

TWO-story bay of Fenestra steel casements floods St. Louis home with sunlight. F. G. Avis, architect; Ed E. Klaustermeier, builder.

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AMERICAN BUILDER

and Building Age

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

JULY, 1937

59th Year

Vol. 59—No. 7

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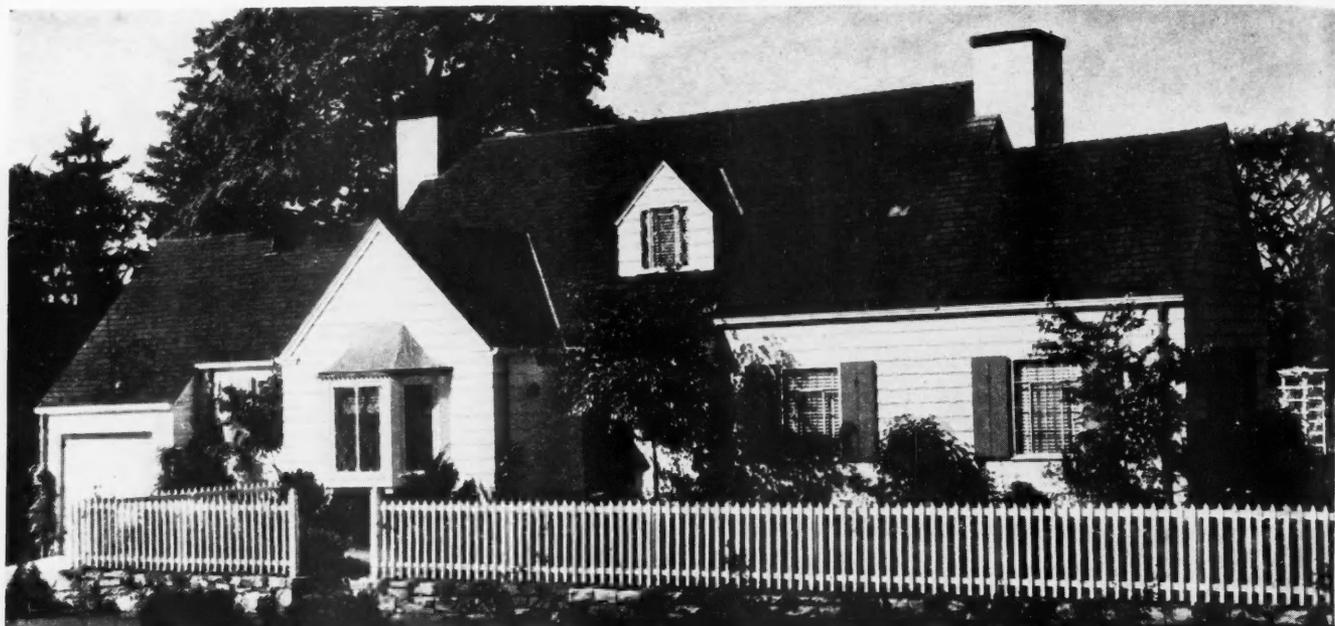
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Why a COLONIAL house needs UP-TO-DATE WINDOWS

EARLY American homes had so many attractive features that they have left a permanent imprint on architectural design in this country.

But it is impossible for builders to include modern improvements and still retain all of the Colonial attributes in their original purity.

Garages, for instance, are not Colonial. Numerous chimneys are unnecessary in furnace heated homes. Steel Casement Windows with their increased light and ventilation, easy operation, inside screens, inside storm windows and facilities for convenient cleaning digress by reason of these very improvements, from the traditions of the inconvenient, double hung, ordinary window.

Obviously, therefore, the term "Pure Colonial" is unthinkable today; but modern houses with beautiful and harmonious Early American characteristics are, and will continue to be, highly popular.

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THE COMPLETE WINDOW

Fenestra

PUBLISHER'S PAGE

An American Napoleon?

JOHAN L. LEWIS and politicians who are supporting his C. I. O. movement are doing more to promote conservatism in government in the United States than united action by all the conservatives could do.

This sounds paradoxical; but it is not. Those who live in large cities and industrial centers are constantly prone to err regarding where the controlling sentiment in this country exists. It is the sentiment of people in small cities and towns and on the farms.

For purposes of political and economic discussion the American people may be roughly divided into three groups: (1) those financially connected with Big Business, (2) those employed by Big Business and (3) those having no direct interest in Big Business excepting as buyers of its products.

THE third class consists principally of persons in small cities and towns and on the farms. Many of them are hostile to Big Business. But they are as indisposed to have their country bossed by labor leaders such as John Lewis as to have it bossed by leaders of Big Business, and can become as incensed at the former as at the latter.

And they hold the balance of political power in this country. Many of them personally know their senators, congressmen and governors, and have great influence with them, while few persons in large centers do personally know their public men or have much influence with them.

And what are the people outside the large cities and industrial centers thinking? A few days ago, at a farmer-labor conference in New York state, John Bosch, president of the Minnesota Farmers' Holiday Association, gave warning "that the farmers generally are turning

against the C. I. O. movement." Thus spoke the president of one of the most radical farmers' organizations in the country, from which it is easy to surmise what less radical people in the towns and on the farms are thinking.

IT IS plain an effort is being made to establish by force the dominance of certain labor organizations in all our public and economic affairs. They are being aided by governors of certain states and some other public officials who are using their positions to "prevent disorder" by closing down manufacturing plants in which many thousands of men want to work instead of by controlling the activities of those who are trying to prevent these men from working.

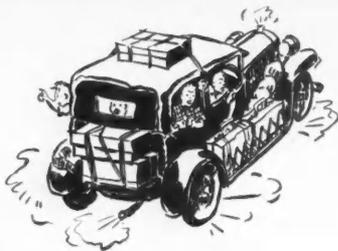
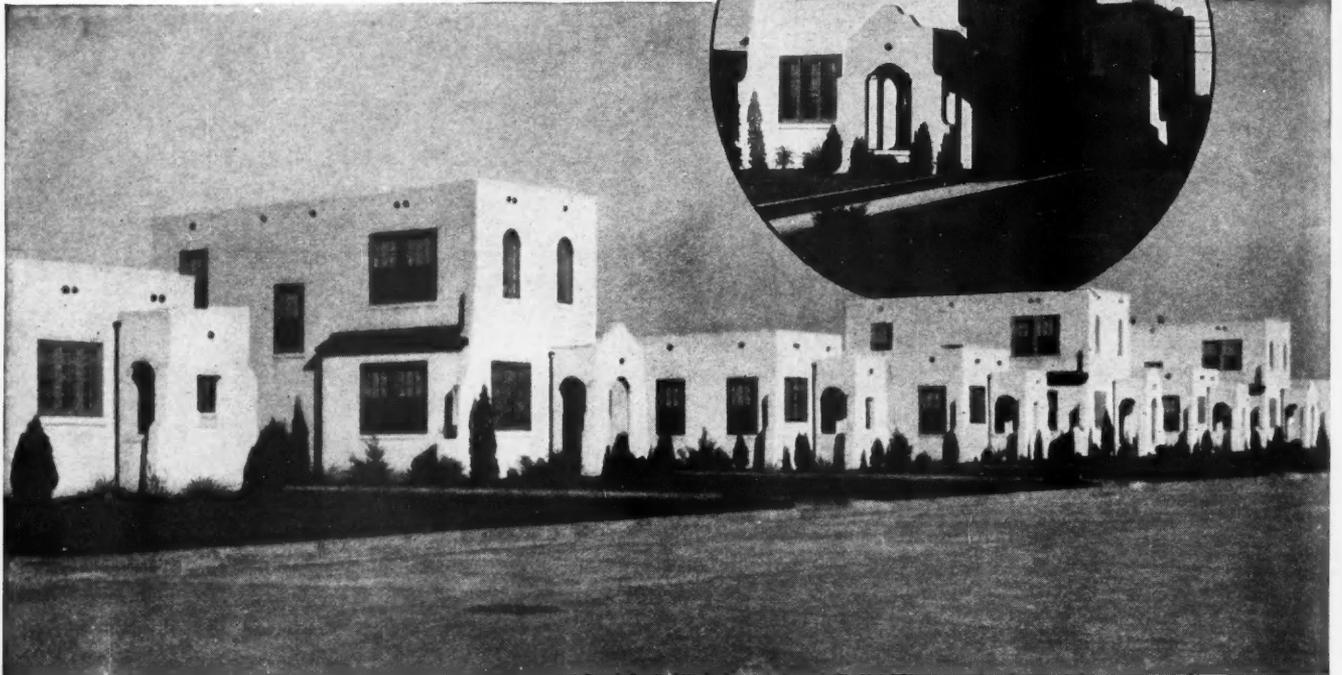
The people of large industrial centers may stand for this. The people outside large industrial centers, whose sentiment is still dominant in the United States, will not stand for it. It was their votes that really determined the result of the election last fall. Most of them voted for the New Deal, but they did not vote for government policies of aiding John Lewis establish a dictatorship over the entire country, or even over employers and workers who do not want him to be a dictator over them.

Significantly enough, Mr. Lewis long has been an assiduous student of the life of Napoleon Bonaparte, who became dictator of France and tried to become dictator of all Europe. When sentiment begins to come in from the grass roots Mr. Lewis will learn that this is not France or Europe—and, anyway, even Napoleon died an exile and prisoner on the island of St. Helena.

Samuel O. Dunn

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Atlas White portland cement was used for exterior finish of the Berryman's Court Tourist on U. S. 61, South Memphis



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A FACTORY PREPARED STUCCO IS PREFERABLE

STUCCO MADE WITH **Atlas White** PORTLAND CEMENT

AMERICAN BUILDER

AND BUILDING AGE

More House TODAY for The Money than in 1926 or 1929

THE best answer the building industry can make to current criticism of high building costs is that 1937 home builders—in spite of rising costs—are still giving more value than they did in 1929.

This is a fact that few people realize. The industry is building better homes today and giving far more for the home building dollar than in either 1929 or 1926. Building men should take it upon themselves to publicize this fact. The cost of building materials and building labor has advanced so that they are very nearly up to 1929 costs. Yet when the improved equipment and construction of the 1937 home are taken into account, the value of today's house is easily one-third greater than for a comparable house built in 1929. If 1926—which is the "normal" year selected by most government departments—is taken as a base, the comparison is still more favorable. A \$6,000 or \$7,000 house today is infinitely better planned, better built and better equipped than a house costing several thousand dollars more in either 1926 or 1929.

Any builder can prove this to his own and his customer's satisfaction by a survey of his own town. Look up some of the houses built during those years, get a picture, list the rooms, list the equipment, note the con-

struction features and compare the price with a similar type house of today. The result will be a strong sales weapon to meet the complaints about high building costs.

After all, it is hardly fair to state that "building costs are too high," as many critics recently have, without setting up some base or standard of comparison. They may be too high for some particular individual's pocketbook if he insists on having the complete modern equipment most Americans now demand. But they certainly are not high in relation to the cost of a finished house and lot as priced in 1926 or 1929.

A study of the comparative values in houses in 1926, 1929 and 1937 has been made by *American Builder* in several localities including the metropolitan areas of New York City. Prominent builders who have been operating during these years were interviewed and the files of local newspapers studied. The study shows, beyond question, how vastly better planned, better built and better equipped the homes of today are—and at less cost. In May, 1926, six-room "low priced Garden Homes" were advertised in the New York papers at \$8830. Houses at Laurelton, Long Island, on 30-foot lots, were advertised for \$7990. Amherst Homes in Hempstead, which were small, high and narrow structures of six rooms and one bath, on 40-foot plots, were advertised at \$9500. Houses of the same approximate size but vastly better planned and equipped are being sold today for a great deal less than these figures.

Turning to the newspaper advertisements of 1929, we find seven-room Spanish style houses in Great Neck, Long Island, with only one bath, and a lavatory in the basement, selling for \$15,950 (part of this price may be accounted for by the fact that a \$4700 second mortgage was required). At Hollis, Long Island, Rodman English Company sold six-room houses on 30-foot lots for \$9800. In Yonkers, Kimball Construction Company advertised six-room houses with one bath (and lavatory in basement) for \$13,500. A builder in White Plains



Amherst Homes
HEMPSTEAD

At Washington Ave., cor. Clowes Ave., Adjoining Beautiful Garden City

Complete Homes in a Complete Town. No assessments to Worry About. All Improvements, 60 Foot Street, Water, Gas, Electric, Sidewalks and Curbs. Built on Plots 40x125. Sample House Open Daily and Sunday for Inspection.

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Amherst Construction Co., On Premises Daily and Sunday

Take Long Island E. B. to either Country Life Press Station, or Hempstead Station. Walk East to Washington Ave., thence to Clowes Ave., or Bus from Jamaica. Telephone or write for circular.

AMHERST CONSTRUCTION CO., 2299 ATLANTIC AVE., BROOKLYN, N. Y.
Telephones Applegate 3000 or Hempstead 1944.

COMPARE this 1926 value with today's modern homes

offered to "sacrifice" his nine-room house, on 100-foot lot, for \$32,000. These are just a few of the prices that can be found by going through any of the real estate pages of those years.

Because prices of houses in different communities vary so widely, it is difficult to prove the price differences in 1926 and 1929 as compared with 1937. But there can be no doubt about the difference in construction and equipment. Houses of today are vastly better planned so that the floor area does more work. There is a minimum of waste space, more livability, more light and air. Construction standards and methods have improved and a host of new and improved products have contributed to these better houses of today.

To illustrate, there is more copper flashing, copper and brass pipe, life-time roofing, grade and trademarked lumber, quality paint, improved plaster and plaster bases, improved factory-built windows, weatherstripping, wider use of waterproofing, fire and decay resisting products.

Houses are placed on larger lots—the old 30- and 40-

foot lots are practically ruled out. Progress is being made in placing the houses on winding, better laid-out streets, with more landscaping and more regard for sunlight and prevailing winds.

Spectacular advances have been made in insulation and in insulating products of all kinds. Few houses today are without some form of insulation. This great improvement was a rarity in 1926 and had made hardly a dent in the popular market in 1929.

The most impressive advance has taken place in home equipment. Automatic heat, air conditioning, concealed radiation and a host of similar improvements have become standard practice. Even homes in the very lowest brackets today are being equipped with a type of heating or conditioning plant that was an impossible luxury for the mansion of 1926.

Like the automobile, the 1937 model home is a vastly more complex machine than earlier models. Electrical wiring equipment and the number of outlets have been increased. The 1937 kitchen has extensive cabinets and work areas, electric and mechanical equipment, sanitary work-saving construction. There are more costly materials used and more value given than in '26 or '29.

Many other types of equipment are standard today that were not included in homes of earlier years and still are unheard of luxuries in the European homes that are so often mentioned by our social-minded housing reformers. These include automatic domestic water heaters, automatic garage door equipment, telephone conduits, modern lighting fixtures and period hardware, streamlined bathrooms with elaborate fittings and equipment. When all of these items of modern equipment and superconstruction are added up, the only wonder is that the cost of the 1937 house is not greater than that of 1929 or '26.

Hold Prices Down—Increase Volume

American Builder, along with every other institution that has the welfare of its industry at heart, deplors the recent increases in labor and material costs. In an editorial in the March issue entitled, "Cutting Our Own Throats?" it was stated that too sharp increases would hurt the industry. This prediction has unfortunately proved true. The only course for the building industry is the one that has made the automobile and other great American industries successful, which is to continue to give more and more value for less and less money. The history of the building industry shows that every time prices have advanced too rapidly, volume has fallen off. The home builder today is more than ever in competition with automobiles, radios and a host of efficient mass-production industries clamoring for the prospective home buyer's dollar. Nevertheless, such facts as have been stated above concerning the real value of homes today as compared with 1926 and '29 should be kept before the public. The 1937 model home is a far more complex, complete and costly structure than has ever been produced before in this or any other country, and it is available now at less cost.

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Just South of Hollis Ave.

Model house illustrated by *The American Builder*, Inc., 202D Street and 202D Avenue, Hollis, L. I., N. Y.

OUR BOND

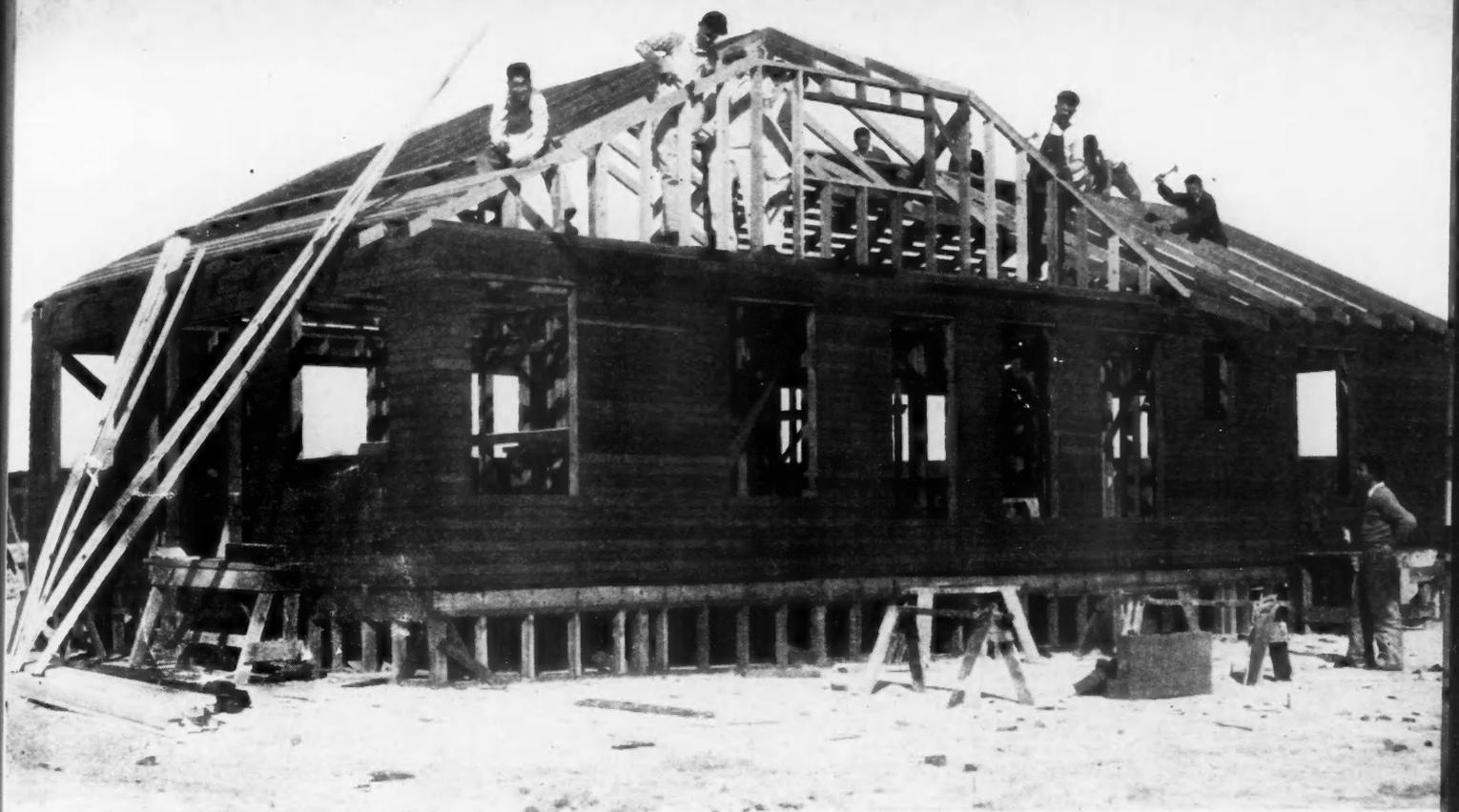
We are builders of long experience and stand squarely behind every house we build. Every buyer receives our bond guaranteeing his home against any defects in workmanship or materials for one year. This bond applies to any home you purchase from us, regardless of price.

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CONSIDERED a bargain in 1929, better houses of today are offered at a third less



CARPENTRY TRAINING for High School Boys

By **GEOFFREY B. NOAKES**

Carpentry Instructor, Taft (Calif.) Union High School

WHAT is the average age of the carpenters to be found working on a building construction job?

Does the building industry as a whole give thought to the fact that the recent depression caused a marked gap in the supply of recruits to the industry? Does the industry feel that it has any responsibility in the matter, or is it content to leave the responsibility entirely to other agencies, such as the public schools?

It might be well for us to lay down our tee-squares and triangles, our hammers and saws, and give some thought to these questions.

The writer recently visited a construction job where some twenty carpenters were working. He did not see one who looked less than forty years of age; the majority were considerably more than that. The carpenter foreman needed more men—skilled men—"Not just hammer and saw men" he said. "I want men who can do something more than nail up concrete forms. I want men who can lay out stair stringers, frame a roof and realize that a steel square is something more than a tool that is hard to fit into a tool box. And when I need finishers—it's going to be a problem."

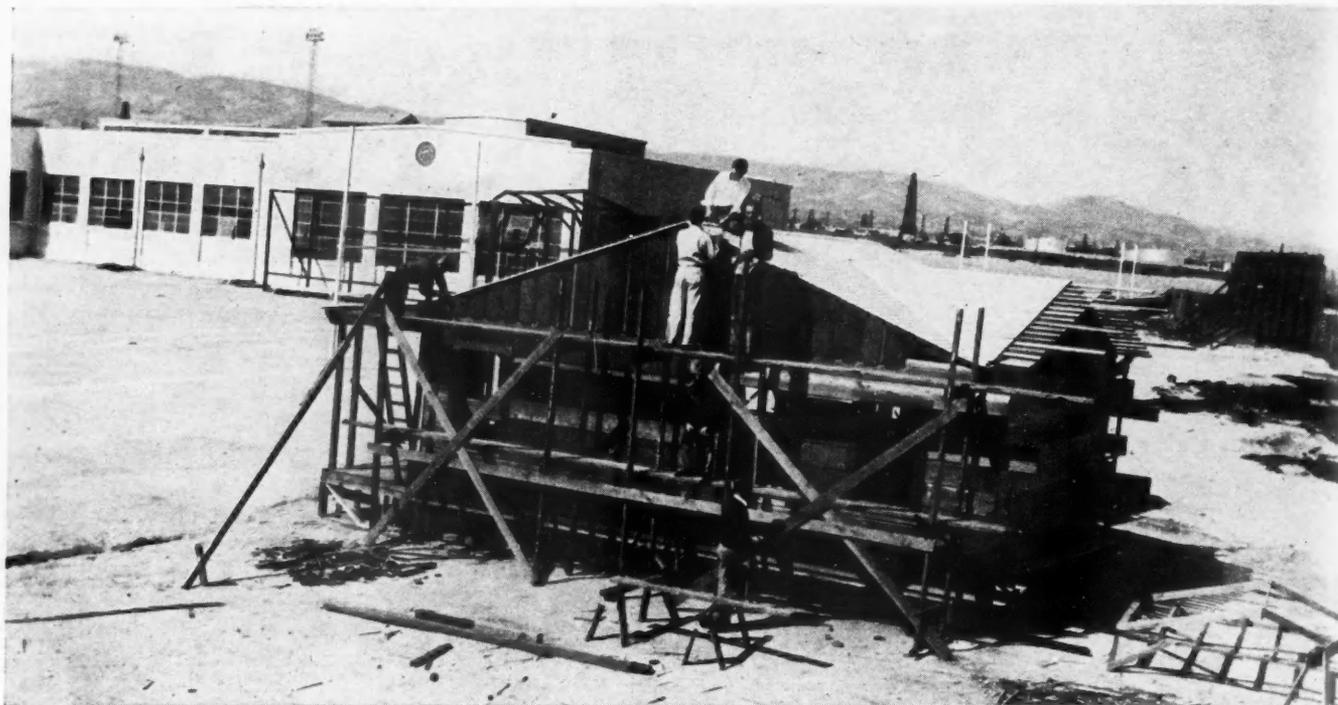
Those who have the direction of the trade and industrial education in the Taft Union High School and Junior College feel that at any rate the schools must do their share in keeping up the supply of future mechanics. They make no pretense of turning out a fully skilled man at the end of a trade training course, such a thing is mani-

festly impossible. They do, however, believe that a young man can be taught the necessary skills up to a certain point, and that a very important part of the work in school—perhaps the most important—is to see that the student gets the drawing, the mathematics and the elementary science of the trade. They know that nothing can really take the place of job experience, but that whereas a beginner can watch the way the other fellow does it, he cannot be a mind reader and learn how it was figured out.

That the Federal and State governments also realize this, is shown by their requirements for a vocational or strictly trade training class for which the school district receives financial aid to the extent of \$1,000 per year. They require that the class shall be in session for three hours per day for the manipulative work, and furthermore that one more hour each day must be spent in studying the drawing, mathematics and science of the trade.

During the depression some schools were forced to drop their trade training classes owing to the scarcity of jobs for their graduates. "Why keep training boys for jobs which do not exist?" was the rather natural cry, although such a procedure would still further increase the shortage of mechanics when the need for them again arose.

This same problem confronted the administration of the Taft High School and their action with regard to it was significant enough to make a brief explanation



THE TAFT Union High School 1936-37 Carpentry project under way. School shop building and athletic field in background.

of what was done along these lines worth while.

The State of California organizes its trade and industrial education under two divisions, 1) The vocational or trade training mentioned previously, and 2) The Industrial Arts type of training. As contrasted to the strictly trade training objectives of the vocational work, the students enrolled in an Industrial Arts course may be there for different purposes. For some it will very nearly approach trade training, for others it will be a chance to find out what they really want to do in life, for others again it will be a very worth-while part of their general education, leading on to a hobby or sideline later in life.

What was done in Taft during the depression was to place Carpentry Instruction on the Industrial Arts basis, making no profession of training students for jobs that were not there, but still giving a chance for training in this work and passing down the knowledge and traditions of one of the most ancient and worthy of all trades. Next year the work will return to the Vocational division.

Such a procedure could be followed by any school district, providing their instructor was qualified to teach in both the Vocational and Industrial Arts set up. The State requires a separate credential because the qualifications are rather different. The vocational teacher must be a high-school graduate, a skilled mechanic, of above average personality and experience, who has had at least seven years journeyman experience in his trade. This experience he must be able to prove by original letters from his employers. He must then pass thorough trade tests, oral, written and performance. His teacher training may be obtained in three summer sessions of the University of California.

The Industrial Arts teacher must also be a skilled mechanic, but not so much trade experience is required of him. He may be the graduate of a technical school or college with a degree in Industrial Education, or he may have a "limited" Industrial Arts credential in one or more subjects for which he has done a specified amount of college work. A combination of Industrial Arts and Vocational education is used at Taft, several of the instructors being qualified to teach in both divisions.

There are other problems to be solved by a school which wants to do its share in giving trade training in Carpentry to its young men. They are:

- 1) Arranging for suitable projects to give the students as close an approximation to job experience as possible.
- 2) Taking care of the finances.
- 3) Keeping the goodwill of the local building tradesmen.
- 4) Showing worth-while results.

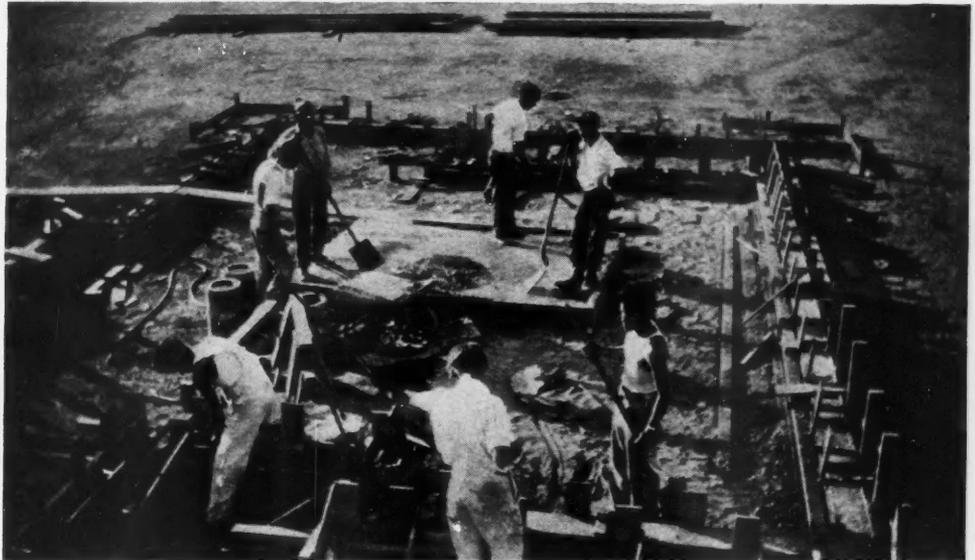
A short history of how this work was begun in Taft, and how it has progressed, will disclose some of the pitfalls to be avoided and a reasonably satisfactory solution of the problems.

During the six years carpentry has been taught in Taft there has been both opportunity and necessity to try out different ideas and methods. At the beginning the work was of the vocational type, and the class worked all the afternoon. The first year the class did a considerable amount of maintenance work around the school plant. It was a financial asset. The boys repaired the baseball park grand stand, built bleachers, goal posts and other athletic equipment. The reaction of the local mechanics to this type of work was not favorable; they felt that the boys were being "used" and were not getting their experience on the right kind of jobs; they also considered that a carpenter could well be hired for this kind of work.

The next year two projects were undertaken which involved additions to two residences located within a few blocks of the school. A small truck was used to transport the tools to and from the job. This work, on a vocational basis, was much more successful as it gave the students actual "on the job" experience. The householders for whom the work was being done bought all the material, so finances were simple.

Towards the end of this particular year building activity was falling off somewhat, and criticisms of the policy of students doing outside work began to be heard. Some carpenters who were "idle" naturally felt that work was being taken away from them. Other individuals, applicants for the services of the class, felt that some favoritism was shown to those whose projects were chosen and the work undertaken.

HIGH-SCHOOL boys are also given instruction in concrete form work and foundation practice.



After careful consideration another plan was decided on for the following school year. A bungalow was to be constructed, on the school campus. It would not be designed for any specific individual, but would be designed to incorporate as many different learning units as would be practical. Upon completion of the house the school board would invite sealed bids for its purchase, the highest responsible bidder to become the owner. The owner would be responsible for moving the house off the school grounds. The material would be ordered by the instructor when needed, provision being made for this item in the yearly budget, money from the sale of each house to be used towards the financing of the next one. This plan has proved satisfactory to all concerned and has been followed from that time.

One house has been completely finished and sold. It came on the market at a time when there was not much demand, and the school took a loss of about \$300 between the cost of materials and the highest bid. Considering the fact that the bidders have to make allowance for the cost of moving the house, and that also this particular job took two school years to complete, the cost to the school could not be called excessive.

The second house has paid for itself already, as before it was completed the school was confronted with an extra enrollment in mechanical drawing which necessitated a

new room. The inside partitions of the house were taken out and stored, the roof was trussed up, and extra windows were put in to provide a fine drafting room which is being used six hours per day. When other construction on the school plant makes its use as a drafting room no longer necessary, this house will be finished and sold.

The project for this year, commenced last September, is to be built in two sections, one this year and one next. This year the front portion of the house will be completely finished by the class, the idea being that if a student can only take the course for one year, he will see a specimen of a job from "foundation to front door key."

The second advantage of this plan is that a house has to be marketed only once in two years such a procedure making it absolutely certain that the output of the local builders is not interfered with to any measurable extent.

Up to the present it has been considered advisable to build a house that can be set on to a lot as narrow as twenty-five feet. Unfortunately in the early days of Taft some locations were subdivided in this manner, but the day is not far distant when none but fifty foot lots will be in use, so that there will be more freedom in designing.

The materials, including rough plumbing, and electric wiring, (not fixtures) are estimated at approximately \$1,000.00 for a house of four rooms, bath and porch of standard construction complying with city ordinance.



COMPLETED house (shown under construction at top of page 47) now serves as the school drafting-room building. Current project can be seen under way to left of completed house.

"Beyond the Water Mains"

By LYMAN M. FORBES

COUNTRY homes no longer need be "inconvenient," for any house now can have running water and all modern conveniences regardless of location. Electric water systems on farms are not new. They provide water for irrigation and for gardens; increase livestock and poultry yields; and make the farm a more attractive place to live. Water systems are proving themselves equally useful to city and suburban home builders, with the result that new home building is reaching out beyond the corporate limits of established communities into the open country where land costs, building costs, and taxes are low.

The most active residential building spots are suburban communities of 5,000 to 10,000 population. Additional houses are being erected on the outskirts of these towns, on paved highways, wooded knolls, and other attractive locations that formerly were neglected. Few of these houses are part of developments. Most are built on contract for individual owners.

Several factors have contributed to this decentralization in home building. Good roads and mechanical improvements in automobiles played a part by enabling men to live farther from their work; wives farther from shopping districts. High taxes levied against city property deterred some prospective home owners, and encouraged others to look elsewhere. Many desirable vacant lots in built-up communities are burdened with unpaid taxes and special assessments that people can escape by building in the open country, making a fresh start on new land.

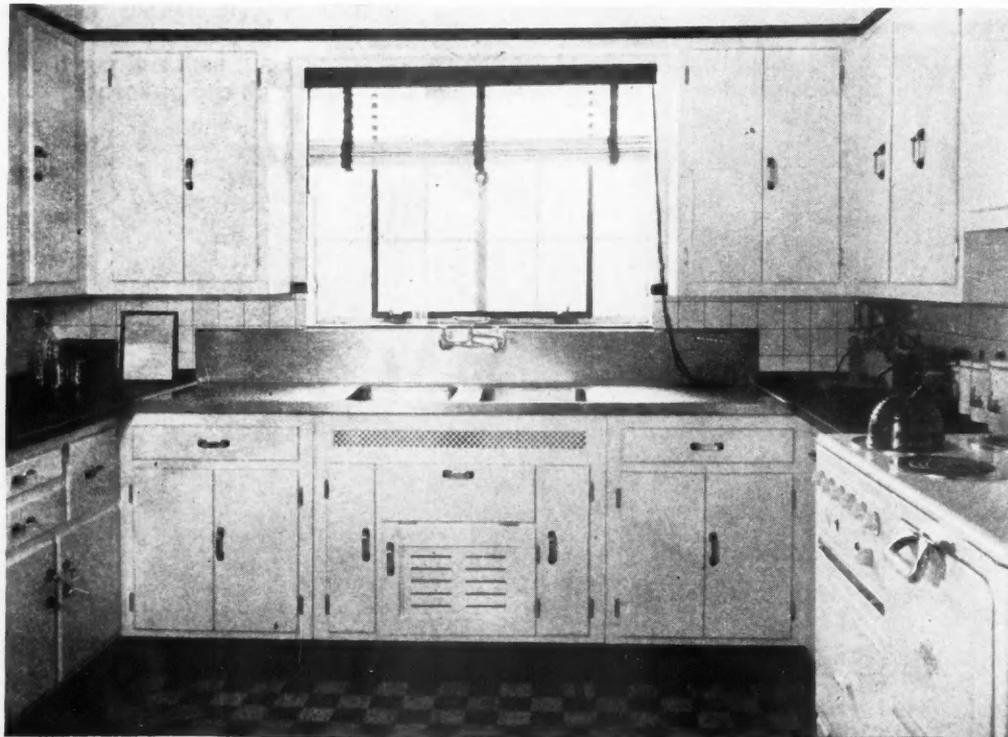
Examples of how electric water systems have expanded home-building opportunities can be found in many places. The territory around Chicago's North Shore provides numerous instances. The North Shore consists of adjoining small communities where costly

Electric Water Systems Responsible For a Spontaneous Wave of Home Building Outside of Established Communities

ANOTHER installment of "American Builder's" Plan for a Modern Basement series tells how home builders are utilizing outlying sites where costs are low. Actual installations are described, with comparative costs. Contractor-builders can use these examples as a guide to similar comparisons in their communities. A survey of local conditions may reveal new home-building opportunities that will enable them to present interesting propositions to prospective home owners who are seeking fresh air and good construction at low cost.

The Editors.

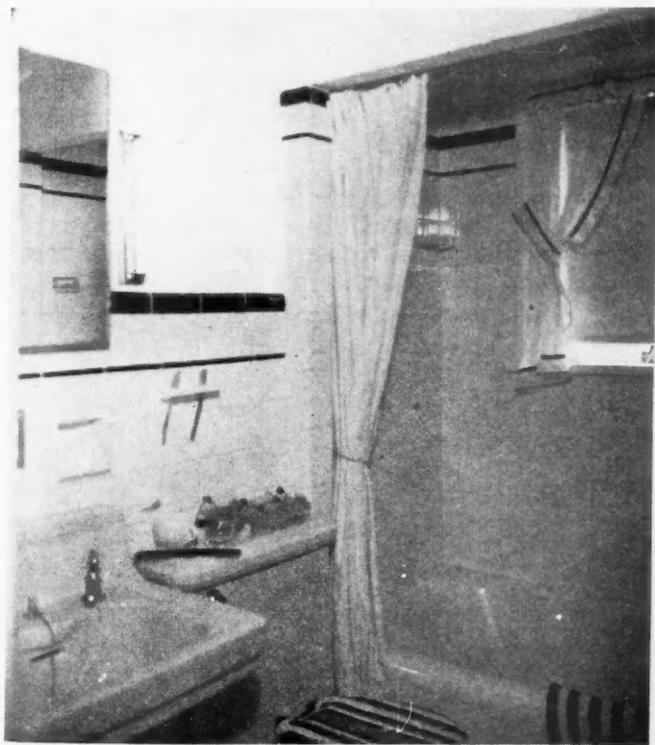
homes predominate and land values are high. To the west lies a former marsh, known as the Skokie Valley. It has been drained and converted into parks and preserves. West of the Valley runs a highway known as



MODERN farm house kitchen, where running water is on tap supplied by an electric water system.



ATTRACTIVE bathroom (lower left) was installed in this comfortable New York State farm house after running water was available on the premises.



Sunset Ridge Road. Building is active here, and since water mains have not been extended, each house must have its own water supply system.

Interviews with owners of new homes, and with builders, brought out some interesting details. The owner of one attractive and rather costly home revealed that he has \$1,000 in his pump room, but that he saved approximately \$10,000 on land. His house is on a four-acre tract that would be hard to duplicate if purchased in any nearby suburb. The water supply system includes a 150' well, with 4" casing, electric pump, storage tank, water softener and purifier.

A short distance along the highway another owner said that he had paid \$3,500 for his land, an attractive one-acre, wooded tract, after deciding against a 60' lot

at \$2,500 in a nearby subdivision. He owns one of a group of seven or eight attractive new homes. A 160' well, at \$1.75 a foot, brought up water of only 5-grain hardness, at 55 degrees F., which will be used for summer cooling. Surplus water will be used on lawns, and for gardening.

Not far away is a cluster of houses erected by A. J. Weil, builder, of Chicago. Three attractive houses, ranging in price from \$7,500 to \$10,800 draw water from a central deep well, equipped with a power pump. Each owner pays a small fee to cover cost of operation until water mains are extended from Wilmette. Lots in this tract sell for \$1,500; and in the suburb for \$2,500 to \$4,000. As in a number of similar projects, owners cook with bottled gas or electricity, and report costs comparable to usual utility rates in developed sections. Cost of a septic tank about equals that of making a sewer connection. In this way a water supply system is being used to open up a desirable tract before water mains and other services are available.

Another tract not far from the North Shore is known



HERE is a kitchen with all modern convenience, included in the house shown at top of page 52.



THIS impressive home at Lampeter, Pennsylvania, can be sold for \$6,500, because it was built with an electric water supply system, in a location where land costs and building costs are low.

as Country Club Acres, and is being developed by Smith & Dawson, of Chicago. It is about two miles north of Mount Prospect, Illinois. The "House of the Month" in this issue is one of more than 50 erected here. Typical houses stand on an acre and one-half of land, and sell for as little as \$6,500 complete, with land values figured at \$850 to \$1,000, as compared with a single lot for \$1,000 or \$1,500 in the nearest town. Hot water for household use is heated with "bucket-a-day" coal-burning units.

Spring-fed shallow wells supply water at low cost. Two-inch casings are driven 30 to 40 feet, at \$1.00 a foot, and water rises to within five feet of the surface. Water is all laboratory tested and meets Federal standards. Total cost of the electric water supply system in each house is approximately \$100.

On page 61 is shown a picture and floor plan of a house built in Kalamazoo, Michigan, by P. S. Schram Company of that city. The selling price of this house is \$3,800. The land, 3 by 8 rods, is valued at \$350. A deep well with 2" casing is driven 45', although the average in the territory is 70', at a drilling cost of \$1.10 a foot. Pump and storage tank cost \$95. The water is hard, and a water softener is usually installed, bringing total cost of the water system to about \$200.

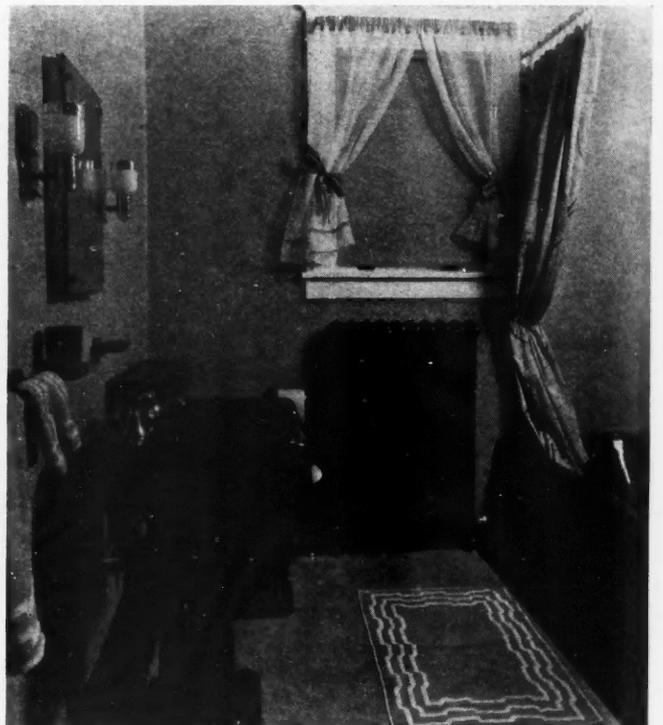
The septic tank installation costs about \$75.00, as compared with \$50 for making a sewer connection. Cutting into a water main in town costs \$28.50. A comparable lot in town would run between \$500 and \$600. Taxes in the outlying location average \$17 a thousand, against \$23 a thousand in town.

