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### AN INVITATION TO YOU

The AMERICAN BUILDER cordially invites and urges you to enjoy the privileges and benefits of its Correspondence Department. Any phase of any building question may be profitably and instructively discussed in this department. If your problem is a knotty or technical one submit it to the Correspondence Department and secure the benefits of the opinions of other experienced builders. It's a "give" as well as a "take" department, and you are asked to relate your achievements and tell how you have conquered difficulties as well as to ask for information and advice. Rough drawings are desired, for they make clear involved points. We will gladly work over the rough drawings to meet publication requirements. The Correspondence Department is your department. Use it freely and frequently.

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



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9. White Pine preserves original accuracy and gives continuous service.
10. Made by largest exclusive standard frame manufacturer. The trade-mark is absolute protection.

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*Andersen*  
**FRAMES**

# □ With the Editor □

## Weaver and Builder of Dreams

The Architect and the Builder Weave and Build the Dreams  
Our Daily Life Is Made Of

**I**T IS a worthwhile thing, sometimes, to consider our proper relation to the business whereby we earn our daily bread. Are we *simply* users of so many rolls of tracing cloth, so many ounces of India ink, so many sheets of drawing paper, so many rolls of blue print paper? Or are we just buyers of so much clay, so much gravel, so much rock, so much lumber, so much machinery?

I don't think so.

All these things are the warp and the woof of the dreams with which we build the structure of daily life; they make the homes, the churches, the factories, the offices, the theatres, the schools, the garages, the shops. And we architects and builders sit down and show our completed handiwork to our clients, and we aren't through when we have delivered to them one completed contract as per order. All those things we have built are still part of us. No one, except the architect, the builder or the dealer in building materials can look around and say: "All this is my city; I caught hold of the dream and made it into actuality. This is my town; I feel a father's pride in it, because I provided it; I feel a mother's pride in it, because most of it was born from the ideas of my brain."

This is the pride of the doer, the weaver and the builder of dreams that become facts. We have given our clients standards of living never dreamed of even in the most gorgeous of old time palaces. We have graduated them steadily into the appreciation of new conveniences. Year by year, through our more modern planning and care for safety and sanitation, we are lessening the death rate, prolonging the duration of human life. We have seen the frontier go down before the village, the village before the town, the town before the city; the city mount up higher and higher within itself, carrying our challenges even to the stars, to the winds, and making them do our service, bear our messages.

Sometimes the moments come when we think of these things. Early one summer morning a builder walked around his town; he looked at the comfortable houses along the quiet, shaded streets; the factories that had been attracted to the town because it was such a thoroughly nice place to live. He saw the early risers hoeing in the gardens, getting some of Mother Nature's fragrant and healing breath before going to their day's work; saw the smoke rising from the many chimneys; sniffed the appetizing, tantalizing odor of



It is the Job of the Builder to Turn Dreams Into Realities and Often His Privilege, Too, to Help Shape and Fashion the Dream. Here we see Mary Pickford in conference with Svend Gade, Danish artist and architect, and Ernst Lubitsch, director. They are visualizing a stage setting of the city of Toledo, Spain, which, when completed, covered five acres.

bacon and eggs and pancakes that wafted from many breakfast tables; heard the early morning laughter of happy children and equally happy elders. And he said to himself—all this has come in by the depot, as it were; over the railroad switch; in so many feet of lumber; in so many thousand bricks; in so many bags of cement; in so many pounds and tons of this and that; *and I have built it into HOMES!* He felt, he told us afterwards, as though he had been lifted up and had sat in with the Almighty on part of the work of creation!

One cannot imagine a builder like that ever giving a client or a customer the disadvantage. I think if you looked him up you would find him on friendly terms with everyone in town, making a birdhouse for a little boy as painstakingly as he would plan the mansion of the banker; trying to build sound and well, because he saw through the outer shell of things, into things as they really are. He is the man young folks sit down with, when they come to plan a house, and their ideas grow less hazy and finally become definite, because he is able to get above his proposition and take a bird's-eye of its possibilities with them. He visualizes the whole thing beforehand, because he has the vision to see how it must look afterward. And because he can do that he will never lack the stuff to build the dreams life is made of.



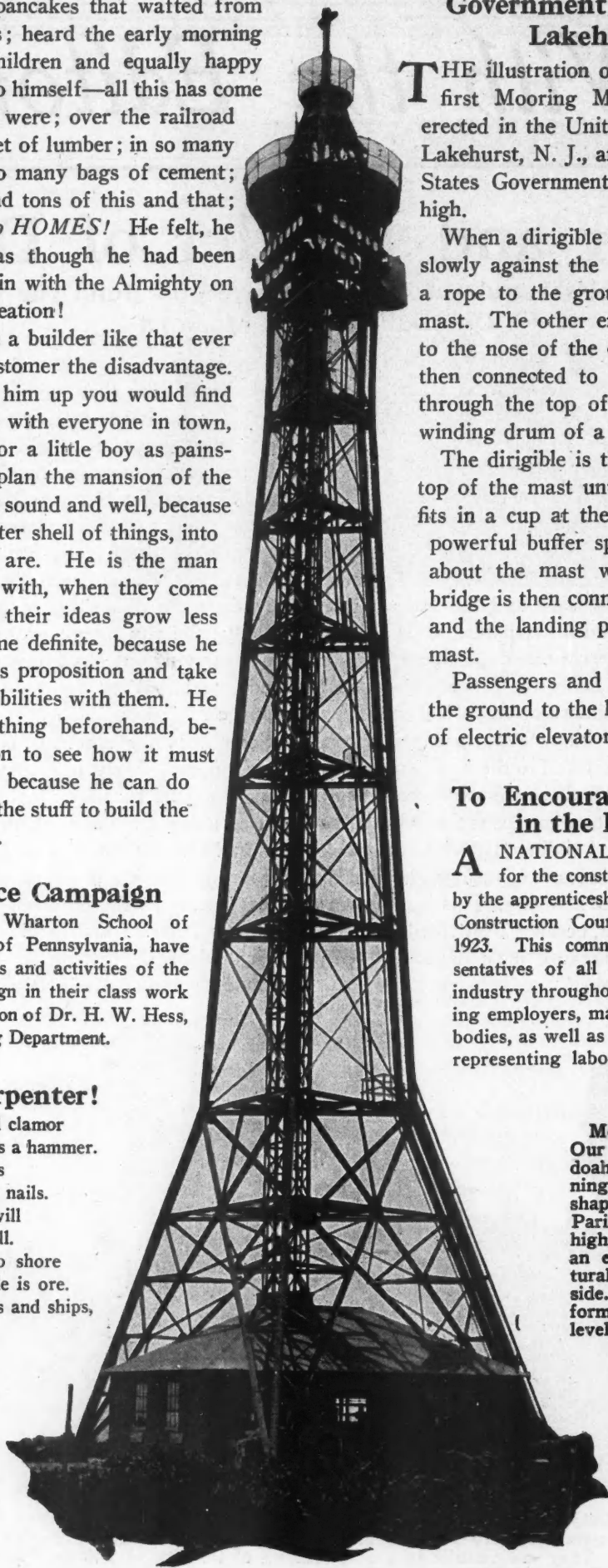
### Save the Surface Campaign

**S**TUDENTS of the Wharton School of Finance, University of Pennsylvania, have been studying the methods and activities of the Save the Surface Campaign in their class work this year, under the direction of Dr. H. W. Hess, head of the Merchandising Department.



### Here's to the Carpenter!

**L**ISTEN to the cheerful clamor  
Of the man who wields a hammer.  
Every blow increases sales  
Of the chap who's selling nails.  
Every nail that's driven will  
Boost some factory or mill.  
Every mill from shore to shore  
Helps the man whose trade is ore.  
Mines and railroads, trains and ships,  
Drummers on their  
cheerful trips,  
Every little country  
store,  
Lumber men and many  
more,  
Glory in the joyous  
clamor  
Of the man who wields  
a hammer.  
*Philadelphia Inquirer.*



### Government Mooring Mast at Lakehurst, N. J.

**T**HE illustration on the other side shows the first Mooring Mast for dirigible balloons erected in the United States. It is located at Lakehurst, N. J., and was built by the United States Government. The tower is 175 feet high.

When a dirigible approaches the mast, riding slowly against the wind, it drops one end of a rope to the ground near the foot of the mast. The other end of this rope is attached to the nose of the dirigible. The free end is then connected to a cable that passes down through the top of the mooring mast to the winding drum of a powerful winch.

The dirigible is then drawn up close to the top of the mast until the nose of the balloon fits in a cup at the top, which reacts against powerful buffer springs. It can then swing about the mast with perfect freedom. A bridge is then connected between the dirigible and the landing platform at the top of the mast.

Passengers and supplies are carried from the ground to the landing platform by means of electric elevators.



### To Encourage Apprenticeships in the Building Trade

**A** NATIONAL program on apprenticeship for the construction industry was launched by the apprenticeship committee of the American Construction Council at Buffalo, December 5, 1923. This committee is composed of representatives of all elements of the construction industry throughout the entire country, including employers, manufacturers and professional bodies, as well as the various trades and crafts representing labor in the industry.



Mooring Mast from Which Our Giant Airship "Shenandoah" Broke Loose the Evening of Jan. 16. Built in the shape of the Eiffel tower of Paris, the mast is 165 feet high, built on a base forming an equilateral triangle of structural steel, sixty feet on each side. The tower tapers to a platform at its top. On the ground level are motor winches, gasoline and water pumps, and elevator machinery by which the airship is hauled to the mast and held in place by great cables. Fuel, water and gas are taken aboard from the top platform, where the passengers also embark and disembark while the ship is moored.

# Black Brick—Gold Trim

Daring Departure from Conventional Treatment in New Home of American Radiator Company

*Winning Architects in Recent Chicago Tribune Tower Competition Score Another Success*

**A** DARING departure from the conventional in office building construction marks the new home of the American Radiator Company at 40 West Fortieth Street, announced recently to be ready for occupancy about May 1st.

Unlike any office building in the country, the new structure will be faced entirely with black brick with golden colored stone trimming, worked together to give a rich black and gold decorative effect. The building has already provoked wide discussion in professional circles because of its unique design. It contains 77,000 square feet of floor space. An interesting feature is that over 90 per cent of the floor space is within 25 feet of windows.

Raymond M. Hood, architect, associated with John M. Howells, who took the first prize for the Chicago Tribune building in the International Competition held last year, designed the building. Of its unique features, Mr. Hood says:

"The radical departure from standard practice arose from a feeling that so many office buildings are monotonous if not ugly. Monotony and ugliness in office building seems to come from the fact that the windows are actually black holes and the regular spacing of these black holes makes a building look like waffles or door-mats hung up to dry. The solution to this problem lay in finding a color of wall that would tie together the black holes, and make them less apparent. But, as the building progressed, we

found it struck a very cheerful note. The idea for gold trimming came next and caught the fancy of us all. Precedent, at least in Europe, pointed to other periods of architecture where black had been used effectively, particularly, for example, in the Grande Place of the Hotel de Ville, Brussels. In Pompeii, also, and in France at the time of the Empire, whole rooms were done in black with only a slight relief of color.

"We felt that the old problem in office building design demanded a new solution and that just as other architects have broken away from conventional treatment in certain directions and raised the standard to higher levels, we might contribute a new plan of coloring which would make for progress."

The building was erected by Hegeman-Harris Company, Inc., builders, and occupies a plot 77 feet front by 100 feet deep. It is estimated that the building, including land, when fully completed, will cost in the neighborhood of \$2,000,000.



## Evansville College to Make Block Tests

**C**O-OPERATION of a practical sort has been extended to the concrete products industry and to the city of Evansville, Ind., by Prof. Max Robinson, in charge of the testing laboratories of Evansville College. That city is about to adopt an ordinance similar to the one passed in September, 1922, by the city council of Camden, N. J., designed to regulate the manufacture and use of concrete products. As an aid to the city and the building industry, Professor Robinson has offered to undertake the testing of block free of charge.



New American Radiator Co. Building in New York City; Black Brick and Yellow Stone Trim. Raymond M. Hood and John M. Howells, Architects.

# Mapping New York from the Sky

Planes Flew 3,000 Miles and Photographed 625 Square Miles on Largest City Mapping Project Ever Attempted

By H. A. BRUNO

**T**HE last flight of the New York City aerial photographic mapping project has been completed. About 3,000 miles were flown and the entire greater city, a territory of approximately 625 square miles has been mapped. Two thousand exposures were necessary to cover this large area. Three planes were over the city whenever there was a good photographic day.

The contract for this tremendous mapping work was awarded to the Fairchild Aerial Camera Corporation on July 10, 1923. It calls for delivery of the completed map by April 15, 1924. Fifteen engineers and surveyors checking controls and assembling the maps have worked in conjunction with an inspector from the city engineer's office. The map pictures the city with the minutest detail. It shows every structure from the contractor's temporary tool shed where construction is going on to the skyscraper, backyards, gardens and parks with every tree and shrub visible, avenues and alleys, streets and unrecorded foot paths, big league ball parks, water front

clubs, with their yachts and motor boats, the boardwalk of Coney Island, and crowds of people appearing like small black dots. Even the congestion of traffic on busy thoroughfares is clearly shown.

Two distinct photographic maps are being made. The first includes the area approximately 400 square miles within the official city limits at the scale of one-inch equals 600 feet; to be delivered in 140 sections, each section being about 14 in. by 21 in. These sections are to be assembled in groups of four to correspond with the thirty-five sectional plan maps as laid out by the Board of Estimate and Apportionment. They will be used in conjunction with these official sheets. If made in one section, this map would measure approximately 22 ft. by 24 ft.

The second map is being made at the scale of one inch equals 2,000 feet and covers an area of about 625 square miles, including the city proper as in the first map and also portions of the counties of Westchester and Nassau in New York State, and that part of the State of New Jersey contiguous to the city as



View of Manhattan Island Showing Three of the Bridges Over the East River. The dark spots are cloud shadows. Above, Sherman M. Fairchild adjusting his new aerial camera used in the aerial mapping of Greater New York. Photos copyrighted by Fairchild Aerial Camera Corporation.



**Oblique View of Columbus Circle, New York.** Compare this with vertical or map view shown below. Both photos copyrighted by Fairchild Aerial Camera Corporation.

shown on the official line maps of the City of New York heretofore in use. The completed map of this small scale will measure 10 ft. by 8 ft. If this larger area were mapped at the scale of one inch equals 600 feet, the dimensions of the map would be about 27 ft. by 30 ft.

Some of the work for the Map Mosaic was done at 16,000 ft. altitude in the Fokker, too high for the plane to be seen with the naked eye. The map calls for the greatest accuracy. Negatives showing very small degrees of tilt have to be adjusted in the printing process so that the tilt is corrected in the prints. All prints have to be brought to the required scale and in order to do this a different ratio of enlargement and reduction is required for practically every print. This requires a fine calibrated adjustment of the enlarging camera.

With a corps of engineers numbering more than 500, with the finest of existing maps of every description, New York City ex-

perienced a decided lack when it wanted to visualize its engineering problems to non-technical officials and to the public. The aerial map solved the problem.



**This Vertical View of Columbus Circle, New York, Is Typical of the Entire Aerial Map.**

# New Hotels of 1923

Year Just Closed Biggest in Respect of Number, Value and Size, with Notable Advances in Modes of Construction

By E. J. WILLIAMSON

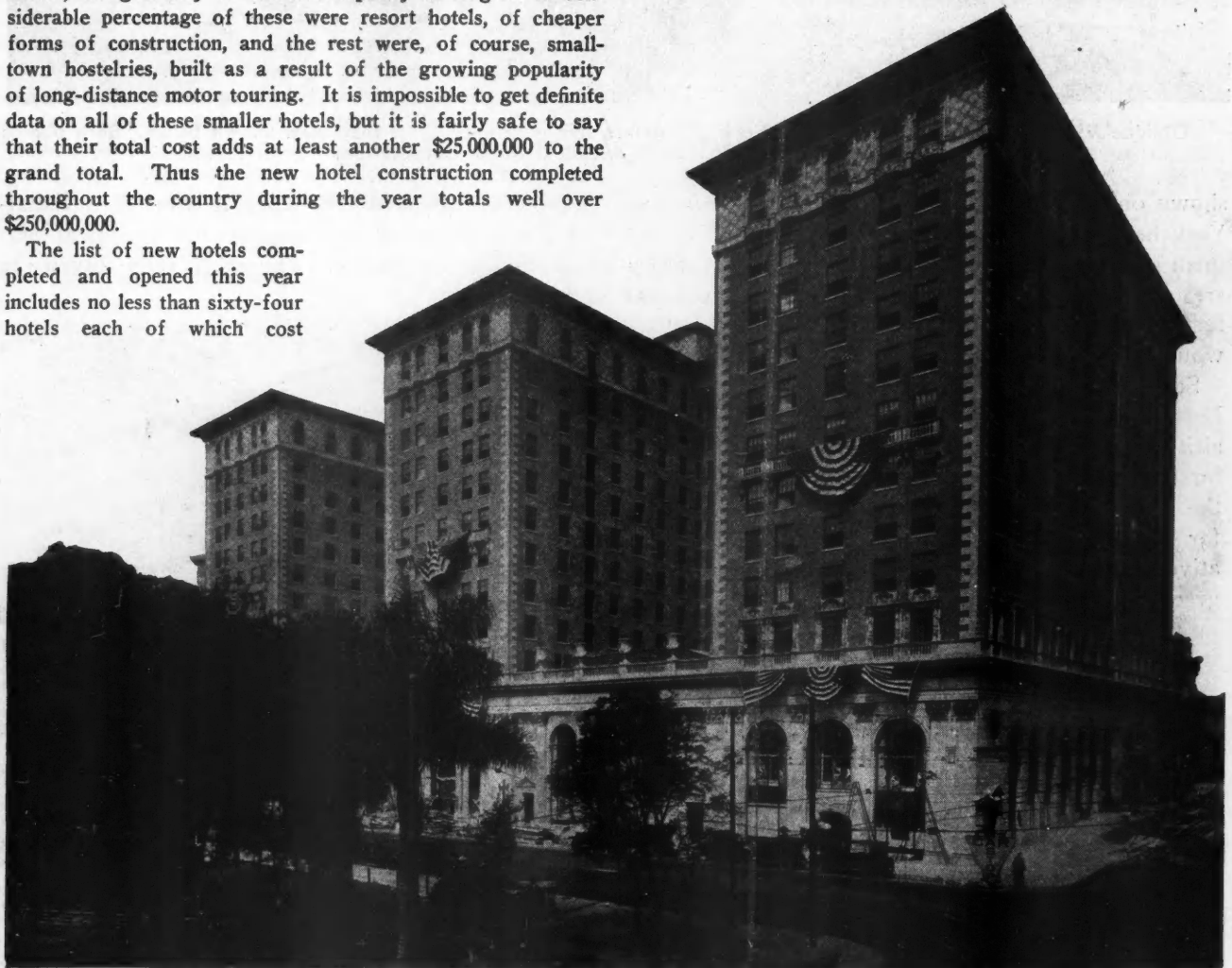
**N**OTWITHSTANDING the fact that a large amount of new hotel construction was deferred until building costs and conditions have settled back more nearly to their old-time normalcy, the 1923 crop of new hotels in the United States has been a bumper crop in every sense of the word. The year has been the biggest on record with respect to number, value and size of new hotels built and opened throughout the country since last Jan. 1, according to figures compiled by one of the leading hotel journals of New York. Since last Jan. 1 more than 280 new hotels of 40-room capacity, or larger, have been built and opened, and the total cost of the investment of these hotels was more than \$235,000,000, a sum which is said to establish a new high water mark in value of new hotel construction in any single year.

In addition to these 280 hotels, several hundred smaller hostelries were built, some with no more than ten or fifteen rooms, but generally of 25-room capacity or larger. A considerable percentage of these were resort hotels, of cheaper forms of construction, and the rest were, of course, small-town hostelries, built as a result of the growing popularity of long-distance motor touring. It is impossible to get definite data on all of these smaller hotels, but it is fairly safe to say that their total cost adds at least another \$25,000,000 to the grand total. Thus the new hotel construction completed throughout the country during the year totals well over \$250,000,000.

The list of new hotels completed and opened this year includes no less than sixty-four hotels each of which cost

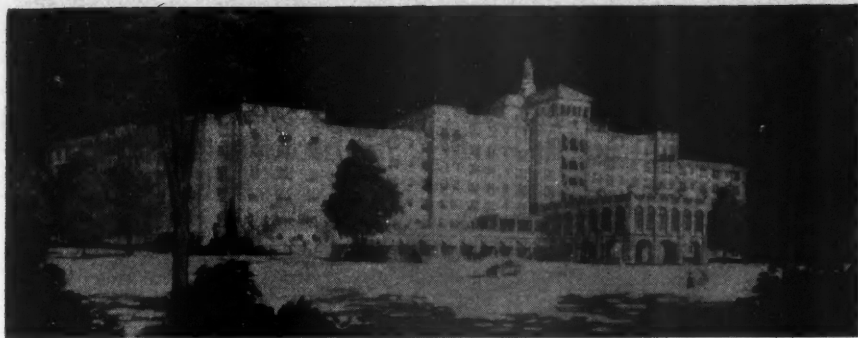
\$1,000,000 or more for buildings and sites. Five of the new hotels opened this year are in the 1,000-room class. The largest hotel of the year was the new Hotel Shelton, New York, with 1,200 rooms, built by James T. Lee, at a cost of \$8,000,000, and opened last Nov. 15. This is known as the largest "stag" hotel in the world. The two costliest hotels of the year were E. M. Statler's new Hotel Statler at Buffalo, N. Y., and John McE. Bowman's new Biltmore at Los Angeles, Calif., each costing approximately \$9,000,000. The Buffalo Statler has 1,100 rooms and was opened last May 19; the Los Angeles Biltmore has 1,000 rooms and was opened last Oct. 1. The two other hotels in the 1,000-room class are the Hotel Brown, Louisville, Ky., with 1,000 rooms, built at a cost of \$6,000,000 and opened on Oct. 26; and the residential hotel known as Twelve East Eighty-sixth Street (New York), also with 1,000 rooms, built by I. Fluegelman, secretary of the Hotel Association of New York City, at a cost of \$5,000,000, and opened on Sept. 15.

The vast amount of new hotel construction that is now under way, but which will not be completed until next year, is not included in the \$235,000,000 figure. Several 1,000-room



The New Biltmore Hotel at Los Angeles, Cal., as It Appeared Just Before Its Opening Last Oct. 1. This hotel of 1,000 rooms is one of the two costliest of the 1923 crop.





The Bon Air Vanderbilt, Augusta, Ga. Willis Irvin, Augusta, and McKim, Mead & White, New York, associate architects.

hotels are now being built and will be ready some time in 1924. Perhaps the first of these to open will be the 1,000-room Hotel Walker at Washington, D. C., built at a cost of more than \$8,000,000. This hotel will be opened early next spring, according to present expectations, with Dan P. Ritchey, of the Hotel Gregorian, New York, as the managing director. The Benjamin Franklin Hotel, Philadelphia, with 1,000 rooms, also is well along, but probably will not be ready until midsummer, or later. Other 1,000-room hotels in course of construction include the 1,100-room Hotel Roosevelt, in the Grand Central Zone, New York, which will be ready next fall; the 1,200-room Book-Cadillac Hotel at Detroit; the new \$12,000,000 Palmer House at Chicago, and the new Hotel Biltmore at Atlanta, Ga., scheduled to open on May 15.

In addition to these construction is well under way on more than thirty new hotels throughout the United States, each to cost \$1,000,000 or more, besides a tremendous amount of construction ranging in cost from \$50,000 to \$1,000,000 in each particular instance. Indeed, the present indications are that 1924 will be even a bigger year than 1923 has been. If all the hotels that are now being planned were to go through, hotel construction in 1924 would be well over the half-billion dollar mark. However, as was the case during the past year, doubtless many of these projects will turn out to be nothing more than castles in the air, or will at least be postponed until another year.

Among the hotels of the million-dollar class now being built may be mentioned the new Hotel Olympia, 640 rooms, in Seattle; the \$5,000,000 Hotel Peabody, Memphis, Tenn.; the Hotel Winthrop, Tacoma, Wash.; the Hotel Senator, Sacramento, Calif., nearing completion; the 600-room Hotel Metropolitan, Los Angeles; the San Pedro Hotel, Los Angeles; the Hotel Finelen, Butte, Mont., to be opened in February; the Hotel Syracuse, Syracuse, N. Y.; the Hotel Lorraine, Madison, Wis.; the Hotel Kentucky, Louisville, Ky.; a \$2,000,000 enlargement of the St. George Hotel, Brooklyn; the Hotel Buckingham, Ashland, Ky.; the Hotel Washington, Shreveport, La.; the Battery Park Hotel, Asheville, N. C.; the Hotel Mayo, Tulsa, Okla.; the new Hotel Arlington, Hot Springs, Ark.; the Altamont, Hazleton, Pa.; the Sam Houston Hotel, Houston, Tex.; the new Hotel Manchester, