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and Building Age

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61st Year

Vol. 61, No. 5

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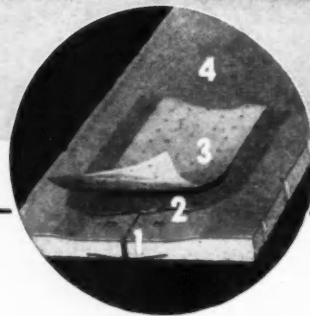


Old Walls and Ceilings Made New

Furniture by Drexel

Here's a solution to your most difficult remodeling problems. With the New Recessed Edge Sheetrock* and Perf-A-Tape* you can build interior walls and ceilings with the *joints between boards completely hidden*. Then you can apply any sort of decoration—paint—wallpaper—calcimine—enamel. The result will be a smooth, even wall of which any homeowner or tenant may be proud.

If you've never used Recessed Edge Sheetrock or Perf-A-Tape, a USG field man will gladly show you how it's done.



HERE'S HOW IT'S DONE:

- 1** The recessed edge forms a channel at joints—
- 2** —which is filled with special cement
- 3** Perf-A-Tape—strong, perforated fiber tape—is then imbedded in the cement, and—
- 4** —more cement is applied over it, leveled and sandpapered, completely concealing the joint.

For complete details of Sheetrock application and a 48-page book filled with remodeling ideas, see your dealer or write USG today. This book probably has in it just the idea you need to sell that next remodeling job. If you'd like to have more information on the application of Sheetrock and Perf-A-Tape, a letter or postcard will bring it to you.



AB-6

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SHEETROCK

The **FIREPROOF** Wallboard

PUBLISHER'S PAGE

"A Study of Depressions"

"A Study of Depressions" is a pamphlet of 37 pages prepared by a committee of the National Association of Manufacturers with the aid of several leading economists. It should be read by every American citizen who wants to know why the United States, after almost ten years of the present depression, is still in the midst of it, and what *must* be done to restore prosperity.

It demonstrates, among others, the following facts:

(1) Recovery began in the latter part of 1932 in every leading country in the world.

(2) In the early part of 1937 there were still *less production and employment* in the United States than in 1929, while there were *more production and employment* in most other leading countries than in 1929. In the United States industrial production was only 99.2 per cent as large in 1937 as in 1929, while in Germany it was 116 per cent; in Great Britain, 125 per cent; in Norway, 126 per cent; in Sweden, 146 per cent; in Japan, 174 per cent.

(3) Production and employment in the United States, because of the "recession," became relatively smaller in 1938 *than in any other leading country*. In April, 1938, industrial production in the United States was *only 65 per cent* as large as in 1929; while in France it was 78 per cent; in Italy, 100 per cent; in Great Britain, 114 per cent; in Norway, 123 per cent; in Germany, 124 per cent; in Sweden, 146 per cent, and so on.

This is the first time in the 150 years since the Federal Constitution was adopted that the United States ever lagged behind *any other country* in increasing production, employment and prosperity.

WHY has the United States thus lagged behind almost all countries since 1932? Why has the recession of 1937-1938-1939 been so much more severe here than

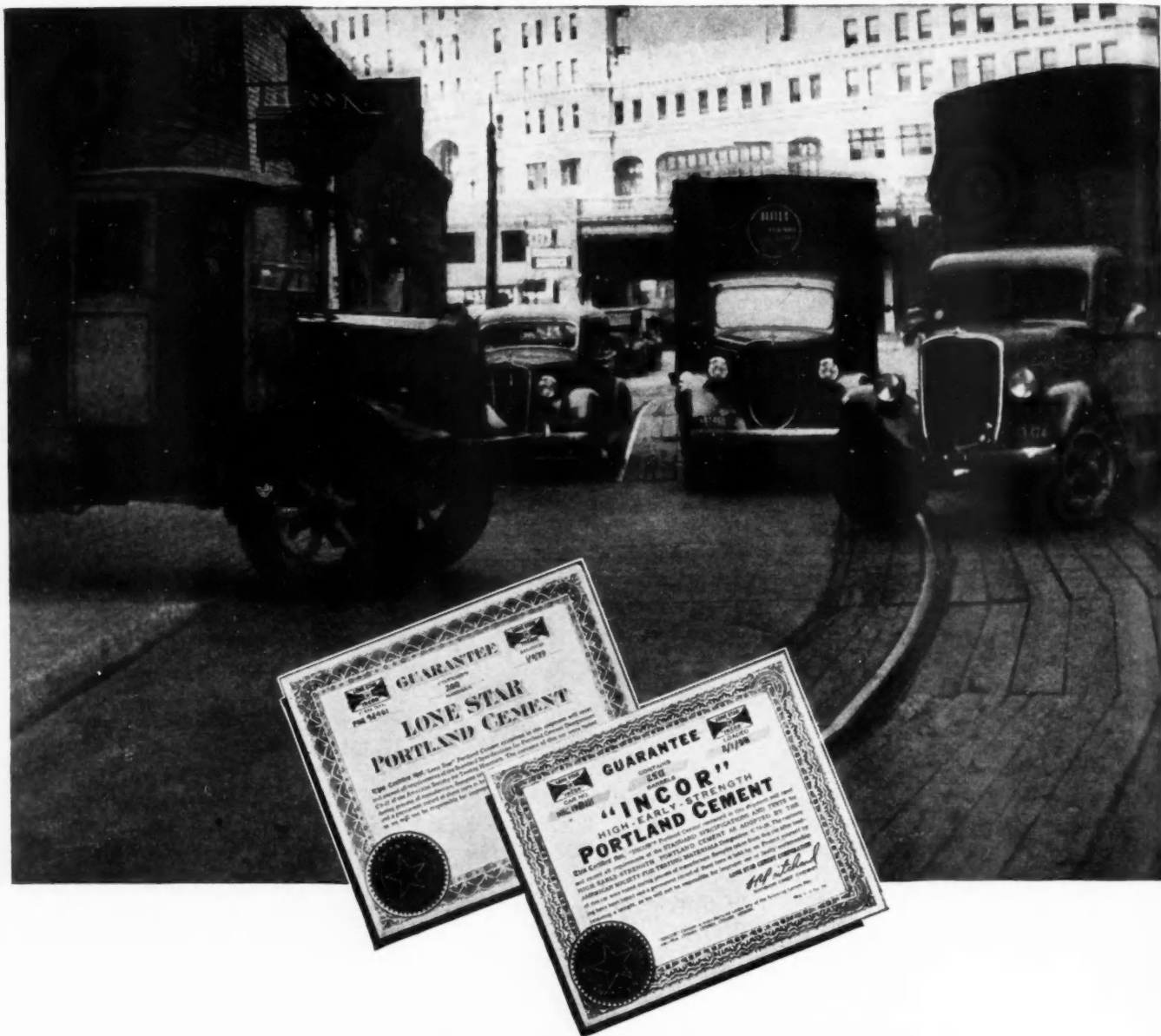
in any other country? And what must we do to end both the "depression" and the "recession" and restore and maintain prosperity?

The *American Builder* believes the correct answers to all these questions are concisely and conclusively given in this pamphlet, "A Study of Depressions." The correct *general* answer to all of them is a vitally important fact repeatedly emphasized in this paper—viz., that government policies in the United States have prevented revival of *private investment of capital*—especially investment in housing and in "capital goods." How? Principally by *restricting profits from most investments already made and the prospect of profits from huge additional investments that owners of capital otherwise would have made.*

If you doubt that the United States for six years has lagged behind almost every other leading country in the world, send for a copy of "A Study of Depressions" and read the statistics (mostly from the League of Nations) that prove it. If you are interested in recovery problems—including that of fully reviving building—not from a *political* standpoint, but from an *economic and business* standpoint, you will find the entire pamphlet well worth reading. It is offered for sale by the National Association of Manufacturers, 14 West 49th Street, New York City. Prices range from 5 cents for a single copy to 3½ cents a copy for more than 100 copies.

The *American Builder* so strongly recommends this pamphlet because this paper believes that the presentation of facts in it is correct and that the policies advocated are essential to *full recovery* of all American industries, including home building.

Samuel O. Dunn,



TEN YEARS AGO LAST OCTOBER

AN almost continuous stream of trucks uses the driveway to Hibbard, Spencer & Bartlett's Chicago warehouse. Ten years ago last October, this driveway was resurfaced with 'Incor'. Placed Saturday and Sunday, opened 23 hours after last pour—without interrupting business.

Today, after 10 years' hardest service, concrete in first-class condition—NO MAINTENANCE EXPENSE.

Proving 'Incor's two-way saving to industry: (1) No plant tie-ups waiting for concrete to harden; (2) money saved on maintenance.

'Incor' provides two-way assurance—dependable high-early strength and proven long-time durability. Use 'Incor'* where 24-hour service and faster job curing show you a profit; elsewhere, use Lone Star, the standard of Portland cement quality for over a quarter of a century.

Written guarantee certificate (shown above) with every shipment, assures quality equal to or exceeding standard specifications. Write for copy of "Cutting Concrete Costs." Lone Star Cement Corporation, Room 2233, 342 Madison Avenue, New York.

*Reg. U. S. Pat. Off.

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AMERICAN BUILDER

AND BUILDING AGE

The Obsession of Bigness

WHEN Justice Brandeis, who recently retired from the United States Supreme Court, reached his 82nd birthday, Judge Learned Hand of the United States Circuit Court of Appeals said of him, "He sees the Good Life in terms of the dignity and the independence of the individual, to be secured by deliberately disabusing ourselves of the obsession of bigness." To those of us in the building industry who have been hearing on every hand exhortations to develop *bigness* in home building, these words carry a message we may well ponder.

Are "mass construction," large scale housing, huge slum clearance projects a desirable form of home building for the American public?

American Builder believes that while a few large projects may possibly be necessary for certain areas, on the whole the construction of single-family houses on fair-sized individual plots is by far the more desirable type of home development. And furthermore, there is little doubt but that the advantages and the so-called economies of bigness are greatly overrated.

From the vantage point of several decades of editorial observation it has long ago become apparent that the most permanently successful and satisfactory form of residential construction consists of the operation of an intelligent, respected builder who puts up from three or four to a dozen houses a year, and who never builds more than a few houses ahead of his actual sales. The bigger the project becomes, the bigger the overhead; and there is much to indicate that the overhead and cost of operation increase more rapidly than the economies claimed for mass construction.

It is true that in recent years there has been a strong trend toward big and still bigger business in the United States. A reaction has set in, however, as regards most business. But in the building industry the Federal government is doing much to encourage the ideal of bigness. Not only is the government encouraging this type of operation, but from the top business-advisers of industry come frequent appeals for a "reorganization" of the home building business with a view to "eliminating the multitudes of small, inefficient operators."

Now this publication holds no brief for inefficient operators, but it does maintain with a strong conviction that the small building operator is not necessarily an inefficient business man. It would be a splendid thing to eliminate the inefficient operators from every line of business; but we do not believe this can be done by any Federal government law or decree.

It is possible that carefully drawn and administered state license laws might do much to improve the honesty and efficiency of the home building industry. But such

an improvement would not necessarily mean the setting up of gigantic national building corporations such as have frequently been pictured in the public press.

To those who are not intimately familiar with the warp and woof of the building industry and its methods of operation over a period of years, it seems difficult to comprehend why such a widespread, diversified system as we find in control of home building is necessary. Admittedly, under the existing system, the details are not perfect; but there are sound reasons for its operation in its present form.

In the first place, there are more than 16,500 cities, towns, villages and incorporated places in the United States scattered over some 3,000 counties. Actual building sites are widely spread out over large areas in and around these 16,500 communities. In addition there is a rural population of more than 14 millions and a farm population of more than 30 million people who do not live in any town, city, village or incorporated place. You can't have "mass housing" for most of the people because they simply do not elect to live herded together.

Coupled with these misconceptions about mass building goes another oft repeated bromide to the effect that the American public is no longer willing to "settle down" in one spot long enough to build a house. At the recent Yale-Life Conference on housing, which in many respects was a laudable attempt to do something to improve building, the principal emphasis given in press reports was on "mobile housing" and mass construction. One prominent speaker believes, and said, that a solution to the housing problem is to put the American public in *trailers or movable homes!*

It is true that some factory workers are afraid to buy a home for fear they may be transferred or laid off. But every tendency today is to stabilize their employment and provide more steady jobs. The Social Security Act encourages stability. The fact that people who move about have difficulty obtaining relief in a community in which they are unknown deters many from making a change.

The decentralization of industry and the movement of the people out to the suburbs and the smaller cities are in line with the objectives of Justice Brandeis' philosophy. Home building certainly should be thought of in terms of the individual, and with the goal of home ownership always in mind.

American Builder believes there is much in this for the advocates of bigness in building to ponder. Let us not rush into the rehousing of Americans by crowding them into huge rabbit warrens of "wandering atoms without permanent associations or local ties," to use Judge Hand's phrase.

PREVIEW—New York World's Fair Houses

HERE they are—the first glimpses of the much-heralded New York World's Fair houses—a whole town of them,—the Town of Tomorrow. **AMERICAN BUILDER** will devote a large part of its June issue to a complete presentation of these houses with pictures, plans, construction details, interiors—the whole story. These will be the most talked of houses in the country during 1939, and builders are planning to bring the World's Fair to their own town by erecting duplicates.

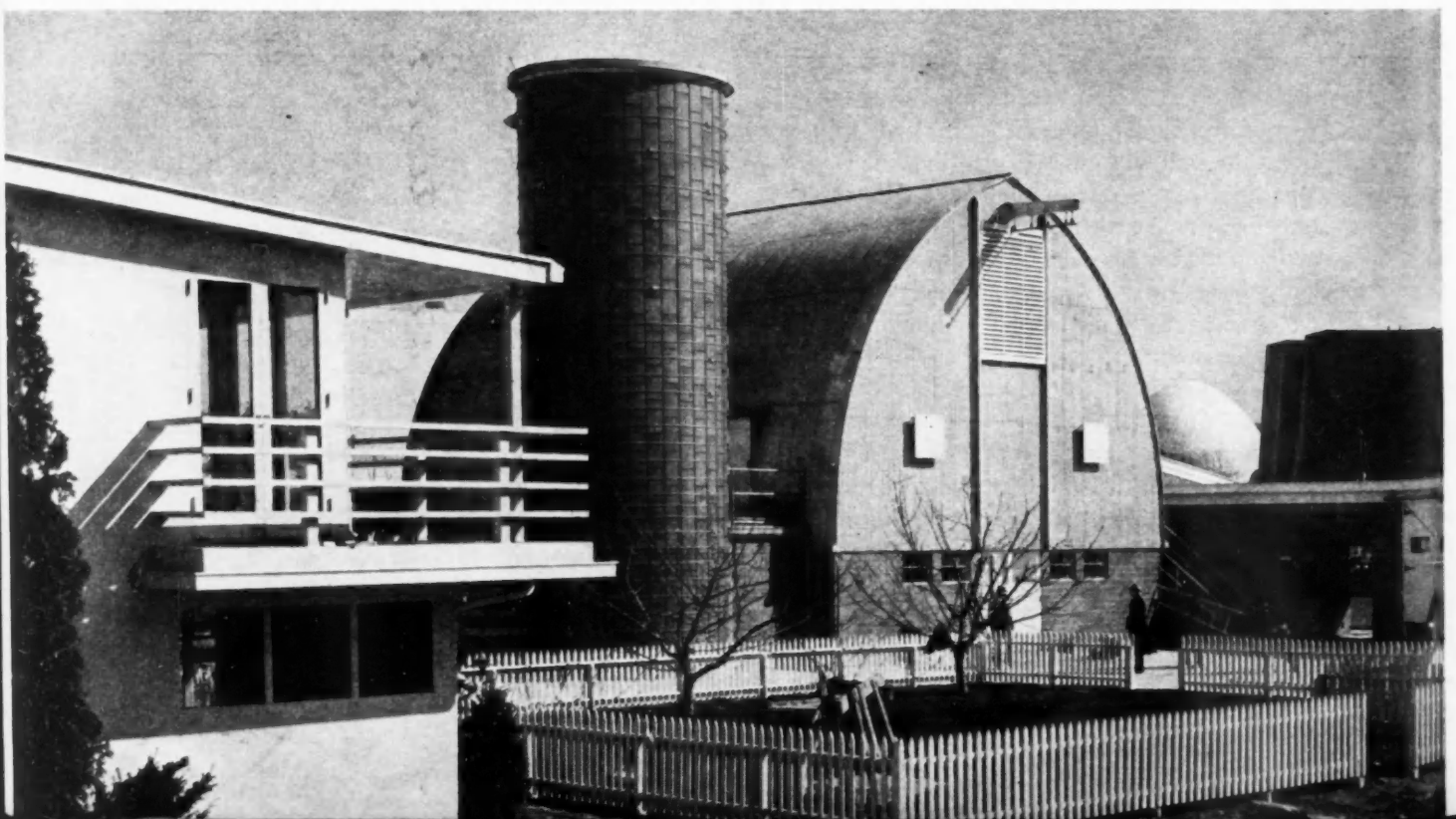


NATIONAL LUMBER MANUFACTURERS' ASSOCIATION home demonstrates new type of economy framing, roof trusses and practical use of plank floors.



THE ALL-ELECTRIC HOME in fresh modern Georgian style brings the latest in equipment features.

ADJACENT TO TOWN OF TOMORROW is the modern electrified farm. Barn, silo, hen houses and a modern farm home are shown.





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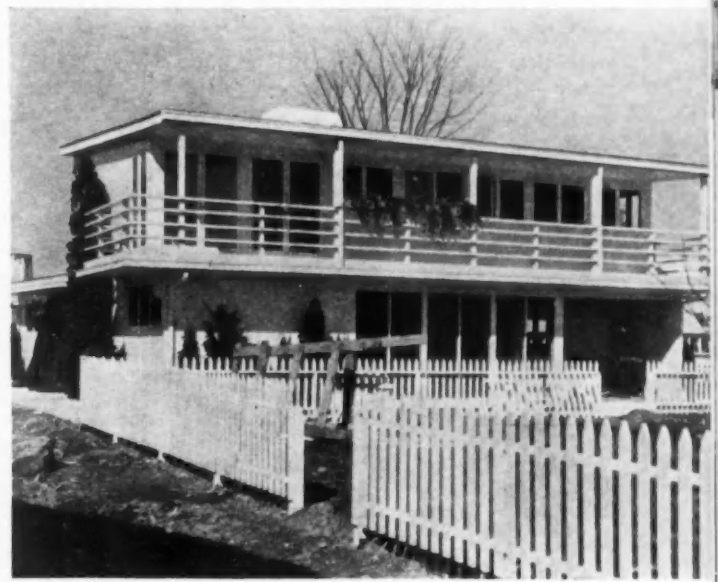
WORLD'S FAIR 5-room Colonial designed by Cameron Clark near completion features asbestos cement shingles.



KELVIN AIR-CONDITIONED HOME demonstrates latest in equipment and services. Designed by Electus D. Litchfield.



1939 "MOTOR HOME" which features a 2-car "motor room" at front, living quarters at rear. Latest in garage doors.



MODERN FARM HOME—A preview of the farm home of tomorrow which is part of the Electric Farm Exhibit at Fair.

A BUSTLING SCENE OF ACTIVITY: In foreground is the low-cost lumber home sponsored by National Small Homes Bureau.



New Orleans Plan Provides Novel Home

A NEW APPROACH to Buyer-Approved home ownership has been developed by the homestead building and loan associations and the Central Appraisal Bureau of New Orleans during the past six months; modified architectural service for the small home at a nominal cost is one of the outstanding features of this "Registered Home" unified building service.

The Central Appraisal Bureau, a co-operative, non-profit sharing institution maintained by the insured building and loan and homestead associations of New Orleans, was organized three years ago at the instigation of W. E. Wood, then state building and loan supervisor. It is staffed by trained appraisers with A. S. Montz, former city architect, as executive head. Every association in the city, of which there are thirty-one with total assets of approximately \$55,000,000, is pledged to take the appraisal of the Central Appraisal Bureau as the maximum valuation for loan purposes. The name of the applicant, the association through which the application comes and the amount of the loan sought are unknown to the appraiser.

Since all construction loans were passed on by this bureau and an architect of recognized standing is at its head, it made an ideal vehicle through which the Federal Home Building Service Plan could function in New Orleans. Local architects endorsed the modified architectural service program, but very few desired to take the time to develop designs and plans. To meet the necessity for small home designs two men were obtained through the assistance of the Federal Home Building Service Plan and they worked up thirty-four floor plans and designs (three of these are shown on the following pages) under the supervision and direction of Mr. Montz and Walter Cook Keenan. The latter is a member of the state board of architectural examiners and also head of one of the local building and loan associations. The two men employed to do the drafting have specialized in small home design in several governmental agencies. Both are capable architects, although not registered in Louisiana. They worked on a per diem basis.

NEW ORLEANS HOMESTEAD ASSOCIATIONS' PROGRAM Has Three-fold Objective As Follows:

1. To stimulate a larger volume of home construction by restoring confidence in home ownership and by eliminating many of the difficulties which heretofore have discouraged the prospective builder.
2. To increase the safety of the associations' investments in loans on new homes.
3. To increase the volume of the lending institutions' desirable home financing business.

Central Appraisal Bureau Co-operating with the Associations Devises Program for Quick Service and Quality Construction for Home Owners; 1500 New Homes Is Secondary Goal of 1939 Campaign

To educate the public on the value of architecturally designed and supervised small homes an advertising campaign was developed by the building and loan associations. (See advertisement reproduced on opposite page.) A further means of publicizing the movement and of educating the public is planned for this spring. It is proposed that ten or more houses will be built by the associations. Each house will illustrate the use of one or more building materials or building equipment. It will be a real exposition of building materials shown in actual houses built for sale.

The co-operation of building material dealers and manufacturers has been sought. It is proposed that the materials used must be purchased at actual market cost and the material must be appropriate to the price class of the house in which it is installed. Thus, it will cost the dealer or manufacturer nothing to participate and he will get his usual profit on whatever material is used. He will be asked to have his expert consult with the architect and builder in preparing the plans and specifications and to assist in the supervision to see that the material is properly installed. So far the cement manufacturers and Johns-Manville have indicated their intention to sponsor one or more houses. A plywood house is to be built and it is hoped to have several "electrical" homes in different price classes.

The purpose of the exposition, in addition to providing an unusually effective publicity medium, is to demonstrate the kind of a home that can be bought in the various price ranges from \$3000 to \$7500. The dealers and manufacturers participating will also be expected to take advertising space in a special section of the local newspapers which will be published when the houses are thrown open for inspection simultaneously in the spring.

A third objective was sought by the building and loan people in this program. That is to develop, if possible, a good house at low cost, thus broadening the market. Dealers, builders and loaning agencies so far have shown a readiness to co-operate and actual bids have been received on a four-room house containing first class workmanship and materials for \$3000. Two houses, containing two bedrooms, living room and dining room together, kitchen and garage, with double floors, central floor furnace, tiled bath, insulated roof, fireplace, attached garage with laundry trays, on a 50-foot lot, have been completed by one builder, working with a local association, and are offered at \$3975 or \$22.50 a month.

Negotiations have been carried on with representatives of organized labor looking toward preferential terms on the part of labor for small home construction. A tentative agreement had been reached about the first of the year but as yet has not been formally approved by either side. The building and loan associations, of course, do not enter into any contract as they are not employers, but they propose to make the terms effective, on their part, if the agreement is finally approved, by making the scale and working conditions a requirement for a Registered Home.

The program, of course, has not yet reached fruition. It

Building Service

New Orleans Homesteads

Now Offer the REGISTERED HOME



Homes that are awarded this CERTIFICATE OF REGISTRATION have **premium value!**

The owner of a registered home is assured that he has gotten full value for what he paid for. He knows that his house will be livable, convenient, usable... that it will endure through his lifetime... that depreciation will be minimized by sound, original construction... that maintenance will be small. He knows that if he wants to sell years later the house will have top market value because the prospective purchaser will know it was well built originally. The Certificate of Registration can be produced, and the prospective purchaser may obtain from the Central Appraisal Bureau in New Orleans the original specifications of the house.

The Home Selector
may be seen at any Insured New Orleans Homestead

It is a treasure-trove of excellent house plans—with a satisfying selection of house designs for every price group. All plans were made in New Orleans and are ideally suited to New Orleans' climate, habits and preferences. Specifications call for materials and construction details required in New Orleans. Talk over your building plans today... and call at your homestead tomorrow for the interesting details of this new plan that makes home ownership so easy.

FEDERAL HOME BUILDING SERVICE, now available TO THE HOME BUILDER OF MODERATE MEANS, offers:

- One-Stop Service for Plans, Specifications, Material Costs
- Prompt Action on Financing on Low Interest Long Term Loans
- Constant Expert Supervision of All Phases of Building During Construction
- Award of Certificate on Completion of Building

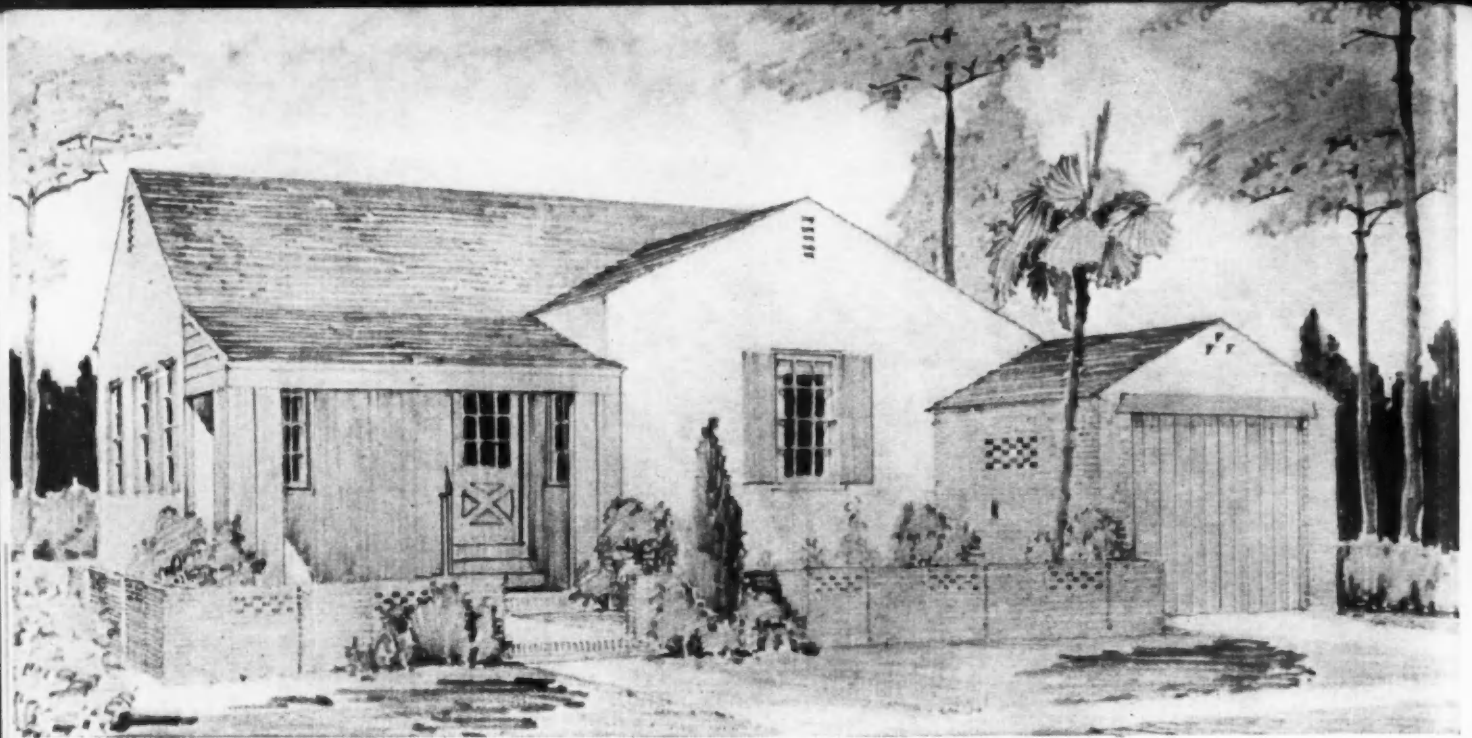
The Federal Home Building Service brings to the small home field for the first time the guarantee of sound design and close supervision of construction. Sound design means economical construction; elimination of unusable space; rooms planned to fit their uses and the furniture that goes in them; exterior appearance that will not go out of style in a few years. Supervised construction means proper construction in the hidden places that the buyer does not see in the finished house; tight joints; proper bracing; sufficient insulation; sturdy foundations; lasting roofs; the kind of lumber and other materials called for in the specifications. Assurance against skimping, careless or shoddy building—to sum up: HONEST VALUE FOR YOUR BUILDING DOLLAR!

HOW TO GET A REGISTERED HOME

Go to your homestead association and look over the many small home plans they have in their Home Selector, from which you can make a choice. When you have selected the kind of house you want, they will tell you, WITHOUT DELAY, about how much it will cost and about how much they will lend you to build it. They will furnish you a list of contractors or builders whom they can recommend, men or firms whose records indicate they are reliable and competent. They will prepare the contract between you and the builder. And finally their building experts will supervise every detail of construction to make certain that the materials you pay for actually go into the house and that the workmanship is up to their standard. OR: if a builder offers you a home that is already built ask him if it is a REGISTERED HOME. Reputable builders can build REGISTERED HOMES to sell. Such houses carry with them the CERTIFICATE OF REGISTRATION, shown on this page, certificate registered in Washington, D. C.

HOMESTEAD BUILDING & LOAN ASSOCIATIONS OF NEW ORLEANS

REPRODUCED ABOVE, full-page advertisement from "The Times-Picayune" announcing "Registered Home" Program.



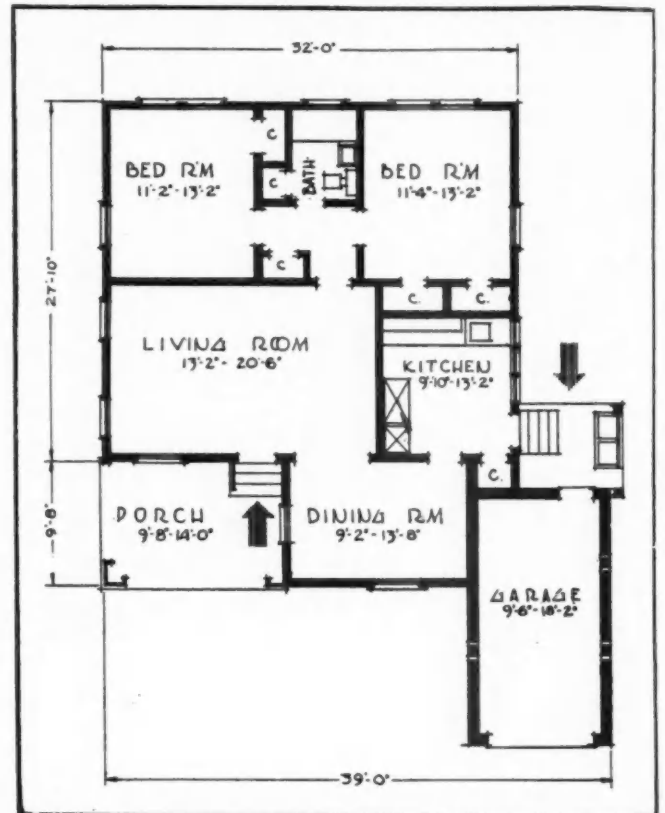
BRICK AND STUCCO DESIGN—This Central Appraisal Bureau design has been planned with an eye to low cost construction. The attached garage can be built of brick about as economically as any other way that will meet fireproofing requirements. The enclosing entrance court wall is of brick 4" thick with 8" piers. This use of brick in combination with stucco and stained wood for the porch presents a pleasant contrast of colors and material. The rooms are large and well ventilated. Closet space is ample. Bedrooms can be made directly accessible to kitchen by means of door through closet space.

is hoped to climax it as the 1939 building season reaches full swing. It has developed sufficiently to warrant the belief that it will, in time, be largely effective in eliminating jerry building and poor small home design and in creating a wider market for better class homes than the city has ever known before.

The program, outside of the actual development of the home designs, has been carried on by volunteer efforts. It is believed to be the practical application in that community of the program promulgated by The Producers' Council in co-operation with the A.I.A.

A summary of some of the qualities and advantages which a Registered Home will possess are as follows:

1. All lumber to contain not more than 19 per cent moisture.
2. All lumber to meet Southern Pine Association grades.
3. All lumber subject to inspection by Southern Pine Association lumber grader. Any lumber failing to meet specifications to be rejected.
4. Construction subject to a minimum of six inspections during the course of construction. It will also be subject to additional inspection by architects of the Central Appraisal Bureau.
5. Builder or contractor must be approved by the Federal Home Building Service, represented in New Orleans by the Central Appraisal Bureau. The builder or contractor must qualify as to ability, responsibility and competency.
6. All materials entering into a Registered Home must be up to specifications and must be American made.
7. Fair wages must be paid to workers in the erection of a Registered Home.
8. Workers and subcontractors must earn a fair profit. "Cut prices" in materials or workmanship are certain to result in inferior construction is the belief of those backing the plan.



9. Building material dealers supplying material must be approved. Evidences of efforts to substitute grades or supply materials of lower quality than called for in the specifications will rule out the dealer supplying them from supplying other Registered Homes.

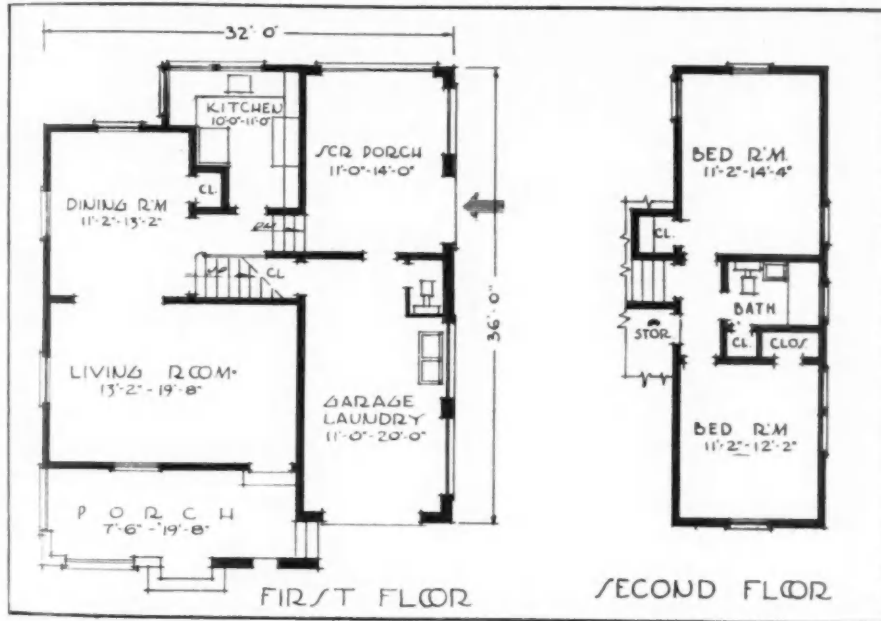
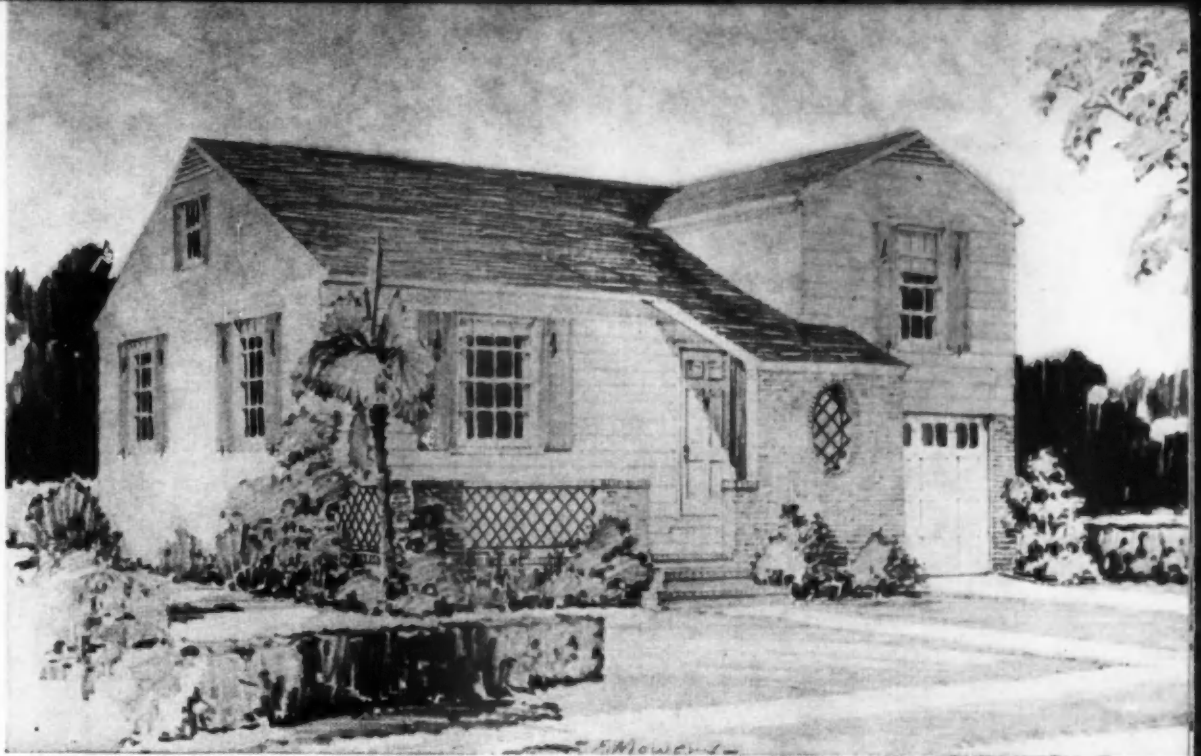
10. Designs must meet architectural standards; three typical designs are shown above and at right. Needless ornamentation adds nothing to the value of the home.

11. The Registered Home will have top loan value and enjoy the benefit of the most favorable loan terms.

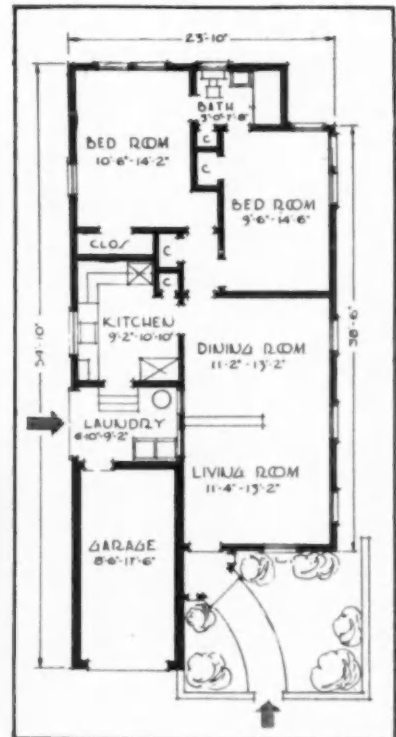
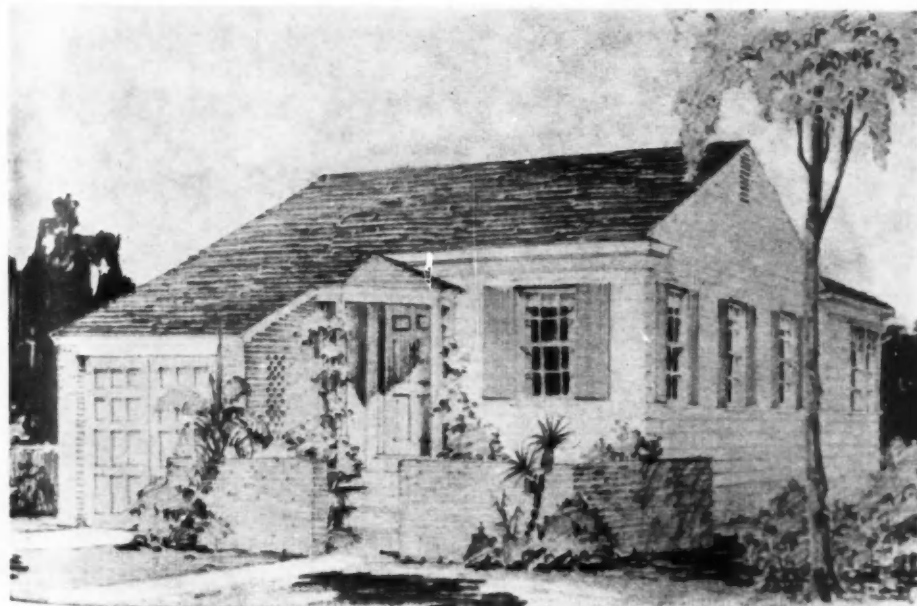
12. New homes failing to meet Registered Home requirements will not be able to enjoy the most favorable loan terms.

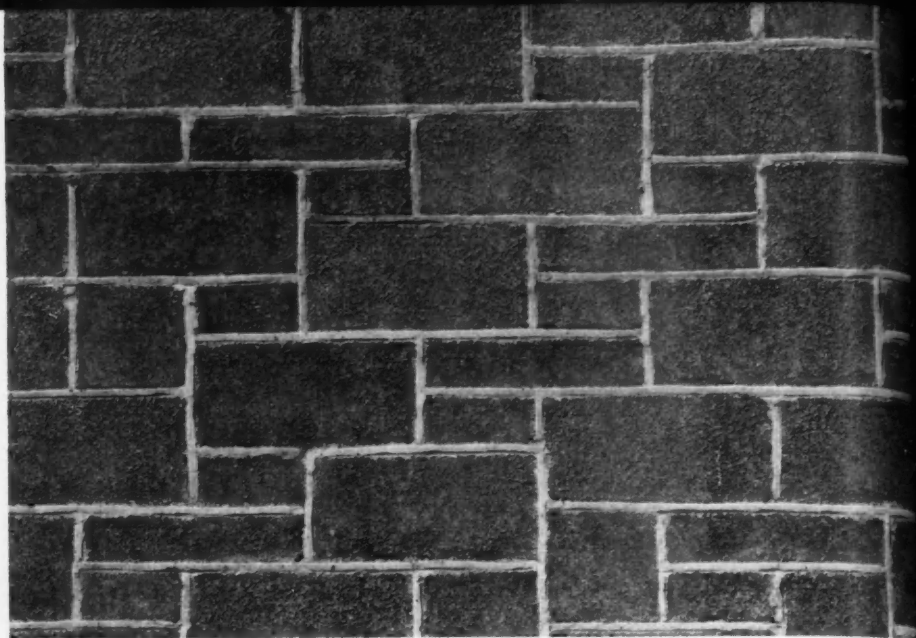
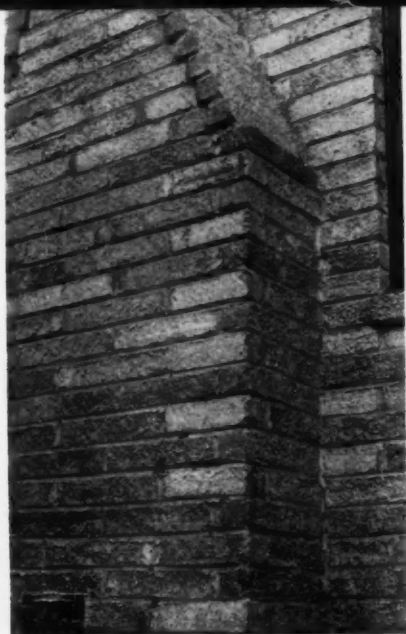
13. Registered Homes will enjoy premium loan value in later years, as the materials that went into the home and the inspection it was subjected to will be a matter of record in the files of the Central Appraisal Bureau.

RIGHT: "HI-LO" FOR A NARROW LOT—The entrance to this roomy and comfortable "Hi-Lo" is featured by a brick and iron terrace partly roofed over to shelter the doorway. An awning over the uncovered portion would be in keeping with the design and offer opportunity for an interesting touch of color. The stair hall, screened from the living room, provides circulation to all parts of the house. Service from the kitchen is convenient to the screened porch which faces the rear garden. Advantages inherent in the "Hi-Lo" arrangement—compactness of plan, efficient space use, short drive, and separation of functions.



