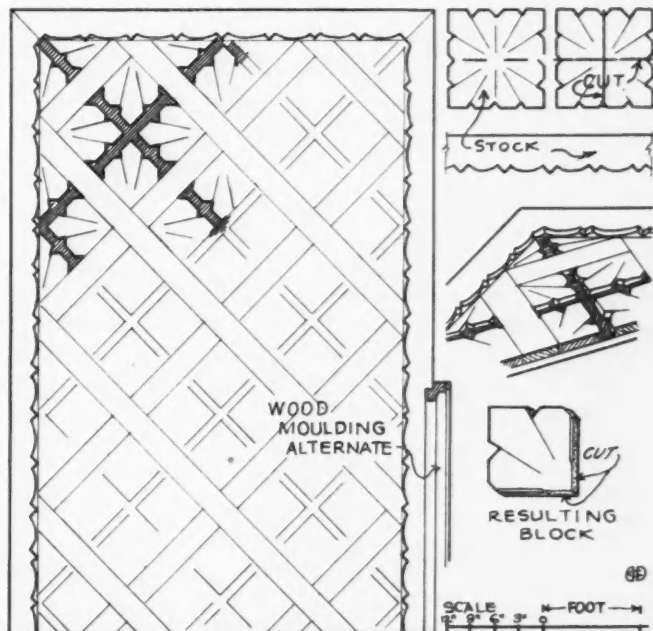
The suggested decorative effects and finishes in this article have been designed to interest buyers and make houses more salable because of their attractive recreation rooms.

Treatment of basement walls depends on materials used in the foundation, which may be monolithic concrete, some form of concrete block, brick, stone, or tile, that can be used in its natural state, or may be finished with special paints or coatings. In case it is desired to cover the wall with boards, plywood, or insulation board, the material should be mounted on furring strips, usually placed horizontally. The inside surface of the wall should be given a coating of waterproofing material before furring strips are applied, unless there is an outside waterproof membrane, or parging of waterproof cement to assure a dry wall.

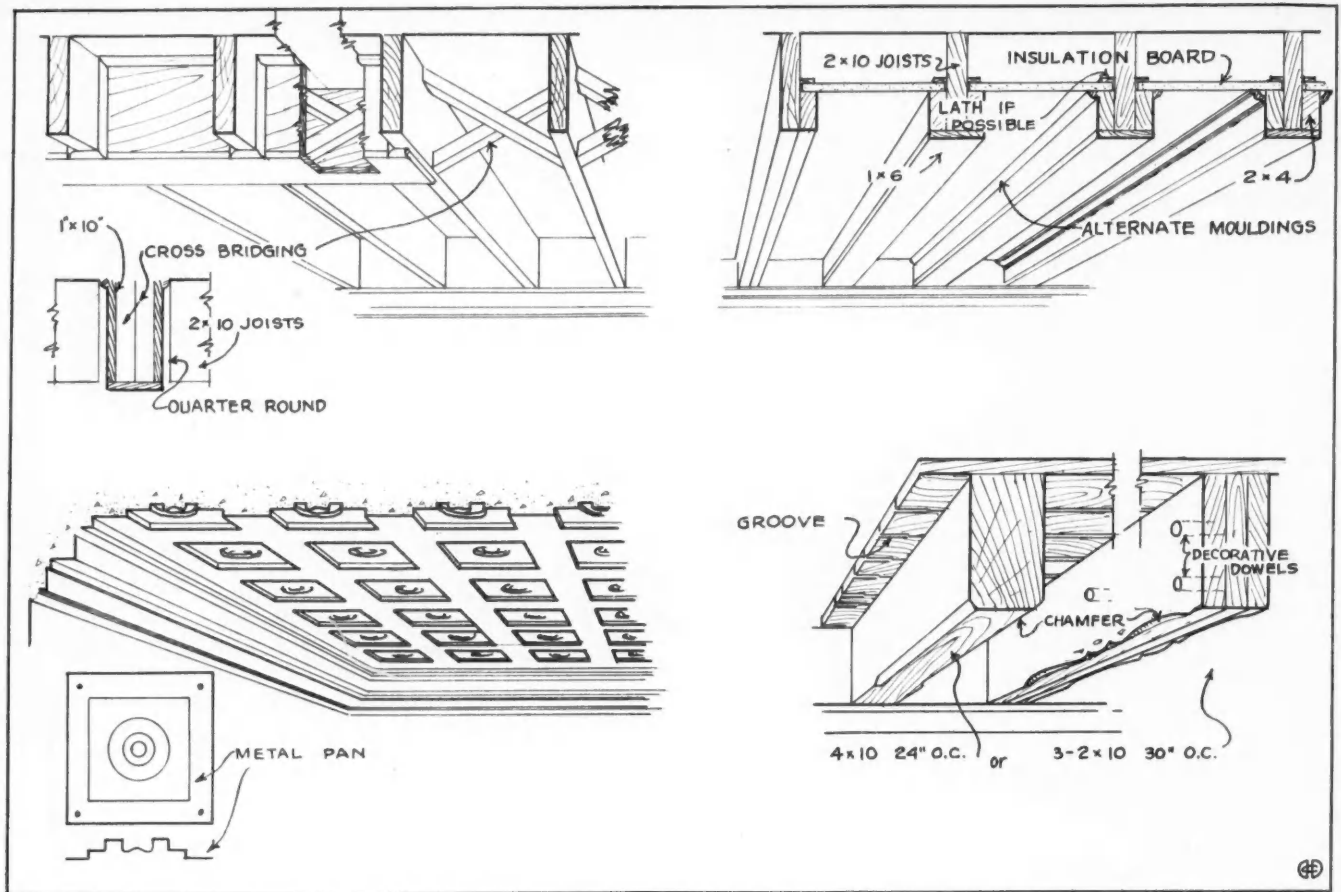
Furring strips are frequently laid horizontally in basement installations. When the foundation wall of an existing building is to be covered, the furring strips may be applied by means of expansion bolts. Holes are cut into the wall with a "star drill," a simple hand tool designed especially for concrete work, or a power



FURRING strips are attached to an existing wall by means of expansion bolts set into holes drilled in masonry. Wood strips or metal channels are cast in place when new wall is poured.



DECORATIVE wall panel produced with stock moulding and patterns of soft-finish insulation board. The decorative stock patterns are quartered and laid into corners of squares formed by straight strips.



FOUR basement ceiling effects, including two that utilize bridging and joists; one in poured concrete coffer; and wood beams 24" O.C.

drill. The latter assures a neater job, with great reduction in the work and time involved. Anchors are inserted in the holes. When bolts are screwed into place the side walls of these anchors expand and hold the bolt securely.

In the case of a new wall, of poured concrete, dove-tail "bucks" or plugs are lightly nailed to the forms. The nails pull out when the forms are removed and the exposed bucks are securely embedded, ready to receive nails or screws that hold the furring strips in place. The two methods, together with another less frequently used, dove-tail metal channel, are shown in an accompanying illustration.

Many interesting effects can be obtained with stock mouldings and ornamental cuttings of rigid insulation board. Rosettes and modernistic effects can be worked on ceilings and walls with special cuttings of hardboards and soft-finish insulation. An illustration at the bottom of preceding page shows a decorative wall panel made from a stock moulding of insulation board, with stock cut ornaments. The ornaments, instead of being used in their original form are quartered, and placed in the four corners of a square formed by cut strips of straight material.

Above are shown four ceiling effects.

In case lines of cross-bridging between joists interfere with appearance of the ceiling, the bridging cannot be removed without weakening the floor above. Boxing will cover the bridging, as shown at the left, above, and at the same time, will give the appearance of a substantial cross beam.

Exposed joists can be made attractive, as indicated at the right of the above cut. Panels of structural board, or rigid insulation, have been set between joists, and rest on batten strips. The latter fasten to sides of the lower portion of joists and widen the exposed edges.

Shown at the lower left of this group are coffers in a poured concrete ceiling. The "pans" used to produce this effect are attached to the forms before the floor is poured, then are pulled out after the forms are removed. Each coffer has at least two set-backs that have interesting decorative possibilities through the use of stains, or concrete paints.

Concrete or wood ceiling beams can be decorated by sand blasting the sides or exposed soffit. Precast joists and slabs of reinforced concrete can be used to make a sturdy floor. Interesting architectural effects are produced in the basement by painting or otherwise decorating the exposed faces. Metal lath and plaster on the basement ceiling serves as an insulator, prevents fire or basement dust from reaching upper floors of the building.

The beam effect (shown lower right), is produced by using two 2-by-10 joists with a 2-by-8 spacer, or three 2-by-10 joists, set 24" on centers. The sub-floor of the room above is of plank, with beveled edges. This produces an attractive beam effect, and a rigid floor for the upper room.

At the top of the facing page is shown a striking Byzantine effect produced with insulation board plank set horizontally over vertical furring strips, or cemented to the wall. The keystone effect around the window is produced by cutting the plank with a beveling hand tool made especially for the purpose. This tool must be kept sharp if a workmanlike job is expected. The window is a circular stock pattern. It might be placed in front of an ordinary basement window, so as to admit natural light, might be built into the foundation wall in front of an area way, or as in this case, might be glazed with colored glass and placed in front of a basement wall. As shown in the illustration, the window has been set out far enough

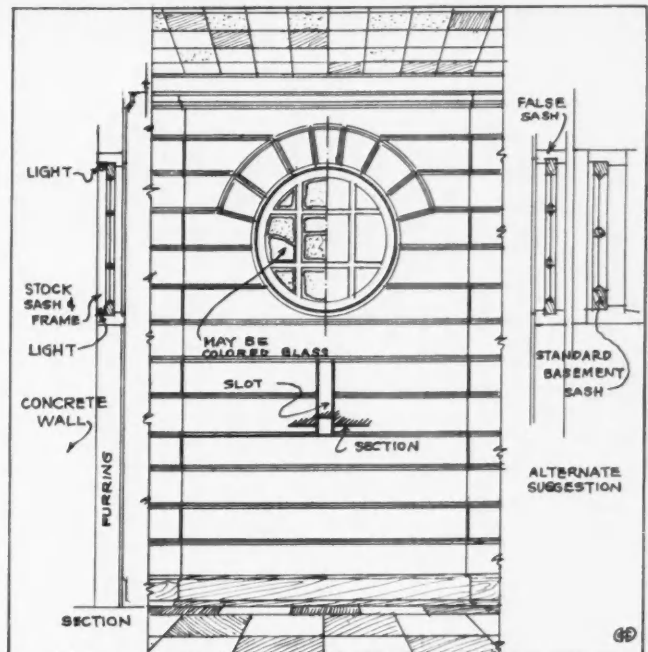
from the wall to permit use of a tubular lumiline bulb that lights up the window when the recreation room is in use.

The illustration at the lower left of this page shows a few nautical effects. A plank floor has been laid on furring strips. The side wall, in which a port hole may be inset, with a life preserver hung below, is of boards or plywood. The newer plywoods are made with beveled edges, and with neat beadings that do not show joints. Resinous seals are used to make the wood highly water resistant. Both plastic and smooth paint finishes can be applied in colors when desired. Wood battens, screw-on or snap-on metal mouldings might also be used to heighten the marine effect, or to give a "moderne" touch. A ship's rail can be placed at one side, and a sea-scape can be painted on the exposed wall behind the railing. An open-tread stairway, with handrails of iron pipe would be inexpensive and properly nautical.

In addition to the coffered ceiling effect previously mentioned, concrete can have a colorful decorative effect when used in walls and floors. Matched boards, with prominent grain, and free from loose knots, are used in wall forms. Grain is raised with moisture in the concrete. Each board leaves its mark and grain on the finished wall. The surface is later stenciled, or may be painted to simulate wood planking.

Gypsum board, particularly those with photographed simulations of wood grains, or actual veneers of wood may be used. It is essential that dampness be kept from these boards. Some wall boards are now asphalt treated to prevent absorption of condensation, and to waterproof them. The use of linoleum on walls is just becoming popular. Good effects can be had by its use. It is usually attached by mastic and a few brads. In the event of excessive infiltration of ground water, full membrane waterproofing may be necessary to give protection to the surface treatments.

In the illustration (lower center), the colored floor has been waxed to give a bright finish and a surface suitable for dancing. Many interesting concrete colors are now available, rich browns, restful greens, and warm reds offer decorative possibilities. Use of a light mesh reinforcing in such floors will prevent large, unsightly cracks, and will confine expansion separations to the

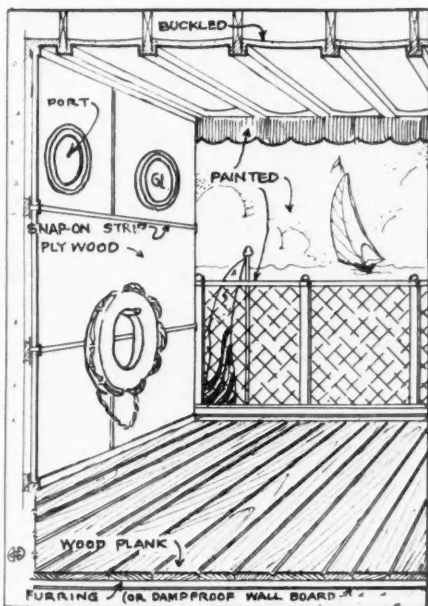


BYZANTINE treatment produced with insulation board plank or wood on horizontal furring strips. Keystone effect around false sash produced with beveling tool. Sash may be set out from wall to permit use of lumiline bulbs that illuminate colored glass from outside when room is in use.

marked squares, where there is no ill effect.

A well cured concrete surface imparts a sense of fitness for its work. It has a texture and appearance of depth and stability that results from proper curing by allowing the floor to dry very slowly, so that proper chemical reaction can take place by allowing water to combine with the cement particles. Such a floor has a flint-like surface, that will not dust or develop small surface cracks.

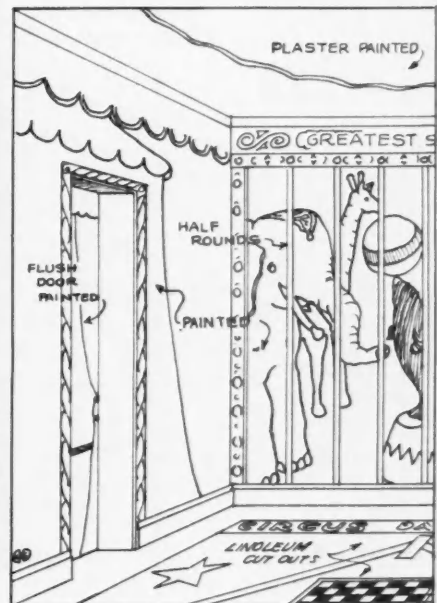
An increasingly popular method of curing involves use of a sisal-reinforced water-proof paper that is laid over the slab as soon as the concrete has taken its initial set, and is left in place for several weeks. The longer the paper is allowed to lay the better the quality of the concrete. The paper serves a double purpose, for it is both tough



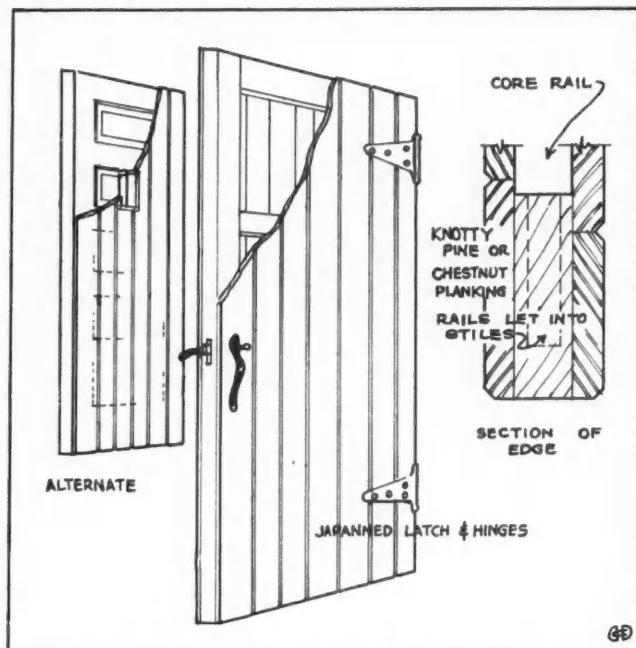
Attractive, inexpensive nautical effects in basement recreation room.



All-concrete room. Floor of Sisalcraft-cured concrete; walls of grained concrete; ceiling of sand-blasted pre-cast joist.



Play room with linoleum cut-outs on floor, and circus animals on walls.



INEXPENSIVE recreation-room door made in random plank effect.

and water-proof, and thus protects the surface from discoloration, prevents paint and dirt being ground into its surface, beside holding moisture at the surface of the concrete to aid in setting. Use of this process is particularly important when colored concrete is to be poured.

The drawing at the lower right of the preceding page shows a playroom in which the floor covering is of linoleum or rubber tile, cut on the job into gay patterns, or to provide playing surfaces for floor games. Painted walls are painted to give an effect of circus tents, cages, and animals. Linoleum should not be laid on bare concrete, but special waterproof materials and tiles are available that can be laid in waterproof mastic directly on concrete.

At the top of the page is shown a recreation room door utilized by Ed Schmitt, a builder of Mansfield, Ohio. The surface is of chestnut, locally grown, beaded in a planer to give a random-width plank effect. The boards are fastened at top and bottom with

battens. An edging strip is put around the outside, and beaded boards are then applied to the opposite face. A large black enameled latch is used, in place of a knob. Coal bin doors are made in the same way, except that only the outside face is finished.

Another attractive effect was noted in a house just completed by Ryan and Ryan, builders, of Rochester, N.Y. In a knotty-pine recreation room, an attractive gun cabinet was built on each side of a fireplace, and pine boards were used to form a square post around an iron lally column at one side of the room.

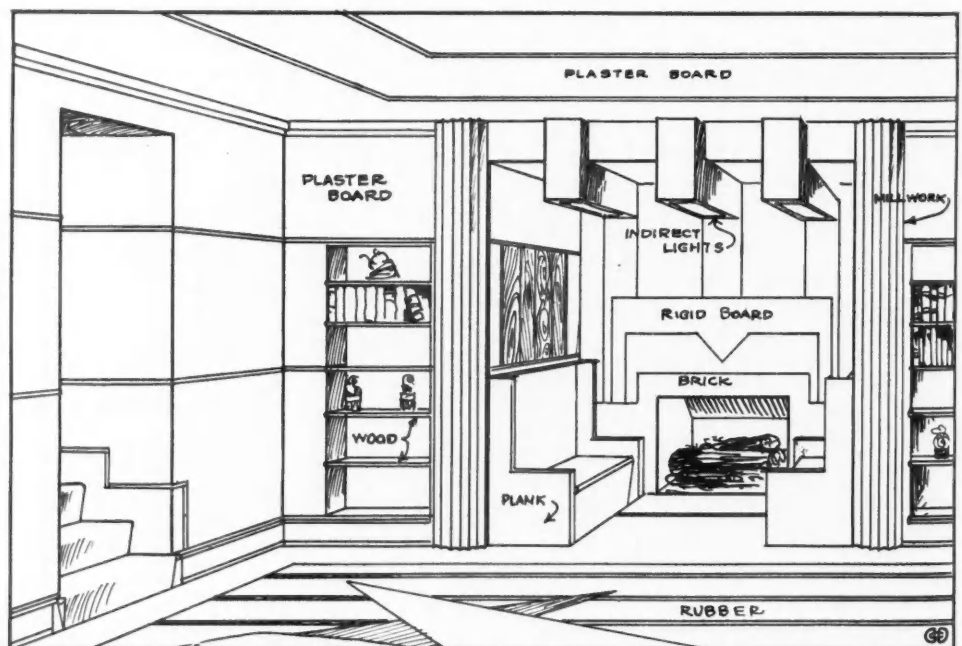
The illustration below shows a fireplace with built-in seats and shelving that give the room a modernistic effect. With the exception of the millwork columns, all of the built-ins can be produced on the job. Shelving, seats, and boxing for modernistic indirect lighting are comparatively simple, yet give a basement room considerable sales appeal.

Recreation rooms in homes are principally for play, so a little "play-acting" and scenery are not falsehoods, but simply add to interest of the room and encourage its use. When unusual effects are attempted, however, we should keep in mind what an architect calls "scale;" that is, relative size of the parts used in a design in comparison to the size of a person, or to that of a room in which they are to be used.

A picture of a monumental new public building in Washington, D. C. was shown in a recent issue of *Doorways*. To a casual observer the door was approximately nine or ten feet high. On more careful inspection, the figure of a man standing at one side of the door hardly came above the plinth block. The door was 40 or more feet high. Scale is relative. A characteristic of stage scenery and stage designing is its large scale. Actors should seem to be dwarfed by overpowering effect of the scenery.

Here is a suggested application of "scale" in a basement recreation room. If we are accustomed to a fireplace with an opening about three by four feet, and a mantle height of five feet, a person would seem dwarfed in a room where the fireplace was built with an opening six by eight feet, and a mantle height to correspond. The effect would be startling, and the room would seem to be much larger than it actually is. Similar effects could be produced by installing over-size benches, bookshelves and other built-ins adjoining a fireplace.

MODERN fireplace recess, with indirect lighting, built-in seats and bookshelves. All decorative effects except the millwork pillars can be built on the job.



Cost Analysis of Wood Frame and Stucco House*

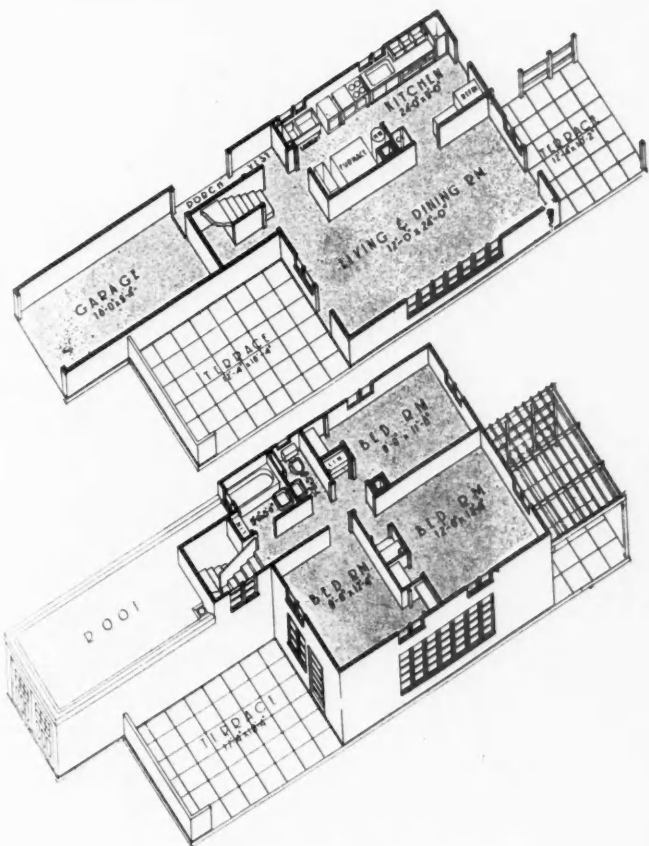
Purdue Housing Research Project, House Number 1; J. Andre' Fouilhoux, Architect; Edward Schroyer, Builder

By C. PAUL ULMER

Technical Assistant Purdue Housing Research Project

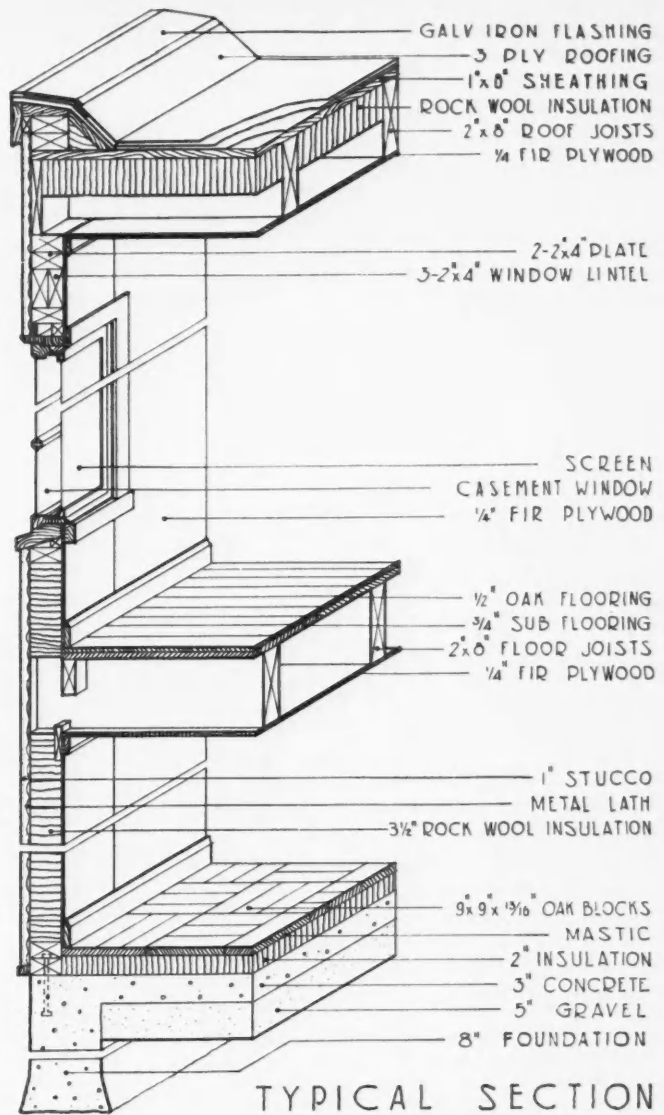
THE design of House No. 1 of the Purdue Housing Research Project was awarded first prize in a small house competition conducted by the New York Chapter of The American Institute of Architects early in 1935. The conditions of the competition program conformed to the cost and accommodation requirements set-up for the houses built on the Purdue Housing Research Campus. These requirements placed a limit of \$5000 on the construction cost and called for space suitable for a family consisting of parents and two or more children of opposite sex.

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



FIRST AND SECOND FLOOR PLANS

HOUSE NO. 1 PURDUE HOUSING RESEARCH PROJECT



TYPICAL SECTION

The type of construction used is one representative of that used for many present day houses. Certain features of the construction, however, incorporated departures from usual practice that warranted research study of their cost economy possibilities.

The house was erected at a general contract cost of \$4852.45 exclusive of the cost of the land, grading, landscaping and architect's and other fees. Construction work was started on December 2, 1935. Due to the severity of winter weather conditions work was stopped on December 20, 1935. Construction work was resumed on March 12, 1936, and the house was substantially completed on July 6, 1936. Exclusive of the lay-off noted above construction required a period of 134 days. No work was done on Saturdays or Sundays. This and other causes resulted in a loss of 38 days. Actual construction was accomplished in 96 working days.

The house was located on a slightly sloping area at the intersection of two roads, the street exposures being to the South and West. The house was designed with space arrangements provided on two floors convenient for an average family. For economy the living and dining areas were combined in one room approximately 12 feet by 24 feet. Since no cellar was included in the design the kitchen and utility areas were combined in a space 8'8" x 18'0". A one-car garage is attached to the house and included in the first floor area.

The framing of this structure and construction of the first floor are worthy of attention. The walls are framed

with wooden studs using the balloon frame system. Ordinarily studs are spaced 16 inches on centers. In this house the studs have been spaced 18 inches on centers and the plan developed on the basis of three-foot units instead of the more common use of four-foot units. The location of the stairway outside of the main unit of the house simplified the framing of the second floor and minimized the cutting of the floor joists in that area.

The compact arrangement of the plan and framing method greatly simplified the installation of the ducts of the heating system.

The first floor, which is laid directly on the ground over a gravel fill, consists of a concrete slab 4" thick, 2" of slab insulation and a finished floor of wood blocks laid in mastic in the living room and of linoleum in the kitchen.

The exterior walls, partitions and ceiling are finished with plywood nailed to the studs and painted. The walls and roof are insulated with bat type mineral wool insulation placed between the studs and the roof rafters. The flat roof is covered with built-up roofing.

A feature of the plumbing system is the use of copper tubing with solder-type fittings for the hot and cold water lines.

Specifications and Cost Analysis

The following analysis combines both the specifications and the costs of the various items which entered into the construction of House No. 1. The total cost and unit cost of each item are stated. Unless otherwise noted these costs include labor, materials and contractor's overhead and profit. Following this analysis will be found an itemized and detailed

ANY information as to Plans and Specifications for this house may be obtained by addressing the Architect, Mr. J. André Foulhoux, 45 Rockefeller Plaza, New York, New York

breakdown of all construction costs as well as a construction cost summary and the percentages which each division bears to the total cost.

Unless otherwise indicated, areas, lineal feet and similar units where given are those actually obtained. They are, therefore, net figures and do not include the excess or waste materials required for the finished work. Waste has, however, been included in the costs given and thus represent the cost of all items in place.

The unit costs of various sections such as walls, partitions, floor and roof represent the cost of the labor and materials required to produce the section described. In arriving at these costs openings have been deducted from walls and partitions, and such items as drain boxes, gutters and flashings are not included in the unit cost of the roof. In other words the net cost of the section is stated. To obtain the superficial unit cost, for instance, of exterior walls one must add to the net cost of the wall the cost of any doors, windows and other items used in conjunction with the walls.

No basement was planned for House No. 1 and no

CONSTRUCTION COST SUMMARY HOUSE NO. 1. 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			\$ 21.00	\$	\$ 21.00	\$	\$	\$ 21.00	0.4
FOUNDATIONS	CONCRETE WORK	FORMS	14.10		14.10		14.10	91.85	1.9
		MIX & POUR	19.95	57.80	77.75		77.75		
OUTSIDE WALLS	FRAMING		190.10	142.33	332.43		332.40	865.90	17.9
	STUCCO BASE	LATH	35.75	91.80	127.55		127.55		
	STUCCO	3 COATS	131.65	87.50	219.15	*	219.15		
	INSULATION	ROCK WOOL BATS	11.00	93.43	104.43		104.40		
	INSIDE WALL FIN.	PLYWOOD	59.10	81.30	140.40		140.40		
PARTITION WALLS	FRAMING		57.55	48.20	105.75		105.75	265.50	5.5
	WALL FINISH	PLYWOOD	69.65	99.10	168.75		168.75		
1ST FLOOR	FILL		13.00	11.80	24.80		24.80	301.05	6.2
	CONCRETE SLAB		7.85	19.90	27.75		27.75		
	INSULATION		18.75	70.70	89.45		89.45		
	FLOORING	LINOLEUM BASE	1.20	8.00	9.20		9.20		
		LINOLEUM	1.85	36.25	38.10	†	38.10		
		HARDWOOD BLOCKS	35.50	76.25	111.75		111.75		
2ND FLOOR	FRAMING		16.50	61.00	77.50		77.50	213.90	4.4
	FLOORING	HARDWOOD	34.60	46.20	80.80		80.80		
		LINOLEUM	1.90	9.10	11.00	†	11.00		
	CEILING FIN. 1ST STORY	PLYWOOD	16.80	27.20	44.00		44.00		
ROOF	FRAMING		34.85	92.15	127.00		127.00	310.20	6.4
	INSULATION	ROCK WOOL BATS	9.25	35.80	45.05		45.05		
	ROOFING	BUILT-UP	11.60	27.60	39.20	32.10	71.30		
	CEILING FIN. 2ND STORY	PLYWOOD	21.50	39.65	61.15		61.15		
METAL WORK	COPING FLASHING		19.20	17.75	36.95	36.75	73.70	73.70	1.5
MILLWORK	DOORS		68.10	224.65	292.75		292.75	1006.10	20.7
	WINDOWS		46.25	371.25	417.50		417.50		
	TRIM		44.25	39.90	84.15		84.15		
	CABINETS		13.95	240.75	254.70		254.70		
STAIRS	FRAMING		18.00	14.40	32.40		32.40	99.70	2.1
	FINISH	HARDWOOD	13.23	54.10	67.33		67.30		
HEATING	FLUE		10.00	19.10	29.10		29.10	521.05	10.7
	RETURN DUCTS		17.25	21.15	38.40	10.10	48.50		
	FURNACE & TANK		19.03	226.23	245.26	95.40	340.66		
	HOT AIR DUCTS	PLENUM & DUCTWORK	22.65	37.90	60.55	40.30	100.85		
PLUMBING	ROUGH		68.65	75.40	144.05	26.23	170.28	369.50	7.6
	FIXTURES & FINISH COMPLETE		22.30	146.55	168.85	30.40	199.25		
ELECTRICAL	ROUGH		20.00	30.80	50.80	2.50	53.30	113.35	2.4
	FINISH	COMPLETE	10.75	46.45	57.20	2.85	60.05		
PAINTING	EXTERIOR	TRIM	67.25	8.05	75.30	*	75.30	322.85	6.6
	INTERIOR	WALLS, CLG. & TRIM	155.30	68.15	223.45	*	218.45		
	FLOORS		18.90	10.20	29.10	*	29.10		
TERRACES	SLABS	CONCRETE WORK	23.75	20.30	44.05		44.05	132.30	2.7
	FENCE	FRAME & STUCCO	29.95	32.35	62.30		62.30		
	PERGOLA		10.95	15.00	25.95	†	25.95		
TOTALS			\$1491.65	\$2231.00	\$4430.65	\$ 277.30	\$4707.95	\$4707.95	100.0
General Contractor's Profit and/or Overhead								\$ 144.50	3.0
GRAND TOTAL AND CONTRACT PRICE								\$4852.45	100.0

* No sub-contract
† Overhead and/or profit included in material cost.

BREAKDOWN OF LABOR COST
HOUSE NO. 1. 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
EXCAVATIONS		PICK & SHOVEL WORK	Common	70	\$ 0.30	\$	\$	\$	\$ 21.00
FOUNDATIONS	LAYOUT		Skilled	3	.90			2.70	
	CONCRETE WORK	FORMS	Carpenter	6½	.90	5.85			
			Carpenter's Helper	8½	.63	5.40			
		NON-PRODUCTIVE TIME	Mixed	4½		2.85	14.10		
		MIXING & POURING	Skilled	11½	1.00	11.50			
		Common	11½	.50	5.75	17.25	31.45	34.05	
OUTSIDE WALLS	FRAMING	STUDS, PLATES, BLOCKING, ETC.	Carpenter	52	.90	46.80			
			Carpenter	35¾	.75	41.81			
			Carpenter	48½	.60	29.10	117.70		
		NON-PRODUCTIVE TIME	Carpenter	16¾		11.50			
		CLEAN UP	Common	2¼	.40		.90	130.10	
	STUCCO BASE	APPLYING LATH	Carpenter	45½	.60		27.30		
		BUILDING SCAFFOLD	Carpenter	13¾			8.45	35.75	
	STUCCO	SCRATCH COAT	Plasterer	22	1.20	26.40			
			Hod Carrier	14	.60	8.40	34.80		
		BROWN COAT	Plasterer	23	1.20	27.60			
			Hod Carrier	16	.60	9.60	37.20		
		FINISH COAT	Plasterer	39	1.20	46.80			
		Hod Carrier	21½		12.65	59.65	151.65		
	INSULATION	INSTALLING BATS	Common	18	.50		9.00		
		NON-PRODUCTIVE TIME	Common	4	.50		2.00	11.00	
INSIDE FINISH	PLYWOOD	Carpenter	9½	.60		54.00			
	ASBESTOS BOARD	Carpenter	8½	.60		5.10	59.10	307.60	
PARTITION WALLS	FRAMING	STUDS, PLATES, ETC.	Carpenter	24½	.90	22.00			
			Carpenter	25½	.75	19.10			
		Carpenter	23½	.60	14.10	55.20			
	NON-PRODUCTIVE TIME	Carpenter	3			2.35	57.55		
	WALL FINISH	PLYWOOD	Carpenter	50¾			55.85		
	ASBESTOS BOARD	Carpenter	21	.60		13.80	69.65	127.20	
FIRST FLOOR	FILL	PICK & SHOVEL WORK	Common	26	.50			13.00	
	CONCRETE SLAB	MIXING & POURING	Skilled	3½	1.00	3.50			
			Common	9¾		4.35	7.85		
	INSULATION	ROCK WOOL SLABS	Skilled	12½	1.00	12.50			
			Common	12½	.50	6.25	18.75		
FLOORING	LINOLEUM BASE	Skilled	2	.60	1.20				
		Skilled	2½	.75	1.85	3.05			
	HARDWOOD BLOCKS	Skilled	49	.60	29.40				
		Skilled	3½	1.75	6.10	35.50	38.55	78.15	
SECOND FLOOR	FRAMING	JOISTS, SUB-FLOOR, ETC.	Carpenter	5	.90	4.50			
			Carpenter	16	.75	12.00		16.50	
	FLOORING	HARDWOOD	Carpenter	10½	.93	9.45			
			Carpenter	25	.60	15.00			
		SANDING HARDWOOD	Skilled	4	1.75	7.00			
		NON-PRODUCTIVE TIME	Carpenter	4½		3.15	34.60		
	CLG. FIN. 1ST STORY	LINOLEUM	Skilled	2½	.75		1.90	36.50	
		PLYWOOD	Carpenter	25	.60		15.00		
		ASBESTOS BOARD	Carpenter	3	.60		1.80	16.80	69.80
	ROOF	FRAMING	JOISTS, SHEATHING, ETC.	Carpenter	11	.90	9.90		
Carpenter				24½	.75	18.35			
Carpenter			7	.60	4.20	32.45			
NON-PRODUCTIVE TIME		Carpenter	3			2.40	34.85		
INSULATION		ROCK WOOL BATS	Common	18½	.50			9.25	
ROOFING	3 PLY BUILT UP	Roofers	14	.63	8.40				
		Common	8	.40	3.20		11.60		
CLG. FIN. 2ND ST'RY	PLYWOOD	Carpenter	26	.60			21.50	77.20	
METAL WORK	COPING FLASHING	INSTALLATION & SHOP LBR.	Skilled	18	.90	16.20			
			Skilled	5	.60	3.00			19.20
MILL WORK	DOORS	SETTING FRAMES	Carpenter	10¼			8.45		
		HANGING & HARDWARE	Carpenter	33	.63	31.80			
			Carpenter	21½	.93	19.35	51.15		
		THRESHOLDS	Carpenter	4	.60		2.40		
		SCREENS	Carpenter	7½	.65		4.00		
	CLEAN UP		3	.40		1.20	68.10		
	WINDOWS	SETTING FRAMES	Carpenter	20			16.00		
		INSTALL SASH & HDW.	Carpenter	14	.90	12.60			
			Carpenter	19¾	.60	14.85	27.45		
		SET SCREENS	Carpenter	1½	.90		1.35		
		CAULKING	Carpenter	2¾	.65		1.45	46.25	
	TRIM	CLOSET SHELVING	Carpenter	11½	.60		6.90		
FIT WINDOW CASINGS		Carpenter	8¾	.60		5.25			
	CEILING & BASE MOLD	Carpenter	28¾	.60		23.10	41.25		

footings were used under the foundation walls. Consequently excavation consisted only of trenches about 8" wide for all foundation walls. These trenches were 24" deep from natural grade, 12" of excavation being cut through frozen ground. Cheap and inexperienced labor was employed and that, combined with digging through frozen ground, resulted in some misalignment of trenches and high unit cost. Ten cubic yards of earth were removed by pick and shovel at a total cost of \$21.00 or a unit cost of \$2.10 per cubic yard.

Foundation walls were of poured concrete. The mix specified was 1 part cement to 3 parts clean, sharp, coarse sand and 5 parts clean crushed stone or gravel. No. 6 graded washed concrete gravel was used instead of the sand and gravel aggregate and the quantity of material required indicates the mix actually used to have been 1:8.

Concrete was poured directly into the trenches up to natural grade without use of forms which was a considerable saving. To bring the wall up the additional 8" to the sill line 2" x 8" planks set on edge and held in place by 2" x 4" stakes were used as forms. Concrete was poured between these forms without the use of a lock joint or dowels to connect the two sections. Bolts, ½" x 6", placed 6'0" on centers were imbedded in the top section as anchors for the wood sill. The form lumber was not damaged and was re-used in the house framing.

