

AMERICAN BUILDER

THE WORLD'S GREATEST BUILDING PAPER

Vol. 39.

CONTENTS FOR MAY, 1925

No. 2.

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Published on the first day of each month by American Carpenter and Builder Co.; Wm. A. Radford, *President, Treasurer and Editor-in-Chief*; Wm. A. Radford, Jr., *Vice-President*; E. L. Hatfield, *Vice-President and General Manager*; Bernard L. Johnson, *Vice-President and Editor*; Roland D. Radford, *Secretary*; S. C. Kellenberger, *Dealer Service*; Delbert W. Smith, E. B. Wolfroth, C. R. W. Edgcumbe, L. H. Reich, O. H. Sutter, Cecil W. Blashill, H. P. Sessions, *Advertising Staff*.

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AROUND THE FAMILY TABLE



Our New Headquarters in New York City

American Builder Eastern Offices Now Located at 250 Park Ave.

THE Eastern Offices of the AMERICAN BUILDER are now located at 250 Park Avenue, in the New Postum Building.

Telephone numbers are Vanderbilt 3185 and 3186.

This very central location on Park Avenue at Forty-sixth Street, just west of the Grand Central Terminal, will be very convenient for our many friends who may have occasion to call at our Eastern Headquarters.

250 Park Avenue is in the center of the up-town advertising agency district, and the co-operation of the AMERICAN BUILDER Research and Merchandising Department is freely offered to all agency men. Our Eastern Headquarters will be of even greater assistance than in the past in the matter of merchandising counsel and in the preparation and distribution of statistics and sales data of interest to the advertising agencies. Please consider the AMERICAN BUILDER offices as headquarters for information pertaining to the building field and permit our Eastern Staff to be of assistance.

This same invitation is extended also to manufacturers and sales agencies serving the building industry. Our facilities are at your disposal and our trained staff at the East-

ern Office, 250 Park Avenue, will gladly confer and advise with you at any time, making available to you without obligation all the statistical information and sales data which we have.

With our convenient location near the Grand Central Terminal, and convenient to all the rapid transit lines, we hope that the manufacturers and the sales and advertising managers in the building industry, both those resident in New York and those visiting the city, will take occasion to call and confer with us.

AMERICAN BUILDER subscribers in the East will, of course, be especially welcome to our Eastern Offices at any time. You will have noticed the large number of popular Eastern designs which we have been featuring in the AMERICAN BUILDER. The Eastern point of view is very important editorially to AMERICAN BUILDER, which serves the best of the builders, architects and dealers all over the United States, and our editorial staff always welcomes the opportunity to talk with builders, architects and dealers who are in close touch with Eastern building conditions.

Our offices in New York City are shared by all of the Radford Publications—the AMERICAN BUILDER, *Farm Mechanics* and the Radford Publicity Bureau. Our former location at 261 Broadway, where we have been for a great many years, proved inadequate to the growing needs of our Eastern Staff. Please note the new address, 250 Park Avenue, Telephones: Vanderbilt 3185 and 3186.

EDITOR AMERICAN BUILDER.



250 Park Avenue, the New Home of the "American Builder" in New York City.

THE MEN WHO BUILT THESE HOUSES
KNOW What *Bishopric Stucco*
 over *Bishopric Base Means*



Bishopric Row—Bishopric Stucco over Bishopric Base in this row of Rochester, N. Y., houses.

Economy, durability, permanence, beauty—all of these are possible when you build with Bishopric. Houses built of Bishopric delight the eye, please the purse and make good in every way from low first cost and minimum of upkeep, to added sale value.



The
Roll
and
the
Drum!

Briefly, *Bishopric Stucco*
over *Bishopric Base*

INSURES

Least cost for labor
 Least cost for material
 Speed in construction
 Lowest maintenance cost
 Strength—stability—endurance

IS

Waterproof
 Weatherproof
 Fireproof
 Rich in insulation

You, as a builder, know what every one of these qualities means to your profit, to the satisfaction you wish your client to experience, and to your success as a builder of STRUCTURES THAT SATISFY.

Therefore, you need to know ALL about Bishopric Stucco over Bishopric Base. It is a wonderful story, this stupendous success of Bishopric products. Let us tell you ALL about it.

Write for Bishopric Booklet "For All Time and Clime"—Beautifully illustrated—working details—specifications—Let us help you with your Building Problems.

Bishopric is Sold by Dealers Everywhere

The BISHOPRIC MANUFACTURING CO
 5 ESTE AVE. CINCINNATI, OHIO

NEW YORK CITY
 NEW YORK

LOS ANGELES
 CALIFORNIA

OTTAWA
 CANADA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Chauncy Hurlbut Branch

AMERICAN BUILDER



Formerly AMERICAN CARPENTER AND BUILDER

Building Costs Become Stable

A CHART showing average construction costs for the past 10 years has recently been issued by the Associated General Contractors of America. This record is of interest because of the fact that it so unquestionably shows the increasing stability which has been developing in the last two years.

Taking the 1913 level as 100 per cent, or normal, there was a rapid increase of cost to the peak of nearly 250 in 1920. Then the break came and costs rapidly fell, going as low as 185 in 1922, after which they showed a slight recovery. The fluctuations of 1921 and 1922 were less violent than those of the preceding years. Fluctuations for 1923 and 1924 were slight with a constantly increasing tendency to become stable at about the 200 mark.

The association foresees no noticeable changes in costs for the coming year, believing that the tendency mentioned above is indicative of permanent stabilization at this point.

Better School Buildings

THE United States Public Health Service has recently published a report of tests which indicate that only 63 per cent of all school children have normal sight of both eyes. The number of children with marked defects of vision was four times as great at sixteen years of age as at six years.

One of the principal causes of defective vision can be eliminated by the proper construction of school buildings, with special reference to the best possible lighting, both natural and artificial. Progressive school boards are now giving much attention to the question of lighting both new and old buildings.

Shade trees near windows are trimmed away to clear an angle of 60 degrees with the horizon. In one story buildings and on top floors skylights are in favor, and in other places there is a tendency to use windows which extend all the way from the floor to the ceiling. Light from windows is controlled by shades, dark ones being used for the lower part of the window and light translucent ones for the upper part in many cases. Coloring all walls to secure full

light reflection is important. Desk tops should have a dull finish to avoid glare and blackboards should be placed so that they receive a good light, never between or under windows.

When these matters of construction have been given proper attention and books with large clear type on dull paper are provided, it only remains for the school authorities to make regular examination and impress upon parents the danger of neglecting visual defects. If this is done the worst of existing conditions can be corrected.



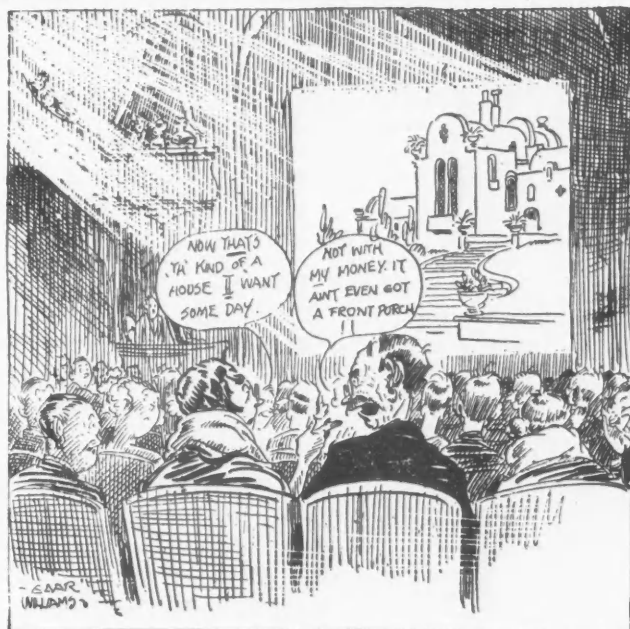
Allied Architects Library and Scholarship

THE Allied Architects' Association of Los Angeles, in line with its policy of developing beauty and permanency in public building, has established and is maintaining at its own expense an architectural and fine arts library for free public use, which is believed to be one of the finest of its kind in the country, and is the only architectural library in existence west of Chicago. At the request of university officials the association has taken charge of the architectural department at the University of Southern California, and in order that closer supervision might be brought about have established quarters for the senior class in its own headquarters.

Courses in design for draftsmen have also been instituted by the Allied Architects, who have in contemplation the establishment of a traveling scholarship for architectural students. It is believed that the scholarship will not be restricted to undergraduates in architectural schools, but will be open to men studying in the offices of architects, preference being given men having had some practical experience.

Since its inception in 1921 the organization has handled many contracts for both city and county, the civic center plans being but one of its many achievements. By the charter of the association it is precluded from either accepting or performing contracts for private individuals, firms, or corporations, the work of the body being specifically restricted to services on public buildings.

A STRAIN ON THE FAMILY TIE



Almost Every Family Is in the Midst of Planning a New Home or Is Dreaming of the Home Which Will Be Built in Future Years. With the coming of spring thought turns more and more to the dream home as evidenced by this cartoon by Gaar Williams, popular artist of the "Chicago Tribune."

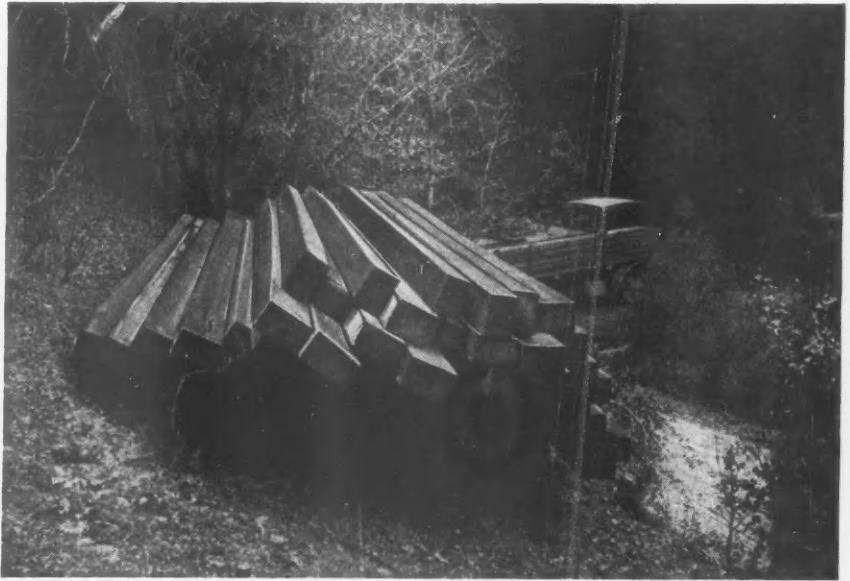
Only Autocars could do this hauling job

How Autocar short wheelbase handiness made it possible to haul long loads of lumber down the narrow, crooked mountain trails out of the California redwood forests

By R. N. Murdoch, Hauling Contractor, Cloverdale, Calif.

THE lumber mill at Peachland, Mendocino County, California, was up against it because they were unable to get their lumber out of the woods over the narrow, steep mountain road leading to Cloverdale, 36 miles away. They had tried several different makes of long wheelbase trucks, but these trucks could not make the short turns in the road. I told them I could bring their lumber out with my Autocars and to prove it took one of the trucks in. They began piling the lumber on and when they had it about half loaded they wanted to stop; but I knew what the Autocar would do and told them to keep piling it on. When they had it loaded with 3900 feet of green redwood, as in the picture, I started out and went right through with no mishaps nor trouble at all.

At many of the bends where the other trucks were unable to get around on account of their long wheelbase the Autocar managed it easily. Most every sharp turn on this road has several piles of lumber at the side of the road where long wheelbase trucks had to unload in order to make the turn. The Autocar made these turns without any trouble.



Nearly every sharp turn has several piles of lumber at the side of the road where a longer wheelbase truck had to unload in order to make the turn. This picture shows an Autocar making the turn without any trouble

The grades did not give any trouble either. In taking the picture shown below, the Autocar was stopped on a 15 per cent grade but pulled right away with the load after the picture was taken. The planks on the truck in the picture are 24 feet long.

Several different trucks were tried on this job, but none of

them of the same capacity as my 5-ton Autocar could make out even with half as much lumber. Smaller trucks came out with smaller amounts of lumber. The inability of the long wheelbase trucks was not due to lack of power so much as being too long to make turns, although we pulled many of them out of soft places on the way from the mill, despite the fact that they were loaded only half as much as our truck was.

It is 36 miles from the lumber mill to Cloverdale and we make one round trip daily of 72 miles. We have been hauling lumber in rainy weather as well as good weather, using chains on the wheels when it is wet. We have brought out 2400 feet of green redwood lumber on this truck in a driving rain.



The 5-ton Autocar was stopped on this 15 per cent grade to take the picture, but pulled right away with its load of green redwood after the picture was taken

The Autocar Company

ESTABLISHED 1897
Ardmore, Pa.

Branches in 46 Cities

Autocar
gas and electric trucks

EITHER OR BOTH - AS YOUR WORK REQUIRES

Taking the House to the Buyers

How the Queensboro Corporation Displays Its Suburban Homes
in the Heart of New York City

By ALBERT W. FRIBOURG



In This Display Room the Jackson Heights Sub-Division Is Brought to the Buyers in the Heart of New York City. In addition to other exhibits a motion picture is shown every half hour or whenever there are ten or twelve people who wish to see it. This depicts the homes, parks, playgrounds, public buildings and various activities of the suburb.

IF buyers will not go to houses, bring the houses to the buyers.

On first glance that statement does not seem possible. In spite of the fact that houses are occasionally moved from one plot to another, no one has ever seriously thought of a wholesale moving of new houses to a place where they would be more accessible to buyers.

But when one company was faced with the problem of having desirable houses located at such a distance from the city that the average buyer would think twice before taking the trip to the suburb, some solution had to be found. It was worked out in this way. 1—The only reason that the houses were not selling more rapidly was because enough people had not seen them. 2—No great increase in the number of prospective buyers could be counted on especially during the slow winter months. Therefore, the houses must be brought into the heart of the city from where most previous buyers had come if selling conditions were to be improved. It was easier than had been expected.

Jackson Heights, the suburb which was to be developed in this unique manner, draws most of its residents from New York City. The logical thing to do then would be to bring the Jackson Heights houses directly into the heart of New York. The Delmonico Building at Forty-fourth Street and Fifth Avenue was selected as the most convenient place.

Of course, an ordinary size house would not fit into the Delmonico Building, nor in any other structure which was not purposely built to meet such requirements. But pictures and

miniature houses are really quite as satisfactory as full size houses, providing the pictures have been chosen carefully.

The exhibit rooms in the Delmonico Building were turned into a miniature Jackson Heights. This suburb is entirely controlled by the Queensboro Corporation and has several distinctive features, one of which is that all families who wish to buy in the suburb must be passed upon by a board whose duty it is to look up references and determine other qualifications. Because of these provisions there is very much the air of a country club about Jackson Heights. And this same atmosphere has been faithfully reproduced in the miniature exhibit. Prospective buyers who go first to the exhibit rooms before they actually visit Jackson Heights do not form any different impression than they would if they had made the trip outside the city.

Every inch of space which the exhibit rooms provide has been put to good use. There are two small display windows which face Fifth Avenue, and in these there are attractively lettered signs announcing that Jackson Heights has moved to Fifth Avenue. A miniature house in one of the windows tells passers-by how the move has been made.

The rooms themselves are filled with pictures of Jackson Heights. There are exteriors showing the various apartment houses, and also smaller one and two-family houses; floor plans which give the exact measurement of rooms; and then there are scenes of life as it is enjoyed in this suburb.

But these pictures are only counted upon to serve as an introduction. The real way in which Jackson Heights is

sold in New York is by a series of moving picture reels. One of the exhibition rooms is set aside as a moving picture theater and is furnished with comfortable wicker chairs in which prospective buyers can sit at ease while they are taken for an investigation tour around Jackson Heights. Quite different from the ordinary method of taking tired people from one house to another in order to prove to them that the suburb is an attractive place. Automobiles may help to do away with some of the fatigue that is felt. But of course they cannot be compared to the ease with which these New York buyers are permitted to see the suburb.

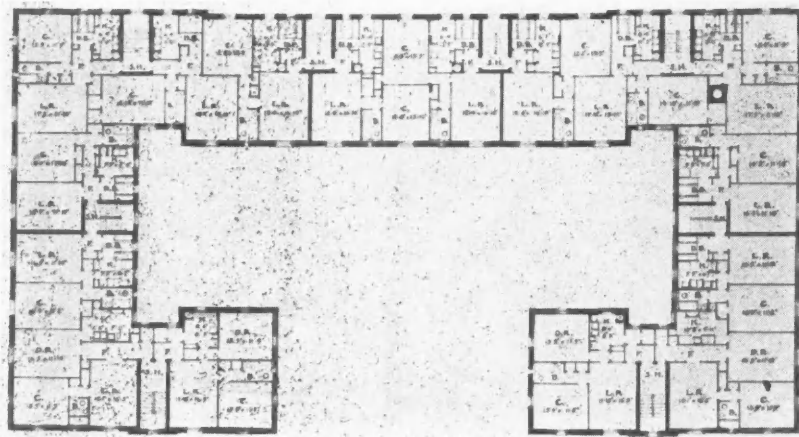
Great care has been taken with these moving pictures so that they show exactly the things in which the ordinary buyer will be interested. They are not a group of ultra-delightful views, but they show things as they are.

First the visitor is shown how the lay-out of the suburb has been planned. Then views of the various apartments are flashed on the screen in the order in which they would be seen if the visitor was actually in Jackson Heights. After the buildings have been viewed, the life in this suburb is described by pictures taken on various occasions. There is one, for instance, showing champion golfers on the Jackson Heights golf links, while another is of the skating rink in the center of the suburb. For the women who are interested in buying a house where their children will have plenty of play space, there are many views of the gardens specially provided for the younger people.

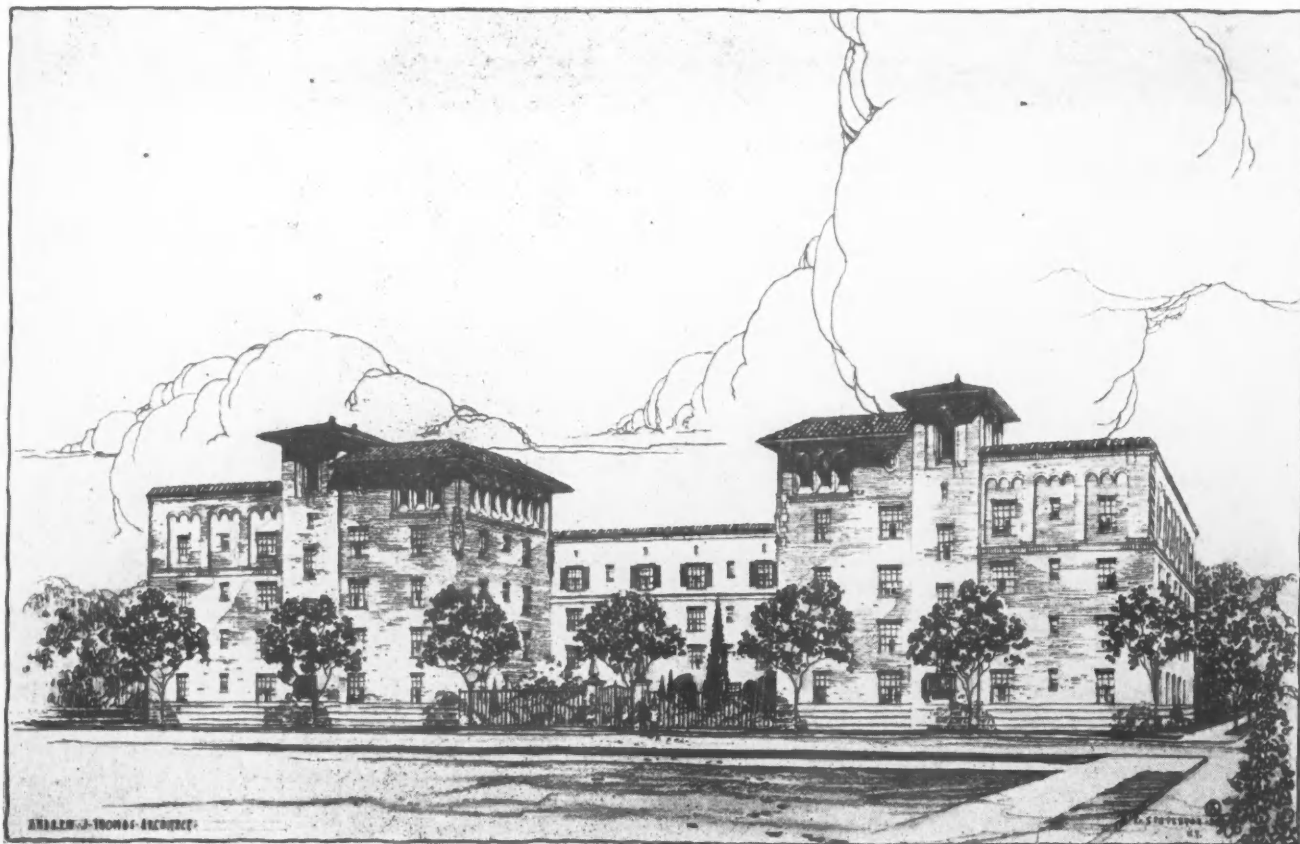
It is really surprising how much more convincing a picture can be than the usual

sales talk which the prospective buyer has probably heard half a dozen times at half a dozen places. The views of Jackson Heights include a picture of a furnace. Now some people, the title reads, may like to live in the country, but when they think of what it will mean to get out of bed in a cold room and go down into the cellar for a fight with the furnace they change their minds. So the picture shows one of the furnaces in the apartment houses going at full blast while the residents arise in a fine warm room. Other problems of suburban living such as the removal of snow from the front walk are taken care of in Jackson Heights, and pictures which show this are of great interest to the prospective buyer.

Aside from the pictures, other ways of showing the com-



The Floor Plan of Cedar Court Shows the High Type of Planning Which Goes into Every Building Which Is Erected in Jackson Hights.



Cedar Court Apartments Are Featured in the Jackson Heights Exhibit. This is one of the many fine buildings which have already been erected and which are rapidly springing up as a result of the effective method of presenting this suburb to prospective buyers.

munity life are used. Jackson Heights publishes its own newspaper in which the social affairs and news of this suburb are recorded. There is a table on which a pile of these papers has been placed, along with other literature and floor plans which the prospective buyer might want to take home to look over more carefully. This literature is never pressed on the visitor. It is on the table for him to take if he wishes.

Mr. E. A. MacDougall, president of the Queensboro Corporation, in commenting on the Jackson Heights exhibit, said:

"This exhibit is undoubtedly responsible for the great increase in sales and leases which our corporation has made since last November when the exhibit was first opened to the public. Prospective buyers and renters have found that even during the luncheon period they can secure information bearing on the solution of their home problems, which otherwise would require days of investigation to obtain."

An average of sixty people visit the exhibit every day. Naturally all of these are not prospective buyers, some of them only being interested in seeing what the exhibit is like. But a great many of them are potential buyers who later come to Jackson Heights after they have seen the exhibit.

As a rule the moving pictures are shown every half hour, but whenever there are ten or twelve people who wish to see them, a special showing is given. One of the points which the Queensboro Corporation has stressed in its miniature Jackson Heights is that all visitors should feel comfortable, and should not have to listen to a sales talk unless they actually ask for particulars. One side of the exhibition rooms is filled with desks where all desired information can be procured. Women of middle age who are distinguished by their charm have been chosen for this work. Mr. MacDougall has found that they are able to make many more friends for the corporation than younger women or men.



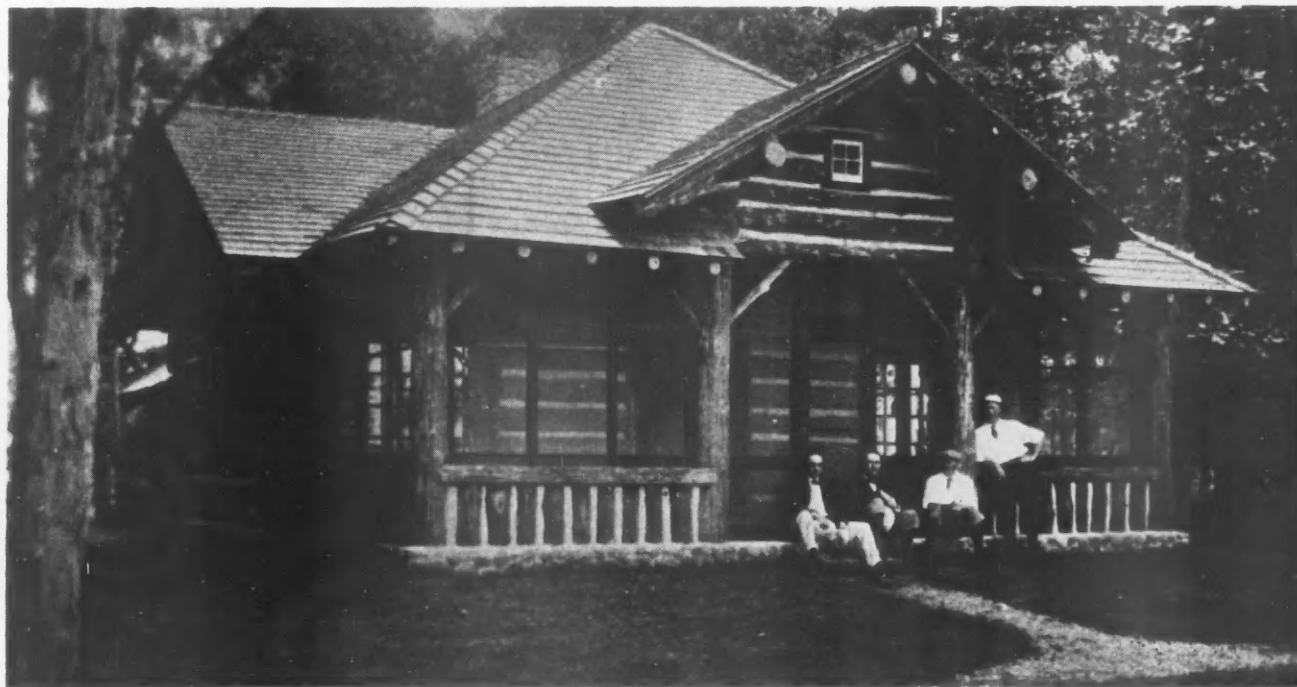
Brick Houses Such as These Add to the Attractiveness of the Suburb and Are Featured in the Pictures Which Are Displayed at the Miniature Jackson Heights in the City.

When prospective buyers have decided that they wish to make the trip to Jackson Heights they can make arrangements at the exhibit rooms for a car which will take them to the suburb in about three-quarters of an hour.

The Queensboro Corporation advertises its suburb extensively. Out of town papers, as well as those which are published in New York City, carry advertisements telling of the desirability of Jackson Heights. Advertisements in suburban papers tell in particular ways how Jackson Heights surpasses the ordinary suburb, with direct examples being given. This system has been found to be very successful.

All advertisements include a notice that Jackson Heights can be seen in New York City. "Because," as one of the officers of the company said, "it is of no use having the exhibit if people do not know of it."

Altogether the Queensboro Corporation has found that the use of the exhibit rooms has been of great help in the development of its suburb. During the entire winter when builders and real estate men count on a dull season rentals have taken a great leap forward.



This Rustic Clubhouse, on George Ade's Estate, in Brook, Ind., Is Occasionally the Social Center of a Crowd of People from All Over the County. The screened veranda offers a cool refuge after an afternoon on the golf course or the tennis court.

A Skyscraper Built Over a Railroad Right of Way

A Notable Group of Perspectives

By **BERNARD L. JOHNSON**

Editor, American Builder

A NEW use has been found for railroad right of way in congested metropolitan areas. At least, it seems likely that the example of the new Philadelphia Inquirer Building will be followed in large cities with depressed railroad tracks. For the beautiful building illustrated on the opposite page has been erected astraddle of five railroad tracks, thus putting them in the basement, as it were.

Chicago is represented in this month's duo-tone plates of architectural perspectives by the new Hibbard, Spencer, Bartlett Building. This building will replace the present structure shortly to be wrecked, which must make way for the new double decked street, South Water Street Boulevard.

Wrecking operations to open a route for this handsome, new, double-decked street have been under way several months. The old Hibbard, Spencer, Bartlett Building blocks the way at the State Street Bridge approach and will have to go.

Fort Worth, Texas, has some very impressive skyscrapers and the new W. T. Waggoner Building would be an ornament to any eastern metropolis. The Postum Building, New York City, is a good example of the massive type of building with light court but no tower. All told, it may be said that this month's selections include some notable designs.

Elverson Building, Philadelphia, Pa.

Rankin, Kellogg & Crane, Architects

Set-back and tower combine in this beautiful building to create impressive skyline effects and, at night, powerful searchlight beams will flash the hours from its pinnacle. It is the new home of the "Philadelphia Inquirer," 21 stories high, which occupies the block bounded by Broad and 15th Streets, Callowhill Street and Pennsylvania Avenue, in which are located depressed tracks of the Philadelphia and Reading Railway. With railroad tracks in the basement, the newspaper is well located to receive direct from freight cars the enormous quantities of paper which it requires—about 1,000 tons or 40 carloads a week. The six lower floors in the tower or front section of the building are occupied by the executive, editorial and business offices of the paper, while the composing rooms, presses, engraving, electrotyping and power plants are located in the manufacturing building which adjoins it to the rear. The architects, Rankin, Kellogg and Crane, have certainly designed a noteworthy and beautiful building. It has a structural steel frame embedded in concrete and the floors are of heavy reinforced concrete. The front is faced with granite and limestone at the base with white glazed terra cotta for facing above the second floor. That part of the building which houses the manufacturing plant is faced with brick and terra cotta. Strong vertical lines are an architectural feature of this building, occasioned by the vertical supports which rise between the railroad tracks and are carried to the top of the building. Although the Philadelphia building ordinance does not require it, the architects have used setbacks at the sixth, twelfth and fourteenth floors, thus presenting artistically diminished mass, capped by the beautiful dome-capped tower.

Hibbard, Spencer, Bartlett & Co. Warehouse, Chicago, Ill.

Graham, Anderson, Probst & White, Architects

This new warehouse for Hibbard, Spencer, Bartlett & Company will be the world's largest wholesale hardware building. The former building, adjoining the State Street Bridge, is to be wrecked to make way for the new double decked South Water Street Boulevard. The new building will be located a short distance east of Michigan Avenue on East North Water Street and across the river from the new Tribune Tower. Massive effects mark the design of Graham, Anderson, Probst & White, Architects. The structural steel framework is to have a face brick elevation at the front of the building and on the side along the river. This enormous structure will occupy a site which fronts about 185 feet on the river, 172 feet on North Water Street, 423 feet on the east and 335 feet on the west. It will be 13 stories high, contain more than a million square feet of floor space and will cost four million dollars.

W. T. Waggoner Building, Fort Worth, Texas

Sanguinet, Staats & Hedrick, Architects

The design and proportions of this building add to its height and symmetry. The architects, Sanguinet, Staats and Hedrick, have provided a strong but ornate cornice effect and a rather unusual ornamental belt which girdles the building at the 18th floor, bridging across the light court and tying the wings of the building together. The building is of steel frame construction with reinforced concrete floors. The ground floor dimensions are 75 by 95 feet and the 20 stories are served by four high speed, gearless elevators. The exterior of the building is faced with Rockport green granite up to the second floor and from there on with Kittanning, Pennsylvania, gray brick and terra cotta. The Continental National Bank occupies the first floor and the entrance to the office portion of the building is through a very handsome lobby, the walls of which are entirely of marble. Magnesite composition has been used for the office floors throughout the building and the corridors have tile floors with five foot marble wainscoting.

The Postum Building, New York City

Cross & Cross, Architects

With a rather large ground floor area—201 by 124 feet—and a height of 20 stories, the architects, Cross & Cross, have used in their design a shallow light court effect and a set-back above the sixteenth floor to break up the bulk of the building and give it symmetry. For the same reason, a very narrow cornice is used.

The building is located on the westerly side of Park Avenue just north of the Grand Central Station. It is of gray-buff brick of coarse texture with limestone and terra cotta trimmings. The building is served by 12 passenger elevators and a service elevator.

The New York offices of the *AMERICAN BUILDER* are located in this building—remember the address, 250 Park Ave.

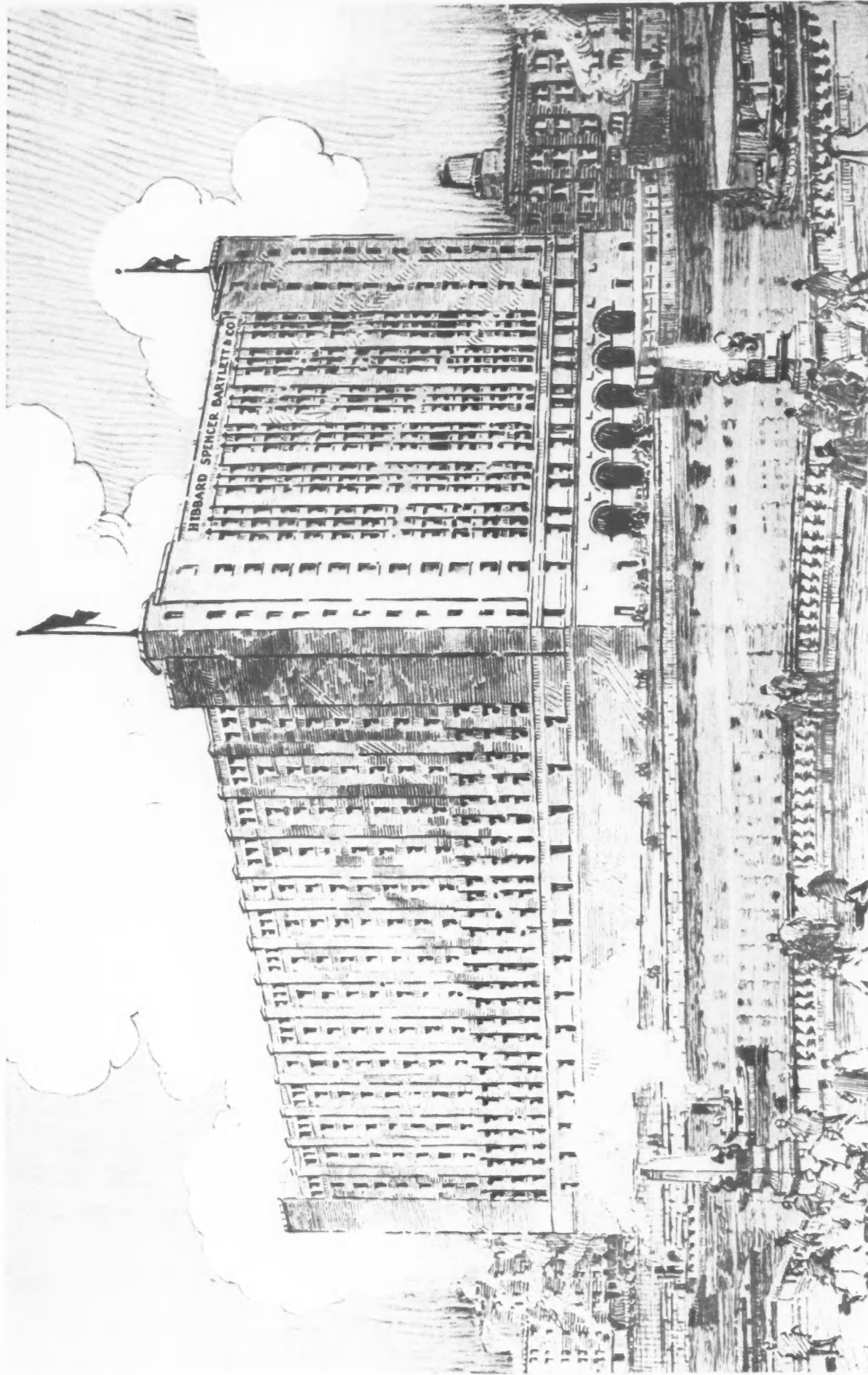
ART SUPPLEMENT *of*
NOTABLE ARCHITECTURE



PLATE XXIX

The ELVERSON BUILDING, Philadelphia; Rankin, Kellogg & Crane, Architects.
This magnificent Towered Building is the new home of
"The Philadelphia Inquirer."

The AMERICAN BUILDER, May, 1925



The HIBBARD, SPENCER, BARTLETT & Co. BUILDING, Chicago; Graham, Anderson, Probst & White, Architects.
This Office and Warehouse is being built on East North Water Street. Their old building will be wrecked for Chicago's New South Water Street Boulevard.

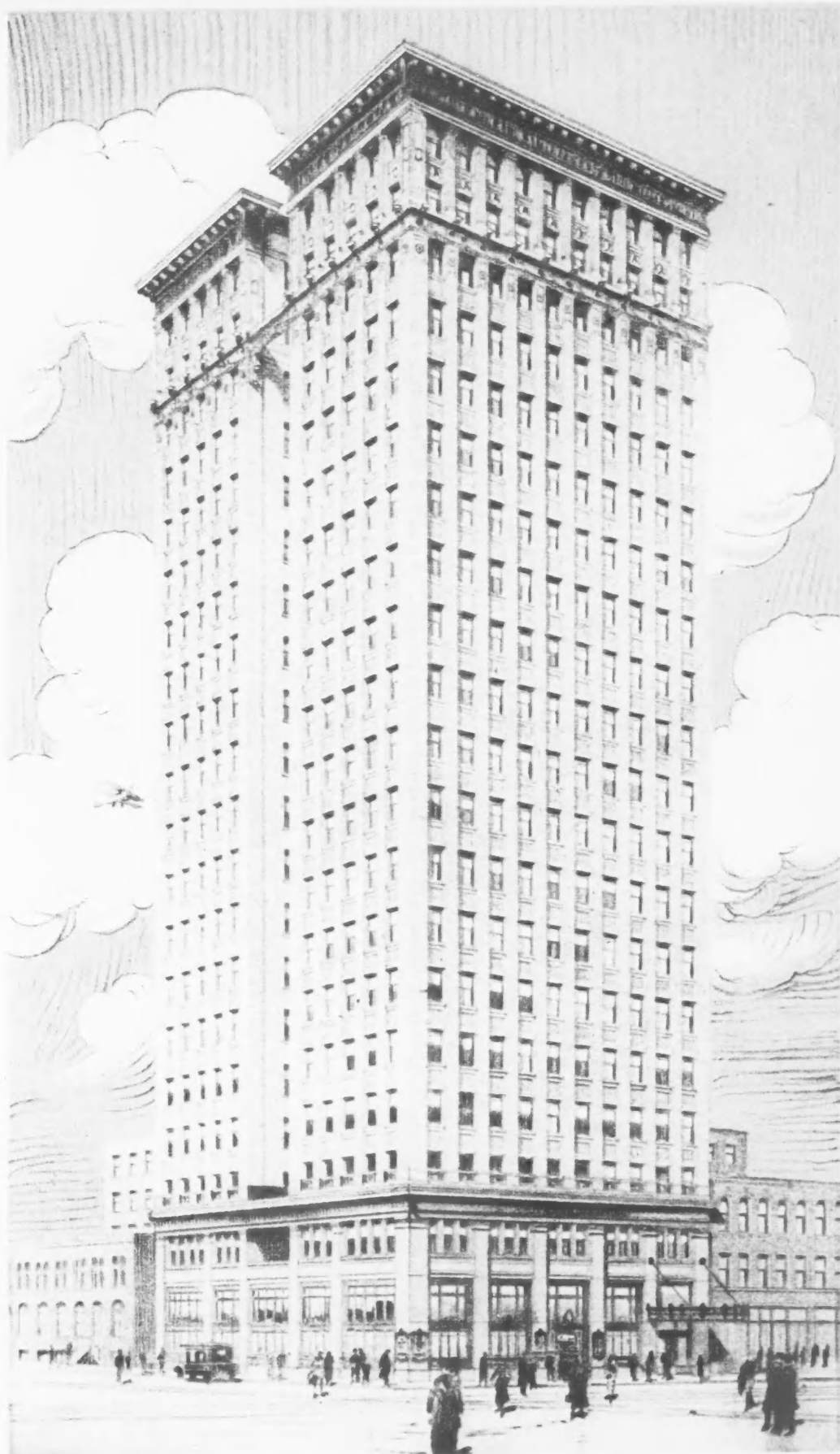
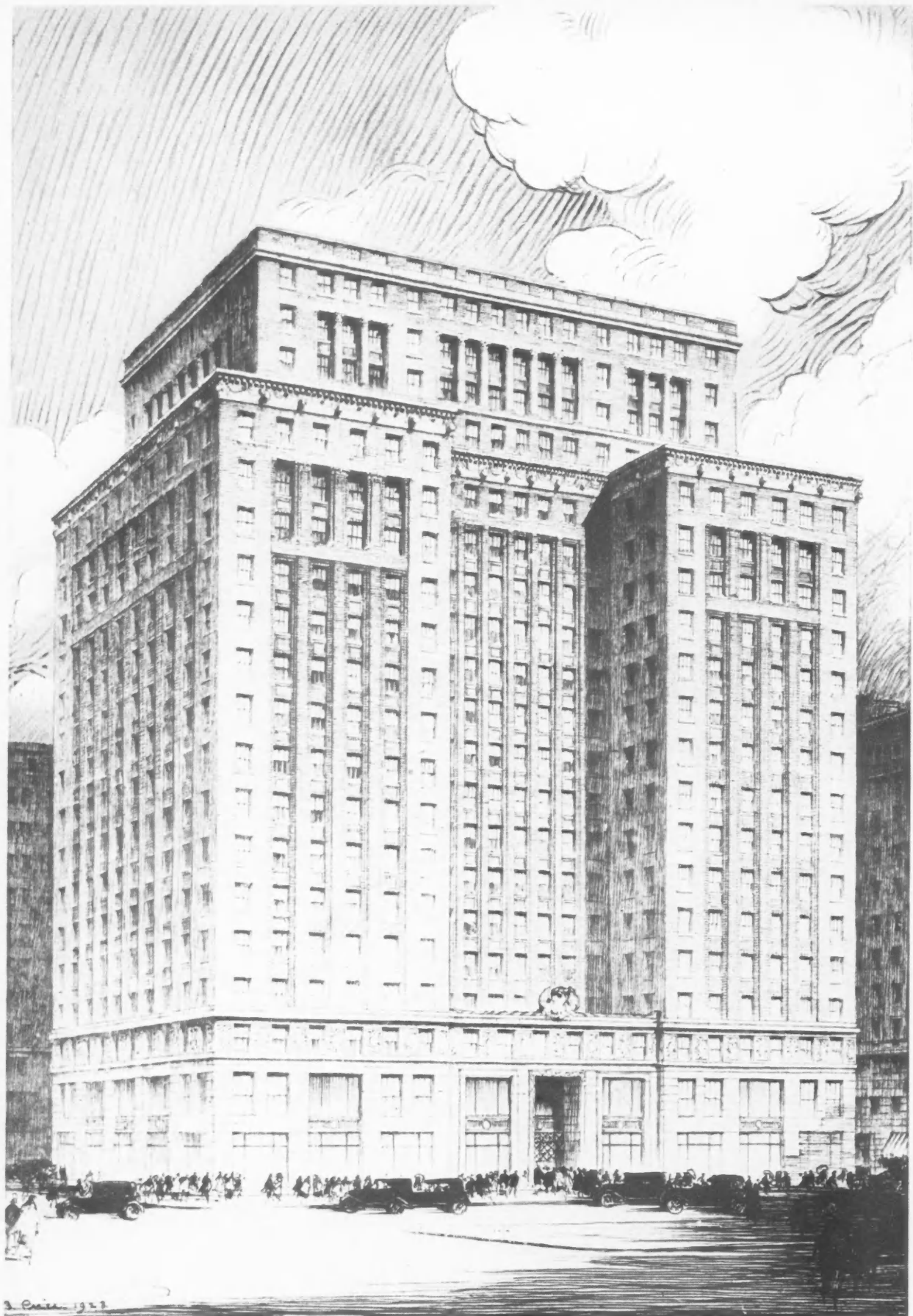


PLATE XXXI

*The W. T. WAGGONER BUILDING, Fort Worth, Texas;
Sanguinet, Staats & Hedrick, Architects.*

will be wrecked for Chicago's New South Water Street Boulevard.



*The POSTUM BUILDING, 250 Park Avenue, New York City,
Cross & Cross, Architects.*

Big Office Structure for Seattle

Fifteen Story Dexter Horton Building Will Include 1,000 Offices With a Rental Area of 250,000 Square Feet; John Graham, Architect

By JOHN H. LONGFELLOW

WITH completion of the Second Avenue unit, now under construction, the Dexter Horton Building at Seattle will include 1,000 offices, representing a rental area of 250,000 square feet or approximately five and three-quarter acres.

All offices have outside exposure, facing either on the street or spacious semi-courts and are characterized by distinctive standardized equipment in the highest grade practical materials obtainable.

The building, from its steel and concrete bases to and including the fifteenth or topmost story, has been constructed almost entirely of home products by home labor under the direction of the Puget Sound Bridge & Dredging Company of Seattle. The Balfour Guthrie Company supplied portland cement for the entire building and the Pacific Coast Steel Company of Seattle furnished the reinforcing steel. Hollow tile came from the plant of the Lake Union Brick & Tile Company of Seattle and lumber from the Lockwood Lumber Company, also of Seattle.

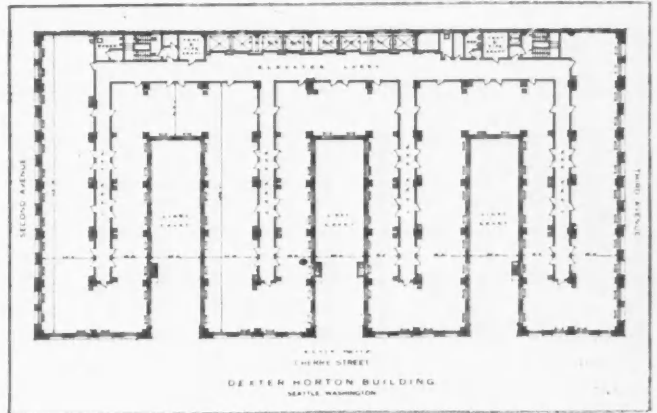
The building is a sample of modern architectural improvement. Equipment and woodwork are standardized throughout. Entrance doors, interior doors and partitions being uniform units manufactured from mahogany.

All office entrance and interior doors are so constructed as to permit quick removal of doors and mouldings should occasion demand. Not the slightest danger of injury to walls or adjacent finish is present in this relatively simple process. This permits tenants to change location in the building without re-lettering the doors. The same principle of manufacture has been incorporated in partition units subdividing office suites. These are by reason of unique construction, sturdy and substantial as one solid hardwood unit.

The floor system of the structure is of cellular type which combines lightness of dead weight with depth sufficient to give great stability and rigidity to the structure. It consists of a series of steel tile, around and over which is poured concrete, thus forming joists of reinforced concrete between the main support-

ing members of the structure. These joists are united with a thin slab of concrete, reinforced with heavy wire fabric.

The builder is the Dexter Horton Estate and the architect, John Graham of Seattle.



Typical Floor Plan of Horton Building. All partition units subdividing offices are movable.



The Rental Area of the Horton Building Is Approximately Five and Three-Quarters Acres. Notice how the structure is set on a slope.

Residence Built for Research in Warm Air Heating

By V. S. DAY

Research Assistant Professor, University of Illinois

THE Warm Air Heating Research Residence at the University of Illinois was built at a cost of \$18,000 and with its furnishings, experimental equipment and the lot, it represents an investment of \$25,000 by the National Warm Air Heating and Ventilating Association for the purpose of aiding in the study of the principles governing the performance of warm air furnaces and heating systems.

The ultimate object of the work being done in this laboratory residence is to improve on the methods of selecting and installing heaters to the end that satisfactory heating may be assured in every case. About 70 per cent of the residential buildings in the country are heated by warm air. In many respects warm air heating possesses advantages over other kinds of systems and as every householder is a "crank" on heating it is important that the manufacturer, installer, and user of the warm air furnace know the conditions governing its successful performance.

The Engineering Experiment Station of the University of Illinois has been engaged since 1918 in the experimental investigation of warm air heaters and heating systems, and has published Bulletins Nos. 112, 117, 120 and 141, setting forth

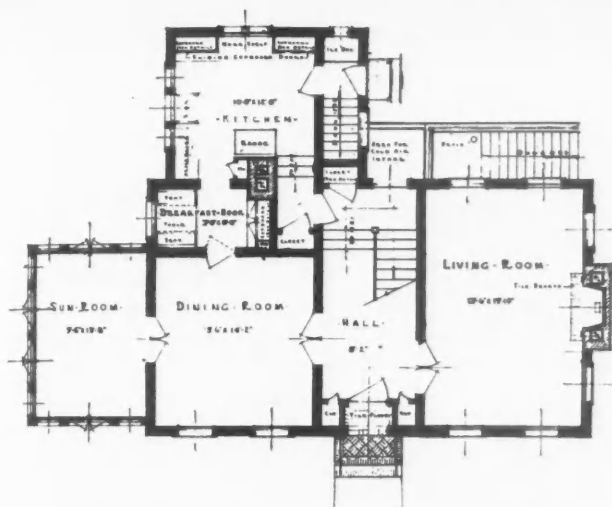
the results. Copies of these bulletins may be secured by request from the Engineering Experiment Station, University of Illinois. The furnace manufacturers' association known as the National Warm Air Heating and Ventilating Association has, through a co-operative agreement with the university, financed the investigation.

Previous to December, 1924, all the experimental work on heaters was done in a large open structure simulating a three-story house inside of the Mechanical Engineering Laboratory. With the completion of the Research Residence in December much of the apparatus has been installed in, and the activity transferred to, the Residence. Professor L. H. Provine, head of the Department of Architecture and Agricultural Engineering of the University of Illinois, was the architect and he was assisted by Clarence E. Keissinger, instructor in architecture.

The Warm Air Heating Research Residence is a frame dwelling having no special features which would cause it to show exceptionally good economy in fuel. The materials and construction are standard throughout and the only uncommon detail is the use of two-inch by six-inch studding which will



The Warm Air Heat Research Residence, at the University of Illinois, Is Complete in Every Detail and Serves as a Laboratory for Studying the Principles Governing the Performance of Warm Air Heating Systems.

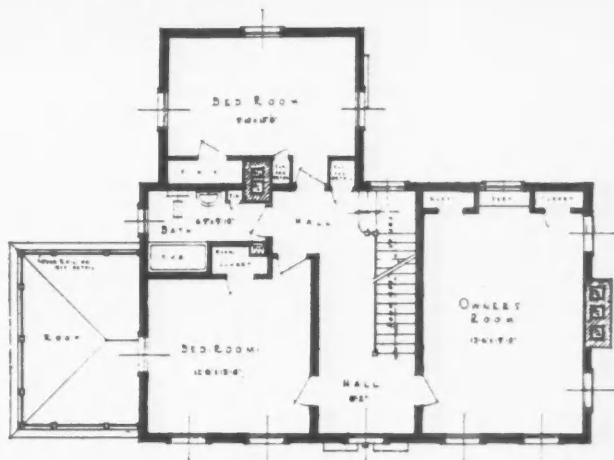


First Floor Plan. The house is designed with rooms presenting practically every condition affecting the problem of heating which is found in the construction of homes. On the first floor the large sun room, exposed on three sides offers a severe test for any heating system.