BELOW: NARROW HOUSE WITH ATTACHED GARAGE—This arrangement from Central Appraisal Bureau should prove very economical because of the narrow lot required, the short driveway and the simple structural lines which make for low construction cost. A brick garage has been built into this house without interfering with an excellent ventilating arrangement. A minimum lot of 30' may be used without loss of any of the conveniences of a well arranged house. The brick-walled forecourt and corner entrance make an attractive approach. The laundry porch serves as a kitchen entrance and provides cross ventilation for living and dining rooms through high windows in inside wall.

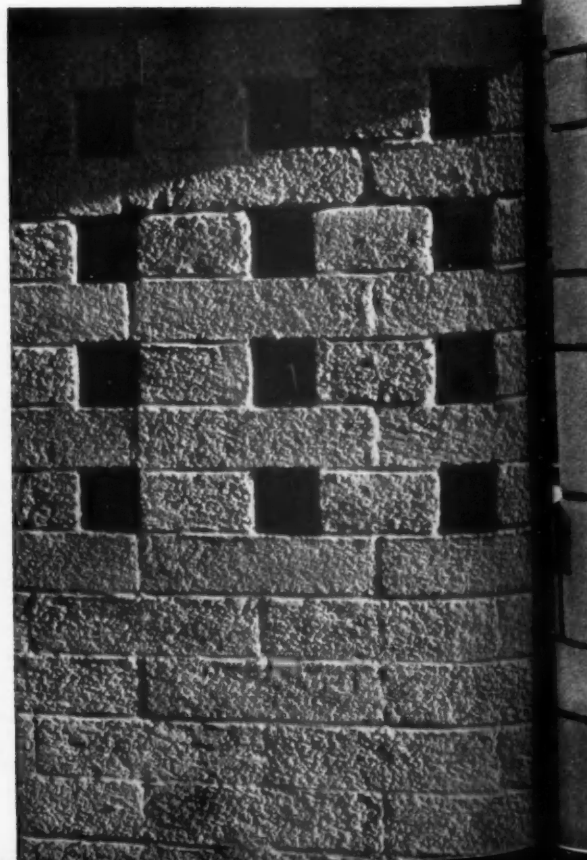
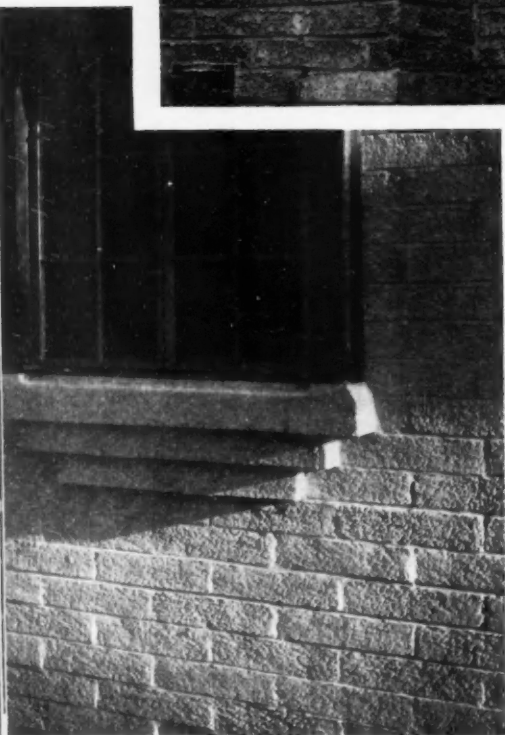




ON THIS PAGE, above at right: Random ashlar coursing with joints pressed with flat tool, unpainted. Four sizes used. Above, at left: Plain ashlar using 3 x 16 in. concrete units with horizontal joints raked slightly and vertical joints struck flush. Left: Corbeled sill with wall of plain ashlar coursing with raked joint, painted wall. Below at left: Deep horizontal lines made with beveled strip in form. This is the effect when unpainted. Below at right: Plain ashlar coursing, raked joint. Ventilation piercings are shown. This wall has been given a surface finish of portland cement paint.

Textures and the Surfaces of

A PRACTICALLY unlimited range of distinctive textures and effects is possible in walls of either concrete masonry or reinforced concrete. And most of these effects may be produced without appreciably increasing the construction cost. This accounts for the growing popularity of

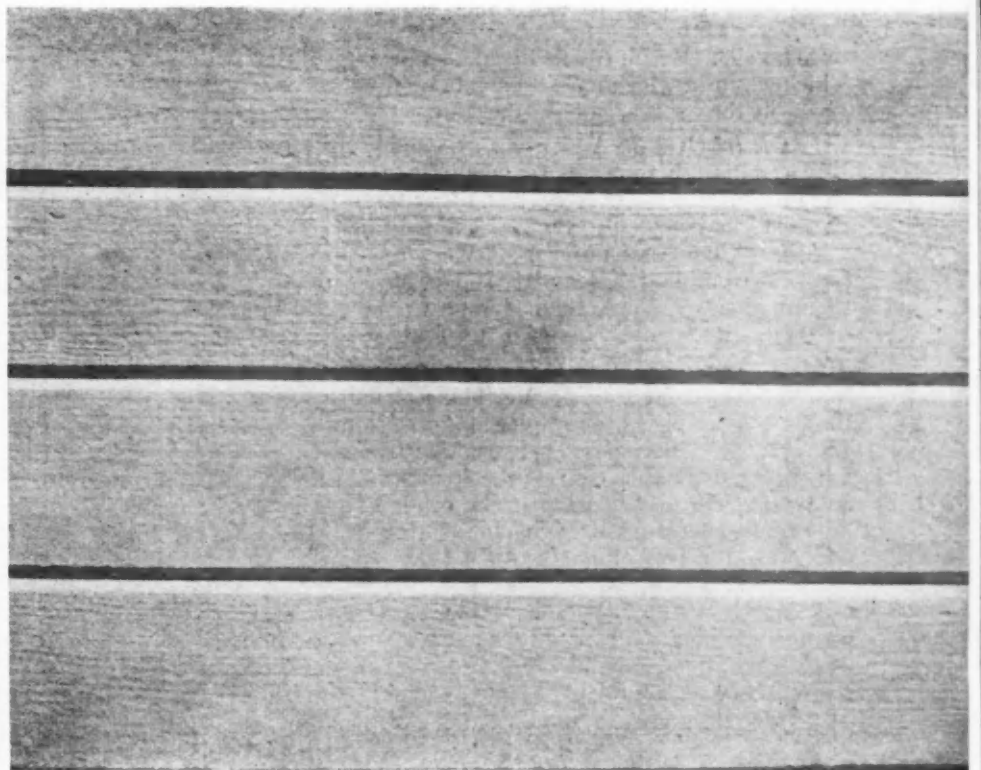




Coursing for Concrete Walls

concrete as a design medium. All the wall effects shown here have been produced commercially. Similar effects may easily be achieved by any builder. Most of the walls shown are those of residences of moderate cost, built by contractors in various sections of the country.

ON THIS PAGE, above at left: Plain concrete ashlar, flush joint. Painted with portland cement paint. Above at right: Tooled horizontal joints, vertical joints flush. Right: Coursed ashlar with six sizes used. Vertical and horizontal joints are tooled and masonry painted. Below at right: Same wall as at left on the opposite page when treated with heavy coat of portland cement paint. Below at left: Random ashlar coursing with black-painted recessed joints. This effect may be produced either by use of recess strips or raking of joints while the mortar still remains soft.



How to Estimate Accurately

Part of a Series on Practical Estimating—Underpinning Units*

By J. DOUGLAS WILSON

Head, Building Trades Dept., Wiggins Trade School, Los Angeles, Calif.

THE CARPENTER, when estimating, is rarely concerned with the thickness and width of lumber, as he only needs to read the blueprints and specifications to find these dimensions.

The thickness and width of lumber for the different framing members will vary according to building ordinance requirements and the load to be carried. The kind and grade of the lumber is usually stated in the specifications.

Lumber is estimated on the basis of its intended use. If it can be joined almost anywhere, bottom plates for example, order by the linear foot. When a large area is to be covered, such as a floor or roof, order by the board foot. If a number of pieces of lumber are needed to span a certain distance or all are of the same size or length the material is ordered by the piece. In all cases "even" foot lengths must be ordered as odd lengths of lumber cannot be purchased. Sometimes odd lengths can be doubled and even length piece of lumber ordered which will cut into two (or more) pieces.

Shingles and wood lath are ordered by the bundle or thousand as they can only be purchased this way.

Underpinning Unit

Underpinning is the term used to include all framing materials that support the first floor joists. The several parts are mudsill, cribbing studs and plates, pier blocks, posts, girders and braces.

MUDSILL: Mudsill is placed directly on the foundation walls and, in good construction, is always bolted down. Redwood is often selected due to its moisture resisting qualities.

Rule: Figure the perimeter of the building; add all dwarf walls. Result equals linear feet of mudsill required. Thickness and width measurements of the lumber will be given in the "specs," or on the blueprint.

PIER BLOCKS: A pier block is usually cut square and is placed directly on a concrete pier. If its size is similar to the mudsill, the number of feet of material required for these blocks is added to the mudsill order.

Rule: Count the number of piers on the foundation plan; determine the length of one block, multiply by the number of piers, then change to an even number of feet. Read the blueprint to find the size of the material.

CRIBBING PLATES: A cribbing plate is necessary if the first floor joists are not placed directly on the concrete foundation. This type of construction is sometimes used when the lot is not level, or if the foundation is "stepped," so as to conform somewhat to the grade of the lot. The best construction requires the foundation wall to be high enough to receive the joists.

Rule: If a single plate is specified, figure the same way as the mudsill. Include all dwarf walls. If more than one plate is specified, multiply the above result by the number of plates. Thickness and width measurements of the lumber will be given on the plans.

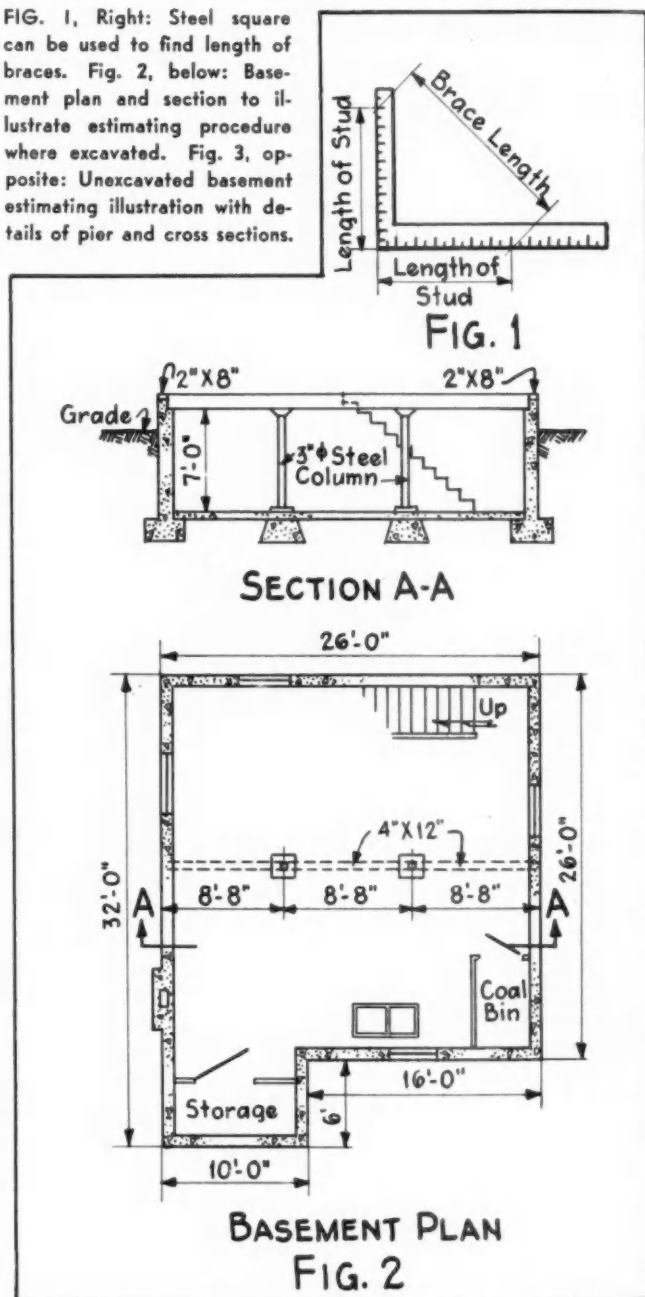
CRIBBING STUDS: The number of studs required to form the framework to support the first floor joists varies with their spacing. The length of each will vary according to the slope of the lot or the steps in the foundation.

Rule: To find the number of the cribbing studs, multiply the total length of all exterior walls and dwarf walls by the spacing of the studs.

Note: Mathematically, the total length must be changed to inches and then divided by the spacing. To illustrate: 60' x 12" equals 720". 720" divided by 16" (the spacing) equals 45 pieces. A shorter way is to change the spacing to feet and then multiply. 16" spacing equals 12/16 or 3/4 studs per foot. 60 x 3/4 equals 45.

Use the following table for spacing problems. Multiply

FIG. 1, Right: Steel square can be used to find length of braces. Fig. 2, below: Basement plan and section to illustrate estimating procedure where excavated. Fig. 3, opposite: Unexcavated basement estimating illustration with details of pier and cross sections.



*Articles in this series appeared in February and March, 1938.

the linear distance by the constant that represents the spacing.

Spacing	Constant	18"	2/3
12"	1/3	20"	3/5
16"	3/4	24"	1/2

The length of the studs will be read on the blueprint. If the foundation is not level or is "stepped" find the average length by adding the shortest and longest length together and dividing by 2. If the shortest stud is 10" and the longest 38" the average would be $\frac{10" \text{ plus } 38"}{2}$ or 24"

Rule: Multiply the number of studs by their average length. Order that many linear feet of lumber or order the material by the piece, selecting a length which will cut with the least waste. 240 linear feet of cribbing studs to be cut into 18" lengths could also be ordered 20 pieces 2 x 4 — 12'. A 12' piece will cut 8 pieces without waste.

POSTS: Posts are necessary on top of each pier block to form a support for the girders. Count on the foundation plan the number of piers, allowing one post for each pier.

The length of each post will vary. Some may have to be long enough to go to the basement floor. The size stock will vary according to the load to be carried and the ordinance requirements.

Rule: Find the average length of each post. (See cribbing studs above.) Read the plan carefully for the special lengths. Multiply average length of each post by the number of posts and order that many linear feet of lumber or change to lengths which will cut without waste. Special basement posts will be ordered by the piece and should not be combined with the regular pier posts.

Note: It is good trade practice, if posts and girders are of the same size, to order post material the same lengths as the girder stock. The foreman carpenter can then select the straightest stock for the girders and cut up the bowed pieces for posts.

GIRDERS: Girders are placed horizontally inside the foundation to form a bearing for the first floor joists and are supported by posts placed on the piers. The size of the stock varies according to the load to be carried and the spacing of the posts. Building codes give minimum requirements, 4" x 6" lumber is often used. Larger sizes are needed if the building has a full basement.

Rule: The length of a girder is determined by scaling the foundation plan and ordering lengths that will join on a pier. An average foundation will require several different lengths.

BRACES: Few braces are necessary in the foundation of the modern dwelling, particularly if the concrete foundation is high enough for the joists to bear directly on it. When cribbing studs are used, each corner should have two braces placed at a 45 degree angle. On a long wall additional braces should be figured, checking the local building ordinance for all requirements. Sometimes a brace is nailed parallel to a joist, the lower end being nailed to the bottom of a cribbing stud.

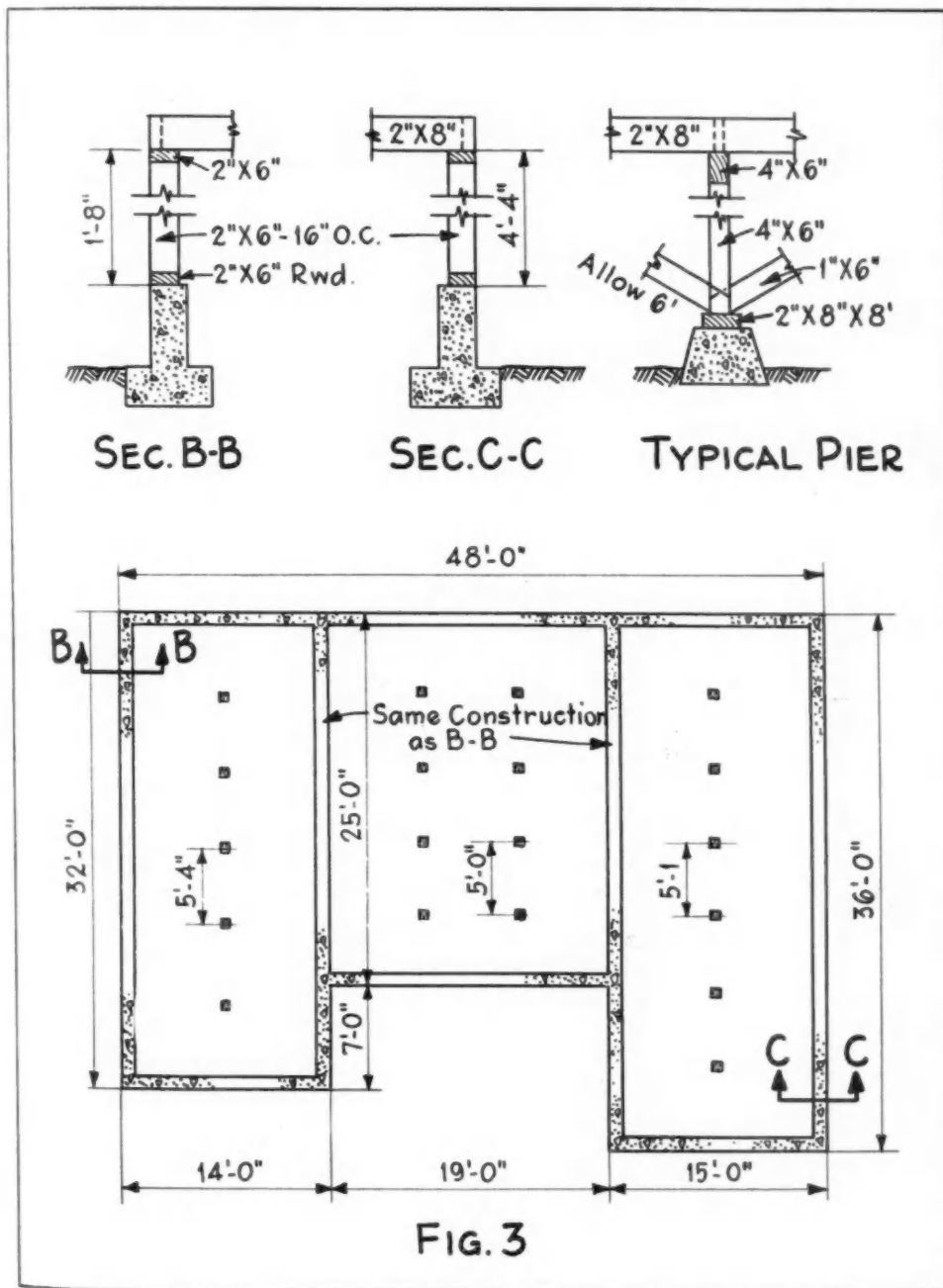
Rule: Figure length of the cribbing studs and find the diagonal of a right angle whose altitude and base are the same as this length.

The carpenter's steel square can be used to do this. See Fig. 1. Allow two pieces to a corner and at least one extra piece for every 25 linear feet of wall. Combine into standard lengths or order by the linear foot.

For the braces parallel to the joists estimate the length of one piece; figure the number of pieces required according to the specifications. Order lengths which will cut with the least waste.

BOLTS: Bolts to hold the sill to the foundation are usually figured in the underpinning unit although they are

(Continued on page 128)



Modernized Florist Shop in Kansas Is Given an Attractive Old English Front

Overend & Boucher, Architects

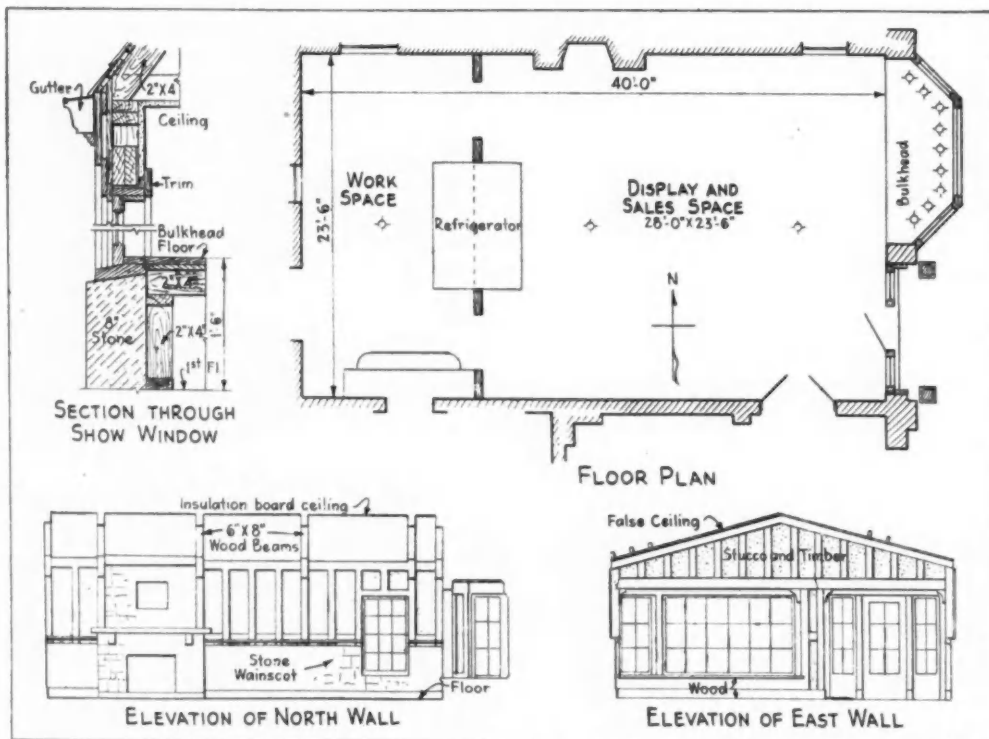


THE Quiring-Owston Flower Shop in Wichita, Kan., presents an unique shop modernization designed by Overend & Boucher, Wichita architects. English design, with modern features, has made it attractive and efficient both in exterior and interior. The front has something of the appearance of a cozy little home as well as of a nice shop; large bay window provides ample display space. The little shelter over the door gives protection from the weather and also adds a decorative feature. Wood paneling with the stucco carries out the same design and materials for the exterior of the walls as are used for the interior.

Marble wainscot was used for the lower half of the

walls of the interior and stucco with walnut finish wood paneling for the upper half. Walnut finish is also used for the wood beams in the ceiling. The wood-burning fireplace is of stone. The floor is also built of natural stone and there is a stone bench in front of the fireplace. The center lighting fixture is of the old oil lamp design, and made of brass. Red cedar shingles over sheathing are used on the roof.

In planning this shop some alterations had to be made in the building to which this new part was attached. The other part of the building is a monument works, which gives it an advantageous location for flower shop business. This neighborhood is more residential than commercial.



PLAN and details of Wichita, Kan., florist shop modernization indicate interior arrangement and construction of this unusual project. The false ceiling built in below the former one consists of 6x8 wood beams with 2x4 ceiling joists 16" o.c. running on top and at right angles to beams. Insulation board used as ceiling finish.



ROLAND COURT—All-gas home community at Cromwell, Conn. August Tobler, builder.

More House For the Money With Gas

A Hand Book of House Designs, Plans, Construction Details and Installation Data for the Modern Gas Home. Planning the Modern Kitchen and Basement. Edited for Operative and Contract Builders—the Men Who Determine How Modern a Home Shall Be

IN THE following pages is presented a group of well-built, well-equipped homes, both large and small, which repeatedly reaffirm the fact that American builders are giving the home buyer of today "More House for the Money." These houses demonstrate in a dramatic way the contribution of American science and ingenuity to better living.

Upon the shoulders of the residential contractor and operative builder rests the principal responsibility for determining how modern the equipment of a home shall be. From among the thousands of items that make up a modern home it is the builder who makes the final selection, buys the equipment and *guarantees* the completed home. His reputation as a builder depends upon satisfactory performance.

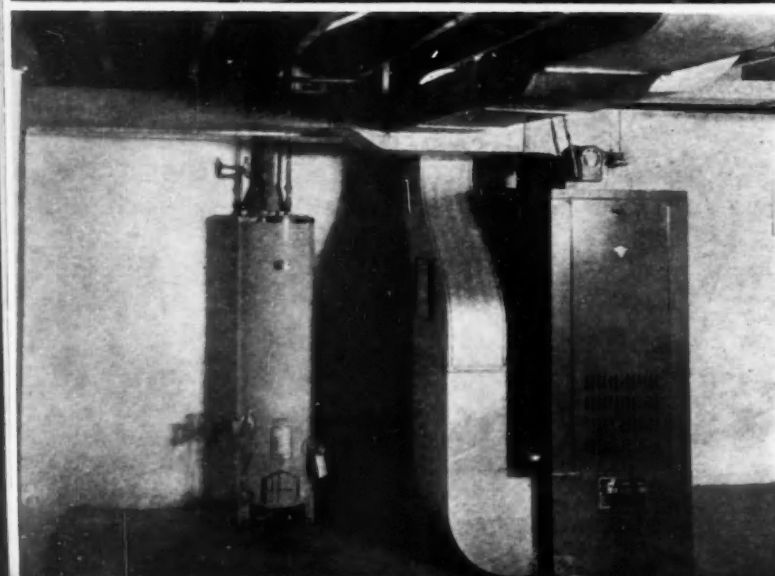
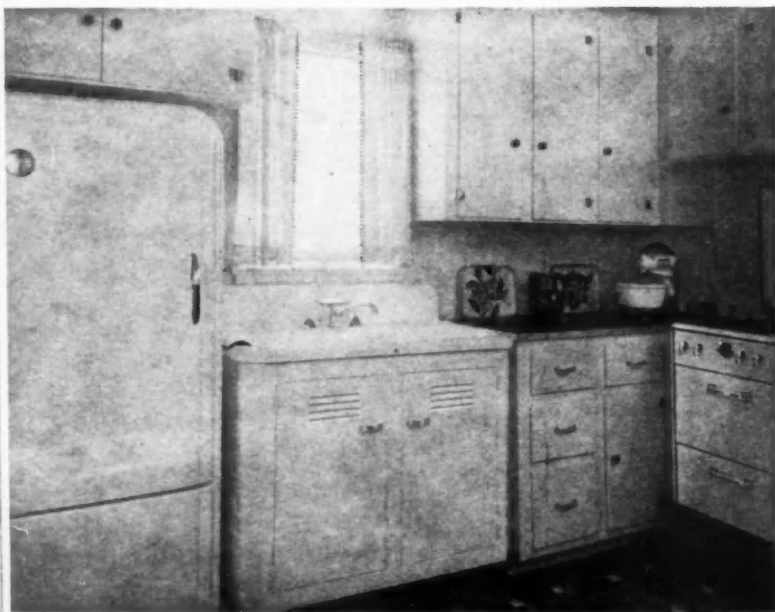
The achievements of a large number of practical, successful builders are recorded in the following pages, and the contribution they have made to better living is shown. The technical information on gas appliances and equipment has been prepared with the co-operation of the American Gas Association, which, with the assistance of gas utilities and appliance and equipment manufacturers, is sponsoring a national program to promote "Gas for

the 4 Big Jobs"—cooking, house heating, water heating and refrigeration. The gas industry, which serves a total of more than 17 million customers in towns and cities with a population of 81 millions, is offering its help and assistance to local builders everywhere in the promotion of better homes. This is a national program backed by some 700 companies. Local builders of homes are invited to take advantage of the promotional and sales assistance of this giant industry through the local utilities. One of the most important helps is the construction of model gas homes, a large number of which were built and equipped by local builders and opened to the public last year.

The building industry is able to give "More House for Money Today with Gas" than ever before because of the scientific progress in gas equipment backed by the reliable service of the local utilities. Due to this progress residential contractors and operative builders have at their disposal time-tested and approved equipment with wide public acceptance and sales appeal. The modern kitchen and basement, the automatic heating plant and hot water supply are focal points of selling interest. The following pages will serve as a handbook to enable salesminded builders to put these selling tools to work.



ONE OF THE FIRST ROLAND COURT all-gas homes erected by August Tobler.



Connecticut Builder Features All-Gas Homes

**Small Homes in Low-Cost Field Have
Good Design and Layout, Latest in
Modern Gas Equipment**

IN SELECTING equipment for his new development of low-cost homes, "Roland Court" in Cromwell, Conn., Builder August Tobler bore in mind the demand for completely automatic operation of heating plant and hot water service. He knew that the home buyer today requires the same comforts and conveniences that are available in the large city apartments. Tobler has gone the city apartment dwellers one better and has provided homes that are far superior to any apartment.

The houses are located in a nicely wooded section, and the development is laid out in an oval shape with space for 16 houses along the two long sides of the oval and a landscaped garden plot in the center. One of the first homes built in the development is illustrated and complete plans shown on opposite page. This was opened as a model home, featuring the use of "gas for all 4." This

The Model Home Is the "Show Room" of the Building Industry. In Purchasing Heating, Hot Water and Kitchen Equipment, the Builder Sets a Standard for the Entire Community, the Effects of Which Go Far Beyond His Development

AMERICAN BUILDER
The Cost FIGURES
 FOR THESE HOUSES
 ON PAGE

102

means it uses gas for heat, hot water, cooking and refrigeration.

Construction consists of 10-inch concrete foundations with a full basement. The insulation consists of 2 inches of mineral wool in the walls with rock lath plaster base, heavy waterproof building paper. The ceilings are insulated with 3 inches of mineral wool, and in addition a tight pine flooring is laid in the attic. The lot is 63 by 145 feet.

Study of the floor plan shows how Architect David S. Douglas of Hartford, Conn., has skilfully provided a maximum amount of living space in a very small cubage. A clothes closet is skilfully worked into the little vestibule, and the attic and basement stairs are cleverly worked in next to the kitchen. A dining alcove 8' 6" by 12' is provided.

The kitchen is well laid out and equipped with the latest in gas equipment, including a gas power refrigerator and a Quality gas range.

Heating equipment consists of an American Gas Products Co. gas-fired air conditioner with Acratherm controls.

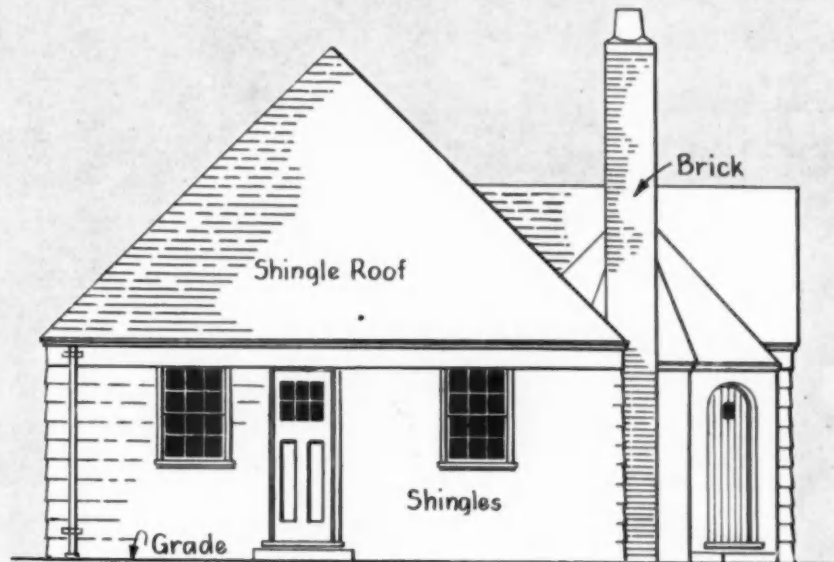
The Connecticut Light & Power Co. of Middletown made an estimate for the builder of \$85 for heating the house for 8 months, and an additional \$44 for cooking, water heating and refrigeration for the same period, or a total of \$129. The gas bills as reported by the company were as follows:

Sept. 20 to Oct. 26.....	\$ 8.00	Estimated
Oct. 26 to Nov. 21.....	9.79	Actual
Nov. 21 to Dec. 20.....	17.92	Actual
Dec. 20 to Jan. 20.....	20.40	Actual
Jan. 20 to Feb. 20.....	21.01	Actual
Feb. 20 to Mar. 23.....	18.09	Actual
Mar. 23 to April 21.....	16.00	Estimated
April 21 to May 20.....	11.00	Estimated

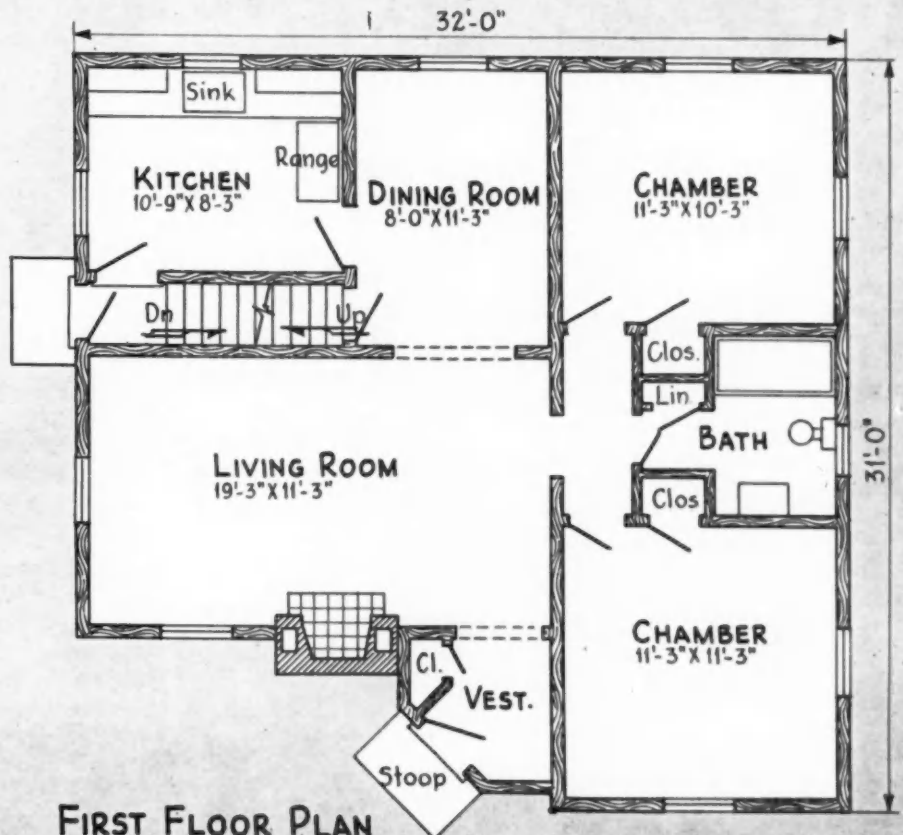
Total\$122.21



FRONT ELEVATION



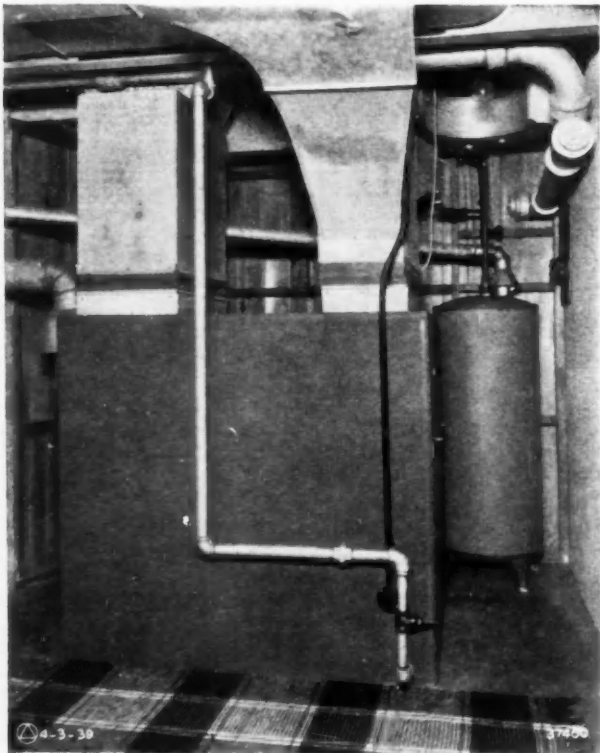
SIDE ELEVATION



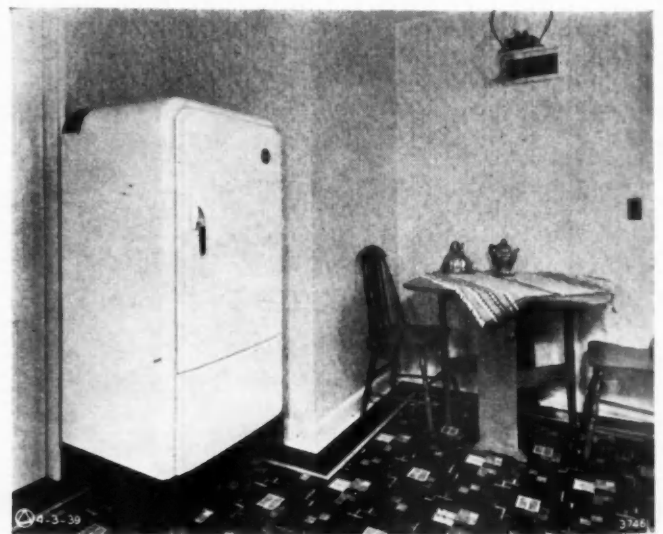
FIRST FLOOR PLAN



KITCHEN is laid out in efficient U-shape, with gas range recessed in well-lighted alcove.



GAS-FIRED winter conditioner and automatic water heater.



AMPLE SPACE for large refrigerator, breakfast table.

"Sex Appeal" in the Kitchen

SMART AND SUCCESSFUL builders like Harold Cheel, developer of Cheelcroft, are making the American kitchen the most beautiful, attractive and efficient in the world. The above is an excellent illustration, done in bright and cheerful colors with attractive wallpaper and equipped with insulated automatic gas range and gas refrigerator.

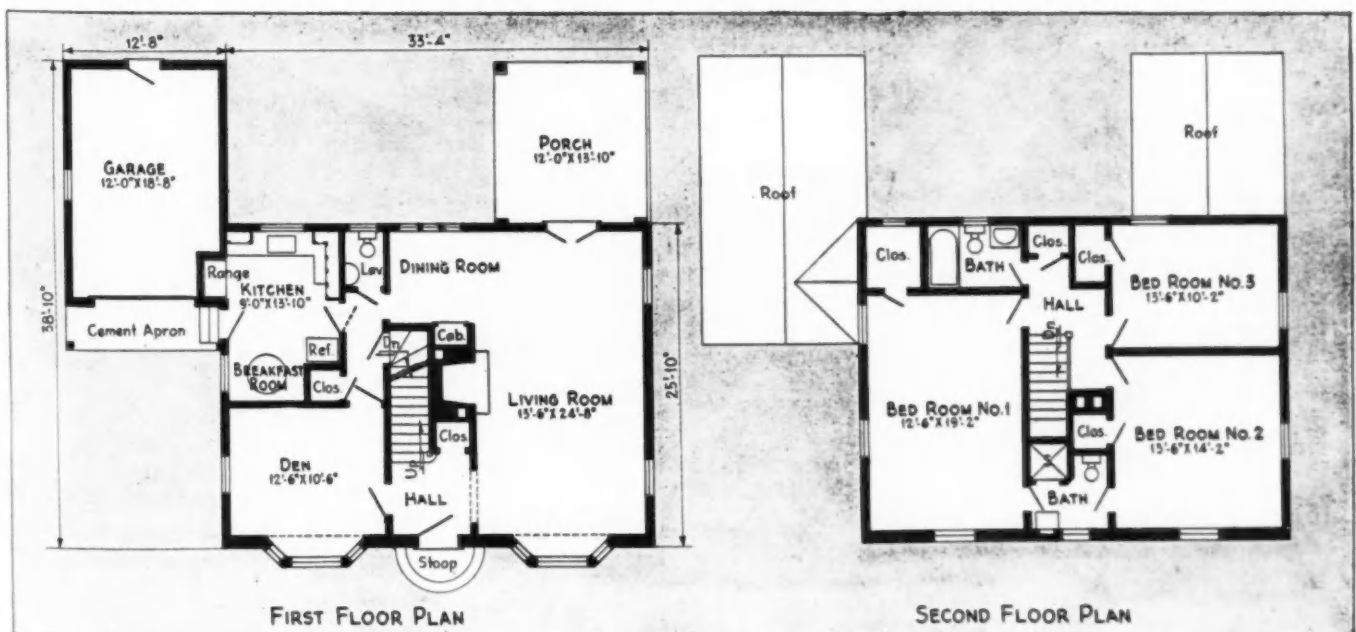


ATTRACTIVE NEW CHEELCROFT HOME built by Harold W. Cheel at Ho-Ho-Kus, N. J. It is well insulated and weatherstripped.

Cheelcroft Colonial with Gas-Fired Conditioner

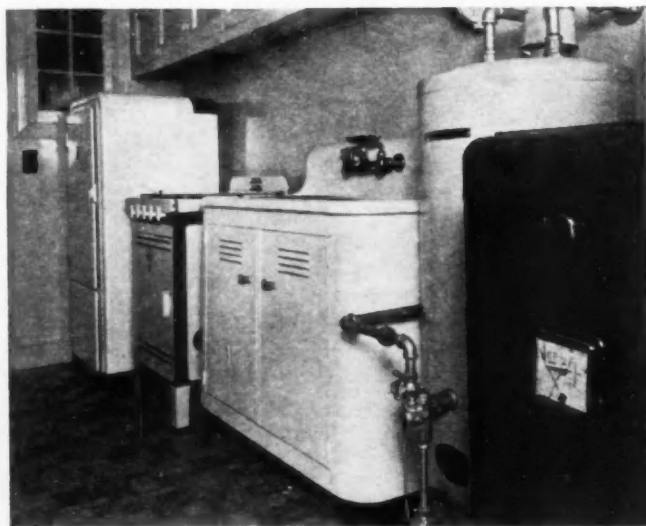
WELL STYLED and well equipped is this attractive house built by Harold W. Cheel in his development at Ho-Ho-Kus, N.J. There are 7 rooms, 2 baths and lavatory, and a 1-car attached garage. Front is of brick veneer painted white, and balance of exterior is covered with 18-in Perfection shingles. The entire house is thoroughly insulated with mineral wool, and all outside doors

and windows are weatherstripped. The equipment includes a modern gas-fired winter air conditioning system, a Rex 34-gal. automatic gas water heater, a modern gas range and gas using refrigerator in the kitchen. Girders consist of 7-in. steel I beams; sills and posts are 4 x 6 fir, and first and second floor joists are 2 x 10 fir. The architect is Carl Kemm Loven.





The Flat Comes Back



KITCHEN of one of the popular Washington flats, showing installation of gas heater, hot water, range and refrigerator.

THE Washington flat (elsewhere known by such high-sounding names as Duplex Homes, Garden Apartments, etc.) is a two-story center-entrance building, with two dwelling units on each floor. A common and important characteristic is that each separate dwelling unit houses its own heating plant which is automatically controlled and fired by gas.

The architecture is such as to provide common front and rear entrances,—usually rear porches, which means waste disposal is the tenants' own problem. No janitor is required, as structural repairs constitute the only up-keep problem. Fellow tenants are limited in number, and the occupant can be as isolated from them as he chooses. Certain privileges of a home are provided, such as a sodded, landscaped yard with gardening opportunities.

These four-family elements can be built in series, all under one roof and separated by party walls, or entirely detached.

Automatic Gas Heat Turns Lowly Flat Into Luxury Home—and Gives Washington Builders a Profitable Source of Business. Thorough Insulation Methods Developed

Because of the extent to which gas utility companies in many cities are becoming concerned with the possibilities for increased heating business offered by flats, builders interested in this type of construction will find in them a willing ally. In Washington and other cities rates have been voluntarily reduced to an attractive "promotional" basis to induce the public to utilize gas for heating, and the companies have otherwise closely cooperated. Dependable estimates of fuel consumption furnished by the gas company are of value in convincing prospective tenants of the economy of gas heat, especially in cities where it is relatively new.