Therefore, no separate charge is made for the form material.

Repeated absences of the contractor from the job during this work caused some delay, inefficiency and wasted time which might have been avoided had he or a superintendent been present at all times.

Twelve cubic yards of concrete were poured at a total cost of \$77.75 or a cubic yard cost of \$6.45. Foundation walls forming two sides totaled 117 square feet. The total cost of forming was \$14.10 or a cost of \$0.12 per square foot. Including forming the total cost of the concrete work was \$91.85 or \$7.65 per cubic yard.

Outside Walls

Balloon type wood framing was used, the outside wall studs extending through two stories from foundation to roof. The frame was set on 2" x 4" sills which were anchored to the foundations. Studding was No. 2 Y. P. 2" x 4"; surfaced 4 sides, 16 feet long and spaced 18" center to center. This spacing was required to form a proper backing and nailing for the 36" wide plywood sheets used for the interior finish. Ribbons, 1" x 4", were notched into the studs to support the second story joists. Double headers over openings were 2" x 4", 2" x 6" or 2" x 8" as required. Stud framing at openings was single. Top plates were 2" x 4" doubled and lapped.

Special care was taken to brace the frame. This was done by cutting in 2" x 4" between the studs continu-

HOUSE NO. 1. BREAKDOWN OF LABOR COST CONTINUED

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Labor Classification	Total Hours	Wage /hr.	Cost	Job Cost	Sub-Total	Total
MILLWORK Continued	CABINETS, ETC.	SET DINING SEAT	Carpenter	1½	.90		1.35		
		SET KITCHEN CABINETS	Carpenter	3½	.90	3.15			
			Carpenter	15½	.60	9.45	12.00	15.55	169.55
STAIRS	FRAMING	STRINGERS, ETC.	Carpenter	20	.90			18.00	
	FINISH	HARDWOOD, ETC.	Carpenter	22	.60			13.20	31.20
HEATING	FLUE	LAYING MASONRY	Mason	8	.75		6.00		
		MIXING & HOD	Mason's Helper	8	.50		4.00	10.00	
		EXCAVATION	Common	2½	.60		1.50		
	RETURN DUCTS	CONCRETE PITS	Carpenter	14½			7.00		
		LAYING TILE	Common	4½	.50		4.25		
		G.I. DUCT WORK	Skilled	5	.60		3.00	17.25	
	FURNACE	INSTALLATION	Skilled	25	.60		15.00		
		FUEL TANK INSTALLATION	Mixed	8	.50		4.00	19.00	
	HOT AIR DUCTS	INSTALLATION	Skilled	32	.60		19.20		
		PLENUM CHAMBER	Carpenter	5			3.45	22.65	68.90
PLUMBING	ROUGH	EXCAVATION	Common	21	.40		8.40		
		METER PIT	Skilled	3	.60		1.80		
		FUR UTILITY WALL	Carpenter	3			2.25		
		INSTALL SOIL PIPE	Plumber	14	1.00	14.00			
			Plumber	20	.60	12.00	20.00		
		WATER LINE	Plumber	16½	1.00	16.50			
			Plumber's Helper	3½	.60	2.10	18.00		
	GAS LINE	Plumber	8	1.00		8.00			
	NON-PRODUCTIVE TIME	Plumber	4			3.60	68.65		
		FIXTURES & FINISH	SETTING	Plumber	8	1.00	8.00		
			Plumber	13½	.60	8.10			
			Common	15½	.40	6.20		22.30	
ELECTRICAL	ROUGH	INSTALL BX CABLE	Skilled	16½	1.00		16.50		
		INSTALL CONDUIT	Skilled	1	1.00		1.00		
		SWITCH BOXES	Skilled	2½	1.00		2.50	20.00	
	FINISH	SWITCHES	Skilled	4½	1.00		4.50		
	FIXTURES	Skilled	6½	1.00		6.25	10.75	30.75	
PAINTING	EXTERIOR TRIM	PRIME COAT	Painter	35½	.65		23.05		
		SECOND COAT	Painter	45	.65		29.25		
		THIRD COAT	Painter	23	.65		14.95	67.25	
	INTERIOR WALLS CEILING & TRIM	PRIME COAT	Painter	62½	.65	40.60			
		SECOND COAT	Painter	79½	.65	51.65			
		THIRD COAT	Painter	84	.65	54.60	146.85		
		WALLPAPER	Skilled	13	.65		8.45	155.30	
	FLOORS	OIL STAIN—2 COATS	Painter	21½	.65		14.00		
WAX		Painter	7½	.65		4.90	18.90	241.45	
TERRACES	CONCRETE	SLABS	Skilled	15½	1.00	15.50			
			Unskilled	16½	.50	8.25		23.75	
	TERRACE FENCE	FRAMING	Skilled	5½	.60		3.45		
		STUCCO	Mixed	29½			26.50	29.95	
PERGOLA	FRAMING	Carpenter	8½	.60	5.10				
		Carpenter	6½	.90	5.85		16.95	64.65	
TOTAL LABOR COST									31491.85

BREAKDOWN OF MATERIAL COST

HOUSE NO. 1. PURDUE HOUSING RESEARCH PROJECT

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Material Used	Quantity	Cost	Job Cost	Sub-Total	Total	
FOUNDATIONS	CONCRETE WORK	CONCRETE MATERIALS	Cement	49 sacks	\$ 34.30	\$	\$	\$	
			No. 6 Gravel	47000 lb	23.50			57.80	
OUTSIDE WALLS	FRAMING	STUDS, PLATES, BLOCKING; ETC	½"x6" bolts	30	1.20				
			2"x4", etc., No. 1 Y P	2345 bd. ft.	105.65				
			2"x(1" & 2") No. 1 Y P	230 lin. ft.	4.00				
			Milled work	680 lin. ft.	24.65				
			1"x4" No. 2 Y. P	152 lin. ft.	2.00				
			Common nails	105 lb.	4.20		142.30		
			Paper back metal fab	244 sq. yds.	90.30				
			Shingle nails		1.50			91.80	
	STUCCO	SCRATCH COAT	BROWN COAT	Lime	6 sacks	3.30			
				Cement	25 sacks	17.50			
				No. 3 sand	6300 lb.	3.15	23.05		
				Lime	5 sacks	2.75			
				Cement	32 sacks	22.40			
				No. 3 sand	830 lb.	4.00	29.15		
	FINISH COAT	Lime	2 sacks	1.10					
		White cement	9 sacks	22.50					
		Silica sand	12 sacks	10.80	34.40	87.50			
	INSULATION	BATS	¾" rock wool	1130 sq. ft.			90.40		
INSIDE FINISH			PLYWOOD	¼"x3"x8" fir	1704 sq. ft.	81.80			
		ASBESTOS BOARD	½"x4"x8"	45 sq. ft.	4.50	86.30	498.30		

ously around the building at vertical intervals of two and one-half feet. This bracing also provided an excellent intermediate backing for the plywood sheets. Since more bracing was required than usual the extra labor and expense involved should be noted as an

extra cost involved in finishing with plywood. This fact is usually overlooked.

The total cost of framing the outside walls was \$272.40. This is a square foot cost of \$0.12 for the gross area of the wall.

Paper backed metal lath was used as a base for the exterior stucco. It was composed of galvanized steel ribs welded to galvanized cross wires which are woven through a backing of fibrous waterproofing paper in sheets 31" x 48". Each sheet was securely nailed to each stud; joints were staggered; and all sheets were lapped. The sheets were lapped one foot around corners. Using four-foot lath sheets and a stud spacing of 18" it was necessary to use extra 2" x 4" blocking between the studs to avoid unnecessary waste of the lath.

A total of 2200 square feet of lath was required to cover 1890 square feet of wall area. The total cost of the lath in place was \$127.55 or \$0.068 per square foot of the area covered.

Portland cement stucco applied in three coats over the lath forms the exterior wall surface of the house. The scratch and brown coats were composed of a mix of 1 sack cement, 12 shovels of No. 3 screened sand and 1/4 sack of lime. Ample drying time was allowed each coat before proceeding with the next. During the application and setting of the scratch coat no carpenter work was permitted on the job. White cement and silica sand with mineral color was used for the final coat.

The net wall area covered with stucco was 210 square yards. The total cost was \$219.15 or \$1.04 per square yard. This is a cost

HOUSE NO. 1. BREAKDOWN OF MATERIAL COST CONTINUED

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Material Used	Quantity	Cost	Job Cost	Sub-Total	Total		
PARTITION WALLS	FRAMING	STUDS, PLATES, ETC.	No. 1 Y. P.	868 bd. ft.	39.16					
			Common nails	100 lb.	4.85					
			2"x(1" & 2") No. 2 Y. P.	215 lin. ft.	4.30		48.20			
	WALL FINISH	PLYWOOD	1/4"x3"x8" fir	1594 sq. ft.		77.40				
ASBESTOS BOARD		1/4"x4"x8"	127 sq. ft.		12.70		90.10	138.30		
FIRST FLOOR	FILL	GRAVEL	Bank run	7 cu. yd.	7.00					
			No. 6 gravel	9800 lb.	4.80		11.80			
	CONCRETE SLAB	CONCRETE MATERIALS	Cement	17 sacks	11.90					
			No. 6 gravel	16080 lb.	8.00		19.90			
	INSULATION	BEDDING MATERIALS	Cement	9 sacks	6.30					
			No. 3 sand	3100 lb.	1.55	7.85				
	FLOORING	SLABS	LINOLEUM BASE	2" rock wool	476 sq. ft.		62.65		70.70	
				1/2" fiber board	100 sq. ft.		8.00			
				LINOLEUM	Standard gauge	13 1/2 sq. yd.		36.25		
				HARDWOOD BLOCK	1 1/2"x9"x9" oak	357 sq. ft.	65.25			
SECOND FLOOR	FRAMING	JOIST, SUB-FLOOR, ETC.	2"x8" No. 1 Y. P.	664 bd. ft.	30.80					
			1"x(4" & 6") No. 2 Y. P.	805 bd. ft.	27.90					
			Common nails	70 lb.	3.00		61.60			
	FLOORING	HARDWOOD	Bldg. paper, nail's		2.70					
			1/2"x2" Sel. Oak	580 bd. ft.	43.50	46.20				
	CLG. FIN. 1ST STORY	PLYWOOD	ASBESTOS BOARD	Standard gauge	4 sq. yd.		9.10		55.30	
				1/4"x3"x8" Fir	484 sq. ft.		24.80			
				1/4"x4"x8"	24 sq. ft.		2.40	27.20	144.10	
	ROOF	FRAMING	JOIST, SHEATHING	2"x8" No. 1 Y. P.	903 bd. ft.	40.65				
				2"x2" No. 1 Y. P.	835 bd. ft.	16.70				
1"x8" No. 2 Y. P.				840 bd. ft.	33.60					
Millwork				160 lin. ft.	4.20					
Common nails				50 lb.	2.00		97.15			
INSULATION		BATS	3/4"x15"x23" rock wool	415 sq. ft.			35.80			
ROOFING		3 PLY BUILT UP	15 and 30 lb. felt	8 rolls	15.20					
			Asphalt	700 lb.	10.50					
			Nails and mop		1.90		27.60			
CLG. FIN. 2ND STRY		PLYWOOD	1/4"x3"x8" Fir	710 sq. ft.			30.65	200.20		
METAL WORK	FLASHING		No. 24 Gauge G.I.	177 lin. ft.	16.55					
			Solder & cement		1.20			17.75		
MILLWORK	DOORS	FRAMES	W. P. frames	19		44.25				
			W. P. glazed	5		37.75				
			1 panel Fir	13		44.40				
			Stock swing type	1 pair		20.00				
			All doors-brcnze			51.55				
			THRESHOLDS & NAILS			4.10				
			SCREEN DOORS	Copper wire-16 mesh	4		20.85			
			FLUSH DOORS	1/2" plywood	2) sq. ft.		2.25	224.65		
	WINDOWS	FRAMES, SASH, HDW., SCREENS				371.25				
	TRIM	MOLDS CASINGS, SHELVSINGS,	Y. P. & W. P.			39.90				
CABINETS, ETC.	KITCH'N UNITS, HDW. & SINK	BATH & TOILET ROOM	Wood	8 units		145.50				
			Med. cab. & mirror			10.50				
			DINING SEAT AND TABLE	Pine		45.00				
			FURRING	2"x2" Y. P.	87 bd. ft.	1.75	200.75	836.55		
STAIRS	FRAMING	STRINGERS	2"x(4, 6 & 10") No. 1 Y. P.	256 bd. ft.	11.50					
			1"x8" No. 2 Y. P.	68 bd. ft.	2.90		14.40			
	FINISH	HARDWOOD	Risers, treads, etc.	32 pcs.	53.50					
HEATING	FLUE	MASONRY	Finish nails	10 lb.	.60		54.10	68.60		
			Com. brick No. 2	500	10.35					
			Flue lining 8"x8"	20 lin. ft.	5.50					
			Prepared mortar	4 sacks	2.00					
	RETURN DUCTS	MASONRY	Sand No. 3	900 lb.	.65		19.10			
			Sewer tile 15"	7 pcs.	11.20					
			Cement	2 1/2 sacks	1.75					
	FURNACE	OIL FIRED WARM AIR	Sand No. 3	800 lb.	.40	13.35				
			REGISTERS	Cold air reg. 18"x18"	2		5.30			
	HOT-AIR DUCTS	DUCTS	FUEL TANK	Galv. Iron-26 gauge		4.50		23.15		
Complete					214.00					
Complete				200 gal.		12.20	226.2)			
FITTINGS				26 gauge galv. stacks	32 lin. ft.					
REGISTERS	PLENUM CHAMBER	ASBESTOS BOARD	Reg. boxes 8"x12"	5 pcs.						
			Elbows, etc.	16 pcs.		22.35				
			8"x12"	8 pcs.		12.05				
			Asbestos board	25 sq. ft.		3.59	37.90	306.38		

of \$0.116 per square foot for the net area. Metal lath and stucco together cost \$1.65 per square yard. This work was done on a time and material basis rather than a sub-contract.

Rock wool bats for wall insulation were securely tucked in place between the studs, 471 bats, size 3½" x 15" x 23" being used. The bats are designed to fill the space between studs set 16" on centers. With the stud spacing of 18" it was necessary to spread the bats slightly to fill the spaces between the studs. All exterior walls from foundation sill to roof plates—exclusive of garage walls—and the partition wall between the stairwell and garage were insulated. The total cost of insulating the outside wall was \$101.40. The insulation cost per square foot of gross wall area was \$0.077.

All interior wall surfaces were 3 ply fir plywood of ¼" thickness. The first story panel sizes were 3' x 8'. The second story ceiling height was 7½ feet but the same size panel had to be used with one-half foot being cut off. This was not all wasted since many small pieces were used where needed as fillers. Each plywood panel was nailed securely in place. Nails were placed about 6" apart and set. All joints were slightly beveled by hand-planing on the job.

Although the studs were accurately placed and the frame well plumbed there were some irregularities which required careful fitting of the panels. Nearly all panels required some planing or cutting before a tight even joint could be made. This was especially true of corner pieces. Consequently the labor of application was a large item. The actual area covered by plywood on the exterior walls was 1657 square feet. For this area the plywood cost \$145.40 which was \$0.088 per square foot.

The cost of painting the inside walls was \$0.039 per square foot. The square foot cost for the complete outside wall was \$0.508.

Partition Walls

Inside walls were framed in a manner similar to that of the outside walls except, of course, only one story high. Studs rest on a single plate at the bottom. Bearing partitions are capped by a double plate upon which the joists rest. The total cost of partition framing was \$105.75 or \$0.096 per square foot of the gross area.

Partition walls also were finished with plywood. The walls of the heater space and the portion around the tub in the bath room, however, were lined with 3/16" asbestos board using sheets 4' x 8', application being made in the same manner as that of the plywood. The square foot cost of net partition wall surfaces applied was \$0.101 for each side or \$0.202 for both sides of the partitions.

Painting both sides cost \$0.078 per square foot since one side cost

COST BREAKDOWN BY TRADES

1. EXCAVATION AND BACKFILL	\$ 35.50	.7
2. CONCRETE AND BRICKWORK	223.30	4.5
3. STUCCO	269.90	5.5
4. LUMBER AND SUPPLIES	600.70	13.3
5. MILLWORK	832.10	16.8
6. PLYWOOD	244.30	5.0
7. CARPENTER LABOR	745.20	15.3
8. INSULATION INSTALLED	235.90	4.6
9. HARDWARE	80.00	1.7
10. LINOLEUM	48.10	1.0
11. ROOFING	72.00	1.5
12. SHEET METAL WORK	73.70	1.5
13. PAINTING	322.85	6.6
14. HEATING	458.00	9.3
15. PLUMBING	353.40	7.3
16. ELECTRICAL WORK	113.00	2.4
17. PROFIT AND OVERHEAD		
GENERAL CONTRACTOR ONLY	144.00	3.0
TOTAL	\$4,852.45	100.00

\$0.039. This plus \$0.096 per square foot for framing and \$0.202 per square foot for plywood applied makes a total square foot cost of \$0.376 for the completed partition wall section.

Gravel fill was used as a base for the concrete floor slab. This fill was 4" to 5" deep, well tamped but not puddled. It covers the cold air return tiles and much of the rough plumbing. The cost of 10 cubic yards of fill was \$24.80 or \$0.05 per square foot of

(Continued to page 138)

HOUSE NO. 1. BREAKDOWN OF MATERIAL COST CONTINUED

GEN. HEADING OF WORK	SUB-HEADING OF WORK	SPECIFIC JOB	Material Used	Quantity	Cost	Job Cost	Sub-Total	Total	
PLUMBING	ROUGH	METER PIT	Cement	1½ sacks	1.05				
		FURRING WALL	No. 6 Gravel	1200 lb.	.60	1.65			
		SOIL LINES	2"x2" No. 1 Y.P.	120 lin. ft.			2.40		
		WATER LINES	Std. C.I. 4", 3", 2"		33.05				
		GAS LINE	Copper pipe & fittings		25.75				
			Galv. pipe & fittings		12.55	71.35		75.40	
	FIXTURES & FINISH	LAVATORIES	Enameled Iron 17"x19"	2		21.20			
		WATER CLOSET	Vitreous china	1		17.75			
		TUB & SHOWER TRIM	5" enameled iron	1		46.35			
		WATER HEATER	Aufb. Gas—20 gal.	1		89.55			
		LAUNDRY TRAY	Cement	1		18.70			
		ACCESSORIES	Towel bars, etc.	6		8.00		146.55	221.95
		ELECTRICAL	ROUGH	WIRING	HX cable	530 ft	11.60		
				Iron conduit		3.85	15.45		
OUTLETS	Outlet boxes				3.70				
	Receptacles				3.40				
	Panel box				3.75				
	Service switch				4.50	15.35		30.80	
FINISH			Fixtures	10	42.35				
			Switches	12	3.30				
			Switch plates	13	.80			46.45	77.25
	PAINTING		EXTERIOR TRIM	PRIME COAT	Mixed paint	1 gal.	2.25		
2ND & 3RD COATS		Mixed paint		2 gal.	5.80		8.05		
INTERIOR WALLS, CEILING, TRIM		PRIME COAT	Mixed paint	7 gal.	17.25				
		2ND & 3RD COATS	Mixed paint	14 gal.	30.60				
		COLOR, PUTTY, ETC.			3.30				
		WALLPAPER, MUSLIN		8 rolls	3.00		63.15		
FLOORS		FINISH		Oil	2 gal.	7.00			
				Stain	½ gal.	1.20			
				Wax, etc.		2.03		10.20	81.40
TERRACES	SLABS	CONCRETE MATERIALS	Cement	19½ sacks	13.65				
			No. 6 gravel	11650 lb.	5.85				
			No. 4 sand	1600 lb.	.80			20.30	
			2" C.I. pipe & ftgs.	45 lin. ft.	9.70				
	FENCE	FRAMING	Channels ½"	96 ft.	1.85		11.55		
			Metal lath & nails		5.95				
			Cement	10 sacks	7.00				
			No. 3 sand	2800 lb.	1.40				
			lime	1 sack	.55				
		STUCCO MATERIALS	Silica sand	1 sack	.90				
			White cement	2 sacks	5.00	20.80		32.35	
PERGOLA	FRAMING	Material complete				15.00	67.65		
TOTAL MATERIAL COST								52939.00	



"They Sell Themselves"—

SURVEYS reveal that a very considerable part of today's home building is being carried on by small independent operators who have learned from experience what it is the home seeking public wants and who are going ahead with a closely knit group of skilled mechanics (usually related) to put up such houses. Their efforts are usually successful since they are better able than their larger competitors to hold down costs and to deliver to the buying public real value based on skill and knowledge.

Peter Koenig of 105th Street, Cleveland is an interesting example of this multitudinous type of small independent operator in the housing field. He has been engaged since March 1936 on the erection of 9 story-and-a-half houses, all in a row, on the west side of 151st Street, just north of Triskett. He has already sold six of the houses, three of them for cash; the other three being put through a financing company. Each place sells for \$8,800—including the house, a 40' x 140' lot and a double garage 19' x 19'.

Koenig has used no advertising whatever and is, therefore, convinced that he has been successful in designing a house that appeals so greatly to the average buyer that this buyer goes out and tells his friends what a wonderful proposition it is. He is also fairly sold on utilizing up-to-date materials that will help him sell his houses.

Among the materials which he mentioned specially as contributing to a quick sale are the following: 1. Fenestra Windows with inside screens. (Storm windows available at extra cost if desired.) All windows with tile stools. 2. Concrete drive. 3. Brick veneer below and jumbo asphalt shingles above. 4. Moncrief furnace with air-conditioning equipment. 5. Upstairs of each house insulated. 6. Brass water-piping throughout. 7. Electric vent over the kitchen stove. 8. Aluminum paint on the basement walls. 9. Cross ventilation in each bedroom. 10. Exceptionally light and convenient kitchen.

Mr. Koenig worked on all of these houses himself and his sons help him so they are not affected very seriously by the increasing shortage of skilled labor. However, he admits that this is a real problem and a growing one in the building business.

Reports Peter Koenig, substantial Cleveland Home Builder, who works on the job with his men



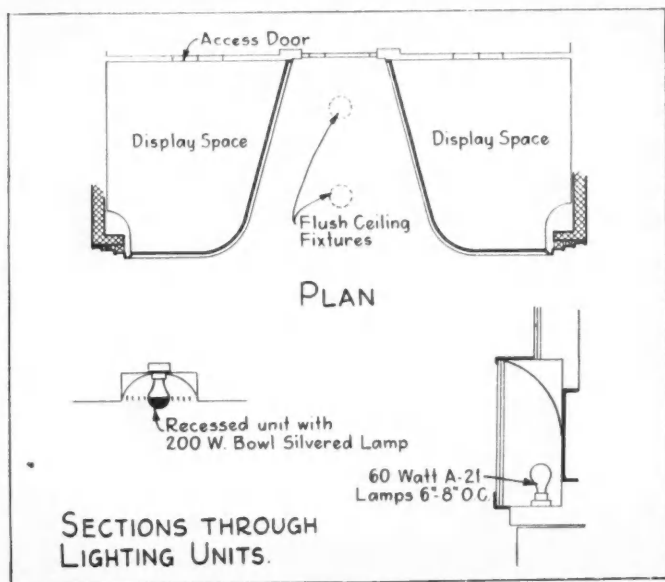
RIGHT: PETER KOENIG in his working clothes and at the top of the page nine of his fast-selling \$8800 homes on 151st Street, Cleveland. Rising labor costs don't affect him.

Model Store Front Caravan

**Popular Designs
Help Modernize
Main Street**



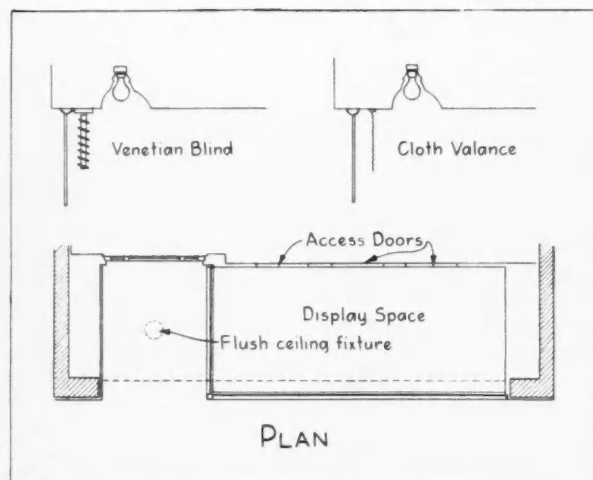
DESIGNED for a grocery, hardware or camera store.



IN EVERY town there are many small store and shop owners that are interested in bringing their properties up to date. But such jobs do not "just happen." The owner has to be sold, and that is why aggressive contractors who have learned to take advantage of the new materials and services available to them have done such a good business in this line. Every indicator points to a big year in store front modernizing and in new store building in 1937.

The designs shown on these pages are part of a model store front caravan built by the Pittsburgh Plate Glass Company to dramatize possibilities of modern store design. It is a traveling exhibition consisting of 12 model store fronts built to exact scale and complete and accurate to the minutest detail. The caravan is visiting hundreds of towns for the benefit of local builders, architects and merchants.

This is an excellent illustration of the help and support being given by leading manufacturers to those interested in "modernizing Main Street." In addition practically all manufacturers of materials and equipment involved in store front construction



DESIGNED for a dry goods, haberdashery or electric store, executed in Carrara Glass, with entrance at one side.

have advisory services that will assist and advise local builders in providing local merchants with store fronts suited to their requirements. There is no reason why the smallest crossroads country store should not have as modern and attractive a front as the Broadways and Fifth Avenues of the bigger cities.

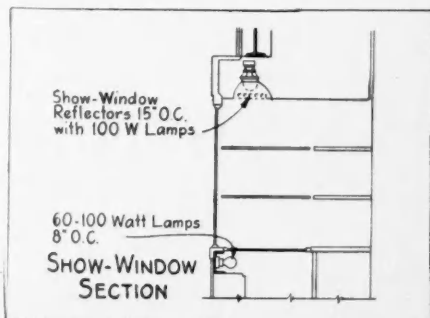
The designs illustrated indicate the practical modern trend of store front design. The Woolrich on opposite page covers a tremendous market among grocery, hardware, camera stores and the like. The large sign is silhouetted against a brilliantly lighted ground-glass background. A rich combination of black and ivory Carrara Glass is used with Aluminum Metal trim.

The James is a simple, small shop with a huge, built-in sign which is illuminated from the rear. The store is suitable for a large number of types of shops, including dry goods, haberdashery, electrical, etc.

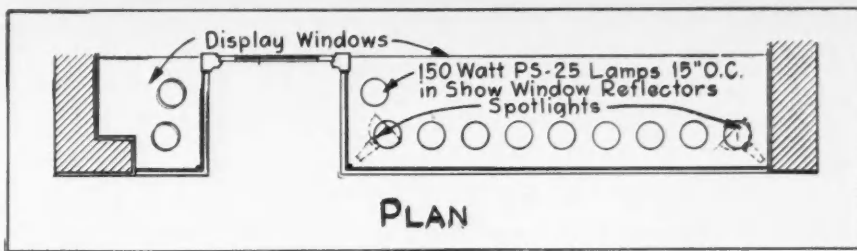
The Eastwood has an off-center entrance, and the design places a small display window at left in addition to the large space at right of door. Strong lighting puts the spotlight on the window display and effectively attracts attention.

One of the liveliest markets for modernizing is the bar and tavern. The Bar O design below is especially designed for this purpose, with the front bulkhead below the display window suggesting the appearance of an actual bar. The lighting details for this show window are unusually interesting as the lights are placed both below and above the displays. A luminous glass floor which throws the light up among the bottled goods display in a pleasing fashion is achieved by placing the lighting fixtures along the front and shielding them from direct view.

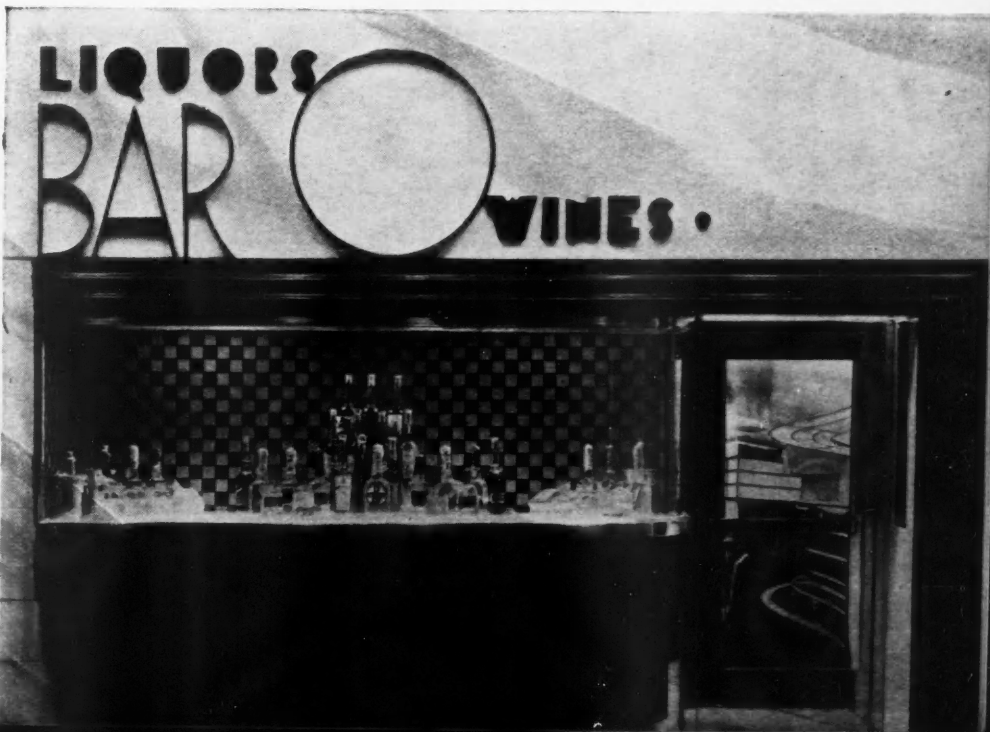
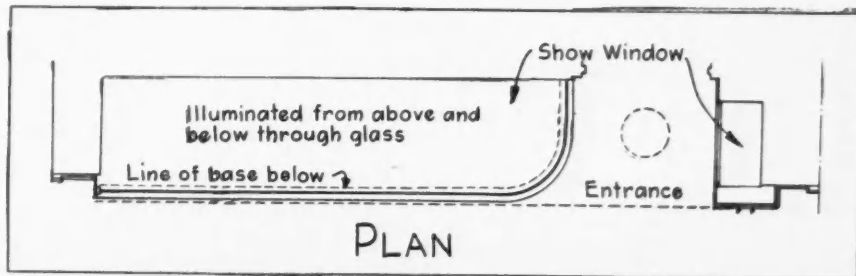
THOUSANDS of bars need modernizing, and here is a modernistic design that will attract much attention. The lighting detail below shows how illumination is provided for bottled goods.



EASTWOOD



DESIGNED for a food store, luggage shop or shoe store in ivory and black Carrara Glass with jade letters. Effective display spaces are provided at both left and right of door.



Bent, Glued Rafters Make Strong Barns

By G. N. BREKKE*

DIRECTIONS for locating a farmstead are usually given thus: You get the town and the mileage east, west, south or north from there; and as the roads are running east-west and north-south, and your speedometer is telling you the mileage, you can't miss it.

Last summer I learned more geography in this way than ever before, and I marked some of the spots I located with the nicest looking Gothic roof barns shining in the sun, like, for instance, the barn built 2 miles north and 1 mile west of Jewell, Ia. This job resulted from the combined efforts of O. I. Kleaveland, the local lumber dealer and myself. Since then, in a circle within 300 miles from Rock Island, I have spotted many more places with these excellent Gothic barn roofs, which won't sag and are exceedingly strong against hurricanes.

There are three different types of my shop fabricated curved rafters so far in use, namely, type 1 (see details opposite) going down to the foundations, type 2, to the mow floor, and type 3, to the plate, which may be located some feet above the mow floor. The curve of the rafter and also the length of the rafter may be varied according to requirements, thereby making smaller or bigger space in the hay mow. As I build these roofs the ridge board of 3 x 8" stock is only at the hood end of the barn, a 14 foot long piece, which extends in over three or four pairs of the rafters. For connection at the ridge, a 2 x 6 inch tie rod is used, to which the hay track rail is usually fastened.

The rafters are made in my shop at Rock Island, Ill., and should soon gain the confidence of lumber dealers, contractors and farm owners on account of their cheapness, reliability and durability.

It has long been recognized that there is something fundamentally wrong in the way many barns have been built. Sagged barn roofs are a familiar, deplorable sight all over the country. One reason is that such structures are always wasteful in the use of materials. They are

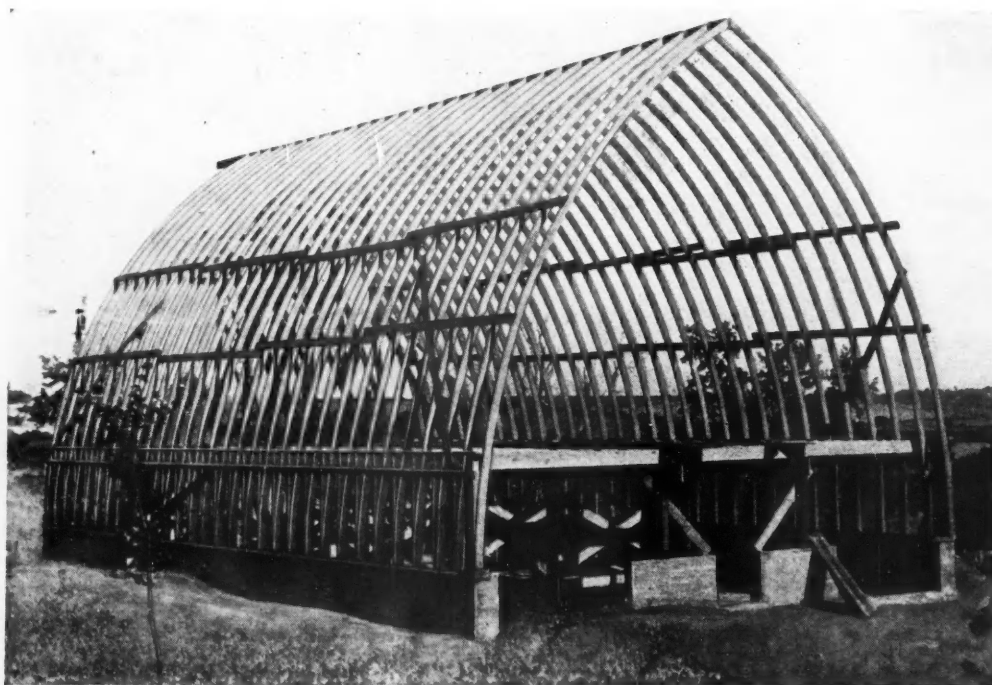


GOTHIC roof barn near Jewell, Ia., designed by the Author whose shop fabricated curved rafters were furnished through the O. I. Kleaveland Lumber Co. Below, frame work before enclosure.

exceedingly weak in some places and too strong in others. All connections, especially, are weak, and in order to overcome this, experience has taught carpenters to use a surplus of materials in the members. But even so, frequently the connections are too weak, slippage occurs and typical sagging is the result.

During the last couple of years, following extensive experience in the Scandinavian countries, I have conducted experiments with laminated structures and American woods in this country. Aware of the fact that it would be necessary in this country to put the manufacture of barn rafters on a mass production scale, I have centered my efforts on reducing labor cost. Quite recently I have succeeded in perfecting the manufacturing methods to such an extent that these excellent structures now, really for the first time, can be made available to the farmers. A great many experimental rafters were delivered to customers last summer.

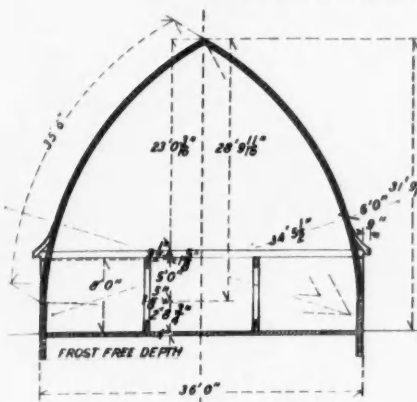
Laminated bent and glued wood arches of my type may be used in any position, from a raised up position, as in a Gothic barn, to a laid down position for flat, curved roofs in industrial and public assembly buildings.



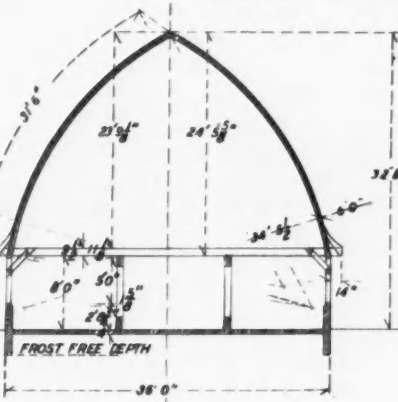
*Structural Engineer and Fabricator, Rock Island, Ill.

CONSTRUCTION of this Jewell, Iowa, barn followed Type 1 details as shown on opposite page.