Illustrations on this page show a \$6,500 house on a 90 x 150' lot in Lampeter, Pennsylvania. Land is valued at \$10.00 a front-foot, as compared with \$15.00 to \$20.00 closer to the center of town. Water is supplied from both a deep and shallow well. The 50' deep well, with 6" casing, was drilled at \$1.75 per foot. The pump and storage tank cost \$190.00, with shallow-well equipment at \$150.00. The septic tank and tiling cost \$50.00, as compared with \$1.50 per foot, plus tiling for a city sewer connection. The minimum charge for cutting into a water main in town is \$65.00.

On page 51 is shown a New York State farm house. The exterior of this comfortable home forms an unexpected contrast to the thoroughly modern kitchen and

bathroom shown in accompanying views. Here is a home with all the conveniences of an attractive city house, and the advantages of living in the country—conveniences made possible by the use of an electric water system. Thus electric water systems are drawing the city and country home closer together, and are breaking down the former differences that distinguished one from the other.

Pump dealers have been urged to sell their prospects water service instead of a pump. Contractor-builders can carry this suggestion a step farther by selling home-building opportunities, made possible by use of electric water supply systems which today offer the best in mechanical efficiency.



COLORFUL, convenient bathroom of the house shown above; included because running water is available at low cost.

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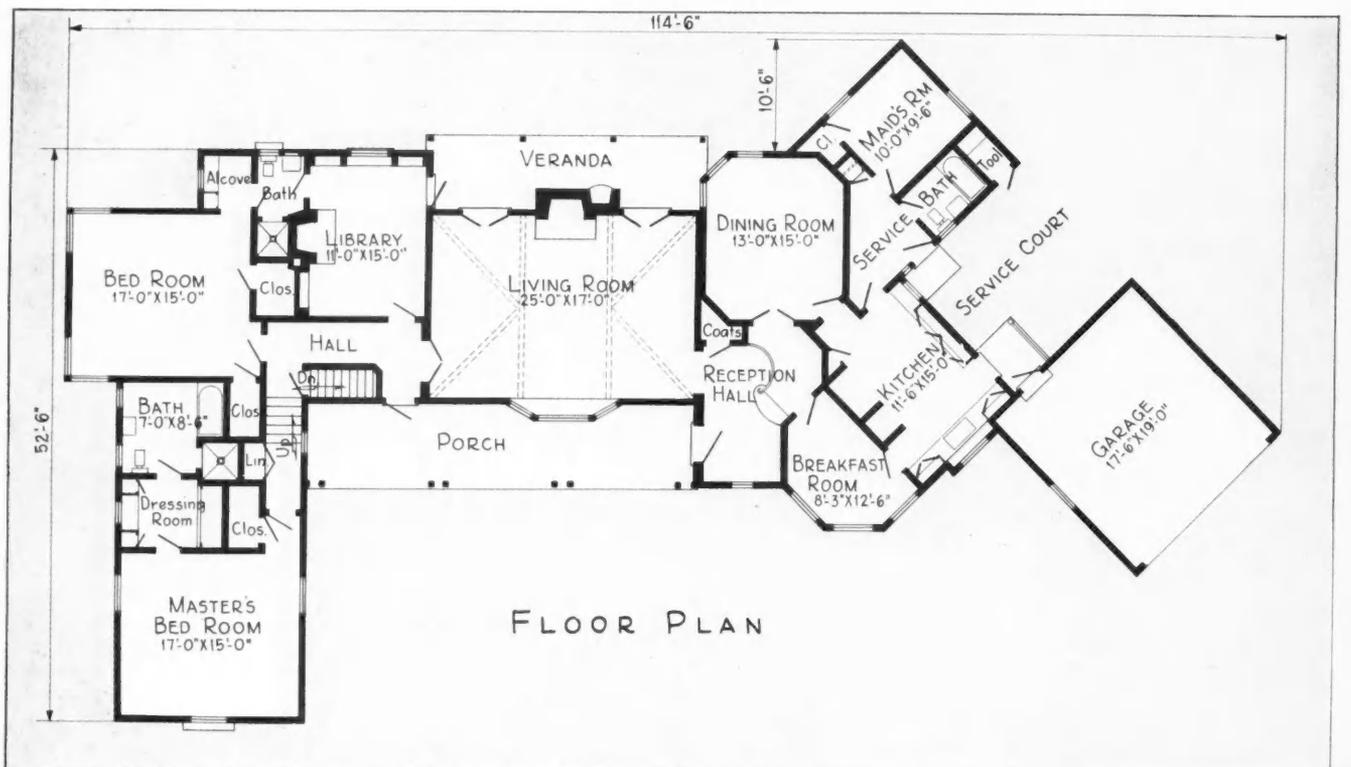
Friendly Wood Invites

**Library in Los Angeles Model Home
Welcomes You to Closer Study of
This and of Nine Other Selected House
Designs in This Special Portfolio**

See two following pages for
photos and plans of this home
by Richard F. King, architect,
and the Capitol Co., Builder.



CALIFORNIA FARMHOUSE STYLE
Built at Brentwood Highlands, Los Angeles





"WINDSOR HOUSE"

Richard F. King, Los Angeles, Architect
Capitol Co., Builder

ABOVE is the Living room, "Windsor House," Brentwood Highlands, Los Angeles, showing open trussed ceiling of shiplap Douglas fir; wallpaper is beige and gray scenic pattern, extending from wood wainscoting to the ceiling beams. Carpet is blue broadloom, draperies, unglazed chintz with deep blue background and garden flower design. Fireplace chairs are upholstered in white with blue cording. Other upholstered pieces are in beige and blue damask. Blue is the dominant color, being selected because of its complimentary relationship to the mahogany pieces in the room. Furnished by Barker Bros. Los Angeles.

TO RIGHT is the breakfast room; Wallpaper in a green and white bamboo design extends to the ceiling cornice from the floor board. Bamboo poles provide a cornice for green draperies at the window.





"THE MIRACLE HOME"

UPPER DARBY, PA.

Wm. F. B. Koelle, Architect

James Bostwick, Builder

ERECTED as part of the 150th Anniversary of the Township of Upper Darby, Pa., this little model house, dubbed "The Miracle Home," is loaded with modern equipment, devices and gadgets including a basement window greenhouse and an elevator. The lighting throughout is built in, making it an integral part of each room. The garage door is electrically operated.

Cost Key is 1.689—115—666—29—18—13



FLOOR PLAN is unusually compact, having an overall dimension of only 29'-6"x31', and a cubic content of 20,100. It provides 4 bedrooms and bath, lavatory, a good sized living room, efficient kitchen, small breakfast room, as well as a garage. The large living room at left is well lighted by a big window, with Venetian blinds.

Specifications

SWITCHES AND RECEPTACLES—Arrow Hart & Hegeman Electric Co.

VENETIAN BLINDS—Artcraft Venetian Blind Co.

INSULATION—Asbestos Insulating Co., Norristown, Pa.

LUMBER—Beatty Lumber & Millwork Co.

AUTOMATIC ELECTRIC GARAGE DOOR—Better Bilt Door Co., Philadelphia.

HEATING—Fitzgibbons Coal-Eighty Automatic and Air Conditioner.

PLUMBING FIXTURES—Hajoca Corp., Philadelphia.

FIREPLACE—The Heatilator Co., Syracuse, N. Y.

ASBESTOS SHINGLE ROOF—Keasbey & Mattison Co., Philadelphia.

HARDWARE—Lockwood Hardware Mfg. Co., Philadelphia.

BUILDING BOARD—Masonite Presdwood, Masonite Corp., Chicago, Ill.

CONCEALED RADIATORS—National Radiator Corp.

ELECTRIC PANEL BOARD—Peerless Electric Mfg. Co.

COPPER FLASHINGS—Anaconda Copper Co.

IRON PIPE—Reading Iron Co.

RESIDENCE ELEVATOR—Shepherd Elevator Co.

METAL WINDOWS—J. S. Thorn Co., Philadelphia.



FRONT ELEVATION

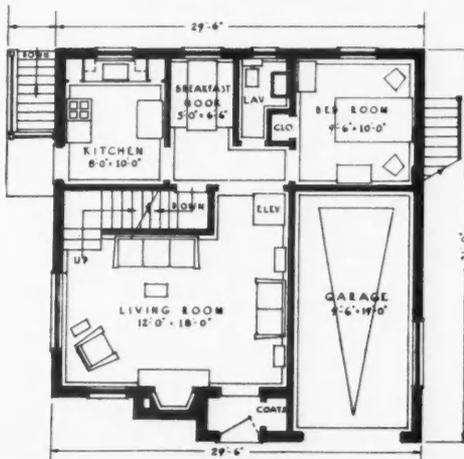
RIGHT SIDE ELEVATION



REAR ELEVATION

LEFT SIDE ELEVATION

SCALE 1" = 16'-0"



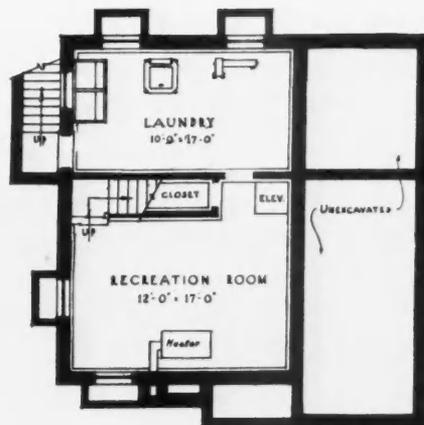
FIRST FLOOR PLAN



SECOND FLOOR PLAN



BASEMENT recreation room features an attractive automatic coal burning air conditioning unit.

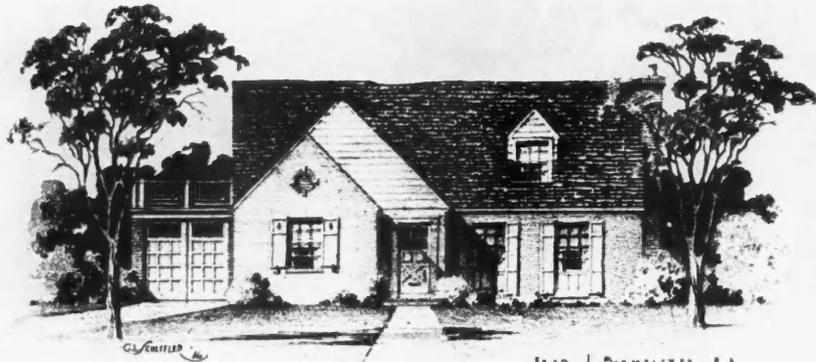


BASEMENT PLAN

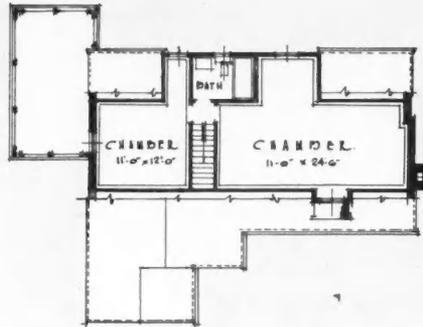
BEDROOM AND BATH TO BE ADDED LATER

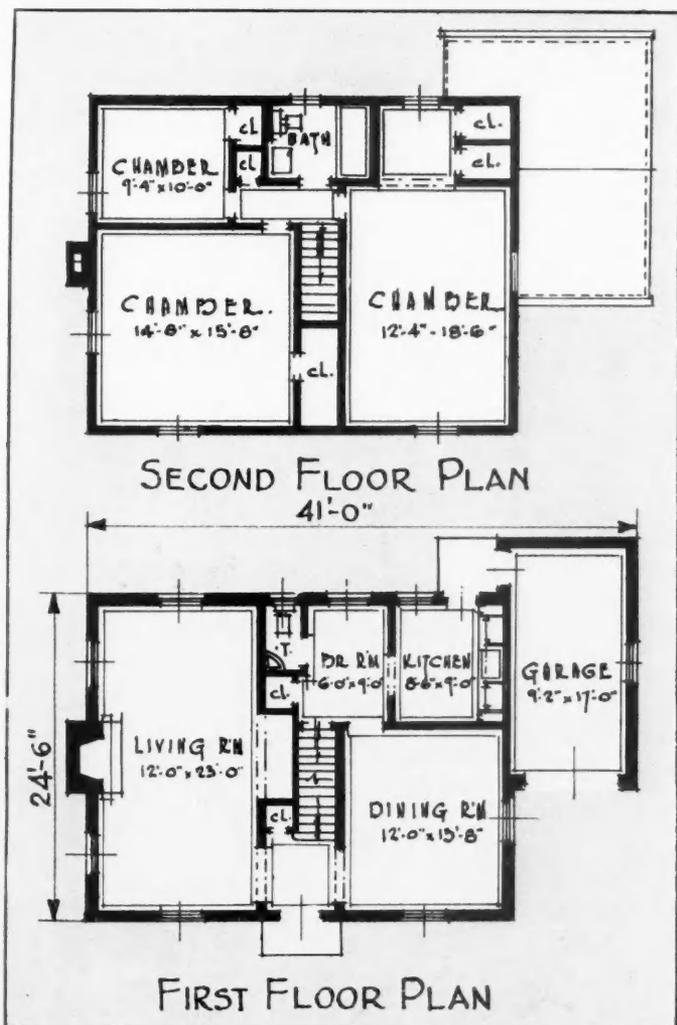
DROESCH & SONS built this compact Colonial cottage in their Westbury, L. I., development, from plans by Fred J. Burmeister, Jamaica, N. Y., architect. The proportions and design of the exterior are well handled, and the floor plan is one that has many points. Two bedrooms and bath may be added to the upstairs later on. Living room is large and its spaciousness is increased by the dining room ell.

Cost Key is 1.660—176—1004—44—22—19



FRED J. BURMEISTER, R.A.
JAMAICA, N.Y.





LARGE ROOMS IN SPACIOUS PLAN

Cost Key is 1.675-131-760-33-25-13

MOST usable space for the money is achieved in the square-type Colonial above, built at Westburg, Long Island, by Droesch & Sons, from plans by Fred J. Burmeister, architect. The house is attractively simple in its exterior details. The interior features large, well-lighted rooms and good arrangement of equipment. The downstairs lavatory is directly underneath the second-floor bath. An alcove off the master bedroom provides space for a future bath at low cost.

FEATURES of the living room is the recess opposite the fireplace, which is ideally suited for a large davenport or couch. There are ample closets and good cross ventilation. The roof of the garage is finished attractively and forms a pleasant second-story deck opening off the master bedroom.

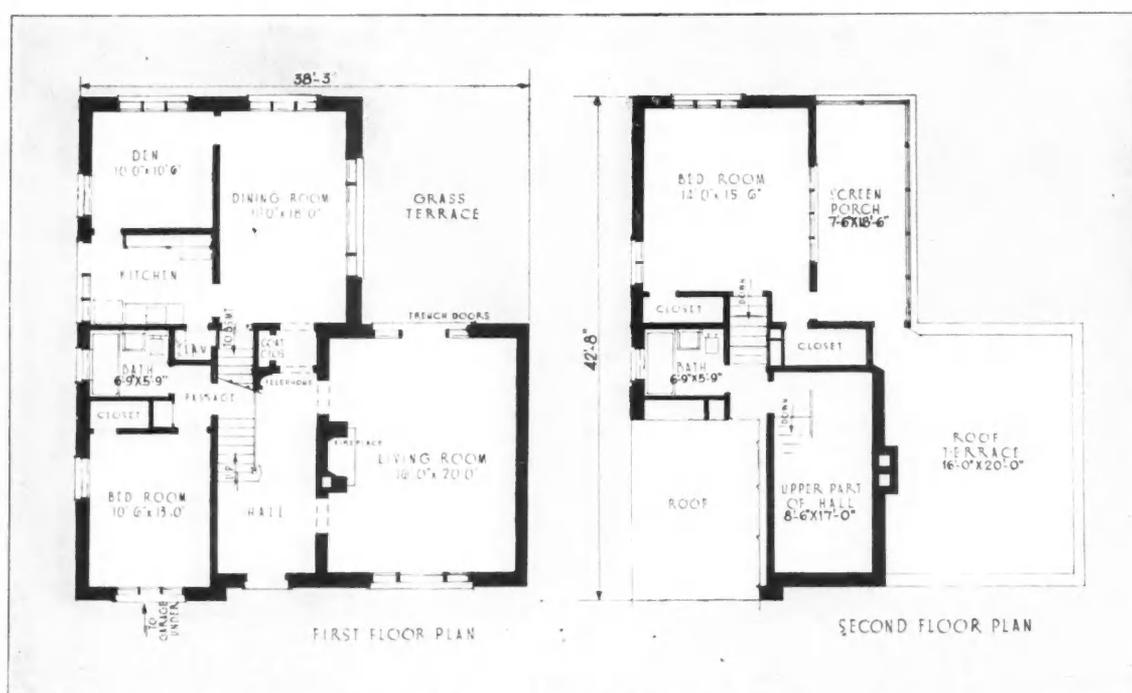


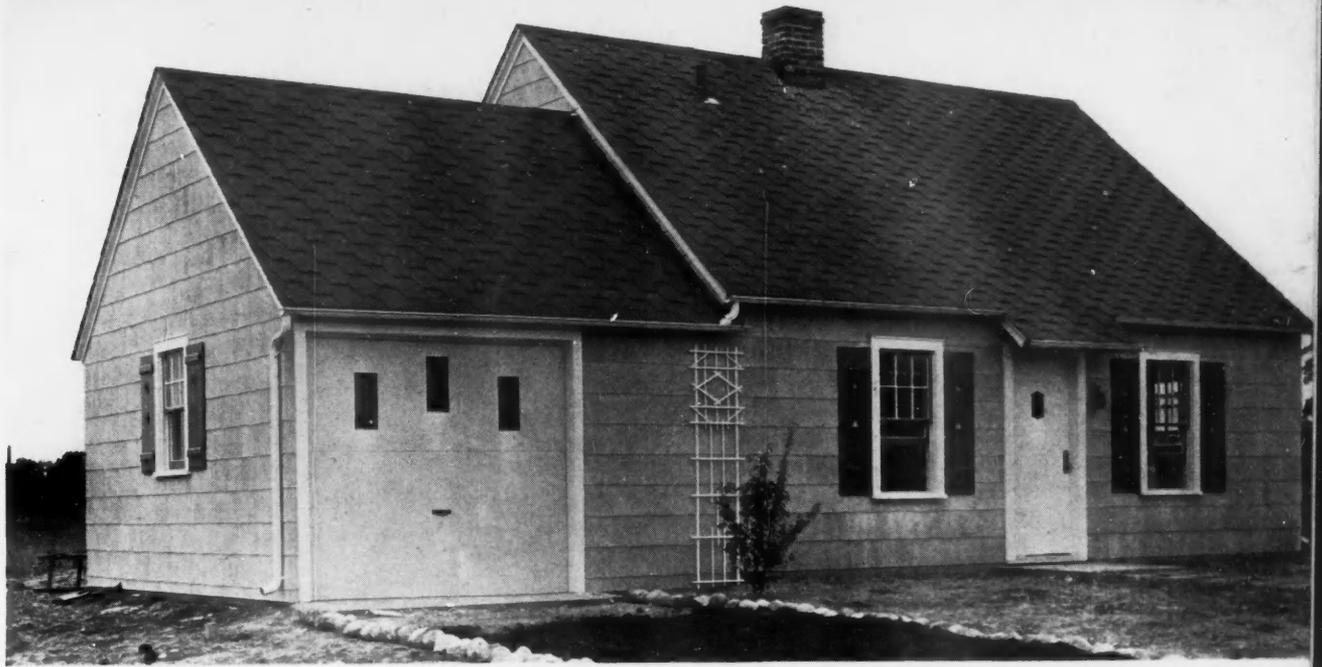
CUBIST CREATION AT GLEN ELLYN, ILL.

Edward McClellan, Chicago, Architect

F. Tomlins, Glen Ellyn, Builder

THE NEW IDEA is embodied in this home of concrete masonry—cinder units—built for Victor M. Henry on Lennox Rd., Glen Ellyn. It presents a face of random ashlar, painted white. The floors are precast joists with poured slab. Partitions cinder masonry plastered. Exterior walls insulated with fibre board on furring strips; plaster applied direct.

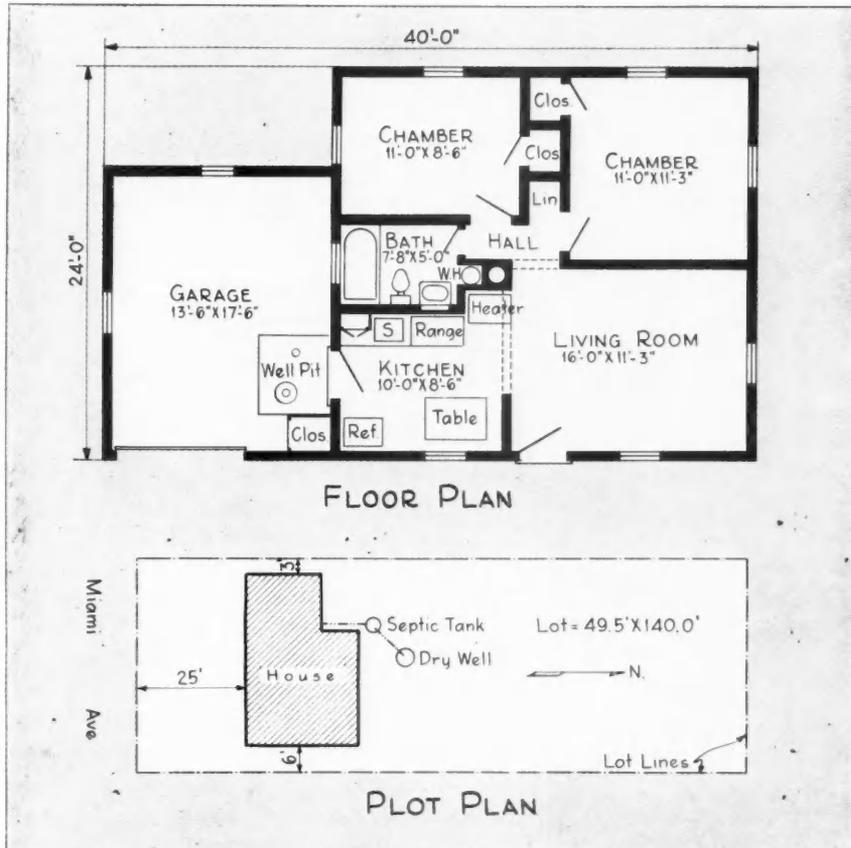




LOW IN COST—FOR COUNTRY LIVING

Designed and Built by Peter C. Schram, Kalamazoo, Mich.

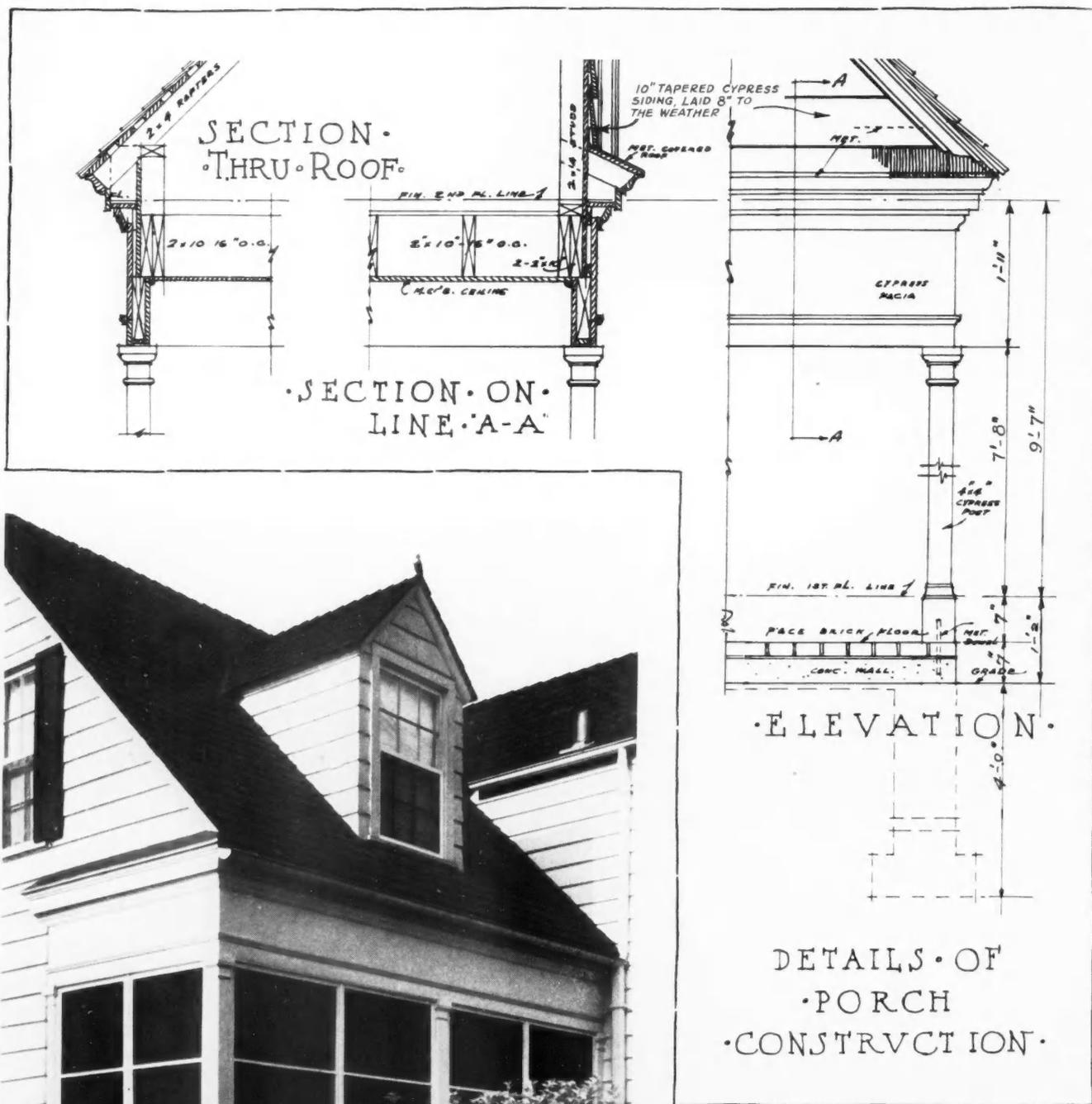
Cost Key is .976—128—(624)—(28)—15—14



IN AN ATTEMPT to produce a really low-cost home, to be located on the edge of town, this well-known Kalamazoo builder built the above house, which has no basement and has a well pump located in the garage, which also serves as a storeroom. An oil burning heater is placed in a specially designed opening between the living room and the dinette-kitchen.

LIVING ROOM and dinette are separated by a waist-high partition which permits circulation of heat. In addition, a circulating fan forces heat through ducts into the two bedrooms and the bathroom. An automatic gas hot-water heater is located in the alcove off bathroom. The house has modern plumbing leading to a septic tank and dry well at rear. The annual heating cost is estimated at \$30.

NUMBER 2 IN THIS SERIES ON A COLONIAL HOME IN PARK RIDGE, ILLINOIS
PRESENTING DETAILS OF A WELL DESIGNED DORMER AND ENCLOSED PORCH

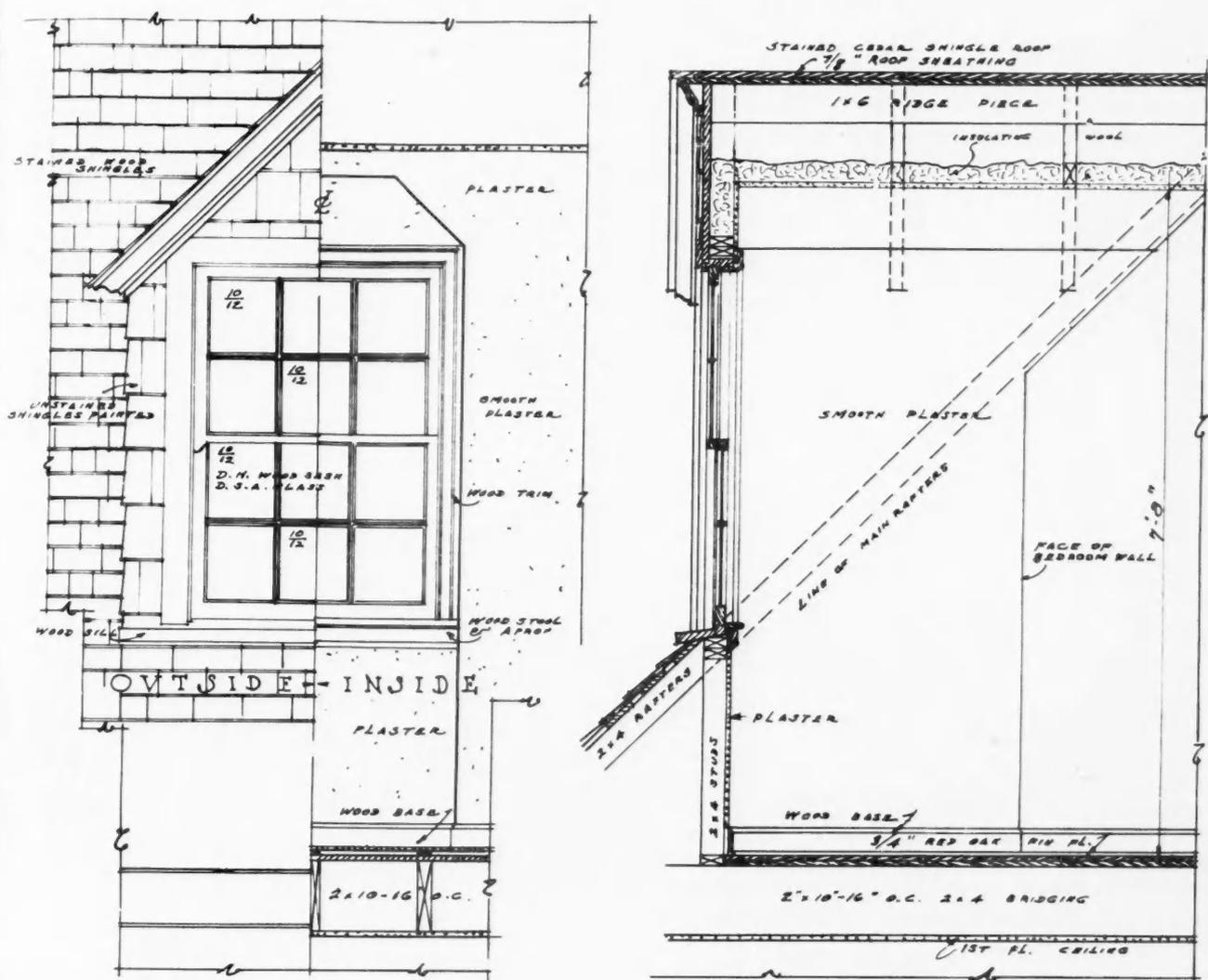


**Planned by Morris Henry Hobbs
and Lester A. Abel, Chicago**

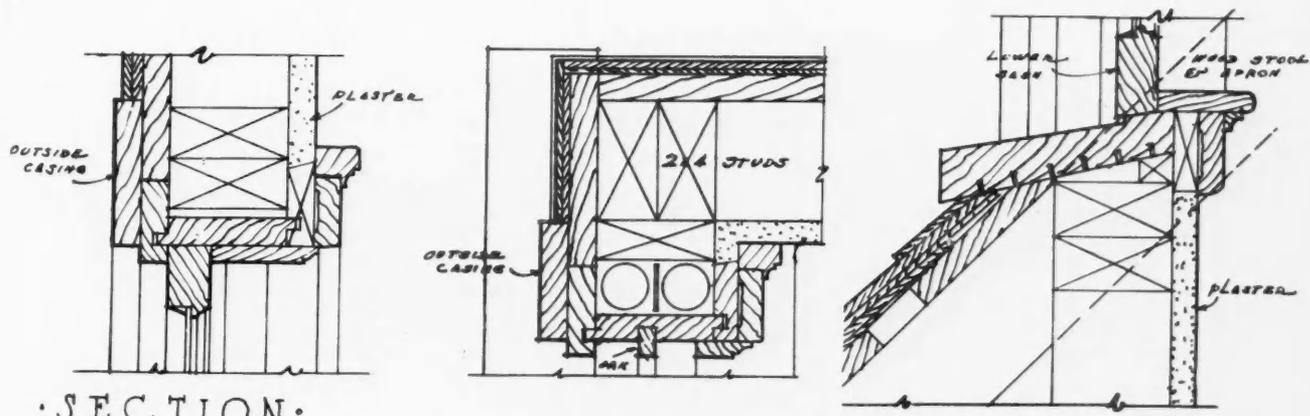
A VIEW of the house as seen at the left shows two important features which have been given careful study for proper detailing in the popular Colonial style. The porch is well handled so as to become a part of the house and is not the unsightly addition frequently found. Construction is indicated above. The dormer detailed on the opposite page is worthy of careful study. Good proportion, neat trim both inside and out and correct placement are indicated.

DIS
CH

• TYPICAL • DORMER • DETAILS •



• ELEVATIONS • OF • DORMER • • SECTION • ON • CENTER •



• SECTION • THRU • HEAD • • PLAN • OF • JAMB • • SILL • SECTION •



COUNTRY HOMESTEAD with CITY CONVENIENCES

**Built by Smith and Dawson, Chicago, at
Country Club Acres, Prospect Heights, Ill.
W. D. Sorgatz and C. J. Kastrup, Architects**

SPECIFICATIONS

EXCAVATION: Strip the top soil from the site of the building and five feet beyond on all sides and pile same on premises at a convenient location for use later in finished grading. Excavate the entire area to be occupied to the levels required.

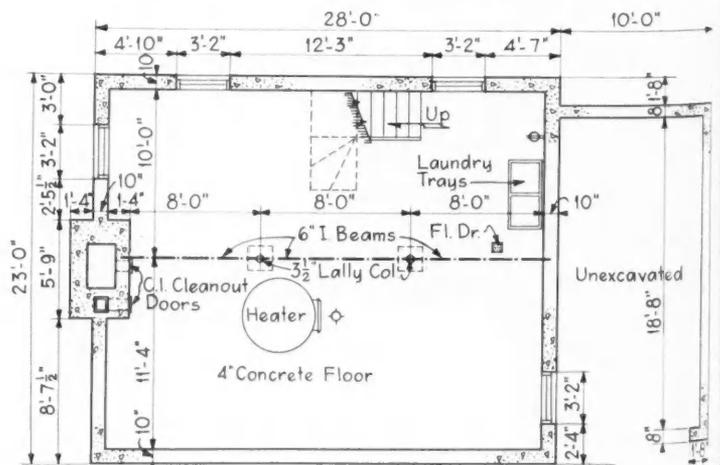
After footings and foundation walls are built, set and prepared, the excavations around same shall be backfilled to a depth of one foot over and around the drain tile with broken stone, gravel, spalls or cinders and the remainder backfilled with earth other than top soil, all properly soaked with water and thoroughly packed, tamped, and puddled to within six inches of the finished grades indicated.

Rough concrete block retaining walls as shown are included in this branch of the work.

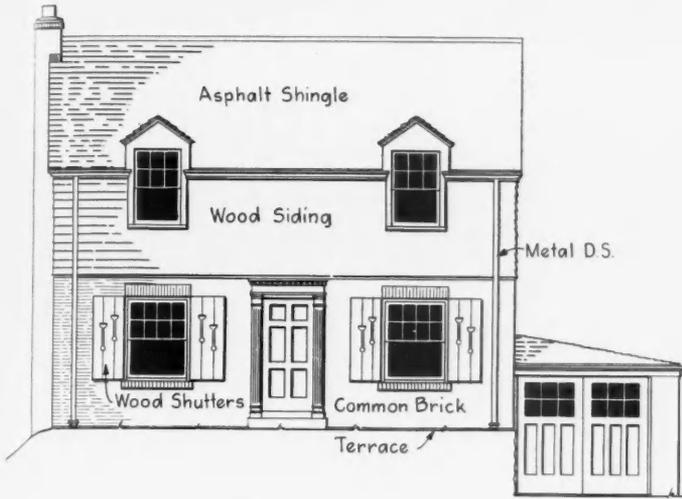
Provide an 8 foot driveway consisting of 4" of pit run gravel
(Continued to page 124)

AROUND certain cities people are buying suburban homes on fair sized plots which offer the advantages of country living combined with urban conveniences. This attractive model homestead of moderate price is built on a one and one-half acre site but, as seen in the plans, the efficient layout would be equally suitable on an average lot. Electric water supply system and septic tank take care of sanitary service requirements. The specifications present interesting details of construction.

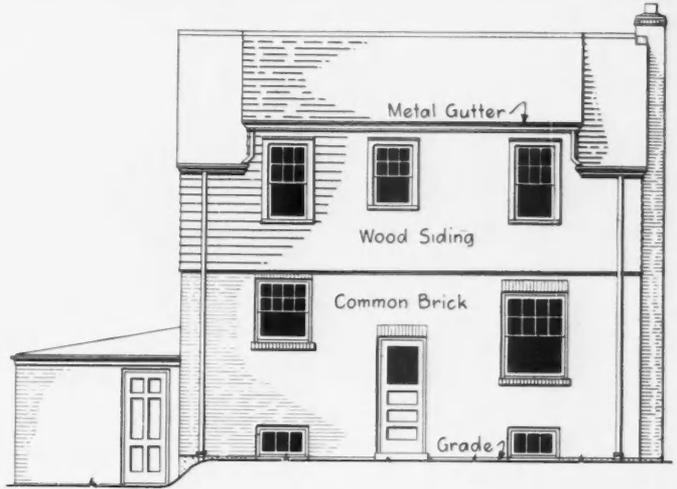
Cost Key is 1.314—122—644—28—22—11



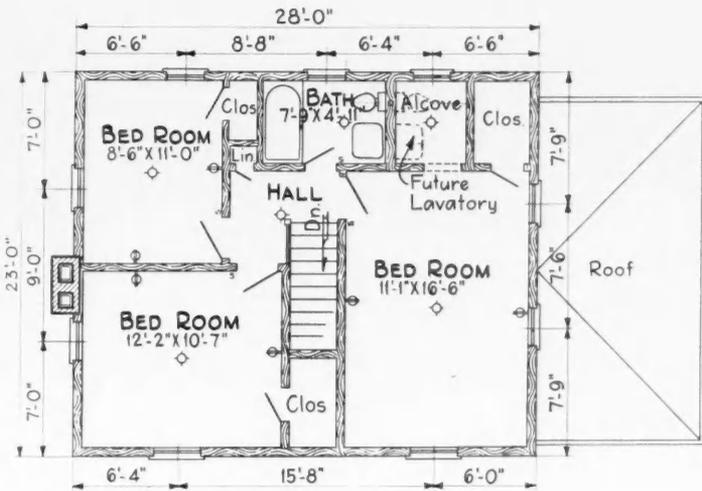
BASEMENT PLAN



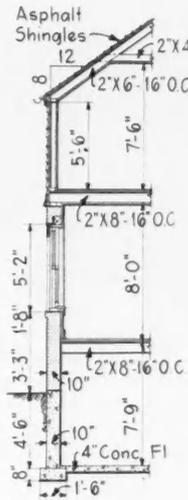
FRONT ELEVATION



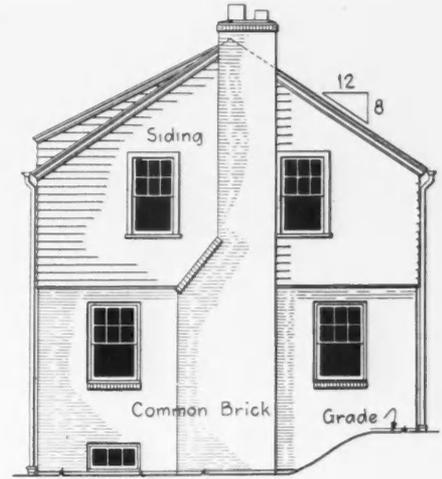
REAR ELEVATION



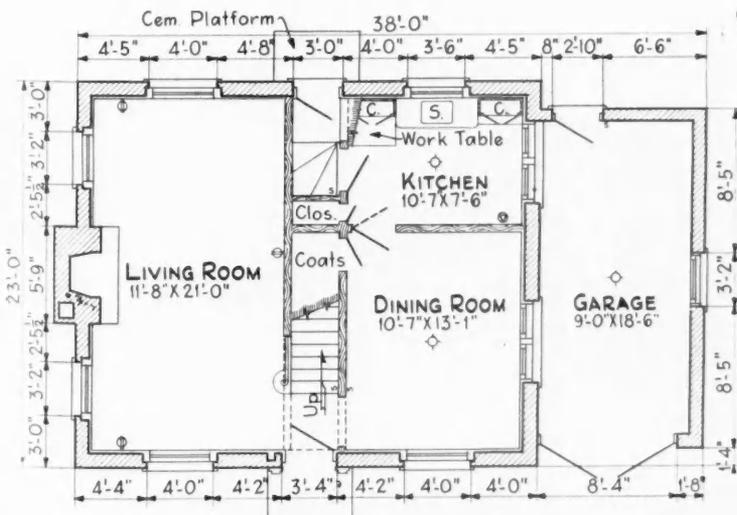
SECOND FLOOR PLAN



TYPICAL WALL SECTION



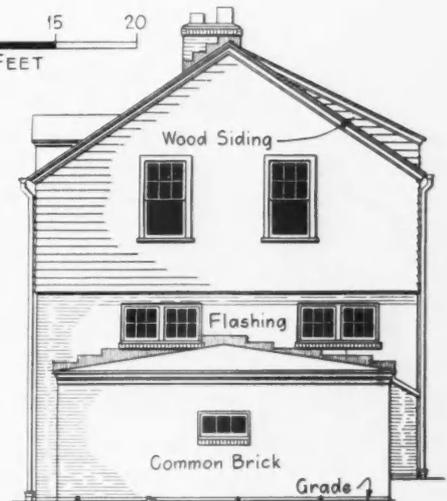
LEFT SIDE ELEVATION



FIRST FLOOR PLAN



SCALE IN FEET



RIGHT SIDE ELEVATION



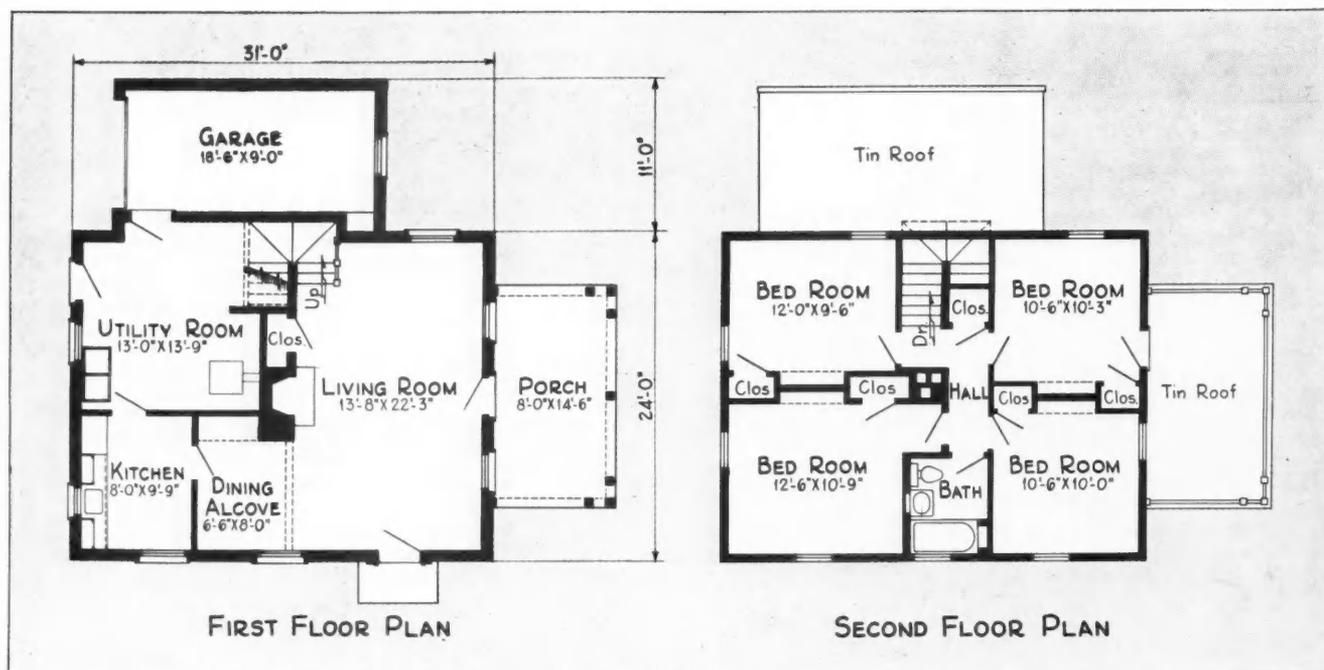
BASEMENTLESS UTILITY HOUSES — 2-STORY

Cost Key is — 1.693 —
136—(764)—(30)—25—16

Built by E. E. Olsen Construction Co.
in Mt. Lebanon District, Pittsburgh, Pa.

THE TWO-STORY Colonial house above has no basement but, as seen in the plan, there is sufficient storage space provided by six closets and the generous sized utility room. An open plan gives maximum usable floor area; dining alcove separated from living room by wide arched

opening and placement of stairs show economical planning practice. Four bedrooms on second floor are compactly arranged. The attached garage has direct access from utility room; open porch and deck above serves outdoor living off both first and second floors.



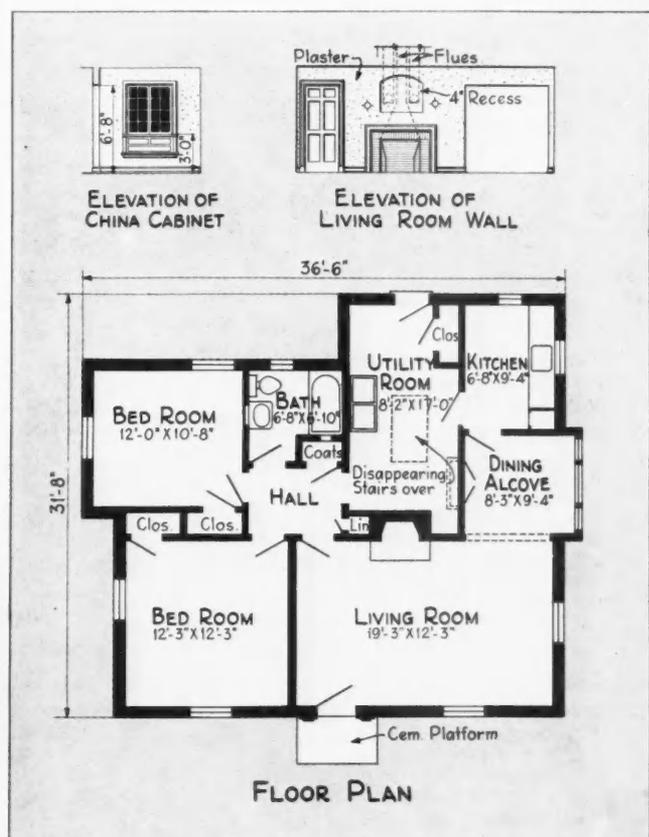


COTTAGE AND 1½-STORY FLOOR PLANS

Hilary D. Watterson, Pittsburgh, Architect
Further Details of Houses on Following Pages

Cost Key is—1.170—156
 —(1043)—(44)—18—15

THE CAPE COD cottage style of Olsen Utility House has two bedrooms, bath, living room, dining alcove, kitchen and utility room arranged on one floor. The latter room gives an unusually large area for laundry, heating and storage considering the size of the house. Circulation is carefully planned; the ample sized rooms have good wall area and cross ventilation. A built-in china cabinet in the well-lighted dining alcove, guest and linen closets off hall provide additional storage space. A variation of this plan having similar first floor and the addition of dormers on the second for extra bedrooms is shown below. The stone veneer gives a different appearance; the houses as described in the following article have individual exteriors.

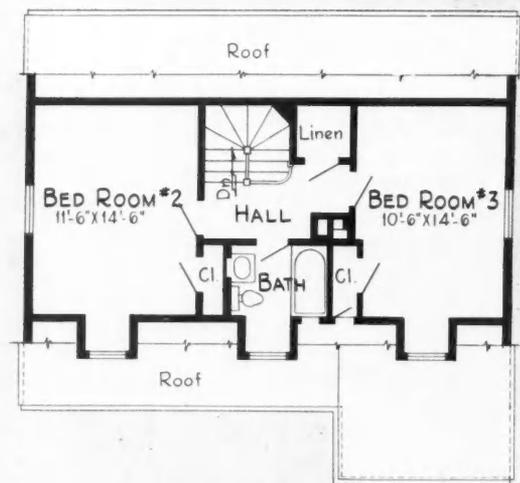
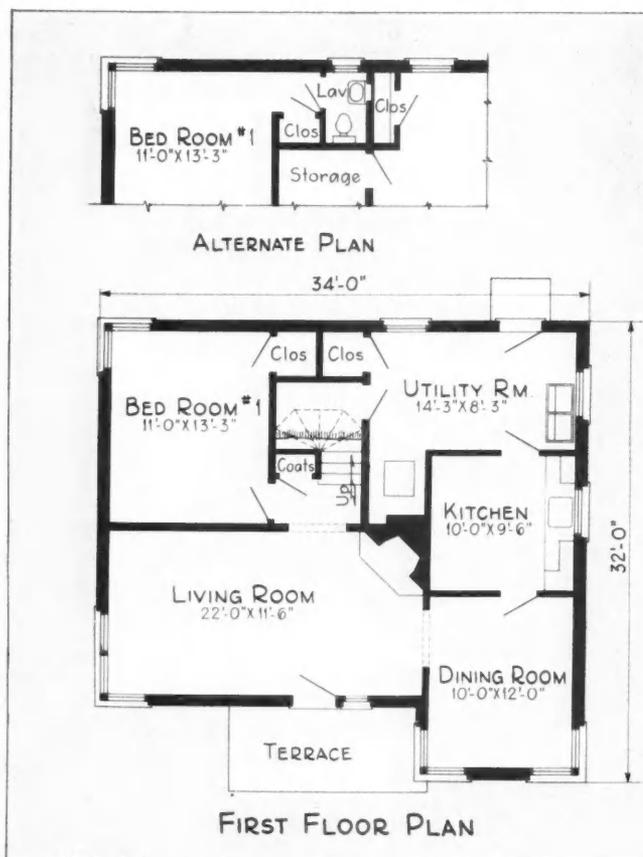




PLENTY OF ROOM WITHOUT BASEMENT

A UNIQUE and attractive exterior is combined with good planning in this house built by the Olsen Construction Co. of Pittsburgh; here again Hilary D. Watterson was the architect. A first floor bedroom is provided and an alternate plan gives an adjoining lavatory. Two more bedrooms and bath are placed on the second floor. Six closets, extra space under stairs and large utility room allow plenty of room for storage. The gas-fired winter conditioner is placed out of the way near the central chimney. As in all Olsen Utility Houses, the first floor is a reinforced concrete slab covered with a waterproof membrane and wood block floors laid in mastic.

Cost Key is 1.482-132-(956)-(40)-19-16



\$1,000 More House for the Money

E. E. Olsen Construction Co. of Pittsburgh Builds Basementless Utility Houses Which Allow a Cost Reduction of This Amount

By R. E. SANGSTER

TO BUILD with a basement or without a basement seems to be one of the prime controversial questions in house construction today. Nearly every builder has definite ideas either one way or the other on this subject (see articles, *American Builder*, September and November, 1936). The E. E. Olsen Construction Company operating in the Mt. Lebanon area near Pittsburgh now adds its experience with basementless, utility houses; backed by cost figures which were carefully kept, the heads of this organization believe that about \$1,000 in cost was saved on such houses as shown in this article.

The two men associated in the firm—E. E. Olsen, president and treasurer, and L. H. Nelson, vice-president—were originally in the heavy construction and engineering field. After observing several housing projects, particularly the Reedsville, Pa., development, they became interested in home building and studied current methods of construction and planning in the medium price range of houses for something new to offer the public.

New Kensington, 18 miles out of Pittsburgh, was finally decided upon as the site for a trial operation, and the first two basementless houses were erected in 1936 from plans by Fellheimer and Wagner, New York architects. When opened for inspection, the public reacted favorably to the utility room idea; in two weeks both



ABOVE, E. E. Olsen, president, (at left) and L. H. Nelson, vice president, of the E. E. Olsen Construction Co., Pittsburgh, Pa.

houses of four-bedroom size sold for \$6,250. This price included lot, grading, shrubbing and seeding complete.

This response was encouraging so larger operations were planned for the Mt. Lebanon district. A number of lots were purchased from the South Hills Company of Mt. Lebanon and the houses were offered for sale as completed.

Although the basementless house is accepted now in this district, it is not to be supposed that the idea was put across without a great deal of promotion and education at the start. But the added value or decreased cost made possible by the utility room proved a good sales argument—the houses compare favorably with similar living accommodations nearby which sell for about \$1,000 more (see cost breakdown on the next page). Also, the



AN ALTERNATE exterior treatment of the plan on the opposite page shows a conventional window placement instead of corner windows, hooded entrance and a variation of dormers and dining-room wing.

ESTIMATE SHEET No. 1. HOUSE No. 341-1

1. Excavation and Grading, Landscaping, Cinder-Fills and Drives, Concrete Footings and Slabs, Cement Finish, 6" x 6" No. 4 Wire Mesh, Sidewalks and Steps, Cinder Blocks.....	\$ 401.31
2. Brick and Stone Work.....	550.00
3. Carpentry Labor.....	450.00
4. Lumber & Millwork: Rough Lumber, Gutter, Finish Lumber, Siding, Millwork, Insulite, Oak Floors, Kitchen Unit, Garage Door, Wood Block Floors, Garage Material.....	1,395.00
5. Rough and Finish Hardware.....	75.00
6. Plumbing.....	490.00
7. Sub-Contracts: Painting, Rubber Tile, Heating, Electric and Fixtures, Plastering, Roofing and Sheet Metal.....	1,591.00
8. Miscellaneous: Architect, Insurance, Foreman, Permit and Survey.....	335.00
Sales Commission.....	237.00
Lot.....	1,000.00
Total	\$6,524.31
Sales Price.....	\$7,024.00
Cost.....	6,524.00
Profit	\$ 500.00

ESTIMATE SHEET No. 2: ALL MATERIAL AND LABOR FOR CONSTRUCTION BELOW-PLATE OF UTILITY HOUSE No. 341-1:

Trench Excavation, 708 cu. ft. at .04.....	\$ 28.32
Backfill, 390 cu. ft. at .03.....	11.70
Cinder fill to receive slab, 21 yds. at 1.00.....	21.00
Reinforcing mesh, 1,074 sq. ft. at .02.....	21.48
4" Reinforced slab over entire area, 11 1/4 cu. yd. at 9.00.....	101.25
Labor troweling and finishing, 976 sq. ft. at .02.....	19.52
Concrete footings, 170 cu. ft. at .35.....	59.50
Haydite Block Walls (cinder-concrete)	
299 sq. ft. 8" at .26.....	77.74
128 sq. ft. 6" at .19.....	24.32
	\$ 364.83
10% Overhead and Profit.....	36.48
	\$ 401.31

ESTIMATE SHEET No. 3: ALL MATERIAL AND LABOR FOR CONSTRUCTION BELOW-PLATE OF THE CONVENTIONAL BASEMENT HOUSE:

Main Excavation, 212 cu. yds. at .60.....	\$ 127.20
Footing Excavation, 176 cu. ft. at .04.....	7.04
Backfill, 1,285 cu. ft. at .03.....	38.55
Concrete Footings, 207 cu. ft. at .35.....	72.45
12" Haydite Block Walls, 832 sq. ft. at .34.....	282.88
8" Haydite Block Walls, 128 sq. ft. at .26.....	33.28
3 Area Ways for Basement Windows at 10.00.....	30.00
4" Cinder fill for 10 1/2 cu. yds. at 1.00.....	10.50
4" Basement cement floor, 849 sq. ft., 10 1/2 cu. yds. at 9.00.....	94.50
Labor troweling and finishing, 849 sq. ft. at .02.....	16.98
1" Cement Plaster on Exterior of Foundation, 832 sq. ft. at .06.....	49.92
Extend Chimney and Fireplace Chimney to Basement.....	48.00
2 Lally Columns for Basement Girders at 11.00.....	22.00
Lumber for first floor Joist and 1/8" floor lining, 2,941 Bd. Ft. at 70.00M.....	205.87
Stairs to Basement with Door.....	48.00
3 Steel Sash for Basement.....	24.00
Extra for Plumbing in Basement House.....	48.00
Extra for Additional Heating Ducts.....	125.00
	\$1,284.17
10% Overhead and Profit.....	128.42
Total	\$1,412.59
Basement House groundwork.....	\$1,412.59
Utility House groundwork.....	401.31
Net Saving on Utility House	\$1,011.28

houses carry a full 80 per cent FHA loan. The latest promotion idea is a color movie of the project made by Mr. Olsen to show to prospects.

The 1937 program calls for the building and sale of 100 houses in three groups of 30 odd each. Exteriors on each of these will be different although several basic plans which have proved to be most workable will be used with variations. Hilary D. Watterson of Pittsburgh is the architect responsible for the attractive and efficient designs. Sales are handled by the South Hills Company of Mt. Lebanon.

On pages 66, 67 and 68, three typical houses are shown with plans. It will be noted that the utility house has not been limited to any particular size; the first is a full two-story four bedroom Colonial type home, the next is a Cape Cod cottage with two bedrooms and alternate exterior, and the third is a one and a half story design having one bedroom on the first and two on the second floor. In all cases, the room arrangement has been worked out for maximum space use and economy, but at the same time plenty of storage has been provided by the numerous closets and the generous proportions of the utility rooms.

The careful planning of these rooms which contain the gas-fired winter conditioning units and laundry facilities has been the key to success in overcoming common objections to basementless houses. Heating plant, well located to one side and near a chimney flue, good lighting for laundry trays and easy access from kitchen and outside are some of the provisions included. Also, there is ample storage space for average requirements and enough room for hanging clothes inside; a grille on the heat supply can be opened to allow passage of additional warm air into the utility room for more rapid drying.

The floor slab and wall construction involved in these houses has been carefully designed and has proved entirely satisfactory. A cross section drawing at the right shows these important details.

The first building operation is to level the side down to solid ground so that the slab is not over filled earth. Concrete footings 8" x 24" placed 3 feet below grade support 8" concrete block foundations; under bearing walls, piers are placed so that no span is more than 7 feet. A cinder fill having a 5-inch minimum depth is placed level with the foundation top, over which a 4-inch slab reinforced with 6" x 6" No. 4 wire mesh is poured. A most important item is the dampproofing with 30 lb. saturated felt laid in emulsified asphalt. This extends over the concrete floor surface up above baseboard height behind plaster base and also down the sides to the top of



ABOVE, two basementless houses in New Kensington, the district where the Olsen Company started home building. At the left, cost breakdown of the 1 1/2-story utility house shown on page 68.

the foundation (see detail). A finished floor of Bruce block is laid in mastic over the membrane. With this construction the usual basement floor is moved above grade to replace the first floor.

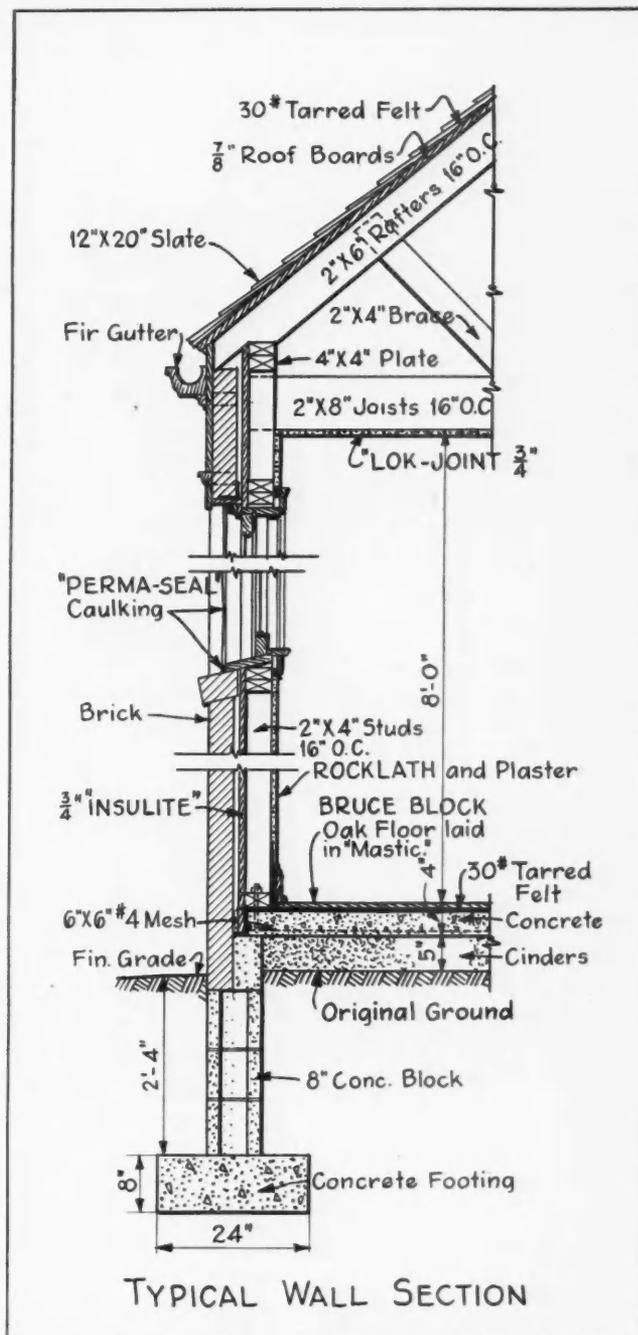
A table on the opposite page shows a cost breakdown of the house on page 68 as taken from three work sheets. The house was built within the past year and, although there will be some variation due to increased costs, the relation shown between this house with and without basement will still be about the same. In explaining this data Mr. Olsen states:

"Even a quick study of the figures will reveal just what the situation is as far as actual costs are concerned and they do not include a sum that could be rightfully set up for, let us say, efficiency, which we find is an important item in production. That is, much is saved in time, energy and labor in working around a group of houses that do not have mountains of excavated loose dirt to work over. We can with this type of construction get in and out with a minimum of lost time.

"Sheet No. 1 is a complete estimate taken from our records. You will note that the total cost is \$6,524 and that the sales price is \$7,024, including commission, lot and contractor's profit. Sheet No. 2 shows item No. 1 of Utility house estimate broken down. Sheet No. 3 shows a breakdown of below-the-plate-construction, if a basement were to be put under this same house on the same lot and under the same conditions that existed on Utility house. The comparison on bottom of sheet No. 3 indicates a saving of \$1,011.28 for the Utility house in dollars and cents—to say nothing of what the 'efficiency' item is worth to the contractor. From the owner's point of view, he has the same space, same number of rooms, a more substantial house and a more modern and convenient place in which to live—and all for a lesser amount of money."

It should be added here that local conditions in various parts of the country would affect the savings shown for these houses. Different combinations of circumstances covering labor scales, excavating problems, materials, etc., could alter the final results quite substantially. For instance, gas is a popular and economical fuel in their area, the average cost of gas fired winter conditioning on these houses running about \$8.00 to \$10.00 a month. It eliminates the need of space for fuel storage and shorter ducts can be used by placing the plant on first floor level. The cubage devoted to the utility room would of course be available for other purposes if basements were included

(Continued to page 118)



WALL SECTION above at the right indicates floor slab features of Olsen houses as described in the article. Notice the tarred felt waterproof membrane.

THE GROUP of six Mt. Lebanon houses shown at the right include two of the utility type together with four houses having basements; E. E. Olsen Construction Co., builders.



FHA Small Homes NOW PLANNED IN Brick



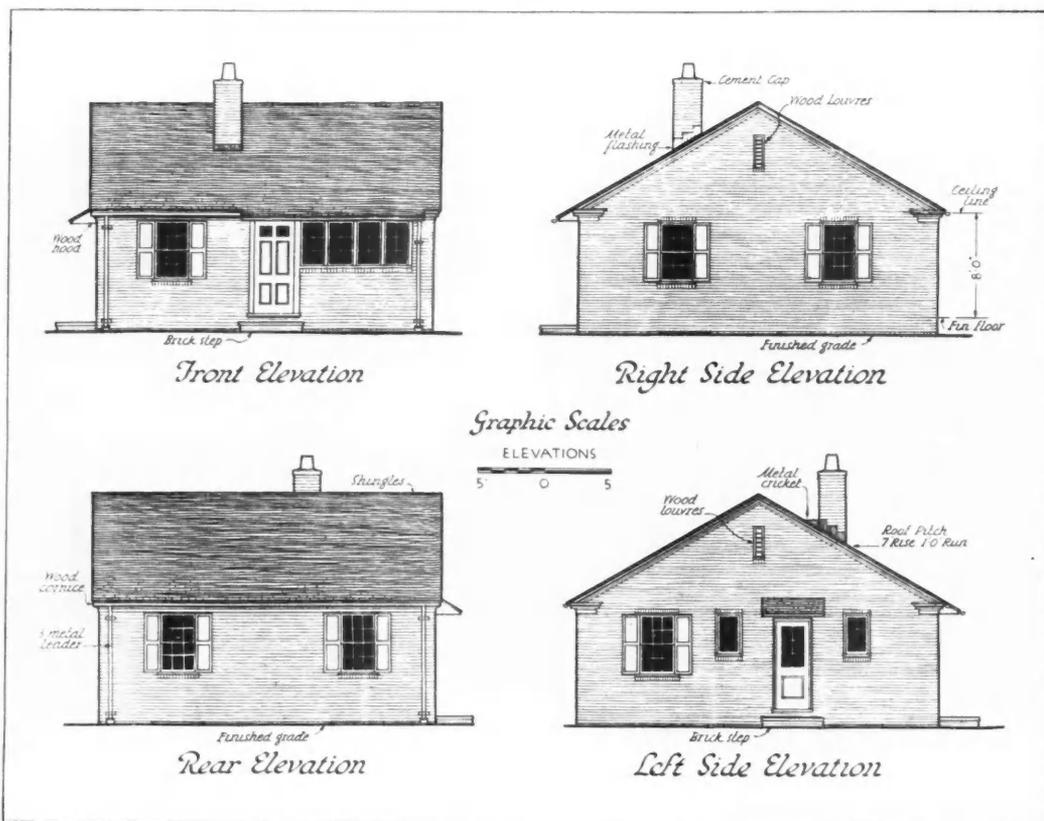
Model of Brick Bungalow at New York Home Show Attracts Crowds

THE famous FHA low-cost houses being built throughout the country as demonstration homes under a program inaugurated by the National Lumber Manufacturers Association are making great headway. An encouraging feature of the demonstration is the broad basis on which it is handled. Producers of other materials are joining hands with the lumber industry in a program that will benefit them all. Prominent in New York City's Home Show at Madison Square Garden was the brick cottage illustrated above sponsored by the Structural Clay Products

Institute. The Institute has prepared plans and details of the FHA houses executed in brick and have made a number of changes in architectural details which they believe enhance their beauty. The designs are planned to be built at a cost of from \$3000 to \$4500 under the principles outlined in the FHA technical bulletin No. 4.

Brick steps and terraces have been added and it is also possible to incorporate brick fireplaces in the living rooms.

As the planning of these houses has been subject to



DETAIL drawings of the low-cost FHA "B" house showing construction in brick as recommended by the Structural Clay Products Institute.

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HOW the low-cost FHA "B" house looks as executed in brick. On opposite page is shown a model of this brick cottage built in New York City's Home Show.

Cost Key is .860-104-688-29-12-9



First Floor Plan



the principles recommended by the Federal Housing Administration and reviewed by their engineers, their construction can be carried out through FHA insured financing anywhere in the country. The additional cost to build these houses with masonry walls will be offset, the Institute claims, by increased appraisal values and savings in maintenance costs.

In the booklet issued by the Structural Clay Products Institute three methods of building exterior walls are indicated for these houses. Foundation footings can be constructed of hollow clay tile or brick. Exterior walls can be built of brick with hollow clay tile backing,

or solid brick as selected. Also in many instances it is realized that these houses will be built of brick veneer construction.

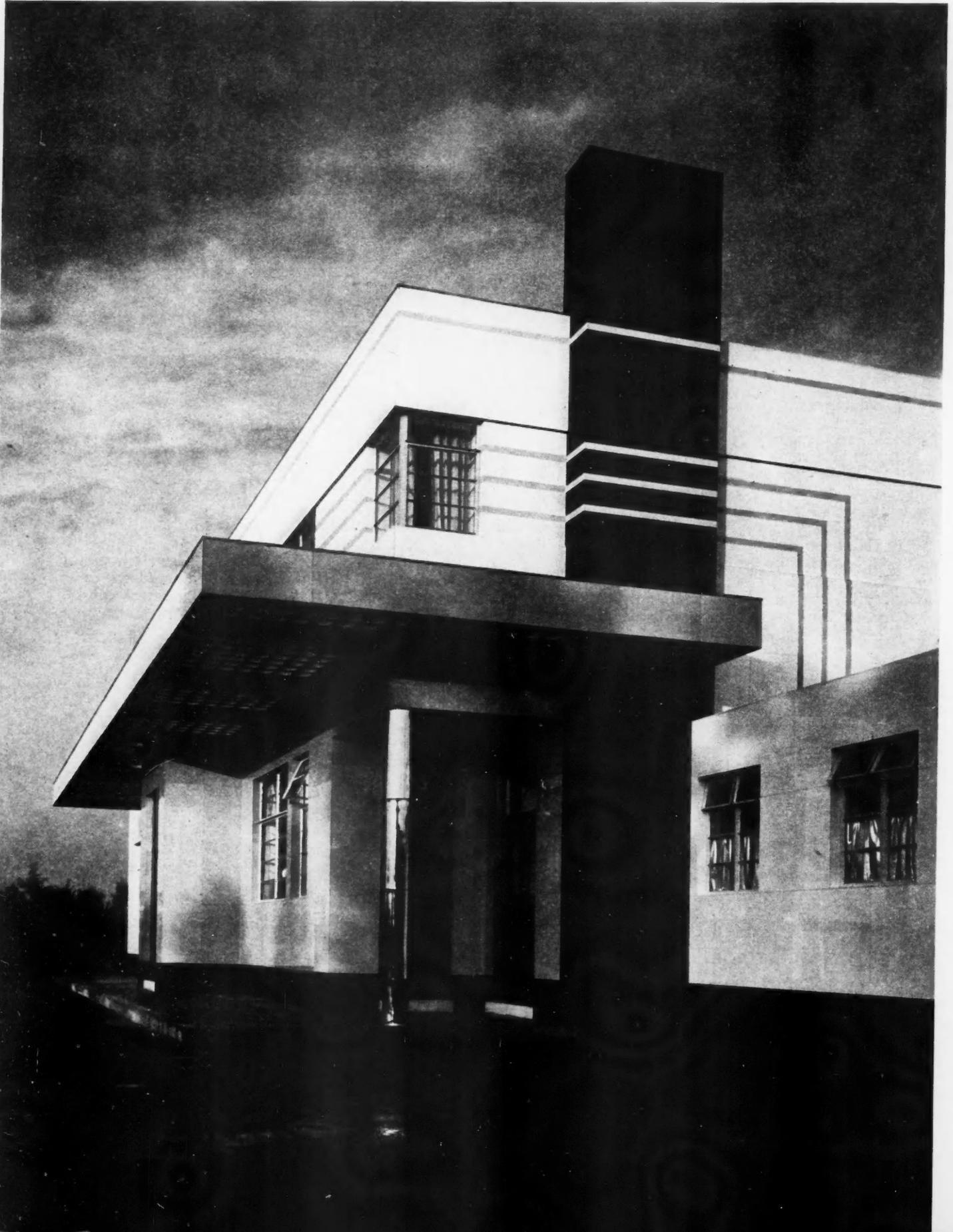
This replanning of FHA small homes in brick is one of the early steps in an extensive promotional campaign now being undertaken by the Institute on behalf of the burned clay products industry of this country.

In March of this year it announced a small house competition calling for drawings or photographs of small houses having exterior walls of masonry construction. This competition program was reviewed in the May issue of *American Builder*.



THIS is the famous FHA "D" house executed in brick with a panel of wide siding at the front. The garage attached with a small connecting porch is an attractive addition. Cost Key is .985-87-452-20-16-7

Pink Glass Latest for Hotel Construction



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"Architecture of Health" featured in new hostelry in England

A PINKISH object glistening in the sun.

That hardly sounds descriptive of a hotel, even as a first impression in this age of unusual architecture, but those were the words of one who recently inspected the new Kirk Sandall hotel near Doncaster, England.

This most interesting building is a modern wonder in glass, a striking example of what many have called the new Age of Glass into which we are just entering, a construction trend someone has called the beginning of the Architecture of Health.

Kirk Sandall hotel is faced externally with shell pink and turquoise blue Vitrolite, so unusual in treatment as to create a desire for further exploration.

Passing under a glass tiled marquise, one enters a primrose colored vestibule, glass walled and floored, leading to the public bar. In the latter room, two bands of color running round the Vitrolite walls form a refreshing contrast to the usual taproom.

Two of the most attractive rooms are the "Smoke Rooms." One has walls of dull gray silvered glass, enriched with a cleverly designed and brilliantly cut frieze, depicting an amusing horse race, which carries the eye to the further wall, ornamented with various motifs of the saddle room, the latter executed by sand blast process upon black glass.

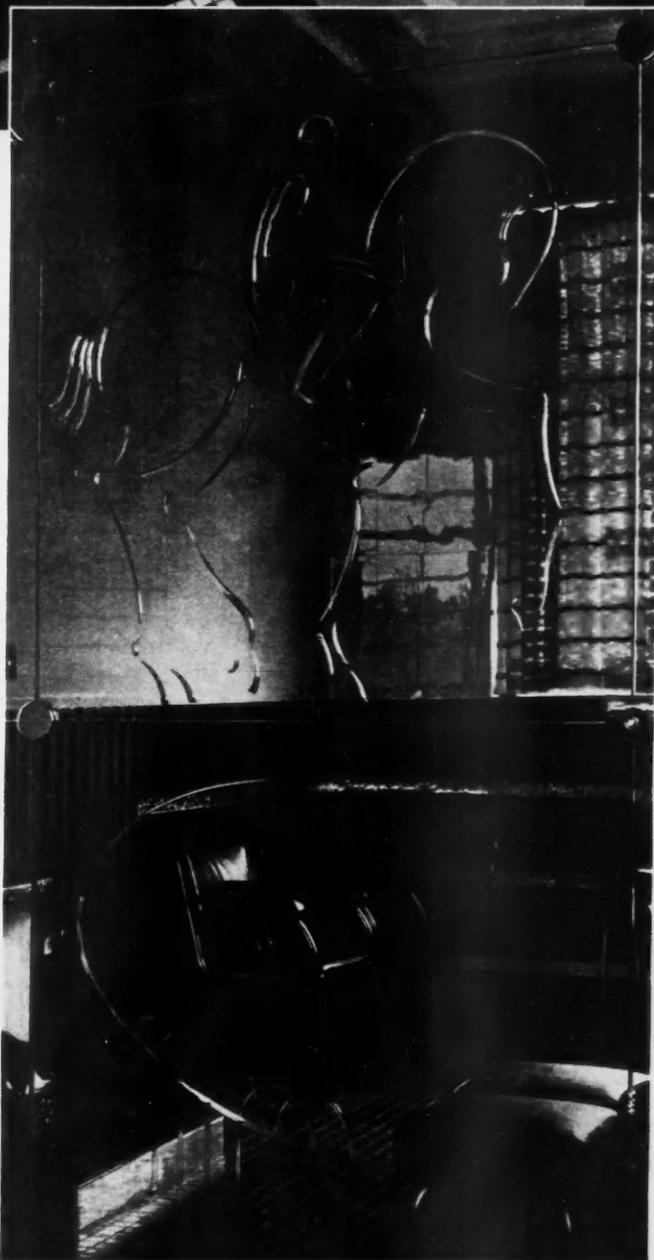
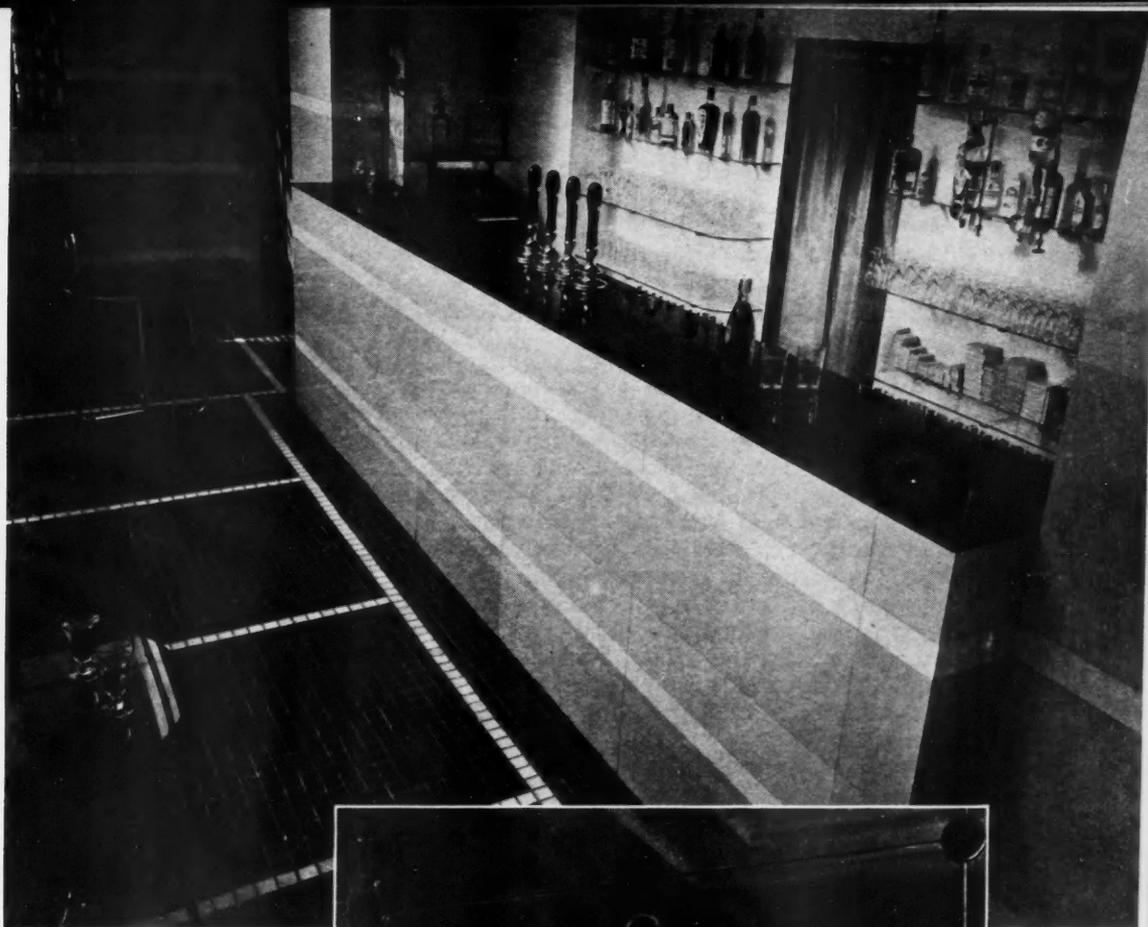
The other Smoke room has glass walls reminiscent of a cloth of gold fabric and a translucent glass floor of incredible loveliness. The end wall of the lounge is entirely of mirror, creating a fascinating duplication of room area.

Vitrolite glasses in various colors complete the numerous service fittings behind the Bar counters and the same material has been used throughout all the corridors and lavatory walls.

Glass is used everywhere and is particularly successful and attractive in its numerous flooring uses, which, with their sandblasted surfaces, are entirely non-slip.

It can only be described as an immaculate building, clean and restful. It is a perfect demonstration of the application of glass to a type of building peculiarly suited to its uses. Here are found smooth, clean, surfaces so essential for maintenance of the modern hotel.

ABOVE: Walls of public bar are lined with bands of green and Wedgewood Vitrolite. **RIGHT:** Interior of lounge in Pink and Black.

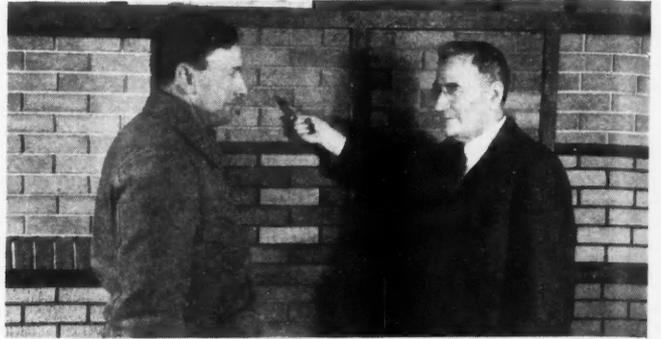


How Cement Brick Are Made and Sold—in Milwaukee

ALITTLE MORE than a year ago Mr. W. W. Whitney, a foundation contractor and a man of long experience in the construction industry, in partnership with Mr. John Krause, well known sand and gravel producer, introduced to the Milwaukee building trade a new and improved building material. They organized the Riverside Dunbrik Company and at a convenient location put up a suitable building and installed the necessary equipment for the economical production of Dunbrik, both ordinary grey and mat glazed in color. Today, with nearly one million bricks on hand for immediate delivery and with prominent local architects, builders and contractors specifying and using their materials in increasing volume Messrs. Whitney and Krause are in an enviable position to serve the Greater-Milwaukee building industry.

Early in May an *American Builder* editor inspected the production plant and sales office, and also visited several construction jobs where the product was being used. The Riverside Dunbrik Company plant is located about eight miles north of the city on the Milwaukee river. The first view is of an attractive, small factory building constructed of its own product in variegated shades of solid color. The front displays a 30 foot sign which is part of the wall itself. This sign is laid with a background of white mat glazed brick, the border and letters being black. Inside the office, walls are completely covered with 3 x 4 foot panels of brick in a complete range of colors from white to black. The floor is constructed of multiple size units in variegated colors and laid in a random pattern. The severe wear this floor receives and the way these colored units have stood this test are a demonstration of the durability of the mat glazing process that has helped to overcome any objection that the most skeptical individual might have had.