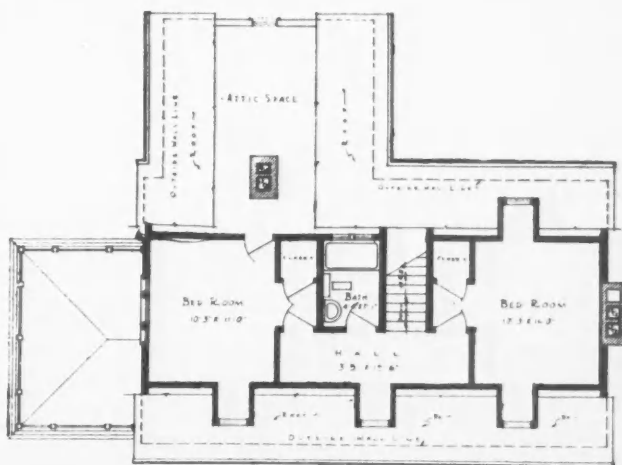
enable the experimenter to use large sizes of heat conductor stacks in the course of the work. No wall insulations are used and no weather stripping of windows or doors has been done. The windows and doors are of good standard construction.

As may be seen from the floor plans the house offers many possibilities for heating experiments. The frontage is south. There are large rooms and small rooms, rooms with one, two, and three sides exposed, and with windows in one, two, or three walls. Unheated attic spaces provide cold ceilings over some rooms. The sun-room is large and offers a severe test of the effectiveness of any kind of heating. In the outside walls special cold air returns have been constructed and with these it will be possible to convert the heating system into one having separate recirculation for each room.

Although the house is beautifully finished throughout, the floors were made of edge grain yellow pine to make easier and cheaper the work of cutting in cold air return registers. The basement floor is so constructed as to permit of easy trenching. Chimneys, both tiled and unlined brick, are provided and outside and inside chimney exposures included. The study of the effect of chimney construction is expected to reveal some very interesting and important data. Thus the house has been planned to permit the maximum flexibility in



Second Floor Plan. Here are rooms under unheated attic space and with exposure on two and three sides.



Third Floor Plan. Finished rooms on the third floor present still different problems. Throughout, the house is finished and furnished exactly as if it were to be occupied.

experimentation. Such factors as the following will be investigated:

- (1) The effect of wind.
- (2) The relative value of inside and outside air supply.
- (3) The significance and proper percentage of relative humidity in the house.

(4) The variation of air temperature from floor to ceiling in actual rooms with different air temperatures at the registers.

(5) The proper location of furnace with respect to center of basement.

(6) The relative value of return air ducts above basement floor compared with ducts placed below basement floor.

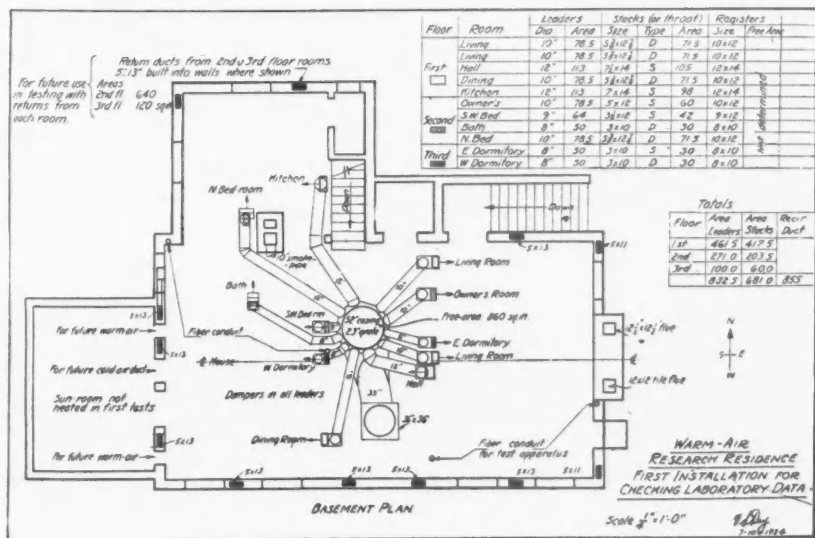
(7) The proper location and number of recirculating registers.

(8) The proper location of warm air inlet registers.

(9) The effect of various installation details on operation of wall stacks to upper floors.

(10) The effect of various installation details on operation of basement pipes.

(11) The relative value of inside as compared with outside chimneys.



The Basement Plan Shows the Layout of the First Heating Installation to Be Tested in this Laboratory. The insert is a key to the piping system showing sizes and areas to be heated.

(12) The importance of constant temperature both day and night.

(13) The problem of the remote room with three sides exposed, and

(14) The proper installation for a sun porch.

As an example of the kind of work being done the heating plan is shown for the tests now in progress. A single large cold air return is shown. When sufficient data on room temperatures, humidity, furnace efficiency and distribution of heated air to the various rooms has been obtained, this recirculating system will be replaced by a system having two or more returns and similar data obtained for comparative purposes. An illustration shows the furnace installation and some of the testing equipment and apparatus.

Suitable furniture and floor coverings have been provided, and the windows curtained so that the house is livable and all the conditions which affect the heating problem are present.

Although the Warm Air Heating Research Residence was not built as a model house, with a model warm air heating installation, it is so regarded by the public and consequently there are many visits by persons interested in heating or in building. For this reason the house is suitably marked with a bronze tablet and a custodian is on duty. From the work done in the Research Residence the University expects to give the architect, builder, and heating installer much information which will enable them to give greater satisfaction in heating to the house owner and occupant.



Travertin Patent Invalid

ALTHOUGH the Pennsylvania Railroad Station was completed in 1913, the court has just ruled that work on that structure was not experimental.

This decision is rendered by the United States Circuit Court of Appeals for the Ninth District. It is of special interest to all architects and contractors, because the construction material involved is artificial travertin stone, now so widely used in large buildings all over the country.

The patent on the process for making this material is held invalid by the decision, and anyone is now at liberty to use it. The opinion is especially interesting to lawyers, because in this case, which was argued by T. Hart Anderson, of the firm of Munn, Anderson & Munn, the court reversed itself, the same appeal court having previously held in two cases involving the same plaintiff that the same patent was valid.

The entire case hinged on the question of whether or not the use of this material in the Pennsylvania Station was an experiment or not. If its installation was not an experiment, but a regular business transaction, then the patent would be invalid because application for it was not made until more than two years after the work was finished.

The evidence showed that McKinn, Meade & White were the architects who designed and supervised the construction of the Pennsylvania Station and that the George R. Fuller Construction Company was the general contractor for the building. The company of Paul E. Denivelle, the alleged inventor of the artificial travertin process, was retained as sub-contractor to install the imitation travertin, which is the material covering portions of the interior of the station. The entire work was to be completed to the satisfaction of the architect.



Furnace Installation and Part of the Testing Equipment Installed in the Warm Air Heating Residence. The equipment is complete from a scale for weighing the coal used up to the most elaborate instruments.

The Denivelle contract was executed March 5, 1909, and on November 29, 1910, the Denivelle Company executed an acknowledgment that it had received from the contractor the sum of \$125,741.03 in full payment of all moneys due or to become due in connection with the contract.

The wall surfacing of the buildings of the Panama-Pacific International Exposition in San Francisco was also of imitation travertin stone installed under the personal supervision of Denivelle, the patentee. The material has proved so attractive and durable that it has been used in buildings in all parts of the United States. The present suit was brought by Denivelle, the patentee, against McGruer & Simpson, contractors, for their use of the imitation travertin stone in the construction of the palatial Biltmore Hotel in Los Angeles.

On October 20, 1915, Denivelle applied for his patent, and the patent was issued to him on January 16, 1917. This patent is knocked out by the court's decision. Judge Morrow saying on behalf of his colleagues, Judges Hunt and Gilbert:

"We conclude that the patent is invalid for the reason that more than two years prior to plaintiff's application for the patent he had placed the process and product of the invention on sale and had sold both the process and the product to the Pennsylvania Tunnel & Terminal Railroad Company for a profit."

Paul E. Denivelle, the plaintiff, was represented by Townsend & Loftus, of San Francisco, and McGruer & Simpson, the defendants, by Munn, Anderson & Munn, of New York.



Screens with One-Way Vision

ORDINARY wire screens for windows and doors afford no protection from prying eyes. This can be remedied by giving the outside of all screens a good coat of thin white paint. The paint will not be noticeable, strange as it may seem, and while those on the inside may look out, outsiders cannot see into the room or porch. The paint should be made as thin as possible with turpentine and applied with a broad flat brush.

Triumphal Arch Is Bridge Feature

Memorial to War Dead Is Incorporated in Design of Delaware County, Pennsylvania Span Opened to Traffic Armistice Day

By ROBERT F. SALADE

GRACED by a beautiful triumphal arch, a splendid memorial to the war dead of Delaware County, Pennsylvania, the newly-erected Plushmill bridge spanning Crum Creek on the Baltimore Pike was officially opened to traffic on last Armistice Day, Nov. 11. The dedication was marked with elaborate ceremonies of a patriotic character in which state and county officials and a number of prominent engineers took part.

The memorial arch, which is of heroic proportions, is after the architectural style of the famous Arc de Triomphe, at Paris, and it also bears a resemblance to the fine memorial arch at Valley Forge Park, Pa. The architect is Clarence Wilson Grazer, of Chester, Pa., while R. J. Aydlotte, county engineer, was responsible for all the engineering features.

This bridge is the fortieth to be erected in Delaware County since the disastrous collapse of the old Third Street bridge in Chester some three years ago—a tragedy which cost the lives of twenty-four persons and which caused serious injuries to many others. The new structure replaces the old covered wooden bridge which collapsed in 1920 when a heavy motor truck crushed through its main span. Bond issues totaling more than one million dollars were subscribed for the erection of the new series of bridges, all of which are of reinforced concrete and of artistic design. In fact,

each one of these forty bridges is of different design, and this diversification has caused wide and favorable comment among engineering circles as well as among those who are using Delaware County's greatly improved highway system.

The length of the Plushmill memorial bridge is 328 feet, and it has a width of 40 feet 6 inches, including 5-foot sidewalks for foot traffic. The roadway is 34 feet above the water level and the top of the triumphal arch is 105 feet. The arch proper is 71 feet in height and 66 feet across. In opposite niches of the arch, facing the highway, have been placed two bronze tablets bearing the names of the 282 American soldiers from Delaware County who gave up their lives during the World War. Many of these soldiers were killed in the Battle of St. Mihiel.

Across the top of the arch, facing both approaches to the bridge, is this inscription: "Erected to Those from Delaware County Who Served in the Great World War." Both the bridge and arch have been constructed of reinforced concrete, and they afford striking examples of the newer use of that material in engineering and architecture.

Another new and handsome bridge in Delaware County which has just been completed is the Hollands bridge over Crum Creek, on the State Highway between Upper Province and Springfield townships.



The Plushmill Bridge, Spanning Plumb Creek on the Baltimore Pike in Pennsylvania, Was Opened to Traffic on Armistice Day as a World War Memorial.

Houses Sold on Interesting Terms to Employees

South Philadelphia Housing Project of the Westinghouse Company Provides Homes at Cost for Permanent Employees

By ALLEN P. CHILD

THE South Philadelphia Housing Project is an interesting example of what may be done by manufacturing concerns to initiate permanence of employment through means of affording employees the opportunity to own their houses. During the war the Emergency Fleet Corporation built 200 houses in South Philadelphia on the property of the Westinghouse Company. Since then twenty-five more houses have been built.

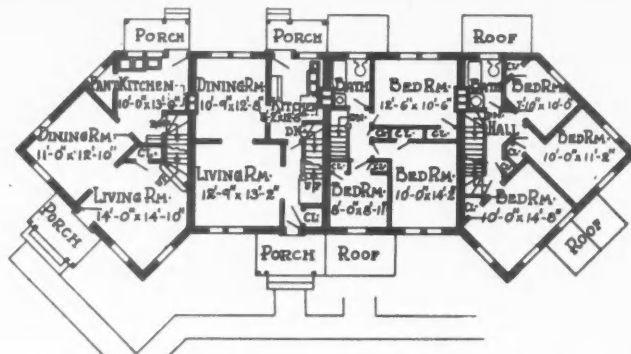
insurance are deducted and the balance is applied to the reduction of the principal. If the employee remains with the organization for five years and maintains his contract he is credited with the 10 per cent added to the cost price plus all the interest paid on the 10 per cent. After a period of five years the employee secures the house at cost.

Property enough to care for the erection of from 500 to 600 dwellings is controlled by the concern and a program



Over 200 Houses, Like Those Shown Above, Have Been Built on the South Philadelphia Property of the Westinghouse Company and Are Being Sold to the Company's Employees on a Special Payment Plan Embodying Features Which Encourage Permanence of Employment.

Until recently the houses had all been rented to employees of the company, but when the title to all of them was acquired by the Westinghouse organization they were placed on the market for sale to employees under a contract plan. The sales prices are placed at 10 per cent above cost. A minimum of 10 per cent of the sales price is charged as the initial payment and monthly payments of 1 per cent of the cost price are required. Out of the monthly payments interest, taxes and



This Floor Plan Shows a Typical Four House Unit in the Westinghouse Project, Which Combines Low Cost of Construction With Ample Space, Comfort and Pleasing Appearance.

is anticipated that will develop the entire tract.

The houses in this project are small and compactly built in units of two or more. The floor plan, shown on this page, is an example of a four-house unit such as is seen in one of the photographs. This style of construction permits building at a minimum cost, and at the same time, with due regard for appearance, complete utilization of space and convenience of the inside arrangement. Brick, wood and

stucco construction have been used, affording a pleasing variety in external appearance.

Streets and sidewalks throughout the section are well paved and terraced lawns, trees and shrubbery have been planted so that the project has quickly developed into a most attractive home neighborhood. Because these homes and the liberal purchase plan have already proved so popular among the employees for whom they were developed the company is going ahead with the plans for extending the project as rapidly as the demand for homes justifies it.



City Planning to Feature Architectural Exposition

THE largest and most comprehensive city planning exhibit ever gotten together was shown at the Architecture and Applied Arts Exposition in New York City in April.

The American Institute of Architects, the National Conference on City Planning and the Regional Plan of New York and Its Environs brought to New York one of the greatest exhibitions of proposed plans for city and country ever seen.

Maps of every description covering general studies, population studies, highways, transportation by rail, motor vehicle traffic, parks and recreation facilities, sanitation, zoning, land values and miscellaneous maps and diagrams all proposing improvements were exhibited.

American cities such as St. Louis and Chicago, which have partially undergone the city planning knife, furnished exhibits.

Foreign countries were represented. France, England, Mexico, South America and Canada offered maps showing



One of the Streets in the Westinghouse South Philadelphia Housing Project for Employees of the Company. It is now planned to extend this project over a tract of land large enough to accommodate 500 to 600 dwellings.

the before and after effects of principal sections that have been changed. The city planning project undertaken by Rheims, France, was extensively displayed. The whole Ruhr region was exhibited in huge maps. Manchester, England, was displayed. An elaborate system of federal highways for Mexico was shown. Buenos Aires and Rio de Janeiro, which have undergone some of the most successful city planning on the North American continent, had an exhibit.

The committee created by the Russell Sage Foundation, known as the Regional Plan of New York and Its Environs, prepared an extensive exhibition. Among drawings which were prepared for the exhibition were some extensive proposals for New York based on the suggestions of Harvey Wiley Corbett, president of the Architectural League. Three distinct levels embody the features of Mr. Corbett's plan. Elevated sidewalks running above and parallel to the street for the exclusive use of pedestrian traffic, with the ground level for motor vehicle traffic, and the present subway system for wheel traffic, all of which it is proposed to be put underground, were shown in huge drawings recently made by Hugh Ferriss.

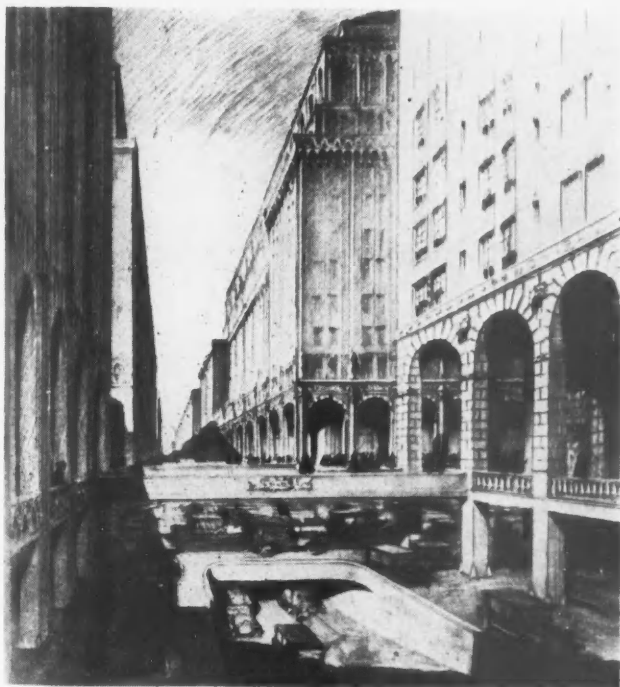
At the Regional Plan Committee recently the opinion was expressed that the people of metropolitan cities will decentralize within the next thirty-five years. Taking New York as an example, it is predicted that 1960 will see a population of 18,000,000 within a 50-mile radius of the City Hall. This fifty-mile radius would extend as far north as Bear Mountain, south to Asbury Park, and west to Lake Hopatcong.

Believing that social conditions of the twentieth century will not allow the commercial and financial sections to decentralize but will call for even greater concentration, Mr. Corbett's plans for New York are worked out to afford greater traffic than at present, and call for a city of imposing zoned structures of uniform height to cornice line of any street and pouring their enormous populations into new arteries of traffic.



French Architect to Instruct

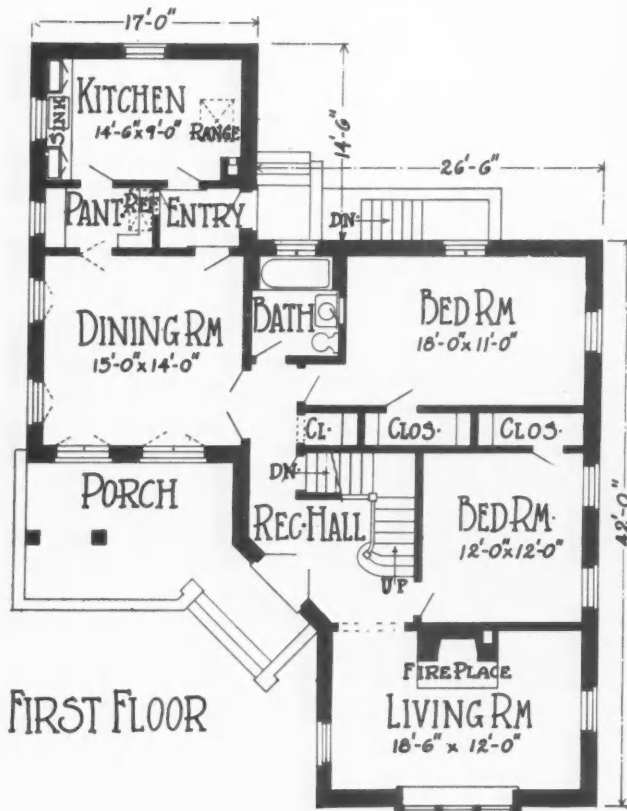
PROFESSOR CAMILLE E. GRAPIN, the distinguished French architect who is now a member of the faculty at the Carnegie Institute of Technology, has been engaged to teach architectural design at the coming summer session of the Pittsburgh institution. Although other members of the summer staff have also been selected from the regular staff employed throughout the college year, this year will be the first that Professor Grapin has been persuaded to remain to assist the summer students.



Here Is One of the Many Sketches Which Were Shown at the Exposition of Architecture and Allied Arts. It shows a triple deck system for city streets suggested by Harvey W. Corbett, President of the Architectural League of New York, and was one of the exhibits of the regional plan of New York and its environs. Under this plan pedestrian traffic would be confined to elevated sidewalks, vehicle traffic to the street level and wheel or subway traffic underground.

A Southern Home of Character

M. E. BOYER, Jr., Architect



An Attractive, Shady Nook in Which to Enjoy the Fine Air of the Sunny South Is Seen in This Corner of the Porch with Its Friendly Vine Climbing Over the Railing.

The Floor Plan Displays Rooms Unusually Well Lighted by Windows and Well Grouped to Contribute to the Comfort and Convenience of Those Who Enjoy the Privilege of This Home.



Simple in Line and Without Elaborate Decoration, This Residence of Mr. Nesbit Heath, of Charlotte, N. C., Possesses a Character Which Is a Real Tribute to the Skill of the Architect, M. E. Boyer, Jr., of the Same City. On the opposite page a closer view shows in more detail just how this character is attained.



This Closer View of the Entrance to the Nesbit Heath Residence Shows in More Detail the Manner of Developing This Doorway Angle with the Inviting and Semi-Secluded Porch Beside It. Brick terrace steps and sills, the lantern light above the door, a trellis and well placed plantings of shrubbery are the only ornamental features, but they combine to form an excellent artistic unit while the fountain breaks the lawn and adds its bit to the picture. The French doors from the dining room make possible access to the porch from the house without using the regular entrance. The entrance door itself is worthy of attention, as well as the casement windows, all of which display careful attention to harmony of design.

Effective Use of Color

Attractive Store Interiors on Pacific Coast Have Floors of Color and Charm

THE seemingly careless yet knowing fashion in which the western builder plays with color is the secret of the great charm of Pacific Coast architecture.

All the glories of sun and sky, of wind-swept hillsides and fragrant valleys, the lost romance and color of the Spanish conquistadores smile back from the buildings of the Pacific Coast today.

This tendency towards the free use of color is not confined to the Hollywood bungalow or the stately homes of Beverly Hills. Walk down the business street of any far western city, and you will find striking combinations of color which an eastern architect would never dare. Perhaps because the cities are of comparatively recent growth, western store architecture has made rapid strides. Especially does the up-to-date merchant devote care and thought to the planning of attractive interiors.

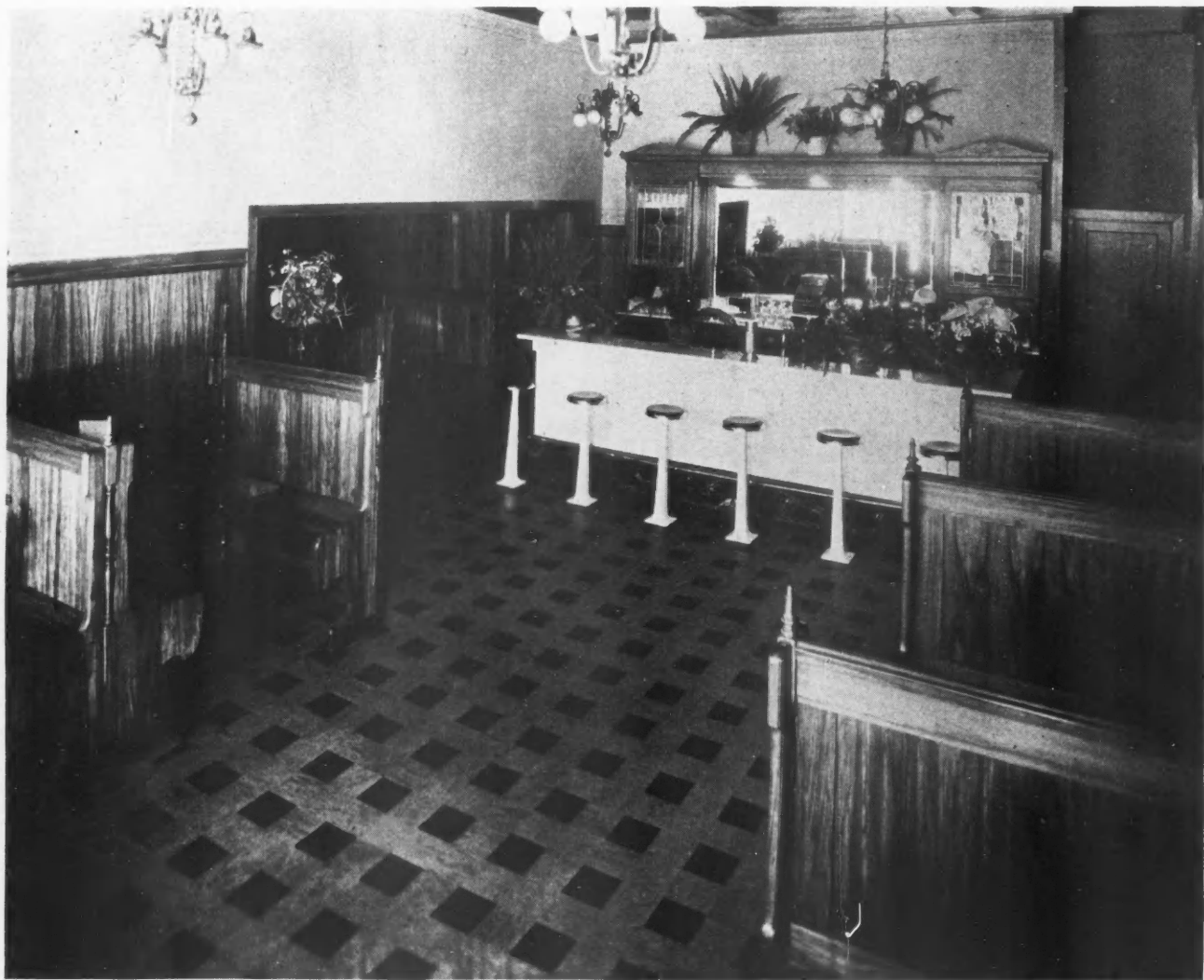
Colorful glazed tiles or many-hued stuccoes blend with California redwood and fancy trim. Even the floor plays an important part in the interior of a well planned California structure. Architects today are replacing the popular and colorful old tiles, harsh and unyielding to the foot, with comfortable, comparatively inexpensive linoleum

floors. They are not content, however, with the dull grays and browns of the typical eastern "business floor." Instead they achieve artistic effects with bright tile and patterned floors, sometimes adding a striking border.

Of course the linoleum contractors on the Coast, as a rule an up and coming lot, are in a great measure responsible for this condition. They carry the distinctive and unusual marble and tile patterns in linoleum which have been developed within recent years and are equipped to lay permanent linoleum floors.

A good example of structural beauty is the Olin S. Grove Phonograph Shop, Oakland, Cal. The lovely arched doorways and galleries, the clever iron balcony, the deep blue and cream of the marble tile linoleum floor, the dignified ornamentation, and the classic simplicity of the central fountain—it might well be a courtyard of old Granada.

Even the grocery stores on the Coast are not the commonplace "supply depots" of the eastern cities but have an individuality all their own. The well lighted store owned by A. J. Mathieu, in Los Angeles, owes as much of its clean, sparkling look to the black-bordered floor of gray and black tile linoleum as to the gray enameled



California Redwood Trim on a Handsome Floor of Black Spotted Gray, Red, and Yellow Marble Tile Linoleum in the Simpson Sandwich Shop, of San Francisco.



Wilson's Confectaurant, of San Francisco, Outlines the Quaint Dutch Tile Linoleum Floor with Black Borders and Aisle Runners to Enhance the Pullman Effect Carried Out in the High-Backed Seats and Decorated Panels in the Arched Ceiling.



Something New in Store Interiors—an Old Roman Court-Yard with Arched Doorways, Half Concealed Galleries, Clever Projecting Balcony, and Splashing Fountain in the Olin S. Grove Phonograph Shop, of Oakland, Calif. The black and white marble floor which fits so well into the picture is really marble inlaid linoleum.



The Jacobean Architecture and Furniture of Baur's Confectionery in Denver, Colo., is Very Well Set Off by the Linoleum Floor of Black and White Marble Tile in 12-Inch Blocks. Notice the well placed mirrors and wall panels.

furniture and built-in display cabinets.

As might be expected, the tearooms and restaurants reveal even more of a tendency towards color in floors and fixtures. The Simpson Sandwich Shop, in San Francisco, with its polished red-wood panels and cozy booths, has a handsome floor of marble tile linoleum in gray and black blocks, with a whimsical dash of red and yellow. In Wilson's Confectaurant, of the same city, the black and gray Dutch tile linoleum floor carries out the Pullman effect of the high-backed seats and arched ceiling.

East as far as Denver, Colo., is Baur's Confectionery, with a black and white marble tile linoleum floor as a background for distinctly Jacobean furnishing and treatment.

Care in the selection of floors and judicious use of color has given each of these otherwise commonplace business interiors real originality. In remodeling an old store or building a new one, a permanent floor of one of the more unusual types of linoleum may often be used not only to add to the beauty of the room but also because it is easy to clean, comfortable to walk and stand upon, and never requires expensive refinishing.



The Preservation of Stone

WE are gradually becoming a race of town-dwellers, and town-dwellers are at the present time coal-burners and manufacturers of sulphuric acid. How long we shall continue to burn coal containing sulphur compounds and whether from the point of view of the life of stone there is any

great advantage in burning gas instead of coal, we do not know; but we are faced with the fairly modern problem that in practically all towns and cities the air contains so much sulphuric acid that both limestones and sandstones decay very rapidly. Prof. Laurie finds an additional source of danger in the mortar or cement used to bind stonework together. Most building stones are porous and the sulphuric acid in the air attacks the mortar and cement and forms soluble compounds which permeate the stone, crystalize and then disintegrate the stone. The Goldsmiths Hall in the city of London, a building of which we have very agreeable recollections, is washed two or three times a year and the stone of which it is built appears to resist decay better than similar unwashed stone. When we have given up burning coal and take to burning carbon prepared from air, or hydrogen prepared from the ocean, we shall be free from the sulphuric acid problem and no doubt faced by others as difficult.—From "Chemistry and Industry," London, March 6, 1925.



Built-in Gray Enamel Display Fixtures and a Gray Tile Linoleum Floor with Black Interliners and Border Give a Distinctive Air to this Pacific Coast Grocery, Owned by A.J. Mathieu, of Los Angeles.



Builders in the Bible

By C. BRYANT SCHAEFER

THE Scriptures show an acquaintance with crafts and engineering operations that would enable modern builders to solve many problems if they would consider its pages from their own experience. As it is, cloistered scholars have formed views very far from the truth, which they have endeavored to maintain with jealousy of layman's criticism.

A few verses in the Bible often cover a great period of time or refer to customs which, for the sake of brevity, are not fully explained. A reader, of similar experiences, certainly has the advantage of understanding.

Reference to what most any builder learns about ancient art is most wholly ignored by clerical authorities.

Expertness in calculation, engineering feats, skill in stone work and carpentry, and beauty of decorations and lifelike illustrations 3,000 years ago could not be improved upon today under the same circumstances. The conclusion is obvious that they were equally skilled in engineering the development of *live beings*, an art in which we stand in need of considerable prompting. We have indeed few benefits to offer the workman above the zero mark of good health.

The language of Bible translators should not be allowed to confuse its practical representations.

In Nehemiah's time booths were introduced in which to live, with commandments they necessitated, all very much as we have introduced the modern flat apartments and attendant ordinances.

An idea as to initiative may be formed where it relates how Zechariah discovers carpenters and a man with a line coming to measure the length and breadth of Jerusalem, and prosperity was declared for the future with "boys and girls playing in the streets."

A chapter in Leviticus has directions for renovating houses and, if still contaminated, for tearing them down—stones, timber and mortar.

Jehoash started financing for rebuilding his temple by a nickel-in-the-slot machine, all details of which are given.

Practical Problems in Construction

The manner in which walls of imperfect workmanship behave and break away; breaches and plaster and other details referred to prove the structural experiences of the prophets, superintending.

Stones with "seven eyes" refer to a standard device for representing equanimity, while stones that "cry out," of course, do so by their instructive details, the nature of which is referred to by "stones from which to raise up children," not *out* of that material as the usual interpreters have it. Neither is there any reason to believe that a tap from a gesture wand by Moses brought water gushing from a stone when implements and unlimited labor abounded for deep well drilling.

A person would hardly feel unusual in that land, so long ago, if supplied with their pocket shaving outfit and other articles for dressing the hair symbolically. Even the flapper girls are

there, drawing out a most amusing description by Isaiah: craning their necks and walking mincingly, with tinkling feet, glasses, crimping pins, hoods and veils. Adornment was only allowed as representing personal attributes which they heedlessly confused.

With reference to laying to line and plummet, foundations and corner stones, passages could certainly be made through water dry shod and through flames without burning, feats startlingly presented, as might be expected of writers of a nation possessing an inherent advertising instinct. River headwaters were opened and pools, wells, springs and fountains in the dry places—work that kept multitudes busy: pumping water, irrigating and making the land fruitful. It is only the modern slacker who complains that the Lord did it by direct intervention in those days.

There was continual contention among craftsmen who mixed up the decorative arts unintelligently, making a mess of their lessons, "graven images of vanity that profit nothing," as Isaiah denounces them. "The carpenter stretcheth his rule, marketh with a line, fitteth with planes and compass" and "worshipeth his work, yet hath not known nor understood."

Many Symbolic Allusions Found

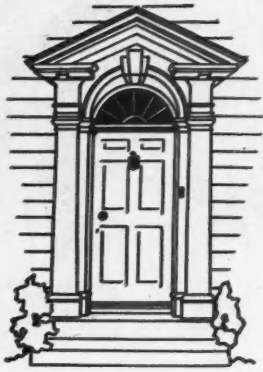
When it comes to later temple building iron workers and much detail are described, but a mechanic can see that it is not intended practically. Much is symbolical. The same may be said of the decorative pictures of construction. With skilled but ignorant labor on their hands the prophets resorted to familiar details of construction with which to represent, by comparison, the good conduct that was necessary. Columns for moral support, canopies for protection—an earnestness had to be instilled to secure observance of health requirements, cooking and agreements or contracts and they became purifications, altars and covenants.

The migration or exodus was not a general rush of all kinds of people, but a colonizing organization demonstrating the mental powers of the prophets. Foresight, irrigation, cities of houses and walls to keep out predatory onslaught could only have been managed by reason of long training and great skill. The indolent, envious and unmanageable were not only nuisances but became menaces that also had to be dealt with. The demands of the improvident and of desperate hordes lead to wars of preservation.

Ancient statuettes show the scribes with parchment and pencil, translating the decorative instructions into written terms. Expert in their own art but with small comprehension for explaining technically great structural accomplishments, they described such matters to superhuman agency direct. Hence they refer to as miraculous that which was under the circumstances no miracle at all. At the same time small mention is made of what we would consider most miraculous of all.

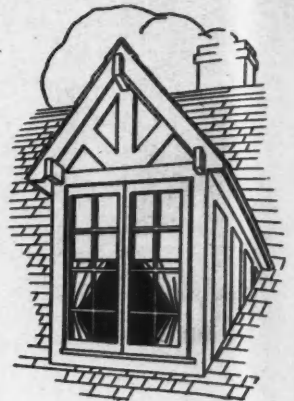
The prophets certainly excelled all modern leaders in culti-

(Continued to page 102.)



DETAILS of HOME BUILDING

by V. L. SHERMAN
Lewis Institute of Technology



Detail 2—The Outer Doorway

THE mills, I believe, have done and are doing their level best to produce high grade work. The job is not an easy one. Forethought, research and endless patience are the price of the correct production of house parts, and the mills have accomplished much along these lines. But the mill owner cannot pursue the house to heaven or the other place and mill products are as likely to be abused in their use as any other products.

The small house of today is very often a mill product. To this there is not the slightest objection except for the fact that mill products are sometimes abused in their use. From what one sees it is easy to surmise that at least a few appropriate pieces are lost in the shuffle between various houses. In the rush the builder is to be congratulated that there are so few mishaps.

In the old days—that is, in the early days of the last century—building and architecture were largely one job. The experience in one line bolstered the experience in the other. Caution and boldness went along together. To illustrate the point refer to Figs. 1 and 2. The upper one represents a Grecian moulding of strong projection with the curve in hyperbolic form. This neat outline of section procures a blending shade when we assume the sun's rays to be about 45 degrees. Now, supposing the angle to be about 45 degrees, and a shorter projection required, we must change the curve from hyperbolic to parabolic so as to get an equal softness of shadow contrast under the moulding. The letter "a" in Fig. 2 shows what would have been an hyperbola, and it is clear that such a curve would not produce the beauty of shadow of the lower curve.

Doorways make or break a house about as thoroughly as any particular part. They are to be studied with as much care as any other part. Some try to go by rule and some do not. For the old forms of formal doorways you will find plenty of rules, but the most logical one to my mind is to start with the proportion of 22 to 9, height and breadth, laying out the stiles as units of the breadth, and sticking to it. The doorway may be large or small, but it should not be unreasonable in its outline.

The entire doorway may be the feature of the house without any harm, or it may be very inconspicuous. There is a home in Knoxville, Tenn., with a plain plank door and raw beam lintel, but it is certainly a beauty. On the other hand, some architects can use such a doorway as is shown in Fig. 6, and on a small brick house, and get away with it in great style. That doorway belongs to a house in Sussex, England, and gives a combination with lights at the side. The whole is in white with the usual dark door. Large doorways will fit small houses when properly designed and placed.

Figs. 3 and 4 show the makeup of two types of Colonial doorways. Both are fairly light in form when compared to some of the modern approaches, although the

drawings give them a rather cumbersome appearance. They are in isometric with a scale alongside for measurement if desired. The only suggestion we make is that the height of the door be increased to 6 feet 10 inches or even 7 feet, if the width of 3 feet is retained. The resulting inequality on the inside will give chance for modest decoration that will not be out of place.

All of these doorways are more or less formal, those least with the window lights at the sides. But full dress does not always spoil the party, and a fair instance of this is the doorway in Fig. 5. At a guess we should say that at one time this was a very prim piece of work. It has all the earmarks of exact beauty without being precise. The semicircular pediment "gives it a vertical motif, while it retains its openness."

Possibly I am entirely wrong, but someone else had a different motive and cornered the doorway with a pergola. Again I may be entirely wrong according to rule, but when I looked at the photograph from which I made the sketch, and that was some time ago, the lightness of the form, pergola and all, coming from that combination of straight lines and impending arc, made me think that some are very fortunate with results.

There is one main feature in the doorway that is sometimes entirely overlooked by the builder. That is its environment, inside and outside. To illustrate the point I have very deliberately helped myself to part of a house. Figs. 7 and 8 show a little more than half of the original. The pedigreed doorway is there. The left hand is the working unit of the home and provides simple partitioning with an accommodating floor plan. The lighted stair-hall with the cross openings make a great combination for appearance as well as utility.

When studied there seems to be very little to that gable end except one door, three windows, and a flat porch roof. Beyond that there was either great capacity by the architect or remarkable luck. Considering the contrast thrown on the door by the row of shuttered windows at the right, eaves above them and shrubs below, and the long roof marked off by the heavy chimney, the probability of chance grows slight. That doorway was built for the house.

So, in building a doorway the question is: will it provide an entrance or a threshold? Is it to be a street doorway, or at the end of a path? Will it be seen as a feature of the house, or partly hidden in its surroundings?

Along with the artistry of doorway building comes another part, construction. What effect will shrinkage have? Is the house to be moist enough in air to prevent checking? If by any chance a Dutch door is used, can the youngsters swing on the lower gate?

And last, does the illusion of a splendid outer doorway vanish as you step inside the house?

"If I have failed the fault lies wholly at my door."

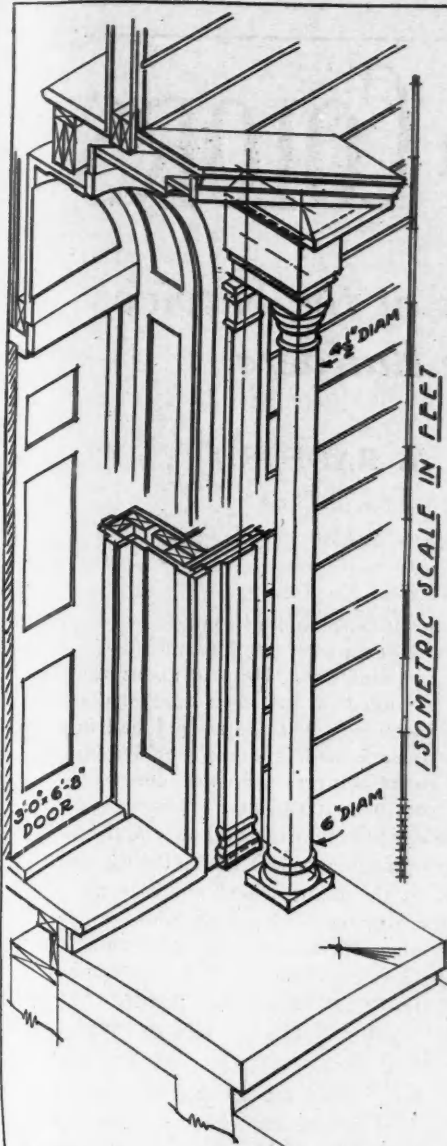


FIG. 3

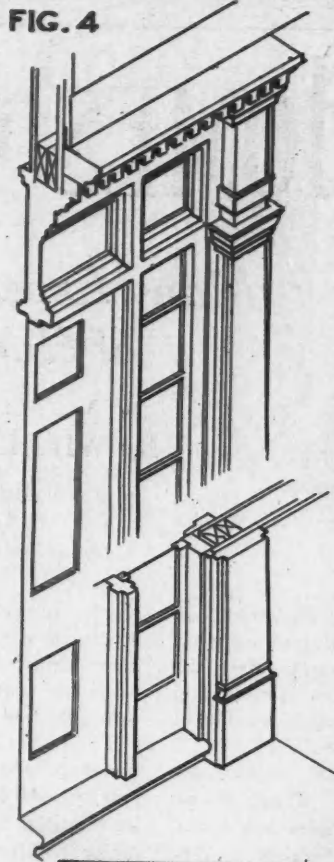


FIG. 4

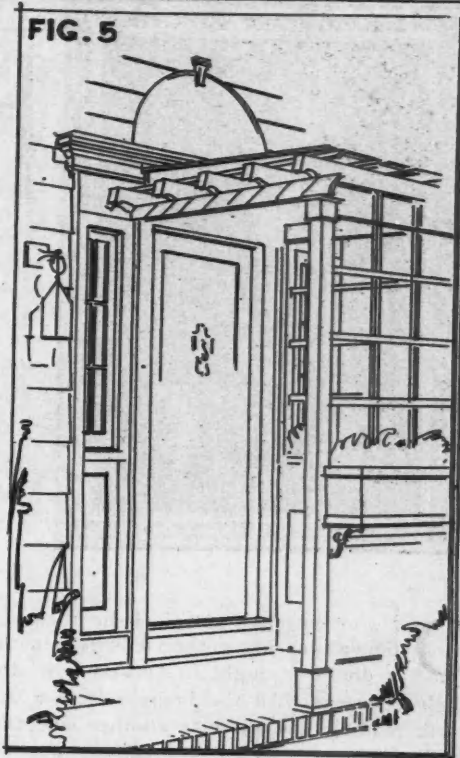


FIG. 5

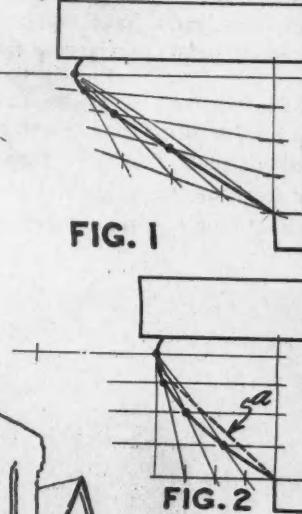


FIG. 1

FIG. 2



FIG. 6



FIG. 7

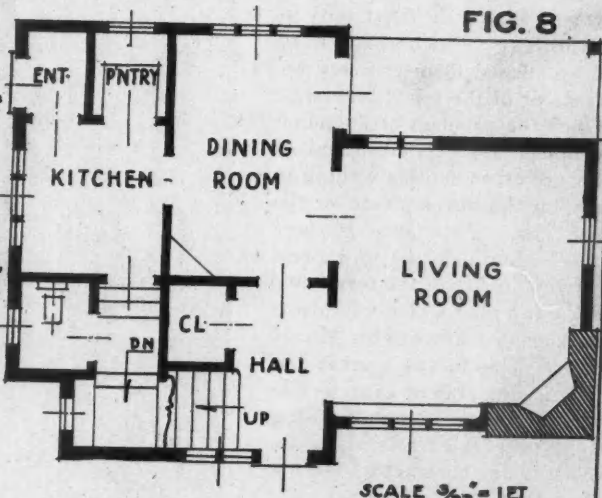


FIG. 8

SCALE 3/32" = 1'-0"

V.P. Thomas 4.6.25.



HOMES in COLORS

*Many Experts at the Service
of Home Builders*

By WILLIAM A. RADFORD

*President and Editor-in-Chief
of American Builder*

ON another page of this issue there is an article on doorways. The author tells us something about what a doorway ought to be and how it may affect the whole appearance of the house. It is a good article and worth reading, but there is another side to this matter of the doorway.

Did you ever happen to think about it that the doorway of a home is the entryway to happiness? There is no getting away from the fact that the surest happiness is found in the planning of the home and the life which centers around it. Every one of us is looking for happiness and sometimes we miss it just because it is so close at hand and so easy to attain.

It is easy to have a home these days, at least a whole lot easier than it was when every man had to be his own architect and contractor, and manufacture his own building materials. Today everything possible is being done to make it easy to acquire a comfortable and attractive home.

First of all the new house has to be financed. There are any number of organizations which specialize on the financing of home building. Look at the remarkable growth of the building and loan associations and there can be no question of the success with which these financing plans are being applied. Also the easy payment system is right now in the process of being extended and broadened to meet every requirement of the home builder.

Once the problem of financing the house has been disposed of there are other experts waiting to carry on the development of the home idea. Assistance is there for selecting a design to express the individuality of the owner and work out a plan which will incorporate every feature of his "dream home." This means a great deal for it is not always easy for the average person to put his ideas into words that will make the architect or contractor see the house that is in his mind.

But this is really no difficulty. There are always available sug-

gestive plans and beautifully colored views. An inspection of these will furnish examples to illustrate every want. How simple it is to point out, "Here is about the way I want the rooms arranged if you can just make a few changes; and this exterior is just the style I had in mind."

Then after the plans are made and the specification drawn up there are the manufacturers who are constantly busy turning out every sort of material and appliance which can be required for the construction of the house and equipping it for comfort and convenience. Manufacturing processes have reduced cost to the point where there is an infinite variety of choice for every size of pocket book.

Finally there are the contractors who, with their trained workmen, take the brick and stone, lumber, cement and roofing and rapidly put together a structure ready for those who in turn apply the plumbing, the electric fixtures, the paint and paper and all the specialties which are a part of the modern home. Even after the house itself is completed

there are other experts who are prepared to do their part toward making it more liveable with draperies and landscape architecture.

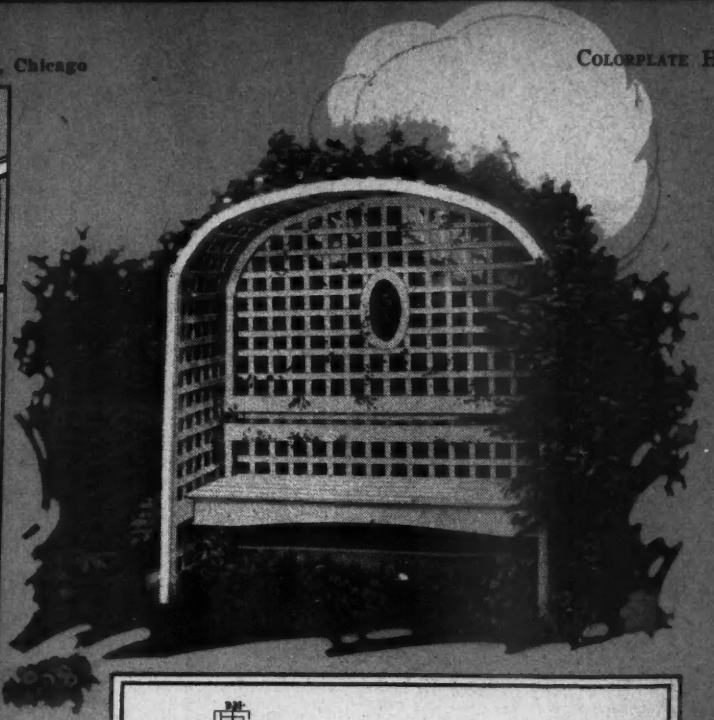
Yes, it is easy these days to open that doorway and step into happiness with a home of your own.

The Homes in Colors presented in the sixteen-page lithographed section that follows are full of encouragement and of suggestion for those who would build wisely yet not at too great a price. These designs have the charm of good architecture—even the smallest of them is truly a delightful little place; and other designs are presented for the needs of the larger family and the larger pocket book.

These home designs supplemented by the detailed descriptions and specifications of all needed building materials and equipment as contained in the AMERICAN BUILDER advertising pages constitute a home builders' service which is the best and most reliable we know of.

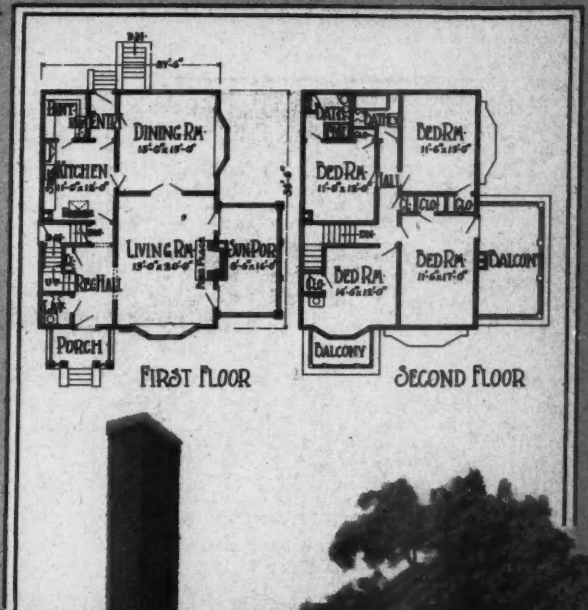


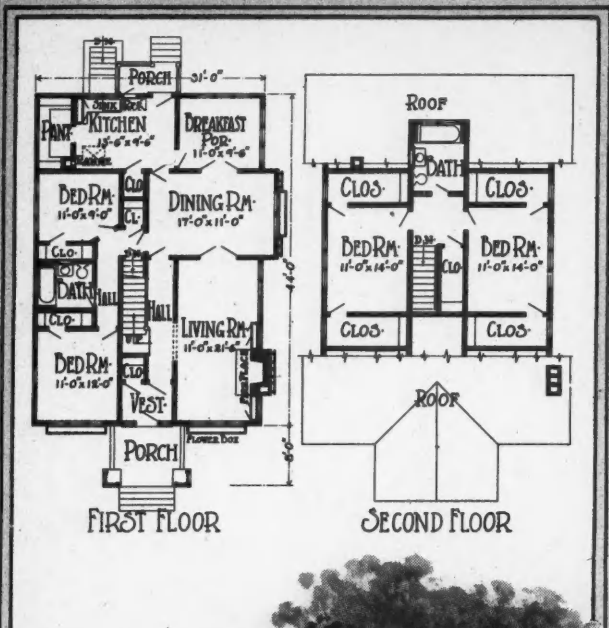
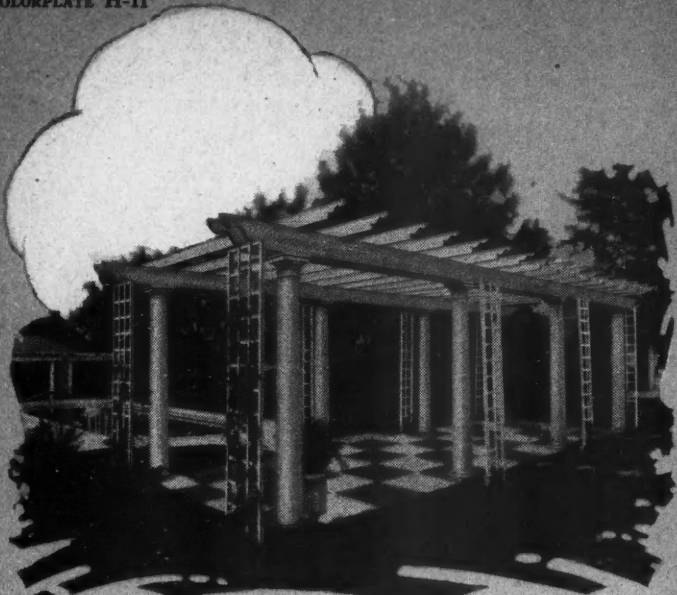
Home—the Door to Happiness.