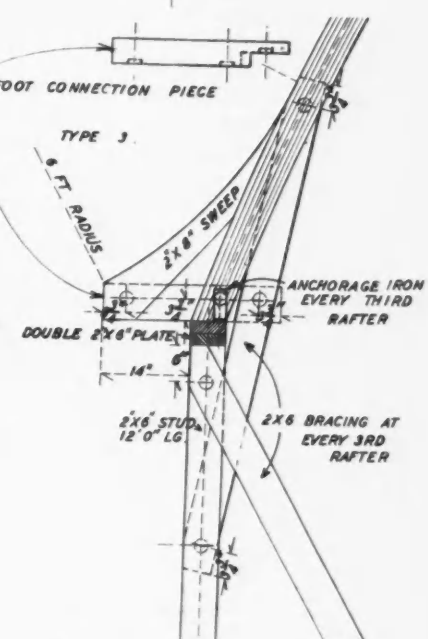
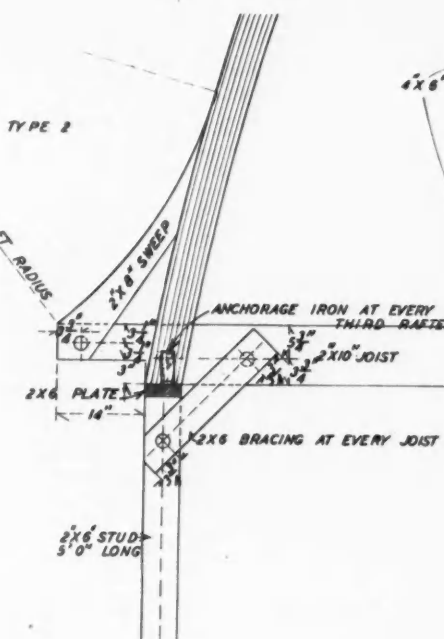
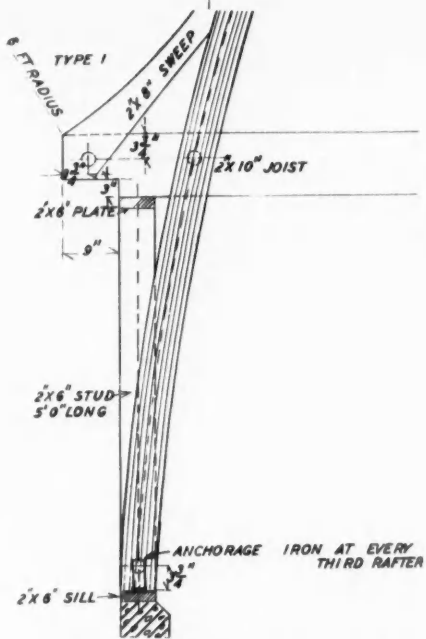
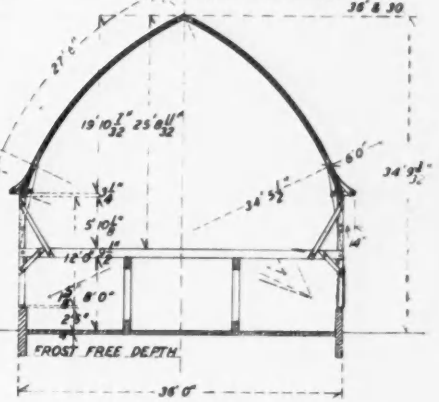
TYPE 1 BARN RAFTERS TO FOUNDATIONS
36 & 34 FEET LONG FOR
BARN WIDTHS BETWEEN 36' & 30'



TYPE 2 BARN RAFTERS TO JOIST
32 & 30 FEET LONG FOR
BARN WIDTHS BETWEEN 36' & 30'

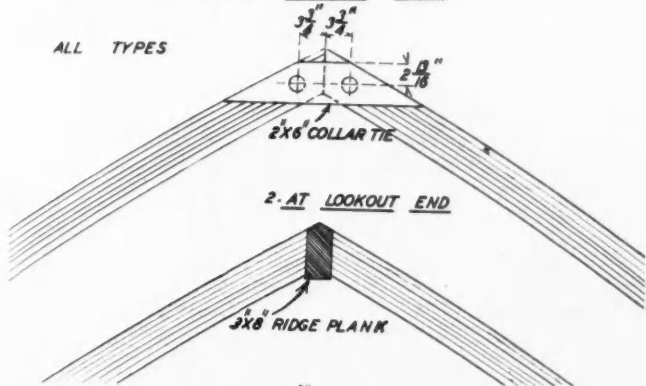


TYPE 3 BARN RAFTERS TO PLATE
28 & 26 FEET LONG FOR
BARN WIDTHS BETWEEN 36' & 30'



RIDGE CONNECTIONS: 1. THROUGH BARN

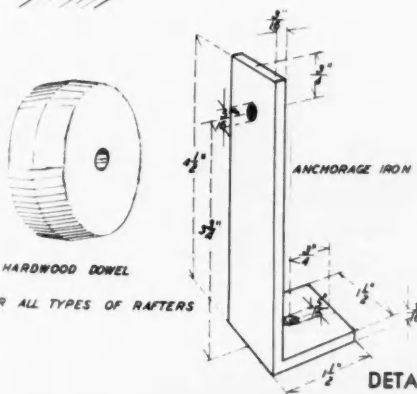
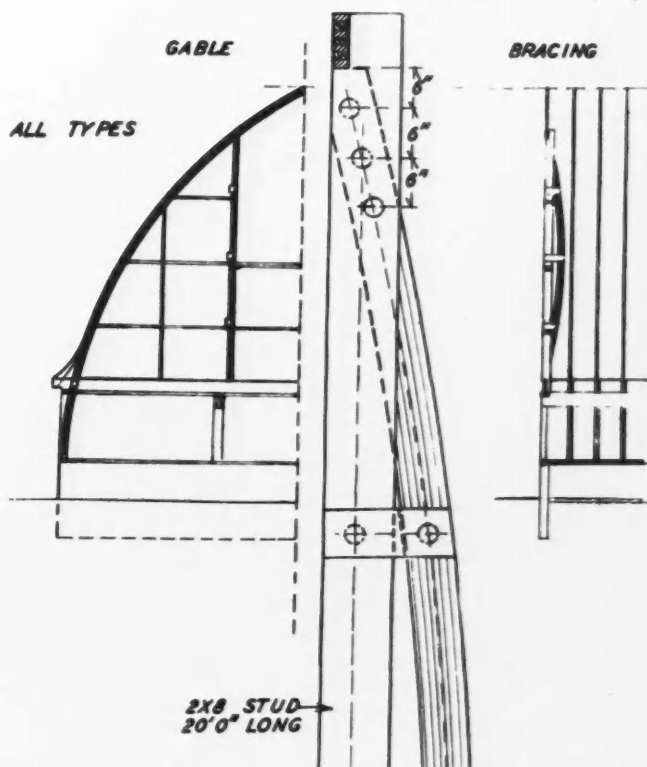
ALL TYPES



GABLE

BRACING

ALL TYPES



DETAILS of the Brekke curved rafters barn construction.

Buyers Approve All-Electric Homes

Complete Year-Round Air Conditioning Proves Strong Sales Argument for Low Cost Homes

A POWERFUL self starter for new home building has evidently been supplied this year by those concerns that have pioneered with low cost electric equipment for modern kitchens and basements. Reports are coming in from practically every state telling of the success operative builders are having with model or demonstration homes in the \$7,000-\$12,000 price class when equipped with electric kitchen range, refrigerator, oil burning heating plant and complete all-season air conditioner including compressor unit, electric fan air-change ducts and full automatic and manual controls.

The situation which this publication found recently in Youngstown, Ohio, seems to be typical; it strongly indicates the trend of buyer interest toward these low-to-medium cost, truly modern homes.

In Newport Village, a high-grade residential subdivision of Youngstown, two young builders, lately graduated from architectural school, are leading the home building procession by putting up two of the "Kelvin Homes" and using them as samples from which seven more are already sold and under way in the same neighborhood. These two partners, Edward J. De Bartolo and Frank P. Villani, operating as the Modern Homes Co., are sales-minded. They visualize what it is that present day home buyers will take to.

"When we read that article in the last September *American Builder* describing the Kelvin homes in Detroit," De Bartolo remarked to a staff investigator, "we concluded right away that here was what we had



E. J. De BARTOLO



FRANK P. VILLANI

Partners in Modern Homes Co., Youngstown, O.

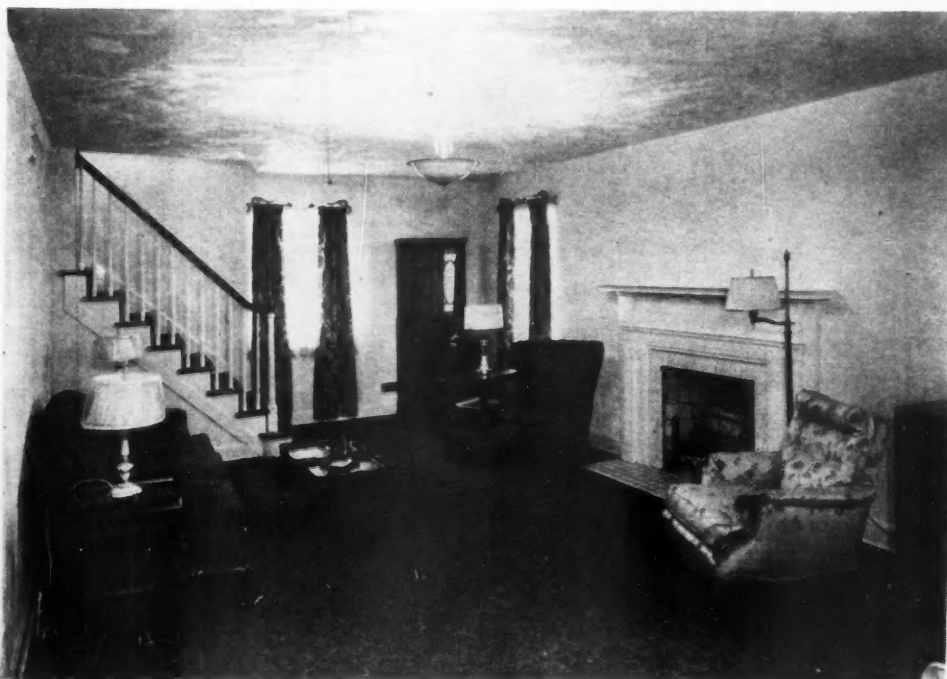
been looking for; we journeyed right up to Detroit, inspected those houses and were so well impressed with their sales appeal that we decided then and there to make these all-electric homes the headliners of our Youngstown building program."

That was last fall; and since then, these two up and coming builders have put up two demonstration homes which were quickly sold (on \$1,500 lots) at \$11,000 and \$11,600 respectively, have two more now under construction, and are just about to break ground for five more. As an evidence of the public's interest in these homes, Mr. Villani said that in advance of any advertising, more than 1,000 visitors had gone through these houses, and that on the first Sunday they advertised, 3,000 inspected them in 5 hours. "Home seekers have become mechanical-minded," he concluded; "they are not afraid of these new improvements, but welcome them. The women in particular appreciate the cleanliness and comfort assured by the all-season air conditioner."

The Modern Homes Co. deals through the local Kelvinator distributor in Youngstown, the Stambaugh Thompson Co. Already other builders, many from considerable distances, have come out to this Youngstown operation and have gone home to start similar all-electric homes. Akron and Rocky River (Cleveland) are two directly traceable to the good example set by De Bartolo and Villani.

Checking further into the progress that the Kelvin

Living room in the first All-electric air conditioned low cost home designed and built by Modern Homes Co., of Youngstown, in Newport Village. It was sold before opened to public inspection.



LIVING Room in the first All-electric air conditioned low cost home designed and built by Modern Homes Co., of Youngstown, in Newport Village. It was sold before opened to public inspection.

homes are making since first presented to *American Builder* readers in an illustrated article with plans and diagrams last September (pages 54-61), this publication learns that 110 have already been built or are under construction in 26 states from Maine to Montana, indicating clearly that homes of this type equipped with complete air conditioning are winning the approval of home buyers and that enterprising builders in many localities—like these men in Youngstown—are sponsoring these new ideas. The Kelvin homes are practically all built

along the lines established by J. Ivan Dise, the well-known Detroit architect who worked out the original Detroit designs. However, individual builders have modified the designs according to their own local requirements. For instance, the two Youngstown homes were redesigned by Messrs. De Bartolo and Villani to give the rooms somewhat larger size than in the Detroit models, this being more in keeping with the standards in the Newport Village (Youngstown) community.

Youngstown Vindicator
Kelvin Home Section
PRICE TEN CENTS
SECTION 3
VOL. XLVIII, No. 214
YOUNGSTOWN, OHIO, SUNDAY, APRIL 4, 1937

Model Kelvin Homes Demonstrate Latest in Home Building

NEWPORT VILLAGE MODEL HOMES OPEN FOR PUBLIC INSPECTION

BUILDING GAIN IS 33 PER CENT
February Construction Shows Upward Surge over Last Year

HOMES STRESS KELVIN PLANT
Show Ease with Which Air in Dwellings May Be Warmed or Cooled

Use Porch Space

Strong Foundation First Building Aim

National Housing Act Personnel Legislation

Albion Manager Is Widely Known

Kelvin Home Section

Newport Village Project Is Opened for Inspection
Designs Reveal Many Possibilities Within Reach of Low-Cost Home Builders

A group of model homes in Newport Village, Youngstown, Ohio, are being opened for public inspection today. The homes, which are being built by Messrs. De Bartolo and Villani, are designed to show the possibilities of building low-cost homes with modern conveniences. The homes are being built on a 10-acre tract in Newport Village, Youngstown, Ohio. The homes are being built on a 10-acre tract in Newport Village, Youngstown, Ohio. The homes are being built on a 10-acre tract in Newport Village, Youngstown, Ohio.

YOU ARE CORDIALLY INVITED TO VISIT
Kelvin Homes—the new mode of living

Time: Two to Ten P. M.
Date: April 4th to April 25th
Place: 121 Prestrick Dr., Newport Village

The homes open for inspection are only one of the many designs available in Kelvin Homes.

Planned here are a few suggested designs for your *New Kelvin Home*.

If You Are Planning to Build—Let Us Show How You, Too, Can Enjoy *the new mode of living*.

Modern Homes Co.
216 Alexander St. Phone 4-2610
Exclusive Builders of Kelvin Homes

FIRST page (greatly reduced) of special 8-page section of local Sunday Newspaper, of April 4, devoted exclusively to the All-Electric Homes produced by Messrs. De Bartolo and Villani. An outstanding example of new home merchandising.



One-Stop Service Station Has Concrete Masonry Walls

AT a prominent location in Holland, Mich., stands a recently completed auto service station designed by the Engineering Department of the Pure Oil Company, Chicago. Its walls and partitions are of concrete stone of local manufacture, exterior trim dark blue contrasting with the natural grey body color of the cement units; the interior walls are mat glazed in cream directly over the "Dunstone" construction. The walls are hollow, with horizontal tie stones of two-brick size, whereas the outside units laid up vertically are tripple size.

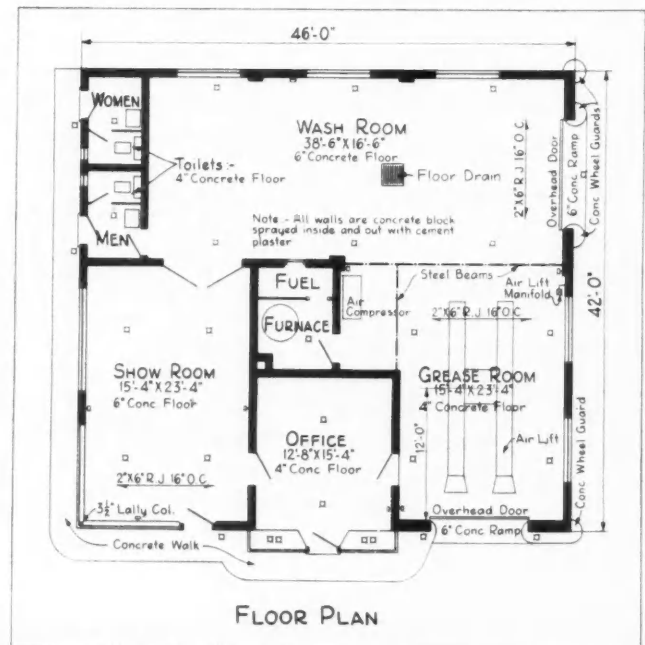
For the past few years these multiple sized brick have been gaining popularity with architects and contractors wherever they are available. The material itself is low in cost as it is manufactured locally by automatic line production machinery, and each plant supplies its local market which is within easy trucking distance—in other words, providing direct from factory to job delivery. In the second place it is available in almost unlimited range of colors, providing a masonry material that allows greater expression for color harmony in permanent construction, whether in conventional or modern design.

Another outstanding feature is that this material can be used in construction in common units, and a monolithic facing in color can be applied over the completed structure. This is accomplished by pneumatically applying a waterproofed color material in thicknesses ranging from just a thin decorative coat to a heavy, protective coat that may be as thick as $\frac{1}{4}$ inch, resulting in a stucco appearance, or light enough to show the mortar joints and individual units in the ashlar type wall.

The adaptations of this material in its multiple sizes are almost unlimited and each offers a saving in material and labor cost. In solid wall construction where an 8-inch or a 12-inch heavy duty wall is necessary, the double or triple units are laid in the usual brick fashion, reducing the number of pieces handled by one-half or one-third,

and also reducing the amount of mortar required. In residential construction, these units provide a material for building hollow ashlar walls.

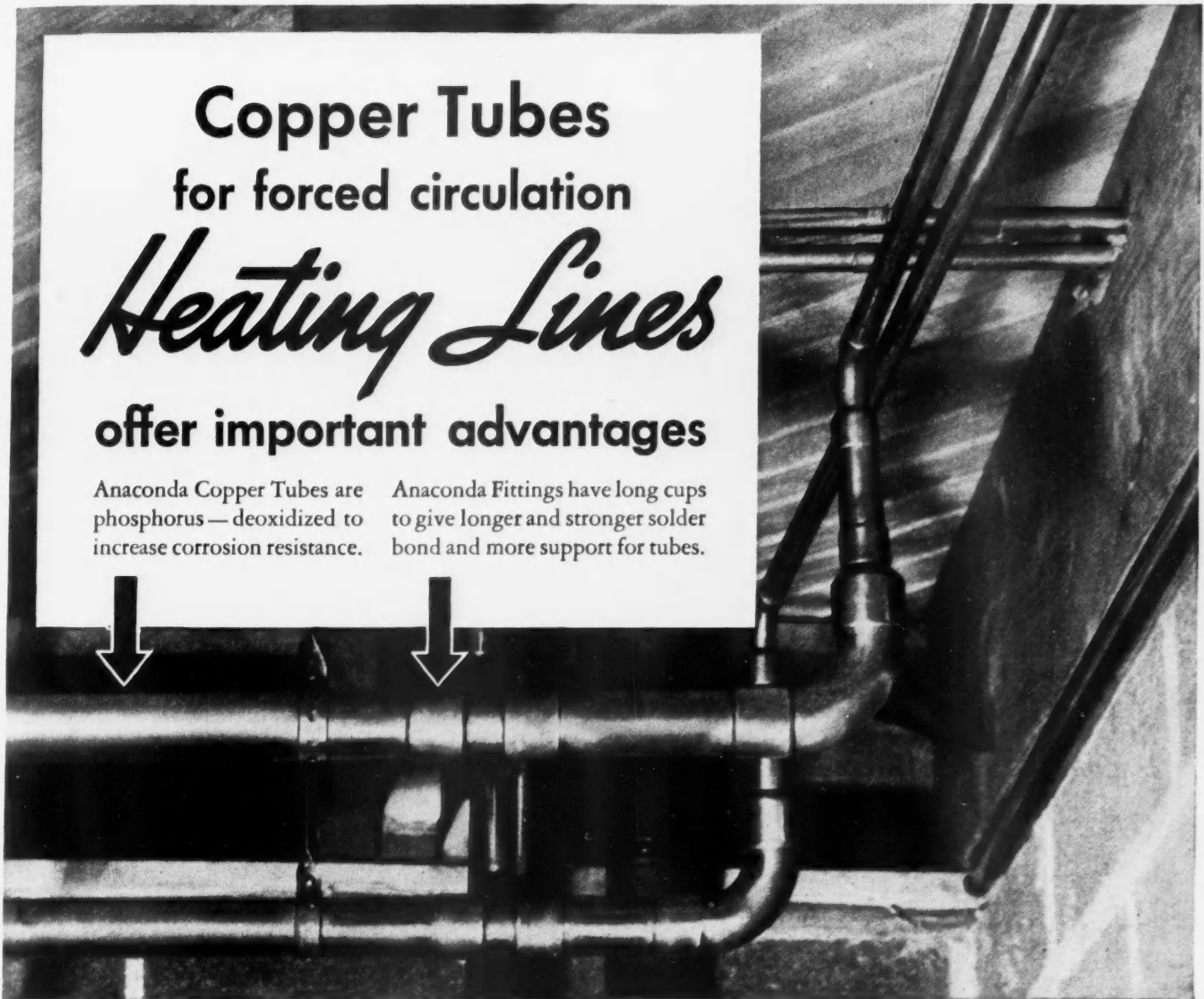
The illustrations on this page show a modern combination sales room and complete one-stop service station designed by the Pure Oil Company and built of "Dunstone" in hollow wall construction. It is a well laid out building with convenient office, show room and car greasing room at the front and a large car washing room at the back, entered from the side. Gas service pumps are out in front, supplied from underground tanks.



Copper Tubes
 for forced circulation
Heating Lines
 offer important advantages

Anaconda Copper Tubes are phosphorus — deoxidized to increase corrosion resistance.

Anaconda Fittings have long cups to give longer and stronger solder bond and more support for tubes.



HERE'S the best value in piping, not only for hot and cold water and air conditioning lines, but for the heating system as well. For heating lines, Anaconda Copper Tubes mean a lower heat loss. On most jobs, insulation is unnecessary. And you can almost always use a size smaller pipe because the smoother inside walls of copper tubes permit a higher rate of water flow. More heat is delivered — faster! Yet these non-rust tubes cost

little more installed than you would pay for piping that rusts.

Soldered joints eliminate pipe threading, making possible lighter weight, lower cost tubes. No wonder builders are using this modern rustproof piping in houses selling as low as \$4,000 and \$5,000!

You will find that your customers know Anaconda Copper Tubes, as well as other Anaconda products for rustproofing the home. They are nationally advertised month after month. 3761

Anaconda
DEOXIDIZED *Copper Tubes*



THE AMERICAN BRASS COMPANY • GENERAL OFFICES: WATERBURY, CONNECTICUT

Offices and Agencies in Principal Cities

In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ontario

SHOPCRAFTER'S Corner

Things To Build for Profit or Pleasure

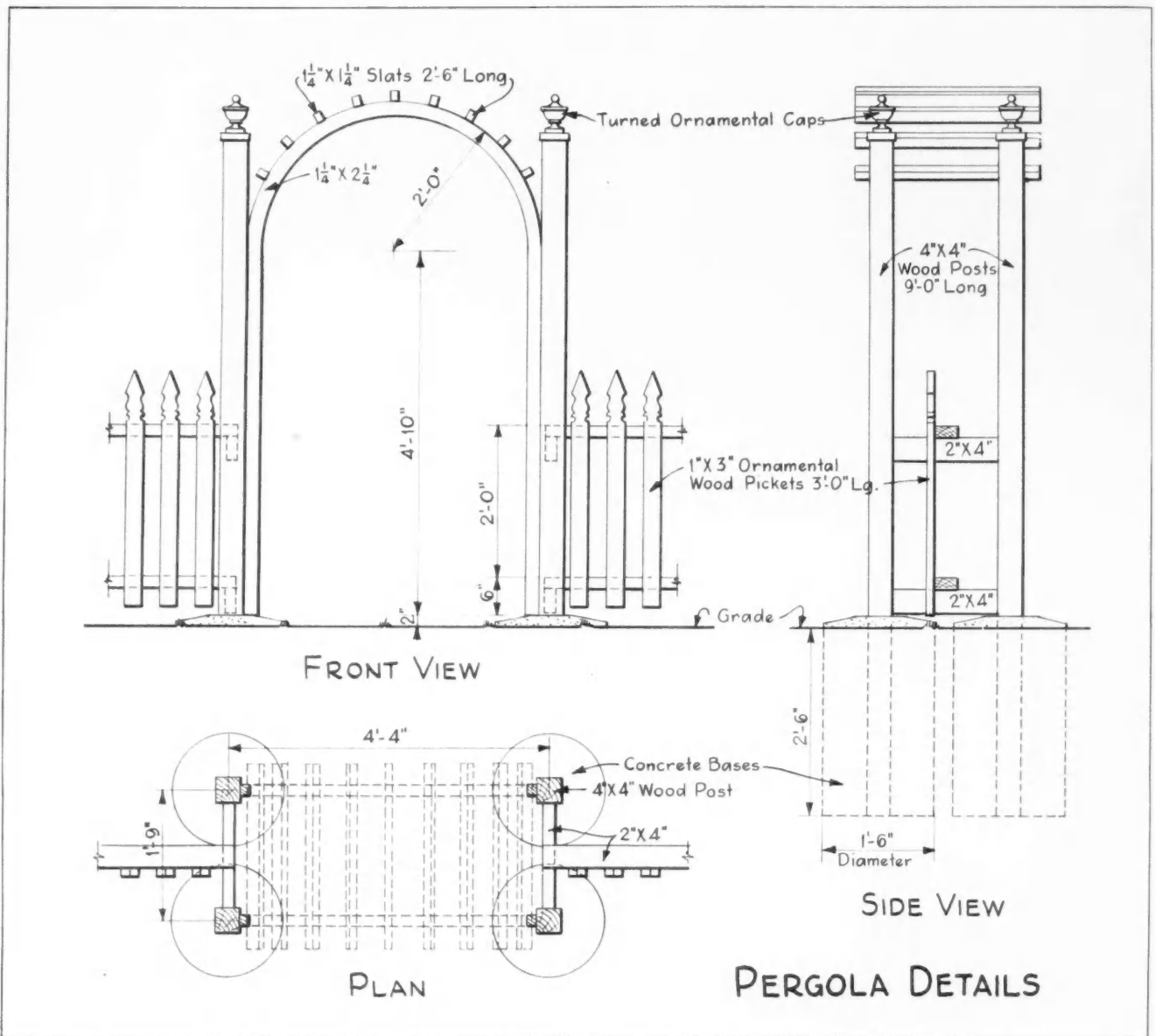
THE month of May is usually a period of planting, landscaping and general dressing up of yards around both new houses started in the fall and old properties in need of beautification. Garden features such as arbors, seats, pergolas, etc., in keeping with the style of the home add much in usefulness, enjoyment and appearance. Recently there has been a revival of fences particularly around Colonial homes for enclosing dooryards, service courts and terraces.

The Early American home on pages 46 and 47 shows a pergola over the flagstone entrance walk and has a trim picket fence about the side court and garage drive. These features were designed as part of the elevations; the

rounded arch of the pergola repeats the semi-circular treatment above the living room front window head.

Plan and elevations below give necessary construction details with dimensions. For a more permanent job the four corner posts are set in substantial concrete bases which will not mean much extra work if there is other concrete being poured on a new house. However, the bottom of the posts might be treated against rot and set without concreting.

Pickets are available in various shapes wrapped in bundles ready to be applied; if special design or turning is desired, the builder can easily make them out of suitable stock such as redwood, cypress or pine.



DETAILED DRAWINGS of pergola entrance to dooryard of an Early American house recently completed in Evanston, Ill., by Irvin A. Blietz, Chicago builder. L. E. Arent, "American Builder" staff artist, has pictured this attractive feature on the front cover.

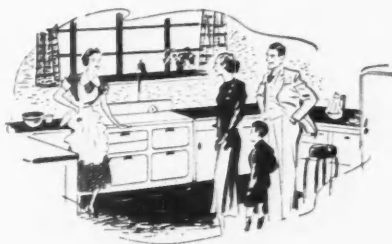


Model planned kitchen from an advertisement in the gas industry's "Modernize Your Home With Gas" campaign in national magazines of 14,000,000 circulation.

There's Nothing
Like Gas for
COOKING
REFRIGERATION
WATER-HEATING
HOUSE-HEATING

More comfortable *Living* **with a**
Modern All-Gas Kitchen

MORE than any other room in the house, the kitchen is designed specifically for the business of *living*. You can make sure the kitchen will do its job better by specifying all-gas equipment. To begin with, gas is the preferred fuel in more than 16,000,000 American homes. Modern ranges and refrigerators do their jobs with less attention, yet with more positive control than was dreamed possible even five years ago. They assure lasting freedom from the petty annoyances of frequent service trouble. There's vir-



tually nothing about them to wear out!
But an all-gas kitchen is only a beginning for homes you want to *stay* modern. For house-heating and water-heating, gas is unmatched in down-

right *convenience* and long years of dependable service. Besides its many other advantages, gas brings substantial economies to homes equipped to use this perfect fuel for every heating need. Consult your local gas company for information regarding the selection of modern gas appliances to meet your problem and your clients' needs.



Be sure the gas appliances you specify carry the approval seal of the American Gas Association Testing Laboratories.

A M E R I C A N G A S A S S O C I A T I O N

THREE TIMES FOR LEVITT!



**AUTOMATIC HEAT SELECTED
FOR THIRD CONSECUTIVE YEAR**



**FIRST AT THE ORIGINAL
STRATHMORE-AT-MANHASSET**



**NEXT AT THE NEW
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THERE must be a reason why these Levitt and Sons builders are ordering G-E equipment year after year. And there is!

They cannot afford to have complaints on a heating system even ten and fifteen years after houses are sold.

But—that's only part of the story! *These builders know that houses sell faster when G-E equipped.*

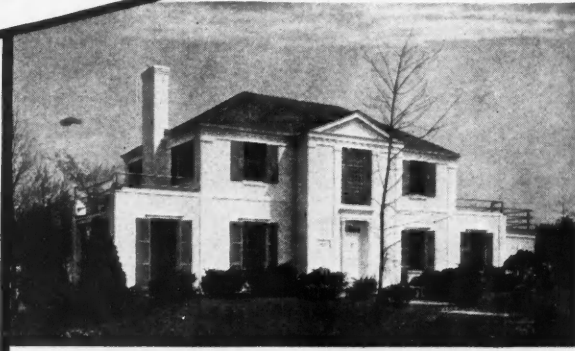
There is never any question about the acceptance of General Electric heating and air conditioning equipment. The G-E monogram has always been associated with equipment of the highest standards of quality.

General Electric has a complete and highly flexible line of Automatic Heating and Air Conditioning Equipment both for Gas and Oil. Why not concentrate your purchases in this one reliable source of supply?

EQUIPMENT FOR EVERY NEED

General Electric offers a complete and highly flexible line of heating and air conditioning equipment including—

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| G-E OIL FURNACE, STEAM AND HOT WATER | G-E AIR CONDITIONING UNITS |
| G-E GAS FURNACE, STEAM AND HOT WATER | G-E AIR CIRCULATORS |
| G-E OIL-FIRED WARM-AIR CONDITIONER | G-E ROOM-AIR CONDITIONERS |
| G-E GAS-FIRED WARM-AIR CONDITIONER | G-E WINTER AIR CONDITIONERS FOR RADIATOR HEATED HOMES |



**AND NOW AT THE NEW
STRATHMORE-IN-WESTCHESTER**

Ask about the new proposition recently developed for contract builders. Just attach coupon to your letterhead.

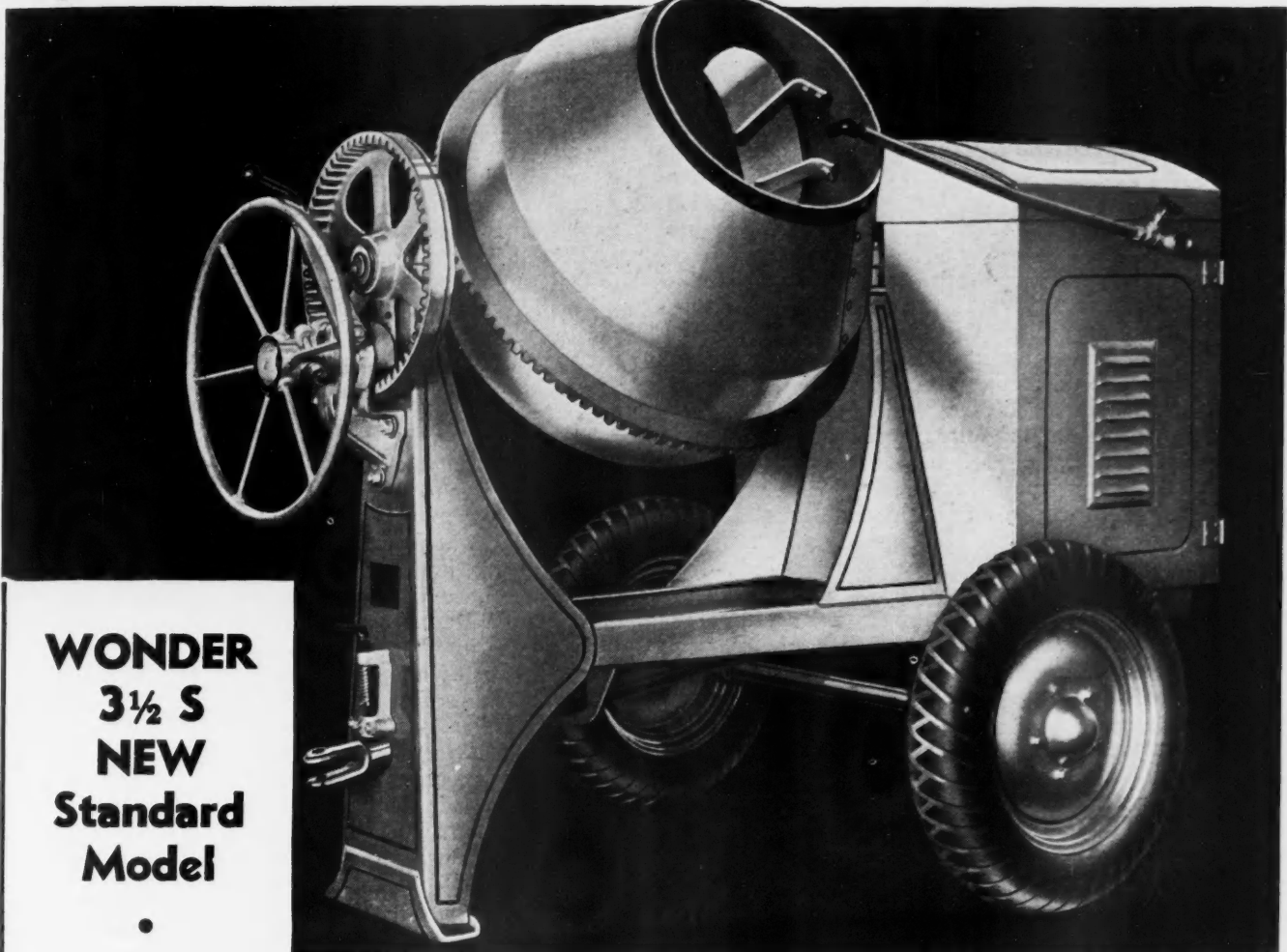
GENERAL ELECTRIC CO., AIR CONDITIONING DEPT.
Div. 51111, Bloomfield, New Jersey

Please explain your proposition for contract builders and send information regarding the full line of General Electric Heating and Air Conditioning Equipment.

Name.....
Street Address.....
City and State.....

GENERAL  **ELECTRIC** *Automatic Heat*

Performance **SPEAKS LOUDER THAN WORDS**

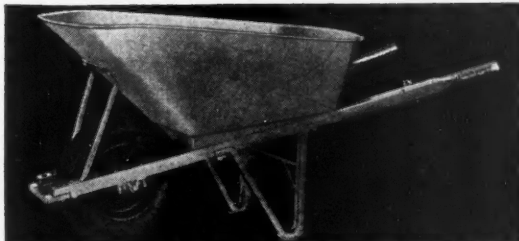


**WONDER
3 1/2 S
NEW
Standard
Model**

THE ORIGINAL SINGLE OPENING TILTING MIXER

The safest place to put your Mixer money is in a machine that has been a *success* from the very beginning of the Mixer industry. The first Wonder was *right*—it literally changed all Mixer design and engineering. The *Wonders of today are right* and they have a record of performance behind them unmatched and unequaled. This brand new Wonder 3 1/2 S "Standard

Streamlined Model" heads a line of half-bag and bag trailers which challenge any comparison on record of performance, reliability, speed in mixing and moving from job to job. You can't go wrong in choosing a *Wonder*, because you are buying a product of experience—a product that has built its reputation on performance rather than claims.



Wheel more material—save planking with balloon pneumatic tired wheelbarrows. Also available with steel wheel.

A complete line of modernized money-making equipment is offered the builder. CMC Non-tilt Mixers all sizes—Wonder Tilting Mixers, Plaster and Mortar Mixers, Saw Rigs, Hoists, Pneumatic Tired Carts and Wheelbarrows. Write for new catalog—the most talked of book in the industry. Shows page after page of pictures of this money-making equipment.

MAIL THIS TODAY!

**CONSTRUCTION MACHY. CO.,
Waterloo, Iowa**

Send me your new catalog right away.

Name

Street

City

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CONSTRUCTION MACHINERY COMPANY WATERLOO, IOWA

Building Quake Proof Frame Walls*

WHEN the Riley Act was enacted by the California Legislature in 1933, the Building Inspector was confronted with two problems, neither of which had been very seriously considered in connection with the usual small frame dwelling, store, warehouse, or multiple garage, unless some special provision existed in the local code.

The first problem was: Shall the lateral force law be applied to minor structures, such as those mentioned above?

The second: What allowances shall be made for the ordinary traditional types of wall construction, such as horizontally and diagonally sheathed walls, wood lath and plastered partitions, stucco, and fire-blocking or herringbone bridging?

In some localities, the first problem was dismissed as being unimportant for frame structures of the conventional type not over three stories in height. This action, of course, eliminated consideration of the second problem. However, in this connection, at that time there was already in existence a considerable literature dealing with the relative stiffness and rigidity of various types of frame walls and special bracing designs.

If, on the other hand, the Building Inspector interpreted the Act in such a manner that all new buildings were subject to investigation, the second problem became a very real one, and was further expanded by the natural question: How detailed and complete an analysis is justified in the above type and class of structure?

It is thought by the writer that possibly the way this problem was handled in Berkeley might be of general interest, and below is given a brief outline of our present procedure, dating from May 1, 1933.

First of all, it was assumed that all new structures must be properly braced to comply with the law. Next, the bracing system was optional with the designer, and certain values of bracing elements were assigned, such as 65 lbs. per linear foot for horizontal sheathing (net wall

length) but no credit was allowed, for instance, for wood lath and plaster or for fibre boards.

Then, certain mandatory requirements were set up, such as "balanced" footings (inverted T sections, double-battered, or combinations), two 3/8-inch deformed bars in the lower half of all footings, bolted mud-sills (usually 3/4-inch bolts, 10 inches long, at 6 foot intervals).

Gable ends were required to be braced, and open fronts of garages were strengthened by horizontal diagonal bracing or by diagonally sheathed floors overhead.

In the case of small stores, a reinforced concrete U frame was built on the front, the upright legs acting as cantilevers in resisting forces parallel to the plane of the open front. These U frames are useful in one-story reinforced concrete or brick structures, being adaptable as longitudinal and transverse stiffening bents.

Finally, some designers would say, "Well, I have never had to analyze or specially brace such a structure, and I don't want to take the time or incur the expense of hiring an engineer—so what is a simple method of bracing the ordinary frame dwelling?"

This put us on the spot; should we insist that a man who was building a \$3,000 one-story, five-room dwelling, pay an engineer to go over the plan and design a bracing system? (Remember, the majority of such plans are not designed by either an architect or engineer.)

As a result, it was decided to utilize a small table of values in connection with what we called the "Berkeley Compression Brace"—a very simple brace for which we claim no credit as to its originality.

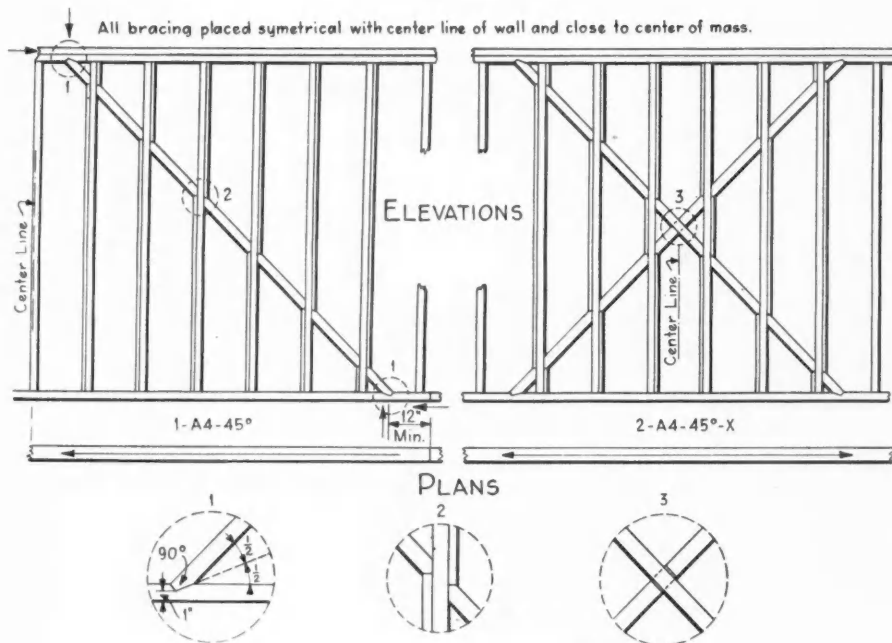
It consists of the usual diagonal integral blocking, reversed in direction from customary fashion, in order to "pick up" a maximum dead load vertical resisting couple, and having the head and foot cut off horizontally to meet vertical cripples which extend from head to plate and foot to sill, and arranging a special dapped-end design at plate and sill (see sketch).

We also encourage the use of diagonal sheathing, both single and double, allowing double values when walls are diagonally sheathed in opposite directions on opposite sides of a wall.