By being provided with automatic gas heat—which everyone recognizes as the epitome of living comfort—the once lowly flat has been endowed with the one thing which would make it sell or rent to luxury-loving people of today.

As automatic gas heat sets the modern flat apart from less desirable multiple housing types of today as well as yesterday, so *individually* controlled automatic heat differentiates the flat from the apartment dwelling. In the one case he actually gets what he pays for, writes his own fuel bill. He pays for such services as house heating and hot water on an equitable basis, frugality is rewarded and waste is penalized. As requirements and desires of families vary in the matter of heat, individual operation is advantageous, entirely apart from the cost factor.

The problem of maintenance is simplified as equipment is serviced by the utility company. In Washington this service extends to kitchen appliances which, for the most part, are modern gas ranges and gas refrigerators. While a few operators prefer to omit the refrigerator on the assumption that a tenant could purchase one about as cheaply as he could rent one (through paying slightly

higher flat rental), the common practice is to provide all essential equipment.

In considering flats for investment, the operative builder is primarily interested in the initial cost and the operating income. It is found that flats require a minimum of cash to finance them. The average cost on the basis of Washington's standards is from \$9,500 to \$10,500, exclusive of the land, which price should allow a nominal profit for the builder. It is now possible to borrow a large part of the cost, which means that the smaller operator can be attracted. The speculative element is almost excluded because we are dealing with conservative rental properties.

There is ample profit for the cash investor; many of the Washington units have sold at a profit and the retail demand is good. As a source of income, the flat property is ideal—rentals approximate \$2,000 a year for the four units, which should amortize a \$10,000 investment in ten years, in addition to yielding a fair return.

A unique advantage in ownership of a group of flats is the easy stages with which they can be liquidated. In times of stress, apartment owners have had to lose an entire building because they were unable to carry it in the entirety. Ability to dispose of flat properties fractionally—in blocks of four units—makes for insurance against such unforeseen demands as curtailment of mortgage, which might jeopardize all of one's holdings if they were in a single building. Four to forty flat units can be under one roof, each four individually titled.

Good Insulation Important

One of the most important lessons learned by Washington builders engaged in this field has been the necessity for thorough insulation. This is highly essential if gas heat is to be offered on the basis of economy. Insulation methods developed in Washington by builders of flats, in co-operation with the gas company, have been accepted as standard in other cities utilizing this type of construction.

To visualize the more important heating installation and insulation problems, there is reproduced herewith a cross-section through the typical four-family flat. This is a hot water heating system, which up to the present time has been largely employed in Washington. The possibility of adapting air conditioning as well is being explored; the units are available and in time will come to be used in flats.

It will be noted that the walls are furred. A dead air space has been left between the masonry and the plaster board. There is little or no excavation—accounting in part for low construction costs—so the floors immediately above the ground are insulated. This is accomplished by the insertion of mineral wool between the joists, held in place by wire mesh and building paper.

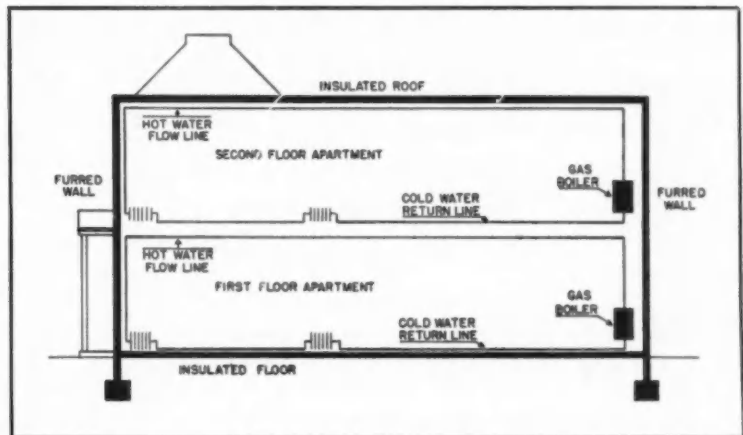
The second floor ceiling area is insulated in the standard manner, using four inches of mineral wool between the joists. Flow lines from the hot water boiler serving the second floor apartment pass over the second floor ceiling, and return lines on the first floor pass under the floor. These are also insulated to minimize the escape of heat.

So well have builders of Washington been educated as to the advisability of constructing for heat conservation (largely through flat experience), that throughout the territory, in all types of houses, furred walls, insulation, weatherstripping and caulking are regular practice.

It must be recognized that the modern flat is conceived



TYPICAL WASHINGTON ROW HOUSE unit which has individual gas heat and hot water equipment.



CROSS SECTION of a typical flat, showing insulated floor and roof, and furred front and rear walls.

for a small family. Most of those in Washington contain but one bedroom—perhaps 10 percent contain two bedrooms, which is a practical limit. From a profit standpoint the single bedroom flat is much more desirable, as income from the two-bedroom unit is not at all proportionate to its increased cost.

One important builder of Washington who has pioneered in this field and constructed upwards of 1,000 units advises against restricting flats entirely to one-bedroom size. He finds it "good business" to provide for the occasional family requiring more accommodations, even at a reduced profit.

Properly designed and located, the flat of today appeals to the higher element of young people who demand good living. In the experience of Washington, a surprising number of flat tenants are those with responsible positions and substantial incomes. They are the pleasure-loving people of today, content with fairly meager living quarters—if comfort is to be found in them—but who insist on driving fine cars, going to expensive places and otherwise maintaining a lofty standard of living. They are glad to dispense with the care of home and grounds and furnishings to make other enjoyments possible.

Under auspicious local conditions, and particularly where attractive gas rates and a co-operating utility company service program exists, the flat can be brought back, a service rendered to the community and unexpected profits realized by the builder.

Profitable Modernization with Gas

Compact, Modern Equipment Used in Putting Old Properties on a Paying Basis

By CHARLES K. HIRZEL

THOUSANDS of old buildings in the large metropolitan areas as well as smaller cities can, and are, being turned into profitable properties through intelligent modernizing. In such work, modern gas equipment, because of its compactness and flexibility, is playing an important part. Requiring no fuel storage space and only a pipe line connection, gas equipment can be placed without direct accessibility to street. Tiny and remote locations can often be used. The size of gas appliances being comparatively small and their service being simple, they use a minimum of building cubage and permit the owner to devote more room to profitable purposes.

Many of the modern gas appliances are so thoroughly automatic that the general

statement can be made that they can be installed, started up and then left alone to perform their duties automatically without further attention. Access for service and use is also minimized for the designer who specifies gas equipment. Service is reduced by elimination of moving and of wearing parts. Thus, parts replacements are few or nil and service access is a minor consideration. With automatic control, the user is relieved of rendering constant personal attention.

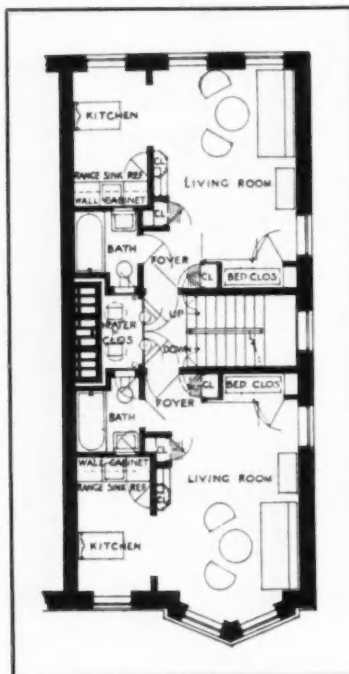
Valuable assistance to architects and builders in solving modernization problems is offered through the services of many local gas companies and the Home Appliance Planning Bureau of the American Gas Association. The gas industry is actively helping to make modernization work profitable to builder, architect and owner.

Special ranges and refrigerators for use in modernizing small kitchens have been developed. The 3 cu. ft. refrigerator can be installed below a sink drainboard or below a gas range of the type with high oven and broiler. These kitchen appliances are reviewed in detail in other parts of this issue.

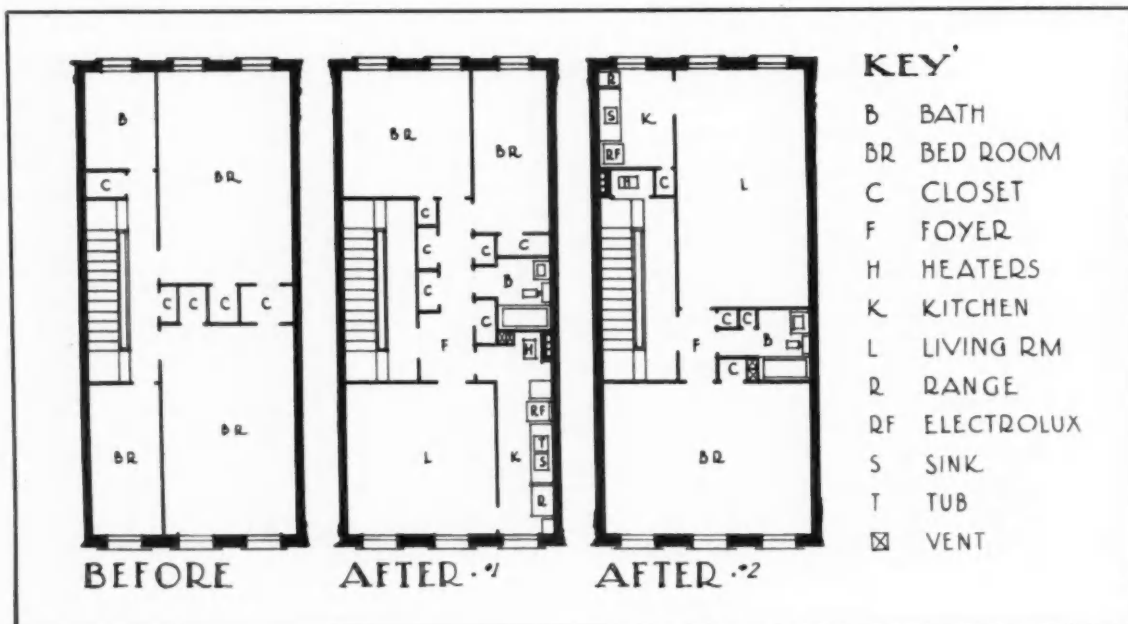
For automatic hot water supply the gas industry has another diversified line of models. They may be classified as automatic instantaneous, automatic gas-designed storage, conversion storage and the well-known side-arm nonautomatic heater.

Instantaneous heaters are recommended for locations where long intervals of several hours or more occur between times of hot water usage. They should be installed close to the point of use to eliminate long hot water pipe lines and loss of heat from such lines. They are used most successfully for single family units or individual apartments where tenants or owners, such as business couples, use the hot water relatively infrequently, or for stores where little hot water is required.

Where there is someone at home during most of the day, hot water can be economically supplied with a storage tank heating unit. Attractive models with concealed controls can be used in finished rooms, such as the kitchen. A spherical tank, enclosed in a low cabinet similar in appearance and dimension to modern kitchen cabinets and



TYPICAL FLOOR PLAN of an old-fashioned city-brownstone apartment which has been modernized and equipped with individual gas heating units and modern kitchens.



TWO practical rearrangements of a typical old-fashioned apartment, providing modern heating and plumbing, ample closets and individual gas heaters.

with a stainless steel counter top, has been placed on the market recently. It is suitable for installations in kitchens, laundry rooms, etc., where appearance and counter space are desirable.

Where extensions or additions are made to the heated portion of the house and the budget does not provide for replacement or addition to the central heating system, small automatic gas units can be used in addition to the existing plant. For instance, heat may be desired for a porch newly enclosed, for an attic or basement which is to be finished and heated, or for a new wing or room extension.

Heating units for this purpose may be gas-fired boilers with radiators, gas-fired forced warm air systems or gravity warm air systems with ducts. These will give occupants complete heating in every room. Other types of heaters with automatic thermostatic control are installed in individual rooms. In this group are included warm air circulators with or without a fan, gas steam radiators, kitchen ranges with built-in heaters, radiant-fires, floor heaters, etc. The heaters in this last group can be installed in the principal rooms such as living room and kitchen.

The space required for a gas heating system is very small. For instance, for a four-room apartment, a central unit occupies less than three square feet of floor area. Equipment can be put into this space by superimposing the water heater above the boiler, as shown in an accompanying illustration. The appliances may be installed in a kitchen closet or a locked closet opening from the public hall, or it may be placed in an alcove of the kitchen.

Winter air conditioning which is becoming more popular, can be installed in individual apartments. A number of suitable and economical appliances are now available. Several are only two feet square in plan. These are built to be connected to the return air duct through the bottom or side of the base. They discharge the warm air vertically through the top. Thus, if installed adjacent to a central hall in the apartment, return air may be brought through the baseboard of the hall directly to the heater; the warm air can be discharged through the same wall at the ceiling into ducts. These may be hidden above a false ceiling in the hall. Closets can often hide branch ducts.

Heating of this type has been found to be very attractive to owner and tenant. In addition to the heating, humidification can be supplied by the same appliance. Air circulation by means of the fan can be used throughout the year. During hot weather this air movement will help to provide a cooling effect and make the apartment more comfortable. Air filters to clean air are recommended. Winter air conditioning has further advantages by eliminating radiator floor space.

In using a gas-fired boiler for automatic heating in an apartment, either a hot water system or a steam may be installed. If the boiler is on the same floor with the radiators the former type is required. If the boiler can be located at a lower level a steam system may be used. Gas boilers are especially designed for this type of installation. They are compact in construction, neat in appearance and are available in a number of sizes.

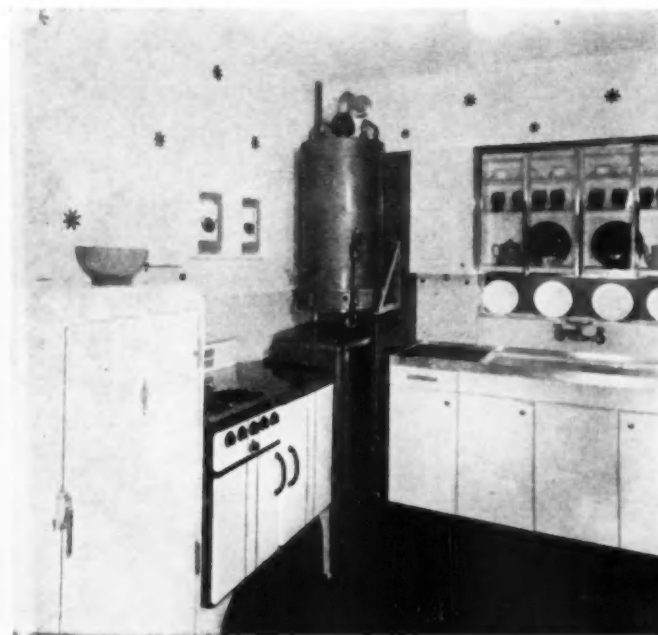
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A 7½' x 9' MODERNIZED APARTMENT KITCHEN in which is located an individual gas heating boiler and hot water heater, as well as range, refrigerator and standard kitchen equipment.



COMPACT PACKAGE-TYPE EQUIPMENT used in modernization work. Includes a gas heating unit and hot water heater with storage tank.

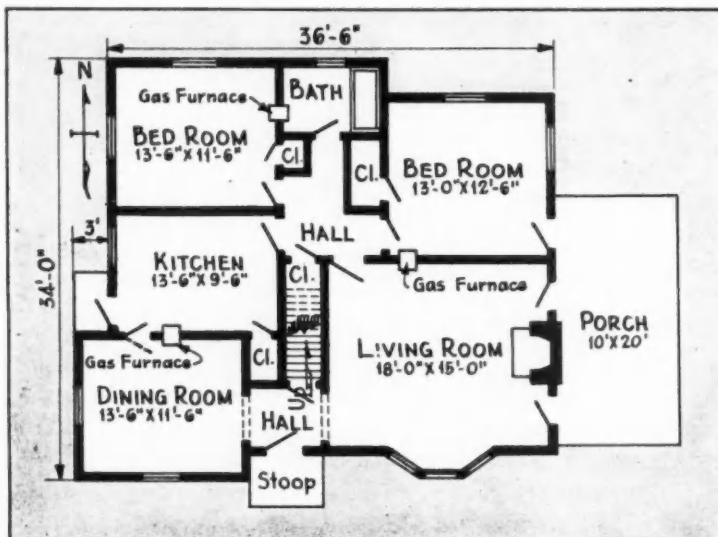


MODERNIZED GAS KITCHEN in which is located gas heating unit and hot water equipment which require minimum floor space.



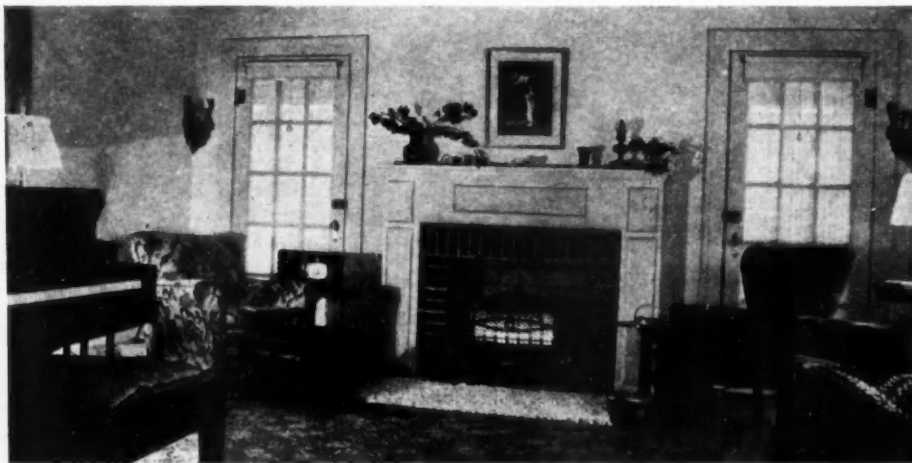
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Popular in Little Rock—3 Floor Furnaces

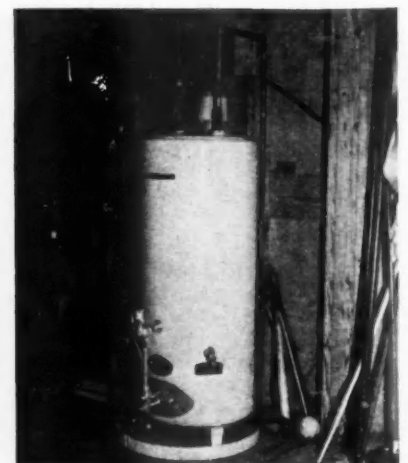


BUILDER C. T. Butterworth of North Little Rock has found the above a popular type of house. He equips it with 3 Empire floor furnaces, a Pittsburgh hot water heater, Detroit Jewel range, gas burning refrigerator, Adams Radiant fireplace heater. In addition, there are built-in Radiant gas heaters in the bedroom and bathroom.

The house has 5 good rooms and a bath downstairs, and there is space for additional rooms and a bath upstairs. There is a wood-burning fireplace, ample electric outlets, 2 radio aerial and ground outlets, electric door chimes, a 10 by 20-foot screened porch. The large bay window in the living room is an attractive feature, both for the interior and exterior of the house.



THE WOOD-BURNING FIREPLACE is equipped with a Radiant gas fireplace heater.



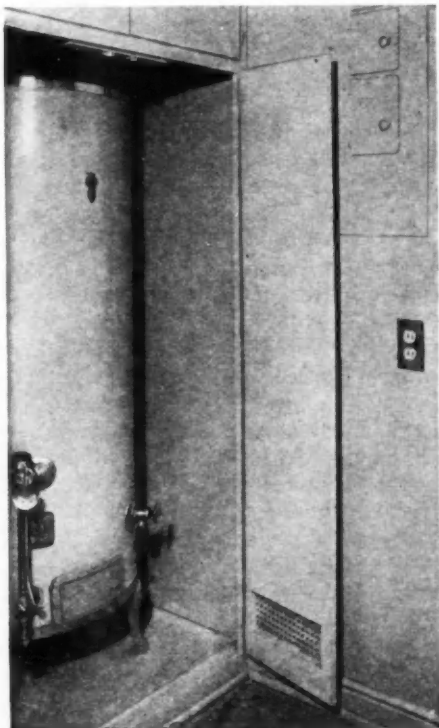
WATER HEATER located in attic.



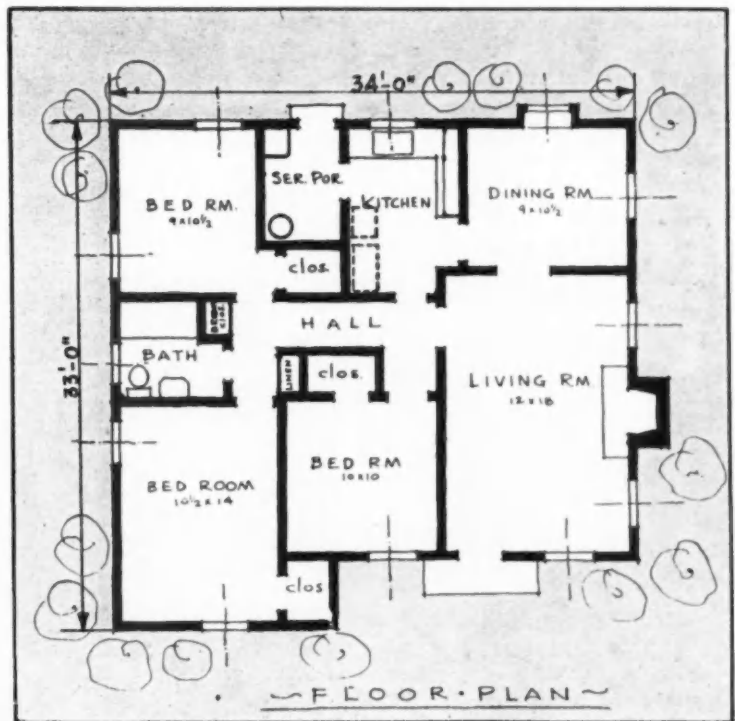
Popular Gas Home in San Gabriel Village

ONE of a large number of attractive small homes being built by Percy Bilton in his new San Gabriel Village development near Los Angeles. The house is designed for a family requiring 3 bedrooms. A service porch off the kitchen is provided. Bilton is providing a well built house of frame and stucco with hardwood

floors throughout, Overhead garage doors, complete modern appointment. For heating equipment he selected a Pacific Dual furnace. The kitchen equipment includes a Magic Chef range and a gas refrigerator. The 12 by 18 ft. living room is well proportioned, with good light and a large fireplace.



WATER HEATER located in cabinet.



FLOOR PLAN provides 3 good bedrooms and bath, large living room.



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A WELL planned, attractive, practical gas kitchen. Note continuity of work tops, cabinet sink and gas range.

Modern Kitchen Planning and Gas Range Cooking

THREE main factors combine to make a kitchen modern: up-to-date, efficient appliances, adequate equipment, and practical coordination of the various elements that combine to make up the kitchen.

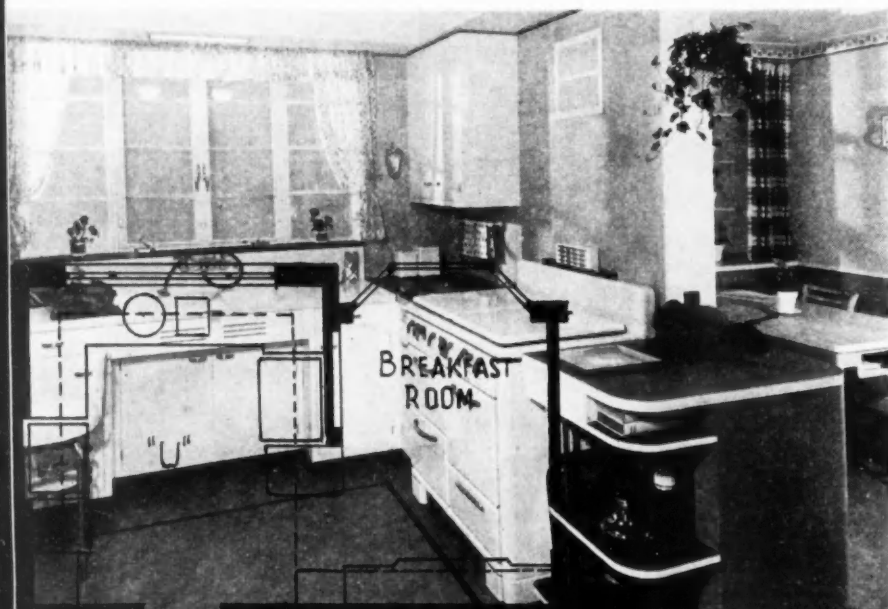
It has always been an American institution that the kitchen should be more than a factory for cooking operations, it should also be a livable room. So to the above mentioned factors must be added two others of considerable importance: comfort and beauty.

The demand put on the kitchen differs greatly from other rooms in the house. It is primarily a production center and the basic approach in planning the kitchen should be functional. Correlated efforts of designers, architects, and manufacturers have resulted in a solu-

tion of every problem related to kitchen efficiency and kitchen convenience. In the wake of these efforts has also come, inevitably though perhaps unforeseen, a well defined standardization of equipment and equipment relations. This standardization of equipment, dimensions and arrangement makes it comparatively simple for the kitchen designer effectively to organize the separate units and work centers to create a thoroughly practical kitchen.

The skill of the designer comes to a test when he must meet specific needs of the kitchen or the demand to relieve the frozen, impersonal appearance likely to result in following a standardized program of arrangement. While standardized equipment very much simplifies kitchen construction, it reduces the possibilities for individual treatment or personalization. It is this that presents the greatest problem in today's kitchen planning. At this point the designer must resort to imagination by giving to the purely functional plan, decorative treatment and touches that add fillip and character to the kitchen and elevate it from a mere kitchen into the status of a room.

Even a casual observer knows by now that the planned kitchen is efficiently divided into work centers where the dominating unit of each center is related in function to the kitchen as a whole. The



"U" SHAPED kitchen with adjoining breakfast nook.

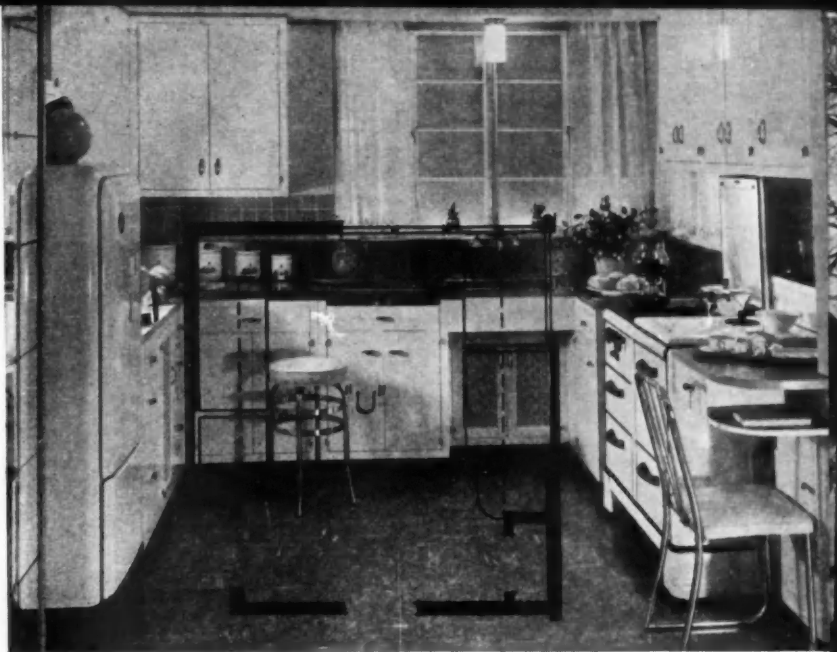
process of food production is practically identical in the average home and remains fairly constant. It may appear in theory that food service requirements determine space requirements. This is true but only to a degree. In actuality it is rather related to space organization. The scientifically planned kitchen allows no waste of space but puts every inch and every area into service, for practical planning means placing of appliances, equipment, and supplies within easy access so that a minimum of effort is required to accomplish any project. Space without specific use serves no purpose in a room where step-saving is a major object. The recommended principle is to have the kitchen compact without real or apparent crowding.

Changing food habits and modern buying habits have affected kitchen requirements immeasurably. Food packaging, tinned and preserved goods, as well as the tendency to buy less at a time and buy more often, make smaller demand on food storage area. On the other hand most families have more utensils, more crockery and glassware than formerly and require more capacious compartments for their housing. These are trends which have materially affected kitchen design and the demand for better kitchens. Designers and manufacturers of kitchen appliances have exerted themselves in producing appliances and equipment that are not only perfect in performance but pleasing to the eye. With better designed and more handsome kitchen equipment the decorative possibilities of the kitchen have unfolded and the modern kitchen should be not only efficient but as attractive as its functional purpose permits.

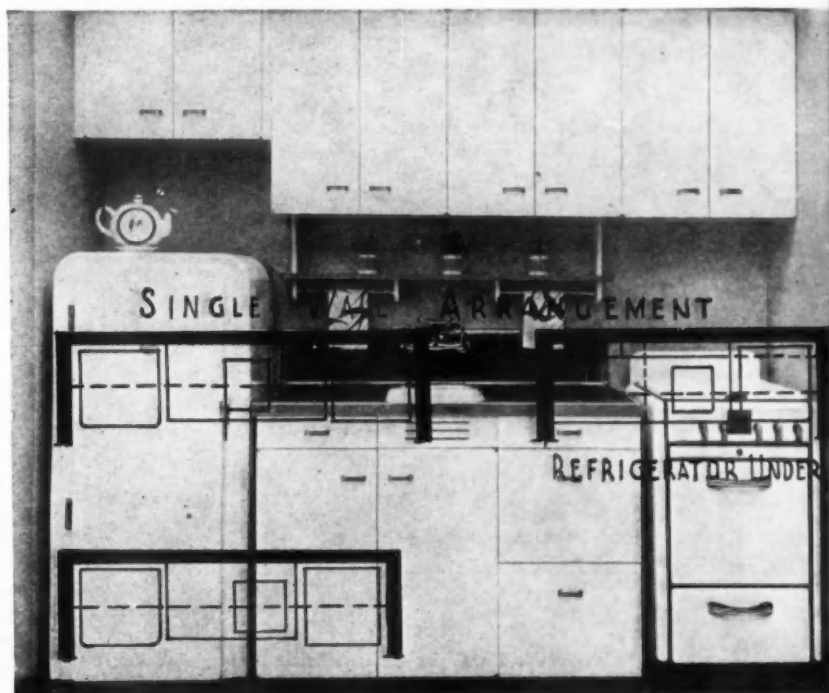
Certain aspects must be considered in the first approach of a kitchen plan: the number of operators working in the kitchen, the counter or table space needed for special requirements and if eating space or space for other purposes should be provided. It is obvious that some relation of kitchen size should be established with the rest of the house. It is generally sound to relate the size of the kitchen to the number of bedrooms in the house. In addition, entertaining, future growth in the family and likely increase in kitchen utensils and service ware should be considered.

It is seldom of any value to oversize the kitchen beyond average needs. Since any home may be subject to sale, the normal or average requirements should guide the extent of special or unusual equipment provided, especially when these features are built-in. It is, however, advisable to choose appliances for maximum requirements. Where a four burner, single oven gas range may serve the family's every day needs, a six burner, double oven may be required for holiday meals and entertaining. Precisely the same is true of the automatic refrigerator. In planning the space for the refrigerator and the gas range it is highly advisable to allow space for future replacement of larger units. In fact, a degree of flexibility should be effected in placing the major appliances and work-areas as well as in decorations. This forethought is certain to prove of value both to the existing owner and a future purchaser. No design should be so rigid that it excludes all possibilities for expansion or change.

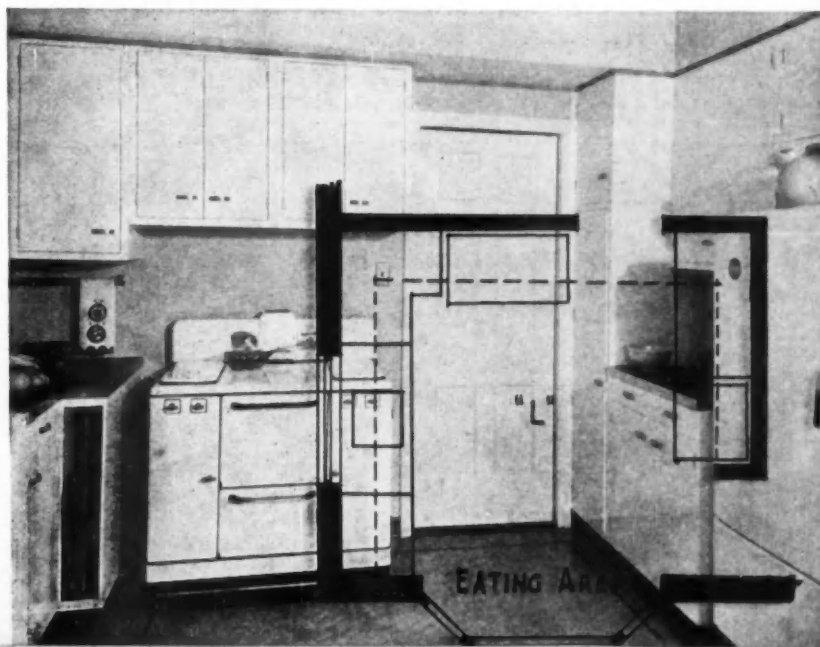
Expert designers have evolved definite ideal kitchen plans where every element that goes into the kitchen is perfectly organized and every

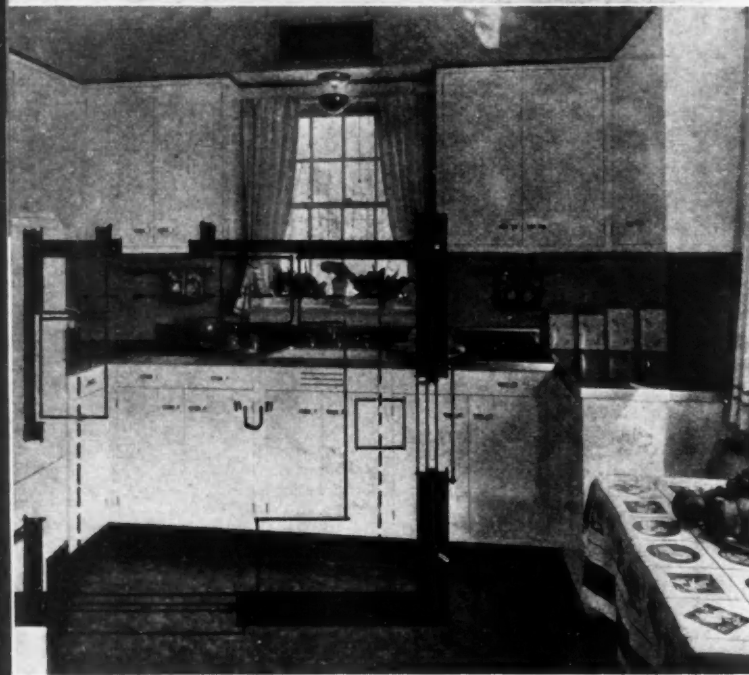
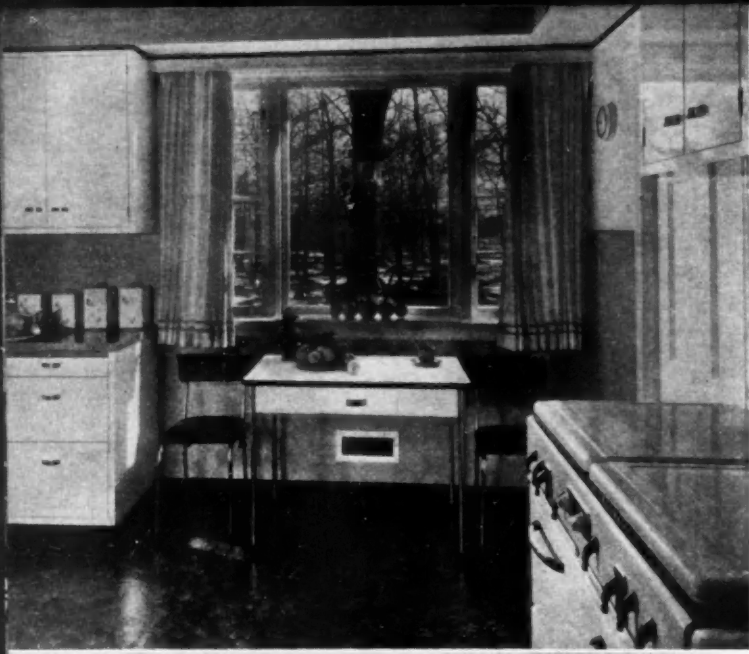


PLAN of "U" shaped kitchen; all work centers closely related. Note knee-hole sink located to one side beneath large double window.



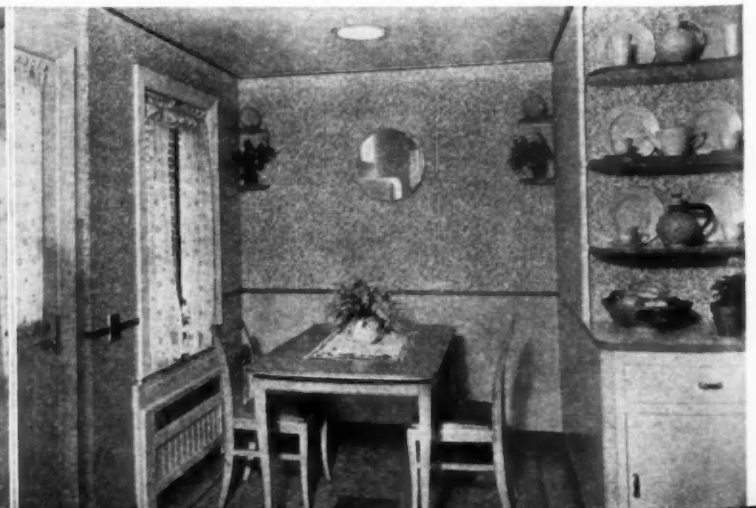
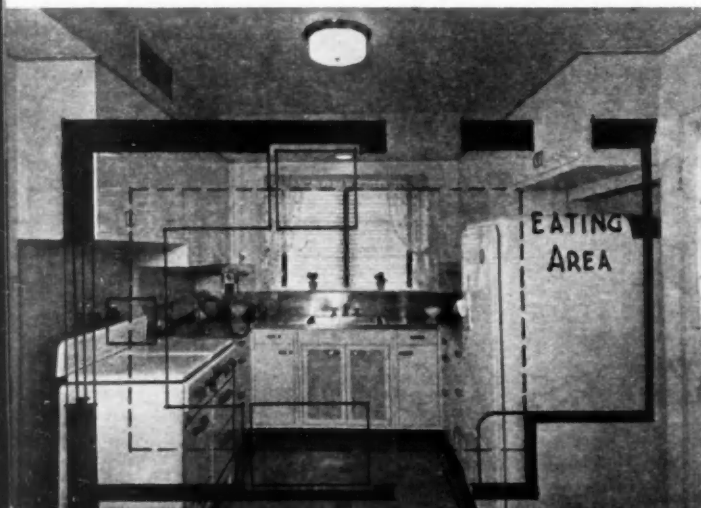
ABOVE: Single wall arrangement for minimum requirements.
BELOW: "L" planned kitchen; note tray space near gas range.





UPPER VIEW: Picture window wall is a feature in this happy kitchen. The gas range is placed near dining room door (left on plan diagram). LOWER VIEW: Same kitchen from dining room door. Organization of units permits orderly, efficient kitchen arrangement.

BELOW, LEFT: This is an ideal "U" type, compact and well organized. Furring carries ventilation. RIGHT: Separate eating nook. This useful area is found especially valuable in a large household.



requirement adequately met. A preferred plan is the "U" type of kitchen where the sink and preparation center form the base of the "U" and the refrigerator with adjacent storage and work-area form one leg while the range and serving area form the other leg. Near-ideal is also the "L" type kitchen. Both types are compact, step-saving and traffic clear. Structural or architectural conditions may not permit either of these plans to be carried out to perfection but it is advisable to strive for a resemblance of the arrangement even when conditions force a concession. Close to the "U" and "L" type in convenience and floor economy is the rectangular kitchen, especially if two of the major units can be located on one wall and the opposite wall can be used for one work center, storage supplies and work area. Space requirements for an eating space are often a problem since it should be somewhat separate from the actual work centers. Where a nook or breakfast room adjoins the kitchen there is no problem at all but where this is not the case a minimum area serving the twofold purpose of work table and eating table may be arranged. The trend here too, is to a highly organized simplicity relieved by ingenious color treatment.

Clear, Clean Colors Best in Kitchen

White is accepted as standard in appliances and equipment. This absence of color in the dominating units results in a vapid, uninteresting appearance unless offset by color. Decoratively, the kitchen can be as effective as any other room; actually it invites a liberal use of decorative effects. While essentially a modern room it can easily take on the distinguishing earmarks of a period house if that is desirable or it may ally itself with any distinctive type of decorative scheme. Clear, clean colors are most effective against white equipment. Exposure, amount of light and reflection should be considered in selecting the color treatment. In general, the larger wall area should be held in softer colors, more intense and purer colors should be used for accents and interest in lesser area, mouldings, trim, shelf edges, et cetera.

In selecting any color scheme it should be borne in mind that the final color touch comes in curtains, accessories, and incidentals. The floor and its treatment plays no small part in today's color scheming. A wide and well designed selection of types and patterns give excellent opportunities for interesting effects. Lighting and proper ventilating, whether through fenestration or by mechanical means, should be considered in the initial kitchen plan; it is a factor of great importance for the comfort of the kitchen operator.

Well planned, effectively organized, and cheerfully decorated, the kitchen will add more value and greater appeal than any other single factor of the home.



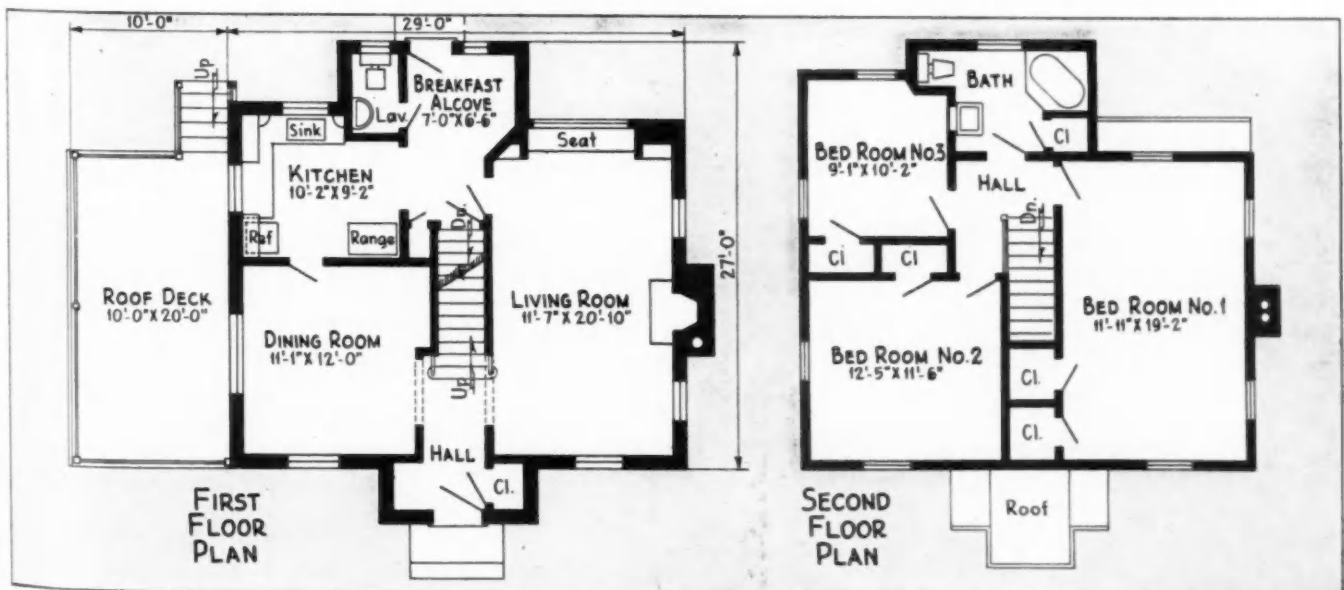
GAS-EQUIPPED kitchen and basement in house at the right.



Long Island Operator Features All-Gas Equipment

STERLINGSHIRE homes, located in Queens Village, Long Island, and built by United Associates, are selling fully gas-equipped homes such as the above, with much success. The equipment includes a General Electric gas boiler, a 30-gal. Monel Metal water heater by Whitehead Metal Products Co., an Estate gas range and a gas refrigerator. This house has an attractive large

living room with a picture window at one end, an 11' x 12' dining room, a well laid out kitchen and breakfast alcove, with downstairs lavatory. Specifications include Celotex sheathing and lath, slate roof, mineral wool insulation, Armstrong linoleum, brass piping, Majestic circulator fireplace, Dutch Boy white lead and oil paint. The architect is William Paul LaVallee of Jamaica.





GAS-EQUIPPED MODERN HOME in new Beñz Park, near Portland, Ore., designed and built by J. Wayland Owen.



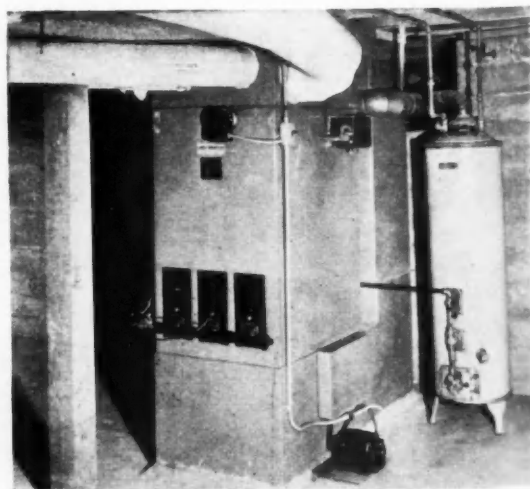
LIVING ROOM WALLS and ceilings executed in Nu-Wood.

CURLY BIRCH wainscoting, trim and doors in dining room.

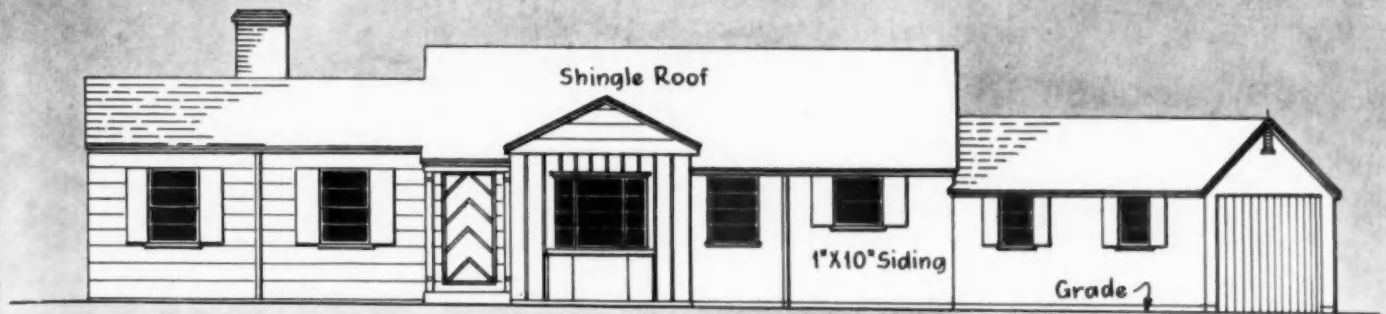


"House in the Woods" Portland, Ore.

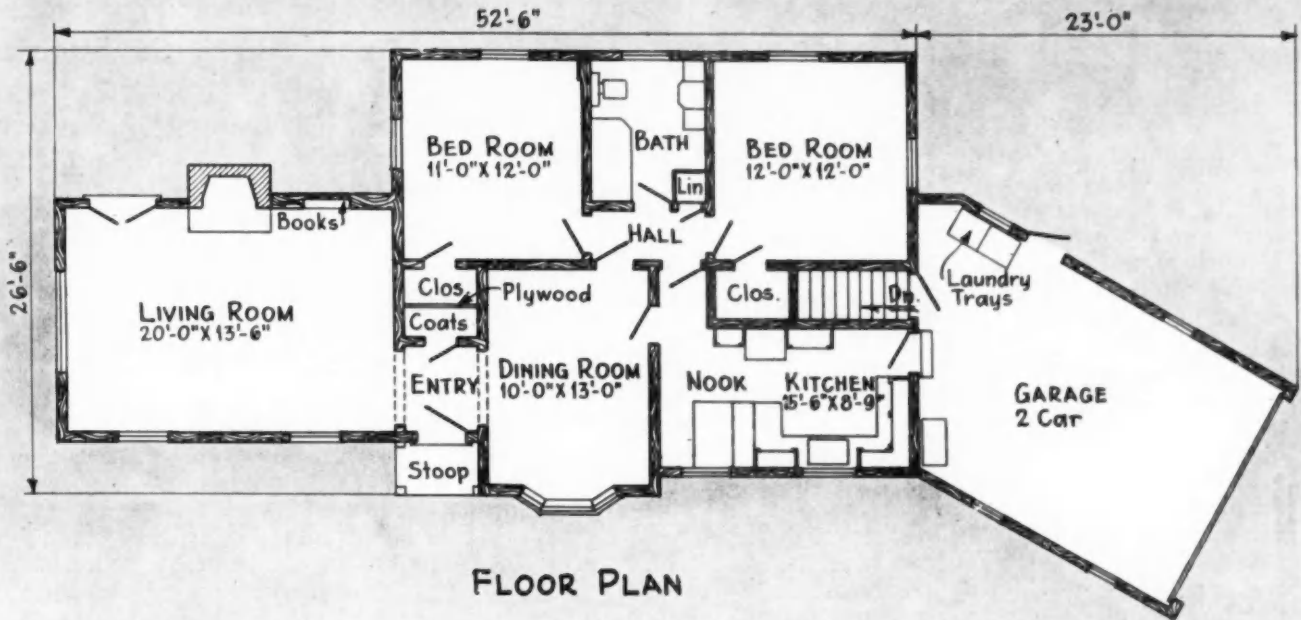
J. WAYLAND OWEN made this Portland home beautiful as well as modern and efficient. It has a low, rambling look that fits in well in the trees. The garage is attached at an angle. Exterior is of 10-inch siding, except for the bay window projection which is executed in 1 by 12 tongue and grooved vertical boards. Equipment consists of an Electrogas unit by the Lynch Furnace Co., Type DKO Ruud automatic gas water heater, a Norge gas range, and a gas burning refrigerator. House is insulated throughout with Balsam Wool.



GAS-FIRED AIR CONDITIONER and water heater.



FRONT ELEVATION



FLOOR PLAN

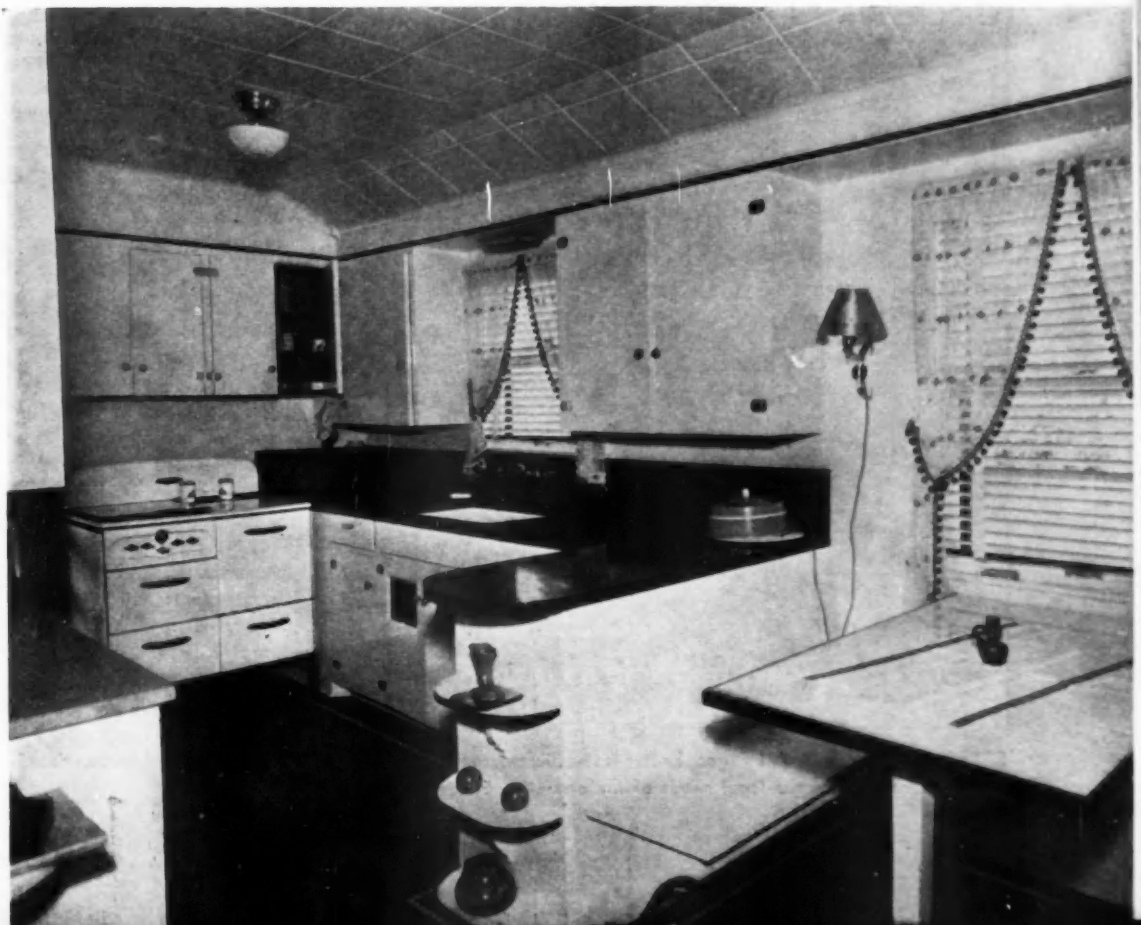
FLOOR PLAN AND ELEVATION of the Portland all-gas home shows many unusual livable features. The 20-foot living room is in a wing by itself. The 2 bedrooms are nicely segregated, with a bath between. There are ample closets, a large dining room and an attractive kitchen.

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Dining Alcove With Built-In Seat

THIS ALL-GAS kitchen is laid out with unusual skill and charm, in which the dining alcove with built-in seat becomes an attractive part of layout. The work area and drainboards are of Micarta. The breakfast table top is of Carrara glass. Nu-Wood tile is used for the ceiling, making for less noise and clatter.





Edwards... The Milwaukee Merchandiser

Construction Crews Kept Busy Through Specialty Selling Technique

THE old saying about the world making a beaten path to the door of the maker of better mouse traps may be correct insofar as mouse traps are concerned but . . . so few of us are in the mouse trap business. Unfortunately, too many builders have depended upon that mouse trap theory of merchandising in the selling of the homes they construct. A home is built with a hope and a prayer that someone will come along and buy it at a price which includes a reasonable profit for the builder.

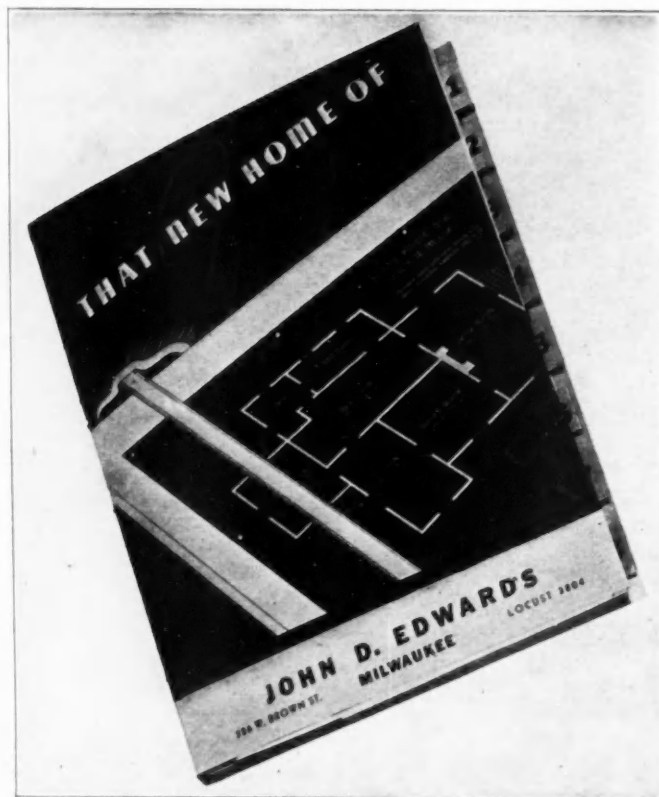
Hope and a prayer . . . and the gods of chance . . . play no part in the businesslike operation of John D. Edwards, one of Milwaukee's best known builders. With a background of successful sales experience, he adopted the building business as his lifetime profession approximately fifteen years ago. With the realization that quality of merchandise must be the foundation for permanent success in any business, he made dollar value his keynote . . . then he added the merchandising slant to make that dollar value known to the Milwaukee public.

In addition to his construction crews and his office organization, Mr. Edwards employs eight men who devote their exclusive time to the selling of the homes he

builds. These men, under the supervision of his son, Douglas Edwards, are trained in the technique of specialty selling.

A two-day Edwards sales school covers not only the general merits of his construction methods and the materials he uses but it also highlights certain features upon which the salesman can capitalize. Representatives of the manufacturers of the standard materials incorporated in an Edwards home are on the school program. The gas range representative, for instance, tells the salesmen about the advantages of his product . . . a representative of the gas furnace manufacturer sketches the merits of his equipment . . . the gas-fired water heater man has his opportunity to present his selling features.

All along the line, from the insulation man on through to the manufacturer of the bathroom fixtures, kitchen equipment, etc., the salesmen are given the "talking points" on the materials which go into an Edwards home.



SALES manual supplied by gas heater manufacturer and specially tailored to fit the local needs of the operative builder.

PRODUCTS USED IN JOHN D. EDWARDS "AGELESS-ART" HOMES

- Rezo Flush Doors—Paine Lumber Co., Oshkosh
- Queen Mary Shower—Milwaukee Flush Valve Co., Milwaukee
- Insulation—(Sprayo-Flake) Insulation Service Co., Milwaukee
- Electric Fixtures—Moe Brothers Milwaukee Co., Milwaukee
- Plumbing Fixtures—Kohler Company, Kohler, Wis.
- Standard Sanitary Mfg. Co.—Pittsburgh
- Asphalt Tile Floors—Thos. Moulding Floor Mfg. Co., Chicago
- Midwest Ventilating Fan—Midwest Ventilating Works, Milwaukee
- Steel Kitchen Cabinets—Modern Steel Equipment Co., Geneva, Ill.
- Asphalt Shingles—Johns-Manville Corp., New York
- Gypsum Block Partitions—U. S. Gypsum Co., Chicago
- Plaster—U. S. Gypsum Co., Chicago
- Duplex Sash Balances—Duplex, Inc., Los Angeles
- Bathroom Cabinets and Accessories—Miami Cabinet Division, Middletown
- Upward-Acting Doors—Rowe Mfg. Co., Galesburg, Ill.
- Linoleum Counter Top—Congoleum-Nairn, Inc., Kearny, N.J.
- Granite Face Block—Advance Cast Stone Co., Milwaukee
- Cement—Medusa Portland Cement Co., Cleveland
- Glass—Owens-Illinois Glass Co., Toledo
- Wood Flooring—E. L. Bruce Co., Memphis
- Haydite Block—Best Block Co., Milwaukee
- Concrete Block—Economy Block Co., Milwaukee
- Paint—Mautz Paint & Varnish Co., Milwaukee
- Shades—Columbus Coated Products Co., Columbus
- Storm Sash and Screens—Goelzer & Schultz Co., Milwaukee
- Pittsburgh Automatic Hot Water Heaters
- THOR—Stow-A-Way Kitchen Laundry—Hurley Machine Co.
- Plasterboard—Certain-Teed Products Corp., New York
- Gas Furnaces (Automatic) Surface Combustion Corp., Toledo

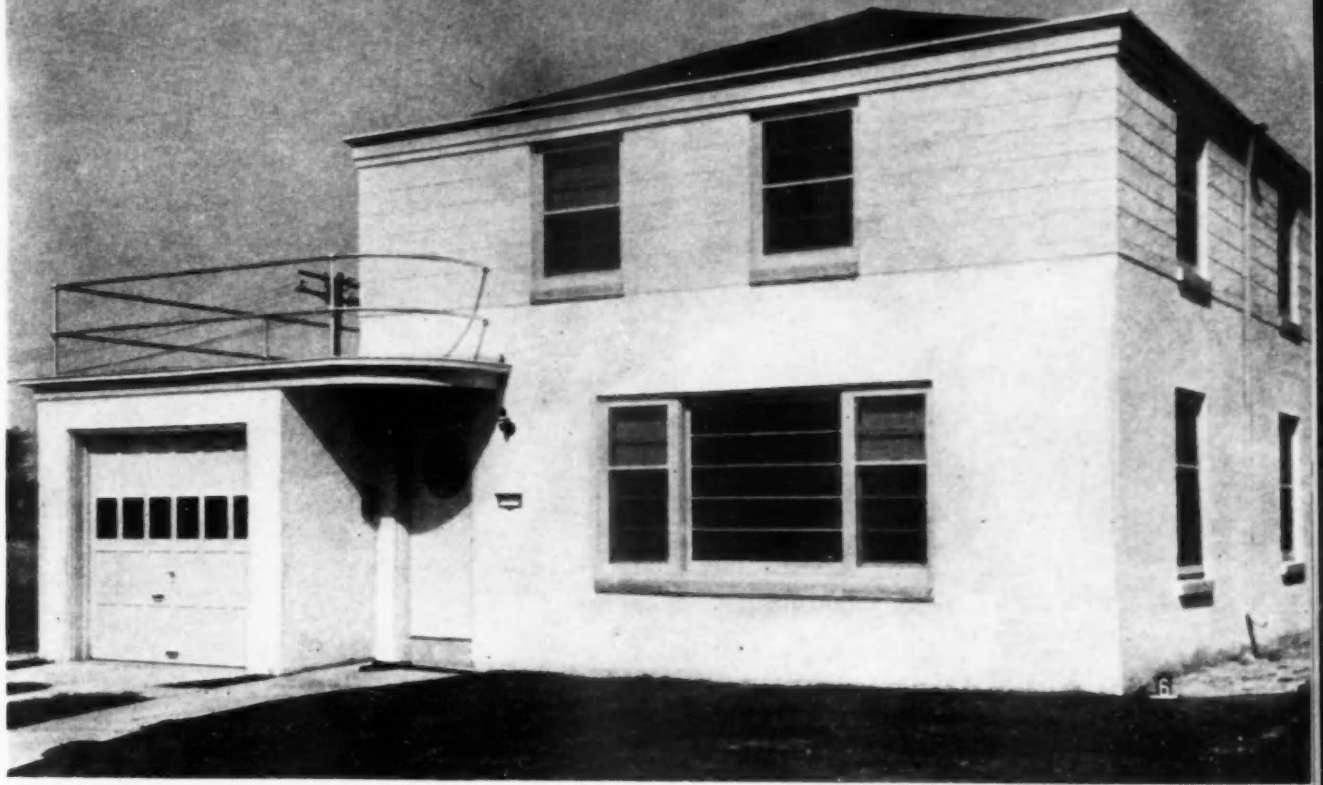


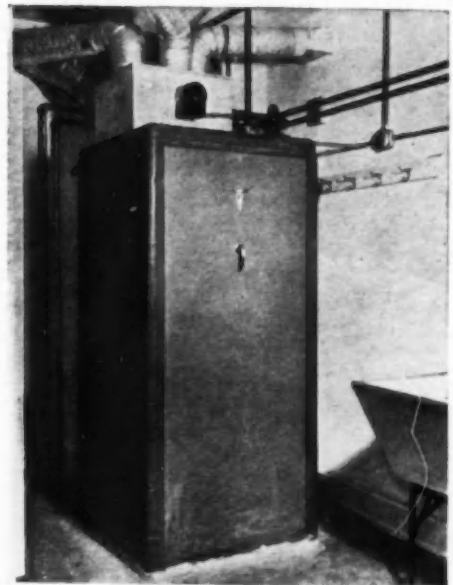
PHOTO above, floor plans at bottom of page, present an Edwards home of modern lines; Walter E. Wendland, architect.

Is it any wonder that after such training, those salesmen can present an extremely interesting and effective story of Edwards' quality? The Edwards salesman really knows what is in the home he is offering . . . really knows the quality of the materials and the sincerity which goes to make up the product he is selling.

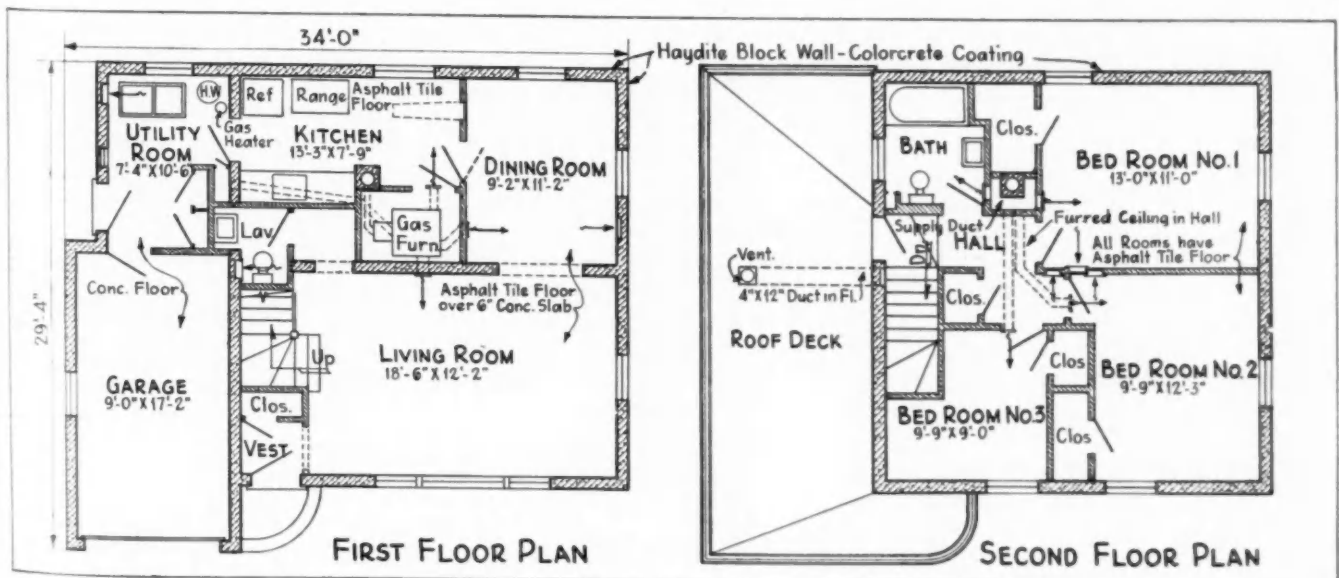
Both in the sales school work and in the morning sales meetings, the value of "visual selling" is stressed. Each salesman is equipped with one of the localized "Builder's Sales Visualizer" recently developed by the Janitrol organization and is thoroughly coached as to how that visualizer can be made to apply to the Edwards home as a whole and also to all of the products entering into the construction of that home.

The selling of the homes he builds, or would like to build, has long been the "bottle neck" in the operation of many a builder. By his merchandising methods, Edwards of Milwaukee has widened that neck to a point where he has set an example for the entire industry.

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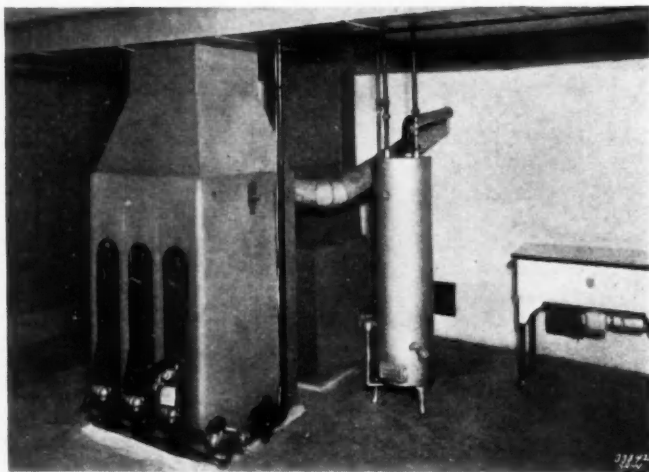


GAS heaters are featured in the Edwards houses.





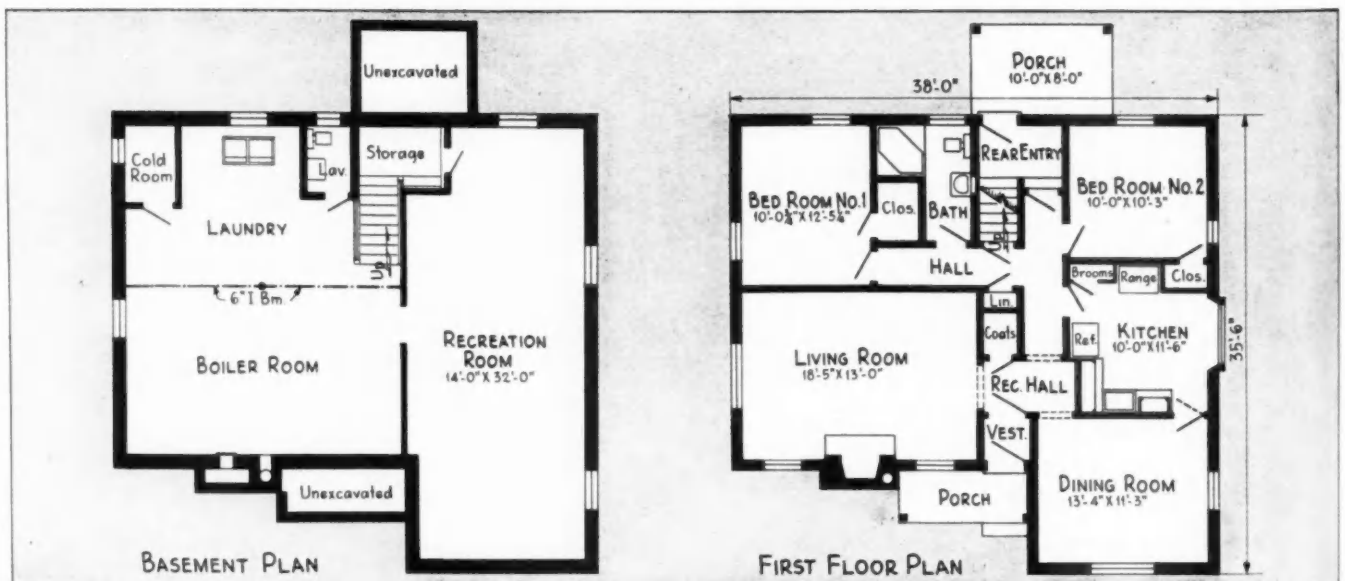
A SUBSTANTIAL TYPE of masonry bungalow built in Detroit by John Senese Co., and provided with complete gas equipment.



GAS FURNACE and automatic gas water heater.

Brick and Tile—Detroit

A SUBSTANTIALLY built house with brick and stone walls, green tile roof, concrete steps and porches, built by John Senese Co., of Detroit. It is thoroughly insulated with 4 inches of mineral wool in the ceiling and Kimsul expanding blanket insulation in sidewalls. The heating equipment is a Mueller gas-fired unit with winter air conditioner. Other gas equipment includes a Hardwick range, a 20-gal. Everhot water heater, and a large size gas refrigerator. Copper conductors, eave troughs and flashings are used throughout.



Hot Water—Always on Tap

By JOHN W. CLARK

Chairman A. G. A. Water Heating Committee

WILL this house be satisfactory to the owner? That is a question that every architect, builder or real estate developer wants to be able to answer in the affirmative; for with homes, as with other things, large or small, a satisfied customer is the best advertisement.

Here it is our province to discuss just one important item that has decided bearing on the home owner's satisfaction—or lack of it.

That item is hot water supply.

What are the uses for cold water in the modern home? As a beverage, as a necessary compliment to the well-known toothbrush, and as a part of the system of sanitation. That's about all. How about hot water? Its uses are legion and we shall not attempt to list them here.

Granted that every home must have hot water, it is only necessary to determine what constitutes a satisfactory supply and to select suitable equipment to meet the requirements.

The prospective owner of a new home definitely wants automatic, care-free hot water service. Perhaps he has struggled along for years with a recalcitrant pot stove. Perhaps he has suffered the inconveniences of a manually operated heater which had to be turned on and off to provide each hot water demand. Perhaps he has been accustomed to hotel or apartment house hot water service with a plentiful supply always available.

In any case he wants automatic hot water service in his new home, and he will not put up with anything else, any more than he would buy a new car without a self starter.

What other qualifications must be met to provide satisfactory hot water service? We list them below, although not necessarily in the order of their importance.

1. Adequate supply.
2. Constant and proper temperature.
3. Safe dependable operation.
4. Reasonable cost.
5. Automatic fuel supply.

An automatic water heater using gas as a fuel meets every requirement for satisfactory service. Let's consider each of the above items separately.

1. **ADEQUATE SUPPLY.** This is simply a matter of selecting the proper size and type of heater to fit the job. Automatic gas water heaters are available in a complete range of sizes to fit the hot water needs of the four-room cottage or the forty-room mansion. There is a further choice of various types of automatic gas water heaters. The most popular is the storage type, and here again we have a choice of the low input burner, the high input burner and the adjustable input burner.

Large dwellings with several baths call for a large volume heater which is generally classed as any heater having a capacity in excess of one hundred gallons of hot water per hour.

In certain cases where hot water requirements occur at periodic intervals, such as in churches, gymnasiums, etc., the automatic instantaneous water heater may prove to be best suited for the job.

2. **CONSTANT AND PROPER TEMPER-**

ATURE. Usable hot water temperatures in the modern home vary from the tepid bath at 105° to steaming hot water at 145° for rinsing dishes and for the washing machine. The thermostat on an automatic gas water heater holds the temperature of the water within a narrow range. The customary top limit is about 145° F. When the desired temperature is reached the gas flame is automatically cut down, thus effectively preventing overheating. When hot water is used the thermostat turns on the gas to replenish the supply.

Hot water supply systems which take heat from the furnace during the heating months are subject to the vagaries of the house heating demand. Sometimes the water is luke warm, at other times it may reach dangerously high temperatures.

3. **SAFE DEPENDABLE OPERATION.** All automatic gas water heaters bearing the seal of approval of the American Gas Association Testing Laboratories are equipped with safety pilots. The safety pilot is a device to prevent the escape of unburned gas. Should the flame become extinguished through any cause, this safety device closes off the gas to the main burner, thus preventing waste of fuel.

Another important factor vital to safe operation is positive, accurate control of water temperature. This is accomplished by the time tested thermostat with which the automatic gas water heater is equipped. Excessive water temperatures are hazardous. Scalding hot water from the faucet or shower bath fixture causes serious and painful second or third degree burns. High temperatures in the hot water supply system will damage the equipment and constitute a potential explosive force, which has wrecked many homes and caused loss of life.

4. **REASONABLE COST.** Hot water supply is a year-round job. Equipment must operate at uniform economy, winter and summer. The modern efficient automatic gas water heater answers this requirement. Just enough gas is used to supply the hour to hour and day to day demands for hot water. The cost of gas fuel for heating water will be found to compare favorably with other fuels when relative efficiencies are taken into account.

One of our country's great industries, the gas industry, assures the user of gas fuel of a stable price for its commodity. The owner of a home equipped with an automatic gas water heater knows that his local gas company stands ready to furnish expert service, so that his equipment may be maintained at a high state of operating efficiency throughout its long life.

5. **AUTOMATIC FUEL SUPPLY.** A record of over one hundred years of continuous, dependable service has been achieved by the gas industry. Gas flows through pipes underground, it is not affected by winter's cold or summer's storms. The home owner who uses gas does not have to tie a string on his finger to remind him that the supply is almost exhausted. He does not need to question the grade or uniformity of the fuel. He has no apprehension of an overnight change in fuel prices.

In short, the owner of an automatic gas water heater is assured of year-round satisfactory hot water service.

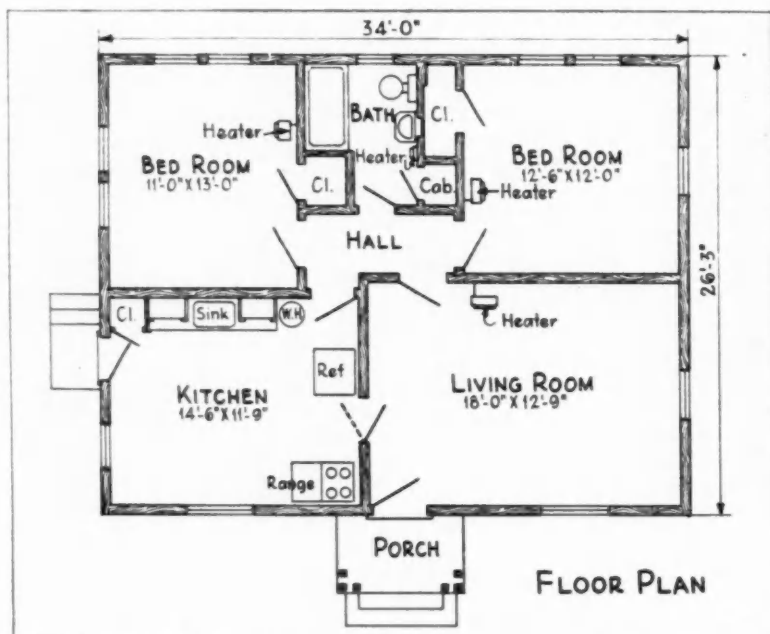


Dallas Bungalow With Individual Gas Heaters

THIS basementless Dallas home is low in cost and compact in plan. Since it is heated with individual gas room heaters, no chimney is required. Builder Nelson A. Farry of Dallas selected a Rapid gas water heater by the Ace Manufacturing Co., a gas burning refrigerator, Magic Chef range, 1 Heart-Glo gas heater by Jaches-

Evans Manufacturing Co., 2 Peerless Radiant heaters and 1 Peerless bath heater by the Peerless Manufacturing Company.

This house is typical of many in the South which, due to the climate, can be built at prices far less than those possible in the northern part of the country.



PINE PANELED KITCHEN—both wall and ceiling—is a feature of this all-gas Dallas bungalow. Floor plan at left is a practical standard arrangement for a house of this type which is compact and low cost.

Builders' Data on Gas Refrigerators

"No Moving Parts" Feature Proves Strong Sales Appeal. Installation and Operation Details Given

THE builder is the man who determines how fully equipped and how modern a kitchen shall be. He is the man who has to guarantee the entire house and its equipment. The products he buys and the fashion in which they stand up over a period of years determine his reputation as a good builder.

The modern gas refrigerator provides the builder with another strong sales argument which he can merchandise to his customers. There are no moving parts to make noise, wear out, or get out of order. After years of operation, the builder can go back to visit his home owner customer with confidence that this is one of the items of equipment which will be giving trouble-free service.

Because of the importance of the "no moving parts" feature of the gas refrigerator, many builders are using this as a sales argument, illustrating the points they make with the diagram shown below. A tiny gas flame at one end of the unit causes refrigeration at the other end, as indicated by the ice trays at the top left of the illustration. The heat supply curve follows the load curve with smooth variations while temperature remains constant. Refrigeration is continuously produced while heat is continuously applied. There are no starting and stopping, no heat losses from quick temperature changes, and no moving parts.

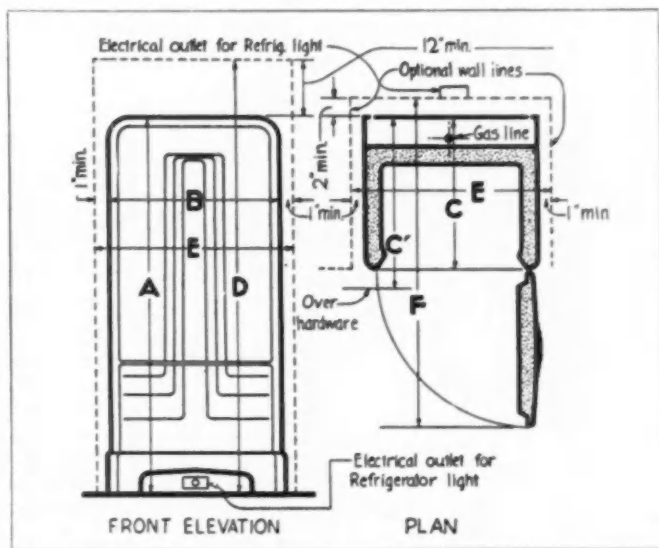
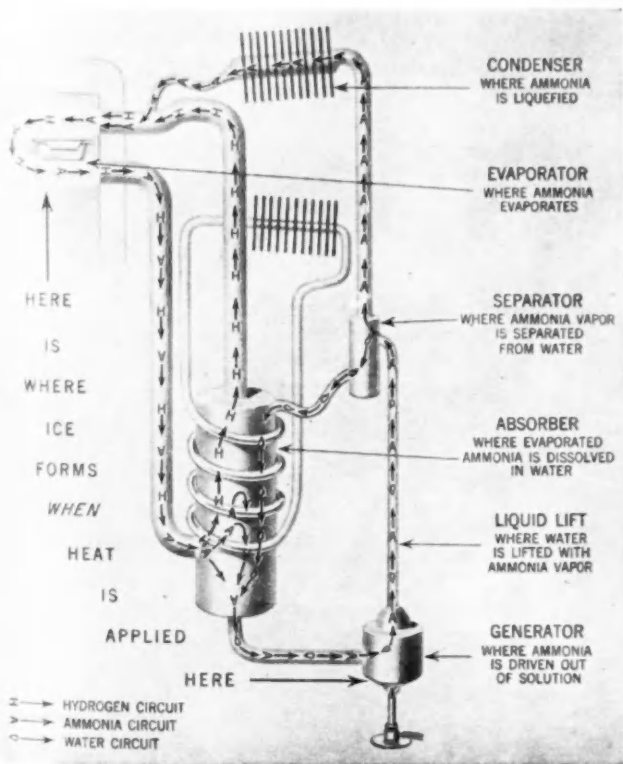
The operative and speculative builder who opens a model home has an effect on the entire community. His model kitchen is the best showroom of kitchen equipment

possible, and the thousands of people who pass through it are impressed by the modern equipment provided and the way in which it is scientifically laid out. A growing percentage of builders provides a completely gas-equipped kitchen with all of the items integrated in scientific fashion. The cost of a completely equipped kitchen is very small when figured out in terms of the monthly amortization payments paid over a 20 or 25 year period.

Some of the first large installations of gas refrigerators were done by apartment builders almost a decade ago. After the severest kind of service these refrigerators are today functioning, the builders report, with the same dependability as when new. Maintenance costs have been low. In the apartment building activities taking place today, the same arguments of low operating and maintenance cost prevail, with the result that a large number of the apartment projects are being equipped with gas refrigerators.

The present practice of builders is to design a complete gas-equipped kitchen, with cabinets, work counters and accessory equipment scientifically laid out to save steps and decrease work. To lay out a kitchen properly the builder should make his decision at an early stage as to the size and type of refrigerator he plans to install. If to be set in an alcove, certain clearance requirements for ventilation around sides, top and bottom should be observed. The accompanying diagram shows the important clearance and ventilating requirements and also indicates the size of a typical series of a current model.

The builder should pick a size and type commensurate with the price class of house and the expected number of persons served. One rule is the refrigerator should have 2 cu. ft. per person regularly served. Another is 1 cu. ft. per room. It is important to study the location of the machine and determine from which side the door is to be swung.



MODEL	K-300	K-410	K-500A	K-500	K-600A	K-600	K-800A	K-800
A	4'-11 3/8"	4'-6 3/8"	4'-5 7/16"	5'-0 7/16"	4'-10 3/8"	5'-2 3/8"	5'-0 3/8"	5'-4 3/8"
B	2'-2 1/8"	2'-0"	2'-1 1/2"	2'-1 1/2"	2'-5 1/8"	2'-5 1/8"	2'-3 7/8"	2'-8 7/8"
C	2'-0 11/16"	1'-11 3/4"	2'-1 9/16"	2'-1 9/16"	2'-1 9/16"	2'-1 9/16"	2'-3 5/16"	2'-3 5/16"
D	2'-2 5/8"	2'-1 1/2"	2'-3 3/8"	2'-5 1/16"	2'-5 1/16"	2'-5 1/8"	2'-6 13/16"	2'-6 13/16"
E	5'-11 3/8"	5'-6 3/8"	5'-8 7/16"	6'-0 7/16"	5'-10 3/8"	6'-2 3/8"	6'-0 3/8"	6'-4 3/8"
F	2'-4 1/8"	2'-2"	2'-3 1/2"	2'-3 1/2"	2'-7 1/8"	2'-7 1/8"	2'-10 7/8"	2'-10 7/8"
F	4'-2 1/2"	3'-9 9/16"	4'-3 9/16"	4'-1 31/32"	4'-3 3/32"	4'-5 3/32"	4'-10 19/32"	4'-10 19/32"
Shelf Area	6.3 Sq. Ft.	9.3 Sq. Ft.	10.5 Sq. Ft.	10.6 Sq. Ft.	12.4 Sq. Ft.	12.4 Sq. Ft.	15.7 Sq. Ft.	15.5 Sq. Ft.
Capacity	2.9 Cu. Ft.	4.2 Cu. Ft.	5.0 Cu. Ft.	5.0 Cu. Ft.	6.0 Cu. Ft.	6.0 Cu. Ft.	8.0 Cu. Ft.	8.0 Cu. Ft.
Ice Cubes	24 (3.3 lbs.)	36 (4.5 lbs.)	48 (5.2 lbs.)	64 (5.0 lbs.)	80 (9.0 lbs.)	80 (7.7 lbs.)	96 (9.6 lbs.)	96 (9.3 lbs.)
Net Wght.	243 Lbs.	268 Lbs.	299 Lbs.	318 Lbs.	364 Lbs.	383 Lbs.	429 Lbs.	454 Lbs.

DIAGRAM of typical gas refrigerator showing installation details and sizes of typical units. Builders are urged to plan location and installation in advance to save later changes.

3 C's Basements - - -

(Clean, Care-free, Comfortable)

THE extra living space produced in a well-planned and equipped basement is worth a great deal to the home owner and as a sales argument is worth a great deal to the builder. In this article ideas and methods will be described for producing a clean, care-free and comfortable basement such as the development of automatic gas heating has made possible.

The development of clean and attractive heating equipment which is fool-proof and tamper-proof makes possible a new concept of the basement. But the kind of livable and useable basement we have in mind does not "just happen." It has to be planned and cleverly worked out in bright and cheerful colors with many

of the objectionable features removed or transformed.

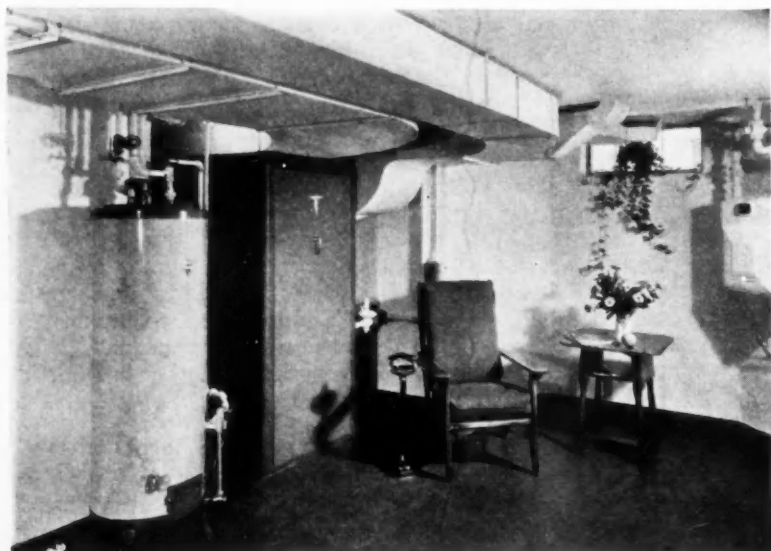
Skillful builders have figured out how to group basement equipment so as to make available the most space possible in one large recreation room. Stairways are made a feature of design and are finished in paneling or attractively painted. Storage space for unattractive but necessary items is partitioned off. Pipes, duct work and utility items are boxed in, concealed or painted to blend with the interior.

It is obvious that a dry, warm and well lighted basement is the first essential. Dryness and warmth are both aided by furring out the walls and using a warm finish material such as wood paneling, plywood or decorative insulating board. Frequently a small circulating gas heater is installed to provide heat rather than draw on the main system. A fireplace is, of course, a great addition to any room and may be equipped with a gas-fired radiant heater. A fireplace in addition provides ventilation, which is important.

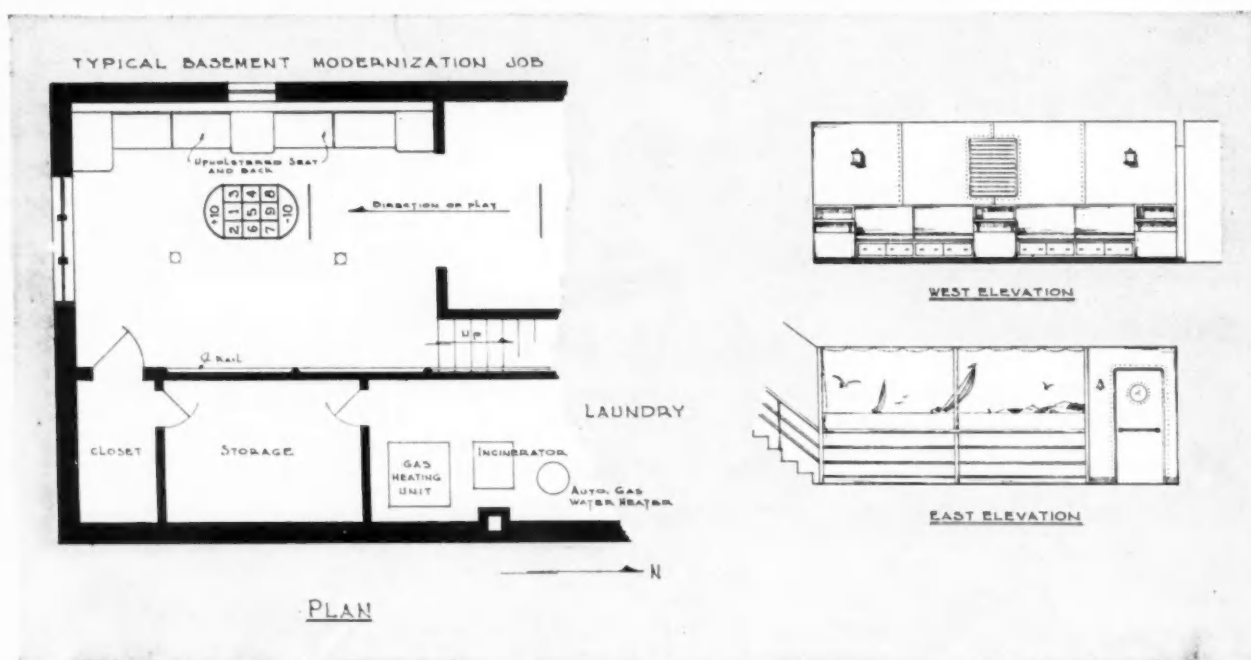
The basement recreation room is a place where unusual and colorful effects can be achieved that would not do upstairs. Walls may be paneled, half-timbered or painted in bright colors. Windows may be dressed up with plywood valances. Lighting fixtures with a special atmosphere may be selected.

Treatment of the floor is, of course, important. Difficulty with painting concrete makes it advisable to use integral colors if possible. Many builders have found the extra cost of laying a wood floor over the concrete justified in providing a warmer more cheerful room.

Basement colors can be gay, even riotous and used with extravagance. Basement



A CLEAN, COMFORTABLE basement made possible by gas equipment.



SUGGESTED PLAN and decorative treatment for a nautical basement in blue and gray with touches of orange or red.

rooms are seldom designed for restfulness but rather for activity, and colors should be chosen with that in mind. Light reflecting colors are preferable for ceiling and walls. In a large room it is no mistake to paint one or two walls in one color, say reddish-orange, while the other walls on the darker side of the room are kept in a clear yellow. Lose no opportunity to make the laundry room a cheerful place by an attractive paint job.

Stairways and landings are places for good color paints. The practice of painting the steps in bright conspicuous colors is practical and precautionary. To distinguish the first and last steps in a stairway not too well lighted, paint them a brilliant orange. Closets also come in for their share of color both for cleanliness and good effect. Here is a list of a few tested combinations.

GAME ROOMS

- 1. Floor: Gun-metal green
Walls: Bud-green and taupe-gray
Ceiling: Cream
Contrast color: Deep red
- 2. Floor: Sand-brown
Walls: Canary yellow
Ceiling: Pale yellow
Contrast color: Blue

PLAY ROOMS

- 1. Floor: Clear green
Walls: Gray-green lower, Ivory upper
Ceiling: Light green
Contrast color: Red
- 2. Floor: Cherry red
Walls: Gray-blue
Ceiling: Pale blue
Color Contrast: Red

RECREATION ROOMS

- 1. Floor: Chocolate Brown
Walls: Bright yellow and sand
Ceiling: Yellow
Contrast color: Orange
- 2. Floor: Maroon
Walls: Sand and Chinese red
Ceiling: Pale yellow
Contrast color: Black

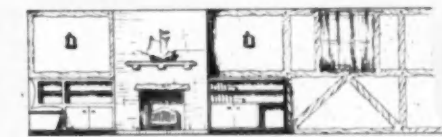
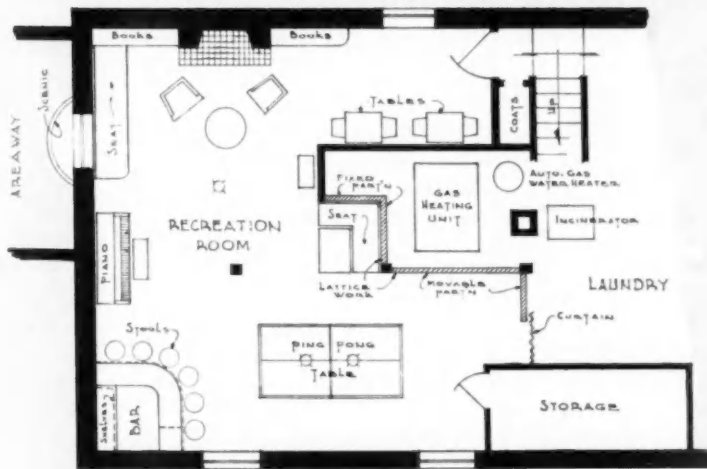


A LIGHT and cheerful basement recreation room having fireplace equipped with radiant gas heater adds to the hours of pleasurable living.

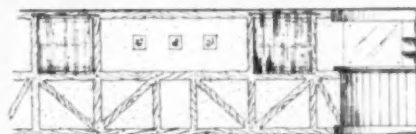


HEATING and hot water equipment blends attractively with color plan in this basement living room where separate space for such items was not available.

TYPICAL BASEMENT MODERNIZATION JOB



EAST ELEVATION



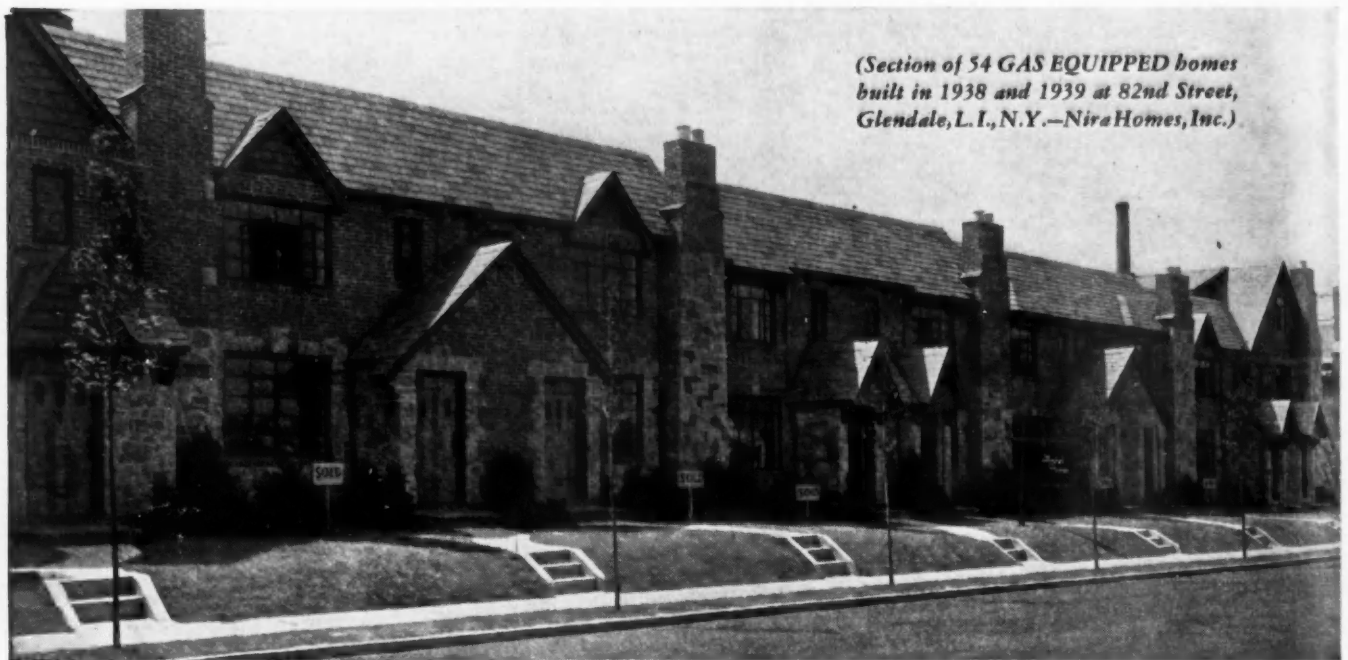
WEST ELEVATION

PLAN
Scale: 1/4" = 1'-0"

PLAN AND SUGGESTED wall treatment for a "3 C's Basement." There is a built-in bar, fireplace, bookcases and built-in seat.

Builders!

GAS SELLS HOUSES



(Section of 54 GAS EQUIPPED homes built in 1938 and 1939 at 82nd Street, Glendale, L.I., N.Y.—Nira Homes, Inc.)

GAS GIVES MORE HOUSE FOR THE BUYER'S MONEY—MORE SALES FOR YOU

Contract—Operative—Speculative—Builders from Coast-to-Coast find that Gas and Gas Appliances SELL their houses quickly and easily

NOW more than ever before, home-seekers demand *more room, more efficient equipment, better living, more house for the money.* You can meet their demands and get *their business* by choosing Gas for the four major house-keeping jobs—Cooking, Water Heating, Refrigeration, House Heating.

The new gas appliances are handsome, compact, particularly adaptable to modern ideas in home-designing and building. Fur-

thermore, they point the way to *important savings on first cost, installation cost, and operating cost.*

Don't fail to consult your local gas company for up-to-date information and detailed specifications of the new gas ranges, refrigerators, water heaters, and house heating equipment.

AMERICAN GAS ASSOCIATION

Builders!

Cash for pictures and plans of your all-gas homes

\$10,000 IN PRIZES!

BUILDERS! ARCHITECTS! — YOU MAY HAVE BUILT A WINNER ALREADY!

Any home built or modernized in the period from July 31, 1937, to July 31, 1939, is eligible, as long as gas equipment does the cooking, water heating, refrigeration, and house heating.

New homes or modernized, semi-detached or row houses. There are no limitations as to size, style, cost or location of houses entered. Enter now! The competition closes midnight, July 31, 1939. Mail the coupon today for booklet containing all the information you need.

AMERICAN GAS ASSOCIATION

**ENTER NOW!
THIS IS ALL YOU NEED**

- 1** A clear exterior photograph of house.
- 2** Interior photographs, showing gas equipment.
- 3** Floor plans—blueprints or new drawings.
- 4** List of gas appliances installed, giving manufacturer's name.
- 5** Description of special features of plan and construction.

*Mail Entry
Coupon Today!*

LET

GAS

DO THE 4 BIG JOBS

**COOKING
WATER HEATING
REFRIGERATION
HOUSE HEATING**



Be sure the gas appliances you specify bear the Approval Seal of the American Gas Association Testing Laboratories.

B-7

Competition Director
American Gas Association, 420 Lexington Ave., N. Y. C.

Date.....

Last Name.....(Please Print).....First.....

Address.....City.....State.....

I wish to enter A.G.A. Builders' Competition. I am a builder

Note: Architects may enter homes in this contest with the written permission of the builder. Architect

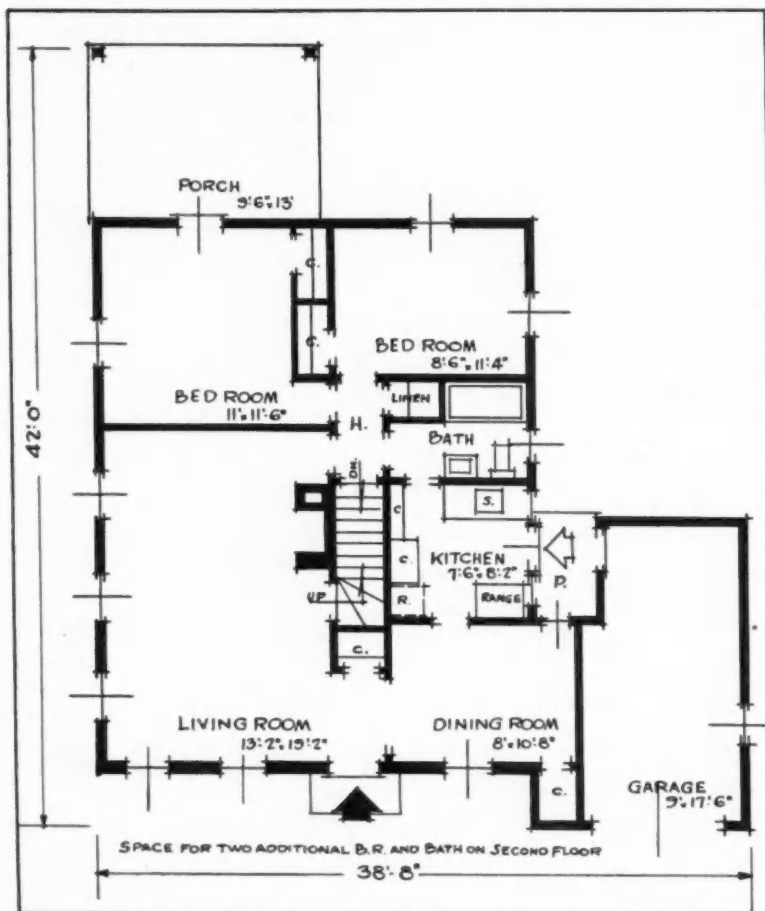
Kindly forward complete details.

Signature.....



FRIENDLY AND CHEERFUL brick front Colonial cottage, built by Lethbridge Construction Co. R. C. Hunter, architect.

"All American" Home at Hackensack, N. J.



THIS home may well be called "All American" because it is good enough to fit in practically anywhere. Architect R. C. Hunter of 501 Fifth Ave., New York City, has done a splendid job of planning and detailing, and has produced a very economical little cottage which has two good bedrooms and bath downstairs and space for an additional two rooms and bath on second floor.

With a cubage of only 18,600, the house provides a 13' 2" x 19' 2" living room and good sized dining room and kitchen. Bathroom is conveniently located off kitchen and hall.

AMERICAN BUILDER
True Cost FIGURES
FOR THIS HOUSE
ON PAGE

102

SPECIFICATIONS include Flintkote house insulation, Cabot's Collopakes paint, Certigrade cedar shingles, Chase copper tubing, Anderson casements, Celotex Vapor-seal sheathing, Bryant gas-fired conditioner, Magic Chef gas range, Lightolier fixtures.

A *New* SALES PLAN FOR MODERN BUILDERS!



JANITROL LAYS OUT A SURE-FIRE, "RED HOT" NEW HOME SALES CLINCHER DESIGNED TO PROMOTE YOU IN YOUR COMMUNITY!

Never before HAS SUCH A SOUND MERCHANDISING PLAN BEEN PREPARED THAT LENDS DEFINITE ASSISTANCE IN PROMOTING THE NEW HOME IDEA, WITH YOU AS THE BUILDER!



At last! Here is a complete merchandising and promotional plan designed to help you sell those new houses! It helps in the sales training of your men! It creates public interest! It demonstrates the model home! It clinches the sale! It has been developed as a result of thousands of contacts with builders throughout the United States. The things it is accomplishing for other builders, it can do for you.

Investigate this marvelous sales plan. It is as modern as the homes you are building.

SURFACE COMBUSTION CORPORATION, Toledo, Ohio.

JOIN THE SWING TO HEATING BY GAS!



The Janitrolaire is the sensational radio cabinet size, self-contained heating unit, ideal for the small basementless bungalow or apartment. It's quiet—it's efficient—it's low cost.

Investigate the Janitrol CA winter conditioner for your better class homes. Hundreds of users the country over attest to their complete winter air conditioning satisfaction.



The Janitrol BC line of low cost conditioners are made in both horizontal and vertical models. Specified for either low ceilings or minimum floor space, there is a correct type for every job.

SURFACE COMBUSTION CORPORATION, TOLEDO, OHIO.

Yes, I'm interested in modern sales methods, the Janitrol Plan and Janitrol Products. Without obligating me, please send me complete details.

NAME (firm name)

ADDRESS

CITY.....STATE.....



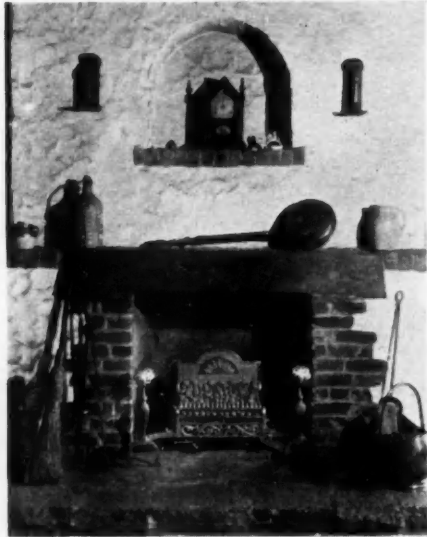
JANITROL

GAS-FIRED

HEATING EQUIPMENT

Gas Equipment Sales Helps

Radiant Gas Heaters, Laundry Dryers, Incinerators and Other Specialties for the Modern Gas-Equipped Home



ENGLISH Cottage fireplace with radiant gas heater complete with andirons. Individual coals become red hot as unit produces clean, odorless radiant heat.

A **H**OST of modern gas devices and equipment contribute to the sales appeal of the modern home. The gas incinerator is one of these, which effectively takes care of the troublesome problem of waste and refuse. These have been perfected both for large and small homes and add an important selling feature.

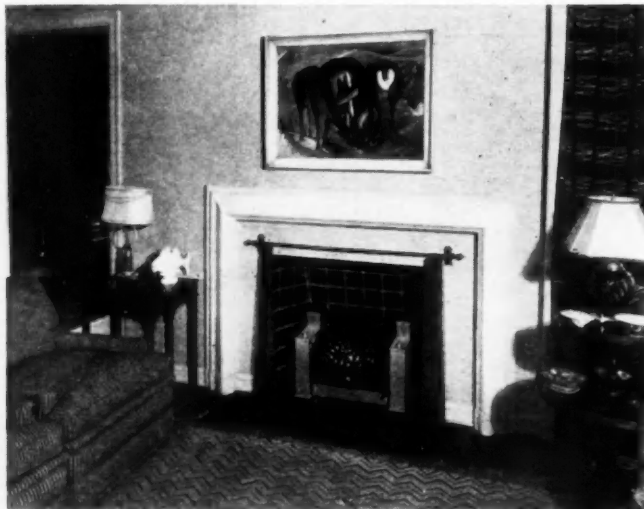
The modern gas home with its clean and attractive basement makes possible well equipped laundries with sales appeal. The gas laundry dryer, which takes the

curse off of cold or rainy washdays makes another important contribution to modern living, as do gas laundry stoves, washers and ironers.

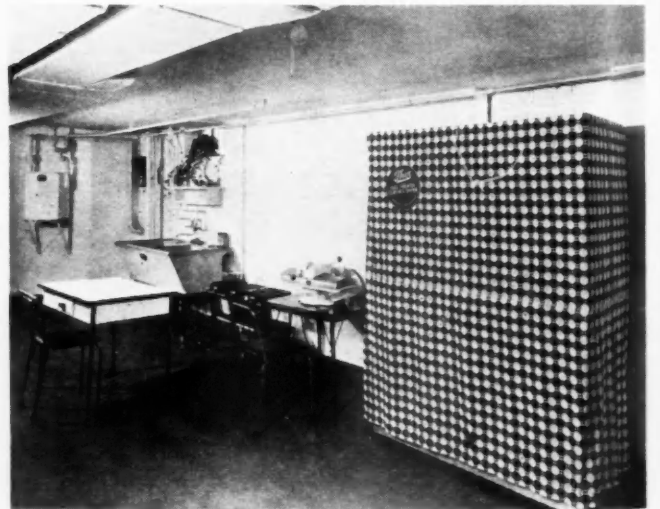
Thousands of homes large and small are being built with gas fireplaces, equipped with such attractive radiant units as are shown in the accompanying pictures. These are constructed to resemble a glowing coal fire and add a keen sense of warmth and friendliness to a room. Other models of radiant gas fireplace heaters are built to resemble a log fire. The equipment usually includes complete andirons and accessories.

In many parts of the south the gas fireplace provides the principal heat and serves an important function. It is important for builders to construct an adequate flue or chimney in order to obtain the best results from the modern, scientifically designed equipment on the market.

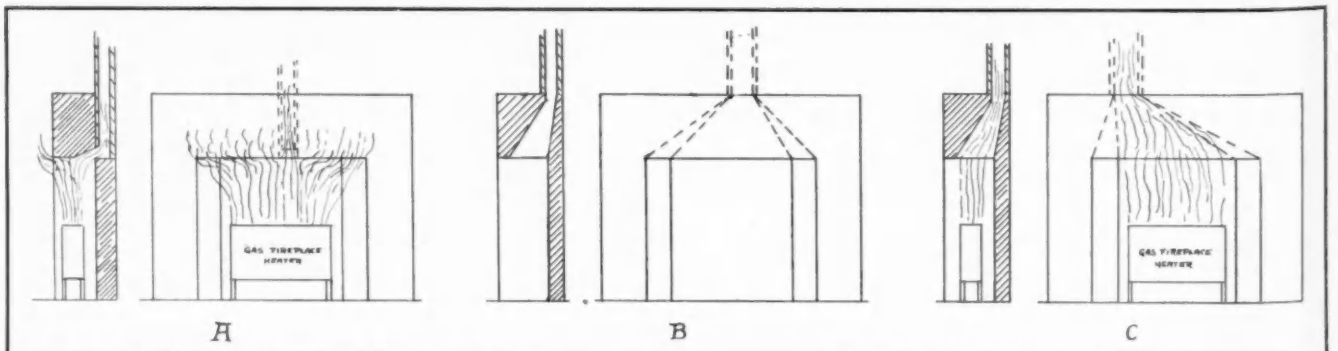
A prominent manufacturer of gas fireplace heaters has prepared the sketches shown below to indicate how the throat of the fireplace should be properly gathered to carry off products of combustion. An improper type of construction is shown in sketch A, at the left. In sketches B and C, fireplace is constructed so that the opening definitely tapers to the vent provided.



MODERN GEORGIAN FIREPLACE with modern style radiant gas heater that resembles coal fire.



CLEAN AND ATTRACTIVE laundry room equipped with gas heated clothes dryer, ironer and convenient three-plate gas laundry stove.



IMPORTANCE OF A PROPERLY CONSTRUCTED GAS FIREPLACE is illustrated in above charts. A, at left, shows how improperly constructed vents may force fumes into room. Chart B, center, indicates fireplace with properly gathered throat. Sketch C, at right, shows properly gathered throat in which gas fireplace heater is located at right of center of chimney.

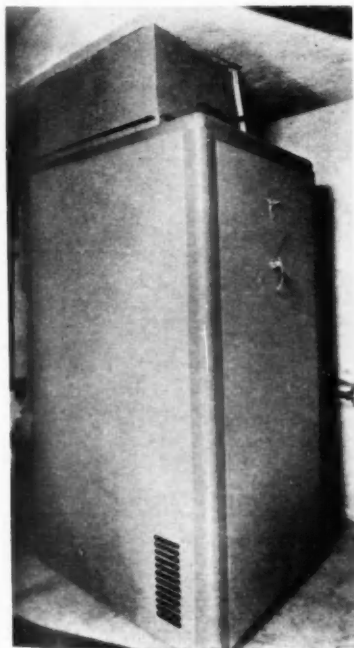


WHITE STUCCO, green blinds, attractive picket fence and good planting contribute to the charm of this Long Island home.

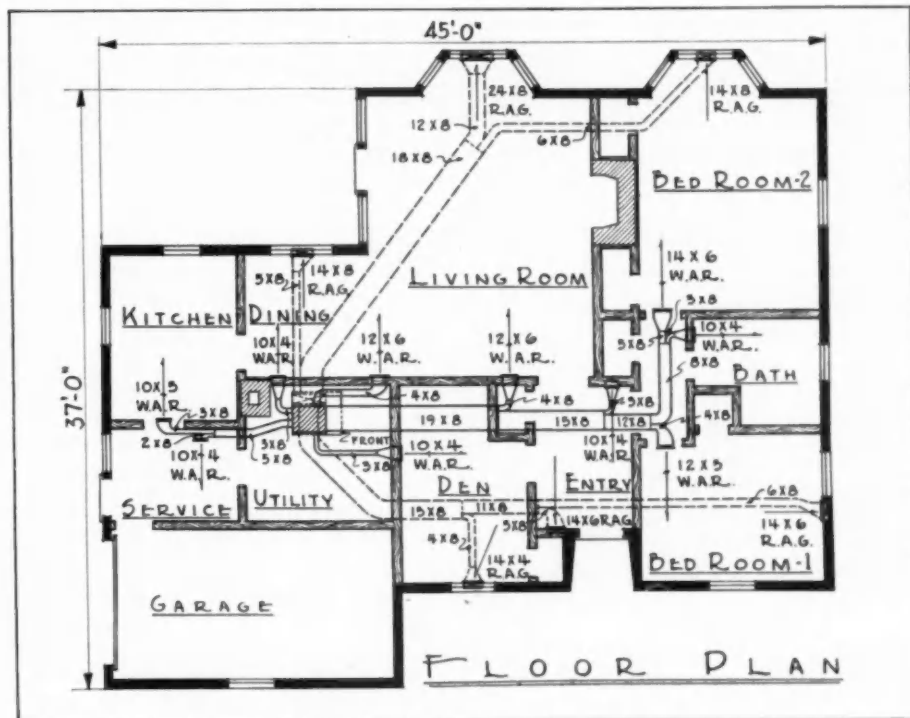
Modern 6-Room Basementless Bungalow

BUILT by the Harmon National Realty Corp., in one of its Long Island developments, this little house was given wide national publicity by a picture magazine. The Janitrol gas-fired winter air conditioning unit is located in a utility room next to the garage. The floor plan below shows the duct layout, connecting the system with registers in the various rooms.

The house is attractively arranged, with a small den at the left of the front door and a large living room with attractive bay window. A service room is located between garage and kitchen with connecting doors. The attractiveness of the exterior design is enhanced by the dark shutters which contrast with the white stucco and the charming picket fence.



GAS-FIRED winter air conditioner located in utility room of basementless house.



The CP (certified performance) Gas Range

"Cooking Marvel" of the Age is Result of Pooled Experience of Range Manufacturers. Proves Big Sales Help to Builders

THE average woman who buys a house is little qualified to determine the durability or quality of the multitude of products and equipment that make up that house. There is only one man she can rely on—the builder who buys and installs the equipment and whose good name is dependent on its satisfactory performance over a period of years.

The gas industry has placed in the hands of the contractor and operative builder a new selling tool—the Certified Performance gas range. It is a range which the builder can be sure will back his reputation for years to come, and it has a sales appeal that contributes much to the house.

The CP gas range is the result of the pooling of the experience and knowledge of the leading manufacturers of the country. They have set up master specifications covering 22 requirements as to superior convenience,

efficiency and performance. Since the launching of the CP gas range movement, the number of manufacturers who have been authorized to display the CP insignia on their products has more than doubled and now numbers 26, representing more than 80 percent of the entire gas range industry.

Widespread advertising and publicity has made the CP trademark nationally recognized by the public. It is backed by the third year of the American Gas Association's national advertising program which carries 100,000,000 messages annually in 14 consumer and 23 trade publications.

It is important to emphasize that these specifications, although rigid, are *minimum* requirements. Many manufacturers offer in addition such optional features as an automatic time clock for control of the oven, interval timer, lamp, convenience electric outlet, utility compartment, plate warmer compartment, design to allow flush fit against the wall (where city ordinances permit), deep well cooker, and griddle.

The 22 CP gas range specifications offer the home-maker features as follows:

1. Automatic lighting—a turn of the handle gives instant, full heat for oven, broiler or top burners. No matches. No waiting.
2. Giant burner—the oversize, superspeed burner cooks one-third faster. A full meal may be prepared much more quickly.
3. Non-rust burners—rust-resisting or enamel finish burners are quick, easy and simple to clean.
4. Pans stay clean—pure, stainless heat from newly designed, efficient top burners leaves utensils mirror-bright.
5. Greater broiler area—more capacity is provided for any broiling job. Often this saves an extra broiling operation.
6. Faster preheating—ovens and broilers preheat in double-quick time because of new type insulation and burners.

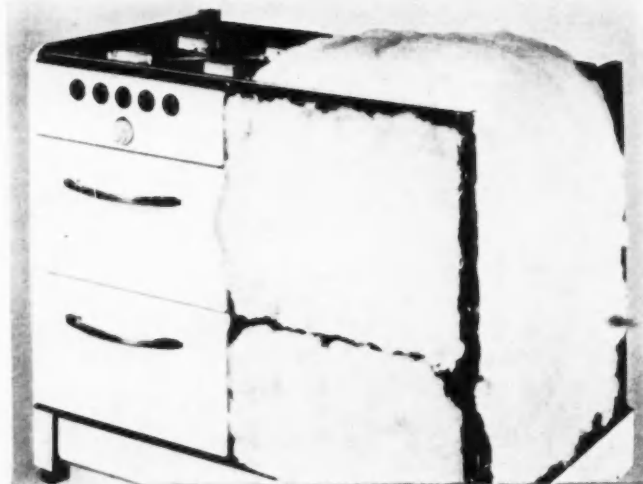
Fuel Savings

1. New burner designs—all of the different types of top burners on CP gas ranges have been carefully designed and approved for the amazing savings of gas.

(Continued to page 104)



THOROUGH LABORATORY TESTS are conducted. In the above picture, efficient CP broiler unit is being demonstrated.



HEAVY INSULATION of the CP gas range means cooler kitchens.



NEW TYPE, NON-RUST BURNERS are quick and easy to keep clean.



Mueller's exclusive new Heat Levelizer evens home temperature more effectively than man or machine has ever been able to do. Gives economy of operation never known before. Provides lifetime satisfaction for your customers.

NOTE TO UTILITY MEN AND BUILDERS:
 Mueller announces nationally this great new invention to the home owning and building public in the May issue of AMERICAN HOME and BETTER HOMES & GARDENS. More than 3,000,000 home owners and builders will be exposed to this story of the amazing Heat Levelizer. Familiarize yourself with this remarkable development in gas heat. Write today or send coupon below for full data.

Amazing Invention – Mueller Heat Levelizer for Gas Furnaces Ends Uneven Heat



Climatrol Jr., provides small homes with winter air conditioning at low cost.

Mueller has Gas Fired Equipment to fit every Home and Purse

Mueller's gas fired line includes Climatrol and Climatrol Jr., air conditioning gas furnaces; also Steel and Cast Iron Gas Era Furnaces; Flor-Aire for small homes and Gas Era Boilers for residential use.

Heat Levelizer supplies a continuous flow of regulated heat, turning the flame up or down as needed to maintain an absolutely uniform temperature. It is not "on-and-off" control.



WITHOUT MUELLER HEAT LEVELIZER

This is how a chart of the temperature looks in most any home with ordinary thermostatic control. This is typical of the performance of most gas-fired furnaces. On-and-off operation causes temperature variations and fuel waste.



WITH MUELLER HEAT LEVELIZER

This is a typical chart of 12 hours of Gas Era Furnace operation with Mueller Heat Levelizer. Outside temperature may vary 20 to 50 degrees during the same period, while indoors you enjoy uniform temperature... no uneven heat.

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How to Install Winter Air Conditioning

New Guide Is Sponsored by Prominent Gas Companies

THE gas companies, who are members of the Metropolitan Heating and Air Conditioning Council,* have prepared a set of rules outlining recommended practices for the installation of gas winter air conditioning in new homes. The rules are in booklet form and the work is known as the Gasco Installation Guide.

These standards have created such interest throughout the gas industry that the American Gas Association (New York City) has taken over their distribution on a national basis and is making the book available in quantity to all gas companies, manufacturers and other interested parties, at a nominal cost.

The reason for the preparation of these standards was to bring order out of the chaotic state into which winter air conditioning was falling because of the unorthodox installation practices that were being followed.

As is so often the case with a new art, engineering, care and experience go to make up its early history. Then when a well deserved popularity has been attained the vendors vie with each other to cut costs in an effort to get the order. These reductions in sales price are invariably accompanied by a reduction in quality, workmanship and engineering skill. There is a tendency to chisel and cut corners to a point where unsatisfactory results are the unfortunate experience of the innocent buyer.

Such has been the history of gas winter air conditioning in the East. During its early history each installation was carefully and individually engineered. The results were extremely satisfactory. The new art seemed destined to become the standard by which good heating was judged. Gas companies everywhere encouraged this new method of heating because it offered them their best opportunity for getting the new home market.

The low price home and speculative building was the point at which sloppy installation practices first appeared. These practices later spread to the better class home in the headlong dash to cut prices and get the order. To mention but a few of the practices that crept in: Sidewalk deliveries of units with the builder hiring his own sheet metal man. In these cases often no layout was ever made. There was divided responsibility and little supervision. Units were sized wrong, and fans were either too large or too small for the job. Ducts were installed without dampers so that balancing was impossible. Insufficient return area or even a complete lack of return ducts was sometimes encountered. Sheet metal ducts were often improperly run, improperly braced and made of too light material. Units were installed in inaccessible locations for service. There were many other examples of unsatisfactory practices. Most of the dealers participating in these unorthodox practices did not want to do a poor job, but a vicious cycle started somewhere and everyone was afraid to check the practices for fear of losing the order.

The gas utilities standing in a somewhat unbiased position were the only hope for establishing a set of standards which would assure the continued enthusiastic acceptance of winter air conditioning.

The Gasco Installation Guide was *not* prepared as a CODE OF MINIMUM REQUIREMENTS, but rather as a set of standards through which everyone con-

cerned could be assured of a first-class installation. Its language is that of "suggestions" rather than "demands." Its rules are not ideals toward which we might strive but never reach. There are no fancy theories or unnecessary recommendations. On the contrary the rules follow the standards suggested by such recognized authorities as the American Society of Heating & Ventilating Engineers, The National Warm Air Heating and Air Conditioning Association, National Board of Fire Underwriters, American Gas Association and over one hundred manufacturers of gas fired winter air conditioning equipment. The G.I.G. brings together the ideas of many authorities, applies them specifically to gas fuel and arranges them in a simple form for handy use by builders, architects, dealers, engineers, installers, utilities and the home buyer who is occasionally interested in such details.

The question immediately comes up as to how such a set of rules can be made to work. The policy of policing installation practices is of course something each utility will have to decide upon for itself. However, the G.I.G. committee offers one possible solution to get the Guide into widespread use. This is a single sheet specification form which may be purchased through the A.G.A. in padded form. This form when signed by the installer is a contract to make the installation according to the precepts of the Gasco Guide. There is room on the form for exceptions to be taken to certain rules. These exceptions are taken in writing and are agreed to in advance between the owner, architect or builder on the one hand and the dealer or installer on the other. Such a set of standards reduced to a simple contractual agreement offers an advantage also to the dealer. He knows when he places his bid that he is bidding against a comparable installation by his competitor. His interest in cutting corners is thus to a considerable degree diminished. It is urged that all utilities who adopt the Gasco Installation Guide as their standard, furnish all dealers and installers with extra blank copies of the specification form and also to urge architects, builders and prospective home builders to insist that a signed specification form accompany each dealer's bid.

Following is the full text of the Gasco Installation Guide.

GASCO INSTALLATION GUIDE

of

Recommended Practices for Installation of Gas Winter Air Conditioning Systems in New Homes

TO QUALIFY as a gas winter air conditioning system, the equipment should be designed to furnish simultaneously all of the four recognized functions of winter air conditioning, namely: To give controlled heat, controlled circulation, humidity, and filtering.

All installations should be in conformity with local building and air conditioning codes and the local fire department regulations as well as those of other bureaus having jurisdiction. Local gas company recommendations for installing external flue connections, gas piping, electric wiring, controls, etc., should be followed when preparing specifications or asking for bids from heating contractors.

I. APPROVAL REQUIRED

The gas equipment should be approved by the American Gas Association and the Gas Company.

II. THE HEATING UNIT

A. Size

The heat loss of the house should be determined by heat loss survey. (Continued to page 96)

*Metropolitan Heating and Air Conditioning Council is an organization composed of representatives of the 18 Gas Companies in the Metropolitan New York City Area.



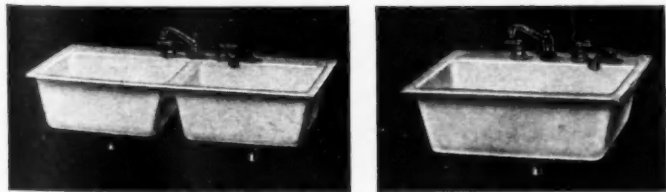
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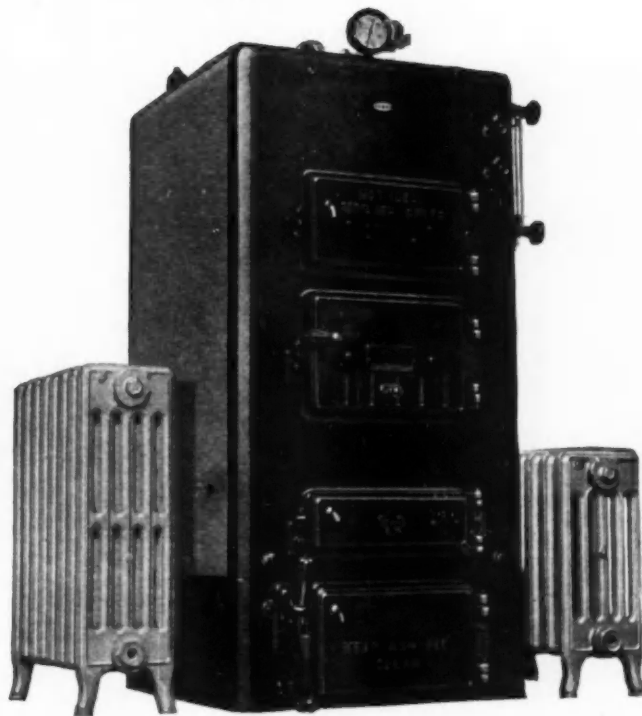
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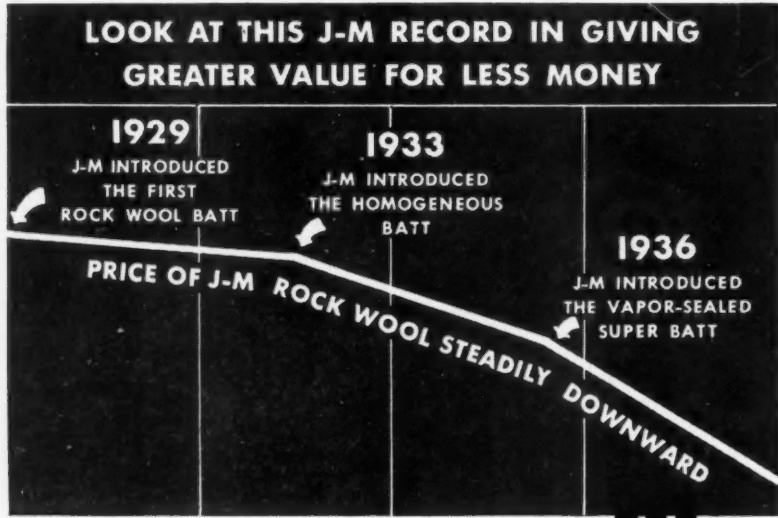
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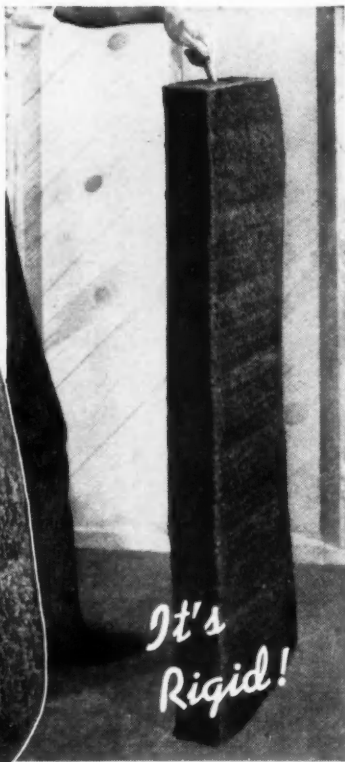
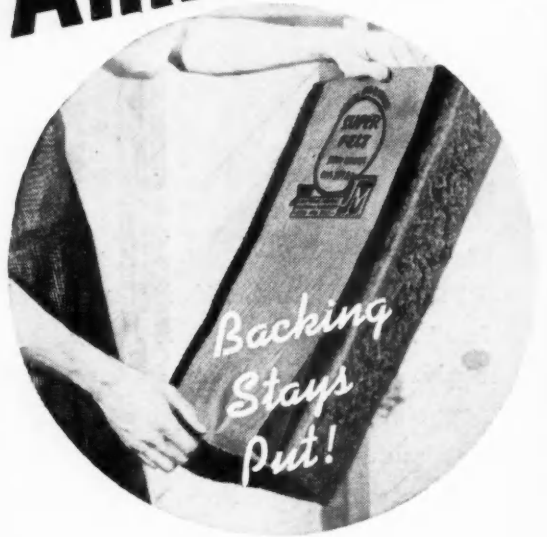
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These four photographs illustrate the amazing strength and toughness of Johns-Manville Super-Felt. The waterproof paper backing stays put—the wool doesn't come loose or fall apart—it handles without "coddling"—the batt is rigid, it won't sag. What other rock wool product gives you all these important advantages?



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JOHNS-MANVILLE BUILDING MATERIALS

The following table provides a convenient method of selecting the appropriate size furnace taking care of satisfactory capacity for quick pick-up under thermostatic control and for heat losses from the duct work.

This table is intended to give the correct size of gas winter air conditioner to get the minimum operating cost. No further allowances are necessary or desirable in selecting equipment.

The insulated house table* applies to completely insulated houses using full stud thickness of fill type insulation and 4" of fill type insulation in the ceiling. The reason these factors are higher than in the uninsulated table is that the insulated house is a relatively larger house for the same heat loss.

Houses not insulated to the same degree as specified above will fall somewhere between the values given for the insulated and the uninsulated constructions.

B. Fans and Motors

1. The fan should have sufficient capacity in cubic feet per minute to deliver against the static head of the system a volume of air in cubic feet per minute equal to 7-1/3 times the M Btu per hour input to the furnace. This is based on a temperature rise thru the furnace not to exceed 100°F.

2. Fans should be capable of delivering the volume of air as determined by the design calculations against a system total pressure of at least .15" water column, exclusive of unit and filters.

