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AN INVITATION TO YOU

The AMERICAN BUILDER cordially invites and urges you to enjoy the privileges and benefits of its Correspondence Department. Any phase of any building question may be profitably and instructively discussed in this department.

We have interesting booklets for
Architects, Contractors and Dealers.
Please tell which booklet you want.



Mr. Noble Rowland, foreman of the Andersen Frame Department, joined our force December 14, 1908.

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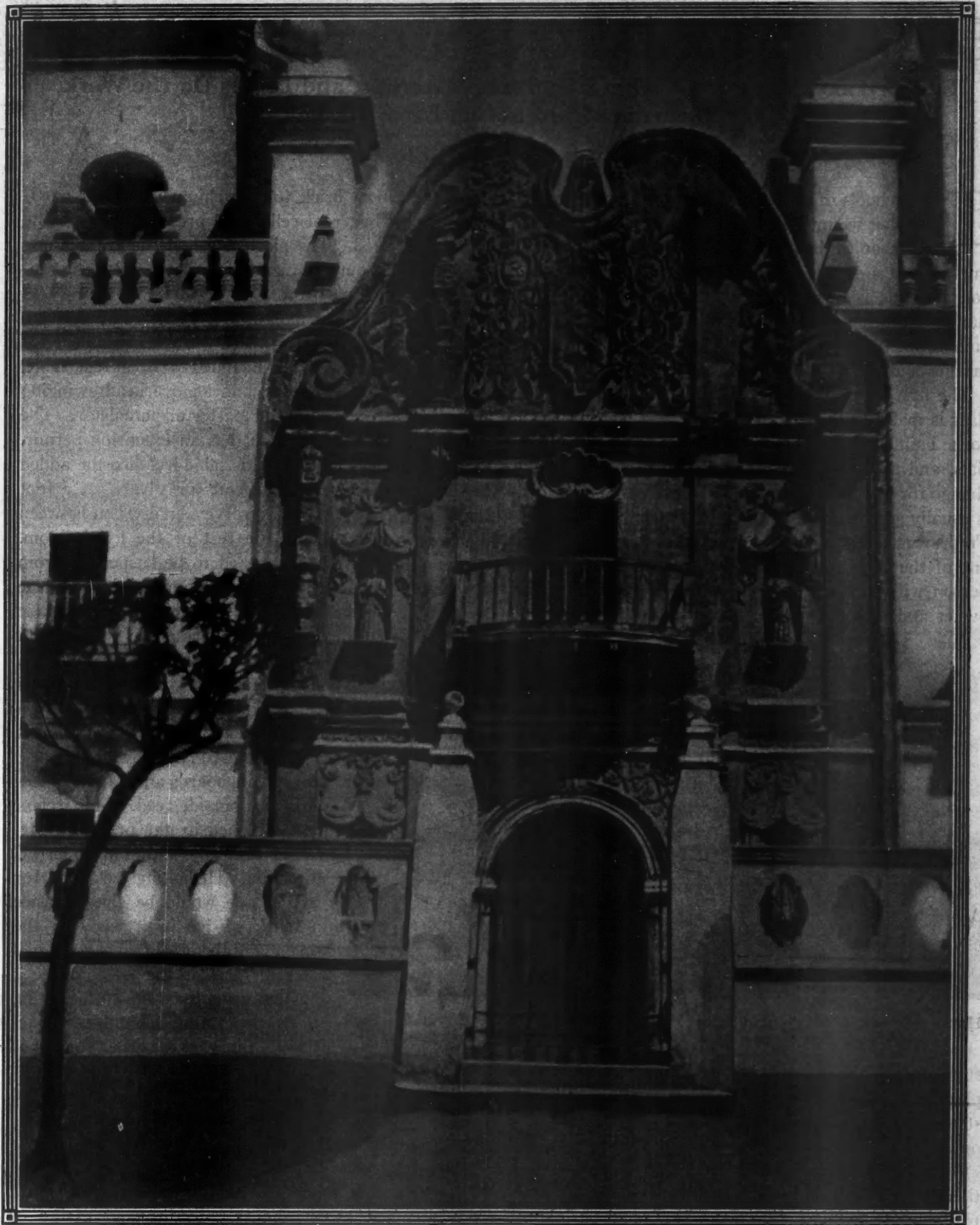
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AN EXAMPLE OF GOOD ARCHITECTURE:

IN THE SOUTHWEST

The finest type of Spanish Mission Architecture is exemplified by the entrance of the San Xavier Mission. Erected by Missionaries in 1692, it still houses a school for the Papago Indian children.

NEAR TUCSON, ARIZONA

High School Boys Learn to Build

School Takes Contract, Owner Furnishes Materials, and Pupils Do the Work, Learning from Actual Experience

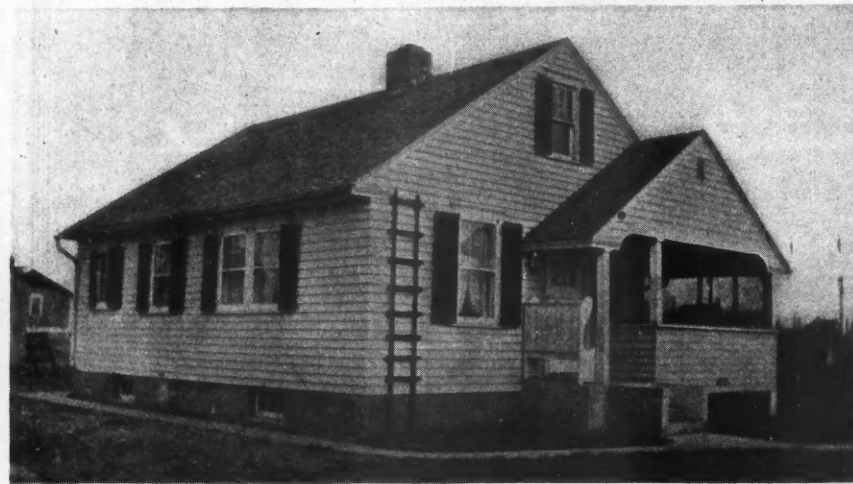
By S. O. WERNER

THE schools of the country are waking up to the fact that we must do something for children with a mechanical bent. One evidence of this is very amply illustrated by the work in building construction that has been carried on by the South St. Paul Junior High School in the last five years. During this time four houses have been built, and a number of garages and a porch have been erected.

The first step in the construction of a house by the class is making a contract with a person who wishes a house built. The prospective owner pays for the materials, and the labor is furnished by the school in exchange for the experience the boys receive. The school is usually given a year in which to complete the project. To prevent exploitation of school labor for speculation, one of the requirements of such a contract is that the person with whom it is made must be the permanent owner and occupant of the house. Another condition

made the cement brick for the chimney and for partitions of coal bin, root cellar and preserve cellar. The house was wired. The plastering and rough plumbing were done by outside men. The boys assisted in installing the heating plant.

During the winter months the inside features were built in the shop. Among these was the equipment for a breakfast nook. This included a breakfast table, benches with hinged seats, and an overhead swinging arm with electric socket for toaster or percolator. The table ordinarily seats six but has an extension permitting the seating of nine. This table has also the added feature of a drawer at the end for silver. A 5-foot bookcase was built partly to serve as a division between the breakfast nook and the rest of the living room. A china closet was constructed to be suspended from the ceiling in a corner of the room, leaving a place beneath it for the tea cart. The tea cart, also made



House Erected During the School Year by Students of the South St. Paul Junior High School as Part of the Course in Practical Construction.

stipulated to the prospective house owner is that the plan must be of good design. The school upholds high standards of building and insists upon undertaking only projects of which the community may be proud.

The last project completed by the building construction class was the little cottage shown in the accompanying illustrations. The work was under the supervision of the writer, but three classes with the collaboration of their teachers and the high school principal worked on the project. The work as a whole was divided into five parts: the carpentry work, cement work, brick work, electrical work, inside finishing and decorating and outside painting.

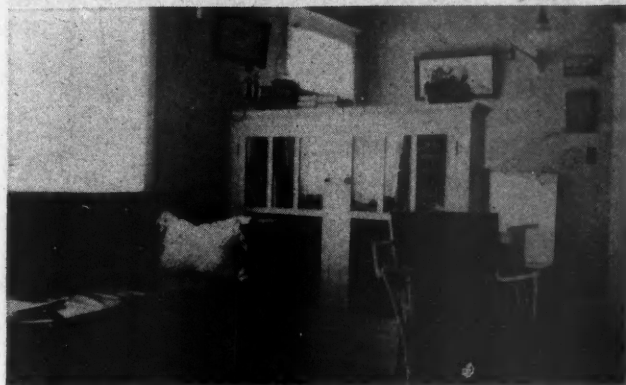
Before the cold weather began all the rough work was completed as well as putting on the finished siding, the cornice work, and shingling. One group of boys

by the boys, has a shelf below and collapsible leaves at the sides with a top dimension of 32 by 36. This permits wheeling the cart out on the porch and then serving from it as a table. The boys built also kitchen cupboards and a built-in icebox with outside feed. This icebox was designed by the principal, Mr. W. L. Maulsby, and built under his direction. He jokingly claimed for it that one would be able to place a block of ice in it early in the spring and throw out what remained of said block in the fall. While it has not quite lived up to this claim, it has been found highly satisfactory. Since there was no other

convenient place, the laundry chute was made a part of the kitchen cupboards. Other inside features constructed were two wall clothes closets with shelf for hats, rods, and drawers underneath for shoes, linen closets, a built-in cedar closet, and a panel for the fireplace.

As soon as it was warm enough in the spring, work was resumed on the house. Fitting and casing of doors and windows, laying floors, painting of walls and woodwork were completed. A coat of filler was applied to the plaster and three coats of paint for finish. The living room walls were painted a soft blue gray to harmonize with the dull-finish white enamel woodwork, the kitchen walls were painted white, the bathroom light blue-green, and the bedrooms respectively buff and pale rose. The ceilings throughout are ivory. Inside features were installed, floors varnished

and linoleum laid in kitchen and bathroom. The class in electricity, under the direction of Mr. F. E. Lawshe, did the wiring and hung the fixtures. The house was unusually well provided with electric outlets especially for wall fixtures. For example, the two small bedrooms have three openings each for light and the rest of the house is provided in proportion. Tile was made and laid for the hearth and porch. Cement walks, steps and retaining wall were constructed. All cement



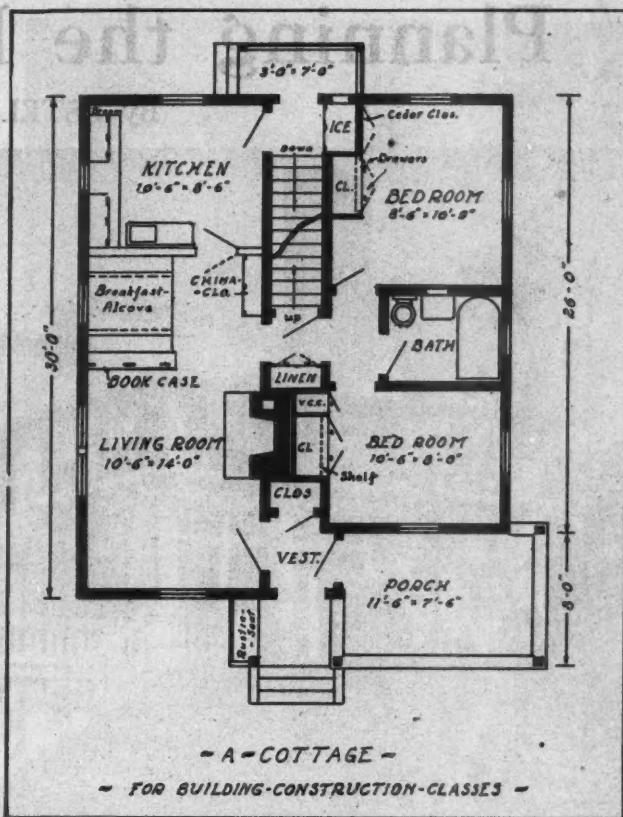
Built-in Features Were Part of the Work of the South St. Paul High School Students in Erecting the House.

and brick work was under the direction of one of the manual training teachers, Mr. William Porten.

Upon completion the house was opened for public inspection a few days before the close of school when the mayor, school board members and the general public, including of course the parents of all the boys who had worked on the house, attended en masse. The home economics department of the high school served refreshments.

Thus far the actual project work has been described. Under the requirements, however, 50 per cent of the school day is devoted to this, while 30 per cent is devoted to trade science and 20 per cent to non-vocational work. The trade science is divided into three parts: mathematics, science and drawing, all correlating closely with the work on the project. For example, as the lumber is received it is checked up in terms of board feet and compared with bill of lading. Measurement of triangle areas is taken up in connection with estimating board feet necessary to cover the gable end of a house. The principle involving the hypotenuse of a right triangle is used in estimating rafter lengths, and stairways and in squaring up corner of building by the rule of 6 by 8 by 10. The boys are thoroughly grounded in the understanding and use of formulas, as a rule working out the formulas themselves.

The correlation of science with the project work may be indicated by some of the topics touched upon in chimney construction; as for example: air pressure, behavior of hot gases and air, heat radiation, deflection of cold air currents, effect of size and shape of flue. The principles of various types of heating are taken up, the explanation of the pounding of steam pipes, etc.



The School Insists That the Design and Floor Plan of the House to Be Built Be Approved Before Work Is Begun.

The drawing work begins with freehand sketching, the drawing of architectural objects to scale, and includes making a floor plan of project for the following year. The class is instructed in the use of trade magazines for reference. The AMERICAN BUILDER and other magazines are not only available in the school library but are kept on a book shelf in the classroom. Finally, the class is given a course of 14 lesson in blue print reading and blue print making.



Records of Today Sealed in Corner Stone

WHEN the thirty-two story Straus Building is razed one hundred years from now, or even several centuries hence, a little copper box placed just prior to the completion of the building in the corner stone of this magnificent Chicago skyscraper will yield a valuable record relative to history of America in 1924.

Besides containing a history of the construction of the building, the box has a copy of the abstract of title, copies of several magazines which have articles on the Straus Building, a strip of the motion picture film being taken of the progress of construction, Chicago newspapers of the date that the corner stone was sealed, and a parchment giving the names of all officers and their associates who in any way are identified with the building.

Five phonograph records, with a package of needles and explanation of the method of playing the instrument, are included. The records are representatives of various present-day artists, Galli-Curci, Paderewski, Kreisler, and Sousa. A. Lyman's California Ambassador Hotel Orchestra number was selected as a representative of modern jazz music.

Planning the Retaining Wall

By ESTELLE H. RIES



Turning a Defect of Location Into an Advantage. With cobbles picked from a nearby field a retaining wall was built, giving a broad terrace to the house.

THERE are many situations in hilly sections that are made plantable, beautiful and distinctive by a carefully planned retaining wall. An effective bit of wall does much to add picturesqueness, and the retaining wall has the added virtue of utility.

Grass will not grow upon a steep slope in which erosion proceeds so rapidly that the roots are exposed and drowned out. Soil when dry will generally stand in a perpendicular bank by its own inertia, but when rained on and saturated with water will be carried away. And there are other soils which will retain water so long that they create a problem with increased pressure. Thus when planting is attempted on the sharp slope, shrubs and other growth will be subjected to washouts and similar conditions that the retaining wall may be called upon to control.

The grounds around the house will, by its use, present a lawn or garden with a definite, clean-cut edge in trim, firm condition, unharmed by rushing rains, and with much better possibilities for planting due to the moderated slope created.

At the same time the retaining wall may perform the function of a garden wall, providing privacy from the prying eyes of passersby, and forming a background or setting for shrubs, garden seats and other adorning things. In these cases the retaining wall is often required to extend upward above the min-

imum height needed to hold back the earth.

"Stone walls do not a prison make," said the poet, but a wall may yet repel and overawe, even as, properly designed, it may attract and afford a sense of well-being, of kindly protection rather than compulsory confinement.

The contour of the ground and the consistency of the earth are the chief determining factors of the dimensions of the wall. After these requirements are satisfied comes the problem of suiting the wall to the house. The material to use and the method of using it must be considered, and a certain amount of clinging foliage or vines will have practical use as well as charm, so that their planning and maintenance have a share in the preliminary work. It has been found that turf which continues over the top of the wall, with trailers dropping down to hide the line of connection, will prove of greater duration than a simple grassy outline that stops just within the wall surface and permits rain to run down back of the wall. At the same time this arrangement softens and beautifies the wall even when it is quite elaborate of itself.

The material for the wall, its color and texture, depends upon the house. Heavy structures are properly supplemented by strong and coarse walls. The brick house might have a brick wall, or a concrete one trimmed in brick. The concrete house may be sim-

ilarly bounded. A little frame house would hardly be so severely guarded, and might be happily surrounded by a retaining wall of log, alternate layers of long logs lying face out, parallel with the terrace, and logs driven well back into the bank of earth with butt ends resting evenly on the ones below them. This arrangement forms a charming wall as well as a durable one that will prevent washouts and furnishes ample crevices in which plants may be grown.

Often the building site is rocky, especially in the hilly sections where retaining walls become necessary. In these instances a delightful result is had by constructing the house out of the native rock.

Of course the mere fact that rock or stone lies at hand is not the last consideration for the prospective home-builder. He may prefer a brick house or a frame building after all, and of course if the additional cost of transportation does not stop him, it is fitting that he should have what he desires. But it is undoubtedly pleasing to see the retaining wall built of the ground itself, so that whether the house be of brick, or concrete, or frame, or anything else, it is permissible to have the retaining wall of stone, *provided* that the stone is obviously local and not brought from distant points.

The wall should always be in architectural harmony with the house even if different materials are used. The scale, the color and, as far as possible, the texture should all be chosen with reference to the type of architecture in the dwelling. The rugged wall for the rugged house, the fine wall for the more delicately detailed house.

There is nothing more dignified, more restful to the eye, than a cut stone wall correctly used. It is only when there is too much attempt at ornamentation, so that the apparent strength of the wall is decreased, that restlessness is felt. In the brick wall there should also be reposefulness. Too obvious and emphatic a pattern in the brick work, especially with various colors, breaks up the wall and reduces its apparent strength. Similarly it is unwise to mix brick and stone,



The Retaining Wall Here Is Part of the Architectural Scheme and Defines the Terrace of This Formal Residence.

or brick and terra cotta enough to mar the unity of the wall.

Decoration is possible through the agency of ornamented caps and accented bases to express foundation. The corners, or the panels, if such there be, may be accented by mouldings or by bands of different materials.

Retaining walls are pleasing when built of rough stone or brick with the mortar joints raked out and the surface covered with vines or moss. Their attractiveness lies in their durability and ruggedness, and in the contrast of bright foliage displayed over the dull tone of the walls.

Plants find their best environment in a wall that is neither the formal mortar-laid stonework, nor the irregular dry wall without mortar, but something sug-



Making the Most of an Abrupt Slope. Comparatively little earth hauling was required for this retaining wall, but an imposing result was obtained.

gestive of both. In this wall the builder may leave small spaces where pockets of soil run back to the natural soil behind the stonework. The largest of the moisture-loving plants may be successfully grown in these spaces as they will not dry out so readily as when planted in shallow crevices and wall crannies. Brick walls may be provided with earth spaces in the same manner if good judgment is used in leaving out a brick or two here and there, and laying the adjoining bricks with good support and to throw off surplus water without letting the earth become loose.

In erecting irregular dry walls that are to depend upon numerous little plants and mosses for their softening grace a common error is often made. This is to complete the wall first and then introduce the planting. A much better result is had if one lays the plants while the wall is in process of construction, as they can at once adapt themselves to the conditions. There are a great many very lovely little plants, both flowering and non-flowering, that may be chosen for color, form and fragrance, to harmonize with the character of the house, and yet be suited to the soil and climate. A number of varieties are listed under the headings of rock gardens and wall gardens.

When both large and small stones are used in dry walls, the irregular spaces give opportunity for a large variety of plants that will bloom successively throughout the year.

As the stones are being laid, the roots of the plants should be set at desired intervals well back in the crevices with a good sprinkling of soil. They should be laid in the right direction to reach back into the moist earth behind the wall for sustenance. Rich earth and gritty sand, well packed back of the wall, will provide for good drainage and proper nourishment. If desired, provision may be made for watering the plants during dry weather, in the form of a long line of sprinkling pipe along the upper part of the wall, concealed among the plants.

The architectural and decorative value of a wall cannot be considered too thoughtfully. The retaining wall satisfies a physical need, but it may also fulfill the mental yearning for beauty. Whether it be of brick or wood or stone, whether frankly unadorned or clothed in greens, it is always one of those important details that proclaim taste in the delightful (or treacherous) way that details do.

Salt Lake City Brick Man Is "On the Square"

WHEN a large delegation representing the Common Brick Manufacturers' Association of America visited Salt Lake City recently en route to Los Angeles, California, old man Efas Morf Erif met the party on Main street.

As an example of cubist art, Efas Morf Erif represented the height of angles. In fact there wasn't a curve in his whole body, unless you counted the scooped out brick which served him for a mouth. His whole anatomy, and he measured something like ten feet from hard-burned toes to kiln-enameled hat, was composed of nothing but bricks, carefully put together by an artistic brick mason.

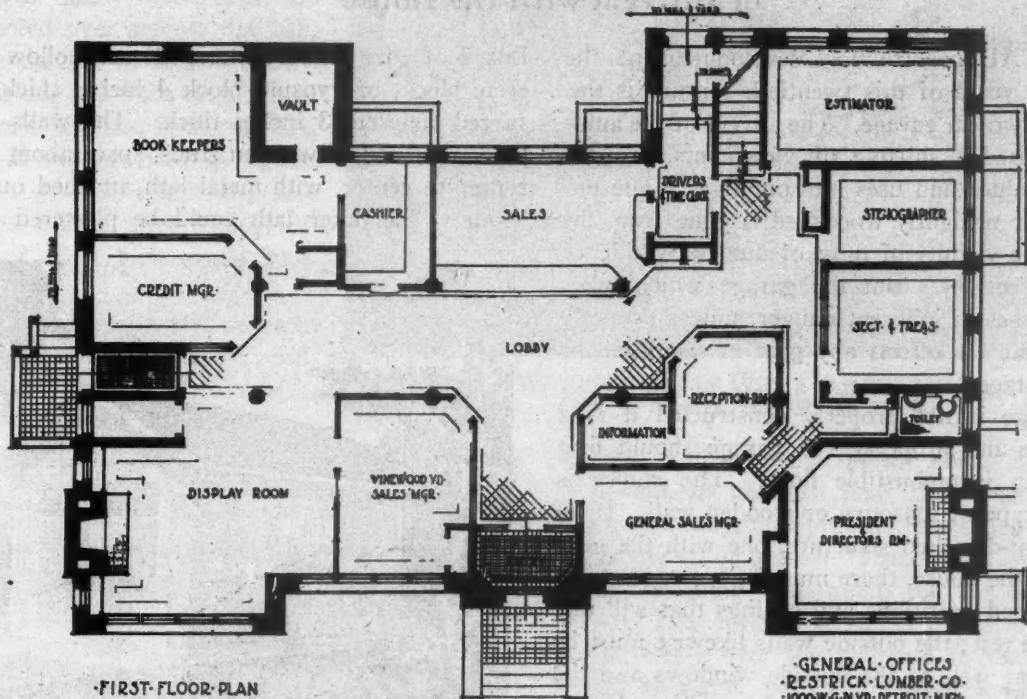
The angular statue, which attracted the attention of thousands to the company's display window, was a novelty even to many of the visiting brick manufacturers. The name which was given him proved to be merely a switching of the initials of the brick association's slogan, "Safe From Fire."—R. H. ARGUBRIGHT.



The Brick Man of Salt Lake City, Utah, Especially Designed to Greet the Visiting Brick Manufacturers. He was also exhibited at the Chicago Own a Home Show.

Chrysalis to Butterfly

Restrict Lumber Company, Detroit, Anticipating Customers' Needs, Makes Its Office Building Turn Salesman



More and More Progressive Firms Dealing in Structural Materials Are Realizing That the Most Forceful Advertisement of Their Product Lies in Their Own Front Yard. The Restrict Lumber Company, Detroit, Mich., has transformed its old office, erected in 1884, into the splendid building shown below. A modern adaptation of the old English domestic architecture, with art brick exterior, shingle-thatched roof, and casement windows, it faces one of Detroit's main thoroughfares. The interior provides not only for the main offices, but facilities for the artistic, efficient display of many different woods and other structural materials, in both the raw and finished product. Abraham & Woods of Detroit, were the architects.



Building the Garage

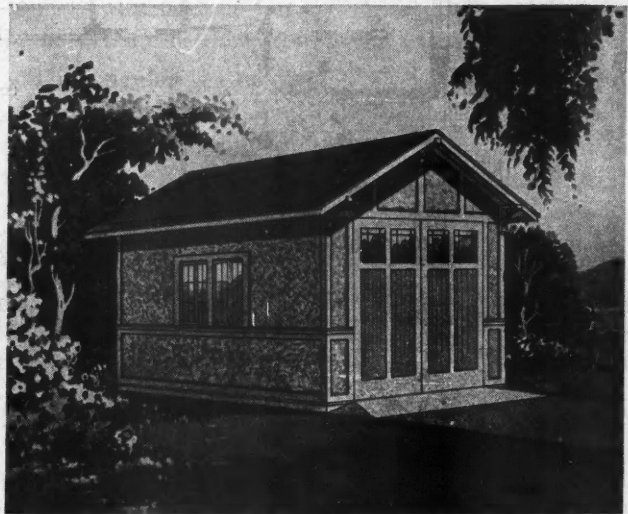
Precautions Necessary in the Design and Construction of the One or Two-Car Residence Lot Garage, or the Garage Semi-Detached or Integral with the House

A TYPICAL construction development of the first 20 years of this twentieth century is the one or two-car garage. The advent of the automobile has caused a shifting of viewpoints, brought a new set of values and uses into our lives. The unsanitary barn or unsightly woodshed is gone from the back lot and the vicinity of most of our city residence and business sections. But the garage which takes its place possesses in inherent danger, unless properly constructed, that far offsets any gain in sanitation or comfort advantage.

If the garage is not properly constructed it is a menace to life and property. A garage should first of all have an incombustible floor. The choice is wide for any type of masonry or wooden wall. If an integral or semi-detached structure, one with the general design of the house, there must be a garage structure of unpierced partitions and ceilings that will meet the 1-hour fire test; the outside walls likewise must be fire-resistant, as well as the outside windows and the garage doors, in order to prevent flames from breaking out and spreading through windows or to the exterior woodwork above. The word "must" here is no legal or ordinance "must"; simply a step dictated by the ordinary standards of safe and sound and profitable construction.

Many materials are acceptable for such garage wall construction from the standpoint of meeting the standard 1-hour fire test recommended by the National

Board of Fire Underwriters. Brick, hollow tile, concrete block, or gypsum block 4 inches thick, or reinforced concrete 3 inches thick. The walls may also be constructed of wooden studs, space about 16 inches center to center, with metal lath attached outside and inside. The outer lath could be plastered and back



For the Stucco House this Garage Makes a Pleasing Complement. It is particularly attractive in a setting of foliage.

plastered with portland cement stucco; the inner lath plastered with $\frac{3}{4}$ -inch portland cement or gypsum plaster.

Assuming that this would be an integral, or semi-detached garage, the interior partitions separating the garage from the rest of the dwelling, $\frac{3}{4}$ -inch Portland cement or gypsum plaster on metal lath, on both sides of studs spaced 16 inches apart, is satisfactory.

The combined floor and ceiling directly above the integral or semi-detached garage should be unpierced and have a fire resistance of one hour. Ceilings or roofs of reinforced concrete, or some other type of incombustible construction that meets the first test, are best and most reliable. A good inexpensive overhead construction is obtained by using 2-inch or thicker floor joists, spacing them not more than 16 inches center to center, with proper bridging. The ceiling could be of heavy metal lath weighing



A Sturdy, One-Car Garage of a Pleasing Type Which Will Blend Readily With Almost Any Type of Residence.

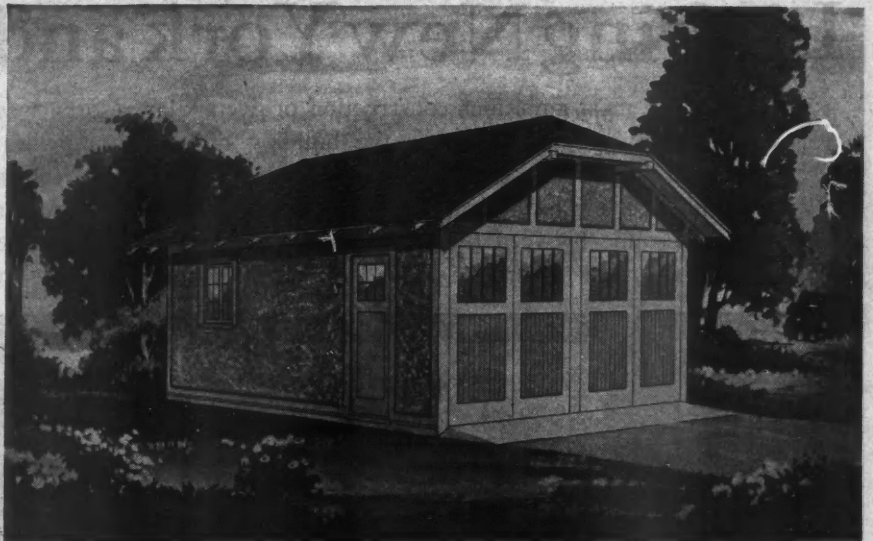
not less than 3 pounds per square yard, and portland cement or gypsum plaster not less than 3/4-inch thick. The metal lath to be attached to the joists by 6-penny nails driven nearly home, with the heads turned over against the lath, which in turn is to be bent down 6 inches along the walls on all sides and securely attached to them. The flooring above the ceiling to be double, of 7/8-inch rough and finished floor boards, with a layer of asbestos or other high grade floor felt between.

Where a garage is located beneath a dwelling all outside doors and windows, with their frames and sash, should be of standard fireproof construction, glazed with wire glass. It is important that these have metal frames.

The opening from a dwelling into a garage should be restricted to a single doorway, protected by some standard swinging-self-closing fire door, with approved fire resistive hardware and frame without glass. If the doorway connects directly with a cellar or basement on the same or lower level, in which there is any furnace, boiler, gas fixture or any kind of non-electrical heating device, the door sill should be raised about a foot above the garage floor level, or the doorway should lead into a vestibule which connects with the cellar or basement by a second door.

The reason for this is to prevent the fumes of gasoline which may leak or be spilled upon the floor from reaching a furnace fire or gas light which may be located in the lower part of the building. It is well known that gasoline vapors are heavier than air, and accumulate on a floor like water. They naturally will flow to any lower level. Should they come in contact with fire of any kind—even a spark—there will be ignition and a flash back to the starting point, causing an explosion.

If we consider the garage which is to be situated at some distance from the house, and not connected directly with it in any way, it is natural that many of the structural considerations governing the semi-detached or integral type of garage, considered above, do not apply. With the isolated one or two-car garage the fireproof door and windows are optional; personal likes or dislikes may dictate whether the structure is to be of wood frame, or brick, or of any of the favored types of stucco or concrete walls. But the design is important; it



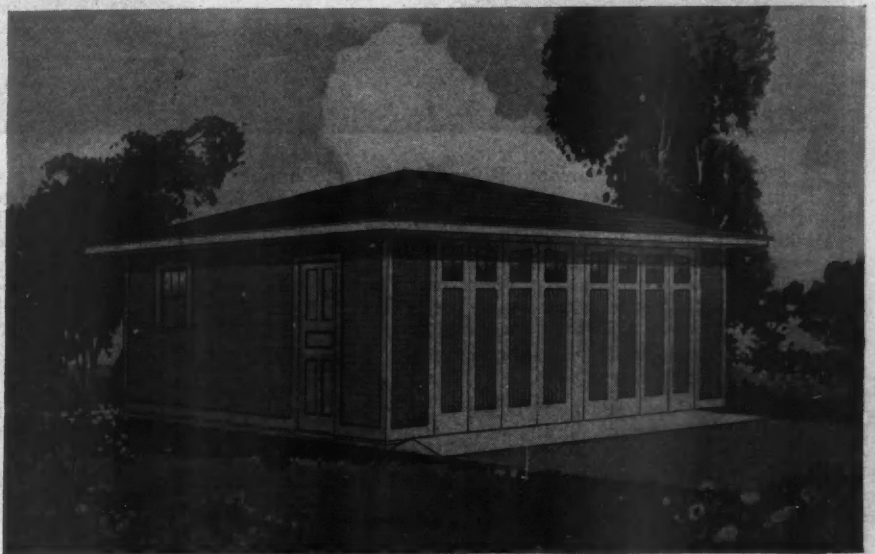
For the Family With Two Cars or With a Duplex Housing Two Families this Type of Garage Will Prove Its Utility.

should tie up with that of the house.

Within, its concrete floor should be laid so as to drain naturally, and prevent dangerous accumulations of water, oil or grease. There could be a pit, also, to permit working underneath the car as occasion required, and covered at other times by boards that fitted snugly over the aperture in the floor. There should be a sink, with warm water available from the house. In fact, if it is at all practicable, steam or hot water heat piping could also be laid from the house to the garage, making it more comfortable in winter. Connecting to the electric lighting system in the house is both a safety measure and a great help.

In a one or two-car garage a glove-fit is foolish and uneconomical. A spare foot or two saves both nerves and fenders, to say nothing of time.

A shelf of the proper width and height for a workbench will be appreciated by the motorist and a small cabinet for the storage of extra casings and other equipment is a convenience which can be built readily.



Note the Arrangement of the Doors on This Garage for Two Cars. The folding leaves allow either car to be taken out without regard to the position of the other doors.

Linking New York and New Jersey

ONE of the most ambitious construction projects attempted in recent years is the building of the Hudson River vehicular tunnel, which will link New York to New Jersey in the most efficient way yet devised. Traffic between the two states is at all times very heavy, and because of New Jersey's popu-

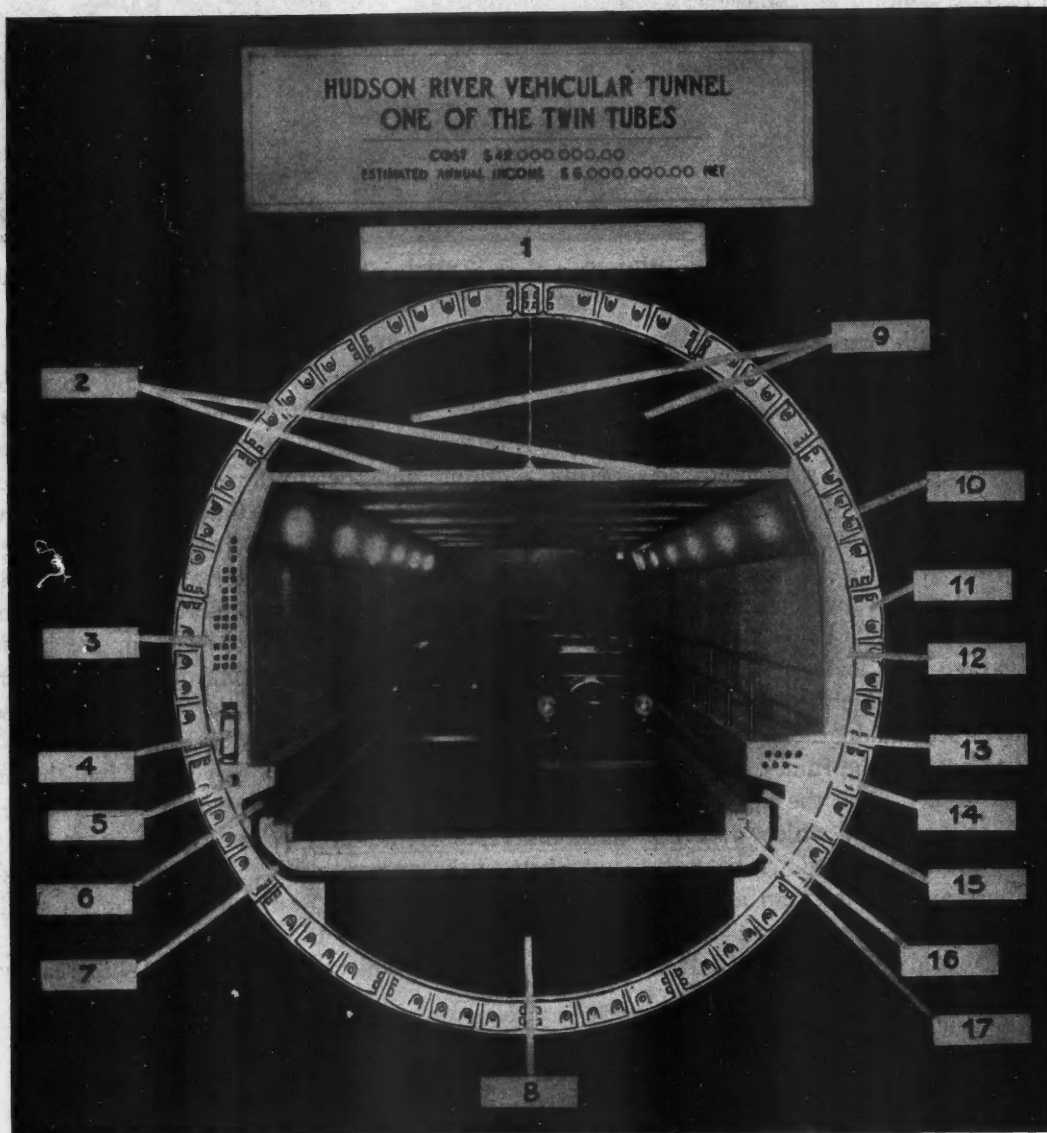
lar resorts, week-ends and holidays bring a congestion of automobiles that is far beyond the capacity of the existing ferry services.

There will actually be two tunnels, one for east bound and one for west bound traffic. Each will be 29 feet 6 inches in diameter, and 9,250 feet long. The

roadways will be 20 feet wide and have an overhead clearance of 13 feet 6 inches. The rest of the space will be required for the ventilating system, which consists of air ducts at the top and bottom of each tunnel. Fresh air under compression will be forced into the lower duct and from there into the roadway itself through air flues and expansion chambers placed at intervals of 15 feet along each side of the tunnel. This will force the vitiated air out through openings, also at 15-foot intervals, into the top duct whence it will be drawn out by large fans and discharged through the caissons at the end of the tunnels.

The tunnels are being constructed from both ends, and will meet somewhere in the middle of the river. The calculations on the work are so accurate that when the tunnels meet they will not deviate half an inch. The tunnels are built in ring sections of 14 cast-iron plates,

(Continued to page 178.)

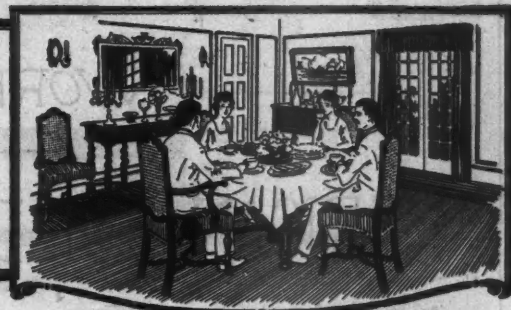


Model of the Hudson River Vehicular Tunnel, Made by the Westinghouse Lamp Company for the Purpose of Determining the Most Efficient Lighting System. The model, which is complete in every detail, is on a scale of one inch to one foot. It is twenty-nine inches in diameter and ten feet long. Miniature automobiles built in proper scale show exactly what traffic conditions will be, while the lighting units provide the exact illumination intensity proposed. There will be twin tunnels, one for east and one for west bound traffic, one slow and the other fast moving. The tunnels will each be 9,250 feet long, with a 20-foot roadway and an over-head clearance of 13 feet 6 inches.

The cards and the ribbons on the face of the model explain each part of the construction, as follows:

- | | |
|---|---|
| 1—Ventilation: Air completely renewed 42 times per hour. Transverse ventilation; no longitudinal movement of air. | 9—Exhaust air duct running through the entire length of the tunnel. |
| 2—Exhaust ports every 15 feet throughout. | 10—Tunnel segment, weight 3,000 lbs. |
| 3—Telephone and telegram cables. Annual income \$100,000. | 11—Weight of complete ring 21.6 tons. |
| 4—Fire extinguisher. | 12—Concrete. |
| 5—Water supply pipe. | 13—Sidewalk. |
| 6—Continuous fresh air supply to roadway. | 14—Power cables for operation of tunnel. |
| 7—Fresh air flues every 15 feet throughout. | 15—Fresh air expansion chamber. |
| 8—Fresh air duct running through the entire length of the tunnel. | 16—Fresh air flues every 15 feet throughout. |
| | 17—Drain. |

OUR FRONT COVER HOME



Plans for English Type Home Provide for Stucco on Hollow Clay Tile or Metal Lath Over Frame Construction

A HOME of beauty and satisfaction, suitable for any part of the United States, is presented in colors on our front cover and with a photographic reproduction below.