The compression brace was well received, as the final test was the carpenters, and they had absolutely no trouble in accommodating their traditional methods to this brace. The retention of the integral blocking, the only "extra" being the few cripples, which were usually scrap lumber anyhow.

Thus, if the designer furnished us a strain sheet showing the forces assumed, and reasonably expected, to be acting on bracing walls, and the "type" of brace taken from our table, we accepted the plans and felt that a reasonable compliance with the Act had been achieved.

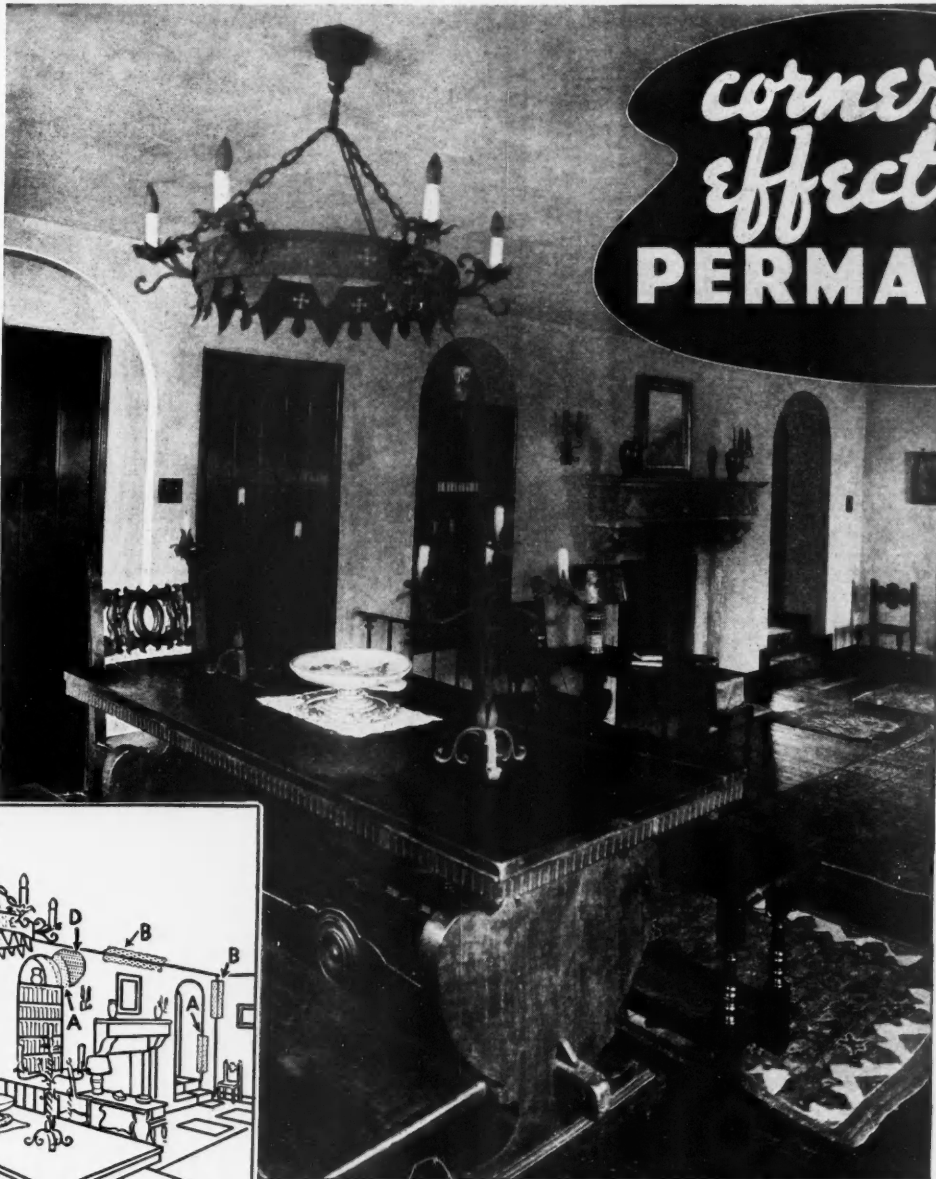
The consideration of torsion, "center of rigidity," "center of mass" and rotation in these minor structures, was dispensed with in all but the most exceptional cases.



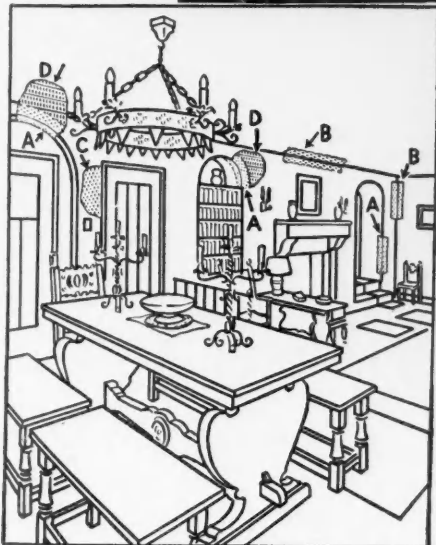
TYPICAL COMPRESSION BRACING DESIGN

*From an article by A. L. Brinkman, Berkeley, California, in "The Architect and Engineer."

corner effects ARE PERMANENT



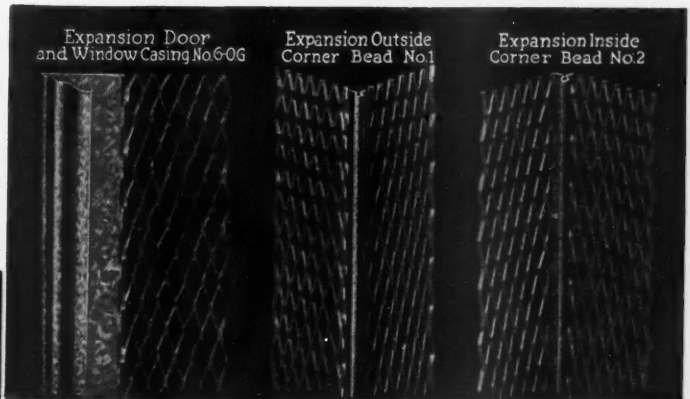
- A. Expansion Corner Bead No. 1 Patent No. 1,419,232
- B. Expansion Corner Bead No. 2 Patent No. 1,482,600
- C. Expansion Casing Patent No. 1,419,232
- D. Kuehn's Special-mesh Metal Lath



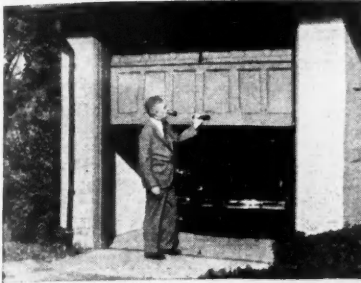
... AND ECONOMICAL, TOO, when based on *MILCOR* EXPANSION CORNER BEAD

You take the guesswork out of attractive corner effects when you specify Milcor Expansion Corner Bead. You can be certain that the finished beauty of the plaster will be perfectly retained for years—that it will satisfy owners and serve to recommend your work.

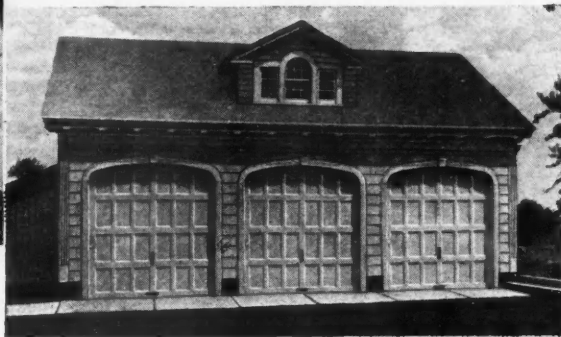
Milcor Expansion Corner Bead provides a straight, true corner that will not chip. Its rigid strength prevents plaster cracks from settling. The patented expanded metal wing keys plaster right to the corner—serves to make Milcor ideal for all jobs. For complete information on this practical bead and other firesafe Milcor steel products write for the Milcor Manual.



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Smooth, carefree operation under any weather condition. What home owner isn't looking for just that?



Curved top doors. A difficult installation for some . . . easy for "Roll-Up" equipment.

STANLEY "Roll-Up" DOORS

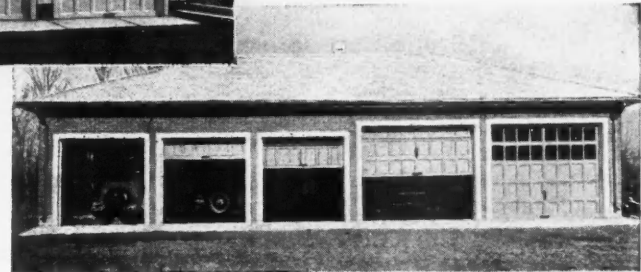
FOR EVERY COMMON OR UNUSUAL DOOR REQUIREMENT

From the modest private garage to the largest industrial opening, there is a smooth-operating, carefree "Roll-Up" Door to exactly meet every condition.

Every Stanley dealer is in a position to offer you a satisfactory solution to every door requirement, regardless of size or unusual conditions.

Make use of this helpful service. Stanley Catalog 38 gives details and specifications.

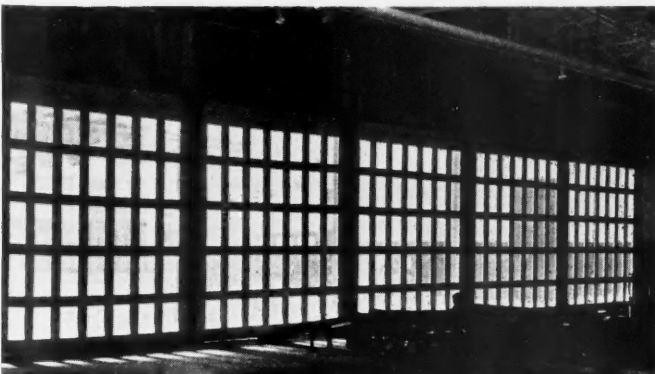
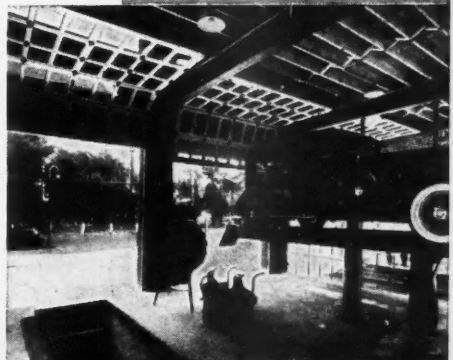
THE STANLEY WORKS, NEW BRITAIN, CONN.



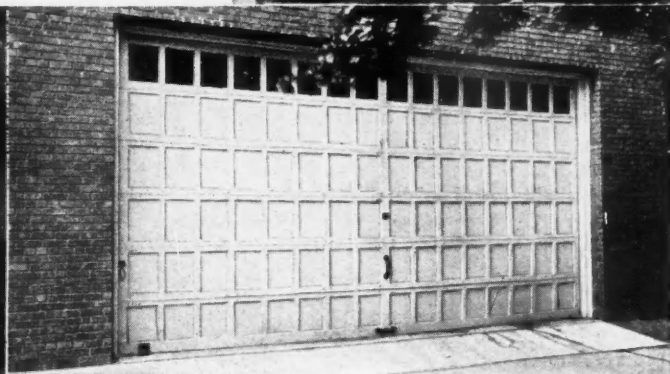
In combination for different size doors.

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With High Lift feature for Service Stations with hydraulic lifts.



With Movable Center Post where single opening or extra large obstruction-free opening must be provided.



For Giant Doors. This one is 20' x 12'. Operation is simple.

Specify **STANLEY "Roll-Up" DOORS**
FOR LIFETIME CAREFREE SERVICE

Home Equipment Perfected for Today's Builders

By V. L. SHERMAN

Department of Mechanical Engineering
Lewis Institute of Technology, Chicago

THE trite remark, that life is a journey, might well be extended into the idea that life is a series of journeys, and that those who progress through life are those to whom these journeys are always new experiences. You see passengers coming aboard a ship who are really not the same people they were before they felt the urge to get away. Did you ever watch these folk in a booking-office, poring over the deck-plans? And how about the motor enthusiast who will sit night after night for weeks before his departure poring over piles of road maps? He is the same youngster who wakened to the fact that Christmas was coming when he had to go back to school in the fall.

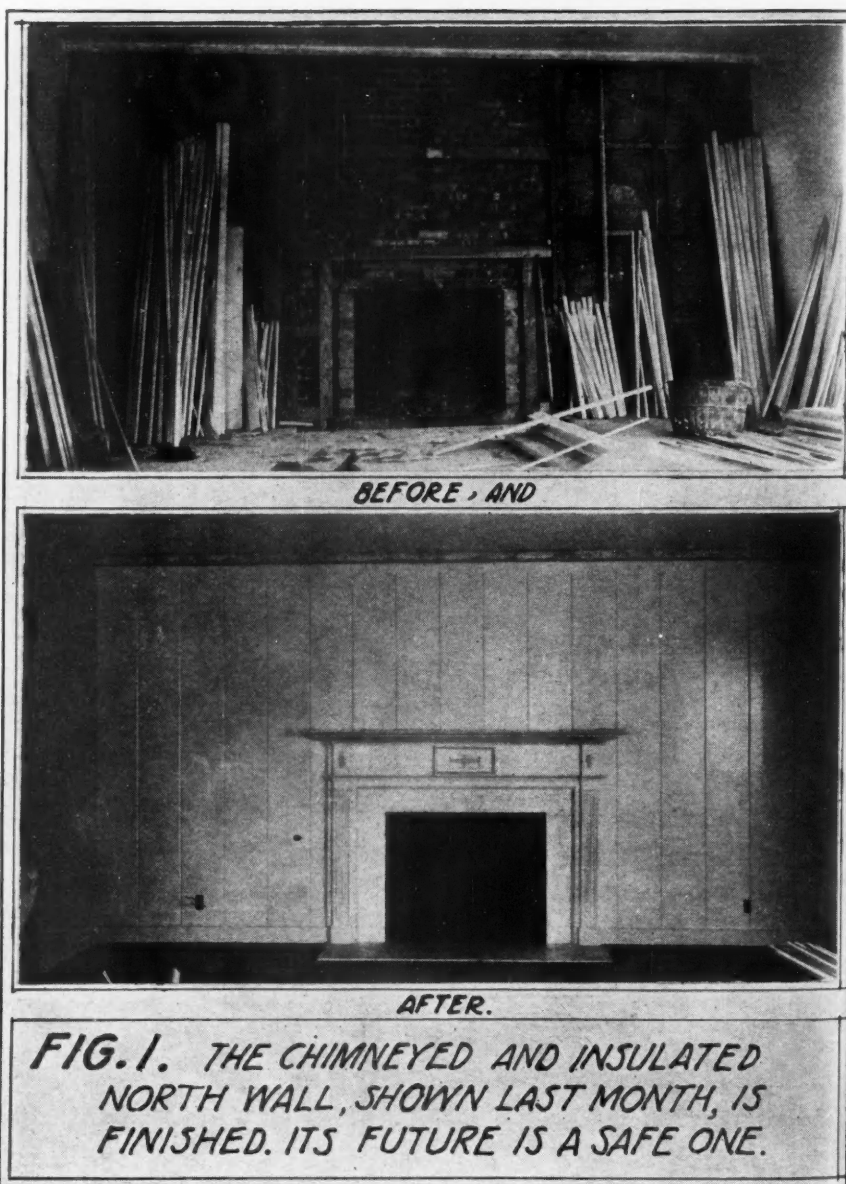
Whenever a couple or a family begin to feel the urge for a home of their own a few sets of attractive floor plans will make that urge their master. Their anticipations are at their peak because their imaginations can run rife. They are making a journey, but they do not want to reach their destination too directly. I am sure few architects realize what an amount of delight men and women, especially women, get when they can sit and argue with a sympathetic architect or builder over floorplans and specifications. The prospective homeowner will drag out a photograph of some house that is probably beyond his or her financial reach. It's the image of a far but delightful country. Then will come the remark: "I want something like that,—BUT—." They must not be anticipated.

One of the most profitable uses this writer has found for the camera is to take pictures of work under construction, then to go back and take pictures of the completed work, and finally to return and take pictures of the house when furnished and with the grounds completed. The prospective builder may be the worst ignoramus in regard to construction before the building is under way but he will not remain so long if he is an enthusiastic traveler. If files of photographs of previous work are in a builder's hands he will find them greatly to his advantage when consulting with the prospective builder.

The upper picture in Figure 1 was shown last month with some comment on the breadth of chimney, one with three flues, and the careful insulation furnished this north wall of the living room. The one shown below is the wall and chimney piece completed. It

is quite on the bill that any lady looking at these pictures might be intrigued and that on examining the lower one she would have some definite feeling. The chances are that she would make some alteration in the design. But the architect or the building contractor would have something very definite with which to tie up her ideas.

The writer will admit frankly that such a wall and fireplace as this seems the best of environment. The fireplace suggests warmth and the batten paneling feels warm. The formality of the mantelpiece adds rather than detracts from the combination. These articles are supposed to furnish discussion in the matter of equipment, and the previous remarks smack a good deal of interior architecture. But to the manufacturers of equipment there is no





Symbol

OF A NEW AND BROADER SERVICE TO THE BUILDING INDUSTRY

All the resources, research and experience of the Anthracite industry are made available to the building industry through Anthracite Industries, Inc.

Among specific services are: a laboratory for the impartial testing, rating and approval of Anthracite equipment; a field organization of trained heating men; a headquarters organization for help in the solution of heating problems.

Information is available about Anthracite,

or equipment for any type of home or building, to meet structural requirements, and owners' desires.

Anthracite Industries, Inc., would like to have the builder and his architect feel free to consult with its field representatives or headquarters at any time. Specific inquiries on any immediate heating problems will be welcomed.

A book describing modern Anthracite equipment for automatic Anthracite heat will be mailed upon request.

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A Permanent Exhibit of approved Anthracite equipment is maintained in the display rooms of Architects' Samples Corporation at 101 Park Avenue, New York. Other permanent exhibits now being established will be announced later.

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MECHANICAL EQUIPMENT FOR 20-YEAR FINANCED HOUSES



FIG. 2 DOOR LEADING FROM LIVING ROOM TO DINING ROOM. MANY OF THE DOORS ARE OF THIS HANDSOME LOUVRE TYPE. DELIVERY GRILLE AT UPPER RIGHT.

great dividing line between them. How come the flush type tumbler switches and the almost insignificant wall-plugs which can be wired for lighting, heating, fool-proof radio connections? Who makes the ash-drop, the hardware for the fireplace throat, the damper and its invisible control?

It might be taken for granted that many large firms throughout this country were led into the field of residential building equipment during the building boom preceding the depression. And of these the substantial concerns certainly did not call it a day when the business went the way of the rest of the businesses. They drew breath and prepared for the day when business would be resumed. The improvements in building equipment and the increased field in building equipment is the result of the respite. There is a great difference, if one cares to look into the matter, between the equipment on the market in 1929 and that of today. Consider for a moment the matter of window sash, glazing in general, or window and door hardware. It is interesting to sit down and study over the catalogs of ten years ago and compare them with those of the present time.

The other day a large building suffered a fire loss in an attic section. The building being practically fireproof and the fire department prompt the loss was comparatively small. But in inspecting the place with an expert on the following day it was easy to see what had happened. A burned up motor, gone to its last long rest, and a burned up floor, ceiling, and wall. It was easy to prepare a speech on the advantages of modern equipment.

To the right and left of the chimney in the upper picture of Figure 1 will be seen the conduits back of the outlets running up through the framing. What a difference there is between the way wiring is done now and how it used to be done.

The picture shown in Figure 2 gives an idea of the neat trim and millwork that is available. The house in which this picture was taken is equipped for winter air conditioning and someone must have converted the owner

to a belief in the virtues of air circulation. But why not continue the louvers all the way to the lower rail? Well, with one or more return air grilles in every room there is no need of it. In the old days of one or two "cold air faces" some provision had to be made against accumulation of cold floor air. The lower rail of the connecting doors must be far enough from the floor to permit of some circulation, we always hoped, back to the nearest cold air face. This was usually a hope.

The delivery grille shown in the wall to the right of the door in Figure 2 is one of two for this large living room. The two can handle the air completely and well.

Leaving the larger house the photographer went over to another house under construction in the same town. The second home will cost considerably less than the first, but it should be carefully noted by those intent on building a home of their own that the second home will have every advantage offered in the way of construction and building equipment as had the first. In Figure 3 and 4 are shown two views taken in the basement of the second house. In Figure 3 is shown the east end of the basement with a winter air conditioning unit installed. This unit, while smaller than that of the first house, is gas fired like the first and just as complete for its smaller capacity. Space is available for cooling coils, should these be desired later. For compactness in home building equipment plays an important part. Just in front of this unit a firewall will be built and a basement garage completed. Notice that the ceiling of this garage space will be entirely free of air ducts, either delivery or return.

Stepping through the doorway which shows to the extreme right in the lower picture, Figure 4, the reason

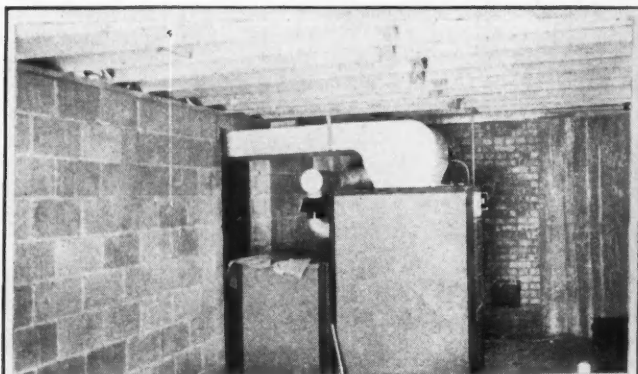


FIG. 3 THIS UNIT TO PROVIDE WINTER AIR CONDITIONING, AND SPACE AVAILABLE FOR SLIMMER COOLING. HOUSE = 18000 CU.F.



FIG. 4 SAME BASEMENT BUT TO THE LEFT OF DIVIDING WALL. NOTE COMPACT WARM-TRUNK. RETURN-AIR DUCT WILL LIE PARALLEL.

BUILDERS!

*DON'T make tenants
do their own wiring*



LET INCREASED ELECTRICAL SERVICE SELL THE HOUSE

"Plug-In" Strip provides a place to plug-in every six or eighteen inches wherever it is installed. This easy access to electricity means complete flexibility in arranging furniture and greater convenience in the use of all electrical appliances, and consequently increased sales appeal for the prospective buyer.

National manufactures three styles of "Plug-In" Strip permitting any desired type of installation, either flush or surface.

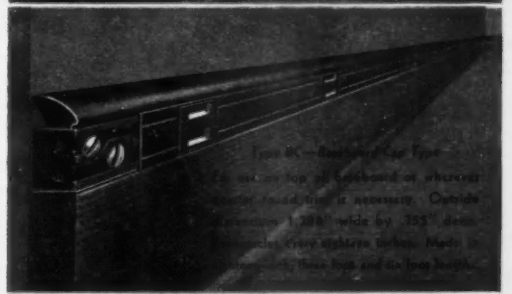
Increase the saleability of your homes by featuring "Plug-In" Strip in the wiring system. **Write National today, for full details.**



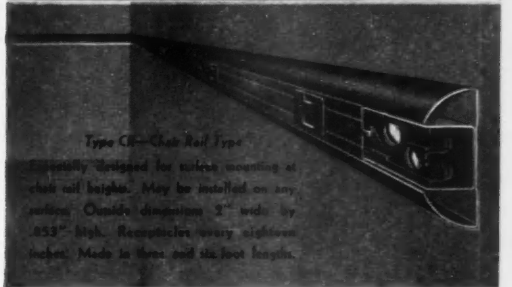
National Electric Products Corporation
Pittsburgh, Pa.



Type A—Flush Type
Designed for flush mounting at
any height. Outlet spacing
flexible. Outlet depth
by 1 1/2" deep. Removable
cover plates. Made in
three and six foot lengths.



Type B—Surface Mount Type
Designed for surface mounting at
any height. Outlet spacing
flexible. Outlet depth
by 1 1/2" deep. Removable
cover plates. Made in
three and six foot lengths.



Type C—Chair Rail Type
Designed for surface mounting at
chair rail height. May be installed on any
surface. Outlet dimension 2" wide by
1 1/2" high. Removable every eighteen
inches. Made in three and six foot lengths.

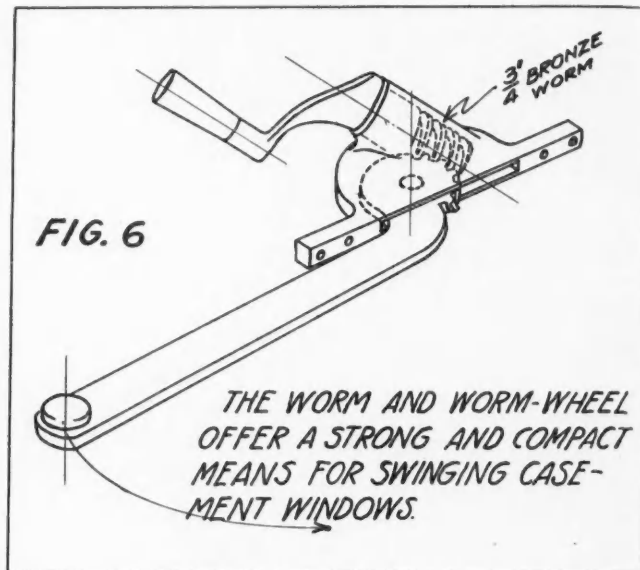
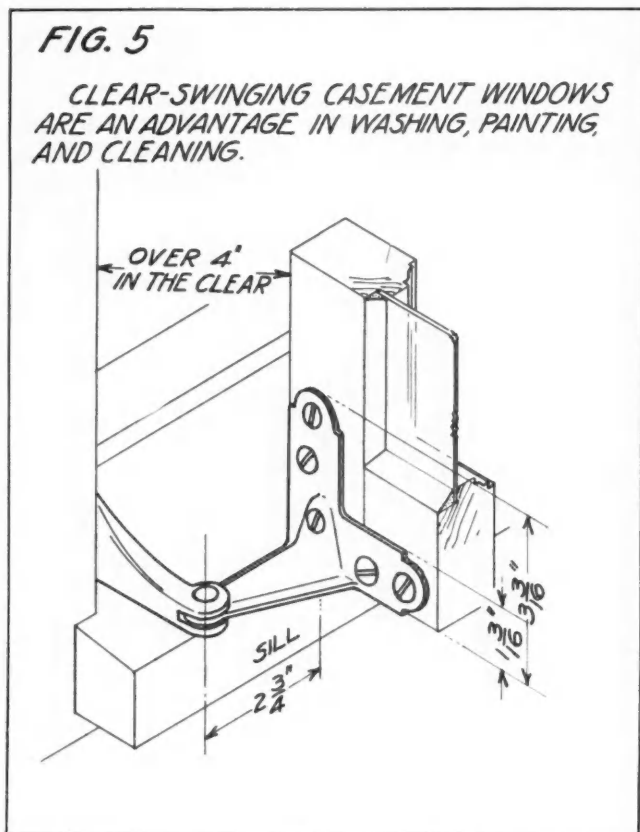
HEATING-AIR CONDITIONING-PLUMBING AND WIRING

for this can be seen. All of the delivery ducts come away from the bonnet of the conditioning unit and are closely nested against the dividing wall. The return air ducts will come through above, between the joists, and drop to a trunk which will parallel the delivery ducts, dropping above the filters and into the unit.

The directing of this air circulation throughout the rooms of the smaller house is given as thorough consideration as it was in the larger one. The ducts are as carefully designed and placed and dampered in the second case as in the first. Now since there is nothing at all extraordinary about the heating plants in these buildings it must be that the real manufacturers have put themselves into a position to manufacture and provide the many builders with this type of proven equipment at reasonable prices.

I would like to insert a statement here that may not be entirely out of place in order to show that such modern equipment need not be any more expensive in many cases, and in some instances may be even less expensive. Whenever a real manufacturer starts to improve a product he does it with the idea of increasing his market, and by increasing his production to decrease his costs. The ultimate design of a piece of building equipment is not all that goes under consideration. His engineering staff will seek better means for manufacturing, better materials, better tools, more skill in manufacture. The particular piece of equipment turned out may be an immense improvement in itself, but in the process the whole chain from raw material to finished product has been improved. Hardware for buildings, as now made, is distinctly in this category.

Speaking again of the second home it would be interesting, for me at least, to enumerate the improvements in building construction and equipment which were taken



advantage of in its design. And yet cost was first in all consideration.

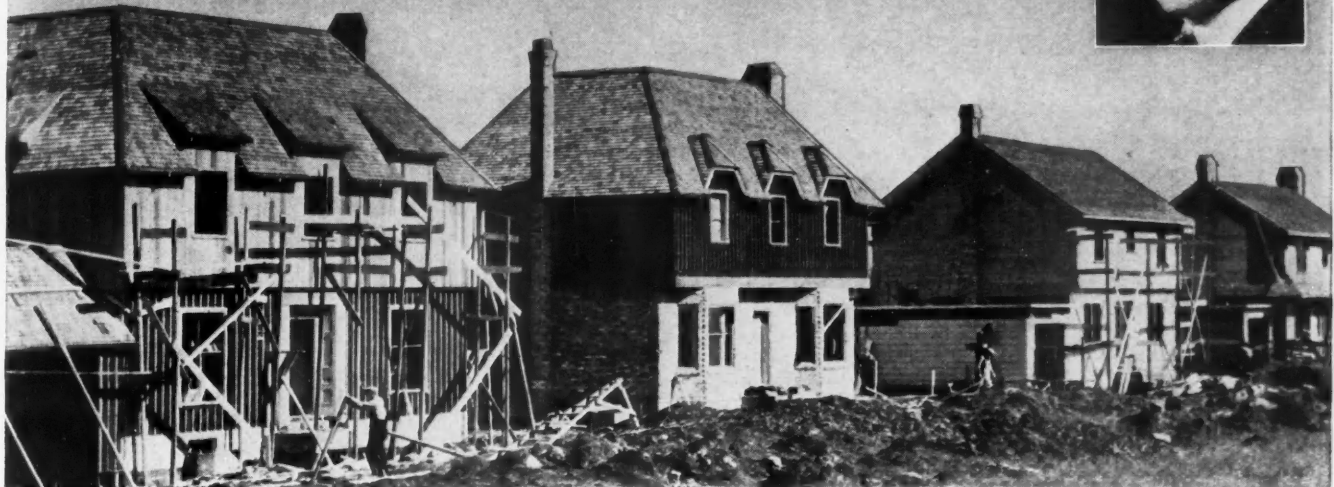
Figure 6 shows a swing-out casement operator. The whole is a rather simple "contrivance," as I heard it once called. Getting back to my argument about improvements and reduction in cost in equipment, let me say that the worm feed and the metals used and the methods of cutting these metals was not perfected simply for the manufacture of a piece of residential equipment. The same research that went into differential drives on trucks, on the manufacture of speed reducers, and several other commercial devices was applied to this simple little window opener. The keying or broaching in the hub of the worm, the metal used, the cutting of the worm and the hobbing of the wheel, the die casting of the parts, the nice adjustments of fit. They are not all to be credited to a simple manufacturer. He wasn't as simple as all that. He took advantage of all the opportunities industry had to offer, and he turned out a neat piece of work that is fully up to its job.

And speaking of the window hardware side again notice Figure 5. It is evident that besides being a progressive hardware manufacturer the man who puts this casement hinge on the market had occasion at one time to cuss the job of washing casement windows or cleaning the snow and sleet from the frames.

There was a time, as there still is, when all of the better houses were built as individuals by experienced individuals who considered all points with extreme care. They were and are more expensive, but they hold their individuality, they do not deteriorate. But there is now, since the advent of the policies of the Federal Housing Administration, an equal type of house, wherein the builder as well as the manufacturer realizes his opportunities. The high price of financing is gone and the balance is left to find itself in appreciation of the house itself. And of all things that go to make a home individual, and a continuing individual, substantial equipment plays the most important part.

It is only to be hoped, so far as the homeowner is concerned, that there is sufficient "booming" to promote healthy competition. The manufacturer is out to outdo himself in home-building equipment. Here's hoping he has plenty of incentive.

BUILDS 10 HOUSES INSTALLS 10 IRON FIREMAN



Coal Flow Row. A few of the Iron Fireman equipped homes built by Frank R. Lount in Winnipeg. Inset: Frank R. Lount.

IRON FIREMAN *COAL FLOW* FIRING selected to heat new Winnipeg homes

IF you want to see home heating plants put to a severe test, go to Winnipeg in the winter. And if you want to learn what kind of automatic firing equipment can provide abundant warmth on the coldest days—without high fuel costs—without trouble—inspect the homes recently built by Frank R. Lount in the new Tuxedo district.

Mr. Lount chose Iron Fireman *Coal Flow* automatic coal burners for his homes after investigating air-conditioned heating thoroughly. Convinced that coal is the only fuel that gives complete satisfaction with this modern method of heating, he selected the Iron Fireman *Coal Flow* model because it is the finest development in automatic coal firing. Practical experience in two other homes had also demonstrated that the cost of heating with an Iron Fireman was less than half of what it was costing with oil in homes of the same size.

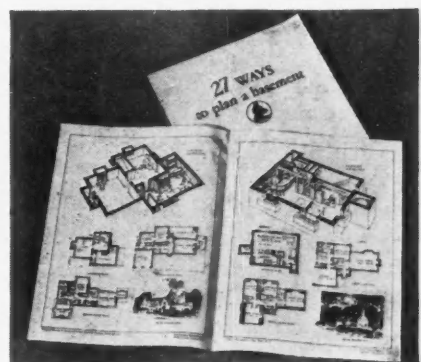
NO COAL TO HANDLE

Iron Fireman's *Coal Flow* model conveys coal direct from bin to fire. There is no coal to handle—no dirt—no dust. From raw fuel in the bin to heat units in the furnace or boiler, coal is an invisible, self-serving fuel.

If you are engaged in residential work, you owe it to yourself to study Iron Fireman's advantages. Your Iron Fireman dealer will gladly furnish complete information, or we will mail a catalog. Iron Fireman Manufacturing Company. Factories: Portland, Oregon; Cleveland, Ohio; Toronto, Canada. Dealers everywhere.

Send for FREE Booklet

"27 Ways to Plan a Basement" is a profusely illustrated booklet prepared especially for contractor-builders and architects. It contains the prize-winning drawings in the Iron Fireman-Pencil Points Architectural Competition, with special emphasis given to the construction of basements for iron fireman installations. This booklet will be mailed free on request. Use the coupon.



CLIP AND MAIL

IRON FIREMAN MANUFACTURING CO.
3214 W. 106th Street, Cleveland, Ohio.

Send booklet "27 Ways to Plan a Basement"

Send Iron Fireman catalog:

Residential Commercial Industrial

Name _____

Address _____

AUTOMATIC COAL FIRING EQUIPMENT

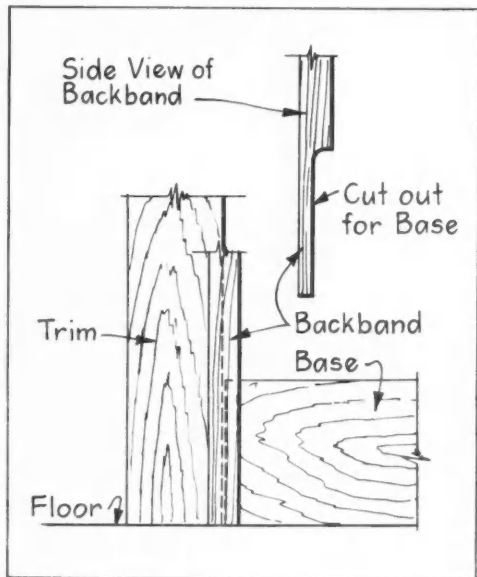
PRACTICAL JOB POINTERS

A READERS' EXCHANGE of tested ideas and methods, taken from their own building experience. Two dollars or a year's subscription to American Builder is paid for each item when published. State business connection or trade.

Fitting Casing at Base

I HAVE read in *American Builder* a Pointer on fitting casings at head. As I have been using that same method for a few years, I thought perhaps this one on base may prove of value to someone.

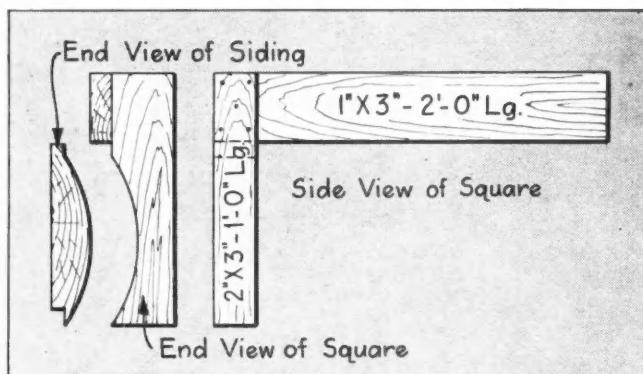
Just case door, then put base down as usual, making no effort to fit against casing. Then fit back of backband around base with fine saw, as shown in sketch.—LEON J. SCOTT, Carpenter, Wauseon, Ohio.



FITTING the backband around base for a neat job of casing.

For Squaring Log Siding

WE HAVE had a lot of log cabin siding jobs this year. This material is made like shiplap boards except it is 2 inches thick, and rounded like a small log on the outside. This makes it very hard to square, and so I have worked out a way as shown in the sketch, which does the job very well. The wooden squares serve on the siding as a common steel square does on a flat board. They should be made in pairs, one for each end.—ROY NILES, Carpenter, Syracuse, Ind.

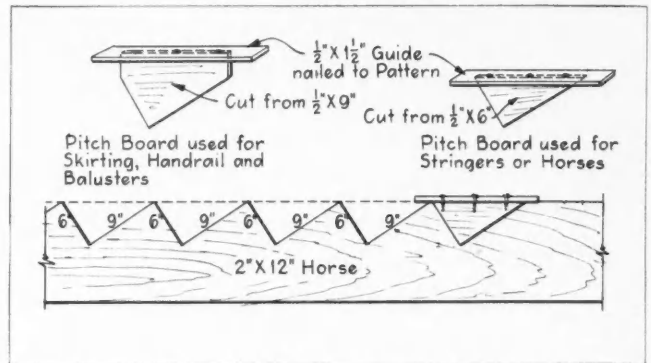


WOOD squares made for marking rounded log siding.

Better Method of Laying Out Stairs

IN the July issue of the *American Builder* I saw time saver on stair stringers which I can accurately, easily and quickly improve by giving you a practical stairbuilder's idea. So I am enclosing detail of pitchboard, which eliminates all clamps, and set screws; it is not only handier but made in a minute or two. Simply take any scrap $\frac{1}{2}$ x 6 or 7; join one edge. Lay off the desired run and rise, and tack a guide strip $\frac{1}{2}$ x $1\frac{1}{2}$ on, as shown. For the skirting simply take another scrap piece (glass box preferred) and follow detail for housed strip dropping as far as desired. Last, but not least, save pattern for laying off carriages and use same for correct pitch of hand rail and balusters.

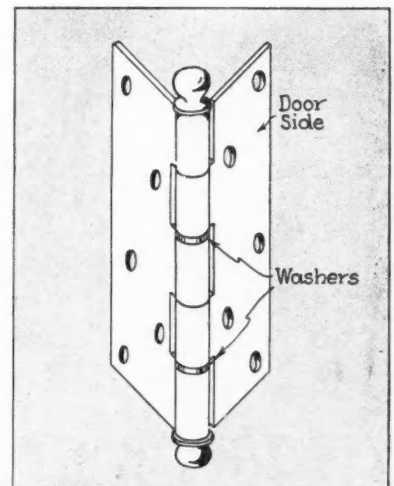
I usually hide it some way, either in my tool box or fasten it in a secret nook where no one can find it until I build the stair case proper. You see, that way I can't vary in the least in any pitch cut throughout the whole job.—JOHN H. UFHEIL, General Building Contractor, Huntington, Ind.