The plant was in full operation with two men serving the continuous brick molding machine. At the end of the building, where the raw materials are stored, we saw a pile of sand dumped from the truck directly to the floor. Adjoining this is a skip hoist, the bucket of which is



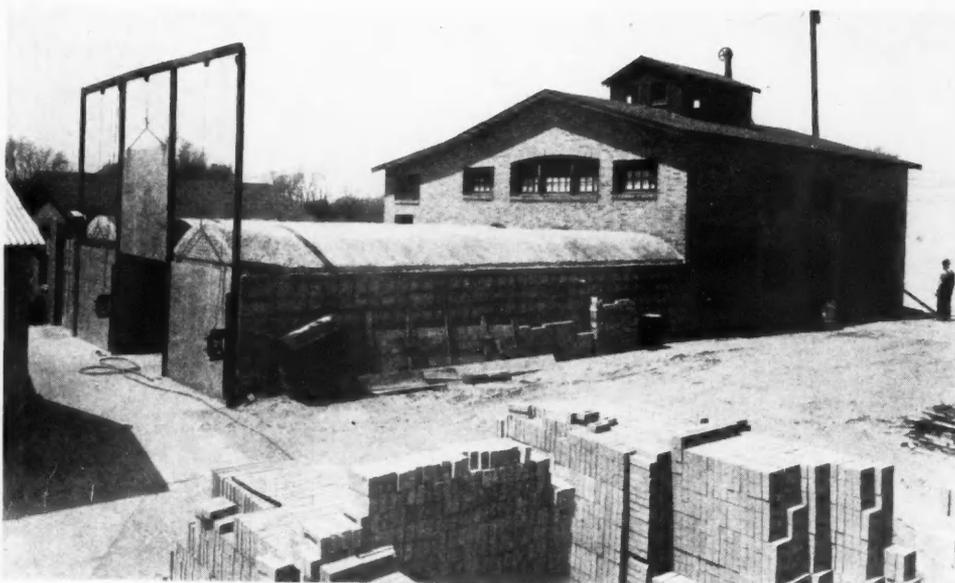
J. KRAUSE, president and W. W. WHITNEY, sales manager, inspect Brick Panels in plant office.

lowered into a pit, bringing the top of it just below floor level. This is then filled from the sand pile. Cement is added and a pull of the control lever by the man that fills it raises it, dumps it and returns it automatically to the filling position. Overhead is mounted a revolving, open drum shovel type mixer with a discharge spout leading directly to the hopper of the production machine. The mixed material is dumped by means of a ground floor control that opens the mixer bottom and permits the whole batch to empty quickly at one time.

The material then passes into the production machine which is directly under the mixer platform. This machine is entirely automatic in operation excepting for the one man necessary to remove the finished material. It consists of a continuous mold box compartment which passes under the hopper of the machine where it is filled through an adjustable feed gate. It is then carried under a series of tamper and trowel arms that operate at 600 strokes per minute and are capable of exerting a blow of six ton. This line-production method assures a constant production of 2,000 brick per hour.

A very simple adjustment enables a change to the production of double or triple units on the same machine. The finished products are placed on steel racks and

transferred by means of a lift jack to the curing rooms in which steam is used during the winter months. In the manufacture of the lower priced face units, the water-proofed integral coloring material is added direct to the sand and cement before entering the mixer and that, therefore, is the only additional cost in the manufacture of these colored units as compared with common brick.



RIVERSIDE Dunbrik Plant; Production building, steam curing kilns and storage yard.

The mat glazing department is housed in a small brick building adjacent to the molding plant; and here Mr. Krause explained the tremendous advantage that this process offers. "I can give you any color, shade or texture without carrying a face unit in stock," he said. "The order is sold from samples, and common units are converted into whatever the order calls for and are ready for delivery in a few days. No long delays. No necessity for premium prices but a means of pleasing every buyer and fulfilling the demand for the out of the ordinary combinations which many builders could always visualize but were seldom able to fulfill because of the difficulty and high cost of obtaining the necessary materials."

The mat glazing process consists of a pneumatic application of a waterproofed, colored material which is mixed to a plastic mass about the consistency of mortar. This can then be applied in almost any thickness and smoothness or roughness as may be desired, producing a surface of distinctive character and permanent beauty. "But this process is not confined to the one use only," explained Mr. Krause. "For builders who want the lowest possible cost and yet wish to produce permanent construction, we furnish a service of applying this material over finished construction. The builder uses our common units, whether brick or some of the larger sizes—builds at the cost of laying common units and when the structure is finished, we apply a coat of mat glazing over the whole building in whatever color the owner desires, giving the entire surface a monolithic, protective and decorative coat of permanent, colorful masonry material."

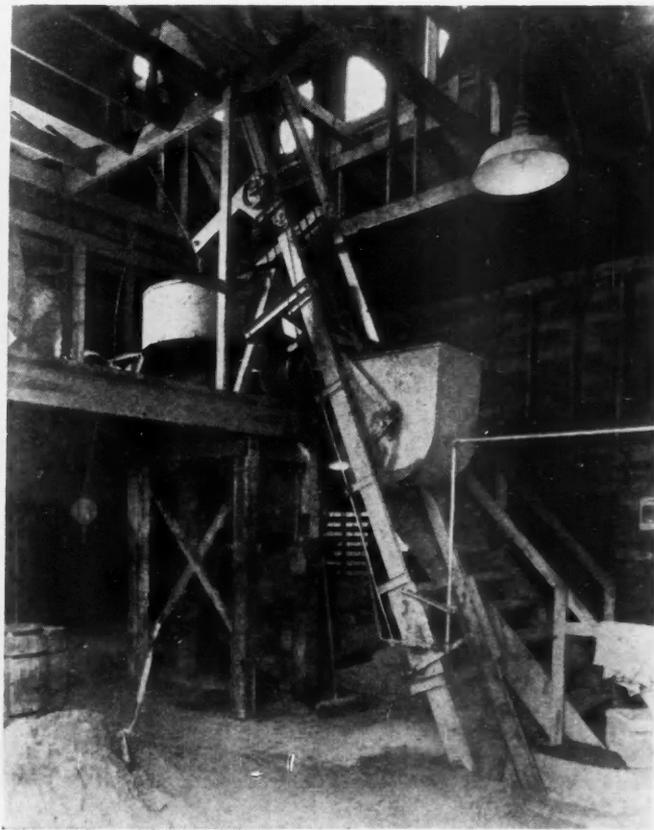
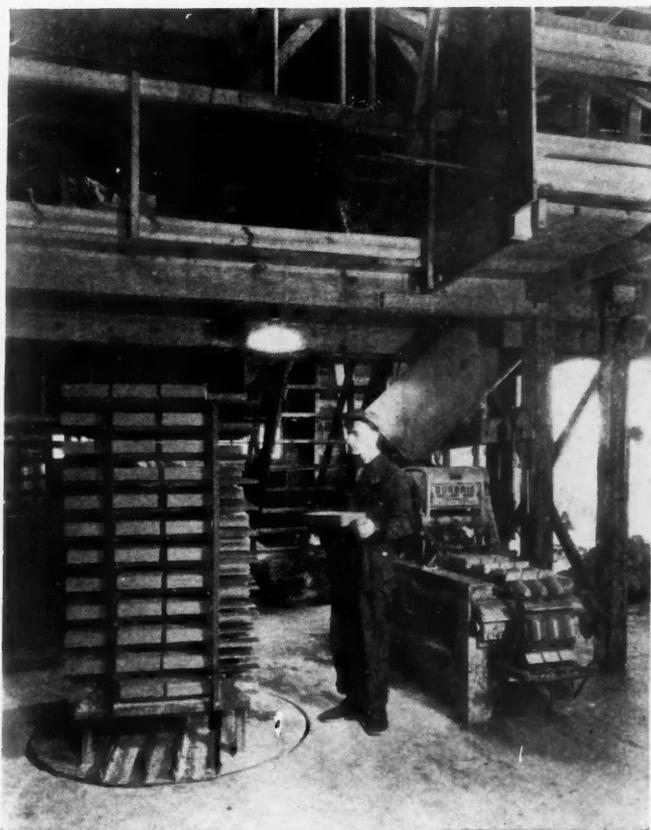
Mr. Whitney, as sales manager, maintains a downtown office for the convenience of his customers. Here they bring their prospects to make their choice of colors and structural designs that can be so greatly varied by taking advantage of the flexibility of the various sizes that are manufactured. With the advantage of absolute accuracy and the multiple sizes, many time saving, material sav-

ing and labor saving combinations are possible in wall designs that build hollow insulated walls at costs no higher than for inferior construction.

These cost reducing factors, combined with the almost unlimited color choice, have helped many a Milwaukee builder close a contract that might have been delayed for another year or two, because the home that Mr. and Mrs. Owner wanted, would have cost more than they could finance immediately, if it had to be built of ordinary materials. However, in many instances, the cost reductions accomplished with these products made it possible to fulfill their desire at a figure within their budget.

From his downtown office Mr. Whitney contacts the architects, contractors and dealers by personal calls, by telephone and by an occasional mailing of literature prepared by the machinery manufacturer. Local newspapers are used for advertising; and displays at the annual Home Show and the State Fair have proven very profitable.

In driving around the city numerous attractive homes built of the Riverside Dunbrik products were seen. "But home building, although one of the most profitable parts of our business, is by far not the largest," said Mr. Whitney. "Here, for instance, is the Greenfield Avenue plant of the Chain Belt Company, a modern steel and brick structure for which we supplied over 250,000 brick. Then there is a PWA project and a County Highway Department garage using over 150,000 units. The City Sewage Commission has already used more than 100,000 in their work, and to numerous other city and commercial projects we supplied well over a million Dunbrik last year. Yet now as we enter our second year's business with the added advantage of approval by the Federal Housing Administration and the passing of all city, state and county requirements behind us, we can foresee an annual volume of well over three million brick. Our former customers are constant repeaters. An example of this is that our city office many days receives telephone orders totalling 20,000 and more units."



LINE PRODUCTION Brick Machine with transfer truck being loaded with Dunbrik; to right is shown material hoist to overhead mixer.

SHOPCRAFTER'S Corner

Things To Build for Profit or Pleasure

Complete Details for Building a 14-Foot Flat Bottom Boat

VACATION TIME spent at summer cottages near lakes is almost certain to be boating time. Requests for plans from which a good boat could be built have resulted in the presentation of working drawings and bill of material for a 14-foot flat bottom boat in the July Shopcrafter's Corner. Selection of good material is the prime requisite in building a boat. For best results selected California Redwood boat lumber is recommended. The bill of material lists all the items necessary to construct this boat.

It is necessary to build some sort of framework for the boat to rest on while building it. Any rough material will do. Carefully lay out each piece, starting with the bottom boards. Fit the edges carefully together (beveling them as shown in the detail for caulking. Mark off the stations and erect the forms, transom and stem by nailing them to the bottom planks. The forms are made from strips and bolted together.

Now if the construction thus far is straight and true, the sides can be fitted to the framework. (In order to keep this framework true, it is well to use braces properly applied.) The balance of the construction is all well diagrammed.

The liberal use, at this time, of white lead and caulking, as well as good paint, will go a long way toward building a boat for many years' service.

The original plans from which these drawings were made at half scale and also plans for several other types of boats are available at many local lumber yards.

THE UPPER DETAIL on this page shows how the transom (3), brackets (8 and 9) and the necessary stock with which to make the forms (4, 5 and 5a) are cut from one board 1 1/4"x16"x10' in size. Below, the sizes and shapes of the three bolted forms, details of stem (6) and false stem (7) are laid out. From top to bottom on the opposite page are shown: elevations from side and above; bottom boards (1 and 2) marked off for shape and location of forms; partly assembled boat with forms in place as viewed from above; two section drawings and joint detail.

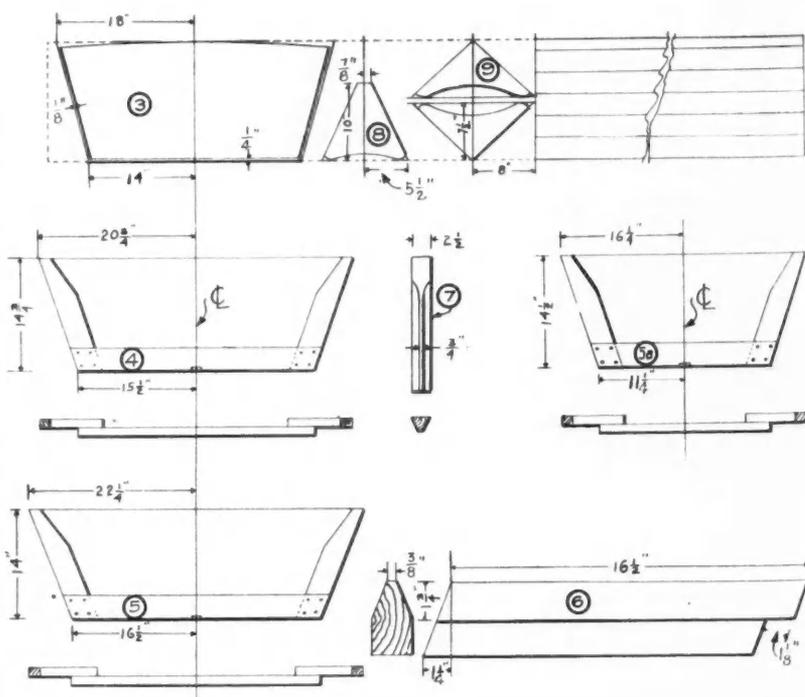
BILL OF MATERIAL

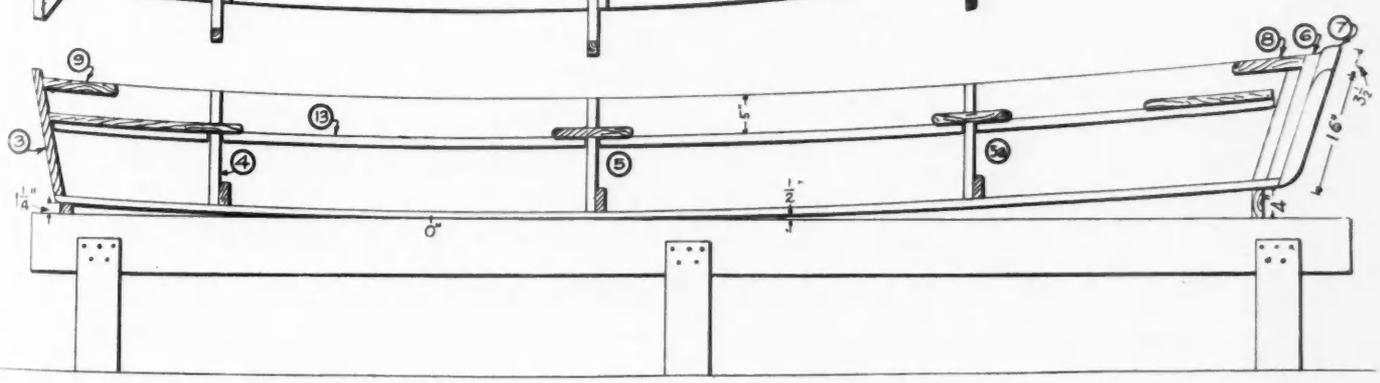
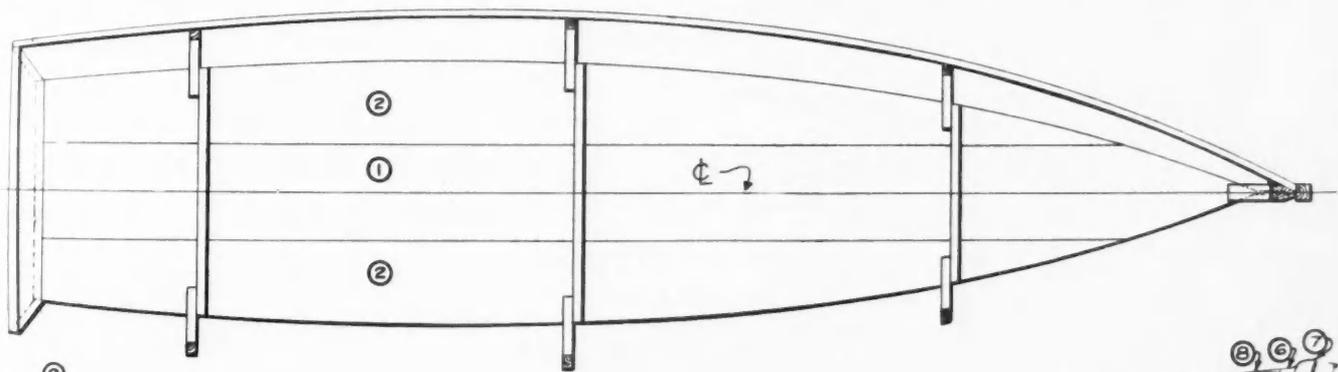
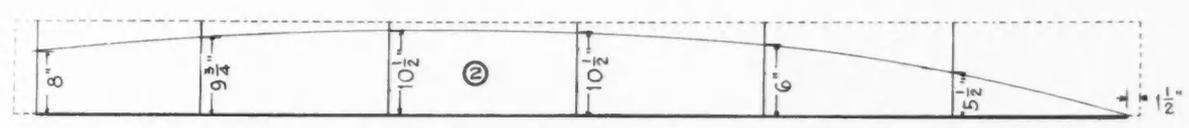
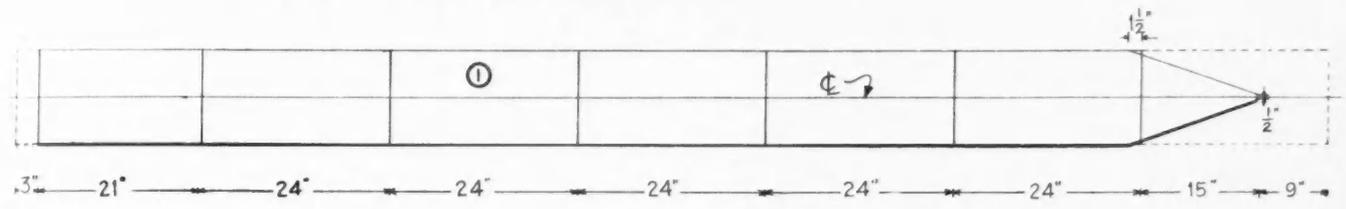
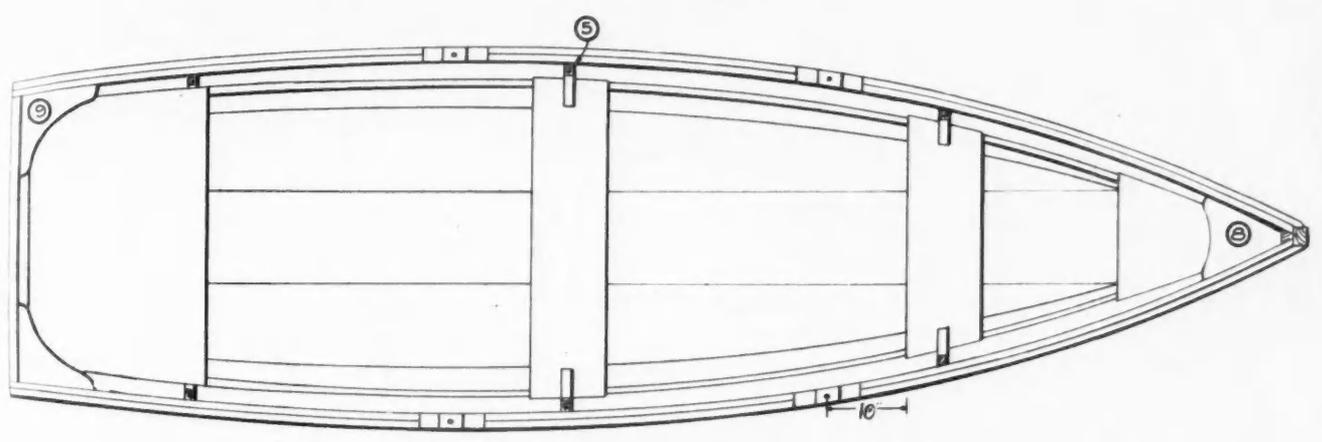
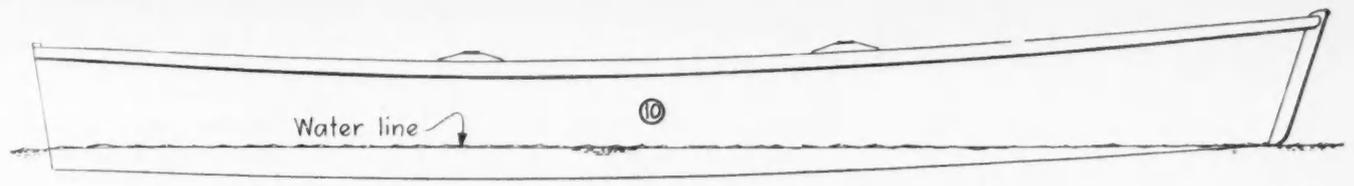
LUMBER: (Selected California Redwood Boat Lumber unless otherwise specified)

Piece No.	Pieces	Size	Kind and Grade	For
1	1	1x12"—14'	Clear Redwood S2S	Bottom
2	2	1x12"—12'	" " " "	" "
(3, 8, 9,				
4, 5, 5-A)	1	1 1/4x16"—10'	" " " "	Transom, Forms, etc.
6	1	2x 4"—1'6"	" " " "	Stem
7	1	3x 3"—1'8"	" " " "	False Stem
10	2	1x16"—14'	" " " "	Sides
11	2	1x 3"—14'	" " " "	S4S Side Battens
12	2	1x 3"—12'	" " " "	Bottom Battens
	1	1x24"—3'	" " " "	Back Seat
	or 2	1x12"—3'	" " " "	" "
	1	1x16"—1'4"	" " " "	Front Seat
	1	1x10"—6'	" " " "	Intermediate Seats
13	2	1x 2"—14'	" " " "	Seat Support Battens
	1	2x 2"—3'	Clear Oak S4S	Oar Lock Cleats

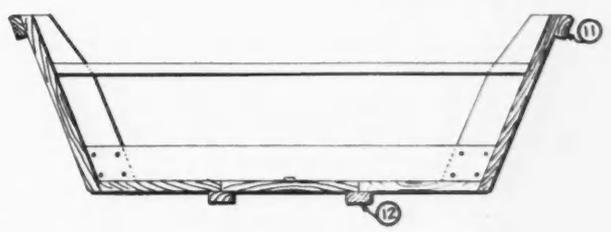
HARDWARE AND FITTINGS:

- 24 1/4x2 1/2" Stove Bolts (galvanized or brass)
- 3# 8d Common Nails, galvanized
- 2# 6d " " "
- 1# 20d " " "
- 2 doz. 1 1/2" #12 Screws, (galvanized or brass)
- 1# Caulking Cotton
- 4 Oar Locks





Edges of Bottom Boards
Beveled for Caulking



Novel Plywood Wall Units Cut Costs in Seattle House

PRACTICAL demonstration of a new development in prefabricated construction was made last winter in Seattle through construction of a five-room cottage with attached garage employing the Horn interlocking Douglas fir plywood wall-units.

The Horn unit is unique in that it permits absolute flexibility of design, length of walls or partitions, and places no restrictions upon size or location of door or window openings. It has the further advantage of being readily marketed through retail dealers or other customary building channels.

With the units standardized in one size only, all window and door openings are cut out after the walls have been erected. One man can handle a unit with ease, but a two-man team works more efficiently and greatly facilitates erection. The standardized unit offers to the contractor, building material dealer, and developer, a combination lumber and plywood product which can be incorporated in any floor plan and small building design—in other words, it is a plywood building unit, just as brick and tile are masonry units except that six of these plywood wall units will build 100 square feet of walls. These walls may be filled with a loose-fill insulation when desired.

The Horn units consist of stock Douglas fir plywood panels, 4' x 8' in size, on the back of which are glued four 1 5/8" x 1 5/8" ribs or studs and extending to within 1 5/8" of each end of the panel to allow for floor plate and top plate.

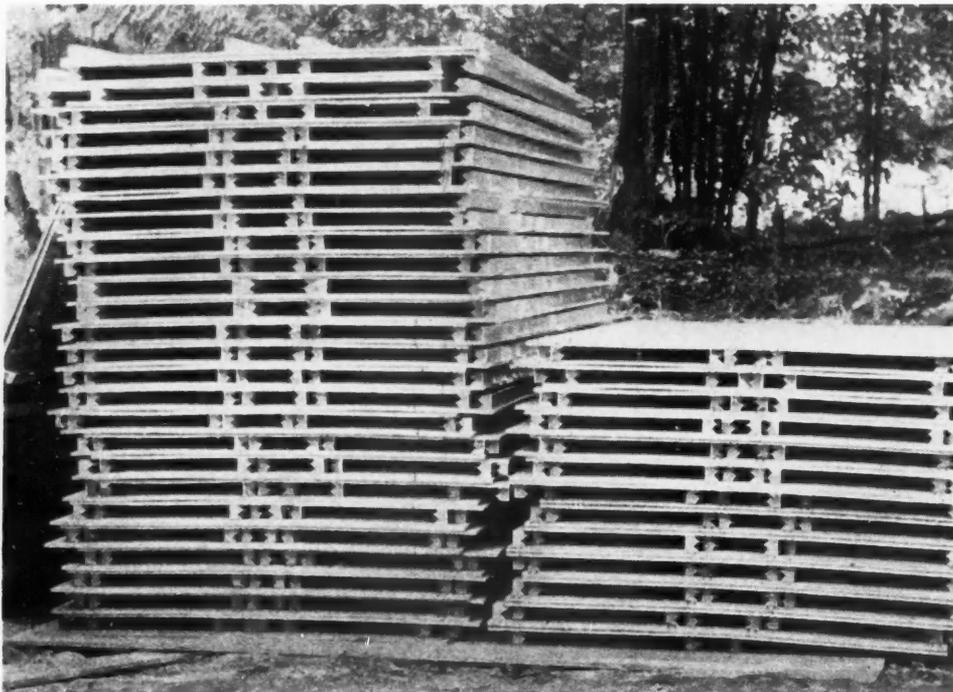
A full wall section consists of a row of these units for the exterior surface, and another series, inverted and slid into place so that ribs interlock with ribs of the exterior panels, to form the interior surface.

The interior finished surface and the exterior sheath-

ing are installed as a component part of the units. A conventional covering of siding, shingles, or other weather protection, may be added to the outside for conventional appearance if desired. However, with the newer waterproof plywoods now available, it is not necessary for protection from the elements in the lower cost homes. On the inside the plywood may be left unfinished, or simply lacquered, sanded and waxed if an attractive and economical natural finish is preferred. Various combinations of stains, shellac, and paints may also be employed as well as some of the plastic finishes which produce extremely pleasing effects.

In the Seattle house, the 170 wall-units required were fabricated by two men in about 18 hours in a shop in the city. The Douglas fir plywood was procured in stock panels, 4' x 8', and 7/16" thick, left unsanded in order to utilize the maximum thickness in this first experimental house. An adequate supply of 2" (nominal) ribs, machined to the interlocking pattern shown in the detail was also secured. The plywood was then grooved with an ordinary dado saw using guides to get the exact slope needed. Next the ribs were glued and inserted into the grooves in about twenty panels at a time which were immediately stacked and placed in special clamps and left to set the required time to produce a bond which was stronger than the wood itself. The panels were then ready to be shipped by truck to the job site.

The foundation of the house, which is without basement, consists of the usual concrete wall around the outside, with wood sills resting on wood posts and concrete footings for interior supports. Over the wood floor joists was laid a 5/8" Douglas fir plywood sub-flooring, which provided a rigid working platform at a very small labor cost, one carpenter and helper laying 973



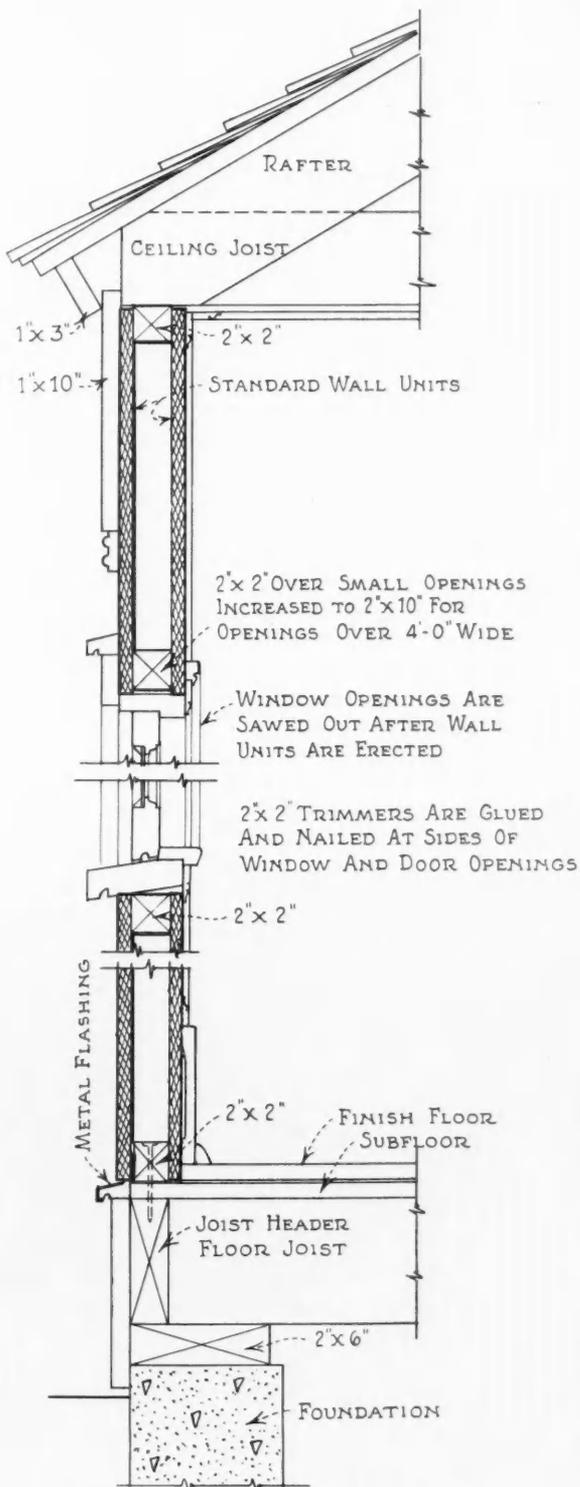
E. A. HORN, inventor and (left) pre-fabricated Douglas fir plywood wall units stacked at the building site ready for use.

square feet in four hours. On this sub-floor, along the lines of the exterior walls and partitions, the 1 5/8" square floor plates were actually spotted and nailed.

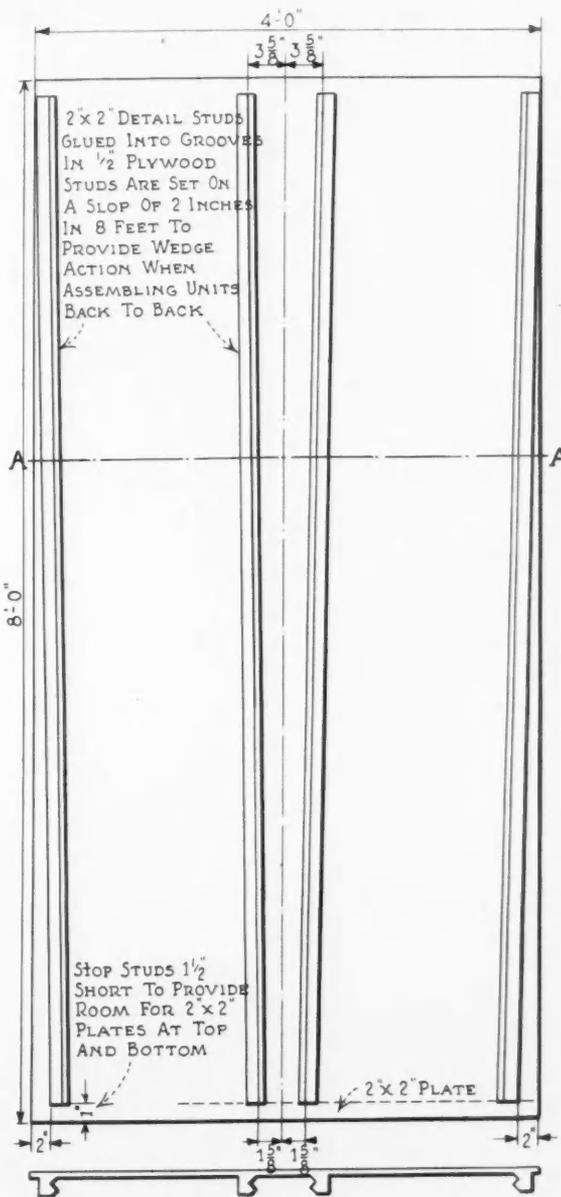
The normal method of starting the erection of walls is to remove the outside rib from one of the stock panels and to nail on a vertical rib flush with the edge. This operation actually takes a man about two minutes. The panel is then set vertically on the floor plate at one corner of the building and toe-nailed with suitable bracing as in any other framing method; the bottom of the panel ribs bear on the floor plate while the plywood fits

flush against the outside of the plate and rests snugly on the sub-flooring. In line with this panel, and butting tightly against it, is placed the second panel. Another unit is now inverted, lifted two feet or so off the floor and fitted symmetrically over the joint of the two panels already erected, and slid down into proper bearing on the floor plate, its ribs locking securely with ribs of the other units. Casein glue is brushed on the edges of the ribs of the interior panels to give added strength to the joints.

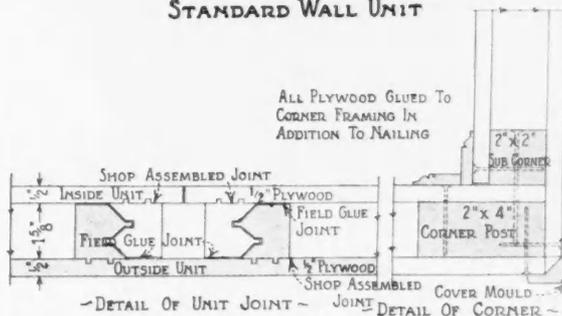
Additional panels are then placed alternately on the



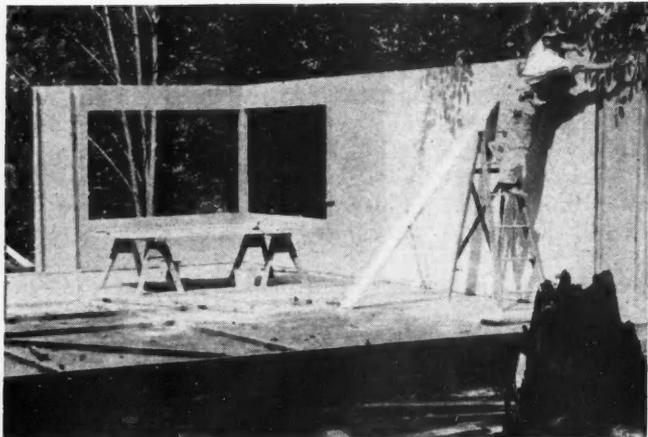
CONSTRUCTION DETAIL OF HOUSE WALL, FOUNDATION TO ROOF



SECTION THROUGH A-A STANDARD WALL UNIT



DETAILS of Horn Wall Units and how they are used in one-story wall construction.



SHOWING how walls are erected. The far corner was started with a window opening and then continued with regular wall units.

outside and inside along the plate until the corner is reached. Obviously if the outside dimension of the wall is an even multiple of four feet, the last exterior panel will exactly finish the outer surface; otherwise the last unit is cut to proper width with a saw. The inner surface at each end of the wall, however, must be filled out with a unit cut to proper width.

In this particular house the design called for rather large window openings on both sides of the starting corner. Accordingly, it was decided to prefabricate two complete wall sections each 8' wide, to include these openings and at the same time provide a good starting place for the standard wall-units. These were handled with ease by two men. The remaining 20 feet of wall was erected following the procedure already described. To turn the corner at the rear bedroom, the outside rib was ripped off a stock panel so that the plywood might lap over and be nailed to the corner post on the wall already in place. Alternate exterior and interior panels were then aligned over the floor plate to complete the rear wall. The same technique was used without difficulty in erecting all of the remaining walls and partitions.

As soon as each straight run of wall or partition was

completed the top plate was fitted into the groove between the plywood surfaces to rest on the top of the various ribs with its top flush with the top of the panels. This plate is preferably glued and nailed in place to provide maximum stiffness; it serves, of course, as support for the ceiling joists and rafters.

The remainder of the house followed conventional practices in general. In line with the desire to minimize erection costs, Douglas fir plywood was used for roof sheathing so that the entire structure was enclosed with plywood—sub-flooring, wall sheathing both inside and out, ceiling, and roof sheathing.

The exterior walls were covered with red cedar shakes, for which the 7/16" plywood was found to provide a substantial and entirely adequate nailing base.

Only the absolute optimist would have expected this first demonstration house to be erected without some difficulties. As a matter of fact, there were several; but fortunately all were overcome rather easily. Near the end of the first wall, for example, trouble was experienced in sliding one of the panels down to its proper place so that considerable pounding with a maul was necessary for these first panels. However, glue was being applied to the ribs of the panels erected for the outside wall surface, as well as to ribs of panels being erected for the inside surface. As a consequence, the glue was setting too rapidly on the exterior units, thereby creating tremendous friction between the ribs when the interior units were being slid into place. By confining the gluing to the interior units, just before they were erected, most of the binding action was eliminated. It was decided, however, that still better results might be secured simply by allowing a little more tolerance in the spacing of ribs on the panels at time of shop fabrication.

Another detail that was expected to need modification was the joint between panels. When openings were cut for windows at one of these joints it was found that a filler was desirable to align the plywood in adjacent sheets and to add stiffness along the joint line. One 2" x 2" x 8' long at each panel joint took care of this.

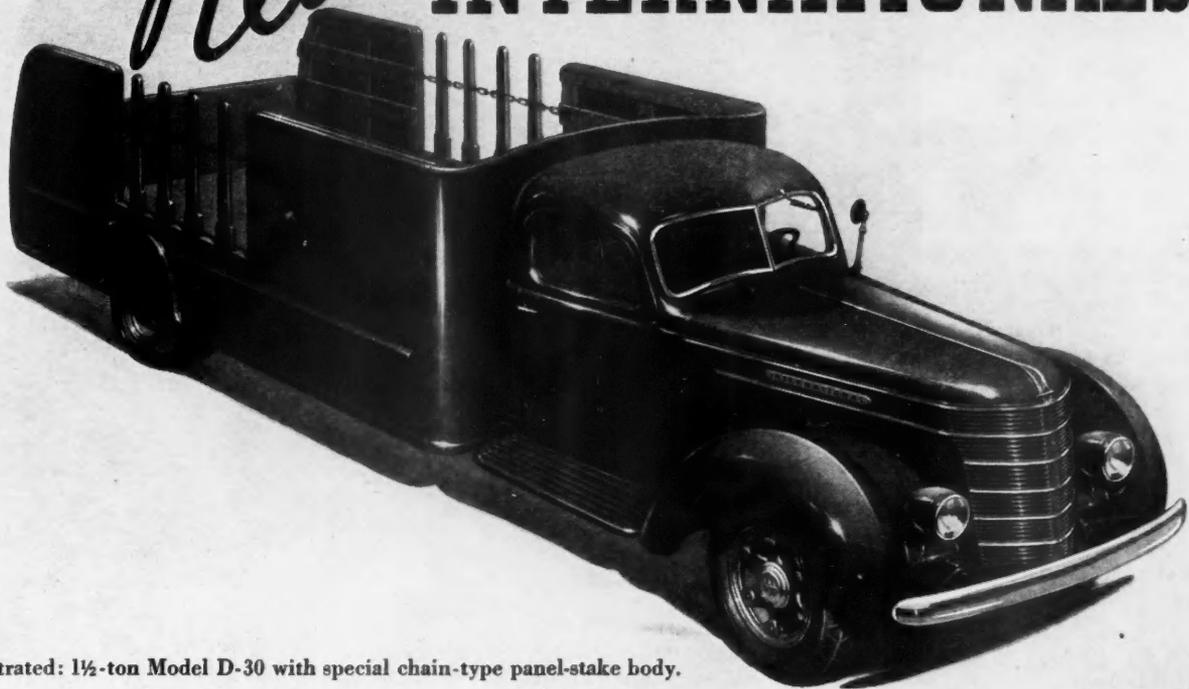
Just after the walls and partitions had been completed they were subjected to an unwelcome and severe test in

(Continued to page 84)



VIEW of the completed home in Seattle, Washington, built with the Horn Interlocking Douglas Fir plywood wall units. While the exterior walls of this particular house are covered with royal red cedar shingles, any type material can be used over the plywood sheathing. The outstanding feature of this type of construction is that it permits complete flexibility of design, length of walls and partitions.

THE *New* INTERNATIONALS



Illustrated: 1 1/2-ton Model D-30 with special chain-type panel-stake body.

STYLE has the spotlight these days in the new International Trucks. Streamlined style may be *everything* the public sees when your trucks are on the road, but in your own mind the many improvements built into these trucks are even more important. Improvements *designed* into them from the drawing board up, from the laboratory out. Qualities that will show on the job during the truck's long life, *and be*

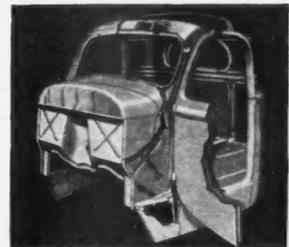
even more evident on the books of your business.