The exterior has dignity, with its interesting planes and well placed doors and windows. The chimneys, with their ornamental caps are decidedly decorative and the long slopes of the roof offer attractive opportunity for the use of colored roofing material.

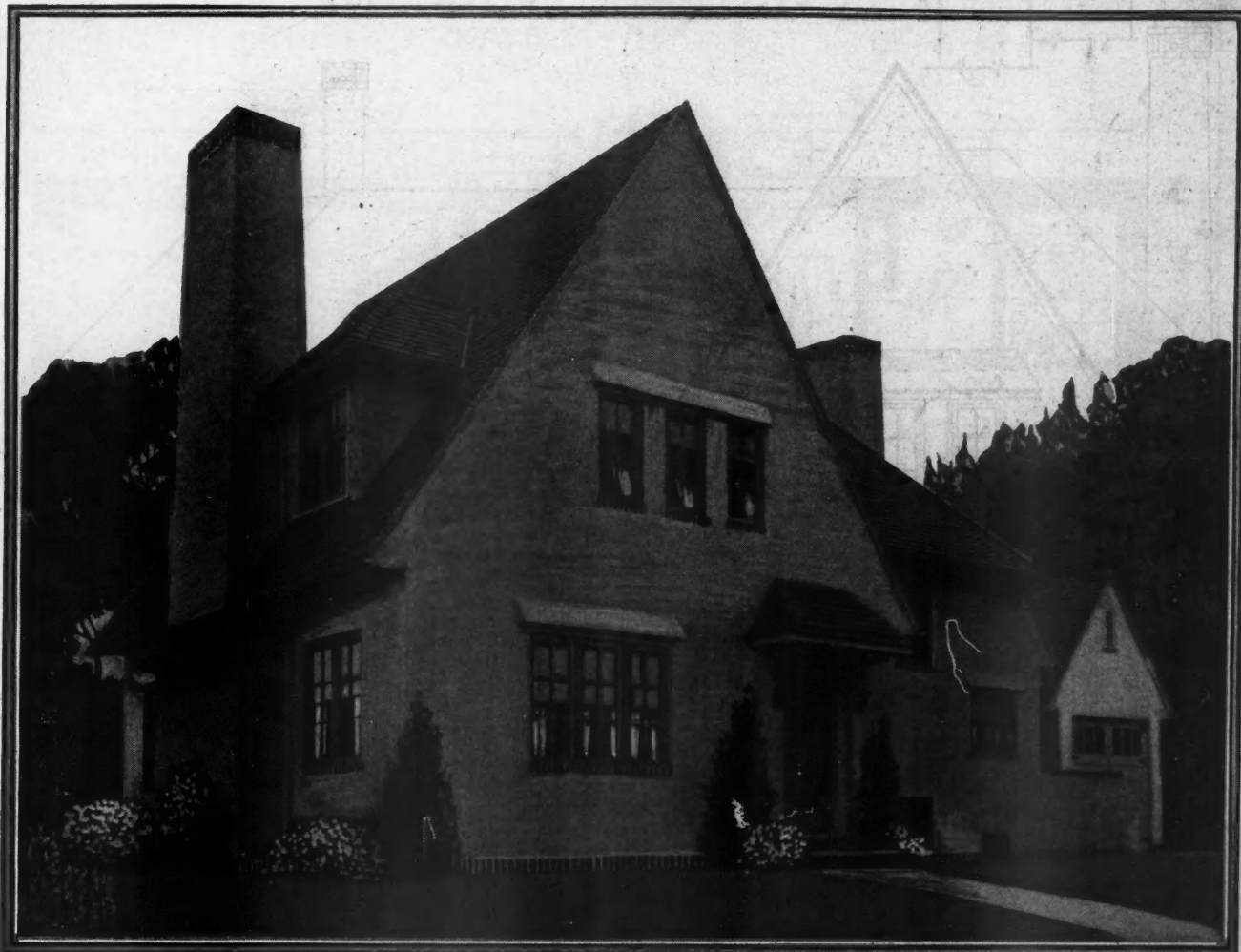
The interior is so planned that a hall separates the living room from the kitchen and dining room. The

living room is notable for the lighting and ventilation from three sides. The kitchen and dining room are liberal in size and conveniently appointed.

All of the three bedrooms on the second floor are of adequate size, generously ventilated and well provided with closets.

Working plans to scale are presented in the four following pages, with cross sections presenting both the hollow tile and the frame and metal lath constructions.

Notice that the garage shown in the illustration is designed to agree with the house in architectural detail.



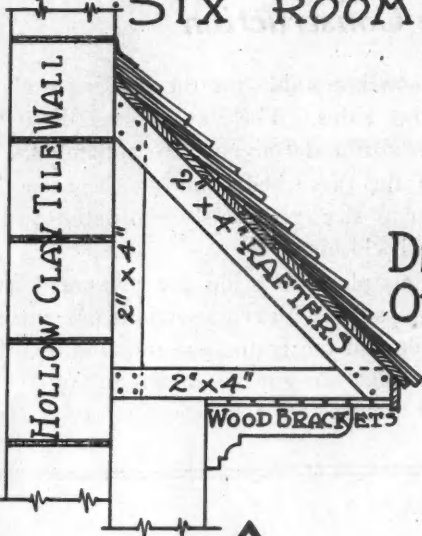
The Inviting Doorway, the Decorative Use of the Brick at the Ground Line and Under the Windows and the Tall Columns of the Chimneys are Touches which Make this Home Attractive. Consider the possibilities of a solid color or multi-colored roofing material. For working drawings, see the four pages following.

WORKING PLANS

OF

AMERICAN BUILDER FRONT COVER HOME

SIX ROOM TWO STORY RESIDENCE



DETAIL OF HOOD
OVER ENTRANCE
SCALE $\frac{1}{2}'' = 1'-0''$

CUBICAL CONTENTS

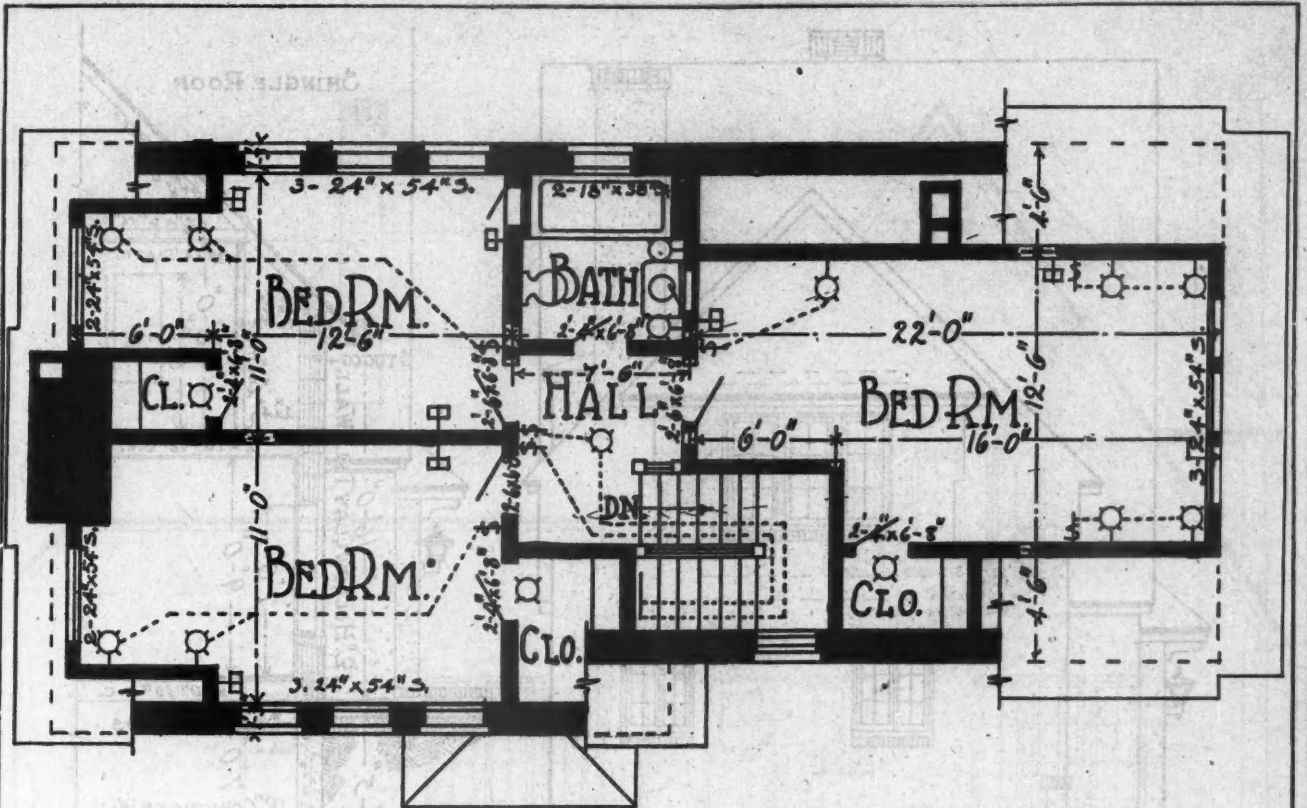
37,214 CU. FT.



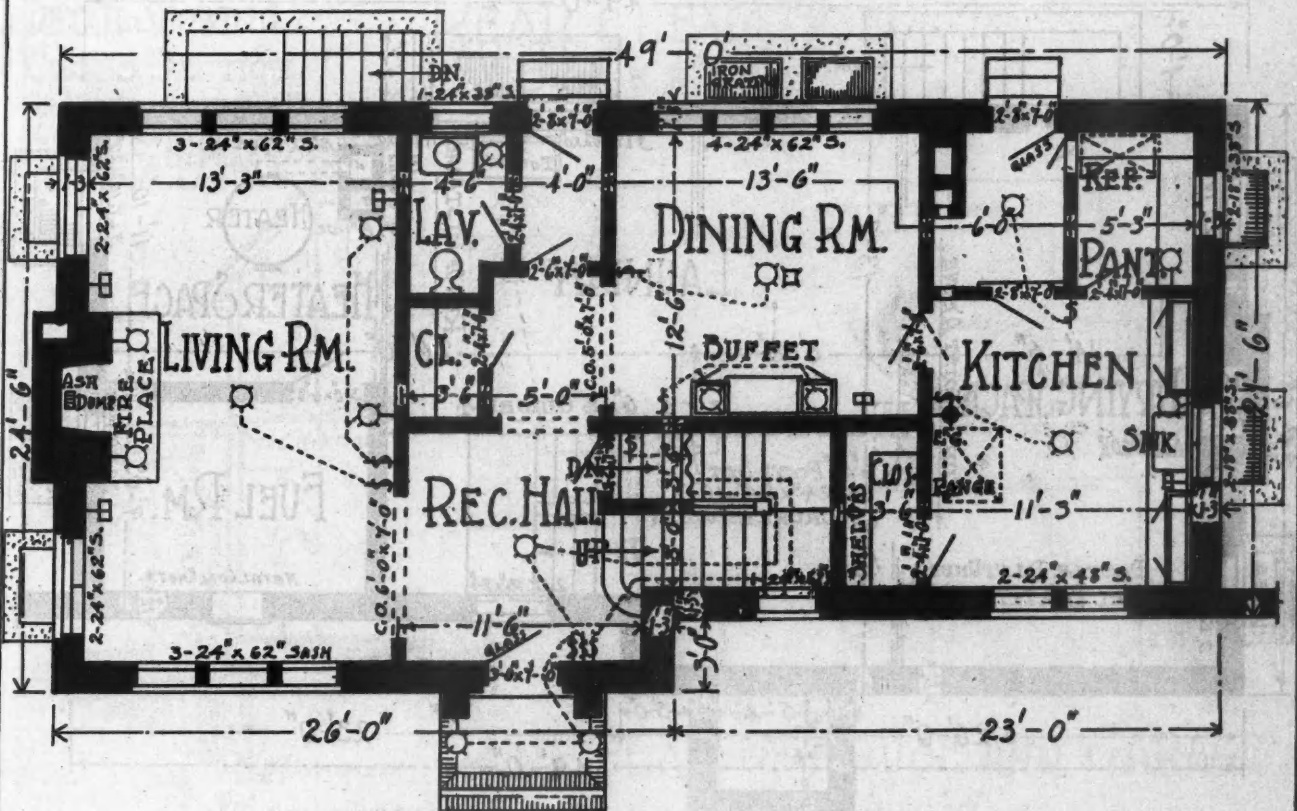
FRONT ELEVATION

SCALE $\frac{1}{8}'' = 1'-0''$

Front Elevation and Detail of Hood Over Entrance of the Front Cover Home. Note the simple, pleasing proportions of the home and the skilled and well balanced placing of the windows.

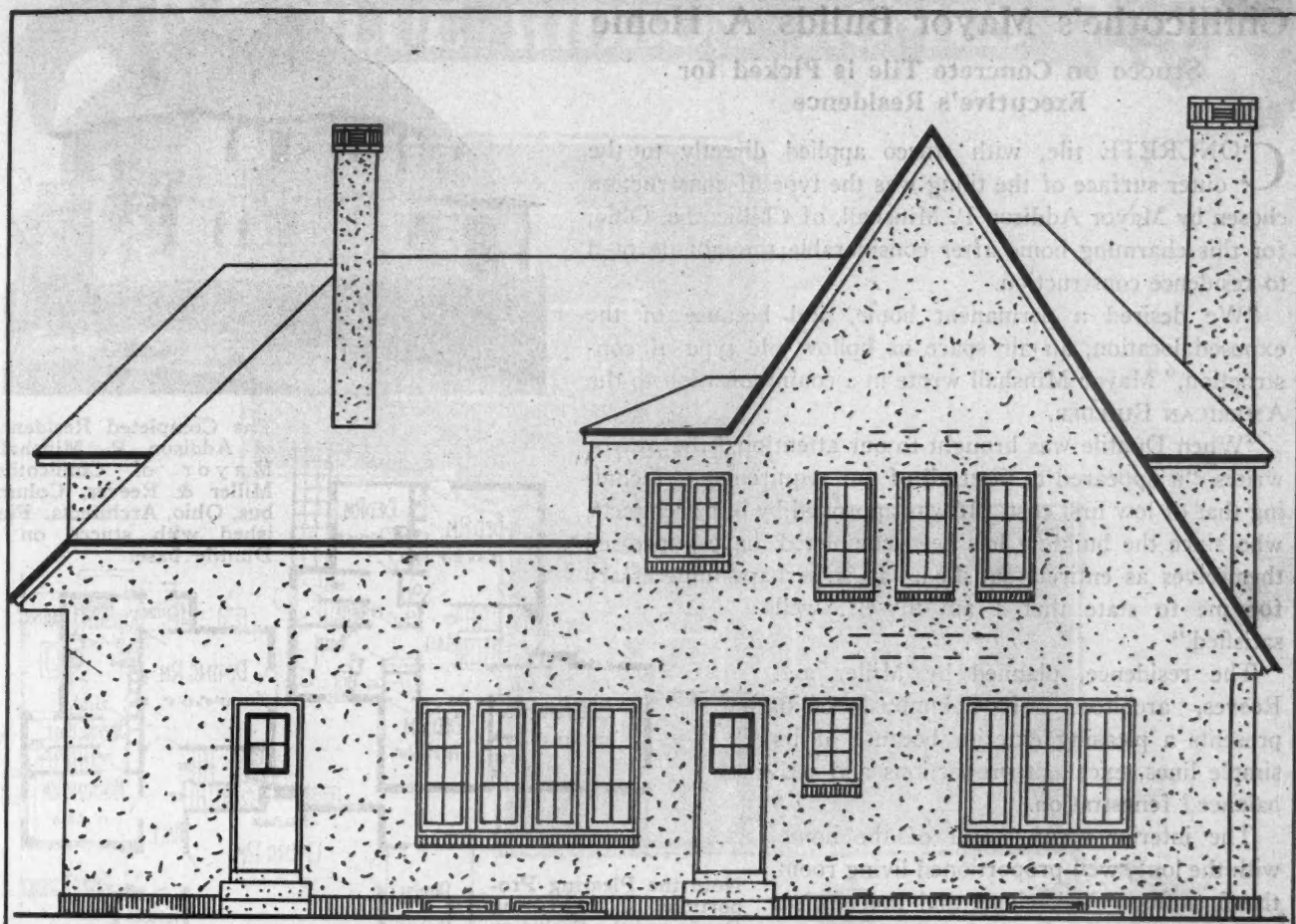


SECOND FLOOR PLAN
SCALE 1/8" = 1'-0"



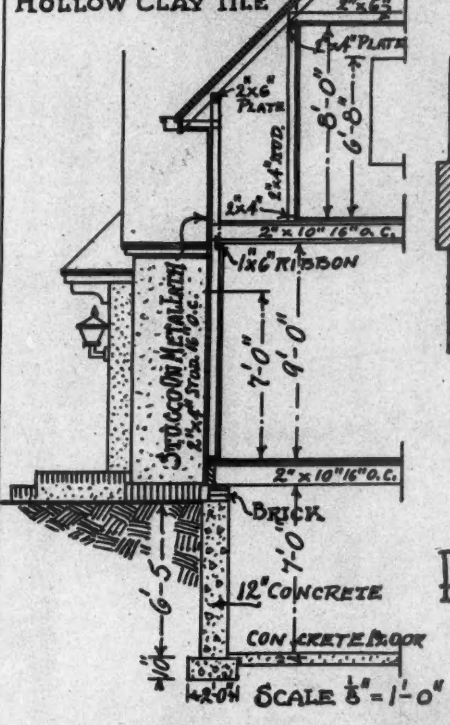
FIRST FLOOR PLAN
SCALE 1/8" = 1'-0"

The Grouping of the Rooms on the First Floor Is Especially Attractive. Note the reception hall with the open stairway and the convenient closet for wraps. The kitchen and dining room arrangement is efficient.



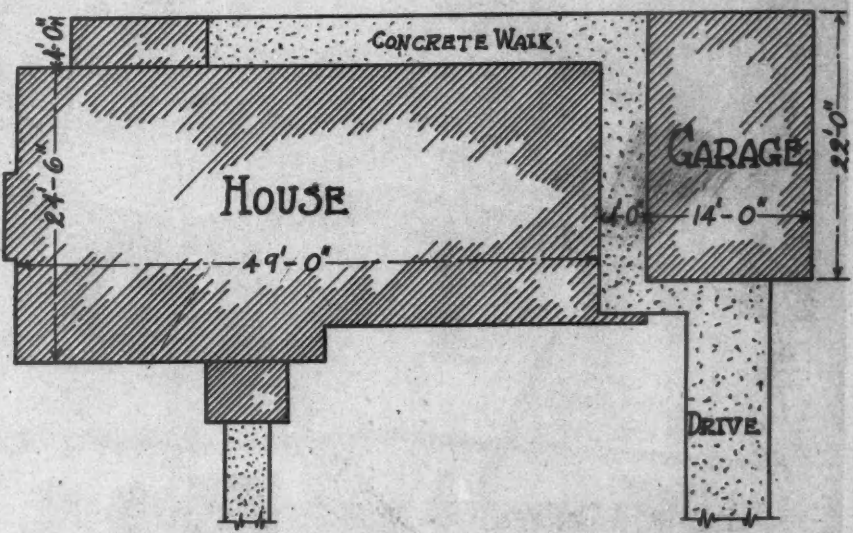
**DETAIL SHOWING
CROSS SECTION**

IF METAL LATH ON FRAME
CONSTRUCTION WERE TO
BE USED IN PLACE OF
HOLLOW CLAY TILE



REAR ELEVATION

SCALE 1/8" = 1'-0"



PLOT PLAN OF HOUSE AND GARAGE

SCALE 1/16" = 1'-0"

Plot Plan for the Front Cover Home, Showing the Arrangement of the Garage, the Walks and the Driveways, with the Rear Elevation and Details of Metal Lath on Frame Construction.

Chillicothe's Mayor Builds A Home

Stucco on Concrete Tile is Picked for Executive's Residence

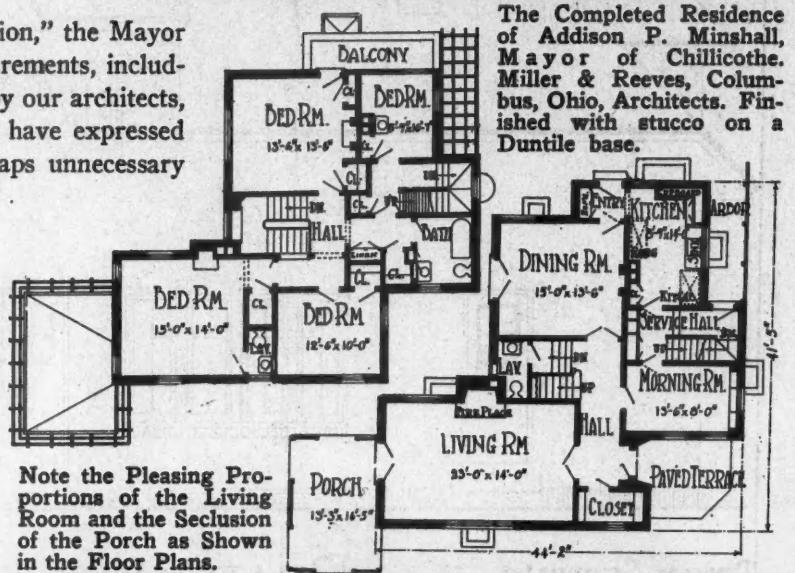
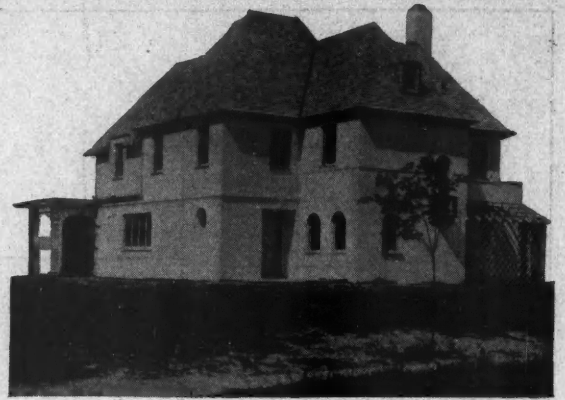
CONCRETE tile, with stucco applied directly to the outer surface of the tiling was the type of construction chosen by Mayor Addison P. Minshall, of Chillicothe, Ohio, for this charming home after considerable thought devoted to residence construction.

"We desired a permanent home, and because of the exposed location, an air space or hollow tile type of construction," Mayor Minshall wrote in a communication to the AMERICAN BUILDER.

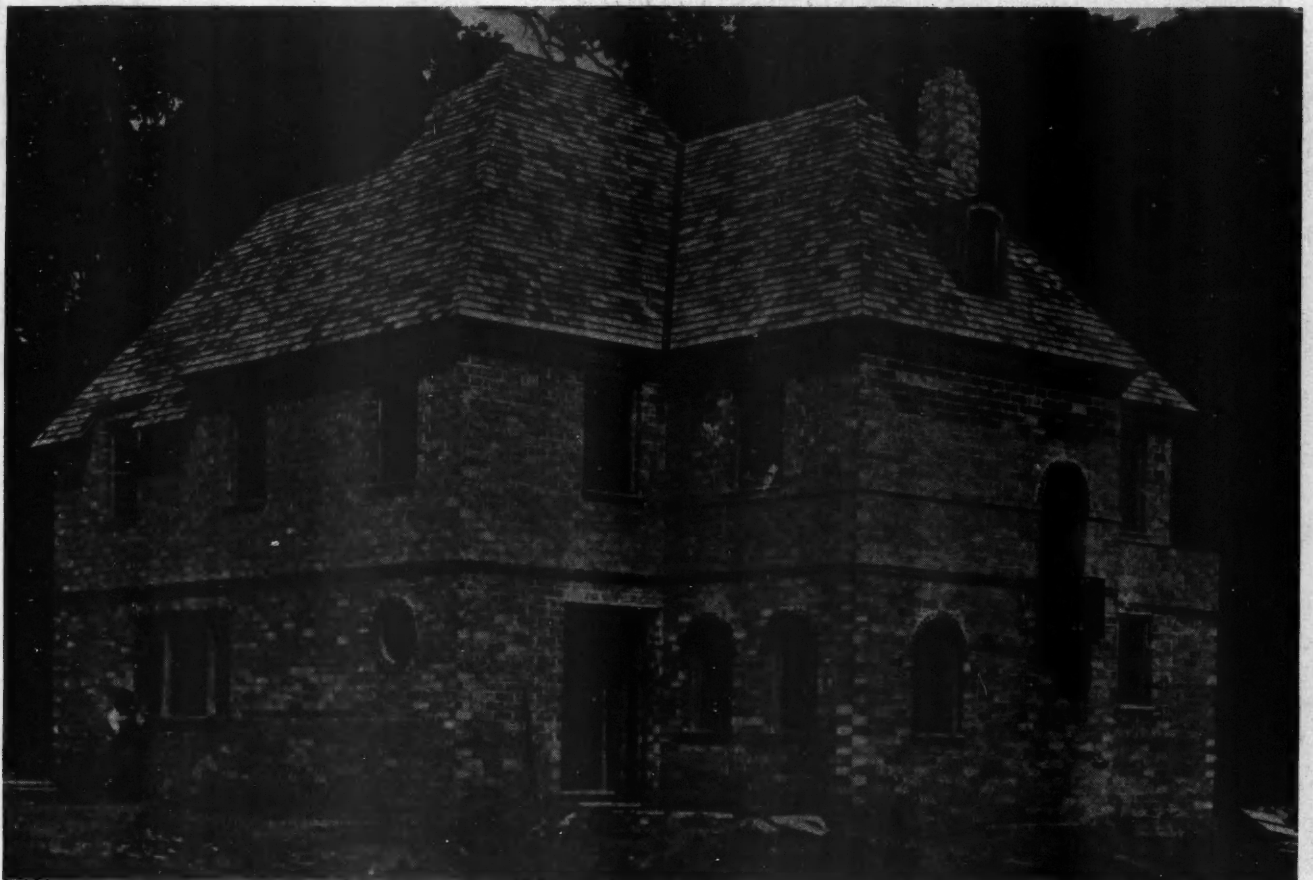
"When Duntile was brought to our attention," the Mayor writes, "it appeared to meet all of our requirements, including that of low first cost. It was approved by our architects, who since the building has been completed, have expressed themselves as entirely satisfied. It is perhaps unnecessary for me to state that I am myself, well satisfied."

The residence, planned by Miller and Reeves, architects of Columbus, Ohio, presents a pleasing exterior because of its simple lines, excellent proportions and well balanced fenestration.

The interior arrangement of the home, with the long, well-proportioned living room, the first floor cloak closet and the efficient utilization of space in placing the bedrooms, speaks for itself.

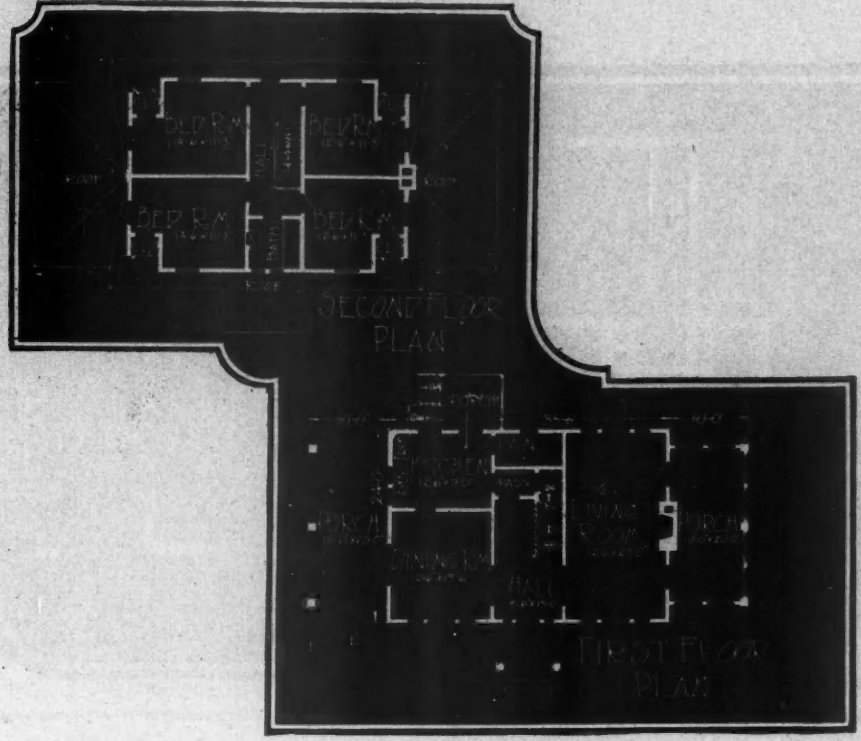


The Completed Residence of Addison P. Minshall, Mayor of Chillicothe, Miller & Reeves, Columbus, Ohio, Architects. Finished with stucco on a Duntile base.



The Minshall Residence, with the Duntile Construction Completed, Being Prepared for the Application of the Stucco Finish.

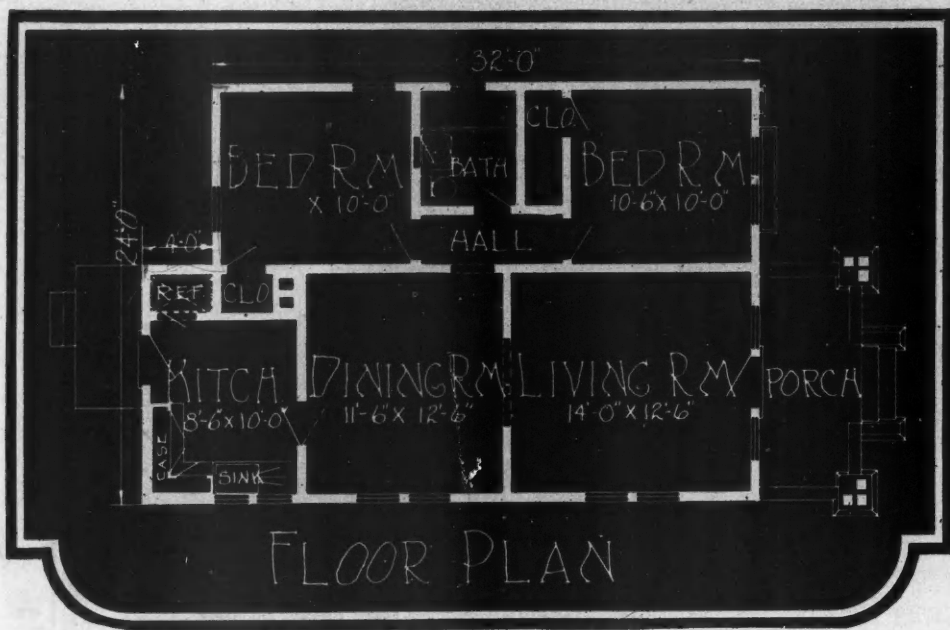
BLUE RIBBON HOMES



A MODERNIZED DUTCH COLONIAL HOME. This is a pleasing example of a type of home of frame construction which is rapidly gaining in popularity because of its beauty and efficiency. While it requires a wide fac-

ing, since the width, including the two porches, is 55 feet, the depth, 24 feet for the main body of the house, suggests that it might be erected on a corner lot with a proper facing. The commodious porches are a most attractive feature.

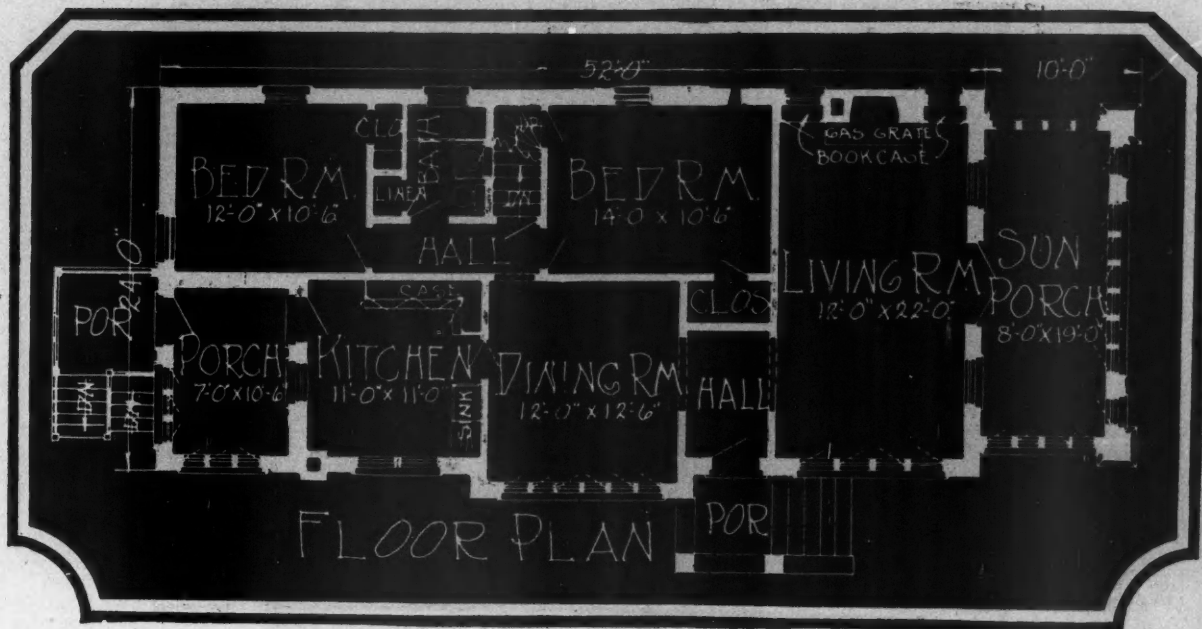
BLUE RIBBON HOMES



A NARROW LOT BUNGALOW. Here is a pleasing home of frame construction which should make office hours seem long to any husband. And notice that the designer has provided plenty of windows for the convenience of the bride in watching for the "Man of the House." The dimensions of the house, 24 feet over all in width and 32 feet deep, exclusive of the porches, make it practical to build on the ordinary size city lot. The simple, but effective, planning, make it a home which will return good value for the dollars invested and will keep it

within the means of the moderate pocketbook. It is a home which is meant for joy and sunshine. Notice how well it lends itself to the decorative effect of growing plants and vines. The interior is well arranged with the living room, 12 feet 6 inches by 14 feet, opening directly into the dining room and giving an added impression of size through the vista. The kitchen, of a size large enough for the demands of the housekeeper, is not of a size to be burdensome. The refrigerator is arranged for outside delivery of ice. The arrangement of the bedrooms is pleasant and convenient.

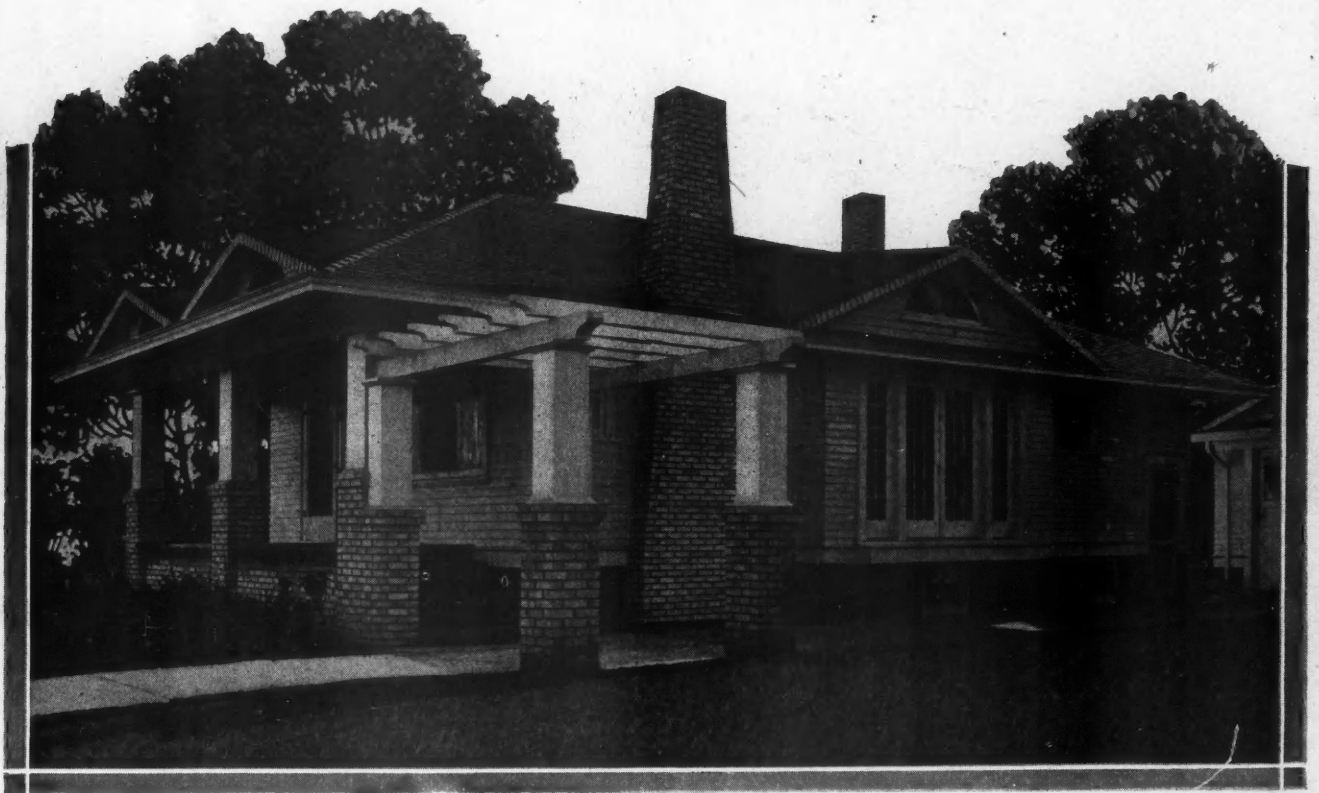
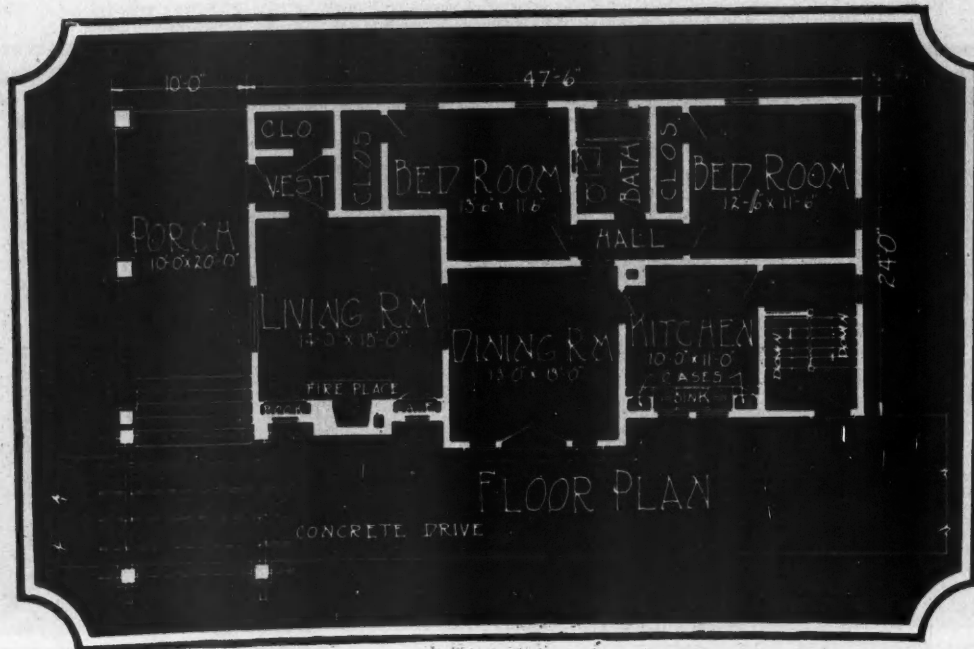
BLUE RIBBON HOMES



STURDY BRICK BUNGALOW. The exterior of this home, with its sense of strength, conveys the impression that the interior will be found to be one of comfort and convenience. The ample number of windows insures that the lighting and ventilation will be taken care of well, while the brick construction assures that the home will be equally suitable to withstand heat and cold. The width of the house, 24 feet, makes it especially suitable for a narrow city lot, while the length, 52 feet without the porches, and the arrangement of the five rooms provides ample accommodations for a family of medium size. The living room,

with its fireplace and built-in bookcases and the adjoining sun porch make an ideal center for family life. The dining room is of adequate size and the arrangement of the kitchen, with the enclosed rear porch, is well thought out. The bedrooms, reached through a hall opening off the dining room, are well arranged in reference to the bathroom and have generous closet accommodations. Notice that a space is provided for a stairway to the upper story where additional bedrooms may be installed with ample provision for windows.