PITCH board provides handy pattern for laying out stairs.

Taking Up Hinge Wear and Raising Warped or Dragging Doors

THE hinges on doors sometimes wear down enough to let the bottom of the door drag or other causes require a slight raising of a door. To remove the hinges and set them up is somewhat of a job. Ordinary washers will not serve to take up this hinge wear as a washer with a hole large enough to take the hinge pin will be too large on the outside to go between the hinge leaves. However, washers cut from an ordinary piece of $\frac{1}{4}$ -inch water pipe will generally serve admirably. Wedge the door up as high as it will go and measure the amount of wear. Cut pieces from the pipe with a hack saw and smooth them down with a file. With the door closed and wedged take out the loose hinge pins, slip in the washers, put a drop of oil on them and replace the pins. This will clear up the drag on the door and make a satisfactory long-time repair.—A. J. HARSTAD, Carpenter, Helena, Mont.



WASHERS sawed from pieces of $\frac{1}{4}$ -inch pipe and inserted in worn or cut away spaces between butts gives easy method for raising doors.

The  **UNIT KITCHEN**
Fits Any Space.. Any Plan



5
OUTSTANDING FEATURES
OF THE G-E UNIT KITCHEN

ONE: The General Electric Unit Kitchen is extremely flexible. Can be large or small. Fits one-wall, L-shaped or U-shaped rooms.

TWO: Because all parts are standardized production items, the cost of a General Electric Unit Kitchen is amazingly low.

THREE: Can be installed easily . . . at substantial savings . . . as it is only necessary to attach each unit to the wall.

FOUR: Each unit is made to match every other unit in size, shape, color and design. All work surfaces of the same height.

FIVE: General Electric Co., through its sales outlets, is the one source of supply for every necessary part.

STANDARDIZED, INTERCHANGEABLE SECTIONS
—QUICKLY INSTALLED

BUILT of assembled, matched sections, the General Electric Unit Kitchen can be as large or as small as desired—from a 6-foot, one-wall, efficiency kitchen to a 20-foot, three-wall, deluxe kitchen. It's ideal for any home . . . or any apartment. It solves kitchen planning problems.

The units of the complete General Electric Unit Kitchen include G-E

Triple-Thrift Refrigerator, G-E Range, G-E Dishwasher-Sink, G-E Disposall, wall and base cabinets, Lumiline lighting—and even chrome trim. Complete in every detail! Readily installed in new or old buildings at surprisingly low cost. A word from you will bring descriptive literature by return mail. Address General Electric Company, Section CW-5, Nela Park, Cleveland, Ohio.

GENERAL  ELECTRIC

All Electric Kitchens

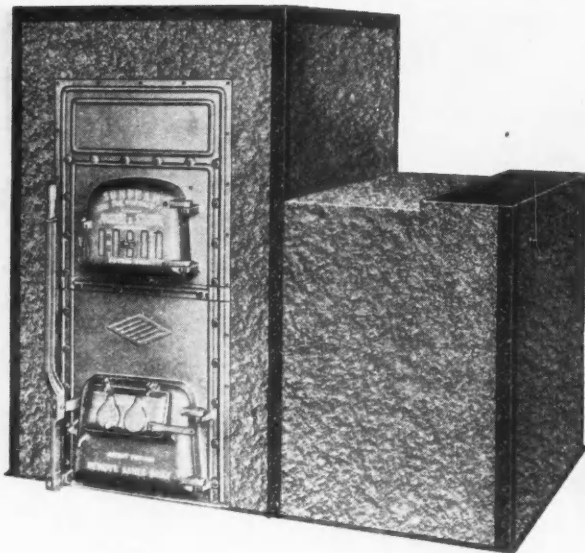
New Equipment for Today's Homes

Highlights in the Building Products Parade Show Many Improvements in Heating, Electric and Other Devices

PROOF of constant progress toward better construction can best be judged by the continuous improvements which manufacturers are making in the various equipment and products to be assembled into building units. The following items present a review of interest to the home builder.

In the heating fields a new Series 5500 Sunbeam air conditioning unit with steel heating element, designed for burning coal or oil, has been announced by The Fox Furnace Company of Elyria, Ohio. The heating element of this new Series is made of boiler plate steel with seams both riveted and welded to assure leak-proof operation. Casings are attractively finished in red crystal-line baked enamel with black trim.

The coal burning model is equipped with duplex grates of the latest design and fire brick lining to protect the walls of the fire



COAL burning conditioning unit for lower priced field.

section. The stoker fired model has an insulated fire door with a glass covered observation opening.

The two oil burning models, rotary type and gun type, will accommodate any standard make of oil burner. An insulated fire door with glass covered observation port is standard on both models. With the rotary model is furnished all the equipment which the installer requires to construct an air-tight foundation for the hearth. The gun type model is equipped with mineral wool insulation for the front section and the necessary supporting and retaining plates.

Although this series is substantially lower in price than other Sunbeam steel air conditioning units, tests prove it to be highly efficient in operation and the heavy, rugged materials used in its construction assure durability and long life.

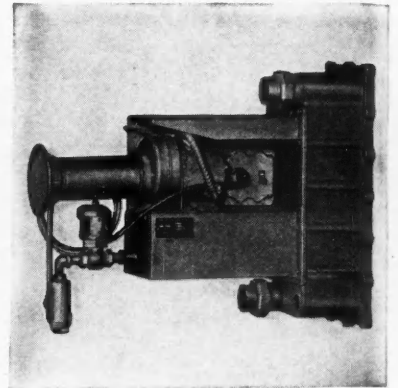
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ANEW humidifying boiler attachment, which, when used with the steam or hot water heating system in correct installation, will supply all the fundamentals of winter air conditioning without the use of any duct work, has been placed on the market by the American Radiator Company, New York City.

Made in two different models, the humidifier supplies humidity to an entire house through a 3-inch pipe. One model, the No. 10,

is designed for attachment to any boiler. The other, the No. 11, is constructed as an integral part of the hot water heater in the company's No. 11 oil burning boiler and can be ordered as part of the boiler.

The principle of the heat exchanger is employed in both models so that super-heated water vapor is supplied to the home and will diffuse quickly throughout the entire house with only one outlet required



HUMIDIFIER designed for use with either steam or hot water type boilers.

for efficient operation and increased comfort.

Super-heating the water vapor and warming the air that supplies it prevents condensation in the pipe or at the outlet grille and at the same time makes it possible to handle a sufficient volume of moisture to meet the needs of the entire house. This outlet grille can either be placed by itself in a baseboard of the first floor of a home or a special diffuser can be placed above the heating unit in a concealed radiator enclosure.

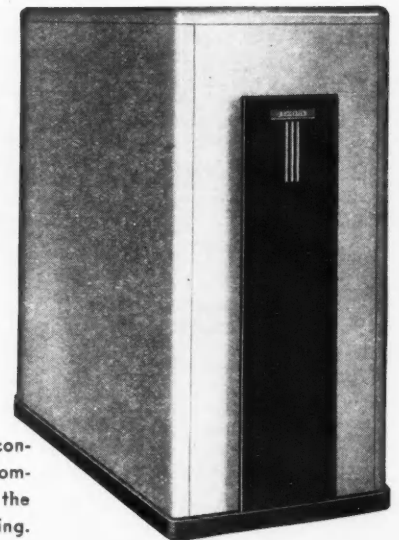
A fine stream of water is played against a heated cast iron surface through a spray nozzle which is operated either manually or automatically by a solenoid valve. Air circulation is provided by a small blower unit that has a capacity of 40 c.f.m. and the humidifier will evaporate approximately 12 gallons of water per 24 hour day which is sufficient to supply the correct amount of humidity to the average home. The humidifier can be used on either steam or water boilers.

The unit, when installed as part of a radiator system with proper controls on the radiator heating to supply constant convection or air motion, will make it possible to supply humidity, air motion, air temperature control and radiant heat from the system.

* * *

SHIPMENT of completely assembled air conditioning heating plants is now being made by Perfection Stove Company, Cleveland, Ohio. The unit, which is smallest of three models of the Superfex oil-burning plant and rated at 65,000 B.t.u. at the registers and 72,000 at the bonnet, is shipped with furnace, motor, blower, humidifier, and filters assembled; the width being only 26¼ inches, it can be easily moved through a standard size doorway. The packaged unit needs only to have the necessary electrical, fuel and flue connections made to start it going.

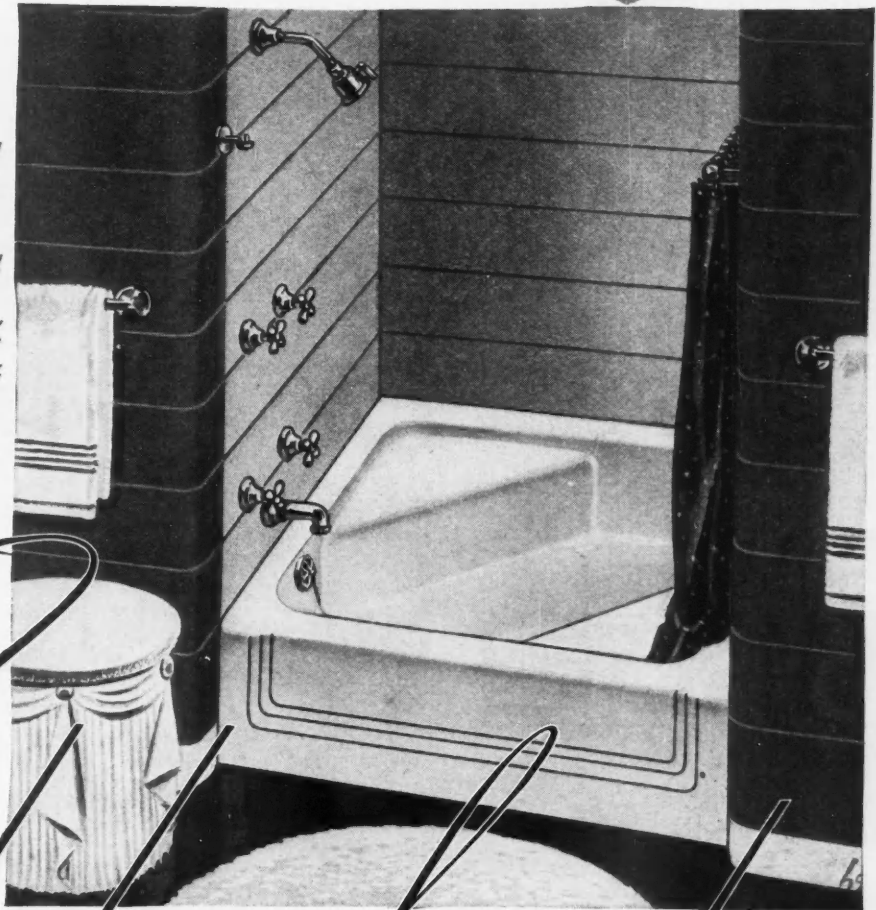
(Continued to page 108)



SMALL size oil fired conditioner which is shipped completely assembled at the factory, ready for connecting.



"Standard"
PLUMBING FIXTURES
COST NO MORE
THAN OTHERS



Pat. No. 1,844,988

Styles have changed

IN BATHROOMS, TOO!

With a
"Standard"
NEO-ANGLE
Bath

"Life is too precious to endanger it by entrusting Plumbing to hands other than those best qualified to assure Health Protection — the Master Plumber."

Henry W. Reed.
President

NEW FREEDOM of design — new arrangements of fixtures — new styles in decoration — have come to the bathroom since "Standard" introduced the Neo-Angle Bath. Never before has a new fixture won such popular approval and offered such unlimited opportunities for original planning as this sensationally different square bath.

The Neo-Angle is only four feet square yet it provides roomy, full-size bathing space, convenient seats in two opposite corners and a shower bath. It adds new beauty and charm to any decorative effect at the same time providing exclusive bathing features that appeal to the whole family.

Whether your homes are large or small, you can use the Neo-Angle Bath to give you distinctive, modern bathrooms that everyone will admire. Consult your "Standard" catalogue or write for literature on the "Standard" Neo-Angle Bath.

Copyright 1937, S. S. Mfg. Co.

Standard Sanitary Mfg. Co.

PITTSBURGH, PA.

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

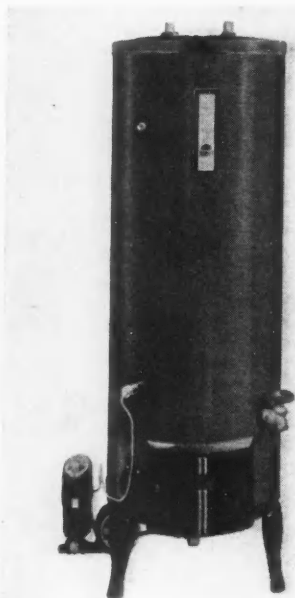
(Continued from page 104)

It operates equally well either in a basement or at ground level, and therefore is well adapted to the needs of the modern small home builder.

* * *

A NEW oil burning water heater is being marketed by the Cleveland Steel Products Corporation, Cleveland, Ohio, manufacturers of Toridheet oil burners and air conditioning equipment. The unit is fully automatic, has a wide range of water temperature adjustments and may be equipped with interchangeable burners for fuel oil, kerosene or gas.

It is available in a standard round style or square cabinet model in plum-finished sheet steel and can be furnished in 20, 30 or 40 gallon capacities. Fuel consumption on "high" fire is 1/6 gallon of oil per hour; on "low" fire, 1/50 gallon per hour. Average fuel consumption for a family of four persons is approximately 3/4 gallon per day. Cost of operation averages about five cents a day.



OIL burning water heater.

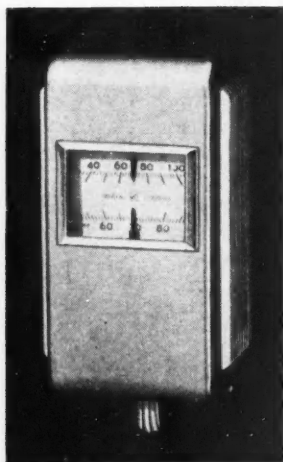
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IN MANY types of air conditioning systems, economy requires the re-use of the water employed for washing or scrubbing the filtered air before it is returned to the rooms that are being conditioned. It is a known fact that a considerable amount of organic matter from re-circulated air is introduced into the re-circulated washwater, providing sufficient food material to allow bacteria to grow and increase rapidly.

Oakite Products, Inc., New York City, through its Research Division, has developed a new material known as Oakite Airefiner that, when added to the re-circulating water used to wash or scrub air, keeps the wash-water sterile and prevents the growth of slime and algae deposits in the system.

* * *

AN ATTRACTIVE new room thermostat, modern in design, has been announced by the General Controls Company of New York City and San Francisco under the trade name of "Metrotherm." The outer thermometer has been eliminated—



slender indicators point out the setting and the actual room temperature on a modern dial. Vertical chromium louvres allow for free circulation of air, yet completely conceal the internal mechanism. The case is finished in dull silver and chromium. Resulting simplicity of design is truly beautiful.

The Metrotherm is of low thermal inertia and contains a tiny rheostat which allows for quickly adjusting the degree of heat acceleration to the load characteristics and the type of installation to be controlled.

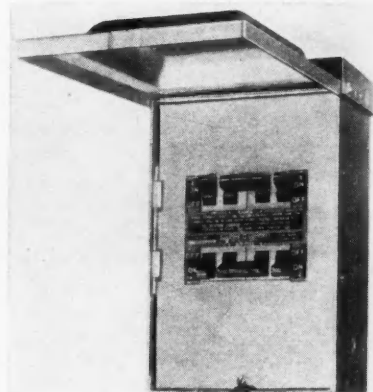
ROOM thermostat modern in appearance and operating design.

SQUARE D Multi-breaker service centers made by the Square D Company, Detroit, Mich., which recently were introduced, are available in Raintight boxes for outdoor use up to eight circuits.

The new boxes embody all the features of the Multi-breaker line, including the swing-out interior, elevated base, solderless connectors, accurate calibration and lower cost.

The enclosures are made of galvanite, which is rust-resisting, and finished in baked aluminum. Knockouts in the back and sides are located below the bottom of the base and the base is set forward in the box to prevent moisture from collecting on the terminals.

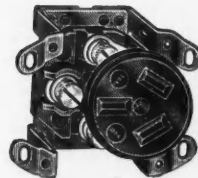
Circuit capacities of 15, 20, 25, 35 or 50 amperes are available for either 2-wire or 3-wire solid neutral 115/115-230 volts A.C. services.



MULTI-BREAKER service centers in Raintight box.

* * *

CONNECTIONS are made easy in an improved flush range outlet (3-wire, 50 amps., 250 volts) now available with one screw solderless connectors. This new product has been added to the line of the Arrow-Hart & Hegeman Electric Company, Hartford, Conn. It is designed for straight-in-wiring, no awkward bends of heavy wire, takes a standard 4 inch or 4-11/16 inch box with standard switch cover, and is made of black Bakelite, attractive and neat.



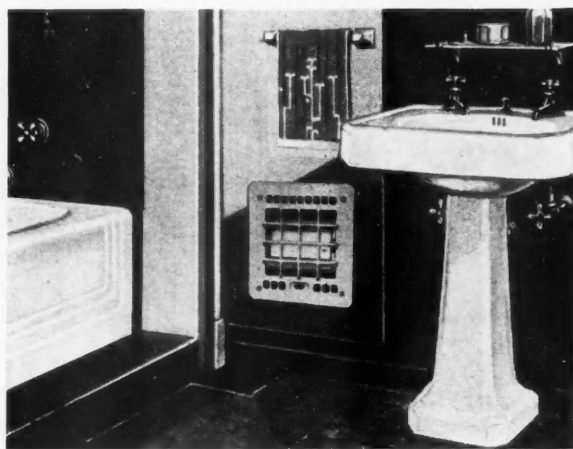
IMPROVED flush type electric range outlet.

* * *

FOR safe, clean, healthful heat instantly available as needed, in dressing rooms, nursery and especially in the bathrooms, the F. W. Shepler Stove Company of Pittsburgh is offering the Radia wall insert electric heater.

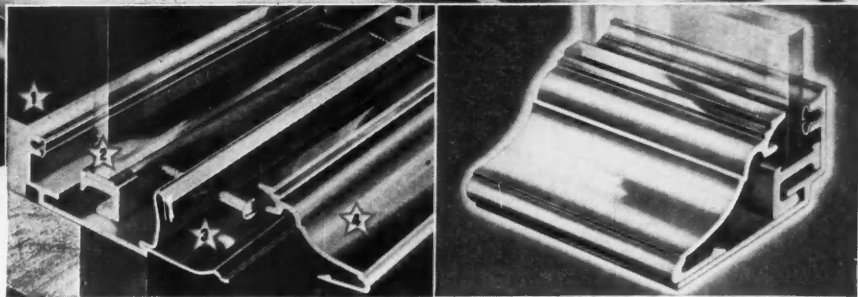
By supplying comforting heat for bathing and dressing, the starting of the main heating plant can be delayed several weeks in the fall and can also be shut down several weeks earlier in the spring. Also, during the winter months less heat will be required and lower temperatures can be maintained throughout the home, if a Radia is standing ready to instantly supply the extra heat required in such rooms. The operating cost of the heater is about 2 to 3 cents per hour for the average room, and as such rooms are seldom used for more than quarter-hour to half-hour periods, the cost per month will be comparatively small.

(Continued to page 110)



BATHROOM equipped with wall insert electric heater.

Here's a **STORE FRONT METAL THAT**
MAKES IT EASY FOR YOU TO DO
a Quality job!



1. EASY TO INSTALL! First, the inner member is set; then the setting block (which is actually 2 1/2" long) is pressed into its groove and the glass lifted into place; then the glassholding member is installed; and finally, the face member snaps on to finish the assembly.
 2. Cross section of Pittco Metal sash as it looks installed.

PITTCO Store Front Metal has won the endorsement of contractors throughout the country. Contractors like this modern store front construction not only because of its exceptional good-looks, its beauty of finish and design, but also because it makes it easier for the contractor to do a good job on store front work.

For Pittco Metal is set entirely from the outside. This simplifies installation, makes the job quicker and more accurate and results in a better-appearing, higher quality job. Further, this

outside setting facilitates glass replacement when it is necessary.

Examine the illustrations on this page and see for yourself how easily Pittco Metal is installed, how good-looking it is on the finished job, how it protects the edge of the facing material by projecting over it slightly.

Ask our nearest branch for a demonstration of Pittco Metal's advantages. And meanwhile, send the coupon for our free folder of full and quarter size details showing various applications of Pittco Metal. There is no obligation.

Pittco **PITTSBURGH** *Glass*
 PLATE GLASS COMPANY

PITTCO

STORE FRONT METAL

CARRARA STRUCTURAL GLASS · PITTCO STORE FRONT METAL · PITTSBURGH PAINTS
 PITTSBURGH MIRRORS · PITTSBURGH POLISHED PLATE GLASS · TAPESTRY GLASS

Pittsburgh Plate Glass Company,
 2359 Grant Bldg., Pittsburgh, Pa.

Please send me, without obligation on my part, your folder containing full information on Pittco Store Front Metal and detail drawings.

Name _____
 Street _____
 City _____ State _____

LOOK FOR THIS MARK

**WEATHERTIGHT!
EASY-WORKING!**

AN IMPROVED OVERHEAD DOOR

The Barcol OVERdoor

FOR SWINGING, SLIDING AND OVERHEAD DOORS, AND SWINGING AND SLIDING GARAGE DOORS OPENED AND CLOSED AS IF BY AN INVISIBLE HAND!

Electric Door Operators

The RADIO Control

THESE ARE

Three important items of modern residence equipment which are being used in up-to-date homes more every year. *Are you thoroughly acquainted with their advantages?* Let us explain . . .

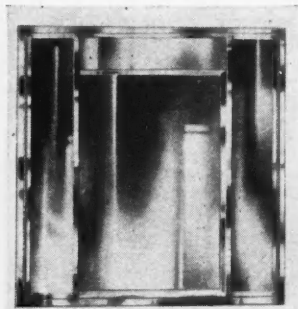
BARBER-COLMAN COMPANY
ROCKFORD • ILLINOIS
REPRESENTATIVES IN PRINCIPAL CITIES

(Continued from page 108)

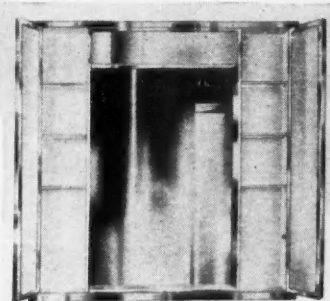
The heating element is absolutely unaffected by water or moisture and is guaranteed against burnout for 1500 hours, normally four to five years minimum service. Wall insert heaters are made in styles and sizes suited for all requirements.

* * *

THE latest de luxe Imperial bathroom cabinet developed by Miami Cabinet Division of The Philip Carey Company, Middletown, Ohio, is distinguished by the skillful combination of brass chromium plating with beautiful side mirrors. The lighting is indirect and yet completely reflected around the center mirror, because of the mirrors; lights are concealed behind opal glass panels above the center mirror. The doors swing on brass chromium plated piano hinges, and the frames are also of this material.



ABOVE, new bathroom cabinet with side mirrors in doors.



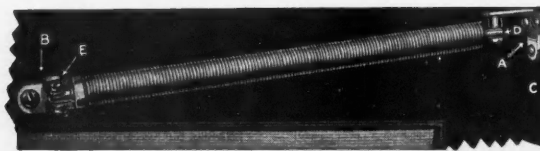
RIGHT, cabinet with doors open; lights are concealed behind upper panel.

* * *

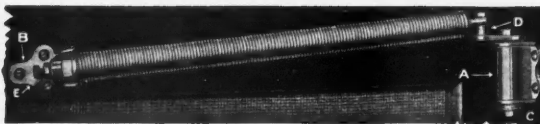
**Hardware for Doors and Windows
Keeps Abreast of Building Progress**

NEW silent hydraulic door closers made by Ware Bros., 4406 W. Lake St., Chicago, and known as "Ever-Ware," are a recent development in low priced closers. They are made in two sizes: No. 1, for light and medium weight screen or inside doors opening 90 degrees; No. 2, for heavier storm and inside doors opening 135 degrees. Both "Ever-Ware" models fit either right or left hand doors without adjustments.

High quality materials and precision work assure performance and satisfaction. There are no washers to wear, Simple adjustment regulates closing speed for weather changes and latching. Rustproof and leakproof, the closers fit between any set of doors and are quickly installed.



EVER-WARE hydraulic door closers. Above, No. 1 for light and medium doors; below, No. 2 for heavier doors.



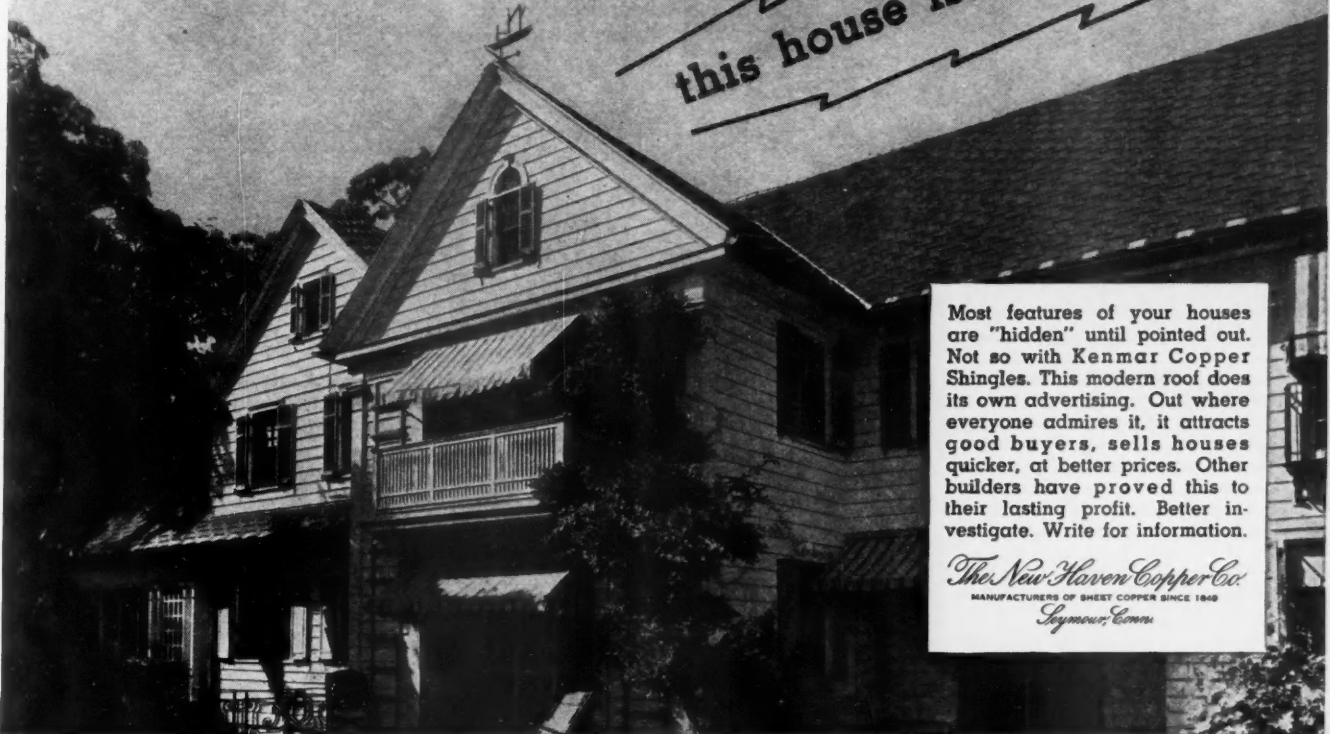
* * *

A NEW friction hinge for outswing casement windows, known as Win-Dor Series 73 and manufactured by the Casement Hardware Company, Chicago, Ill., has four important features. It is an extension cleaning type providing a projection of 2 3/4 inches away from the sash which, when the window is open, allows

(Continued to page 112)

A KENMAR Copper Shingle Roof broadcasts:

this house is a better buy!



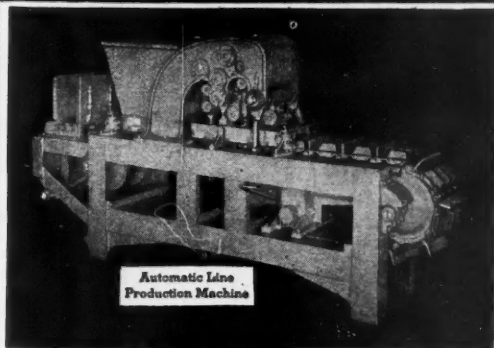
Most features of your houses are "hidden" until pointed out. Not so with Kenmar Copper Shingles. This modern roof does its own advertising. Out where everyone admires it, it attracts good buyers, sells houses quicker, at better prices. Other builders have proved this to their lasting profit. Better investigate. Write for information.

The New Haven Copper Co.
MANUFACTURERS OF SHEET COPPER SINCE 1840
Seymour, Conn.

DUNBRIK LOWERS BUILDING COSTS



GETS THE BUSINESS



Automatic Line Production Machine

DUNBRIK-DUNSTONE MANUFACTURERS in Goldsboro, N.C.—Newport News, Va.—Brooksville, Fla.—Wichita, Kans.—Milwaukee, Wis.—Kalamazoo, Mich., and many other places have shown a new high standard of value in permanent, low cost home building. They have actually proven that a beautiful ashlar DUNSTONE wall can be built for less than the cost of frame.

LEARN WHY MANUFACTURERS ARE GETTING THE BUSINESS—why DUNSTONE cuts costs at every step from foundation to roof—how this machine makes both BRICK and DUNSTONE at an unheard of low cost.

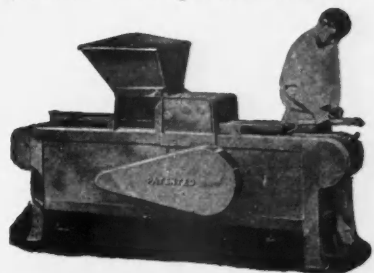
HERE IS A NEW AND PROVEN OPPORTUNITY for you if you want to ride the crest of America's greatest building come-back in history. Send for "4 Keys to Success." It may mean independence for you.

DUNTEX ROOF TILE MACHINE

LEARN HOW YOU CAN DOMINATE the vast roofing material market with DUNTEX roof tile unequalled in value, permanence, beauty and fire safety. Hundreds of both old and new buildings must be reroofed annually. With this machine your costs are low, investment moderate and selling prices offer attractive profits.

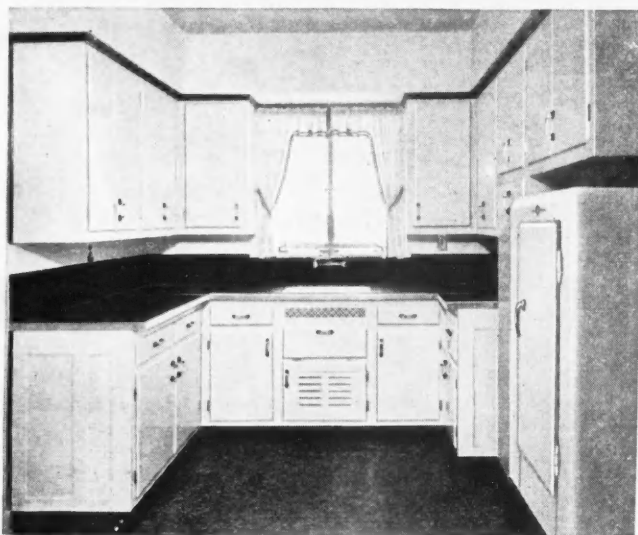
Send for "DUNTEX Survey & Manufacturer's Manual."

450 W. 24th St., W. E. DUNN MFG. CO., Holland, Mich.



TIME-TESTED CONSTRUCTION OF WOOD...

For the Modern Kitchen



● Today's kitchen problem is solved ideally by the use of standard Kitchen Cabinetry units of wood. Planning is simplified because such a wide range of units is available that every bit of space can be used profitably in an efficient, step-saving arrangement. Installation is easy (and speedy alteration or repair possible) because this time-tested wood construction has ample flexibility to meet conditions on the job. And the finished kitchen is sure to be a delight to the housewife, thanks to simple modern design, attractive hardware, the choice of 12 appealing colors, the complete sealing of each unit, and many other practical features.



EASY-SLIDING DRAWERS

No substitute has yet appeared which equals wood for all-around strength, dependability, flexibility, economy, warmth or general efficiency. A notable exception is the use of steel for non-stick drawers which slide smoothly on hardwood guides. Write the Kitchen Maid Planning Dept. for data or for suggestions on the use of Kitchen Maid units.

THE KITCHEN MAID CORPORATION, ANDREWS, INDIANA



The Kitchen Maid Corp., 705 Snowden Street, Andrews, Indiana
Send new catalog and latest details on standard unit Kitchen Cabinetry.

NAME _____

ADDRESS _____

Architect

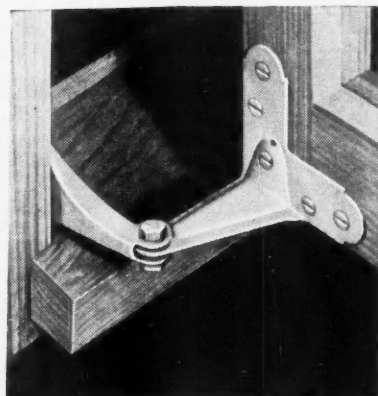
Builder

Owner

Dealer

(Continued from page 110)

4 inches of space between the frame and the sash for cleaning the outside surface of the glass from the inside of the room. It is corner reinforcing with 12 square inches of sash attachment surface. It has a friction knuckle adjustable to any desired tension and is quality hardware, cadmium plated, bronze bushed and well made throughout.

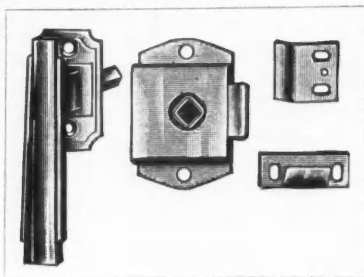


FRICITION Casement adjustable hinge.

* * *

THE American Brass Goods Co., Grand Rapids, Mich., has included in its line of modern kitchen hardware a concealed latch No. 2400 of modern styling, but not extreme, so that it can be used with Colonial or classic as well as modern design. It is available in polished chromium, dull chromium and dull nickel finishes; the handle and escutcheon are of non-ferrous materials, the escutcheon being stamped brass and the handle die cast.

The latch can be applied on any type of door, whether right or left hand, flush or offset, and in any thickness door from 1/2 inch to 1 1/8 inch, and comes packed complete in a carton with illustrations showing application.

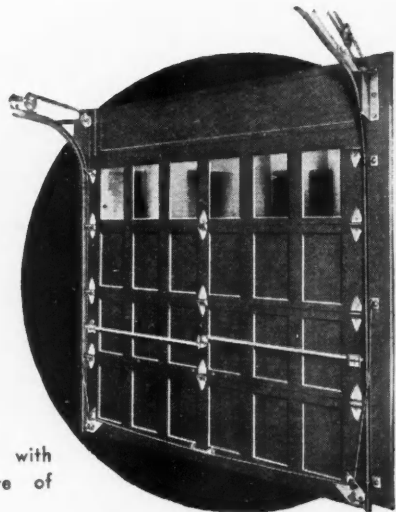


CONCEALED latch item in modern kitchen hardware line can be applied on any type door.

* * *

THE tracks and hardware for the Overhead Door are now being manufactured from a no-rust metal, Salt Spray Steel, by Overhead Door Corporation of Hartford City, Ind.

Salt Spray Steel is made by coating flat steel with zinc applied hot under pressure. By this process the zinc fuses with the steel and is of uniform thickness, texture and composition, affording maximum protection against atmospheric corrosion and does not impair the strength or forming qualities of the steel. With this latest improvement of Salt Spray Steel tracks and hardware, years of life and satisfaction have been assured the user.



OVERHEAD DOOR with tracks and hardware of no-rust metal.



THE ANSWER TO LOW-COST HOUSING

Homasote Big Sheets—up to 8'x 14'—mean savings in time, labor and money.

You can build this 7-room house with full basement for less than \$4000. Due to Precision-Built methods, you can build other homes from \$1500 to \$5500; undoubtedly the lowest construction cost per cubic foot yet devised. Here is the answer for low-cost house construction; it opens up a wide, new market for you.

Homasote Precision-Built Homes do not sacrifice quality. Plans embody the best in construction principles and building materials. There are two reasons for the low cost—Homasote Big Sheets and a revolutionary new method of construction which saves time, labor and money.

Walls and partitions represent approximately 22% of every building dollar. Precision-Built

methods cut this cost one third and save another 8% in framing. Moreover, you need only 30 days to erect Homasote Precision-Built Homes—instead of the usual 90 days. You shorten your investment period—and build three times as many houses in the same time with the same crew.

Precision-Built Homes are livable, attractive, economical to own—and qualify for F.H.A. 20-year mortgages. They are doubly insulated throughout—an excellent value at an incredibly low cost.

Let us send you a free folder illustrating 11 different houses and 24 sales-inviting features. Be sure to send for a Precision-Built materials list of the house illustrated—it's free. If pre-fabricated houses have taken away some of your business, Homasote Precision-Built methods provide an answer to this problem. It is to your interest to mail the coupon today.

WEATHERPROOF HOMASOTE INSULATING AND BUILDING BOARD

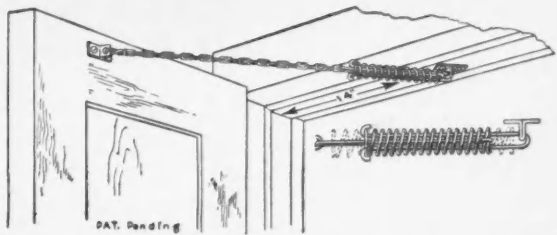
HOMASOTE COMPANY, TRENTON, NEW JERSEY
Formerly Agasote Millboard Co. 10

- Send free folder on Precision-Built Homes
- Send free Precision-Built materials list
- We enclose \$5 for 27 blueprints on Precision-Built Homes

Name _____
Address _____

Sensational NEW TWINS

STOP-A-DOR

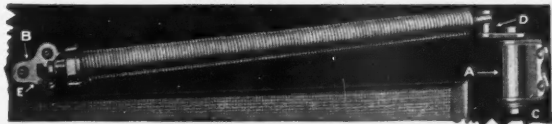


PREVENTS OUTWARD SLAMS

Nothing else like it. Everybody buys for Screen, Storm or Inside Doors. The snubber absorbs shocks at 80° to 90°, resists outdoor winds and indoor wall slams. Prevents cracked door frames and broken glass door panels. First quality—strength—super power. Priced amazingly low. Complete ready to install. **50c**



EVER-WARE Silent Hydraulic Door Closer



Checks—Then Closes and Latches

Different from all others. The lowest priced Hydraulic Closer on the market. Amazing in performance and Guaranteed. For Screen, Storm and Inside Doors. Fits right or left hand doors. All metal parts—no upkeep. Leakproof, rustproof and adjustable to speed. Complete, ready to install.

No. 1—**\$2.00** No. 2—**\$3.50**

GET TWINS FREE FOR DEMONSTRATION PURPOSES

Yes sir! One of each of these twins FREE! Get all the facts of FREE OFFER—NOW! TODAY! Eye-catchers that help sell homes. Money makers for lumber dealers, mill work houses and remodelers. Use the Coupon—paste on Postcard NOW!

WARE BROS., 4403 W. Lake St., Chicago, Ill.

We are interested in your TWINS and FREE OFFER of DEMONSTRATORS—Please send details, discounts, etc.

Name _____
Street _____
Town _____ State _____
Jobber _____

MAIL COUPON TODAY!