You can accept these beautiful trucks—a *completely new* line, ranging in sizes from Half-Ton to powerful Six-Wheelers—either on faith, based on International's 30-year success with trucks, or on a careful study of their modern engineering. Or on *both*. Examine these trucks at any International branch or dealer showroom.

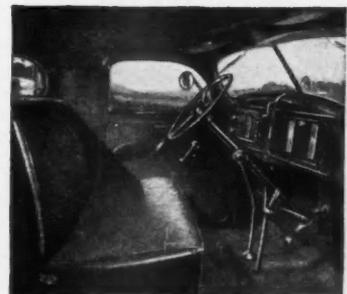
INTERNATIONAL HARVESTER COMPANY
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Beautiful, streamlined International Pick-Up Trucks are also available in Half-Ton to One-Ton capacities. Pick-Up bodies in three sizes: 76, 88, and 102 inches.



Section of the ALL-STEEL cab—in ALL the new Internationals! The one-piece top, the sides, the back and cowl panels are welded into the complete cab frame. The one-piece heavy-gauge sill is an exclusive International feature. Rubber mountings stand guard wherever cushioning is needed.



Interior of the roomy, well-appointed de luxe cabs in the new Internationals. Full-size door windows, sloping V-type windshield, and large rear window assure clear vision for safe driving. Deeply upholstered, adjustable seat and back cushions add to driver comfort.

INTERNATIONAL TRUCKS

STANDARD size Douglas Fir $\frac{1}{2}$ " plywood panel, showing the grooves into which ribs will be fitted and glued. In using $\frac{1}{4}$ " plywood the ribs are glued directly to the face without grooving, and short horizontal stiffening ribs are added. To right: Sliding an interior wall unit into position. Exterior and interior units are identical, but those for the interior are inverted, to interlock with the exterior.



the form of an all-day down-pour. All of the panels, including the sub-flooring, however, came through this storm without the slightest trace of buckling, blistering, shrinkage, or other weakness, a fact that augured well for the adequacy of this new type of construction.

One of the interesting features of this attractive new house is the special plywood panels used in the dining nook. These panels, finished in western red cedar with a Douglas fir center, were admired by visitors fully as much as were the attractive fir panels.

In the exterior design of the house the builder was fortunate in receiving assistance from one of the best known architects in the Northwest, George Wellington Stoddard, A. I. A. who has been a keen student of plywood application for many years, and has designed and built scores of houses in Seattle and vicinity.

Costs on a single example of a new construction method are seldom of great significance but figures on the actual time spent in fabricating the panels and in erecting them on the job are nevertheless of considerable interest. The methods employed in a small shop were necessarily non-production methods, yet despite the handicap of a new technique and of fabricating for only one structure, 170 wall units, 4' x 8' in size, were completely fabricated by one skilled carpenter and one helper in 18 hours.

Erection time averaged better than 20 linear feet of wall per hour for the same two men. Openings were cut out with a hand portable electric saw, averaging about 20 minutes per opening. If carpenter labor is assumed at \$1.00 per hour and 50c for a helper, rough estimates show that total labor costs for all wall and partition panels in place were approximately ten (10c) cents per linear foot of wall.

The possibilities thus opened up for skilled crews using production methods should prove interesting to every builder and every retail lumber dealer and material man in the country. From the interest stimulated locally in this new building method it appears that a

considerable volume of local business could be had without undue effort and production methods would soon be necessary.

Standard stock materials are used in making the units, i.e. simple stock Douglas fir plywood panels, and 2" x 2" lumber machined to a simple pattern. The finished wall-units are in one standard size. The walls resulting from the use of these interlocking units are rigid and strong, have numerous dead air spaces lined on both sides with a plywood sheet which is totally impervious to air leakage, and furnish at the same time both the exterior sheathing (or finish if desired) and interior finished surface, and yet can be built at large savings in both material and labor over present methods.

This new type unit was developed and patented by E. A. Horn, of Seattle. Its history goes back to 1929 when Horn was employed as detail draftsman by the American Portable House Corporation of Seattle. His development is the direct result of efforts to simplify sectional building construction.

The experimental work on the unit construction was long and varied and at times very discouraging to the young inventor. At first he employed some steel in the structure, but later eliminated it for the sake of absolute flexibility and the desire to get away from any construction that the ordinary carpenter could not take care of with his usual tools. Practical carpentering experience was of material advantage to Horn—he was a carpenter foreman in construction of the model construction town at Grand Coulee Dam.

From the experience gained in construction of the first completed house in Seattle, Horn is making some slight modifications and improvements in his technique before starting on a second house which will be described in an early issue of this publication. These changes in no way alter the basic idea of a standard unit for outside and inside walls without extra framings or finishes of any kind.

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

Insulation—Air Conditioning

By R. E. BACKSTROM*

THERE is a definite need for air conditioning if man is to enjoy comfort and good health in all seasons. Man's average daily diet consists of 3 lbs. of food, 4 lbs. of water and 34 lbs. of air. It is claimed that 60 percent of man's energy is supplied by the 80 percent of his diet which is provided by air. Air conditioning, as we understand it today, must provide five distinct treatments of air to improve his diet.

In winter the conditioning system is expected to do these things: 1. Heat; 2. Humidify; 3. Filter; 4. Circulate; 5. Ventilate.

In summer it is expected to 1. Cool; 2. De-Humidify; 3. Filter; 4. Circulate; 5. Ventilate.

The heater can be one that generates steam, heats water or heats air. Incorporated with it or as a separate unit, a device for humidifying the air is required. The heater should contain filters, either dry or moist, for cleaning the air of soot, dust, infectious droplets and pollen. It must have a fan attached to circulate the air and some provision for supplying a certain amount of ventilation to remove odors. The heating, humidifying and circulating parts must be automatically controlled.

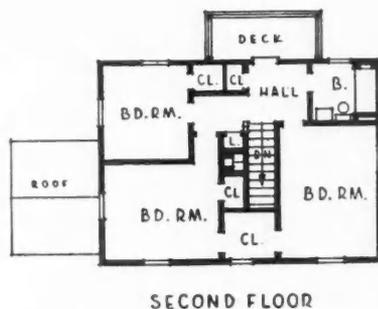
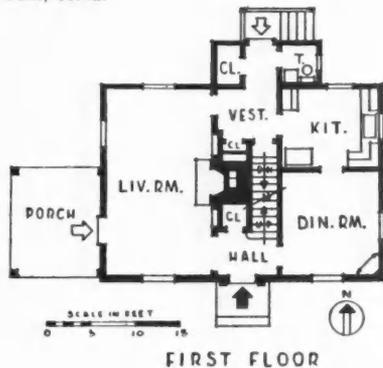
In summer, reduction of air temperature is handled

by coils through which brine, cold water or refrigerant is circulated. Close contact of air with the cold coils actually lowers the sensible temperature of the air. This part of the system functions exactly like a mechanical domestic refrigerator. Moisture is also removed by the cooling coils. Thus, the air is de-humidified and moisture is deposited on the coils in the form of frost.

The mechanism for all these treatments of air can be remotely located and the conditioned air delivered to the room through ducts, or part of the mechanism may be in the room itself as a "room conditioner." In the latter case the refrigerating unit may be in another room but the coils, fan and filter would be located in the room to be conditioned. Each system has its advantages and disadvantages. The duct method is best suited to homes and apartments whereas the unit system is often better for hotels, shops and offices.

Strictly speaking, and according to the Air Conditioning Manufacturers Association, air conditioning is: "The cooling, de-humidifying and circulating of air by an automatically controlled mechanical process." Such a definition was agreed upon by a representative group of manufacturers who formed the association.

*Manager Sales Engineering Department, Wood Conversion Co., St. Paul, Minn.



Exterior Walls: Wood siding exposed 8½ to the weather on side and rear walls, building paper, shiplap on 2 x 4 studs 16 o.c., plaster on wood lath; 4 brick veneer on lower half front wall; vertical siding on upper half front wall.

Roof: 16 plain shingles exposed 5' to the weather, over paper on tight roof boards.

Windows: Sash—double hung, wood.

Painting: Exterior walls and sash—3 coats lead and oil.

Color—White.

Heating and Air-Conditioning: Forced warm air, filtering, humidifying, cooling and de-humidifying by mechanical refrigeration.

Why Air Conditioning Needs Insulation

Why does air conditioning need insulation? There are several answers to this question. In the first place, insulation makes it possible to reduce the size and likewise the cost of air conditioning equipment. Therefore, the initial investment is less. Examples can be cited where the size of the heater has been reduced 25 percent by the use of insulation in walls and ceilings, and the size of refrigeration equipment reduced as much as 33⅓ percent. In dollars and cents the reduced size of heater and duct work may not be such an important factor, but a ⅓ reduction in the size of evaporating coils and compressor represents a substantial saving. In fact, the difference may well be the difference between a sale or no sale.

Another reason why air conditioning needs insulation is that operating costs will be reduced for the life of the building. The saving in reduced fuel, power and water bills will pay for the insulation within a few years. After that, the savings represent dividends which might be greater than the profit ratio of the business located in the building itself. Applied to a home, the savings would be even more appreciated.

Insulation in the walls and ceiling of a building makes for more uniform temperatures. While it is true that the method of heating by warm air is in itself an effective means of creat-

(Continued to page 88)

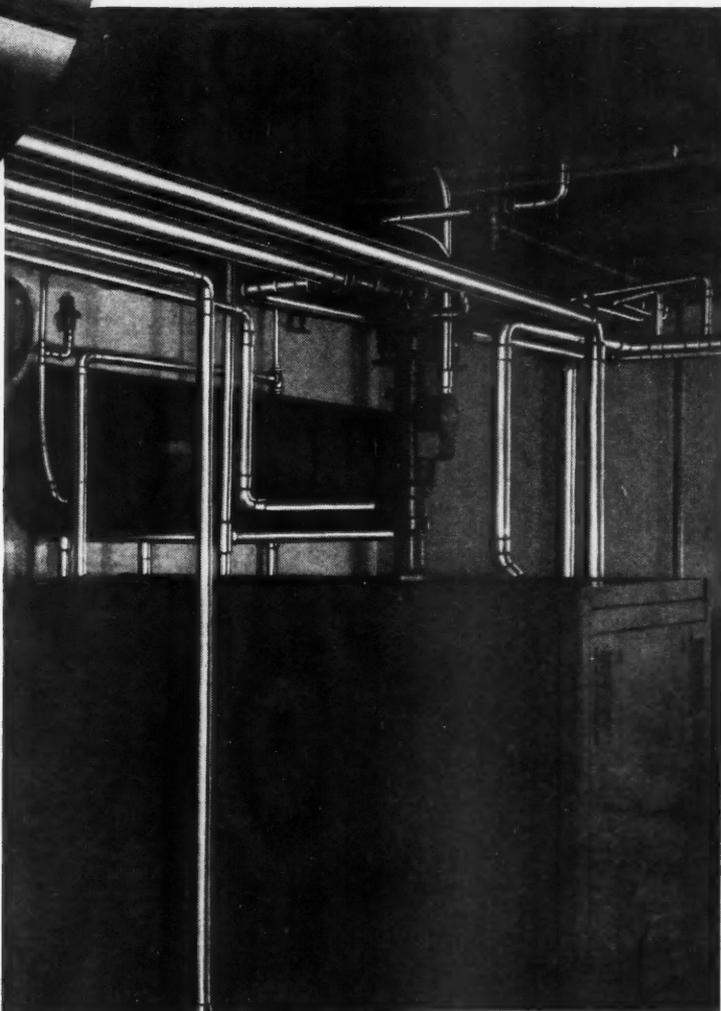
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ing an even distribution of temperature, yet walls and ceilings that dissipate heat readily will be the cause of drafts and discomfort that even the best air conditioning system is not able to overcome. Furthermore, tests and experience have proved that *cold* walls give room occupants a sensation of discomfort. This is true even though the air temperature may fall well within the comfort zone.

With cast iron radiator heat, the effect of cool walls is partially offset by direct radiation from the iron but with a warm air system the effect of cold walls is constantly noticeable. Houses heated by warm air need the heat confining barrier of insulated walls to give the necessary "fly wheel" effect when the system is temporarily stopped.

Since one of the functions of air conditioning is to supply moisture to air during winter months, it stands to reason that the walls must be built with a sufficiently low heat transmission coefficient to eliminate the possibility of surface condensation on cold walls. This automatically calls for well built walls in houses located in the northern zone. The perfect parallel for this condition is found in the use of storm sash which makes it possible to raise the humidity to 45 percent without the appearance of surface moisture, as compared with single glass when it is not possible to carry more than 15 percent relative humidity with zero outside and 70° inside without having condensation. Of

course, moisture on wall and ceiling surfaces is the source of much more grief than on glass, consequently, the construction of a wall must have a lower coefficient than that of a double glass area.

Air conditioning also needs insulation to reduce duct losses. In many installations it is necessary to carry the ducts through non-conditioned spaces. In winter this space robs heat from the air that was intended for other parts of the structure and in summer an additional load is thrown upon the cooling system. Insulation should cover all ducts which pass through non-conditioned rooms.

Specifying Insulation

When it is accepted that air conditioning needs insulation, which properties of insulation are most desirable? It must be acknowledged that air conditioning creates some conditions that have not existed in buildings up to this time. For example, in summer cooling the inside air temperature is approximately 15° lower than outside air. The absolute humidity corresponding to the inside temperature is frequently less than that outside; consequently, vapor pressure is inward. In winter, conditions are reversed with vastly greater temperature difference and also greater difference in absolute humidity with *outward* vapor pressure. Somewhere within the wall the temperature is below

(Continued to page 90)

Table I. Total Annual Heating Requirements
Annual Load Given in Mb (1000 Btu)

Insulation Between Framing Members	Wood Sheathing, Wood Lath			3/8" Nu-Wood Sheathing on Walls Only, Wood Lath			Wood Sheathing, 1/2" Nu-Wood Lath			3/8" Nu-Wood Sheathing on Walls Only, 1/2" Nu-Wood Lath		
	Annual Load	Annual Saving ¹	% Saving ²	Annual Load	Annual Saving ¹	% Saving ²	Annual Load	Annual Saving ¹	% Saving ²	Annual Load	Annual Saving ¹	% Saving ²
No Balsam-Wool	207,489			191,550	15,939	7.7	179,225	28,264	13.6	170,895	36,594	17.6
1/2" Balsam-Wool In Ceilings Only	185,426	22,063	10.6	169,487	38,002	18.3	165,645	41,844	20.2	157,314	50,175	24.2
1" Balsam-Wool In Ceilings Only	180,348	27,141	13.1	164,409	43,080	20.8	162,069	45,420	21.9	153,739	53,750	25.9
Wall-Thick Balsam-Wool In Ceilings Only	175,631	31,858	15.3	159,692	47,797	23.0	158,132	49,357	23.8	149,801	57,688	27.8
1/2" Balsam-Wool in Walls 1" Balsam-Wool in Ceilings	150,771	56,718	27.3	145,484	62,005	29.9	143,506	63,983	30.8	140,463	67,026	32.3
1" Balsam-Wool in Walls Wall-Thick B.-W. in Ceilings	138,104	69,385	33.4	135,099	72,390	34.9	133,482	74,007	35.7	130,991	76,498	36.9
1/2" Balsam-Wool in Walls 1/2" Balsam-Wool in Ceilings	155,850	51,639	24.9	150,562	56,927	27.4	147,082	60,407	29.1	144,038	63,451	30.6
1" Balsam-Wool in Walls 1" Balsam-Wool in Ceilings	142,821	64,668	31.2	139,816	67,673	32.6	137,420	70,069	33.8	134,928	72,561	35.0
Wall-Thick B.-W. in Walls Wall-Thick B.-W. in Ceilings	130,648	76,841	37.0	128,575	78,914	38.0	127,339	80,150	38.6	125,950	81,539	39.3

- NOTE: • Metal weatherstripping on windows and doors results in an annual saving of 13,732 Mb per season, under any of the above conditions.
• Storm sash on windows and doors results in an annual saving of 30,546 Mb per season, under any of the above conditions.
• Metal weatherstripping plus storm sash on windows and doors results in an annual saving of 44,278 Mb per season, under any of the above conditions.

¹Saving in Mb over the house with wood sheathing, wood lath, no Balsam-Wool.

²% saving over the house with wood sheathing, wood lath, no Balsam-Wool.

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COMFORT AND BEAUTY are built into the walls of this Forest Castle Night Club bar, Opelousas, La., with Temlok De Luxe. Architect, Owen J. Southwell.

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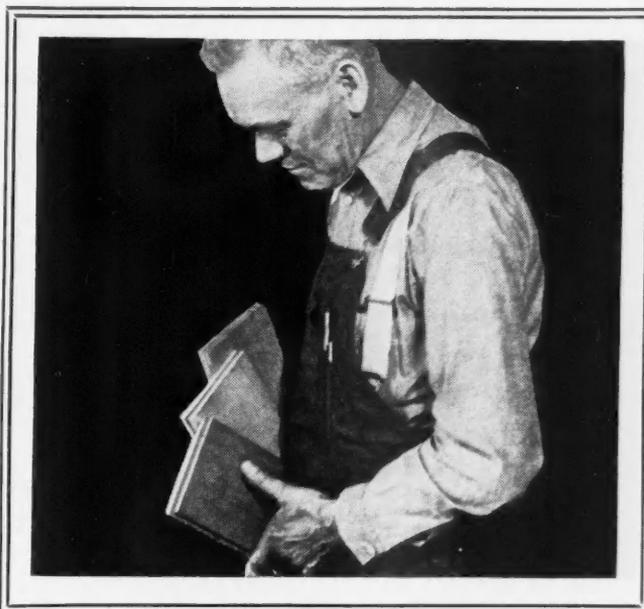
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the dew point and, consequently, moisture may collect. As a safeguard, insulating material should be one that will not readily absorb moisture and preferably it should resist vapor penetration.

An insulating material ought to be one that is permanent. To be permanent, insulating material must remain in place as originally applied. It should not be susceptible to deterioration either chemically or physically under the more severe moisture conditions that may exist. Failure of the insulating material means taxing the capacity of the equipment and might mean noticeable difference in comfort. Usually, selection of the equipment is not so finely drawn that larger loads cannot be handled for brief periods.

Since the exterior covering of a wall is rarely air tight it follows that the added protection of a wind proof insulation within the wall is highly desirable. This means that the actual and estimated results will be in closer agreement. Heat loss by infiltration through walls is not usually taken into consideration. Test values for building materials are based upon still air conditions. They are adjusted to wind velocity on the exterior surfaces of a wall or roof but do not consider heat loss by air leakage through the structure.

An insulating material for use in air-conditioned buildings must be efficient and it must be available in the thickness to fit the job. Much can be said on the subject of efficiency and thickness. These are properties of insulation that often lead to confusion because the values for materials themselves are not in direct proportion to overall values for the completed structure. Perhaps one of the best ways to determine practical effects of insulation is to study the results from the standpoint of winter heating and summer cooling in a typical

residence. An analysis has been made of the house shown on page 86. This is a typical two story, six room house, the shell of which is standard frame construction. The house has wood siding, all except the lower half of the south exposure which is brick veneer. The floor plan is as shown. The house faces south and is located in a climate having 7925 degree days.

This house has been analyzed for heating requirements with almost every conceivable combination of insulating board and flexible blanket. The complete summary of this analysis is shown in Table I. Data used in calculating the fuel requirements are as follows:

Net First and Second Floor Wall Areas: Siding	1201	Sq. Ft.
Brick Veneer	195	Sq. Ft.
First and Second Floor Window Area	212.3	Sq. Ft.
First and Second Floor Door Area	54	Sq. Ft.
First Floor Exposed Ceiling Area	54	Sq. Ft.
Second Floor Ceiling Area	713	Sq. Ft.
First Floor Area	705	Sq. Ft.
First and Second Floor Window Crackage	307.2	Lin. Ft.
First and Second Floor Door Crackage	55.3	Lin. Ft.
First and Second Floor Volume	10030	Cu. Ft.
Number of Degree Days in Heating Season	7925	

The figures given in the column under "Annual Load," Table I, represent the total Btu requirement, in thousands (Mb), for the entire season. For example, with no insulation between the framing members and with standard construction of wood sheathing and wood lath, the annual heating load is 207,489 Mb. This is net load without regard to kind of fuel or efficiency of the system. If it is desired to know the fuel requirements in coal, oil, or gas, this can be determined by dividing the "annual load" by the useful Btu per ton of coal, gallon of oil, or cubic foot of gas. For example, the coal required per season (for the house shown) without insulation, weatherstripping, or storm

(Continued to page 92)

Table II. Maximum Hourly Summer Heat Gain

Heat Gain Given in Btu

Insulation Between Framing Members	Wood Sheathing, Wood Lath			3/4" Nu-Wood Sheathing on Walls Only, Wood Lath			Wood Sheathing, 1/2" Nu-Wood Lath			3/4" Nu-Wood Sheathing on Walls Only, 1/2" Nu-Wood Lath		
	Heat Gain	Btu Saving ¹	% Saving ²	Heat Gain	Btu Saving ¹	% Saving ²	Heat Gain	Btu Saving ¹	% Saving ²	Heat Gain	Btu Saving ¹	% Saving ²
No Balsam-Wool	35,537			33,864	1,673	4.7	31,324	4,213	11.9	30,443	5,094	14.3
1/2" Balsam-Wool In Ceilings Only	30,682	4,855	13.7	29,009	6,528	18.4	28,209	7,328	20.6	27,328	8,209	23.1
1" Balsam-Wool In Ceilings Only	29,504	6,033	17.0	27,831	7,706	21.7	27,245	8,292	23.3	26,364	9,173	25.8
Wall-Thick Balsam-Wool In Ceilings Only	28,548	6,989	19.7	26,875	8,662	24.4	26,448	9,089	25.6	25,567	9,970	28.1
1/2" Balsam-Wool in Walls 1" Balsam-Wool in Ceilings	26,404	9,133	25.7	25,841	9,696	27.3	25,295	10,242	28.8	24,985	10,552	29.7
1" Balsam-Wool in Walls Wall-Thick B.-W. in Ceilings	24,615	10,922	30.7	24,278	11,259	31.7	23,858	11,679	32.9	23,632	11,905	33.5
1/2" Balsam-Wool in Walls 1/2" Balsam-Wool in Ceilings	27,582	7,955	22.4	27,019	8,518	23.9	26,259	9,278	26.1	25,949	9,588	27.0
1" Balsam-Wool in Walls 1" Balsam-Wool in Ceilings	25,571	9,966	28.0	25,234	10,303	29.0	24,655	10,882	30.6	24,429	11,108	31.3
Wall-Thick B.-W. in Walls Wall-Thick B.-W. in Ceilings	23,840	11,697	32.9	23,588	11,949	33.6	23,197	12,340	34.7	23,052	12,485	35.1

¹Saving in Btu over the house with wood sheathing, wood lath, no Balsam-Wool.
²% saving over the house with wood sheathing, wood lath, no Balsam-Wool.

THE
"OVERHEAD DOOR"

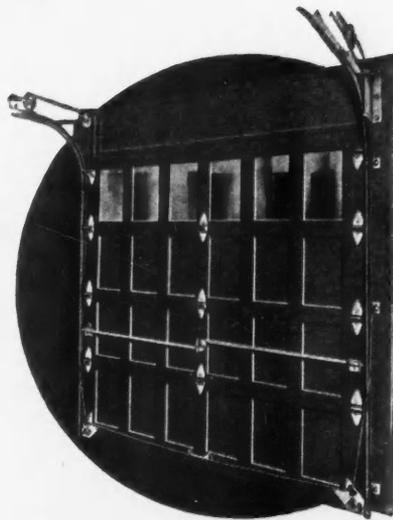
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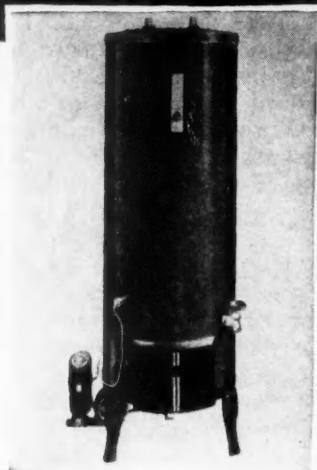
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AB-737



This Toridheet Water Heater is quiet, clean and dependable. No wicks, oil grooves or sleeves to require special servicing or cleaning. The fully insulated tank acts like a Thermos bottle to maintain temperature with use of minimum fuel.

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And there are other advantages to Medusa-Lite. This paint is thinned with water instead of expensive oils or turpentine. It dries to the touch in 40 minutes. Rooms can be painted and ready for use in a few hours. It can be brushed or sprayed on almost any interior surface. There are no objectionable odors with this paint. Medusa-Lite does not powder, peel or crack. You have a choice of seven attractive pastel colors and white, the latter having a 90% reflective value and does not turn yellow.

HOW TO PAINT CONCRETE, STUCCO AND MASONRY. These surfaces are all difficult to paint. The book shown above, "How To Paint Concrete, Stucco, Masonry and Other Surfaces" tells about Medusa Portland Cement Paint for these surfaces and Medusa Floor Coating for painting concrete floors, as well as giving a complete description of Medusa-Lite, the super flat wall finish.

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

Name

Address

City State

Your dealer's name

Insulation and Air Conditioning

(Continued from page 90)

sash is $\frac{207,489}{15,600} = 13.3$ tons. In this case the useful

Btu per ton of coal is obtained by assuming 13,000 Btu per pound and plant efficiency of 60 percent.

The first step in the consideration of insulation for a house of this kind might be the substitution of insulating board sheathing for wood sheathing. In this case, insulating board sheathing would be applied to the walls only, since the use of such material on roofs involves construction that is not always deemed practical. With this substitution we find that the annual load would become 199,500 Mb, which would represent a saving of 7.7 percent on the requirements for the entire house.

Substitution of 1/2" insulating lath for wood lath offers slightly greater saving. In this case the saving on the heating requirements amounts to 13.6 percent. This form of insulation can be used on the top floor ceiling as well as on all outside walls. If the combination of insulating sheathing and insulating lath is used the saving amounts to 17.6 percent.

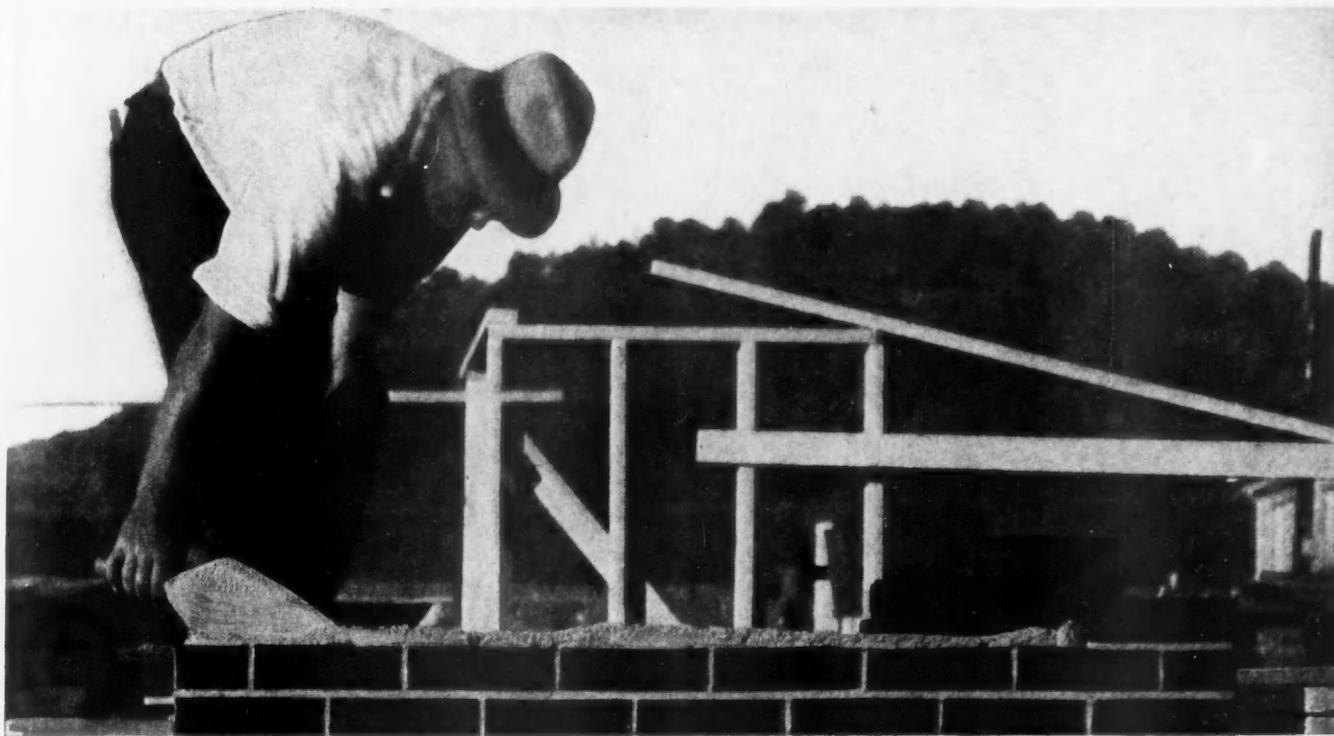
Sometimes the attic only is insulated between the ceiling joists or roof rafters. In this study we have considered the results from 1/2", 1" and 2" flexible blanket applied between the ceiling joists. Comparison of thickness is extremely interesting. Note the saving of 10.6 percent with 1/2" flexible, 13.1 percent with 1", 15.3 percent with 2". This immediately suggests the application of a rule which everyone recognizes as the law of diminishing returns. We see that doubling the thickness from 1/2" to 1" results in a gain of 2.5 percent, doubling from 1" to 2", a gain of 2.2 percent. The analysis is carried out for these three thicknesses, used in the attic only, in combination with insulating sheathing and lath. Inasmuch as the heat loss through the roof of this house represents 21.3 percent of the total loss and the walls represent 32.3 percent, it is reasonable to believe that if we insulate both ceiling and walls the saving can be more than doubled. This theory is borne out by the figures showing a saving of 24.9 percent when 1/2" flexible insulation is used in the walls and ceiling with standard construction of wood sheathing and wood lath. Again, we get diminishing results from increasing thickness. A saving of 31.2 percent results from the use of 1" flexible blanket in the walls and ceiling, increasing to 37 percent when 2" blanket is used.

The maximum possible saving in total fuel requirements was found to be approximately 39 percent with the combination of insulating sheathing on walls plus insulating lath and 2" of flexible blanket in walls and ceiling.

Nothing yet has been said about the savings that result from weatherstripping or storm sash. In this particular residence, saving from weatherstripping has been calculated to be approximately 7 percent, and approximately 14 percent from storm windows, or a total of 21 percent for this combination. That saving is in addition to the figures shown in the Table and can be added directly to the percent saving accruing with insulation. In other words, the gross savings on this house insulated with 1" flexible blanket throughout and all openings protected with weatherstrips and storm sash amounts to 52 percent; and 58 percent with 2" flexible blanket.

A similar study was made to determine the maximum hourly heat gain in summer for the various combina-

(Continued to page 94)

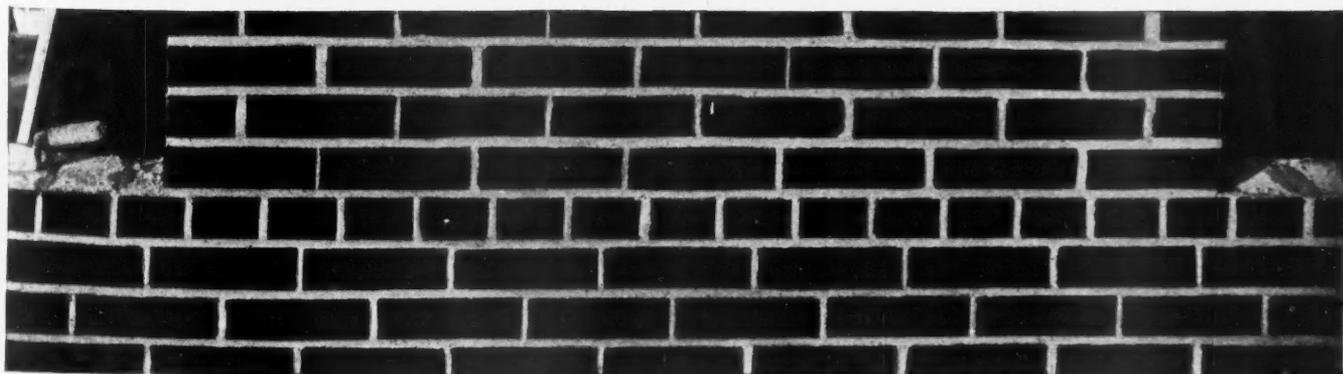


BRIXMENT has **Extremely High WATER-RETAINING CAPACITY**

THE rate at which moisture is removed from the mortar by the brick has a marked effect on the bond strength and water-tightness of the wall. Unless a mortar has high water-retaining capacity, it is too quickly sucked dry when spread out on porous brick. This prevents a good bond, and encourages shrinkage cracks between the brick and the mortar. Brixment mortar has

extremely high water-retaining capacity. This keeps the brick from sucking the water out of Brixment mortar too fast, and prevents the mortar from losing its fine plasticity when spread out on the wall. This, in turn, permits a more complete bedding of the brick and an increased area of contact between the brick and the mortar. The result is a better bond, and a more water-tight wall.

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Back of this information service is the research and testing laboratory, constantly at work evolving improved equipment, testing equipment of manufacturers, suggesting improvements to raise equipment efficiency.

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(SEE ADVERTISEMENT ON OPPOSITE PAGE)

Pennsylvania
ANTHRACITE
COAL

THE SOLID FUEL FOR SOLID COMFORT

Insulation and Air Conditioning

(Continued from page 92)

tions of insulation. Results are shown on Table II.

This study is on an hourly basis because variations in wet and dry bulb temperatures from year to year make it impractical to project heat gain over an entire season.

The data used in calculating heat gain are as follows:

Design Temperatures:

Outdoor:	Dry Bulb	95° F.
	Wet Bulb	75° F.
Indoor:	Dry Bulb	80° F.
	Wet Bulb	67° F.

House Faces:

Net Wall Areas:	South:	
	North:	368 Sq. Ft.
	East:	303 Sq. Ft.
	South:	167 Sq. Ft.
	West:	195 Sq. Ft. (brick)
		363 Sq. Ft.

Glass Areas:

	North:	47.3 Sq. Ft.
	East:	41.0 Sq. Ft.
	South:	87.5 Sq. Ft. (includes door—20 Sq. Ft.)
	West:	56.5 Sq. Ft.

First and Second Floor Door Area:	34 Sq. Ft.
First Floor Exposed Ceiling Area:	54 Sq. Ft.
Second Floor Ceiling Area:	713 Sq. Ft.
First and Second Floor Volume:	10030 Cu. Ft.

Color:	Walls—white; Roof—natural wood
Awnings:	None
Shades:	Light Color
Latitude:	45°
Occupancy:	Eight persons
Infiltration Rate:	167 cfm

Under these conditions we see that insulating sheathing substituted for wood on walls results in a saving of 4.7 percent; insulating lath, 11.9 percent; and the combination of insulating sheathing and lath, 14.3 percent. This saving is not as great as it was in the case of winter heat loss due primarily to the fact that the greatest heat gain in summer is through the roof which is exposed to direct rays of the sun. In short, insulation placed between the ceiling joists has greater effectiveness in stopping heat entrance than in preventing heat loss.

The heat gain figures may be converted into tons of refrigeration by dividing by 12,000, the heat equivalent in Btu of one ton of refrigeration for one hour. In other words, this house without insulation would require equipment of 3-ton capacity whereas ceiling insulation alone will reduce this to approximately 2½ tons, ceiling and wall insulation to approximately 2 tons. The lesser differences that occur with combinations of insulating board sheathing and lath may not be realized as a saving in investment in the purchase of refrigeration equipment but will be apparent in reduced operating costs.

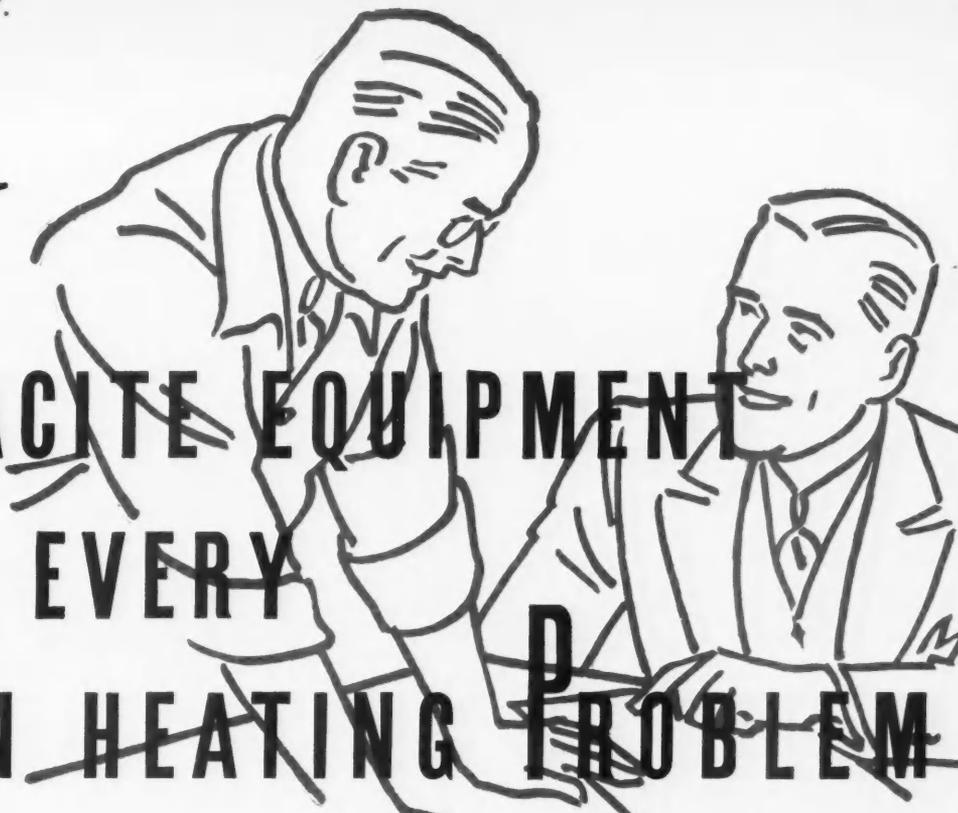
Summary

Air conditioning needs insulation to (1) reduce first cost of equipment, (2) reduce operating cost, (3) make temperatures uniform, (4) eliminate surface condensation, (5) reduce duct loss.

Considering a typical air-conditioned two-story, six-room residence, we find that insulation results in an annual heat saving ranging as high as 39 percent. Storm windows and weatherstripping increase this another 21 percent. From the standpoint of summer cooling, insulation will reduce the load as much as 35 percent and equipment size can be reduced in proportion. Thus, the importance of insulation is illustrated, and we have answered the question of what properties of insulation are desirable. We have seen that air conditioning appeals to the health and comfort of people. When the man on the street learns more about what true air conditioning does he will patronize the restaurants and shops equipped for comfort, and he will demand that the home he buys be air conditioned.

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ANTHRACITE EQUIPMENT SOLVES EVERY MODERN HEATING PROBLEM



THERE is a significant story back of the tremendous upward sweep of automatic Anthracite heating equipment and air conditioning.

It's a story to which architects and builders are paying a lot of attention. Because not only does this new equipment mark a decided advance in all automatic heating, it also permits installation economies ... with better, cleaner heating into the bargain.

There are three important reasons why Anthracite heating equipment should be incorporated in building plans. (1) Anthracite offers a wide range of equipment to fit any budget ... from a simple inexpensive

heater with a thermostat, providing automatic heat ... to an all-season firing and ash-disposal installation. (2) Firing periods, with even the simplest adequate installation, are stretched to 12 hours. Magazine feed heaters require no attention over 24 to 48 hour periods. The most automatic equipment feeds fuel right from the bin, and removes ashes all season long. (3) Any basic Anthracite equipment may be used with air conditioning.

Call upon the services of the Anthracite Industries' Field Organization to help with any problem affecting Anthracite heating. There is no obligation. Write ANTHRACITE INDUSTRIES, Inc., Chrysler Building, New York.

This seal appears on Anthracite equipment only after it has passed the most rigid tests in the heating field.



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Useful Steel Expansion Chart

THIS chart will be found useful by builders for determining the expansion in steel beams, columns, struts, piping, rods, tubes, chains, etc., for any ordinary temperature difference. It makes "longhand figuring" unnecessary.