BLUE RIBBON HOMES

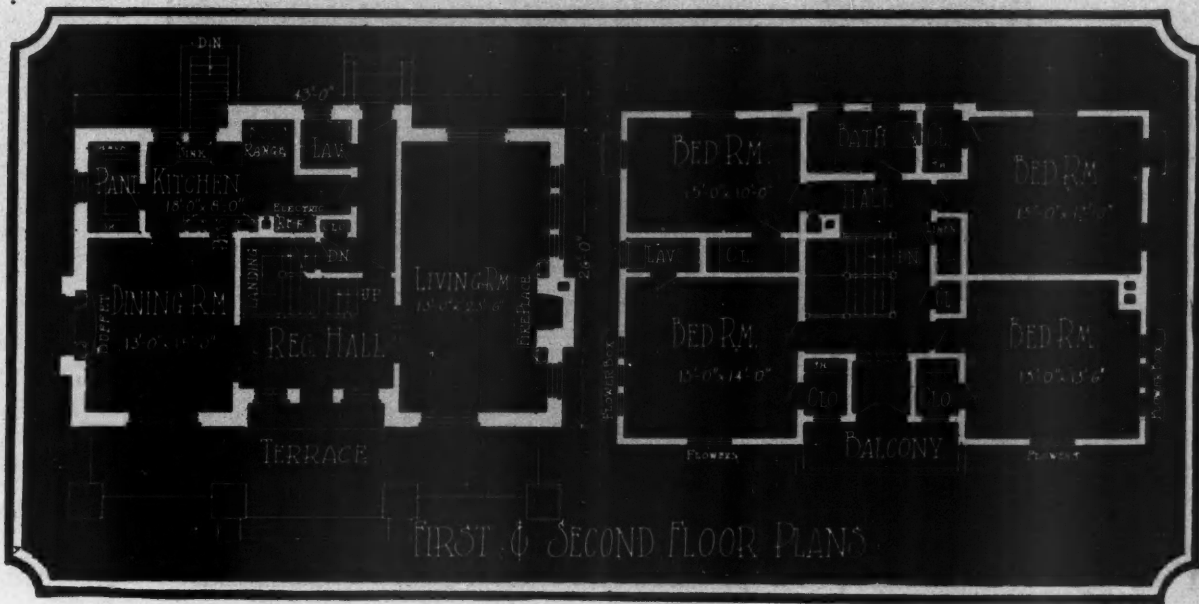


INVITING PERGOLA ENTRANCE BUNGALOW.

The whole impression created by this pergola entrance and the wide spreading porch is one of invitation to the passerby to come inside. It is a neighborly looking house; one can imagine it always being a welcome gathering place for guests. The pergola arches the driveway to the garage at the rear, only partly visible, but following the same general design of the house. The porch columns and those of the pergola are foundationed with brick, and with the

brick chimney this construction makes a good foil for the white-painted frame exterior. There are five rooms; the entrance is direct into the living room, which in turn looks into the dining room—a very attractive place, with long French windows. The kitchen is small and compact, with enclosed rear entry. There are two bedrooms, reached from the dining room. Over all dimensions are 24 feet by 57 feet 6 inches.

BLUE RIBBON HOMES



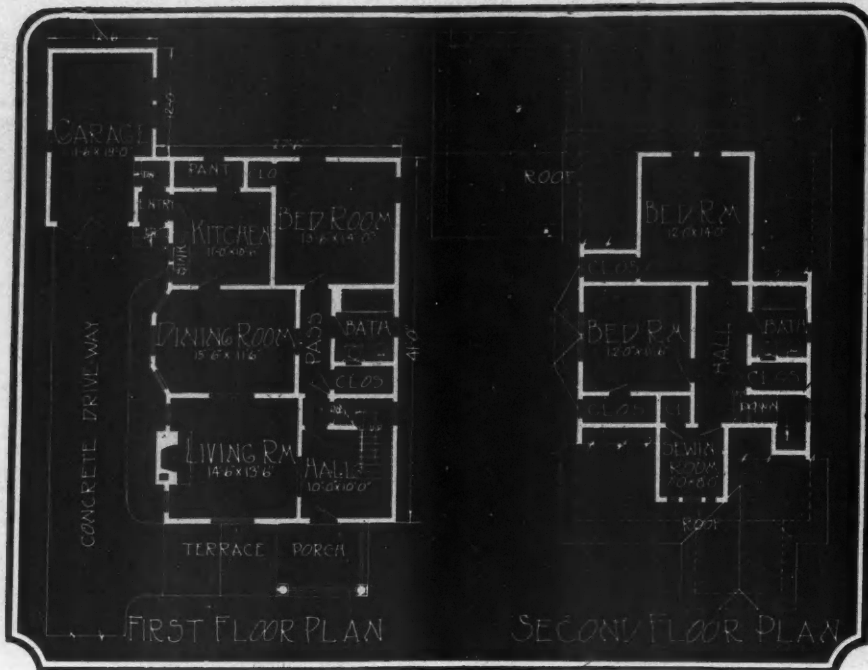
FIRST & SECOND FLOOR PLANS



A DISTINCTIVE RESIDENCE. This home proves that the rectangular type of architecture, recognized as one of the most efficient and most economical to build, can be very pleasing in appearance. The plane lines of the house are relieved and distinguished by the ornamentation of the classic type, while the balcony over the entrance and those under the windows add to the interesting effect of the overhanging second story. The terrace gives a happy finish to both the house and the grounds. The reception hall with its open stairway, divides the living room from the dining room and kitchen. Here also are a closet for wraps

and a lavatory for the convenience of guests. The generous proportions of the living room make the beamed ceiling indicated in the floor plan particularly appropriate while the arrangements of the windows suggests attractive grouping of furniture. The built-in buffet under a high window is an interesting feature of the dining room, while the kitchen shows the results of study with convenience in mind. Four bedrooms of generous size are provided on the second floor. All have cross-ventilation and are well provided with closets. The house is 46 feet wide and 26 feet deep.

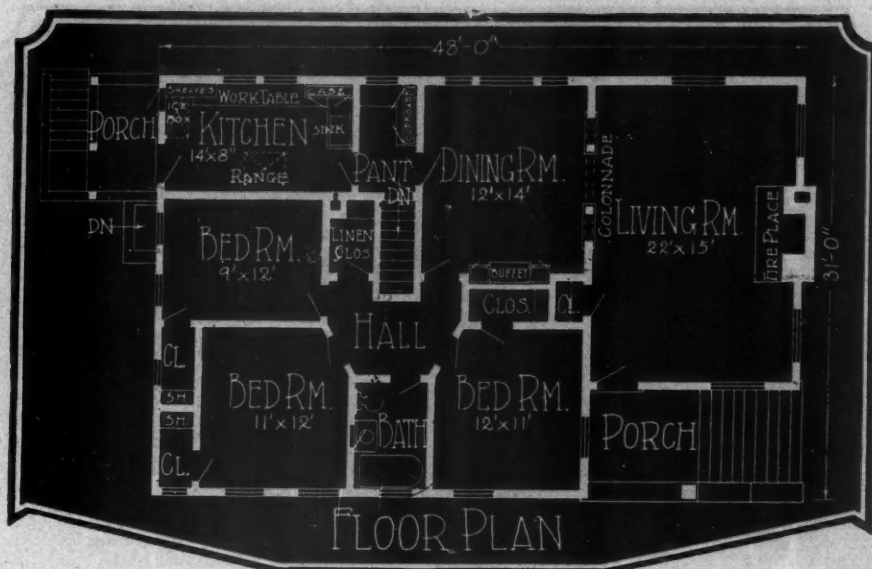
BLUE RIBBON HOMES



A CLAPBOARD AND SHINGLE HOME. This well-balanced home, with its broad windows, is of a type which will not soon become obsolete and one of which a family will not tire readily. The house, with the semi-detached garage, has a width of 40 feet, which is the width of many city and suburban lots, and it will be well to plan it for a lot at least 10 feet wider. The depth is 41 feet. The shingling of the gables to conform with the roof adds to the general effect of low snugness, and is a pleasing

variation of the all-clapboard home. The first floor plan provides for a living room with a fireplace, a dining room, a kitchen and a bedroom, with an adjacent bath, a feature much appreciated in a home where there are elderly persons. The hall, with its open stairway and passageway to the first floor bedroom is good, and might allow this bedroom to be rented to help pay the cost of home construction. On the second floor are grouped two bedrooms, a bath and a sewing room.

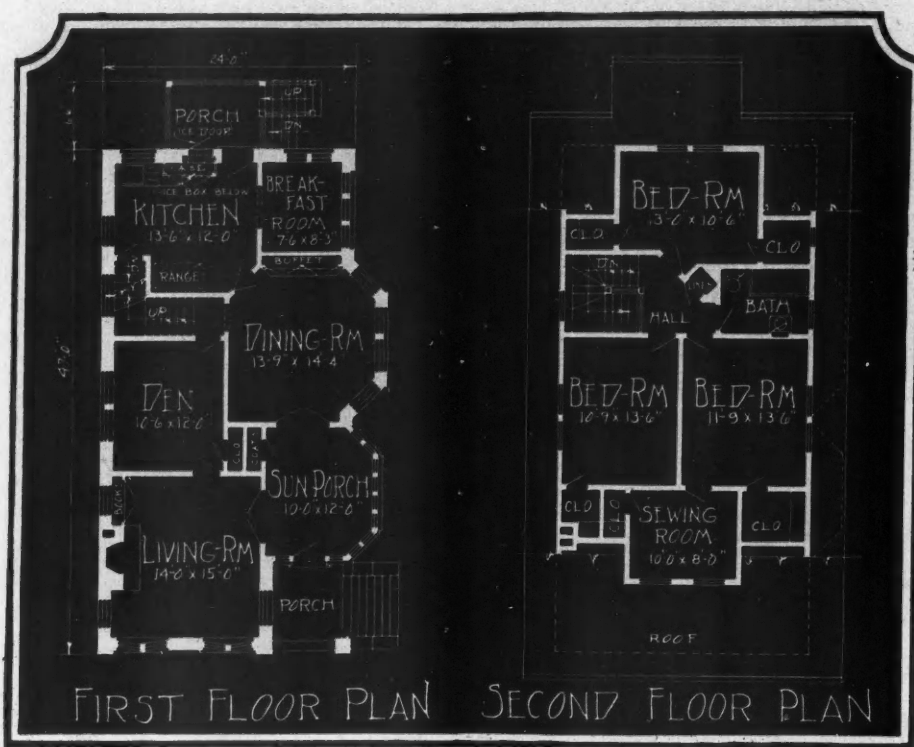
BLUE RIBBON HOMES



A BUNGALOW OF STUDIED SIMPLICITY. The straight lines and balanced proportions of this stucco bungalow combine with the interesting wide angles of the roof lines and the pleasing arches of the porch to give to this home the cozy attractiveness so much sought in this type of dwelling. Note how pleasingly the tapered column of brick forming the fireplace breaks the front between the two windows and how naturally a home of this type fits into a setting of shrubbery or flowers. The finish in a white or gray stucco should make a perfect background for window boxes which might be rioting with colors. Passing into the living room from the front porch of this home, one is surprised by the impression of spaciousness

heightened by the colonade opening between the living room and the dining room. A practical feature of the living room is the cloak closet which provides a place for wraps immediately beside the entrance. The built-in buffet will be found to be one of the attractive features of the dining room while its attractiveness to the housewife will be increased by the serviceable pantry leading to the kitchen. This room, with its work table directly under a group of windows, is of most efficient proportions. Note the provision for icing the refrigerator from the outside of the house. The group of bedrooms is arranged cleverly for convenient access in the space devoted to them.

BLUE RIBBON HOMES



MAKING THE MOST OF SUNSHINE. By the arrangement of the bays for the sun porch and the dining room, and the ample provision for windows in the breakfast room, this house is planned to make the most of its sunny southern and eastern exposure the whole day long. The photographer, wily man! has contrived to make it appear really larger than it is, by photographing it from the angle shown, but it really isn't such a small home

either. The over all dimensions, exclusive of the bay extensions, are 24 feet by 47 feet. Downstairs are six rooms—living room, sun porch, den, dining room, breakfast room and kitchen, with handy rear porch. Upstairs are three bedrooms and one sewing room. Not a very expensive place to build, this; and it does not need to take off its chimney cap to any house for style.

School Shows Effective Planning

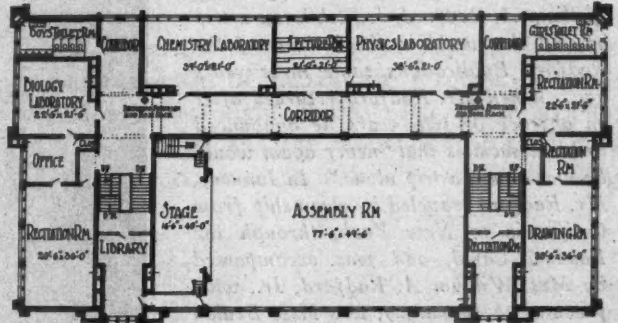
Structure at Argo, Ill., Benefits from Efficient Arrangements of Class Rooms About Auditorium and Gymnasium

MODERN efficiency in the construction of public high schools is shown in the accompanying illustration for floor plans of the school erected at Argo, Ill., planned and supervised by Ashby, Ashby & Schulze, the well-known schoolhouse architects.

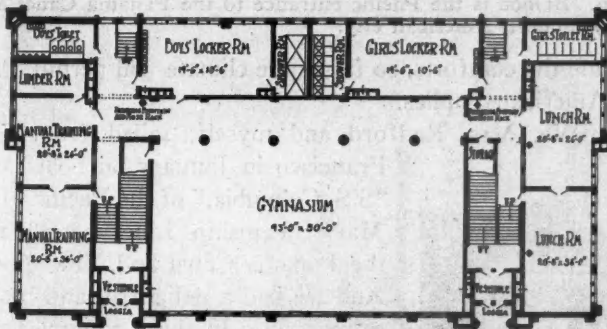
The building, two stories with full basement, is of concrete and brick construction with Indiana Oolitic limestone of standard buff building stock used for the cut stone trim. The face brick chosen was of the buff seven-tone wire-mat type, laid in lime and cement mortar. The construction is fireproof throughout the building.

The interior trim is of plain sawed birch, with interior doors of veneered red birch, 1 3/4 inches thick.

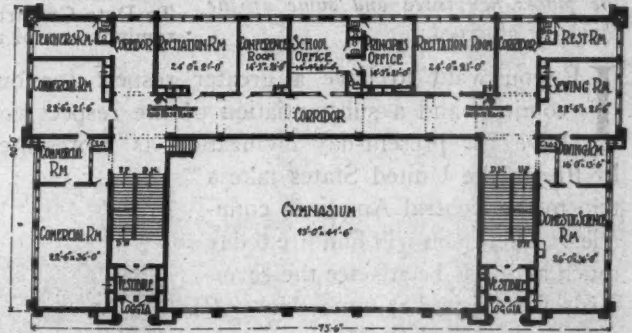
The front entrance doors are of solid red oak and the other exterior doors of No. 1 solid white pine.



The Second Floor Contains the Science Laboratories and Lecture Rooms and the Assembly Room.



The Gymnasium Floor Houses the Locker Rooms, Lunch Rooms and the Manual Training Group.



On the First Floor Are the Executive Offices and the Commercial and Homecraft Groups.



The Argo School, Argo, Ill. Brick, with Cut Stone Ornamentation at the entrance facade, this school is representative of the better kind of educational buildings now being erected. Ashby, Ashby & Schulze, of Chicago, architects.

From Coast to Coast by Sea

William A. Radford, Jr., Who Made a Trip Around the World for the Radford Publications, Journeys from California to New York, but this Time has Company
By WILLIAM A. RADFORD, JR.

EDITOR'S NOTE—Readers of AMERICAN BUILDER magazine will remember the interesting series of articles supplied by William A. Radford, Jr., while on a trip around the world in the interest of the Radford Publications some three years ago. When Mr. Radford returned after an absence of two years he announced to his associates that "never again would he make such a trip alone." In January, Mr. Radford traveled by steamship from California to New York, through the Panama Canal, and was accompanied by Mrs. William A. Radford, Jr., who, previous to January 9, was Miss Beulah Hay, of Rock Springs, Wyo. In this article Mr. Radford describes some of the places he visited and some of the things he observed.



View Overlooking Balboa, Showing Government Buildings of Modern, Up-To-Date Construction. Balboa is the Pacific entrance to the Panama Canal and reminds one of a very modern American city.

IF you want to have a greater respect for our country, and a substantiation of the respect you have for present-day civilization as represented by life in the United States take a trip to the Central American countries. There you will find life today much as it has been since the Spaniards first visited it more than 400 years ago. Southern Mexico, Guatemala, San Salvador, Nicaragua, Costa Rica and Panama—those are the countries you visit on a trip from San Francisco to New York by sea. And then you come to Balboa, at the Pacific Ocean end of the Panama Canal, and what a difference you find! For the canal, and the country a few miles wide through which it traverses is American, with the life

and the comforts, so far as the climate will permit, that American implies.



William A. Radford, Jr., at Acajutla, San Salvador, C. A., in January.

We, Mrs. Radford and myself, sailed from San Francisco in January on board the "S.S. Colombia," of the Pacific Mail Steamship Line, bound for the Panama Canal and New York. And we had a delightful and interesting trip. In these countries the indolent life of the tropics is lived much the same as in the Far Eastern countries. The countries themselves are as picturesque as any of those I saw during my two years' trip around the world, and I visited most of them. And your sightseeing on such a trip as we took is done in comfort. I think I could write a length volume on the discomforts and hardships that



At San Jose De Guatemala We Found Nothing but a Few Native Huts and Warehouses as This Is the End of the Railroad. Thatched roofs and cane walls comprise the bulk of the material used in the construction of a native hut, which in some instances have wooden floors, but in the majority of cases have no floors at all. Babies, pigs, dogs, ducks and chickens all have equal rights in the houses, and to us it seems particularly dirty and filthy when compared with even the poorest of homes in the United States.

a traveler in the Oriental countries has to endure. But there were no such difficulties, as the accommodations on board ship and in the cities where we stopped for more than a few hours compare favorably with those in cities of similar size in the United States.

Because of "internal disturbances," the nature of which is familiar to all of us, we did not stop at Manzanillo, which is one of the two nearest Pacific ports to Mexico City, and connected with it by railway, but continued on to Champerico, Guatemala, near the Southern Mexican line. Then came San Jose de Guatemala, Acajutla and La Libertad, Salvador. All of these towns are merely ports of call, where lighters are used to load coffee from the inland plantations.

Pacific Ocean. The city has undergone many changes since the Americans took over the Canal Zone. Here concrete and steel buildings are in strange contrast with the bamboo, thatched-roof huts of the natives, and government supervision is evident everywhere. Even the dairy farms that supply the residents with milk are licensed by the health department, and the control measures to insure sanitation are too well known for me to repeat.

To my mind, the most interesting and at the same time impressive part of the trip was through the canal, which takes about eight hours. The great, sloping banks of the canal and the mountains of earth and rock that were removed to make the waterway, deep



Gatun Lock. This Photograph Was Taken at Gatun Lock, Showing the Electric Mules, Taking Our Boat, the Steamship "Colombia" Through the Series of Three Locks on the Way to Colon. In bringing the boat from the Atlantic Coast to the Pacific up to different levels, one would imagine it would take considerable time to fill the lock with water. However, by a series of flood gates at the bottom, all of which are opened at once, it takes less than five minutes to raise the boat 38 feet. It takes approximately 6½ hours to go from Balboa to Christobal and one is impressed the whole journey by the fact that the entire organization and enterprise depicts American energy and thoroughness.

Our first trip ashore, which is made via lighter, into which you are loaded by a basket and hoist, was at San Jose de Guatemala, while from La Libertad we went to San Salvador, the capital of the country. This trip, about twenty miles, was made by automobile, over a good macadam road. We spent several hours there. San Salvador is old, and looks it. The street cars were hauled by the small, decrepit mules of the country, and at each rise in the streets a "booster" pair was added to get the bob-tailed car up the hill.

At Balboa, the steamer entered the waters of the Panama Canal, and came into American waters. We arrived there about 8 a. m., and Captain A. R. Hunter, of the "Colombia," gave us "shore leave" until the following morning at 6, when the start through the canal was made. It was from a hill near Balboa that Vasco Nunez de Balboa discovered and named the

enough for the greatest of modern ocean-going vessels, are mute testimony to the skill of Americans and the efficiency of American excavation machinery.

And then the locks, first at Miraflores and Pedro Miguel, near the Pacific, and Gatun near the Atlantic. They are wonderful pieces of concrete and steel construction, operated by electricity and raise or lower huge steamships with the greatest of ease in a remarkably few minutes, dropping us to the level of the Atlantic, and thence to Cristobal, the American city in the Canal Zone, and Colon, the Panamanian coast city.

From the Atlantic we sailed a little west of north, around the end of Cuba and into Havana Harbor, where we staid twenty-four hours, and then up the coast to Baltimore, and New York.

It was a wonderful trip that is well worth thirty days of anyone's time and the expense entailed.



Some Day We All Hope We Shall Have a Home Porch with a View Like This. In the meantime, let us make the best of what we have and consider the home porch and its pleasurable possibilities to the full.

The Porch as a Living Room

By CHARLES ALMA BYERS

THE real purpose of porches is utilitarian. We build them with the expectation that we will use them. Yet how often do we permit them to become but ornaments, and scarcely creditable ones at that! And when we do actually make use of the porch which we have gone to the work and expense of building, how prone, usually, are we to let it serve its purpose only indifferently!

The porch should, of course, afford pleasure, enjoyment. It should constitute a retreat, moreover, that will potently entice, allure to frequent use. It ought to comprise, in short, a real summer living room—a living room of the semi-outdoors, permeated by healthful breezes and perfumed from adjacent gardens. Quite naturally, therefore, it should be furnished both for comfort and for attractiveness. The matter of furniture is particularly important; but the porch that is to be a true, all-round delight must also, it is equally apparent, receive thoughtful consideration from various other angles. In making the porch into a genuinely inviting summer living room, there are

innumerable interesting and charming possibilities. Perhaps the accompanying illustrations will help in stressing these as well as offer some suggestions.

The first illustration shows a porch of the very charming home, in southern California, of Julian Eltinge. The house is of old Italian architecture, and the porch is naturally designed to conform to this style. It possesses an arch and column treatment which, in conjunction with the enclosing iron railing, gives it, structurally, an especially attractive appearance. It is floored with cement and carpeted with a great oval-shaped, weather-proof rug. Its furniture consists of comfortable hickory chairs and an Italian-style iron table. The house is situated on a commanding eminence overlooking a lake, and the outlook is particularly interesting.

The other illustration shows what is actually both a sun room and a porch in one. Originally it was a quite ordinary porch, but subsequently it was equipped with French windows and doors on its exposed sides and thus made into a closed room. It, however, has

this distinct advantage, that all the glass doors and windows may be thrown open, with true porch-like results, or any or all of them may be closed, as desired. The floor is of tile, covered with an attractive fiber rug, and the furniture consists of reed, with chairs possessing comfortable cushions. This is, indeed, a particularly enjoyable summer living room, governable to all kind of weather.

A well-planned porch comfortably and attractively furnished is unquestionably capable of affording much real pleasure.

Whether it is to be protected from the elements by permanent windows, or left open to the winds and weather, the porch deserves attention on its own account as an individual part of the house. The floor may be of cement, tile, or brick, in preference to wood, if desired. Weather-proof fibre rugs are always preferable to other rugs, since if wet they dry out more easily, to say nothing of remaining undamaged. Reed furniture, together with child's swing and a hammock, capable of being used as a bed on occasion, give all the required furniture. Tubs and hanging baskets of ferns, flowers or decorative palms lend a charming touch of greenery to the porch retreat.

Properly furnished, the porch makes a delightful

summer room in every way—comfortable and invitingly furnished for the retreat and the meeting place of all the members of the family.

There is another reason for the popularity of the porch, not often kept sight of in the midst of planning, but present nevertheless. In the past 10 years human society as we know it has changed its habits and its methods of living. There was a time when the porch was a point of vantage, wherefrom to view the passersby and draw conclusions, flattering or otherwise, about their general appearance and what might be the business which drew them forth.

Now, however, the housewife uses the porch as a therapeutic agent. It is her retiring room; her rest room, in whose attractive surroundings and suggestion of flowers and ferns and the great outdoors she can escape from the reality of housework at intervals during the day, and gain a rest that is recuperative in the extreme.

A nice touch for the porch is the presence of a bowl of goldfish, with an electric light, conveniently placed; it can turn into a great fascinating globe of light in the evenings. Care should be taken that the water in the bowl is not changed too frequently, and that the bowl is brought inside on chilly nights.



A Porch Like This Belongs to a Home Where Father and Mother Never Need Worry Over the Absence of Son and Daughter at Questionable Amusements. Ten to one, all the young folks of the neighborhood will congregate right here for the dances that mean so much to the young.

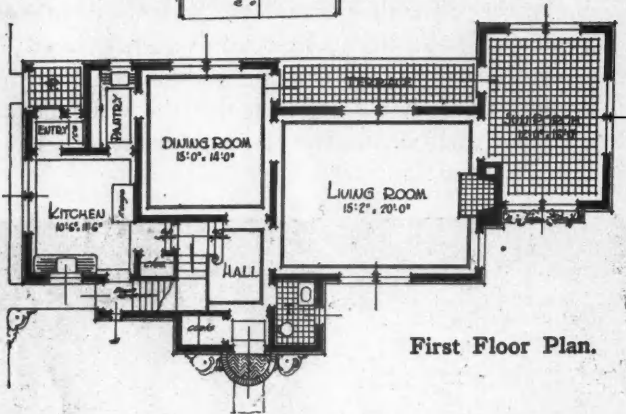
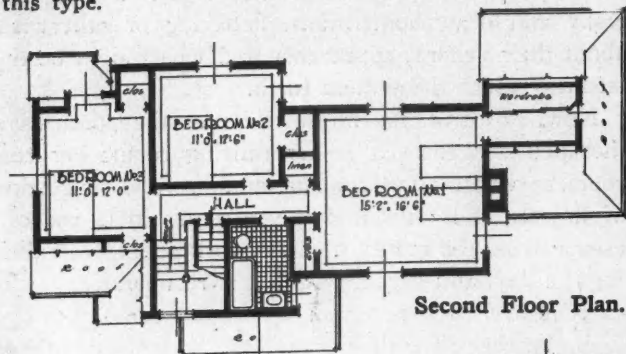
A Modern Home of English Type

Residence of J. G. Fitzsimmons, Esq., Charlotte, N. C.

By R. C. HUNTER & BRO.
Architects, New York City

HERE is a thoroughly modern American home of English adaption.

The many gables of the exterior give interest and variety, their steep pitch and low eaves are characteristic of the English cottage, in fact, the entire exterior is true to this type.



A Charming Feature of this Home is the Entrance, Shown Above. The second floor plan, above to the left, shows the effective bedroom arrangement. The first floor plan shows a careful separation of living room and kitchen.



The Interesting Treatment of the Gables in this Home, with the Idea Developed Even in the Garden Wall, Forms a Motif of Unusual Interest. The one timbered gable makes an interesting contrast while the attractive, shuttered small window and the details of the entrance and door all do their part in adding attractiveness to the house.

The entry, with its distinctive door, the fitting lamp above and the brick stoop, are inviting and carry out well the English atmosphere. The sun porch of generous size and the recessed terrace are features which will insure the comfort of the owners of the home.

The interiors have been carried out in a later period, they are well furnished, are thoroughly livable and distinctly American. The simplicity of these interiors lends strong character, no fussy decorations, no overcrowding of furnishings, they are open, spacious and cheerful.

The plan arrangement of this house is good. The toilet off the entrance hall affords a real convenience for the owners and their guests. The kitchen and adjoining service portions are well arranged.

On the second floor are three bedrooms and a bath. There is plenty of closet space. A very generous wardrobe opens from the master's bedroom.

This house was but recently completed. When the planting has grown it will soften the exterior effect and increase the charm.



Looking From the Living Room of the Fitzsimmons Home Into the Sun Porch. The pleasing simplicity of the fireplace and mantle design and the general atmosphere of the room make the Windsor chair in the corner of the room seem peculiarly fitting.



The Hallway and Dining Room of the Fitzsimmons Home as Seen from the Living Room Give an Adequate Idea of the Roominess of the House. The stairs are interesting. Note how the living room is given a large appearance through keeping the center of the room free from furniture and avoiding over-crowding.

Modern Factory Features

New "One-Floor Plant" Makes Appeal to Builder, Owner and Employee as Efficiency Measure

By ROBERT F. SALADE

WITHIN the last few years have been erected thousands of modern "daylight" factory buildings throughout the United States, and the great majority of these structures are of handsome architecture in addition to being designed and built particularly for the purposes of manufacturing. Many other buildings of this class are now being put up in the leading towns and cities, while hundreds of others have been planned to rise in the near future. Truly, this is an age of perfection, and the modern manufacturing plant is a remarkable improvement over the old-fashioned factories of the past.

The modern factory building is of fire-proof construction; its work-rooms are spacious; and, as a general rule, it has batteries of large-size windows on all four sides to supply all of the various departments with an abundance of fresh air and natural light. In most instances, the entire interior is painted in mill white,

finished with a coat of white enamel, and the white walls and ceilings reflect the natural light, as well as artificial light, to the greatest advantage. The workers in such a bright, cheerful plant are bound to feel contented, and they can perform their labor under the most efficient conditions, making possible increased production.

Although the greater number of modern manufacturing plants are of several stories, some of them having a dozen or more, a large number of the new plants are of the one-story, "all-on-one-floor" type, and having a "saw-tooth" roof of steel and glass. A building of this design not only has the benefit of natural light on all sides, but it also gains daylight from its roof. During the hot weather months, when the numerous windows of such a plant are opened, the employes are practically working in the open air, and the cool, pleasant atmosphere helps in speeding up production.



Illustration courtesy The Ballinger Company, Philadelphia.
View of Saw-Tooth Printing Building from Composing Department Showing Unusual Daylight Illumination.

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Illustration courtesy The Ballinger Company, Philadelphia.

View of Printing Building from Bindery Showing Wide, Unobstructed Floor Space.

The new-style "all-on-one-floor" plant makes it practicable to install the mechanical equipment, materials and supplies in such a manner that there is a great saving in floor space, with all of the various departments arranged in close proximity to one another. This plan provides for good "team-work" between all of the departments, thus effecting continuous production with no loss of time caused by climbing stairs or using elevators. The one-floor plant idea can be adopted by manufacturers in many different lines of business with a positive increase of production over the same kind of plant spread over several floors of a building. The raw materials can be hauled into the various departments without the use of elevators, and the finished product can be shipped out also without the assistance of elevators. In many instances, motor trucks come directly into the one-floor factory to serve the plant with raw materials and to take away the completed merchandise. Small-size electric trucks are utilized on the floor of the plant in conveying materials and products back and forth from the different departments.

One large manufacturing company recently had plans prepared for a modern one-story plant which is now

completed and which is one of the most efficient of its class in America. When the engineers were perfecting these plans it was found that a saving of nearly 25 per cent in floor space could be effected by the elimination of pillars and partitions between the departments. Ordinarily, this plant would have had a considerable number of pillars and partitions which, of course, would have required the essential amount of floor space. As the building now stands, there is a total of more than 27,000 square feet of floor space, and only six columns are necessary to support the steel frame of the "Super-Span" saw-tooth roof. The entire mechanical equipment of this plant is laid out on one floor, as are all of the various departments. The floor is of concrete and under it is installed all of the electrical wiring that connects with the individual motors on the machines. A further saving in floor space was made possible by placing the radiators of the steam-heating system in the sections of the "saw-tooth" roof. Between all of the departments is a six-foot aisle to provide ample passageways for the conveyance of stock and product; in fact, the six-foot aisles are also extended to run between rows and batteries of machines, thus allowing plenty of open space.

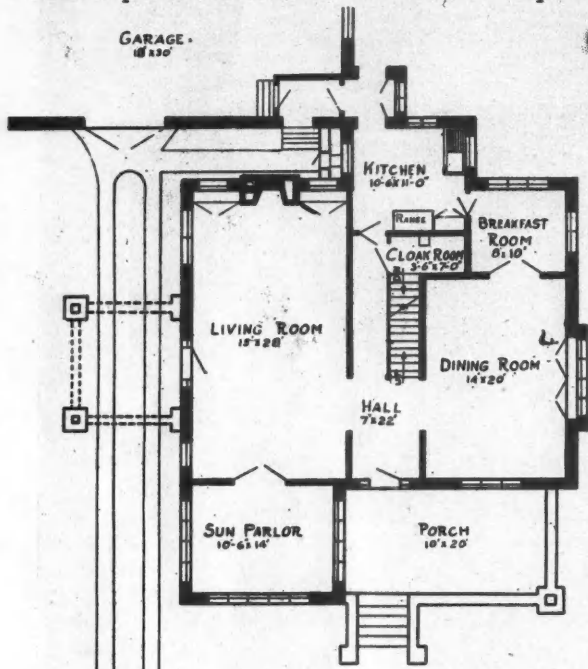
Attractive Concrete House by Indianapolis Builder

By A. J. R. CURTIS

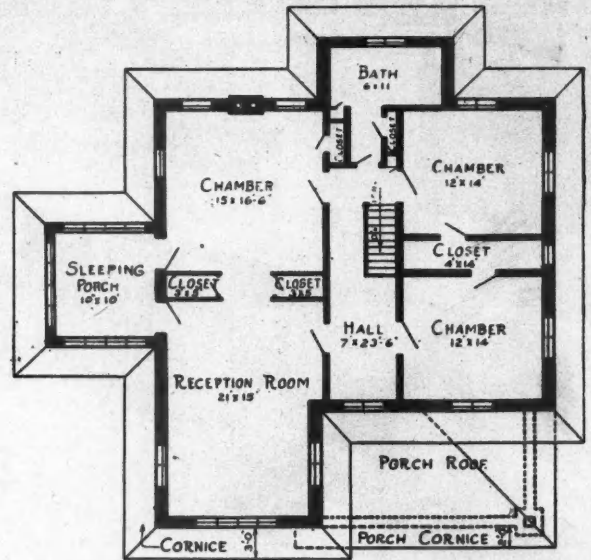
THE attractive residence shown on this page is one of a number of such structures recently completed by the Peters-Eastman Co., builders and concrete products manufacturers of Indianapolis.

construction, however, is rather unique, embodying several economical principles worth while calling to the attention of other builders.

The building was erected on shallow concrete footings 24 inches wide and 15 inches deep, approximately 4 feet below grade. The walls above these footings are of semi-hollow type concrete block. These block, of a



FIRST FLOOR PLAN



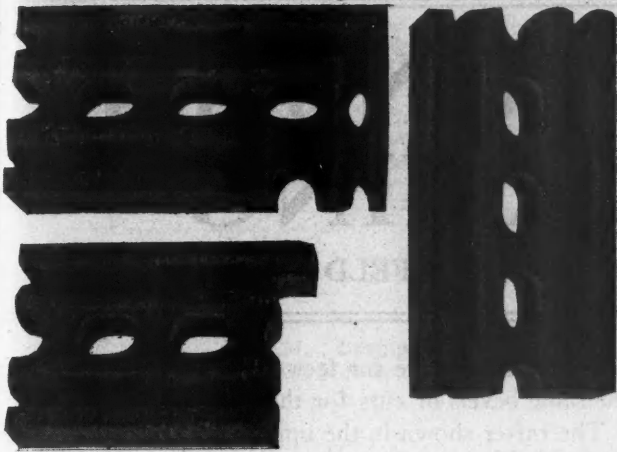
SECOND FLOOR PLAN

In exterior appearance the building resembles any well built stucco surfaced residence except that concrete sills may be seen thruout. The method of wall

peculiar design having three parallel rows of openings, were laid in the wall dry, without mortar, and the center openings filled with a grout or "soupy" mixture



The Walls of This House Are of Concrete Block, Laid Dry Without Mortar, the Center Openings of the Block Filled with a Grout of Portland Cement, Sand and Water, and Later Stuccoed with Cement.



The Concrete Block Used is of Peculiar Design, Having Three Parallel Rows of Openings, and Doweling Firmly at Wall Corners.

of portland cement, sand and water.

Common laborers carried the block from the pile to the wall and placed them as directed by an experienced "placer," who watched alignment. Each unit is 20 inches long, 6 inches high and 10 inches in width. As often as three or four rows were completed the grout was poured into the center openings, being puddled somewhat to force it into the horizontal openings between block as well as into the vertical openings. With the pouring completed, three or four more courses are laid and so on until the wall is completed. As might be imagined, the wall construction employed made a saving in labor cost of at least 25 per cent over other good types, a record which the builders naturally hope they can equal or excel in future work.

Successive corners of block are firmly doweled and grouted together, and the wall shows unusual charac-



As Often as Three or Four Rows of the Blocks Were Laid, Grout Was Poured Into the Center Openings, Being Puddled Somewhat to Force It Into Horizontal as Well as Vertical Openings.

teristics of stability and strength. The outside surface is immediately covered with two coats of portland cement stucco, sealing the surface and bringing it to a true plane. By reason of the efficient insulation provided by the double row of staggered air spaces, it has been found perfectly safe in Indianapolis to place plaster directly on the inner surface of the blocks.

In other particulars the building simply follows recognized standards of good construction. One of the noteworthy points is a well laid concrete tile roof.



Concrete Floor Tests

THE hollow tile and reinforced concrete floors of the Arlington Building, Washington, D. C., occupied by the U. S. Veterans Bureau, were tested by loading them and measuring the deformation.

In this structure, the tiles were placed in rows and spaced 4 inches in each direction. Reinforcing steel was placed in these spaces near the bottom of the slab in the panel and near the top of it across the supporting beams. The concrete was poured around the reinforcing bars and into the open ends of the tiles.

The building was intended for a hotel, but was later turned over to the government for the use of the Veterans Bureau. The original design load of 70 pounds per square foot was increased to 100 pounds per square foot and the increased strength obtained by a 2-inch layer of concrete over the tops of the tiles.

The panels of the floor were loaded with sand bags up to 380 pounds per square foot and the stresses in the steel and the concrete measured. The maximum stresses developed in the steel reinforcement were about 27,000 pounds per square inch and those in the concrete about 1,600 pounds per square inch. The effect of time under load was to increase the stresses in the reinforcing steel from 15 to 20 per cent. This was particularly pronounced in the first twenty hours and was comparatively small later.

The panels tested varied in the ratio of length and width. It was found that with the increase of that ratio, the stresses in the reinforcing steel at the bottom of the slab and those at the top of the slab (across the girders) increased in the direction of the short span and decreased in the long one. The stresses in the girders were lower than those in the slab.

The factor of safety of the structure was greater than two. This factor is the ratio of the maximum load the structure can sustain to the load which can be safely allowed when the building is in use.



"The Man Who Knew It All" Found Out That When He Opened His Tool Chest a Lot of Business Got Away from Him He Didn't Know Was There.

INSTRUCTIONS IN ROOF FRAMING

LESSON FOUR—By JOHN T. NEUFELD

EDITOR'S NOTE: *The question of correct roof framing seems to be one of perennial interest among our readers, if we are to judge by the number of questions and answers on that subject which are sent in monthly for the Correspondence Department. AMERICAN BUILDER therefore conducts this department for the benefit of its readers who may have roof framing problems. Write in your problem and Mr. Neufeld will answer it, and some questions and answers will appear in this department of AMERICAN BUILDER for the benefit of others who may be interested. We want to make this department the place where YOU can solve all your roofing problems.*

Cuts for the Common Rafter

THE top or plumb cut is the cut at the upper end of the rafter where it frames against the opposite rafter or against the ridge board.