This Improved Method
IN CONSTRUCTION OF WOOD FRAMING
Pays for Itself!

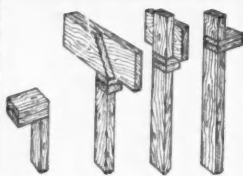
ADJUSTABLE BEARING PLATE and STUD-TIES

A revolutionary improvement in construction of all buildings using wood framing . . . a low-cost method to avoid shrinkage and sway.

Enclose Openings Cut for Air Ducts and Plumbing Pipes with Reinforcing Bands of Steel

In the ADJUSTABLE BEARING PLATE method, rigid steel bearing plates enclose openings cut for ducts and plumbing, forming a continuous support for joists. Studs are securely *locked in place* to prevent swaying. Assure sound steel tie construction at **NO EXTRA COST**—or just a slight increase, if any, depending on layout. Investigate this better way **TODAY!**

THE OLD WAY



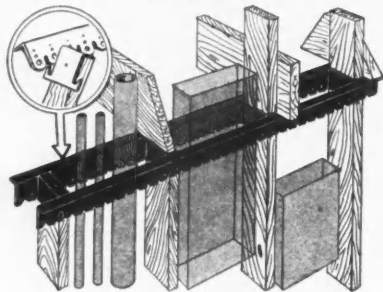
Lateral tie cut for ducts and pipes. This weakens construction.

**DISTRIBUTORS!
 LUMBER DEALERS!
 BUILDING MATERIAL
 DEALERS! ETC.**

Good territories are open to live-wire distributors to handle **ADJUSTABLE BEARING PLATE . . . STUD-TIES and ADJUSTABLE BATH TUB HANGERS.** Get the franchise for your territory. Write or wire today.

THE NEW WAY

With Adjustable Bearing Plate ducts and pipes pass through reinforcing bands of steel. Rigid construction.



ERECTED BY THE CARPENTER

WRITE OR WIRE FOR FULL INFORMATION, INSTALLATION DETAILS, ETC.

STUD-TIES Serve same construction purpose as Adjustable Bearing Plate, except they are designed for **SINGLE DUCT** or plumbing between two studs.

ADJUSTABLE BEARING PLATE CO.

11 Rutger Street

St. Louis, Mo.

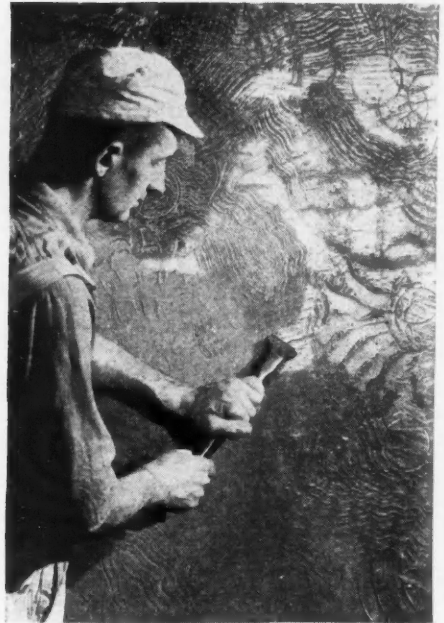
A. I. A. FILE NO. 14-J

Offer New Materials and Finishes for Floors and Walls

ONE of the interesting new paint products on the market is Polytect, a plastic water paint that has a number of unusual qualities, one of them being that it may be metallized and burnished to produce remarkable decorative effects. The manufacturer is the American Polytect Corp., 84 University Place, New York City.

This new type of paint can be applied directly to concrete, plaster, wallboard, stone, wood or metal or to any solid surface.

It comes in the form of a fine white powder, to which water and color are added. When it has hardened the metallized surface can be applied with a metal burnisher. The product is permanent, washable and lends itself to a large number of attractive textured surfaces as well as metallized surfaces.



APPLYING a metallized surface to the new Polytect plastic water paint.

* * *

A LINE of insulating products has been developed by the Mikolite Company of Kansas City, Mo., which use as a base a micaceous mineral ore called Mikolite. These products cover a broad range of application and include loose-fill insulation, insulating cement plaster, insulating gypsum plaster, acoustical plaster, Velvet Touch textural, insulating cement roof, insulating asphalt roof, insulating floor, Sur-Seal waterproofing, cold storage insulation and high temperature insulation.

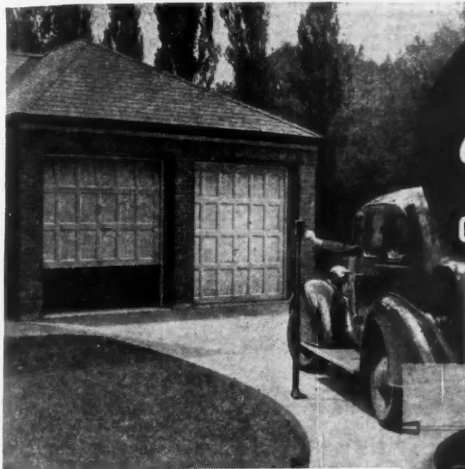
The virgin Mikolite ore is so deposited by nature as to be mined at a relatively low cost and when put through a specially developed heat process at 2000 degrees F., it expands as much as 20 times, forming an extremely light, cork-like material with the high insulating value of .30 thermal conductivity per inch thickness.

When expanded, the mineral develops four-way insulating efficiency. The mineral itself is both a thermal and an electric non-conductor. In expanding, minute cells of the non-conductive mineral form and entrap dead air. Each granule has a multitude of such dead air cells and the granules in turn imprison dead air between themselves. In addition, the expanded mineral has a permanently bright golden surface which insulates by reflection of heat rays.

Mikolite insulating plasters are made with either gypsum or cement binder and in any mineral color. The cement insulating plaster has come into extensive use for application directly to concrete, cement or cinder block and masonry surfaces. No furring or lathing is necessary. It bonds perfectly; the bond is not affected by moisture and it completely stops wall condensation. The economy it effects, according to users, is hard to believe but true nevertheless.

In addition to the cement and gypsum insulating plasters, the Mikolite Company has developed two acoustical products—an acoustical plaster and an acoustical tile. The plaster breaks up and absorbs sound waves uniformly, having in fact absorption capacity of .34 at low frequency and .58 in the middle and high frequency range. It is easily applied in the same way as plaster and high coverage. The tile has even higher sound absorption

(Continued to page 116)

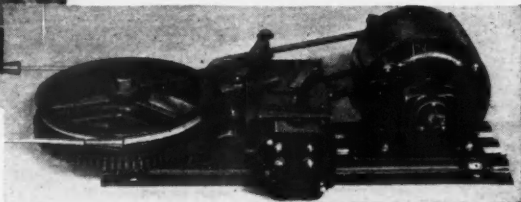


RO-WAY
Electric
Operators
FOR
GARAGE DOORS

Give Car Owners a new SAFETY feature

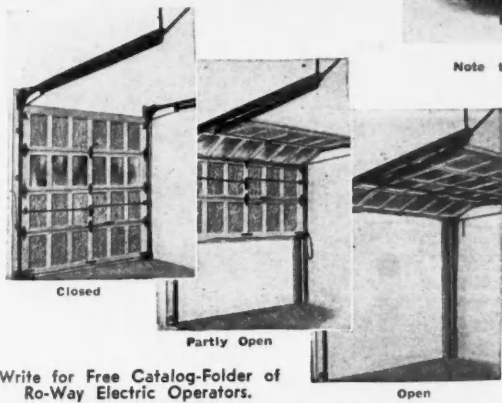
**Instant Reversal of Direction
in addition to the usual
"OPEN-CLOSE-STOP" Control**

Ro-Way offers a radically different and superior type of electrical control for operating overhead types of garage doors. A two-button station instantly changes the travel of the door, no matter at what point of opening or closing it may be. The value of this safety factor is immediately apparent. The Ro-Way Line covers every type of operation, from small residential installations to large commercial jobs. Choice of these types of control are offered: Button Switch; Ceiling Pull Switch; Toggle Switch; Constant Pressure Switch; Momentary Contact Switch; Key Operated Exterior Wall Switch; Key Operated Exterior Driveway Post Switch. Prices of all Ro-Way Electric Control Operators are surprisingly low.



Note the compact design of the residential Ro-Way Electrical Control Unit.

Key operated switch located conveniently on the driveway post enables operator to open and close door without leaving the car.



RO-WAY Over-Head Type Doors Easier to Sell . . . Easier to Install . . . More Net Profit

They require less headroom for installation, as little as 8 1/2 inches for residential garages. They require fewer alterations in old buildings. Some models have the exclusive Ro-Way "Seal-Tite" Molding Feature . . . the gravity operated mechanical hand that instantly frees the lower section of the door for easy opening, and just as effectively seals it draft-tight in closing. 16 different types for every commercial and residence use are offered. All priced right. Write for Free Catalog-Folder.

ROWE MANUFACTURING CO.

747 Holton St.

Calcsburg, Ill., U.S.A.

Write for Free Catalog-Folder of
Ro-Way Electric Operators.



**Lumberman Chooses
the WESTERN PINES
for his own home**

This is the newly-built residence of Mr. E. J. Rossman, Wilmington, Calif. He is the "Rossman" of the Rossman Mill and Lumber Company. He chose over 6500 feet of the Western Pines for the inside and outside of his home! Tell that to your clients, and see what an impression it makes. The Western Pines are the lumberman's choice!

There's money to be made this year . . . with "Small Homes" built of the WESTERN PINES*

Estimates and predictions promise more than 400,000 new homes for 1937. Building and selling your share will be easier, if you make full use of the cooperation offered by the Western Pine Association!

By steady advertising in the nation's most popular home magazines, the beauty and endurance of the Western Pines are being impressed on your clients' minds. The small-home prospect—and that's where

you'll make your money—wants quality for *his* money. The Western Pine Assn. is telling him, *for you*, about the quality of these woods. You'll save on labor, build better, and meet less sales-resistance, in the "Small Home" market and *any* market, when you recommend the Western Pines! Send for our free, illustrated booklet. Write today. Western Pine Association, Dept. B-41, Yeon Bldg., Portland, Oregon.

*Idaho White Pine

*Ponderosa Pine

*Sugar Pine

These are the Western Pines



MASONITE WINS A BET FOR BUILDER BEALS



BUILDER CLARK
"Sure, I know MASONITE INSULATION is the best I can buy. But this particular location needs extra protection against dampness and I don't know of any insulation that can supply it. Afraid I'm licked."

BUILDER BEALS
"Bet you a new beveling kit against a public speech I can solve your problem."

BUILDER CLARK
"You're on!"



BUILDER BEALS
"Here's your answer, my friend. MASONITE DUBBLESEAL SHEATHING! It's 25/32" thick and the surfaces and all edges are permanently sealed with asphalt, making it absolutely waterproof."

BUILDER CLARK
"You win! Here's your speech."



BUILDER CLARK
"In behalf of the Masonite Corporation, may I present a brand-new insulating board that will defy every bit of moisture that attacks your house. And, at the same time, provide twice the insulating values of 7/16" standard MASONITE STRUCTURAL INSULATION. It forms strong, sturdy sheathing . . . eliminates the necessity of other sheathing and insulating materials . . . and enables large sheathing areas to be applied in no time at all. In houses of every type and size, MASONITE DUBBLESEAL SHEATHING more than ever will keep heat and cold on the right side of the wall . . . reduce fuel bills in winter, and make the house more livable all year round."



MASONITE

THE WONDER WOOD OF A THOUSAND USES

A MISSISSIPPI PRODUCT

SOLD BY LUMBER DEALERS EVERYWHERE

Of course, you want to know all about this interesting new Masonite Product. Mail the coupon below for free sample and further details.

MASONITE CORPORATION, Dept. AB-5
111 W. Washington St., Chicago, Ill.
Please send me a free sample of MASONITE DUBBLESEAL SHEATHING and give me full information about this marvelous new Masonite Product.

Name _____
Address _____
City _____ State _____

(Continued from page 114)

capacity than the plaster. It weighs 2½ pounds per square foot, ¾ inch thick. Its low cost and ease of application is said to be revolutionary. In wall textural, the Mikolite people claim to have the one long-sought by architects and builders. It has a velvet-like feel and a mellow appearance which never becomes harsh or abrasive because it dries to firmness, never sets.

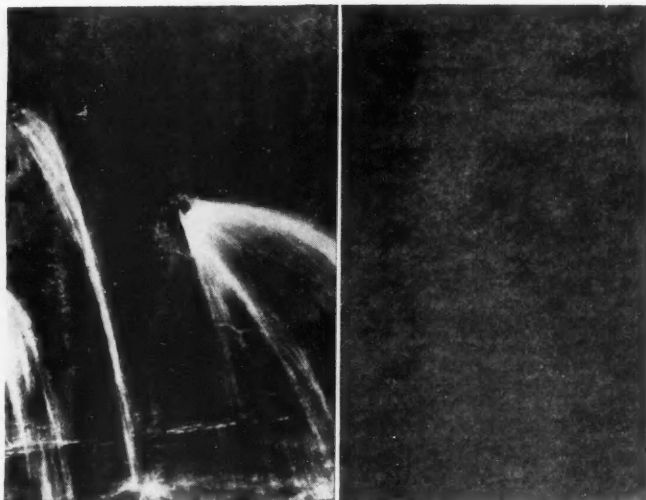
The insulating roofing material is supplied in two forms—with asphalt binder and with cement binder. Either is applied in monolithic form without expansion joints on any roof deck of wood, steel or concrete, or right on top of old roofs without removing even the gravel.

* * *

MATERIALS known as Sika for waterproofing basements and similar sub-grade masonry either on new construction or existing structures have been developed by Sika, Inc., Grand Central Terminal, New York City. Sika is always mixed with portland cement.

For a leaking fracture, with streams of water flowing under pressure, the method is as follows: Fill crack with cement mixed with Sika 4A, concentrating water stream into flowing bleeder holes; apply bonding coat of sand and cement mixed with Sika 4; plaster entire surface with two coats of cement plaster of sand and cement mixed with Sika 1; shut off water from bleeder holes with plugs of cement and Sika 2 and cover with cement plaster.

On a percolating surface, with water permeating: Seal surface with cement mixed with Sika 4A; apply bonding coat of sand and cement mixed with Sika 4; plaster entire surface with two coats of cement plaster of sand and cement mixed with Sika 1.



LEFT, water pouring through wall; right, same wall sealed with Sika.

Where there is no water pressure, for a damp porous surface: Apply bonding coat of sand and cement mixed with Sika 4, and plaster entire surface with two coats of cement plaster of sand and cement mixed with Sika 1.

Using the integral method on poured concrete, to insure water-tight concrete, Sika 1 is mixed with gauging water.

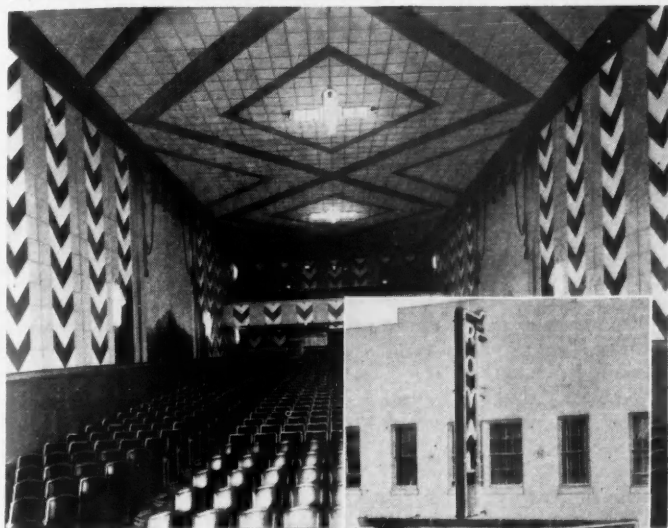
* * *

AFTER extensive use abroad, a new floor surfacing material known as Linoterm Standard is being introduced into this country from Europe by the U. S. Linoterm Corporation, New York City. It is a basic adhesive compound troweled in plastic form, which can be applied direct to cement, wood, tile, iron, stone, etc. Adhesive qualities of Linoterm make possible the production of an absolutely seamless floor if desired, yet no bedding is required. The product dries in 8 to 24 hours after application, based upon temperature of place where applied.

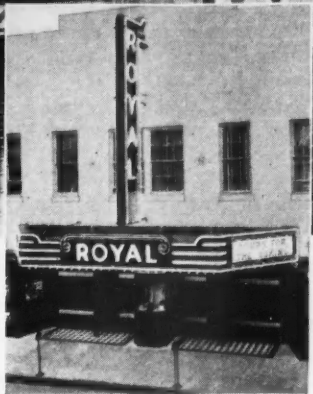
Recent laboratory mechanical tests, equivalent to 30 years of normal walking traffic, have been made; results show less than

(Continued to page 118)

Build COLORFUL Interiors with TEMLOK DE LUXE



CONTRASTING TILES of Temlok De Luxe make this interesting interior of the Royal Theatre, Gainesville, Ga. Architect, Tucker & Howell; Contractor, Barge Thompson Lumber Co., Atlanta, Ga.



AT RIGHT—view of Gainesville's Royal Theatre.

FACTORY-FINISHED INSULATION IN SIX BEAUTIFUL COLORS

NOW . . . one material supplies both insulation and decoration for attractive interiors of all kinds. This material is Armstrong's Temlok De Luxe—the insulating board that is factory-finished in six beautiful colors. Think what that means! In one operation, you can insulate, sound-quiet, and decorate with Temlok De Luxe! Easy to install, Temlok saves time and money.

Temlok is first of all an efficient insulating board. To this, Temlok De Luxe adds a smooth-surface finish, in six factory-applied colors—white, ash, cream, green, walnut, and coral. Furnished in boards, panels, planks, and tiles, Temlok is easily and quickly cemented in place with Armstrong Adhesives. This versatile low-cost material offers practically unlimited decorative possibilities for homes and commercial interiors.



MAIL COUPON TODAY FOR COMPLETE DETAILS

ARMSTRONG CORK PRODUCTS COMPANY
Building Materials Division
1006 Concord Street, Lancaster, Pa.

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

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

Armstrong's TEMLOK
DE LUXE INTERIOR FINISHES
Insulating Board • Lath • Sheathing

JIM—HOW IN THE WORLD DO YOU SELL YOUR HOUSES SO FAST?

WELL, FOR ONE THING, I INSTALL WILLIAMS OIL HEAT—AND ADVERTISE IT!



. . . and now a new Williams Oil-O-Matic Product . . . of special interest to builders—

WILLIAMS OIL BURNER

*selling at an amazingly
LOW PRICE!*

SEE IT! This great new Williams Oil Burner is what you have long needed—and wanted. A truly exceptional quality product . . . priced unbelievably low . . . the peer of any high pressure burner regardless of cost!

It bears the famous Williams' name, of course—meaning immediate acceptance by prospects for your houses.

Investigate this burner immediately! It's the bargain of bargains.

WILLIAMS OIL-O-MATIC, Dept. 405, Bloomington, Ill.

STUDY THESE FEATURES

- ★ Fully Automatic
- ★ High Pressure continuous spark—no radio interference
- ★ 1/10 H.P. motor—very low current consumption
- ★ Two-stage pump with automatic safety shut-off—uniform pressure—constant flame
- ★ Exclusive anti-carbon nozzle
- ★ Burns low cost No. 3 fuel oil
- ★ Silent as a whisper
- ★ Williams engineered throughout
- ★ Easy payments—12-36 months to pay



CARPENTERS-CONTRACTORS
THERE IS REALLY
BIG MONEY
IN FLOOR SURFACING

BIG PROFIT

Here's your chance to make some big money—be your own boss and have your own business. There is no reason why you should not be a big success in the floor surfacing business—you already know a lot about the building game, so you naturally have a head start on the other fellow.

EASY TO RUN

An American Floor Sander is easy to run—truly a professional machine. No skill is required to operate and within a few hours you can run one as well as an "old-timer." American floor sanders are easy to take from job to job. You don't need any helpers.

SEND COUPON

Sign and mail coupon below and get complete details and prices without cost or obligation. It costs nothing to investigate. If you are in a rut, now is the time to get out and become independent—have your own American floor surfacing business.



THE AMERICAN
FLOOR SURFACING MACHINE COMPANY

511 So. St. Clair Street, Toledo, Ohio

Gentlemen: Send complete details, general catalog and prices on your American floor sanders without any cost or obligation to me whatsoever.

Name

Street

City State

(Continued from page 116)

2 millimeters worn off; color, design and adhesion unchanged; absolutely no change in physical make-up.

The material is rated as being approximately 50 per cent stronger than quartered oak floors, yet is comfortable to walk on. Linoterm floors are non-slippery, yet maintain their beauty at all times. The natural buffing of ordinary walking will keep the floor lustrous; waxing treatments, such as given to ordinary dance floors, will produce the perfect dance floor. At present about 20 varying solid colors and marbelized effects are available.

Linoterm floors are fireproof, waterproof, acid resisting, heat and cold insulating and termite proof.

Linoterm "B" is similar to Standard in qualities except that it is a basic wood fibre plastic composition and is available in solid colors only.

* * *

A NEW acid-resistant floor, known as Rockflux, has been announced by Flexrock Company, Philadelphia, Pa. It is used as a total floor over old or new concrete floors at one inch thick. For repairing, very little chipping is necessary as it may be used at 1/2 inch thick.

The new flux used to combine the diabase and quartz in Rockflux is reduced to almost zero in calcium and other elements affected by acids. The Flexrock method of grading assures perfect homogeneity, thus perfecting the most remarkable acid-resistant floor.

The types of floors for which this new material is perfectly adaptable include dairies, meat packers, creameries, canneries, fruit packers, cheese factories, ice cream plants, abattoirs, tanneries, dye houses, breweries, and all other floors subjected to severe wet conditions.

Rockflux also has many other advantages—low cost, abrasion resistance, quick setting, simplicity of installation; any plant may use this material with its own maintenance crew.



WORKMAN installing Rockflux floor.

* * *

FLOORSTONE, a flooring underlayment that speeds up the usually long drawn out process of floor construction, has been introduced by Tamms Silica Company, Chicago. Actual installations and exhaustive tests under every conceivable existing condition show that this underlayment sets in only one-half hour after pouring. In the short space of one hour it can be walked on. In twenty-four hours any type floor covering may be applied.

Resurfacing of corridors, halls and lobbies of hotels, office buildings, factories and every type building with a flooring problem can readily make use of the flooring methods available in this product.

As a companion product of Floorstone, Tamms has just developed a new asphalt emulsion. Designed originally as a primer for wood floors prior to installing Floorstone, it works equally well as a tile cement for asphalt tile.

Equipment for Better Handling of Concrete and for Mixing Plaster

THE Chain Belt Co., Milwaukee, Wis., has developed a new model 160 or 6 inch Rex Pumpcrete. This new model will serve those contractors having projects with a maximum of 5000 cubic yards of concrete to be placed, and has an hourly capacity capable of handling a half cubic yard mixer.

The same principles which were used in the large models are incorporated in the model 160. It is mounted on pneumatic tires which permit towing from job to job as an ordinary truck used on a construction project has ample power for pulling. The power for the new model is supplied by a four cylinder gasoline engine, and the rated capacity for this size Rex Pumpcrete is from 15 to 20 cubic yards per hour. A six-inch diameter pipe line will most generally be used with this new model.

(Continued to page 120)



Robert McNair Red Cedar Old-fashioned Hand-Split Shakes AND Shingles

Let these distinctively individual Robert McNair hand-split Shakes and Shingles help you plan and sell more homes. Architecturally correct in every detail Robert McNair Shingles and Shakes faithfully reproduce early American roofs and side walls with the lasting quality of true hand-split shakes and shingles.

The old story holds good—the best costs less in the long run. But in this case it is double economy because McNair Shakes and Shingles cost no more than ordinary shingles. Write for complete detailed information and name of nearest dealer.

FEATURE TAPERED TIP • EXPOSED SIDE ROUGH HAND-SPLIT BACK FLAT SAWN • EXTRA LONG 25'-31'-37' OPTIONAL RANDOM WIDTHS 5" TO 18" • THICKNESS AT BUTT 1/2" TO 1 1/4"

• MCNAIR HAND-SPLIT SHAKES AND SHINGLES WILL NEVER WARP—CURL OR SPLIT •

STOCKS CARRIED BY

ROBERT MC NAIR SHINGLE CO.
PROVINCE BLDG., VANCOUVER, B. C.

MANUFACTURERS RESERVE SUPPLY CO.
IRVINGTON, NEW JERSEY



TORIDHEET

OIL-BURNING, AIR-CONDITIONING FURNACE

FOR SMALL HOMES

**... FACTORY-BUILT BURNER ASSEMBLY
MAKES INSTALLATION QUICK AND EASY**

The demand for automatic oil heat and air conditioning in moderate-priced homes created this No. 720-R Toridheet Air Conditioning Furnace. Oil burner unit designed for efficient, low-cost operation and for installation by furnace men without previous oil burner experience.

*It Provides the Carefree Comfort that
Home Owners Now Demand...*

In the heating season it, (a) filters air, (b) maintains uniform temperature, (c) humidifies, (d) circulates air. In other months it, (a) filters air, (b) cools effectively by recirculating night air through the day. Clean, economical, entirely automatic.

A sales asset worth far more than its cost to builders of small, modern homes. Ask for detailed information and our "special offer to builders"

The Rotary, Well-Flame Burner and parts that require accurate installation are completely assembled at factory. To install, this ready-built unit is shoved into place through the front of heating element.

CLEVELAND STEEL PRODUCTS CORPORATION, 7306 W. MADISON AVENUE, CLEVELAND, OHIO

TORIDHEET AUTOMATIC OIL HEATING AND AIR CONDITIONING

See this Amazing DEMONSTRATION!

VICTOR In-Bilt VENTILATORS

UNTIL you have an opportunity to inspect a Victor In-Bilt Ventilator at close range—you cannot fully appreciate its outstanding superiority. From every consideration: appearance, mechanical and convenience features, clever construction for quick, easy installation—there is no equal. The Victor representative near you will be glad to demonstrate and explain its many advantages, including automatic operation—one-shot, occasional lubrication—telescopic sleeve design for walls of any type or thickness—super-quiet fan blades—rust-proof finish, etc. No obligation—just check and mail coupon.

Banish Cooking Odors

Complete Air Change

Less Cleaning

For Basements, too

FRESH, CLEAN AIR is a powerful SALES MAGNET

When you sell the kitchen you have sold the home—as every architect and builder knows. A Victor In-Bilt Ventilator will do a more powerful job of selling the kitchen than other features costing many times its low price. A home free from cooking odors and greasy fumes is the desire of every woman! And a Victor In-Bilt does that important job better—and far more. It changes all the air on an entire floor and keeps the kitchen cool and comfortable in hot weather, too. Give this super-salesman a trial and be convinced by actual sales results.

SEND FOR FREE BULLETIN—TODAY!

The Victor In-Bilt Bulletin No. 905-C tells the whole story—gives specifications, installation information, etc. Just clip the coupon and mail. Your copy will go forward immediately.

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



FREE BULLETIN-CLIP COUPON!

VICTOR ELECTRIC PRODUCTS, INC.
788 Reading Road, Cincinnati, Ohio
 I would like to see the Victor In-Bilt Ventilator demonstration.
 Send me your Bulletin No. 905-C.

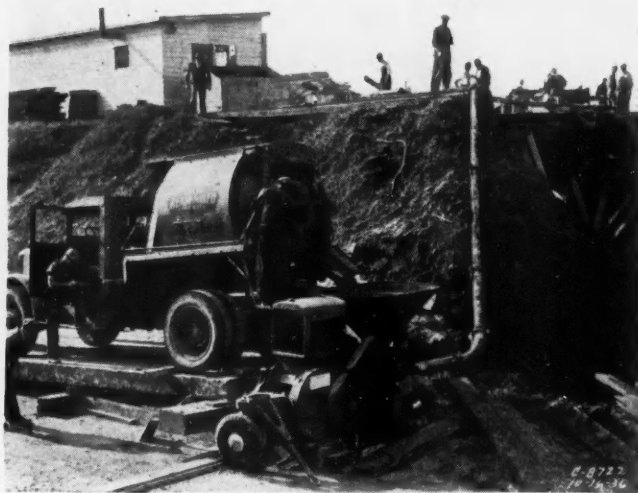
Name _____

Address _____

City _____ State _____

(Continued from page 118)

The illustration shows the new Rex Model 160 Pumpcrete in use on a track elevation, underpass job which was poured by the Rex Pumpcrete from a single setup. Pouring the concrete on the other side of the tracks, the pipe line was passed under these tracks and did not disturb the railroad traffic in any way. In this picture, the Pumpcrete is being set by a Rex Motomixer. Immediately after this job was completed, the contractor who owned the Pumpcrete towed the machine to another overhead crossing project approximately five miles away, and started pumping concrete immediately.



CONCRETE is raised with Pumpcrete on underpass job.

* * *

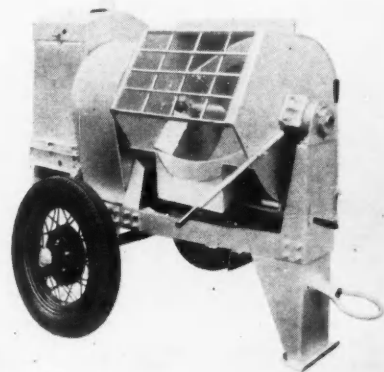
THE Ransome Concrete Machinery Company, Dunellen, N. J., has perfected a mixer made specifically for the plasterer.

It has been designed to mix quickly and thoroughly patent hair fibre, putty, plaster, magnesite or mortar, and will not ball or pull hair. Hand mixing and breaking down on the hawk are eliminated, and it will keep 18 to 30 plasterers well supplied with a smoother spreading and better tempered plaster. The new bag splitting blade is an original feature which eliminates the hand cutting of paper bags.

Two sizes, 6 and 10 cubic feet, are identical in general design. On both, three important factors have been taken into consideration in the designing of this mixer—low cost of mixing, quality of mixing and dependability when on the job.

The trailer mounting is so balanced at one end that a workman can easily move the mixer to any desired location, by means of the handling bail with an extra large handle. Weight has been evenly distributed to enable one man to move the mixer into position.

The engine clutch control is at the front end where it is always within reach. Paddles are adjustable to fit closely to shell; scrape and clean drum when revolving. Drum is perfectly balanced thereby enabling operator to tilt it easily. The weight of the drum is not carried on paddle shaft but on independent trunnion bearings.



MIXER specially designed for handling various types of plaster.

LEADERS for 37 YEARS

SMITH ROLL CALL

SMITH MIXERS ON WORLD FAMOUS PROJECTS

- Boulder Dam
- San Francisco-Oakland Bridge
- Fort Peck Dam
- Norris Dam
- Bonneville Dam
- Parker Dam
- Muscle Shoals
- Panama Canal
- Tygart Valley Reservoir
- Eschequer Dam
- Conowingo Dam
- Mississippi Locks
- Ile Maligne Project
- Coolidge Dam
- Roosevelt Dam
- Cascade Tunnel
- Galveston Sea Wall
- Bagnell Dam
- Mendota Bridge
- Pardee Dam
- Calderwood Dam
- Dallas Viaduct
- Chicago Sewerage Plant
- Martin Dam
- St. Louis Waterworks
- Jordan Dam
- Shaver Lake Dam
- Moffat Tunnel
- New York Aqueduct
- Beauharnois Canal
- Ca...
- Bull P...
- H...

SMITH MIXERS have set concrete pouring records on huge construction jobs and now the same type of mixer is available to you for your small concrete jobs. The same quality construction — the same thorough mixing action — the same speed and dependability — yet it costs no more than ordinary "tub" mixers.

Equipped with pneumatic tired or cushion tired disc wheels — with or without handy feed chute.

Tilts thru short 40° arc.

3 1/2-S TILTER

Positively the greatest small mixer value on the market. Get the complete facts. Write for Bulletin No. 170.

THE T. L. SMITH COMPANY, 2849 N. 32nd St., Milwaukee, Wis.

SMITH MIXERS

THE BOULDER DAM MIXERS

NO LONGER THE "FORGOTTEN DOOR"

Time was when any makeshift door would do for the garage. Today the garage door is one of the most important units in any home. That's why so many leading architects and builders are specifying and installing Wagner Overhead Doors.

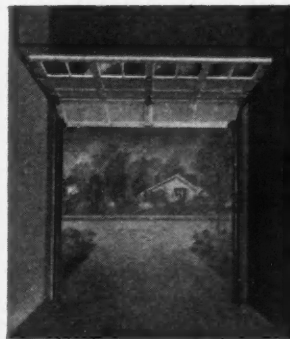
WAGNER OVERHEAD DOORS



Easy opening—easy closing—weather-tite. Users are enthusiastic about the smooth operation of Wagner doors. Builders appreciate the ease and speed of installation. Write for new literature and estimates.

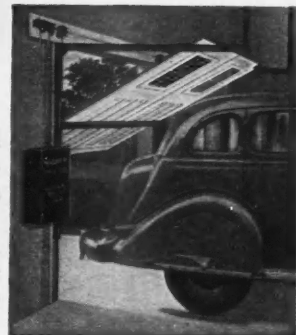
WAGNER GLIDEOVER

Furnished complete with doors and hardware. Hand or electric operated. The "Glideover" represents perfection in overhead door performance and appearance.



WAGNER CANOPY

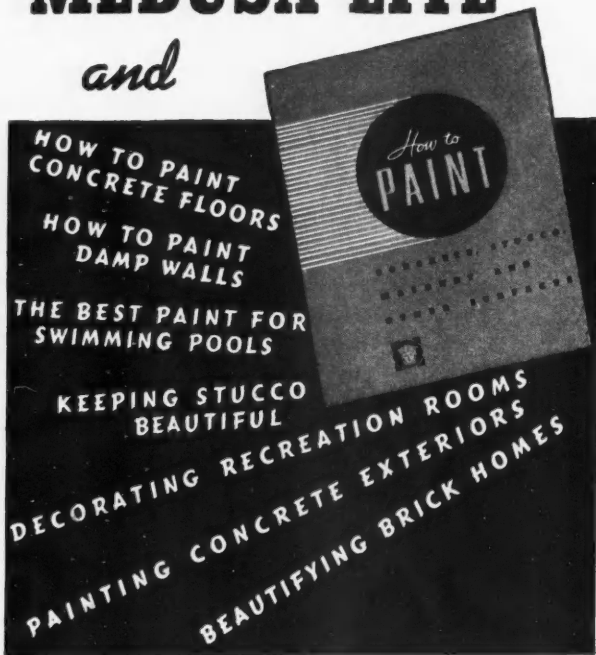
The leader in economical overhead door construction. Converts old doors (one, two or more sections) into modern overheads. Also provides a satisfactory one-piece overhead door for new structures.



WAGNER MFG. COMPANY
Dept. AB. Cedar Falls, Iowa.

THIS *Book* TELLS ABOUT MEDUSA-LITE

and



● Architects and others who want beautiful, durable, decorative finishes on concrete, stucco, masonry, concrete floors or other surfaces at lower costs should send for a copy of the book shown above.

In addition to valuable suggestions on painting concrete, stucco and masonry, this book also tells about Medusa-Lite, the super flat wall finish. Medusa-Lite makes attractive interiors in black, white or any of seven pastel colors at much lower cost than other types of paint. For example, one coat generally covers, drying to the touch in forty minutes. Medusa-Lite is thinned with water instead of expensive thinners. It can be brushed or sprayed and does not powder, peel or crack. White Medusa-Lite has 90% reflective value and does not turn yellow. It can be used on almost any interior surface.

SEND FOR THIS BOOK Again we urge you to send for the book shown above. It contains a liberal education on painting and protecting concrete, stucco, masonry and other surfaces. Fill out the coupon below and mail it for your complimentary copy.

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."

Name

Address

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

Your dealer's name

News of the Month

Building Activities and Meetings

Offer Credit Facilities to Replace Expired Title I of FHA

MODERNIZATION credit provisions of the National Housing Act having expired, Johns-Manville has announced that it will continue its "Million-Dollar-to-Lend" plan to provide for modernization of buildings and homes on a time payment basis similar to that under the former government program.

The plan, which has been operating under the FHA, has been somewhat revised because of new conditions but operates similarly to established routine. As under the FHA, no security will be required, extension of credit being based on various factors such as reputation of applicant, attitude towards obligations, ability to pay, future prospects and past record.

The National City Bank of New York also has announced that it would continue to make property modernization loans. Since the FHA modernization credit plan was started, Aug. 10, 1934, the National City Bank has made 88,000 loans of this kind totalling \$43,000,000. Loans have been made for as little as \$50 for painting, roofing and similar improvements, and up to many thousand dollars for complete remodeling jobs, the Bank's records show.

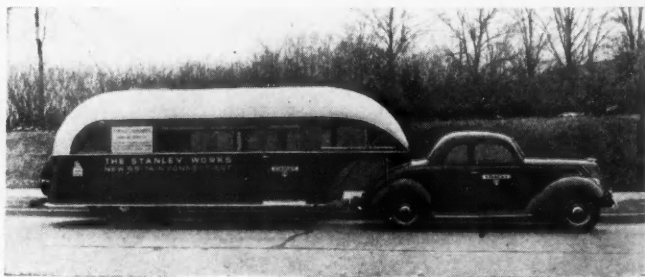
Lumber dealers will be able to continue to sell repairing and remodeling on the monthly payment basis under a new plan of the Weyerhaeuser Sales Company. Allied Building Credits, Inc., a corporation organized for the purpose, will purchase from lumber dealers installment notes meeting certain requirements which parallel closely the requirements established under Title I.

The type of work to be covered includes repairs, alterations or additions upon improved real property; private garages, apartment garages and other service buildings erected in connection with existing complete structures; portable structures and equipment, such as shelving, booths, cabinets, counters, etc.; heating systems, electric wiring and plumbing systems, when a part of a general remodeling or repairing job.

Expansion of credit service facilities to home owners, including the establishment of three new regional offices, has been undertaken by the Ruberoid Purchase Corporation, financing subsidiary of The Ruberoid Co., manufacturers of building products. The corporation will continue its plan of making character loans for home modernization on a monthly payment basis over periods similar to those under Title I.

Stanley Coach Now Touring Southwest

THE Stanley Works' Display Coach, carrying a complete display of Stanley hardware, which started "on the road" Feb. 20, is now touring the Southwest. Nearly a thousand items of Stanley hardware are on display, most of the goods being mounted on handsome 18 x 28 inch boards, which are stored in specially designed cabinets beneath the counters. The boards can be set up for display purposes on counters at the side and on racks at the back of the coach. Track and hanger samples are displayed overhead in position simulating their actual use.



STANLEY coach on demonstration tour of hardware line.

BIG MONEY for YOU

MAIL THIS COUPON NOW

MILES MFG. CO.
JACKSON - MICHIGAN

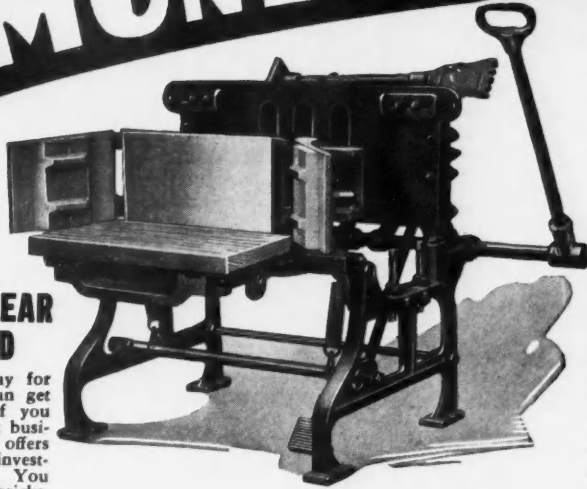
Please send me your catalog on concrete equipment and data on how to start in the cement block business.

Name

Address

Town

State



MILES NO. 1 BLOCK MACHINE

Here you get the best money can buy at a price you can afford to pay—Proven by years of use—Built for speed and service and fully guaranteed.