3. Fan motors should have a capacity to handle the calculated air volume against the total resistance of the system without overheating.

TABLE I. Selection of Correct Size Gas Winter Air Conditioner.
INSULATED HOUSE*

Heat Loss of House from Survey M Btu/hr.	Size in M Btu/hr. Input	Heat Loss of House from Survey M Btu/hr.	Size in M Btu/hr. Input
10	20	110	214
20	40	120	232
30	60	130	250
40	80	140	269
50	100	150	288
60	119	160	305
70	138	170	322
80	157	180	340
90	176	190	358
100	195	200	376

UNINSULATED HOUSE

10	16	110	171
20	32	120	186
30	48	130	200
40	64	140	215
50	79	150	230
60	95	160	244
70	110	170	258
80	125	180	272
90	141	190	286
100	156	200	300

III. ERECTION OF FURNACE

Furnace should be erected in accordance with manufacturer's instructions. There should be no leakage between combustion chambers and the distribution system.

IV. INSTALLATION OF FURNACE

A. Furnace Room

1. Furnace should be installed in a room with sufficient air supply for ventilation and proper combustion. When such a room is not available, adequate fresh air openings to the outside should be provided. Properly screened metal sleeves having a net free area of 25 sq. in. per hundred thousand Btu furnace input with a minimum of at least seventy-five (75) square inches connected to unexcavated, ventilated spaces under the building furnish a satisfactory method. In the absence of an adequate air supply to the furnace room, outside air openings from two walls are desirable.

2. Furnace should be as near to chimney and as centralized with respect to heat distributing system as possible. Flue connections in excess of 20 feet in length are not desirable.

3. Suitable fireproofing must be used when furnaces are set up on combustible floors or installed adjacent to combustible materials.

B. Accessibility

1. Ample clearance should be provided around furnace to allow ready access for cleaning of all heating surfaces and for ready removal of filters, burner parts, fan motor, and controls. Fan

and motor should be readily accessible for adjustment and lubrication.

2. Furnace should not obstruct ready access for servicing of other appliances, such as a water heater.

V. CONTROLS

A. Thermostat

1. For greater convenience and economy, it is recommended that thermostats with automatic clock control be used.

2. The thermostat should be placed on an inside wall of a first floor room which is responsive to changes in outdoor temperature. The living room or the dining room is a generally acceptable location.

The following locations are known to give unsatisfactory results and are not recommended:

Exposed walls.

Walls of stair wells leading to unheated attic or unheated basement.

Corner recess or alcove or other air pocket.

Closets.

Hallways exposed to stairway or door drafts.

Kitchens.

Bedrooms.

Opposite or too near open fireplace.

Porches.

Too near kitchen door.

Wall locations too near a radiator, register or in direct path of warm air stream, warm air riser or hot or cold water pipe.

B. Furnace Control

1. The system should be provided with a thermostatic fan switch or other device which will accurately control fan operation with respect to burner operation.

2. The thermostatic fan switch should be provided with a graduated scale and with means for ready and independent adjustment of the cut-in and cut-out temperature.

C. Summer Switch

The fan should be installed with a labeled summer switch which can operate the fan independently of all other controls. This switch should be located at some convenient point, preferably at the first floor level or above.

D. Humidifiers

Humidifiers having evaporation rates sufficient to cause troublesome condensation should be limited by a humidity control.

VI. AIR DUCTS

A. General

1. The duct systems should be designed to meet established standards for air delivery and quiet operation and be reasonably air-tight.

2. The National Fire Protection Association suggests that the return of air from the first floor to the basement through open registers and without continuous ducts be prohibited; also the taking of air from any basement section not used for living quarters.

3. Ducts and fittings should be constructed with double-locked seams, connected at joints with standard "S" and drive slips or by an equivalent method.

4. Asbestos tape is recommended on each joint in the duct work to assure air tightness.

5. No first floor riser stack should have less than eighteen (18) sq. in. in cross sectional area nor any dimension less than three (3) inches. No second or third floor riser should have less than 28 sq. in. cross sectional area or any dimension less than three inches. No trunk or basement branch should have a ratio of width to depth of more than four (4) to one (1). No riser stack should have a ratio of width to depth of more than four (4) to one (1). The above limitations may be slightly exceeded for lengths of not over five (5) feet.

6. The distribution system should be designed so that the required static pressure for the system, including the filters, does not exceed the manufacturer's rating on the fan of the unit selected. According to the *A.S.H.V.E. Guide*, air velocities in the main trunk system of 750 ft. per minute, branch duct velocities of 600 ft. per min., and wall stack velocities of 500 ft. per min. are typical for medium speed design. The volume of air to be handled is determined as shown in Section II. B., 1.

7. Risers should be constructed of material not lighter than 28 gauge galvanized iron or equivalent. Plenum chambers and

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trunks should be constructed in accordance with the following schedule of weights and sizes:

Gauge	Width	Seam	Reinforced Seam
28	Up to 12"	1"	-----
26	13" to 18"	1"	-----
24	19" to 30"	1"	1/8" x 1"
22	31" to 60"	1 1/2"	1/8" x 1 3/8"
20	61" to 90"	1 1/2"	1/8" x 1 3/8"

8. All elbows should be of double-radius construction or be equipped with multiple vanes (duct-turns). All double-radius elbows should have a center-line radius of not less than seventy-five (75) per cent of the width of the duct.

9. Boxing of stud or joist spaces should be avoided on return ducts. It should never be used on supply ducts.

10. If a room requires more than 150 cfm, it is best to use two or more supply openings to bring about better room circulation.

B. Supply Ducts

1. Supply ducts should be designed to heat each room to a comfortable temperature when the outside temperature is 0°. (Use local design temperatures in specifications.) (Refer to Section VI, A., 6).

2. If supply ducts are run in outside walls, they should be thoroughly insulated.

3. If garages are to be heated, a separate branch direct from the heater unit should be run. The register should be of the automatic back-draft damper type.

4. Supply ducts in cold unexcavated spaces, unheated attics, garages, and the like should be insulated with at least one (1) inch insulating material.

5. In heating basement recreation rooms, it is advisable either to fur the walls and use double floors or to oversize the supply duct. This is necessary to counteract heat losses through bare basement walls and to take care of the pick-up load due to intermittent heating. Better results will be obtained by adding 20 per cent to the calculated air delivery for recreation rooms.

6. Because of tendencies of rooms over garages to cool off quickly, it is advisable to figure them with three air changes per hour and to treat floors as an outside exposure. A separate branch duct should be run to rooms over garages and floors should be thoroughly insulated.

7. A separate riser should be provided for each supply register.

8. A canvas connection (not lighter than 12 oz. and not

drawn tightly) should be provided between the unit and the supply plenum chamber.

C. Return Ducts

1. The return duct system at its most restricted point should have a cross-sectional area of not less than eighty-five (85) per cent of the area of the supply system at the outlets of the air conditioning unit.

2. A canvas connection (not lighter than 12 oz. and not drawn tightly) should be provided at the junction of the cold air return duct and the fan housing inlet.

3. If return grilles are located very near the fan so that its noise could be readily transmitted, the branch or trunk duct to that point should be lined with fireproof acoustic material for a length sufficient to provide an effective sound trap.

D. Dampers

1. Volume dampers with positive locking devices should be installed in each supply trunk adjacent to the plenum chamber.

Volume dampers with positive locking devices should be installed in each branch about 6" to 12" from the point of take-off.

Volume dampers should also be installed in all return ducts. Stack-head dampers should only be used in connection with the installation of a volume damper or when a volume damper is impossible to install or when it would be difficult to adjust it when installed.

Since splitter dampers produce considerable turbulence, it is better to install transition fittings at all branches. The trunk size should be reduced immediately after the take-off and from the take-off side. This is illustrated in Figure 2.

Good design will avoid a branch taken off the inside radius of a curve in a trunk duct or immediately following the curve. However, if it is impossible to avoid such a construction, a splitter damper should be used.

2. An indicator should be provided on each volume and splitter damper which will indicate the open and closed positions.

3. Freedom of operation of all dampers should be carefully checked after installation.

4. If an outside cold air intake is used, a tight-fitting damper should be installed therein.

E. Supports

1. Supports and reinforcements should be as prescribed by Local Building Regulations.

2. Full support of all risers and fittings should be to studding and joists with heavy galvanized band iron.

(Continued to page 100)

SOME OF THE STRUCTURAL DETAILS FOR GOOD DUCT WORK PRACTICE

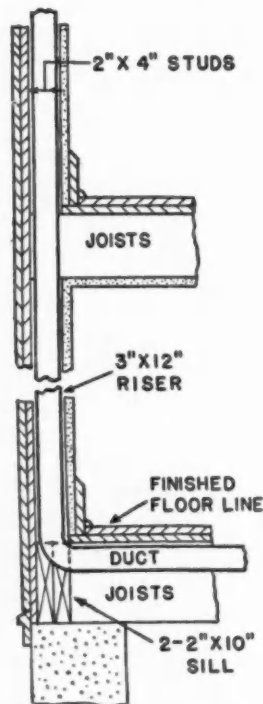


Figure 1. A Variation of the Sill, Introducing a Riser without Serious Cutting.

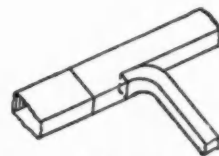


Figure 2. Branch Connection Take-off.

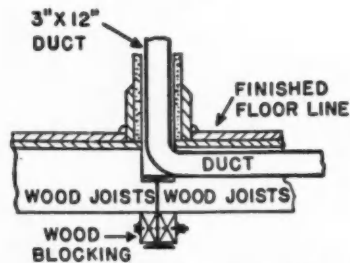


Figure 3. Suggestion to Avoid Cutting Main Beam to Provide for Riser.

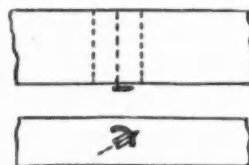


Figure 4. Plan and Elevation of Volume Damper.

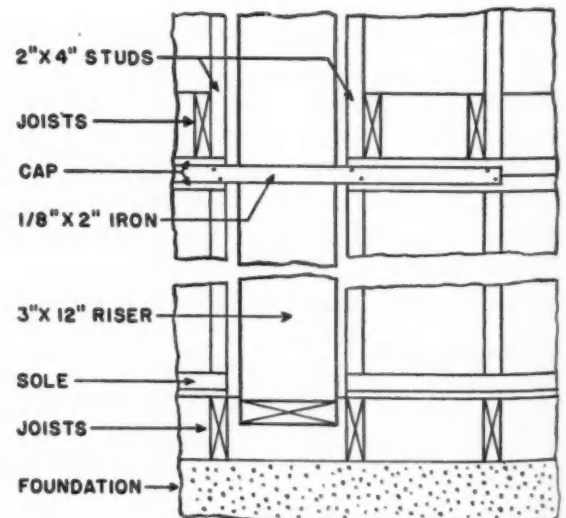


Figure 5. The Use of a Reinforcing Iron Plate where a Duct Cuts thru a Partition Cap.

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3. Heavy galvanized band iron or equal should be used for the full support of the entire basement system from ceiling joists.

4. Whenever the cutting of the main structure of the house is necessary for the reception of a riser or return, this member should be reinforced with a suitable iron band at least 2" x 1/8" securely fastened on each side of the plate and should extend at least one stud space on each side of the space or spaces which have been cut. See Figure 5. (Consult Local Building Code.)

VII. REGISTERS AND GRILLES

A. General

1. Registers and grilles should be of the type specifically designed for air conditioning systems and should be the full width of the stack.

2. Manufacturer's ratings should be used for volume, velocity and areas required.

B. Supply Registers

1. Registers installed in walls should be supplied with frames securely fastened to studding and tightly assembled to the stack-head to preclude air leakage.

2. Registers should be assembled against gaskets to prevent streaking.

3. All registers except one, preferably the one supplying the room where the thermostat is located, should be provided with a valve operated from the face.

4. Each room in which heat is desired should be provided with at least one supply register.

5. Low supply registers are recommended and they should have a maximum register velocity of three hundred (300) feet per minute. Downward deflecting registers permit velocities up to five hundred feet per minute.

6. High supply registers are likely to cause ceiling streaking but when used they should be designed for a high register velocity of from five hundred (500) to six hundred (600) feet per minute (except in bathrooms and toilets) and should be provided with adjustable horizontal vanes. Where the distance from the register to the opposite side of the room is over 15 ft., higher velocities should be used. The register top should be at least 18" from ceiling to help prevent streaking.

C. Return Grilles

1. Return air should be brought back from as many rooms as possible except from kitchens, pantries, bathrooms, and garages.

Care should be taken to draw from each room or series of intercommunicating rooms air equivalent to the amount designed to be delivered to the room or series of rooms; also that the total air to be returned shall, in no case, be less than the total equivalent supply of warm air to all rooms unless compensated for by the admission of outside air.

2. Care should be exercised, especially in living rooms, in the placement and number of return air grilles so as to preclude drafts.

3. All grilles in bedrooms should be provided with a valve operated from the grille face.

4. A separate return riser should be provided for each return grille.

5. Floor grilles are not recommended but where used they should be installed flush with the floor and be removable for cleaning the duct.

VIII. FILTERS

Systems should be equipped with fire-proofed filters for cleaning the air. "Throw-away" type filters are desirable. Generous filter areas are advisable to counteract reduced capacities and increased resistances when dirty. The manufacturers' ratings and recommendations should be followed for resistances and efficiencies.

Filters should be easily accessible for removal with sufficient clearance provided for this purpose.

All risers should be capped during construction periods.

If the system is to be operated prior to occupancy, filters should be installed, but clean ones should be installed before occupancy.

IX. ELECTRIC CONNECTIONS

Electric connections should be made direct from the main fuse panel. The automatic gas valve and the fan motor should be on the same fuse circuit. The clock should be fused separately.

X. BALANCING SYSTEMS

The house heating system should be balanced to the customer's satisfaction under winter operating conditions, after the house is

NEW AIR-CONDITIONING METHOD REVOLUTIONIZES HOME HEATING!

And now it's available
with
GAS



One of four models with capacities, at the registers, from 61,200 B. t. u. to 153,000 B. t. u.

AIR-CONDITIONING 24 HOURS A DAY—NOT "NOW AND THEN"



Superfex circulates fresh air—filtered, warmed and properly humidified—constantly day and night. It is full 24-hour air-conditioning. And because

of continuous operation, the owner gets continuous comfort.

With "stop and go" systems, when the blower stops—air-conditioning stops. The home is air-conditioned only part of the time. The continuous operation of the Superfex keeps every corner of the home constantly warm, and air-conditioned every minute of the day and night.

"STRATIFICATION" PROBLEM ENDED—NO COLD, DRAFTY FLOORS!



The Superfex two-speed blower operates continuously . . . low speed with pilot and low coasting fire . . . high speed with high fire. The discomfort of stratification is thus prevented by continuous gently moving currents of air, circulating between floor and ceiling . . . flooding every corner.

You can feel the difference in a Superfex air-conditioned home. Floors are warm—cold leg zones unknown. The air is fresh and mild as a May morning. There is no stuffiness, no chilliness. You experience a rare sense of restful comfort and physical well-being.

THREE-STAGE PRINCIPLE DOES AWAY WITH "HEAT LAG"

With Superfex you enjoy unvarying healthful temperature by means of an entirely new three-stage principle of electrical control. It permits, for the first time in home heating, combined use of (1) a pilot flame (2) low or coasting fire and (3) high, fast fire, synchronized with low-high blower operation. The thermostat automatically selects the fire needed to exactly maintain the desired temperature.

In contrast with intermittent systems, the Superfex fire does not go "off" and "on" in cold weather. Because operation is continuous, you get continuous comfort. Your heating plant never "goes cold." You avoid heating "lag." You save fuel because you never waste it to reheat the system.

SUPERFEX

Gas & Oil Burning

AIR-CONDITIONING FURNACES

PRODUCT OF PERFECTION STOVE COMPANY

DON'T SPECIFY ANOTHER HEATING SYSTEM UNTIL YOU READ THIS BOOK! .. SEND COUPON TODAY!

PERFECTION STOVE COMPANY
7174-A Platt Avenue, Cleveland, Ohio
Please send me booklet describing the Superfex Air-Conditioning Furnace.

Gas Oil

Name _____

Street Address _____

City _____ State _____

Gas Heating Comfort FOR AVERAGE BUDGETS!...with



CAPITOL GAS BOILERS

HOME owner prospects are instantly attracted by the luxury of fully automatic gas heat. And with Capitol Gas Boilers you can offer this advantage even in your moderately priced homes.

The series "A" Boiler illustrated here is particularly designed for residential use.

Capitol Gas Boilers are adaptable to any system of heating and air conditioning which employs radiators or convectors.

Write for full information on the complete line of Capitol Gas Boilers. Also, ask for literature on Capitaire Gas Air Conditioning Units.



UNITED STATES RADIATOR CORPORATION

General Offices: Detroit, Michigan
Branches and Sales Offices in Principal Cities

occupied. All dampers and louvers should be set in a locked position after the balancing adjustments have been made to secure proper distribution of air and heat to all parts of the premises which are to be heated or conditioned.

XI. GENERAL

Attention is directed towards the fact that cold floors cause unsatisfactory heating conditions, and it is therefore urged that whenever floors are situated over unexcavated spaces or ventilated spaces, such as garages, suitable insulating materials be properly applied to such portion of the floor.

All installations should be made in a neat and workmanlike manner.

The complete duct lay-out should be in the hands of the general contractor before he starts actual framing. As a guide to proper duct work the five figures may be useful to the heating contractor as well as to the general contractor. Figures 1 and 3 may be drawn to the attention of the general contractor so as to assist him in providing for the installation of heating ducts.

* * *

The Value of Insulation

By B. A. JOHNSON

The Peoples Gas Light & Coke Co.,
Chicago

INSULATION is valuable because it prevents a building from losing large quantities of heat (in cold weather) which cost money to produce through the burning of fuel. Insulation is also valuable because it reduces the amount of heat that can enter a building on a hot day and, thus, contributes to greater comfort in warm weather.

These have been the conclusions which the house heating department of the Peoples Gas Light & Coke Co. has definitely arrived at, based on its own extensive operations in the Chicago area.

The use of gas as a fuel in homes that have been heated without insulation and subsequently insulated has made possible very accurate evaluations of insulation as a fuel saver, because fuel consumption for given periods of time for given weather conditions can be positively determined.

Bungalow-Heating Cost Reduced 20% by Ceiling Insulation; 2-story Houses, 15%

Economies from insulation for residences and bungalows vary considerably for individual cases and therefore generalities should be avoided and claims made only after a careful analysis of existing conditions, particularly the relation of the heat loss through the roof to the total heat loss. However, from statistics which have been compiled over a long period, we have been able to establish average fuel savings through the use of insulation in various types of residences. For instance, in the average bungalow, constructed without floored attics, it has been found that, after insulation was installed in the ceiling only, the reduction in gas used averaged about 20 per cent. In two-story residences where the roof heat loss in relation to the total heat loss is lower than is the case in bungalows, the reduction in fuel consumption has been about 15 per cent. These figures are accurate because they represent before and after comparisons.

It can be stated generally, therefore, that insulation will in most cases reduce the heat loss of the area insulated approximately from 60 to 80 per cent, depending upon the thickness and quality of material used. It is now commonly recognized that the installation of insulation in a new home or in an old home using any fuel will definitely pay for itself over a period of years in added comfort and savings in fuel; and, in the case of new buildings, it will reduce the initial cost of new heating equipment that is to be installed.



Get two-way heating at one-way cost

WITH A

PAYNE DUPLEX FURNACE

Hundreds of smart builders are discovering that Payne Gas Duplex Furnaces solve the time-worn problem of giving homeowners first class heating — at a cost in line with today's narrow building profits.

Installation costs are slashed! For one Payne Duplex heats two rooms or suites.

● *Prospect appeal is intensified.* For the name PAYNE has been favorably known for a quarter of a century to people who buy homes. The Payne Duplex is backed by superior quality, scientific engineering and precision construction. Guaranteeing complete heating satisfaction, *it helps sell homes.*

Payne's Gas Duplex Furnace saves costly basement excavation . . . it hangs from the floor joists. Installation is simple, quick and inexpensive . . . no leader pipes are necessary.

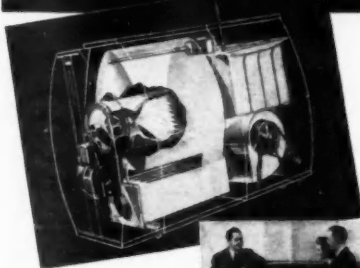


Payne

FURNACE & SUPPLY CO., INC.
BEVERLY HILLS • CALIFORNIA

FLOOR FURNACES • FORCED AIR UNITS • DUPLEX FURNACES
CONSOLES • GRAVITY FURNACES • WINTER AIR CONDITIONERS

Builders Say: "GAR WOOD EQUIPMENT Aids in Selling Homes."



The Gar Wood Tempered-Aire gas and oil-fired home units are supreme in functional design and mechanical excellence.



● GAR WOOD home heating and air conditioning furnace-burner units led the nation and topped all leading brands in percentage of total sales in 42 key markets in the United States, for the last three consecutive years.

WRITE TODAY
for Bulletin B473
describing home
air conditioning at
its best.

There is a Gar Wood system for every type of home, large or small, costly or low-priced. Owners the nation over praise the performance, economy and operating efficiency of Gar Wood units. It's safest to equip any home with a Gar Wood. Dealers: write, wire, or telephone for franchise facts.

GAR WOOD INDUSTRIES, INC.
Air Conditioning Division
7924 RIOPELLE STREET, DETROIT, MICHIGAN



THE IDEAL CABINETS FOR THE ALL-GAS KITCHEN



Metal drawers . . . light in weight and easy to clean . . . operate smoothly on hardwood guides and slides.

Kitchen Maid Cabinets are built to complement the appliances around which they are used. Units adjacent to range or refrigerator provide not only the right kind of storage space, but also the right amount. This is one important reason why builders and buyers alike favor this well known, beautiful line of kitchen cabinetry. When you plan the kitchen in any house you design or build, provide for Kitchen Maid Cabinets. Write now for color catalog and details.

The Kitchen Maid Corp., 595 Snowden Street, Andrews, Indiana
Send new catalog and details on standard unit Kitchen Cabinetry.

Name _____

Address _____

Architect
 Builder

Dealer
 Owner





Reg. U.S. Pat. Off.

Figures for American Builder Homes

HOME DESIGNS ON PAGES AS NUMBERED

Units of Construction	May, 61	May, 63	May, 68	May, 69	May, 73
Basement Walls, lin. ft.	126	130	0	0	117
Trench Walls, lin. ft.	11	114	200	134	30
Basement Floor, sq. ft.	746	862	0	0	596
Garage Floor, sq. ft.	0	270	0	0	171
Excavation per ft. deep, cu. yds.	37	40	0	0	3.5
Outside Walls, squares	11.72	28.9	19	15.4	26.8
First Floor, squares	8.84	9.39	11.5	10.3	7.2
Second Floor, with Fin. Flg., sqs.	0	8.75	0	0	6.8
Second Floor, without Fin. Flg., sqs.	5	0	7.1	0	0
Ceiling, sqs.	8.84	11.03	11.5	10.3	8.7
Roof Pitch, inches rise per ft. run	12"	8"	10"	8"	8"
Roof, squares	13.7	15.9	15.1	13.7	12.4
Hips and Valleys, lin. ft.	138	20	20	27	30
Cornice, type and lin. ft.	C & F-125	C & F-62	C & F-180	C & F-93	C & F-216
Cornice, type and lin. ft.	0	6"-126	0	12"-64	0
Partition, lin. ft.	126	201	141	150	200
Inside Finish OS Walls, lin. ft.	122	240	111	130	219
Front and OS French Doors, opgs.	1	2	4	1	1
Rear and Grade Doors, opgs.	1	2	1	1	2
Garage Doors 8 ft. wide	0	1	0	0	1
Inside Doors and Cased Opgs., opgs.	13	19	13	12	20
Windows and Casements, opgs.	11	26	15	12	19
Gable Sash and Louvers, opgs.	1	2	2	3	2
Chimney, lin. ft.	30	36	26	23	35
Main Stairs	0	1	0	0	1
Porch Floor, sqs.	.23	1.93	2.4	.24	.33
Porch Ceilings, sqs.	0	1.79	1.85	0	.10
Porch Beam, lin. ft.	0	54	40	0	11
Porch and Balcony Post and Newels, No.	0	6	8	0	17
Porch Roof, sqs.	0	2.32	2	0	0
Porch Cornice, lin. ft.	0	38	40	0	0
Porch and Deck Rail, lin. ft.	0	0	40	0	41

HOME DESIGNS ON PAGES AS NUMBERED

Units of Construction	May, 75	May, 77	May, 78	May, 80	May 86
Basement Walls, lin. ft.	158	0	147	0	120
Trench Walls, lin. ft.	56	126	38	154	81
Basement Floor, sq. ft.	1044	0	1022	0	703
Garage Floor, sq. ft.	360	171	0	0	150
Excavation per ft. deep, cu yds.	48.3	0	49	0	32.5
Outside Walls, squares	18.5	17	18.8	13	17.8
First Floor, squares	11.1	6.24	11.7	8.84	7.5
Second Floor, with Fin. Flg., sqs.	0	5.3	0	0	0
Second Floor, without Fin. Flg., sqs.	0	0	7.2	0	5.5
Ceiling, sqs.	14.7	7.94	11.7	8.84	9
Roof Pitch, inches rise per ft. run	8"	5 1/2"	12"	8"	9"
Roof, squares	17.8	9.1	17.3	11.21	12.6
Hips and Valleys, lin. ft.	30	68	26	20	0
Cornice, Type and lin. ft.	C & F-107	C & F-157	C & F-102	C & F-66	C & F-104
Cornice, Type and lin. ft.	6"-141	0	8"-45	6"-57	8"-60
Partition, lin. ft.	143	203	150	96	127
Inside Finish OS Walls, lin. ft.	154	109	140	116	114
Front and OS French Doors, opgs.	2	2	1	1	2
Rear and Grade Doors, opgs.	1	1	1	1	2
Garage Doors 8 ft. wide	2	1	0	0	1
Inside Doors and Cased Opgs., opgs.	14	20	15	10	14
Windows and Casements, opgs.	17	15	13	12	18
Gable Sash and Louvers, opgs.	4	0	3	2	0
Chimney, lin. ft.	20	26	32	0	31
Main Stairs	0	1	0	0	0
Porch Floor, sqs.	.16	.24	1.24	.85	1.45
Porch Ceilings, sqs.	.14	0	1.06	.64	1.23
Porch Beam, lin. ft.	9	0	40	14	36
Porch and Balcony Post and Newels, No.	3	0	6	4	2
Porch Roof, sqs.	.20	0	1.47	.82	1.55
Porch Cornice, lin. ft.	9	0	43	27	35
Porch and Deck Rail, lin. ft.	0	47	0	0	0

Necessary Home Equipment, Fixtures, Accessories, Extras

Since the above surveyed items cover only the actual superstructure of the house, you should figure and add the following items as specified or wanted (and don't forget Overhead and Profit):

Areaways, Cellar Sash, Coal Chute, Basement Partitions & Doors, Attic Flooring, Attic Stairs, Blinds, Gutters & Downspouts, Fireplaces,

Built-in Cabinets, Rail & Newels for Stairs and Stair Well, Beamed Ceiling, Weatherstrips, Tile Work, Plumbing, Heating & Air Conditioning, Lighting, Terraces, Patio Walls or Fences, Sidewalks including Porch Steps, Driveways, Unattached Garages. Also add for painting and decorating if not included in Unit Cost.

Peerless GAS-FIRED HEATERS



**FLOOR FURNACE
REQUIRES NO
BASEMENT
SAVES SPACE**

Here's a floor furnace that gives real economy. Plus clean safe automatic heat. Can be

equipped with Peerless Safety Pilot and Built-in Thermostat. Ideal for small homes.

"DELUXE" GAS-FIRED CIRCULATORS

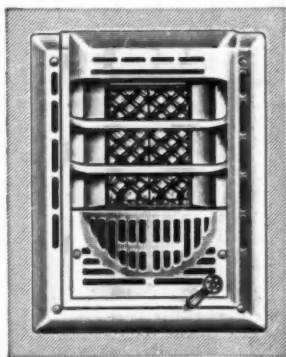
Even, healthful temperature all over the room—a type and size for all requirements. Peerless "Deluxe" gas circulators are fully vented. The heating elements are die formed, gas tight, and rigid. Round corners prevent injury. Radiants keep the floor warm with maximum radiant heat. The finish is baked on, no chipping, cracking or crazing. Pilots on all closed top models. Thermostats and safety pilots available on all models.



GAS-FIRED WALL INSERT HEATERS

For quick clean heat. Ideal for baths and other small rooms—Easy to install—no floor space required. Available in white and a wide range of colored Porcelain Enamel Finishes. Economical in operation.—Highest efficiency guaranteed.

All Peerless Gas-Fired Heaters are approved by the American Gas Association Testing Laboratory.



Write for Free Circulars

PEERLESS MANUFACTURING CORP.

1400 West Ormsby Ave.

Louisville, Ky.



REFRESHING SHOWERS!

The instant hot water service of modern gas heaters and exclusive features of Weisway Cabinet Showers give the fullest enjoyment of this modern way to bathe. You revel in streams of clear, running water—a tingling spray that revives and refreshes as it cleanses. Yet, with Weisway's modern features, you actually use less water than for a conventional tub bath!

AN ADDED BATH



WEISWAY Does it!

● Pictured above is a typical extra bath, with all the usual fixtures, plus a built-in dressing table and wardrobe closets, made possible in small floor area by a Weisway. The convenience and livability of such extra Weisway baths builds value into the home far beyond the small investment required... adds immeasurably to the sales appeal.

Weisway's complete line includes models suitable for all homes, from simplest to most luxurious—for the basement "clean-up" shower, the low cost week-end cottage, or the master bath. Each is a self-contained bath, with leakproof walls, and No-Slip floor of vitreous porcelain. Easily, quickly installed, with no special treatment of building walls or floor, in a three-foot square or less.

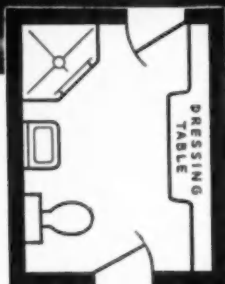
MAIL COUPON NOW, for illustrations in color of actual bathrooms, with data on Weisway's exclusive features, specification details. No obligation.



HENRY WEIS MANUFACTURING CO. (Est. 1876)
501 Oak Street, Elkhart, Indiana

Gentlemen: Without obligation please send complete information about Weisway Cabinet Showers [] for new homes [] for modernizing [] for schools, hotels, institutions, commercial buildings.

Name _____
Street _____
City, State _____



ENGINEERED TO YOUR JOBS

PACIFIC Offers
"Double Value" to
Building Industry

MOST FOR YOUR MONEY

- ★ FLOOR FURNACES with floor or side wall registers.
- ★ FORCED AIR UNITS for first floor, porch or closet.
- ★ BASEMENT FURNACES for gravity heating or summer-winter air conditioning.
- ★ UNIT HEATERS, floor, overhead and duct types for every commercial and industrial need.
- ★ Also a complete line of blowers, space heaters and water heaters.



"Plus PROFITS"

Pacific offers "plus profits" from planned installation economies, every item definitely engineered to your job... but, more than that, PACIFIC is "the line of least resistance", affording superior construction features, amazing operating economies, longer life... every advantage and convenience that spells quality in a gas furnace. Write for complete literature... or mail the coupon NOW

26 SUCCESSFUL YEARS



... and still growing!

FLOOR FURNACES
FORCED AIR
UNITS

Pacific

BASEMENT
FURNACES
UNIT HEATERS

Profitable Modernization with Gas

(Continued from page 67)

A hot water system may be installed with an overhead supply main and with a low return main along the baseboard or below the floor. Any standard radiator 26 inches high, or more, may be used when the boiler is on the same floor level as the radiators. Where modern low convector radiation is desired the boiler must be installed on the floor below the apartment being heated.

To provide further automatic service without the expense of a janitor, a gas incinerator to burn refuse and garbage may be installed. It provides tenants with a handy, simple means of disposing of refuse and garbage. It helps to eliminate the fire hazard of refuse and the odor of garbage with their resulting menace to health. Automatic controls to operate the incinerator at a predetermined time schedule are available.

The use of gas has played a very important part in the progress and development of our living standards. In rehabilitation work, gas has proved to be economical and logical. It has helped make modernization a profitable business.

* * *

The CP Gas Range

(Continued from page 90)

2. Tailored heat—gas provides instant and unlimited heat selection—from a fast boiling speed to the tiniest simmer—by the "signal controlled" CP burners.

3. Economical pre-heating—the CP oven and broiler will pre-heat rapidly, effecting big savings in gas due to new, scientifically designed speed burners.

4. Efficient operation—oven burners, of several types, are carefully designed to meet CP requirements for lower operating costs.

5. Scientific insulation—ovens and broilers are surrounded by a heavy blanket of super insulation which makes the kitchen cooler and reduces heat waste.

6. Heat control—the oven heat control saves fuel by automatically reducing the volume of gas required to exactly meet any cooking requirement or need.

Food Savings

1. Saves vitamins—CP top burners make low water cooking easy and provide food economy by conserving valuable vitamins and healthful food minerals.

2. Cuts meat shrinkage—meat shrinkage may be reduced as much as 20 percent with the low temperature cooking method made possible by the new CP ovens.

3. Reduces meat cost—cheaper cuts of meat may be cooked to the same delicious, juicy tenderness as more expensive cuts by cooking at low temperature.

4. Stops baking failures—no more burned or under-baked food when using a CP gas range with its oven heat control. Any desired temperature is accurately maintained.

5. Spilling food avoided—special "stops" of various types prevent oven racks from tilting or falling out; no more food waste from spillage.

6. Smokeless broilers—fats are drained away from the heat zone to prevent burning, smoking and food waste.

In summary, the CP gas range has strong "sales appeal" either in new construction or modernization work. The builder, contractor, dealer or realtor can offer the finest in today's cooking appliances—appliances which properly interpret gas as a fuel.

Pin to your letterhead... Mail today.

Pacific Gas Radiator Co. (Dept. AB-5)
1740 W. Washington Blvd., Los Angeles
Send complete literature and prices on—

Name.....

Address.....



**"I HIT PAY DIRT
IN THE LOW COST
BUILDING BOOM!"**

**(Barrett Dealer
gets big idea!)**

**Money saved on roof..more
to spend on rest of house!**

"... That's the way I figured it, so I went around and showed all the builders in town how to dodge lop-sided roofing costs by using Barrett Shingles.

"Did I get the business? You bet I did!"

Savings realized by choosing Barrett Shingles may leave room on the building budget for an extra lavatory downstairs, a cheerful breakfast nook in the kitchen, or Venetian blinds on all the windows.

Just show your builder friends and prospective home-owners how they can afford these "frills" and watch your sales of Barrett Shingles jump! It will pay you to make them familiar with Barrett's handsome, fire-safe shingles and sidings. *Identify yourself with "the biggest money's worth in roofing."*

THE BARRETT COMPANY

40 Rector Street New York, N. Y.

2600 So. Sacramento Ave., Chicago, Ill. Birmingham, Alabama

EXCLUSIVE

Barrett Broad Shadow Shingles

with a realistic, *built-in shadow band* of dark colored mineral surfacing. Attractive, colorful, fire-safe and economical, as is the complete line of time-tested distinctive Barrett Shingles.

**Barrett
SHINGLES**

SHOPCRAFTER'S Corner

Things To Build for Profit or Pleasure

JEWEL CASE and TRAY FROM BUILT-UP STOCK



IF MADE from a block glued up of different colored woods, these objects are more interesting than if made from a piece of solid wood. The block for turning is made as follows:

Begin by gluing four blocks of $\frac{1}{8}$ " stock, each block consisting of two pieces of mahogany and one piece of maple. Two of the blocks are to be $2\frac{5}{8}$ " wide and two of them 3" wide. They may be made in any length depending upon the number of objects to be turned, but more than 2 feet is not recommended on account of the difficulty of clamping.

Two pieces of black walnut, $\frac{5}{8}$ " thick and one piece 1" thick, are then cut and planed true. These pieces should be $2\frac{5}{8}$ " wide. The walnut pieces and the two $2\frac{5}{8}$ " wide blocks are then glued as shown in the upper left corner of the drawing. When dry this block is cut as indicated by the dotted lines so that two pieces $\frac{5}{8}$ " thick and one 1" thick are formed after planing. These pieces together with the two 3" wide blocks are finally glued as shown in the lower left-hand corner of the drawing.

The jewel case consists of the lower part and the lid. The stock for the lower part is cut 1" longer than the actual length needed, which is $3\frac{7}{16}$ ". The end is screwed to a small face plate. It must therefore be square so that the stock will run true in the lathe.

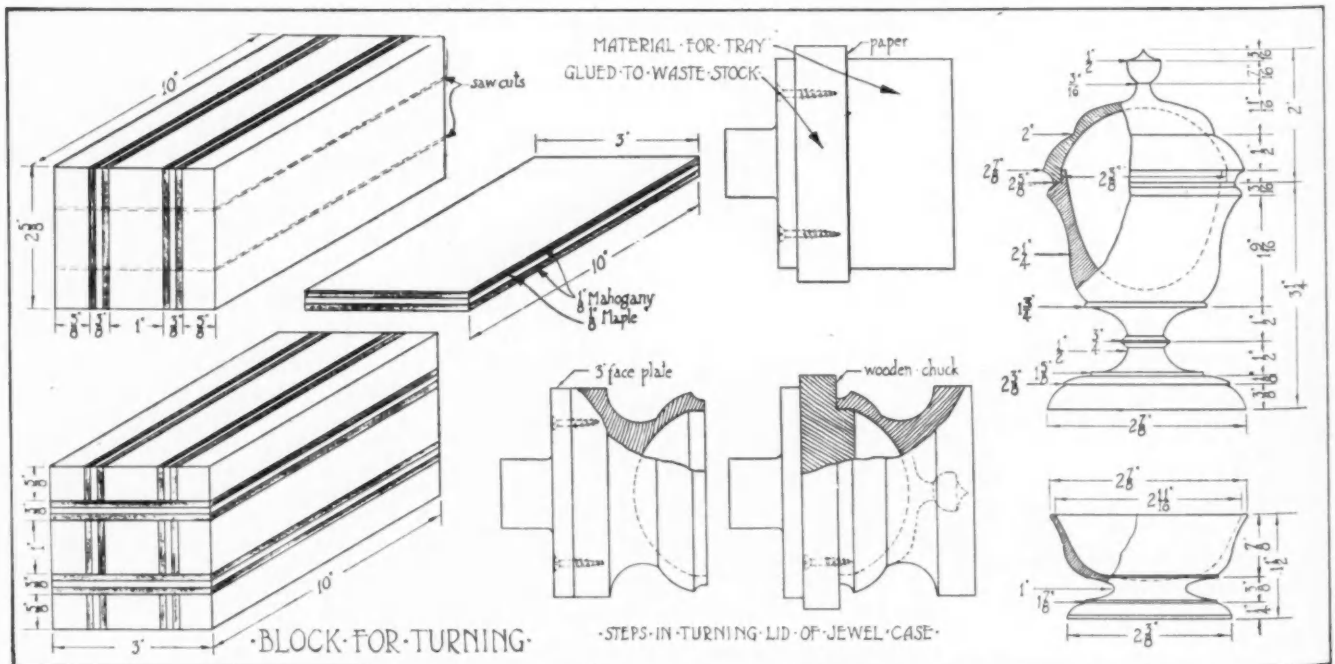
The tray may be turned in the same way as the lower part of the jewel case. It may also be glued to waste stock, thereby saving material. A piece of wrapping paper is placed in the joint and the stock to be turned is accurately centered and clamped to the disk. When the turning is completed it is removed from the disk by inserting the blade of a chisel or plane iron in the joint.

The work is polished with a mixture of half shellac and half boiled linseed oil. This is applied with a linen rag while the lathe is revolving at its slowest speed.

BILL OF MATERIAL

2	pieces	Black Walnut	$\frac{5}{8}$ "	x	$2\frac{5}{8}$ "	x	10"
1	"	"	1"	x	$2\frac{5}{8}$ "	x	10"
4	"	Mahogany	$\frac{1}{8}$ "	x	3"	x	10"
4	"	"	$\frac{1}{8}$ "	x	$2\frac{5}{8}$ "	x	10"
2	"	White Maple	$\frac{1}{8}$ "	x	3"	x	10"
2	"	"	$\frac{1}{8}$ "	x	$2\frac{5}{8}$ "	x	10"

THIS DESIGN with directions was reproduced from more complete details and instructions furnished by Casein Co. of America, Inc., 350 Madison Ave., New York City. It is one of the 24 plans offered to Casco users in the Casein Free Project service.



LINABESTOS WALLBOARD



PROFITABLE TO USE IN THE HOME



FOR ATTICS

"Century" Linabestos, used in the attic structure, not only provides desirable spare room, but adds to the safety of the house as a whole. Its fire-resistant properties, as well as its own natural attractiveness, are strong sales points to potential home buyers.



FOR RECREATION ROOMS

Here, the smooth buff surface of Linabestos can be put to effective use in the decorative scheme. This fact, plus vermin-proof durability, makes this structural sheathing in demand for recreation room construction.



FOR GENERAL INTERIOR USE

Wherever attractive wallboard can add convenience and increased utility, Linabestos is the logical choice.



FOR EXTERIOR USE

On the outside of the house, Linabestos is both weather-resistant and rot-proof. It is inexpensive to apply; it hardens and toughens with age.

See K & M's Fiery Snowman and Exhibit in the Home Building Center at the N. Y. World's Fair.

KEASBEY & MATTISON COMPANY
AMBLER, PENNA.

because it is so **ECONOMICAL**
because it is so **ADAPTABLE**
because it is so **PRACTICAL**
LINABESTOS is a PROFIT-MAKER for YOU!

MAIL COUPON TODAY for complete data on Linabestos Wallboard.

NAME _____

NAME OF FIRM _____

ADDRESS _____

Cleveland Launches Building Campaign

Better Housing Program Sponsored by the Construction Industries Committee of the Cleveland Chamber of Commerce

By **GEORGE B. BUCKLEY**, Executive Secretary

ON FEBRUARY 1 of this year, intensive promotional activities were started on a rather unique experimental cooperative effort in which architects, builders, building material men and financial institutions of Cleveland and its suburbs, combined with the Chamber of Commerce to promote the construction of new homes.

This promotion was begun under a banner bearing the words "The Better Housing Program." It was not a new activity, by any means. It had been incubating for several months while we sought favorable factors in home construction which would convince prospective home owners that 1939 would be a good year in which to build.

Our search for these factors revealed that Cleveland stood in an economically favorable light so far as material costs were concerned; that we had abundant and efficient construction labor, willing to work without performance limitation for a rate of pay which compared well with similar population centers and that construction funds were available at fairly reasonable rates of interest.

However, we felt that it would not be good policy to carry our "Now is the Time to Build" slogan to the public before we had eliminated certain service charges which had become more or less standard nationally. When we carried our objection to these charges to our leading bankers, some of whom were members of our committees, we found them most generous in their considerations of what might be done. When Cleveland bankers and executives of similar financial institutions finally got together and decided to completely eliminate the customary 2% service charge, we felt the road was clear and began in very certain terms to preach homebuilding night and

day through every avenue of publicity which we had at our command.

When we consulted newspaper editors we found they were generously eager to carry articles amplifying our contention. Radio station executives saw eye to eye with us and invited us to use whatever time we could intelligently and effectively fill. Magazines, such as the *American Builder*, having the success and prosperity of the building industry at heart, offered to print our story and to tell other cities what can be done if men in the building industry exert a concerted effort.

Thus, with these splendid avenues opened before us to the minds of the people, we set up a public relations department and selected, from a long list of applicants, a publicity director with a woman assistant and with the combined talents of these two, began broadcasting the fundamentals and desirability of home ownership as far as our mediums of printing and speech could penetrate.

Certain plans we had made while formulating our policy of most effectively reaching the people with our program, had begun to materialize by the time our publicity staff began functioning.