The Homeland

A SQUARE type frame house of seven rooms with strong appeal. Size 27½ by 36½ feet. Color sketch above suggests sun porch interior.



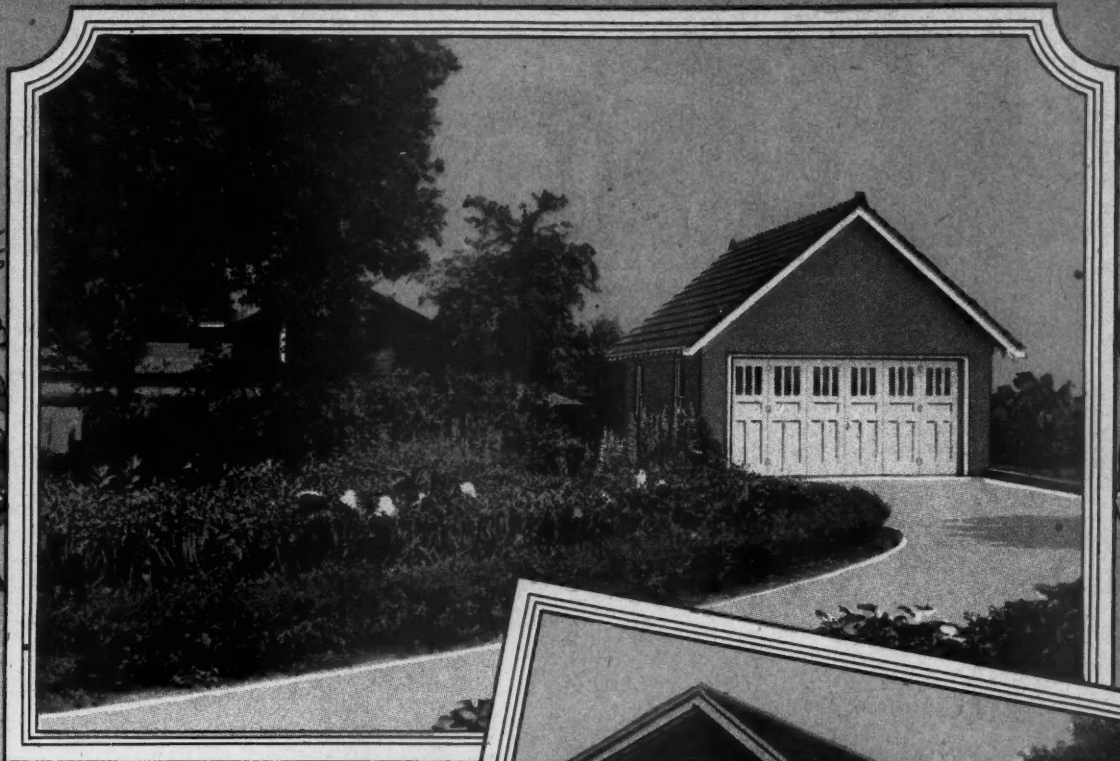


The Hawthorne

A SEVEN-ROOM story-and-a-half bungalow, 31 by 44 feet, with two baths and breakfast porch. Color sketch above showing kitchen cabinet.



Every Home Needs a Garage



Above

The Hayes Garage

Size 20 by 20 feet.



Below

The Hale Garage

Size 18 by 18 feet.

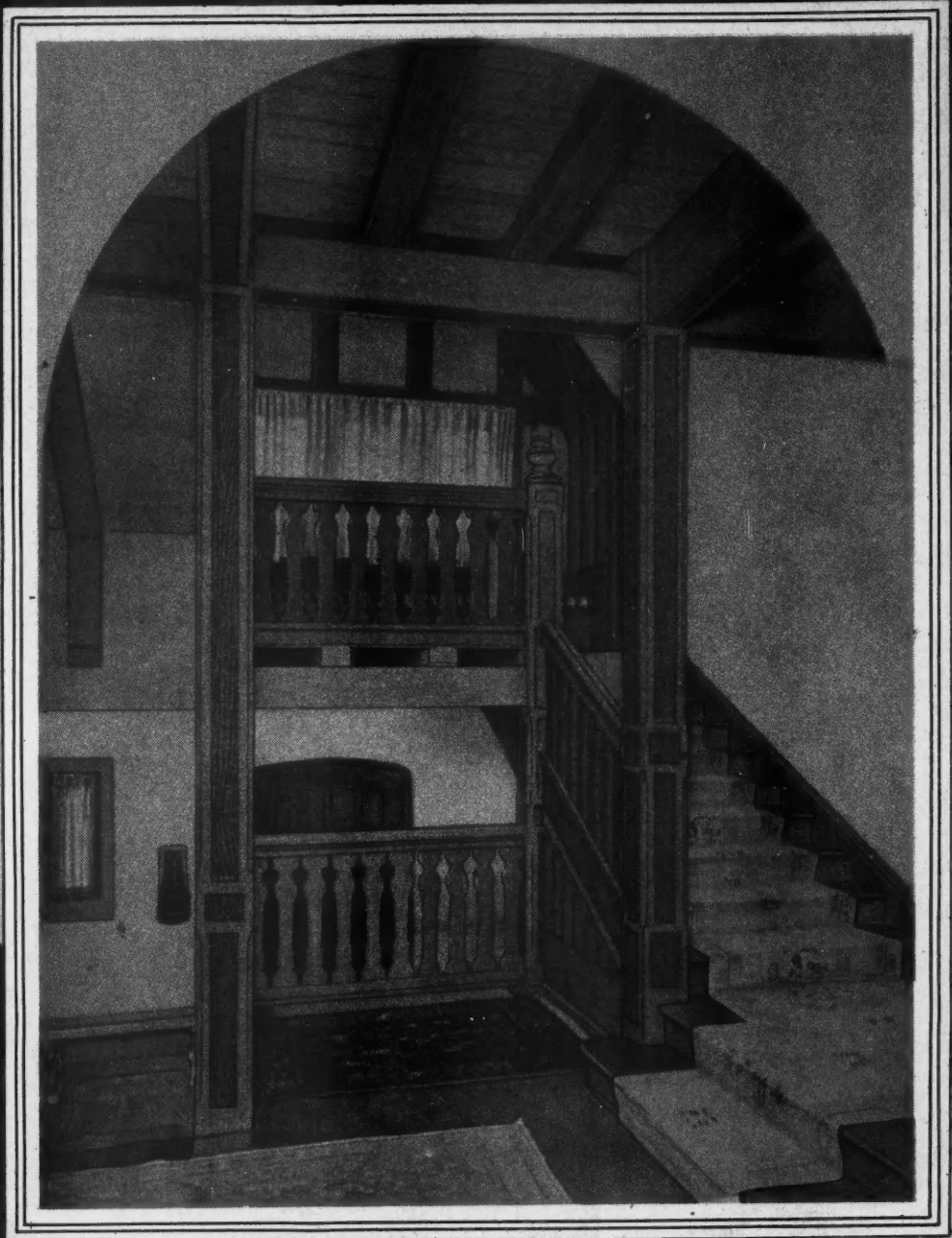


Above

The Hardy Garage

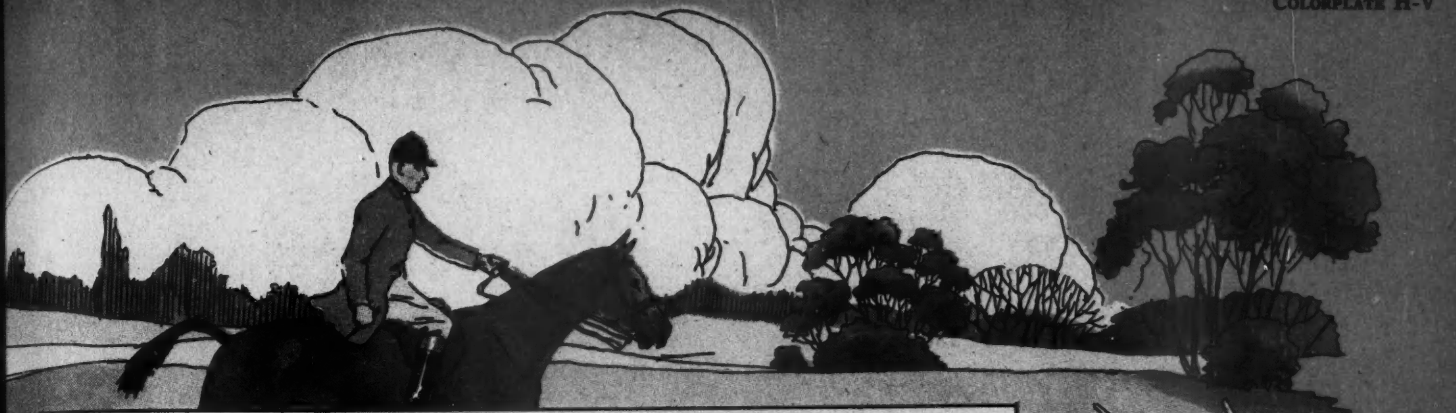
Size 12 by 18 feet.





A delightful treatment of beamed ceiling in modish stair hall.

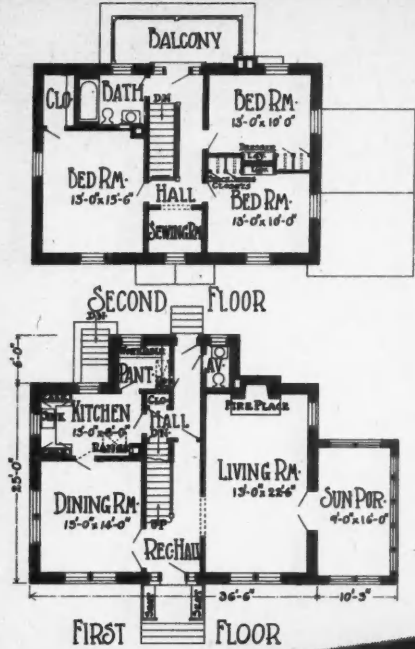
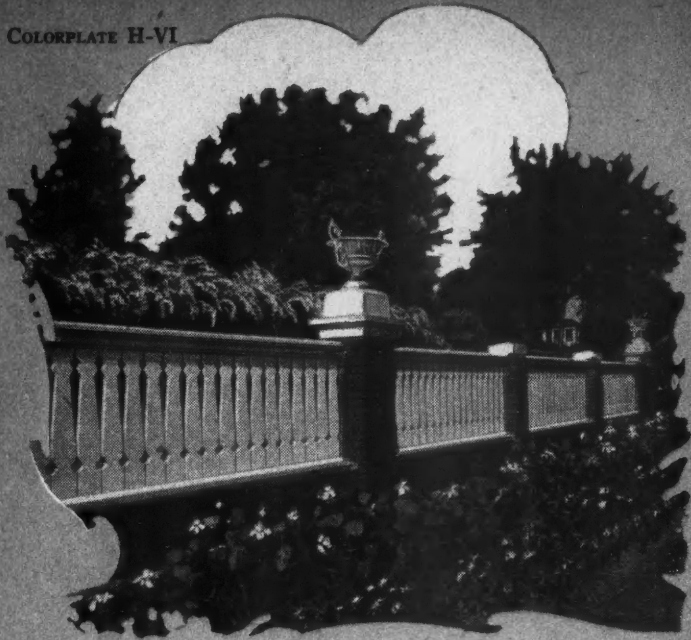




A living room corner featuring wood mantel, paneling and French doors.

Right. A distinctive stairway of Colonial design.





The Hudson

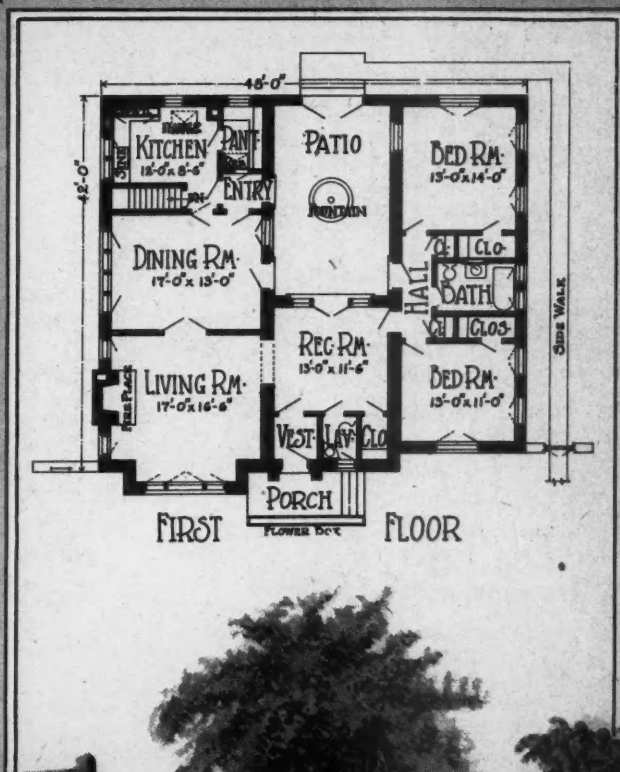
A COMFORTABLE suburban brick home of six rooms and sun porch. Size 25 by 36½ feet. Living room pictured by color sketch above.

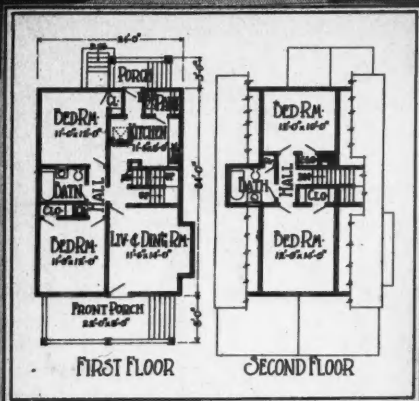




The Hesperia

A UNIQUE Spanish bungalow of six rooms and patio. Size 48 by 42 feet, of hollow tile on block construction. Attractive bedroom pictured in color sketch above.



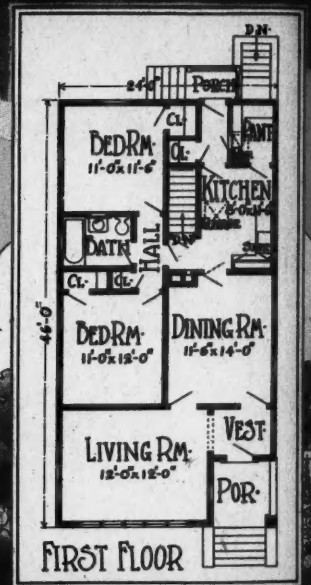


The Halifax

A six-room story-and-a-half Bungalow of exceptional design. Size 24 by 34 feet.

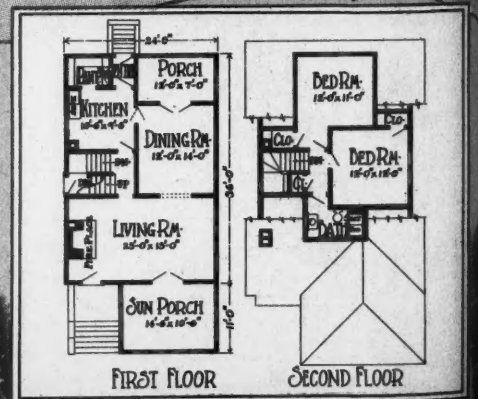
The Homewood

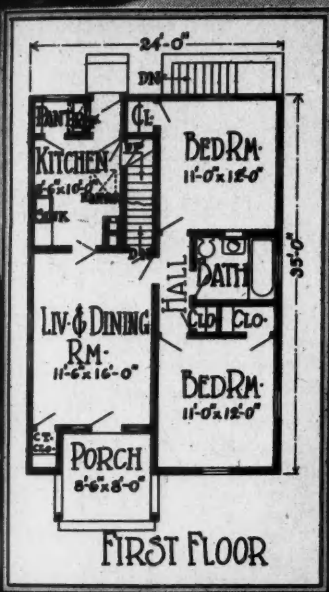
Bungalow of five rooms and bath. Size 24 by 46 feet.



The Hartley

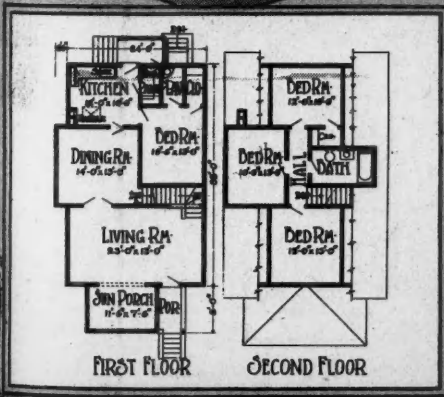
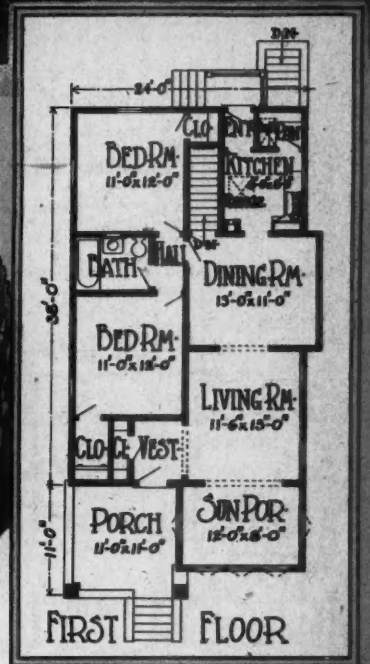
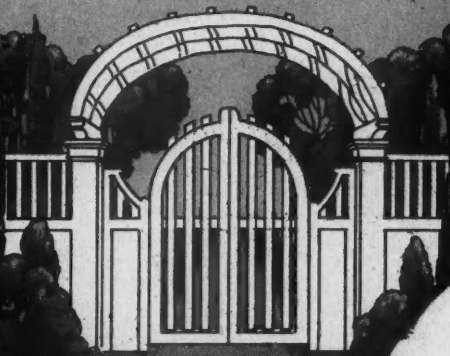
A story-and-a-half bungalow of five rooms and bath. Size 24 by 36 feet.





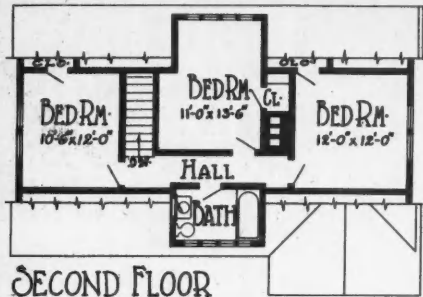
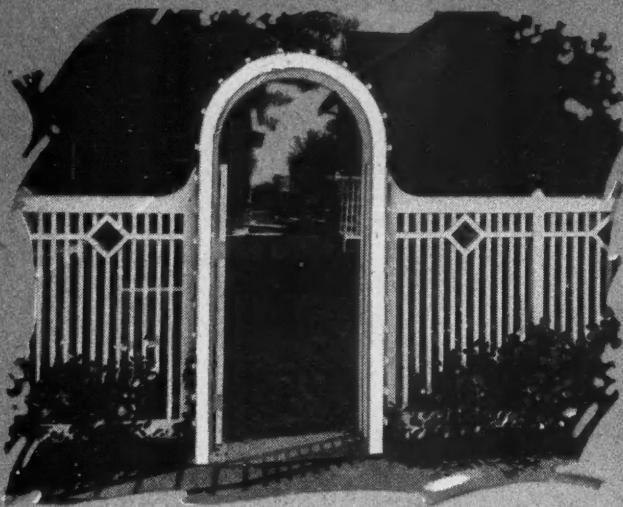
The Holliday
 Four rooms and bath.
 Size 24 by 35 feet.

The Hopewell
 Five rooms and bath.
 Featuring sun porch.
 Size 24 by 38 feet.

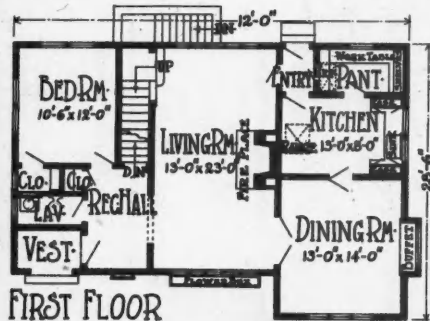


The Hinsdale
 Story-and-a-half bungalow of seven rooms and bath. Size 24 by 38 feet.





SECOND FLOOR

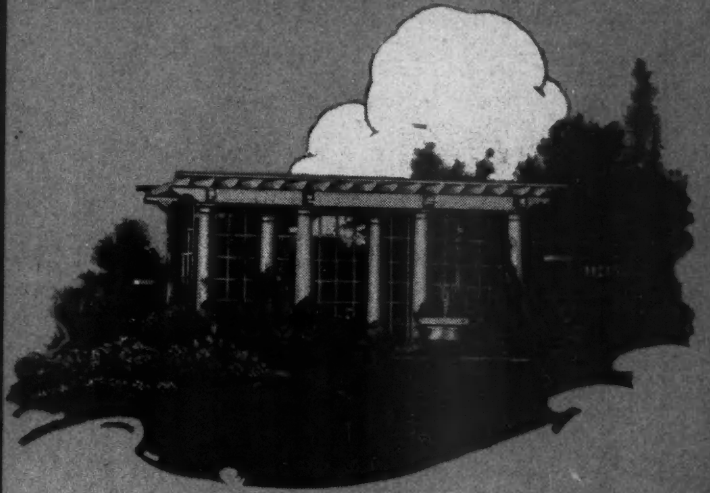


FIRST FLOOR

The Hollywood

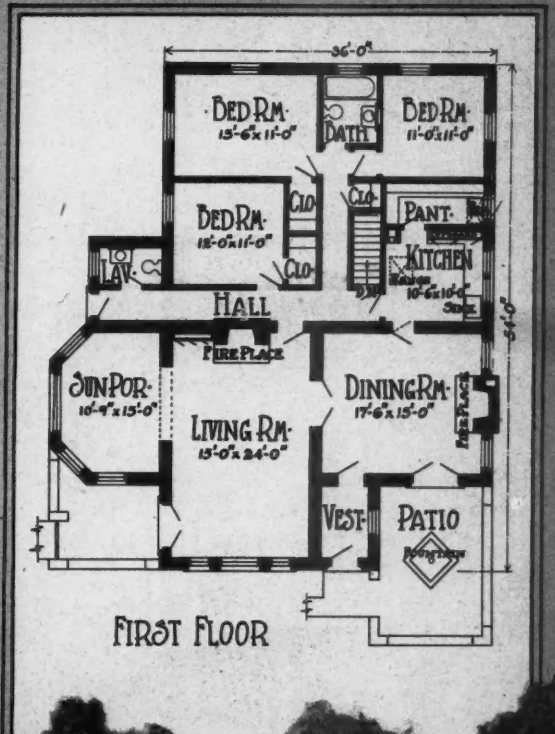
A SEMI-ENGLISH shingle house of six rooms, size 42 by 28½ feet. First floor bedroom adds convenience to this home. Color sketch above shows modern built-in buffet.

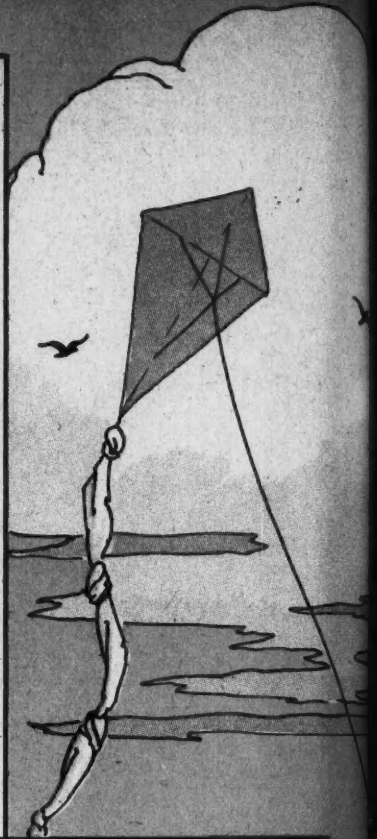




The Havana

A SIX-ROOM Spanish bungalow, size 36 by 54 feet with delightful solarium. Color sketch above featuring sunroom furniture.



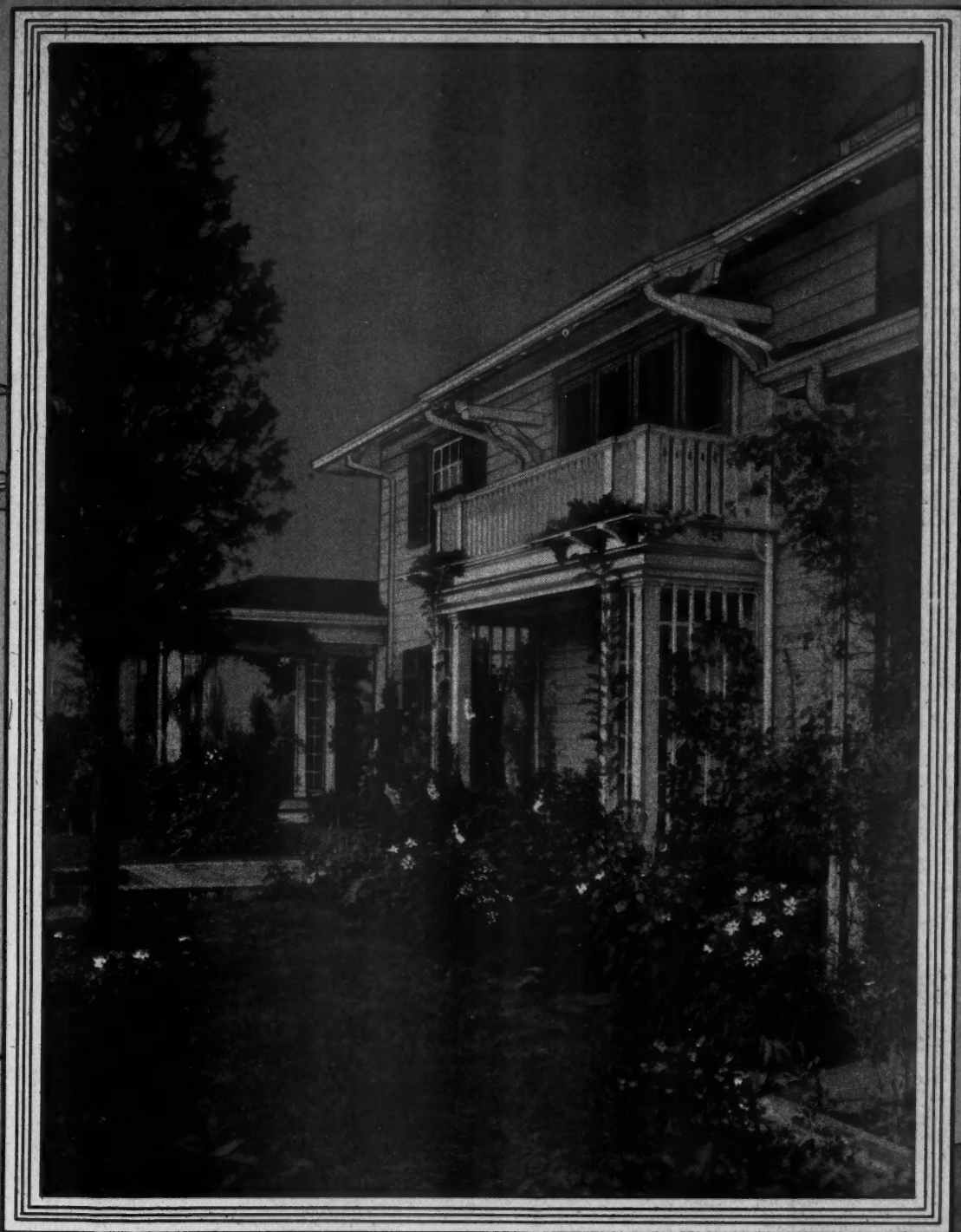


Above. Flower bordered garden walk showing attractive trellis.



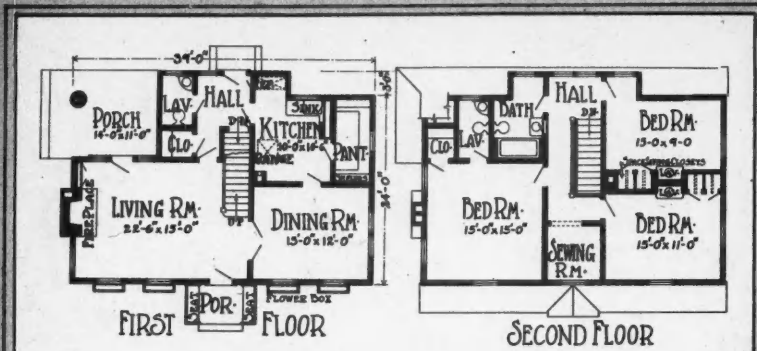
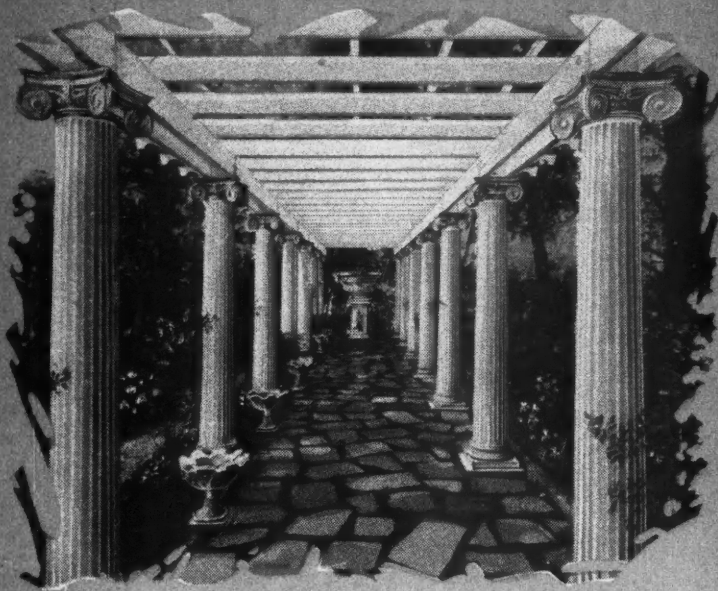
A garden nook with beautiful fountain.





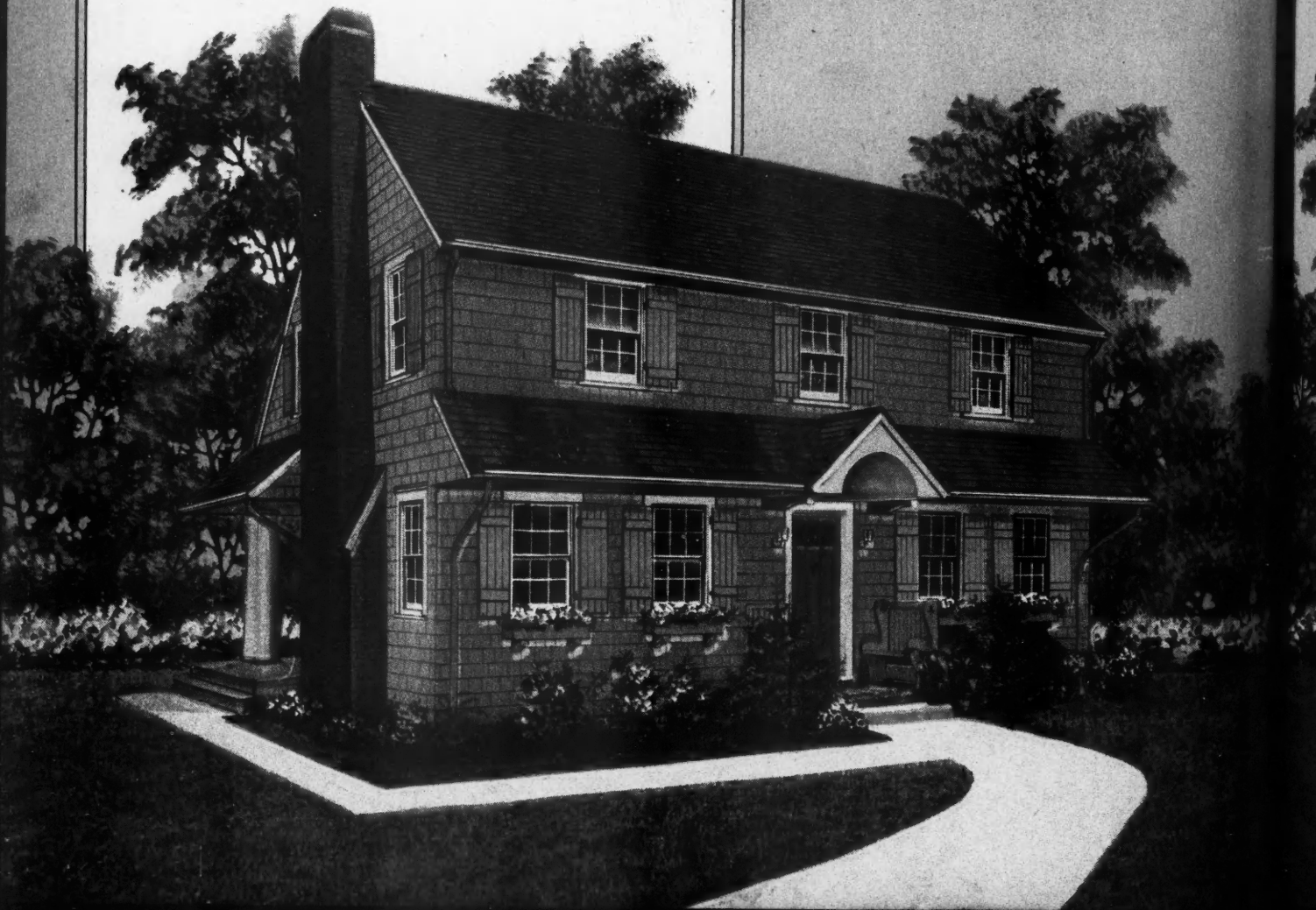
An unusually attractive setting picturing taste and refinement.





The Haverhill

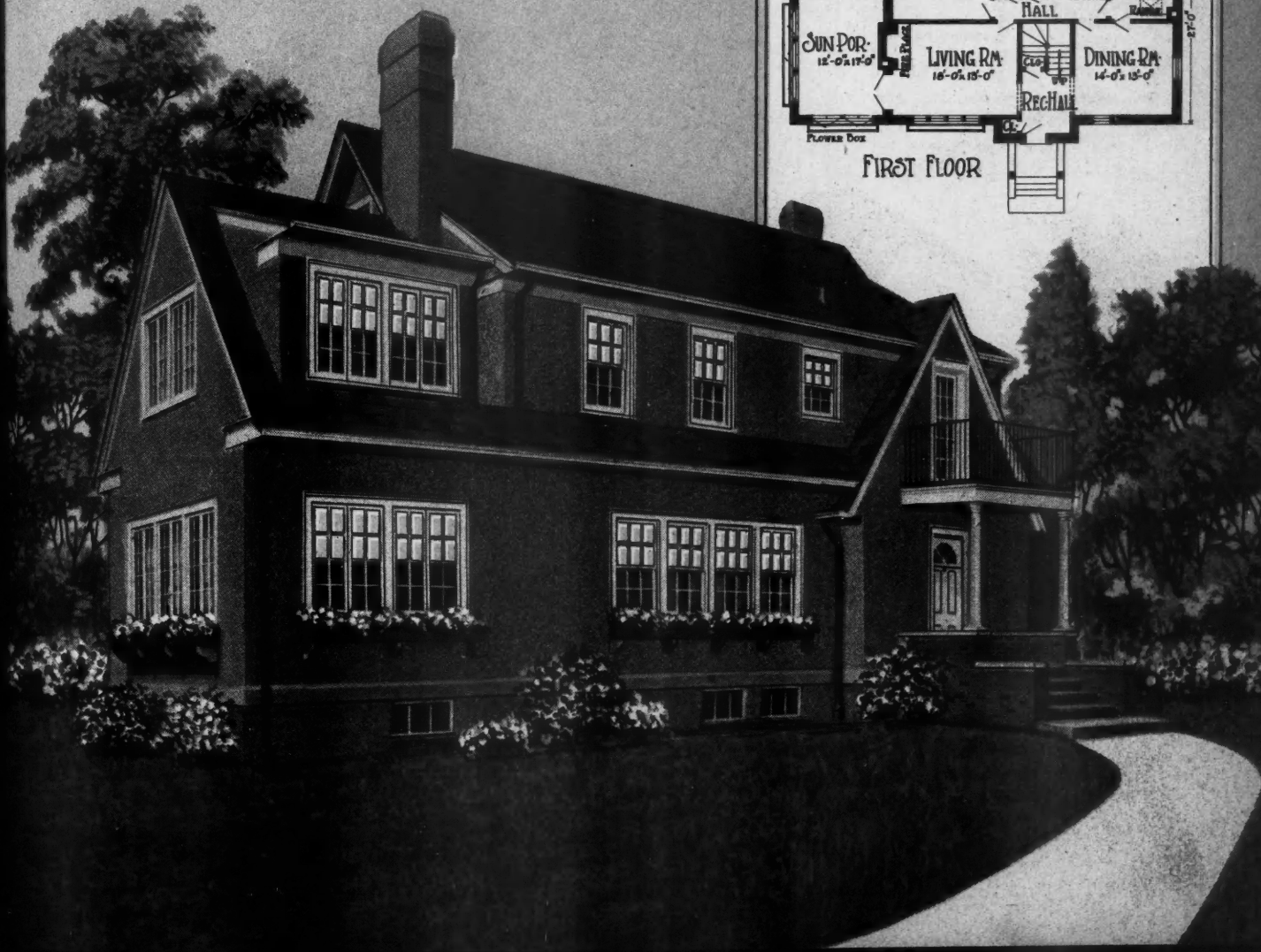
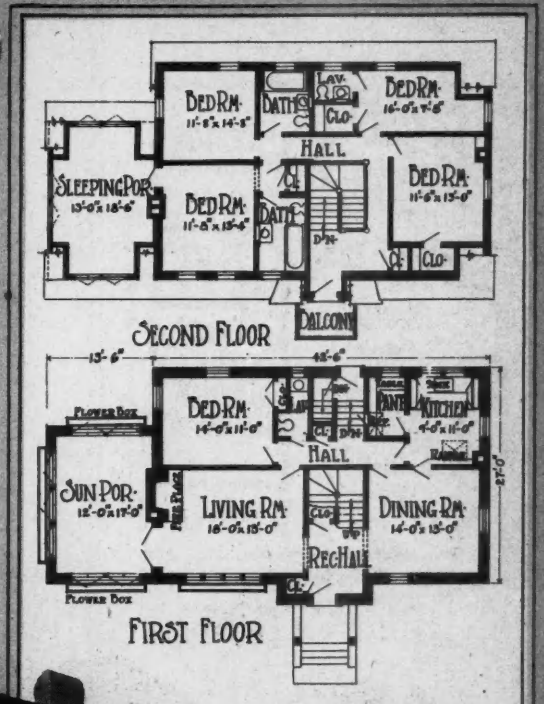
A SHINGLED Colonial home of six rooms and sewing room. Size 24 by 39 feet. Combined living room and library suggestion above.

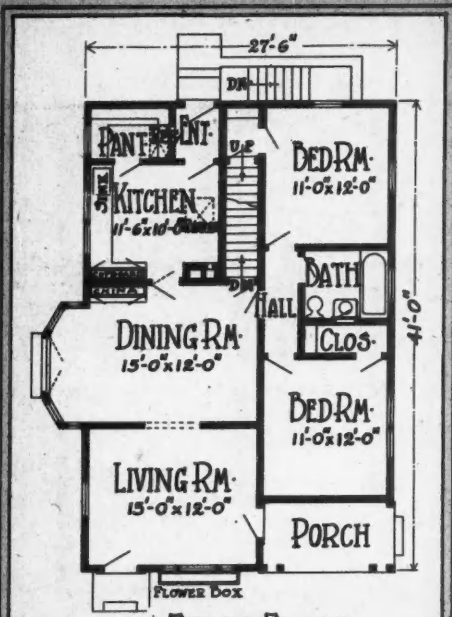
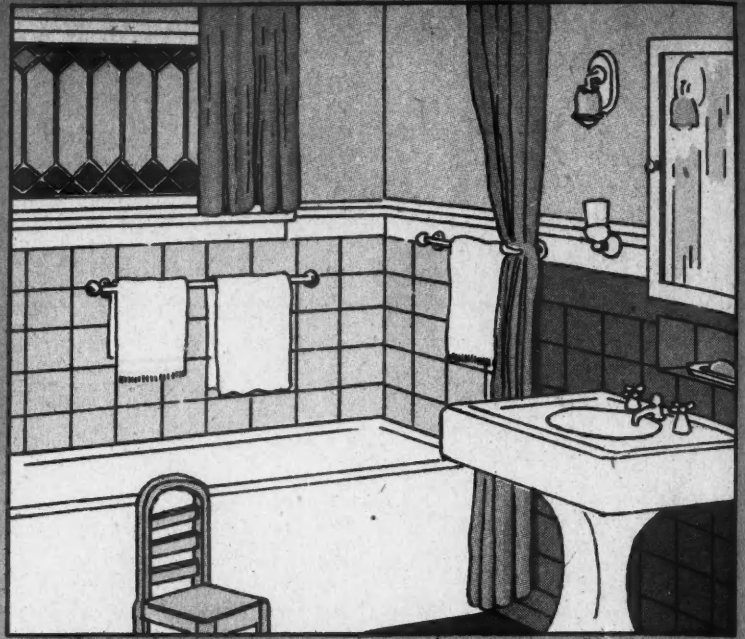
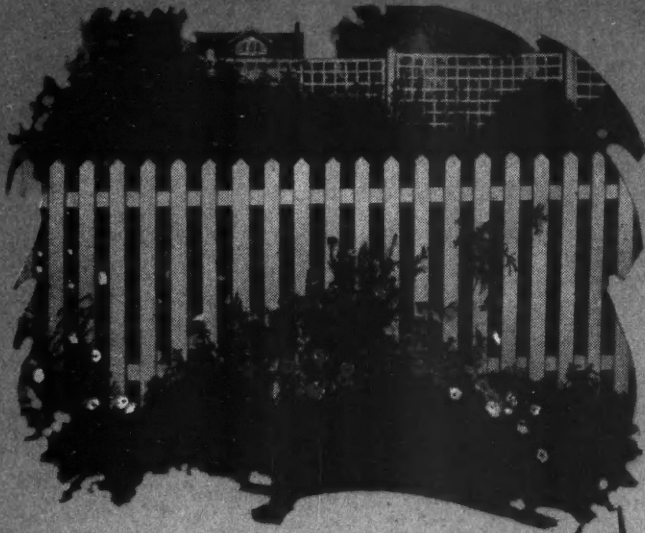




The Huntington

A DELIGHTFUL stucco or hollow tile home of eight rooms with sleeping porch and solarium. Size 27 by 42½ feet. Color sketch above suggests attractive bedroom furnishings.





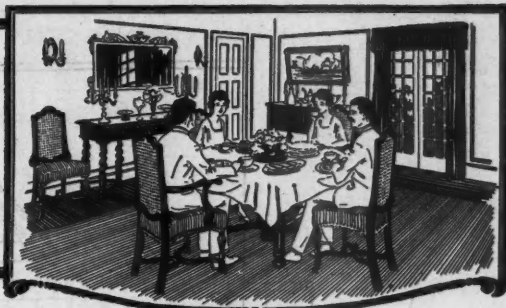
FIRST FLOOR

The Harmony

A FIVE-ROOM frame bungalow, size 27½ by 41 feet. This home has many practical as well as attractive features. Color sketch above showing modern fencing.



OUR FRONT COVER HOME



Shingles and Brick Combine to Form a Distinctive Six Room House with an Air of Solid Comfort

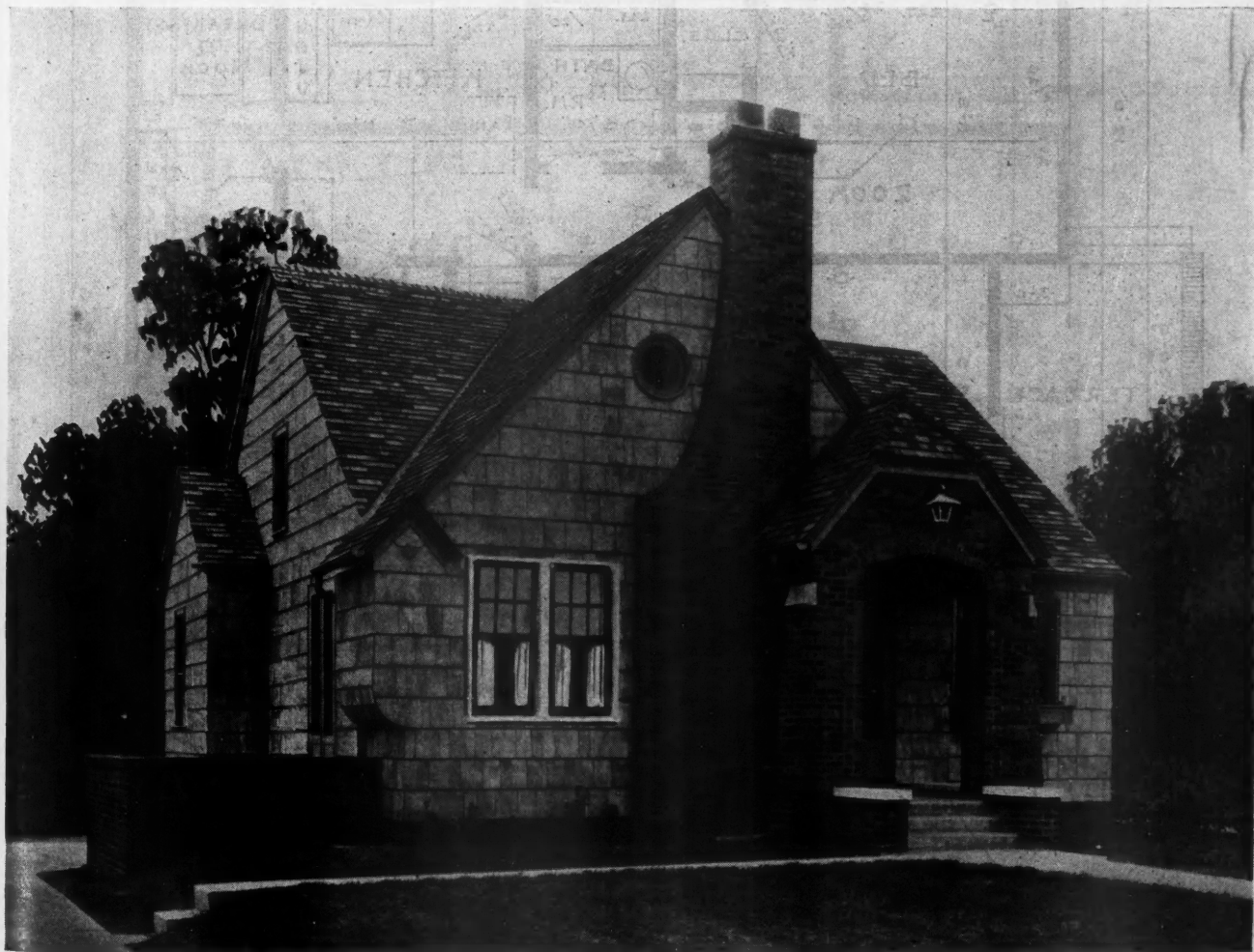
A WELL deserved popularity has been accorded to houses of the type represented by Our Front Cover Home this month. While of no clearly defined style it suggests the English and possesses a distinctive character of its own. The low foundation and walls finished with shingles laid wide to weather give a substantial tone which is ample to carry the rather massive brick chimney and porch and the whole effect is attractively homelike.

On the interior the same thought has been carried out and the design is one of unusual comfort. On one side of the central hall is the dining room while opposite is a large living room with an interesting corner fireplace, built-in bookcase and a doorway opening onto the brick and cement terrace. The rear of the first floor may be reached either through the living room or dining room

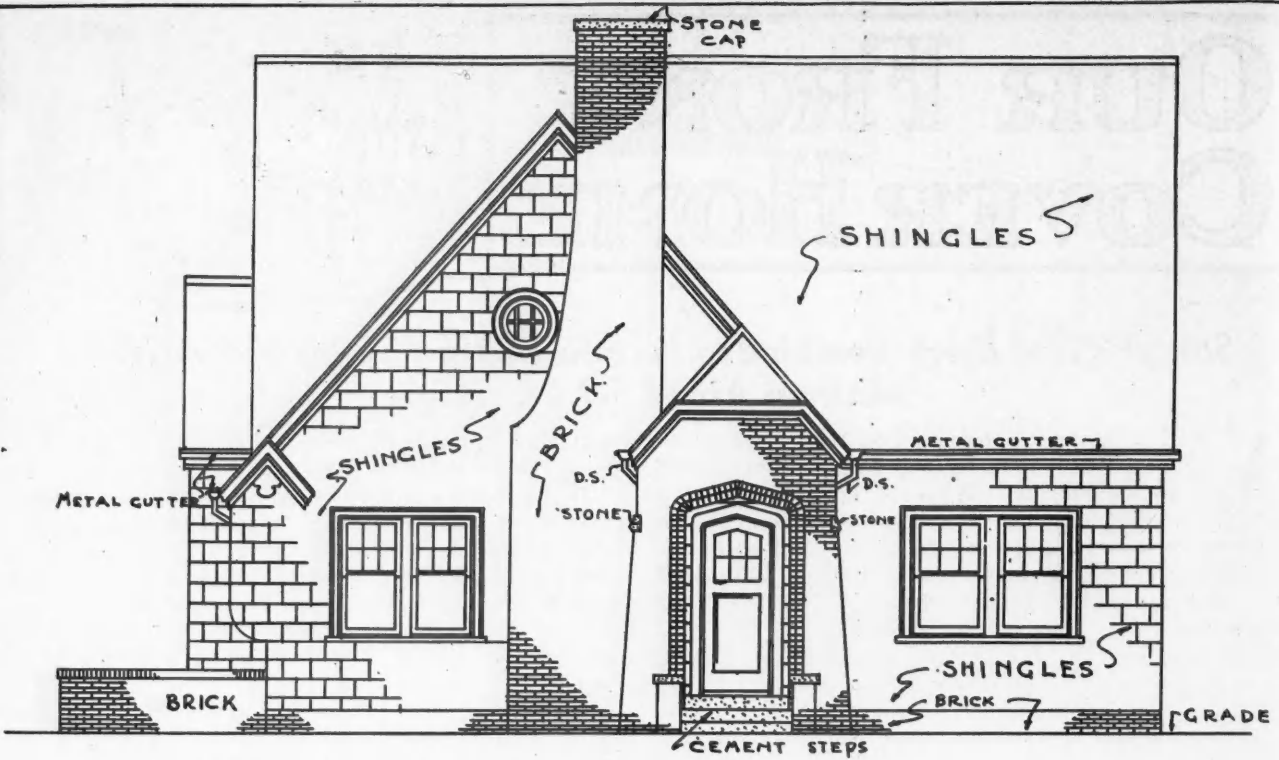
and here are found a bedroom and bath in addition to the kitchen and a breakfast nook.