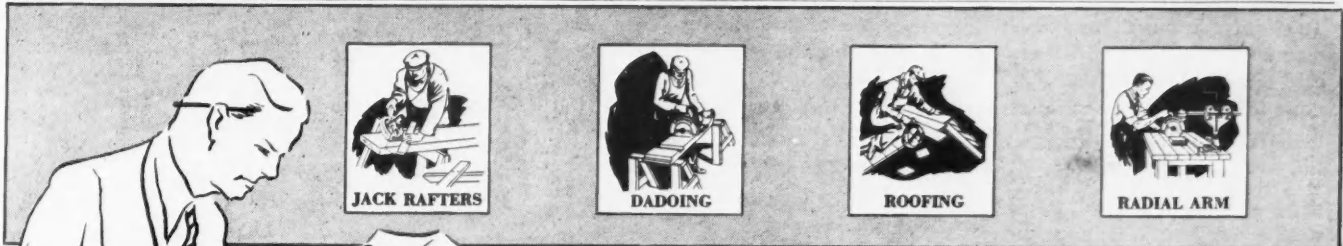
This face down block machine can be used either with or without power tamper, and is conceded to be the fastest block machine on the market. Made of the best materials obtainable. Accurately machined and fitted, this machine will stand up under the hardest service. Blocks made on this machine are absolutely square and have clean, sharp faces. Get our catalog for complete details.

1937 WILL BE A BANNER YEAR IN THE BUILDING FIELD

There will be millions spent every day for building materials and supplies. You can get your share of these building dollars, if you start now and get into the concrete block business. This profitable fast-growing field offers you unlimited possibilities—A modest investment starts you in business for yourself. You can make high-grade cement blocks, bricks, and tile with our equipment in any desired volume.



**BLOCK MACHINES—HAND STRIPPERS—POWER STRIPPERS
 POWER TAMPERS—ELEVATOR & FEEDERS**



YOUR BRAINS AND A *Speedmatic* SAW

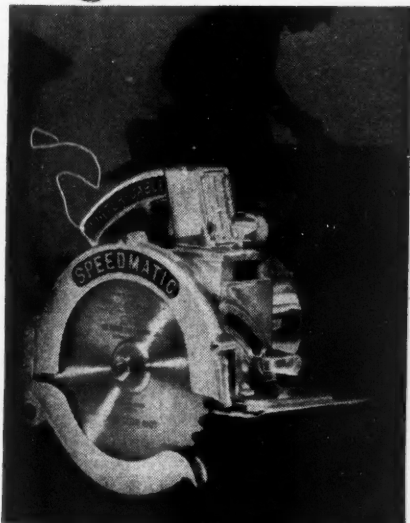
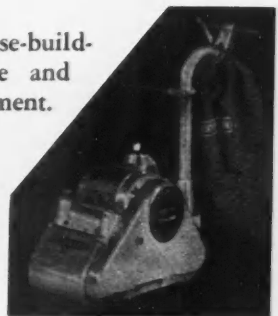
Can save hours and money on every job. Stop for a couple of minutes and plan to do your cutting the modern "Speedmatic" way. The only saw that has guaranteed cutting speed . . . the saw that can be depended on to stand up month in and month out and take a tremendous lot of punishment without petting. Useful on wood, metal, marble, tile and composition. Finger tip adjustment for depth and angle cutting.

WRITE FOR FREE COPY OF

"Manual on the Use of Electric Handsaw in House-building." It gives actual facts and figures on time and money hundreds of others are saving with this equipment.

CONTRACTORS SPECIAL

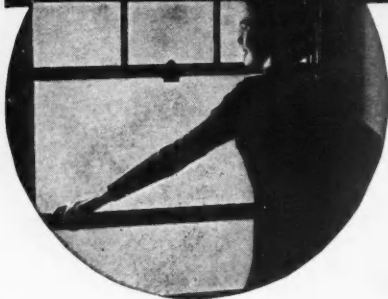
For profitable floor sanding on old or new work you will find this newest Porter-Cable Contractors Special drum sander the most powerful, quickest and smoothest machine you have ever used. Write for details without obligation.



PORTER-CABLE MACHINE CO.

1721 - 5 North Salina St.

Syracuse, N. Y.



PERMATITE



You need Weathertight Windows TO MAKE INSULATION EFFECTIVE

To justify its cost, insulation must keep out hot air in summer, cold air in winter. If the windows leak, much of the value of the insulation is lost.

Permatite Windows are weathertight. The new, patented, metal weatherstripping forms a weathertight seal—checking the seepage of air, rain or dust. This feature makes them ideal for air-conditioned buildings—saves fuel—and eliminates annoying rattles. There is no warping, no sticking, no rusting.

Permatite Windows—in the highest quality of workmanship and

design—are available in bronze or aluminum, casement or double hung. They give homes added sales appeal. Their cost is less than half that formerly paid for windows of similar quality.

Send for a fully illustrated catalog giving complete construction details and specifications. It shows you how easy Permatite Windows are to handle and install—and describes other new, patented Permatite features that will help you build homes easy to sell. You will need this book. We invite you to mail in the coupon below for your free copy today.

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 _____

20

March Residential Volume 65% Above 1936

A MARCH construction total of \$231,245,900 in the 37 eastern states was reported by F. W. Dodge Corporation. In February the figure was \$188,257,300 while for March, 1936, the total was only \$198,761,900. Of the March, 1937, figure \$90,167,600 represented residential building; \$88,601,500 went for non-residential building and \$52,476,800 went into heavy civil engineering projects.

The March residential total was about 65 per cent ahead of the total of \$55,220,600 reported in this class for March, 1936.

Residential building gains over March of last year were shown in each of the major geographic districts without exception. The most important increases occurred in the Chicago territory (Northern Illinois, Indiana, S. E. Wisconsin, Iowa); in Southern Michigan; in New England; in the Southeast; and in the Pittsburgh territory (Ohio, Western Pennsylvania, Kentucky, West Virginia).

Non-residential building gains over a year ago, where they occurred, were largely in private as distinguished from public jobs. Losses in total non-residential building from March, 1936, were concentrated in the Southeast, Southern Michigan, the St. Louis territory, and Texas.

New Quarters for Weyerhaeuser Shingle

WHEN extra space was needed to render better service and accommodate constantly increasing production and sales departments, the Stained Shingle Division of the Weyerhaeuser Sales Company decided to make their new quarters an example of the results that can be obtained through the use of Red Cedar products. Twenty-five inch black hand splits have been used on the roof and white twenty-five inch hand split shakes on the side walls. The interior finish is entirely of random width cedar paneling, finished in a weathered silver effect. Random width pegged floors complete the all-wood finished interior. The illustrations show the adaptability of cedar for use with timbers, brick and other building materials, both for interior and exterior use.



ABOVE, architect's sketch, below, interior of Weyerhaeuser office.



Modine in Air Conditioning Firm

MODINE Manufacturing Co., Racine, Wis., has acquired a substantial interest in the Syncromatic Air Conditioning Corp., Milwaukee. National distribution of Modine-Syncromatic equipment will be through the Modine sales organizations.

Gear Drive or Belt Drive

DREADNAUGHT Offers Both!

Take your choice. Both are outstanding in easy and efficient operation; both set new highs in amazing capacity. The D-8 is driven by silent long wearing gears; for years hailed as America's greatest performer. The new V-8—parallel in main features—is for those who prefer a belt-driven machine.

Both are dustless; both sand up to the baseboard; both are firm but gentle as they melt away old, worn floors and leave them smooth, gleaming and spotless. And both are sold on the 60-day money-back guarantee to perform as stated.

DREADNAUGHT V-8

Although belt-driven, the V-8 will sand 700 to 2,400 sq. ft. of old varnished floors in 8 hours; or 1,400 to 3,800 sq. ft. of new floor; thrifty of sandpaper. Due to "finger tip control", both hands remain on handle of machine while adjusting the depth of cut. Motor can be removed from machine in 10 seconds for ready portability. Operates on 110 or 220 voltage.

Be sure to get complete facts before you buy a sander.



CLARKE SANDING MACHINE CO.
DEPT. AB-537 MUSKEGON, MICH.

CLARKE SANDING MACHINE CO.,
Dept. AB-537, Muskegon, Mich.

Send complete description and prices
on the Dreadnaught Sander as checked:

D-8 (Gear-Driven) V-8 (Belt-Driven)

Name _____

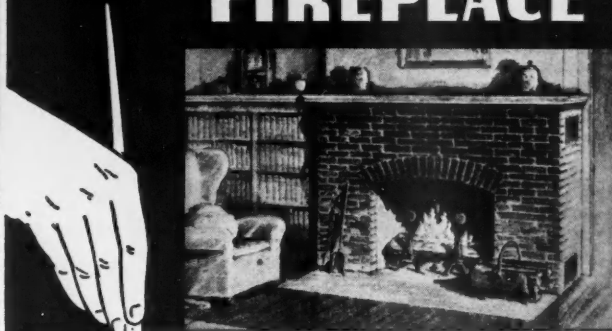
Street _____

City _____

State _____

*Mail
This
Coupon
Today*

Easier to Sell the HEATILATOR FIREPLACE



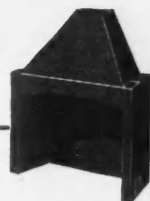
Check these sales advantages!

- ✓ Circulates heat; will not smoke.
- ✓ Warms every corner of the room and even adjoining rooms.
- ✓ Saves fuel bills spring and fall.
- ✓ Gives all the heat needed in mild climates.
- ✓ Makes camps usable weeks longer.
- ✓ Ideal for recreation rooms.
- ✓ Easier to build; saves labor.
- ✓ Now priced within reach of all.
- ✓ PROVED in all parts of America.
- ✓ Thousands in use—every Heatilator owner a Heatilator booster.

Every year the Heatilator has grown in popularity . . . you can safely recommend it. Every claim made for the Heatilator has been proved in thousands of homes and camps everywhere. Thousands of future home owners are learning of its advantages through advertising in 17 big national magazines.

EASIER TO BUILD—It's easier to build a fireplace around the Heatilator. For it provides a correctly proportioned form around which the masonry is easily laid.

At the *new low prices* the Heatilator will sell in even greater volume this year. Stocked in principal cities for quick delivery. Send coupon for details and new price list today.



MAIL THIS COUPON TODAY

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

Please send me complete dealer information on Heatilator and price list.

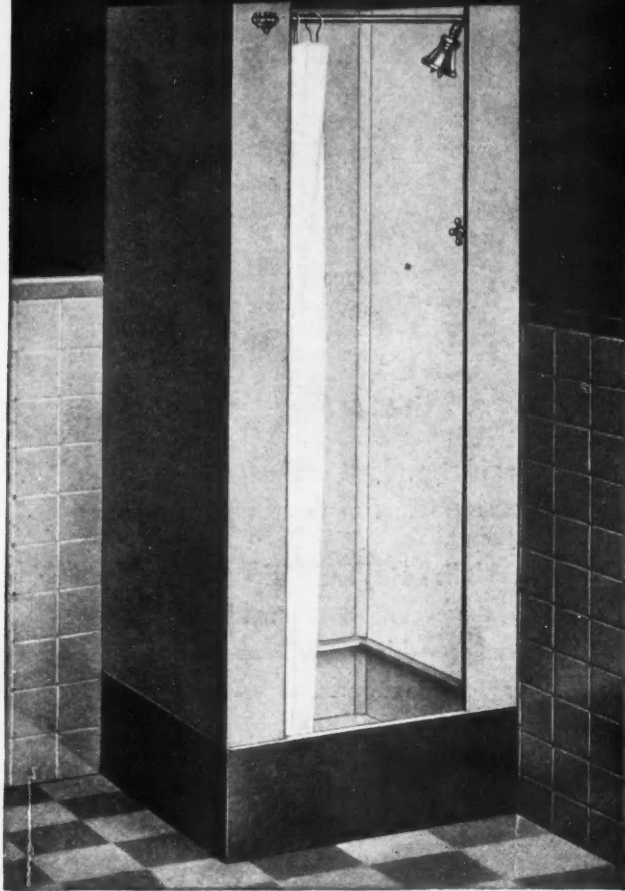
Name _____

Address _____

City _____

Heatilator Fireplace

Here's How to Utilize Waste Space to Good Advantage



In the modernizing of old homes or the building of new ones, there are always odd corners that can be advantageously utilized — at very small cost — by the installation of an

ELKAY "Sturdibilt" Shower Bath Cabinet

These cabinets will be found ideal for an extra bathroom for junior or for the guest room or the servants' quarters, or as a "clean-up room" in the basement.

Constructed of extra heavy galvanized steel, they are guaranteed absolutely leak-proof and water tight. Supplied in both integral unit and "knock-down" types, in various sizes, they are adaptable to different sizes of space and are quickly and easily installed wherever water and drain are available.

Write today for illustrated folder and complete details

Elkay Manufacturing Co.
4704 Arthington St. : : : : Chicago, Ill.

New York and Chicago Home Expositions to Be Staged in May

APPROXIMATELY \$1,000,000 will be spent on the North American Homes Exposition at Madison Square Garden, New York, from May 12 to 23, which promises to set a new record for housing shows in this country. One exhibit alone—the "House of Tomorrow"—will cost \$100,000 to build and furnish. After the exposition closes this house will be taken to Rockefeller Center and reassembled on one of the set-back terraces in Radio City.

Three model houses and three apartments, full scale on the two-acre (92,000 square feet) floor of the exhibition hall, will serve to display building materials, furnishings and home appliances, tiling, roofing, metal work, lumber, brick, terra cotta, wall and floor covering, kitchen and bathroom fixtures, radios, refrigerators, lighting, heating and air-conditioning plants.

L. Porter Moore and R. L. Purdon, co-directors, state that the immediate response of all manufacturers and dealers allied with the home building industry indicates a healthy revival in housing construction this year.

Every phase of home building, financing, modernization and furnishing will be revealed at the National House and Garden Exposition at the Coliseum in Chicago May 8 to 16. The show will stress landscaping and gardening as essential to home beautification.

Co-operating in the staging of the exposition are leading material manufacturers, architects, heating and air conditioning associations and civic groups, including the Brick Manufacturers Association, Portland Cement Association, Illinois Master Plumbers Association, Central Division of the Architects Small House Service Bureau, National Warm Air Heating and Air Conditioning Association, Metal Lath Association, Illinois Chapter of American Society of Heating and Ventilating Engineers, Oil Heat Committee, Burning Oil Distributors Association and the Garden Department of the Illinois Federation of Women's Clubs.

Manager John A. Servas announces that the exposition, which will be "a clinic for better construction in the interests of better homes and better building," has attracted 150 commercial exhibitors including building material manufacturers and household furnishers doing a nation-wide business.

Air Conditioning Manufacturers to Meet

J. F. G. MILLER, president of the Air Conditioning Manufacturers' Association, has announced that its Annual Meeting will be held at Hot Springs, Va., on May 14 and 15. Closing a year which has been marked by excellent progress in the interest of the Air Conditioning Industry, the Association is planning an even broader program of the constructive work called for by the Industry's remarkable growth.

* * *

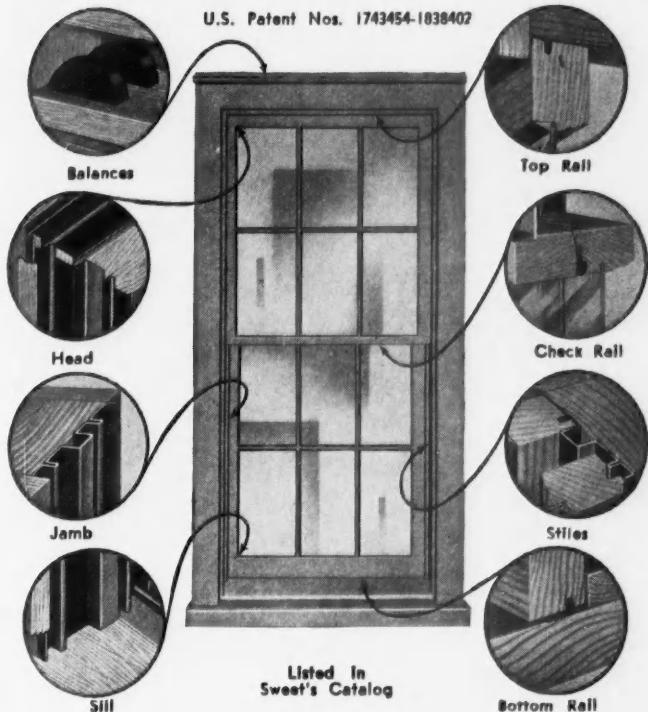


IN THE illustration, Edward L. Wood, chief experimental engineer of the air-conditioning division of Gar Wood Industries, Inc., Detroit, is seen peering into the basement of the miniature Gar Wood model home which contains Tempered-Aire and Airdux system. This tiny, electrically lighted model is an exact, scaled-down duplicate of an actual residence now under construction.

Non-Stick WINDOW

The Trouble-Proof Window

U.S. Patent Nos. 1743454-1838402



Listed in Sweet's Catalog

Insures Beauty, Ease of Operation and Weather Tightness

Heavy, accurately-formed zinc sash guides include parting stops, weatherstrip ribs and returns at blind and inside stops. **AT NO POINT DOES SASH CONTACT WOOD OR PAINT.**

Plank frames and completely housed spring balances eliminate entirely the so-called "elsewhere air leakage." Factory-installed weatherstripping and mill-fitted sash reduce air infiltration to a surprising minimum.

A COMPLETE WINDOW FROM ONE SOURCE eliminates gambling on cost and service.

See the Non-Stick Window at Your Dealer or Write Us.

N. S. W. COMPANY, 2137 Gratiot, Detroit, Mich.

CLIP COUPON - MAIL TODAY

A-57

N.S.W. Company
2137 Gratiot
Detroit, Mich.

Please send us Free Literature.

Name _____
Address _____
City _____ State _____



A NEW LEASE ON LIFE...

When the owners of this bank building in Sioux City, Iowa, decided to renew the interior of this building, the question was—what to do?



1 Nu-Wood to the Rescue!—Nu-Wood brought the building back to profitable life. With its beautiful texture, modern patterns and soft colors, Nu-Wood made offices attractive to tenants once more.



2 Peace and Quiet—the clatter of typewriters—and street noises—were hushed by Nu-Wood. For Nu-Wood, too, is an efficient noise quieter.



3 Reception Room Miracle—This reception room was completely transformed by the use of Nu-Wood Board on walls and ceiling.



4 Where Waiting Is a Pleasure—This Nu-Wood in a doctor's office illustrates the variety of individual effects which Nu-Wood makes possible.



5 From the Owner's Point of View—Nu-Wood will reduce operating cost because it is a permanent interior finish. Today, Nu-Wood is used in practically every office of the building.

NU-WOOD the insulating interior finish



WOOD CONVERSION COMPANY

Room 119 First National Bank Bldg., St. Paul, Minn.
Gentlemen: I want to know more about Nu-Wood for

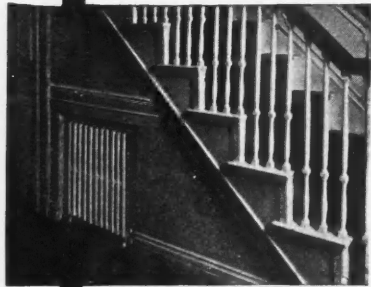
New Construction Remodeling

Please send me complete information and illustration.

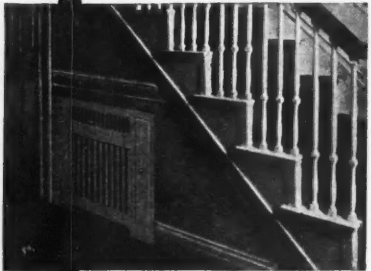
Name _____

Address _____

City _____ State _____



Can be free standing, or recessed with open front.



Or, recessed and our panel front used, giving you both radiant and convected heat.

Because Burnham Radiators

can be IN the hall
and still be OUT of it

SO shallow are the Burnham Slenderized Radiators, they can be recessed anywhere in any room between studdings and not extend beyond face of wall.

They take up 40% less room in depth, height and length, and still have same square feet as in the 40% larger radiators.

Furthermore, they heat 40% quicker. Do it because there's 40% less air to be vented or 40% less water to be circulated.

Millions of feet of these Burnham Slenderized Radiators in use. Send for Catalog. Get full facts. See for yourself.

Burnham Boiler Corporation

Irvington, New York Zanesville, Ohio

Representatives in All Principal Cities of the
United States and Canada

Burnham Boiler



SHOWN above is Mr. Rolf M. Smith of The Edwards Manufacturing Company, busy at his desk in the office of the new plant. An interesting application of Edwards sheet metal building materials on the office walls demonstrates the use of metal stucco sidewalls finished with flat paint and trim of stainless metal.

Berger Housed in Modern Plant

THE new Building Products Division of the Berger Manufacturing Company in Canton, Ohio, a subsidiary of Republic Steel Corporation, is now operating in the modern plant formerly occupied by the H. H. Miller Industries Company. It has 170,000 square feet of manufacturing floor space; the property covers thirty acres.

The entire plant has been newly equipped with the latest and most efficient sheet metal fabricating machinery, for the exclusive production of the new Berloy Blue Label line trademark of sheet metal building products.

Organizes Frazier, Inc.

A. H. FRAZIER, the designer and patentee of the original Frazier disappearing stairs, has recently organized a new company known as Frazier, Inc., to manufacture the Frazier balanced disappearing attic stair. The firm is located in Pittsburgh, Pa., on Magnolia Street near Pennsylvania Avenue, and has no connection with the Frazier Stair Co.



A. H. FRAZIER

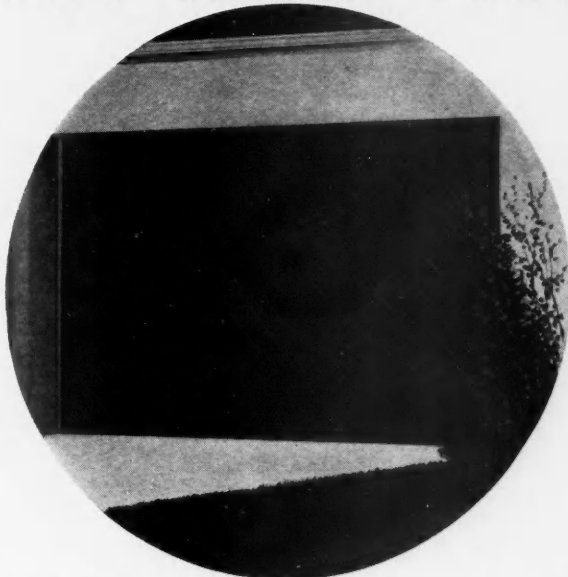
Clay Products \$5,000 Prize Competition Open to Builders, Architects and Realtors

THE Structural Clay Products Institute, Inc., has announced, on behalf of the burned clay products industry of this country, an extremely interesting and unusual small house competition. Architects, operative builders, realtors and contractors may submit entries for the award of prizes totaling \$5,000. The competition is open from now until Sept. 20, 1937. A copy of the full program and requirements of this small house competition will be sent immediately on application to Structural Clay Products Institute, Inc., 1427 Eye Street, N.W., Washington, D.C.

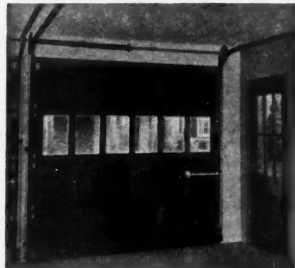
The following is a digest of the competition program which is in three simultaneous stages calling for designs or photographs of brick or brick and clay tile houses ranging in size from 3 to 7 rooms and one or two baths, and for architectural (decorative)

(Continued to page 138)

A Big Response Greets The NEW CRAWFORD (UPWARD-ACTING) REZO GARAGE DOOR



CONTRACTORS and Dealers everywhere see the great sales possibilities of this newest addition to the Crawford money-making line. The Crawford Rezo-Door is the easiest and quietest operating door on the market; Made with CELLIZED CORE, with laminated waterproof faces; will not warp, sag or swell. Light-weight and strong. Reflects surpassing beauty in Herringbone, Diamond, Vertical, Horizontal and many other effects. Available in both Sectional and One Piece upward-acting Doors.



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POLICY:
100 Percent
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SECTIONAL UPWARD-ACTING DOORS

of latest improved design—simple, rugged—affording ease of operation, serviceability and long life. Models for residential and commercial use; High-lift and special doors for service stations, boat wells, factories, warehouses, etc. Also ELECTRIC OPERATORS.

CRAWFORD UPWARD-ACTING HARDWARE

for changing swinging or sliding garage doors into one-piece upward-acting doors. Also used on new doors, enabling you to make a double profit every time you sell a standard door from stock.

Ask Your Dealer  Or Mail Coupon

A. B. 5-37

CRAWFORD DOOR CO. 5300 St. Jean Ave.,
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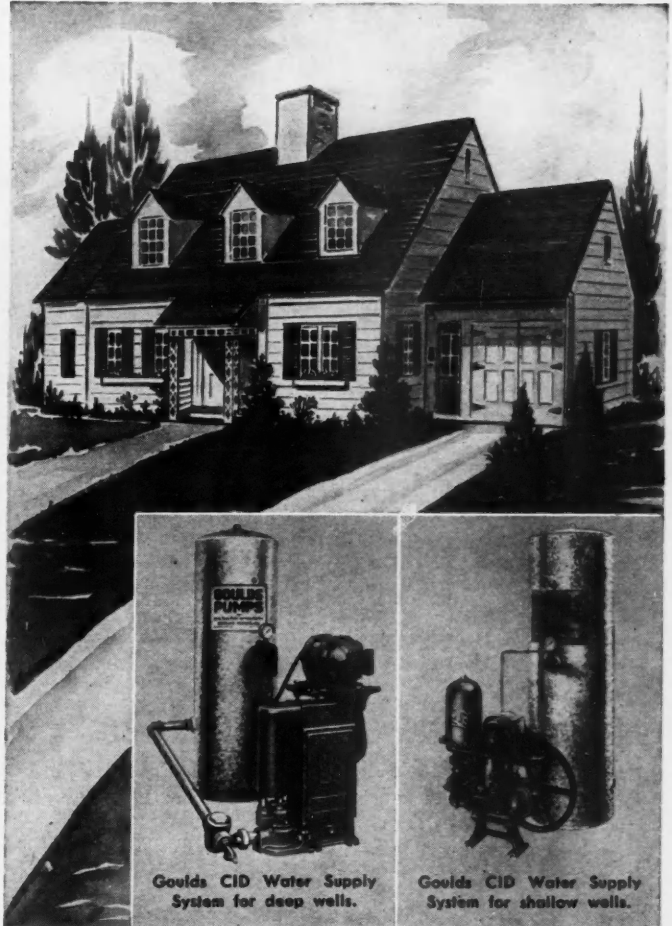
I want to know more about the Crawford complete line. Please send free literature and full details.

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Goulds CID Water Supply System for deep wells.

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RUNNING WATER in abundance adds comforts and convenience in homes

Added comforts and convenience in a modern home equipped with a dependable Goulds CID Water Supply System are desirable and in demand.

A Goulds CID Water Supply System, installed in a new or remodeled house, will furnish running water in abundance under pressure from every faucet for as little as two cents a day.

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Get the facts on how Goulds CID Water Supply System will help insure year round comforts and convenience in the home. Write our nearest office or address us direct.



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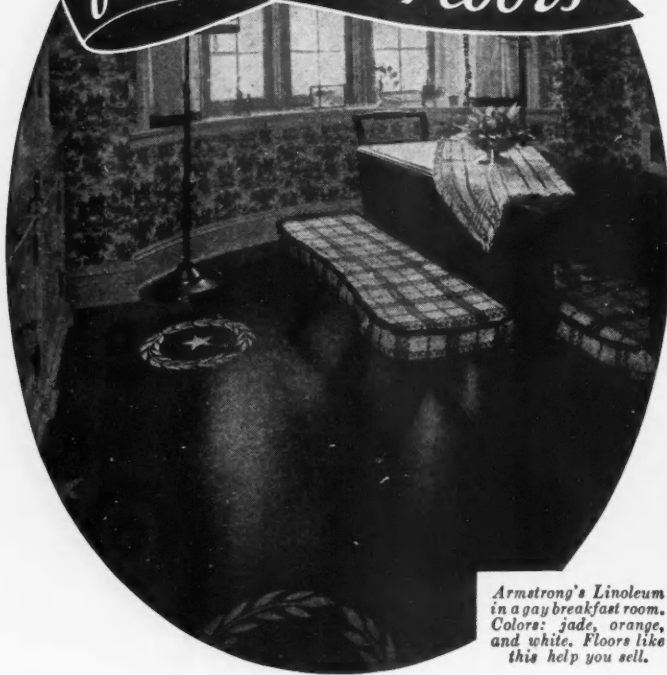
Please send me the name of the nearest Goulds Distributor. I am interested in a pump for deep well shallow well service.

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Street or R.F.D.

Place..... State.....

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Armstrong's Linoleum
in a gay breakfast room.
Colors: jade, orange,
and white. Floors like
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OFFER your properties with smart, specially-designed floors like the one above, and you will sell them faster. With Armstrong's Linoleum, you can install colorful, distinctive floors at moderate cost in new or old houses.

Armstrong's Linoleum is *nationally advertised*. Your prospects know that it is top quality and that it makes a property more desirable because it is colorful and easy to keep clean.

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Armstrong manufactures the only complete line of resilient floors—Linoleum, Linotile, Accotile, Cork Tile, and Rubber Tile. Armstrong's Architectural Service Bureau can give you unbiased suggestions on the best type for any floor. For the latest ideas in floor design, send *ten cents* now for color-illustrated copies of "Floors That Keep Homes in Fashion" and "Gay Floors for Basement Playrooms." Armstrong Cork Products Company, Building Materials Division, 1218 State St., Lancaster, Penna.



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LETTERS from Readers on All Subjects

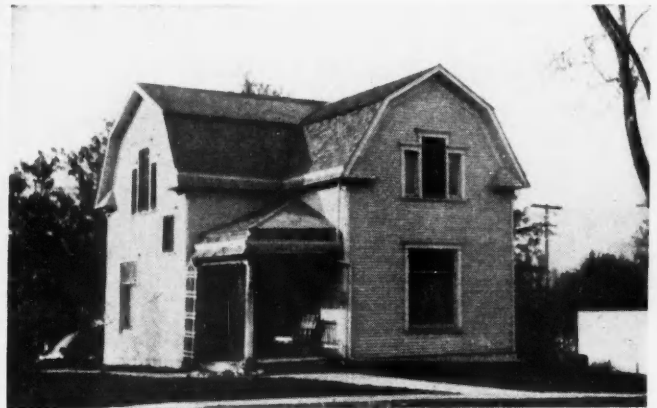
Facts, opinions and advice
welcomed here

36 Years Old and Still Good

Lodi, Calif.

To the Editor:

I am enclosing photograph of a home built by myself in Bethany, Nebr., and lived in for six years before coming to California thirty years ago this February. I visited the place last October and was surprised to find the fine state of preser-



vation and fine general state of appearance, which is due largely to the lack of gingerbread in vogue in the years prior to that time—all of which goes to show that millions of dollars, while spent in the interest of labor, are a detriment to the looks of buildings in their later days when they commence to rot and drop off.

A. H. BULL

Monolithic Concrete for Houses in Mass Production

Hub City, Wis.

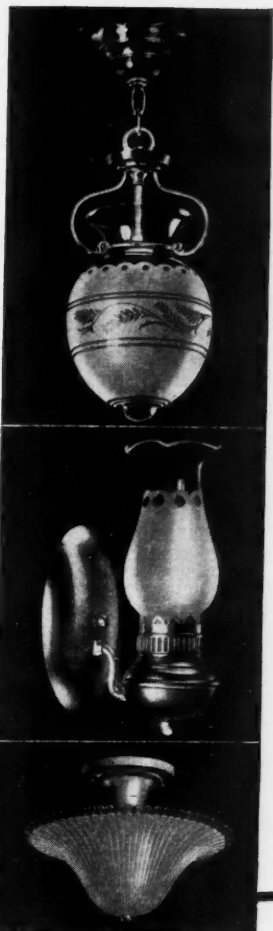
To the Editor:

I have just read your article in the January number on "1937 Outlook Bright" and would like to comment a little on one of your assertions—that the 1937 building progress might be considerably held back on account of great price advances in building materials. This is probably true and probably will be true; but not necessarily true. The cheapest and best materials for building permanent, sanitary and economical houses is very evenly distributed all over the earth's surface. In a great many cases all the cost is hauling it to the job or it can be had very cheaply from dealers. This material is sand and gravel with enough cement to make a good wall. I have just finished this fall one of these structures, a milk house 10 x 18 feet, at a cost approximately of \$150.00. This is a monolithic structure with a double cement wall and an insulation board wall in the hollow which gives me three walls and two dead air spaces. The house is almost equal to a thermos bottle.

Of course there is a joker in introducing these houses and that is that the forms cost considerably more than the house; so no individual could afford to build only one. But a good set of steel forms would build from a thousand to two thousand houses. In order to make the houses popular, the forms would have to be on the market for rent by the cement or steel people or a company formed for this special purpose.

The houses can be built so cheaply that there is plenty of room for a good margin of profit on the rental of the forms. Everything nowadays is on the order of mass production.

(Continued to page 132)



CREATIVE LIGHTING— at no extra cost!

Choose Lightolier and, with no extra outlay, get all the benefits of Creative Lighting.

As developed by Lightolier, Creative Lighting makes your home more attractive—more comfortable to live in—a better investment—easier to sell.

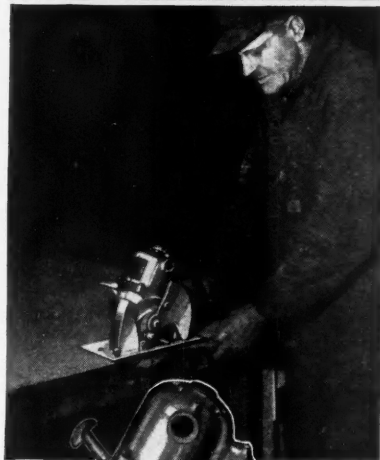
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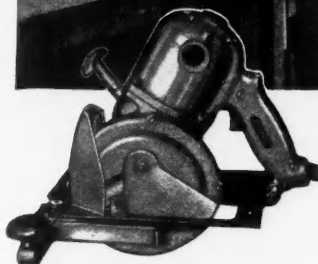
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In Any Position

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Greater Wall Strength
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For a partition "lathed" with this patented gypsum lath and plastered with gypsum plaster has not only successfully withstood a fire test conducted at the laboratories of the Bureau of Standards qualifying it for a one-hour rating, but billions of feet of it have passed the test of actual service.

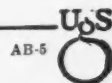
Light and easy to handle, it presents an even, strong wall surface, perforated every four inches with 3/4" circular holes that admit plaster and literally anchor the plaster to the wall itself. This unusual feature is your assurance of permanent, beautiful, unmarred walls and ceilings, as the base for whatever decoration you choose.

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Please send me, free of charge, a sample of USG Perforated Rocklath.

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Address.....

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

UNITED STATES GYPSUM COMPANY

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The wood inside each growing tree is protected by nature—with a tough, waterproof covering. After the tree is cut into lumber, the lumber still needs a protective covering. And that covering should be Sisalkraft—the tough, waterproof building paper. Use it to cover piles of delivered materials on the job. Prevents damage from moisture and dirt. Keeps lumber, cement, lime and other items in good condition and ready for use.

Sisalkraft is a double thickness of heavy kraft paper, waterproofed, toughened with inlaid sisal fibres so that it won't tear or rip. Should be used on every building job—over sheathing, under roofing, under floors—and to cure concrete floors and walks. Many manufacturers of building materials use it to protect their own products. We'll be glad to send you a big free sample and show you how to use it.

THE SISALKRAFT CO.
203-b Wacker Drive, Chicago

SISALKRAFT

LETTERS DEPT.

(Continued from page 130)

Here is a mass production house. With one of the late cement pumps and a crew of cement men and probably a couple of crews of form men and a couple of crews of finishers, one could average from six to ten of these houses a week.

I have no selfish interest in mentioning this matter because I am too old to enter into the building game again though I have been at it more or less all my life, but if this interests you or any of your friends I would be glad to send you pictures of the house and a detailed description of the method. I am very confident that the coming house will be a monolithic hollow wall house with prefabricated steel trim. This particular house that I had mentioned hasn't a particle of wood in it and is absolutely fireproof.

B. C. CLARK

A Socialist Explains "Class Struggle"

Schenectady, N.Y.

To the Editor:

I am building a house and find your magazine very useful indeed for suggestions and up to date information about building. The description of new devices is very valuable. I have just read the editorial by Samuel O. Dunn (page 25, December) and am much impressed by the fact that such a thoughtful editorial should appear in a magazine of this character.

I happen to be a Socialist and am sure that you will not mind if I criticize some of the statements in the editorial. The term "class struggle" is used with quotation marks and is evidently taken from Socialist or Communist literature. In one place it is defined as a struggle over the distribution of wealth and income. In another place it is defined as the struggle for power in government. To a Socialist it means something inherent in capitalism and which will be with us as long as capitalism lasts. It is the clash of interests between two economic classes—the employers and the employees. The employers desire high prices and low wages, the employees desire low prices and high wages. It is not something that the Socialist brings about or that he desires. It is something that exists naturally under capitalism and that the Socialist heartily detests. He aims to bring about a classless society—a co-operative commonwealth.

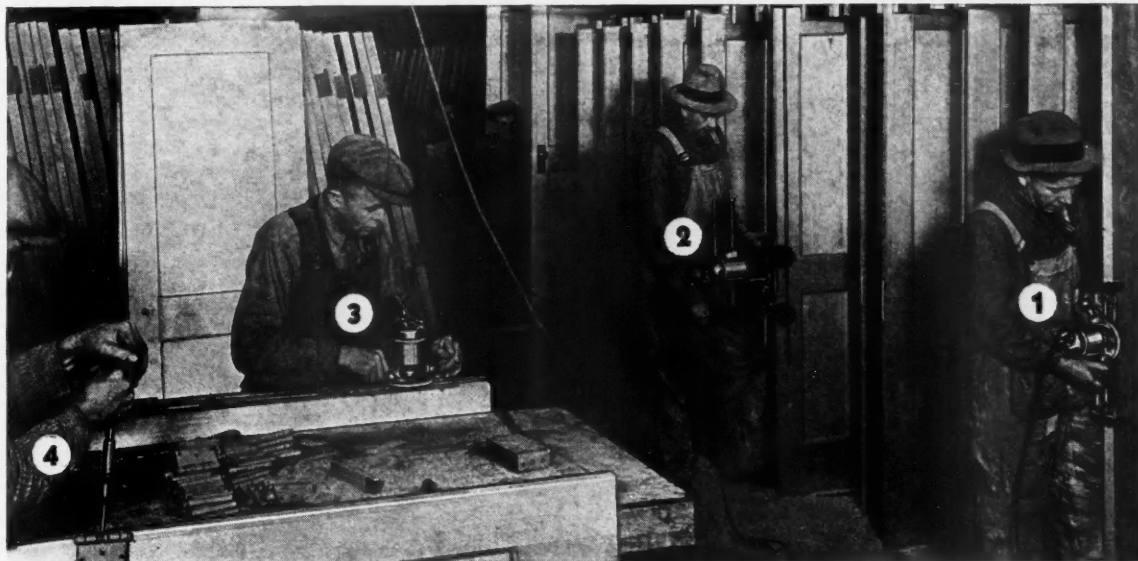
"Can men find no way to settle the distribution of income except by civil wars leading to dictatorships? They have thus far in England and the United States." This is very far from the truth. Probably no other countries in all the world can show greater extremes of dire poverty and concentrated wealth than these two. The Brookings Institute is a conservative institution, but all its figures show the most appalling injustice in the distribution of wealth and incomes. "It has been done under government that interfered little in business." The government interfered little in business during the Coolidge and Hoover administrations and we reaped a whirlwind. "That in the main left employers and employees to settle differences themselves." Only by organizing and striking can the employees attempt to obtain their rights. The employers oppose the organizing, they call out the militia and shoot the strikers down. This is the class struggle.