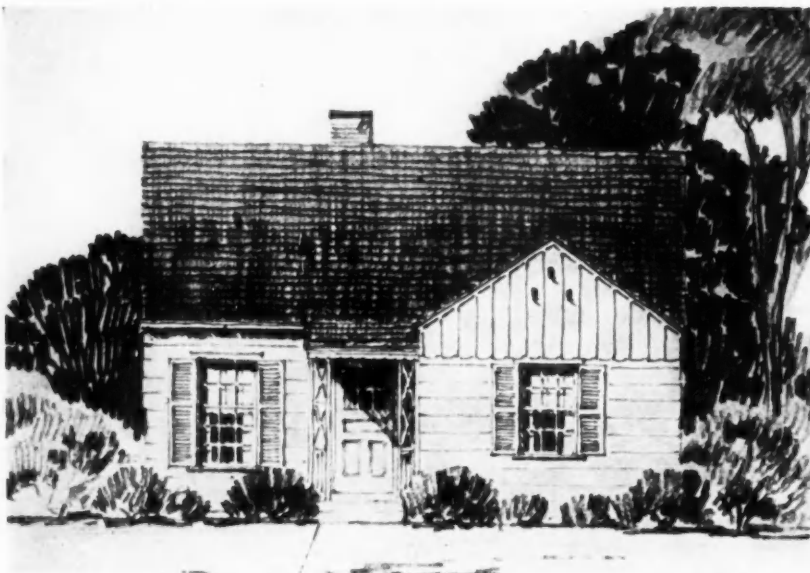
One plan called for the construction of ten houses, which we chose to call, Demonstration Homes. We wanted these homes, ranging in duplication cost, exclusive of lot, from \$4,200 to \$11,000, as vehicles with which to carry our message of today's sound building values to our people in visible form. Five of the homes have costs under \$5,400; emphasis thus has been upon the lower cost home. Ten contractors who had been selected by builders' organizations agreed to undertake the construction of these homes, in various sections of Greater Cleveland, and work on some of them had started when we began publicizing our program.

Then in March, the Cleveland Home Show opened and provided us with a splendid opportunity of meeting personally, prospective home builders. To attract casual visitors at the show to our forty-foot exhibit, we enclosed, what we called "The Magic Village" in a shadow-box and this was illuminated intermittently by conventional illumination and ultra-violet or, "black light." The homes, the landscape and the background of the village had been treated with fluorescent lacquer which enabled us to show how the miniature community appeared both by day and by night.

Such of our Demonstration Homes as would appear well in miniature, made up the homes in this village and gave the visitors a view of homes, which they might want to build, as they appeared grouped in a standard community with other houses.

After they had seen these, a majority of them took a few minutes to inspect enlarged, landscaped and colored render-

(Continued to page 126)



ONE of the small home designs being used in the Cleveland campaign; size 27 x 27 feet; full basement, five rooms on first floor, unfinished second floor. Architect, Harry F. Bremmer; builder of demonstration in Garfield Heights, Arthur R. Taylor, who offers to duplicate, exclusive of land, for \$4200.

Walls that provide Double Insulation, Weather Protection Strength and Economy

OUTSIDE →

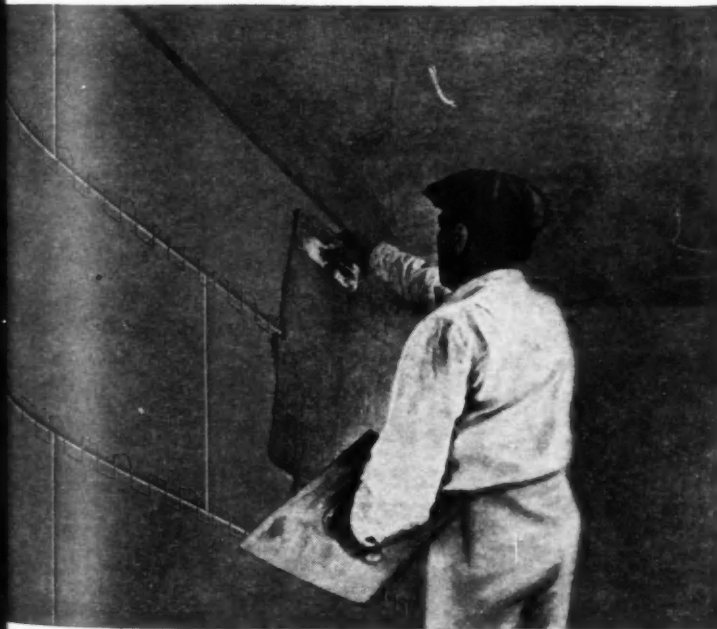
USG Weatherwood* Tongue and Groove, 2' x 8'
Asphalt Coated Sheathing

- ★ A "3-in-one" product—it builds, sheathes, insulates
- ★ T&G joints provide tight joints, protection against wind infiltration
- ★ One man application—applied horizontally
- ★ Saves labor and material—cuts may be made on scaffold
- ★ Ties 7 studs together



← INSIDE

- ★ USG Weatherwood U-Joint fasnep Reinforced Insulating Lath
- ★ A "3-in-one" product—it provides base for plaster, insulates, reinforces plaster
- ★ Convenient size sheets make handling easy, are fast-erecting
- ★ Reinforcement minimizes plaster cracks
- ★ Easy to plaster over—fiberboard has natural plasterboard
- ★ Helps quiet rooms, makes excellent sound deadening for partitions.



Product of United States Gypsum Company

300 WEST ADAMS ST., CHICAGO, ILL.

WEATHERWOOD

Insulated Wall

*Registered Trade Mark
AR-5

5 Years OUTDOORS in Rain or SUN, Sleet and Snow!



Underneath summer skies, hundreds of dancers nightly have found remarkable outdoor dancing comfort, on White City's resilient Northern Hard Maple floor. "A floor that pays dividends!"

White City's OUTDOOR Dance Floor is *Hard Maple*

Five years ago this famous Chicago amusement center decided to build an outdoor dance floor. Its experienced management knows what fun-bent people want—and particularly that for dancing, *the floor is just as important as the music.* They would not use a non-resilient floor. But, could any wood floor "take it" under rain and sun and daily weather changes? Their maintenance superintendent said Hard Maple could. And so they laid Northern Hard Maple. Crowds came—enjoyed dancing outdoors with "indoor" foot-comfort—and came again. Today, after five years exposure to the elements, the floor is still in splendid condition. The management says, "We certainly would use Hard Maple again, in similar circumstances."

... And there's a tip to builders: Remember, Northern Hard Maple's versatility hardly has a limit. It has no equal for Ballrooms, Squash and Racquet Courts, Bowling Alleys, Roller Skating Rinks, Gymnasiums, Roof Gardens—because it's ideal for dancing, games, sports of all kinds. So tough-fibred and tight-grained, the years seem merely to make it smoother. It's the longest-wearing, *comfortable* floor—easiest to maintain, least expensive to clean.

And, of course, there's nothing like Northern Hard Maple for most factories, offices, stores, schools, and homes. And when you lay **MFMA*** Northern Hard Maple, you make the owner a "booster."

MAPLE FLOORING MANUFACTURERS ASSOCIATION
1781 McCormick Building, Chicago, Illinois

See our catalog data in Sweet's, Sec. 11/77. Let our service department help you plan, sell and build "floors that pay dividends." Just write.

Floor with **MFMA** Maple

(NORTHERN HARD)

*The **MFMA** trademark, indented and stamped on Maple flooring, guarantees it to be genuine Northern Hard Maple, graded and **MFMA** supervised in accordance with the Association's exacting standards.

News of the Month

Building Activities and Meetings

March Residential Contracts at Highest Level Since October, 1929

MARCH residential contracts, despite severe storms and a delayed spring, rose to the highest level on record since October, 1929. The gain over the March, 1938, total for the 37 states east of the Rocky Mountains amounted to 58 per cent, according to F. W. Dodge Corporation. The gain of 59 per cent over February, 1939, was somewhat more than the usual seasonal increase.

Total contracts for all classes of construction started during March amounted to \$300,661,000 which represented a gain of 32 per cent over March of last year and a further gain of 36 per cent over February of this year. All major classes of construction contributed to these gains.

During the past month, the volume of FHA mortgages accepted for appraisal have risen each week with almost continuous regularity. The total of \$29,457,028 reported for the final week of March by the Federal Housing Administration was the highest amount for any week on record. These gains may presage further expansion in residential building as the year progresses.

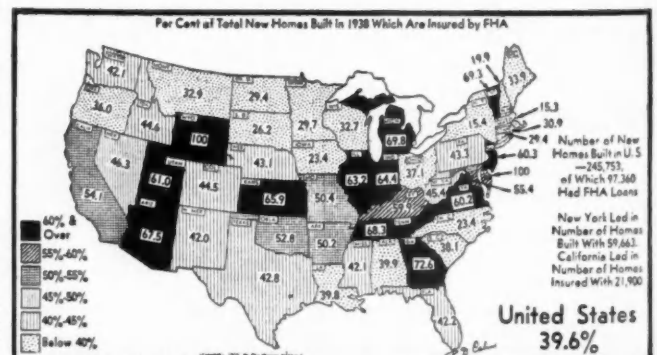
Total construction contracts for the first quarter of 1939 have reached the highest volume in eight years. The gain over last year amounted to 44 per cent, while the increase over the first quarter of 1937, which represented the previous high point in the recovery period, amounted to 17 per cent. In residential building, the contract total for the first quarter represented a ten-year peak. The gain over the corresponding period of last year amounted to 83 per cent, and over the first three months of 1937 to 23 per cent. In non-residential building, corresponding gains over the first quarter of last year amounted to 30 per cent while contracts for public works and utilities were 25 per cent ahead of the first three months of 1938.

Further analysis of the construction record on the basis of ownership reveals the fact that private building has shown far greater gains than public construction. For private work, the March record was 58 per cent ahead of February while public work showed a corresponding gain of only 16 per cent. At the end of the three-months' period, private construction was 40 per cent above last year. On the other hand, public construction, because of the unusually low totals during the early months of last year, registered a 47 per cent gain over the first quarter of 1938.

Figures for the first half of April, 1939, are as follows:

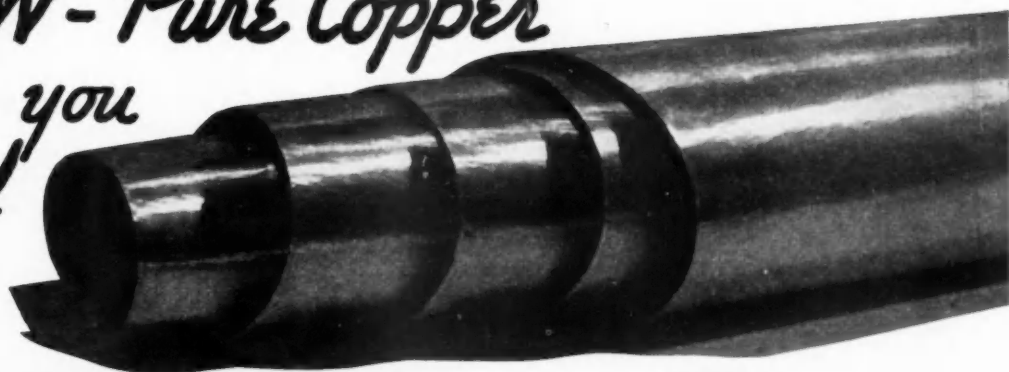
	Apr. 1-15, '39	Apr. 1-15, '38	April, 1938
Residential	\$ 53,253,000	\$ 32,522,000	\$ 74,577,000
Non-Residential	50,678,000	38,797,000	80,435,000
Public Works	41,664,000	25,619,000	57,631,000
Utilities	18,971,000	3,123,000	9,373,000
Total	\$164,566,000	\$100,061,000	\$222,016,000

* * *



THE ABOVE DIAGRAM, which was prepared recently by the Chicago Daily Tribune, indicates the per cent of new homes financed with FHA loans in each state in 1938. The black areas indicate states in which over 60 per cent of the new homes carried FHA insured mortgages. (Note Wyoming 100 per cent.) U. S. average, 39.6 per cent.

And NOW - Pure Copper
at a price you
can afford
to pay!



COPPER-ARMORED SISALKRAFT

USE SISALKRAFT

—the tough, weatherproof building paper over all sheathing. It assures dry walls—so important to well-built, well-protected homes.

USE it for moistureproofing foundations, heads and sills, basement walls, and shower stalls—door and window flashing—these are only a few of the many applications for Copper-Armored Sisalkraft. Copper-Armored Sisalkraft is a perfect combination of pure electro-deposit copper bonded to tough Sisalkraft—it will not kink, crack or tear easily—applies as readily as building paper.

Now you can include permanent copper protection in every project, large or small, because this new, practical product costs only about 1/5 as much as heavy copper, and has such a variety of uses.

Copper-Armored Sisalkraft comes in 3 weights of copper: 1 oz., 2 oz., and 3 oz. per sq. ft. Rolls are 120 ft. long, up to 60 in. wide.

THE SISALKRAFT CO.
205 W. Wacker Drive, Chicago
NEW YORK • SAN FRANCISCO

Write for samples and 24 typical specifications.

MIAMI CABINETS



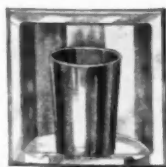
Ask your dealer for new Miami catalog.

HELP SELL HOUSES

Miami equipped bathrooms, the "beauty spots" in modern homes, help sell houses. Buyers are favorably influenced by the extra quality and utility of Miami Bathroom Cabinets and Accessories. Over 140 models—low-cost housing types to DeLuxe ensembles. Write Dept. F.

MIAMI CHROMIUM BATHROOM ACCESSORIES

... retain their brilliance through years of wear and hard use. Made of forged brass, heavily nickeled, then covered with hard chromium. There is a Miami Accessory for every modern bathroom requirement—recessed and projection types.



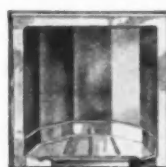
No. 6001
Tumbler
Holder



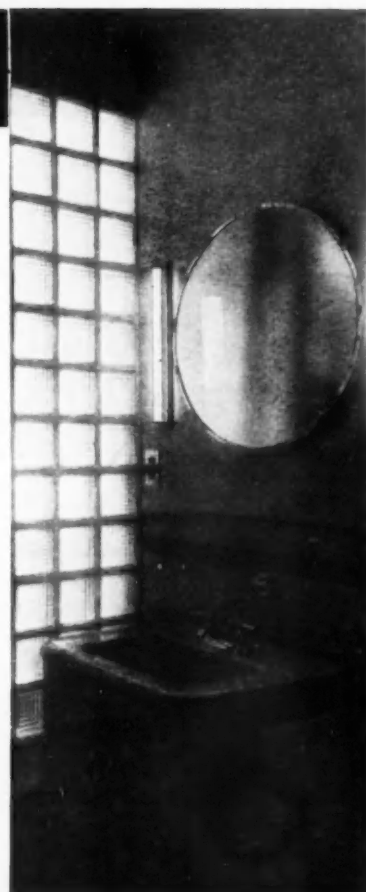
No. 5005
Soap Dish



No. 5010
Single Robe
Hook

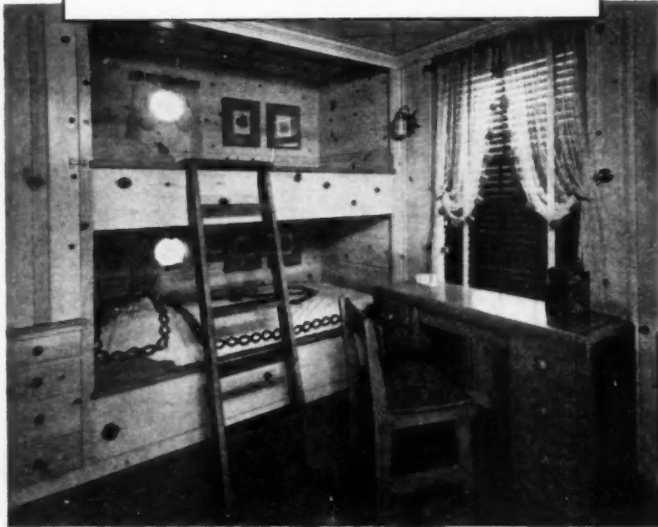


No. 6000
Soap Holder



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

Picture of a
Handsome Lumber Salesman



"I want a room just like this."

That's what you'd hear from morning to night if you hid in the delightful bunk room in the Western Pine Association's Model Home at the Golden Gate International Exposition. Finished entirely in Knotty Pine, this attractive room is working prospective home builders' interest in the Western Pines up to buying and building pitch. Why not cash in on this increased interest?

FREE! Send for the Bunk Room Detail Sheet, which gives full data on its construction. Write to Western Pine Association, Dept. 122-B, Yeon Building, Portland, Ore.

WHEN YOU GO . . .

East—

—visit the Western Pine Exhibit, five typical American Rooms, in Home Building Center at New York World's Fair.

West—

—visit the Western Pine Home, a completely furnished Cape Cod Cottage on Treasure Island, San Francisco Bay.

THE WESTERN PINES WILL DO YOUR NEXT JOB BETTER
. . . TRY THEM

SPECIFY WESTERN PINES



FROM ASSOCIATION MILLS

Western Pine Association, Yeon Building, Portland, Oregon

*Idaho White Pine

*Ponderosa Pine

*Sugar Pine

THESE ARE THE WESTERN PINES

Valuable "Gold Strike" Uncovered in Old Floor with Sanding Machine

AFTER twenty-two years of business in the same building, the T. V. Allen Company, Inc., of Los Angeles, Calif., built a new building for its gold and precious metals engraving business.

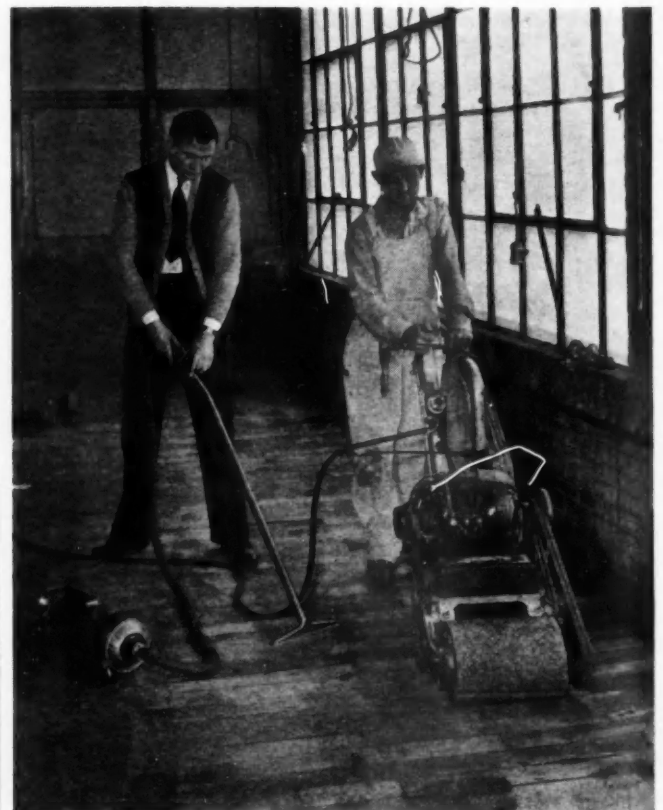
Knowing that in all these years a great many particles of gold from the engraver's benches and from the stamping machines had fallen to the floor and had been imbedded in the old pine floor, officials of that company made an assay of scrapings from a small section of the floor directly beneath the old benches and from this test decided that it would be highly profitable to have the old floor sanded and the gold reclaimed from the dust saved. Mr. Buggbee of the T. V. Allen Company estimates that they expect to reclaim as much as \$2,000 in gold from the work involved in this job.

They hired Mr. Harvey Gunn of Pasadena to do the work. Since they were only interested in getting off the top of the floor which, by the way, belonged to them, they decided to use a very fast and vicious paper for ripping off the top of this old, uneven floor. Mr. Gunn used American Combination 4½ grit for this work, crossing the floor in order to get the greatest amount of wood off as fast as possible. He used the same grits on his American Spinner Model B for sanding along the wall. Even after two very deep cuts, small chips of the precious metal were still to be seen imbedded in the pine and successive cuts were taken until it was thought all the gold possible had been reclaimed.

The dust was saved, burned, and the ashes containing several pounds of gold chips and turnings was melted down into a solid mass and shipped to the U. S. Mint at San Francisco. While no report has been received as yet, it was estimated that the total salvage would net very close to the above figure since most of the gold used in their processes is 990 fine, or about 24 karat, minting gold being refined to 999 plus.

The work was performed by an American Universal floor sander more than eighteen years old, which is still doing good work, although naturally this machine is not as fast as the newer type of twelve-inch machines.

The machine Mr. Gunn is operating is equipped with the new "V" belt and pulleys which replaced the old chain drive.



FLOOR SANDER being used to cut down the floor surface in the T. V. Allen Company, Los Angeles, former plant of its gold engraving business. The dust is being collected for gold recovery.



"GRAND RAPIDS"
STEEL SASH PULLEYS

*are used for
Narrow Trim*

No possibility of "kickbacks" when "GRAND RAPIDS" pulleys are used for narrow trim installations. Like the standard "GRAND RAPIDS" line, they're guaranteed to outlast the building when properly installed.

The name "GRAND RAPIDS" in pulleys, stands for 40 years of specialization . . . in bringing the best brains, practical experience, and the most adequate facilities to bear on sash pulley problems.

Send for our new bulletin No. NT-1 for complete and practical information on sash pulleys for narrow trim frames. It's free and you will find it helpful.

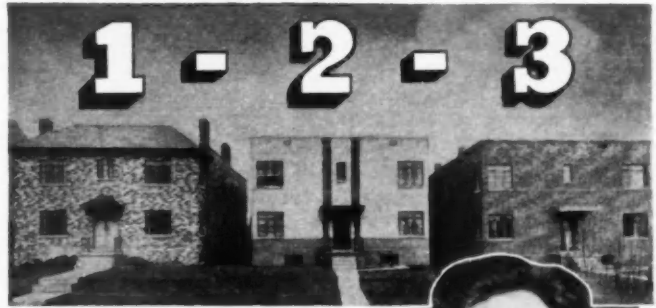
Write for
**SPECIAL BULLETIN NT-1
ON NARROW TRIM
INSTALLATIONS**

The new flat weights used with these pulleys can be obtained from nearby foundries. Write for complete list.

**GRAND RAPIDS HARDWARE CO.
GRAND RAPIDS, MICHIGAN**

"GRAND RAPIDS"
STEEL SASH PULLEYS

The Standard of Quality for 40 Years



It's Mesker Guildhall Casements right smack down the line with J. W. and J. M. Goddard, smart Columbus, Ohio builders. "Steel casements are here to stay" . . .

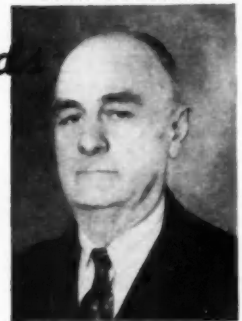


J. M. GODDARD

say the Goddards
"and our choice is

Mesker

because they



J. W. GODDARD

**FIT BETTER,
OPEN AND CLOSE EASIER,
ARE EASIER TO INSTALL,
and have SOLID BRONZE HARDWARE**

They're easier to buy, too,

because Mesker offers our dealer a complete line of Guildhall Casements from which we can choose."

Write Today for the new Mesker 1939 Steel Sash Price Book for complete information on standard sizes and prices of . . .
**LIGHT CASEMENTS PIVOTED SASH
BASEMENT SASH PROJECTED SASH
UTILITY SASH SECURITY SASH
and DOORS**
State whether you are a dealer or a contractor

Mesker Steel Sash prices 1939

MESKER BROTHERS
424 SOUTH 7TH STREET
SAINT LOUIS, MISSOURI

Send my free copy of "Mesker Steel Sash Prices for 1939" right away!

Send it in care of Mr. _____

Firm Name _____
 Dealer Contractor

Address _____
City _____ State _____

Mesker
SINCE 1879

MESKER BROS., 424 S. SEVENTH ST., ST. LOUIS, MO.

3 WAYS TO MAKE MONEY



1. FLOOR SURFACING

Be your own boss and make big money with an American Floor Sanding Machine. As much as \$25.00 a day is not an unusual amount for the floor surfacing contractor to make. When "New Building" activity is slow, there are always hundreds of floors in older homes to be resurfaced and finished. With the many outstanding time and money-saving features, American machines for years have been the favorites of floor surfacing men. Investigate the wonderful possibilities of this work today.

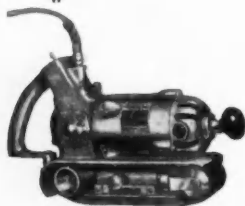
2. POLISHING and WAXING

Many contractors find a considerable need for polishing, waxing, steel-wooling and disc-sanding equipment. Here it is—all in one—in the new American DeLuxe line. In addition—many men are doing nothing but polishing, waxing and finishing floors and making big profits at it too. There is a big field for men owning these machines. Decide to be your own boss and investigate today.



3. CABINET and MILLWORK

Here is a machine—the American Sanderplane that will quickly pay for itself in your work. Many lumber companies, millworks and cabinet shops have testified as to the American Sanderplane's money-saving and profit-making applications. Besides wood, it can be used on metal, marble and stone with equal success.



SEND COUPON NOW

If you are at all interested in getting into something for yourself and getting out of the "old rut" or if you want to increase your profits in your present business, sign and send in the coupon below. There is no cost or obligation to you. Be sure to check the kind of machine you are most interested in on the coupon below.

THE AMERICAN
FLOOR SURFACING MACHINE COMPANY
511 So. St. Clair Street • Toledo, Ohio

Gentlemen:

Without cost or obligation send complete prices on the following:

- American Floor Surfacing Machines
- American Polishing and Waxing Machines
- American Belt Sanders
- I want to get into something for myself.
- I already own one—quote trade-in value.

Name

Street

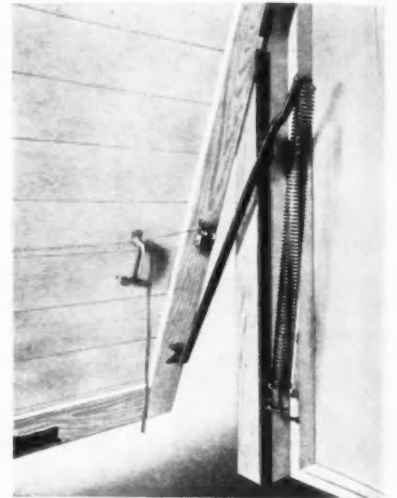
City..... State.....

New Specialty Items and Building Products Announced

Inexpensive Garage Door Hardware

A NEW up-and-over door device, designed especially for the mass market, is now available from the Frantz Manufacturing Co., Sterling, Ill. To be known as Junior Over-the-Top light door equipment, the new set will be what the name implies—an understudy for this company's Over-the-Top door equipment.

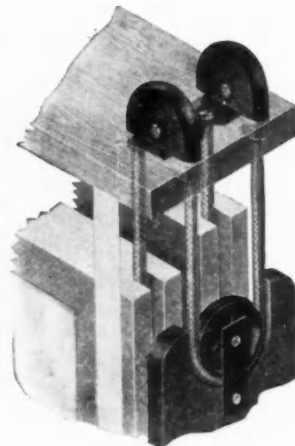
The set costs less to purchase and less to install because it is built only to carry doors weighing 150 pounds or less. This means that the inexpensive standard 1 3/8 inch (2-section) door or a low-cost carpenter-built one-piece door can be used. The set is applicable to doors of openings not larger than 6 feet 6 inches to 7 feet high and up to 8 feet wide. Only 2 inches headroom are required.



SIMPLE, compact mechanism of new low cost garage door hardware of upward-acting type.

Pulleys for Narrow Trim Frames

A COMPLETE line of sash pulleys for the new narrow trim window frames has been developed by the Grand Rapids Hardware Company, Grand Rapids, Mich. It includes both open and covered face pulleys, fitting mullions of less than 3-inch width and side-casings as narrow as 2 1/4 inches. The company has also developed a new overhead type pulley, reported to be the only completely concealed pulley on the market. This pulley is seated 1/2-inch in head jamb and held snugly in place by mortise and one screw, making for least possible air leakage and assuring permanent rigidity. The pulley has a full 1 1/2 inch wheel and 1/4-inch axle (same as in larger pulleys) and is guaranteed for the life of the building when properly installed. It is predicted that this pulley will prove outstandingly popular for residential construction.



Flat sash weights are used with these new narrow trim pulleys, four of these flat weights taking the place of eight round weights in a typical double frame installation. Weights are economically available from no less than 90 foundries located in all sections of the country.

OVERHEAD sash pulley for narrow trim frames.

New Board Offers High Light Reflection

AN UNUSUALLY high light reflection factor of better than 70 per cent is claimed for Nu-Wood Sta-Lite, a new insulating interior finish product announced by the Wood Conversion Company, St. Paul, Minn. This new surface treatment is the result of a special coating recently developed which incorporates

(Continued to page 116)

Blends with every type of construction



THE DOOR WITH THE

MIRACLE WEDGE

-ADAPTABLE-

Home Garages Factories Boat Wells Greasing Stations
Public Garages Fire Stations Warehouses Similar Buildings

TRACKS AND HARDWARE OF

Salt Spray Steel

BACKED BY A NATION-WIDE SALES-INSTALLATION SERVICE

OVERHEAD DOOR CORPORATION
HARTFORD CITY, INDIANA, U. S. A.

CLIP THIS COUPON and MAIL NOW!

MADE IN ANY SIZE AND FOR ANY OPENING,
ELECTRIC OR HAND OPERATION

Please send me literature and full information regarding your product.
I am interested in doors for the particular purpose as checked.

Name _____

Address _____

City _____ State _____

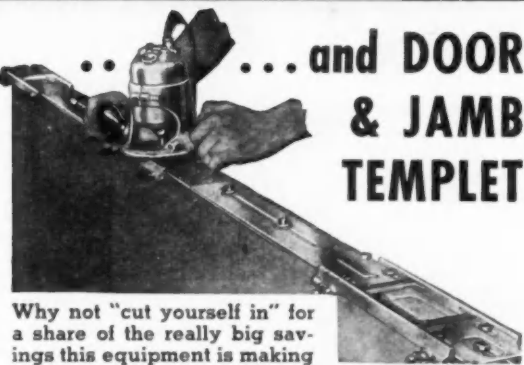
Mail to: OVERHEAD DOOR CORPORATION, Hartford City, Indiana, U. S. A.

PRIVATE GARAGE
PUBLIC GARAGE
WAREHOUSE
GREASING STATION
WOOD DOORS
STEEL DOORS
FACTORY DOORS
OTHER BUILDINGS
ELECTRIC OPERATORS AB-5-39

"6 TIMES FASTER" Means You're MONEY AHEAD!

with CARTER HINGE BUTT ROUTER... ..and DOOR & JAMB TEMPLET

With this Router and the Door and Jamb Templet shown at the right, you can cut butt-mortises in just one-sixth the time required by hand, yet leave a smooth, perfectly flat mortise that fits the hinge like a glove. This snug fit means that doors actually hang by the hinges—not by the screws. There's no chance for the door to sag, or the screws to loosen or pull out.



Why not "cut yourself in" for a share of the really big savings this equipment is making for thousands of contractors and builders? The full story is free on request . . . send the coupon now.



With this equipment you produce six mortises for three butts in door and jamb in five minutes . . . mortise more than 75 doors and jambs in a single day.

Interpret these advantages in terms of extra savings and extra profits on your own jobs — then clip the coupon for detailed information.

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

Please rush me complete information on the
Carter Hinge Butt Router and Door & Jamb Templet.

Name _____

Address _____

City _____ State _____

CARTER MONEY MAKING TOOLS

FRANTZ ANNOUNCES

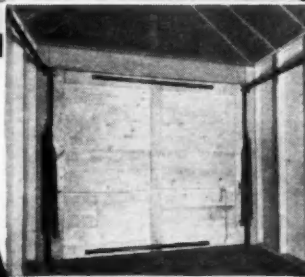
Junior

"OVER-THE-TOP"
LIGHT
DOOR EQUIPMENT



*Sweeps Away
Sales
Resistance*

*Breaks Down
the Price
Barrier*



Here is big news! "Over-the-Top" Door Equipment has a baby brother . . . a set that gives you profit opportunities unprecedented in the history of overhead doors.

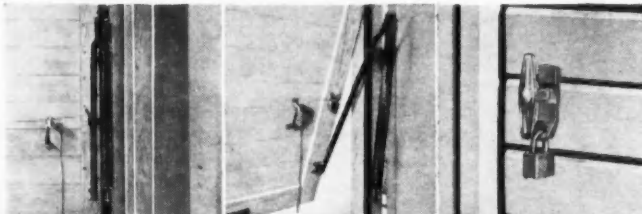
★ Yes, the device that startled the building field back in 1930 with its radically new principle and amazing simplicity has an "understudy". Frantz introduces JUNIOR. "Over-the-Top" Light Door Equipment . . . a lighter, inexpensive, yet none the less efficient model . . . especially designed for doors weighing up to 150 pounds, within the limits of 6'-6" to 7' high and up to 8' wide. It sweeps away the last vestige of overhead door sales resistance of the mass market. Strike while the iron is hot. Write today!

FRANTZ MANUFACTURING COMPANY
STERLING, ILLINOIS

Look at JUNIOR! Even simpler and more compact . . . and costs less, too.

JUNIOR has everything it takes where light doors are concerned.

It's a "natural" for the vast small-home market on overhead garage doors.



FRANTZ
Guaranteed BUILDWARE

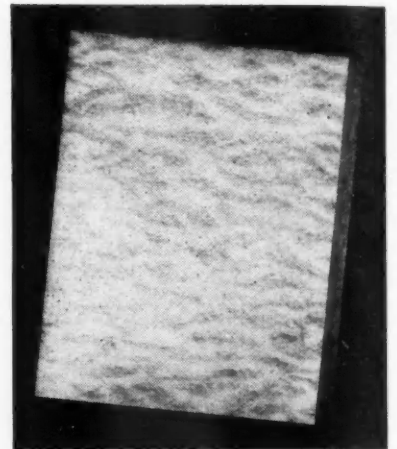
(Continued from page 114)

the use of new principles in surfacing materials.

The company reports an interesting feature in that this extremely light surface actually turns lighter with exposure. Tests on samples exposed to sunlight and Fadometer show that the surface after exposure is enough lighter to be easily seen by the eye. Tests made in a standard Fadometer show that exposure, the equivalent of two years, results in a definite increase in whiteness.

Nu-Wood Sta-Lite is available in tile, plank and board. The product maintains the distinctive texture of Nu-Wood. It offers a considerable amount of sound absorption and insulating value. Both in texture and color, Sta-Lite is designed to harmonize with tan and variegated Nu-Wood.

A special new type tongue and groove joint is furnished on Sta-Lite tile and plank. This joint has a slightly shallower bevel which gives the board an improved appearance in design. The tongue and groove joint offers greater support in construction to adjacent pieces—plus practically fool-proof application. Leakage of air through the joint is practically eliminated and slight movement is not noticeable on the finished job. Nu-Wood Sta-Lite can be easily cleaned with a sponge or cloth.



NEW Sta-Lite insulating interior finish offers high light reflection and permanence.

Adhesive for Wallboard Finishes

A NEW adhesive for use in applying fibreboard and hardboard wall and ceiling finishes has been announced by the Armstrong Cork Company, Lancaster, Pa. It features high initial bond to lessen the possibility of installation failures due to improper application methods. During a period of eight months, trial installations were made involving the application of a number of different materials against a variety of surfaces, and the results were reported very satisfactory, according to the manufacturer.

The new adhesive is of the modified oil base type. It is waterproof, easily worked, and remains plastic indefinitely. Its longitudinal shrinkage is reported to be less than one-half of one per cent.

The company's expanded adhesives line is intended to help retail lumber dealers take better advantage of demands for decorative fibreboards. Of particular interest is the fact that the new product may be safely used for the application of hardboards and similar materials against smooth concrete and plaster surfaces, wood furrings, solid wood sheathing, gypsum board, and gypsum lath.

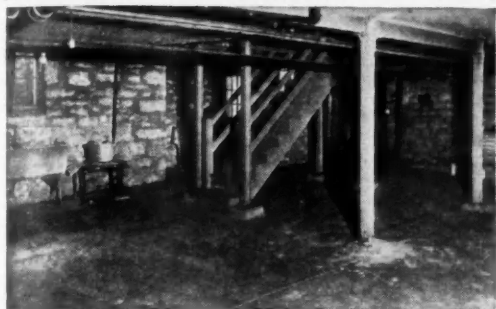
Insulating Brick Siding

A NEW insulating brick siding for modernizing the outside walls of all types of frame buildings has been announced by The Insulite Company, Minneapolis, Minn. In addition to providing a modern, attractive wall, Briklite is credited with reducing upkeep expenses, adding to the strength of the wall, and lowering heating costs by providing efficient insulation.

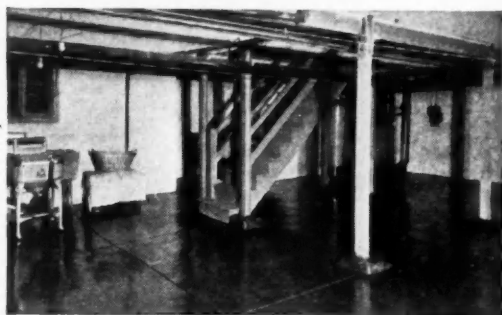
Insulite Graylite board forms the base material of Briklite and is completely enveloped with a coat of high melt point asphalt. Mineral granules are applied to the surface which is then embossed, giving the finished product a remarkably close resemblance to clay brick products. Available in two colors, red and buff with all edges shiplapped, four design styles are manufactured, making possible the application of conventional brick patterns.

END LEAKY BASEMENTS

The Sure **BONDEX** WAY



BEFORE
Here's a typical basement, damp and unhealthy, because hard rains seep right through the walls.



AFTER
Treated with Bondex Waterproof Cement Paint, the same basement is bone-dry and ideal for laundry work.

Spring Rains make Homeowners say, "Let's Do Something About Dampness"

The rainy season brings a crop of leaky basements and rouses the anger of Mrs. Housewife against the rivulets that trickle across the laundry or playroom floor. That's where Bondex Waterproof Cement Paint comes in! Suggest a treatment of this world-famous finish that beautifies as it waterproofs basement walls.



For Non-Porous and Painted Surfaces
Use the New **BONDEX-PRIMER**

For painted and integrally-waterproofed surfaces, use one coat of the new Bondex-Primer followed by a finish coat of Bondex. For porous and non-painted surfaces use two coats of Bondex in a choice of 16 colors. Folder giving complete instructions will be gladly sent on request. Mail coupon below.

BONDEX is
Nationally Advertised in the
Saturday Evening Post

THE REARDON COMPANY
2200 N. 2nd St., St. Louis, Mo.

Please send illustrated folder on Bondex Waterproof Cement Paint for basement use.

Name _____
Address _____
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Smart Builders are Specifying THIS NEW OIL FURNACE



X-80
A
ROUND OAK
PRODUCT



FOR SMALL HOMES

SMART builders everywhere are now specifying and buying the Round Oak X-80 Oil Furnace for average small homes. They have found this revolutionary new oil-fired winter Air Conditioning unit so low in cost and efficient in operation that it is practical and economical in average 5 to 7-room houses. And today... thanks to these builders... hundreds of home owners are enjoying all the advantages and luxury of automatic oil heat. This remarkable X-80, compactly encased in an attractive steel cabinet of blue finish, is equipped with the famous Round Oak Contraflow burner plus unusually efficient circulating, filtering and humidifying units. It produces a maximum of 84,000 BTU's per hour (larger sizes also available). Be sure to see it at your Round Oak dealer's today... or mail coupon below.



The Contraflow—Round Oak's famous exclusive oil burner.



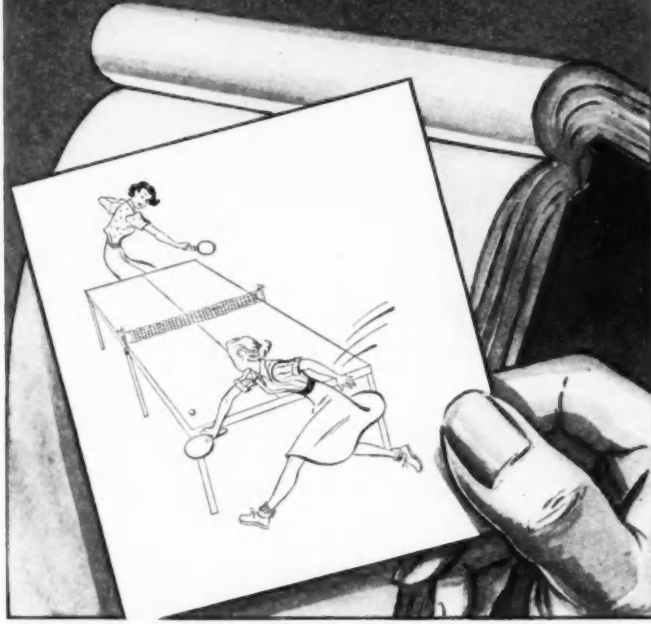
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STOVES • RANGES • FURNACES
OIL BURNERS • AIR CONDITIONERS

The Round Oak Company, Dowagiac, Michigan — Dept. 539.
Please send literature and complete information describing your
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Street _____
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Put this picture
in your sales plan
WITH A BASEMENT FLOOR OF
ARMSTRONG'S ASPHALT TILE



YOU can sell from the ground up when your houses have colorful basement recreation rooms. For the floors, choose Armstrong's Asphalt Tile—the moisture-resistant, resilient flooring that can be installed over concrete below grade level.

Here's a sturdy, low-cost floor that resists wear and doesn't stain easily. Its handsome plain and marble colors can be combined into hundreds of designs. And the colors run clear through the composition—scuffing and scraping can't wear them off.

The low cost of Armstrong's Asphalt Tile makes it suitable for many other rooms in the house, as well as for stores and offices.

You'll find complete information and many sales-building floor ideas in color-illustrated *Asphalt Tile Floors*. Write for your free copy today. Armstrong Cork Company, Building Materials Division, 1218 State St., Lancaster, Pennsylvania.

Armstrong manufactures Linoleum, Reinforced Rubber Tile, Cork Tile, Asphalt Tile, Linotile (Oil-Bonded), and Linowall.



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Armstrong's LINOLEUM
and RESILIENT, NON-CERAMIC TILES

CORK TILE • LINOWALL • ACOUSTICAL CEILINGS

Factory-Finished Hardwood Flooring

A NEW factory-finished hardwood flooring, developed to be sold at a total installed cost usually less than that of ordinary 25/32 inch x 2 1/4 inch strip flooring finished on the job, has been announced by E. L. Bruce Co. This new type flooring, which bears the trade name Streamline, is full 25/32 inch oak flooring with a 3/4 inch face.

Streamline flooring is sanded, filled, finished and waxed at the Bruce plant. The well known Bruce-Way penetrating seal type finish is used. Both sides and ends of the flooring are beveled, giving a Streamline floor a distinctive patterned appearance.

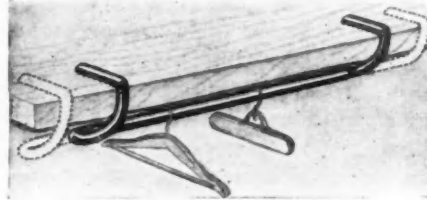
Bruce Streamline flooring, with an installed cost always competitive with regular hardwood flooring finished on the job, permits the use of factory-finished flooring in even the most modest cost houses. This is due to two factors: First, the elimination of manufacturing waste and the lower "matching waste" give the dealer a lower square foot cost on Streamline flooring than on regular strip flooring. (The matching waste on Streamline is 23 per cent, compared with 33-1/3 per cent on 2 1/4 inch face flooring.) Second, the flooring is finished by machinery at the Bruce plant for several cents a square foot lower than the cost of ordinary sanding and finishing on the job.

Screwless Shelf Bar

THE Setwell screwless shelf bar developed by the Mackie-Lovejoy Mfg. Co., 1706 W. 13th St., Chicago, as one of the most needed conveniences today for home owners or apartment dwellers, takes the place of the old fashioned clumsy clothes closet bar that screwed onto walls at both ends.

Shortage of closet space calls for such a handy convenience. It is hung on the shelf; there are no screws to mar walls or woodwork because the notched ends grip the shelf; the more weight that is put upon it, the tighter it holds. It can also be shifted from one closet to another in emergency for guests.