The second floor is reached by the stairway leading from the front hall and here are two more bedrooms and a second bathroom. Both these bedrooms are large and one is supplied with a large dressing room. This dressing room has a separate closet while the room off of which it opens is provided with two other closets. The other bedroom has one large closet and a linen closet is a feature of the upstairs hall.

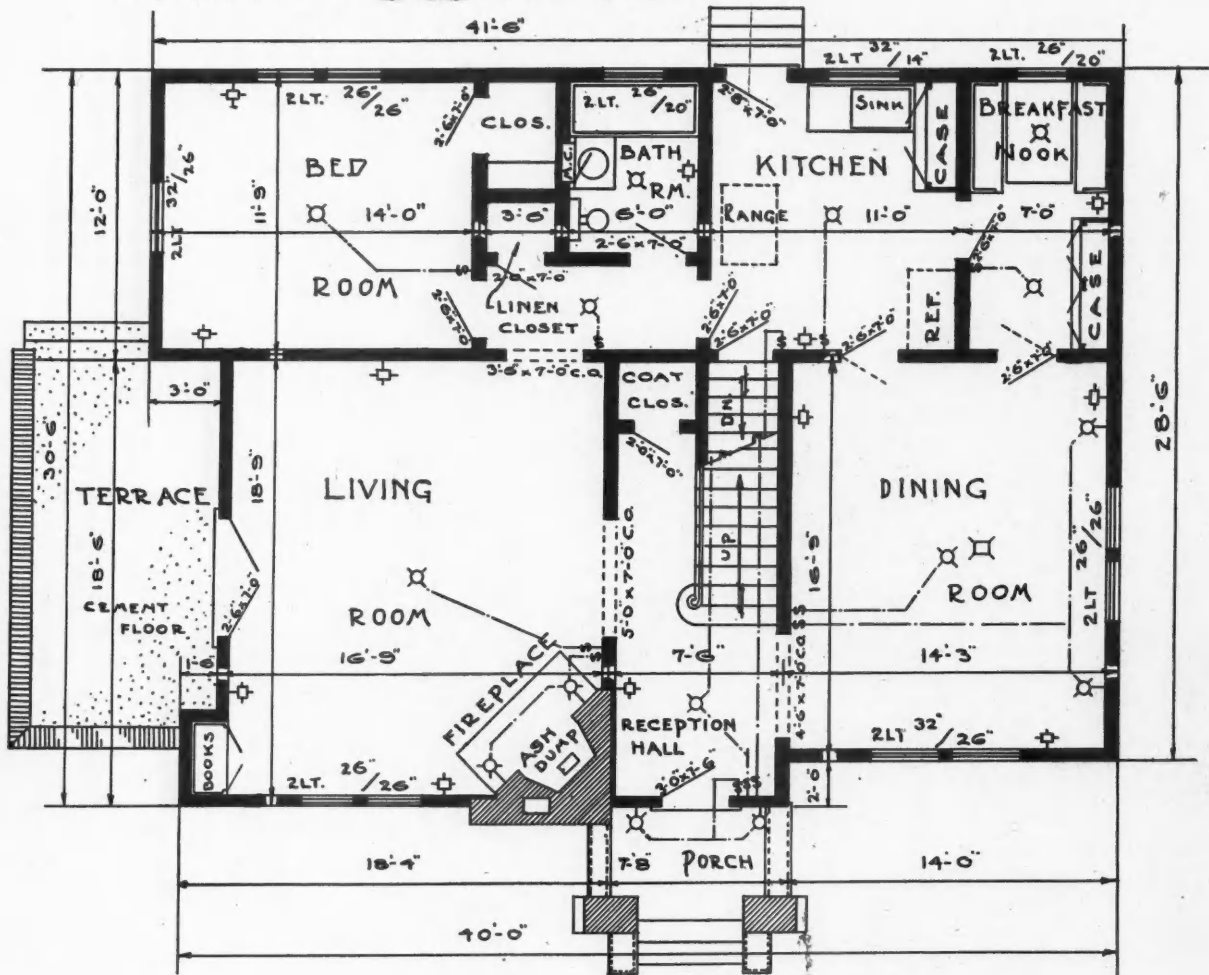
On the front cover this house is illustrated in full colors which brings out the attractive effect of the shingle and brick combination against the background of trees. Floor plans, elevation and detailed sections of building construction are shown on the next four pages and tell in detail the story of Our Front Cover Home.



This Style of House, Finished in Shingles Laid Wide to Weather and With a Massive Brick Chimney Has Earned a Well Deserved Popularity. Floor plans and details of construction will be found on the next four pages.



* FRONT * ELEVATION *



SCALE 1/8" = 1'-0" * FIRST * FLOOR * PLAN * SHEET NO 1

Elevations and Floor Plans Show What Well Thought Out Planning by an Expert Can Do in Producing a Convenient and Attractive House Such as That Shown in Colors on Page One.



The American Garden

This is NUMBER THREE of a Series of Articles

By F. A. CUSHING SMITH, Landscape Architect

Give me a home in a garden,
Where the birds and the blossoms so gay
Bring a spirit of joy and of blessing,
Which will all of our sadness allay.

Have you heard of a home in a garden,
In which happiness was not a guest?
There you dream and your visions enchanting
Make its peace and sweet charm seem the best.

THERE are scenes of native beauty which the artist has caught for us upon his canvas, or which the composer has woven into his melodies. These dreams become works of art when they appeal to the imagination and inspire the onlooker. The American home becomes the greatest work of art, when we can see deeper into its real place in our life, see beneath the materials of which our hopes

are builded to the underlying plans which are the foundation of all home structures from time immemorial.

Primarily in the early days the home and the garden were a retreat, a haven of protective love from the prying eyes of the unknown, often-feared world, to which kindly friends were welcomed. Let us for a moment follow the historical development and the characteristics of the home gardens from their earliest beginnings and see what we may gain, yes—what we may emulate among the gardens of yesterday. Space will permit touching upon but a few of the many countries from which inspiration for our home gardens may arise.

Tradition has painted our earliest ideal picture in the Garden of Eden, from the midst of which God drove Adam and Eve because of their sins. It would almost seem as though beautiful gardens were meant for those whose industry, thrift, right living and great dreaming made them worthy of the quiet of their Eden. So perfect was this biblical garden that many



An Inviting Terrace in the Weld Garden, Brookline, Mass., an "Outdoor Room" Which Is Adapted to the Architectural Character of the House and Aids in Making the House and Garden a Harmonious Unit.

countries claim it as theirs in the hope that men may be encouraged to live within their borders amidst the perfection which this Garden of Eden assured them.

Within the gardens of Egypt, walled high for privacy and as a protection against the hot desert winds, were palms and fig-trees, beneath the shade of which played a gay fountain, or where in the waters of a quiet pool, the sacred ibis and the scarlet flamingo made their stately stand. The architecture of that oldest of countries was adapted to the climatic conditions and to the customs of the day, and the low ceiled rooms looked out upon the court-yard garden in its earliest form.

The gleam of the Italian lakes as seen from the upper terraces of the gardens of old Italy, is a sight which once seen is never forgotten. Here the rugged hillsides lent themselves to villas which from above or below presided over the long series of terraced, balustraded walls which enclosed and ornamented the gardens. Vistas formed by cypress avenues, and delightfully cooled valleys, where fountains and water-

falls trill their bright music, reflecting the matchless beauty of the Italian sky, or where the stately formality of the cypress spires remind one of a cathedral, all these and many other happy dreams we take with us as we leave Italy.

In the French chateaus of olden days we begin to learn of the grandeur of the days of the kings, when courtiers vied with one another in out-matching the estates of their ruler. Here Le Notre, the famed garden architect, produced perfect examples of garden design, the massive scale of which for out-of-door entertaining has never been equalled in any other country.

Here were great promenades, where thousands of people gathered in the pomp of the mediaeval courts. Here were tiny bosquets hidden along paths in the woodland, in which at frequent intervals were placed stone seats, marble statues, and other types of garden architecture. Long tree-lined vistas, carefully preserved by the families to whom these estates have for generations belonged, still give us some inkling of the majesty and grandeur of those by-gone days. Parterres of strange and intricate designs with colored stones and gravel used for the fanciful patterns, broad grass walks and bedding plants in profusion give individuality to these massive gardens.

In old England where Sir Humphrey Repton, one of the first landscape architects, achieved renown, the gardens have ever been more intimate, and more charming in their details. There no home is complete without a garden, however small the lot may be, and in their unhurried and happy manner the English people have learned to live out-of-doors, and appreciate as perhaps no other nation has the joy of a garden retreat. Unexpected nooks invite exploration beyond the borders of the little retreat which we may have found. No bit of the land is lost, every spot having its use and beauty.

In but few other countries is the turf so fine, so soft as in England, or the clipped ilex and box-wood so perfectly wrought into fantastic forms, or the flowers so brilliant or produced in such profusion, or the rockeries so ablaze with alpenes as about the estates and country houses of England. It is almost

as though the pride of possession in these fine old homes has grown as the years pass by and a new generation takes up the work and the joys of garden and home development. The English people, and we believe the American nation, are learning to live out-of-doors and to plan their houses to accomplish that worthy aim.

And what can we of America learn of the arts of landscape design from the gardens of other countries? To try to create an English rose garden beside a French chateau would surely be folly, nor would a Japanese garden with its religious meaning in the stones and walks look or feel at home beside an English stone and half-timber mansion.

Landscape and garden design is but the art of designing gardens and surroundings for our homes which are adapted to the architectural character of the house, and what is even more important, to the mode of living and the standing of their owner. A garden to be a true success must be easily reached from the house, and its details be so inviting that one can scarcely stay away.



England and Japan in an American Garden Afford a Charming Vista, from the Windows of the House, Terminating in the Japanese Gateway in the Background of This View.

In but one or two noteworthy instances has it been at all possible to recreate the elusive beauty of the Italian garden in America. Perhaps this style is best adapted to the California coast, where the skies seem almost as blue, and where the ocean affords a setting of charm.

It is the dream of my co-workers, the architects, to create an American style of residential architecture, and various schools, so-called, of architecture have been developed in our great middle western country. To those who would aid this worth-while effort, encouraging this group in this undertaking, that the homes of America and her gardens may be symbolic of the age and of the days in which we now live. The great expanse of this country and the consequent changes in materials of construction, in flora and in climate, of necessity changes and varies the architectural styles which seem best fitted.

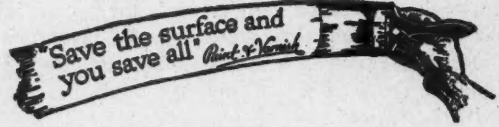
You can help to bring back to American life, to American consciousness the crying need for true examples of American gardens and American homes, not imitations of the arts of other countries poorly adapted to American conditions, but sane, virile, original styles which will persist long after their designers may have gone.



Original Portland Cement Patent

A PHOTOGRAPHIC copy of the original portland cement patent granted by King George the Fourth, of England, to Joseph Aspdin, of Leeds, October 21, 1824, was presented to the Smithsonian Institution, Washington, D. C., by the Portland Cement Association. The original patent is still in the possession of the Aspdin family and covers the principle of proportioning the raw materials and pulverizing them before burning, which was contrary to the practice in making earlier cements. Aspdin called his material portland cement because of its resemblance to rock from the Isle of Portland, a stone widely used in England in such structures as Westminster Abbey.

SAVE THE SURFACE DEPARTMENT



Written, Illustrated and Edited by the Headquarters
Staff, SAVE THE SURFACE CAMPAIGN

Lace Stencils for Wall Decorations

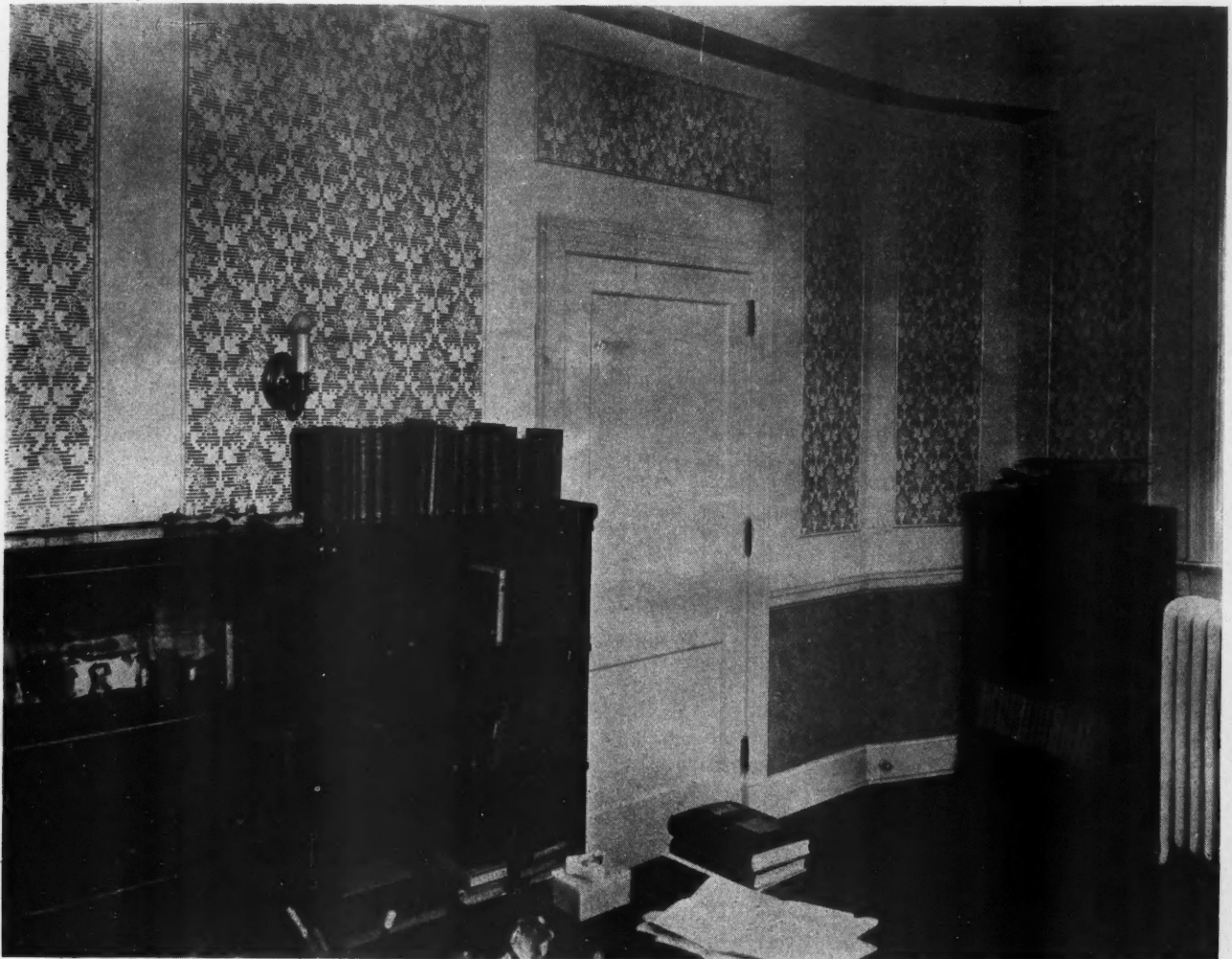
ONE of the most interesting contributions made in recent years to painting craftsmanship and interior decoration is the use of ordinary woven lace, such as curtains are made of, for stencil decoration. This was the invention of S. T. Ballinger, a master painter of thirty years' experience, who has experimented extensively with various decorative motifs.

It is the woman of the house who is chiefly interested in wall finishes and designs, and almost invariably she is looking for the latest methods of decorating her home. Lace stencils

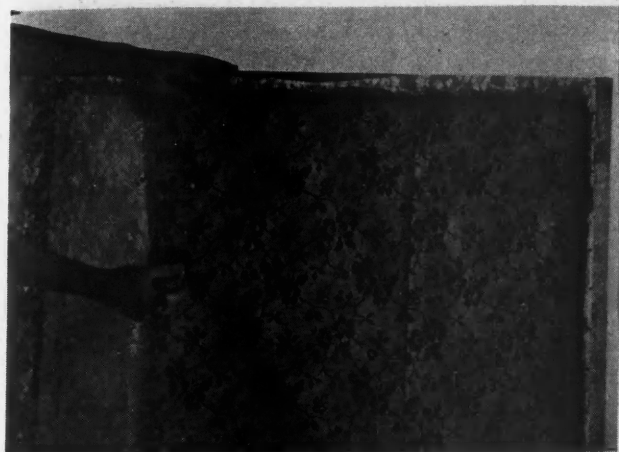
are the newest thing in their line—they have innumerable possibilities and they have a peculiar ingenious quality which appeals to the feminine mind.

The value of showing cleverly planned and decorated rooms to women customers is well known to all builders, architects and painters. They have a practical interest in the construction details of the building, but their final decision frequently depends upon the imaginative appeal of the house and its decorative possibilities.

Lace stencils develop a charm barely hinted at in the cut



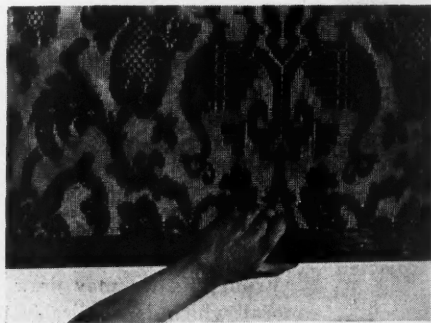
Paneled Effects Lend Themselves Particularly Well to the Method of Decorating Walls with Lace Stencils. Remarkably delicate and attractive patterns can be obtained which are in harmony with the tone of each room.



Applying Orange Shellac to Lace Stretched on a Frame Is the Preliminary Step in Preparing Lace Stencils.

paper stencils. They possess a subtlety and delicacy impossible to obtain through coarser mediums. Laces of all sorts—the web-like Chantilly, trim fillet—these and a dozen more provide a variety of patterns and textures hitherto unknown in the use of stencil decoration.

The tiny lines and fine designs are difficult to handle in the paper stencils. They spoil easily by tearing and creasing. And even the finest of them is not so delicate as that produced by ordinary lace. Moreover they are necessarily at the best, more or less stiff and conventional.



Lace Stencils Are Handy for They May Be Rolled Up for Storing or Transporting.

In preparing a lace stencil the following method is used:

Dry, untreated net or lace is first carefully and evenly stretched over a light but rigid frame and securely fastened with tacks. A generous coat of

orange shellac is then applied, care being taken to see that no open spaces have been allowed to remain filled or bridged over with shellac.

This step in the operation is a most important one as the beauty of the work eventually attained with the stencil largely depends on the care with which the stretching and shellacing have been done.

Allow the shellac to dry hard and the stencil is ready for use. Conditions will indicate whether or not it need be left in its frame. In some cases the decorator will find it advisable to retain the frame for convenience in manipulation.

For use the stencil is held against the wall and paint applied with a rotary motion of the brush. An important thing to



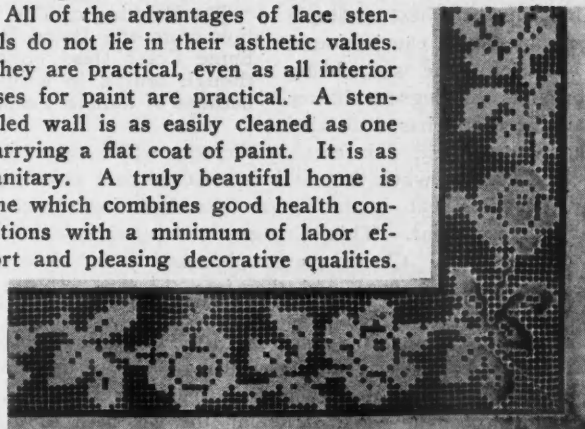
Color Is Applied to the Stencil Pattern with a Round Brush Manipulated with a Rotary Motion.

watch in this connection is that very little paint at a time should be in the brush.

Panel effects are good for lace stencil work. The center block is solid color with a panel frame of lace tracery done in contrasting color.

The quality of lace designs is almost proverbial. Lace carries infinite varieties of patterns of almost invariable beauty. Lace making is an art and the skill and taste of fine workmanship is embodied in its fine webs and patterns. To make these fine patterns available for wall decoration is a decided advantage to the home owner who wants the best he can get.

All of the advantages of lace stencils do not lie in their aesthetic values. They are practical, even as all interior uses for paint are practical. A stenciled wall is as easily cleaned as one carrying a flat coat of paint. It is as sanitary. A truly beautiful home is one which combines good health conditions with a minimum of labor effort and pleasing decorative qualities.



A Panel Border Pattern Obtained by the New Lace Stencil Technique. Walls finished in this manner are washable, sanitary and durable.

The use of lace stencils has an advantage in that it is adapted to an infinite variety of patterns, shades, tones and colors.

Paint and the Heating Problem

ONE never failing source of annoyance to both builder, who receives all complaints, and dweller within the new house who suffers all the inconveniences, is the heating system. For a race of people whose ancestors originally roamed the vast open spaces, we are almost fanatics on the subject of drafts and chills. Many office feuds have been

waged between the "fresh air fiends" and the "vacuum absorbers."

But heating a house is not accomplished only by the installation of a furnace and set of radiators, or by erecting a draft-proof building. Heat is a much more elusive thing than that. Dr. George K. Burgess, director of the Bureau of

Standards, United States Department of Commerce, gives some valuable suggestions on temperature control and heating results produced by aluminum paint.

Heating systems are based upon the diffusion of heat from one body to another, from the warmer object to the colder. A body which is warmer than air may lose heat by convection. Dr. Burgess explains how the air near the surface becomes warm and rises; the cooler air, which is heavy, sinks, coming against the warm surface where in turn it is heated. Heat is also transmitted by radiation, in which case the process is entirely different from that of convection which is caused by motion of the air. Radiated heat is heat energy which, upon reaching the surface, is transformed into rays similar to light rays except that they are of very much longer wave length. Because of this similarity, heat might well be spoken of as "dark light."

The amount of these heat rays given off by an object is determined solely by the temperature of the body and the character of its surface. However the net heat loss or gain depends upon the relative temperature of outside body or bodies, since an object gains heat by radiation as well as giving it out by radiation.

Perhaps the best example of radiated heat can be found in nature. The sun, being thousands of degrees hotter than the earth, has a decided tendency to heat the earth's surface, while there is a decided cooling when the earth is exposed to a clear night sky, because heat is no longer absorbed from the sun but is given out. This change in temperature results in dew or frost. Clouds prevent dew and frost, since they are warmer than space, and therefore the loss of heat to them is much less.

An extremely practical application of the principle of relative heat and radiation was made by the Bureau of Standards when they were asked to determine upon the best material for balloon hangar roofs. Helium, the gas used to inflate the bags, is extremely volatile, and therefore a constant chang-

ing of the temperature within the hangars would mean a varying strain upon the balloons. Dr. W. W. Coblentz, an expert on radiation, set to work to find a combination of materials which would reduce to a minimum the amount of heat absorbed from the sun and allowed to escape on the inside of the hangar. A series of experiments resulted in this decision:



The Painting of This Radiator Made a Pleasing Variation from the Usual Bronze—Gold by the Use of the Same Color Used on the Walls. Aluminum paint, although toning in with the color scheme, was rejected because of its heat retaining property.

The outside of the roof was painted with white paint, or covered with asbestos and the underside of the roof was coated with aluminum paint. The white paint absorbed the heat rays from the sun and then, because the roof was only a little warmer than the air, gave back the heat to the circumbient atmosphere. White paint is therefore a very good reflector of sunlight, while the aluminum paint on the inside of the hanger kept the heat of the roof from escaping into the shed.

Other experiments were conducted and it was discovered that when a tent was painted on the inside with aluminum paint the tent was kept cooler during the day and warmer at night. Aluminum paint is a very effective means of preventing radiation of heat—it keeps heat from being absorbed during the day time, and then it is just as useful in seeing that the accumulated warmth is not radiated into the cold night air.

From this we may draw a moral which is applicable to

the building profession. In contracts specify that aluminum paint be used whenever losses of heat or coolness through radiation are an important factor. Dr. Burgess suggests that aluminum paint can be applied to advantage on the insulating jackets of steam pipes. It would increase the efficiency of the asbestos covering, and might even be used to reduce the cost of a thick asbestos covering since the paint might be used as a substitute.

Despite the pleasing effect of aluminum-colored radiators, or the pleasant relief from the customary gold-bronze pipes, aluminum paint should not be used where, as in the case of heating a room, radiation is essential.

Second Thoughts on Painting

IF ever you see a notice in the paper, an item to the effect that a leading citizen who was building a beautiful home on Main Street, was foully murdered by three masked men, lean back in your chair and sigh, "Well, that's a good job," for you can be dead sure that the perpetrators of the deed were the architect, builder and painter, who held the contracts, and that the victim was a cantankerous homeowner who wanted his Colonial house painted dark red with Nile green trim.

Nothing can so completely blast the reputation of an architect or builder, though the house be a masterpiece of designs and construction, or so ruin the prestige of a painter, though the

paint be applied with the skill of Michael Angelo, nothing, we repeat, can so spoil the effect of a house as a poor color scheme. And yet a stubborn homeowner sometimes utterly disregards the advice of architect, builder and painter, and insists on some atrocious color combination that undoes the good effect of good plans, honest building and honest painting.

That there is a definite aesthetic relationship between building and painting, Mr. Roger B. Whitman, editor of a magazine of general circulation, points out in a recent article, "Thoughts on Painting a House"—"the house of loveliest design and best workmanship may be ruined by inappropriate



Here Is a Blending of Good Design, Expert Construction, and Tasteful Painting Which Is Essential to the Production of an Attractive, Successful House.

colors; and colors may give distinction and charm to a house that in itself is commonplace in the extreme."

According to Mr. Whitman the safest and surest selections are those that are expected; the colors that long experience and habit have associated with certain forms and outline and masses. The general public are a conservative people who hate to be startled; they expect a Colonial house to be light yellow or grey, and rebel at the thought of emerald green. Generally speaking, best results follow conventional treatment.

"But just what is conventional treatment?" demands the eager searcher after knowledge, and here, Mr. Whitman informs us, "we find what would be conventional for one style of building or one particular setting would be impossible for another, so we conclude that they are based on general rather than actual conditions, and are more a matter of psychology than of fact. Most people instinctively dislike color schemes that are assertive, vivid colors and violent contrasts.

"A brilliant red roof against a clear sky, for instance, is repelling because of its color and its contrast with the blue background; but against trees, or with foliage partly screening it, the same roof might be interesting and attractive. A stucco house in the Italian manner, with salmon-pink walls, would be entirely charming in an appropriate setting of foliage and vines, but would be startling indeed when situated in unrelieved contrast with the snow-banks of winter. Yellow might be a good color for a house in the woods, but hardly so for one of a row with a red house on one side and a blue one on the other.

"The strong contrasts of deep brown, light buff and brick red, eminently suitable to an English half-timbered design, would be impossible for a Colonial farm house, and the colors appropriate to a Dutch Colonial house might be most unsuitable for a Georgian residence. Again, a house that stands boldly against the sky will almost invariably demand soft, unobtrusive tones; vivid colors will give contrasts unpleasantly strong, although those same colors may be charming when screened by foliage."

But, as we all know, there can be no hard and fast rules. No sooner are rules made than exceptions crop up until their name is legion. One says that a small house cannot afford to be painted dark, that light colors make it appear larger, and yet we all know of tiny homes that could look startlingly incongruous in any shade but the dark tone that blends in with

the surroundings. It is almost always the case that a house looks best when it tones in with its background. That is why a roof against the brilliant blue of sky should be subdued in tone and color, but against dark foliage may be gay.

Mr. Whitman makes the suggestion that in selecting color combinations the best results are usually found in varying shades of the same color. For example the walls of a stucco house might be buff, the trim ivory and the roof brown since there is then more harmony than in a house with white walls, green shutters and a red roof.

However, while "patchiness" should be avoided, there should always be a contrasting relief to surfaces of one solid color. This contrast may be secured by having trim and shutters in a contrasting color or tone to relieve the monotony of evenly-toned walls. On the other hand, ornamental work should not be brought out by painting; a porch column, for instance, should be of one color throughout, and not have different colors for shaft, base and cap. It should be remembered that a mass of color seen from a distance gives a very different impression from a patch of the same color seen near by, which undoubtedly explains why so many houses which are painted according to the owners' specifications do not live up to their expectations.

The whole appearance and proportion of a house may be quite altered by the color scheme. This point is driven home by citing actual instances where windows appeared much larger when the blinds and trim were of about the same color as the interior seen through the glass. Or where cornices, mouldings and trim are painted white, on a white or light house, it is *shadow* which brings them out; such trims should therefore be made wide with deep projections. To paint them in contrast to the walls would make the whole effect too heavy, thus destroying the planned proportions of the exterior.

Since color is so much a part of the design of the house; and since the whole balance and proportion of a building depends, in great part, on the care with which the color scheme is thought out, it behooves builder and painter to consult with the owner and decide upon the combination of colors most appropriate for the building as a whole, at the same time gratifying his personal preferences. This entails a careful consideration of the character of the house, its location and setting, the effect that is desired, combined with the diplomacy of a statesman.

Sheet Metal Details

Sheet 7—Flashings Around Deck Edges, Hips and Ridges—Gravel Stops

EDITOR'S NOTE: This is the seventh of a series of articles, presenting authentic details for flashing and metal work problems in building. The drawings, presented on the opposite page, were prepared by the Copper and Brass Research Association, and may be applied in the use of all roofing metals. The first of this series was published in the November issue

of the AMERICAN BUILDER. Readers will remember that the drawings are intended to show the details of construction for every trade involved and are suitable for use by the drafting room in designing details. The distortion of the drawings will be apparent at a glance, but this purposely has been done that the methods may be made more clear.

NOTES FOR DRAWINGS ON OPPOSITE PAGE

FIG. 37. When a roof surface is covered with gravel or slag some means must be used to prevent the gravel being washed over the edges and off the roof by the rain. A device called a "gravel-stop" is used and is shown in Fig. 37. It is made of sheet metal and applied along the edge of the roof and secured at the side and the top. A brass edge-strip is fastened to the edge of the roof by brass wood screws or copper nails. The sheet metal is hooked over the under side of this strip and brought up over the edge and out on the roof with a "crimp" above the roof surface high enough to prevent the washing off of the gravel. The sheet metal should extend out on the roof on top of the felt 4 inches and be nailed through the felt to the roof sheathing with copper nails and then covered with two layers of felt. The metal may also be laid in between the layers of felt instead of on top, or it may be laid on top of the felt and covered with two additional layers of felt extending 6 inches out on the roof as described in Fig. 40. Many roofers prefer this method as it prevents interruption of the roofing work.

Fig. 38. When a flat deck covered by a sheet metal roof is built over a sloping shingle roof the edge of the deck is flashed in the manner shown in Fig. 38. The flashing should lap the shingles 4 inches and be joined to the metal roofing by a flat lock seam with the seam turned in the direction of the flow.

Fig. 39. When a gravel-stop flashing occurs at the edge of a gravel roof laid on a concrete slab the flashing is secured as shown in Fig. 39. Holes are drilled into the concrete slab about 12 inches apart and $\frac{3}{8}$ inch in diameter and a small piece of sheet lead slightly shorter than the depth of the hole is inserted, leaving a space slightly smaller than the diameter of the screw. A brass wood-screw with

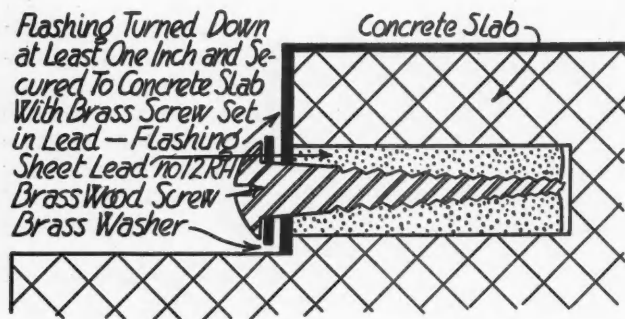


Fig. 63.

a slotted washer is then used to fasten the metal to the concrete. The manner of placing these screws is described and shown more in detail in Fig. 63.

Fig. 40. When a flat deck covered with felt-and-gravel roofing is built above a sloping shingle roof, the method of flashing to be used is shown in Fig. 40. The lower

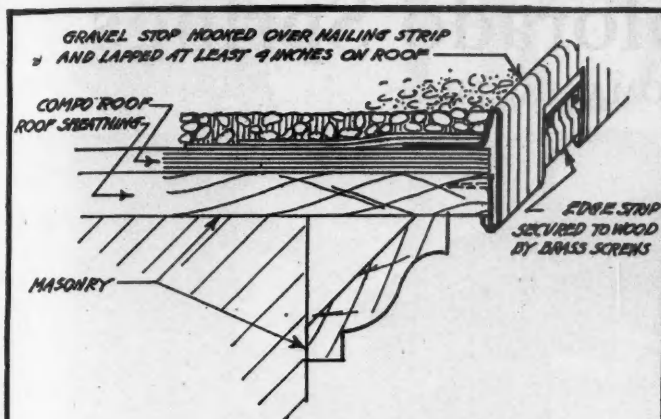
edge of the metal extending down the slope of the roof is turned back on itself $\frac{1}{2}$ inch for stiffness, and should lap the shingles at least 4 inches. It is then brought up on to the main roof and, after forming a crimp to retain the gravel, is extended out on the roofing 4 inches and nailed with copper nails spaced about 8 inches apart near the inside edge of the metal. These nails should be driven through the felt into the roof sheathing. The metal may either be incorporated into the layers of the felt or placed on top and covered with two additional layers extending out on the roof 6 inches. This latter method is preferred by many roofers.

The metal should never be laid directly on the roof boards. The felt will pull away from the metal and an open joint result at the junction of the metal and the felt.

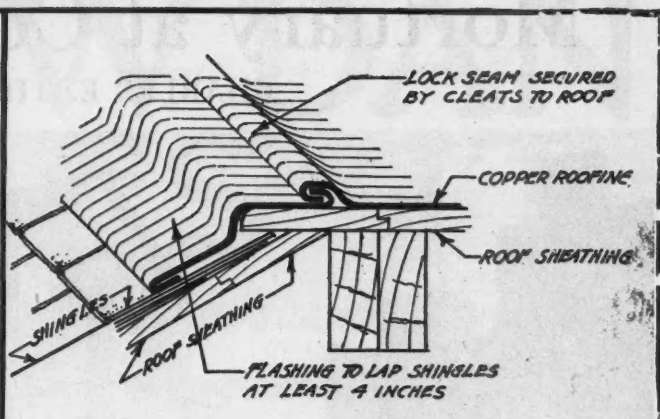
If the vertical distance from the shingles to the top of the crimp is more than 8 inches it may be advisable to make the flashing in two pieces joined by a flat lock seam secured by cleats to the vertical surface of the roof boards.

Fig. 41. When clay roof tiles are used on a sloping concrete slab roof and project but little beyond the eaves, the use of metal flashing is necessary. It is placed in the manner shown in Fig. 41. Sometimes this flashing takes a molded form and is treated in the design as a cornice, but the method of application is still essentially that shown in Fig. 41, except that the metal may be formed in two parts with a horizontal lock seam joining the parts at or near the first horizontal sleeper. The first step in placing the flashing shown in Fig. 41 is to secure to the concrete a brass edge-strip. This is done by drilling holes in the concrete about 12 inches apart and fastening the brass edge-strip as described in Figs. 39 and 63. The strip should have a slight bend outward to permit the insertion of the hook of the flashing. In no case should the holes in the concrete be filled with wood plugs as the wood will dry out and shrink and the edge-strip will work loose. The flashing is brought up on the wall and turned back over the first sleeper and back on the roof far enough so that no water-pocket will be formed and the high end of the flashing will be about 2 inches vertically above the top of the first sleeper. No nailing is necessary for this part of the flashing as the weight of the tiles will hold it in place, but copper nails should be used to secure the tiles to the sleepers.

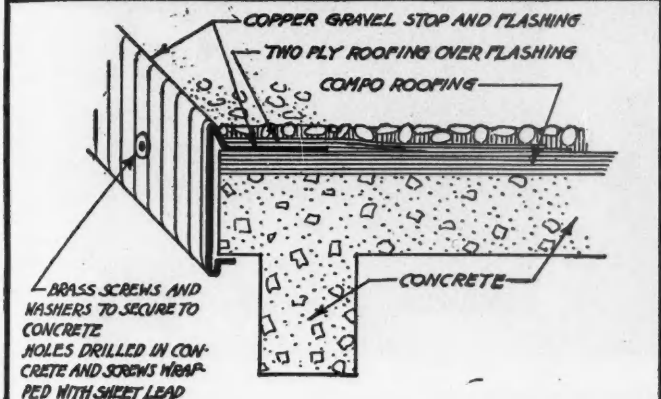
Fig. 42. The method used to flash the hip or ridge of a shingle roof is shown in Fig. 42. After the sheathing is in place a wood hip-batten is nailed to the ridge, of the height and width required by the design. Then the roofing paper and the shingles are laid in the usual way and the metal rip-roll or flashing set in place. This roll should lap the shingles on each side of the hip at least 4 inches and be secured by brass wood screws and slotted washers through the shingles into the wood roof sheathing. When doing this great care should be taken to avoid splitting the shingles. It is recommended that the holes for these screws be drilled instead of punched to avoid this risk of damage to the shingles. The heads of the screws and the washers should be well-soldered.



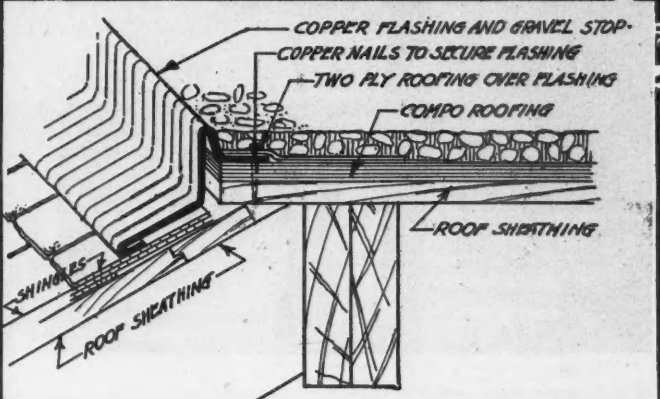
COPPER GRAVEL STOP FOR FLAT COMPOSITION ROOF ON WOOD (37)



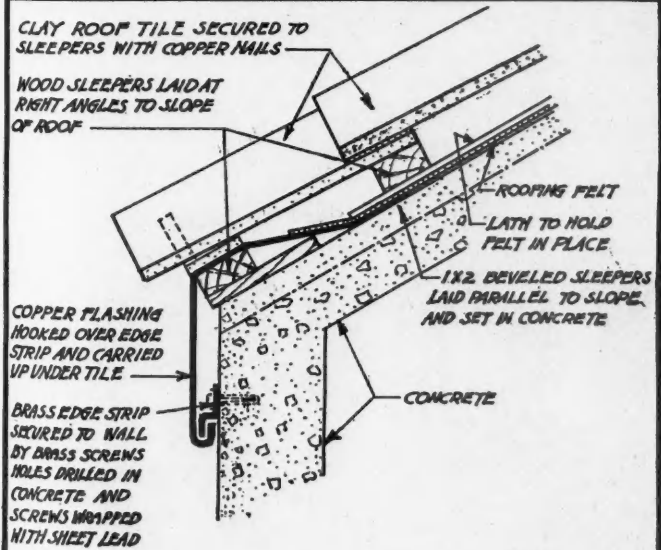
FLASHING FOR EDGE OF COPPER DECK ROOF ABOVE A SLOPING SHINGLE ROOF (38)



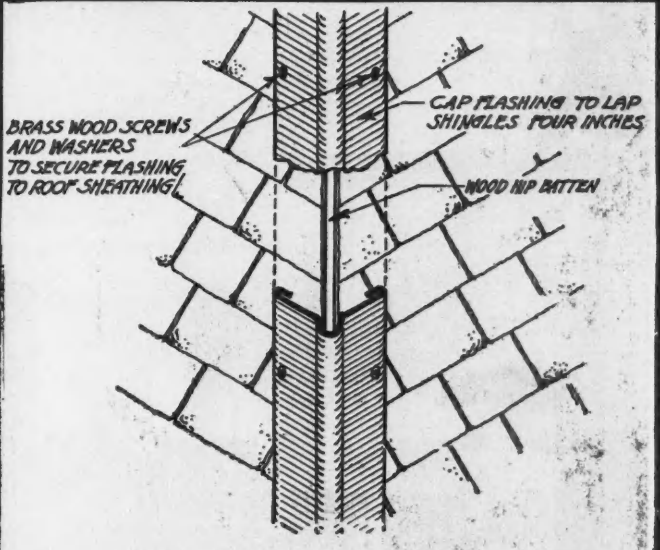
COPPER GRAVEL STOP FOR FLAT COMPOSITION ROOF ON CONCRETE (39)



FLASHING FOR EDGE OF COMPOSITION DECK ROOF ABOVE A SLOPING SHINGLE ROOF (40)



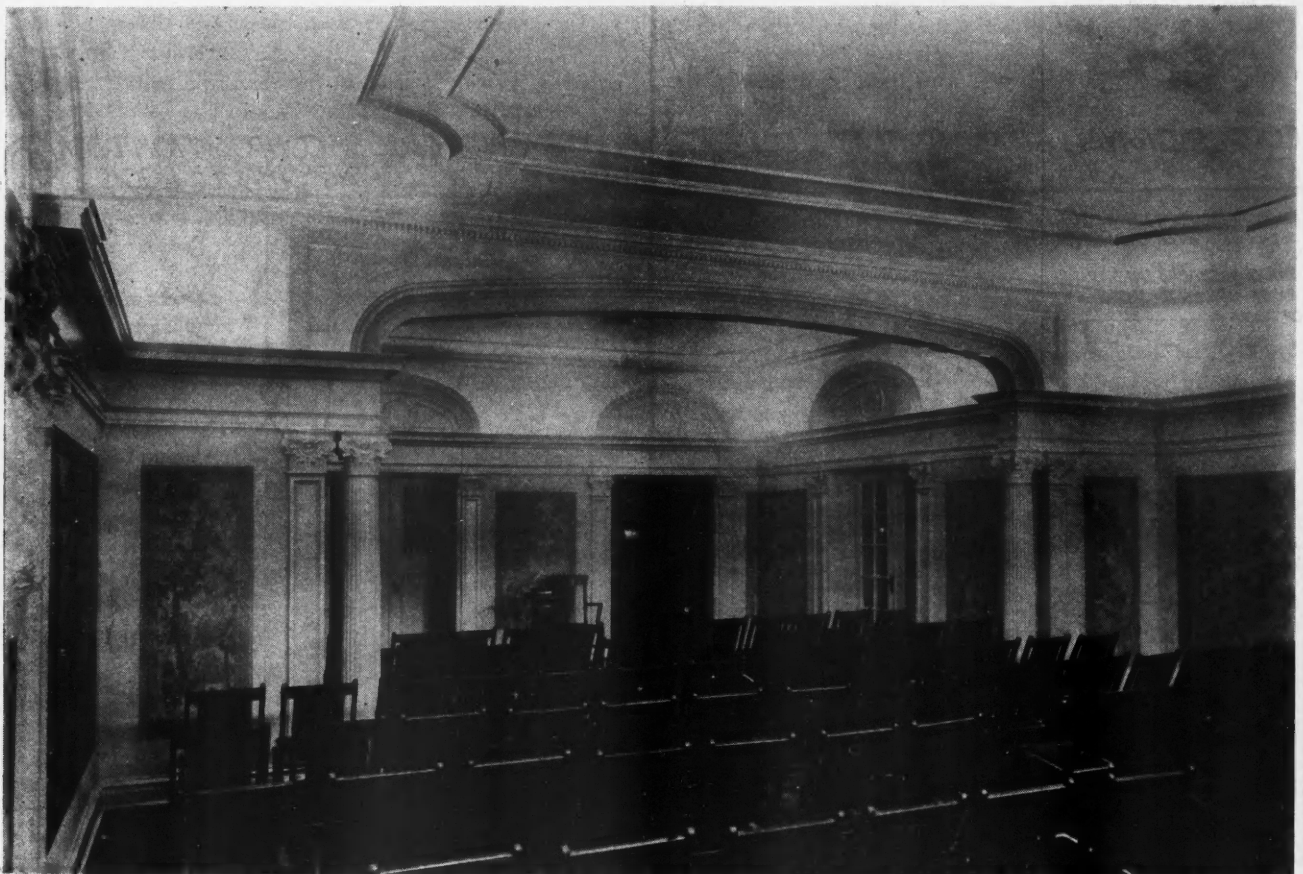
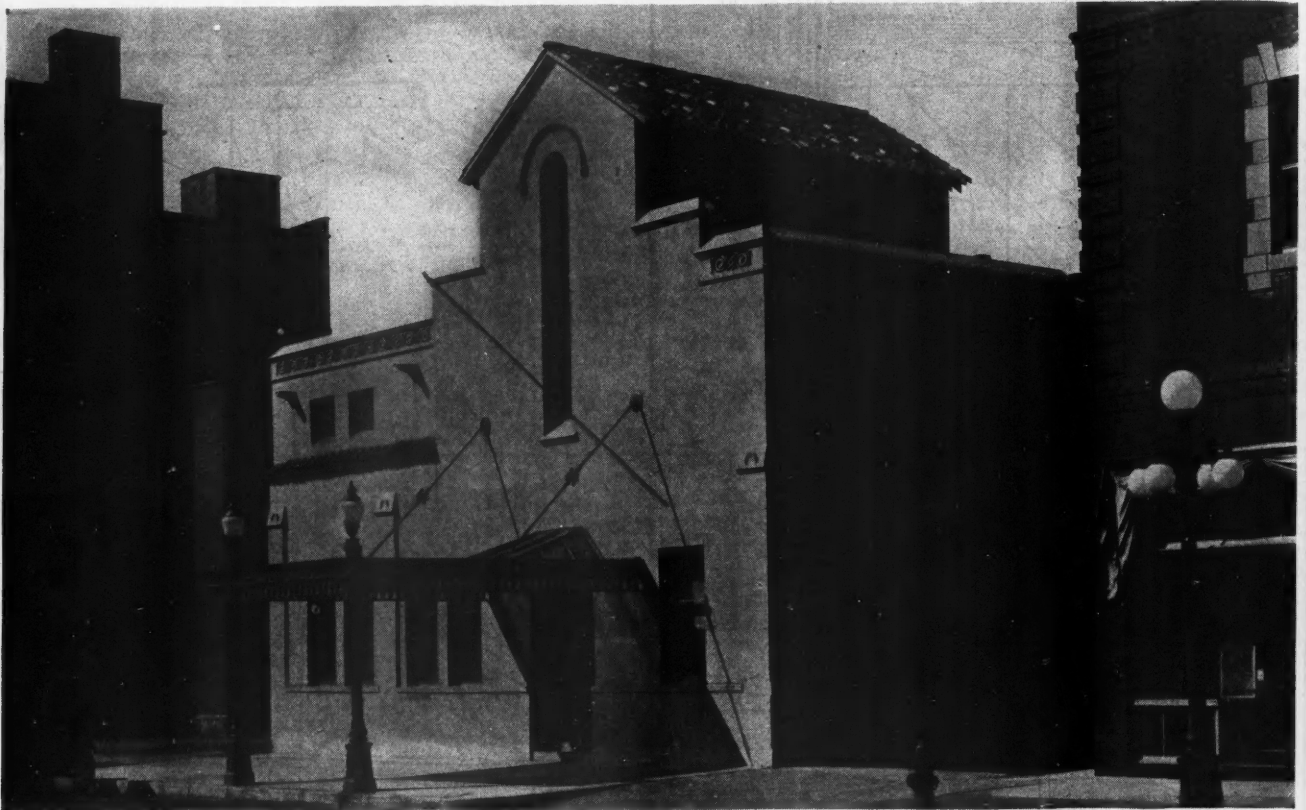
FLASHING AT EAVES FOR A SLOPING TILE ROOF ON CONCRETE (41)



HIP FLASHING FOR A SHINGLE ROOF (42)

Mortuary at Colorado Springs

CHARLES E. THOMAS, Architect



We Have Here a Remodeling Job in Which the Architect Has Taken an Old Brick Residence and by Addition of a New Front Section and Interior Changes Made it Over for the Business of a Mortuary Firm. The new facade of stucco on brick is decidedly Spanish in style with its uneven lines, tile roof and repeat border decoration in red.

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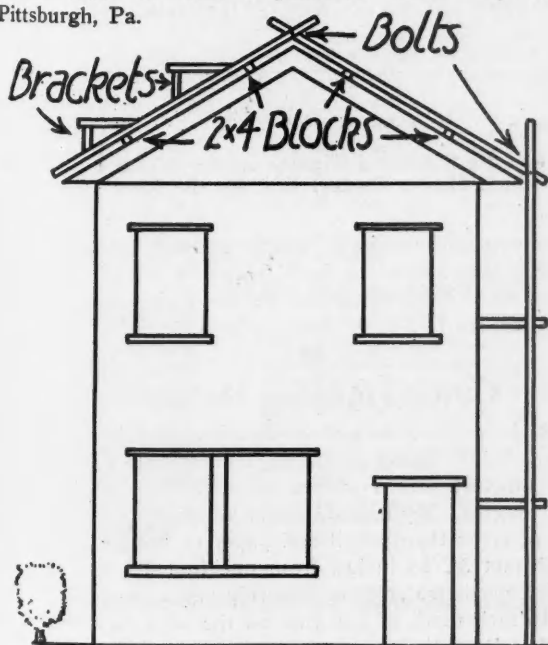
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Address Dan-Do-It, care of American Builder, 1827 Prairie Avenue, Chicago, Ill.

Roofing Without a Scaffold

IN building a house recently the foundation was only two feet from the property line and the next door neighbor had a hedge at the property line. Erecting a scaffolding on that side would probably have caused a lawsuit because of injury to the hedge, so I devised a means of working without it. I had the bricklayers lay the brick from the inside of the house and the carpenters keep the sheathing ahead of the brick layers. This was simple, but when it came to the roof a substitute for the scaffold had to be found.

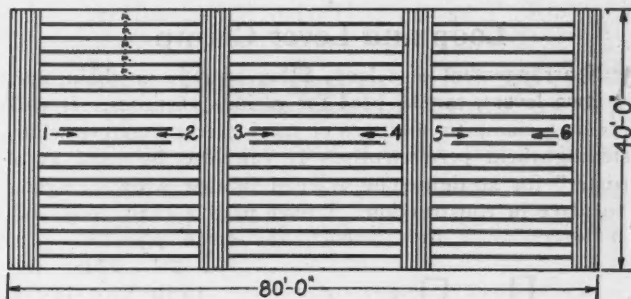
I nailed five two by fours 18 feet long to the scaffold on the opposite side of the house. These were laid edgewise and extended over the ridge. To these I bolted two by fours which extended down the roof on the hedge side. I inserted loose two by four blocks under the long two by fours on both sides of the roof. I then nailed brackets to the two by fours on the hedge side and stretched planks across them to form a platform.—MICHAEL J. GLEESON, Pittsburgh, Pa.



A Rather Difficult Problem to Solve Until You Read the Explanation of How It Was Done, Which Makes It Seem Quite Simple After All.

Rapid Floor Laying

THE problem that we are presenting herewith is one that comes up most frequently on quick-construction work where buildings are to be erected over night, as it



Time Is Money in Construction Work and This Shows How a Floor Can Be Laid Most Rapidly and Cheaply.

were, although there are many instances on permanent work where the same problem is met.