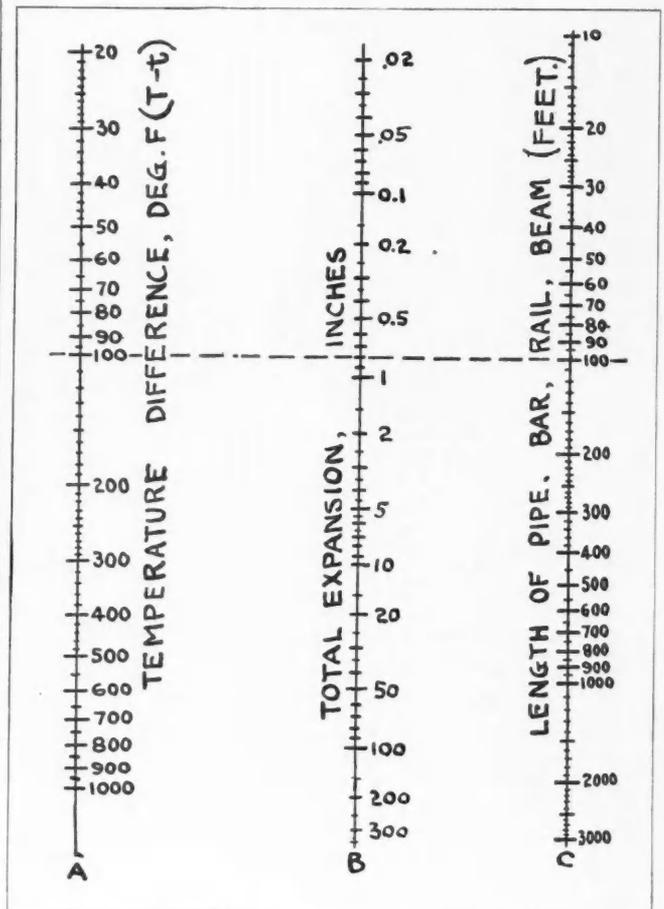
Simply lay a straightedge across the chart once or stretch a fine black thread across, as indicated by the dotted line, and the problem is solved.

Thus if a certain pipe line 100 ft. long is subjected to a temperature variation of 100 deg. F., what will be the total expansion in inches?

Simply connect the 100 deg. temperature difference, column A, with the 100 ft. length, column C. The intersection with column B gives the answer at 0.8 in. That is all there is to it.

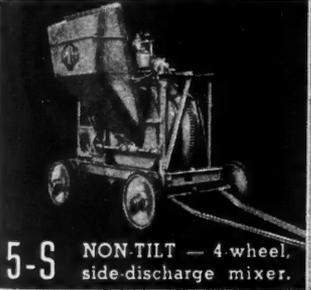
Also, if the factors in columns A and B or B and C are known, the unknown in column C or column A is immediately found. In other words, if any two of the factors are known the third is quickly found, and without any computing whatever.

The range of the chart is wide enough to care for almost any expansion or contraction problem. The temperature difference, column A, varies all the way from 20 deg. to 1000 deg. Seldom if ever do we have as high a temperature as 1000 deg. The length of pipe line, also, is great, varying all the way from 10 ft. to 3000 ft.—W. F. SCHAPHORST, M.E., Newark, N.J.



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Philippine Mahogany

Added Much to Value and Only \$200 to Cost



The beautiful woodwork in this library is Philippine Mahogany. Residence of Mrs. Walter S. Zimmerman, Portland, Oregon. Harold W. Doty and Wade Pipes, architects.

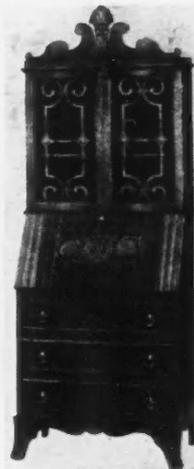
FOR little more than the cost of an ordinary softwood, Philippine Mahogany enabled the designers of the Zimmerman residence to achieve a rich effect. In the library pictured above, Philippine Mahogany is used for paneling, for the fireplace mantel and for the bookcase. In the principal rooms, hall and stairway, Philippine Mahogany is used for doors and trim.

The cost of using Philippine Mahogany in this home was only \$200 more than the cost of a common soft-wood. This small extra sum has added greatly to the value of the house.

The architect or designer who specifies Philippine Mahogany gives his client the greatest possible value, and he knows he is using a wood that expresses beautiful designs at moderate cost.

Philippine Mahogany has a rich appearance—and its striking ribbon grain is much sought after.

As pointed out by E. F. Saucerman, the builder who installed Philippine Mahogany in the Zimmerman home, "This wood works easily, machines readily, and takes a high finish."



Beauty and utility commend the use of Philippine Mahogany for furniture. This wood has fine texture and hardness, and its beautiful figure is highly prized by furniture and cabinet makers.

Philippine Mahogany

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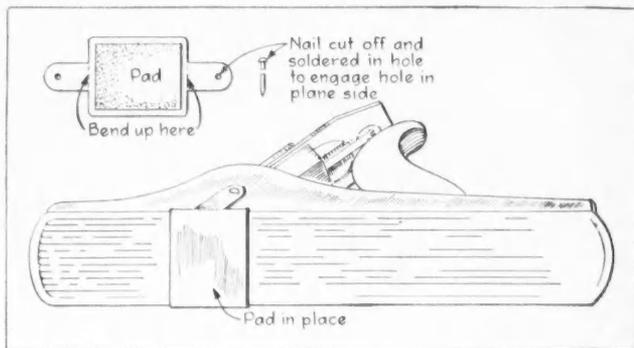
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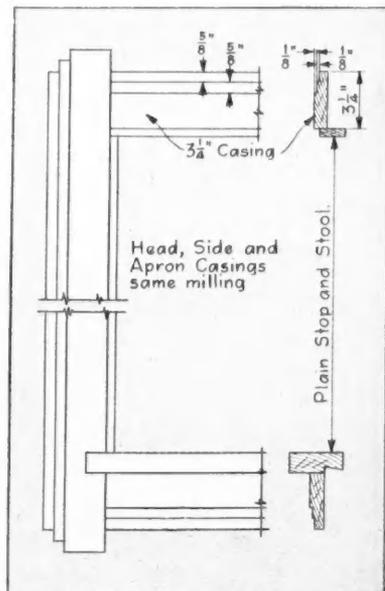
PADDED metal guard protects cutting edge of plane.

Modern Door and Window Trim Is Easily Made on the Job

ENCLOSED is a sketch of a new style door and window trim which we have just used in the finishing of a new home on the Bay Shore road near Fradenton, Fla. Some of your readers may be interested in "modern" designs.

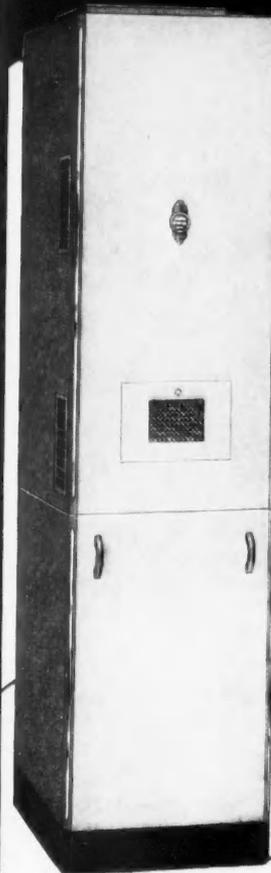
This is one of my own designs, and the trim was made on the job by myself and another carpenter, using a 4-inch jointer, an 8-inch circular saw, and 1" x 4" stock. The narrow effect of the trim turned out quite well. One good feature of this method (making the trim on the job) is that it is so much straighter and therefore easier to put on than the stock trim that happens to be warped when delivered.

We cut the 1" x 4" to the approximate lengths that we needed, ran them through the jointer to straighten one edge. Then gauging from the straight edge they were run through the rip saw and the other edge jointed. Finally the two rabbets were cut on the jointer.—ED KIGER, Myakka City, Fla.



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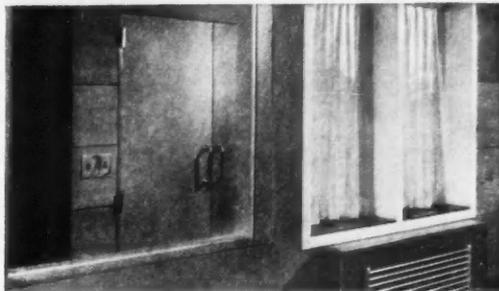
The cabinet contains complete heating unit, blower, gas pressure regulator and all control equipment. Write for complete details.

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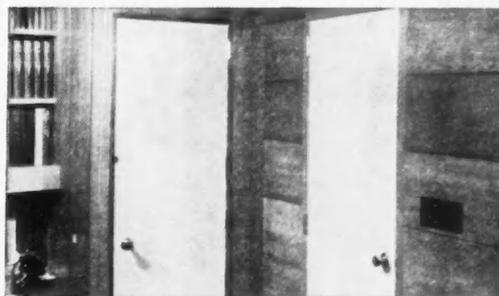
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● The bathroom walls are MASONITE TEMPERED PRESWOOD. Two are enameled and two are clear-varnished to produce a smart two-tone color scheme.



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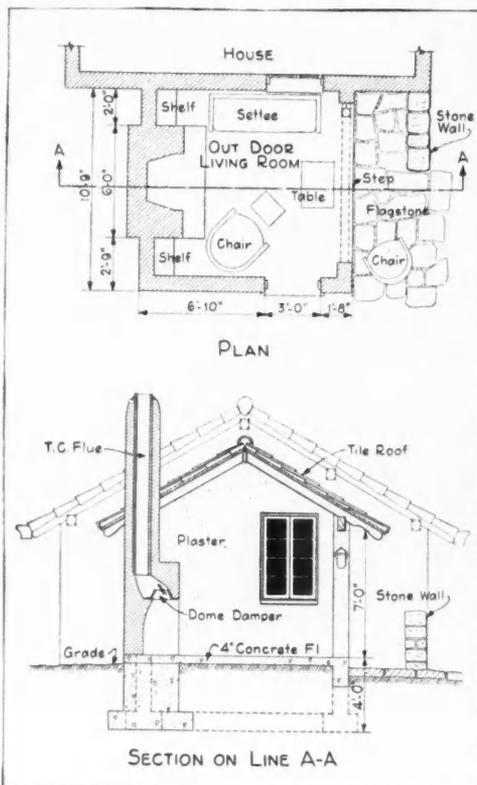
Detroit, Mich.



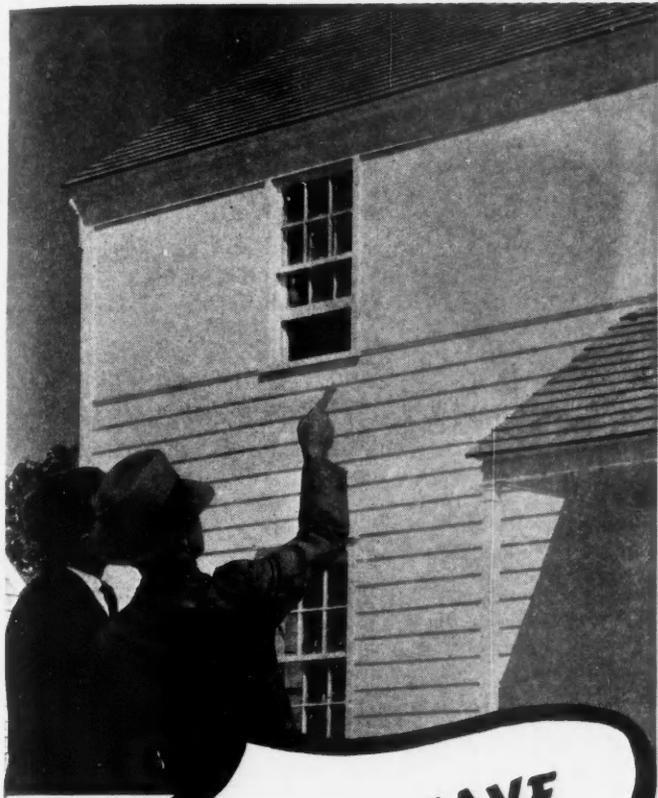
FRONT COVER Outdoor Living Room

THE PLEASANT spot pictured above and in L. E. Arent's front cover painting is a part of the house owned by L. A. Sharrad of Palos Verdes, Calif. It provides a quiet, restful corner for outdoor relaxation such as would be enjoyed by any home owner. Where the building site lacks sufficient width this feature could be built as a separate unit and placed to the rear of the lot as a garden shelter.

A plan and cross section below indicate the arrangement and construction of such a project. It is designed in keeping with the house; if built as an addition, the style should be in harmony. The fireplace is both decorative in appearance and useful for outdoor grilles and picnic suppers. Shelves provide places for ornamental bric-a-brac. The design was done by Architect A. F. Withey; Geo. E. Miller was the contractor.



Plan and cross section of the outdoor living room illustrated above and on the cover.



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EAGLE pure WHITE LEAD
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doesn't crack or scale



CHOICE OF
GOOD PAINTERS
SINCE 1843



• This is the way one building contractor puts it: "After trying other paints, I always come back to Eagle White Lead!"

There's a reason—this time-tested pigment outwears ordinary paints—costs less per square foot per year. Eagle White Lead is chemically active—when mixed with linseed oil it produces a paint film that anchors deep in the wood. It's an elastic film, too—it expands and contracts with the surface it is applied to.

Play safe—specify Eagle Pure White Lead for all the properties you build.

THE EAGLE-PICHER LEAD COMPANY • CINCINNATI

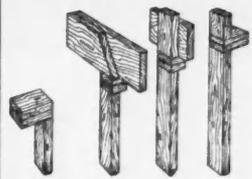
... for
ECONOMY
plus
SOUND
CONSTRUCTION

**ADJUSTABLE
BEARING PLATE
and STUD-TIES**

● Enclose Openings cut for Air Ducts and Plumbing with Reinforcing Bands of Steel ●

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

THE OLD WAY

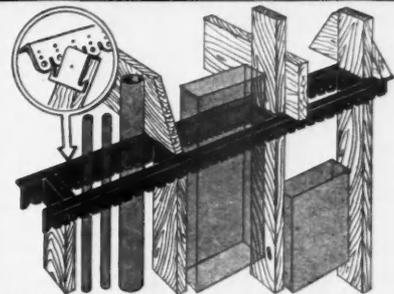


Notice how lateral tie is lost to permit passage of pipes and ducts. This method weakens construction.

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

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

THE NEW WAY



Note how Adjustable Bearing Plate allows ducts and pipes to pass through reinforcing bands of steel. Securely locks studs in place. Rigid construction!

ERECTED BY
**THE
CARPENTER**

Write or Wire
for
Full Information
Installation
Details, etc.

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

ADJUSTABLE BEARING PLATE CO.

11 Rutger Street

St. Louis, Mo.
A. I. A. FILE NO. 14-J

TRUE STORY

right from Hollywood

A half-million feet of the Western Pines helped this Hollywood star builder sell 128 homes in two years.



I'll stick to the Western Pines, thank you. I want my buyers to stay sold on the homes I build.

WILLIAM MELLENTHIN

12021 Ventura Blvd., Hollywood, California

Builder Mellenthin of the movie capital swears by the Western Pines. He's found their use as sheathing, for example, stops those after-the-sale complaints of cracking plaster and out-of-line doors. He insists on their use in all doors, for then they swing true on cabinets, closets, entrances. He's found that they take to paint like an artist's palette, hold the lustre and smoothness for years both inside and out.

The Western Pines Will Do Your Next Job Better * Try Them**

● Western Pine Association, Yeon Building, Portland, Oregon.

*Idaho White Pine

*Ponderosa Pine

*Sugar Pine



These are the Western Pines

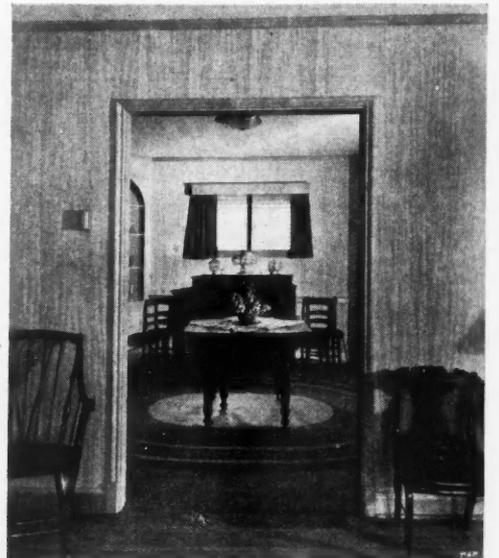
New Products Now Offer More Efficiency, Beauty and Economy in Building

THE many new developments which are taking place in practically every line of building products are of particular interest to the alert builder who is constantly looking for means of increasing the attractiveness of his buildings and giving more value for the money.

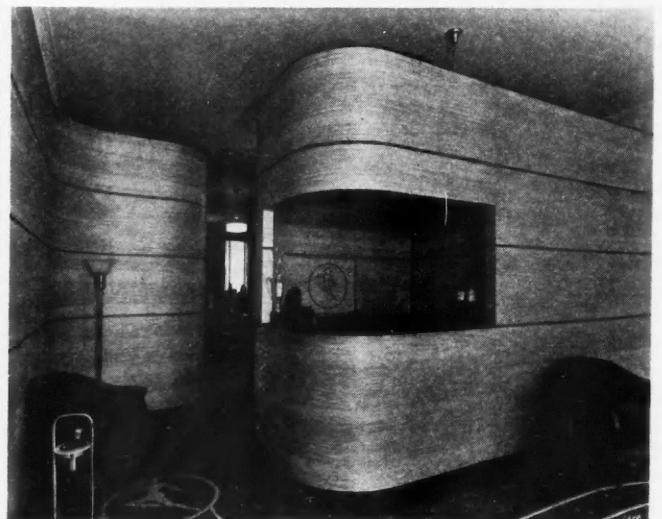
Along these lines the office, shop or home can now be transformed almost overnight at low cost into a natural wood paneled interior through the use of a new, beautifully decorative panel which has been placed on the market by the Algoma Plywood & Veneer Company of Chicago under the name of Carstenite. This material which has a surface of real wood bonded to fibre board with a waterproof resin, is intended for wainscoting, wall covering, window backgrounds, furniture, or any other use where panels of beauty and durability are required. The product, which is furnished in 21 different cabinet veneers, is recommended by the manufacturers for all interior decorative purposes where it is desired to show attractive wood surfaces at moderate expense.

The base is a wood fibre board—grainless, non-warping and non-splitting—which can be worked in all the ways that ordinary wood can be worked, and which will moreover bend readily under suitable treatment to form curved surfaces. The

(Continued to page 104)



RIGHT: Carstenite in a hall and dining room. Architect, Chester Pope, Chicago. BELOW: Josef's Beauty Shop, Chicago, shows Prima Vera Carstenite on curved wall surfaces.

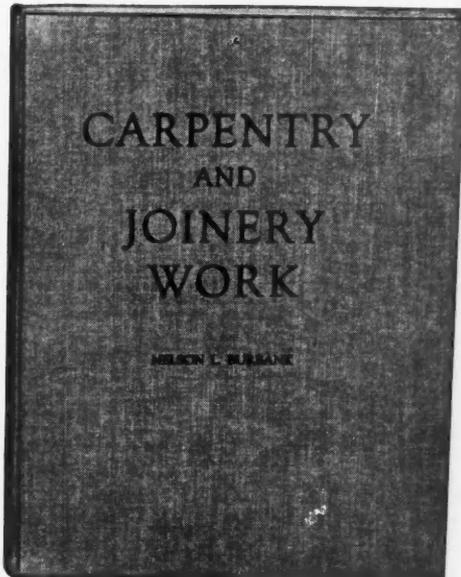


Second Edition

CARPENTRY and JOINERY WORK

By Nelson L. Burbank

Formerly Instructor, Building Vocational High School, Cincinnati, Ohio



The new edition has been thoroughly revised.

The manuscript was carefully checked by a former contractor and ex-editor so that this book combines the practical outlook with the author's trade teaching experience. The cardinal principles of modern residential construction are set forth simply and logically with the aid of many photographs and line drawings. The Second Edition contains 90 revised pages with new illustrations and descriptions of new methods and materials.

The program of study as presented in this latest textbook for students of carpentry work involves class discussion, practical job work and related studies. These include Architectural Drawing, Plan Reading, Carpentry Mathematics, Business English, Applied Science, Civics and First Aid.

This book will be very useful to any man entering the home building field. Contractors can safely recommend it to apprentices and rough carpenters who wish to improve their knowledge of the work. The complete index makes it useful as a general reference book. Having a copy handy will help explain a piece of work.

Chapter Headings

Tools and Equipment—Tool Boxes—House Plans—Excavations—Foundation Forms—Foundations—Sills—Girders—Floor Joists—Sub-Flooring—Outside Framed Walls—Inside Framed Walls—Plumbing Framed Work—Sheathing Walls—Ceiling Joists—Roof Framing—Roof Sheathing—Cornices—Roofing—Porch and Bay Framing—Exterior Wall Covering—Interior Wall Covering—Stairs—Interior Trim—Windows—Doors—Hardware—Closets and Shelving—Finish Flooring—Finishing—Index.

280 pages, illustrated, 8½ x 11 inches. Cloth Bound, \$3.00.

369 Practical Job Pointers

A collection of many of the best "Job Kinks" which have been published in American Builder and Building Age. Each of these helpful time, labor and money-saving methods is illustrated with a line drawing. There are 76 pages of ingenious methods of doing work, 66 pages describing special tools and devices, and 54 pages of construction details and recommended methods. All are based upon actual experience. An index enables quick reference to a particular job hint and the book is pocket-size for carrying on the job.

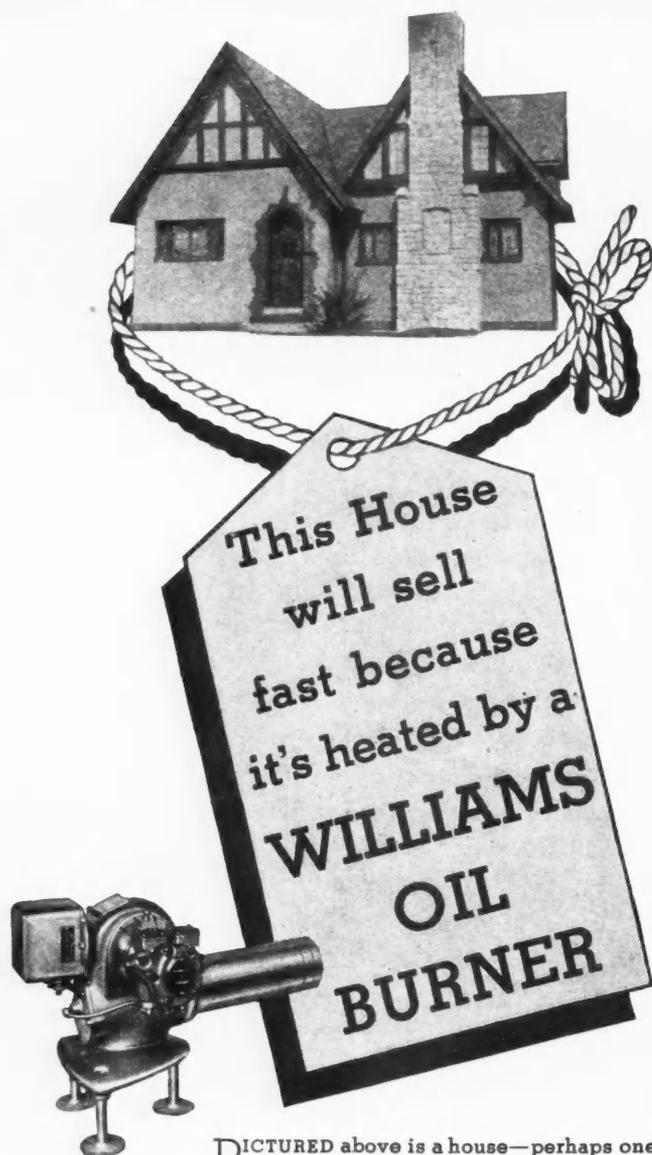
192 pages, 275 illustrations, 4½ x 8½, paper binding, \$.75

BOOK DEPARTMENT

AMERICAN BUILDER AND BUILDING AGE

30 Church Street

New York, N. Y.



PICTURED above is a house—perhaps one like you are building today. It will sell in record time . . . not only because it is a very fine house . . . but because, in addition, it is heated by the great new Williams Oil Burner, product of Williams Oil-O-Matic.

This means much, because: 1. People respect the Oil-O-Matic name. They know it stands for the best in heating. 2. The Williams Oil Burner is nationally advertised. 3. Engineers say it is the peer of any high pressure burner regardless of price.

Amazing though it may seem, the Williams Oil Burner is selling at the lowest price ever placed on a nationally known oil burner. Special low prices on quantity purchases. Write for complete facts.

STUDY THESE FEATURES

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

WILLIAMS OIL-O-MATIC HEATING CORPORATION
Dept. 407, Bloomington, Illinois

**WILLIAMS
OIL-O-MATIC
HEATING**

(Continued from page 102)

face wood surfacing is but 1/60th of an inch thick, yet so firmly is it bonded to the base, which is in itself quite firm, that the general effect is that of a piece of solid wood.

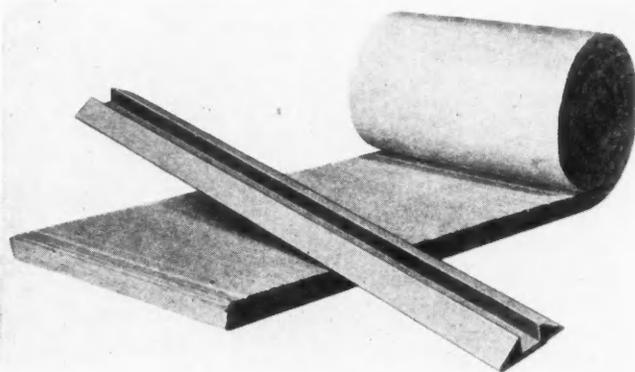
Carstenite's outstanding advantages are that it can be nailed or glued to old walls, without preparation of the walls, or nailed direct to studding or furring; that it is unaffected by dampness; that it will not craze nor check; and that it remains flat in place. It can be had in width of 4 feet and length of 4, 6, 8 and 12 feet. These dimensions, the manufacturers claim, allow broad panel effects and make Carstenite economical, especially when exotic woods are used.

* * *

IDEAL AIR-CELL INSULATION manufactured by the Hinde and Dauch Paper Co., Sandusky, O., consists of a built-up structure of alternate flat and fluted sheets of chemically pure, hard finished kraft paper. There are ten layers per inch of thickness bound together along the edges of the fluted members with a fire and water resisting cement.

This insulation—by volume 95 per cent confined non-circulating air and 5 per cent of solid material—the lowest percentage of solids by volume of any commercial insulating material known—at 75 per cent F. passes only 0.260 B.T.U.'s of heat per square foot, per inch thickness, per degree F., per hour.

It comes in standard sizes to conform with regular building practices. Installing strips, provided with channels into which the insulation fits snugly, are furnished. These strips are placed on both sides of the insulation and the complete unit is then inserted between the studs or joists and tacked into place for permanency. Odd sizes may be trimmed on the job, using a carpenters' hand saw.



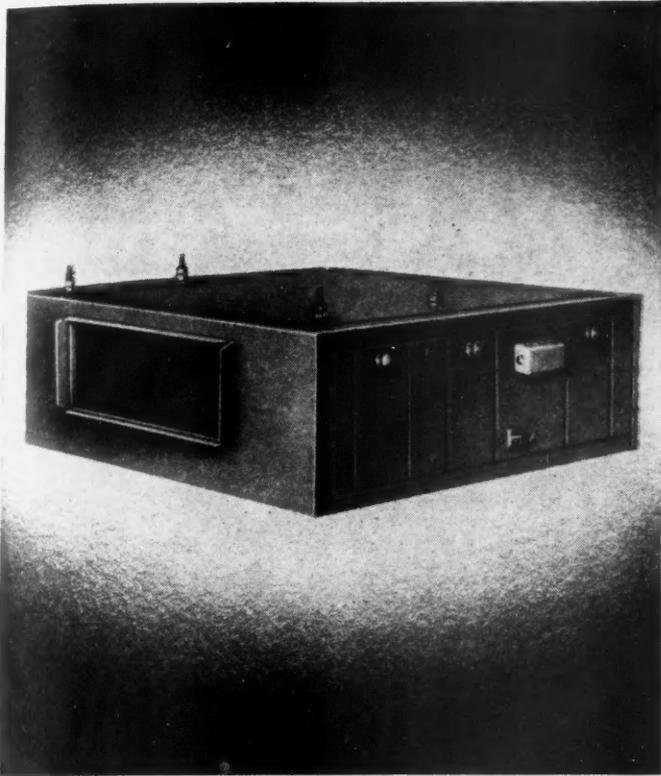
ROLL of Ideal Air-Cell Insulation and installing strip.

* * *

TRUS-STEEL long span metal roof deck has been developed by The Edwards Manufacturing Co., Cincinnati, O., for the purpose of making clear spans without beam or center supports, giving a clean, smooth ceiling that can be painted or decorated and cleaned with the minimum amount of labor. This deck is constructed of 18 gauge steel sheet formed in U shape pan on ten-inch centers, and locked together with an H key. With 18 gauge channel bridging every four feet, this bridging is secured in place with self-threading screws. To the top side of this deck can be applied one-inch insulation board, and a mopped on or other type roof.

Also this company has developed Trus-Steel prefabricated wall sections, 18 gauge Trus-Steel wall or partition units so constructed that the wall surface and metal stud is of one with a hardwood nailing strip. Made on 16-inch centers so that any conventional type of interior finish can be easily applied, and any type of insulation material can be installed, these sections are locked together with the regular type H key lock, which makes the whole structure 100 per cent salvage if the building must be moved and rebuilt. This wall unit is reversible, for use in commercial work where porcelain enamel is to be applied to the outer surface and gives an all-steel wall for interior finish which is easily painted and decorated. No screws or bolts mar the surface of this construction, making it possible to use a white

(Continued to page 106)



COMPARE

Packaged Weather

What goes on inside an air conditioning unit is seldom the concern of a customer. They think, and rightly so, only of their comfort. They depend on your judgment for good performance.

Naturally, you want to keep them sold. And you can—by carefully selecting the equipment you recommend. There isn't space enough here to tell you all the features you should compare but you can easily find out by calling in your nearest National Radiator Wholesaler.

Ask him to discuss the functions of *true* air conditioning for winter or summer—heating, tempering or cooling, humidification or dehumidification, filtration, circulation and ventilation. Ask him how these functions are accomplished with National "Packaged Weather" units. Get the advantages of our "vaporization" method of humidification as against "atomizing". Go over each detail of the unit. Note how many accessories usually considered as "extras" are included in standard National units. Observe the compactness, the beauty. Find out why "Packaged Weather" is quieter (an important point).

These are details you really need to know. Play fair with your customers and play safe with your recommendations.

CALL IN THE NEAREST
NATIONAL RADIATOR WHOLESALER

NATIONAL
RADIATOR CORPORATION
Johnstown, Pennsylvania

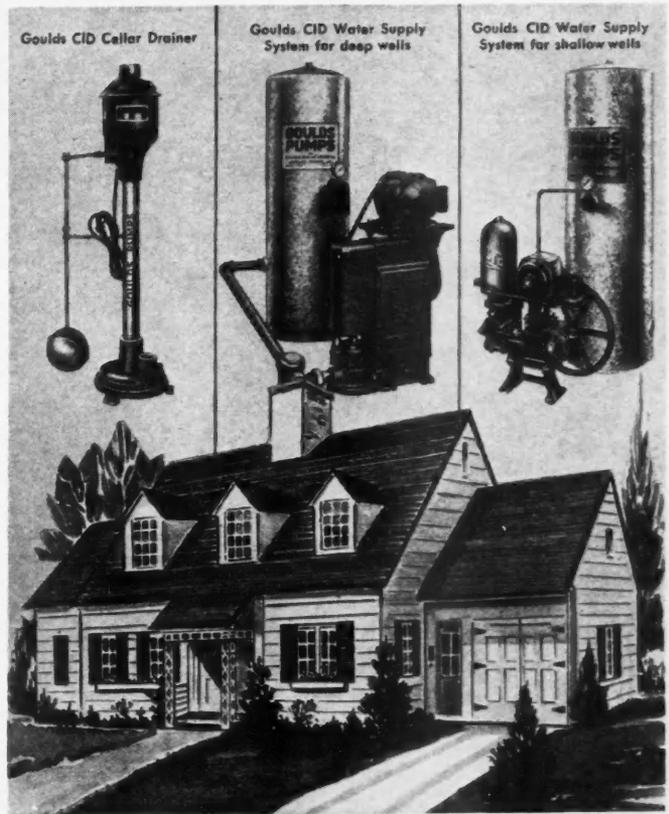
Branch Offices: Baltimore • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Detroit • Milwaukee • Newark • New York • Philadelphia • Pittsburgh • Richmond • Washington

Convenience at 2¢ a day ..with GOULDS WATER SUPPLY SYSTEM

Users of Goulds CID pumps enjoy the convenience of fresh, clean, hot and cold running water under pressure for as little as two cents a day. That's why Goulds CID Water Supply Systems are easy to sell.

Behind every Goulds pump stands 85 years of experience in pump design and manufacture—your insurance against costly servicing. And Goulds distributor and dealer plan assures you of fair dealing, strong assistance, and substantial profits on the complete line of Goulds CID deep and shallow well pumps and cellar drainers.

If your regular dealer does not carry the complete Goulds line, write us—today.



GOULDS

GOULDS PUMPS, Inc., 230 Fall St., Seneca Falls, N. Y.

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

Name _____
 Street or R.F.D. _____
 Place _____ State _____



Speedmatic

PUT a Speedmatic Hand Saw on the job and immediately you will see the results of its rugged, dependable all-around time and money saving ability. Work moves faster—material is cut and trimmed more accurately—and production costs *come down*. For guaranteed cutting speed and dependability the Speedmatic Hand Saw out-performs and outlasts any other saw on the market. Finger tip adjustment for depth and angle cutting—balanced for one hand operation, safe and powerful. Built in three sizes to cut $1\frac{7}{8}$ ", $2\frac{11}{16}$ ", and $3\frac{1}{8}$ " material. Cuts wood, tile, composition, slate, marble and light metal.

WRITE FOR DETAILS WITHOUT OBLIGATION.

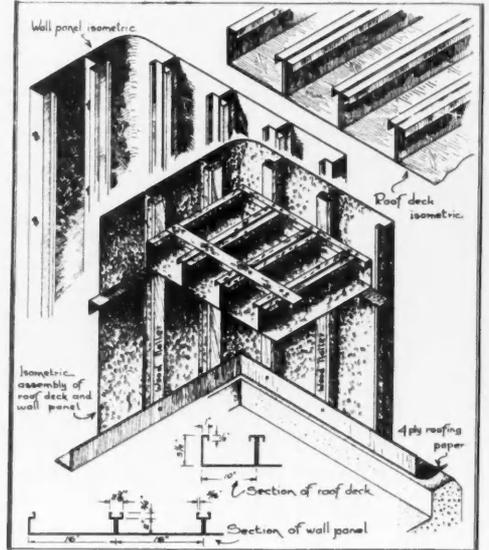
Also ask for your free copy of, "Manual on the Use of Electric Hand Saws in House-Building." It shows how hundreds of builders are making more money.

The PORTER-CABLE MACHINE COMPANY
SYRACUSE, N. Y.
1721-7 NORTH SALINA ST.

(Continued from page 104)

lead and sand finish in any texture or color desired. This wall section comes complete with slab angles and roof deck angles and all necessary fastenings. Can be had in lengths from one to fourteen feet.

With the Trus-Steel roof deck and side wall combination, a prefabricated all-steel building complete with all necessary metal windows and door frame and steel sash is possible.



EDWARD'S Trus-Steel long span metal roof deck and wall sections.

* * *

A MORTARLESS UNIT system of reinforced construction in which interlocking concrete blocks are laid in a wall without mortar has been developed by the Mortarless Unit Construction Co., Inc., 3328 San Fernando Road, Los Angeles. This company manufactures the machines used in making the blocks which are assembled as shown in the sketch below.

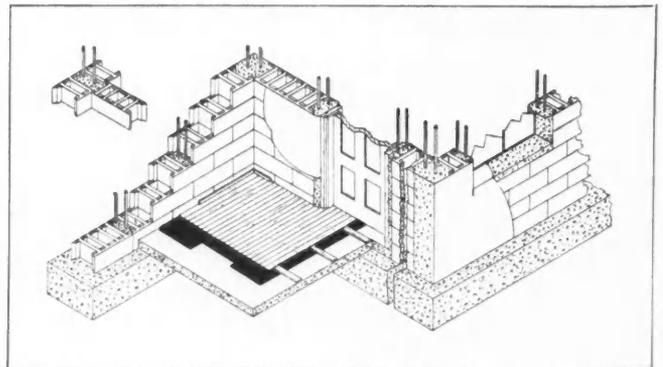
Within the wall, vertical concrete columns, size $3\frac{1}{2}$ " x $5\frac{1}{2}$ ", reinforced with two $\frac{3}{8}$ " steel rods, are poured, and spaced every 24" on center. A reinforced concrete bond beam is placed around the top of all walls at each floor level.

A 2" x 8" wood plate is bolted around the top, on the bond beam, of all exterior walls. Upon this the superstructure is built. Any type or design of roof may be used.

Interior plaster is applied directly on the blocks and the exterior may be given one or two coats of waterproof stucco followed by a waterproof brush coat, or it is often possible to finish the exterior by applying two good waterproof brush coats directly on the blocks, thus giving a rougher appearance.

In residential construction exterior walls are built of 8" blocks and the partitions of 6" blocks.

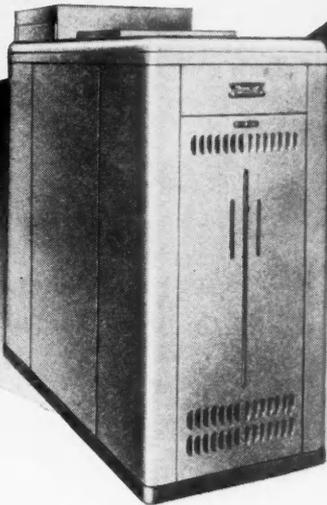
Common labor is used largely in building the walls. A large saving is made in cementing the window and door frames in position; no lathing is required. There are further savings in the cost of the interior plaster as only two thin coats are required, and in the cost of the exterior stucco, as only enough is required to adequately cover the wall.



MORTARLESS block system of reinforced construction.

MONCRIEF
Special Oil Fire
AIR CONDITIONER

For
**SMALL
HOMES**



Now small homes, too, can enjoy all the benefits of winter air conditioning . . . at low first cost and continuing low operating cost . . . plus the convenience of oil heating.

The Moncrief Special is a beautiful, compact, complete winter air conditioner designed especially for the small home . . . takes very little space and may be set in an out-of-the-way corner. Adapted for use with any standard type oil burner. This is the ideal unit for the modern small home of today where space is at a premium, and low price is an essential condition. It heats, circulates, filters and humidifies the air, requiring no attention from the home owner, since operation is governed entirely by automatic controls.

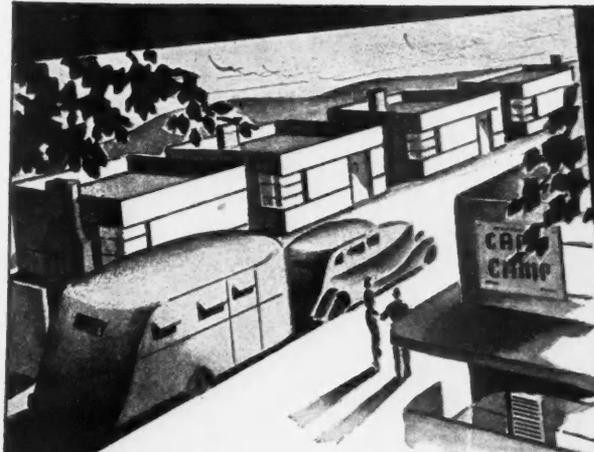
Moncrief also makes the Aristocrat Oil Fire, a larger model air conditioner for residences; also the Aristocrat Air Conditioner for coal, with either cast or steel heating unit; and the "CBF" Gas Air Conditioner.

Write for new descriptive literature just off the press.

**MONCRIEF
ENGINEERING
SERVICE**
is freely available
for estimating
and laying out
installations.

THE HENRY FURNACE & FOUNDRY CO.

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Cabin camps
GO MODERN

MODERNIZATION takes on a brand-new meaning for builders and lumber dealers with the advent of revolutionary new weather-proof Super-Harbord Outdoor Plywood.

From cabin camps to the smartest residential districts — Super-Harbord is showing its mettle in providing an outdoor building material which is attractive, long-lived, and economical.

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Tap a new building and modernization field as big as all outdoors . . . with Super-Harbord — the outdoor plywood. Send in the coupon today.

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THE OUTDOOR PLYWOOD

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Communications addressed to Harbor Plywood Corporation in any of the following cities will receive prompt attention.
BRANCHES: Atlanta, Chicago, Indianapolis, Milwaukee, Philadelphia, Pittsburgh, Cincinnati, Louisville, Jacksonville, New Orleans.
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HARBOR PLYWOOD CORPORATION
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Please tell me what Super-Harbord can do for a live builder or dealer.

Name.....
Address.....
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LINOLEUM FLOORS IN BATHROOMS

*Speed up sales
and rentals*



Pleasingly modern is this bathroom floor of Armstrong's Linoleum No. 0346 with black border and flash type cove and base. Walls and sides of tub are of Armstrong's Linowall—a washable, linoleum-type wall covering. Wall back of tub is Linowall with linoleum insets.

COLORFUL, durable floors of *nationally advertised* Armstrong's Linoleum will help swing sales your way. The quality reputation and the extra attractiveness of these fine floors make your properties more desirable to prospects.

Armstrong's Linoleum is not expensive to install. There are grades for every need and every budget.

Linoleum floors are easy to keep clean and never require costly refinishing—advantages that prospects appreciate. From the hundreds of attractive patterns in Armstrong's Linoleum, you can easily find the right floor for every room. Or special floors with inset figures can be designed to your order.