The bottom or seat cut is the cut at the lower end of the rafter where it rests on the plate.

Assume a huge square, with feet divisions in place of inch divisions, placed alongside of a rafter on a

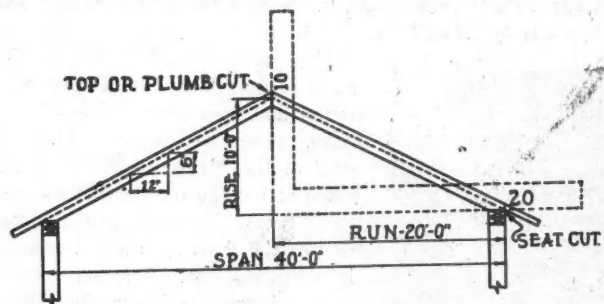


Fig. 13. Imagine a Large Steel Square Placed Along the Side of a Rafter, to See How the Top and Seat Cuts Are Obtained.

building, as shown in Fig. 13. The edges of the square will coincide with the cuts on the rafter.

If we take the regular steel square and substitute

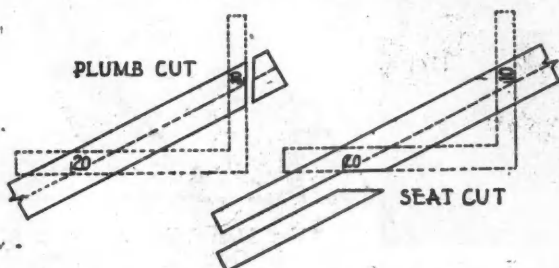


Fig. 14. Laying Out the Rafter Cuts Using the Total Rise and the Total Run on the Square.

inches on the square for feet on the rafter, we can get the same bevels or cuts for the rafter.

The rafter shown in the upper illustration has a run of 20 feet and a rise of 10 feet. If we take 20 inches on the blade of the square and 10 inches on the tongue, and apply the square to our rafter piece, we obtain the proper top and bottom cuts for the rafter. This is shown in Fig. 14.

In the above method we hold the points of the square on the measuring line. We may also use the edge of the rafter as shown in the illustration below.

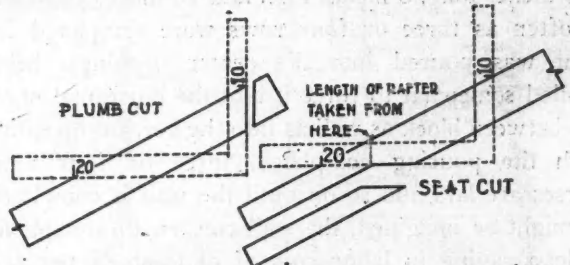


Fig. 15. Laying Out the Rafter, Cuts from the Edge of the Rafter, Not Using the Theoretical Measuring Line.

By this later method mistakes are often made at the seat cut. It is therefore safer for the beginner to draw the measuring line and use it as the base line in marking for the cuts.

We may also take the rise per foot run of the rafter on the tongue and 12 inches or the "foot run" on the blade. This will give the same angles for the cuts as the above. Apply the square and cut the rafter as shown in Fig. 16.

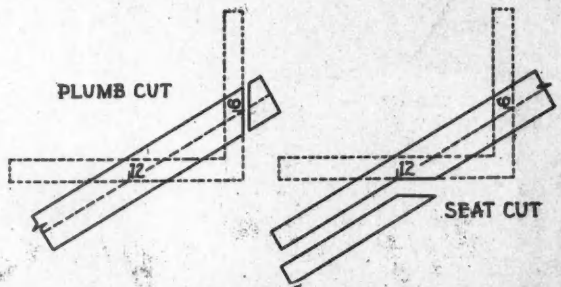


Fig. 16. Laying Out the Cuts by Using 12 Inches and the Rise Per Foot Run on the Square.

The shape of the bottom end of the rafter will not always be the same, but the figures used above will give all necessary cuts.

The illustration below shows a common form of rafter end. We note that it requires both a vertical and horizontal cut to make the notch for the seat. This form of seat cut is known as the birds mouth.

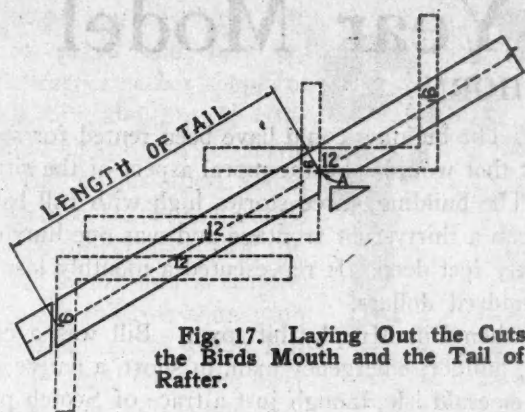


Fig. 17. Laying Out the Cuts for the Birds Mouth and the Tail of the Rafter.

The illustration also shows how to get a perfect plumb cut for the end of the tail.

When cutting the rafter a straight piece should be selected for a pattern.

There is no set rule to give, as to which end of the rafter should be cut first, but in most cases it is well to lay out the seat cut first.

Then draw the measuring line through the point where the rafter will coincide with the outer edge of the plate, as shown at A in Fig. 17. Next measure the exact length of the rafter along this line, and mark the point on the line where the top cut should be made. Then apply the square for the top cut.

Drawing the measuring line on the rafter is considered by some carpenters as a waste of time; as the edge of the rafter can be used for the measuring line and line for laying out the rafter cuts as in Fig. 15.

For an experienced man this is all right, but the beginner often gets confused as to where to start measuring. This confusion is eliminated when the theoretical measuring line is used, as in Figs. 14, 16 and 17.

Even though more time is spent in laying out the pattern it will avoid extra cutting and chipping and sometimes save material in the long run.

The pattern when cut should be used for marking the lengths of the other rafters. Sometimes the cuts are also marked from this pattern. This does not give the best results. If a crooked piece is marked from the straight pattern, it will fit only as long as the piece holds its crooked shape. After it is straightened out by the sheathing board (roof boards), it will show a slight opening at one end of the joint.

It is better to use the pattern only to get the lengths of the other rafters, and use the square on every rafter, to mark for the cuts; or else the bevel may be set by the pattern just made, and used to get the proper cuts for all other rafters.

Crooked rafters cut in this manner will sometimes show open joints before they are straightened out but after they are straightened out, they will fit properly.

Problems

(1) What two sets of figures could be used on the square, to obtain the cuts for a rafter with—

A run of 16 feet and a rise of 12 feet?

A run of 8 feet and a rise of 8 feet?

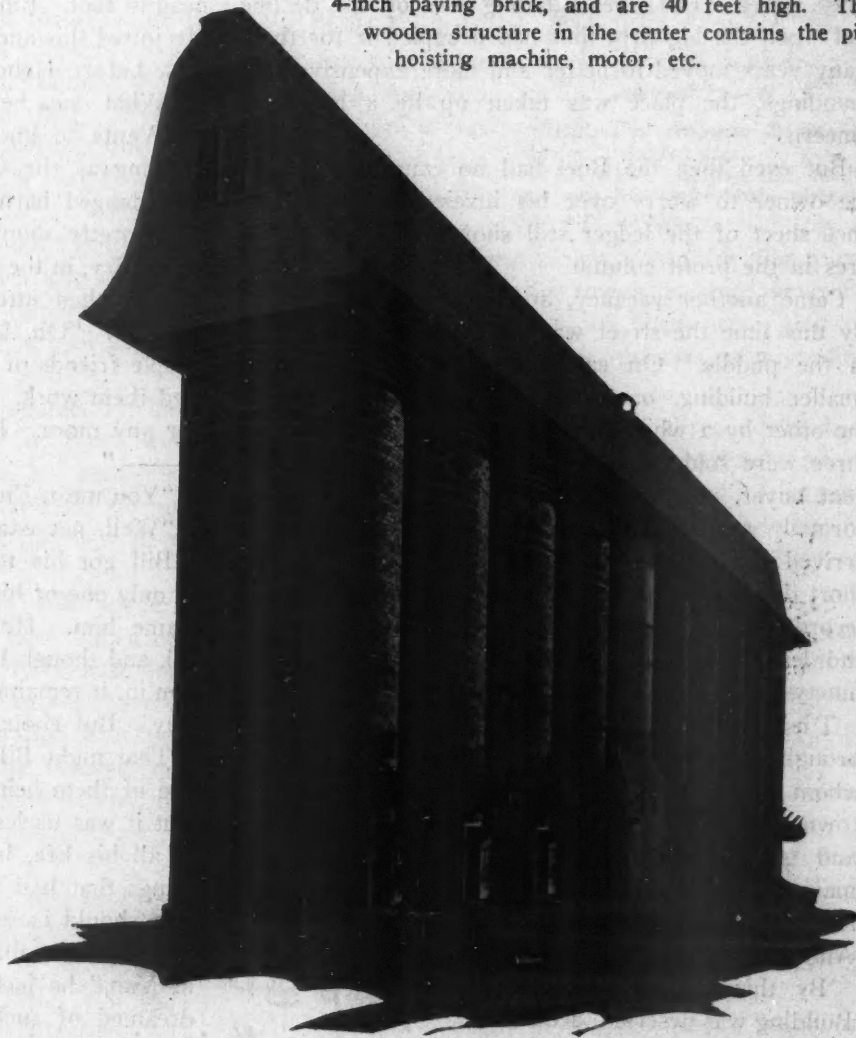
(2) What figures on the square would you use to lay out the cuts for a rafter with a $\frac{1}{2}$ pitch? A $\frac{1}{4}$ pitch? A $\frac{3}{4}$ pitch?

The answers to these problems will be found on page 180.



The Modern Coal Yard

THE familiar silo has given inspiration to the designer of these coal pockets, erected by the Ingvaldstad Lumber Company, Decorah, Ia. There are nine pockets, with inside diameters of 16 feet. They are constructed of 4-inch paving brick, and are 40 feet high. The wooden structure in the center contains the pit, hoisting machine, motor, etc.



The Coal Pockets Shown Are of Tile. Cement could have been used also, with good effect. Many firms paint their names on the roof, gaining valuable billboard advertising space.

Salvaging a Last-Year Model

By DALE R. VAN HORN

THE Buel building stood a block removed from the main thoroughfare of the town. Bleak and desolate, it reared its three stories above the street and the shadow it threw at evening or sunrise was no larger than the blotch of gloom it cast over the life of the man who had leased it.

For it was unrented. Built years ago, it once could boast of things few other buildings possessed. In the prime of life it stood in splendor upon a busy street. Its front was done in red brick with a rather elaborate coping and scrolled facades. During those first few years it housed a growing concern. Time was when faithful subordinates cleaned and polished the windows carefully every day. One of the first three autos ever seen in town drew up to the fronting curb every morning and the original owner stepped out to begin his work.

Then things changed. New buildings were erected on the next street north. There the first paving went through. The first street car felt its way along the other street. The Buel Building was on the decline and when the big firm that had occupied it for those many years moved to better and more expensive surroundings, the place was taken up by a hardware concern.

But even then the Buel had no cause to drop or the owner to worry over his investment. The balance sheet of the ledger still showed the proper figures in the profit column.

Came another vacancy, and another, and another. By this time the street was no longer the main toad in the puddle. On each side of the Buel was a smaller building, one occupied by a restaurant and the other by a wholesale grocery establishment. The three were sold, literally sight-unseen, to a non-resident buyer. Shortly after his new possessions were formally registered by the transfer of the deed, he arrived in town to look things over. It took him a short day to see the business trend. Armed with past records, he hurried to Chicago, found a listening ear and leased the three buildings to a third party for ninety-nine years.

This new acquisition brought the third person whom we will call Tyson to town. He bought a home and settled down. His main occupation was to look after his interests. And it was enough.

By this time the Buel Building was deserted. Repeatedly ads were run in the daily paper in the vain effort to find a long-time

renter. The building could have been rented for storage but that would spoil the moral aspect of the situation. The building, three stories high with full basement, ran a thirty-foot frontage and was one hundred and sixty feet deep. It represented a monthly loss of five hundred dollars.

And then Bill Murphy hit town. Bill was a contractor, builder, emergency man, in short, a native son of the emerald isle, though just a trace of Scotch prudence ran through his veins.

Bill was out of a job. He looked up the builder to whom his old pal back east had referred him, and showed him his credentials. Thirty minutes here found him good steady work at the wage scale.

Two months of work with the gang won him friendships on all sides and the confidence of Hendry, the boss contractor. "Bill," said Hendry one noon, "run up to the Buel Building and look things over."

Bill went, per instructions, found the lessee waiting in front, and in his company inspected the Buel from head to foot. Bill answered questions and asked them. He jotted this and that down and two hours later was back before Hendry.

"What does he want?" asked Hendry.

"Wants to know how much he can get for that building as she stands. He says he is going to set that danged barn afire if he can't begin to cash in on it pretty soon. What's my next job?"

Hendry, in the act of taking a bite of plug cut lunch, paused, then uttered what was a blow to the heart for Bill. "Oh, I forgot to tell you, Bill. I've got a couple friends of mine coming from Omaha. I promised them work. Reckon there won't hardly be room for any more. If I get that job I'm bidding on I'll —"

"You mean I'm fired?" asked Bill, rather surprised.

"Well, not exactly—well, yes. Sorry, though."

Bill got his tools and went home. He was mad as only one of his kind can get. And, darn it, I don't blame him. He was a good worker, honest, faithful, and though he came unheralded and Hendry took him in, it remained for Hendry to let him go the same way. But enough of that.

That night Bill wrestled with all sorts of problems, one of them being the simple task of trying to sleep. But it was useless, for he never was more wideawake in all his life, he later told me. He recalled a few things that had happened during the past few weeks that should have put him on his guard and had him prepared for this sudden let-down. "Why, goldarn it, Van," he has said a dozen times since, "I never dreamed of such a thing." But let's see what that sudden let-down did to get his dander up. By seven o'clock the next morning it was up on all fours, begging for raw meat.



"You Mean I'm Fired?"
Asked Bill.

"Well—yes," answered
Hendry. "Sorry though."

He put on his blue suit, got a shave and hair cut at the corner barber shop, got a shoe shine and three 15-cent-straight cigars, and set forth. The end of his quest found him before Tyson. I'll not go into the conversation that followed, for it was a lengthy affair. A full two-hour brain storm followed in which Bill had the lead from the first syllable. Oh, he was nobody's fool.



His Daughter, a Typist in a Downtown Office, Was a Great Stimulant to Bill.

At the end of this intense two-hour period Bill came out, red of face but victorious. Inside his breast pocket reposed a little contract that he hoped would put him in clover. I said he hoped it would. For that agreement meant the biggest step in speculation Bill had ever undertaken. Succeeded to the letter of that document and he would be able to give Hendry the merry "Ha-ha"; fail, and he would have to ramble on.

For Bill had agreed to remodel that old Buel himself. More than that, he had agreed to put it on a paying basis. In fact he had agreed to take for his services all that Tyson netted on his investment above 10 per cent. Failing this, he got nothing. Tyson, perhaps carried along on the crest of Bill's enthusiasm, had agreed to foot the bill and it was down in writing.

Now what Bill intended doing was this: Reface the front, refinish the first floor with but little expense, divide and subdivide the second and third floors into offices, and provide the basement with proper lighting facilities for storage or a garage.

The front was done in terra cotta, simple, but of a pleasing and clean gray color. The windows were replaced with others of the same size, but containing only two panes of glass, or one to each sash, as compared to the original windows which had two panes to each sash.

The first floor front was equipped with modern, large panel plate glass that set out onto the street. The entrance was tiled. The whole of the first floor interior was done in light tints, the ceiling covered with figured sheet metal and the floor shod with linoleum. The lighting fixtures were of the indirect type. However, here, no partitions were placed at first, the plan being to find a renter and then placing them to suit his convenience.

Bill had a heck of a time trying to find out what colors were pleasing to the majority of office renters. For a while it stumped him.

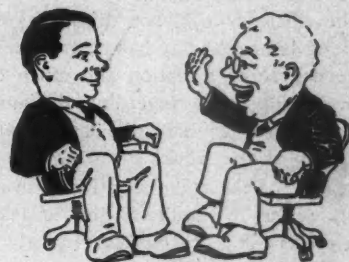
But this is what, in the end, he did. His own daughter, a fair sample of Irish wit and loveliness, was herself a typist in a downtown office. She mingled freely with others of her kind and found them all to be a confiding bunch. So Bill and Dell conspired together.

In the end she presented Bill with first-hand knowledge of the first, second and third choices of all the typists in town. Most of them wanted their offices done in plain colors with a simple stenciled border about the wall. They liked cloth carpets rather than painted floors, but a pleasing tone of linoleum better than carpet. They liked transoms over the doors. They liked . . . but why go into further detail?

From this bonafide evidence Bill went ahead and finished off the second floor. The offices ran along two sides with the hall down the center. He found that expenses were not running very high, either.

Before he got to the top floor a little hunch poked him in the ribs one morning. He laid off that forenoon and verified it. The result was that, instead of giving this space over to offices, too, it was divided into a deep set of office suites in the front but with a big hall at the rear.

By the time the building was remodeled the basement had already been taken over. A little scouting on Tyson's part closed a deal calling for a five-year lease on the first floor and Bill set to work to put in the finishing touches as per instructions.



"Bill, I've Another Corpse to Revive," Said Tyson.
"All right," agreed Bill, as he got out his wage scale plus 10 per cent bonus.

About this time came a new boom for the town. Business men from smaller towns, lacking the price or finding downtown offices all filled, were glad to take these new and up-to-date quarters at a smaller figure.

In a short three months all but three offices had been leased. The top floor, rear, fortunately interested the officers of a new club which had just organized, and they agreed to use it for all of their entertainments, yet allowing its use for other festivities on open dates.

Long before Bill packed his tools on the last day Tyson's dyspeptic gloom had given way to a more matter-of-fact look and on that day when Bill stopped in to chat a moment Tyson was actually jovial. The old Buel building was again holding its own. But just what Bill got out of it can be surmised by what took place a short time afterward.

This time Tyson had found another building that was a lemon on the owner's hands, and after sizing up the situation, bought it.

"Bill," he said. "I've got another corpse to revive. I'd like to have you handle that for me, too."

"All right. I'll begin in the morning. Want to have me do this on the same basis that we took on the Buel Building?"

"No, I'll just give you your wage scale plus a ten per cent bonus."

Irregularity of Employment as a Factor in High Labor Costs

A Paper Presented at the Recent Philadelphia Housing Conference

By WILLIAM STANLEY PARKER, Boston

THE study of economy in the use of materials has been actively pursued, in the building industry, for many years. The manufacture and use of cement has been brought to a uniform practice. The stresses of all materials have been given consideration in the drafting of our building codes so that masonry walls and piers of all kinds might be safe without the use of unnecessary material.

The effect of weather on the use of materials has been carefully considered and provisions for laying brick or making concrete in freezing weather included in laws and specifications.

Owners have striven to arrange their building programs so that they would be completed as nearly as possible on the usual leasing dates, that their investment in materials and labor might not be idle.

The efficiency of labor during its eight working hours per day has received a very large degree of attention and much comment has appeared regarding the amount of work done per man per day in various branches of the work.

In spite of the scientific attitude towards many phases of industry that characterizes present-day practice surprisingly little thought has been expended on the element of economy in our use of human beings in the building industry. Economy by the mechanic in the use of his employed time has been closely studied. Economy in the use of the mechanic himself, but the industry has been largely neglected.

The one time popular comic opera motto, "I want what I want when I want it," has summed up our attitude towards labor supply. Every one connected with the building industry has assumed that he need only press the button of demand at his entire convenience, and a supply of labor, of whatever kind, would promptly answer the bell. How this labor was supporting itself prior to his demand for it, or how it would support itself after he had done with its present services and until he might need it again, he gave no consideration; and yet therein lies a problem that is at the root of many of the difficulties of the industry and a large factor in the present high cost of building.

It is somewhat elementary to say that a man supports himself during idle periods by what he makes when working, and yet that is generally overlooked when wages are being discussed, or rather the very existence of a period of idleness is overlooked. The wage under discussion is apt to be multiplied by eight hours a day and the number of working days in a year, and a year's income arrived at for purposes of spectacular comparison.

Mr. John Donlin, President of the Building Trades Department of the American Federation of Labor, expressed the facts very pungently when he stated, in one of his reports, that the mechanics in the building trades "work by the hour but live by the year." Hourly wages are but means to an end and much confusion might be avoided if discussions on this subject could be based on yearly incomes instead of an hourly wage scales.

During the past three years there has been developed, in various parts of the country, an active interest in the question

of seasonal unemployment in the building industry. Heretofore accepted without much thought, except by the labor group, as a necessary feature of the industry, it has at last been recognized as a very serious and chronic illness which needs treatment or certainly at least diagnosis. An accurate diagnosis is not easy; successful treatment still less so. Let us see, however, as accurately as may be what the facts are.

At once we must qualify any data by a local limitation, for conditions are by no means identical throughout the country.

Seasonal fluctuations in employment refer to those fluctuations which in normal years recur at the same time each year. Each trade has its own periods of idleness and full employment and these do not necessarily coincide with those of other trades or those of the industry as a whole.

Philadelphia made one of the first, if not indeed the first contribution to the study of this subject in the co-operative efforts some three years ago, led by Mr. D. K. Boyd. At about the same time the Boston Building Congress was organized and took up this as its first subject for inquiry and discussion.

Composed of representatives of all the elements of the building industry, from the owner through the architect, engineer, contractors and materials interests to and including labor, it was possible to get whatever facts or experience existed and to bring to bear upon them the combined judgment of all those having knowledge directly or indirectly of the subject.

The results were roughly charted in diagrammatic form and showed that each year there was in each draft a period of several months in which there was a very marked degree of unemployment. Two trades showed in their slack period 25 per cent unemployment, six trades showed

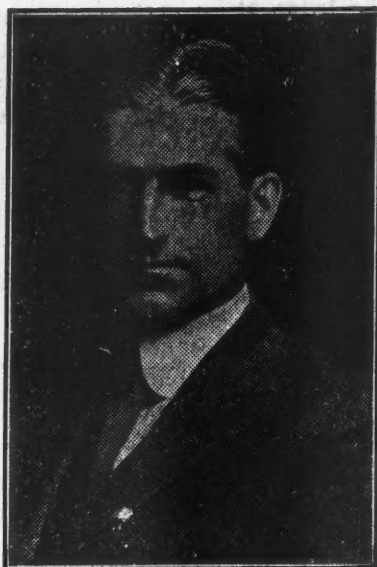
50 per cent unemployment, four showed 60 per cent unemployment, one 65 per cent and three 75 per cent.

The extreme slack periods varied in length from one and one-half to four months and it appeared to take from one to five months for employment to improve sufficiently to absorb the normal membership of the craft. Similarly the high peaks of employment varied from three to six months with slackening-off periods varying from one to five months.

Averaging these curves to show the average employment each year for each trade we find that the two trades showing a maximum unemployment of 25 per cent showed an average employment of just under 90 per cent. The other trades ranged roughly from 80 per cent to less than 70 per cent.

I imagine that you would agree that a corporation that used its employes only to about 75 per cent of their efficiency was uneconomically administered. That appears to be the case with the building industry, taken as a whole. Each owner or contractor, however, acting along general business principles, hires and fires labor as the occasions demand, endeavoring to show efficient use of labor so far as his own books are concerned. But he deceives himself if he pretends that by such methods he avoids paying for any idle labor. He cannot escape the fact that present wages have been pushed up to

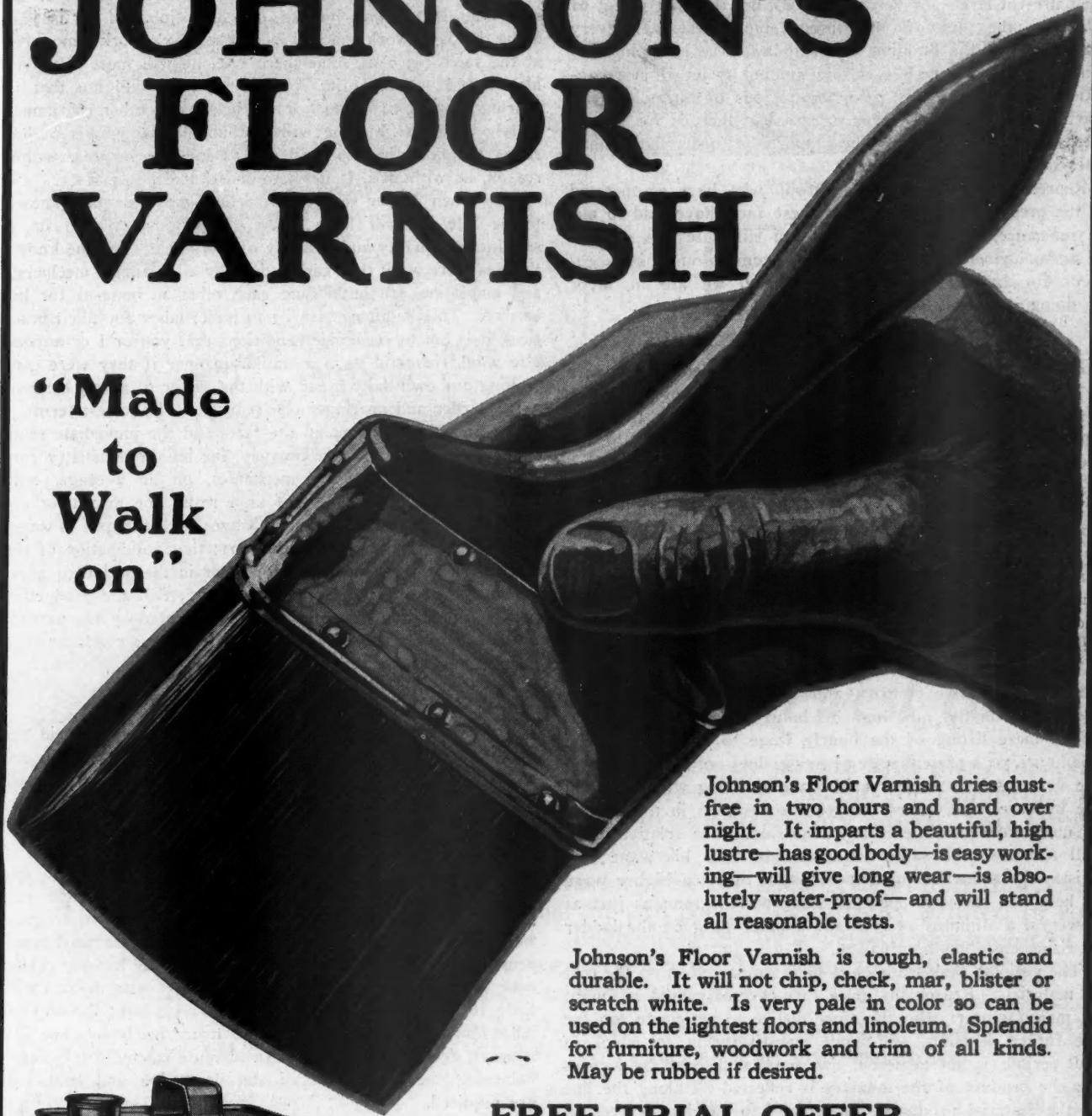
(Continued to page 148.)



Wm. Stanley Parker.

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Irregularity of Employment

(Continued from page 146.)

their present levels for various reasons, not the least potent of which is the plea of intermittent employment. In every wage scale in the building trades today there is an indeterminate but none the less certain amount included in recognition of those annually recurring periods of unemployment. Part of the present high cost of building, then, is for unproductive idle labor that must be supported in order that it may later be available when needed.

Representatives of the labor group who have co-operated in the presentation and study of these facts have said to me, in substance, "Of course, if you can eliminate this element of unemployment you will take away from us our chief argument for higher wages, but go ahead, we are in favor of doing it if it is possible."

Mental Attitude of the Mechanic

Before considering ways of reducing this element of waste in the cost of building let us consider some of the other results of this unemployment factor in the industry, the principle one of which is the resultant attitude of mind of the mechanic. Any man will tend to develop a scale of living to fit his productive periods of employment. If he gets \$45 a week he will tend to develop expenses approximating the same amount. He never knows just when or for how long he will be unemployed and he will always hope; if not expect, that the desired job will turn up. He will be more than human if he is able to put aside, each productive week, enough of his wages to maintain his family on its normal basis during his unproductive weeks.

The average man will have his periods of feast and famine, of relative comfort and hardship and this will be the case no matter how high his hourly wage rate may be.

The mere lifting of the hourly wage to take care of the idle hours, on a present scale of living, does not suffice, because the first result is an increased scale of living which eats up the increases and leaves the relative situation in the periods of unemployment little if any improved. The relative pinch still irritates; the same dissatisfaction with his wage rate exists—the same feeling that he ought to get a higher wage to help him carry through his slack periods remains just as powerful a stimulus as ever and another rung on the ladder of rising costs has been passed.

The periodic peak loads have their similar effect on the cost of materials. Reasonably quick turn-over of capital is sought by manufacturers who therefore dislike to anticipate too far the future demands, and while manufacturing for stock in dull periods is not neglected the seasonal demand by owners for the product of the industry is reflected all along the line of the material producers and creates in varying degrees an element of waste due to the carrying charges of idle equipment and overhead, increased wage scales due to their own fluctuations in employment and excess costs of transportation due to concentrated demand on common carriers and delays resulting therefrom.

These are even more difficult results to measure with accuracy than the wage scales of the mechanics in the field, but there is no lack of indications of their real existence.

There is another effect to be reckoned with that is closely bound up with the mechanics' attitude of mind and that is the relative efficiency of labor and the various manifestations of restriction of output that have been extensively commented on of late years.

There seems to be a fairly general consensus of opinion among the employers of labor in the building trades that less is produced per man per day than formerly. This is complicated by new methods of construction and working conditions that are not always, I believe, given correct value in making comparisons. Regardless of the accuracy of this

deduction as a whole, it is, I believe true, and in accordance with the underlying traits of human nature, that a man will automatically and instinctively slow up his processes if he sees himself working himself out of a job. If he is just doing the day's work and will do another day's work tomorrow, at the same place or somewhere else, he will most likely do his normal stint. If he is working on a building that is nearing completion in the fall and he sees no other job immediately ahead of him he will undoubtedly lessen his output so as to make the job hold out as long as he may within reason, or without it if he is so constituted.

Also when 25 per cent of his fellow mechanics are known to be idle he will have more natural incentive to do a satisfactory quality and quantity of work than when he knows there is more work than can be done by all available mechanics and employers are outbidding each other in bonuses for his service. This is not necessarily to indict labor for illicit practices, it is but to recognize conditions that you or I or anyone else would respond to in a similar manner if they were controlling our own daily bread with the factor of safety between a full larder and an empty one reduced to its lowest terms.

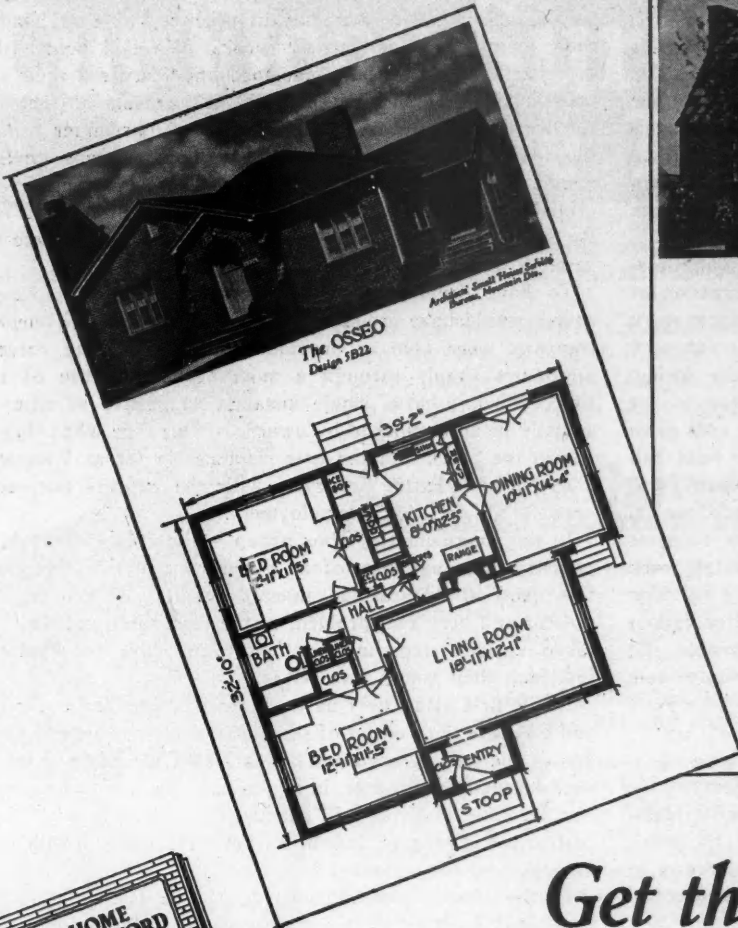
We find, then, to sum up the facts and the immediate reactions, that, speaking approximately, the building industry furnishes employment to its mechanics, on an average, only nine months in the year; that as a result the mechanics are chronically dissatisfied with their wages, and increases in wages do not materially improve conditions; that anticipation of the slack period and competition for labor in the period of great demand, both affect the output of labor; that the production and transportation of materials is complicated by the unevenness of demand; and that the result of all these conditions is a definite increase in the cost of building.

Causes of Uneven Demand

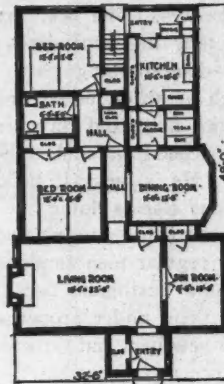
Now what are the causes of this uneven demand in the building industry, and there are several. While perhaps not so all important as it may first appear, still the element of weather is probably the most important direct and underlying cause. And the wet season of winter in the South and on the Pacific Coast seems to be as effective in shutting down construction work as the cold seasons of the northern and eastern cities; and probably in none of them is the real practical or economic need of avoiding these seasons so great as custom would seem to indicate. Commonly practiced measures for protecting men and materials from the weather permit many kinds of work to proceed during the winter months with little if any extra expense, and the increased efficiency of labor during the months when so many mechanics are idle appears from reports to be a definite factor in counterbalancing the extra cost of the protection and heat that are required.

Custom in northern communities directs all small house building operations to start in the spring so as to finish in the fall ready for winter occupancy. Yet houses for summer use will start normally in the fall, get covered in before snow flies, and finish during the winter their inside work, ready for occupancy in the early summer. The latter houses furnish work for mechanics during the usual slack period and many other operations might equally well follow suit were it not for the element of leasing dates which perhaps as much as the weather controls the building program.

Practice is by no means uniform. In some cities leasing dates are divided between the spring and fall but in some a tendency to vacate in the spring and take a chance on finding a vacant apartment in the fall has led to the adoption of a uniform fall leasing date with a very great consequent reduction in the percentage of vacancies. Where this occurs, as in Boston, for instance, all new buildings are planned to be completed ready for occupancy on October 1st. This date seems to result from the general desire or need to return



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to the city in time for the opening of the schools. In addition to new construction, the large amount of minor repairs, repainting and decorating incident to changes in tendency is also crowded into the few weeks prior to October 1st. The charted experience of telephone companies and other public services, such as gas, electric and water, gives striking evidence of this concentrated activity at the uniform leasing date when every tenant moving into new quarters is demanding service connections and meters, and telephone connections with a demoralizing unanimity.

Apart from these factors, in some cases sheer thoughtlessness and the habit of delay tend to create a concentration of demand, as, for particular instance, in the case of repair work on heating plants and furnaces. The best time to put such plants in repair is when they are shut down in the spring, but the average person does nothing then except to let his fire go out, with a sigh of relief, under present coal price conditions. Then when the first cold day arrives next fall he finds a new damper is needed, or some other repairs, and calls up his furnace man. He is lucky if he can get him on the telephone, for every one else is doing the same thing at the same time and contractors who couldn't find enough work in the spring to keep their regular men employed are refusing orders for repairs from new customers because they cannot get men enough to handle them under proper supervision and they do not care to employ new men and turn them into private houses without any guidance and oversight.

Work Bunched Too Much

One other factor tending to concentrate still further the demand for mechanics is the general delay in preparing plans, getting estimates, and awarding contracts, so that the work is crowded into the last available weeks with little leeway to take care of difficulties in getting mechanics and in the general progress of the work.

The principal causes then appear to be weather conditions, leasing dates, local customs related to weather but not necessarily controlled by it, and mere lack of consideration of the problem by owners who add to the more normal and necessary peak demand repair work better done at other times.

And of them all the most important is the last mentioned cause, lack of consideration of the problem by any of the controlling elements of the industry. Contractors and architects and owners alike have given little if any thought to this problem of seasonal unemployment, what it means to the mechanic and, through his reactions, to the operation of the industry.

What can be done about it? Nothing, without the understanding and co-operation of the building public. In the last analysis the owner decides when he is going to spend his money and in so doing determines when building operations go forward. Until the owner recognizes the importance of the question and realizes that he is paying the bill, and will continue to pay the cost of this wasteful procedure, he is not likely to bother to change things.

But the owner is, generally speaking, rather vague about the building industry. Considered in quantity the large majority of owners build only once. They have therefore a second-hand knowledge of the industry before they build and they do not get very close to the working conditions of their own job. Such owners must look to their architects and contractors to advise them on all such matters. There are, however, many owners, such as public service corporations of various kinds, who build repeatedly, and who are apt to be very thoughtful in their attitude towards their building programs. If they can be shown the importance of this matter they can do a very great deal towards improving conditions. In proof of this I may cite an instance that resulted from our study of this question in Boston.

I took the matter up with the building department of the

New England Telephone & Telegraph Company with a view to finding out what their current practices were in handling their maintenance and repair work. We laid before them the charts which we had developed and discussed their relation to their regular procedure. As a result of that conference they put several interior painting jobs under contract the following January instead of waiting, as they otherwise would have done, until the spring. These contracts involve probably fifty painters for a month or six weeks at least. By doing this work in the off season they released these fifty painters to help carry the summer peak load.

To have developed fifty apprentices through a four-year course would have produced finally the men that the telephone company were able to provide from the existing force of mechanics simply through a more economical use of their time. This is but a single instance, suggestive of what can actually be accomplished by owners of this type when they are shown the facts, and the first instance, so far as I know, of a corporation letting contracts with the express purpose of overcoming seasonal unemployment.

In my judgment the labor group is the only element in the industry that has heretofore given constructive thought to this question of seasonal unemployment. It was an ever-present and very real problem to the mechanics and they have taken various steps in an effort to improve the conditions in which they found themselves.

In the first place, they have sought increases in hourly wage and I believe the element of periodic unemployment was always one of the leading arguments. As I have already pointed out, such increases will never, in my opinion, answer this argument for the scale of living will change with the wage scale, if the cost of living permits, and the unemployment period will remain an argument for a further increase.

In the second place various restrictive rulings have been developed, such as the five-day week in certain trades, and I believe generally in a conscious effort to solve the problem of seasonal unemployment by spreading the work out over a longer period. Of course it hasn't actually worked that way, but has only resulted in creating more mechanics in order to complete the work in the required time, and more mechanics than ever have been idle when the slack time came.

Regardless of other considerations involved in these complicated questions of working conditions, I believe we must credit the labor organizations with the only constructive efforts that have been made in the past to cure the seasonal unemployment ill. Their failure simply emphasizes the fact of the inability, by any measures whatever, to affect this condition without the co-operation of the other elements of the industry, and particularly the owner.

A steady program of public information, in each community, is required to drive home to the owners and users of buildings the actual local facts. But first there must be a careful study of local conditions to determine just what the actual facts are, what they mean and what can be done to improve the conditions. This work is the legitimate work of the building industry. It can only be adequately done by the co-operative effort of the various elements involved.

The industry should, through these congresses or otherwise, strive to educate the public to an appreciation of the facts, but unless the public lends a sympathetic ear and takes steps to change some of its present-day habits in relation to the initiation of building projects and repair work, it will continue to pay the cost of uneconomic practices.

The dollars and cents involved in their building operations, however, constitute the more unimportant of the two principal results of such procedure. The other and the vastly more important one is the unstable living condition among the ranks of the mechanics created by the constantly recurring periods of unemployment, the natural result of which is a poor mechanic and a less valuable citizen.