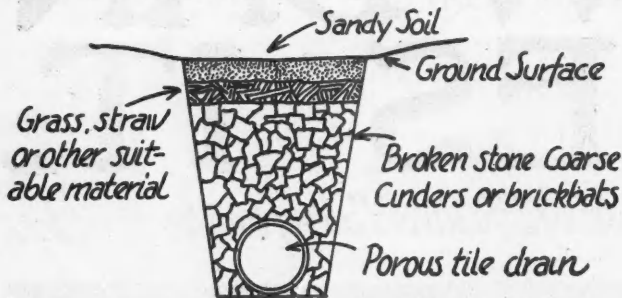
The diagram shows a floor space 40 feet one way and 90 feet the other, with the joists placed 2 feet on center and running parallel with the 80-foot sides. This space is to be covered with, say, shiplap, within a surprisingly short time. There are plenty of men available but how are you going to manage it so the men will not be in one another's way?

Assuming that we have eighteen men, we will start three at No. 1, three at No. 2, and three at each of the following numbers. Each group of men works in the direction indicated by the spears until the shiplap is all down. When, for instance, No. 1 and No. 2 meet it will be necessary to rip one board in order to finish the space they are covering. The same thing is true on the other two spaces. Care must be taken when starting Nos. 2 and 3, and Nos. 4 and 5, so that the start will be made parallel with the two ends, or difficulties will arise on finishing the various spaces.

If only twelve men were available we would start three at each end and six at the center, three working in each direction. If only six men were to be had, we would start three at either end and let them work so as to meet somewhere near the center of the space to be covered.—H. H. SIEGELE, Emporia, Kan.

Intercepting Drain for Cellar

IN order to prevent flooding of a cellar which gathered water from a large watershed, an intercepting drain was constructed as shown in sketch, in which the flow is caught



Sectional View of the Intercepting Drain for Preventing the Flooding of Basements Likely To Be Filled by Water from a Large Watershed.

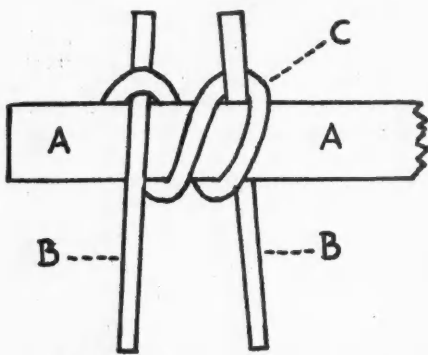
and carried to a suitable outlet.

The drain was located so as to catch any water that was likely to rush into the cellar, the outlet pipe carrying it away. It is constructed of porous tile, such as used in farm drainage, placed in a trench. Around it is placed broken stone, coarse cinders or brick-bats. Straw, grass or other suitable material is placed on top of this, above which is a layer of sandy soil or loam, or other soil that will allow the water to drain through. The straw or grass prevents the soil from washing into the voids of the porous material (stone, cinders, bats, etc.) and choking the flow of water.—O. H. HAMPSCH, Nashville, Tenn.



Loop and Lever Clamp

AN arrangement of a loop, either of rope or chain, and two levers, can be used for various purposes. It will serve as a clamp to hold two or more pieces together while fastening them permanently. It can also be used as a "twister" for straightening warped lumber while bringing it to place in construction. I have used a chain loop and two levers as a pipe wrench for large pipes.



This Simple Loop of Chain or Rope with Two Levers Forms a Serviceable Clamp for Many Purposes.

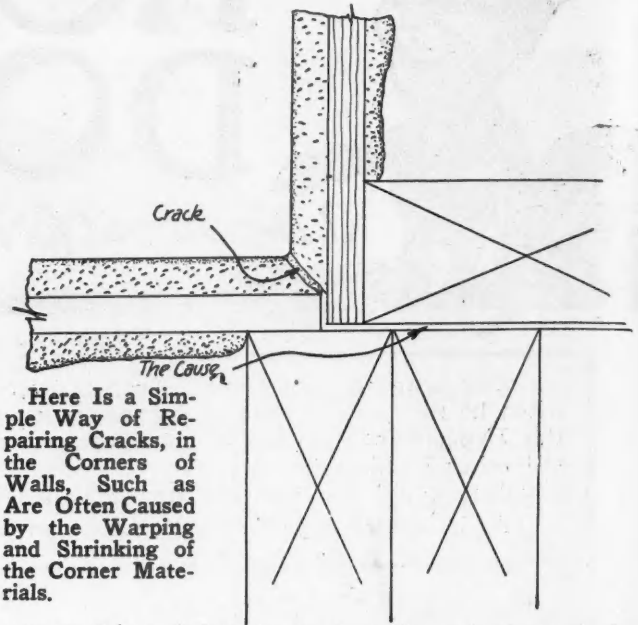
and hold the other lever just tight enough to keep a firm grip on A. When used as a clamp, equal power is extended on the two levers.—A. TENGWALE, Blue Earth, Minn.



Fixing Cracks

CRACKS that show up at corners of rooms in new buildings are frequently caused by the warping and shrinking of the material of which the corners are constructed. A two by six, or even a two by four, if somewhat green or water-soaked when the lathing and plastering are done, will shrink and warp enough when it dries out to cause a small crack to appear the full length of the corner.

Such cracks, as well as other cracks that may develop after the plastering is done, can be filled, leaving the wall as smooth and white as if there had never been a crack in it. Of whatever material the finishing coat is made, make a



Here Is a Simple Way of Repairing Cracks, in the Corners of Walls, Such as Are Often Caused by the Warping and Shrinking of the Corner Materials.

putty and force it into the crack as shown in the angle, by the drawing. When the crack is full, take a soft cloth and wipe the surplus putty off. When the putty is dry the crack will not be noticeable.—H. H. STEGELE, Emporia, Kan.

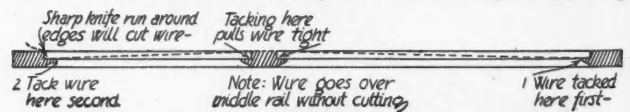


Getting Screen Wire Tight

WHEN properly applied screen wire on doors or windows is tight without a ripple or loose place. To accomplish this, carefully remove the stops and all the old wire from the door and cut a new piece of wire about six inches longer than the screen opening. First, tack the wire securely at the top, then pull the wire as tight as possible and tack it at the bottom.

It will sag in the middle and look loose, but proceed to tack the wire on both sides of the middle rail and as each tack is placed the screen will tighten up and lie straight.

The explanation is simple, as the wire has been pulled over the middle rail and the depth of the rabbet, for the stop



Wire Can Be Stretched Tightly on the Window or Door Screen Which Has a Central Rail by the Method Shown Here.

gives just enough leverage to tighten the wire when tacked. The wire is then tacked on both sides and, with an old file sharpened to a knife edge, can be cut with a single long stroke.—CHARLES L. SMITH, Jackson, Miss.



Quick Figuring Method

HERE is a short method of figuring that might be of use. While laying out some bench work, I had occasion to subtract 35/16 inches from a large number of assorted lengths. My method seems to me to allow smaller chances of error than pencil and paper or head work.

To subtract 35/16 inches from one foot 1 3/8 inches, for example, I used two rules or one rule and a square. Place the 35/16 inch mark of one rule on the 13 3/8 inch mark of other rule. Read the zero end of top rule and there is your answer with no fractions to figure. Simply write the answer on the work sheet.—ELMER STACY, Daytona, Fla.



Mrs. Home Buyer: "Hm-m! Nice looking floors—easy to keep clean. And what kind of a finish is that velvety effect on the woodwork?"

Mr. Home Seller: "That's Johnson's Wood Dye and Johnson's Flat Varnish, Mrs. Buyer. We used Johnson's materials for every bit of our interior work. See those waxed floors—notice the beautiful enamel work on the bathroom and the kitchen!

"Johnson's aren't ordinary 'paint' manufacturers, you know. They make nothing but the finest specialized interior finishes. In fact, they are considered *the* authorities. The use of Johnson materials is the finest example I can give you of the values we have put into this house."

Mrs. Home Buyer: "Oh yes! I don't know anything about 'paints' but I have used Johnson's Wax ever since I can remember. (Aside) John, it's just the kind of place we are looking for."

Mr. Home Buyer: "Say, Mr. Seller, come in and see me at the office in the morning and let's talk real turkey on this proposition."

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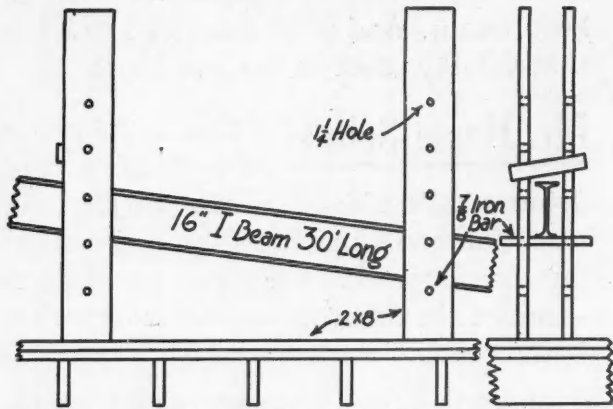
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Hoisting Beams Without Tackle

I WAS working on a job once where we had 12 "I" beams about 30 feet long to be raised 12 feet above the first floor. When we came to the point where these beams had to be raised the tackle for handling them was in use on another job about 40 miles away and could not be spared without delaying the other job seriously. We either had to wait for the tackle or find some other way to raise the beams.



Here Is a Simple and Ingenious Way to Handle Steel Beams When the Usual Tackle Is not Available for Some Reason.

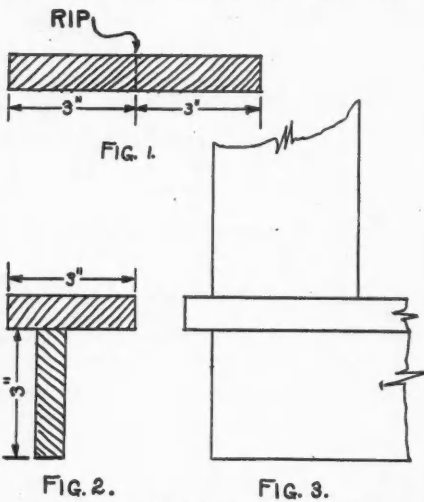
Two by eight planks were laid as a temporary floor and two pairs of uprights were erected about ten feet apart. These uprights were two by eights and were spaced six inches apart, just far enough to allow the "I" beams to move freely between them. Holes were bored about 18 inches apart in each upright and directly opposite similar holes in the other upright. Two iron bars were passed through the holes to serve as supports for the "I" beams.

It was a simple matter to slide the "I" beam between the uprights, raise one end 18 inches and slip the iron rod under it and through the holes. Then the other end was raised in the same way and the beams were soon put into place by raising one end at a time in this manner.—PERCY D. COY, Mars Hill, Maine.

Simple Stool and Apron

WITH the cost of material where it is today, it behooves every builder to be as economical as possible, wherever that can be done and at the same time retain a neat and harmonious effect. Service, too, should not be overlooked.

With the illustrations I am showing how a stool and apron can be made out of a 1 by 6 by ripping it through the center. This is shown in Fig. 1. Fig. 2 shows the stool and apron in place. Fig. 3 shows a corner of the face of this simple trim—the members of which are but for temporary buildings there is nothing that will give as pleasing results for a like amount of expense.—H. H. SIEGELE, Emporia, Kan.

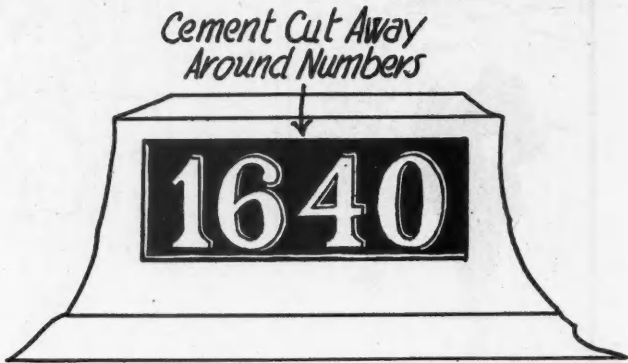


This Idea Is Offered as a Means of Economizing on Material and at the Same Time Securing a Neat Piece of Finished Work.

House Numbers in Cement

WHERE a house is set on a high terrace and approached by steps it is a convenience to place the house number on one of the lower steps to save people climbing the steps to see the number. I have used a method of doing this which I believe is entirely original, as I have never seen it used by anyone else though I have been in the cement and plaster business for fifty-six years.

I set a board 5/8 inch thick in the cement in the rise of the step. This board is beveled so that it can be easily removed after the cement has hardened. When the cement



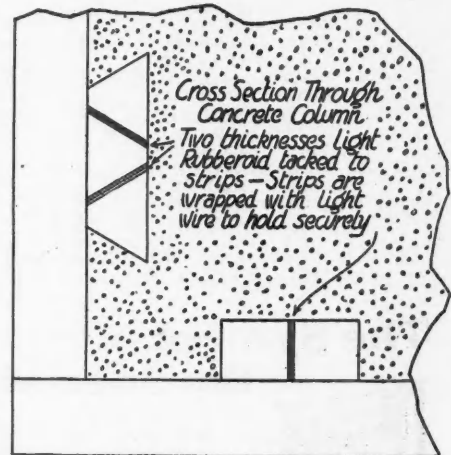
A Practical Method of Making Raised House Numbers of Cement Steps Which the Author Devised from His Experience in Cement Work.

is hard I remove the board and fill the cavity with fine sand and cement. As soon as it stiffens I place tin house numbers on it, fastening them with lath nails. I then cut the cement away around them, leaving the number raised.—RICHARD BLACKBURN, Birmingham, Ala.

Preventing Broken Corners

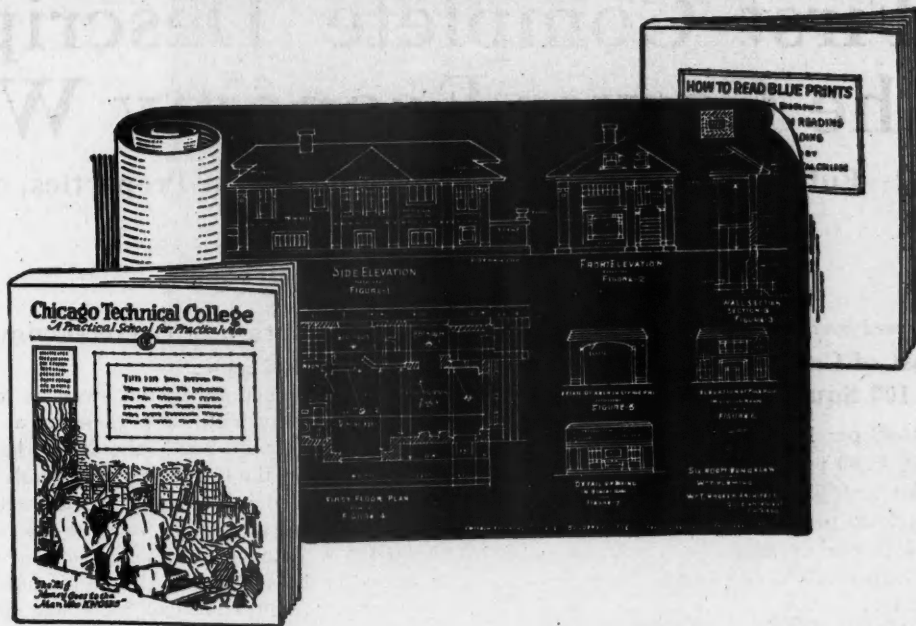
THIS method will prevent the swelling of wooden forms from cracking and breaking off the corners of columns in concrete work. It has been used both in monolithic and unit construction and successfully eliminated broken corners in all cases.

To the left in the sketch three strips are used to form a channel in the concrete. These strips are fastened together with light wire and have two thicknesses of light rubberoid between them and tacked to the strips. They are lightly nailed inside the forms. When the forms are removed the strips remain imbedded. The wires are then cut and the center strip removed first. The other strips then can be removed easily.



The Manner of Placing the Strips Which Is Shown Here Will Surely Prevent Breaking and Cracking Due to the Swelling of Wood Forms.

In the section at the bottom of the illustration the wire is not needed as it is immaterial whether the strips come away with the forms or are removed later. If these strips are thoroughly painted with paraffine oil, it is possible to use them several times.—JAMES W. GRAHAM, Newark, Md.



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The First Complete Description of the Carver-Economy Wall

Part 2—Full Preliminary Details and Data on Cost Properties, and Instructions for Its Erection

By WILLIAM CARVER, Architect

(Continued from page 192, April.)

Average Cost of Carver-Economy Wall 100 Square Feet

750 brick at, say, \$16.00 per M.....	=	\$12.00
Mortar allowance @ \$6.00 per M.....	=	4.50
Additional mortar for back plastering.....	=	2.00
6 hrs. bricklayer @ \$1.50 per hr.....	=	9.00
3 hrs. laborer @ 87½c per hr.....	=	2.63
Furring strips and carpenter's time placing same @ 3½c per sq. ft.....	=	3.50
Wood floor and ceiling supports, resolved into a value per sq. ft. of 2/3c.....	=	.66
Cost of 100 sq. ft.....	=	\$34.29

The saving of cost with the Carver-economy wall as against brick veneer would of course be even more striking.

The cost of the Carver-economy wall is far below that of concrete block or hollow tile, and the wall costs less than frame.

Construction of Carver-Economy Wall

Construction Is Simple:

1. The construction of this wall is easy and simple. The bricklayer has little new to learn, and if he can lay a solid wall in common bond—the easiest bond of all to lay—he can construct the Carver-economy wall without difficulty.

2. The detailed instructions in this section of the article should not lead anyone to imagine that the wall is complicated. A detailed description of any innovation must of necessity be thorough, although much of the information herein given concerns facts and practices that are so familiar to the average builder and mason that their performance is "second nature" to each.

Mortar:

3. It is recommended that cement-lime mortar be used in the construction of this wall.

Starting the Wall:

4. In houses with basements beneath, the Carver-economy wall starts on top of the basement wall at the bottom of the first floor joists, the basement wall being constructed preferably of brick in the ordinary way.

5. In houses which have no excavated basement beneath, the Carver-economy wall may start at the footings, which should be carried down the usual distance, according to local practice below the frost line.

6. Start the construction at any corner by laying one 4-inch course of brickwork in running bond. Then back up the corner as per detail and locate the first pilaster so that there is left a panel of 4-inch brickwork 4¼ stretchers wide (see Fig. 2). Space the remaining pilasters to the next corner 4½ stretchers apart, letting the width of the last panel come what it will. The pilasters will thus be placed so that the headers in the bonding courses break joint with the stretcher courses above and below. That is the reason for placing the first pilaster 4¼ stretchers away from the corner.

7. It saves much time to locate the pilasters without regard to the position of windows and doors.

Back Mortaring:

8. One great added advantage of this wall is the fact that it can be blanketed with mortar on the inside while being built and by the same mechanic who builds the wall, without added overhead expense.

9. This feature of the wall is required in all sections which have winter temperatures much below freezing.

10. Constructing the wall with a mortar blanket behind also makes the laying of the brick a much more speedy

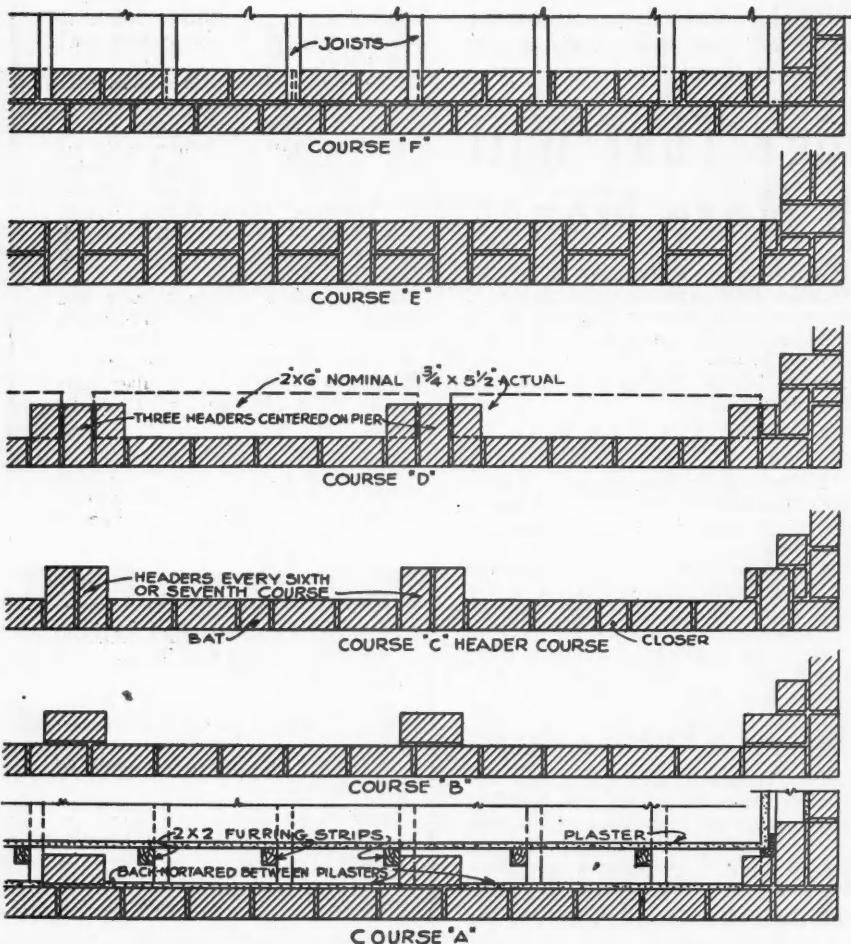
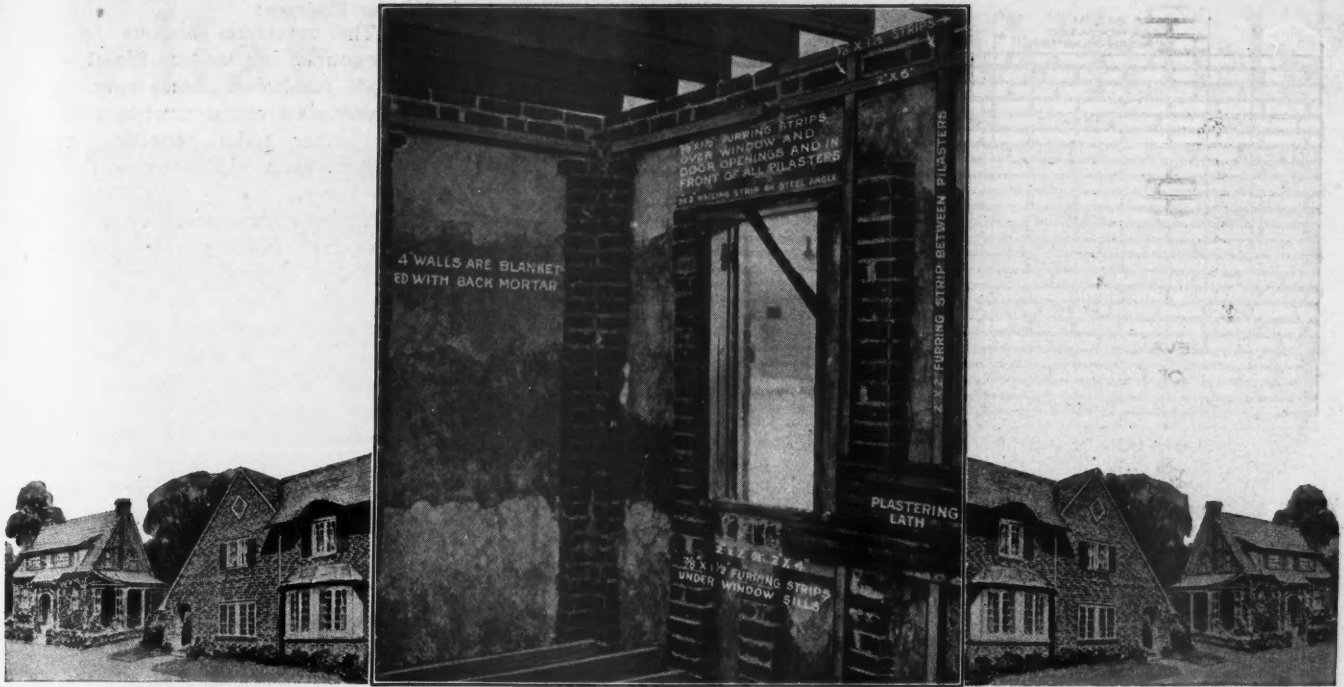


Fig. 2 Plan Showing Construction of the Carver-Economy Wall by Courses. For the key to lettering on courses see Fig. 4.

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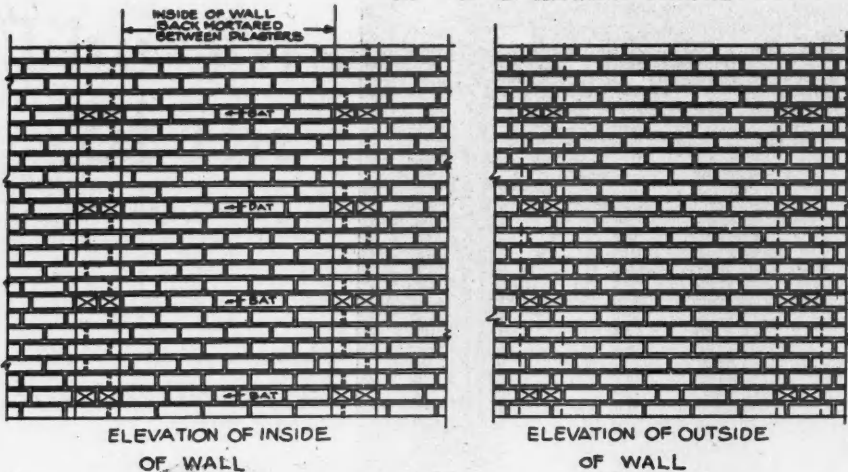


Fig. 3. Outside and Inside Elevation Showing Bonding. Headers may be at every sixth or seventh course, according to local code.

process, for in laying the outside 4 inches of brickwork the mason will make much better time if he is allowed to simply butter the front edge of the brick, leaving unfilled some portion of the vertical joint toward the inside of the building. As the wall goes up it then becomes a simple matter for the mason, using the back of his trowel, to roughly mortar the inside face of the wall between the pilasters, sealing the wall and adding greatly to its warmth in winter and coolness in summer. The back mortaring is very easily and quickly done, requiring only a few minutes of the mason's time for covering a large area. The same mortar is used as for the joints in the wall itself, so that no mortar has to be mixed specially; and the wall is mortared every few courses as it goes up, so that no special scaffolding is required for the application of this insulation.

"Hacking" the Brick:

11. The speediest way for a mason to work when building any kind of a brick wall is to place temporarily on the backing a number of loose brick for the outside face. When the latter is built to an appropriate height, loose brick for the backing are temporarily piled on the outside course. When the backing is up to the proper level it is again used as a storage for brick for the laying of the outside course.

12. In some parts of the country this operation is called "hacking" by the bricklayers.

13. The Carver-economy wall permits the ready "hacking" of the brick. The brick for the pilasters are naturally "hacked" on the outside course, while the brick for the outside course are "hacked" upon a piece of scrap lumber, such as a length of 1 inch by 4 inches or 2 inches by 4 inches placed so that each end rests upon a pilaster. When the outside course is up to the proper level the wood piece is taken off and the pilasters carried up to the level of the outside course, when it is again placed for holding temporarily the brick for the outside course.

Header Courses:

14. The maximum distance between header courses is a matter of local building code regulation. Some codes state that every sixth course must be a header course, other codes permitting every seventh or every eighth course to be a header course.

15. The bonding course consists of two headers laid side by side upon each pilaster with a special detail at the corner. This is the only course in which it should be necessary to cut any brick and no more cutting is required than would be the case in any solid brick wall laid in common bond. Inasmuch as the spaces between the pilasters equal 4½ stretchers, it is obvious that 4 stretchers and a bat must be placed between each pair of pilasters except in the panels next to the corners in which 4 stretchers and a closer will be necessary. (Fig. 2.) The bat and the closer will make a very much better appearing wall if they are located in the center of the panels between the pilasters as shown in Fig. 3. (Continued in June issue)

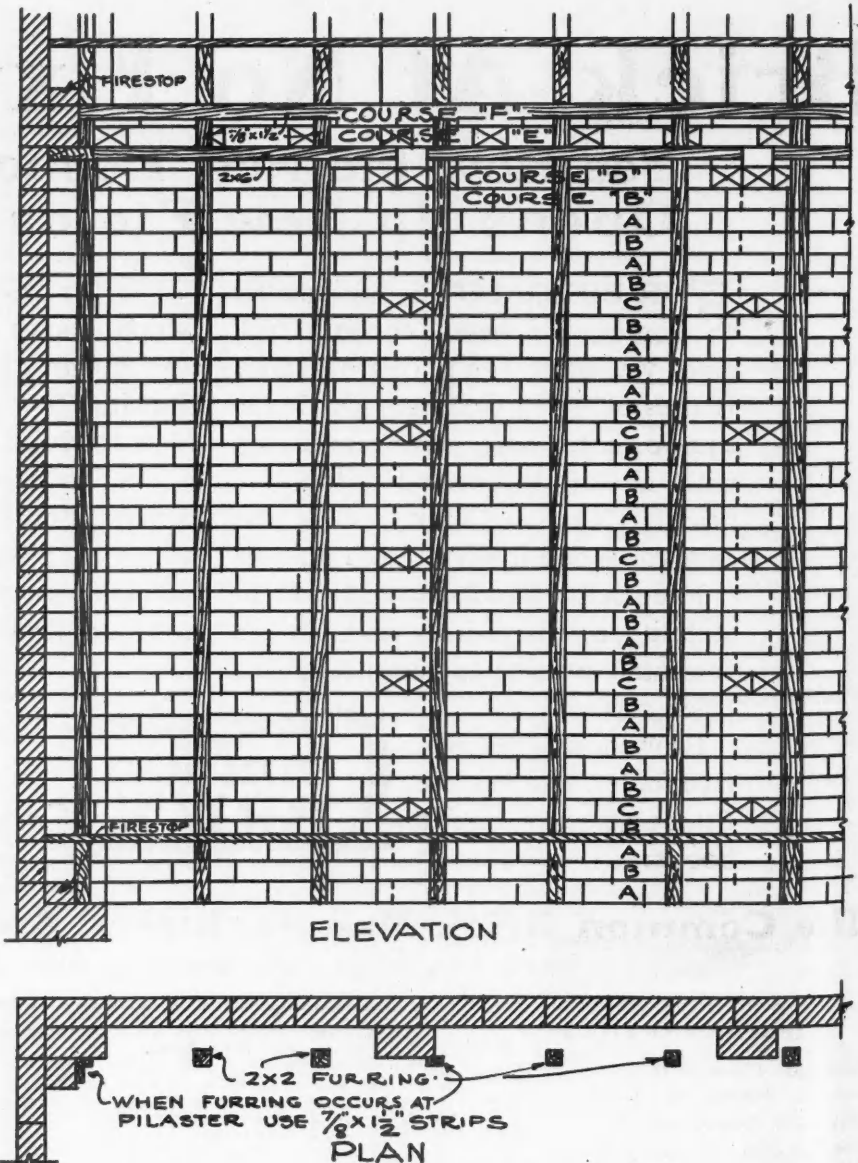
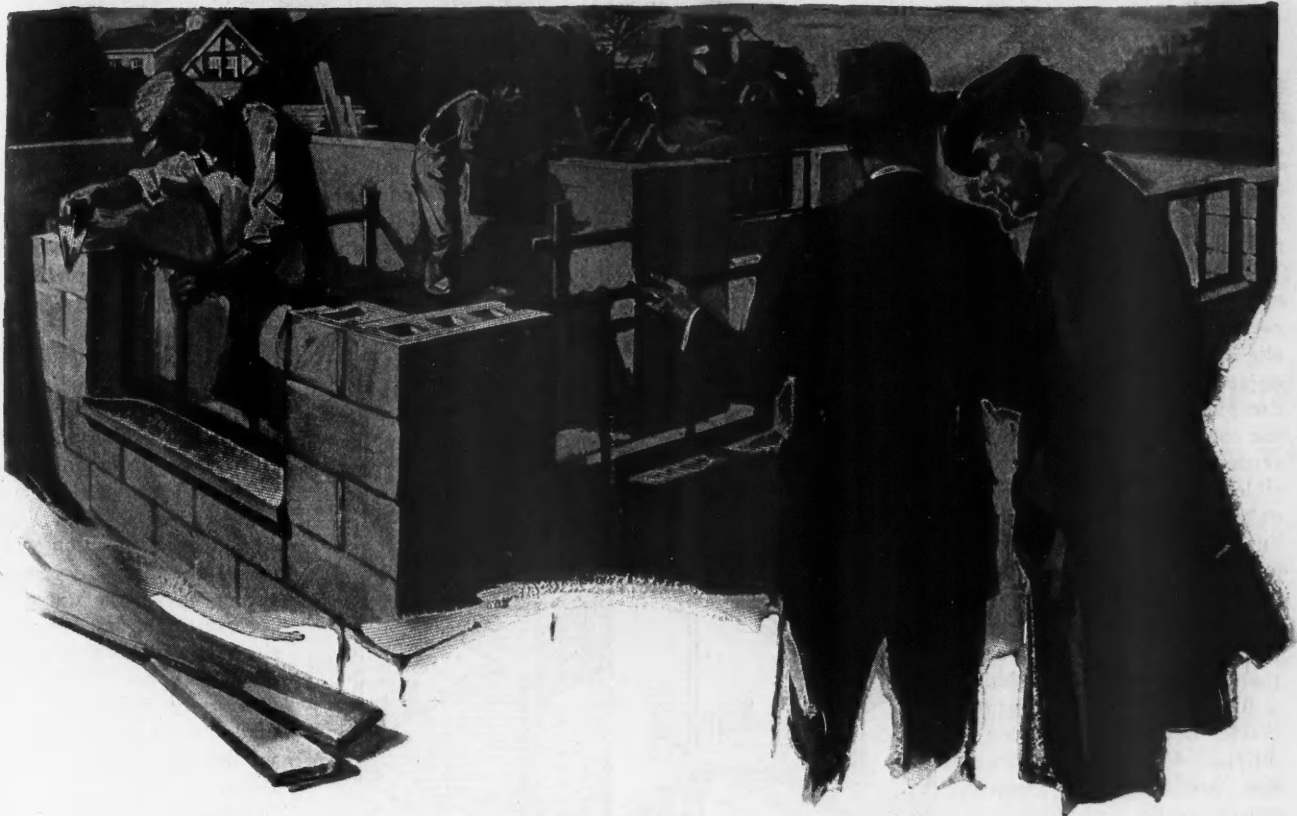


Fig. 4 Typical Interior Elevation of the Carver-Economy Wall with Back Mortaring Omitted, Showing Application of Furring Strips. For plan of lettered courses see Fig. 2.

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Better Plastering

Proper Framing to Insure Interior Beauty and Permanence

This Is the Second of a Series of Authoritative Articles on This Subject

IN our last article we discussed the importance of plastering as an interior finish and how the fireproof qualities of the building are dependent upon the lathing and plastering. This month we are going to discuss the importance of the framework and the general construction of the building and its importance to the preservation of the plastering.

It goes without saying, perhaps, that the foundations must be adequate and well proportioned to the load they carry. All buildings settle slightly on new soil and the object in view is to make the piers on the inside, and the footings under the walls settle as nearly alike as possible. This settling may be only a fraction of an inch, but if it is a fraction of an inch more in the piers than in the walls, then a strain will be put upon the plastering that may be so great that even a reinforcing lath will be unable to prevent cracks under extreme conditions. Conditions such as this are frequently found where walls or partitions touch chimneys. In such a position it is essential that the lath be furred out in the clear from the chimney breast so that the plaster and lath is not carried down with the chimney in its settlement, but remains on the level of the walls beside the chimney.

For added precaution, however, where the plastering is applied directly on the chimney a strip of metal lath at the juncture of the chimney and wall may be used to reinforce this particular point and eliminate the settling cracks there.

Wood shrinks more in the direction across the grain than parallel with the grain so that wood lath laid on its edge or side will shrink considerably while wood studs or posts do not shrink enough to be noticeable. However, if these same members are put upon wood plates or have thick wood girders over them, the shrinkage on the horizontal wood will be noticeable. Every precaution, therefore, must be taken here to so frame the house that there is an equal amount of horizontal wood in all parts. That is, if it is necessary to use horizontal wood girders or plates on the interior, there should be an equal amount of horizontal woodwork in the exterior walls. Or, to put it in other words, if the wall is of masonry, the least possible amount of horizontal woodwork should be used for the interior partition. This is illustrated by Figs. 1 and 2.

If the house is to be stuccoed, it is essential that the balloon frame construction be used for the exterior wall. This construction means that the studs will go from the

foundation wall plate to the roof in one piece without the use of horizontal wood in the form of plates at story levels. In such a construction, the second floor joists rest upon a ribbon cut into the studs at proper levels, and if partitions on the second floor are directly over the partitions on the first floor, it is advisable to carry out the same through stud construction in the interior. This is not possible in every instance, but if the house is designed carefully all bearing partitions will be through partitions. In

framing for stucco, there is the additional question of proper flashing which should be given thoughtful consideration. Flashing should be put over all projecting woodwork and should be placed at the end of all window sills and in every position where there is the possibility of water getting behind the stucco.

Next to the importance of shrinkage comes the question of deflection. Timbers are stiff only when they are made sufficiently deep to withstand the load, and the Department of Commerce has decided upon the following table as giving the proper stiffness for joists of southern yellow pine, 16 inches on centers, for ordinary construction:

SAFE SPAN FOR EACH SIZE

Sound wood—

9'3" 12'4" 15'8" 18'11"
2 by 6 2 by 8 2 by 10 2 by 12

Dense wood—

2 by 6 2 by 8 2 by 10 2 by 12
10'4" 13'10" 17'6" 21'2"

The table goes further, giving the maximum lengths allowable for all other kinds of lumber in commercial use.

Where walls or partitions rest upon girders or floors, it is most important to expect shrinkage or deflection to show, unless plaster is reinforced with steel lath. Where such walls butt into masonry walls further cracking can be avoided by reinforcing the inside corners of walls and ceilings with a 12-inch strip of metal lath as shown in Fig. 3. While we cannot depend entirely upon the lath to hold up the building there, it is sensible to believe that steel lathing will reinforce the building to a far greater extent than ordinary lath. If all cracks are not avoided they at least will be reduced to the minimum.

Ceiling cracks are sure to occur if the joists are too shallow to prevent deflection. The commonly recognized allowable deflection is $\frac{1}{360}$ of the span. Loads causing greater deflection will tend to crack the best plastering. The lighter the construction the more susceptible it is to deflection, so it is advisable to make the framing well within this rule.

Cross-bridging should be placed between the joists at distances of not more than six feet on centers. One reason

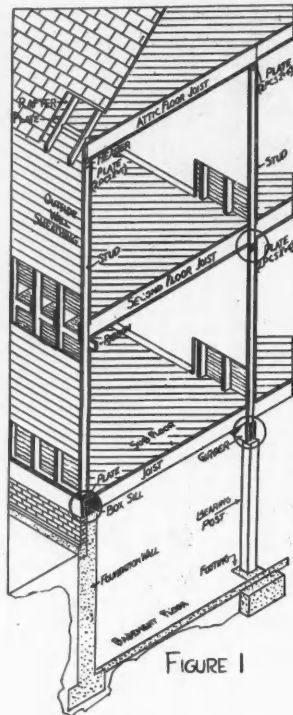


FIGURE 1

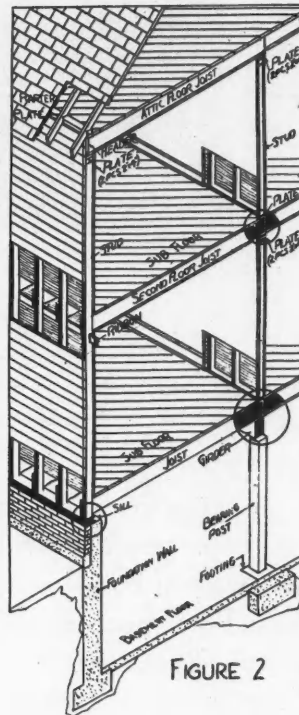


FIGURE 2

Fig. 1 Shows the Method of Building Against Shrinkage by Equalizing and Minimizing, in Walls and Partitions, the Amount of Lumber, Shrinkage of Which Would Cause Settlement.

Fig. 2 Shows the Common Method of Framing in Which the Shrinkage Problem Remains Unsolved.

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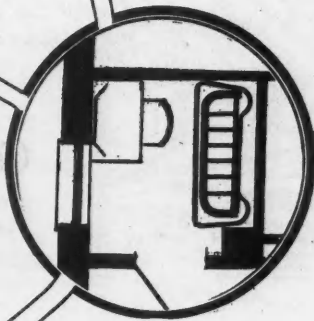
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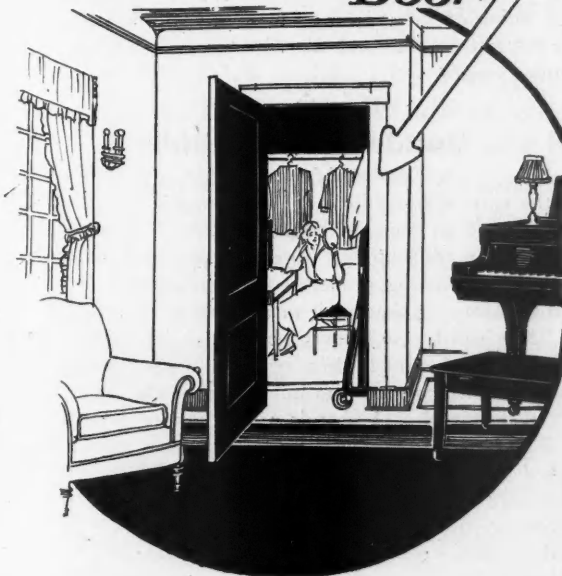
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Roll-A-Way Through Any Door



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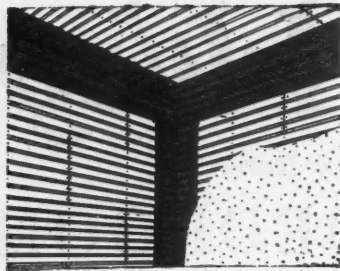


Fig. 13—A 12-inch Strip of Metal Lath Bent Into the Inside Corners of Walls and Ceilings Reinforces the Plastering Even When Applied Over an Ordinary Base.

deflections which inevitably would bring about plaster cracks in the ceiling below.

Bridging always should be nailed at the top and allowed to be loose until the rough flooring is put on, when the carpenter should go below and nail the bridging tight and snug. A new steel bridging on the market lessens the amount of labor necessary and insures a better fit than often is obtained with the wooden members. It should be emphasized that if spans are longer than twelve feet there should be two rows of bridging.

The next important item of construction to provide a proper base for better plastering is the correct framing of the openings. Any opening wider than four feet should have a truss built over it so that the loads are carried to the studs on the sides of the openings and are not carried by the horizontal lintel pieces. These side studs should, in every case, be doubled, as shown in Fig. 4. They carry the load which ordinarily would be taken care of by the studs which have been cut away to make the opening. The approved framing of such a truss is shown in the illustration.

Horizontal bridging between the studs is also essential to proper framing and never should be omitted. There is somewhat of a question as to whether diagonal bridging, which, when used, is placed at an angle of about 15 degrees from the horizontal with the slope alternating between adjoining pairs of studs, is preferable to horizontal bridging. Inasmuch as the chief duty of this bridging in this place is to hold the studs steady, rigid and prevent buckling, either type is satisfactory. It will be noted in passing that the bridging serves as a very effective firestop in preventing the upward spread of the flames through the stud spaces.

While there no doubt is an advantage in using double plates if very heavy construction is employed, it is doubtful if the advantage is enough to warrant double plates where perfection of plastering is desired because the shrinkage of horizontal woodwork has such a detrimental effect on plastering.

In closing the discussion on framing, there will be a time some day when plasterers will refuse to work upon houses which are framed so that plaster cracks are inevitable. That day has not yet been reached and we cannot expect it to be here when architects themselves are careless in designing homes that are intended to be the finest examples of their profession. The shrinkage of wood is

for the bridging is to hold the joists in an upright position, but as the word indicates, the chief value of the bridging is to carry the concentrated and unusual loads over a series of joists so that no one of them will have to carry more than its capacity. Without the cross-bridging single joists would be called upon to carry more than their share of the load, causing deflections

more important now than it ever has been because we do not get the same amount of pre-shrinkage that we had in times gone by. Timber is cut and transported by rapid freight and in many instances goes immediately to the building upon arrival in the town, there to shrink and throw doubts upon the plastering.

To sum up the points to be watched: Unequal settlement is the first factor to guard against. Elimination of as much horizontally placed wood as is possible is the second precaution. At any rate there should be as nearly as practicable the same amount of horizontal wood in all walls and partitions. Joists of proper depth for the span is the third element to consider. Proper framing over openings is the fourth. Cross-bridging between joists is the fifth and horizontal bridging between wall and partition studs is the sixth.



A Basic Industry

THE ease with which the construction industry can adjust itself to an unprecedented demand for building is illustrated in a review of the developments of the year 1924. Following a year which in itself broke all records, the industry entered 1924 with material stocks almost depleted and with an acute labor shortage in the skilled trades. On all sides came predictions that if as much business developed in 1924 as had come the year before, construction cost would mount.

Although 1924 was another record year, subsequent events proved that this was a mistaken prophecy. The year ended with costs practically where they were the year before. Throughout the year construction costs paralleled general commodity prices, which proves that construction is a basic industry and construction costs may be taken as a fair index of the general business situation.



Heavy Losses from Dry-Rot

OF all kinds of rot which destroy timber, that called dry-rot is the most insidious and develops with the greatest rapidity, according to C. J. Humphrey, of the U. S. Forest Products Laboratory. In discussing decay prevention as part of the activities of American Forest Week he made these statements:

"Dry-rot is an indoor fungus primarily and once it gains entrance into a building within a single year the floor and lower portions of the walls may become a crumbling mass of wood unfit for further service. None of the common woods of the United States are immune to dry-rot. Tared roofing and building papers also fall a ready prey and even mineral shingles composed of cement and asbestos have been known to warp and discolor when in contact with dry-rotting wood."



Builders in the Bible

(Continued from page 147.)

vating the natural possibilities of their people. In themselves they developed an harmonic influence that soothed most of their immediate difficulties. Egyptian pictures describe this anatomically. Walking propelled the nourishment of life. It secured a momentum that made many feats of resuscitation possible. They lead through seven periods of development where moderns have fallen off to three or four. It included recuperative functions which most workmen develop who are well nigh tireless in their zeal. The hands of the laborer determined his skill, like eyes. The sensibility of the feat was carefully cultivated and trusted to for guidance. Hungering was recommended to stimulate natural body and soul processes, hence their systems of fastings.

All these things were referred to in the Bible and illustrated in the tombs that are opened from time to time.

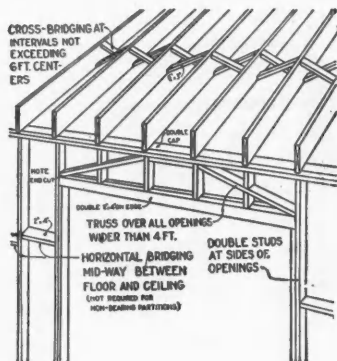
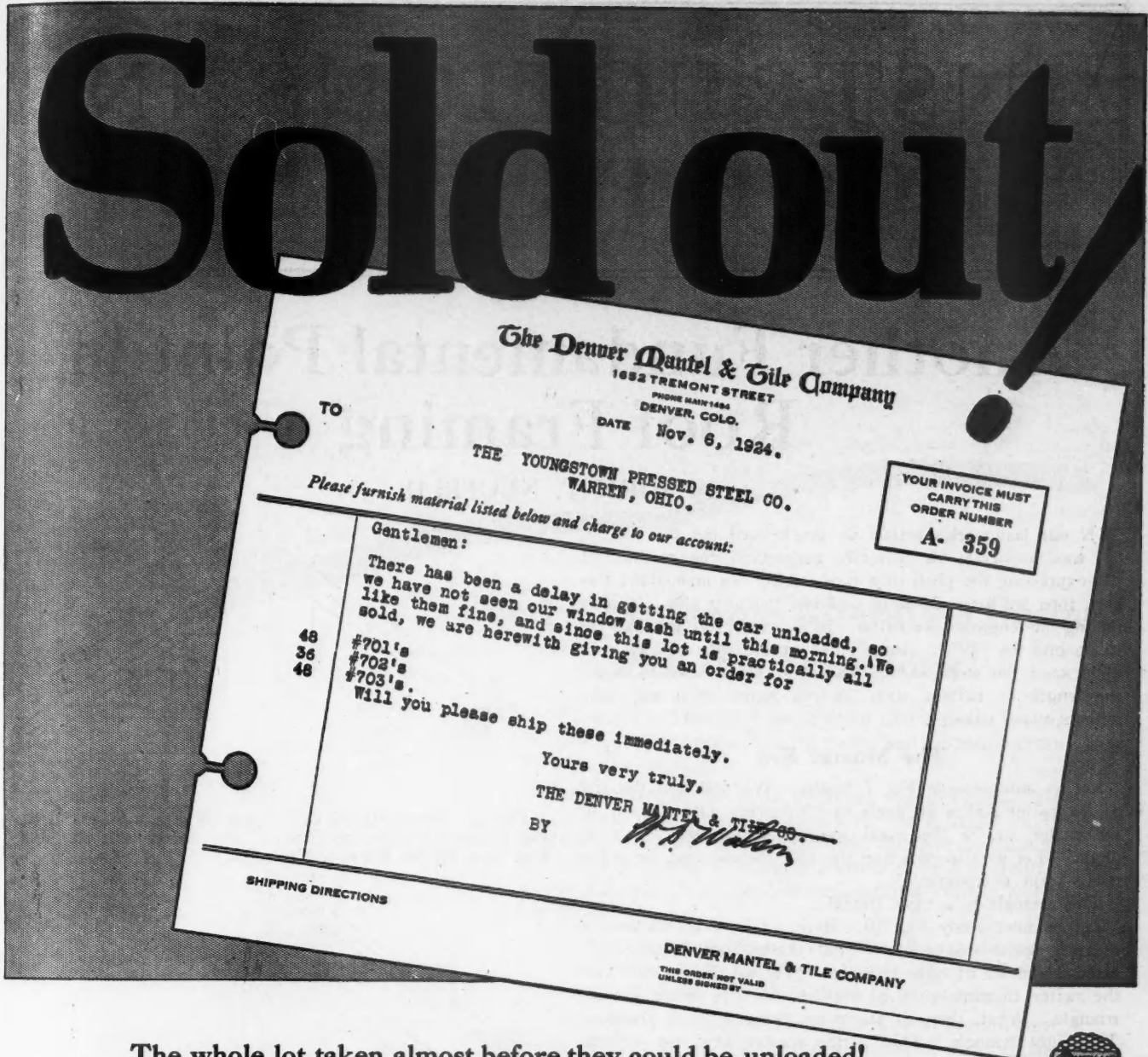


Fig. 4—Proper Bracing of the Framework of the Building Is the First Essential of Good Plastering.

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INSTRUCTIONS IN ROOF FRAMING

Another Fundamental Point in Roof Framing

By JOHN T. NEUFELD

IN our last week's article we emphasized the fact that it was important to correctly understand the method of expressing the pitch of a roof. After we understand this part, then we naturally want to know the next step. This is finding the length of the rafter. In this case, too, we shall try to go into the "Why" of the rules, or methods. If we once understand the mathematical reasoning that is used to figure the length of rafters, then we can figure most any kind without many rules.