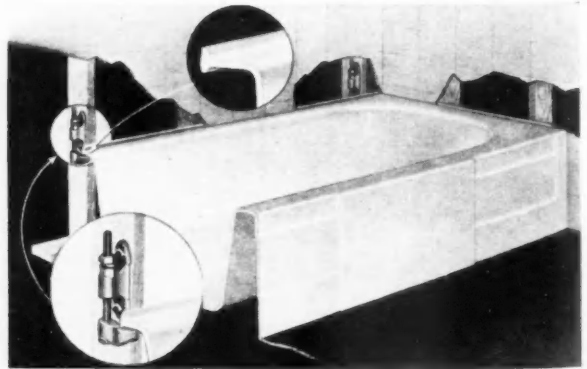
The adjustable length is an added feature. The ends telescope in tube and extend in length from 15 to 24 inches; it is made in bright nickel finish, also in chrome.



HANGER weight on shelf bar holds it firmly in place.

Adjustable Bathtub Hanger

TO provide an inexpensive but dependable method for securely and economically installing any built-in bathtub, the Hollaender Hanger Co., Cincinnati, O., is offering the Hol-Anchor adjustable bathtub hanger. With this device, building false floors, nailing strips or similar methods are unnecessary. Only two lag bolts fasten each hanger to studding. The wide range of adjustability entirely removes the necessity of rehandling the tub once it is placed in position. Due to its similarity to a jack, a tub may be raised or lowered with a turn of a nut.



BATHTUB hangers are quickly adjustable for position.

HERE'S THE PRODUCT THAT CAN BOOST YOUR SALES... AND PROFITS!

DU PONT *Chromated Zinc Chloride* **TREATED LUMBER**

There is a bigger demand today for Du Pont Chromated Zinc Chloride Treated Lumber than there has ever been before... and that demand is growing bigger every day! *Here is why:*

Widespread publicity has made most people conscious of the lumber losses caused by decay and termites... the need for protection. They are demanding preserved lumber for the vital spots where losses start. Du Pont Chromated Zinc Chloride Treated Lumber "stands up" as the dependable protection against these losses. Besides, it is clean, odorless, paintable and fire-retarding... ideal lumber for permanent construction.

DU PONT CHROMATED ZINC CHLORIDE LEADS IN PRESERVATIVE VALUE

Comparative tests show that Du Pont Chromated Zinc Chloride is a distinct improvement over the successful, 101 year old zinc chloride treatment that has been the stand-

ard "clean" preservative for lumber. It is more resistant to decay than any other "clean" lumber treatment, based upon tests made in 7 different parts of the United States, under wide variations of temperature, rainfall and humidity.

DU PONT ACTIVELY BUILDING A MARKET FOR YOU

Du Pont advertising and publicity, and du Pont representatives, are telling the story of Chromated Zinc Chloride from coast to coast; to engineers, architects, contractors, business men and public officials. You can "cash in" on this campaign. You can boost your sales and profits by stocking Chromated Zinc Chloride Treated Lumber for the home builder, public works and industrial buyers.

Write us before you forget it. We'll see that you get complete details about Du Pont Chromated Zinc Chloride and the growing market for this Treated Lumber.

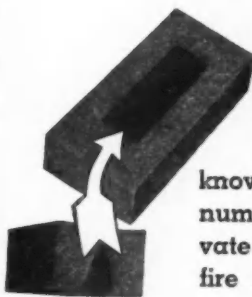
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WANTED ONE MAN IN EACH COMMUNITY

Modern engineering has revolutionized the manufacture and distribution of a basic commodity in daily use by the building industry. This has opened up new profit opportunities for aggressive individuals or companies to dominate their local markets manufacturing exclusive products.

THE PRODUCT



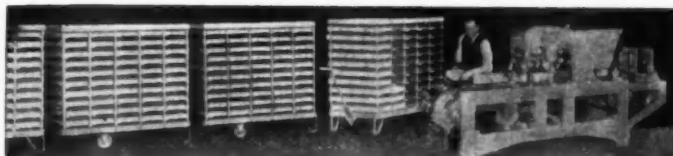
Proven by actual use throughout the world. Vastly improved in design and quality, unsurpassed in beauty. Over 40 colors, shades and textures. Quality beyond any

known building requirement proven by numerous Federal, municipal and private laboratory tests. Offers permanent, fire and vermin proof construction at cost level of frame.

THE BUSINESS

Proven by established manufacturers already successful beyond anticipation. Equipped with our automatic machinery—large production—one or two men. Only moderate investment required. Franchise granted protecting your market, business and future.

INVESTIGATE — while your territory is still open. Fill in and return coupon today. No obligation.



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- Show me through your free books about the product, the business and the earning power of an exclusive plant in my territory.
- How a contractor can build better for less.

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To Make BASEMENTS MORE LIVABLE

INDIRECT VENTILATION
With Weather and Dirt Protection
... eliminates direct drafts (particularly valuable in laundry and recreation rooms) — yet permits plenty of ventilation without allowing rain or snow to enter.

All Accomplished Instantly From Sill Level

The Premier can be quickly adjusted to top, center, bottom or full opening by means of the handy locking bar, from the sill level. No need of anything to stand on, or hard-to-reach ceiling hooks — an exclusive patented feature.

VENTO PREMIER

the only Basement Window with VERSILATOR OPERATION and these structural Superiorities

Note these features: 1. Heavy double channel, pressed steel frame. 2. All-welded construction. 3. Unequaled ease for detaching ventilator from frame. 4. The most practical method for puttyless glazing. 5. Top of frame is easily secured to lintel. 6. Design of frame provides the easiest means of securing weather-tight installations. 7. Carefully prepared for quick and easy attachment of screens and storm sash — and the PREMIER costs no more than other first line windows.

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UTILITY

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A COMPLETE LINE OF WINDOW PRODUCTS

VENTO offers you a complete line of window products for all types of buildings — and suitable to all architectural styles and purposes.

See your Dealer for particulars on the entire line or write us for descriptive booklet on any type in which you may be especially interested.

The Vento Steel Products Co. has an enviable record for dealer cooperation.

BARN WINDOWS

CASEMENTS

COAL CHUTES

VENTO STEEL PRODUCTS COMPANY

MUSKEGON, MICHIGAN

LETTERS from Readers on All Subjects

Facts, opinions and advice welcomed here

All About 90% Loans

Peoria, Illinois.

To the Editor:

After all, there is very little to this so called ninety per cent loan on new construction. A great deal is said about ninety per cent loans but not even one per cent of the people have a ghost of a chance of getting through a ninety per cent loan. Ninety per cent of the actual value and ninety per cent of the appraisal value are two different things. A home that actually cost \$6,000 to build if carrying a ninety per cent loan would only require the owner to have \$600 as a down payment. But under the system of appraisal used today by most lending institutions would be appraised at about \$4,000. Ninety per cent of this would be \$3,600 which is only sixty per cent of its actual value. This is a long way from this so-called ninety per cent loan on new construction which is so much advertised.

Now compare the system of financing that was in effect in the boom years before 1930, and you will find that it takes a greater down payment to build a home today than it did in the period before 1930. At that time, most loan associations and lending institutions set an appraisal value equal to or greater than the actual cost of the property. Also, in addition to a sixty per cent of the actual value of the property, the owner was able to get the balance on a second mortgage. In this period, a person was able to build under this system a \$6,000 home with only a \$500 down payment. Our so-called ninety per cent loan in reality only amounts to a sixty per cent plan with the second mortgage feature cut out.

Under the system today a person with a \$600 down payment could finance a home that costs \$1,500. Compare this with what he could do in 1929, and you can plainly see why building does not go ahead. It's not possible for the building industry to cut its prices seventy-five per cent in order to create a building boom. The trouble lies in our system of finance. Put the question before the contractors that read this building magazine. Ask them what per cent of their prospects that have a ten per cent or better down payment to make on a new home and are ready to sign on the dotted line are able to get a loan to finance their home. They will tell you that better than fifty per cent of sure business is stopped by the lack of capital.

Our system of finance has to be improved up to the 1929 level to do that amount of business.

I believe that the *American Builder* by acting as the voice and leader of the nation's contractors and with the help of all building and contractor associations can formulate a plan and get the government to take care of the gap created by the elimination of the second mortgage in the last ten years.

I would suggest a plan whereby we induce the government to step out of all loan associations, FHA, HOLC, PWA, and all slum clearance projects. Take this money and create a second mortgage division to close the gap that now exists between the ten per cent down payment that a great many people have, and that sixty or seventy per cent that they are able to get of the actual value of their prospective home. This would more than double building which now lags too far below normal.

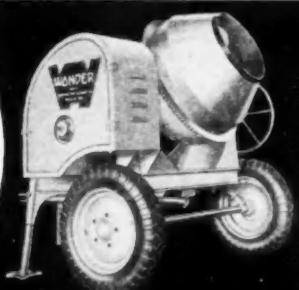
I find that a great many people are now paying more rent and are able to do it, than they would be required to pay on a new home. The system of second mortgage before helped a great many people to build and purchase homes that would otherwise not have had an opportunity to buy a home.

This system was considered fairly sound up until the depression and it did work for the benefit of business. I will admit that the depression killed the second mortgage business and threw a lot of fear in all other business.

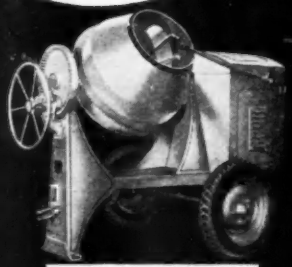
By limiting the cost of a man's home to his ability to meet his

(Continued to page 122)

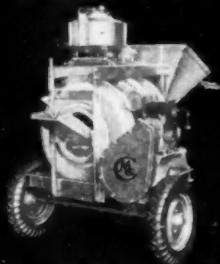
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New 1/2 Bag End Discharge Tilter



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New End Discharge 1/2 Bag Non-Tilt

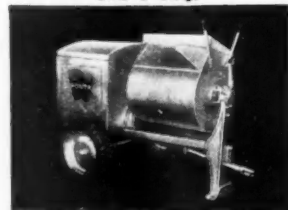
CMC

AMERICA'S NO. 1 EQUIPMENT LINE

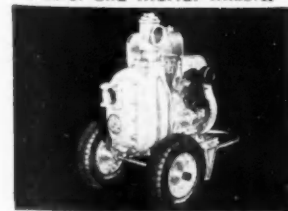
The most complete array of modern half-bag Mixers in the field. Built to move faster and handle easier—to get jobs done quicker—to make more money for builders.



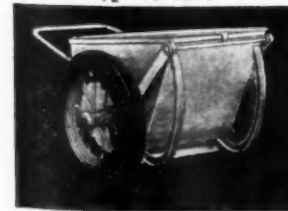
Two Wheel Trailers. 1, 2 and 3 Bag.



Plaster and Mortar Mixers.



Dual Prime Pumps, from 1 1/2" to 10".



Dumpover Material Carts.



GET THE NEW CMC CATALOG! See the newest in CMC Mixers, all sizes, Plaster and Mortar Mixers, Dual Prime Pumps, Hoists, Saw Rigs, Pneumatic Tired Carts and Barrows—Before you buy. It's America's No. 1 Equipment Line.

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WHO CAN BUY YOUR HOMES

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NEARLY 2,000,000 families read BETTER HOMES & GARDENS every month. That's the biggest home-

owning-minded audience in America! NOW BETTER HOMES & GARDENS discusses you and your business—reports on how half of America's homes are planned and built each year—tells the public how to buy a house as well as how to build one.

Besides frequent mention in regular editorials, you will be covered in a big, new book, "How to BUY a BETTER Home." It describes your services, your responsibility, your ability. It includes a check list to help owners-to-be understand the value you build into your houses.

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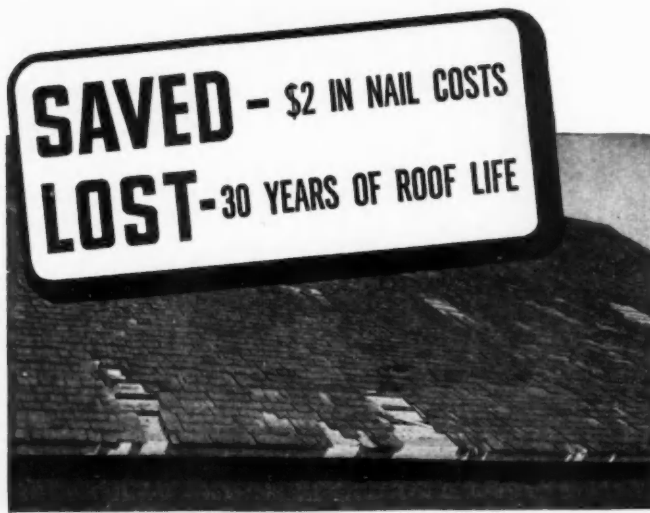
In 1938 I builthouses for resale.
Please send me a free copy of "How to BUY a BETTER Home" and tell me how I can use it in my own selling.

Firm Name

Address

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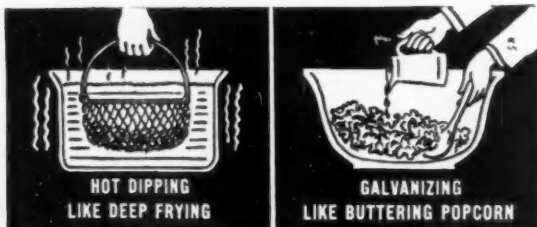


Maze Hot-Dipped Zinc-Coated Nails Would Have Added 30 Years To This Roof—Cost Only \$2 More!

There's nothing wrong with the shingles—rusted nails have ruined this roof. And that's bad business. For the owner of the building. For the dealer who sold the shingles and nails. For the contractor who did the work. Especially when for only \$2.00 more MAZE HOT-DIPPED NAILS could have been used and given *lasting* protection and real profit to all concerned!

The Roof's Only as Good as the Nails!

Why spoil shingles good for 50 years with nails good only for 15 or 20? There's only ONE kind of nail recommended by leading Shingle Associations and recognized by the U. S. Dept. of Commerce (see Page 6, National Bureau of Standards pamphlet CS31-38—Wood Shingle Commercial Standard). That's a HOT-DIPPED ZINC-COATED NAIL—not a galvanized zinc-coated nail!



Here's the difference. MAZE HOT-DIPPED NAILS are actually *submerged* in molten zinc. *Completely covered*. *Heavily covered*. Galvanized nails are merely sprinkled with zinc and rolled or tumbled. The difference in coatings means many years in shingle life!

Give Your Customers the Best!

There are Maze Nails for every roofing job. Wire and Cut Style Wood Shingle Nails. Asphalt Roofing Nails. Anchors and Calk-Screws for all metal roofings. See the entire line at your lumber dealer's. Or write us for samples and complete details. Use Maze Nails for better jobs and more customers!

W. H. MAZE COMPANY • PERU, ILLINOIS

Zinclad NAILS

(Continued from page 120)

monthly payments and never giving him another chance to receive a government second mortgage if the government loses by necessity of foreclosure of his home.

This plan would help the man who was willing to help himself get a home. By not getting more than one chance if he failed his government, would keep him from taking a greater risk than he was able to take care of. If he paid off his home or sold it, or traded it for a larger home at no loss to the government, he would still be able to get another loan and government second mortgage on a new home.

By using a Government Second Mortgage Division as the basic idea, I believe that the *American Builder* and its staff could originate a plan that would have the support and any help that would be required to pass it through congress.

By stopping government building in competition with private building and creating a government second mortgage division, we would put a great deal of confidence back in all lines of business. A second mortgage was always considered a gesture of confidence in the other party's ability and honesty to pay. What is needed more than a greater amount of confidence in business.

In the last few years a great many private loan associations and loaning institutions have set aside certain districts of cities and towns that they actually refuse to consider any kind of a loan. This has a natural tendency to make certain sections of cities into slum districts; aso it kills the sale of property and runs values down.

Some lending institutions absolutely refuse to consider a loan except on new property. This does not give the home owner a chance to repair his property.

I would like to hear from you and get your views on the second mortgage idea. Also what do other contractors think of the idea.

Sincerely,

SAM E. BLUME, Contractor.

Likes Short-Cut Estimating

Marshalltown, Ia.

To the Editor:

Every reader who takes the time to investigate your TruCost system will be benefited by it. The forthcoming articles on small stores and commercial buildings will be of interest to me.

THEO. FRICKE.

Results Have Been Negative

Kansas City, Missouri.

To the Editor:

I very much appreciate your sending me advance copy of the editorial for your April issue. I read your publication carefully each month.

While I certainly agree with the fundamentals involved in the exposition you have made in this editorial, I am also of the opinion that this is a much involved question, where the solution is not easy.

Out in our section where the multiple unit houses have been gotten under way by contractors, in most instances the local dealers have lost the sale of the materials and practically no profits have been made on the transactions. In some of our towns, where ten or twenty houses are thus erected, the supply is so well taken care of that it may be two or three years before anyone else undertakes to build a home. I recognize, however, that even in those instances, labor is employed, materials are used, and there is some benefit from the standpoint of the intent of the FHA Act.

In Oklahoma City, where the Will Rogers apartments were erected a year or two ago, I think the cost was so excessive and the entire transaction handled so badly that the whole community condemned it.

So far, nothing has been undertaken yet in Kansas City.

My own conclusion is that when it is all analyzed, we are compelled to recognize the limitations of our state and federal governments to do very much of lasting value in solving business problems. When the government steps out of its regular functions, other dislocations develop that are far-reaching in their consequences.

E. E. WOODS,

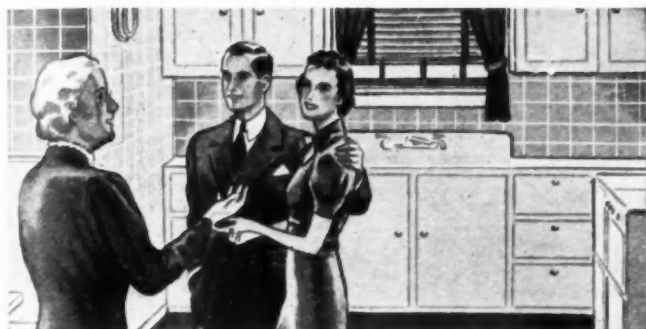
Secretary-Manager, Southwestern Lumbermen's Assn.

Easy to install



• Masonite Presdwood Temprtile is the modern material for kitchen and bathroom walls. Because it's an all-wood, grainless board, it can be applied with moisture-proof adhesive or nailed to studs. Properly installed, it will not warp, chip or crack. And it resists moisture.

Produces beautiful tile effects



• Already grooved with tile-like pattern, Presdwood Temprtile can be painted in any number of pleasing combinations. It can be washed with soap and water to keep it looking spick and span. And it can be repainted whenever the home owner wants a change in color scheme.

Masonite Presdwood Temprtile provides lasting surfaces at low cost

• Masonite Presdwood Temprtile saves money for the home owner in many ways. It enables him to have expensive-looking walls for a low initial cost. It is easy and inexpensive to install. The up-keep cost is very little. And Presdwood Temprtile will last as long as the building.

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111 W. Washington St., Chicago, Illinois

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Clear as the print on this page—are the sharp BLACK-ON-WHITE markings of a Favorite Wyteface Steel Tape. Easy to read—even in poor light. Your readings are *always* right, the first time.

The smooth, white surface is crack-proof—protects the steel from corrosion and rust. Full strength steel makes it hard to kink, hard to curl. This new popular-priced model has all the major features Surveyors and Engineers have long valued in higher-priced Wyteface tapes.

Building material and hardware dealers sell Favorite Wyteface—in 25, 50, 75 and 100 foot lengths. Mail us the coupon for free sample of line and illustrated folder showing sizes and prices.

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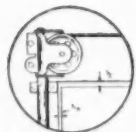
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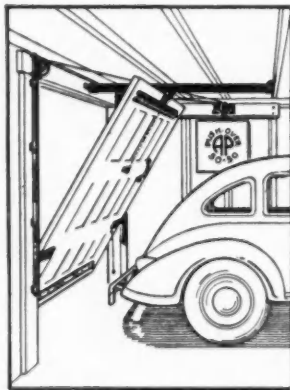
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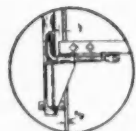
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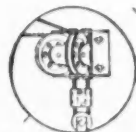
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A Good Objective—But Who's to Pick 'em?

Waterbury, Conn.

To the Editor:

On page 9 of the December 1938 issue of *American Builder* is an illustration showing a combination of a Cape Cod and salt box house, owned by Mr. Gale H. Carter at Old Greenwich, Conn. They are said to be perfect specimens of their particular type.

I, and I believe a great many other prospective home builders, would greatly appreciate a series of "perfect type" traditional house plans in your valuable magazine.

So many illustrations and plans go under the name of the traditional types, which in reality are nothing but adaptations of those types from which they are named, that to anyone except an expert, there is no way to determine just what type we would like to build, and be able to know in advance what it would look like when completed and that it would be architecturally correct.

To me, the Cape Cod house pictured on page 9 of the December 1938 *American Builder* is extremely pleasing. Would it not be possible to secure the actual outside measurements of this particular house, and incorporate it in a series giving the very best there is in traditional design?

If a series could be run in *American Builder*, giving this particular house (outside) and including what are accepted as perfect types of N.E. Colonial, Dutch Colonial, Southern Colonial, Salt Box, etc., I am sure that both prospective home owners and builders would find in it a long felt want.

DAVID R. PICHARD.

Approves Our Fight on Govt. Housing

Billings, Mont.

To the Editor:

Last evening I read your editorial on page 57 of *American Builder*.

I feel that your opening paragraph is about the clearest statement with respect to "slum" housing by the Federal government that I have yet read.

Here in Billings, Mont., a group who are in the building and rental business as builders, owners and operators, assisted by many home owners, have been opposing a proposed housing unit to expend \$500,000 and erect a hundred unit project.

We have felt that while the larger cities might need slum clearance, yet we cannot agree that such a costly unit can be necessary for a small town of slightly more than 20,000 population.

HENRY A. CHAPPLE,

Chapple and Balsam, Apartment Management.

Unlockable Bath Room Doors

Sioux Falls, S. Dak.

To the Editor:

A recent news story in the Des Moines Register told of the predicament of a small boy who locked himself in the bathroom and firemen had to break in to release him.

It is a common stunt for children to lock themselves in a bathroom. They are likely to do considerable damage before anyone can get to them. There is a much more serious side to the matter—older people often fall or become faint and helpless in the bathroom. With the door locked or bolted, it is impossible for aid to get to them.

Practically every modern home has a bathroom lock which can be unlocked from the outside, (the one illustrated in the Des Moines paper appears to be of that type). They are made especially so they may be unlocked from the outside with a small square key, if the lock has been properly adjusted when put in place. Unfortunately many carpenters do not adjust the locks nor explain them either, with the result that not one out of fifty home owners has any idea how simple it is to get into a locked bathroom. Even the police and firemen will often tear a door or window off when a small key will quickly and easily do the trick.

In view of the fact that this type of lock is used almost universally, I believe the Register would do well to give the public a little more information on this subject. It is even more important to stress the fact that bathroom locks, with bolts or keys on the inside only, should never be used.

CLIFFORD F. SMITH,

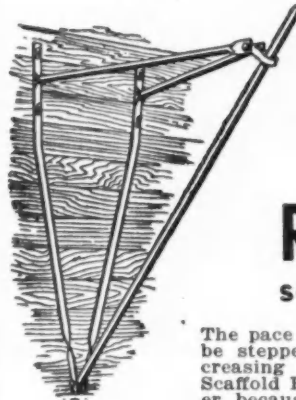
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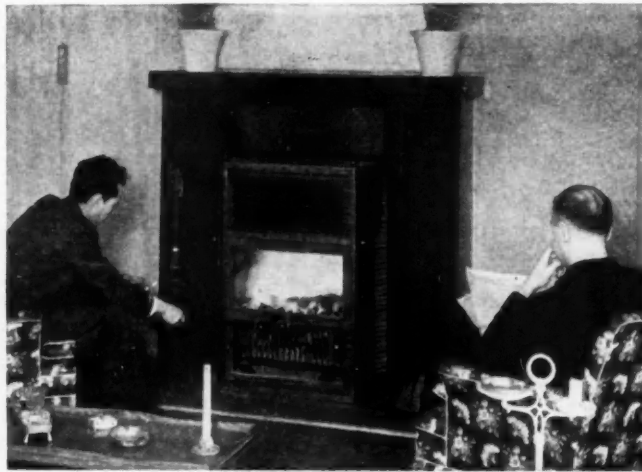
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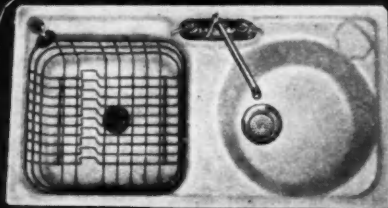
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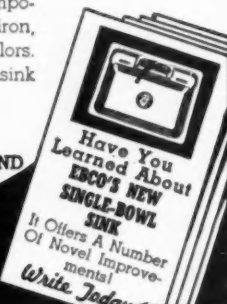
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Cleveland Launches Campaign

(Continued from page 108)

ings which hung on the walls of the display. Almost 500 men and women who inspected these renderings, not only asked our attendants the price and structural details of the houses, but asked to be notified when they were ready for inspection, most visitors wishing to see one house and many desiring to inspect two or more of them. Tabulation of the value of the homes in which they were interested, indicated a healthful and active market for about \$3,000,000 worth of new houses. This calculation, carried still further by processes of deduction, placed our 1939 market in Cleveland and its suburbs at \$15,000,000.

Contests to Interest Women

Casual publicity efforts having proved to be of slight interest to women, we set about remedying this by declaring through all of our mediums, that the building industry would be definitely benefited if we knew what today's home-makers consider to be the most important features in planning a house.

We announced a contest for women's clubs in which each club could submit one entry, the entry consisting of two parts. The first requirement was ten most important features to be considered in planning today's home. The second requirement called for not more than 150 words on "Why Now is the Time to Build." Prizes were to be \$75 for first, \$50 for second, \$25 for third, followed by five honorable mentions of \$10 each.

This contest served two important purposes since it not only provided us with information which would make future homes more salable, but it also caused new homes and their planning to be discussed by more thousands of women than we could possibly have reached in any other manner.

As a result of these direct and indirect approaches to the home-buying public, when our first Demonstration Home was building, more than 3,000 people visited it during the term of construction. Although the opening day was cold, rainy and disagreeable, another 1,000 called to inspect the house.

Due to the attention focused upon these ten houses, two of them were sold before completion, and from one, the \$4,200 design, the builder had sold nine contracts before he even broke ground for the first house.

Other concrete results of this program may be recognized in the fact, that for the first quarter of 1939, home building in Cleveland and its suburbs was 118 per cent over the same period last year and statistics indicate we shall rise to greater volume than we did in 1930. It is significant too, to note that during the period when our increase was 118 per cent, the national average east of the Rocky mountains, was but 44 per cent greater than 1938.

In their report to FHA executives in Washington, the men in the Cleveland district office gave the Better Housing Program much credit for increasing the first-quarter applications from 721 to 2,056 and the money volume from \$3,432,300 to \$10,343,370. The smaller figures, of course, represent the first quarter of 1938. Naturally, we are proud that this could be said of our program, even before we reach our point of greatest concentration of effort during Construction Week, May 8 to 14.

Whatever we have accomplished in Cleveland must be credited to but one series of circumstances. Men who operate our construction industry got together, put their shoulders to the wheel as one man, and I believe they have amazed themselves by what concerted action can accomplish.



EASY TO LAY ON NEW OR OLD FLOORS
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COSTS NO MORE THAN GOOD GRADE LINOLEUM

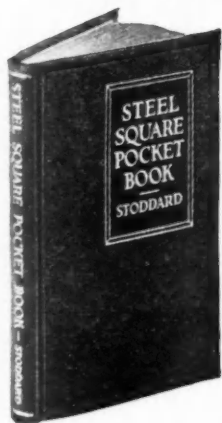
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This concise and handy little reference book illustrates and describes the best practical methods of using the carpenter's steel square in laying out all kinds of carpentry work, including common, hip or valley rafters for different shaped roofs, jack rafters and roofs of uneven pitch.

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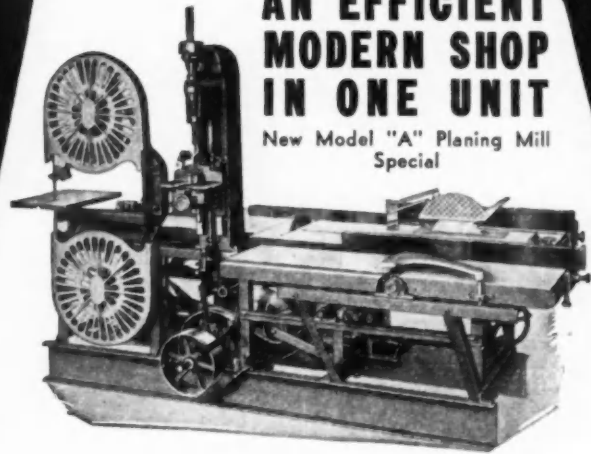
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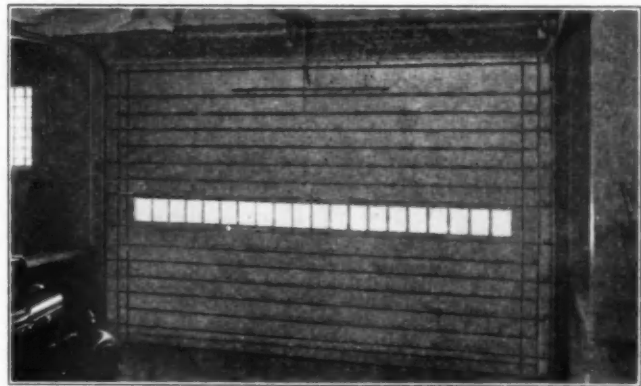
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“THE HEATILATOR Fireplace saves both time and worry,” a speculative builder told us recently. It saves time because it provides a correctly designed metal form around which the masonry is easily built. Less material is required. It saves worry because it insures a correctly operating fireplace. Owners are sure to be satisfied. More—the Heatilator Fireplace *circulates heat*, actually warms every corner of the room, and even adjoining rooms. Stocked by leading building supply and lumber dealers.

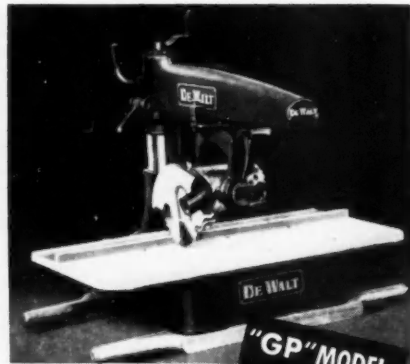


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How to Estimate Accurately

(Continued from page 57)

classified as hardware. The diameter and the length of the bolts vary, the building ordinance is the governing factor. The specifications will usually state the spacing required.

Rule: Divide the perimeter of the building by the bolt spacing; add one extra bolt for each corner or angle; result equals number of bolts required. Sometimes this is changed to the dozen basis.

Solving A Practical Problem

Estimate the underpinning materials for the buildings shown in Fig. 2 and Fig. 3.

The specifications call for the following sizes of lumber:

Item	Figure 2	Figure 3
Mudsill	2" x 8"	2 x 6
Pier Blocks	Metal Plate	2 x 6 x 6
Posts	3" diam. steel	4 x 6
Girders	4" x 12"	4 x 6
Cribbing Plates		2 x 6
Cribbing Studs		2 x 6—16" o.c.
Braces		1 x 6 every 4' on supporting walls.
Bolts	1/2" x 10"—4' o.c.	2 x 6 at corners. 1/2" x 8"—5' o.c.

1. MEASURING THE FOUNDATIONS:

a. The perimeter of the foundation shown in figure 2 is found by adding the width and length measurements together and doubling the result. 26 + 32 equals 58. 58 x 2 equals 116 linear feet.

Note: This method of finding the perimeter is shorter than if each wall measurement were added together. For any building with an offset the largest width and length measurements can always be added and doubled.

b. The perimeter of the building shown in figure 3 is found as follows: Add the width measurement (36') to the length measurement (48') and double the result. This will be 168'. To this must be added twice the inset distance. 7' x 2 equals 14. 168 plus 14 equals 182 feet which is the perimeter.

Note: This method of finding the perimeter of a building that has several angles is shorter than if each wall measurement was added together. Add the largest width and length measurements; double the result; then add twice the length of each inset wall. To the perimeter must be added all dwarf walls. In this case it is twice 25' or 50'. The total linear feet of foundation wall is 182 plus 50 or 232 linear feet.

c. Figure 3 indicates 19 piers.

2. ESTIMATING THE LUMBER: (see specifications above)

a. Mudsill: Figure 2 will require the same number of linear feet of mudsill as the perimeter of the building or 116 linear feet 2" x 8" mudsill. Figure 3 requires the same number of linear feet of mudsill as the perimeter of the building plus the dwarf walls or 232 linear 2" x 6" mudsill.

b. Pier blocks: Figure 3 indicates 19 pier blocks. 19 x 6" equals 9 1/2 or 10 linear feet 2" x 6".

c. Cribbing plates: Figure 3 requires one cribbing plate on all walls and dwarf walls. This material will duplicate the mudsill order; therefore, 232 linear feet 2" x 6" stock is required.

(Continued to page 132)

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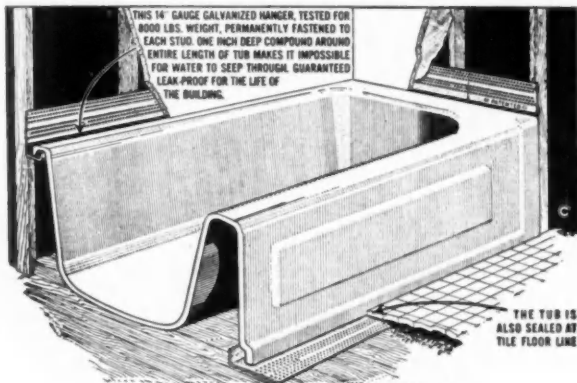
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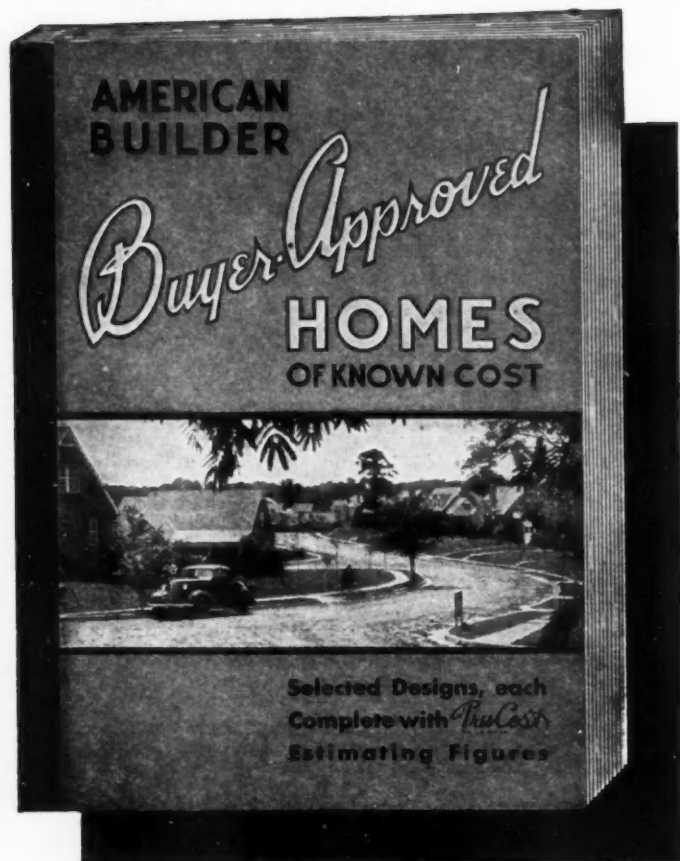


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Continued from preceding page.

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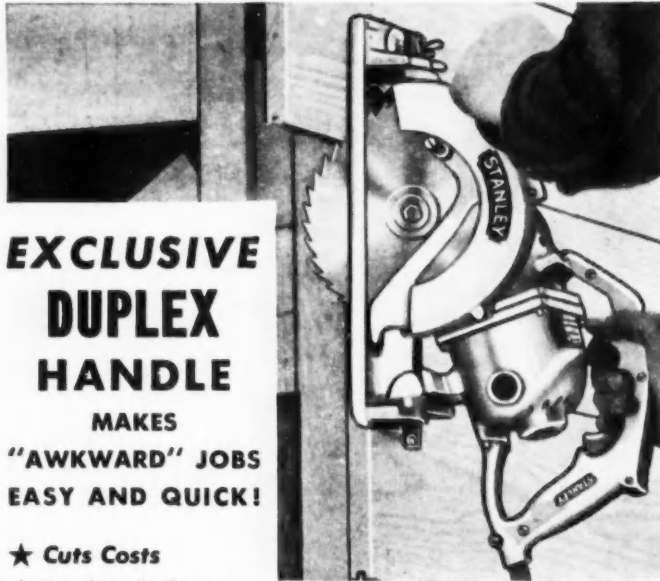
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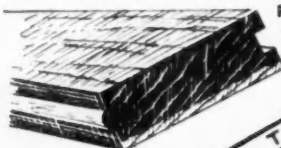


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How to Estimate Accurately

(Continued from page 128)

d. Cribbing studs: Figure 3 indicates the shortest cribbing stud is 1'-8" (see section B-B) and the longest 4'-4" (see section C-C) $\frac{1'-8" \text{ plus } 4'-4"}{2}$ equals 3'-0" the average length.

232 divided by 16" (the spacing) equals 232 x 3/4 or 174 pieces. 174 pieces 3' long equals 522 linear feet or 43½ pieces 12' long and ordered 44 pcs.

e. Girders: Figure 2 indicates a 4" x 12" girder 26' long. This could be built up with two 2" x 12" pieces bolted together. The pieces should be joined over the posts; in that case the order would be 3 pieces 2" x 12" 18' (8'-8" plus 8'-8" equals 17'-4" or 18'). Figure 3 requires 4" x 6" girder stock. Row "a" requires two pieces 16' long. Row "b" and "c" requires two pieces 16' and two pieces 10' long. Row "d" requires one piece 16' long and one piece 20'.

f. Figure 2 requires two 3" diameter metal posts 7' long. Figure 3 requires 19 posts averaging 3'-0" long each or 57 linear feet (called 58 linear feet). This could be changed to three 16' lengths and one 10' length and combined with the girder stock.

g. Braces (2" x 6"): For the building shown in Fig. 3. The average length of a cribbing wall brace would be the diagonal of a right angle 3' x 3' or 4'-3". Allow two for each corner or angle; therefore 10 pieces 4'-3" would be 42½ or 44 linear feet or it could be one piece 2" x 6"-16' and two pieces 2" x 6"-14'. Braces (1" x 6"): There are 136 linear feet of supporting walls. (Front and rear wall are not counted.) 136 divided by 4 (see specifications) equals 34 pieces 1" x 6"-6' equals 17 pieces 1" x 6"-12'.

h. Bolts: Figure 2: 116' (perimeter) divided by 4' (spacing) equals 29. 29 plus 6 (for corners and angles) equals 35 bolts ½" x 10". Would be ordered three dozen. Figure 3: 232' (perimeter and dwarf walls) divided by 5 (spacing) equals 46 2/3 or 47. 47 plus 10 (for corners and angles) equals 57 bolts ½" x 8". Would be ordered 5 dozen.

SUMMARY: The underpinning material for each building would therefore be as follows:

Figure 2: 116 linear feet 2" x 8" mudsill; 2 metal posts 3" diam., 7'-0"; 1 piece 4" x 12"-26' girder (or 3 pcs. 2" x 12"-18'); 3 dozen x" x 10" carriage bolts.

Figure 2: 242 linear feet 2" x 6" mudsill and pier blocks; 232 linear feet 2" x 6" cribbing plate stock; 522 linear feet 2" x 6" cribbing studs (or 44 pcs. 2" x 6"-12'); 1 pc. 4" x 6"-20' girder; 5 pcs. 4" x 6"-16' girders; 2 pcs. 4" x 6"-10' girders; 58 linear feet 4" x 6" posts (or 3 pcs. 4" x 6"-16' and 1 pc. 4" x 6"-10', add these to girder list); 44 linear feet 2" x 6" posts cribbing braces (or 1 pc. 2" x 6"-16' and ½ pc. 2" x 6"-14'; 17 pcs. 1" x 6"-12' braces; 5 dozen ½" x 8" carriage bolts.

* * *

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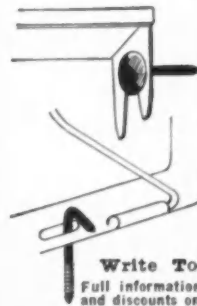
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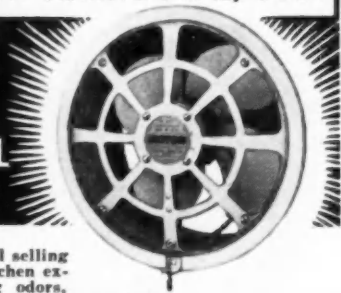


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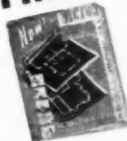
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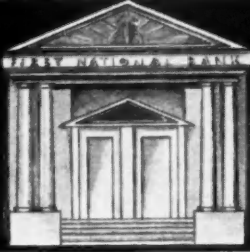

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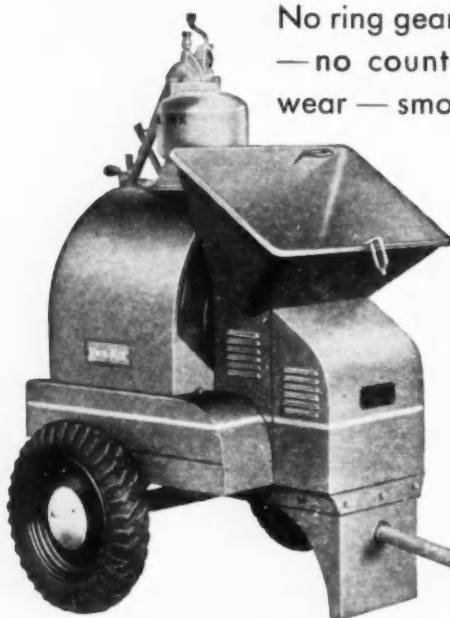
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(Continued to page 136)

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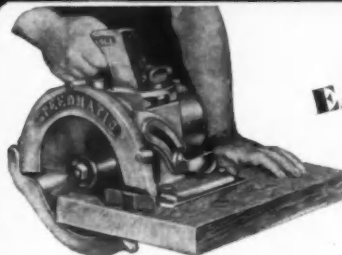
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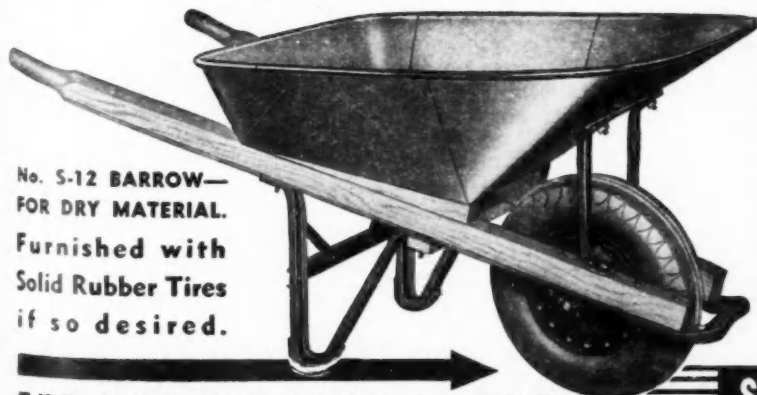
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(Continued from page 134)

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"WINDOWS BY VENTO"—A 32-page de luxe handbook presents the complete Vento line of architectural windows and casements for homes and commercial structures. Standard sizes, details of construction and window layouts make this a valuable book for reference.—VENTO STEEL PRODUCTS CO., Muskegon, Mich.

"CONSTRUCTION EQUIPMENT"—A 48-page catalog of impressive layout presents the complete Construction Machinery Co. line of mixers, pumps, saw rigs, hoists, etc. Illustrations large and clear, and all mechanical specifications included.—CONSTRUCTION MACHINERY CO., Waterloo, Ia.

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