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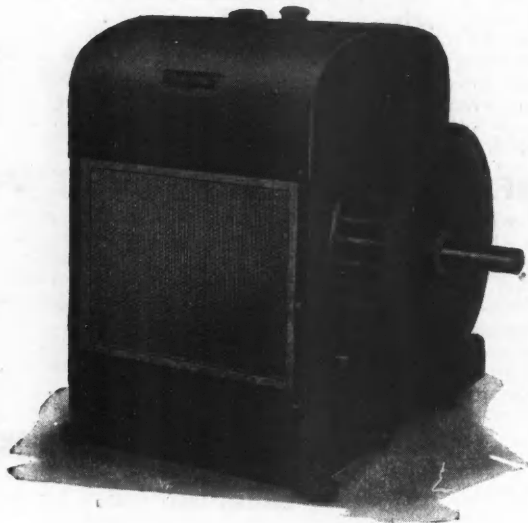




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A Power Unit Designed for the Builder's Needs

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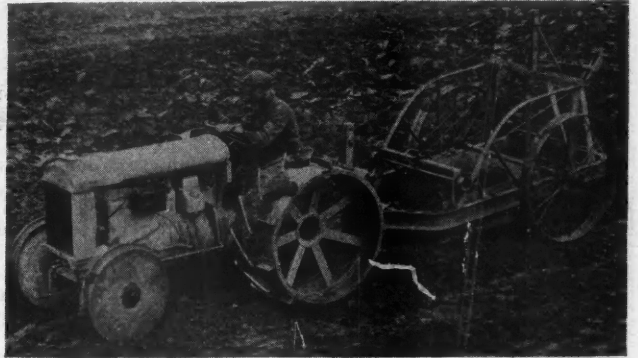
This Self Contained Power Unit Is Designed Especially for Driving Machinery Used by Contractors and Builders.

The unit, as illustrated, is a four-cycle, two-cylinder motor, rated at from five to ten horsepower by the makers, weighing 550 pounds. A pump circulating lubricating system is used, with magneto ignition. Rigidity is assured by casting the cylinders, combustion chamber, water jacket and main frame in one piece. Speed is controlled by a centrifugal governor. The unit is entirely self-contained and protected by a housing which may be locked.



Simplicity with Speed in This New Scraper

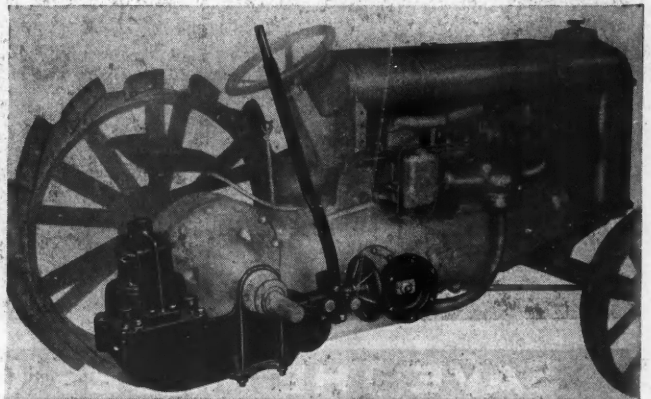
THERE has been placed on the market a new scraper built to remove large amounts of dirt or sand and to be used exclusively with the Fordson Tractor. This scraper operates three times as fast as horses in this class of work. The driver



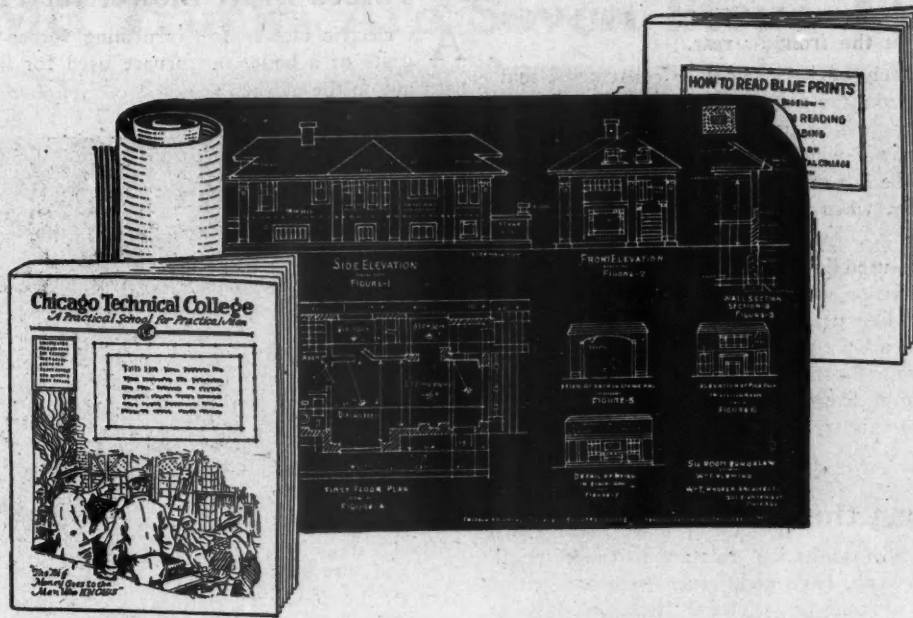
This Power Scraper, Operated by One Man, Is Declared to Be Three Times as Fast as a Horse Outfit.

of the tractor loads, drives to the dump, unloads and spreads the material and returns to the loading point without leaving the seat of the tractor. The engine of the Fordson does all of the work as it is connected to the scraper through a winch operated by one lever. In each load between 18 and 21 cubic feet rounded load of dirt are delivered.

When loading, the bottom of the pan is almost parallel with the ground and remains in the same relative position until fully loaded. This reduces the drawbar pull of the scraper about 50 per cent over any other machine. It also permits the scoop to fill to capacity every trip. The operator drives forward at the same time holding the control lever at his right. The pan is instantly lowered to the desired depth. As soon as the pan is completely filled, the operator pushes forward on the control lever thereby engaging the friction clutch. This causes the winch to operate and by means of the cable elevates the front of the pan to about a 15 degree angle. The bottom of the pan at the rear is then about 9 inches from the ground. In this position the driver runs to the dumping



This Illustration Shows Details of the Method of Installing the Scraper Control Lever and Mechanism to the Fordson Tractor.



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Not only workmen have got ahead through this instruction but also contractors who were taking on small jobs because their experience was limited. Chicago Tech. has taught them how to handle the big jobs that pay the most money.

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Never before have there been such opportunities as there are right now for men with expert knowledge of building. You can get ready for these big opportunities if you will use some of your spare time to study at home under the direction of the Chicago Tech. experts. No time taken from your present work. All this will be explained when we send you the free books and blue prints.

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point in either second or high speed at a rate of from two to six miles per hour. The pan is so designed that the dirt cannot roll off either at the front or rear.

The unit is built entirely of steel and is so constructed that it can be disconnected from the tractor in about three minutes. This leaves the tractor free to use for plowing, grading or trailer hauling. The power winch does not interfere with the regular hitch and may be left on the tractor permanently, as it does not operate except when the friction clutch is engaged by the control lever.

The scraper may be used in moving sand or dirt in road construction; for subdivision work; for stripping coal veins or gravel pits and many like uses. Low depreciation and low operating costs make it a very popular machine on the market today. Recent tests made by the manufacturers show that the machine will replace four teams and six men, indeed a great advance in methods of this type of work.



Abolishing the Garbage Man

MODERN methods of sanitation, relating to the disposal of refuse of all sorts, have done much to decrease the death rate in some of our large cities. But probably a perfect method of collecting garbage fresh and hurrying it away in sanitary vehicles will never be found. Only by destroying it on the spot, in the home, wherever it is created, will all danger and trouble be averted.



This Device Eliminates the Odorous Garbage Cans and the All-Too-Frequent Calls of the Garbage Man.

whose residence is equipped with this incinerator is entirely independent of the garbage man.

The machine generates about 1,200 degrees of heat, but is so constructed, being lined with asbestos with an air space between the outer and inner walls, thereby giving a constant circulation of air, that the radiation is reduced to a minimum.

The cost of operation is very slight, five cents worth of gas being sufficient to destroy a bushel of garbage, which requires from three-quarters of an hour to one hour to burn, depending upon its nature. The residue is only a very small quantity of sterile ash, which may be dumped back in the hopper door on top of the following day's accumulations, and burned over and over for several weeks, thereby saving the trouble of taking the ash out of the house each time garbage is burned.—ROBERT H. MOULTON.

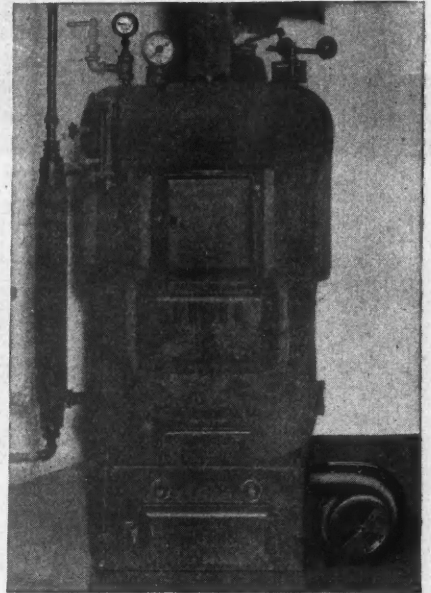
A device, which does this very thing, simply, thoroughly and economically, has been invented by a New York man. It is in the form of a garbage crematory, which can be conveniently installed in either new or old buildings, residences, apartments, hospitals, hotels, etc., at the place where waste originates, and which destroys by incineration all home, kitchen or sick-room waste, wet or dry, animal or vegetable before it has a chance to menace the health of the household.

A householder

Forced Draft Blower for Furnaces

AN electric blower for furnishing forced draft under the grate of a boiler or furnace used for house heating has been put on the market.

The blower is operated by a $\frac{1}{2}$ hp. motor. With this blower it is possible to burn the cheaper grades of coal, such as buckwheat and screenings, at a saving of \$5.00 or \$6.00 a ton over the more expensive kinds. By means of an inlet damper the air delivered to the blower can be regulated in quantity and pressure to meet the conditions of the fuel bed and to give complete combustion. An automatic control for steam or hot water boilers or hot air furnaces can be furnished that will shut off the motor when the temperature or steam pressure reaches a predetermined maximum and will start it again when the temperature or pressure drops. Practically automatic operation is thus possible, with a more even temperature and higher efficiency.



The Blower System Illustrated Allows the Efficient Use of Cheaper Grades of Coal.

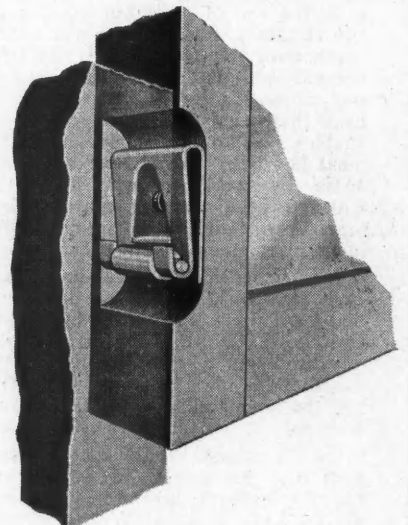
Practically automatic operation is thus possible, with a more even temperature and higher efficiency.



A New Window Support

A DEVICE for supporting windows in any position to which they may be raised, without the use of sash cords, weights or pulleys accomplished its purpose through a roller and a supporting bracket made of spring brass.

The bracket is attached to the sash and carries the roller horizontally when the sash is being raised. One end of the roller is confined while the other has a slight play, allowing it to assume a slanting position from the force of gravity on the sash. The resulting friction is sufficient to hold the sash in place, but yields readily when the window is pulled down. The spring construction makes the device serve as a preventative of rattles and to hold the sash tight. Two of the supporters are used on each side of each sash weighing not more than 30 pounds. For heavier windows more of the supporters are used.



This Device Replaces Weights, Pulleys and Cords in Window Installations.

"GMC Trucks Are Seven Steps Ahead"



Prompt Delivery Makes Satisfied Customers

This two-ton GMC truck operated by the Messing Planing Mill Company has been fitted with a special body that is particularly adapted to mill work. GMC provides a speed—power—large capacity combination that assures prompt delivery, satisfied customers and increased profits. GMC trucks embody seven special features of construction that definitely sets them seven steps ahead in the motor truck world. Surplus power is provided without increasing the size of the engine, without sacrificing road speed and without adding in any way to running expense. Low maintenance cost and uninterrupted service are assured and indefinitely long life is possible because of exclusive GMC improvements. Constant brake adjust-

ment, perfect cooling and unusually efficient lubrication are maintained by other special GMC features. In many essential points GMC is different and every change from the ordinary principle either materially increases the earning power of the truck or reduces the cost of its operation and upkeep. GMC construction—GMC special features and what they mean to you in actual hauling advantage are fully explained in the free GMC catalogue. Actual photographs illustrate each feature—models are shown and specifications given. We have a copy ready to send you. Let us have your address and we will send it at once. Use the coupon below.

GENERAL MOTORS TRUCK COMPANY
 Division of General Motors Corporation
 PONTIAC, MICHIGAN

General Motors Trucks



Mail This Today

General Motors Truck Co.,
 Dept. 9,
 Pontiac, Michigan

Please send me literature on GMC trucks including catalogue.

Name
 Business
 Address

Kitchen Fixture Has Two Uses

HOUSEWIVES who object to unit lighting in the kitchen will find provision made in the lighting fixture shown in the accompanying illustration to meet their objections and give them efficient illumination.



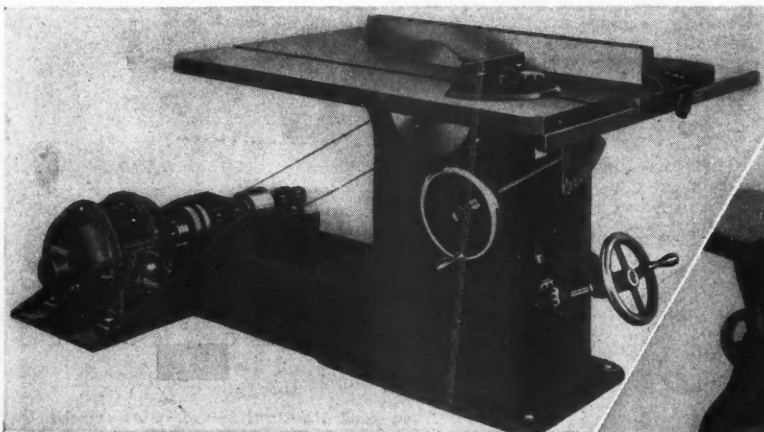
A Kitchen Fixture Which Combines a Central Light with a Convenience Outlet.

and the plug of the electrical appliances may be connected with the bottom of the same drop. This enables the home worker to have the advantage of the same sort of light used in modern office buildings and at the same time to utilize her electrical appliances. Installed in the bathroom such a fixture makes it possible to use the light and a heater or other device at the same time.



Self-Contained Wood Workers

THE need of the contractor whose requirements do not warrant the installation of a large floor machine was in



A Dimension Saw, Equipped with a Motor on the Same Base. The table tilts to any angle up to 45 degrees by means of a hand wheel.

the mind of the manufacturer who designed this bench jointer.

The machine will prove of particular value to builders seeking economy, for in one operation it will complete the same work requiring a number

of operations through the manual use of the jack-plane, fore-plane and square. With material up to 8 inches in width, the bench will handle all work which could be done on a floor machine. A valuable feature of the machine is the direct drive motor mounted on the same base. It also may be had to take power from a line drive.

The same concern also builds a dimension saw equipped as a self-contained unit with the motor on the same base. The table is grooved on both sides of the saw to receive mitering and cut-off gauges. It tilts to any angle up to 45 degrees by means of a hand wheel and screw, situated in a convenient position for the operator. The angle is indicated by a brass scale and pointer.

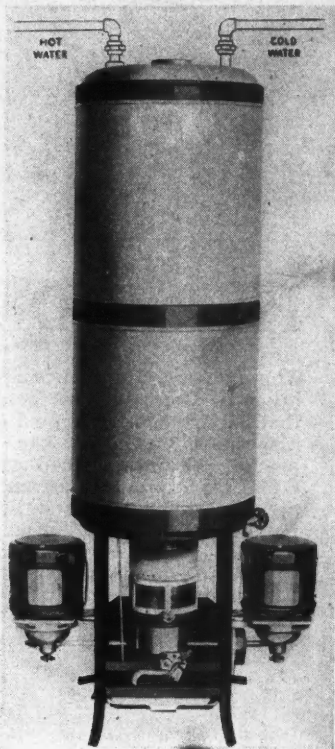


Kerosene Water Heater Has Advantages of Gas

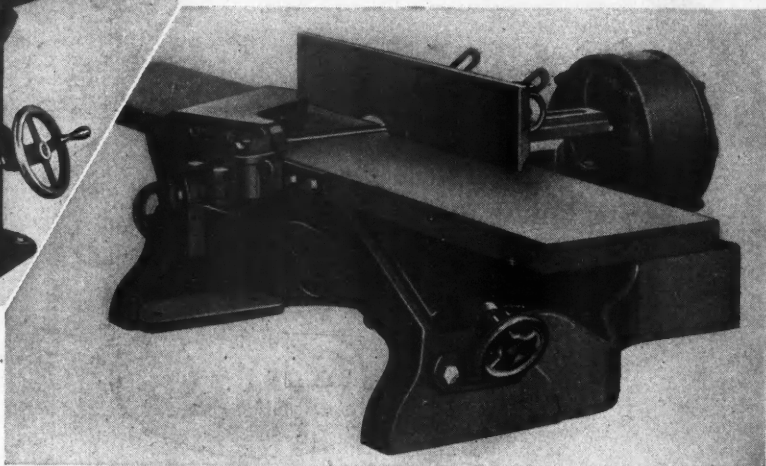
THERMOSTATIC shutoff control, a heat retaining storage tank and a powerful oil burner are outstanding features of a new line of kerosene burning water heaters.

The makers announce that the heaters are the equal of gas heaters in satisfaction, dependability and operating economy, and that they will make possible a dependable supply of running hot water to the many homes where gas is not available.

The thermostat automatically turns out the burner when the tank is full of hot water. For two days and a night after the burner has been turned off, the tank is capable of keeping water at a temperature of 100 degrees. The model with the heat retaining, insulated storage tank is a complete and self-contained unit, the tank surrounding the copper coils.



The Oil Burning Water Heater, Shown at the Right, Has Many of the Features of Modern Gas Heaters.



This Bench Jointer, Equipped with a Motor, is Especially Designed for the Builder Whose Volume Does Not Demand a Floor Machine.



In and Out of Excavations With Heavy Loads and Bad Going!

Garford units have both the stamina and the power for conditions like these.

The long years of research and effort Garford Engineers have put into such vital points of strain as the axles, springs, etc., are justified by the way these famous trucks stand up under the hardest kind of hauling.

Construction companies who have used Garford Trucks over a period

of years have nothing but praise for their economical performance, durability and trouble-free service.

If you want a truck for either light or heavy duty that will haul on the low cost ton-mile basis ask for a recommendation by Garford Engineers.

A postal mailed today will bring you further information about the trend of motor haulage, and the part Garford Trucks are playing.

The Garford Motor Truck Company, Lima, Ohio

Manufacturers of 1, 1½, 2½, 4, 5 and 7½ Ton Trucks

GARFORD

DEPENDABLE TRANSPORTATION

And Now the Fold-Away Dining Room

INCREASED property values and the cost of construction have brought out the need for compactness and a greater efficiency in the apartment of today. We see folding beds, folding ironing boards, hidden articles of every description to allow a greater freedom of floor space and a more economical room arrangement.

But, in apartments where the living and dining rooms are combined as one, the problem has been left for the tenant to solve—until the advent now of the fold-away dining room. Mr. Walter C. Fain, the creator of this idea, is a contractor who has seen the need for just such a contrivance and he has at last perfected it.

The fold-away dining room is concealed behind a pair of French doors, giving the appearance of an entrance to another room. The use of draperies makes a pleasing and inviting aspect. When the doors are opened there is revealed a table and two benches that readily fold down, lock themselves into place automatically. When folded up the table and benches are locked into place with friction catches.

Already the demands from all parts of the country prove that the idea is a welcome one and it is specified in many

new arrangement and the other half used the fold-away dining room, the latter were the first to be leased.

This is probably due to the fact that newly wed couples saved the cost of buying a dining room suite. It also did away with the cumbersome idea of a gate leg table to use as a dining table. Now, with the folding dining room, when they are through with dinner it is quickly folded back into place and the entire floor space can be utilized for social or home entertainment.

The numerous designs in which the fold-away dining room can be built make it very practical to carry out a particular style of architecture and complete the harmony of construction.



When the Meal Is Over Fold Up the Table and the Benches and Close the Doors. Just the thing for the compact modern hotel, apartment and home. View to left shows the table and benches let down.

buildings that will be erected this year.

The table is 54 inches long by 28 inches wide. The benches are 46 inches long by 14 $\frac{1}{4}$ inches wide. And the entire arrangement requires only 6 inches of depth space, and may be built into the wall as well as installed on the face of the wall.

Mr. Fain has drawn plans for what he calls "The Fain Efficiency Apartment." In this he makes use of the folding bed and the fold-away dining room, both being used in the living room which is 13 by 20 feet. By the elimination of the dining room there is a saving from 1,000 to 1,500 feet with a 9-foot ceiling. And this means a saving of from \$450 to \$540.

In those apartments where the fold-away dining room has been installed it has proven rental advantages that were not expected. True, in the construction of the apartment the saving and economy of space could quickly be determined. But what effect it would have on the people renting the apartment could not be foretold. The result has been that in a building where half of the apartments were without the

Stucco House Moved a Mile Without a Crack

HOUSEMOVING, however carefully done, must inevitably put a much greater strain on a building than the weather or settling strains it was designed to withstand.

In view of this, it hardly seems possible that a large eight-room stucco house could be cut in two and moved over a mile without even cracking the stucco, yet this feat was recently accomplished at Waukegan, Ill. No extreme precautions were taken, and no especial equipment was used. The home was raised and lowered with jacks and transported on the ordinary steel moving trucks.

The stucco used on this house was a prepared magnesite material, manufactured in Waukegan, and applied in accordance with manufacturer's directions. The fact that it came through this test so triumphantly, should effectually dispel the idea that stucco is especially liable to damage from weather or settling strain.



The new Ford all-steel body and weather-proof cab mounted on the Ford worm drive chassis at \$490 f. o. b. Detroit, is the world's lowest priced complete one-ton truck.

A Preference Based on Quality

There is deep significance in the fact that 78% of all trucks of one ton or less capacity in the United States are Fords.

This overwhelming preference for Ford haulage units has its basis in the low cost of Ford transportation, the rugged construction of the truck itself, and its unusual adaptability to every line of industry.

Mechanical excellence, simplicity of design and ample power are further factors that have contributed to the popularity of the Ford One-Ton Worm Drive Truck.

As a logical step in providing dependable transportation at the lowest possible cost, the Ford Motor Company is now producing an all-steel body and steel weather-proof cab mounted on the Ford Truck Chassis, selling at the remarkably low price of \$490.

Merchants standardizing their delivery systems on Ford One-Ton Trucks have available the facilities and assistance of over 33,000 Authorized Ford Service Stations, conveniently located to their business.

Ford Motor Company
Detroit, Michigan

See the Nearest Authorized Ford Dealer

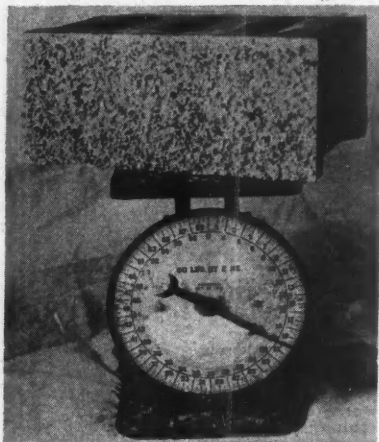
Ford

CARS · TRUCKS · TRACTORS

Power Machine Produces Light Weight Concrete Block

A MACHINE especially designed to make concrete blocks which will meet the demand for a lighter block than that of the regulation type differs in several important details from any similar machine now on the market.

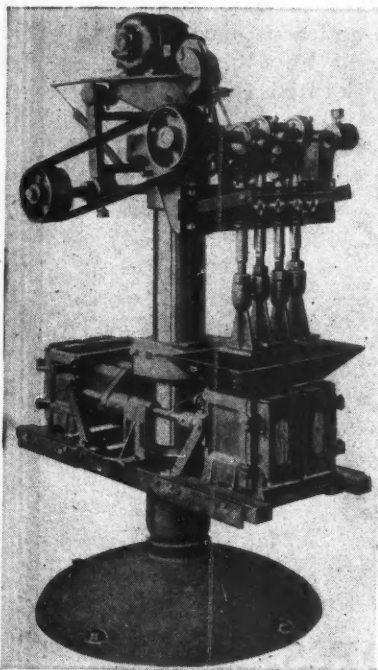
The unit made by this machine is of the now widely approved size, 5x8x12 inches with face surface measuring 5x12 inches. It weighs 20 pounds.



Power Machine Produces Light Concrete Block 5x8x12 Inches and Weighing 20 Pounds.

Although the machine is designed to be used primarily for the making of block by the face-up method, provision has been made for placing face plates of rock or other design in the bottoms of the molds for the making of block by the face-down method.

Perhaps the most unique feature of this machine is the provision it makes for uninterrupted production with a two-man crew. This is accomplished by means of the revolving table which, as the picture shows, has a mold on each end. This table turns easily on ball bearings and locks in correct position.



The Machine Is Built with a Swinging Table to Enable Two Men to Work at the Same Time

As the illustration shows, the webs in this block are so spaced that they come directly over each other in the wall, thus affording maximum load-bearing efficiency.

The block is made by the face-up method, permitting the use of any desired facing. The facing operation is accomplished quickly and economically before the block leaves the machine. In fact, the facing is so applied that it becomes integral with the block proper.

While one man is engaged in making a block, the other faces the block previously made and removes it from the machine. The labor is thus very evenly divided and neither man is kept waiting for the other.

The tampers operate at the rate of 600 blows per minute, that is, 2,400 blows per minute are struck by the four tampers. This results in thorough nesting of the concrete.

The machine is completely self-contained, very rugged, and derives its power from an electric motor mounted out of the way of dirt and sur-

plus concrete. It is extremely simple in operation and speedy in production.



Sliding Doors Save Space

THE tendency of modern design in apartment buildings and homes calls for the utilization of every available inch of space. Often in designing an abode the architect is confronted with the problem of two adjacent doors which will interfere with each other if both are equipped with swinging doors. The sliding door often solves this problem.



The Hangers for the Space-Saving Sliding Door Shown in the Illustration Are Provided with an Adjustment to Compensate for Settling of Buildings.

One firm has concentrated the designing skill of its technical staff on a hanger for such doors which will meet the requirements of silent operation, easy running and durability. The hanger illustrated has a heavy all-steel frame in which the wheel is fitted with ball bearings, with both the cups and the cones machined from solid steel, and hardened by special processes.

Provision is made for adjusting the hanger to overcome dragging of the door caused by settling of the building. An adjustment is located at the top of the door, accessible to one standing in the doorway.



New Steel Window Unit Made for Private Garages

AMONG recent announcements of interest is that of a new steel window for small buildings, such as private garages, barns, filling stations, small shops, rear of stores, high ends of basements, and other installations calling for a moderately priced standardized steel window.

From the standpoint of design, this new window possesses all of the advantages of steel window construction. Besides

Makes Your Ford A Two-Ton Truck

Six Speeds for Your Ford

Two-ton ruggedness is built into the Ford Truck.

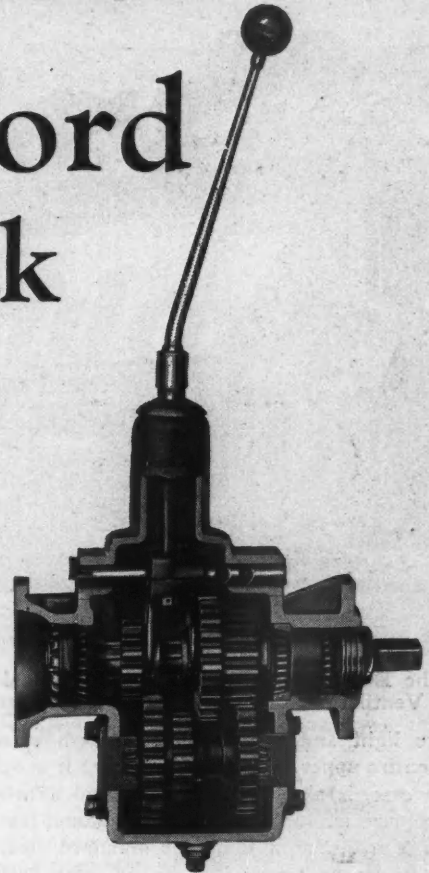
Two-ton power is supplied by the famous Ford engine.

The Warford Auxiliary Transmission forges the link between the two, which makes the Ford truck a distinctively economical two-ton haulage unit.

The Warford-equipped Ford, with a speed for every condition of road and load, hauls with the best of them through heavy going and passes the rest of them on good roads.

Warford couples bull-dog strength and speedwagon fleetness with Ford dependability and economy.

If your Ford dealer hasn't the Warford transmission, write for our dealer list.



What the Warford Is and What It Does

The Warford Auxiliary Transmission is a high-grade gear shift of the approved sliding gear selective type which gives the Ford six speeds forward and three reverse.

The Warford transforms engine revolutions into rear axle torque at six different ratios, from 36 to 1 in low, to 5 to 1 in high, allowing the engine to run at normal speed whether the truck is traveling one mile an hour or thirty.

In adapting normal engine speed both to heavy hauling and high speed, the Warford saves wear and tear, loss of power and waste of gas and oil, caused by the racing motor.

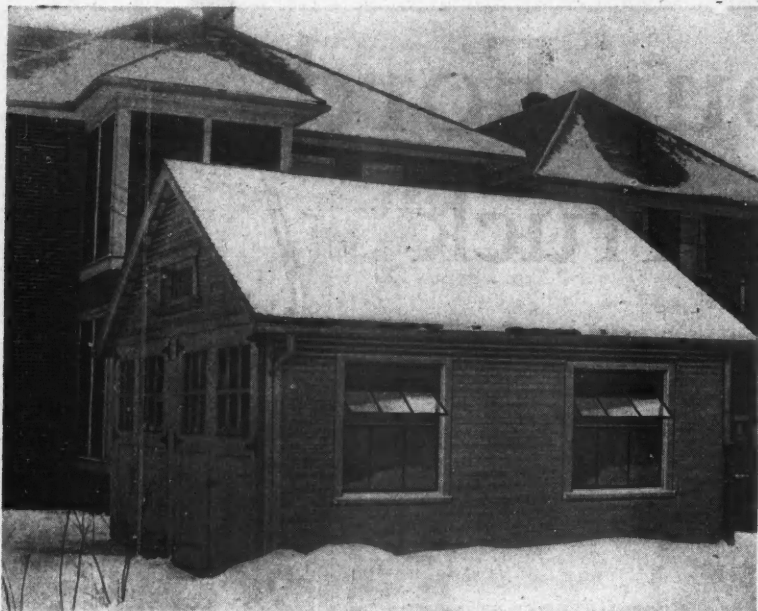
Warford

AUXILIARY TRANSMISSION

The Warford Corporation

44 Whitehall Street, New York

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



The Entire Upper Section of This Steel Sash Swings for Proper Ventilation. The unit is designed especially for small garages.

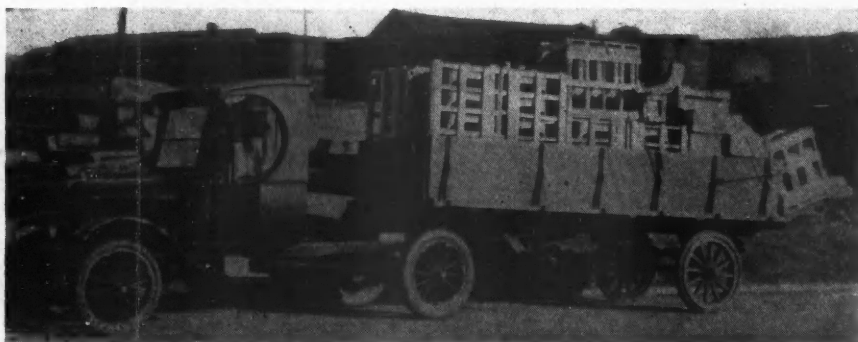
more light and ventilation (the sash or ventilator forms the entire upper half of the window) it is opened and closed with ease, is absolutely fireproof, and affords more than the customary amount of protection against intrusion.

It is manufactured in one standard size, for an opening 3 ft. 4½ in. wide and 3 ft. 7½ in. high over-all, and is sold as a complete unit, including frame, sash, cam latch, stay-bar and a priming coat of paint. Only two light sizes are required, 12 in. by 20 in. and 13 in. by 20 in. The fixed lights at the bottom are 13 in. by 20 in. The middle light in the sash or ventilator is also 13 in. by 20 in. Both side lights in the sash are 12 in. by 20 in.

The sash is held open by means of a notched stay-bar at a 20, 40 or 60 degree opening. The design of the sash and the length of the stay-bar cause very little projection into the building even when the window is wide open.

Weathering, at all points between the frame and sash, is of the double flat contact type which insures adequate protection under all weather conditions. Over-all dimensions indicate clear openings, with ½ in. allowed all around for proper anchorage to the building.

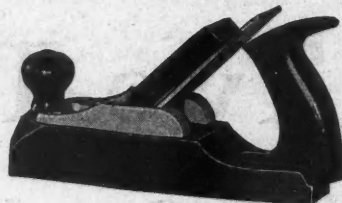
It is made of solid, open-hearth, rolled steel sections of minimum weight, yet great rigidity. It is adapted to all types of construction—brick, tile, concrete block, poured concrete and frame, and in each case permits an easy, economical installation. Over-all dimensions make it particularly well suited to concrete block construction. It is two and a half blocks wide and six blocks high, with a stone or cement sill.



Axle for Ford Trucks Which Gives Four Speeds Forward Instead of the Customary Two Allows Heavier Loads on Trailers and Quicker Return Trips.

Plane Has Aluminum Fittings

"YOU can tell a good mechanic by the tools he uses," declare the manufacturers of the plane shown in the accompanying illustration.



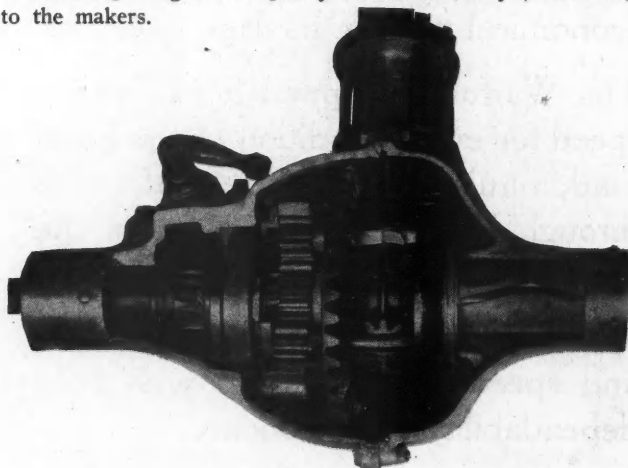
Plane with Aluminum Fittings.

A novel feature of this plane is that aluminum is used for the top fittings where iron is utilized in the construction of the plane of the usual type. This innovation does much to lighten the tool, and should mean much to lessen the fatigue of the man who uses a plane for long hours each day.



New Axle Increases Light Truck Power Range

AN axle for light cars, allowing four speeds forward instead of the usual two, with a resultant increased range of speed and power is shown in the accompanying picture. The axle furnishes the truck with two direct drives without impairing the simplicity of the mechanism, according to the makers.



Cut-away Picture of the New Transmission Device Incorporated as an Integral Part of the Rear End System. The device for changing speeds is shown at the left, where the planetary gear system used is shown as applied to the differential assembly.

The gears are said to mesh perfectly in pulling, resulting in a noiseless operation. They are of the planetary type and cannot be stripped since they are always in mesh. The change from the regular speeds to the special speeds provided by the special axle is effected by slipping the clutch pedal and moving the hand lever back.

The axle is made an integral part of the rear end of the truck and is not regarded by the maker as a part or accessory. An idea of its construction may be gained from the photograph showing part of the differential case cut away.



Building Specialties

Underground Garbage Receivers—Package Receivers—Metal Basement Windows—Fire-place Dampers—Ash Dumps—Flue Clean out Doors.

Sold by **5,000** Hardware, Building Supply, & Lumber Dealers Everywhere!

Majestic Coal Window

Certified Malleable Iron and Keystone Copper Steel are the most durable and satisfactory materials for a coal window. Majestic uses them. This, plus years of experience, are the reasons why Majestic Coal Windows are superior in quality, design and workmanship at no additional cost—why Majestic leads the world in coal windows. Specify the Majestic.



You don't want this!

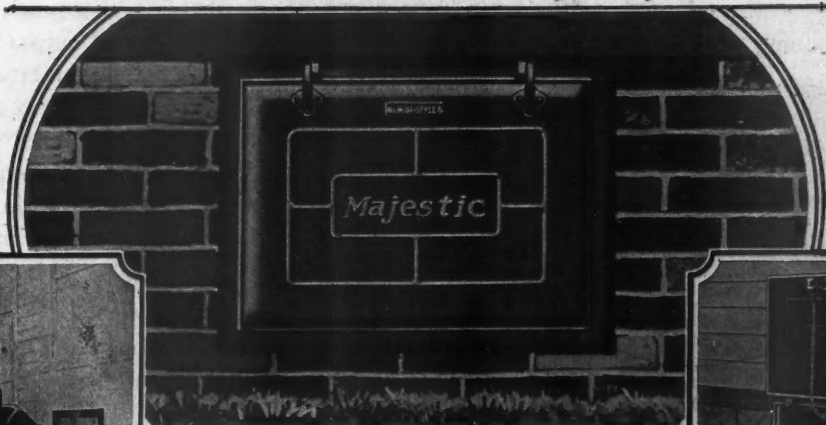
The ordinary basement window soon looks like the one at the left when used as a coal window. Wall, sash and frame battered, broken and disfigured. The Majestic Coal Window eliminates this.

The door, frame or hinges of the cast iron coal window frequently break under the heavy impact of coal as it is delivered—see illustration at the right. The Majestic Coal Window is break-proof.



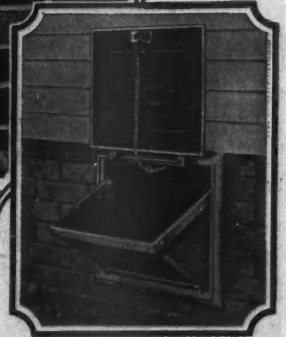
Nor this one, either!

You Want the Break-Proof Majestic!



The Mark of a Modern Home

There are eight different styles of Majestic Coal Windows and Coal Chutes—styles and sizes for homes, stores, business buildings, apartments. Write for catalog and prices.



THE MAJESTIC COMPANY, HUNTINGTON, IND.

Branches and Warehouses, 406 Scarritt Arcade Bldg., Kansas City, Mo.—6024 Grove Ave, Chicago, Ill. 816 Security Bldg., Minneapolis—Westlake Ave. and John St., Seattle, Wash.—3227 Larimer St., Denver Canadian Factory THE GALT STOVE & FURNACE COMPANY, Ltd., Galt, Ont.



Costs You No More to Have the Best



Making "Millwork" Better Known

Identifying "Millwork" to Home Owners, by Telling the Interesting "Story of Architectural Woodwork"

By J. H. WEDDELL, Chicago

MILLWORK has the closest possible contact with the life of every household. Porches and porticos, front door entrances, vestibule and hallway trim, doorways, window frames, mouldings, wainscoting, paneling, closets and wardrobes, the fireplace mantel, built-in bookcases and settles, sunporch construction with French doors and windows, dining room and service cabinets, breakfast nook equipment, bedroom and bathroom fittings and compartments, kitchen and laundry conveniences—all this is millwork to the manufacturer and builder.

But to the home owner it is "architectural woodwork," the appointments that convert a house into a home. Its value lies in the household conveniences it makes possible, in the beauty it adds to the appearance of a modern home.

Millwork is fully as important to household comfort as floor plans or arrangement of rooms, upon which the person planning a home usually places a great deal more emphasis. But usually it is after the house is built and the furniture moved in that the search begins for conveniences in the shape of detached furniture which might far better have been installed while the house was "in the shell," when the work of the builder would have contributed to the architectural beauty of the whole. It is surprising how much of the household furniture used in the every-day running of a home can be planned in advance, with great consequent saving in money and space. Without knowing that

she has millwork to thank for it, every housewife is instinctively drawn to the well-appointed house, equipped with every built-in convenience.