The action of the Socialist Party to obtain political power is not a class struggle. It is a perfectly peaceful and democratic means of bringing about a co-operative commonwealth. Many men whose personal interests are now on the capitalist side are good Socialists. They are thoughtful enough to desire something better for all. The huge majority will gain immensely in security and income. A small minority will have smaller incomes, but will always have security and plenty. No violence can possibly result unless this minority uses its wealth and power to revolt. It is they who would make a breach in democracy.

"There is only one way to assure increased national income and more equitable distribution of it. This is through more able, unselfish, and public spirited management of business and closer and more intelligent co-operation between employers and employees." Exactly! And the most just and widespread co-operation is through a democratic government. And the only way to be rid of the "class struggle" is for the workers to own in common

(Continued to page 134)

FITTING 7000 DOORS—THE CARTER WAY



This is part of a large Cleveland job on which 7000 doors are to be fitted and hung with Carter Tools. Doors were first fitted, including a bevel on the closing side, with a Carter Power Plane.

1 Carter Router cutting lock face parallel with the bevel on the door.

2 Carter Lock Mortiser cutting lock mortises.

3 Carter Router with Hinge Butt Templet cutting mortises for the butts.

4 Attaching butts to the door.

RESULTS: Better work with less effort. Butts fitting tightly in the mortises

carry the load. The screws merely hold the butts in place. Send for the folder giving full details on these Carter Tools. R. L. Carter Division, The Stanley Works, 133 Elm Street, New Britain, Conn.

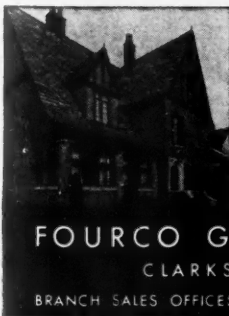
CARTER TOOLS



ORIGINALLY A FRONT PORCH . . .

When this house was built it had a porch 25' x 12' and a living room 30' x 13'. Later the owner enclosed the porch with glass and added this area to his living room. Above is a view taken from the original living room showing the enclosed porch.

At left is the home. This is but one of the many ways in which glass adds comfort and attractiveness to a home. When you want fine glass for a home, specify CLEARLITE—a Fine Glass for Fine Homes.



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I would like to look at the five books described above. I will pay the few cents delivery charges only and will examine them thoroughly and return them in ten days unless I like them in which case I will send you \$2.00 and after that \$3.00 per month until the total price of only \$19.80 is paid. You are also to send me your book, "Blueprint Reading," and consulting membership certificate without extra charge.

Name _____
Address _____
Attach letter stating age, employer's name and address and that of at least one business man as a reference.



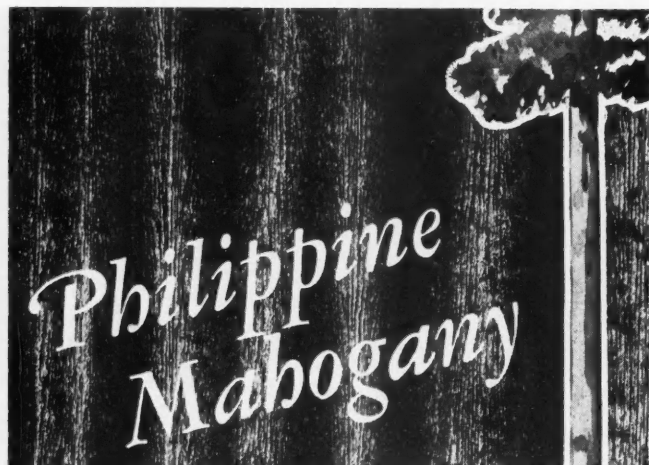
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Lime Plaster is ideal and economical for base coats. All Ohio Hydrate limes are 99% pure dolomite. Metal-preserving, acoustic-improving, fire-resistant. Guaranteed to meet the A. S. T. M. and U. S. Government Standards. The Ohio Hydrate & Supply Company, Woodville, Ohio.

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FURNITURE and BOATS.



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Philippine Mahogany Manufacturers' Import Assn.,
111 West 7th Street . . . Los Angeles, Calif.

LETTERS DEPT.

(Continued from page 132)

all capital goods. They then constitute both employer and employee. This is the classless society. Until then the "class struggle" will be with us.

No individual capitalist, however sympathetic he may be, can help matters at all. Capitalist organizations such as the National Association of Manufacturers and the United States Chamber of Commerce are hopelessly reactionary. Already, before one depression is over we see the makings of another. One could almost predict the time of the next crisis by the rapidity of advance in the stock market and the slowness in advance of wages and employment.

FRANK H. BLOOD.

Cost of All-Steel Peoria House

Peoria, Ill.

To the Editor:

In answering your letter of Feb. 11 I was not able to give you the costs on our all-steel factory-built houses (as illustrated on pages 82-83 March *American Builder*). But I can now give you the approximate cost of materials in the second of these houses, including electric water heater, steel furnace, coal stoker, cooling system, electric range, steel wardrobes, storage cabinets, Venetian blinds, etc.

The materials bill runs about \$3500.

R. G. Le TOURNEAU, Inc.
By Donald M. Taylor.

Doubts Run-About Feature of Peoria House

Chicago, Ill.

To the Editor:

The March *Builder* exceeds all efforts to date. It is a real credit, and all credit is due to you, Bob and Joe.

However, who in the name of God is responsible for the statement on page 83 to the effect that the steel house described can be moved 100 to 200 miles overnight on the highways? A "special permit" would be required all right—to widen our average 20 foot roads, tear off the retaining walls of 99 per cent of the bridges, not to mention railroad bridges that will clear but 10 feet from road level. It would be most interesting to see this job moved from Peoria in any direction other than to the river banks, as described. Two to one we occupy the doghouse for this one. Or else our intense readership will lapse for the moment.

But it's a swell issue, and no kidding.

J. S. CRANE.

Help Yourself!

Milwaukee, Wis.

To the Editor:

The *American Builder* has been used in our architectural drafting classes for many years.

At the present time, we are preparing instructional material in which it is necessary to refer to illustrations which are included in previous volumes of the *American Builder*. Since it is very difficult to duplicate many of the excellent illustrations which you have in the *American Builder*, I wish to ask you if we might have permission to use such illustrations if we were to give you credit for the same in our lessons.

MILWAUKEE VOCATIONAL SCHOOL.

By John R. Patlow, Curriculum Counselor, Division
of Instruction & Research.

We Try to Keep Readers Posted

Chicago, Ill.

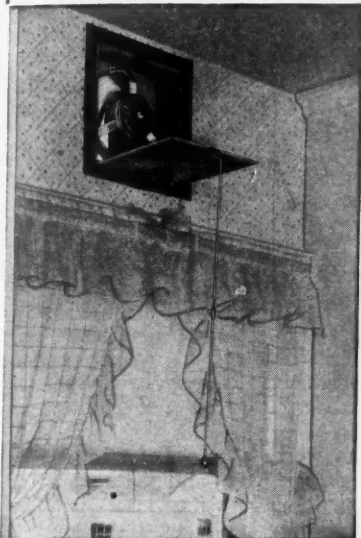
To the Editor:

With reference to the February issue of the *American Builder*, pages 42, 43, 44 and 45, we do not understand why this magazine should promote and sanction mass production methods, when every honest home building contractor would like to see the building industry grow, and keep out of the mass production.

We note that you advocate this idea although it is a chiseler's feature, not productive to the good will of the mechanics and the trade, as mass production reduces the cost of construction, thereby inducing all other contractors to meet their competition.

(Continued to page 136)

1 out of 5 insists on a Kitchen Ventilating FAN



That's what a recent survey among prospective new home owners showed. So if you want to make your homes more attractive to the buyers, we suggest that you install a quiet, dependable, economical "Buffalo" Home Ventilating Fan in every new home you build. If your dealer can not supply you, write us direct for literature and prices.

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New Series S Majestic Fireplace Damper is scientifically designed for perfect control of draft and to help prevent smoky fireplaces. Embodies built-on lintel, a Majestic feature of proven worth. Easily installed in new or old fireplaces. Absolutely tight, hence especially adapted to air-conditioned homes.

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LETTERS DEPT.

(Continued from page 134)

We understand that the majority of the subscribers are building mechanics and therefore it is difficult to understand why you advocate and bring out mass production features in your magazine.

J. C. JENSEN & CO.,
Home Builder & General Contractors.
By J. C. Jensen.

Worried Over Advancing Costs

North Industry, O.

To the Editor:

In the December issue 1936 in an article titled, "What About Labor?" you seemed worried. You fear a shortage of labor, you fear labor will rise and advise the building trades to lower wages. But really I don't know of a building trade in our section that is getting overpaid, especially when one considers the constant rise in cost of living.

But really, you don't need to worry about labor. Lumber is too high and has been too high, and now with the speculators sweeping the South and buying it up at higher prices in some cases than it is now selling for, it's serious. But I suppose you will now want us tradesmen to donate our labor. But am sorry to say I can't donate mine.

WOOD MAXWELL.

"Big City" Information to Smaller Towns

Hillsboro, Ill.

To the Editor:

I have been a subscriber to your magazine for one year and I have just renewed for two more years. I find that I just can't do without it. I live in a small city and your magazine enables me to keep up with everything that is new in the building world.

I especially appreciate your catalog service; with it I can keep up an architectural file that is practically invaluable on any job that I have. I am sending another list of catalogs for which I shall be very grateful.

S. COLLINS, Building Contractor.

American Ideas to Australia

Sandgate, Queensland, Australia.

To the Editor:

I trust I am not asking too great a favor in asking that the catalogs as listed on your coupon, attached, be forwarded to me at the above address.

I was pleased to receive my first copy of your journal recently, and find in it some particularly useful information regarding home design. I am interested in the design of modern homes, in which I am required to incorporate the use of the very latest type of building materials. We have to look to other countries for this information, and I have found in your publication a good number of articles advertised that are quite new to us.

G. J. WAYPER.

Keeps Up-to-Date with Catalog Service

Greensburg, Ind.

To the Editor:

I want to thank you for the service rendered through your "Selected Catalog" service. I have received many catalogs and handbooks, and I think it is an excellent way to get a better idea of new materials and new methods of construction.

JOSEPH J. OLIGER, Contractor & Builder.

Cleaning Up "Eyesore" Districts

Jacksonville, Ill.

To the Editor:

I think you have a fine magazine, and you interested me in it by publishing plans for small homes. I would enjoy reading an article on how builders in other cities have gone about cleaning up "eyesore" districts and at the same time doing it profitably.

ERNEST C. SAVAGE.

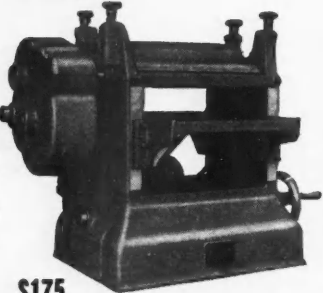
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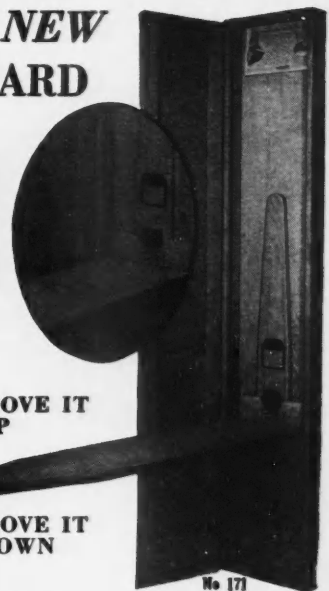
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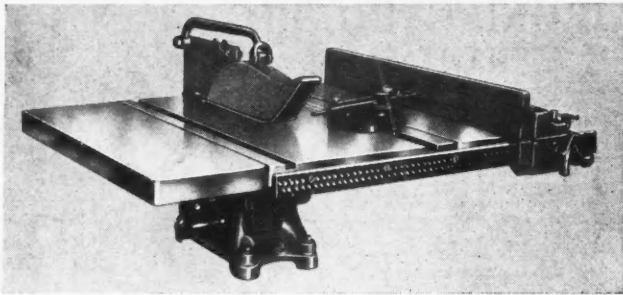
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PORT WASHINGTON . . . WISCONSIN

Clay Products House Competition

(Continued from page 128)

and structural details built of clay masonry for any type of building or ground improvements:

Stage 1 is open to all architects and draftsmen, and calls for sketches, floor plans, elevations and sections of Class A and B 1, 1½ and 2 story houses built of structural clay masonry, brick or clay tile and their combinations. First prize in each of the above classes is \$500; second prize, \$250; third prize, \$100, and ten honorable mention awards at \$50 each.

Stage 2 is open to architects, operative builders and realtors, and calls for photographs and plans of Class A and B 1, 1½ and 2 story brick or brick and clay tile houses built since 1928. First prize in both classes is \$250; second prize, \$100; third prize, \$50, and twelve honorable mention awards at \$25 each.

Stage 3 is open to architects, engineers, contractors and realtors, and calls for Class A and B sketches or photographs of decorative or structural details built of clay masonry. First prize in each of the above classes is \$200; second prize, \$100; third prize, \$50, and ten honorable mention awards at \$10 each.

For each house submitted by an architect, builder or contractor, and selected for publication in its literature, the Institute will pay \$25. For brick or clay tile details (drawings or photographs) showing ingenious uses of clay masonry for decorative or structural details in any type of building, the Institute will pay \$10 each on selection for publication in its literature. This offer is open during and after the duration of this competition.

COST ANALYSIS OF PURDUE HOUSE

(Continued from page 70)

floor area. A concrete slab floor was poured directly over the fill except in the garage. This slab was 3" to 4" thick and without reinforcement. A 1:3:5 mix of cement and aggregate was specified. The quantity of materials used indicates this mix was obtained. For 5½ cubic yards of concrete the cost was \$27.75. This is a cost of \$5.10 per cubic yard or \$0.056 per square foot of floor area. For insulation and damp-proofing a low temperature type of insulation was placed on the concrete slab and used as a base for the hardwood floor. The insulation, made of rock wool with a waterproof binder, came in slabs 2" x 18" x 36". The slabs were bedded on the concrete and brought to a level with a cement filler of 1 part cement to 3 parts sand. The cost of the insulation installed was \$89.45 or \$0.182 per square foot.

The finish floor in the kitchen was standard gauge linoleum, plain color. This was cemented to a base of ½" rigid insulation board laid over the insulation slabs. One hundred sixty square feet of ½" board were used to cover 145 square feet of floor at a cost of \$9.20 or \$0.63 per square foot. This method of laying the floor resulted in a resilient floor on which it has proved pleasant to walk.

The quantity of standard gauge linoleums used to cover 120 square feet was 13½ square yards. Its total cost was \$38.10, which is a cost of \$2.85 per square yard or \$0.317 per square foot covered.

The hardwood finish floor of the first story was 9" x 9" x 13/16" oak blocks, tongued and grooved on four sides. The blocks were cemented to the insulation slabs with an application of hot liquid asphalt mastic. An area of 347 square feet was covered at a cost of \$111.75 or \$0.32 per square foot including sanding; staining and waxing cost \$0.031 per square foot.

From the above figures on floor cost it is seen that the completed floor section covered with hardwood blocks cost \$0.639 per square foot. That covered by linoleum cost \$0.668 per square foot.

Second Floor

The second floor was framed with 2" x 8", No. 1 Yellow Pine joists. The joists rested on ribbon strips notched into the outside wall studs and on partition studs on the inside. Each joist was securely nailed to the stud and to each other where lapped. Double joists were used under partitions; 2" x 4" blocks were cut in at the ends of joists for bracing; and one row of 1" x 4" cross-bridging was used in each span. No. 2 Yellow Pine, 1" x 8",

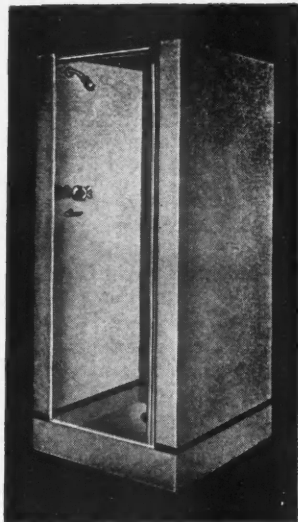
(Continued to page 140)

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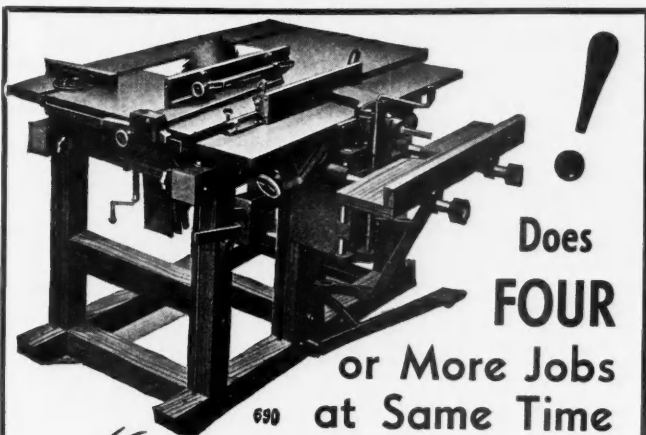


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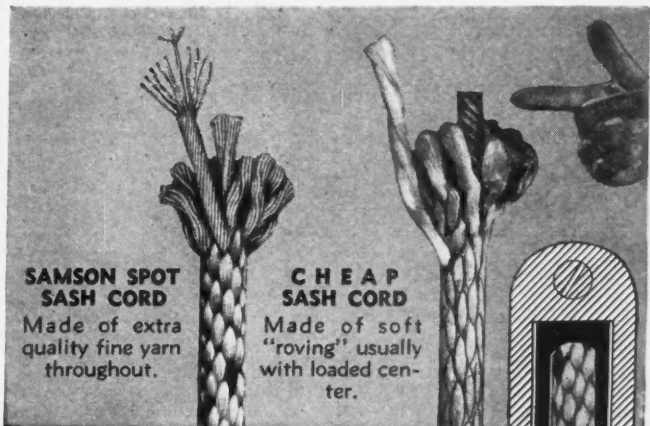
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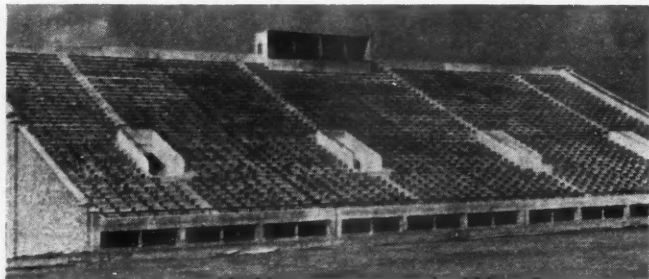
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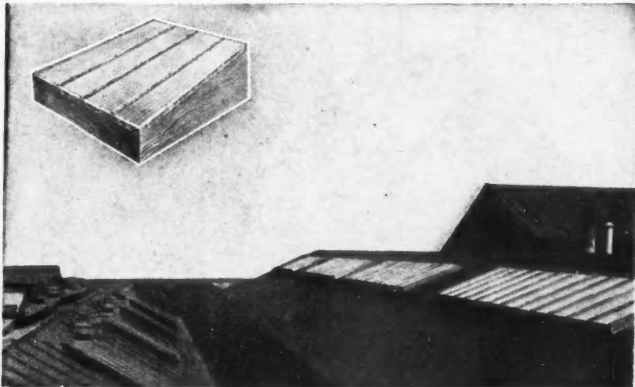
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"STANDARD for almost half a century"

COST ANALYSIS OF PURDUE HOUSE

(Continued from page 138)

sheathing was used for the sub-floor, laid diagonally, and securely nailed to each joist. The framing of the second floor, not including the garage roof, cost \$0.153 per square foot.

The hardwood finish floor was select oak strips, $\frac{1}{2}$ " x 2". Tar paper was placed between the sub-floor and the finished floor. The hardwood floor cost including sanding was \$80.80 or \$0.182 per square foot; oiling and waxing, \$0.031 per square foot.

Linoleum cemented to the hardwood was used as the finished floor in the bath and toilet rooms. Four square yards were used to cover 33 square feet at a cost of \$0.333 per square foot. This is a cost per square yard of \$2.99.

The plywood ceiling for the first story is included under the second floor cost. This cost was \$0.093 per square foot, and the cost of painting the ceiling was \$0.039 per square foot.

The cost of the second floor having an area of 504 square feet was \$0.50 per square foot.

Roof

The roof was framed in the same manner as the second floor and with similar members. The joists, however, bear on the double plate of the outside walls and the ends are framed into a continuous 2" x 8". Cant strips cut from 2" x 2" stock were nailed to the top of the joists before applying the sheathing to form a slope to a center roof drain. No. 2 Yellow Pine sheathing 1" x 8", was applied diagonally. The low parapet around the edge of the roof is formed by the use of doubled 2" x 4"s.

The cost of the roof framing including the garage roof was \$132 for 720 square feet. The unit cost was \$0.183 per square foot.

Insulation used for the roof was the same as that used for the walls except that it was held in place by nails and roofing nail washers. It would have been impossible to have laid the bats in place as the plywood was nailed up. Insulation of the roof cost \$45.05 or \$0.083 per square foot.

Three-ply built-up 10 year guarantee roofing was laid over the sheathing. For the first ply 15 pound roofing felt was laid with an edge lap of 4". At right angles to this ply a layer of 30 pound felt was mopped on and then covered by another layer of 15 pound felt laid in the same direction as the first. Between each layer a mopped coat of hot asphalt was applied as well as a final coat over the top. The three plys were laid up and extended over the top of the low parapet.

Roofing to cover 720 square feet cost \$72.00 or \$0.10 per sq. ft.

The second story ceiling cost of \$0.093 per square foot for the plywood and \$0.039 per square foot for painting was the same as that of the first story ceiling.

The total of all items representing the roof section is a cost of \$0.50 per square foot.

Metal Work

On the house and garage parapet walls a special crimped section of 24 gauge galvanized iron was used for flashing. Extending down over the roofing on the inside it caps the wall top and forms a 6" band on the outside with a drip at the bottom. All joints were soldered and cemented to the roofing. At the stucco and roof line on the garage, flashing is run from behind the stucco onto the roofing. Two 12" square galvanized drain boxes, placed in the roof frame and flashed to the roofing and connected to two cast iron leaders carry all drainage from the center of the main roof and from one corner of the garage to the sewer. The metal work cost was \$73.70.

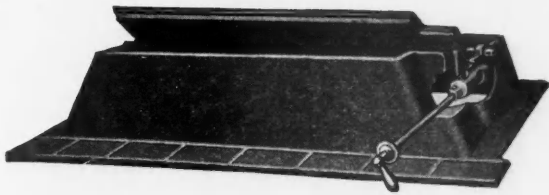
Millwork

Doors were of white pine. Interior doors were $1\frac{3}{8}$ " stock, 6'8" high of varying width and with one fir panel. Exterior doors were glazed, $1\frac{3}{4}$ " stock, 7'0" high and 2'8" wide. Garage doors were one pair of the outswinging type. There were four screen doors covered with 16 mesh copper wire.

Door hardware was of dull brass finish, high lighted. The main entrance door has a cylinder mortise lock with brass knobs and escutcheon plate. Other doors have thumb piece lock sets operating from inside only. All doors have rubber capped metal stops. Outside doors were hung with one and one-half pair $3\frac{1}{2}$ " x $3\frac{1}{2}$ "

(Continued to page 142)

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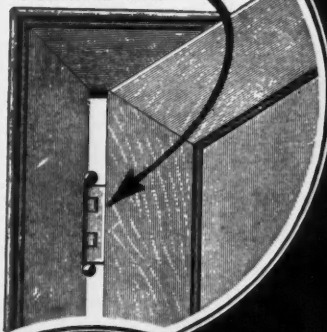
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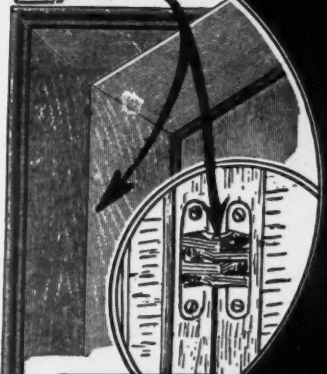
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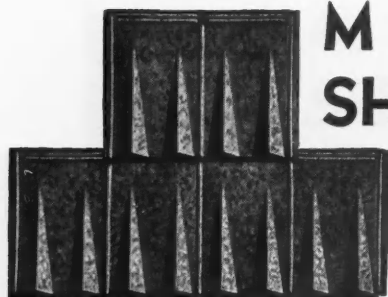
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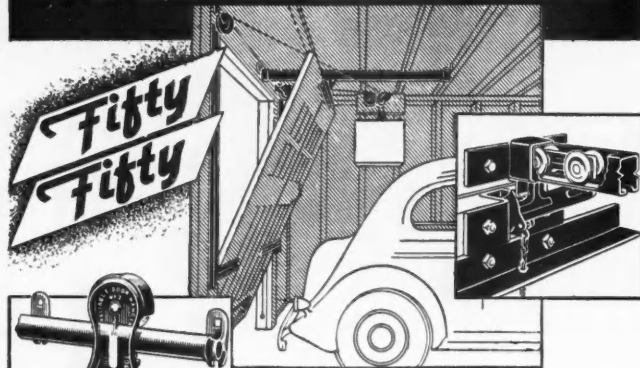
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Popular for over a quarter
of a century! Simple, rug-
ged, "Always on the Track."

ALLITH-PROUTY, Inc., Danville, Illinois

COST ANALYSIS OF PURDUE HOUSE

(Continued from page 140)

butts; inside doors one pair. The cost of doors and screens, hanging and hardware installed, was \$292.75.

Windows were manufactured casements sent to the job complete with frames, hardware installed, weatherstripping applied and screens. Installation was done with a minimum of fitting. All glass was single strength B-quality. Windows installed cost \$417.50.

All trim was of yellow or white pine. Window casings were of white pine strips $1\frac{3}{8}$ " x $3\frac{5}{8}$ "; stools $1\frac{1}{8}$ " x $1\frac{3}{4}$ "; ceiling mold, $\frac{5}{8}$ " x $2\frac{1}{4}$ "; and base mold, $\frac{5}{8}$ " x $3\frac{1}{4}$ ". Shelving in closets was 1" x 6" redwood boards. Installed, the trim cost was \$81.15.

Eight kitchen cabinet units were of stock manufacture shipped to the job complete. Cabinets are of wood with white gloss enamel finish. Counters are covered with heavy gauge black linoleum with metal chromium finished binding strip at the edges. An acid-resisting sink 20" x 30" installed in the main counter was included in the cost of the cabinets. To properly install these cabinets required furring from the top of the cabinets to the ceiling. The cabinets cost \$143.50, and with furring and installation cost \$157.85. All cabinet work including dining seat and table and bathroom medicine cabinets amounted to \$214.70.

Stair stringers were of 2" x 10" planks using one on each side and one in the center. Risers were of one-piece oak and the treads were of strip oak flooring nailed to a sub-tread of 1" boards. The stair cost was \$99.70.

Heating

A masonry flue having 4" brick walls and an 8" x 8" tile lining was constructed as a vent for the oil burning furnace. The chimney required 590 common brick and 20 lineal feet of tile flue lining. The brick were laid up with prepared mortar. The cost of this masonry work was \$29.10.

Cold air returns were of 15" sewer tile laid with cemented joints and running from a concrete pit near the location of the furnace to two concrete pits beneath floor registers. The registers were of the fixed grille type. One is located under the large bank of windows in the living room and the other in the kitchen entrance vestibule. The cost of the returns and registers installed was \$50.50.

The heating system is a forced warm air type. Warm air is supplied from an oil fired and automatically controlled unit. Built compactly and installed in a small space the unit encloses a vaporizing pot type oil burner, motor and fan, steel wool air filters and a drip and pan type humidifier. Two automatic mercoid switches regulate the fuel flow and control the blower motor. A separate switch to start the blower motor at high or low speed is provided for recirculation of air during summer temperature. The unit stands 62" high, is 40" wide and 32" deep. According to the manufacturer's data it has a heating capacity of 85,000 B.t.u. Fuel is stored in a 200 gallon tank placed underground at the rear of the house. The cost of this unit with tank installed was \$340.60.

When the air is heated it passes up to a plenum chamber built of asbestos board beneath the ceiling. Galvanized iron ducts of 26 gauge, 4" x 12" and 8" x 12" placed between parallel joists conduct the air from the top of the plenum chamber to each room. Louvre type registers control the flow of air from these ducts. These are located near the ceiling in the first story and near the floor in the second story. The length of the longest duct is about 8'. In all there are only 32 lineal feet of duct work. The cost of plenum chamber, ducts, and registers was \$100.85 installed. The total cost of all work necessary to complete the heating system was \$521.05.

Plumbing

Soil pipe was standard weight cast iron and included a 4" central roof drain, 3" garage roof drain, 2" floor drain at the water heater, and a 4" bathroom stack. Horizontal runs from these drains placed under the floor slab lead to the meter pit in the garage where there is a deep seal trap. This trap connects to the sewer through 5" cast iron pipe. Soil pipe joints were made with lead and oakum.

Three-quarter inch copper tubing was used for all water lines, both hot and cold. Tubing was connected by solder type fittings.

(Continued to page 144)

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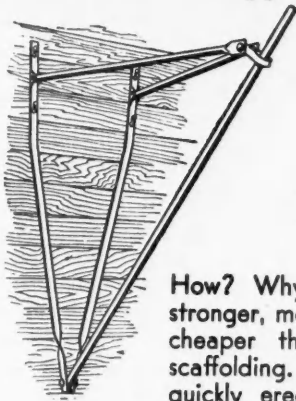
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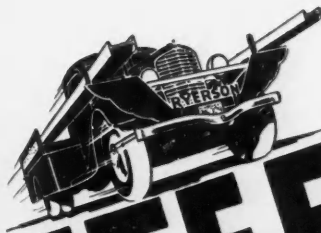
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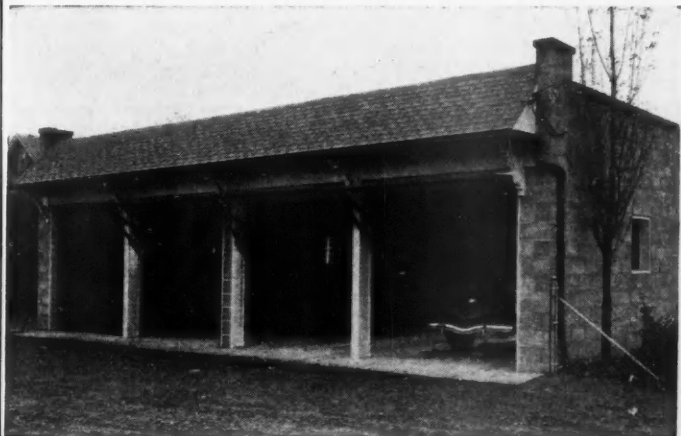
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COST ANALYSIS OF PURDUE HOUSE

(Continued from page 142)

A stop and waste valve is connected to the water line in the meter pit which makes possible the draining of all water lines when desired.

Gas service from the street main is 1/4" galvanized pipe. This line is connected to the kitchen range and to the hot water heater. The gas meter is located in the meter pit.

Furring was required to build out the wall behind the laundry tray and cabinets to conceal the plumbing for these fixtures. The cost of furring and of the meter pit was \$8.10 and is charged to the plumbing cost. The cost of all plumbing roughing-in was \$170.25.

The plumbing fixtures were installed with chromium plated exposed traps, pipes, fittings and trim. The fixtures consisted of two 17" x 19" lavatories of enamel iron; one vitreous china reverse trap bowl water closet with white seat and cover; five-foot enameled iron recessed tub, complete with shower head, diverter valve, rod and curtains; two compartment 24" x 48" cement laundry tray; and an automatically controlled gas water heater having a tank capacity of 20 gallons. The cost of the fixtures—exclusive of the sink supplied with the kitchen cabinet—and finish plumbing was \$199.25. The complete plumbing, rough and finish, cost was \$369.50.

Electrical

Entrance of the electrical service to the house meter and panel boxes is made through 2" black iron conduit. Wiring throughout the house is BX armored cable, 2 and 3 conductor without bushings. Installation of the cable was simply and quickly accomplished using a special drill to cut holes in joists and studs through which to run the cable to the outlet locations. All holes were cut in the centers of joists. The installation includes 17 convenience outlets, 10 ceiling outlets and 13 switches. Electrical roughing-in for 41 outlets cost \$53.30.

Finish work included the switches, single and 3-way, outlet cover plates and fixtures. There were ten lighting fixtures costing \$42.35 or an average of \$4.235 each. The complete finish work cost \$60.05. The total electrical cost, including lighting fixtures, was \$113.35. This is an average of \$2.76 for the 41 outlets.

Painting

All exterior trim and metal work was painted 3 coats using ready mixed paint. Sash, doors, and frames were primed before erection, this counting as the first coat. Exterior painting cost \$75.30.

Interior plywood and trim was also finished with 3 coats of ready mixed paint. After the first coat all nail holes were puttied. Joints between plywood panels were not puttied. Plywood required but little sanding before painting. Sections of the walls in two bedrooms were covered with wall paper. Muslin was first pasted to the plywood to form a base for the paper.

Interior painting and papering cost \$218.45. This is a cost of \$0.039 per square foot of wall covered.

Oil stain was applied directly to all hardwood floors without filler. The floors were finished by waxing. The cost of staining and waxing the floors was \$29.10 or \$0.31 per square foot.

The dining and living terraces consist of 4" concrete slabs with a troweled finish marked off in two foot squares. This concrete work cost \$44.05 or \$0.13 per square foot.

At the end of the living terrace a 5/6" high fence was constructed having a frame of 2" cast iron pipe to which was attached 3/4" steel channels and metal lath. Stucco was applied to this base. The total cost of the fence was \$62.30.

Over the dining terrace a pergola constructed of fir and cypress members provides a support for growing vines. The pergola is open to the front, and has a gate to the rear which allows access to the kitchen door. The pergola cost \$25.95. The terraces, fence and pergola cost \$132.30. This is included in the total cost of the house.

Square Foot and Cubic Foot Costs

In determining the cost per square foot the gross area included within the outside lines of the outside walls of the house and garage was obtained. The terraces were not included, but the cost of the terraces is included in the total cost. The area of the first

(Continued to page 146)

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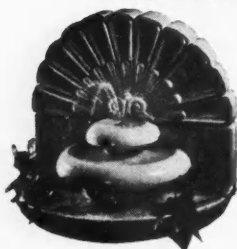


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COST ANALYSIS OF PURDUE HOUSE

(Continued from page 144)

and second floors and the garage of House No. 1 is 1330 square feet. The contract cost was \$4852.45 and the cost per square foot \$3.65.

The cubic contents were estimated on the basis of the cubic feet of space enclosed within the outer surfaces of the outside walls and between the main roof surface and a plane one foot below the finished floor of the first story. The garage was figured at its full cubage. No allowance for the terraces was made. The cube of the house and garage contains 12,712 cubic feet. The cost per cubic foot was \$0.38.

Comments On House No. 1

In plan this house proves to be livable. The stairwell is a little small and some difficulty was encountered in moving furniture to the second story. It would be desirable also to have the garage a little larger. The two terraces add much to the livable area of the house. The long, narrow kitchen, while possibly contrary to current theories of kitchen planning, has been found to be convenient.

Lack of overhead lighting fixtures in the living room and in the bedrooms has not proven a hardship or disadvantage. The table and floor lamps used for lighting appear not only adequate but better suited to the architectural character of the house than would overhead lights. Each bedroom has a wall outlet connected to a switch adjacent to the bedroom entrance door and also a wall outlet not so connected for the attachment of bedside lamps. This arrangement has proven to be satisfactory. All wall outlets in the living room are controlled by a main switch located in the living room. This has proven to be a disadvantage since no connection is thus provided for daytime operation of a radio or an electric clock.

Wall studs were specified to be set 18" center to center to allow properly spaced backing for plywood 3 feet wide. Because of this some difficulties and extra costs were encountered. Three-foot plywood was not stocked locally and the small shipment had to be ordered specially. Insulation bats and metal lath were of standard sizes used for studs spaced 16" center to center. The bats had to be spread slightly when put in place and extra blocking was necessary behind the lath to avoid undue waste. Since materials are manufactured and stocked in standard sizes based upon 16 inch stud and joist spacing, the advantage of using 18 inch spacing is open to question from both the economic and practical standpoints.

In balloon type framing the floor and roof joists are nailed to the sides of the studs, which extend through two stories. Consequently when the 3-foot plywood panels were nailed to the wall studs the joints between each panel did not line up with the joints in the ceiling panels. Had a western type frame been used with the joists placed directly over the studs the ceiling and wall panel joints would have been in line with each other. The balloon type frame, however, which minimizes shrinkage of structural members, is preferred for the construction of houses using stucco on the exterior.

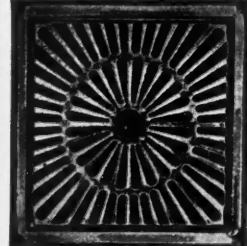
The cost analysis revealed forty hours of non-productive labor time which cost \$28.00. Most of this was a result of winter work when extremely low temperatures caused the men to seek the warmth of a fire. A small part of this non-productive labor time may be charged to the failure of materials to arrive on schedule.

The construction cost summary shows a total labor cost of \$1491.65 or 30.7 per cent of the total. The material cost of \$2939.00 represents 60.7 per cent of the cost. The balance or 8.7 per cent was profits or overhead of the general and sub-contractors.

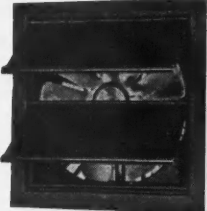
Certain sub-contractors showed a very good profit and one or two an inadequate profit. The 8.18 per cent profit and overhead of the electrical contractor and the 19 per cent profit and overhead of the plumbing contractor were probably not adequate. While involving but small amounts, the 83.7 per cent profit and overhead figure of the roofing contractor and the 99.4 per cent profit and overhead figure of the metal work are higher than is believed ordinary for these two trades. Sub-contracts totaled \$1028.10 with \$277.30 or 27 per cent in profits and overhead.

The 3 per cent profit of the general contractor is low. This may be attributed to the installation of certain extras not specified which he did at no extra cost because of his pride in the appearance of the job. This attitude on his part is commendable but he should show enough profit to enable him to continue in business.

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270—**Monarch Woodworking Machinery for Contractors and Builders**—A new 26-page catalog, with large illustrations and full mechanical specifications of the Monarch portable variety woodworker, combination saw benches, portable, treadle saws, rip and cut-off saws, hand saws, swing cut-off saws, American hoists and other equipment designed for contractors and builders.—**American Saw Mill Machinery Co., Hackettstown, N. J.**

271—**Concrete Products Manufacturing**—"Construction Book No. D-8" is an attractive handbook of 24 pages presenting a line of "modernized building materials" in line with present-day demand. These include Dunstone and Dunbrik in several sizes, Duntex roofing tile, air pressure mat glazing equipment, and equipment for producing machine-made reinforced joists and slabs. Numerous photographs and drawings embellish this handbook.—**W. E. DUNN MFG. CO., Holland, Mich.**

272—**Rex Mixers, Pumps and Concrete Placing Equipment**—Three new catalogs are being distributed covering these well-known items of contractors' equipment. The mixer catalog presents Rex 7-S and 10-S models while the pump catalog presents 2", 3", 4", 6" and 8" sizes, "a pump for every dewatering job." Concrete by pipe line is featured in the handbook devoted to Rex Pumpcrete.—**CHAIN BELT CO., Milwaukee, Wis.**

American Builder,
105 W. Adams St.,
Chicago, Ill.

(May, 1937)

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*Please note that occupation must be stated if full service is to be given.