The Master Key

Let us now observe Fig. 7 closely. We find that the rise of the rafter makes an angle of 90 degrees with the run of the rafter, or, in the usual way of stating this, "a right angle." Let us also note that the rise, the run and the rafter itself form a triangle.

This triangle is a right triangle.

Let us next study Fig. 10. Here we have an illustration of an irregular shaped roof. With dotted lines we have indicated a number of right triangles. We find that in each case the rafter together with its run and its rise forms a right triangle. What, then, is the great thing in roof framing? The right triangle. This is the master key that unlocks all the combinations of troubles in roof framing. It gives the length of rafters. It gives the top and bottom cuts and it gives the bevels.

How the Master Key Gives Lengths

How, then, do we find the length of a rafter? We find that to get the length of a rafter the pitch must be given. This is part of the design.

If a building is 8 feet wide and has a $\frac{3}{8}$ pitch, then the rise is $\frac{3}{8}$ of 8 feet = 3 feet. The run is 4 feet.

The steel square is made in the form of a right angle—that is, the tongue and the blade make an angle of 90 degrees with each other. Therefore, we may use the steel square to find the length. In Fig. 8 a huge steel square is shown on the side of a rafter. The blade of the square takes the place of the run of the rafter and the tongue of the square takes the place of the rise. If we wish to find the length of a rafter we may take as many inches on the tongue of the square as there are feet in the rise of the rafter and as many inches on the blade of the square as there are feet in the run of the rafter. Then measure between the two points with a rule and the rule will give the length of the rafter. Each inch on the rule will stand for 1 foot length of rafter and each $\frac{1}{2}$ of an inch on the rule will stand for 1 inch on the rafter.

The rafter in Fig. 7 has 4 feet for the run and 3 feet for the rise. This is shown on the square in Fig. 9. The length

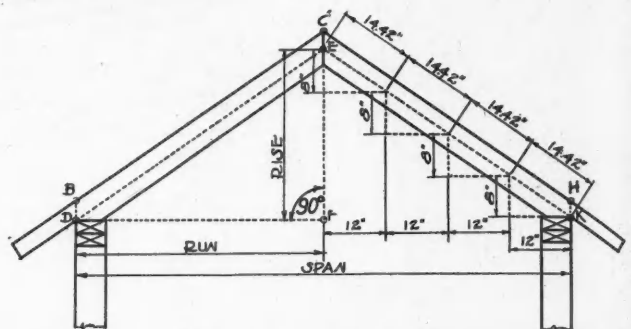


Fig. 7. The Rise of the Rafter Makes a Right Angle (90 Degrees) with the Run of the Rafter and the Rise, Run and Rafter Form a Triangle.

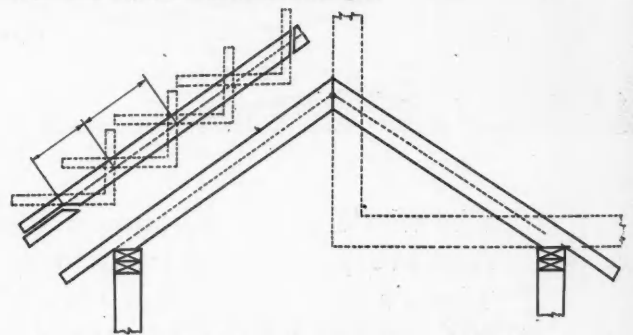


Fig. 8. If a Huge Steel Square Were Placed at the Side of the Rafter, the Blade of the Square Would Take the Place of the Run and the Tongue Would Take the Place of the Rise.

is found to be 5 inches on the square, therefore the length of the rafter would be 5 feet.

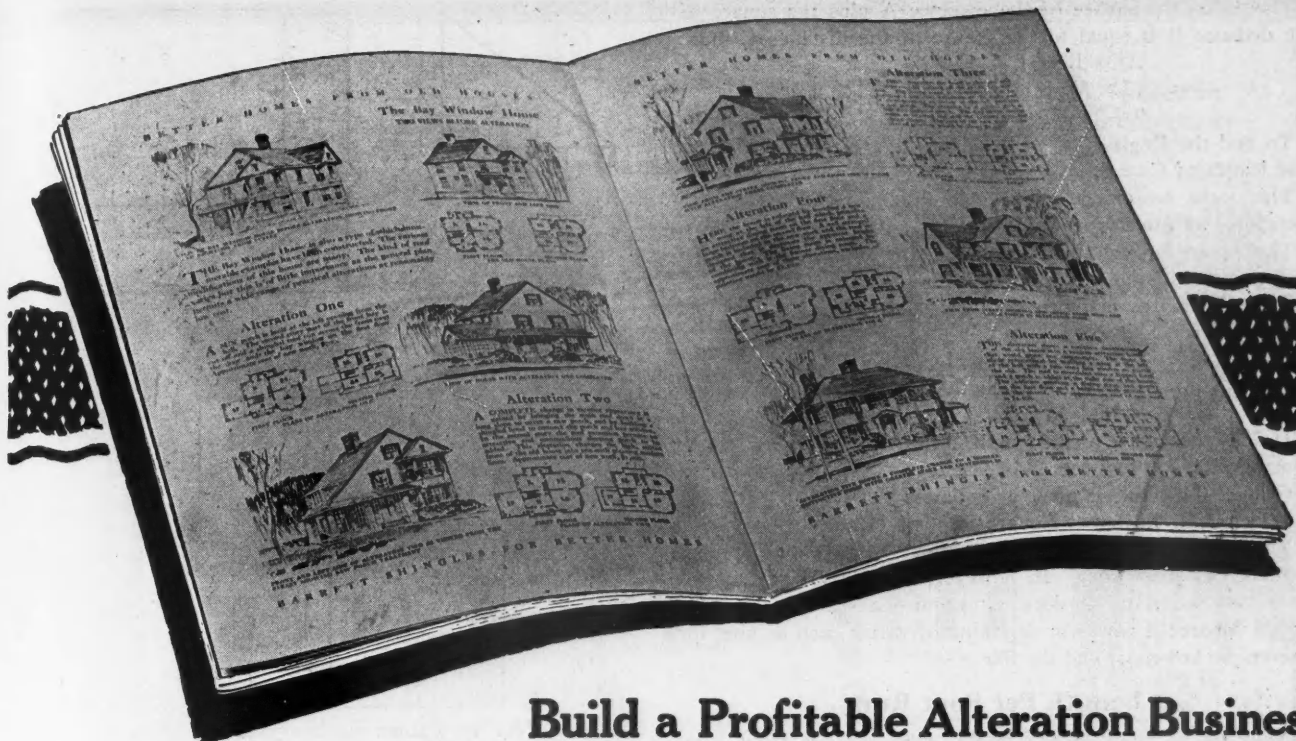
Try another example on your own square. Take the run of the rafter as 10 feet and the rise as 8 feet. The length of the rule will come out as 10 and $19\frac{1}{2}$ inches, therefore the rafter is $10\frac{19}{12}$ feet or 10 feet 10 inches.

Square and rule should be divided into twelfths of an inch to make transposing from inches to feet easy.

The Mathematical Method

We may next study the lower part of Fig. 9. We have the same size triangle as in the upper part of this figure.

Let us count the little squares on each side. We find that the number of squares on the side A plus the number of squares on the side B are equal to the number of the squares on the side C thus: $A \times A = 9$; $B \times B = 16$; $9 + 16 = 25$, and this is the same as $C \times C = 25$.



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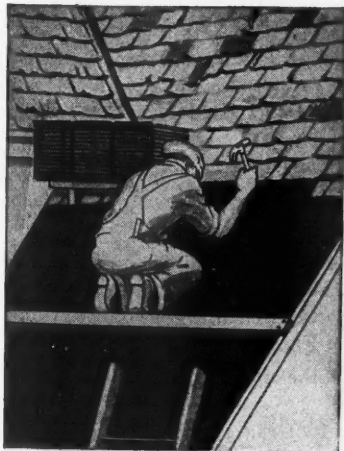
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Therefore, the square of the distance A plus the square of the distance B is equal to the square of the distance C thus:

$$A^2 + B^2 = C^2$$

$$(3 \times 3) + (4 \times 4) = 5 \times 5$$

$$9 + 16 = 25.$$

To find the length of C we take the square root of $25 = 5$. The length of C = 5.

This same reasoning holds good on any right angle, and, therefore, we use this method for finding the length of rafters.

The square of the run plus the square of the rise is equal to the square of the length.

Take the rafter in figure 10 that has a run of 4 feet and a rise of 6 feet.

$$\text{Run}^2 + \text{Rise}^2 = \text{Length}^2$$

$$4^2 + 6^2 = \text{Length}^2$$

$$16 + 36 = 52.$$

If 52 is the square of the length, then the length is the square root of $52 = 7.21 = 7$ feet $2\frac{1}{2}$ inches.

Generally the rule is given as follows:

$$\text{Length of Rafter} = \text{Square Root of } (\text{Run}^2 + \text{Rise}^2)$$

This method does not appeal to carpenters in general because it involves square root. It, however, has several advantages. It is very accurate; it does not require a set of tables nor even a square; it works on any kind of rafter such as hips for uneven pitched roofs and the like.

Length Per Foot Run

Next let us study Fig. 7 again, especially the right hand side. Here we have four small triangles in place of one large one as on the left side. We have formed a triangle for each foot of run. It is clear that if we find the length of the rafter for one of these small triangles that we can find the total length of the rafter by multiplying by the total number of divisions.

In Fig. 7 the length of rafter for one foot run is 14.42 inches and there are 4 feet in the run; therefore, the total length is 4×14.42 inches = 57.68 inches = 4 feet 9.68 inches or 4 feet $9\frac{10}{16}$ inches.

The length per foot run for the different pitches may be found by the square root method, but is generally given in tables either on the square or in books. When we wish to find the length of a certain rafter we look at the pitch and then find the length per foot run from the table.

Take as an example, the rafter in Fig. 10 that has an 8-foot run and an 8-foot rise. This is $\frac{1}{2}$ pitch or 12 inches rise per foot run.

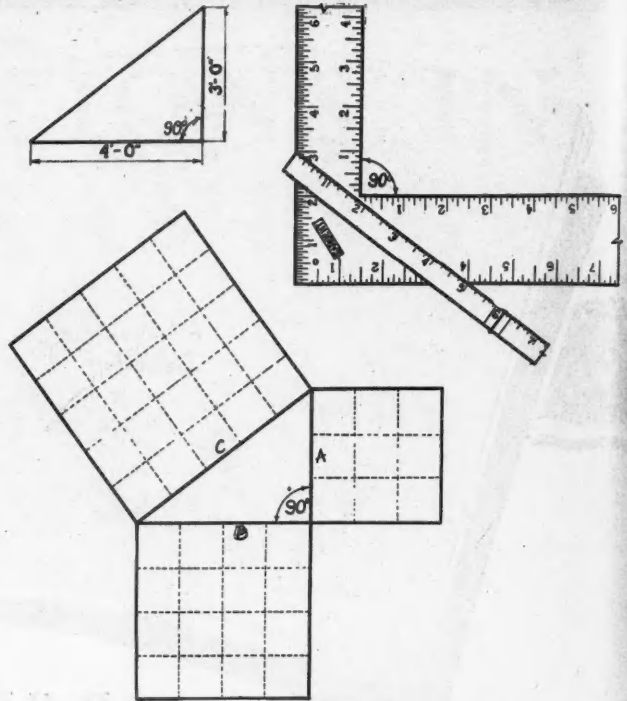


Fig. 9. Here is shown in diagram the relation of the rise and run to the length of the rafter.

From any standard square or table, we find that the length per foot run for this pitch is 16.97 inches.

As the run of this rafter is 8 feet the total length will be $8 \times 16.97 = 135.76$ or 11 feet $3\frac{3}{4}$ inches.

Stepping Off with the Square

On the right hand side of Fig. 8, we show how we may step off the length of the rafter with the square. The square is applied as many times as there are feet in the run. The figures on the square to be used are the rise per foot run on the tongue and a foot run or 12 inches on the blade of the steel square.

Problems

The roof illustrated in Fig. 10 is perhaps somewhat out of the ordinary. It is drawn in this manner for the purposes of illustrating the points discussed in the lesson. The following problems are based on Fig. 10:

1. What is the pitch of the upper part of the gambrel roof shown in Fig. 10?
2. What is the rise per foot run of this rafter?
3. What is the length of this rafter? Measure this length on the square.
4. What angle does the blade of the steel square make with the tongue?
5. What length is the run on the valley rafter? Use square root.
6. What is the length of the valley rafter?
7. What is the pitch of the lower part of the gambrel roof shown in Fig. 10?
8. One of the rafters in the illustration has a run of 8 feet. If the length per foot run is given as 16.97 inches on the steel square, what would be the length of this rafter?
9. If the method of applying the square as shown in Fig. 8 (upper right-hand corner) was to be used for finding the length of the rafter in problem 8, what number would be used on the square?
10. How many times would the square have to be applied to find the length of this rafter?

[Answers to these problems will be found on page 206.]

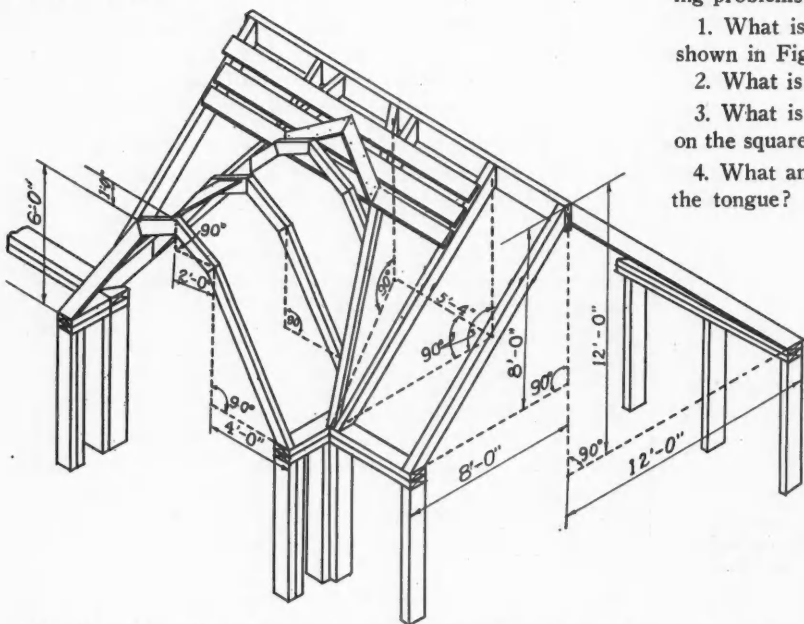
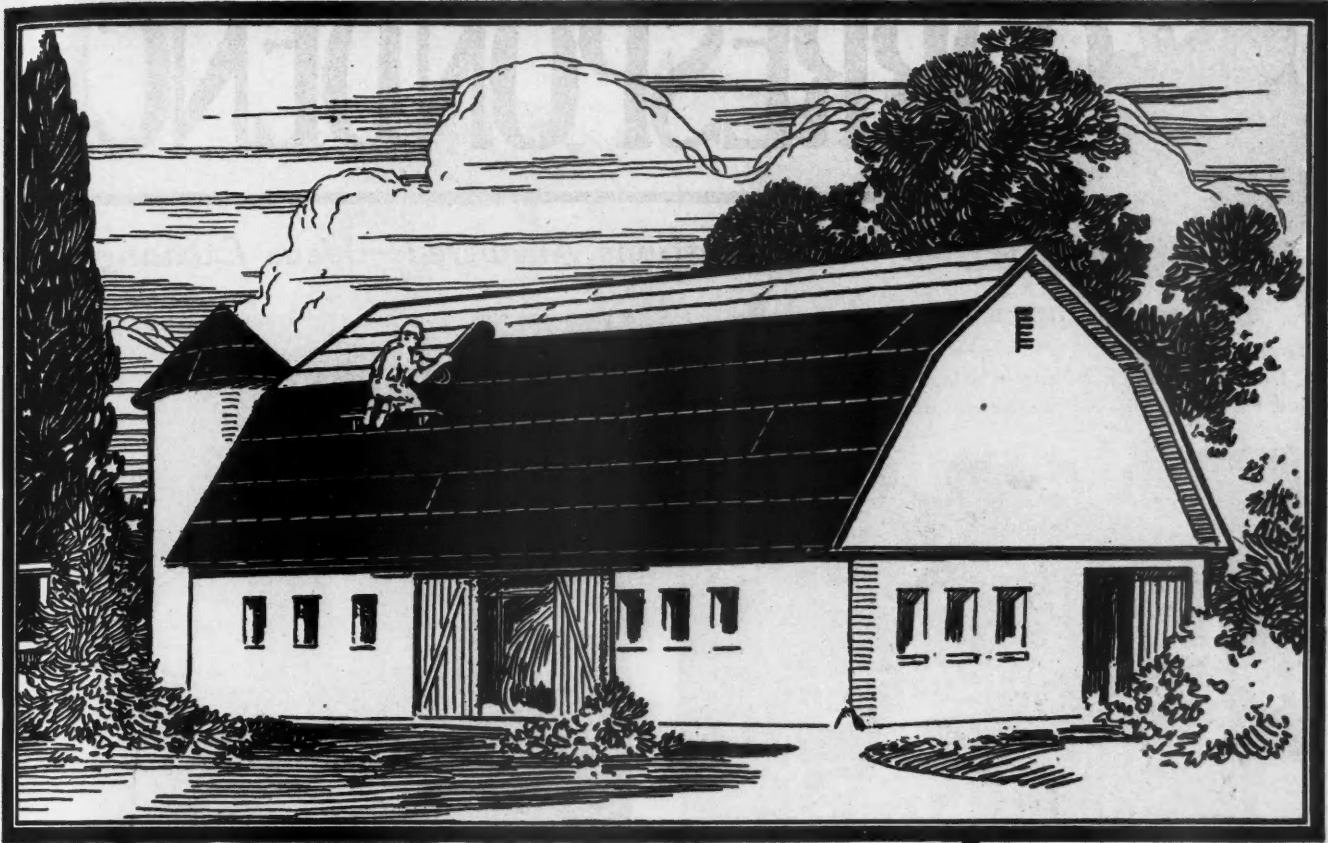


Fig. 10. Here is an irregular shaped roof but in each case the rise and run form a right angle. The great thing in roof framing then is the right angle.



Why Genasco is the standard quality roofing of the world

Genasco Roll Roofing is waterproofed with the world-famed Trinidad Lake Asphalt Cement—a nature-made waterproofing product far superior to the artificially-produced asphalts.

Genasco Roll Roofing is built on a foundation of tough, long-fibred felt—selected because of its great power of absorbing and holding the waterproofing saturant.

Genasco Roll Roofing is the only roofing furnished with Kant-Leak Kleets. They eliminate cement, large headed nails and caps. Also keep seams absolutely water and wind tight.

These are just a few reasons why Genasco Roll Roofing is the standard quality roll roofing of the world. Made in two styles—smooth surface and slate surfaces. The slate-surface roofing is made in three colors—red, green and blue-black.

Let us send you additional data regarding Genasco Roll Roofing and other roofings of the Genasco Line.



The Genasco Line includes asphaltic roofings, floorings, paints and allied protective products. Write for illustrated folders.

The Barber Asphalt Company
PHILADELPHIA

New York, Chicago, Pittsburgh, St. Louis, Kansas City, San Francisco

Genasco

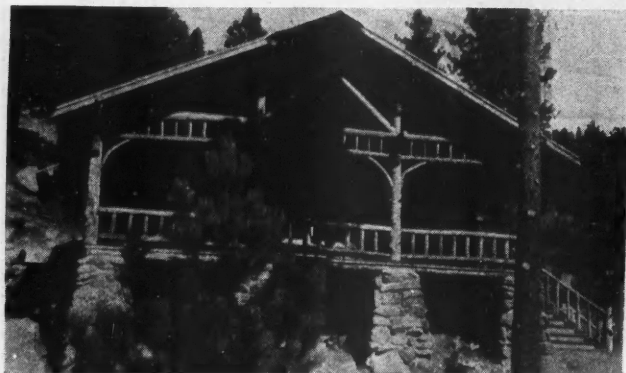
ROLL ROOFING

CORRESPONDENCE

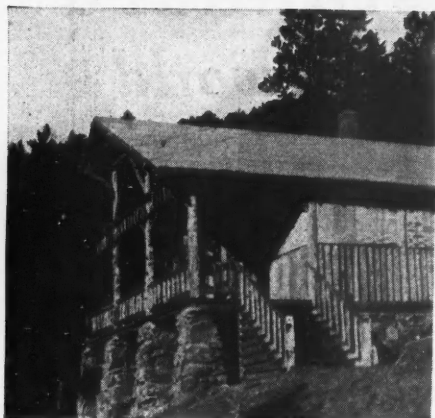
Questions Answered—Ideas Exchanged

A Mountain Cottage

To the Editor: Lyons, Colo.
I am enclosing two views of a log cottage which I planned and built last fall. As this cottage has a number of features



Logs and Boulder Were Close at Hand to Make This Cottage on the Side of a Mountain Attractive. What a great view there must be from that broad porch.



which are rather out of the ordinary in the art of log construction, I thought that it might be of interest to you and some of the readers of AMERICAN BUILDER. The plan includes three rooms, sleeping porch and front and back porches.
A. W. WOOLEY.

To Put on Ceiling

To the Editor: Pewaukee, Wis.
Here is an easy way to put on ceiling. Cut a slot in a piece of board three or four inches wide, and one foot long, the thickness of the ceiling, like a clothes pin, put it astraddle the piece you are putting on, and have the slot long enough to catch one or two boards that are on, and one man can put up a ceiling very easily.
ROBT. HARLAND.

What Will Stop Condensation?

To the Editor: Belvidere, Neb.
We have a chimney in one of our buildings in which water forms to the extent of about a gallon a day in cold weather. This is a six brick flue laid up of hard, burned brick, plastered inside. It passes through an unheated room. Perhaps some reader of AMERICAN BUILDER could suggest the proper method of correcting it. Won't you take this up?
BELVIDERE COAL & LUMBER CO.



The Owner Has a Right to Be Proud of This Barn, for Even at the Stage of Construction Shown Here It Is Plain That It Is a Truly Modern Building.

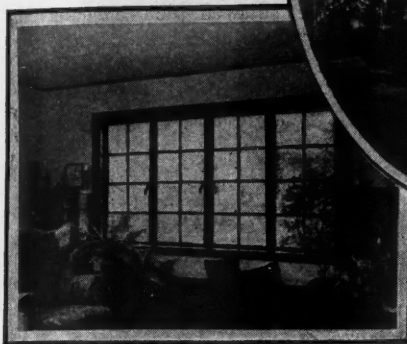
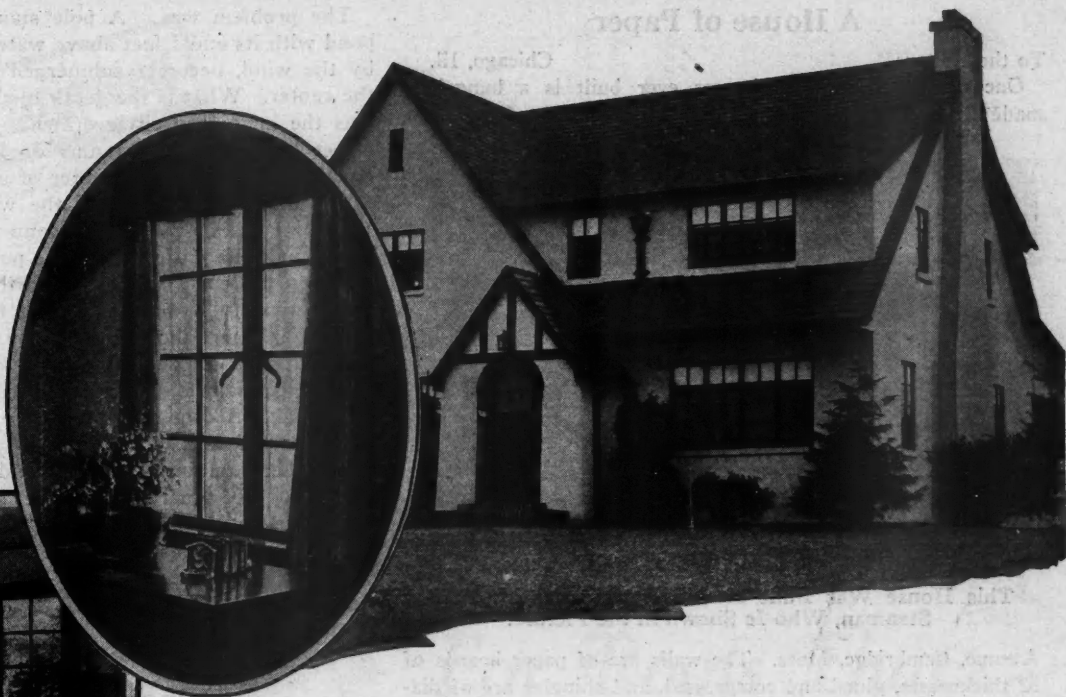
To the Editor: Winomac, Ind.
Enclosed please find a picture of a barn I built. It is a horse and dairy barn, 36 by 62 feet, of the gambrel self-supporting roof type. All spectators speak a good word for this barn. Your good AMERICAN BUILDER aided me in the construction on this barn and it might be interesting in your next issue. The proud owner of this structure is Mr. Elmert Monesmith of near Kewana, Ind.
JUD. J. PETERSON.

An Old Time Builder

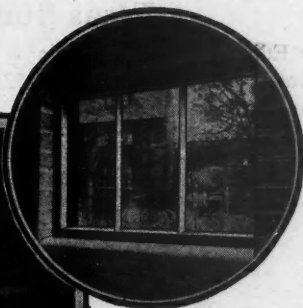
To the Editor: Moyers, Okla.
In order to get better acquainted I am sending you a picture of myself and one of the buildings which I have constructed here. I have done similar work in many parts of the country and with every kind of building material except adobe. The building shown in the photograph was all the work of myself and one helper.
JOHN FRISKOFF.



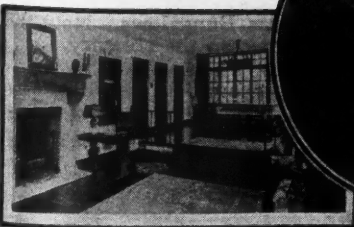
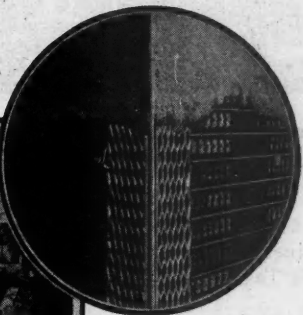
Here Is Another Fine Looking Building Which Was Being Put Up by One of Our Readers When the Picture Was Taken. The builder himself can be seen right on the job in his working clothes.



Four Standard sizes of Truscon Casement Windows meet every need.



Truscon Copper-Steel Basement Windows add rooms of service to the home.



Truscon 1-A Hy-Rib Metal Lath and Corner Bead give fireproof, crackless walls and ceilings.

Homes to Which You Point With Pride

Truscon Home Building Products offer you permanent building materials which will give lasting value and attractiveness to the houses you construct. The durability of the completed structure will be a testimonial to your ability as a builder—and you can build this way very economically.

Truscon Copper-Steel Casement and Basement Windows meet every home building need, are permanent, rust-resisting, weather-tight, sagless and low in price.

Walls and ceilings of lasting beauty, fire-safe and crackless, can be secured with Truscon 1-A Metal Lath and Expanded Metal Corner Bead. Build your reputation with these dependable products.

Consult Truscon Before Building

Truscon maintains a corps of experienced building engineers who will cooperate with you on any building problem without obligation to you. Consult Truscon to secure the best design and the most economical construction.

Write for "Home Builder's Encyclopedia"

TRUSCON STEEL COMPANY, Youngstown, Ohio

Warehouses and Sales Offices in principal cities.

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TRUSCON STEEL CO.

HOME BUILDING PRODUCTS

A House of Paper

To the Editor:

Chicago, Ill.

One of the most novel houses ever built is a bungalow made from 30,000 newspapers by E. F. Stenman, 418 Huron



This House Was Built of Old Newspapers by E. F. Stenman, Who Is Shown in the Picture.

Avenue, Cambridge, Mass. The walls are of paper boards of 52 thicknesses, glued and compressed, and shingles are of diamond shape, being from 20 thicknesses of paper. The place has 22 windows. Paper boards were nailed to the frame and the shingles were nailed to the paper boards. The whole was then varnished to keep out air and wind. RHYS. G. THACKWELL.

Here's One to Work On

To the Editor:

Villa Grande, Calif.

I had a contract to build a concrete road at a certain amount per square foot. The owner and I differ in computing the length and area of this road, so I am writing to you in the hope that you or some of the other readers may be able to give me the exact length and area.

This road is built diagonally across a plot of land 100 feet square. It terminates at two opposite sides of this plot. At each end the side of the road nearest the corner of the plot is 10 feet from the corner. The road itself is 10 feet wide. How can the length of the road and the area be found?

WILLIAM PATTERSON.

Can You Help This Man?

To the Editor:

Montclair, N. J.

I would like to request, through the "Correspondence" department, the experience of your readers in regard to a problem which we have here.

We have an order for a sectional building, 24 by 60 feet, one story and gable roof, half pitch, interior head room at least 12 feet, clear of interior posts, sections to be not wider than 6 feet, all sections to be bolted together, to be erected on a concrete foundation. This building will probably be used as an office for a period of eighteen months, moved to a new location and re-erected by common labor.

Any data which can be furnished me on this will be greatly appreciated.

SAMUEL A. MATEER.

Reply to W. H. Duke's Problem

A LARGE number of letters have been received replying to the problem offered last month by William H. Duke. Two simple methods of solution are offered. It should be noted that in both solutions it is assumed that the pole, when submerged, forms a straight line from the point where it enters the bottom of the pond to the surface of the pond. In actual fact it would form a curve and the length would be greater than that found in either solution.

The problem was: A pole standing in the center of a pond with its end 5 feet above water level, on being swayed by the wind, becomes submerged at a point 15 feet from the center. What is the depth of the pond and what radius was the imaginary circle drawn?

Let "X" equal the radius or length of the pole, "Y" equals the depth at the center of pond, "A" equals the distance, along the surface of the water from the center to the point where the pole becomes submerged, or 15 feet, "B" equals the projection of the pole above water, or 5 feet.

When the cord of an arc and the height of the segment are known, to find the radius of the circle add the square of one-half the chord to the square of the height of the segment and divide by twice the height of the segment. Applying this rule, which may be found in any construction handbook, "A" squared, plus "B", divided by 10 equals the radius, or 25 feet.

Another solution: "A," "Y" and "X" form a right angled triangle. "X" squared equals "A" squared, plus "Y" squared. "X" equals "Y" plus "A," or "Y" plus 5. Substitute the square of "Y" plus 5 for the square of "X" in the first equation and solve for "Y." Both solutions give us 25 feet for the radius or length of the pole and 20 feet for the depth of the pond.

Who Can Help Here?

To the Editor:

Hartford, Kansas

Will you please tell us how we can make a good cheap trailer for a Ford ton truck to haul lumber on or have some good subscriber tell us how.

G. G. STORK.

A Texas Bungalow

To the Editor:

Seguin, Texas.

Enclosed please find check for \$2.00 for one year's subscription to AMERICAN BUILDER, also some kodak pictures I've taken of some of the houses I build. The pictures are not very



One of the Robert Felsing's Texas Bungalows. Note the novel placing of a flower box on the chimney.

good, but you may be interested in seeing the type of building we are doing. You need not return pictures. I am sending them just to show that we have some mighty fine building down here in Texas.

ROBERT FELSING.

Can Log Walls Be Cleaned?

To the Editor:

Phelps, Wis

I would like to ask you a favor; am up against the problem of cleaning a log wall. The logs were peeled in the spring and now are brown in color. Have tried acid for bleaching but it does not work. Would like to get a thin shaving off all around. A portable sander would be just the thing if I could get this with some blades to take the place of sandpaper or sand-cloth. Perhaps you can advise where I can get something like this.

EMIL KINNER.



For Roofs That Give Contentment and Protection

PROTECTION, beauty and permanence through the years to come, are assured the owners of those new homes going up in your community—when you roof with *Certain-teed* Slate Surfaced Shingles or *Certain-teed* Roofing. Your customers will be doubly proud of the job, because they know the *Certain-teed* reputation of producing roofing and shingles unexcelled in quality and service.

Certain-teed's capacity for rendering service to your customers has grown each year. Its ability to develop sound business and good profits for builders, is daily finding added proof in rapidly increasing sales of its products.

You will find the *Certain-teed* system of distribution a big factor in removing building difficulties. You won't be held up by delayed deliveries of material, for a *Certain-teed* distributor is near at hand, ready to supply you quickly. Take advantage of this service and build up your business with *Certain-teed*.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

NEWS of the FIELD



First Annual Commencement of Cleveland Apprentice School

FOR the first time in the history of education, a group of building trade apprentices, who had completed certain prescribed work, were presented with diplomas by the public school system of Cleveland, Ohio.

This graduation, which was held in the auditorium of the East Technical High School on April 10, is evidence that the public educators of the country are beginning to realize their responsibility in the training not only of the minds but the hands of the youth of America.

The apprentice training movement in Cleveland dates back to 1917 when a night class for sheet metal workers was organized. In 1918, a committee of master and journeymen plumbers decided that some provision must be made to recruit apprentices for that important branch of the building industry. This committee petitioned the Board of Education to assist in the work of starting and maintaining such a school. The request was granted and in a brief space of seven years the movement has grown until now in place of a handful of boys in one trade there are nearly one thousand boys in six trades attending the part-time schools.

All of the schools are conducted under the same general plan, which provides for a joint committee in charge, composed of an equal number of contractors and journeymen and a representative of the public school system. The schools come under the provisions of the Smith-Hughes Act, which is a federal statute enacted in 1917, that provides for federal and state aid in apprentice training. The balance of the money required is furnished by the local Board of Education. The building materials used in the Cleveland School are supplied by the local material manufacturers and dealers.

In addition, from time to time, evening meetings are arranged at which moving pictures depicting certain phases of the manufacture of materials used by the students are shown.

In order to insure an apprentice that he will be given steady employment during his entire four-year course, each boy is indentured to a contractor in his chosen trade with the understanding that if his employer runs out of work he will be given temporary employment with another employer in that branch. Thus the danger of boys leaving before the expiration of their apprenticeship period due to unemployment is minimized.

Each apprentice spends four hours a week in the classroom for which he is paid by his employer, and the balance of the time is spent on the job. In this way the practical and theoretical parts of his trade are so correlated that when he is through he is a thoroughly trained mechanic.

Plumbers, bricklayers and carpenters to the number of 150 made up the first graduating class. In addition to these grades, classes in painting and electrical work were organized early this year, while the sheet metal course, which was started in 1917, is still training apprentices in that trade.

Leaders in industry, labor and education were in attendance at this commencement. Secretary of Labor Davis who was unable to be present sent a message; so did Franklin D. Roosevelt, president of the American Construction Council.



Better Homes Week

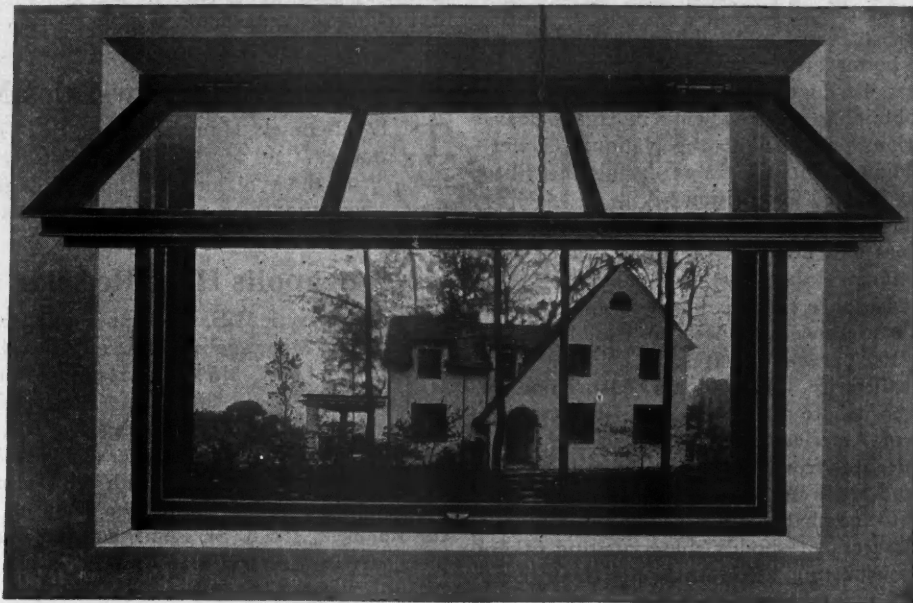
ASSURANCE that the campaign for Better Homes in America would surpass all previous records in the number of communities to observe Better Homes Week was reached at the end of March, a month and a half before Better Homes Week, May 11 to 17.

The Better Homes organization is educational in character, aiming to help every American family, particularly those of modest incomes, to know the best means of increasing the comfort, convenience and beauty of their homes. It is through local demonstrations in the hands of committees headed by volunteer chairmen that this message is actually carried to the people of the country.

Last year 1,500 local communities, ranging from large cities to one community in the Southwest comprising only a dozen families, took part in Better Homes Week. By the time set for the inauguration of Better Homes Week—May 11—the number of local committees, it is confidently expected, will pass considerably last year's figure.



At the First Annual Commencement of the Cleveland Building Trades Apprentice School, 150 Graduates Received Diplomas, the First Ever Issued by a Public School in Recognition of the Completion of a Prescribed Course of Training in the Trades.



**Lupton
Basement
Window**

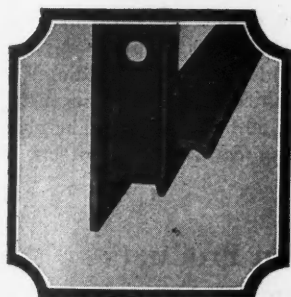
**Made of
Copper-Steel**

A popular basement window

Rigid

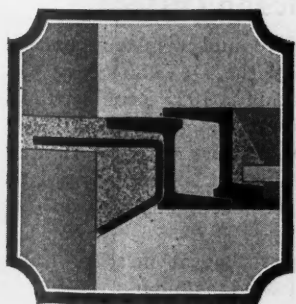
Weather-tight

Economical



Solid steel drip

An extra degree of weather-tightness is gained by this solid steel drip which is an integral part of the bottom sash member. The sash is easily removable, from the inside, for glazing.



Tight and rigid

Continuous anchors which project into the masonry ensure a weather-tight job. An exclusive welding process makes this window so rigid that it can't get out of square.

As you drive through the residence section of your city, notice the increasing number of homes equipped with Lupton Basement Windows. These good-looking windows appeal to practical people because their neat appearance improves the looks of the basement, both inside and out.

You should put Lupton Basement Windows in your houses, too. Rigid and light, they are as easy to set as wood windows, but being made of copper-steel, they will last many times longer.

In addition, they give the owner greater protection from the weather and more daylight. Made in three standard sizes to fit almost any basement condition—all moderately priced.

Write for descriptive folder

DAVID LUPTON'S SONS COMPANY

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751

To Set Building Standards

THE standard of American homes built in the future can be raised by penalizing poor construction in charging a higher rate of insurance than that placed on good construction, "pedigree" of merit, issued to good houses will encourage the building of better homes, and home ownership in the United States can be encouraged by doing away with excessive fees for obtaining and renewing mortgage loans according to resolutions presented to the National Conference on Home Building, held in Chicago during the Fifth Annual "Own Your Home" Exposition.

The electrical industry, the plumbing trade, the heating and piping contractors and many of the other trades now issue individual certificates that give the home buyer or or builder only the assurance that his house is good in one particular and the conference proposes to combine their efforts and achieve 100 per cent houses.

The conference called by the National Association of Real Estate Boards to debate on how to raise the standard and lower the cost of American homes built in the future was composed of delegates from more than twenty national allied professional and trade organizations and associations and pledged itself to combat loan sharks, unscrupulous contractors, manufacturers of shoddy materials and others who prey on the unsuspecting home buyer and builder.

It is proposed to make this conference a permanent organization to meet each year in one of the cities where the national "Own Your Home" Expositions are held.

Exhibit Sash and Screen Machinery

WHAT is said to be the first exhibition of sash and screen manufacturers' machinery ever held in New York will be the new exhibit, during April, at the show rooms of the Lou Markwell Company, 105 Hudson Street, corner of Franklin Street, New York City. This exhibition will be held in rooms 811 to 814 and only new machines will be shown. An invitation is extended to all readers of the American Builder to attend this First Annual Exhibition. There will be no charge for admission.

Move to Reduce Fire Losses

AT the National Conference on Home Building, held in Chicago, March 25-26, attention was called to the serious need of reducing the fire losses in this country which now amount to more than \$500,000,000 annual or \$4.00 per capita, which is twice as much as the interest paid out last year on all savings bank accounts.

Toward this end resolutions were passed, "That this conference accord preferences to fire-resistant methods and material in the construction of American homes and dwellings," and "That in recognition of the fact that approximately three-fourths of all residence fires of known origin start in basements, masonry types of construction which contain first floors with at least two-hour fire rating be recommended to the public for their superior fire resistant qualities."

Heating and Ventilating Exhibit

A HEATING and ventilating commission composed of prominent and representative members of the various trades under this classification has been formed in connection with the Philadelphia First Annual "Own Your Home" Exposition to be held in the Commercial Museum, May 9th to 16th, under the auspices of the Philadelphia Real Estate Board, and an operating license issued by the National Association of Real Estate Boards.

This committee will see that the public is impressed with the importance of the proper selection and installation of

heating and ventilating equipment, pass on all firms exhibiting in this section at the exposition, endeavor to have each division of the heating and ventilating trades represented by educational exhibits and generally guide the policy of the interests participating.

Rommel Has New Sales Manager

THE Rommel Manufacturing Co., Kewaskum, Wis., announces that H. W. Keyes, formerly assistant sales manager of the Worthington Pump & Machinery Corp., has taken over the sales managership of its business.

Minneapolis Heat Regular Co. Branch

ON February 1, 1925, the Minneapolis Heat Regulator Company of Minneapolis, Minn., established its seventh branch office in St. Louis, Mo., as a result of the rapid growth of regulator business in that city. The location of this district factory branch in St. Louis, managed by Mr. George Kingsland, enables the company to give better and speedier shipping service and a more intimate contact with the heating trade.

The St. Louis office will carry a complete stock of regulators for shipment, f. o. b. St. Louis, and is prepared to offer complete installation service for St. Louis and suburbs, within a radius of twenty-five miles.

The new branch office is adequately prepared to service installations, to advise the trade regarding the application of regulating devices to the various heating systems, both domestic and industrial, and to assist in solving the problems of successful heating and heat regulation.

Addition to Heins Plant

A NEW addition to the plant of the A. G. Heins Company, Knoxville, Tenn., distributors of building materials, in the form of an office and warehouse building, has recently been completed and occupied. This is a thoroughly modern brick and steel structure, 50 by 100 feet. The plans were prepared by Manley, Young & Meyer, architects, of Knoxville.

New Hutchinson Products

TWO new bench jointers were added to the line manufactured by the Hutchinson Manufacturing Company, 18 South Seventh street, Philadelphia, Pa., on February 1, according to the announcement sent out by that company describing its new products.

De Vilbiss Chicago Office

A N accessible downtown office and display room has been opened in Chicago by the DeVilbiss Mfg. Co., of Toledo, Ohio. This new location is 1006 Republic Bldg., corner of State and Adams Streets.

There is featured in these new quarters a display showing of DeVilbiss Spray-painting equipment, as well as a large stock of spray guns and other parts making up this equipment.

The DeVilbiss Company states that at no time has it been so well equipped and situated as now to serve its many customers and friends in the Chicago territory and gives assurance that a hearty welcome will be accorded all callers.

Association Changes Address

THE executive office of the National Association of Building Trades Employers have been transferred to Room 214, Electric Building, Cleveland, Ohio.

Why Pay Six Men For One Man's Job

Every contractor without an American Universal Floor Surfacing Machine is increasing his payroll by six men every day that he pays for scraping floors by hand. Think what it means to your payroll over a period of a year, and what it would mean in profits over the same year, if you owned an

American Universal FLOOR SURFACING MACHINE

Not Only New Buildings But Old Buildings must have their floors resurfaced and put in good shape. The increased amount of work in resurfacing old floors in old buildings and homes would add big, extra profits to your contracting business.

YOU ARE THE LOGICAL MAN TO HANDLE THIS BUSINESS

Contractors and builders find the "American Universal" method of floor surfacing a profitable side line to keep the money rolling in the year 'round, besides saving the wages of six men on all of their own work. Send a postal card, write or fill out coupon today and ask for particulars and other valuable information which we will furnish without any obligation on your part whatever.

The American Floor Surfacing Machine Co.
515 So. St. Clair Street, TOLEDO, OHIO



CUT OUT AND MAIL THIS COUPON TODAY

The American Floor Surfacing Machine Co.,
515 South St. Clair Street, Toledo, Ohio

Please send me without any obligation on my part full information about the "American Universal" Floor Surfacing Machine.

- I am a building contractor.
- I am interested in becoming a floor surfacing contractor.

Name.....

Street.....

City.....

State.....

ONE MAN ON HIS FEET IS WORTH SIX ON THEIR KNEES



Award Architectural Scholarship

THE 1925 Le Brun Traveling Scholarship was won by Clarence W. Hunt, a graduate of the department of architecture at Carnegie Institute of Technology. This is a yearly award of \$1,400 to be devoted to at least six months' study in Europe. It was established by Pierre Le Brun, and is awarded under the direction of the New York Chapter of the American Institute of Architects. It is offered to any architectural draftsman or architect between the age of 23 and 30 who is a resident of the United States.

The subject of this year's competition was a municipal building for a town of at least 150,000 population having room for all the city officials, including a city court and auditorium for public functions. First mention was given Will Rice Amon, of New York City; second mention to Charles H. Dornbusch, of Princeton, N. J.; third mention to Louis Skidmore, of Boston.

Long Service Recognized

AT THE close of a recent weekly meeting of the foremen of the L. S. Starret Company, Athol, Mass., Robert J. O. Simpson, superintendent of the company, was presented with a watch by his associates in recognition of their esteem and the fact that he had completed his twenty-fifth year as superintendent of the factory, and twenty-ninth year with the company.

Another recognition of service occurred at the annual meeting of the board of directors when Ernest W. Taylor was elected to the board to fill a vacancy. Mr. Taylor has been with the company twenty-eight years during which time he has been in charge of credits and collections and for two years has been assistant treasurer.

Summer Architectural Course

SPECIAL attention will again be given to the courses in architecture this year at the summer session of the Carnegie Institute of Technology, in Pittsburgh. The Department of Architecture in the College of Fine Arts, according to an announcement, will give intensive six weeks' courses from June 15th in Design, Outdoor Sketching, Descriptive Geometry, Shades and Shadows, and Perspective.

Six and eight weeks' courses are announced also in Chemistry, Physics, Mathematics, Mechanics, English, Economics, Commercial Law, Drafting, Surveying and various Shops. Courses of six weeks will be given to teachers and supervisors of Public School Music, Fine and Applied Arts, and Manual and Industrial Arts.

New Promotion Manager

ANNOUNCEMENT has been made that, effective with February, Mr. Oscar W. Loew will assume charge of the advertising and sales promotion work of the Truscon Steel Company, Youngstown, Ohio. Mr. Loew has been connected with the advertising business for many years and has had wide experience in merchandising and marketing.

Prevention of Blue Stain

IN connection with the observance of American Forest Week, E. E. Hubert, of the U. S. Forest Products Laboratory issued a statement on the waste of forest products which results from the organism known as blue stain.

"The nation's bill for losses inflicted by the common defect in lumber and wood products known as blue stain

amounts to over ten million dollars annually. The loss results primarily from a reduction in grade accompanied by a drop in the selling price. Methods of preventing blue stain are in process of improvement, and efforts are constantly being made to find new ones. The preventive measures available to the average mill man are by no means confined to a single method."

The methods are briefly described in this statement, which says that "We cannot hope to eliminate blue stain entirely from wood. A certain amount of blued stock must, therefore, be marketed. Proper utilization of blued lumber, for purposes where such stock is not objectionable, will go a long way toward reducing the present monetary loss," as well as the rapid depletion of our forests.

Building Officials Conference

THE twenty-fifth convention of the Building Officials' Conference was held in Madison, Wis., April 20-24. Madison was chosen because it is the home of the Forest Products Laboratory of the United States Forest Service, which is now conducting various researches that are of great importance to building officials.

The third and fourth days of the convention, namely, April 23-24, were largely given over to the Forest Products Laboratory. On the 23rd Carlisle P. Winslow, director, read a paper on "American Lumber Standards"; John A. Newlin, chief of section of timber mechanics, discussed "Strength of Timber," and C. J. Humphrey, pathologist, Bureau of Plant Industry, presented a paper on "Nature of Decay in Timber."

The next day was devoted to an inspection of the laboratory plant and to the witnessing of tests on full size (12 by 12) timbers—columns, beams, and joints—intended to show the effects of defects on stiffness.

Occupy New Building

THE Chicago address of Samuel Cabot, Inc., manufacturing chemists, has been changed to 5000 Bloomington Avenue. In the new building which has been constructed at this address the company has combined its stained shingle plant and warehouse carrying a full stock of all its products.

Answers to Problems on Page 196

1. The run for this rafter is 2 feet. This makes the span 4 feet. The rise is 1 foot. The pitch is equal to $\frac{\text{Rise}}{\text{Span}} = \frac{1}{4}$.
2. The rise in 2 feet = 12 inches. The rise in 1 foot = $12 \div 2 = 6$ inches.
3. The length of this rafter is 2 feet $2\frac{1}{8}$ inches.
4. The blade of the steel square makes an angle of 90 degrees with the tongue.
5. The run of the valley rafter is the square root of $5.33^2 + 8^2 = 9.613 = 9$ feet $7\frac{1}{8}$ inches.
6. The length of the valley rafter is the square root of $9.613^2 + 8^2 = 12.563$ feet = 12 feet $7\frac{3}{4}$ inches.
7. The total rise is 6 feet and the run is 4 feet. If the rise is 6 feet or 72 inches in 4 feet then the rise per foot is $72 \div 4 = 18$ inches. This is $\frac{3}{4}$ pitch.
8. The length of the rafter, if the run is 8 feet and the length per foot run 16.97 inches, will be 8×16.97 inches = 135.76 inches = 11 feet $3\frac{3}{4}$ inches.
9. The numbers used on the square would be 12 and 12 as this rafter has a 12-inch rise per foot run.
10. The square would be applied 8 times as the run is 8 feet.

WHAT'S NEW?



EDITOR'S NOTE: *The AMERICAN BUILDER does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address AMERICAN BUILDER Information Exchange, 1827 Prairie Ave., Chicago.*

Now Offer Portable Woodworker

ONE of the old, well-established manufacturers of wood-working machinery is now producing, for the first time, a portable woodworker which, because of established manufacturing facilities and design, is sold at a comparatively low price. This machine is a cost-saver because it saves time in all the framing operations of building. It is built with a swinging arbor, which is the fastest type for cutting wood, and this arbor can be raised and lowered to make any depth cut required, such as dadoing, grooving and rabbetting.

The table is of heavy steel, 33 by 46 inches, and is fitted with a long wooden throat piece so that dadoing and cross-cutting can be accomplished safely. The table tilts to 45 degrees, making possible such cuts as notching rafters, bevel ripping and accurate double mitres. For straight ripping as well as bevel ripping the swing arbor can be clamped stationary. The swing arbor is operated with either hand or foot level, both of which are conveniently placed.



This Machine Is Called a Cost-Saver Because It Saves Time on All the Framing Operations in Building Construction. The swinging arbor aids greatly in fast work.

The cross-cut gauge is clamped securely to the table and can be swung to any angle desired for mitre cuts. The ripping gauge is made solid and bevel ripping is accomplished by tilting the table.

This machine is furnished with a 14-inch rip saw, a 14-inch cross-cut saw, two dado or grooving heads, waterproof belt and wrenches. When an engine is ordered, unless otherwise specified, a four horsepower gasoline engine is supplied. A boring and hollow chisel mortising attachment can be mounted on the side of the machine.

Wall and Floor Insulation

IT is quite as important to build a house to keep out the heat in summer as to keep it in in winter and it is for these purposes that various forms of insulating material are used in the construction of walls and floors. Such materials may also serve the purpose of sound deadening.

One such product is a substance which is made by converting melted scoria into a fibrous state which holds from

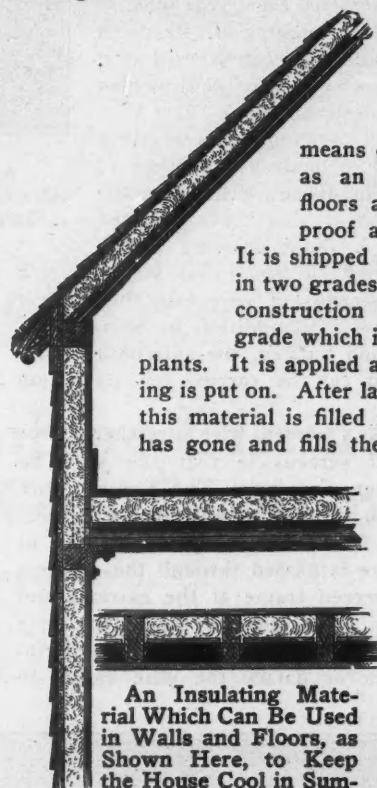
92 to 96 per cent of air in suspension. Being entirely mineral in structure this material also serves as an effective

means of fireproofing when used as an insulation in walls and floors and is vermin and damp-proof as well.

It is shipped in burlap bags and comes in two grades, one suitable for ordinary construction purposes and a selected grade which is largely used in chemical plants. It is applied at the same time the lathing is put on. After lathing up two or three feet this material is filled in as high as the lathing has gone and fills the space compactly. It is

obvious that one side of a partition should be lathed completely before any of the material is put in. The pressure of the insulation behind the lath does not prevent the plaster keying, as it is sufficiently pliable to give way to pressure.

The cost of application is not great and is said to be fully returned by the saving in fuel within three or four winters.



An Insulating Material Which Can Be Used in Walls and Floors, as Shown Here, to Keep the House Cool in Summer and Warm in Winter, Is Also Fire, Damp and Vermin-Proof.



Vitrified Porcelain Medicine Case

THE particular feature of one of the new metal medicine cases is the finish in vitrified, porcelain enamel, fused onto heavy gauge pure ingot iron, at a heat of 1,800 degrees, in electrically controlled furnaces. The manufacturers point out that this finish should be distinguished from baked enamel. It is highly sanitary and easily cleaned and will not chip, rust, burn or discolor.

This cabinet was described and illustrated on page 256 of the April issue, but an error was made in that description which stated that the case was formed from one piece of cast iron, instead of from pure ingot iron sheet, as is actually the case. Obviously, cast iron would be entirely unsuited to such a product.

Screen Making Machinery

ABOUT twenty years ago it came to the attention of, and was accepted by, the members of the medical profession that flies, mosquitoes and other insects were carriers of deadly diseases. The mosquito carries, in addition to his sting, malaria germs. The fly is known to carry the germs of typhoid, dysentery, sleeping sickness and is responsible for the spread of tuberculosis.

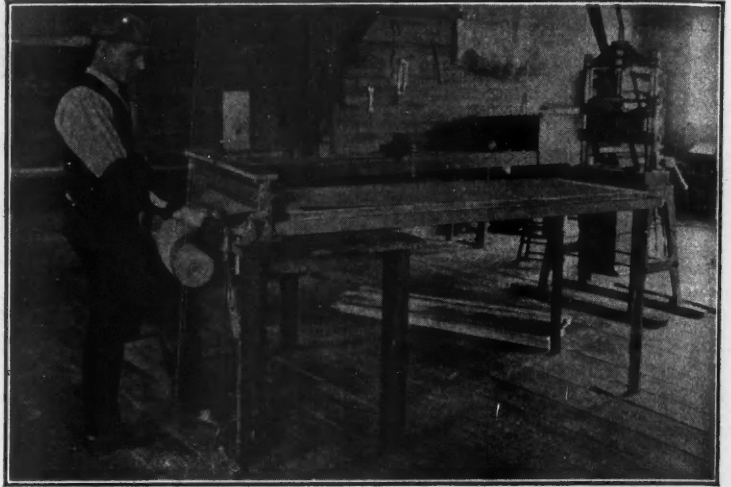
Naturally, as a result of the warnings of the medical profession, there began a campaign against these pests to protect the health of the people. Window screens, screen doors, screened-in porches and piazzas soon became very noticeable. This demand for screens as a protection brought new business to the wide-awake builder, carpenter, planing mill, sash manufacturer and contractor, who was called upon to build these screens. The dangers of malaria and yellow fever during the construction of the Panama Canal were greatly reduced by screening.

The screen wire cloth of 1904 was not as perfect a product as that of 1925 and frequently it would be necessary to replace screens each year due to destruction by corrosion and disintegration. Research by screen wire cloth manufacturers developed new ideas and today we have screen wire cloth which defies all the elements of destruction.

With the development of perfection in wire cloth has come the development of modern machinery to build screens. Notable among these are the automatic screen tacker, which in most shops has replaced the hammer and tacks. A slight pressure of the hand upon a plunger drives a broad flat staple, which covers or straddles five strands of wire into the hardest of lumber used for screens. In addition to being about eight times faster than hand tacking, the automatic tacker is light and portable and can be carried out on a job when necessary.

Another development is a screen wire stretcher. One important requirement of screens is that the wire be stretched well to prevent sagging. The screen wire stretcher can be set up on the end of any bench or table in a very short time. In front of it is placed the rolls of wire. One end of the wire is passed through the grippers and then tacked to the screen frame at the extreme end with the automatic tacker. The operator then steps on a pedal which by double cam action causes the rubber grippers (which do not mark or deface the wire cloth) to

stretch the wire and hold it. Stretching the wire cloth in this manner eliminates all possibilities of cutting or scratching the hands in handling the cloth. The hands do not touch the cloth while it is being stretched. It is then a simple matter to tack the two remaining sides and end. A step on the reverse pedal releases the wire, ready for the next screen. One man can do this work with the stretcher and do it perfectly, whereas two were required before, which is quite an improvement over the old fashioned



A Wire Stretcher, Set Up on the End of Any Bench or Table, Stretches the Wire Screen Cloth Without Marring It and Enables a Quick, Neat Job of Applying Wire to the Frame.

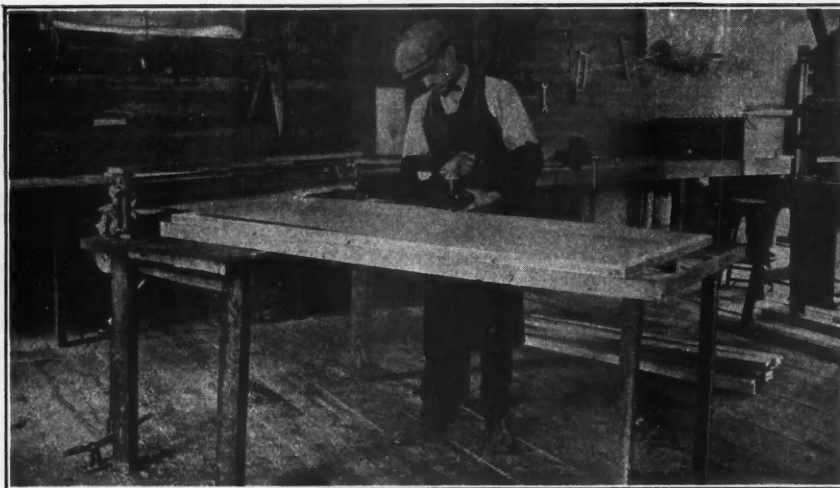
methods still used in some shops.

The wire cloth being stretched and tacked on, the screen is then ready for the moulding. The screen season is short; therefore, it is necessary to work fast; so a special screen moulding mitre cutter has been developed. A slight pressure on the foot pedal causes the blades to cut a perfect mitre on screen moulding up to 1 inch in width, thus leaving the big mitre cutters for other shop work.

Perhaps the finest of all improvements is the new clamping bench. In this bench everything can be done; boring, doweling, glueing, bench work, etc. Frames up to 10 feet by 5 feet can be made. A rule stamped on the beams eliminates guess work. The screen wire stretcher with a special attachment can be clamped at one end of the bench if desired. The entire screen could be made right here.

The old oil and gas stoves used for heating the glue pots, which often boiled over, gives way to the new electric glue pot with thermostat control which keeps the glue at an even heat, without attention, insuring full tensile strength for the work.

Equipped with these devices, screen making has been removed from the class of undesirable work and is today a fine source of income and profit for the up-to-date shop. The manufacturer of screens as a profit producer can only be accomplished by the employment of modern machinery. Most people do not order screens until the fly bites, and then they want them quick. The modern screen builder who is equipped with up-to-date machines is in a position to cater to special orders. The poorly equipped shop cannot do so and as a result suffers a loss of prestige and profit.



With the Automatic Tacker, Only a Slight Pressure of the Hand Is Required to Drive a Broad Flat Staple Into the Hardest Wood Used for Screens. It is a great time-saver.

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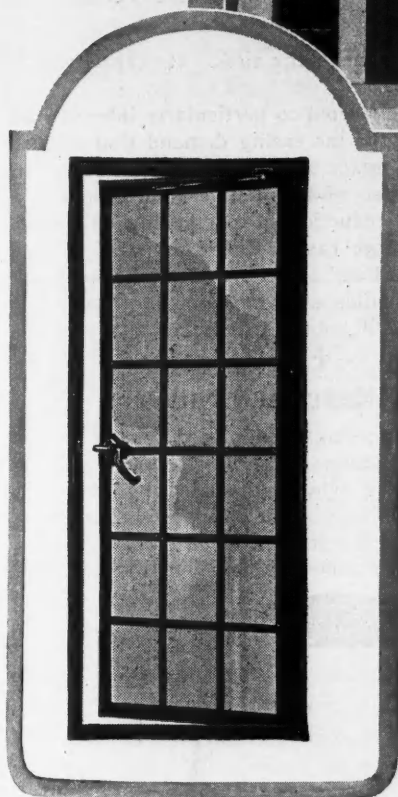
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CRITTALL Standard Steel Casements



Crittall Standard Steel Casements are made of Crittalloy—the Copper Bearing Steel

Crittall Cottage Casements

Are standard in size and design and low in cost for use in small residences, apartment houses, etc. They have the usual advantages of steel over wood in that they can be easily operated under varying weather conditions. Made to open out only. Ask for literature giving types and sizes.

Combine Distinction With Economy

For small homes of good architectural treatment where costs must be held within close limits, a complete installation of Standard Steel Casements may sometimes exceed the planned expenditure for windows.

In such instances, the combination illustrated above is exceptionally happy. Crittall Standard Casements are here used in the principal rooms of the home with Crittall Cottage Casements in less prominent positions.

Complete harmony thus obtains between the leaded glass of the Standard casement and the steel muntins of the Cottage casement giving the desired English effect sought by many home owners.

Crittall Standard Steel Casements are guaranteed weather-tight—no weatherstrip is required. They are made to open either in or out and operate easily under all weather conditions. Glass may be used in either large lights or small leaded panes.

Literature giving types and sizes may be had upon request.

CRITTALL CASEMENT WINDOW COMPANY, Manufacturers
10953 Hearn Avenue, Detroit, Michigan

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Preventing Wood Decay

ONE of the greatest factors in the conservation of timber is the preservation of lumber already in use. A large portion of the annual timber cut is for the purpose of replacement. The Forest Products Laboratory at Madison, Wis., estimates that the annual saving of more than a billion and a half cubic feet of standing timber could be effected by protecting wood from fungi, the growth of which is the cause of decay.

A preparation, which was developed in Europe and has been successfully used for several years, has recently been placed on the market in this country. This preparation will not, of course, restore wood which has already been attacked by fungi, but it will kill the fungi and prevent the spread of decay. It will protect wood which has not been attacked. Wood treated by this method will last from six to ten years longer than untreated wood, depending upon the species and density and the atmospheric conditions.

The compound is supplied in a sack which is suspended just below the water level in a wooden tank or barrel containing 50 gallons of water. It requires 12 hours for all the chemicals to go into solution and the solution should be used within two days after being prepared. Metals should not be placed in contact with this solution, as they will weaken it.

Lumber may be dipped in the solution or it may be applied with a brush.



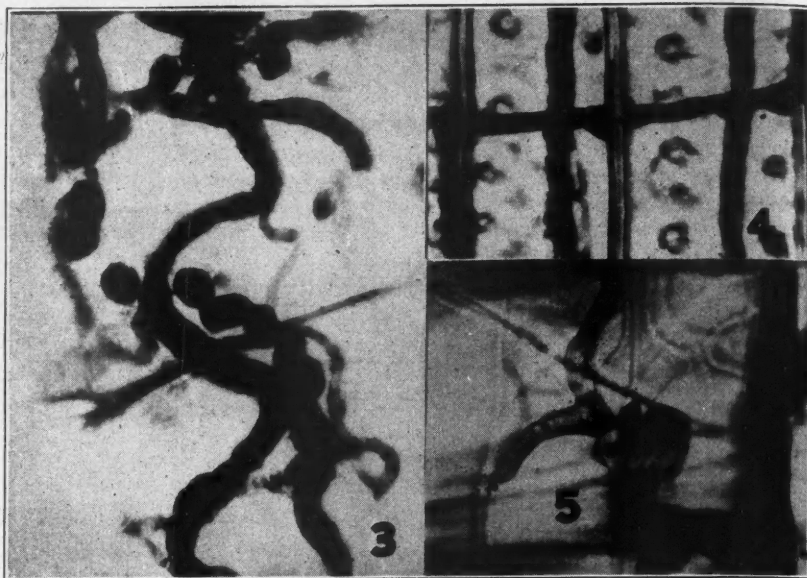
New Tilting Concrete Mixers

TWO new concrete mixers of the tilting type have been placed on the market. The smaller one, of 2½ cubic feet capacity, is designed for the use of contractors who specialize on small jobs, and is the smallest tilting mixer built. While light and easily portable, it is of rugged construction, insuring long life.

The drum is of the double cone type and is practically self-tilting because, as soon as tilting is started, the batch shifts to the discharge side. A 45-degree tilt gives complete discharge. It is mounted on steel wheels either with or



Here Is a 2½ Cubic Foot, Tilting Mixer Which Has Been Especially Designed for the Contractor Who Specializes on Small Jobs. It is light, rugged and easily portable.



Section of Fungus Threads (Magnified About 600 Times) Showing How These Growths Destroy the Wood Which They Are Permitted to Attack.

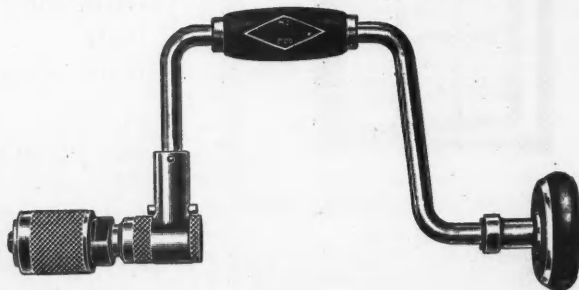
without solid rubber or pneumatic tires. Its capacity is 25 to 45 cubic yards a day.

The larger mixer is expected to particularly interest road contractors because of the increasing demand that nothing smaller than a one-bag mixer be used on bridge and culvert work. This drum is also of the double cone type and is tilted through a set of reduction gears, making either partial or complete discharge easy. Either all steel or hard rubber tires are furnished and a two-cylinder, 6-8 horsepower gasoline engine. It handles a seven cubic foot batch and has a capacity of 90 to 100 cubic yards a day.



A New Ratchet Brace

A NEW ratchet brace has been placed on the market which the manufacturers describe as being particularly designed for those who appreciate that paying a little more for the highest quality, efficiency, accuracy and durability is a wise investment. The ratchet is finely made, like a watch, but unbreakable. There is no need



A Ratchet Brace Which Is Intended to Fill Every Requirement of the Man Who Demands Quality in Tools Even Though the Cost is a Little Greater.

to hold the chuck on the ratchet movement; it is dust-proof, moisture-proof, and is a quick, positive shifter. The pawls are of tool steel, hardened and tempered.

The chuck is a new patented feature which is quick centering, holds any bit (round, square or taper) accurately, and will not loosen. It has two jaws and a capacity of ½ inch. The handles are of hard rubber, which will not warp, shrink, crack or bind, and the top handle is steel clad and has ball bearings. The sweep handle is held by a patented method which keeps caps in place and eliminates excessive play. The entire brace is made and finished like a precision tool.

SUBSTANCE · FORM · AND · COLOR



Concrete, made with Atlas, permanently repeats the glory that was Greece



THE Parthenon, gem of Athens' Acropolis, has been reproduced accurately in Nashville, Tennessee. Not a crumbling ruin greets the tourist today, but the complete structure, its marvelous symmetry fittingly enhanced by its original color. For with Atlas White Portland Cement not only the shining columns, but the rich panels back of the frieze figures, the intricate sculpturings themselves, the delicate shadings in the cornices, the whole splendid coloration of that ancient Parthenon has been reproduced *permanently*, an achievement which without concrete would have been financially impossible.

Such structures of permanent beauty are now an economic possibility in any community, for through Atlas, Portland Cement is today the cheapest of all manufactured products.

To concrete's substance, its strength and permanence, to its adaptability for all forms of construction, to its economy now is added this achievement of abundant and permanent color.

And just as Atlas, by developing the rotary kiln, made possible a high standard of quality, made possible quantity production, made Portland Cement actually cheaper today than it was a third of a century ago—so, with Atlas, has this new beauty of concrete become an accomplished fact. The architect, the contractor, the home builder, have now available in Atlas Portland Cement, obtainable either in the usual gray color or a pure white, the complete architectural medium—permanent, adaptable, economical and beautiful, "the Standard by which all other makes are measured."

Between the Atlas plants and the user there is but one distributor—the building material dealer—who brings Atlas to the public cheaper than by any other method. Any architect, contractor or prospective builder is invited to write this Company regarding the possibilities of concrete, made with Atlas.



Atlas Portland Cement

The **ATLAS** Company
PORTLAND CEMENT

25 BROADWAY, NEW YORK, N. Y.

CHICAGO BIRMINGHAM INDEPENDENCE, KANS.

Philadelphia Boston St. Louis Des Moines Dayton Omaha
Buffalo Kansas City Jacksonville, Fla.

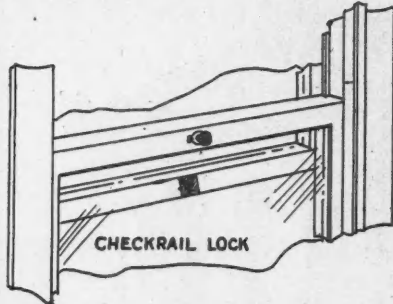


Atlas White Portland Cement

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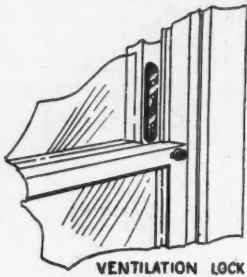
An Automatic Window Lock

THIS little invention is a neat appearing and efficient window fixture and in addition it is claimed to be absolutely jimmy proof and that nothing about it can break or wear out. With it in use, it is impossible to forget to lock the window because it locks automatically when the window is closed. To open the window it is only necessary to turn the knob half a turn to the right and hold it in position till the check rail on the lower sash is past the check rail of the upper sash. Then release the knob and the window will lock automatically when again closed.



This Automatic Window Lock Placed at the Center of the Check Rail Is Neat, Effective and an Assurance That the Window Will Be Locked.

This type of lock is installed in the center of the check rail and serves simply as



Placed as Shown Here the Same Lock Serves as a Ventilating Lock Which Is Equally Effective in Operation.

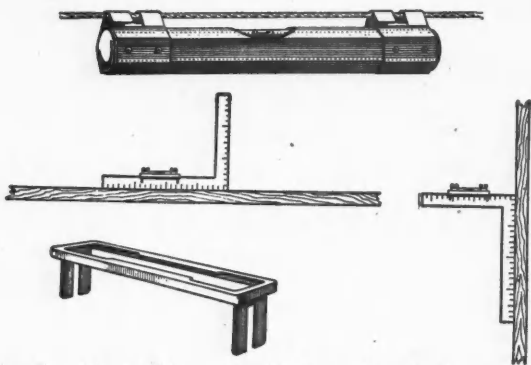
a window lock. The same lock, when provided with a stile plate for the upper sash, can be used at the side of the sash as a ventilation lock. When used in this way the upper sash may be lowered or the lower sash raised, and locked in any one of four positions. The operation is the same as for the check rail lock.

These locks can be applied to any double hung window, being made in two sizes, to fit 1 3/8-inch and 1 1/4-inch sash.

Combined Line and Surface Level

A SMALL spirit level is being marketed which is so made as to combine three uses. This instrument is a proved level glass set in a three-inch octagon aluminum tube. Twin hooks, of spring nickel silver, are rivetted to the tube at each end in such a manner that they will not pull out of alignment in case of rough usage.

Each level is tested and proved from the hooks and from the flat under surface. A metal carrier is supplied with the level. This makes possible the three uses to which it is adapted. It can be used on any flat surface where a small spirit level is used. Suspended by the hooks, it serves as a line level and when placed on the carrier it can be used on the edge of a square for plumbing door and window frames or studding, or any similar work.



This Combined Line and Surface Level Serves Many Purposes and Is a Well Made and Thoroughly Dependable Instrument for the Convenience of the Builder.

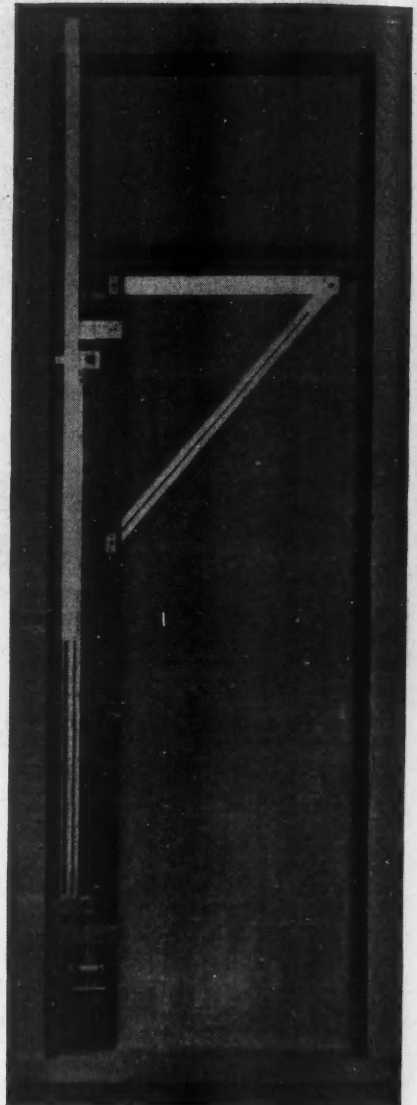
Two Way Plumb Level

A RECENT invention, which fits into a number of uses in building construction, is a two way plumb level.

It was designed for the purpose of quickly installing door jambs without a continual handling of the plumb rule, the necessity of nailing a leveling strip at the bottom end of the jambs, and the use of a level. It use results in a saving of time and so a saving of money.

Other uses of this device are, setting back in fireproof buildings, which can be done by one man, laying bricks on corners without the need of handling the plumb rule every time two or three courses are laid, plumbing up from floor to ceiling by one man, by use of extension rod of the plumb level, getting the lengths of studding in setting partitions. It also serves as a large square and eliminates trouble in finding 6, 8 and 10 when laying out foundations.

A windshield, to keep the bob from swaying, simplifies its use outdoors, in windy weather.

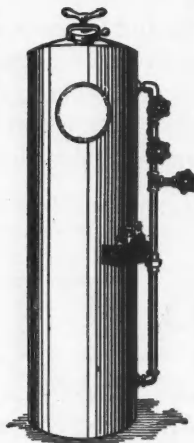


A Two-Way Plumb Level Is a Recent Invention Which Is a Versatile Aid to the Builder, Especially in the Installation of Door Jambs.

Inexpensive Water Softener

AN inexpensive water softener, suitable for the small size dwellings, has recently been placed on the market by one of the well-known manufacturers of water softeners.

This new water softener consists of a welded steel tank tested to withstand 125 pounds pressure and having but three valves. Each tank is given two coats of rust-proof baked porso-enamel for protection against rust. The mineral which is found in nature and is not a manufactured product, will soften, between reconditionings, 885 gallons of 10 grain water, 595 gallons of 15 grain water, and 445 gallons of 20 grain water. The softener will adequately take care of the soft water requirements of the small sized household.



A Water Softener Which Is Inexpensive but with a Capacity Ample for the Small House.

You can now sell
 an Eternit roof
on easy time payments
 More business
 No risk

THIS is the most revolutionary sales idea ever put through in the roofing industry. It's an Eternit idea.

Arrangements have just been completed with the most experienced financing corporation in America which enables all dealers in Eternit Asbestos Shingles to sell reroofing jobs under the most simple and workable plan you ever saw.

This plan will let you divert into your pockets part of the stream of cash that's flowing through deferred-payment channels into the coffers of dealers in motor cars, pianos, phonographs, etc.

You know how many people have been putting off reroofing year after year. Patching and mending—and waiting till they get the necessary cash. Never getting it because of so many alluring luxuries that



have been made easy to buy through the deferred-payment way.

Under this Eternit financing plan you can now get their "go ahead" on new roofs. You've got something more to offer them in addition to the best shingles at the best prices in the world. You've got a buying plan that lets them get a genuine necessity by a small initial payment with the balance stretched over a year or more.

We want to tell you all about the Eternit financing plan. And why you should sign up as the Eternit Shingle Man in your community right away. Our exclusive dealer policy and merchandising plans that sell will also be explained. Write us for full particulars today.

*Ask about Eternit Asbestos Building Lumber
 —the same materials made up in sheet form.*

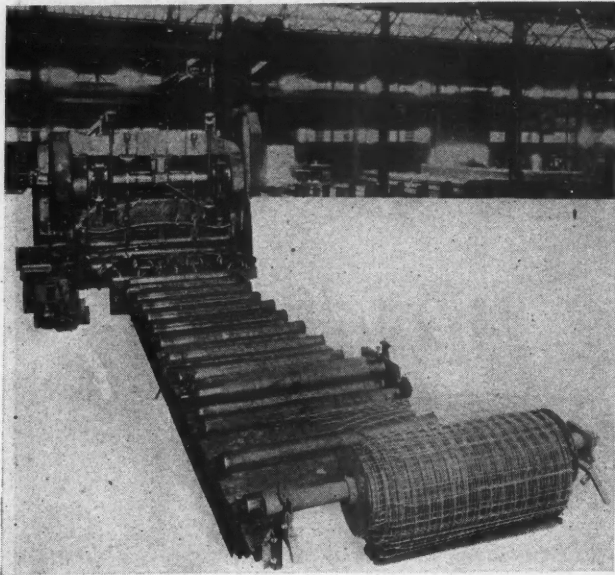
AMERICAN INSULATION CO.
 Roberts Avenue and Stokley Street, Philadelphia, Pa.

Eternit

ASBESTOS SHINGLES
 Make your first roof last

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

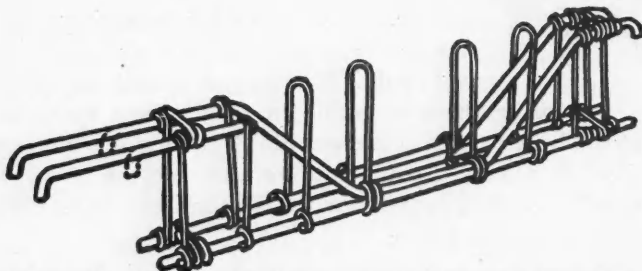
Continuous Stirrups of Wire Mesh for Reinforced Concrete Beams



The Material Is run Through Straightening Rolls and Then Cut, by Huge Shears, into Flat Sheets of the Correct Width.

AFTER careful study of all the difficulties encountered in either shop or field assembly of beam reinforcing, a prominent manufacturer has brought out a continuous stirrup which has proved a startling success by reducing the field labor to a minimum.

This type of continuous stirrup is made from rectangular wire mesh which is furnished in rolls by the wire mills. The material is run through straightening rolls and then cut into sheets of sufficient width to include the two sides and bottom of the stirrup to be formed as well as the additional



Here Is a Single Unit Frame with All the Members Tied Together Before Being Placed in the Form.

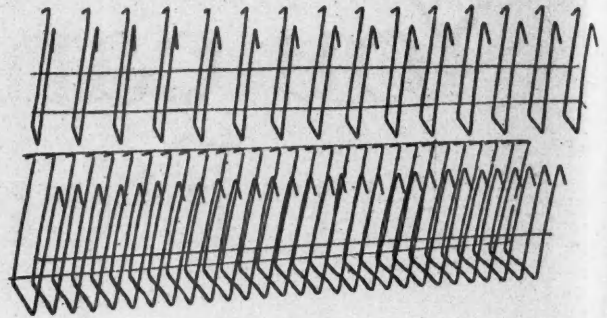
material required to form hooks at each side of the beam. The shearing is done so accurately that the ends of the hooks after bending are in exact alignment and rest evenly on the wood forms at either side of the beam when placed in position in the field.

After shearing, the sheets are run through a specially designed machine operated by compressed air. The hooks are first bent at the edges of the sheet; a plate the exact inside width of the stirrup to be formed is then inserted in the machine and the sides and bottom of the stirrups are pressed to the desired depth and width with all corners straight and true.

When delivered at the building it is only necessary to drop the stirrups into position in the form, then insert the main reinforcement, wire these bars onto the stirrups in two or three convenient places and the beam is ready for the pouring of the concrete.

The stirrups support the main reinforcement at the proper height above the forms and no other supports are required except in the case of long beams where the usual

bar supports may be needed at the center of the beam. In any case, two thirds of the lower beam bar supports



Continuous Stirrups, Made from Electrically Welded Fabric. In the upper piece, the main wires are spaced four inches apart and in the lower two inches apart.

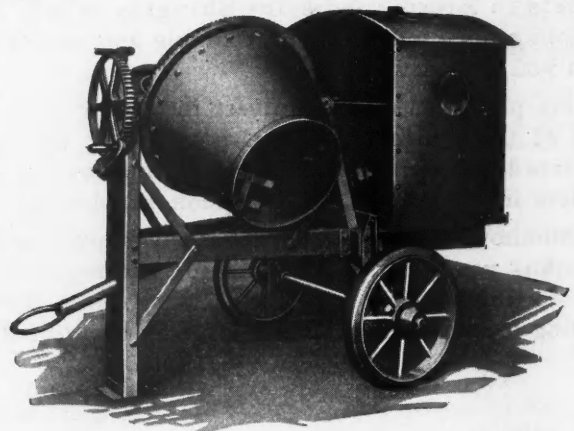
usually furnished can be dispensed with, and in many cases, they will not be needed at all.



A New Tilting Mixer

THIS new tilting concrete mixer differs from other machines of this type in a number of particulars, chief of which is the use of Timken tapered roller bearings, on the spindle and the absence of castings in the truck assembly. Two types of mounting are available: The trailer type, in which the mixer is mounted on two rubber-tired wheels with coil springs between the axle and the frame, and the truck type, where the mixer is mounted on 19-inch steel wheels.

Sturdy construction throughout is a feature. The main frame is made of 4-inch channels, axles are of cold rolled steel and of generous dimensions, the lower half of the drum is a high grade casting and the upper section is of steel plate reinforced at the lip. The double-slat blades give an exceptionally good mixing action and with the anti-balling blades mounted in the base of the drum and the generous water clearances materially accelerate the rate of mixing, a feature particularly valuable when handling mortar.



A New Tilting Concrete Mixer Which Incorporates a Number of Improved Features and Is Built in Two Styles, Mounted on Rubber-Tired Wheels or Mounted on Steel Wheels.

The drum can be charged or discharged from either side, and though while in charging position is of the usual height, it can easily be discharged into large mortar barrows. The drum can be easily tilted with one hand and locks in any desired position. The drive from the engine to the countershaft is by means of sprockets and pintle chain, both being protected against stones or gravel by the engine housing.

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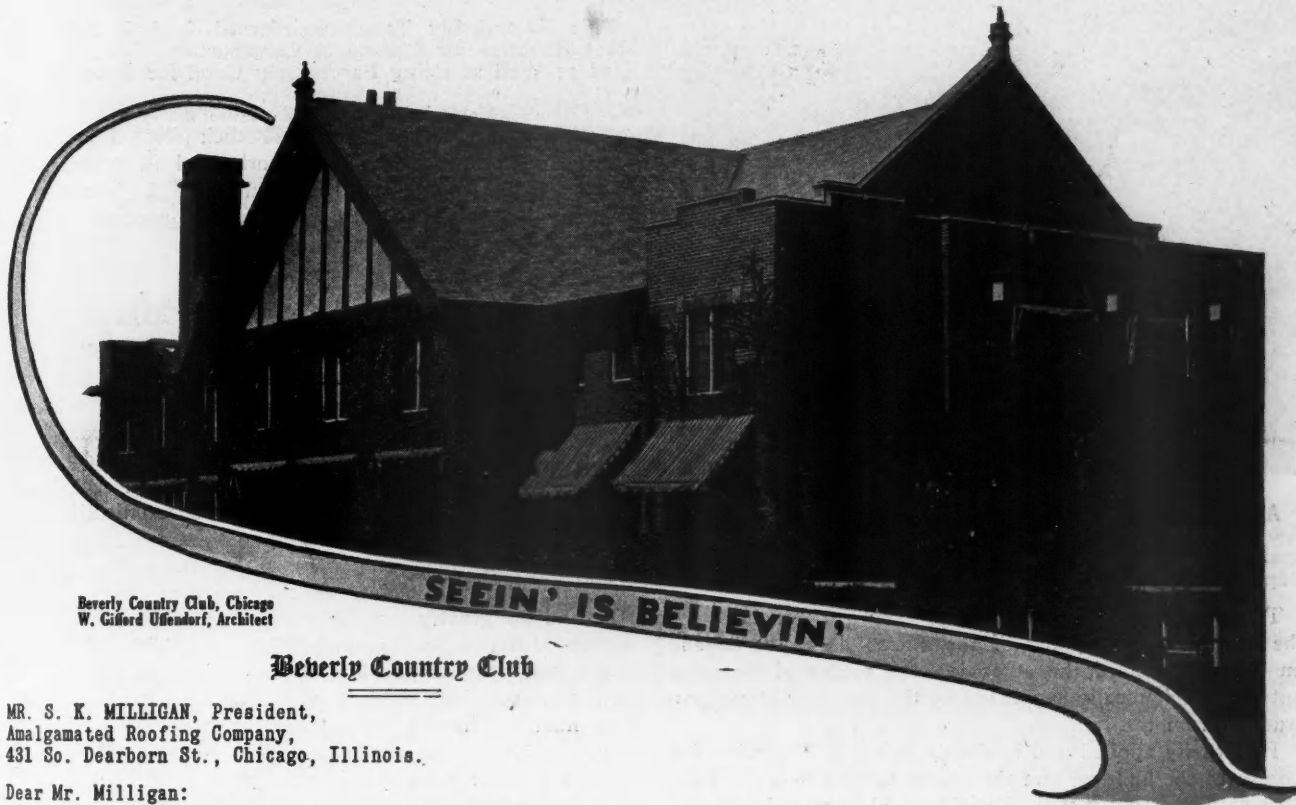
You Must See **NU-TILE**

WORDS cannot describe nor brush paint the beauty of Nu-Tile Tapestry Shingles—you must see them—to appreciate the unobtrusive harmony of nature's own permanent colors, as they are blended in the six major Nu-Tile tints. These again are laid on the roof in innumerable artistic combinations, enhancing the attractiveness of any house.

But Nu-Tile Shingles are more than a beautiful roof covering. The same sturdy weather resistance, which has been built into Amalgamated roofing products for so many years, is contained in Nu-Tile Tapestry Shingles. And in nature's non-fading minerals, marble, granite, slate and porcelain, lies the secret of the permanency of Nu-Tile tints.

Not until you examine actual samples of Nu-Tile Shingles can you get an adequate conception of their unusual roofing values.

You should have a set of Nu-Tile Samples to show your clients.



Beverly Country Club, Chicago
W. Gifford Uffendorf, Architect

Beverly Country Club

MR. S. K. MILLIGAN, President,
Amalgamated Roofing Company,
431 So. Dearborn St., Chicago, Illinois.

Dear Mr. Milligan:

I am sorry I was not at the office when you called, for I wanted to tell you of the many interesting and amusing comments of members of the club, since we laid our new roof of Nu-Tile Tapestry Shingles.

Several inquired whether a less costly roof would not have served as well—they reasoned it must have cost considerable.

The general comments are, however--it almost makes the club look like another building. I NEVER REALIZED A NEW ROOF COULD SO IMPROVE THE APPEARANCE OF A BUILDING. The club appearance is 100 per cent improved by the new roof.

I, personally, am highly pleased with the job. The weight of your Nu-Tile Shingles and their apparent wearing qualities, it seems to me, insures us against the expense of re-roofing the club for years to come.

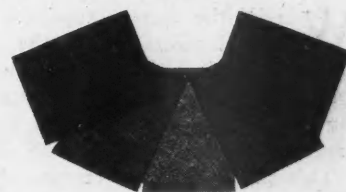
Sincerely yours,
(Signed) G. R. WALGREEN,
President (1924)

CRW'FL

Nu-Tile Tapestry Shingles are manufactured by
THE AMALGAMATED ROOFING COMPANY
431 S. DEARBORN ST. CHICAGO, ILLINOIS

THESE SAMPLES
OF

NU-TILE
Tapestry Shingles
are for you



WRITE FOR THEM TODAY

(COUPON)

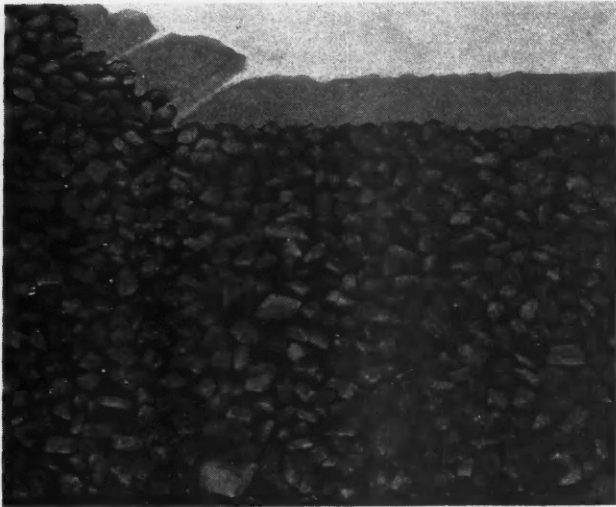
THE AMALGAMATED ROOFING CO.,
431 South Dearborn Street, Chicago.
Please send me full details and a complete set of Nu-Tile Tapestry Shingle samples.

Name.....
Firm.....
Address.....

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Asphalt Stucco Base

ARCHITECTS, engineers, contractors and builders who have used asphaltic products in building construction for a number of years will be interested to learn that asphalt is now used in the manufacture of a stucco base. One of the leading asphalt companies has developed a stucco base made of high grade all rag felt, thoroughly saturated and then coated with asphalt. A coating of crushed Pearspar or stone chips is then embedded in the upper surface of the felt under pressure and while the asphalt is still hot.



An Application of the New Asphalt Stucco Base Cut Away at One Edge to Show the Depth as Well as the Pearspar "Keying" of the Surface Which Forms a Mechanical Support for the Stucco.

The pieces of Pearspar form a "key" or "anchor" for the stucco. The support of the stucco does not depend on the cohesion of the stucco to the pieces of Pearspar but it is mechanically supported by the pieces of stone protruding from the felt.

It is easily applied and is simply nailed to the sheathing boards of the building and the stucco applied over the base. It is expected that it will be widely used in remodeling.

Owing to the character of this type of stucco base and the method of application, it cannot sag or bulge and since no metal enters into its construction it is impervious to rust. It cannot trap water between the pieces of Pearspar and stucco to freeze and cause the stucco to crack in cold weather by freezing.



Reinforced Building Paper

WHEN the cost of application is considered there is a decided advantage in the use of reinforced asphalt paper which does not require the use of battens of tin caps for nail heads but can be simply nailed on. Even disregarding the saving in the cost of application the cost of this paper compares favorably with other materials of the sort.

This paper is made of two sheets of tough, 30 pound, kraft paper, cemented together with two layers of asphalt. It is reinforced in two directions by non-elastic, Java sisal fibres placed close together. This makes an exceptionally good sheathing and building paper. The reinforcing prevents damage from rough handling or from wind. There is no space for the wind to start a rip or, if a rip has been cut in some other way, there is no chance for the wind to carry it farther.

Being remarkably tough and also waterproof it is particularly adapted for sheathing under stucco, brick veneer, clapboards and shingles and under floors it prevents the passage of moisture and dust. In construction work it can



This Remarkably Tough Reinforced Asphalt Paper Is Most Effective for Closing in Construction Work of Any Kind as Well as Being Particularly Good for Sheathing.

be used for covering temporary buildings and partitions and protection of finished work and stock piles. It is excellent for closed-in construction work, and in winter will resist the most severe weather conditions. It is made in rolls from 36 to 60 inches wide, and in special sizes to order. Samples sent on request.



An All-Around Concrete Mixer

A RECENT addition to the line of a well-known manufacturer of concrete mixers is called the real all-around machine for effectively handling the concrete work on jobs of average size, such as large sidewalk jobs, driveways, culverts, residences and churches. The mixing drum, having just the right capacity for a full sack batch of 1-3-5 proportions, is the best size for economically doing this work.

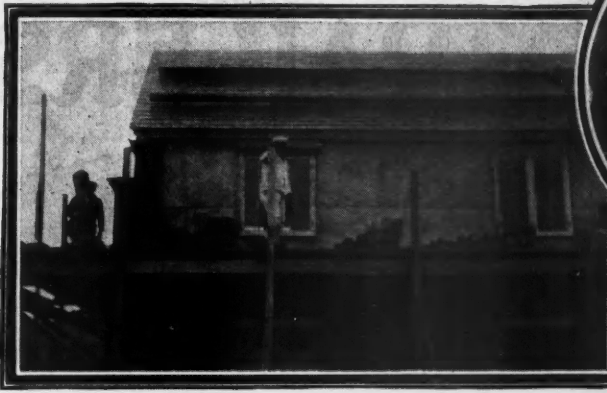
The machine illustrated here is the tilting drum mixer complete with side loader, accurate measure tip-over water tank and the gravity or balanced automatic device for turning the drum to loading and discharge position, 3 horsepower one cylinder gasoline engine for ample power, with new power-saving features of lifting the loader bucket. One man can handle every operation from one position.

Frame and trucks are of approved design and construction—and built entirely of high-grade steel for strength and sturdiness. Mounted on steel or automobile wheels with demountable rims and cushion or pneumatic tires, which makes it extremely portable.

This size machine is made in six different models, all variations of the basic design, to adopt them to every requirement of the small contractor. Rapid in action, they handle with ease a batch of $7\frac{1}{2}$ cubic feet of unmixed materials or 5 cubic feet of mixed concrete.



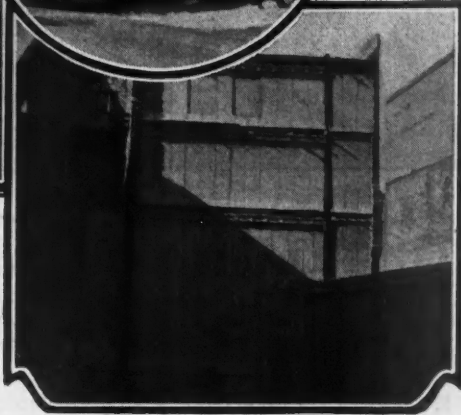
One of a Series of Mixers Which Has Been Added to a Well-Known Line of Concrete Machinery to Supply the Demand for an All-Around Mixer.



Perkins Institute, Watertown, Mass., used under brick veneer—no battens were used to hold paper in place. On the right—Temporary partitions in place since fall.



Contractors field office in Boston covered in the fall—there all winter. Note, no battens were used to hold the paper, just nails.



To Be Universally Used by BUILDERS Everywhere

American Reinforced paper is an exceptionally fine sheathing and building paper. This paper (the name of which has not been decided upon, but will be announced in the next issue of this magazine) is made of two sheets of tough 30 pound Kraft paper, cemented together with asphalt and reinforced in *two* directions with non-elastic Java rope Sisal Fibre. It makes a tough, strong waterproof paper that will stand the rough handling of applying to the sides, floors or other parts of a building without tearing. The cost of application, because of the time required, is one of the largest items entering into the sheathing of a house or building. Because of its unusual strength this reinforced paper can be applied much faster and tighter than any other kind of building paper on the market. Wood strips or tin caps for the heads of the nails are not required. This saving in the cost of application alone makes it one of the cheapest building papers that can be used. Here are a few excerpts from letters we have received:

"A careful examination of your product convinces me that it is far superior to the ordinary tar saturated or rosin-sized sheathing papers now on the market. The sisal reinforcing is an innovation furnishing a remarkable element of strength and durability, qualities sadly lacking in that old type of this material heretofore available."

"During rain storms and for several days after snow storms there was a continual drip of water from the roof (over forty feet above) on the paper.

"It ran off the paper as it would off metal. The snow did not leak through, there was no lost time, the work was dry and the temperature was right at all times. During zero weather concrete was poured as it would be in summer.

"Your Reinforced Waterproof Paper resisted rain, snow, wind, cold and dampness. When the walls were finished the paper was rolled up ready for use on the next job."

We will gladly send you a sample and further information. *Use the Coupon Below.*

Watch for the Name In the Next Issue!

AMERICAN REINFORCED PAPER CO.
Attleboro, Mass.

Please send me a *free* sample and other information of your Building Papers.

Name.....

Address.....

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

MAIL COUPON FOR A *FREE* SAMPLE

AMERICAN REINFORCED PAPER COMPANY

ATTLEBORO, - - MASS.

MOTOR TRUCKS and TRAILERS



Preparing the Cooling System for Hot Weather

BEFORE hot weather sets in it is advisable to thoroughly clean the inside of the radiator. Scale formation, corrosion from the winter's anti-freeze solution and sediment will decrease the heat radiating ability of cooling systems enormously.

Ordinary a thorough flushing will remove the accumulated sediment. If a scale has formed from the use of hard water it is best to consult local dealers in boiler scale compounds. They are usually able to recommend the most suitable treatment for the water prevalent in the locality.

It is extremely important to have the outside of the radiator free from oil, mud or any other foreign substance. Only a clean, bright metal surface can give maximum radiation.

Occasionally when it is necessary to replace the water pump packing, it is well to disassemble the pump and clean the rotor and casing thoroughly. The rotor, especially,

should be clean, bright and smooth. The pump shaft should be kept clean and smooth.

Only the best quality of rubber hose should be used for the water connections, such as originally installed on the engine. In making replacements, the best plan is to purchase hose ready cut to the proper length from one of the manufacturer's branches. The inside tubing of cheap hose is apt to dissolve, the rubber particles being carried along with the water and clogging up the radiator. Hose without rubber inner lining is apt to give trouble from the fabric coming loose and flapping over the opening, shutting off the water.

Every spring it is well to go over the hose connections carefully, as some anti-freeze solutions have a deleterious effect upon the rubber.

The fan should be kept clean and well lubricated. The belt tension, adjusted by the eccentric shaft upon which it runs, should be sufficient to prevent slippage of the belt,



For the Hauling of Lumber Within the Yard and for the Rapid Loading and Unloading Which Gets 100 Per Cent Service from Delivery Trucks, Trailers of This Type Are Invaluable. The tractor greatly facilitates handling in a large yard and saves the time of trucks.

Two Photographs
of the Same
International
Truck... and between the
two a world of Work and Service



The Tampa Rock Company and its International story

IN the picture below, the work-worn Model 63, once so spotless, is unloading crushed rock on Davis Islands, a \$30,000,000 project in Tampa Bay. This truck had the honor, long ago, of conveying the first carload of rock to this celebrated development which has risen from beneath the salt waters of the Bay.

The truck is a possession of the Tampa Rock Company, contractors at Tampa, Florida, who have used a fleet of Internationals over a 3-year period with outstanding success. Working Internationals side by side with many trucks of other makes, on every kind of haul, this firm has found Internationals always leading the rest, always with an edge on their rivals in stamina and economy.

The truck in these photographs runs a 60-mile

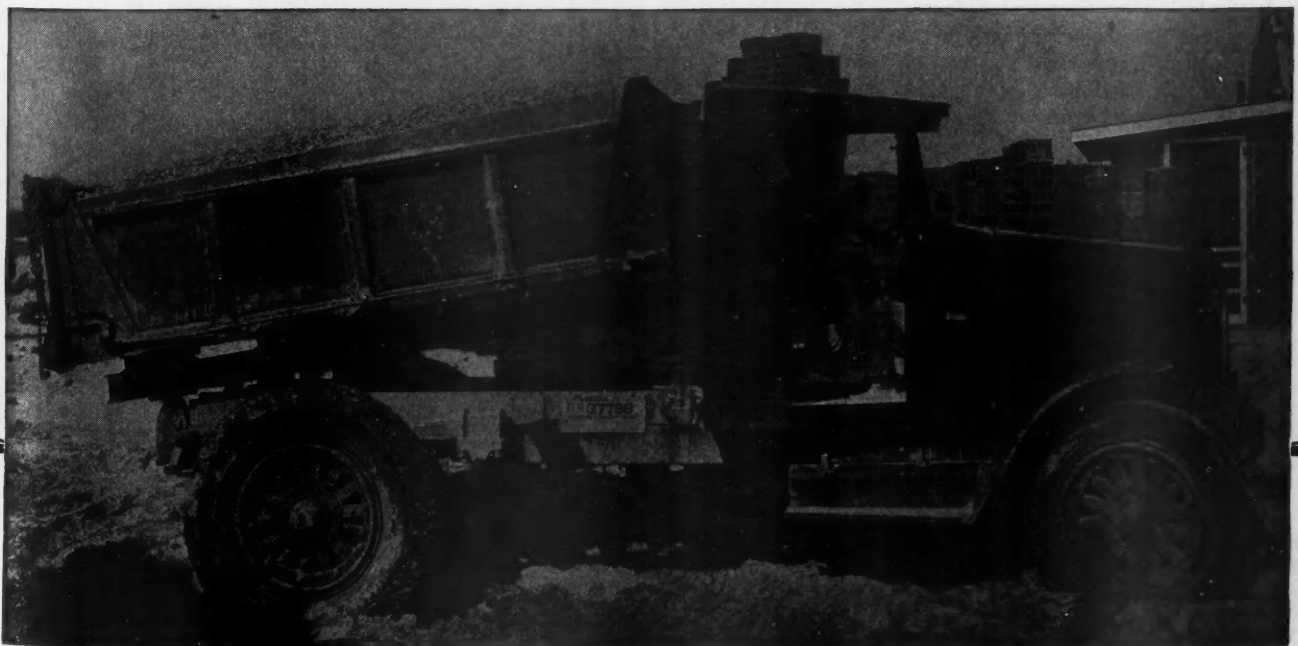
daily average. Every day finds its wheels deep in sand or mud, in what is described as "the worst going on earth." Each day puts this truck to the severest tests, but it has never been driven into places that have proved beyond its power, loaded or empty.

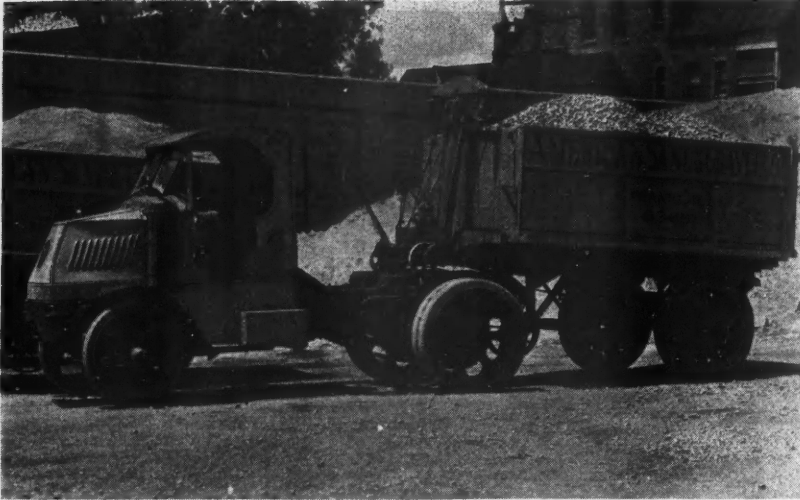
The careful and complete records kept by the Tampa Rock Company on the entire fleet show that its Internationals haul material in carload lots on an average route at a total running expense of 36 cents per ton, as compared with a general average for other trucks of 52 cents per ton.

Such service commends International Trucks to any man who needs *dependable, low-cost* hauling.

INTERNATIONAL HARVESTER COMPANY
606 S. Michigan Ave. OF AMERICA Chicago, Ill.
(Incorporated)

The International line includes a Speed Truck for 2000-pound loads, and Heavy-Duty Trucks ranging from 3000 to 10,000 pounds, maximum capacities. It includes also Tractor Trucks and Industrial Tractors. Distributed through 105 Company-owned branches and many dealers.





Equipment of This Kind Is Unsurpassed for Handling Heavy Bulk Material, but Could Not Profitably Take the Place of the Light Truck Shown at the Bottom of the Page.

but not so tight that the belt is unduly stressed or the fan bearings overloaded. The tension is right when it is possible to slip the belt easily, with the engine not running, by turning the fan by hand, and yet not possible to spin the fan. A little belt dressing applied to the fan belt occasionally, accompanied by a thorough cleansing and drying of both the pulleys, will enable it to turn the fan with the least tension, thus prolonging its life.

In filling the radiator only clean water should be used. If necessary, the water should be strained through cloth, where none but dirty water is obtainable. Above all, water containing oil should be avoided and water buckets in which oil has been kept should not be used.

To secure proper results it is necessary that the radiator be filled as full as possible. This means that the level will be up to the base of the radiator filler. It is for this reason that the overflow pipe is carried well toward the top. It should not be allowed to bend down below this height or it will drain the water below the proper level.

If the overflow pipe is allowed to become clogged or flattened by a blow or kink, steam will form in the top tank, under low pressure, which will not only lower the efficiency of the cooling system but may blow the gaskets and hose connections in various parts of the cooling system or prevent circulation by forming a steam lock.

In replacing cylinder water covers, white lead is usually applied to the gaskets. If care is not taken in this operation, some of the white lead will get inside the cylinder jackets. This should not be allowed to occur, as the white lead will deposit on the side of the jacket and interfere with cooling, or it will be carried along with the water stopping up the radiator tubes.



Chassis Lubrication

IF motor truck operators would give more attention to chassis lubrication it would result in longer life and better operation of their trucks. The average truck operator observes the ordinary precautions in engine lubrication, but often neglect his chassis which requires consistent and, at many points, daily attention.

Instruction books indicate the points on a chassis which should receive most consistent attention and these instructions should be followed to the letter.

In engine lubrication we will touch only upon points which are most often overlooked by the operator.

On cold mornings the engine should be warmed slowly because the oil is thick and while your oil pressure gauge may show a high pressure when the motor first starts, if you will watch it you may see it fall back almost to zero, due to the oil being too cold to pass through the screen readily. Get the habit of watching the oil pressure gauge. It is an index to the engine lubrication system. Oil should be changed every 1,000 miles or more often. Many operators run 2,000 miles successfully on a supply of oil, but the first figure is recommended for any make of truck.

The use of an air filter, which is standard on a few of the higher grade trucks, will keep road dust from working into the engine and completely add to the life of oil and the engine's working parts.

The changing of oil regularly, however, can be considered one of the most important points in lubrication because the very nature of the use of oil necessitates its renewal at regular intervals.



Remedying Valve Tap

IF you notice an engine tap in your motor truck which occurs regularly, it is very likely due to a valve tappet which is too loose and which must be adjusted. Experienced operators will agree that this is a most common difficulty, yet one which is quite simple to remedy.

First, the engine should be cranked over by hand until the valve in question has closed, and then the engine should be turned another half revolution just to make sure that the valve is closed. The upper end of the valve tappet consists of a screw which is locked fast to the lower end of the valve tappet by a lock nut. The valve tappet or push rod, by the way, is the member between the valve stem and the camshaft, which slides up and down in a guide in the crankcase. The lock nut should be loosened and the screw turned up until the clearance between the top and the valve stem is the thickness of a thin card. Then the lock nut should be turned to lock the screw firmly in place. After this is done, the adjustment should be tested, and if it has changed it should be done over again.



Each Piece of Equipment Should Be Carefully Selected for the Type of Work Which It Must Do. This light truck is just the thing for quick delivery of many of the materials used in construction.

Two New TRUCKS that set a New Standard

GMC again has provided a new measure of motor truck quality with the new 1 ton and 1½ ton models.

Not only do these trucks embody the well known GMC principles of design, but they provide further refinements in construction and arrangement which are revealed in more power, more speed, more safety, more comfort for the driver, and easier and quicker adjustment or replacement of wearing parts.

New and more powerful engines, mechanical four-wheel brakes, new type rear axles with banjo housing, new transmissions, new design radiators and hoods, new and easier steering gears, magneto ignition, cord tires, electric starting and lighting.

These are among the many improvements found in the new GMC models—improvements which establish their quality as second to none among motor trucks of their capacities.

GENERAL MOTORS TRUCK COMPANY

Division of General Motors Corporation

PONTIAC, MICHIGAN



Trucks and Tractor Trucks from 1 to 15 Tons Capacity

General Motors Trucks

Beaver Easy Payment Plan Aids Remodeling and Reroofing

MANY of the largest industries owe their progress to a financing plan which has made possible the extension of credit by the dealer, contractor or other distributor of their commodities. The deferred or partial payment plan is an old and successful system, but is new to the field of building remodeling. Realizing the need and advantage of such a plan for financing remodeling improvements, reroofing, and the application of wallboard, the Beaver Products Company, Inc., of Buffalo, N. Y., has fully developed and has placed in operation such a plan.

Like all successful plans this partial payment plan, as adapted to the remodeling and repairing business, works to the benefit of all parties to the transaction. The owner of the building is enabled to make immediate building improvements by making a small down payment when the job is completed and the balance in convenient monthly installments over a period of ten months. This avoids the inconvenience of delay and loss through deterioration which may be caused by delay. The cost of financing is comparatively low.

The contractor receives his cash in full when the job is completed, just as he would on a regular cash transaction, with no liability for the balance of payments due. This gives him the equivalent of unlimited capital for financing credit extension, a larger market for his work, a quick turnover of capital and freedom from charge and collection expense and credit liability.

While the dealer is not a direct party to the transaction, under this payment plan he, too, will benefit substantially. For every additional job which it enables the contractor to secure there must be additional material purchased from the dealer. Increased sales mean increased profits and so the dealer has an immediate interest in the success of the arrangement. It is in the same manner that the manufacturer will profit for the market for his product will be greatly extended without an increase of credit risk and without any increase of capital being required.

The method of procedure is simple, safe and effective. The contractor first makes an estimate of the cash price of the job and then adds the cost of financing and quotes the total as the price to the customer, this price to be paid one-fifth down and the balance in ten equal monthly installments. If desired, the balance can be arranged for payment in six or twelve monthly installments. The cost of financing increases slightly in proportion to the length of the credit period.

When the terms are agreed upon an agreement form is filled out and signed by the owner. This is not endorsed by the contractor. An application for credit is also filled out and the two blanks are sent to the nearest office of the Commercial Credit Corporation.

This is one of the leading finance companies of the country with branches in many cities so that a branch is close at hand for every contractor, no matter where he may be located. The relation of this company is that of an outside agent which has agreed to handle the loans arranged under the Beaver plan. The application for credit is signed by the contractor as the one recommending the account, but only as recommending it, and this in no way obligates him.

If the office of the credit company is in the same city a report should be available within a few hours, if in another city two or three days may be required before the credit O. K. is received. The information which is required of the owner, on the application of credit, is simply that which is customarily required by those extending credit, most of which, concerning the prop-

erty owned, is a matter of record at the county courthouse. The information is treated as strictly confidential.

On receiving the O. K. from the credit company, the contractor may immediately go ahead with the job. When it is completed he collects the 20 per cent down payment from his customer and sends his bill, showing the amount still due, together with the signed agreement, to the office of the credit company. This company approves the bill and forwards to the contractor a check for the amount still due him. In this way the contractor receives his full cash price as soon as the job is completed and the transaction, so far as he is concerned, is closed, to the extent that an ordinary cash transaction would be closed when the work was completed and the bill paid.

In order to bring the many advantages of this plan to the attention of all who may be aided by it, the Beaver company has undertaken an extensive advertising campaign. This includes large advertisements in leading publications of general circulation which reach the building owners as well as material to be used by the dealer and contractor. Such material includes suggested copy for newspaper advertising, hand bills and letters, samples of which are shown on this page, and samples, booklets, folders and other selling aids. A system of telephone calls and personal solicitation is also recommended.

Remodel Now Pay Later No Longer Need for Delay

Call us up—get our figures for a new bathroom, a sun porch, a breakfast room, or remodeling throughout. The price will be right and you can have ample time to pay in convenient monthly installments. You need no longer delay. Ask about our new

BEAVER PARTIAL PAYMENT PLAN

(Your Business Name and Address Here)

REPAIR, REMODEL NOW PAY THIS CONVENIENT WAY

Our new partial payment plan will enable you to make repairs now or remodel your home, office or store and pay later in convenient monthly installments.

The same sound idea that is behind the purchase of a piece of property is back of this plan—a down payment and the balance while you are enjoying the use of the property.

The same simple arrangements you would use to buy a victrola, a vacuum cleaner, furniture or a car are allowed with certain improvements as well. No indorsements to secure, or other annoying red tape to go through.

This plan we have worked out with The Beaver Products Co., Inc., saves you the cost that is often caused by further delay; makes it possible for you to improve the use and appearance of your property now; and provides a convenient way to pay for these improvements in small monthly installments.

Let us lay our plan before you this week. No obligation is incurred. In this way you can judge for yourself if it will pay you to wait longer for those improvements you have in mind.

Yours very truly,

YOUR BUSINESS SIGNATURE HERE.



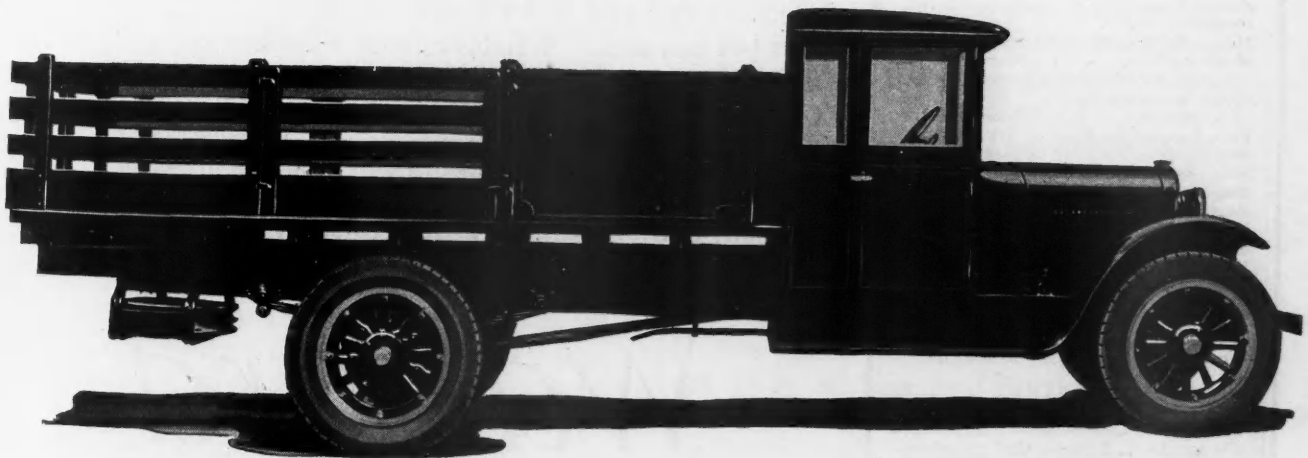
The Big Advantage

Graham Brothers Trucks have proved themselves to be admirably suited to difficult haulage problems.

Their sturdy construction, their dependable Dodge Brothers Engine—and the fact that prompt service is provided everywhere by Dodge Brothers Dealers—give them a definite and unmistakable advantage in any work that demands exceptional stamina and regularity of performance.

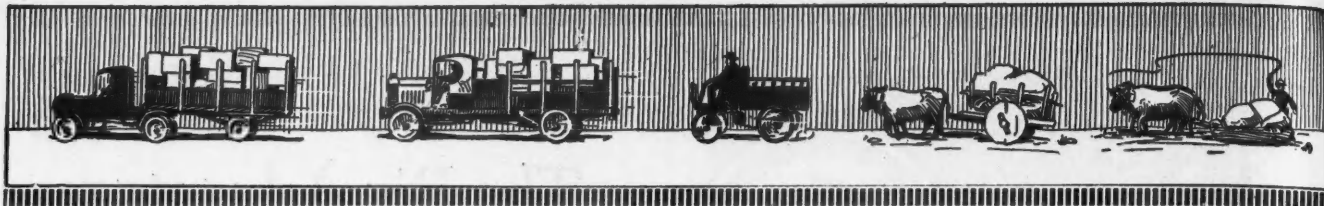
1 Ton Chassis, \$1175; 1½ Ton, \$1375; f. o. b. Detroit

GRAHAM BROTHERS
 Detroit - Evansville - Toronto
 A DIVISION OF DODGE BROTHERS



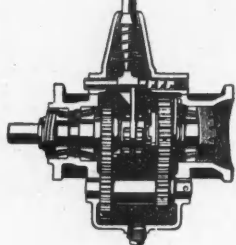
GRAHAM BROTHERS TRUCKS

*SOLD BY DODGE BROTHERS
 DEALERS EVERYWHERE*



The
"Tee"

The New
Four-Speed
Warford



If Your Ford Dealer Hasn't
Warford, Call On The
Nearest Distributor

Atlanta-Houdaille Co. - Atlanta, Ga.
C. G. Spring & Bumper Co. - New York City
Dealers' Warford Co. - Memphis, Tenn.
George Dietrich - Spokane, Wash.
Dine-DeWees Co. - Canton, Ohio
Dyke Motor Supply Co. - Pittsburgh, Pa.
Foster-Warford Co. - Auburn, N. Y.
Hall-Warford Co. - Charlotte, N. C.
Hammel-Gerke Co. - Los Angeles, Cal.
Kenney Equipment Co. - Indianapolis, Ind.
Houdaille-Polk Co. - Dallas, Texas
McGee-White Corp. - Minneapolis, Minn.
McMahon Bros. - Morrisville, Vt.
Massachusetts Warford Co. - Haverhill, Mass.
Motor Specialties Co. - Denver, Colo.
W. C. Nabors - Mansfield, La.
Price Auto Service Co. - Wichita, Kan.
Sieg Company - Davenport, Iowa
Transmission Sales Co. - Stockbridge, Mich.
Sieg-Warford Co. - Chicago, Ill.
Wade & Dunton Motors Inc. - Lewiston, Me.
Warford-Eastern Co. - Philadelphia, Pa.
Warford-Equipment Co. - Seattle, Wash.
Warford-Pacific Co. - San Francisco, Cal.
Warford-Sales Co. of S. Carolina
Columbia, S. C.
Warford-Western Co. - Kansas City, Mo.
Wholesale Auto Supply House, Tampa, Fla.
Woodward Sales Co. - Portland, Ore.

In Canada:—

The Warford Corporation of Canada, Ltd.
Windsor, Ont., Toronto, Ont., Montreal,
Que., Regina, Sask., Vancouver, B. C.
Calgary, Alta.

If You Believe in Progress You Will use LIGHT Trucks

It was a new idea that yoked the ox to a sledge—resulting in the discovery that he could drag more than he could carry.

It was a new idea that mounted the sledge on cross-sections of a tree trunk—giving it wheels on which to roll, and still greater capacity for the same ox-power.

It was a new idea that adapted the "horseless carriage" to carrying the world's goods.

It was a new idea that an efficient motor truck must weigh as much or more than its load capacity—and this idea, like the others, is an old idea today.

It is a newer idea to judge hauling equipment by performance, net cost per ton mile, rather than by deadweight and bulk. New as it is, this is the prevailing idea today, for more than half of all the trucks in operation in the United States are "light" trucks of one-ton capacity or less. And 78 per cent of these "light" trucks are Fords.

Standardizing on Ford equipment will give you hauling efficiency reduced to its lowest common denominator—less cost per ton mile. Whatever your business may be there is a Ford unit particularly adapted to your needs; the Ford One-Ton Truck, the Ford truck equipped with Warford Auxiliary Transmission for two-ton hauling and the same unit with trailers for hauling three to four tons.

Ask any authorized Ford Dealer to show you how much this new idea in transportation can reduce your hauling costs.

Warford

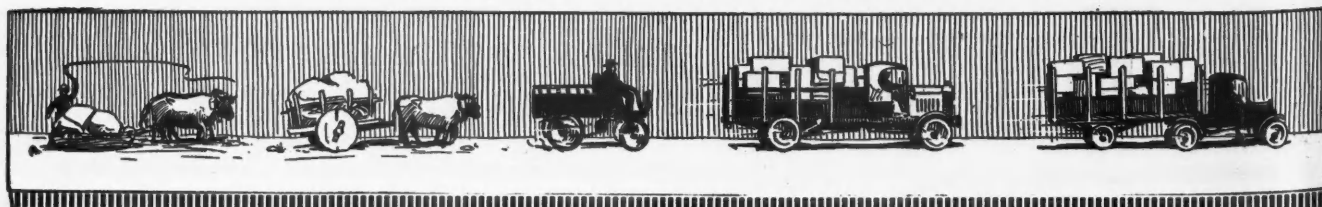
AUXILIARY TRANSMISSION

"To Fordize Is To Economize"

The Warford Corporation

44 Whitehall Street, New York City

Neither the Warford Corporation nor its manufacturers has any connection whatsoever with any company manufacturing motor cars.





Fordson With Dump Body Speeds-Up Paving Operations

Extra speed in hauling sand and gravel from dump piles to the concrete mixer is obtained through a specially fitted dump body attached to a Fordson Tractor.

Cummings & LaPointe, contractors at McMinnville, Ore., use three Fordson Tractors, one having a loader attachment and two with dump bodies, which handle all work of this type.

The loads are hauled for only short distances, but the speed of operation is so far superior to the former system of wheel barrows that the substantial saving in handling costs has more than justified the installation.

Contractors and builders, who are faced with difficulties of labor and operation, will recognize the advantage to be secured through equipment of this nature. The low cost and dependable service which are features of all Ford products will appeal to every engineer and business man engaged in highway construction.

If these facts and figures interest you, ask your Authorized Ford dealer to show you how Ford Products can be applied to your business at a saving in time, labor and money.

Fordson Tractor \$495, f. o. b. Detroit

Ford

CARS · TRUCKS · TRACTORS

ELECTRIFY ALL BUILDINGS

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

Well Lighted Display Windows Bring More Buyers

By ROY A. PALMER

THE display window is the greatest of silent salesmen. The advertising value, if estimated in terms of money, would run into enormous figures because display windows possess certain properties which are not possessed by other forms of advertising. In the first place, a window permits the goods to be displayed directly at the place where they are sold; an observer having viewed certain goods in a display window immediately thinks of that store as a place where the goods may be procured even though considerable time has elapsed since the display was seen.

The show window allows the goods to be examined and this feature results in creating a desire—one of the prime purposes of the show window. Another feature in which the display window differs from other forms of advertising is that it has an appeal to people of all tongues. Regardless

of the language limitations of the observers, the window will effectively carry its message to them.

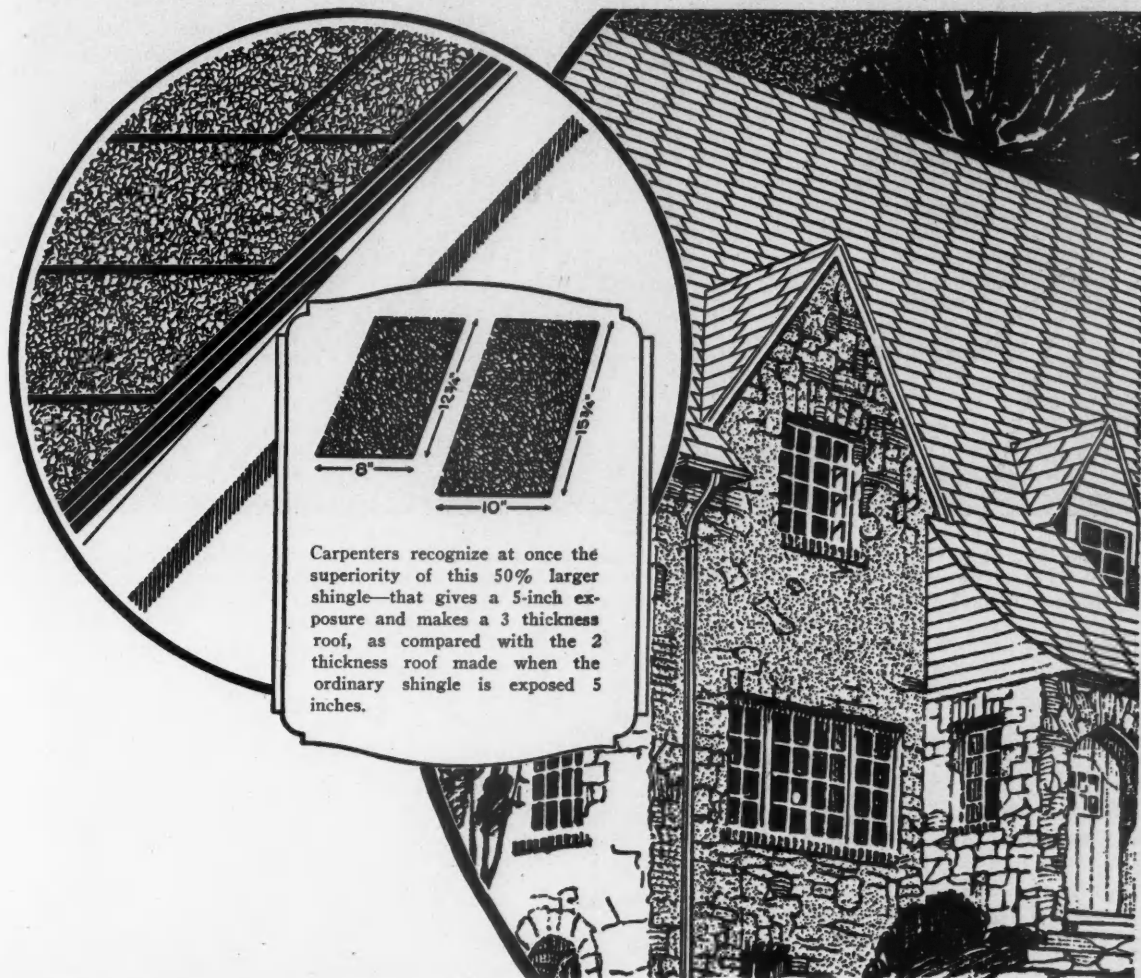
Realizing, then, that the window has a direct bearing upon the sales of the store by virtue of its advertising properties, it should be the merchant's desire to attract the greatest number of passersby to the window, in other words increase its circulation. There are various ways in which this may be done; but by far the most effective and reliable is by better illumination in the window.

It has long been realized that an abundance of light adds greatly to the attractive powers of show windows, but until recently there was nothing in the way of concrete facts and figures to show how much this power of attraction depends upon illumination. Figures are now available from several tests which have been made in various cities. These tests were quite extensive and were so consistent in



Here Is an Example of the Effect of Proper Window Lighting. One side of this window is well lighted and immediately attracts the eye of the passer, while the other side, dimly lighted as it is, has practically no pulling power.

The **BIG SIZE** Shingle always speeds up the work!



Carpenters recognize at once the superiority of this 50% larger shingle—that gives a 5-inch exposure and makes a 3 thickness roof, as compared with the 2 thickness roof made when the ordinary shingle is exposed 5 inches.

THINGS always drag as you are finishing up a building. Days run into weeks; pennies grow into dollars; you see your profit being eaten away.

The **BIG SIZE** Carey Asfaltslate Shingle puts life into the job. It is applied quickly, easily, inexpensively. It requires less nails, less time. And yet you show a superior roof. It is sturdy and durable. This shingle weighs approximately 300 pounds to the square. It is thick, giving a deep shadow line. It has a natural slate surface, rich and attractive.

And it is "the Shingle that Never Curls"—the last answer you need to make to any customer.

The size, 10 by 15 $\frac{3}{4}$ inches allows a 5 inch exposure and still gives a three thickness roof. You should not build a less efficient roof.

Ask your dealer for the Carey **BIG SIZE** Asfaltslate Shingle and watch it speed up things for you. It comes in three natural slate colors—the new and distinctive silver green, blue-black and red. The coupon will bring you complete information.

THE PHILIP CAREY COMPANY

510-530 Wayne Ave., Lockland, Cincinnati, Ohio

Carey
ASFALTSLATE
SHINGLES

THE SHINGLE THAT NEVER CURLS

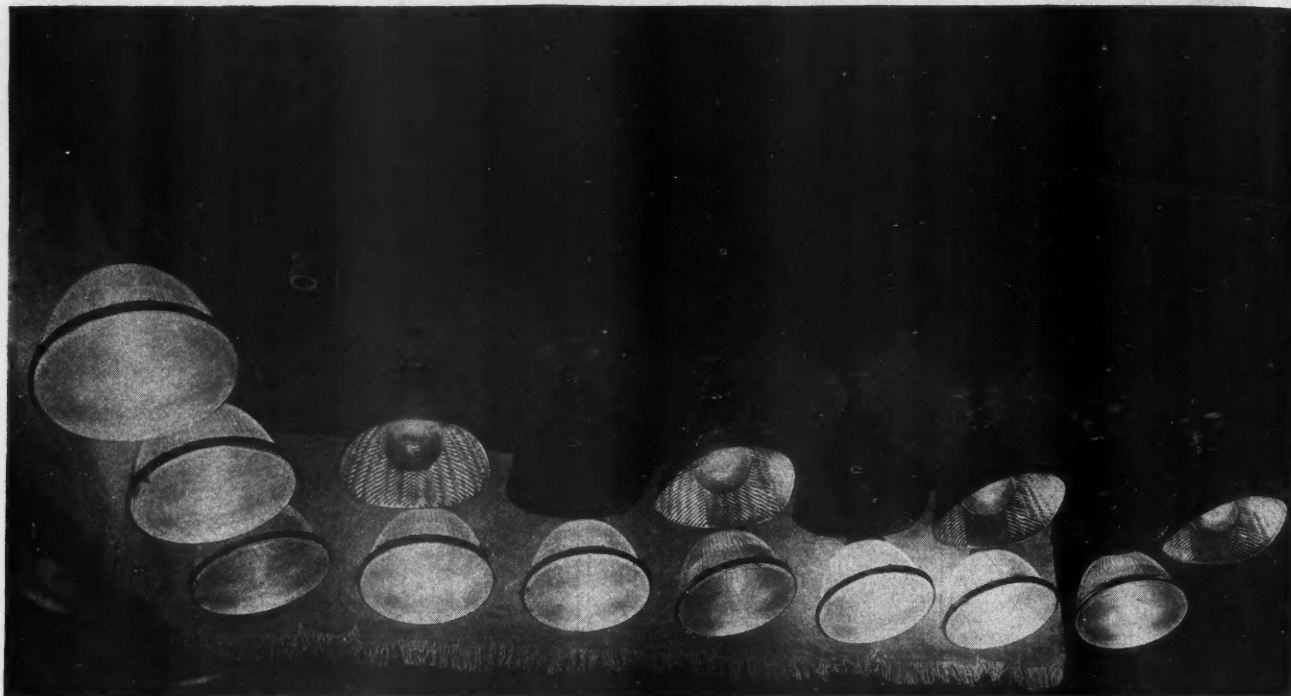
THE PHILIP CAREY COMPANY,
510-530 Wayne Ave., Lockland, Cincinnati, O.

Gentlemen: Please send copy of "Before You Build" booklet and sample to

Name _____

Firm _____

Address _____



This is the Lighting Equipment Used in the Well Lighted Side of the Window Shown on the Opposite Page. An abundance of light is provided and so directed as to flood every part of the window, but the fixtures themselves are completely hidden behind the valance at the top of the window.

results that they are representative of conditions to be found in most any locality.

When the level of illumination was raised from 15 foot-candles to 40 foot-candles, 33 per cent more people were attracted to the window. At 100 foot-candles the attractive power was increased 73 per cent. From an interview with the merchants it was found that they considered their windows capable of producing a profit of \$10.00 per hour when illuminated to 40 foot-candles. This figure was used as a basis for estimating the profit at various levels of illumination. The accompanying chart compares the profit derived at 15, 40 and 100 foot-candles and the corresponding increase in the cost of operation. The advantages to be gained from lighting display windows to a high level as compared to lighting them at a low level is apparent.

The character of the store and its location will determine largely the amount of light required. A window located on a brightly illuminated street where buildings and windows are well illuminated will obviously require a high level of illumination to make the window stand out in a distinctive manner. Stores which deal in specialties or goods other than necessities require more light than such stores as bakeries, groceries and the like.

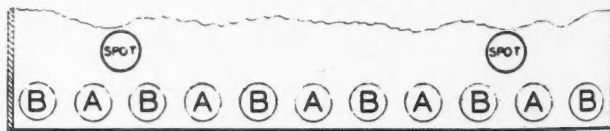
Character of the display will also determine the amount of light needed. Dark backgrounds and display materials of dark color absorb considerable light and more light will consequently be required to compensate for that which is lost in this manner. A light-colored window display in a small town might be well lighted at a level of 10 to 15 foot-candles, while a similar display on a prominent street in a city may profitably use 25 foot-candles. A dark display under the latter conditions would perhaps require 50 to 100 foot-candles.

An interesting window lighting system has recently been installed in the windows of the Lindner Company, in Cleveland. On account of the peculiar location this window was subject to very troublesome reflections which seriously hampered the visibility of the display. After considerable experimenting, a lighting system was installed which gave a level of about 2,000 foot-candles. It was found that with this level of illumination the difference between the bright-

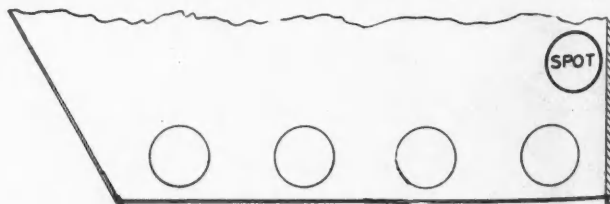
ness of objects outside the window and of those within the window was reduced and the reflections greatly eliminated. This system is, of course, employed throughout the day.

While it is not our chief interest to consider window lighting from the standpoint of reflections, this installation is interesting from the standpoint of attractive power in the daytime under the new lighting system. A test showed that 50 per cent more people stopped to look in the window when the display was illuminated than when the lights were not burning. Realizing that better lighting is responsible for increasing the sales power of their windows, the Lindner Company operates its windows at this level of illumination throughout the evening hours as well. With 2,000 foot-candles already in practical use, it can safely be predicted that the present standards of 10 to 100 foot-candles for show windows will reach new levels as soon as the real value of more light as a sales producer becomes more generally appreciated.

Another instance of appreciation of the value of illumination is the Washington Shirt Company Store in Chicago. Whether the day is bright and sunny or dark and gloomy



Correct Use of Colored Light Adds to the Attractive Power. Here is a layout of 100-watt lamps with alternate blue and amber color caps. Two 500-watt spotlights are directed on particular points of the display.



A Smaller Window May Be Lighted with This Layout of Four 150-Watt Lamps, a 200-Watt Flood Light with Amber Color Screen Adding to the Attractiveness.

Wrigley Buildings, Chicago
Graham, Anderson, Probst & White
Architects
Hatfield Electric Company
Electrical Contractors

Clean
sharp
threads



Sherarduct
Economy Conduit
Flexsteel
Flextube
Ovalflex
Metal Molding
National Brackets
Conduit and Cable
Fittings
Outlet Boxes
National Automobile
Products
Liberty Wires, Cables,
Cords

A TWIRL of your hand and the coupl-
ing spins into place. Each thread
clean, sharp and uniformly protected.
Saves time, saves labor, saves money.
And the alloying of zinc with steel pipe
in SHERARDUCT, creates an everlast-
ing resistance to rust, corrosion—to time
itself.

*Send for the Conduit Catalog, an
illustrated book describing Sher-
arduct and Economy Conduits.*

National Metal Molding Company
1438 FULTON BUILDING
PITTSBURGH, PA.

Represented in All Principal Cities (x30)

SHERARDUCT
A NATIONAL METAL MOLDING PRODUCT
The Rigid Conduit That Bends

their windows are lighted to a high level of illumination. They are fully convinced that light is a business-getter for them during the day as well as at night.

It may be inferred from the foregoing that modern window lighting is a sales promotion feature only for large stores in the big cities and involves too complicated equipment to produce results for the small establishments. Let it be known, however, that the results of good lighting will be evident to every class and size of store regardless of location.

This simple recipe will in general guarantee good lighting for your window: Use 150-watt clear Mazda lamps in standard mirrored or prismatic glass show-window reflectors spaced 12 inches apart in a row directly back of the glass. For windows with extra high ceilings use the next larger size lamps, and if the window is more than 10 feet deep use two rows of lamps. If Mazda daylight lamps are used the next larger size should be used.

The reflectors should be mounted high enough above the glass so that they will not be visible from the street. When this is not possible, a curtain or valence should be placed between the glass and the units so as to properly conceal them from view.

It is very desirable to have the lighting circuits so wired that the lighting effects can be varied at will. Variation is a fundamental principle of successful window displays and in no other way can this be as effectively accomplished as by light. A display which might be considered very ordinary can be made a real sales builder by the use of a few lighting effects.

A decided variation in the intensity of illumination can be made to draw attention to a special feature of a display as well as to the window as a whole. For instance, in a window which was designed to feature talking machines, the window was trimmed as a typical living room with an instrument standing in a rear corner and figure sitting

comfortably in a chair in a listening attitude. A portable lamp was placed in a convenient table so as to give sufficient light to show the corner dimly illuminated, yet leaving the remainder of the window in almost total darkness. At the opposite side of the window, the various models of the instrument were arranged with such descriptive signs as were necessary.

The lighting system was so designed that by means of a flasher the whole window was first lighted for an instant, then darkened for an instant and this was followed by the lighting of the portable lamp. The lighting of the whole window attracted attention to the display of the machines; the whole window becoming dark served to increase the interest in the window, and the lighting of the portable lamp served to center the interest on the instrument in use under home conditions and thereby bring to the observer's mind the place the instrument would take in his home.

The use of spotlights will serve to bring attention to that part of a display which is desired to be featured. Flooding the window with colored light or with the clear light from the spot light will attract people within several blocks to your window. Tests have shown that the attractive power of a window using colored light increased 44 per cent over that of a window using clear light. Equipment designed especially for lighting a window with colored light is now available on the market. Color screens or color globes used in conjunction with standard show window reflectors give very satisfactory results. The possibilities for the use of colored light are practically unlimited.

With the modern equipment which is now available, opportunities are open to the merchant to make his window one of the greatest assets in his store. He has an abundance of light at his command to direct and control as he sees fit making his window compel attention and create desire which will boost his sales tremendously.

ALLMETAL WEATHERSTRIP



Illustrating Waterproof Casement Strip

Your Opportunity
To Make
Big Profits

Sell and install ALLMETAL WEATHERSTRIP if you want a good paying business of your own—it is well known all over the country.

EVERY BUILDING
NEEDS IT

Start now and you can keep busy every day.

NO EXPERIENCE REQUIRED—NO STOCK TO CARRY

-----SEND BACK THE COUPON-----

ALLMETAL WEATHERSTRIP CO.
231 W. Illinois St., Chicago, Ill.

GENTLEMEN: Without obligation, please send me samples and literature.

NAME.....

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Save 30% on Your LIGHTING FIXTURES

We serve the builder and
know his needs

Note our Offer. Satisfaction Guaranteed.

\$2800 To the
HOME BUILDER

6-room house complete—Ready to install

This series consists of

1 Porch (copper) No. 12.	1 Kitchen (white enamel) No. 9.
1 Living room (silver) No. 1012.	1 Hall (silver) No. 10.
1 Dining room (silver) No. 1012.	1 Bath room (white enamel) No. 2.
3 Bed rooms (ivory) No. 9.	1 Cellar Receptacle.

**GOLAT ELECTRIC CO. 281 MARKET STREET
NEWARK, N. J.**



THE MARVEL THERMOSTAT

When installing a thermostat in your new home, be satisfied with none but the best. The MARVEL is accurate, dependable and completely automatic. Unreservedly guaranteed.

Write for booklet "N" and prices.

American Thermostat Co.
226 Jelliff Avenue
NEWARK (Est. 1909) NEW JERSEY



Call attention to the wiring

Have you received our helpful booklet on complete wiring, "The Home of a Hundred Comforts"? Send for a copy.

Section AB-5
Merchandise Division
General Electric Company
Bridgeport, Connecticut

When you present a contract bid—or offer a house for sale—make a special point of the wiring. It is of lifetime importance, and if you specify a G-E system throughout, you have a big talking point of *quality*.

You know G-E quality. And every man or woman to whom you sell knows G-E quality. A G-E wiring system throughout adds sales value to a house. It gives your customer confidence in the thoroughness of your building job. And it places the entire responsibility for the quality of the materials upon one great company—General Electric.

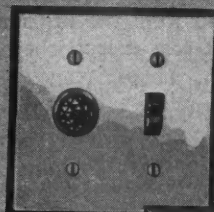
A two-color campaign in the Saturday Evening Post is paving the way for a *quality* bid instead of a *price* bid—selling the importance of a G-E wiring system throughout every building.



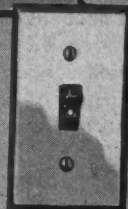
WIRING SYSTEM

—for lifetime service

In a G-E Wiring System these materials mean convenience—and lifetime service.



G-E Tumbler Switch with pilot to show that the current is on.



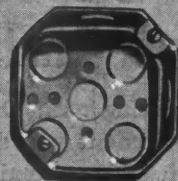
G-E Tumbler Switch—a flip of the finger works it.



G-E Convenience Outlets sturdy for service. Plenty of outlets mean real convenience.



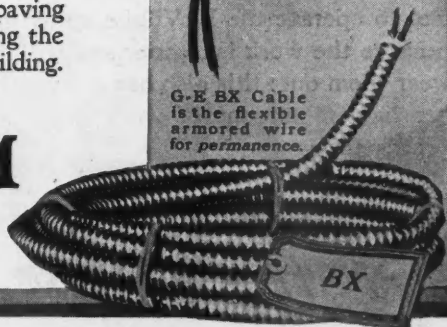
G-E Outlet Boxes mean protection inside your walls.



In big buildings G-E Conduit and Code Wire serve unflinchingly.



G-E BX Cable is the flexible armored wire for permanence.



GENERAL ELECTRIC

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.

Hendricks Commercial Register, 70 Fifth Ave., New York City, and 18 E. Huron St., Chicago, Ill. The thirty-third edition of this register has just been announced as ready for distribution. This is a complete directory of products of American manufacturers. Price \$12.00.

"Roof Standards" is a booklet offered by the Federal Cement Tile Company, 608 S. Dearborn St., Chicago, Ill., which contains complete general roof tile specifications and 26 pages of detail drawings showing the application of pre-cast reinforced concrete slabs to all types of roof construction.

"Mac-Stone and Oxyment Specifications" are available in the form of a small booklet issued by the Mac-Stone Stucco Company, Inc., Glenwood Road and E. Forty-fourth Street, Brooklyn, N. Y.

"The Forestry Almanac," compiled and published by the American Tree Association, 1214 16th St. N. W., Washington, D. C., is the first volume of this nature which has been published in the United States and attempts to furnish full information on forestry in this country. This is a limited edition and the publishers state that a second edition is already being planned. The price of this book is \$2.00.

"The Ideal Fitter," published by the American Radiator Company, 40 W. Fortieth Street, New York City, is a most handy and complete handbook on heating equipment. It contains, in addition to a catalog of boilers and other heating equipment, information on the particular field for which each unit is especially adapted and the last a section devoted to engineering data, useful to the heating equipment dealer.

A History of Architecture on the Comparative Method by Sir Banister Fletcher, Architect, F. R. I. B. A., F. S. I., F. R. G. S. Seventh Edition, Revised and Enlarged, with about Three Thousand Five Hundred Illustrations. Charles Scribner's Sons, 597-9 Fifth Ave., New York, N. Y.

This work has become a classic of the architectural profession. It was first published in 1896 and the principal author, was the father of the Sir Banister Fletcher, whose name is attached to the present and latest edition. It has been, in a way, a family affair, but is in reality the property of all students and practitioners of architecture and building. It has been said that no one has ever mastered the Fletcher's History of Architecture and a short perusal of the book will show why. It is encyclopedic in its contents, both as to text and illustrations. The Fletchers were the first historians and critics of architecture to point out the influence of geography, geology, climate, religion, social conditions and history, on their subject and their history "on the comparative method" is based on a discussion of these influences on each of the historical and non-historical architectural styles. Possessors of copies of earlier editions of the history will remember the many improvements which were made in the sixth edition, but this seventh edition contains still more, chiefly in the form of larger and clearer illustrations. Thinner paper has also been used, greatly reducing the thickness and weight of the volume. The book contains 933 pages and the price is \$12.00.

The T. L. Smith Company, Milwaukee, Wis., has prepared a new catalog for 1925 which covers its entire line of mixers, including four new models which have recently been added to the line. This catalog is beautifully illustrated in colors and contains much valuable information.

The Rotary Oil Burner Corporation, 6451 Sheridan Road, Chicago, Ill., offers a pamphlet which describes and illustrates its oil burner and its construction.

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



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"A Lucrative Proposition"

What They Say

BUILDER—Regarding the Ruberoid Giants on the Garmoe Home at Cedar Rapids, I can frankly say that the actual cost of laying this shingle has been cheaper than any other I have ever used. This, of course, is a lucrative proposition for any contractor. They will not curl, and they stay put in any position desired.

As a contractor, I would recommend this shingle to other contractors above all other makes.

ORA HALPHILL

ARCHITECT—I have used Ruberoid Giant-shingles for several years on A No. 1 residences and have always been perfectly satisfied with the results.

I used Ruberoid Giants on a bungalow erected just recently for Mr. M. E. Garmoe of Cedar Rapids, Iowa.

I do not think anyone will make any mistake in using Ruberoid in any size shingle made.

I. F. McMINDS

OWNER—After seeing all the different asphalt shingles, we decided that from appearance, wearing qualities, etc., the Ruberoid Giant was by far the best. From outward appearance our home is 85% roof and we are highly pleased with the Ruberoid Giants.

MR. & MRS. M. E. GARMOE



There is but one Ruberoid. Look for the Man on the Label

THAT'S what Mr. Ora Halfhill, a well known builder of Cedar Rapids, Iowa, has to say about Ruberoid Giant-shingles. Read his letter in the column at the left—also those from the architect and the owner of a home at Cedar Rapids, Iowa.

This home is typical of thousands throughout the country. It has a roof of Ruberoid which gives 100% satisfaction alike to builder, architect and owner.

The growth of your business depends largely on what people say of your work. This, in turn, depends largely on the products you use. Put Ruberoid Giant-shingles on the roof and you make a friend of every owner.

How much do you know about Ruberoid Giants? If you are not thoroughly familiar with their size, weight, color, price and cost of laying—it will pay you to use the coupon below and we will tell you the story.

The RUBEROID Co.

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RUBER-OID

GIANT - SHINGLES

Dept. 1

The RUBEROID Co., 95 Madison Avenue, New York City

Gentlemen: Kindly send me full information regarding Ruberoid Giant-shingles, also the name of the nearest Ruberoid Dealer.

Name

Address

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.

Hartmann-Sanders Co., 2187 Elston Ave., Chicago, Ill., has prepared an illustrated catalog on architectural features for improving and beautifying the home grounds, including pergolas, arbors, trellises, garden seats and similar products.

Asbestos Shingle, Slate & Sheathing Company, Ambler, Pa., has issued a little booklet on the application of asbestos building lumber to the construction of bath houses at bathing beaches.

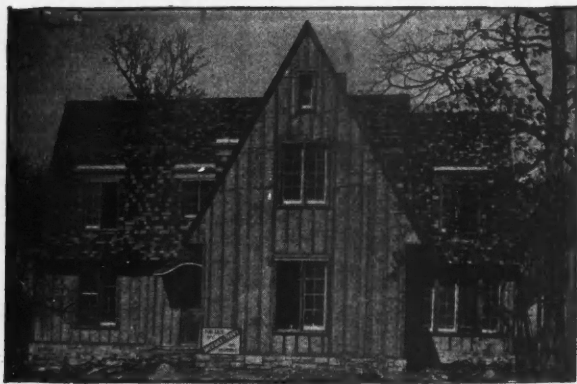
Stewart Manufacturing Company, 124 Rath St., Waterloo, Iowa, has issued a very complete descriptive catalog of its line of concrete mixers. This catalog, No. 25, is illustrated throughout.

The Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford, Conn., has issued a most complete and well illustrated Catalog, "R," covering its line of electric wiring devices.

Albert Pick & Company, 208-224 W. Randolph St., Chicago, Ill., has a new general catalog number E 27 which is just off the press and covers the entire line including equipment for restaurants, hotels, clubs and institutions.

Northwestern Expanded Metal Company, 407 Dearborn Street, Chicago, Ill., has just published a new general catalog covering its entire line and containing recommended specifications for metal lath construction.

Milwaukee Corrugating Company, 36th Ave. and Burnham St., Milwaukee, has just issued a new catalog of furnace and stove pipes and fittings. This is a line only recently taken over by the company and so this catalog is their first covering this line. It is well arranged and fully illustrated throughout.



House near Chicago, showing us "underclothing" of Cabot's Quilt, with furring strips over the Quilt, on which the outside finish is laid. Roof also insulated. Leon E. Stanhope, Architect, Chicago

Underwear for Houses

Underclothing makes people warm because it prevents the heat of their bodies from escaping. You can make your houses warm in the same way.

Cabot's Insulating Quilt

prevents the house heat from escaping. It insulates the whole house and saves the heat from the heater—that costly heat. It keeps the house warm on the smallest amount of coal; saves one-quarter to one-half of the coal bill. Makes the house comfortable for all time. Preserves health and saves doctor's bills. Makes the house cooler in summer. Quilt is not a mere felt or paper, but a scientific insulator that makes the house like a thermos bottle.



Sample of Quilt with full details, and references to dozens of users, sent FREE on application.

SAMUEL CABOT, Inc., Mfg. Chemists
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342 Madison Ave., New York
24 W. Kinzie St., Chicago

Cabot's Cresote Stains, Conserve Wood Preservative, Stucco & Brick Stains, Damp-Proofing

Granite Stone Stucco

is made on the job by

**CONTRACTORS
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Make \$50.00 to \$100.00 per day

No capital investment, extra tools or machinery required
Our new stucco book "The Holmes System of Pebble Dashing" SENT FREE

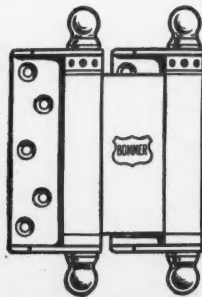
It tells you how to get our secret formula for making Granite Stone Stucco. Write for testimonials from contractors who are making \$200.00 to \$500.00 extra profit on every job they handle.

Don't let someone else get this money making business in your town. Write today for Free Samples and our new book.

E. W. HOLMES PEBBLE DASH CO.
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IF interested in any goods not mentioned here write us and we will be glad to put you in communication with the manufacturers best fitted to supply your needs.

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1827 Prairie Avenue, Chicago, Ill.



Buy the Best HARDWARE For Hard-wear

For more than 48 years Bommer Spring Hinges have maintained their leadership and proven their superiority over all others.

They have kept pace with the times, because they have been kept up with the times whenever improvement was possible.

BOMMER SPRING HINGES ARE THE BEST

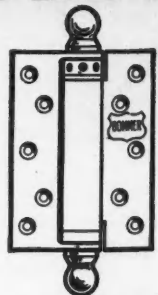
They are in universal demand—easiest to apply and the most satisfactory spring hinges made.

Your Dealer handles them.

Send for New Catalog 47. It is a big help in ordering.

Bommer Spring Hinge Company

MANUFACTURERS
BROOKLYN, N. Y.



This money-making, reputation-building booklet for builders available free. Write for copy today.



"Fills a Long-felt Want"

— says Howard J. White, well known Chicago Architect, of the PLYMETL "Air-Tite" Clothes Vault. In protecting clothing, the Vaults fill a universal, vital and permanent need. Q The Vaults afford absolute protection against moths by Government-Approved Process. Effectually they bar out dust, dampness, and guard everlastingly against fire and sneak-thieves. Both the United States Government and the Field Museum have purchased PLYMETL Vaults.

Built substantially of PLYMETL—the steel clad construction material—these Vaults are supplied to the contractor ready to install. No plastering of cramped closets, no closet doors or trim required; in but a few minutes Vaults can be neatly installed. And the finished job makes a big impression of value—way beyond its moderate cost. Write for full details on this amazing Clothes Vault, now used by progressive builders.

For immediate delivery of Stock Vaults write or call Plymetl Products Companies at the following addresses:

AKRON, OHIO
70 Cherry Street,
Phone Main 355

CINCINNATI, OHIO
1908 Dunlap Street,
Phone Canal 51

CLEVELAND, OHIO
5700 Euclid Avenue,
Phone Randolph 4300

DETROIT, MICH.
10226 Woodward Avenue,
Phone Arlington 1961

PHILADELPHIA, PA., 4007 Chester Ave., Phone Baring 0314

INDIANAPOLIS, IND.
863 Massachusetts Avenue,
Phone Main 0669

KANSAS CITY, MO.
1015 E. Eighth Street
Phone Main 0123

LOS ANGELES, CALIF.
1732 West Seventh Street
Phone 51545

MINNEAPOLIS, MINN.
2616 East 29th Street,
Phone Drexel 8353

COUPON

HASKELITE MFG. CORP.,
133 W. Washington St.
Chicago, Ill.

Send descriptive booklet on the moth-proof
PLYMETL "Air-Tite" Clothes Vault.

Name _____

Address _____