A mistake has been made when it becomes necessary



Model Kitchen Arrangement—Millwork's Contribution to the Household.

to call in a carpenter afterwards to add a shelf here, a cupboard there, to build a breakfast nook, to install book shelving or equip the insides of closets. There has been a sin of omission when it becomes necessary to buy kitchen equipment to fit wall spaces as best it can. The cluttered up kitchen is out of date. All conveniences can be organized in the beginning, supplying additional and profitable work for the builder and preserving the unity of architectural treatment as well.

The Addition of a Hundred Conveniences

But the public must be told, the same prospective building public that now spends its time collecting roofing samples, cement, brick, and stucco literature, heating and lighting information, catalogs of wall paper, drapes and furniture. Tell the story of "architectural woodwork," for that is what millwork really means to the home owner. What woman will not be intensely interested in the plan of a model kitchen, organized to save steps, to make the "workshop of the



See How Every Inch of Space in this Small Kitchen Has Been Adapted to Household Conveniences, and Incidentally to the Use of Considerable Millwork.



Open and close the coal window from inside

THE Peerless Automatic Coal Window is unlocked, opened, closed and locked from any convenient point *inside the house*.

Ordinarily it is necessary to climb over the coal pile, unlock the window, climb down again and lift the window from the outside. After the coal has been delivered the same awkward process must be reversed.

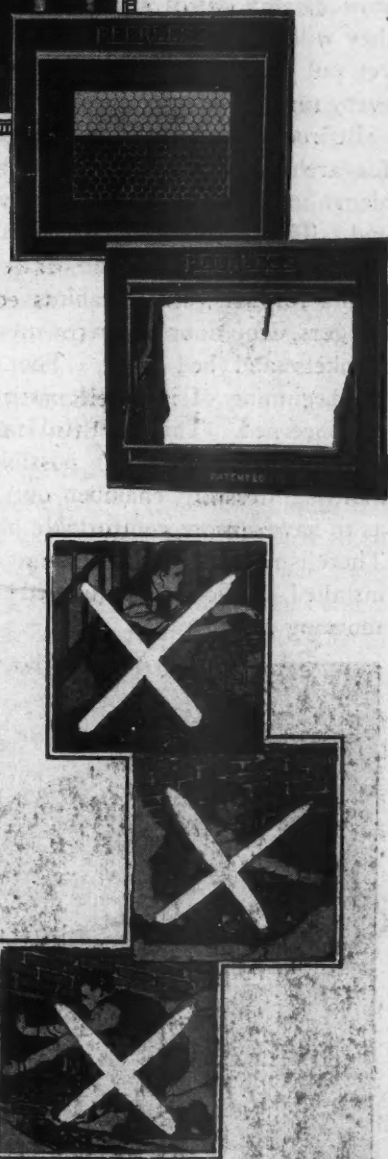
With the Peerless Automatic Coal Window a gentle upward pull of the chain lifts the gravity latch, swings the door easily up and back into the foundation and extends the hopper to receive the coal. To close and lock the window the chain is simply lowered.

Made with durable fire glass or solid steel panel—with or without hopper. No hinges or locks outside the building. *Send for complete description.*

DEERLESS MANUFACTURING CO.
INCORPORATED
LOUISVILLE, KY. USA.

Largest manufacturers of fireplace equipment in the world

Dealers: Write for proposition.

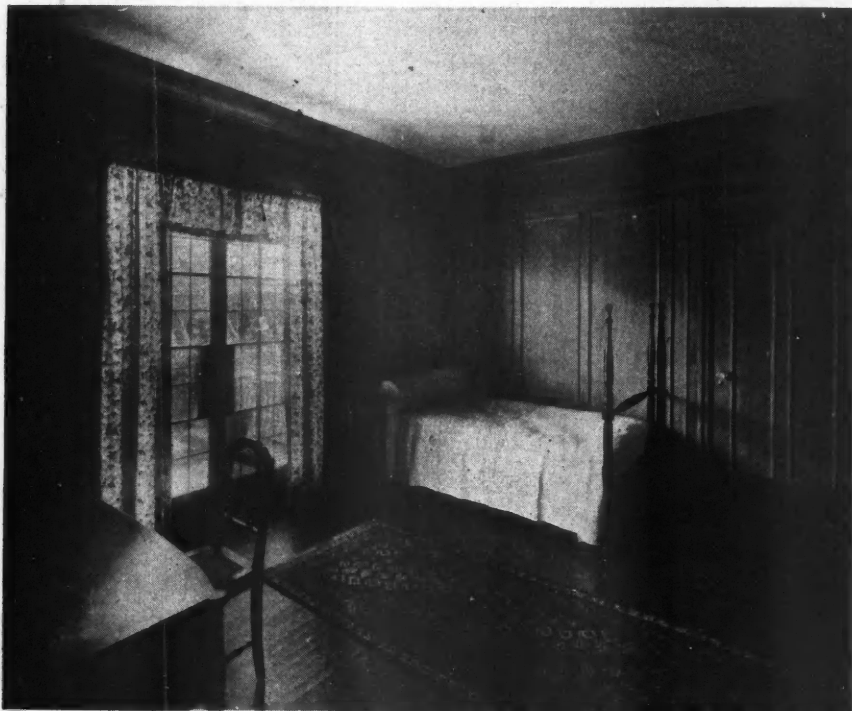


PEERLESS COAL WINDOWS

home" as pleasant a place to be in as possible? What a transformation is possible compared with the present haphazard makeshift in the average home. Cooking and dish washing can be "routed" for the woman, just as office work is simplified for her husband. Everything at hand, and in the right place; cupboards and compartments within easy reach, reducing labor to a minimum, and preventing disorder.

Conduct a "millwork tour" from kitchen, through the butler's pantry or breakfast nook, to the dining room. Show how service conveniences installed to save steps make work easy and pleasurable. Then what about the wasted hall spaces upstairs in most homes? What an opportunity for built-in linen closets on either side; compartments for housecleaning equipment—brooms, carpet sweepers, vacuum cleaners—stowed away out of sight on the same floor for which they will be used. Everything within easy reach, and yet put away out of sight; orderliness apparent at every turn.

Bedrooms and bathroom suggest innumerable uses for architectural woodwork. Frequently there is an alcove in the bedroom, perhaps with a window at the end. This entire wall space may be partitioned into most useful cabinets and drawers; upper compartments for hats, center cabinets equipped with clothes hangers, drop-door compartments or drawers below for blankets and bed linen. The bathroom is just at the beginning of its development, as far as millwork is concerned. The healthful fashion of keeping the bed chamber as cold as possible suggests making a morning dressing chamber out of the bathroom, so as to have a more comfortable place in which to dress. There is no reason why dressing cabinets should not be installed, sufficiently equipped to take care of the morning toilet.



Repose Is In the Very Atmosphere of this Room. The wall treatment is permanent—the eye will never tire of its dignified and chaste beauty.

And so on through the house. Once let the woman grasp the idea that half the conveniences she now buys individually afterwards, can be built into the new home, the millwork designers will be busy keeping pace with the new ideas she will evolve.



Millwork in Charming Collaboration with Stone Is the Making of this "Outside-Inside" Porch, which Can Be Transformed to Meet Changing Weather Conditions..

Convenience and physical comfort have their appeal. But there is such a thing as "comfort to the eye" to be considered as well. Every room has four walls. The function of "architectural woodwork" is to make these enclosing surfaces as attractive as possible. Windows and doors are necessary. Millwork makes them beautiful. Stairs are essential. Millwork makes staircase and hallway a gracious entrance to a hospitable interior.

Manufacturers of other materials that go into a home have dramatized their products, many of them with less human appeal than architectural woodwork can bring to bear.

"The Story of Architectural Woodwork" remains but to be told to awaken full appreciation of its function in the modern home. The telling of it will result in an immense stimulus to the millwork industry as a whole; will place its finely fabricated craftsmanship in the long list of structural products that are now identified and appreciated for what they do to individualize and beautify the American home.

There is also a fertile field for enlightenment in the planning of schools, hotels, theaters, office buildings and the like. Different arguments will apply, and different audiences must be reached, but the fundamental appeal of *convenience and beauty* inherent in "architectural woodwork," remains the same.

ELECTRIFY ALL BUILDINGS

A Department of Up-to-date Information
for all who Plan and Build

Wiring the Home for Comfort

By C. J. CAMPBELL

EDITOR'S NOTE—The Electrical Section of the AMERICAN BUILDER is written and edited by the experts of the Joint Committee for Business Development, an institution which comprises representatives of electrical contractors, dealers, jobbers, manufacturers and central station organizations. It functions through an Executive Committee and a Headquarters staff, office 29 West Thirty-ninth street, New York, H. A. Lane, Director.

MUCH has been said and done in the last few years concerning the proper location and sufficient number of electrical outlets in the home. Although statistics have shown that the application of electricity in the home has enjoyed wider use in the United States than in any other country, there is yet necessity for further improvement before the average home can realize all the comforts and conveniences which can be enjoyed.

The modern home should have at least one convenience outlet in each room—preferably two or three in the living room, kitchen and master's bedroom. The following partial list of electrical appliances now in general use should prove conclusively the need for a greater number of convenience outlets which serve to furnish power for these appliances.

Reasons for Convenience Outlets

- | | |
|---|---|
| PORCH
Fan
Reading Lamp | KITCHEN
Cooking Appliances
Electric Iron
Exhaust Fan
Electric Range
Dish Washer
Utility Motor |
| FRONT OR RECEPTION HALL
Floor Lamp or Torchères
Cleaner | BEDROOM
Curling Iron
Hair Dryer
Massage Vibrator
Heating Pad
Violet Ray Outfit
Boudoir Lamps
Radiator
Fan
Cleaner |
| LIVING ROOM
Candlesticks
Piano Lamp
Electric Grate
Phonograph Motor
Electric Clock
Floor and Table Lamps
Xmas Tree Outfit
Cleaner
Fan | SEWING ROOM
Sewing Machine Motor
Portable Lamp
Fan
Cleaner |
| DINING ROOM
Toaster
Coffee Percolator
Tea Samovar
Chafing Dish
Cleaner
Fan | BATHROOM
Radiator
Immersion Heater
Sterilizer
Milk Warmer
Massage Vibrator |
| BASEMENT
Iron
Washer
Ironing Machine
Ice Cream Freezer | |

Convenience outlets having receptacles taking the parallel or tandem blade plug should be used rather than those of the Edison screw type, as the former are more rugged, and there is no possibility of touching live contacts. The New York City building code requires the use of the "dead front" type of convenience outlet. A satisfactory method of installing two outlets for slightly more than the cost of one is to use the convenience outlet having two instead of one receptacle. The wiring cost is the same and the increased price of the receptacle is very small.

Experience has proven that the location of switches deserves more consideration. A switch should be located where it can be most conveniently reached when entering the room. This may seem obvious, but there are many cases where a switch has been located behind a door, or in some other inconvenient location. Three-way switches for controlling lights from two different points are commonly used on stairways. They should also be used in large rooms such as the living room where there is more than one entrance, in order to



Two of the Major Items in the Housewife's Daily Dozen of Electrical Helps—the Electric Ironer and the Electric Washing Machine.

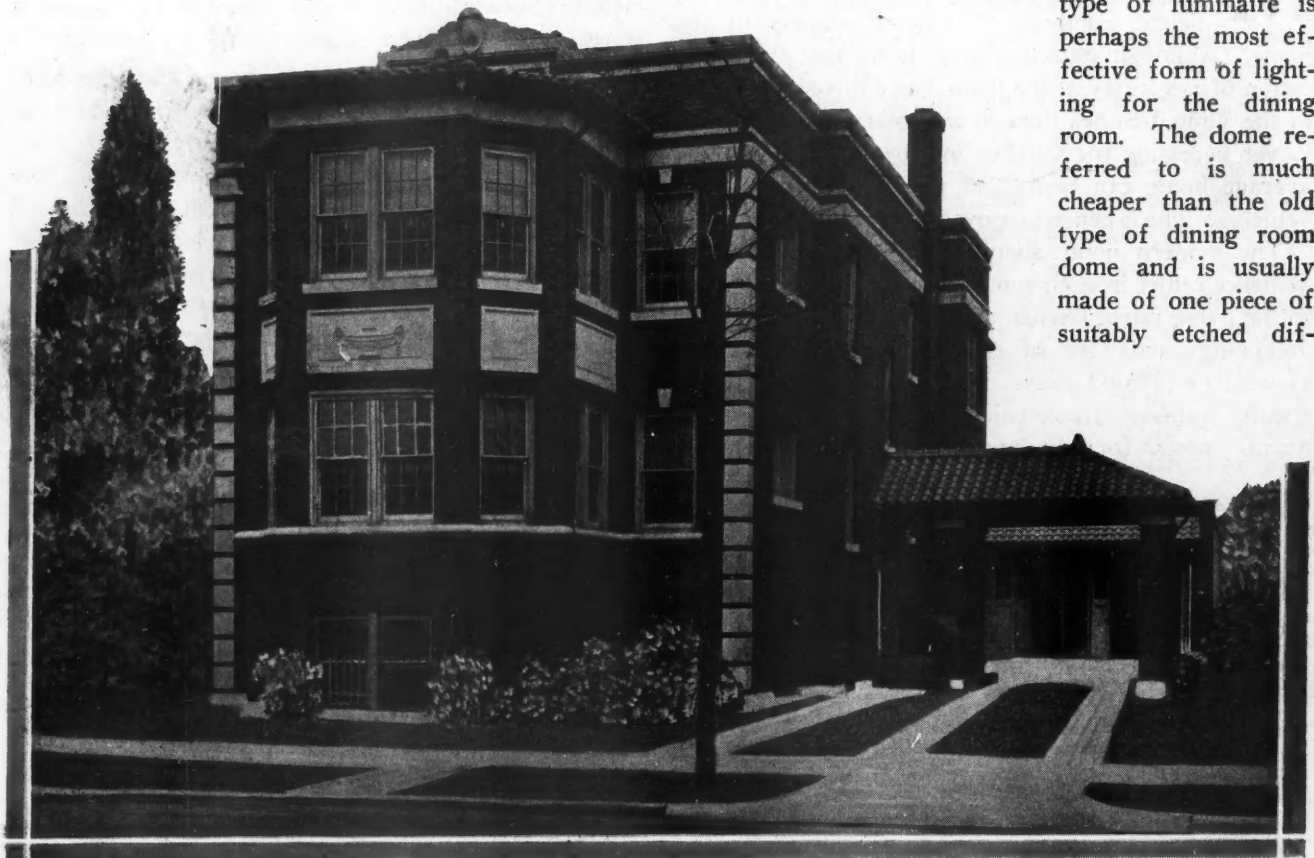
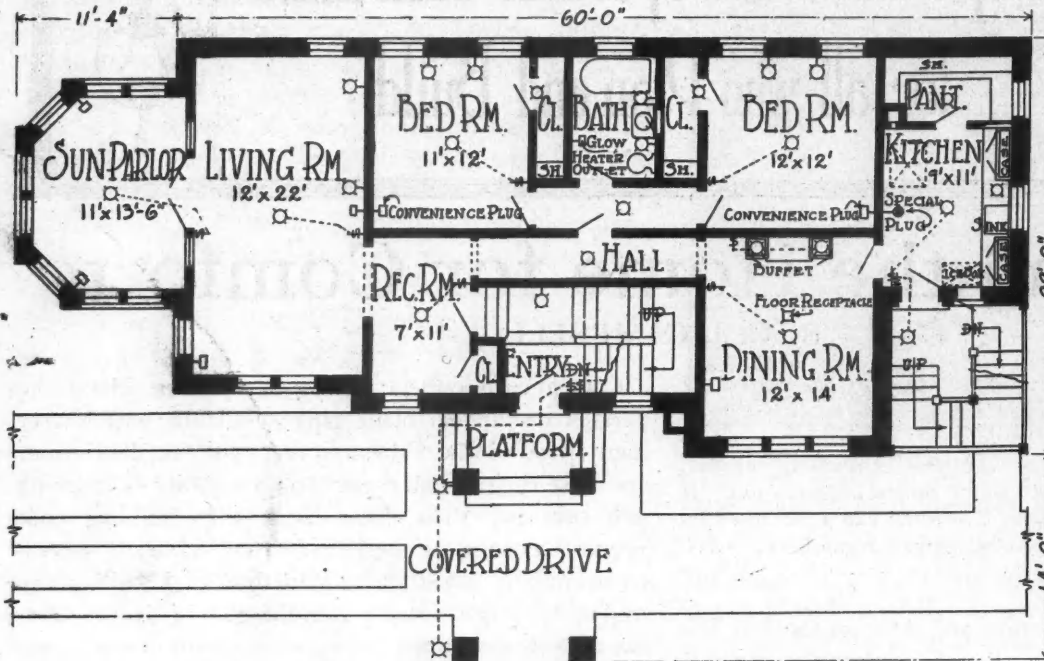
save steps and prevent groping about in the dark. Wall switches, instead of socket or pull chain sockets, should be used for the same reason. Indicating switches, in which a buzzer or red signal light operates when the current is on, are recommended for basement lights and electric iron circuits.

It is not within the scope of this article to attempt

to show the proper type of fixtures or luminaires, as they are more properly called, for the various rooms of the house. It may be well to note, however, that the use of the "bowl and cluster" type of luminaire should be discouraged, for, in the first place, the appearance is usually anything but pleasing and secondly the average unit of this kind is very inefficient.

The kitchen, aptly termed the "workshop of the home," really requires more light than any other room. The light must also be well diffused. These requirements can be best met by using an enclosing globe or diffusing glass or a totally indirect luminaire. All metal parts should be finished in white enamel. A wall bracket with direct lighting type of glass reflector should be placed over the sink.

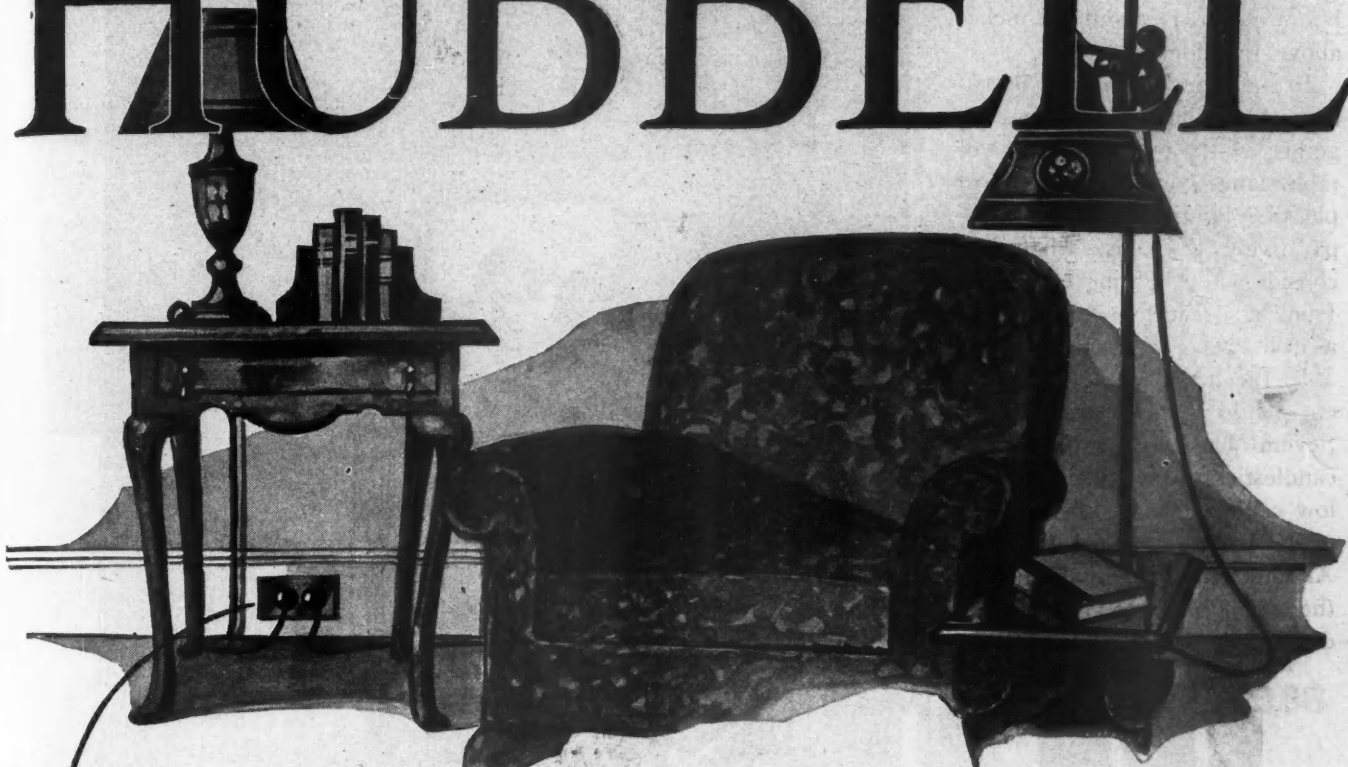
The modern dome type of luminaire is perhaps the most effective form of lighting for the dining room. The dome referred to is much cheaper than the old type of dining room dome and is usually made of one piece of suitably etched dif-



TWO-APARTMENT BUILDING. Typical of apartment dwellings now being erected in cities, large and small, is this well-designed two-apartment building in brick with cut stone trimmings. As will be seen from the typical floor plan above, it contains six rooms, and bathroom, also a very roomy sun parlor. There are in each apart-

ment electrical conveniences and heater outlets amply numerous enough to serve each family by contributing to personal comfort and lightening the work of the housewife. The driveway portico is well-illuminated at night, and the garage at the rear wired to give all necessary illumination at the snap of a switch.

HUBBELL

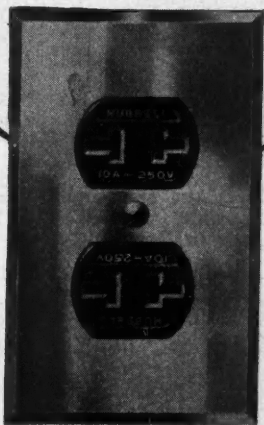


A Welcomed Convenience The Duplex Outlet

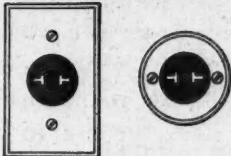
In the living room a Hubbell Duplex Convenience Outlet provides connections for both table and reading lamps—without necessitating extra wiring.

A builder's clients appreciate this constantly used *double* convenience and welcome its availability throughout the home. Hubbell Convenience Outlets are made in both duplex and single types.

We would welcome an opportunity to confer with any builder regarding the most advantageous locations for convenience outlets in any class of building.



Duplex Convenience Outlet
Composition body No. 7575
Porcelain body No. 6257
Stamped brass flush plate for
either of above, No. 6258



Hubbell Convenience Outlets are also made in the single types shown above, with round or rectangular plates.

HARVEY HUBBELL INC.
ELECTRICAL WIRING DEVICES
BRIDGEPORT CONN. U.S.A.



Remember it's the Te Slots, that make outlets "Convenient"

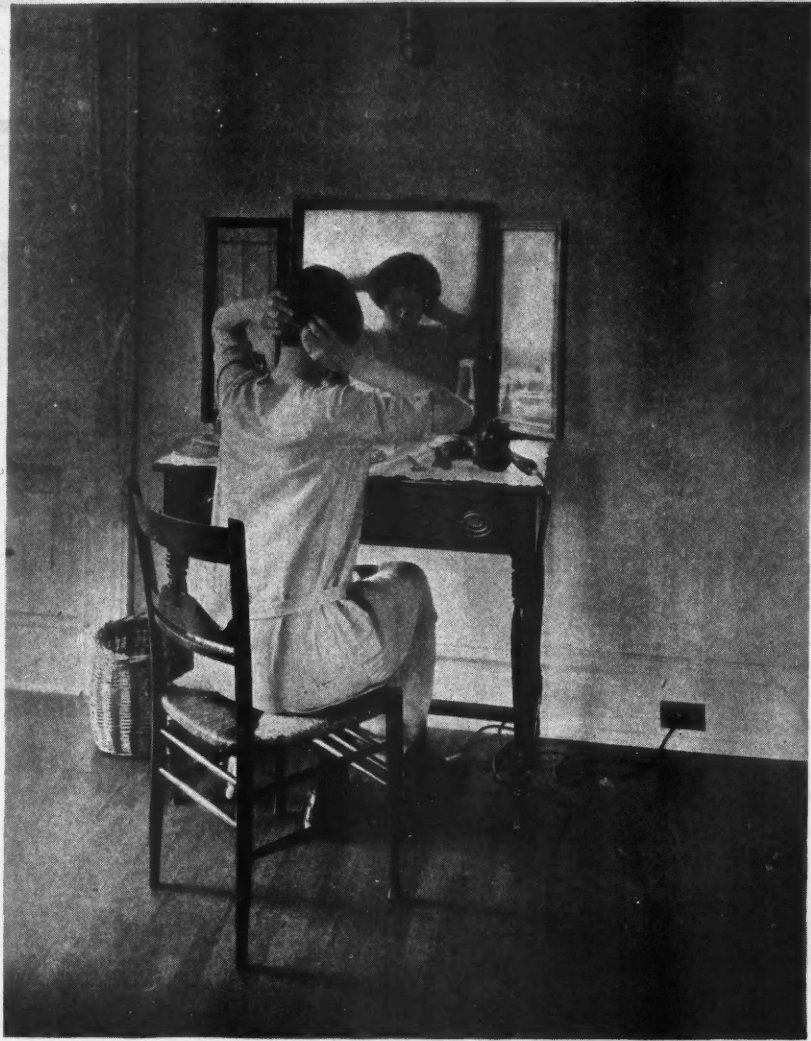
fusing glass, or a glass diffusing unit concealed in a silk shade. A 100-watt bowl-enameled Mazda lamp is ordinarily used in this type of luminaire. The dome should be mounted so that the bottom edge is about 56 inches above the floor.

In the living room wall brackets and ceiling luminaires, together with portable floor or table lamps, give a variety of pleasing lighting effects at comparatively low cost when one considers the lighting equipment from a decorative rather than a utilitarian standpoint.

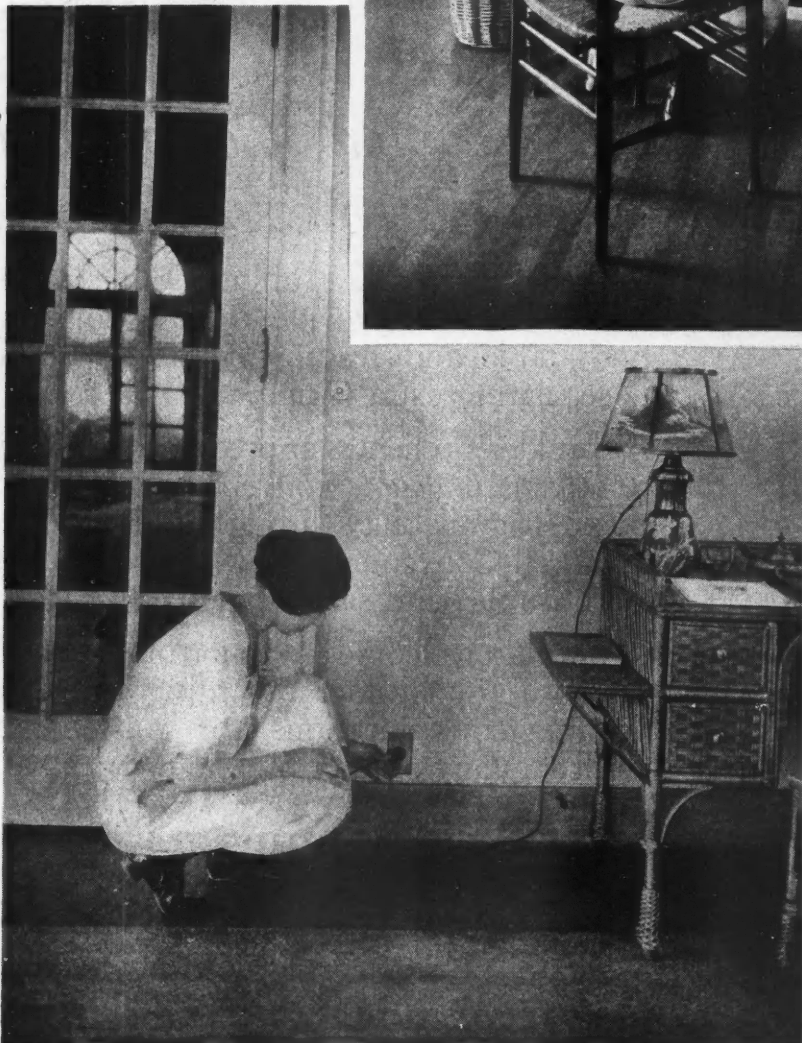
In the bed rooms wall brackets should be more widely used. Several brackets of the shaded candlestick type, when used in low ceilinged bedrooms, actually make the room appear larger. Another advantage, aside from the wall brackets being more decorative, is the fact that a

person lying in bed does not have to look at a brightly lighted area on the ceiling.

The generally accepted method of lighting the



A Convenience Outlet Placed Near the Dressing Table Makes Possible the Use of Milady's Aids to Beauty.



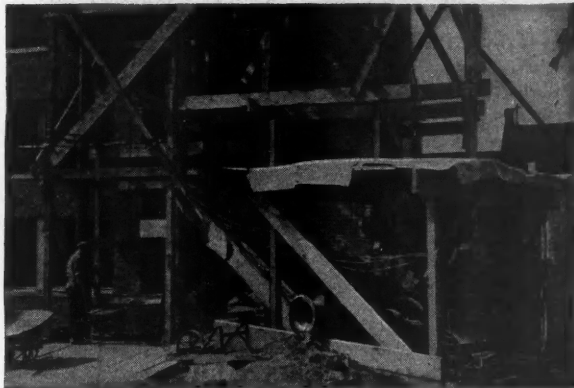
It's a Lot More Satisfactory and Convenient to Light a Desk Lamp in This Manner Than It Is by Stringing Wires from a Fixture.

bathroom is to place a light at each side of the mirror. These lights should be controlled by a wall switch at the door rather than pull chain or snaw switches at the socket.

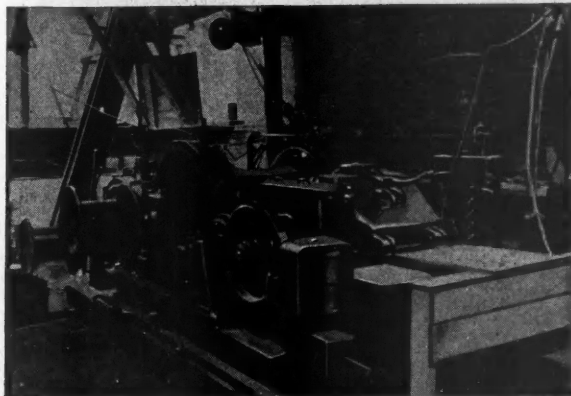
Clothes closets should be provided with lights. This is advisable from a convenience standpoint, as well as decreasing fire risk, for a lamp inside the closet makes the use of matches unnecessary when trying to find goods stored therein. The closet light may be controlled by an automatic door switch or pull-chain socket. In case the door switch is installed, the pull chain should also be used, so that it will not be necessary to have the



G-E Motors drive air compressors used in excavating for the Equitable Society Building, New York City.



G-E Motor drives hoist used in erecting the Home Insurance Building, New York City.



G-E Motor drives elevator used in constructing the Title Guarantee & Trust Co. Building at Jamaica, Long Island.

The Power of Progress

Modern business efficiency demands skyscrapers—modern construction efficiency utilizes G-E Motors to the utmost.

From the start of the first pneumatic drill eating into the living rock at the beginning of the excavating until the completion of the finished building, G-E Motors aid the builder.

They drive the compressors which furnish air for drills and riveters.

They operate pumps for draining excavations—derrick used at every stage of the job, from clearing the excavated material from where the foundation rests, to lifting the final structural girder on which some proud worker plants the flag—hoists for furnishing lumber, brick, concrete, tile and plaster—mixers, conveyors, and elevators.

And when the job is done, they are easily moved on to the next job.

Ask G-E engineers to help you select electrical equipment for your construction plant. You can reach them at G-E Sales Offices in all large cities.

General Electric Company
Schenectady, N. Y.

GENERAL ELECTRIC

light burning when the closet is being aired. An inexpensive method of controlling closet lights is to have a pull chain receptacle mounted flush against the wall, above the door and having a pull chain of sufficient length that it is within easy reach when the door is opened.

In selecting luminaires for the house, only those should be used which properly shade or shield the filament of the lamp. Glare will thus be prevented and the effect will be much more pleasing. In case it is desired to install luminaires of the candelabra design, "all frosted" lamps should be used.

The meterboard should be so placed that the meter can be read by the lighting company's man without entering the house. The meter is often placed on the back porch, where it is protected from the weather. If placed in the basement it should be so positioned that it can be read through the cellar window. Special "outside reading" meter boxes designed to sit in an outer masonry wall are now on the market. With such a box the meter dials are visible from the outside, while the connections, switch, meter and fuses are accessible only from within.

From a purely mercenary standpoint, it is a good policy to provide an adequate number of lighting and convenience outlets, for the American public has become rather well educated to the conveniences of electricity in the home. For example, a "Home Electric" recently built at Hollis, Long Island, sold for \$1,000 more than adjoining houses of the same type, built at the same time, simply because it had been supplied with more convenience outlets and better luminaires than its neighbors. It is interesting to note that this additional outlay for electrical equipment amounted to approximately \$250.



An Electric Maid-of-All-Work

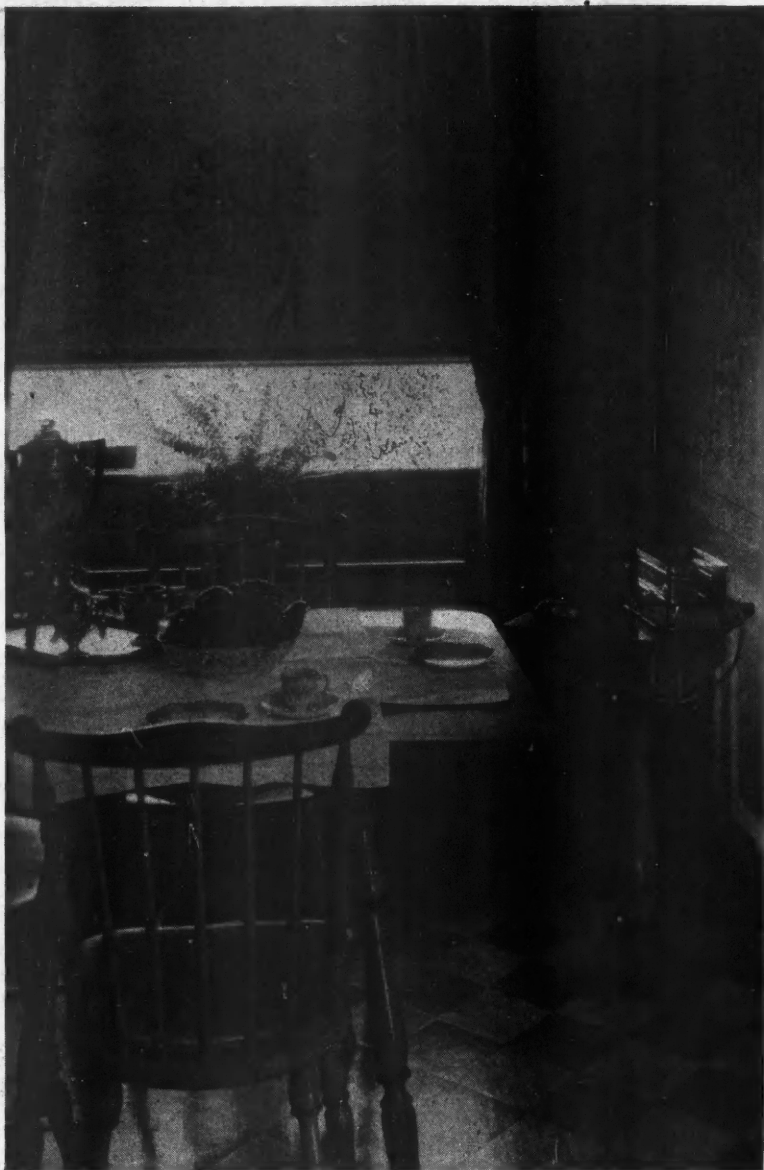
THE handy-size mahogany table, electrically wired, which you see below has been christened with a nice homey sort of a name by its manufacturer. Why? Well, it must be because it is really a pleasant-looking, cheerful, willing, faithful electric maid-of-all-work.

It is a small, portable, wired stand or table for use in any room, affording three electric outlets. In other words, it brings the socket to you instead of having to delve for a possibly inconveniently situated baseboard outlet, or overhead connection to the chandelier.

Suppose you were breakfasting some morning in this cheerful-looking corner illustrated. You would move the electric

maid-of-all-work alongside the table. Then you would plug in on the three outlets with your toaster, egg boiler or coffee percolator as needed. And there you would be, having breakfast without arising from the table. And it is not alone in the dining room that it is of service. Alongside the dresser it is a silent and well-trained "maid" with the vibrator, curling iron, fan, comb, etc. On cold winter mornings you can plug in your glow heater without getting out of bed.

In the summer time one woman had her electric maid-of-all-work run her sewing machine and fan her at the same time. Pleasant to have around and to look at, too, for it comes in a Colonial style supported by a pedestal; and a top-and-shelf plain style which accords well with the furniture in any room. Both styles are finished in soft, rich dark brown, with mahogany top and shelf.



This Handy Little Side Table Is Wired with an Inlet Down by the Floors to Connect with the Base Plug and Three Outlets Up Near the Top for Connecting with Toaster, Percolator, Table Lamp, etc.

Facts About Kelvinator Electric Refrigeration

Kelvinator, established in 1914, is the oldest domestic electric refrigeration.

It has a firmly established organization of distribution and service, international in its scope.

Kelvinator is so well designed that it can be installed in any standard refrigerator. The cooling tank which is placed in the ice compartment, simply takes the place of a cake of ice.

Kelvinator is scientifically and mechanically right. *It has*



never changed its basic design and principle. Its principle is correct, and that principle

is applied by highly skilled, conscientious workmen, employing only the finest materials.

Manufactured in a factory especially built and equipped for its sole production, no Kelvinator is permitted to leave the factory until it has been submitted to tests of far greater severity than it will ever be given

in practical and every day use.

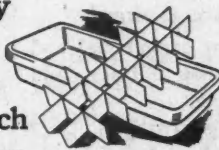
Kelvinator is deliberately built to give service over a long period of years. It is precisely because it *does give such* service that Kelvinator has won universal approval and has attained positive leadership.

The Convenience of Kelvinator

Kelvinator eliminates the trouble of ice. There is no inconvenience, no dirt, no "waiting for the ice man."

Kelvinator maintains a dry, wholesome even temperature, much colder than ice.

This perfectly dry, constant refrigeration keeps food much better and longer, prevents food waste and safeguards health.



Kelvinator freezes ice for table use. Another outstanding advantage is the ease with which delicious frozen desserts and delicacies can be prepared. Kelvinator is an invaluable aid to the hostess.

In convenience, in economy, in actual comfort, Kelvinator

satisfies in every way the nation wide demand for home refrigeration.

What Kelvinator Owners Think

Kelvinator is endorsed by the Good Housekeeping Institute, the New York Tribune Institute, the Modern Priscilla Proving Plant and best of all by thousands of satisfied owners.



What Owners think is extremely important. Talk with owners of Kelvinator. They will tell you it will do everything we say—and more. They will make you sure of the satisfaction Kelvinator gives before you specify or recommend it.



Because of these facts, the "Investigating Committees of Architects and Engineers" New York City, endorse it and scores of leading architects and builder everywhere are including Kelvinator in their plans and specifications.

Write for your copy of "Specifications and Data" and name of nearest dealer.

Kelvinator Corporation
2020 W. Fort St. Detroit, Mich.

Established 1914

Kelvinator Electric Refrigeration

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

NEWS of the FIELD



Construction Seven Per Cent Over Last February

FEBRUARY building contracts in the thirty-six eastern states (including about seven-eighths of the total construction in this country) amounted to \$299,929,100, according to F. W. Dodge Corporation. This was a decrease of 1 per cent from January, and an increase of 7 per cent over February of last year. January showed an increase of 23 per cent over January, 1923. The combined total for the first two months of this year, \$601,880,600, shows a 15 per cent increase over the corresponding period of 1923.