Armstrong's Architectural Service Bureau can give you *unbiased* suggestions on the best type of floor for any interior because Armstrong manufactures the only *complete* line of resilient floors—Linoleum, Linotile, Accotile, Cork Tile, and Reinforced Rubber Tile. Send *ten cents* now for color-illustrated copies of "Floors That Keep Homes in Fashion" and "Transform That Old Room." Armstrong Cork Products Company, Building Materials Division, 1218 State Street, Lancaster, Pennsylvania.



ARMSTRONG'S *Linoleum*
and RESILIENT TILE FLOORS

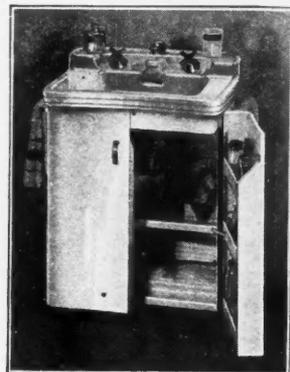
LINOTILE · ACCOTILE · CORK TILE · RUBBER TILE · LINOWALL · ACOUSTICAL CEILINGS

New Style and Convenience in Modern Bath Fixtures

A NEW cabinet lavatory has been added to the series of advanced design plumbing fixtures introduced by Crane Co., Chicago, within the last twelve months. This, the Coronet, incorporates the same in-a-door shelves which proved so popular in previous cabinet-lavatory styles and likewise has the piano-hinge doors, but instead of the conventional type of lavatory basin, it has a special new vitreous china top of unique design.

Faucet handles are set at an angle on an inclined and beveled-corner "instrument panel," intended to afford more comfort, convenience, better appearance and ease-in-keeping-clean.

It also has a special raised "dry" shelf back of the faucets for the purpose of keeping powder, toiletries, etc., dry and out of the way. The spout is raised well above the rim of the bowl to eliminate danger of cross connections and back siphonage of waste water into fresh water lines—in line with the recommendations of health authorities.

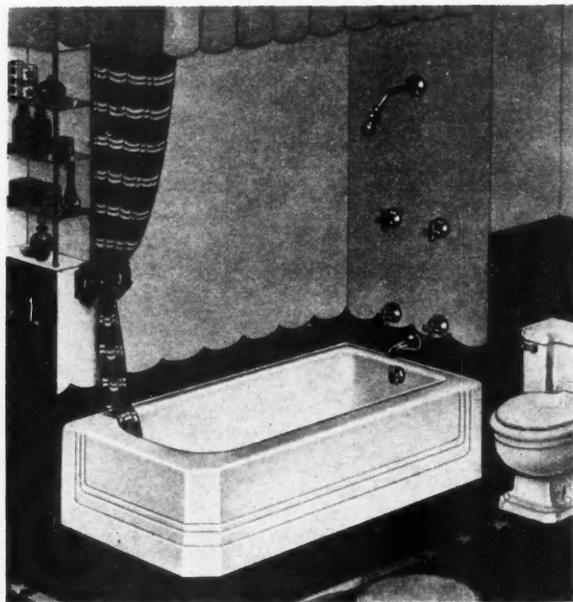


CORONET model lavatory by Crane Co. has top of new design and enclosed Cabinet shelves.

* * *

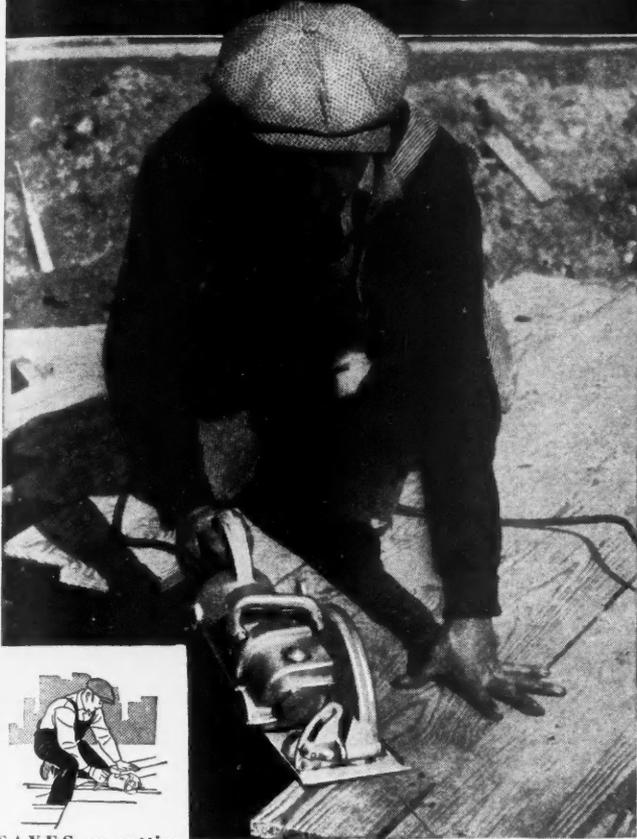
THE Master Pembroke Bath, newest addition to the line of Standard Sanitary Mfg. Co., Pittsburgh, creates a new conception of a bath that combines striking beauty with unusual practicality and added safety. Features include the wide, flatter bottom; the roomier bathing space; the flatter, 3¾-inch rim, two inches lower than usual; the greater safety stepping in and out and greater freedom and surer footing while under the shower.

It is available in white and ten striking colors, to allow full range of color preferences. Fittings for the Master Pembroke and regular Pembroke baths are interchangeable.



MASTER PEMBROKE bath combines beauty and safety.

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



SAVES on cutting rough flooring joists, studding, siding, bridging! Cuts off 222 ft. of 7/8 in. decking in only 12 minutes! Cuts out a 16-step stringer in only 10 minutes!



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



SAVES on trimming doors,—ready for hanging in only 7 minutes! Strips no thicker than shavings can be cut off with SKILSAW. Finishing blade smooths edges as if sandpapered!

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

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

SKILSAW, INC.

3314 Elston Avenue, CHICAGO

210 East 40th Street, New York
 52 Brookline Avenue, Boston
 1429 Spring Garden, Philadelphia
 312 Omar Avenue, Los Angeles
 2065 Webster Street, Oakland



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

SKILSAW CUTS YOUR SAWING COSTS IN HALF



for **SISALKRAFT**

THESE vital spots need protection—on any building job. Contractors and builders use Sisalkraft for this protection because they know it's absolutely waterproof, tough, and air-tight.

- X Use Sisalkraft over all sheathing. Prevents infiltration of air and moisture because its strength insures application without damage.
- X For the same reason, use it as flashing around doors and windows.
- X Put it under all floors and have it bent up under the baseboards. This makes both a moisture stop and a cold air stop because Sisalkraft can be so bent without cracking. Prevents drafts and damp floors. And use it to cover finished floors, for temporary protection.
- X Sisalkraft belongs under roofing. Remember, it's waterproof.
- X Use it to line attics, store rooms and garages.
- X Cure concrete walks and basements with it.
- X Use it to cover all delivered building materials for protection against the weather.
- X Wrap trees with it to protect them against mechanical injury during construction.

Sisalkraft is two layers of kraft paper, waterproofed, and reenforced with millions of sisal fibers. It's tough—handles easily—can be nailed and formed into place. Lasts indefinitely. Inexpensive—but adds real value to any building. Our new booklet "The Importance of Building Paper" shows where and how good paper should be used. Write for it—and we'll be glad to send you a liberal sample of Sisalkraft, too.

THE SISALKRAFT COMPANY
 203-b West Wacker Drive CHICAGO



MODERN RESIDENCES DEMAND Quality Windows — at a moderate cost

PERMATITE Windows in bronze or aluminum give your houses a distinct sales advantage over your competitors'. They have unequalled efficiency — lasting beauty — practically no maintenance cost — and are moderate in price.

These new, patented windows are amazingly efficient. The built-in metal weatherstripping provides a weathertight seal against seepage of air, moisture, dust and dirt — and annoying rattles. Such features make these windows ideal for insulated and air-conditioned homes.

Permatite Windows in bronze or aluminum — whether casement or double hung — are free from rusting, warping or sticking. No paint is required. They are remarkably easy to handle and to install.

Practically all Permatite features (including cost) are selling features — interesting and easily demonstrated. Write today for fully illustrated literature. To save your time, use the coupon.



Send for fully illustrated literature—FREE

PERMATITE WINDOWS

Bronze or Aluminum • Casement or Double Hung



GENERAL BRONZE CORPORATION
34-19 Tenth Street, Long Island City, N.Y.

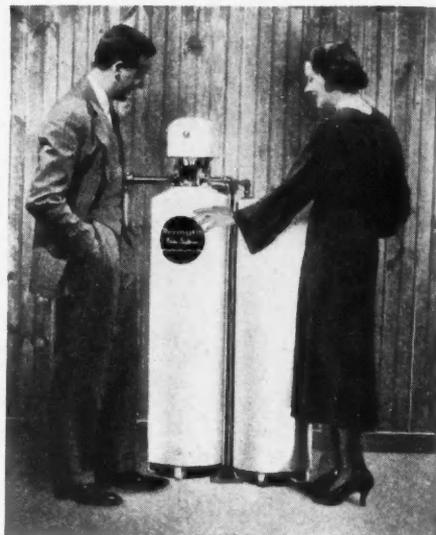
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Address

Improvements in Equipment Items

A REDESIGNING of all equipment, resulting in the simplifying and standardizing of all water softeners, sand filters and activated carbon purifiers, has just been completed by The Permutit Co., New York City. Two important additions in equipment have been made; a neutralizer which prevents corrosion in household plumbing, and an iron removal filter for use in taking iron out of water. These two items are used in sections where the water is naturally soft but contains chemicals which corrode plumbing or where there is an over-supply of iron.



AUTOMATIC electric water softener for medium sized homes.

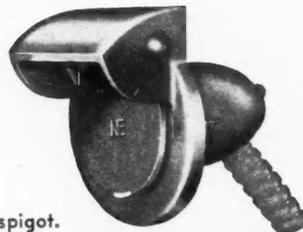
BASEMENT drains may now be installed wherever the builder wishes, because a new automatic trap seal valve manufactured by The Phillips Corp., Portland, Ore., maintains a fresh water safety seal in any drain trap, regardless of how infrequently the drain is used. The Phillips automatic valve is set into the cold water supply line running to a frequently used fixture. It "bleeds" enough fresh water to maintain the required fresh water seal. Back siphonage is prevented.



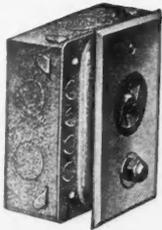
PHILLIPS automatic trap seal valve.

A NEW electric spigot has been designed by the National Electric Products Corp., Pittsburgh, to supply electric current for use outside houses. This item has a weatherproof hood and a cover hinged with a heavy spring over the outlet which keeps out rain, snow and ice.

Ten minutes is liberal time required for the units' easy installation. Drill a 1 3/4-inch hole in the wall, pull the cable through the opening, attach it to the self-binder for armored or non-metallic cable that the spigot features, and secure it to the wall with two screws.



OUTDOOR electric spigot.



The
FAN HANGER OUTLET
with Many Uses

Ⓜ Fan Hanger Outlets provide a source of added convenience and utility—not only for wall mounting of Electric Fans, but also for Electric Heaters, Art-Exhibit Lighting, Show Window Spotlights, Radio and Public Address Systems.

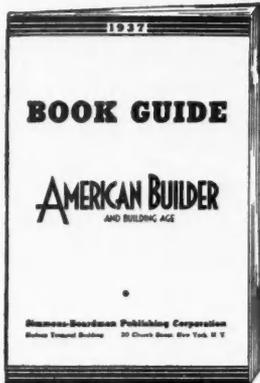
They are designed to be built in as a permanent feature of the electric system—and because they provide a safe, permanent and secure outlet, they eliminate the possibility of danger present when temporary, makeshift arrangements, such as wall standards and shelves, are used.

Bakelite receptacle with struck-up heavy brushed brass or black finish face plates make a neat, workmanlike appearance.

Get New Catalog No. 56

Frank Adam
ELECTRIC COMPANY
ST. LOUIS

Here's Help for Builders



New 1937
Book Guide
of
**American Builder
and Building Age**



A lot of the information you want is found in books. The problem of finding the right books is made a lot easier if you have a copy of this 1937 Book Guide on your desk. In its 64 pages are classified and described more than 500 building trades books. Year of publication or last revision is given so that you can find the latest book on the particular subject you are interested in.

Free on Request



BOOK SERVICE DEPARTMENT

American Builder and Building Age
30 CHURCH STREET NEW YORK, N. Y.



AZROCK is "sales-talk"
for builders . . .

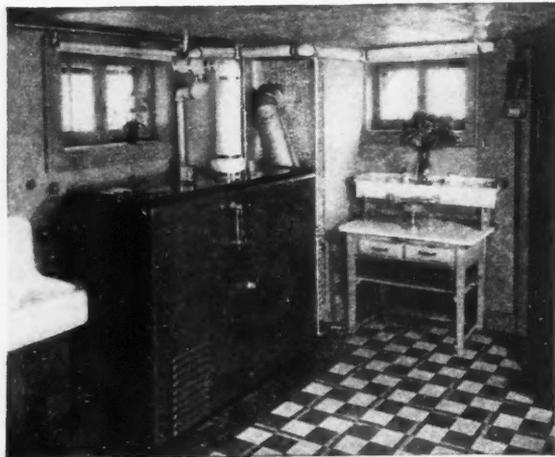
Azrock, the modern mastic tile floor covering, is a powerful ally in overcoming sales resistance to your building plans because it answers in the most satisfactory manner those three important questions your prospects always are sure to ask: "How much does it cost?", "How long does it last?" and "Has it modern beauty?"

Economical in both first cost and maintenance, durable for long life and constant usage, Azrock Tile forms a gently resilient floor covering whose sound absorbing, non-slip, moisture proof, fire-resistant characteristics make it supremely desirable in both commercial and residential building. Available in your own selection of beautiful permanent colors.

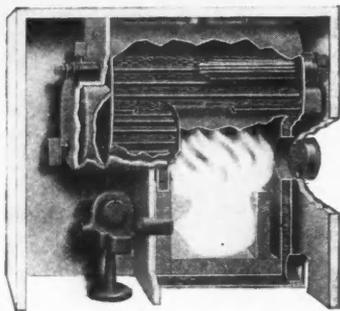
Write to Uvalde Rock Asphalt Co.,
San Antonio, Tex., for name of your
nearest distributing contractor.



OTHER AZROCK PRODUCTS:
AZROCK INDUSTRIAL TILE -- AZROCK PLANKTILE



So good-looking is this Burnham Steel Oil boiler that it was placed right in the basement kitchen of this Long Island home.



Steel Boilers

Burnham-Built
For Burning Oil

THIS is not just another steel boiler. It's a Burnham-Built one having distinct economy advantages.

Taco Heater is built-in. Not just built part in and part out. It is entirely inside where most effective.

It is noise-hushed. Jacket is double lined. Lined for heat insulation. Lined for sound-deadening.

Jacket has all edges rounded. Finish is smooth as cabinet work. All controls are inside, both out of the way and protected against children's tampering.

It's a welded job with a completely water surrounded combustion chamber—which means side, top and bottom. It has the usual Burnham efficiency.

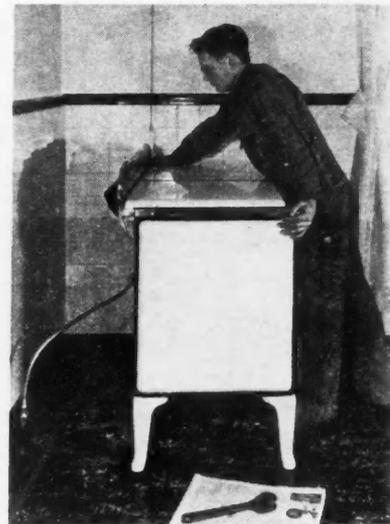
Send for Catalog. See for yourself.

Burnham Boiler Corporation
IRVINGTON, NEW YORK ZANESVILLE, OHIO
Foreign Export Dept., 116 Broad St., New York

Burnham Boiler

THE Romine gas stove connection made by The Gray-Wilson Co., 1627 W. Fort St., Detroit, Mich., consists of two self-sealing brass fittings and a specified length of very special aluminum pipe which will not collapse. Outside diameter is $\frac{5}{8}$ -inch; inside, $\frac{1}{2}$ -inch. It has the capacity of a $\frac{3}{4}$ -inch pipe.

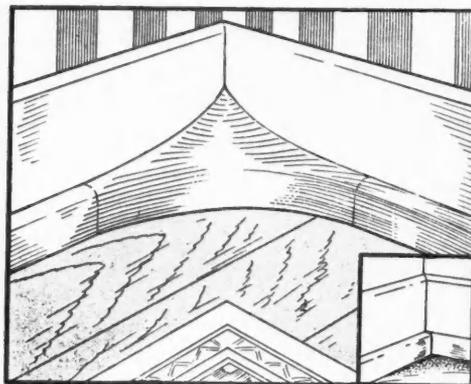
To install, place the stove two or three feet from the wall, where everything is easily accessible and attach, with an end wrench—the only tool required—one end of the connection to the gas line; the other to the stove; then simply push the stove back to its permanent position.



ROMINE flexible gas stove connection.

* * *

AROUND corner base shoe made by Round Corner Base Shoe Co., 218 N. Howard St., Glendale, Calif., offers an improvement both in floor and baseboard appearance. It provides a cornerless condition of the floor, when mop is used and is available in stock material—pine, oak and mahogany; special designs and woods furnished upon request.



NEW round corner base shoe for easy cleaning.

* * *

THERE is now available a line of knockers, known as the Strombos "Peep Hole" door knockers, made by J. Thos. Rhamstine, 301A Beaubien St., Detroit. These have the unusual distinction of adding a very definite safety feature to every home as well as providing an attractive and serviceable addition to the door; this special safety feature is possible through the peep hole portion of the knockers. They are built in two sections, one of which is a small brass door installed on the inside of the house door, the brass door fastening from the inside. By means of a 3-inch hole cut in the house door, it is possible to open the small brass door and communicate with the visitor without opening the house door.



PEEP HOLE door knocker.

"Flash Control"
FOR GREATER SAFETY

That's what RO-WAY offers in this NEW Electric Operator

for Over-Head Type Garage Doors

In operating a garage door, just as in driving a car, emergencies arise when it is not enough to "stop" or "start." The ability to reverse quickly prevents costly damage to person or property. So with Garage Doors, Ro-Way now . . .

Gives you Instant Reversal of Direction in addition to "OPEN-STOP-CLOSE" Control

No electric operator for Over-Head Type Garage Doors has ever before provided such complete and convenient control. The safety factor of instant reversal of direction is a value every car owner immediately appreciates. A simple two-button station instantly changes the travel of the door . . . no matter at what point of opening or closing it may be.



Carrier Track and Lifting Arm—Residential Door Operator

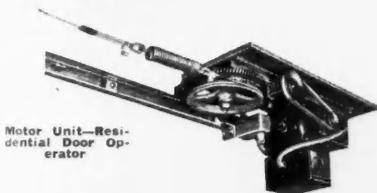


Carrier Track and Lifting Arm—Commercial Door Operator

RO-WAY ELECTRIC OPERATORS

are manufactured by the makers of Ro-Way Over-Head Type Doors, and cover every type of operation from small residential installations to large commercial jobs. Choice of these types of control are offered: Button Switch; Ceiling Pull Switch; Toggle Switch; Constant Pressure Switch; Momentary Contact Switch; Key Operated Exterior Wall Switch; and Key Operated Exterior Driveway Post Switch. Prices of all Ro-Way Electric Control Operators are surprisingly low.

Write for complete Catalog-Folder



Motor Unit—Residential Door Operator



Motor Unit—Commercial Door Operator

Rowe Manufacturing Co., 750 Holton St., Galesburg, Ill., U. S. A.

A LOWER COST BRICK

Supply Your Territory With Brick and Dunstone

Actual operating DUNBRIK plants show remarkably low production costs. The performance of the Dunn Automatic Machine has astounded the trade and industry. Yet the investment required is only a fraction of what would be necessary in any other machine of equal capacity.

YOU DOMINATE THE MARKET. Your ability to make common and face brick in any color or texture, combined with your low cost, gives you the whip-hand over competition. **DUNSTONE**, a double and triple unit permitting Hollow Ashlar Construction at cost of frame, gives you another added advantage. Get the facts about this great opportunity for your territory. Learn about the records made by other manufacturers. Write for "4 Keys to Manufacturing Success." It may mean manufacturing independence for you.

W.E. DUNN Mfg. Co.
 450 West 24th St., Holland, Mich.



THE MOST POPULAR IRONING BOARD

Improved 4 ★ features

AT NO EXTRA COST WILL INCREASE YOUR SALES

- ★ **ADJUSTABLE TO ANY HEIGHT—"NO MORE IRONING DAY BACKACHES"**
- ★ **AUTOMATIC RATCHET CONTROL—"A CHILD CAN ADJUST ITS HEIGHT"**
- ★ **FULL METAL HUNG—RIGID, STRONG, NO SIDE SWAY OR WOBBLE.**
- ★ **LONGER, WIDER BOARD—"WITH FAR MORE IRONING SURFACE"**



MOVE IT UP



MOVE IT DOWN

Made both in recess and on wall type

HOWARD 4 ★ ADJUSTABLE CABINET IRONING BOARD

FOR SALE by LEADING DEALERS EVERYWHERE
 CONSULT YOUR DEALER OR WRITE TO US FOR PRICES AND LITERATURE

THE CHINOOK MANUFACTURING CO. PUYALLUP WASHINGTON



MCKINNEY Oilite Bearing BUTT HINGES

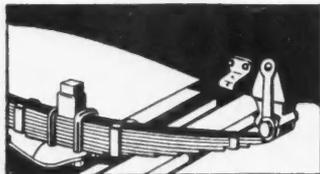
PATENT APPLIED FOR

The modern hinges that can never squeak at the joints because they are equipped with Oilite Bearings, that remarkable oil-impregnated metal, combining durability with smoothness and silence of a self-oiling composition. Oilite or ball bearing equipped Butts optional at same price. Write for data.

MCKINNEY MANUFACTURING COMPANY, PITTSBURGH, PA.



Water pumps can't wear it out—Heat . . . abrasion . . . speed cannot wear out Oilite Bearings.



Self lubricating Oilite prevents squeaks. That is why McKinney Oilite Bearing Butt Hinges will never squeak at joints.



Clutch Bearings can't break it down. They require a self-lubricating non-wearing bearing . . . and Oilite stands up. For the same reason Oilite bearings stand up in butt hinges.



High frequency doors function perfectly twice as long when equipped with McKinney Oilite Bearing Butt Hinges. Tests indicate that 2 million cycles and more are to be expected.

PERFECT ALIGNMENT

Oilite Bearings used in McKinney Butt Hinges are absolutely uniform in composition presenting wear resisting surface over long periods, and therefore perfect alignment throughout the life of the hinge.

ABSOLUTE QUIETNESS

Oilite Bearings in McKinney Butt Hinges are made to give a lifetime of quiet service. Unique composition of Oilite assures smooth, frictionless hinge action.

AGELESS ENDURANCE

Graphite composition of the Oilite bearings in McKinney Butt Hinges eliminates friction and wear making them outlast any other hinges including ball bearing equipped Butts.

News of the Month

Building Activities and Meetings

May Construction Ahead of 1936, But Shows Smaller Volume Than April

CONSTRUCTION reported during May in the 37 eastern states showed a gain of about 11 per cent over the figure for May, 1936, according to F. W. Dodge Corporation. The May total amounted to \$244,112,800 and contrasts with \$216,070,700 for May, 1936, and with \$269,934,200 for April, 1937.

Residential building during May of this year amounted to \$83,937,000; this was an increase of 20 per cent over the figure of \$70,253,400 reported in the 37 states for May, 1936, but was sharply lower than the volume of \$108,013,400 registered during April of this year. Gains in residential building over last year were general over the country except for the Southern Michigan area. At the same time declines from the April, 1937, figures were rather universal, with Upstate New York exhibiting the only exception.

Nonresidential building undertaken in May in the 37 states east of the Rocky Mountains amounted to \$93,432,700 and compares with \$82,251,700 for May, 1936, and \$96,179,300 for April of this year. Public works and utilities showed a total of \$66,743,100 during May, 1937; this was moderately better than the figure reported for either the preceding month or May, 1936.

Total construction of all types started in the 37 eastern states since the beginning of 1937 has amounted to \$1,176,377,200 as contrasted with only \$1,004,676,100 for the corresponding five months of 1936.

Laucks President of Manufacturers

I. F. LAUCKS, the newly elected president of the Manufacturers' Association of Washington is the head of I. F. Laucks, Inc., Seattle, the world's largest makers of waterproof glue. Mr. Laucks succeeds E. Rex Smith of the Crescent Manufacturing Company, and his new official family consists of C. L. Havens, Pacific Coast Forge Company, and Philip G. Johnson, Kenworth Motor Truck Corporation, vice-presidents; A. E. McIntosh, Spruce Veneer Package Corporation, corporation secretary; Ralph J. Marsh, Northwestern Glass Company, treasurer; and Clancey M. Lewis who begins his 23rd year as manager of the association.



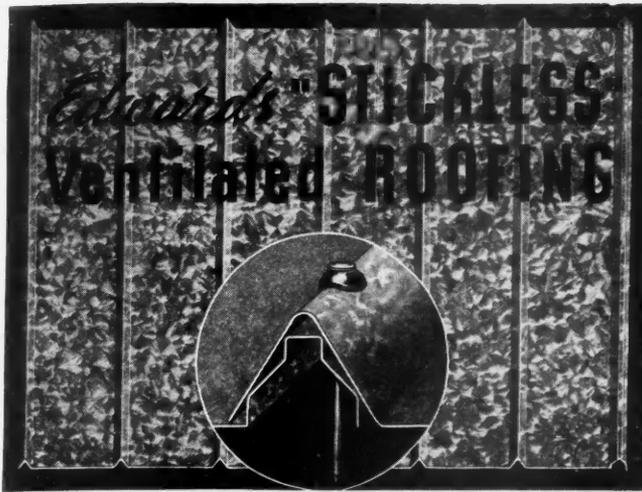
I. F. LAUCKS

Mehren Resigns As P.C.A. President

EDWARD J. MEHREN has resigned as president of the Portland Cement Association. Mr. Mehren's resignation came because of his desire to devote his entire time to personal interests in Arizona and in the East.

Mr. Mehren was elected in 1931 as the first full-time, paid president of the Portland Cement Association organized in 1902.

He is a member of the executive committee of the National Safety Council and of the policy committee of the Construction League of the United States. He was formerly editor of Engineering News-Record and vice president of the McGraw-Hill Publishing Co. The resignation will take effect Aug. 31. His successor has not yet been elected.



Keeps All the Water on the Outside

See those air passages! Not even a driving wind can force rain or melting snow through them. Syphoning is impossible. No drains or channels are necessary to assure fast and complete drainage from any "Stickless" Steel Roof having a pitch of 4 inches per foot or more.

The flat top of the inner crimp guides the nails into the sheathing—no wood sticks are needed. The crimps can't collapse. Your least expensive labor can lay "Stickless" in a jiffy to last a lifetime. Made in 2, 3 and 4 crimp styles; sheets from 5 feet to 12 feet long, painted open hearth steel, galvanized open hearth steel, and copper bearing steel, galvanized, of course.

Write for New Handy Roofing Catalog No. 92

THE EDWARDS MANUFACTURING CO.
542-562 EGGLESTON AVE. CINCINNATI, OHIO



Natural texture and rich color preserved through correct drying and seasoning.

Lays without waste and stays where you lay it.

Marked and guaranteed for grade with the NOFMA copyrighted label certifying highest standard of quality.

ASK YOUR LUMBER DEALER
or Address

FORDYCE-CROSSETT SALES CO.
FORDYCE and CROSSETT, ARKANSAS



● No home is truly modern without a dependable electric kitchen ventilator. Cooking odors and greasy fumes are definitely "out of date" and Mrs. House Buyer knows that kitchen ventilation is the only answer. Give the kitchens of the homes you build real sales appeal—specify a Victor In-Bilt Ventilator!

THE CHAMPION OF ALL HOME VENTILATORS

In the Victor line of In-Bilt Ventilators you'll find many important features such as automatic operation, three-speed control, weather tight shutters and simplified unit assembly. They are built to give years of trouble-free performance—to operate perfectly in all types of homes and to be easily installed in walls of any thickness. Get the facts now about Victor In-Bilt Ventilators—mail the coupon below—today!

VICTOR ELECTRIC PRODUCTS, INC.
790 READING ROAD CINCINNATI, OHIO



Mail

THIS COUPON TODAY!

Here's the complete data on Victor In-Bilt Ventilators. Bulletin No. 905-C illustrates and describes all features—gives specifications, installation data, etc. Send for it now!

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

Please send me your Bulletin No. 905-C which gives complete information on Victor In-Bilt Ventilators.

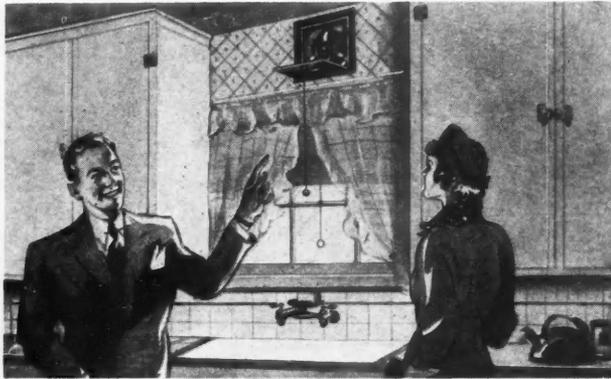
Name _____

Address _____

Town _____ State _____



"And a "Buffalo" HOME VENTILATING FAN in the Kitchen"

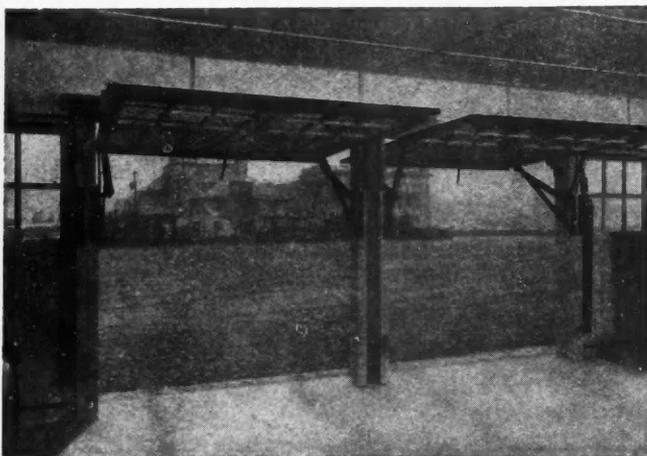


Every architect, building contractor, and realtor knows well how important a factor the kitchen is in selling a new home. And because housewives like to work in a cool, spotless kitchen, free from cooking odors, they are demanding the quiet, efficient "Buffalo" Home Ventilating Fans. These better fans are furnished complete with wall box, ready to install.

Write for literature and prices now on this valuable aid in the sale of better homes.

BUFFALO FORGE COMPANY

145 Mortimer St. Buffalo, N. Y.
Branch Engineering Offices in Principal Cities
In Canada: Canadian Blower & Forge Co., Ltd., Kitchener, Ont.



LOW COST EASY ACTION
SPEEDY ERECTION

are all yours when you use

THE EMPIRE "AUTOMATIC HINGE"

**UPWARD ACTING
GARAGE DOOR HARDWARE**

This trackless hardware easily and quickly imparts modern efficient overhead action to old-style doors. Its economy makes an overhead type door available to all builders.

Ask your dealer—or write

THE EMPIRE PLOW CO., Cleveland, Ohio
Est. 1840

New Concrete Kink Books

THE book, "1001 Ways to Use Concrete," by Harold O. Hayes, having 256 pages, well illustrated, with photographs, working drawings and 16 colored plates, has been issued by Popular Mechanics Press, 200 E. Ontario St., Chicago. It covers the use of concrete about the home and on the farm, and in business and industry. It is written for contractors, builders, property owners and home workshop craftsmen.

1937 Air Conditioning Sales Set New Record

INSTALLED cost of equipment sold by the members of the Air Conditioning Manufacturers' Association broke all records in the first four months of 1937, aggregating \$41,311,301 increase of 180 per cent over the sales of \$14,756,992 in the same months a year ago, and a total not reached in 1936 until October, according to announcement by William B. Henderson, executive vice-president.

April sales were second highest of any month in history, being \$9,663,009, an increase of 156.8 per cent over the April, 1936, total, which was \$3,751,015.

Plan Air Conditioning Institute Addition

THE Refrigeration and Air Conditioning Institute, 2150 Lawrence Avenue, Chicago, has completed plans for the construction of a new building unit of the most modern type at an estimated cost of \$50,000.

The new building will be used exclusively for shops and laboratory. Work is expected to start on the project Aug. 15.

This additional unit was decided upon because of the steadily increasing growth of air conditioning and the consequent increased demand for trained men. In order to meet these demands a program of enlargement was mapped out to include taking care of 400 students at a time. The proposed building will be of brick and steel construction with windowless walls of glass brick. It will be air conditioned throughout.

Mahogany Assn. Launches Promotion

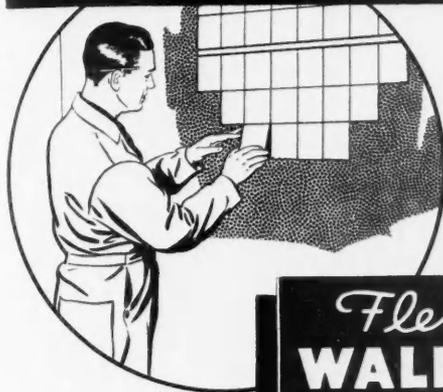
THE Philippine Mahogany Manufacturers' Import Association, Inc., is launching in July a large-scale sales promotion program designed to increase further the acceptability of what is already the largest selling tropical hardwood. Members of the association imported 22 of the 33 million board feet of Philippine Mahogany brought into this country last year. The campaign will stress the suitability of the wood for interior finish.

* * *



EFFECTIVE use of murals, mirrors and simple color contrast feature the modern design of the new Chicago offices of The Herman Nelson Corporation, heating equipment manufacturers. Every available foot of floor space was utilized by the designer, Abel Faigy.

Install Tile-Text



for
**LASTING
BEAUTY AT
LOW COST**

Flexible
WALL TILE

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

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

Write us today stating whether you are interested in a dealer proposition or if you want information for prospective home builders. Free literature will be sent promptly.

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

Decorative WALL TILE
TILE-TEXT
Resilient FLOOR TILE

BIG OPPORTUNITY STUCCO SPRAYING



This new machine and process completely solves the problem of permanently surfacing new or resurfacing old masonry buildings, walls, etc. It fuses a waterproofed plastic mixture on any masonry. It fills all cracks and can be applied in any thickness desired and in 30 colors and shades. Fully proven by over twelve years actual use under all conditions and every climate.

LARGE WAITING MARKET

Owners everywhere want to enhance present values and make their buildings more attractive and livable. The better builders are striving for greater permanence, beauty and salability in their new construction. With COLORCRETE Stucco Spraying, you can supply this waiting market and can offer permanent, colorful surfacing at amazingly low cost. Operators report costs of 2c and up per sq. ft. and sell up to 7c. Some have paid for their equipment from first couple of jobs. Machine capacity up to 600 sq. ft. per hour. Get the facts. The new COLORCRETE Books tell the whole story. Write today. It may mean business independence for you.

COLORCRETE INDUSTRIES, INC.
505 Ottawa Ave. Holland, Mich.



BUILT FOR HIGH SPEED ON THE ROAD - ON THE JOB

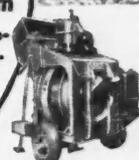


JAEGER

-the Half-Bag Trailer with Pneumatic Tires, Timken Bearings and "V" Bottom Dual Mix Drum

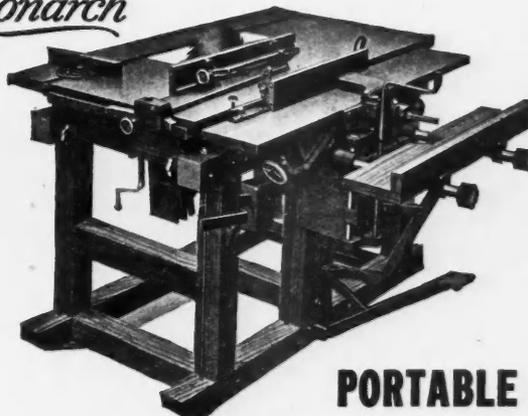
Latest high speed model of world's most popular mixer. Built for faster hauls, higher production, longer life than ever before. Get new Catalog and prices, all sizes.

THE JAEGER MACHINE CO.
521 DUBLIN AVENUE
COLUMBUS, OHIO



SPEED KING 75-105
NON-TILT TRAILERS

Monarch



PORTABLE Variety WOODWORKER

\$300 complete with:

- Cut-off and rip saws
- Drum and disc sander
- Dado heads
- Emery wheel
- 8" jointer
- Ripping gauge
- Boring attachment and bits

At Slight Extra Charge:

- 20" or 27" band saw
- Mortising attachment
- Gasoline engine or electric motor

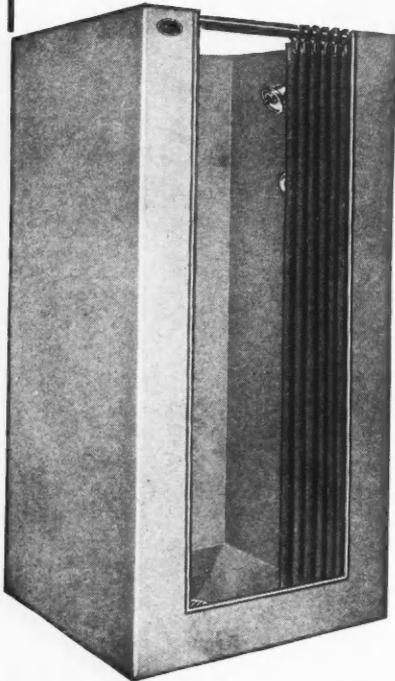
SEND FOR CATALOG OF WOODWORKING MACHINERY



AMERICAN
SAW MILL MACHINERY CO.

Makers of Woodworking and Saw-Mill Machinery
60 MAIN STREET HACKETTSTOWN, N. J.

A Sure Solution to Your Space Problem



ELKAY "Sturdibilt" Shower Bath Cabinets

provide the extra bathroom facilities now demanded in almost every type of home, from the modest bungalow to the finest apartments and palatial residences.

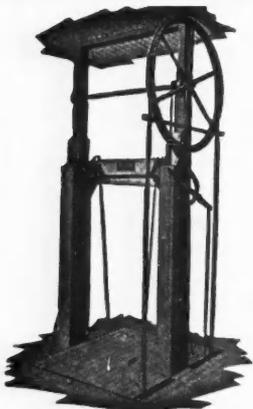
Ideal for guest room, for junior's bath or for servants' quarters, or as a "clean-up" room in the basement.

Supplied in both unit and "knock-down" types to fit spaces from 30 inches square and up to 36 inches square.

Easily and quickly installed, economical to operate. Guaranteed absolutely leak-proof and water tight.

Write today for illustrated literature and complete details.

ELKAY MANUFACTURING CO.
4708 Arthington St. CHICAGO, ILL.



KIMBALL HAND POWER ELEVATORS

A complete line of efficient Hand Power and Electric Elevators built to suit any requirement.

Fitted for rapid installation in your building. These straight-line-drive machines are little giants of lifting power and are surprisingly nominal in costs.

FREE Engineering Data

Give us your problems and let our engineers help you. Full descriptive literature on request.

KIMBALL BROS. CO.

915-989 Ninth Street Council Bluffs, Iowa

NEWS BRIEFS—

SKILSAW, Inc., of Chicago has announced the election of Edward W. Ristau as vice-president. Mr. Ristau will continue his work of the past five years in directing sales, advertising and promotion. . . .

FRANK P. WILSON has been appointed as representative for The Alabastine Company Oil Paint Line in Kansas and Western Missouri. Mr. Wilson's headquarters will be Atchison, Kans.



EDWARD W. RISTAU

FRIGIDAIRE will broaden its manufacturing and marketing activity in the near future with entrance into the general appliance field. Complete lines of electric ranges and electric washers will soon go into production. . . .

AMERICAN RADI- ATOR

opened the largest showroom in the building industry with the completion of a six-story annex to the black and gold tower at 40 W. 40th St., New York City.

A **PLAQUE** containing the engraved signature of every employee of the Marquette Cement Manufacturing Company plant at Cape Girardeau, Mo., was recently presented to Richard Moyle Sr., vice-president of the company, as a personal tribute.

* * *

\$1000 More House for the Money

(Continued from page 71)

in these houses. However, as the Olsen Company points out, the average use of large basement area for heating and laundry facilities and excess storage space does not warrant the difference in cost when construction economy is a primary consideration.

The following outline specifications will indicate the thoroughness of construction found in Olsen houses:

- FOUNDATION: 8" concrete block walls—24" footings.
- FLOORS: 1st—5" reinforced concrete slab on 5" cinder fill.
- STRUCTURAL STEEL: Steel lintels over all openings.
- SEWERS: 6" soil line (extra heavy) to sanitary sewer.
- CONSTRUCTION: Brick or stone veneer over wood frame, ¾" Bildrite Insulite board. Lumber, No. 2 Y.P.
- INSULATION: Rigid insulation ¾" Insulite on walls. ¾" Lok-Joint ceilings.
- STAIRS: Oak treads, pine risers, birch rails.
- ROOF: Slate, 3/16" x 12" x 20".
- GUTTERS: Fir, asphalted miters.
- SHEET METAL: Downspouts and conductor heads copper, 16 oz.
- FLOORS: 1st floor—Bruce Block layed in mastic 2nd floor select white oak over subfloors.
- LATH AND PLASTER: U. S. G. Rocklath throughout, metal corners; garage walls and ceiling metal lath, cement plaster; 6" base in Utility Room.
- HEATING: Pennsylvania gas fired furnace, full automatic controls. Forced air.
- PLUMBING: Richmond tub—remainder fixtures Universal. All fittings chromium. Duo-Strainer in sink.
- ELECTRICAL: B-X throughout. Radio antenna in attic.
- FIXTURES: Chase Brass, choice by owner.
- GLASS: Libbey Owens "A" quality.
- WEATHERSTRIPPING: Zinc on windows, copper on doors, interlocking brass thresholds.
- LINOLEUM: Armstrong, inlaid feature stripe.
- HARDWARE: Russwin dull brass, brass butts. Nickel in bath and kitchen.

K & E WYTEFACE
TRADE MARK
STEEL MEASURING TAPES
for visibility!

This improved steel tape makes life easier for the man on the job. The clear, black-on-white graduations are a decided convenience, and a valuable safeguard against annoying errors.

And WYTEFACE is serviceable. A new resilience prevents kinks or curls; a crack-proof surface protects the steel from rust—exclusive WYTEFACE features that greatly increase the useful life of the line.

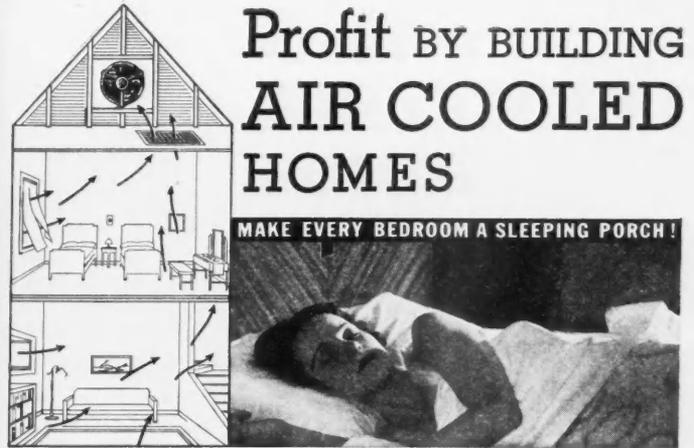
You'll want to own a WYTEFACE Steel Tape. Ask your dealer, or write for complete information.



KEUFFEL & ESSER CO.
EST. 1867
 HOBOKEN, N. J.
 NEW YORK CHICAGO ST. LOUIS SAN FRANCISCO DETROIT MONTREAL
 MADE IN U. S. A.

Profit BY BUILDING AIR COOLED HOMES

MAKE EVERY BEDROOM A SLEEPING PORCH!



The Ilgattic System
 ... OF COOLING AND VENTILATING

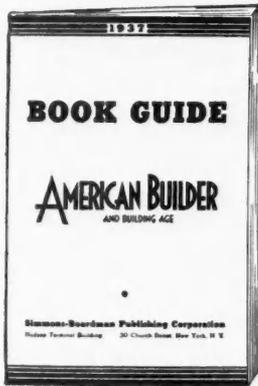
Air cooled homes—upstairs and down, cooled and ventilated with the Ilgattic System; it's a wonderful sales feature, nationally advertised, a timely idea that is being enthusiastically praised by builders and home owners everywhere. Positive housewide ventilation is assured—every bedroom is like a sleeping porch. Prevents moisture condensation in the attic space of insulated buildings during cold weather.

Now is the time to investigate—to profit by building homes that are delightfully ventilated and cooled by the Ilgattic System. The installation is simple—the cost little compared to the all year 'round comforts. Ask for bulletin of special interest to builders.



ILG ELECTRIC VENTILATING CO.
 2852 NORTH CRAWFORD AVE., CHICAGO, ILL. *VENTILATION and Air Conditioning*

Free on Request



The New American Builder and Building Age
BOOK GUIDE

In the index of this 64-page, 6 x 9 catalog you will find listed the building books published or revised within the past 10 years. The Book Guide contains concise descriptions of 500 books, booklets and estimating forms. The latest plan books, up-to-date estimating books, concrete manuals, architectural handbooks and other building books of all kinds are fully described.

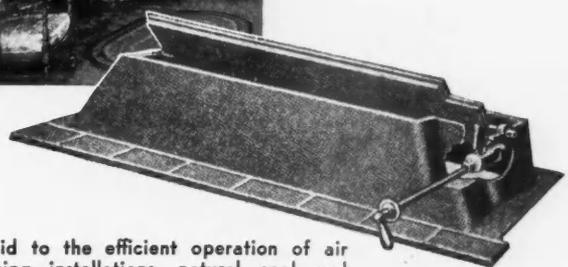
BOOK SERVICE DEPARTMENT

American Builder and Building Age
 30 CHURCH STREET NEW YORK, N. Y.

PEERLESS dampers



FOR AIR CONDITIONED HOMES



As an aid to the efficient operation of air conditioning installations, natural coal and wood-burning fireplaces must be equipped with the proper dampers. Peerless Dome Dampers give complete satisfaction. They seal the chimney flue when the fireplace is not in use. No heat loss—No back drafts. A proper burning fireplace guaranteed. Built for a lifetime of service. All standard sizes. Three models to choose from. Rotary Control—Poker Control—Chain Control—

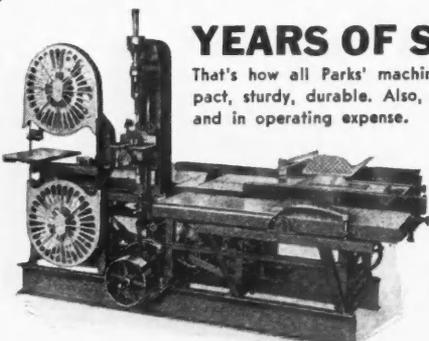
Write for prices and details

OTHER PEERLESS PRODUCTS

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

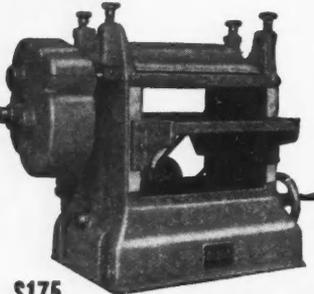
PEERLESS MANUFACTURING CORP.
 1400 W. Ormsby Ave. Louisville, Ky.

YEARS OF SERVICE
That's how all Parks' machines are built—compact, sturdy, durable. Also, they're low in cost and in operating expense.



MODEL "A" PLANING MILL SPECIAL
\$685 without power

Rip and cross-cut saw, 22" band saw, 12" jointer, tenoner, hollow chisel, mortiser and borer, swing cut off saw, reversible spindle shaper and sand disc.



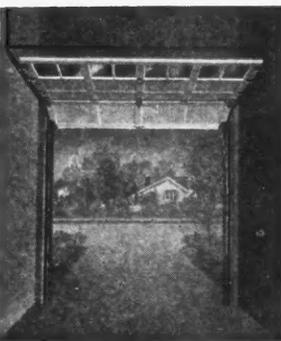
\$175 without power
12' BENCH PLANER
Plane material up to 12" wide x 4" thick. Maximum cut 1/2". Takes pieces as short as 6" and as thin as 1/16". Bearings highgrade New Departure ball bearings. Chip breaker and pressure bar completely guard the head and feed rolls. Power: 1/2 to 2 H.P. Weight 300 lbs.

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Good Woodworking Machines Since 1887
THE PARKS WOODWORKING MACHINE CO.
Dept. BL-7 1524 Knowlton Street Cincinnati, Ohio

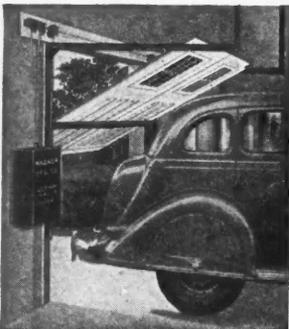
WAGNER
OVERHEAD DOORS

Builders prefer them because of ease of installation. Owners prefer them because of their smooth performance.



WAGNER CANOPY
Converts old doors (one—two or more sections) into modern overheads. Also provides an economical one-piece door for new structures. Easy to install—weathertite—smooth operating. Write today for literature on Wagner Overhead Doors and Hardware.

WAGNER GLIDEOVER
Furnished complete with doors and hardware. Hand or electric operated. The "Glide-over" represents perfection in modern overhead door features. Easy opening—easy closing—weathertite.



WAGNER MFG. COMPANY
DEPT. AB, CEDAR FALLS, IOWA

LETTERS from Readers on All Subjects

Facts, opinions and advice
welcomed here

Interesting Letter from Philip Lieber

Shreveport, Louisiana

To the Editor:

I have been a consistent reader of your magazine, as a subscriber, for a number of years. It is a very practical magazine and of value to those of us who are in the home financing business and of double value to us who may have real estate interests or who may be engaged in the building and development of houses.

Your article on page 57 of the March issue (Cutting Our Own Throats?) is a very timely warning of a situation that has already become serious. During the thirty-two years of my connection with the Institution I still serve, I have tried to keep in touch with the building situation from a practical standpoint. Having associated with me one of the most efficient and economical builders in this section of the country who has built moderate priced homes for more than fifteen years in Shreveport, I am probably as well in touch with the building situation as anyone except these so called experts who advance so many theories that never work out in practice.

I say that there is a serious situation presenting itself to the home building industry because of the several sudden and drastic advances in the price of building materials that have, as far as our section of the country is concerned, already increased the cost of housing to people during the last twelve months at least 20% and in many cases up to 40%.

Forgetting for the moment the argument of the lumber industry that prices of lumber were below cost of production about fifteen or eighteen months ago, I would now venture the assertion that an increase from \$22.00 per thousand to \$37.00 per thousand for No. 2 Common Shiplap, so extensively used in frame house construction down here, with other wood materials increasing in practically the same proportion, all of which added to substantial increases in labor costs and the price of all other types of materials going into home construction, is well placing the cost of home acquisition above the ability of the average person to pay for a home.

When President Hoover had his great Conference on Home Building and Home Buying, I was appointed on one of the Committees. Therefore, more than seven years ago I pointed out to the public in America and especially to the building and loan folks of this country that the only answer to the even then high cost of home owning was either in the form of a Government subsidy, which is very objectionable, or in the form of new financing methods under which twenty year loans could be made to deserving people and at much lower interest rates than were then offered to the public. My radicalism shocked my associates in home financing work all over the country. Yet you know and I know that these very things which I then advocated have been brought about.

My own Institution at this time lends money for new construction at 5% interest, the borrower paying 1/2 of 1% per annum on the reducing balance each month for a mutual insurance fund or guarantee, to be redistributed among the borrowers when their loans are half paid out. This is even a lower cost than the Federal Housing Administration's costs, as we are making a copy of the FHA loan but we eliminate the 1/2 of 1% service charge and we charge the insurance premium on the reducing balance instead of the full amount of the loan. The entire cost of a borrower's loan from this Institution is \$25.00. We do not charge a closing fee or service charge of any kind.

Now, when, just about fifteen months ago, it was possible for us to purchase a lumber house pattern for about \$1,000.00 or \$1,100.00, only to find the duplicate of the same to cost today about \$1,600.00 to \$1,800.00, it is time for some one to seriously

(Continued to page 122)

ANNOUNCING the Greatest Improvement In Double-Hung Windows Since the Advent of Metal Weather-Stripping



Malta genuine White Pine window and door frames have long been widely recognized for high quality.

But NOW, our patented "Supreme" weather-stripped window frame, with self-adjusting weather strip, jamb clamp, stock sash installation, and other distinctive features, is pronounced "The Ultimate."

It possesses those extra service features long desired by home owners. Positively no "jambing" in any season or climate; no "rattling"; permanently water tight—and it's easy and economical to install.

Every architect and contractor should have complete information about this newest type Malta window frame. Do not wait for it to appear in next Sweet's Catalog File—write TODAY for illustrated literature and details.

Building supply dealers, alert to profitable new business opportunities, should write—OR WIRE—for our attractive "protected territory" proposition.



THE MALTA TRADE MARK MEANS MASTER CRAFTSMANSHIP

THE MALTA MFG. CO.
MALTA Home Office and Plant OHIO

MODERN STEEL
Kitchen Cabinet Units



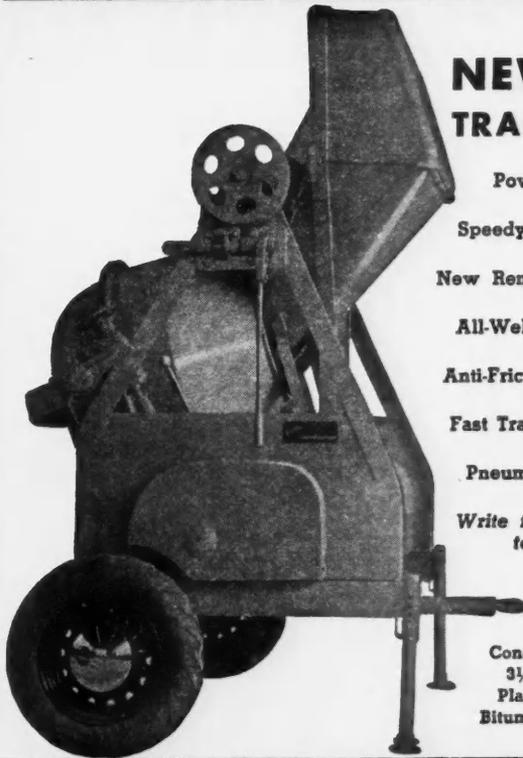
CUSTOM-BUILT APPEARANCE
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Kitchen planning experts have perfected the Assembly Unit idea—providing a complete installation of ready made modern steel cabinets to fit into virtually any shape or size of kitchen.

Assembly Units are made in a complete range of sizes for economical grouping into complete, efficient kitchen set-ups. Hundreds of different combinations are now possible. Our Kitchen Plan Book contains many helpful suggestions and informative data. May we send you a copy for your reference file?

MODERN STEEL EQUIPMENT COMPANY
GENEVA, ILLINOIS

KWIK-MIX



NEW 5-S TRAIL-MIX

- Power Tilt
- Speedy Discharge
- New Remixing Action
- All-Welded Frame
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- Write for bulletin today.

Concrete Mixers
3½-S to 10-S
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PORT WASHINGTON . . . WISCONSIN



Sell More Houses with Walls that Spell Charm and Security

Concrete masonry—portland cement paint—any color, texture and pattern buyer wants

Concrete's place as the fastest growing kind of home construction has been earned by giving buyers what they want—warm beauty, economy, firesafety, permanence and low upkeep. National advertising is bringing thousands of inquiries every week to builders featuring modern concrete construction.

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Dept. 7-3, 33 West Grand Avenue, Chicago, Ill.

Buy the Best When You Build



When you sell a product your customer demands the best—
Yet he does not want to pay a premium—

WILLIS SKYLIGHTS

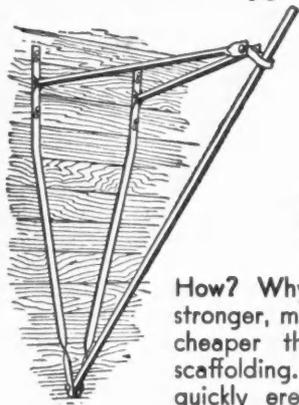
are your answer to these problems. Show your client how to
save money and improve working conditions—both in new
building and remodeling operations.

WRITE FOR OUR SKYLIGHT CATALOG

WILLIS
MANUFACTURING CO., Inc.
GALESBURG, ILLINOIS, U. S. A.

"STANDARD for almost half a century"

Reliable Scaffold Brackets



SAVE
YOU
MONEY

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

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

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

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

RELIABLE
SCAFFOLDING BRACKETS

(Continued from page 120)

study the situation and I am very glad to see how sensibly you
are attracting attention to this matter.

Housing is not only expensive "per se" but the average home
owner has to pay so many fees and expenses for what he ob-
tains that, as I have stated throughout this country, when I was
President of the United States Building and Loan League, he
gets on an average of not over seventy-five cents on the dollar
for what he pays for.

The average home owner in this community going to an
architect pays 4½% for the plans and 3% for supervising the
construction of the house. This percentage is figured on the
cost of the improvements. When a real estate developer has
to sell property of this kind, there must be added to all of his
costs the real estate commission of 5%. Contractors in this
section usually charge about 10% for profit on their work.
Then there are contractors and contractors. For example, in
our financing work, we secure breakdowns of building costs
quite often from builders who do business with us. Only a few
days ago we received an analysis which showed \$1,270.00 labor
on a certain house. By the side of this analysis was an
analysis from another contractor who was building a larger
house and whose labor cost ran less than \$800.00. Both of these
contractors paid the same wage scale.

There is one criticism about your magazine as well as all
architectural magazines that come into this section of the coun-
try that I should make at this time. Practically every one of
your illustrations and plans are for houses to be built in
Northern communities where the weather is not as warm in
summer time, where ground values are higher and consequently
people must do with smaller sized lots. It has not been possible,
after many years of effort on my part, to educate the people
down here to accept smaller sized rooms. As a matter of
climate, the one and one-half story house is not of much utili-
tarian value down here. This latter objection seems destined to
be removed shortly because of the increasing use of insulation
and the introduction of air conditioning systems. The job that
is ahead of us in the South to bring down building costs is to
get people to accept smaller sized rooms.

Several months ago I published an advertisement on behalf
of the First Federal Savings and Loan Association in which I
said that "there ain't no such animal" when one referred to a
complete, ready to live in house for a family of five for \$2,000.00.
This advertisement attracted considerable attention, it having
lately been referred to in the American Lumberman.

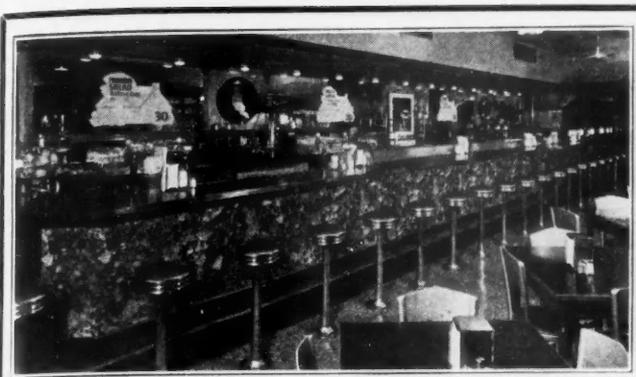
For example, in your article on page 60, March *American
Builder*, you show a breakdown of costs of one hundred houses.
In the first place, these houses have less than 700 square feet
of area. It is a small house indeed, judged by local standards,
that does not have from thirteen to eighteen hundred square
feet of area.

As we build mostly shiplap houses, with canvas and paper
interiors, against your lumber, trim and plaster amounting to
\$725.00, we have, of course, in the larger house, a bill of about
\$1,500.00 for lumber and mill work. The three plumbing fix-
tures in a bathroom, the sink and water heater in the kitchen,
usually amount to a minimum of \$350.00, as against your
\$285.00. As our Institution has educated the people to the
requirement of permanent roofing in the asbestos cement shingle
type or equivalent, and as our roofs have a minimum of prob-
ably 20 squares, roofing and copper metal work which we re-
quire instead of galvanized iron, amount to from \$350.00 to
\$450.00 per roof.

I merely mention these two or three items to show you that,
if anything, publicity in the national magazines printed up North
on \$2,000.00, \$2,500.00 and \$3,000.00 homes do considerable harm
to the building industry in this section of the country.

What we need is a more level price range over the years.
It is a miracle if an appraising committee for any financial
institution guesses right today on the value of a house. And
it is a double miracle if that value will stand up for two or
three years, much less fifteen or twenty years. What we need is
to educate the people to build smaller homes, out of better quality,
so as to last throughout the years. What we need is to educate
business institutions, exactly as you suggest, to the idea of
making a reasonable profit, building up large profits by volume
rather than by percentage.

PHILIP LIEBER,
President First Federal Savings and Loan Association of
Shreveport.



Chicago's Longest Soda-bar—Gibbs Boardtile used.

GIBBS BOARDTILE

For Permanent Artistic Wall-Ceiling Effects

Known for more than a decade and ranked as foremost by Architects and Builders, Gibbs Boardtile is splendidly adapted to modernization of old interiors and new building requiring permanent walls and ceilings. The Base material is highly compressed wood fibre, with our patented finish; lustrous and of a beautiful texture that is proof against water, grease—and insects.

Over 20 Standard colors in plain (unscored) or tile-scored. Varitone horizontal bands in graduated color are very modern. Several types of Marble reproductions—and of rare Wood effects. Furnished in sheets to suit needs without waste. Special Trim accessories of metal or Boardtile material to harmonize or contrast.

Make it a point to see samples. Write us direct for full information, samples; literature.

Gibbs Boardtile Corporation

624 No. Aberdeen Street

Chicago

GET THEM TO THE JOB FASTER—



SPOT THEM ON THE JOB EASIER

GET GREATER PROFITS WITH REX MODERN MIXERS

Here's the mixer line that can't be beat when it comes to high-speed towing, faster, easier spotting and low cost, dependable operation. Lightweight alloy steel, all-welded construction makes them lighter—yet far stronger. And it's a complete line, starting with the speedy little 3½-S tilter—the half-bagger that mixes more yards per day on small jobs and does more "odd jobs" per day on larger projects. The 5-S, 7-S and 10-S mixers are all equipped with the Rex Shimmy Skip—Rex Modern Drum—Rex One-Man End Controls. Made in 2-wheel or 4-wheel—end or side discharge types. You'll find them the fastest, finest mixers on wheels. They step up your mixing speeds and get you those extra profits

Send for our 1937 Mixer Bulletins!

CHAIN BELT COMPANY, 1621 W. Bruce St., Milwaukee, Wisconsin



STEEL IN STOCK

• Steel of every kind, in all shapes and sizes, is carried in Ryerson stocks ready for Immediate Shipment. Unusual facilities for cutting, handling and shipping assure accuracy, dependability and speed. When you need steel draw on the nearest Ryerson plant.

PRODUCTS INCLUDE:
 Bars • Sheets • Plates • Shafting • Stainless
 Screw Stock • Alloy Steels • Tool Steels
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Write for the Ryerson Stock List

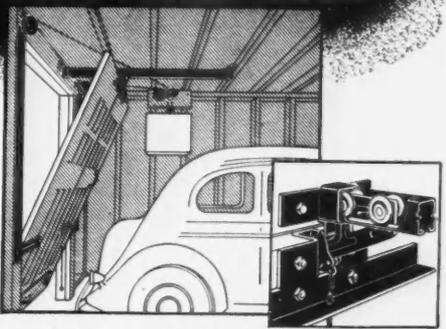
RYERSON

Joseph T. Ryerson & Son, Inc., Chicago, Milwaukee, St. Louis, Detroit, Cleveland, Cincinnati, Buffalo, Philadelphia, Boston, Jersey City

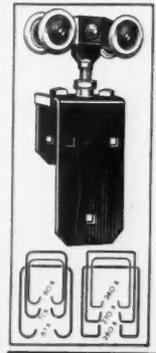
ALLLITH HARDWARE FOR EVERY DOOR

"50-50" "Push-Over"

Smooth-acting over-head type door hardware at a price that captures the profitable volume market.

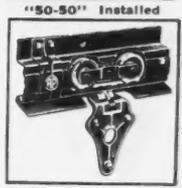


"ALWAYS ON THE TRACK"



ALLLITH hardware has a well-earned reputation for unflinching performance. The line includes complete sets for over-head, sliding, round-a-corner, and folding-sliding doors of all sizes and types, as well as a full assortment of hangers, tracks, latches and door fittings. With a good stock of ALLLITH hardware on hand, and the ALLLITH catalog on your counter, you're set to handle all door hardware business.

Send for the New Catalog



ALLLITH-PROUTY Inc. Danville, Ill.



"A Home Without a Porch Is not Complete"

A cool pillared porch adds greatly to the attractiveness of a home. There's something warm and friendly and welcoming about a porch. People who have a porch open their doors widely and step right out to greet their guests. SAMSON COLUMNS aid you in planning porches and entrances of architectural beauty. Their fine design and sturdy construction add value to any building. Ask your dealer to show you SAMSON COLUMNS. If he does not carry them, write us. We will mail you complete descriptive literature.

WASHINGTON MANUFACTURING CO.
TACOMA, WASHINGTON

Manufacturers of Columns, Porchwork, Door Frames, O. G. Fir
Gutter and Fir Finish

Clearlite
SHEET GLASS
A QUALITY

EASY ON THE EYES

WINDOW GLASS

Whatever the cost of a home—it deserves the best of Window Glass. Windows are the eyes of the home—through them the owner has either a clear bright outlook or one spoiled by distortion. CLEARLITE has that brilliant lustre and perfect flatness which permits of clear vision. Specify Clearlite "A" Quality Glass for flooding the home with sunshine and light.

Ask Your Dealer

FOURCO GLASS CO.
General Offices
CLARKSBURG, W. VA.
Branch Sales Offices
NEW YORK • CHICAGO
FT. SMITH, ARK.

House of Month "Specs"

(Continued from page 64)

and $\frac{1}{2}$ " of limestone screenings. A 12" corrugated Armco Iron culvert shall be provided where driveway crosses ditch; flagstone walks as indicated on plot plan.

CONCRETE WORK: All concrete shall be composed of one part portland cement, eight parts of fine and coarse aggregate so proportioned as to provide the maximum density, and ten per cent of hydrated lime. Cement topping shall consist of one part portland cement to two parts of fine aggregate.

Lay four inch layer of clean crushed cinders or gravel well puddled, tamped and leveled and place a $3\frac{1}{2}$ inch base slab of concrete. Before this concrete has its final set, a $\frac{1}{2}$ -inch layer of cement topping shall be placed and troweled to a smooth, dense surface, level or pitched to drain as indicated.

MASONRY: All brick shall be laid in lime-cement mortar, consisting of one part portland cement, two parts of lime putty, and six parts of sand or shall be laid in natural cement mortar.

Exterior walls are to be constructed as shown by details, with 2" air space between inner and outer bricks. Full brick headers equal to one seventh of the wall surface and uniformly distributed are to be provided for all such walls. All joints to be filled solidly and exterior joints struck.

Build fireplace in living room as detailed, with fire brick back, sides, and back hearth laid in fire clay mortar. Furnish and install Heatilator of size and type indicated on drawings, together with all registers and flues required to provide a complete installation of this item.

Fireplace and heater flues shall be lined with terra cotta flue lining entire length of flues and extending two inches above the chimney cap.

No mortar shall be left on face of brickwork; exterior surfaces of all brickwork back of terraces shall have all voids filled and entire surface mopped with a heavy coat of asphalt.

Fill in between first floor joists with common brick and mortar to completely seal openings between basement and exterior walls.

Erect steel girders and lally columns with flanged bases and caps; steel angle lintels for all openings above basement.

CARPENTRY: All lumber for joists, sills, and rafters shall be No. 1 Common Y. P. or Fir. All other framing lumber shall be No. 2 Common Y.P. or Fir. Studs shall be 2"x4" spaced not over 16" o.c. and doubled around all openings.

Joists shall be spiked to studs wherever possible, with 1"x3" bridging for all spans of over 8 feet. Double joists under bearing partitions. Double all trimmers and all headers over 4 feet in length. Headers carrying more than three tail beams to be supported by metal stirrups. Corner posts shall be made of 3 2"x4" blocked to form nailing corners for lath.

1"x2" vertical furring strips of 16" o.c. to be provided on all interior brick walls receiving plaster. Secure with cut nails driven into dry joints of brickwork. Furnish necessary grounds of thoroughly seasoned clear Western White Pine.

Sheathing for exterior wood walls to be 1" Celotex applied vertically with joints on studs; horizontal joints backed up with 2"x4" blocking between studs. Roof sheathing 1"x8" square edge Y.P.

Exterior walls are to be covered with beveled wood siding not less than $\frac{5}{8}$ " thick at butt edges, clear Redwood or Cypress.

All floors shall consist of a subfloor and a finished floor. Subfloor to be 1"x8" square edge Y.P. nailed securely to each joist with three nails.

Lay heavy building paper over subfloor and strip with lath, then lay finished floor of $\frac{3}{4}$ "x2 $\frac{1}{4}$ " matched Red Oak flooring.

All finished floors to be blind nailed to every subfloor strip, each piece driven well into position with all joints closely fitting. Finished flooring shall be sanded or scraped to a smooth and level surface and covered with a layer of heavy building paper until painter's finish is to be applied.

Finished flooring in kitchen and bathroom shall be 1"x6" T. & G. Pine or Fir flooring.

Frames for exterior doors to be clear White Pine $1\frac{3}{8}$ " thick, rabbeted for door and screen. Frames for interior doors shall be $\frac{7}{8}$ " thick Y.P. All sills shall be saw kerfed.

Staff beads shall be attached to frames in a temporary manner until frames have been caulked.

(Continued to page 126)

Portable ONAN "SAFTY SAW"



Can Be Taken Out on Any Job

Here is a POWERFUL, PORTABLE, CARPENTER SAWING MACHINE. Will Cut Rafters, Studs, Stairhorses and Bridging; square long dimensions as fast as you can handle the lumber. For trimming sash, doors, screens, fitting casing and flooring. **Cross Cuts, Rips, Miters, Dados** Furnished with either gasoline or electric power, or both. One man moves it anywhere, two men load it. Write for details.

D. W. ONAN & SONS
4458 Royalston Ave., Minneapolis, Minn.

EXCLUSIVE TERRITORIAL RIGHTS NOW OPEN

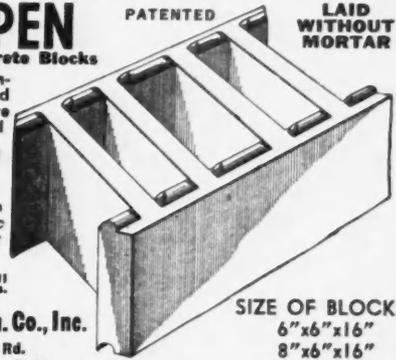
For Mortarless Concrete Blocks Vertical, reinforced, concrete columns, spaced every 24" on center are poured within the wall

Build for a Century Not for a Decade

Mortarless Masonry Construction is unequalled for economy and permanency.

Write for catalog and full particulars of our machines.

Mortarless Tile Mach. Co., Inc.
3328 San Fernando Rd.
Los Angeles, California



SIZE OF BLOCKS
6"x6"x16"
8"x6"x16"
12"x6"x16"

MAKE EXTRA PROFITS ON DENNIS



DOUBLE CUSHION DENNIS

BRONZE WEATHER STRIPS

Easily Installed Without Removing Sash or Doors!

Now you can make quick, new profits by selling genuine Dennis Double Cushion Spring Bronze Weather Strips for modernizing jobs and new homes. The easiest to install—comes attached to new parting stop. Patented "S" fold gives double spring action. Prevents cold air leaks. Makes snug weatherproof seal conforming to all warping, shrinkage and expansion of sash and doors. Endorsed by architects and builders for saving fuel. Ask your jobber or write for new 1937 Weather Strip Catalog.

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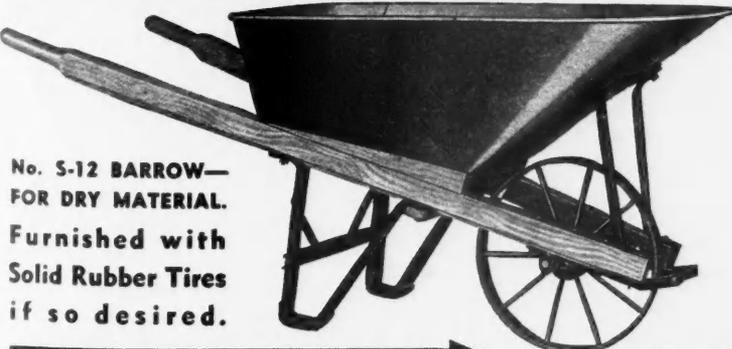


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House of Month "Specs"

(Continued from page 124)

Interior trim throughout shall be Western Pine, clear grade, sound and thoroughly seasoned and kiln dried, smoothly sanded with all mill marks removed and with no cross sanding.

Garage doors 1¾" thick W.P. Interior doors to be 1¾" Oak.

All exterior sash shall be made of clear, sound, well seasoned Western White Pine. All openings in exterior masonry walls are to be caulked between the wood frames and the masonry with oakum, and sealed with elastic caulking compound.

Floors of kitchen and bathroom to be covered with standard gauge inlaid linoleum laid on a layer of unsaturated rag felt, in waterproof cement, and rolled with a heavy roller.

ROOFING AND SHEET METAL: All roof surfaces except where indicated otherwise are to be covered with slate surfaced asphalt shingles weighing not less than 170 lbs. per square, over one layer of 15 lb. waterproof building paper.

Gutters and downspouts as indicated on drawings of 26 ga. Galv. Iron. Hangers for gutters to be placed under the shingles. Downspouts secured to brickwork with clamps built into the masonry. Cement downspouts into sewer stubs. Provide 26 ga. G.I. flashing. Counter flashing to be built into masonry.

GLAZING: All glass shall be set in first class and workmanlike manner. Glass shall be cut accurately to fit sash or frames.

LATHING AND PLASTERING: Lath for all exterior walls and ceilings of second story shall be ½" Celotex plaster lath. All other surfaces shall be Rock Lath. Three coat gypsum plaster work.

PAINTING: All lead shall be strictly pure, National Lead Co. All linseed oil, strictly pure; all colors, strictly pure pigment ground in linseed oil. Enamel and undercoating, Pratt and Lambert Vitrolite. Floor varnish Pratt and Lambert No. 61. Ready mixed paint, Sherwin-Williams best grade.

All work to be painted shall be primed as soon as practicable after receipt of same at building; all exterior wood, one coat of lead and oil or ready mixed paint in addition to the priming coat. All exterior metal except concealed flashings, one coat of lead and oil or ready mixed paint in addition to the priming coat. Inside of gutters, one coat of red lead. All trim, sash, doors, and structural steel in basement, one coat of lead and oil or ready mixed paint in addition to the priming coat. All trim and woodwork to be finished with three coats.

PLUMBING: Lay 4" dia. farm tile footing drains around building, connect with floor drain and run to sanitary sewer. Lay 4" dia. vitrified clay tile sewers with cement joints from house to septic tank and connect with disposal field at a point not less than 30 feet from house. Lay 4" dia. farm tile disposal field with 100 lin. ft. of open tile. Provide brick septic tank in accordance with regulations, and grease catch basin for kitchen drain.

Provide cast iron soil stack connected to sewer and extending through roof with lead flashed increaser. Connect all fixtures and provide re-vent for each fixture.

Provide galvanized iron lines to all fixtures, with air chambers at each fixture. Risers to be valved in basement. All lines to drain to main valve near pump. Sizes to be sufficient to provide a satisfactory rate of flow at each fixture.

Dig well to a depth to provide an adequate flow of pure, clean water. Install Dayton pump and pressure tank combination fixture with ¼ H.P. electric motor.

Provide 30 gal. hot water tank with coal fired heater and auxiliary heating coil in furnace. Run hot water lines to all fixtures except toilet.

Provide Standard Pembroke recess apron tub, Standard C.I. enameled lavatory, Standard china two-piece closet, Standard roll rim sink with steel cabinet, and Standard two part granitine laundry tray with steel frame.

Soil stack to be plugged at base and filled with water to top, left for at least one hour, examined for leaks at all joints, and re-caulked as required to provide a water and air tight installation. Water piping shall be tested under pressure after installation and any defective parts replaced to provide a water tight installation.

ELECTRIC WIRING: All wiring of every description, excepting low voltage bell circuits, shall be run in rigid pipe conduit.

HEATING: Install Sunbeam warm air coal fired heating plant of sufficient size to heat all rooms uniformly to a temperature of 70 degrees F. with outside temperature at -10 degrees F.

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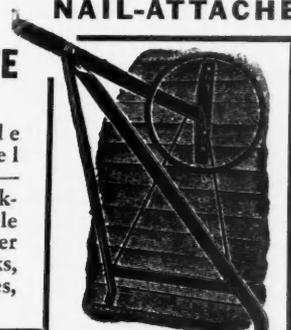
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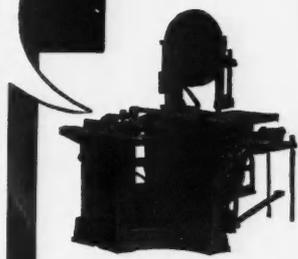
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BUILDING MATERIALS

300—Sheet Metal Handbook—"A Guide for Sheet Metal Workers" is a new 64-page booklet on USS galvanized black, ternes and stainless steel. It is full of practical details for sheet metal work, contains numerous tables giving gauges, weights and sizes, with practical information on estimating, laying out, fabricating and installing.—**CARNEGIE-ILLINOIS STEEL CORP.**, Pittsburgh and Chicago.

301—Brickote Siding—"The Home Renewed for Life" is a new illustrated folder presenting Brickote, a combination of baked clay face brick surfacing on waterproofed Celotex board to be nailed on over old siding.—**THE BRICKOTE CONSTRUCTION CO.**, 15000 Linwood Ave., Detroit, Mich.

302—Philippine Mahogany—A new brochure containing suggestions on how to use Philippine mahogany for paneling, staircases, doorways, fireplace mantels, all presented in clear, photographic illustrations.—**PHILIPPINE MAHOGANY MANUFACTURER'S IMPORT ASSOCIATION, INC.**, 111 West 7th Street, Los Angeles, Calif.

303—Plywood Forms—"Reasons why Concrete Forms of Douglas Fir Plywood" is a 24-page handbook, illustrating the advantages of plywood forms with clear directions for form design construction, stripping, storage, etc. An interesting section deals with curved formwork.—**DOUGLAS FIR PLYWOOD ASSOCIATION**, Tacoma, Wash.

304—McKinney Oilite Butt Hinges—"The First Improvement in Butt Hinges in 2 Decades" is the title of a new bulletin describing the new McKinney butt hinges which are provided with the wear-resisting, self oiling bearing material, oilite.—

McKINNEY MANUFACTURING COMPANY, Pittsburgh, Pa.

305—Cabinet Hardware—"Handy Reference Catalog No. 26" presents sixteen pages of timely information on National Brass cabinet hardware sets. Something brand new in cabinet hardware design is presented in the "Matched" cabinet sets illustrated for the first time in this catalog.—**NATIONAL BRASS COMPANY**, Grand Rapids, Mich.

306—Schundler Insulating Plaster—Specifications and working details for use of this material "identified by its golden glitter" are presented in a four page data sheet. The use of Schundler Mica Pellets for dry fill, wall insulation is also covered.—**F. E. SCHUNDLER AND COMPANY, INC.**, Long Island City, N.Y.

307—Residential Wiring Booklet—"Durax Non-Metallic Sheathed Cable" is a 12-page booklet describing the installation of this material and interpreting its use according to the rules laid down by the National Electric Code.—**ANACONDA WIRE AND CABLE COMPANY**, 25 Broadway, New York City.

308—Industrial Maintenance Finishes—"Introducing F.W.B. Modern Industrial Maintenance Finishes. Fortified With Bakelite Resins" is an 8-page data sheet describing the composition of the new line of Everseal floor finishes, mill white, enamels and aluminum finishes.—**EVERSEAL MANUFACTURING COMPANY**, Fish Bldg., Broadway and 57th Street, New York City.

HOME EQUIPMENT

309—Mirrors For 1937 Interiors—"Mirrors in the New American Home" is a deluxe brochure of 28 pages with roto-

grave photographs illustrating the important place of decorative mirrors in today's architecture. Mirrors for halls, over mantels, living-rooms, apartments, dining rooms, dressing rooms, bathrooms, hotels, salesrooms, restaurants, bars, shops and theaters are presented in this superb collection, prepared by the Mirror Manufacturers Association.—**PITTSBURGH GLASS INSTITUTE**, 30 Rockefeller Plaza, New York City.

310—Laundry Equipment—"Modern Home Laundering" is a valuable consumer booklet of 42 pages, thoroughly illustrated with the latest home laundering equipment and rich with useful hints on special laundering problems and labor-saving laundry procedure in the home. Foreword states that this is "a book of practical information, based on tested methods dedicated to the modern woman."—**WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY**, Mansfield, Ohio.

311—Bathroom Cabinets—"Morton Steel Products for The Building Industry" is the new 16-page catalog of steel medicine cabinets and mirrors; also ironing board cabinets. A wide range of styles and sizes is offered; complete dimensions for each is included.—**MORTON MANUFACTURING COMPANY**, 5105-43 West Lake Street, Chicago, Illinois.

312—Will-Burt Stokers—Complete information regarding the air controlled Will-Burt Stokers for the home and for commercial use is presented in a new series of 4-page illustrated data sheets.—**THE WILL-BURT COMPANY**, Orrville, Ohio.

313—Fireplace Construction Supplies—Catalog A-31 is a 20-page folder with illustrations and detailed drawings covering fireplace units, dampers, flexible fire-screens, basket grates, ash dumps and clean out doors. Information also available on the Bennett recirculating fireplace units.—**BENNETT FIREPLACE CORPORATION**, Norwich, New York.

314—Gibbs Boardtile—New information regarding durable and decorated walls of Gibbs Boardtile is presented in the new folder richly illustrated. A section on metal and boardtile trim is of particular interest.—**GIBBS BOARDTILE CORPORATION**, 615 North Aberdeen Street, Chicago, Ill.

315—Howard Ironing Board—Illustrated data sheet, "An Achievement in Practical Home Modernization," covers three different models of Howard ironing boards, showing detailed construction.—**CHINOOK MFG. CO.**, Seattle, Wash.

American Builder,
105 W. Adams St.,
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(July, 1937)

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