This increase over last year is principally in New York State and Northern New Jersey and is mainly due to a continued large volume of speculative residential building in New York City. New England and the Southeast show very moderate increases over last year; the remaining sections show moderate decreases. Moderate decreases are normal for this present phase of the building cycle. The large increases in the New York district at the present time are abnormal.

The February record showed increases in commercial and educational buildings and public works and utilities, and decreases in industrial and residential buildings.

In detail the February record included: \$142,079,200, or 47 per cent for residential buildings; \$47,123,800, or 16 per cent, for commercial buildings; \$37,955,600, or 13 per cent, for public works and utilities; \$31,154,900, or 10 per cent, for educational buildings; and \$19,059,700, or 6 per cent, for industrial buildings.



Johns-Manville Elects Officers

T. F. MANVILLE was named chairman of the board at a recent meeting of the board of directors of the Johns-Manville, Inc. Other officers elected are H. E. Manville, president; L. R. Hoff, vice-president and general manager; W. R. Seigle, vice-president and general manager of factories and mines; J. E. Meek, vice-president; J. W. Perry, vice-president; J. S. Carroll, vice-president; A. C. Hoyt, secretary and treasurer, and T. F. Manville, Jr., assistant secretary and treasurer.

T. F. Manville was chosen chairman of the executive committee to serve with H. E. Manville, L. R. Hoff and W. R. Seigle.



A Correction

IT has been called to our attention that in our issue of October, 1922, in an article headed "Spiral Slide Fire Escapes for Schools," a mis-statement was made, to the effect that Illinois has a law which requires all school buildings of four stories or more to be equipped with spiral escapes.

Mr. John G. Gamber, State Fire Marshal, advises us that there is no such law in this state. EDITOR.

Lumbermen Have Record Year

THE American lumber industry in 1923:

1. Cut enough lumber to comfortably house 10,000,000 persons.
2. Cut enough lumber to rebuild three times the 800,000 destroyed buildings of the French war regions.
3. Cut enough lumber to encircle the world three times with a foot-wide duckboard walk.
4. Felled trees on 5,000,000 acres of land.
5. Employed more than 800,000 woodsmen and millmen.
6. Required 3,000,000 carloads for hauling.

THE NATIONAL LUMBER BULLETIN



Linking New York and New Jersey

(Continued from page 116.)

each plate weighing a ton and a half. The excavating is done in shields, or movable heads, which are pushed forward 2½ feet at a time by 30 hydraulic jacks. As the shield moves forward, the rings are added one by one. When completed the tunnels will have a protective covering of broken stone, and at each entrance there will be a modern pier above the tunnel as it reaches the land, in order to avoid the possibility of a ship running into the tunnel where it comes up.

One of the most difficult problems in connection with building the tunnel has been proper illumination. The Illuminating Engineering Laboratory of the Westinghouse Lamp Company recently became interested in this problem and began a series of experiments to determine the best possible lighting system. In order to study all suitable systems of illumination under approximate operating conditions, an exact model of the tunnel on a scale of one inch to one foot, and 10 feet long, was constructed. Exact replicas of the proposed lighting units were installed in this model tunnel, furnishing an amount of light corresponding accurately to the desired illumination. The model tunnel, pictured above, is complete to the most minute detail, even the brass railing along the walk for pedestrians being provided.

It would seem at first glance that lighting the tunnels would be merely a matter of installing plenty of units, but that is not the case. It is necessary in the first place to eliminate all glare, so the units, one every 20 feet, were encased in metal boxes sunk into the concrete of the tunnel, and diffusing glass used to cover them. Next, the lights had to be so placed as to secure the greatest possible amount of reflected illumination from the walls and ceiling. Third, and most important, it is extremely necessary that all shadows between cars be eliminated in so far as possible, as sharp shadows would cause drivers to misjudge distances, which might result in accidents. As the new tunnel is expected to relieve the traffic congestion on the west side of New York, any accidents or tieups in the tunnel must be rigorously guarded against, and proper illumination will be an important factor in accomplishing this.



Why Spend Money on Chimney Flues?

Unless a fireplace is used for burning wood or coal, its flue was an unnecessary expense.

Thousands of fireplaces, so designed, are standing idle today because a real fire means work, dirt and ruined draperies.

In Magicoal Electric Fire you can have all the beauty and charm of a real open fire—its heat and comfort, too—without these drawbacks. No flue is needed.

Magicoal will turn a dead fireplace into the most attractive spot in the room. Just provide an electric outlet in the fireplace. For the firelight effect the ordinary lighting circuit will do; for heat, heavier wiring is needed.

Whenever you build, save the expense of chimney flues, yet provide the means for "Firelight Happiness" which every one longs for—a fireplace opening, a mantel and Magicoal.

Send for complete data regarding installation, heating capacities and styles of grates to harmonize with mantels of any design or period.

Mayer Bros. & Bramley, Inc.
413 West 28th Street, N. Y.

Sole Distributors for U. S. A., H. H. Berry World Patents

MAGICOAL

REG. U. S. PAT. OFF.

ELECTRIC FIRE

"Firelight Happiness" at the turn of a switch



Do You Build Homes?



Type R
Safety Type
Residence
Panelboard

Make Panelboard Safety and Convenience Selling Points

Practically all wiring is concealed after the home is built. The panelboard alone remains. You can indicate the quality of the entire wiring job by using the **FA** Type R Residence Safety Type Panelboard. Because of its absolute safety it can be located at the center of distribution, which costs less in labor and material and adds greatly to the convenience in fuse changes.

The **FA** Safety Type R Residence Panelboard is the last word in modern, safety type, panelboard engineering. It can be used with equal facility in residences, apartment buildings and stores. It is a factory product of standardized unit construction, that costs less—installed—than the old-fashioned porcelain-block, fuse-plug assembly.

You should have the full story. It means more profit to you. Write for "Wiring the Home for Comfort and Convenience," which gives full information and complete wiring diagrams.

Frank Adam
ELECTRIC COMPANY
ST. LOUIS

District Offices:

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New Orleans, Chicago, Denver,
San Francisco, Los Angeles,
Seattle, Philadelphia, Pittsburgh.

Manufacturers of

Major System of Theater Light-
ing Control; Triumph Line of
Safety Type, Standardized Pan-
elboards and Cabinets; knife
switches; safety switches;
hanger outlets; reversible-cover
floor boxes; A. C. and D. C.
Distribution Switchboards.



Answers to Roof Framing Problems on Page 142

(1) To obtain the top and bottom cuts for a rafter with a run of 16 feet and a rise of 12 feet, we may use 16 inches on the blade of the square and 12 inches on the tongue.

As the rise per foot run is 9 inches, we may also take 9 inches on the tongue, with 12 inches on the blade.

For a rafter with a run of 8 feet and a rise of 8 feet, we may take 8 on the blade and 8 on the tongue; or we may take 12 on the blade and 12 on the tongue as the rise per foot run is 12 inches.

(2) For a $\frac{1}{2}$ pitch the rise per foot run is 12 inches. To lay out the cuts we use 12 on the blade of the square and 12 on the tongue.

For a $\frac{1}{4}$ pitch the rise per foot run is 6 inches. Use 12 on the blade and 6 on the tongue.

For a $\frac{3}{4}$ pitch the rise per foot run is 18 inches. Use 12 on the blade and 18 on the tongue.



Jack Lyons Joins Best Bros. Chicago Organization

JACK LYONS, formerly installation expert with the Ceresit Waterproofing Company, has joined the Chicago office of The Best Bros. Keene's Cement Company, 111 West Washington Street. He will work under E. C. Carter, Chicago Sales Manager, on the company's various contracts in this territory, giving its customers the benefit of his suggestions and service.



**Soon in
Every Home**

More and more are home owners and builders realizing that no kitchen is completely equipped without its electric ventilator. Installation is easy. Cost is small.

Send for bulletin. Engineering advice given if needed. Write us today.

The Emerson Electric Mfg. Co.
2018 Washington Avenue
50 Church Street
New York City St. Louis, Mo.

EMERSON
Residence Ventilators

Speeding Up Your Painting and Profits

Painting with DeVilbiss spray-painting equipment will speed-up the work and bring correspondingly bigger profits to you.

Spray painters will do more jobs for you in your present working time by spending less time on each job. Your men will like to operate the DeVilbiss spray gun because the work is cleaner and will not wear them out: this also has a favorable bearing on amount of work done and profits for you.

DeVilbiss Spray-painting System

gives you all that is practical, complete and reliable in spray-painting equipment. The DeVilbiss spray gun operates on the lowest practicable air pressure; it makes possible 4 to 5 times faster painting than can be done with the hand brush; it insures a more thorough and uniform coating with any kind of paint, on any inside and outside surface.

Further interesting facts about the DeVilbiss Spray-painting System, that will point the way to more painting and profits for you, will be gladly sent. Get the facts.

The DeVilbiss Mfg. Co.

238 Phillips Ave.

Toledo, Ohio



INDISPENSABLE AND INEXPENSIVE



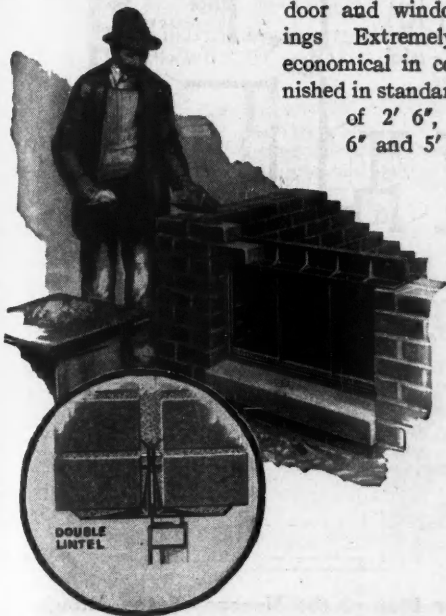
TRUSCON COPPER STEEL BASEMENT WINDOWS

Modern homes everywhere are using steel basement windows because of their advantages of double daylight, fireproofness, ease of operation and absence of repairs. Their cost is as little as wood and their worth twice as much. Truscon Basement Windows are made of copper steel which resists corrosion. They have many exclusive features which make them preferred by discriminating home owners, builders and architects. Get the facts. Write for circulars, prices, etc.

TRUSCON COPPER STEEL STANDARD LINTELS

Truscon Copper Steel Standard Lintels. For use in walls to support brick, stone or concrete blocks over door and window openings. Extremely rigid—

economical in cost. Furnished in standard lengths of 2' 6", 3' 6", 4' 6" and 5' 6".



TRUSCON COPPER STEEL STANDARD CASEMENTS

Casement Windows are in demand everywhere and are continually growing in popularity. They add distinction to the home and give double the ventilation. Truscon Copper Steel Casements being standardized and manufactured in quantities are low in price. Their quality features insure permanence, weathertightness and ease of operation. Before you build investigate these casement windows. Complete information, prices, etc., on request.

TRUSCON STEEL CO. YOUNGSTOWN, OHIO

Warehouses & Sales Offices from Pacific to Atlantic
For addresses see phone books of principal cities
Canada: Walkerville, Ont. Foreign Div.: New York

TRUSCON

STEEL WINDOWS

CORRESPONDENCE

Questions Answered—Ideas Exchanged

A Texas Bungalow

To the Editor: Nocona, Texas.
 I am inclosing a picture and plan of a bungalow that I planned and built for Mrs. G. Whaley of this town.
 I wish to thank you for the good magazine you have published this year.
C. E. McCARLEY.



English Workman Expresses Views of American Building

To the Editor: Grand Rapids, Mich.
 I am sending you a copy of *The Illustrated Carpenter and Builder*, published in London, England, in which is printed an article I wrote on "England and America; the Workman's Lot Compared." It may be of interest to your readers through showing the impressions of the workman recently arrived in America:

I left dear old England with great regret, and somewhat prejudiced against America and American ways; but I must freely and honestly admit that I was entirely wrong in my opinions and conjectures as to the differences and conditions prevailing in the United States in comparison with those in England, and London in particular.

New York burst upon us with a feeling of immensity and grandeur compared with the simplicity and quietude of London. The great height of skyscraping buildings, which from a distance had the appearance of some huge cathedrals, the mighty Hudson River, with its great life and movement, the streets with their teeming thousands of people, the great noise of traffic, overhead trains, buses, trams (termed trolleys), the universal bustle and hustle—all make one feel how small and insignificant one is in this great city. You require strong nerves to get about the center of New York. The traffic is on the opposite side of the streets to that in England, and until one becomes used to the difference you are inclined to feel confused. It is a bewildering to cross the streets; everybody who can possibly do so owns an automobile; consequently the streets are absolutely full of them. Even the work-people possess cars, and you will see crowds of them parked around the new buildings, etc., wherever parking space can be obtained. Gasoline is so plentiful and cheap, running from

18 to 22 cents per gallon (about 9d. to 11d. in English money), so that the cost of using a car is not a great one, and from a workman's point of view is less than traveling by tram, bus, or train. There are no workmen's fares in New York and district.

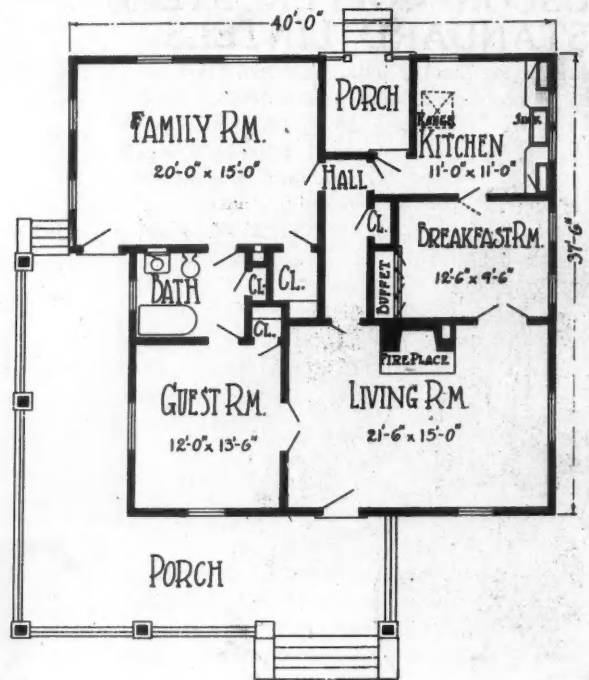
Much has been said about the comparison in the cost of living in London and New York. So far as his inquiries and observations go, the writer does not find the difference to be so very great, with the exception of the rents charged for rooms or houses.

In Yonkers and Mount Vernon, both large residential suburbs of New York, which occupy the same relative positions to New York as Kingston, Wimbledon, Croydon, East and West Ham, Ilford, and the northern suburbs do to London, and where building operations are exceedingly brisk at the present time, the rent of a five-roomed house with bath (unheated by the landlord) costs from \$50, with taxes added. Calculating 4s. 4d. in English money per dollar, this amounts to about £10 16s. 8d., equal to, say, £2 16s. per week, or more than double that of a house with similar accommodation in corresponding districts round London.

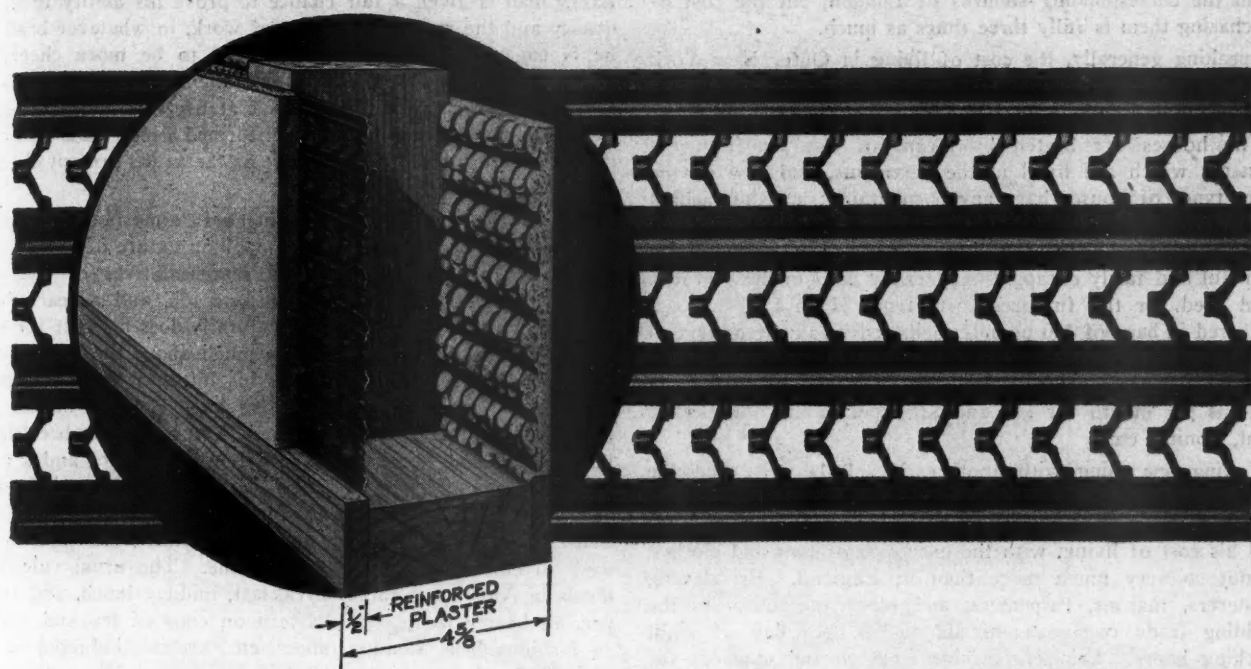
It can be safely affirmed that rents in New York and its suburbs are more than 100 per cent above those in London and its suburbs. The center of New York is given up entirely to palatial hotels, offices, and business premises. Beyond the boundary of central New York are immense blocks of flats, the rents of which are exceedingly high, quite beyond the reach of the ordinary working man, although thousands manage to exist in one or two rooms, and it is only in the outer suburbs that self-contained houses can be obtained at the rents quoted, and a very large percentage of these are owned by the tenants, just



Attractive Bungalow of Brick and Frame Construction Erected by C. E. McCarley, Nocona, Texas.



Well Designed Floor Plan of the Nocona, Texas, Bungalow Built for Mrs. G. Whaley by Mr. McCarley.



METAL LATH ON $\frac{1}{2}$ " GROUNDS GIVES QUALITY HOMES AT ECONOMICAL COST

Crackless ceilings and walls are sought after by home owner, contractor and architect. The greatest advance in plastering methods for home interiors is the use of $\frac{1}{2}$ " grounds with metal lath, which means crackless ceilings and walls. The plaster on metal lath is actually thicker than on wood lath with $\frac{7}{8}$ " grounds. In addition, metal lath thoroughly reinforces the plaster with a steel mesh, preventing its cracking, streaking or dropping. It is an exceptional fire retarder and a permanent construction. Truscon 1-A Lath is especially designed to provide a reinforced plaster coat of maximum strength, while using the minimum amount of plaster. The deep, wide ribs run the full length of the sheets of lath, while the "keys", spaced $\frac{1}{2}$ " apart between the ribs, grip the plaster firmly.

The Economy of Truscon 1-A Lath

1-A Lath with $\frac{1}{2}$ " grounds uses no more plaster than is required with wood lath on $\frac{7}{8}$ " grounds, and adds little if anything to the cost of construction. It is actually worth hundreds of dollars in the savings in repairs and decoration, and in protection against fires or depreciation.

Its Value to the Builder and Owner

By the use of metal lath, the builder produces residences superior in construction, fire resistive, sound-proof, crack-proof and vermin-proof. These are attractive features to all prospective home buyers. Truscon 1-A Lath and $\frac{1}{2}$ " grounds make them possible at an exceptionally low cost.

Full Information on Request

You should know all about this great improvement in plastering methods. Write for pamphlet on Reinforced Plaster with $\frac{1}{2}$ " grounds.

TRUSCON STEEL COMPANY

YOUNGSTOWN, OHIO

Warehouses and Sales Offices from Pacific to Atlantic. For addresses see phone books of principal cities. Canada: Walkerville, Ont. Foreign Div.: New York.



as in the corresponding suburbs of London, but the cost of purchasing them is fully three times as much.

Speaking generally, the cost of living in Outer New York (with the exception of the rents) is not so very much more than in Outer London.

The houses are heated by means of hot air from the furnaces which are fixed in the basements, and few of the older types of houses have any open grates; but the fashion in the new types of houses is to have an open grate in the room corresponding to the English parlor, and wood being plentiful and fairly cheap, it is generally used in these grates. Coal used for the furnaces costs from \$15 a ton, or load, delivered in bags of 100 pounds each, and it takes from six to seven tons to heat a house during the winter. Most of the cooking is done by gas or electricity, the average cost of which is \$2.64 per month for gas and \$2.50 per month for electric light, ironing, etc.

Taking one thing with another, it will be seen that the working man of America is much better off than his fellow worker in England, insomuch that he earns much higher wages and his cost of living, with the exception of rent and clothes, is not so very much more than in England. Bricklayers, plasterers, masons, carpenters, and other mechanics in the building trade receive from \$12 to \$16 per day of eight working hours. Laborers receive from \$6 and upwards for the same number of hours, but a better output of work is demanded, and the workmen have to prove themselves worth the pay. The American workman is not so addicted as the Englishman to "spotting the winners" and betting. Consequently, you find all the jobs going strong, every man giving his whole heart to his work. He is treated well by his employer, who expects a proper return for the wages paid. There is, however, not the great hustling that is generally supposed to be ruling, but a steady, continual run of work.

Every man is given a fair chance to prove his ability to give quality and the required quantity of work, in whatever branch he is engaged. The workmen appear to be more cheerful and contented, and you do not find them "chewing the fat" as they do in England. They look at life in a more serious light, and altogether the writer has formed a high-class opinion of the American building operative as far as his present observations have gone.

One of the reasons of the contented "atmosphere" among the American builders is the cosmopolitan nature of the workmen. It is not unusual to find representatives of five or six distinct nations working upon one job, and as each has got his own interest to study, he naturally does his best for his employer, and does not bother so much about the other man at the end of the line. He does his bit, and the other man is made to feel he must also do his bit. There is no tea or beer drinking during working hours. You have your breakfast before you leave home, and take a few sandwiches and a can of cold tea, coffee, or coca, or a thermos flask, with you, and in this way manage temporarily during the day, and sit down to a good solid tea, supper, or dinner, whatever you wish to call it, when you reach home. The usual rule for meals in America is three—breakfast, midday lunch, and supper, all hearty meals. The afternoon cups of tea and cakes so fashionable in London offices, etc., are not indulged in in New York. Everyone is too intent upon his work, and there is little leisure for luxuries; but when work is over the people enjoy themselves; the theaters and cinemas are crowded.

The American workman is very careful in his dress, and wears overalls and gloves, so that when he leaves work he is clean and tidy, and you do not have to rub shoulders with men covered with dust and dirt in the trams, buses, and trains. Neither do you see them carrying home piles of short ends of timber for firewood, etc.

FRANK JAY.

The Best Insurance Against Theft!



ONE of the most frequent causes of irritation on every construction operation arises from the constant series of disputes between the different contractors on the job as to the ownership of various kinds of equipment such as scaffolding and

ladders which are used and brought to the job by practically all the different trades. Hardly a job goes through without a contractor losing some of his equipment due to his inability to identify beyond question his own material. In the aggregate this relatively small leak represents a substantial loss to every contractor in business today.

THEREFORE—

For many years you have keenly felt the need of an inexpensive, efficient and simple branding iron that could be used to brand easily and quickly scaffolding plank, scaffolding horses, ladders, wheelbarrows, tools and other common contractors' equipment—a branding iron that could be used wherever and whenever the necessity for branding occurs.

The Everhot is just such a tool and was designed for the building trades. In addition to the protection branding offers, it also has a great advertising value.

Everhot equipments are priced as low as \$14.00.



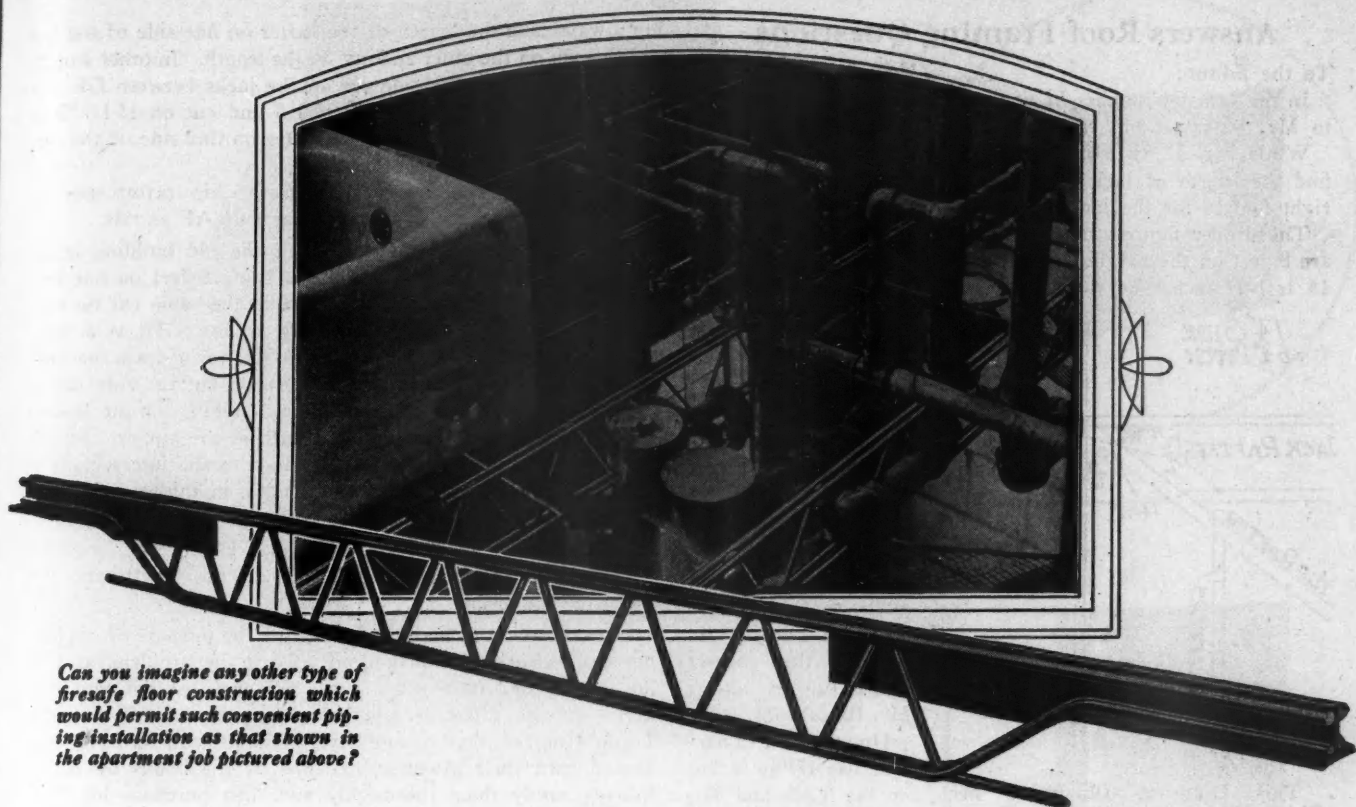
Sold thru local stamp and stencil dealers

Sold thru Contractors' Supply Houses

EVERHOT
America's Brand Makers
EVERHOT
EVERHOT MFG. CO., Maywood, Illinois

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER





Can you imagine any other type of firesafe floor construction which would permit such convenient piping installation as that shown in the apartment job pictured above?

No Other Floor Construction Permits Such Convenient Piping Installation

Piping and conduit layouts offer no problem to the architect designing buildings with Massillon Steel Joist firesafe floors. He can run his piping almost at will in any direction without suspending the ceiling or raising the floor level. Soil pipes can be installed along walls or beams at right angles to the joists and there is a 2½-inch space provided to carry piping over "I" beams. To make repairs it is only necessary to remove the ceiling below. The floors need never be torn up.

Massillon Bar Joists are standardized structural units, made in twenty sizes to

meet every span and load requirement. They are quickly installed and need never be cut except where they extend into outside walls far enough to interfere with face brick.

Massillon Bar Joists are sold by thoroughly reliable concerns located in all principal centers. Because of their standardized sizes joists can be shipped immediately anywhere. Write us for complete information and safe loading tables.

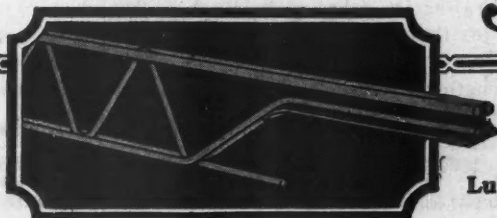
The Massillon Steel Joist Company
Massillon, Ohio

M A S S I L L O N

PATENTS PENDING.

BAR JOISTS

Also sold by Building Supply Dealers,



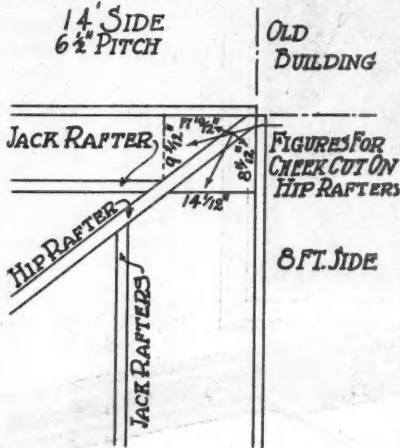
Lumber Yards and Hardware Stores

Answers Roof Framing Questions

To the Editor: New Britain, Conn.
 In the January number of your magazine I read the answer to Mr. Bates on hip rafter.

While Mr. L. G. Hibler has suggested the right way to find the length of jack and hip rafter, he has not given the right figures for the jack rafters cheek cut.

The proper figures to use for said cut on the 14-foot side are 8 feet on the tongue and the length of the common rafter 15 feet 11 inches on the blade to cut along the blade mark.



This Diagram Illustrates Mr. Ghio's Method of Finding Proper Rafter Length.

For the jack rafters on the 8-foot side, use 14 feet on the tongue and the length of the common rafter 11 feet on the blade, to cut along the blade mark.

As sometimes is necessary for hip or valley rafters of uneven pitch roofs to have a cheek cut, I am sending the correct figures for the hip of Mr. Bates' roof.

On the 14-foot side use 17¹⁰/₁₂ inches on the blade and 9¹/₂ inches on the tongue cut on blade mark.

On the 8-foot side use 14¹/₂ inches on the blade and 8¹/₂ inches on the tongue cut of tongue mark.

FREDERICK GHIO.

Another Solution to Mr. Bates' Framing Problem

To the Editor: Elmore, Minn.

I have been a reader of your magazine for ten years and enjoy it very much. I noticed in the November issue a problem in roof framing sent in by Edward C. Bates and the answers by Mr. Hibler and Mr. Bradley. I think Mr. Hibler gave a very simple method, most of which will work out very nicely, but I believe he will get into trouble when he goes to cut the cheek cuts as he explains them.

I am enclosing a sketch of Mr. Bates' problem with the explanation as follows:

A represents the corner of the old building; AG, 14 feet, the width of the addition on the end; AD, 8 feet, the width of the addition on the side. The lines, AB-AC-AF represent the rise which in this case is 7 feet 7 inches. The line GB equals the length of the common rafter for the 14-foot run, which, spaced in four spaces, will give the different length of the jack rafters on this side. The line DC is the length of the common rafter for the 8-foot run which, spaced in seven spaces, will give lengths of the different jacks on this side. The line EF is the length of the hip rafter.

Now to get cuts, for the common rafter DC take 77/12 and 8 on the square, cut on 8 for the seat and cut on 77/12 for the plumb cut. For the cheek cut on the jacks between ED take the length DC on the tongue of the square and the run, GA on the blade and cut on the length.

Here is the point which I wish to make clear. When you wish to cut jacks to fit against an irregular

hip always take the length of the rafter on one side of the hip and the run on the other and cut on the length. In other words, if you were to cut the side cut on the jacks between GE you would use the figures 15 11/12 and 8 and cut on 15 11/12 as this is the length of the common rafter on this side of the hip, and 8 is the run on the other side.

The seat and the plumb cuts on the hip rafter may be obtained by taking the distance EA as run, AF as rise.

But as to fitting to the corner of the old building at A, from the proportions of the addition being 8 feet on one side and 14 feet on the other it is plain that the same cut on both sides will not fit. So we will draw a line, EH, at a right angle to the run of the hip and meet AH, also draw the lines I and J in the same manner. In order to cut the side cut on the hip at A to fit the corner of the old building on the 14-foot side take the distance EF, or the length of the hip, on one side of the square and the distance from E to the intersection of IJ on the other side and cut the length, in this case 17 10/12 and 28, cut on 17 10/12.

For the other side, take the distance EF, or the length of the hip, and the distance EH and cut the length and you will have the proper cut.

I am referring to the sketch only for the purpose of explaining more clearly the method of solving the problem, as I do not recommend measuring across the angle of the square to arrive at the different lengths where accuracy is required. I would suggest that anyone having trouble with roof problems should turn their attention to some of the books by A. W. Woods, study them thoroughly and then purchase his "Key to the Steel Square."

MERRITT WARNER.

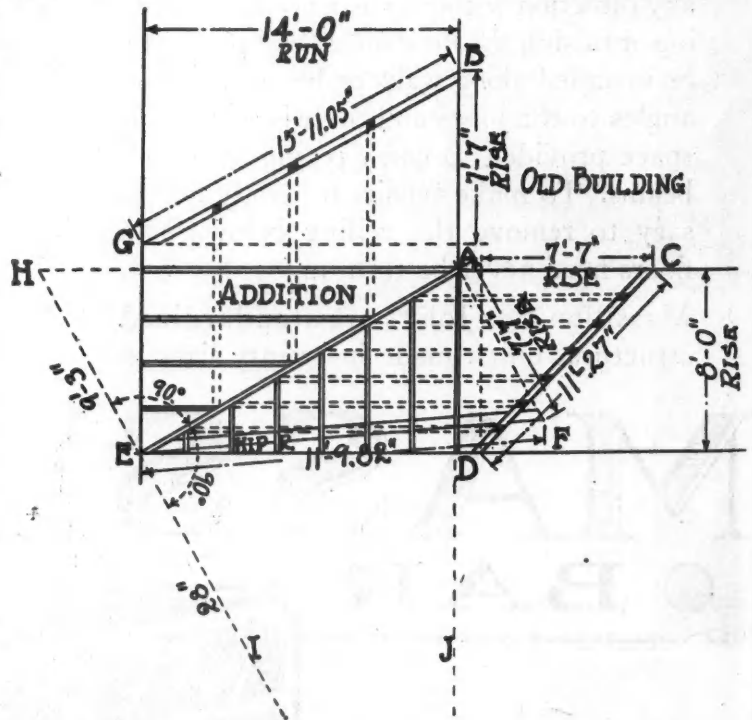
To Clean Old Paint Brush

To the Editor: Chester, Pa.

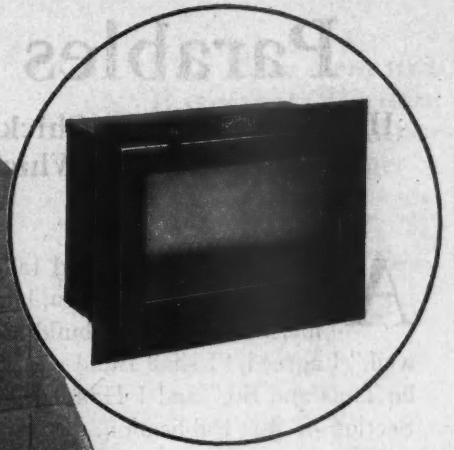
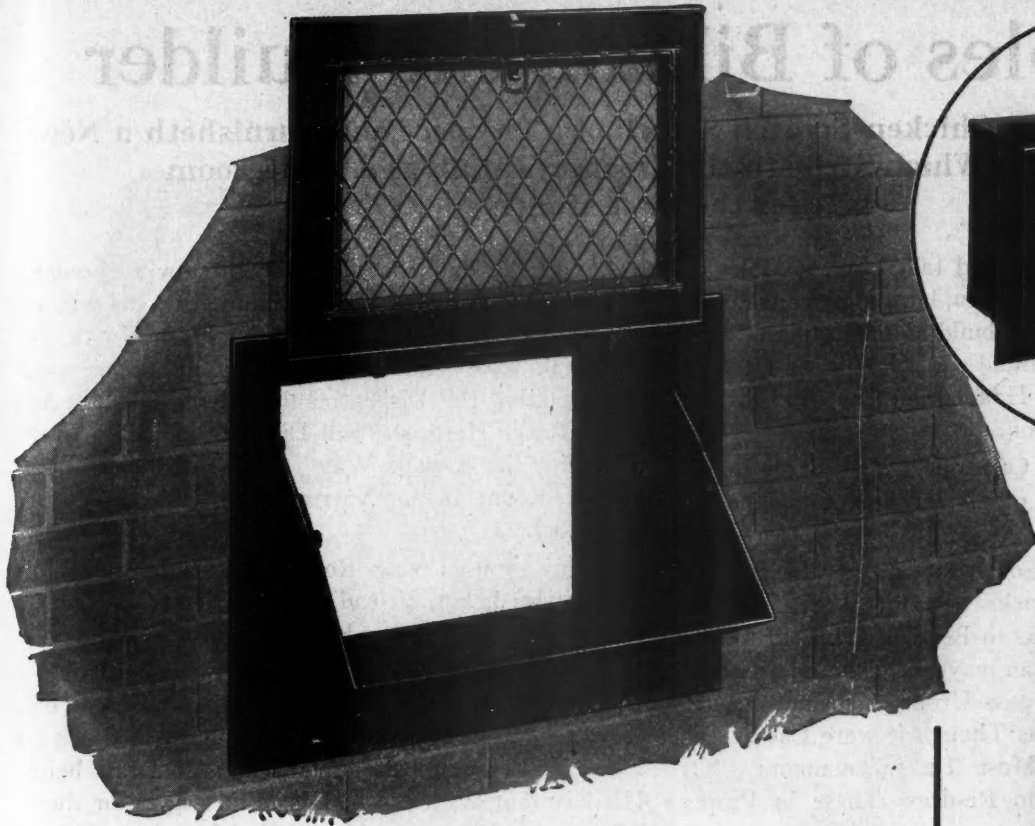
Someone wanted to know how to clean a paint brush when the paint had dried hard.

To get a good result put brush in old pan, put enough vinegar to cover brush and boil until paint becomes soft, remove from fire and clean with putty knife all soft paint and brush on paper until it becomes soft.

EUDORE CADORETTE.



Merritt Warner Illustrates His Solution of the Bates Hip Rafter Problem with the Diagram Given Above.



An Unusual Coal Chute that Sells for Less

Outstanding improvements feature the Gabriel Coal Chute. Heavy rolled steel is used throughout—no brittle castings to break. Joints are electrically welded. The substantial rolled steel hinges won't break. The automatic spring latch assures positive closing. A single plate of rolled steel is used in doors. The heavy wire glass is further protected with a wire guard.

The collapsible boot—an exclusive feature—folds against the back making the chute only 3" thick, a tremendous saving in storage, shipping and handling. The chute is fireproof and burglar-proof. The price of Gabriel Rolled Steel Coal Chutes is low; less than ordinary quality chutes. They are rapidly being stocked by dealers everywhere. If your dealer does not have them send us his name.

Gabriel Chutes are furnished with solid steel or glazed doors—with or without hopper—two sizes of wall openings, 16" x 24" and 22" x 33"—collapsible boot for 8", 12½" or 17" wall. Used with equal success in any kind of foundation.

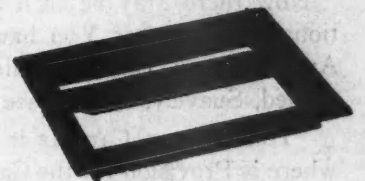
Return coupon for further facts with prices

GABRIEL STEEL COMPANY
BELLEVUE AVE. DETROIT, MICH.

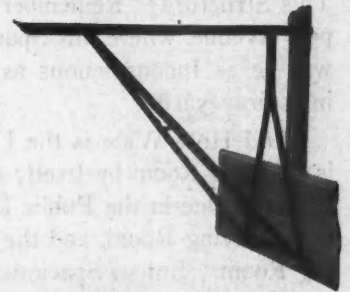
GABRIEL
ROLLED STEEL
COAL CHUTE



ASHPIT DOORS
for the basement



ASH DUMPS
for the fireplace



SCAFFOLD BRACKETS
for general building

Gabriel Steel Co.
Bellevue Ave., Detroit, Mich.
Send further information and prices on following:
 Coal Chute Fireplace Ash Dump
 Ashpit Door Scaffold Bracket
 My Dealer's Name is

Name.....

Address.....

4-A

Parables of Bildad, the Builder

He Revampeth the Chicken-Scratch Sketch of a Prospect and Furnisheth a New Home Plan Which Striketh the Prospect Dumb as a Bridegroom After the First Month

A NEIGHBOR who had fallen by the Wiles of of a Leap-Year Maiden, blushing called upon me, Desiring that I build him a House. "Very well," I agreed, "I shall Build you a House, and it shall be Thus and So," and I Handed him the Blue Ribbon Section of this Publication.

"But is it Necessary?" Quoth he. "Behold, my Loved One and I have Planned our Dream Home together on the Sofa. Here it Is!"

And he Handed me Some dog-eared Envelopes of Love-Letters, on the Backs whereof Were Sketches both Fearful and Curious to Behold. This, to Me, to Bildad, who Knows a Man may Get along on a Crutch if he Has to, but Why pass Up an Airplane? But I swallowed My chagrin as Though it were Castor Oil, and Observed in my Most Tactful manner: "Of course, You wish Me to Re-draw These in Proper Style?"

"No," he Pouted. "Are not These enough? My Fair One has Made them Sacred; They are Drawn by her Own Hand!"

Now there May be such a word as "NO" in Dictionaries, but after You have Become a Builder and Architect you Do not Believe it. "Very Well," I replied, Suavely, "let Us see How these Pan out.

"You Drive a Car—Is it Not so?" I asked. "Yet where is Provision for the Garage, or even a Driveway? Perchance," I observed Sagely, "You expect to Fall On your House with an Airplane? And what Period is This Structure? Remember that your Lot is on Prospect Avenue, where this Spanish Castle of your Design will be as Inconspicuous as a Red Haired Ethiopian in a Graveyard.

"And How Wide is the Lot? This Reception Hall is a Young Room by Itself, and the Staircase is Bigger than the One in the Public Library. And on one Side is the Living Room, and the other Side holds the Dining Room. But so Spaciously Proportioned are They, that You must Needs occupy the Entire Block. And then What will the Tax Assessor do to Your Bankroll?"

"And Furthermore, where is the Upstairs' Bathroom? Nowhere! And when Company comes, You must Head Down the Reception Hall stairs for Hot Water, showing Your Bare Scrawny Neck to the Guests, because you Have made no Provision for a Rear Staircase.

"But your Kitchen makes Amends. How well it Brings back to Me the dear Old New England kitchen of my Birthplace, with its Fireplace big enough to Hold a Modern Kitchenette, and its Slabs of Bacon and Prime California Hams dangling from the Raf-

ters! Yet, Friend, should Anyone bestow a Speedometer upon Your Wife as a Wedding Gift, she will ask for her Walking Papers after the First Month, for she Shall have Walked Two Thousand unnecessary Miles getting the Dishes on the Dining Table. And like a Brave Hero, she will Die with her Back to the Wall, for the passage Way from the Kitchen to the Dining Room is so Narrow it would Strangle a Cockroach.

"Truly, your Living Room is likewise Splendidly Proportioned, but, Friend, tell me Truly if it is Not just one Damn Door and Window after Another?"

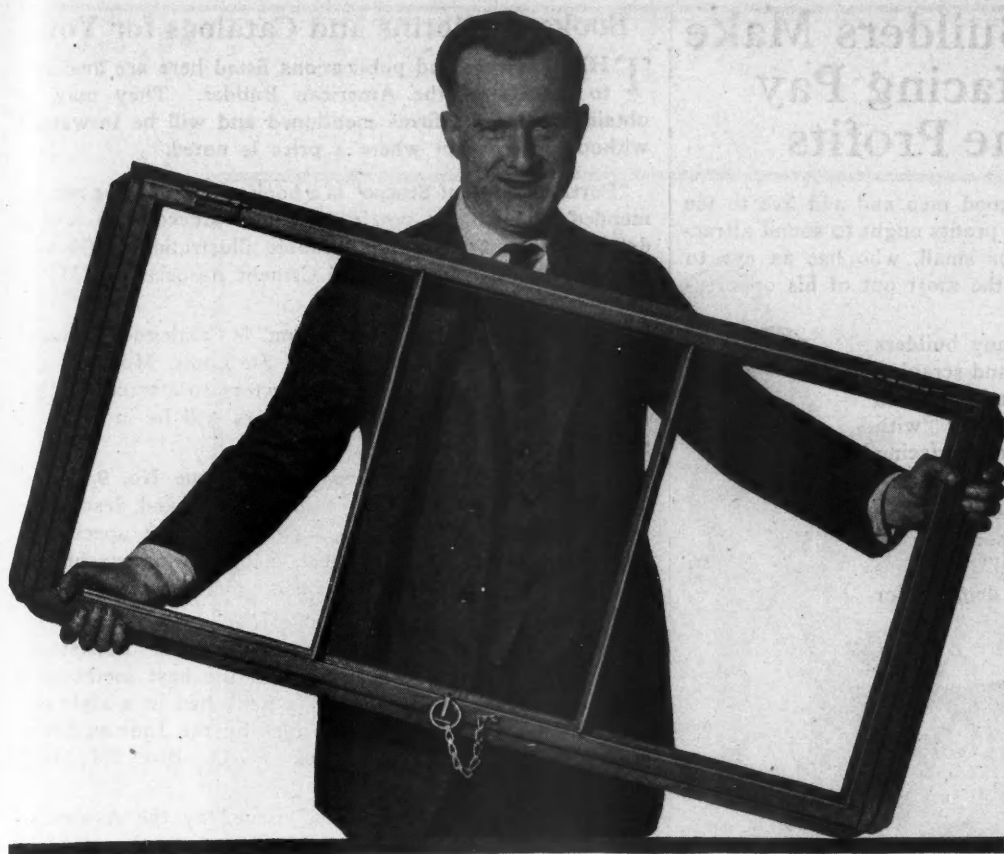
Now, all This Time I had been Sketching roughly on My Own Account, and He watched me with Fascinated Orbs. For there is Naught that will Catch the Eye of a Prospect better than This: To Draw before His Eye that Which is In His Mind's Eye—or should be. But my Prospect said: "I Feel I ought to Respect the Drawings of My wife."



Draw Before Your Prospect That Which Is in His Mind's Eye—or Should Be.

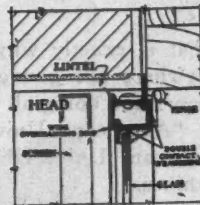
"Friend, as one Married Man to another, let me Tell you: Assert your Rights as Head of the Family now, or Forever hold Your Peace. To Women their Work; to You, yours; to Me, mine. You prefer the Colonial style; Very Well, it Can be Brick or Frame. And the Building Material Men whom my Specifications and Bills of Material have Enabled comfortably to ride in Rolls-Royces will deliver All ship-shape and A-1."

"Go ahead, Bildad," said he. "Just as the Best-Intentioned may not be Married without a Marriage Certificate, it may be the Best-Intentioned House needs a Set of Plans."



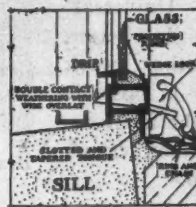
The New Fenestra Basement Window Has These Distinctive Advantages

1 Both frame and sash are of rolled solid steel casement sections. Jamb and sill of the frame are one continuous piece. Corners are true right angles rigid against distortion.



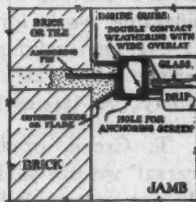
2 The sash closes against frame with double contact and wide, flat overlap all around the opening. In addition, special weathering is provided;—at the head the outside leg of the frame forms a long overhanging drip;—at the sill the outside leg of the sash is turned out and down as a water shed while the inner edge of the frame forms a protecting ridge.

3 Absolute anchorage at the jambs and air and water-tight weathering between sash and masonry are secured by a projecting fin which imbeds in the wall. A long, down-standing leg protects the sill preventing seepage under the window frame.



4 Guides are provided at the jamb both inside and outside the window to aid the mason in laying up the wall. The outside guide takes the form of a flare, forming a neat finish between sash and masonry—another exclusive Fenestra feature.

5 The new Fenestra basement window is the only one that needs no glazing clips. The glass, inserted from the inside, rests in a bed of putty supported by the bars of the sash.



6 Hinges are accurately located and solidly riveted in place. By slipping out the two split hinge pins the sash may be removed from the frame for glazing.

7 The new Fenestra Basement Window has an exclusive feature in its automatically self centering lock. This performs a triple service. It draws sash and frame tightly together; secures the window when closed and furnishes a convenient means of holding it open.

An Opportunity for Dealers
The rapidly increasing use of Fenestra Basement Windows offers exceptional opportunity for up-to-date dealers—less money invested; smaller stocks; more rapid turn-over. Write for details of our 100%—Dealer Proposition.

And Now, a Still Better Fenestra Basement Window

Here's the new Fenestra Basement Window, the greatest improvement since steel replaced the old-fashioned wood window in the basements of modern homes. It has 25 big advantages yet its cost is as low as before.

Advantages for the Home Owner

- (1) They admit 80% more light than a wood window of exactly the same dimensions.
- (2) Being made of steel, they never warp or stick.
- (3) They admit more air than wood windows, thus giving better ventilation.
- (4) They provide better weather protection.
- (5) Naturally, they are non-inflammable and fire resisting.
- (6) They last longer than wood windows; never split, splinter nor decay.
- (7) They are easy to screen, screw holes being provided for that purpose.
- (8) They discourage prowlers and form a protection against rodents.
- (9) With all their advantages, their cost is little if any more than wood windows—in some places actually less.

Now, more than ever, home buyers will demand brighter, more airy and more useful basements. Now, more than ever, investment builders will recognize the Fenestrated basement as an actual selling advantage.

Advantages for Builders

- (1) They come completely assembled—sash, frame and hardware all ready to install.
- (2) They are already painted one priming coat.
- (3) They are less bulky than wood windows—much easier to handle.
- (4) Installed by the mason alone. Wood windows require the work of a mason, a carpenter and a painter.
- (5) Can be installed much more quickly than wood windows—they save the builder's time.
- (6) Sash are interchangeable.
- (7) Made in four standard sizes.
- (8) They are adaptable to any type of construction—brick, concrete block, poured concrete, tile or field stone.
- (9) Local dealers all over the United States carry them in stock for immediate delivery.

DETROIT STEEL PRODUCTS COMPANY, B-2260 E. Grand Boulevard, DETROIT
For Canada: Canadian Metal Window and Steel Products, Ltd., 160 River St., Toronto

Fenestra
BASEMENT WINDOWS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Many Live Builders Make Floor Surfacing Pay Handsome Profits

TO save the labor of six good men and add five to ten thousand dollars to yearly profits ought to sound attractive to every builder, large or small, who has an eye to business and a desire to get the most out of his opportunities.

That is exactly why so many builders everywhere are giving up hand-scraping of floors and doing all their surfacing jobs the "American Universal" way with "American Universal" Floor Surfacing Machines.

But that is not all. The ease and rapidity with which floor surfacing is done the "American Universal" Way has created a new and growing demand for this work—not only for new floors but for many old ones as well. Moreover, it is generally admitted that the "American Universal" will do better, smoother work than is possible for the most expert hand scraper to do.



Bernard Boone, of Michigan, and his "American Universal" on a job.

Builders and Others Tell of Big Profits

The strongest proof of the big money-saving and money-making possibilities floor surfacing the "American Universal" way offers lies in what many are actually doing.

Bernard Boone, of Michigan, for instance, who does considerable work for builders as well as independently, says: "I am making a business of surfacing floors the 'American Universal' way, and I am making as high as \$40 a day. As fast as I finish one job I find others waiting."

H. T. Green, of Connecticut, says: "The 'American Universal' we use paid for itself on the first few jobs. We would not part with it." J. H. Rhea, of Iowa, makes the statement that "I can surface a floor with my 'American Universal' and have the job pass the most critical inspection. Moreover I can do it in one-fifth the time required by hand."

Look Into This Opportunity

Write to the American Floor Surfacing Machine Co., 515 So. St. Clair St., Toledo, Ohio, and get the details of this unusual opportunity to cut your operating costs, add to your profits or start an independent floor surfacing business. If you are interested in making money you will surely be interested in what they offer. For further information see American Floor Surfacing Machine Co. advertisement on page 151 of this issue.

Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to readers of the American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

"Portland Cement Stucco" is a book containing the recommended practice for portland cement stucco, and stucco detail drawings, with photographic illustrations. Obtainable on request from Portland Cement Association, 111 W. Washington Street, Chicago, Ill.

"Brascolite for Better Illumination" is Catalogue 10, issued by the Edwin F. Guth Company, St. Louis, Mo., and describes these well-known bowl-reflectors so attractively, we feel sure, most architects and builders will be in favor of specifying and using them.

"E. C. Atkins & Co., General Catalogue No. 9," is at hand, containing 268 pages of illustrations and descriptive matter of silver steel saws, saw tools, saw specialties, machines knives, grinding wheel, metal cutting machinery, etc. The catalogue may be obtained by writing the company at Indianapolis, Ind.

"Standard Specifications for Cut Indiana Limestone" with supplementary data relating to the best methods of specifying and using this stone is published in a style and size suitable for the architect's files by the Indiana Limestone Quarrymen's Association, P. O. Box 500, Bedford, Ind.

"Glazed Tiles and Trimmers," issued by the Associated Tile Manufacturers, Beaver Falls, Pa., lists the standard shapes and sizes of tile products adopted by the association. It illustrates the products with detail drawings. This publication is available for architects.

"The Control of Lighting in Theaters" deals extensively with the installation and operation of lighting equipment in showhouses of all types. It is published by the Frank Adams Electric Company, 3650 Windsor Place, St. Louis, Mo., who also have issued Panelboard Catalog No. 32, listing panelboards, steel cabinets and safety first material.

"Berloy Floor Cores," issued by the Berger Manufacturing Co., Canton, Ohio., describes the different types of steel floor cores made by the company with construction details and load tables. It is of a size suitable for filing. Berloy Metal Lumber is described in a bulletin of the same series issued by the Berger Company.

"Packer All-Steel Cabinets" is the title of a catalog recently issued by the Metal Products Division of the Ohio State Stove and Manufacturing Co., Columbus, Ohio. The catalog marks the change in the name of the products listed from "Royal Ossco All-Steel Cabinets" to conform with the names of the rest of the products of the company. The catalog lists and describes steel kitchen cabinets, electrical cabinets, medicine cabinets, kitchen tables, cupboard units, sink cabinets and kitchen stools. An insert shows a unique combination of a gas range with a steel cabinet base.

Radford Radio Farms, edited by R. D. Radford, is a 100-page radio guide and instruction book bound in a four-color art cover. It presents all the facts and information needed to successfully build, install and operate a radio set in the home. It is also a guide in the selection and purchase of manufactured parts, units and complete sets. The book is profusely illustrated with half tones and a number of diagrams explanatory of the different radio devices and arrangements. It is published by Farm Mechanics (one of the Radford publications), 1827 Prairie Avenue, Chicago, and can be obtained with a three-year subscription or renewal to Farm Mechanics. Price \$2.00 for the three years.



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Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to readers of the American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

House Moving Equipment is described and listed in the four page letter size catalog issued by the LaPlant-Choate Manufacturing Company, Cedar Rapids, Iowa. The bulletin, printed in two colors, illustrates the products of the company in use.

Ideal Hoists, their construction and use, are described in a catalog recently issued from the press of the Universal Hoist & Manufacturing Co., Cedar Falls, Iowa. Half-tone cuts illustrate the use of the hoist in building operations and even in lumbering and similar illustrations show the details of the mechanical construction of the machines.

Healthful Helpful Hints, published by the Farquhar Furnace Co., Wilmington, Ohio, is a discussion of hygienic heating and ventilating of buildings under modern conditions which lists the unique construction of the Farquhar Sanitary Heating System.

Smokeless Water Tube Boilers is the title of Catalog 0324 issued by the Hart & Crouse Company, Utica, N. Y. A number of models of the Hart & Crouse Down Draft smokeless boilers are shown as are many large buildings in which the firm's heating equipment is installed.

"Standard Practical Plumbing," by R. M. Starbuck, is issued in the seventh revised and enlarged edition by the Norman W. Henley Publishing Co., 2 West 45th street, New York, N. Y., price \$3.50. The book treats all branches of plumbing construction, including drainage and venting, ventilation, hot and cold water supply and circulation. It

directs particular attention to the theory underlying plumbing and contains chapters on examinations for plumbers and fitters and on government plumbing. It is illustrated with 364 drawings.

"What to Do and How to Do It," edited by Mildred Gopen Bowen, is an authoritative and sound booklet issued by the Pittsburg Plate Glass Company, Paint and Varnish Division, Milwaukee, for prospective home owners and those already in homes. While the early chapters give sound advice on financing and building homes, the major portion of the book is devoted to a common sense discussion of interior decoration presented in a pleasing manner.

"The Norton System of Operating Doors" is described in a catalog issued by the Norton Door Closer Company, 2900 North Western avenue, Chicago. The catalog lists the advantages of the Norton type of closer, gives instructions for preparing the doors and installing the device and lists the products of the company.

"Architectural Specifications," issued by The Glidden Company, Cleveland, Ohio, gives typical specifications to be used in drawing up contracts for the use of the Glidden paints, varnishes, enamels and other products.

The Construction of "Weatherbest" Thatch Roofs is described in an attractive pamphlet of a size suitable for filing issued by the Weatherbest Stained Shingle Co., North Tonawanda, N. Y. The book describes and illustrates the pleasing results procured through the company's product, gives standard specifications for the construction of roofs to receive the shingles, gives the methods of applying the shingles and illustrates the details of the work with typical detail drawings.

"Miami Snow White Cabinets" issued by the Miami Cabinet Company, Middletown, Ohio, illustrates and describes the pressed steel, enameled cabinets and bath room fixtures manufactured by the company.

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Locked—and doubly so. Each shingle has 2 locks which positively prevents blow-up, cup or curl. Has double thickness at butt which casts deep tile-like shadow.

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Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to readers of the American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

"Ceco Metal Weatherstrips" is the title given to a catalog issued by the Weatherstrip Department, Concrete Engineering Company, 1926 South 52nd avenue, Chicago. The catalog describes in detail the advantages and construction of the Ceco product with illustrations. The methods of installation are shown by reproductions of blue prints, showing the proper methods of installing the devices.

"House Painting" by Alvah Horton Sabin, M. S., D. Sc., is published in its third edition by John Wiley & Sons, Inc., 440 Fourth avenue, New York, N. Y., price \$1.50. The book takes up painting, glazing, paper hanging and whitewashing from the standpoint of the householder rather than from that of the professional painter and decorator.

Power Driven Woodworking Machinery for the use of contractors is discussed at some length in a recent catalog issued by the Beach Manufacturing Company, Montrose, Pa. The single and double arbor rip and cut-off saw rigs produced by the company are fully described and illustrated.

"Smith Pavers" lists and describes the models and sizes of paving machines and concrete mixers manufactured by the T. L. Smith Co., Milwaukee, Wis. The book is liberally illustrated with pictures of the Smith machinery "on the job."

"Metallic Construction for the Modern Home" is the title of a booklet now ready for distribution by the Milwaukee Corrugating Company, Milwaukee, Wis. The book-

let is prepared to appeal particularly to the prospective home builder and explains the advantages of metal lath, metal interior and exterior expansion casings, and "Milcor" concealed picture moulding. An insert tells of the metal roofing products of the company.

"Panic Exit Locks," issued by the Frank F. Smith Hardware Co., 85 Clay street, Newark, N. J., catalogs the fixtures for panic exit doors manufactured by the company as well as other door hardware which it markets. The basic mechanical details of the Smith panic exit locks are pictured in X-ray reproductions, which are accompanied by full explanations.

Pressed steel door coal windows and building specialties manufactured by The Majestic Company, Huntington, Ind., are listed in a catalog recently compiled. A number of new and novel uses of steel appliances in building are shown.

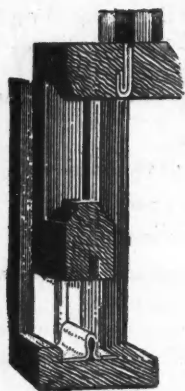
"Mr. Will I. Build and the Dotted Line" is a humorous and interesting description of the service given to dealers by the National Fire Proofing Company, Fulton Building, Pittsburgh, Pa., in the marketing of Natco Hollow Tile. The booklet carries the hero, Mr. Will I. Build, from the point of wishing that he had a house through the process to where his local material dealer and contractor see the name on "the dotted line."

Radford Pilgrim Doors are illustrated in colors showing the grain of the woods and the distinctive colonial designs of the product of the Radford & Wright Co., Oshkosh, Wis., in a magazine size booklet recently issued by that company. Among the items illustrated is a door of distinctive appearance especially designed for apartments, hotels, offices and public buildings, constructed with correct Colonial sticking and with stiles adequate for the use of heavy hardware.

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This shows a house insulated with Cabot's Quilt, ready to receive the outside finish. Russell S. Walcott, Archt., Chicago, Ill.

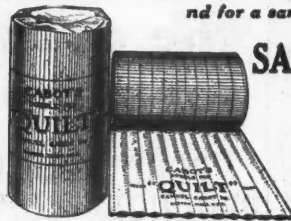
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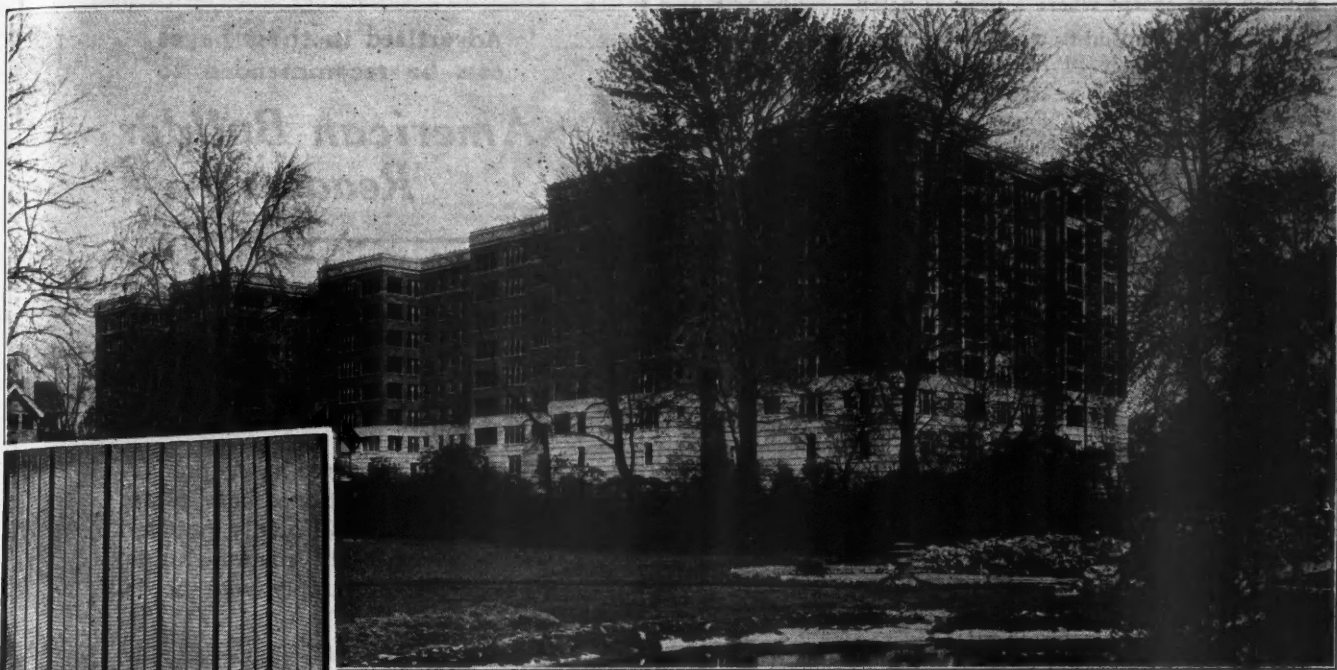
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Books, Bulletins and Catalogs for You

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The use of Fordson tractors by contractors and in lumber yards is featured in "Power and Haulage" issued by the Ford Motor Company, Detroit, Mich. "Fordson for the Building Contractor," "Fordson Adaptability in Lumber Yards" and "Using a Fordson to Move a Mountainside" are titles of several of the articles.

Illustrated Specifications of Boss Cement mixing machinery are presented in a catalog recently issued by the American Cement Machine Co., Inc., Keokuk, Iowa. A number of different models of the mixers made by the company are illustrated, together with other equipment of a like nature.

"Gymnasium Construction," published by the Narragansett Machine Company, Providence, R. I., explains in details the requirements, design and construction of gymnasiums. The book, through detailed explanation of locker installation, swimming pool construction, running track design and other problems peculiar to the planning and construction of gymnasium, almost assumes the scope of a reference work. Since contractors and builders may encounter this sort of construction problem, such a book, containing the suggestions of men constantly working in this field, should be invaluable.

Establishing lines and levels according to modern practice is outlined in a notebook published by the Warren-Knight Company, 136 North 12th street, Philadelphia, Pa. The information is combined with a notebook for the convenience of builders. Those writing for the book should ask for "notebook F."

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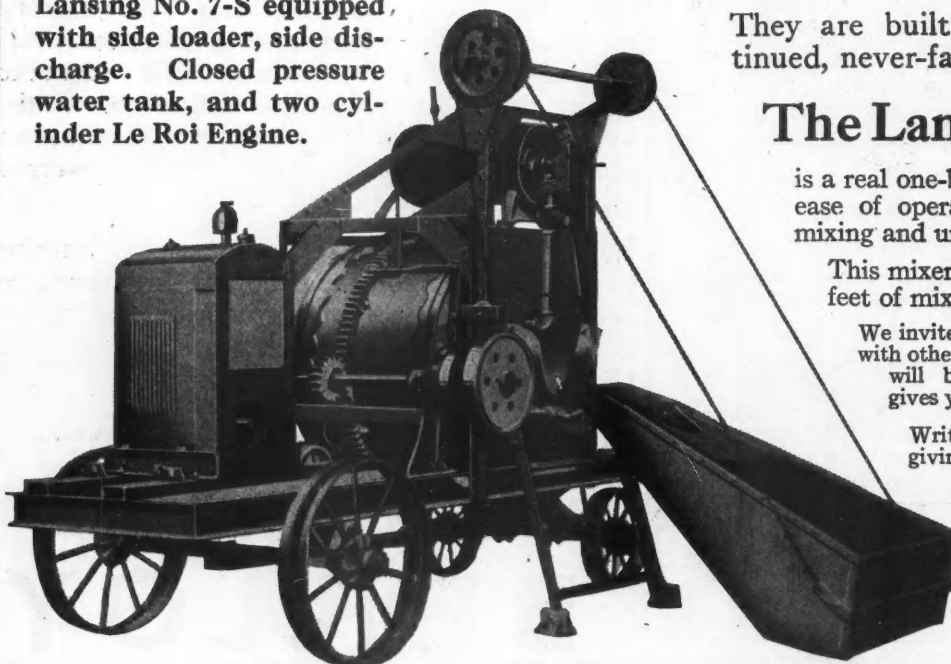
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The Lansing No. 7-S

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This mixer has a capacity of 7 cubic
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We invite you to compare this mixer
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will be convinced that Lansing
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Why is it, when you enter most homes in winter, you are subjected to stale, odor-laden air, often times filled with dust and fire-gases and anything but pleasant to breathe?

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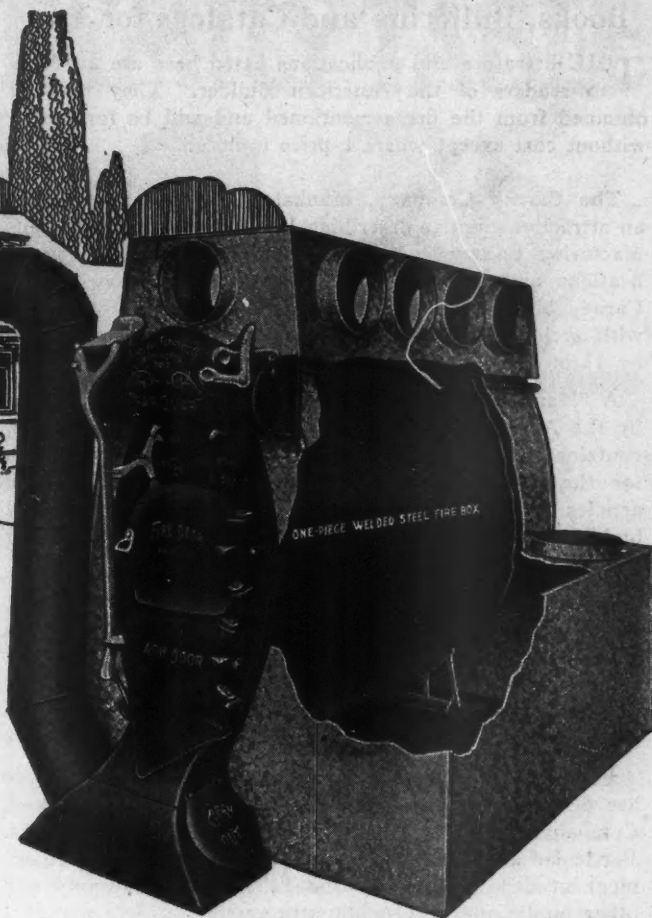
Night and day, all winter long, the air in your home can be made balmy, exhilarating, and delightfully comfortable, merely by the installation of the FARQUAR HEATING AND VENTILATING SYSTEM.

If you are interested in such results; if you would like your house heated with a "summer atmosphere all winter," get in touch with the FarQuar Dealer at once. If you cannot locate him, write us direct. Interesting booklet on Healthful House Heating will be mailed free.

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THE
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Heating and Ventilating System



"Winter More Delightful than Summer"

Dear Sir:—

"The FarQuar is not to be compared with ordinary furnaces. It is quite in a class by itself.

"You know the poet said:—'What is so rare as a day in June?' All winter days are June days with the FarQuar, with its wonderful supply of pure, fresh air, so gently warmed,—quite a treat not met with in homes where steam or hot water is used.

"I am the owner of a concert grand piano, a beautiful electric range, and a vacuum cleaner, but the loss of all these would not mean much to me as compared with the loss of my FarQuar, which would be unspeakable.

"With the FarQuar, winter is more delightful than summer, for all days in summer are not June days.

"If your FarQuar is properly installed, the results will be as represented." Follow instructions and you will be pleased."

Sincerely yours,

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Exclusive FarQuar Features

—One piece, electrically welded steel fire-box prevents escape of gases and fire poisons.

—Large grate area with complete down draft insures slow combustion and economy of fuel.

—Automatic control actuated by fire-box keeps fire under perfect control and makes necessary only once-a-day firing.

—Vent and Return System which removes all stale, devitalized air, floods the rooms with pure, fresh air, gently warmed, and maintains uniform temperature in all rooms.

Books, Bulletins and Catalogs for You

THE literature and publications listed here are available to readers of the American Builder. They may be obtained from the firms mentioned and will be forwarded without cost except where a price is noted.

The Carney Company, Mankato, Minn., has published an attractive circular describing late improvements in manufacturing Carney, cost comparisons, physical tests, specifications and testimonials. It contains four-page list of Carney built buildings in all parts of the United States with architects and contractor's names. The size is 8½ by 11 inches, eight pages. It is illustrated.

A "Handbook on Concrete Products Machinery," issued by the Anchor Concrete Machinery Co., Columbus, Ohio, contains, beside the catalog of the company's machines for the manufacture of concrete products, authoritative articles on the manufacture of concrete, brick, tile and building blocks by men well known to the fabricators of such products.

Products of the Penberthy Injector Company, Detroit, Mich., are listed in Catalog No. 29, recently issued by the company. Steam heating system fittings, cellar drains and other items of particular interest to the builder are listed in addition to the products for which the company ordinarily is known.

Furnishings, Equipment and Supplies for Public Service are described in Catalog E-26, issued by Albert Pick & Company, 224 West Randolph street, Chicago, for 1924. Particular attention is paid to the furnishings and equipment needed in hotels, hospitals, stores, restaurants and other public and semi-public structures.



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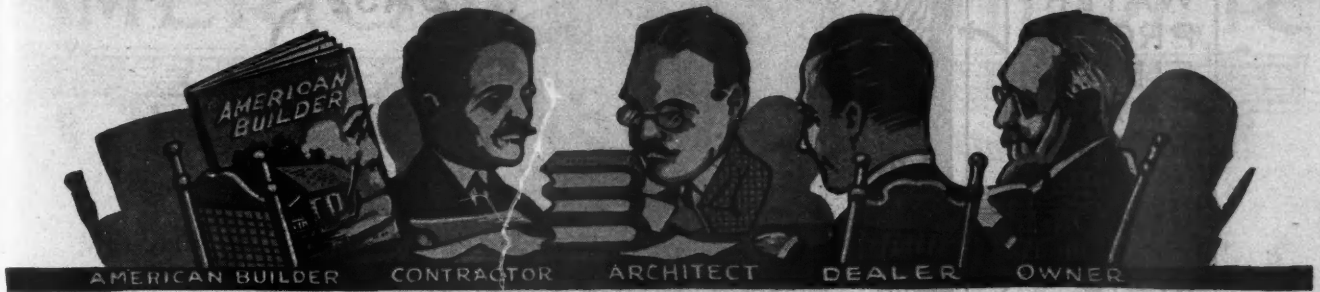


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AROUND THE FAMILY TABLE



A Treat for Our Folks in June

Historical and Reference Number of American Builder to be Book of 600 Pages

THE June AMERICAN BUILDER will be dedicated to the leaders of the building industry of today as a permanent and lasting Historical and Reference Number. The editorial contents of this great issue will be so valuable and so comprehensive, the historical narratives so interesting and important, and the reference catalog section so useful that we are pricing this big 600-page issue at \$1 per copy, in paper covers, and \$5 per copy in hard covers, leather bound. Our printing order for the June Historical and Reference Number calls for a minimum of eighty-five thousand (85,000) copies. These copies of the AMERICAN BUILDER will be placed in the hands of every worth-while buying unit and man of influence in the building industry—our own regular net-paid circulation of more than 60,000 who will receive it without any extra charge, plus enough more to each class to give this great issue complete coverage of the architectural, building, dealer, jobber and allied fields.

A Permanent Record

The public libraries in all the principal cities and towns are recognized as the proper repository of historical and reference data. Accordingly we are preparing a quantity of the June Historical and Reference Number in hard covers bound in leather, beautifully embossed and stamped in gold; and we will place a copy of this permanent edition, free and with our compliments, in every public library, where the valuable historical and reference data contained will be on display and available for this and future generations.

Don't Miss June Issue

There are many good things in store for our readers in this big June issue. Better make sure *now* that your subscription is paid to include June.

Also please tell your friends in the building industry about this big \$1 special issue. They can subscribe for a whole year for only \$2 and get this big June magazine without extra cost.

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to every branch of the building industry. It is a monthly magazine of from 250 to 300 pages, with over 100 illustrations, printed on super-calendered paper, with a handsome cover lithographed in four colors. Every architect, builder, lumberman, general contractor and building supply dealer will find in it a wealth of material that will be of untold value and benefit to him.

More Readers Than Any Three Other Building Papers

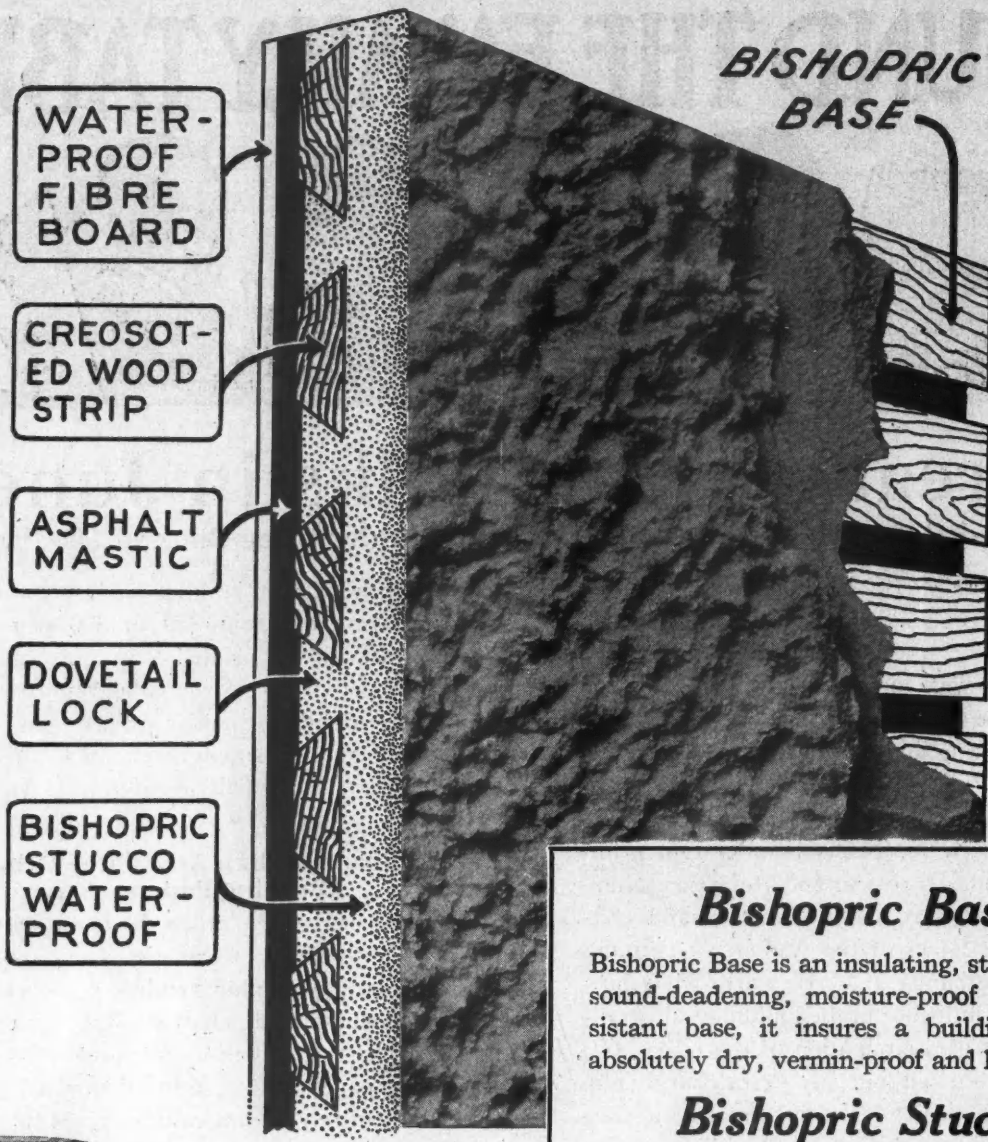
So popular has the AMERICAN BUILDER become, so much has its instructive information been appreciated in every branch of the building industry, so greatly has it benefited its subscribers, that today it has a circulation greater than the combined circulation of any three other building papers. Its continued upward progress has been due entirely to the value it gives its readers.

200 New Building Plans a Year

In the 12 numbers of the AMERICAN BUILDER covered by a year's subscription there will be at least 200 perspective views, floor plans and details of cottages, bungalows, apartment buildings, two-family residences, school houses, farm buildings and other private and public structures. In addition, there will be many interior views, showing completely furnished rooms, giving ideas on appropriate furnishings and fittings. There are so many different departments and articles, all profusely illustrated, of timely interest and help to its readers, that to attempt to describe them all would not be possible in this limited space.

Your Money Back If You Are Not Entirely Satisfied

Send us your subscription and if you are not absolutely satisfied after you receive your first copy and look it through just write and tell us so and we will return your money and cancel your subscription. Write at once and make sure of getting the big June Historical and Reference Number—the biggest, best, most complete, and most valuable number of a building paper ever published.—Editor AMERICAN BUILDER, 1827 Prairie Ave., Chicago.



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CREOSOT-ED WOOD STRIP

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BISHOPRIC STUCCO WATER-PROOF

BISHOPRIC BASE



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Bishopric Base

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Bishopric Stucco

over Bishopric Base is water-proof and fire-proof. No contraction or expansion. All the elements of wear and tear have been anticipated in the manufacture of BISHOPRIC.

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Stucco Over Bishopric Base

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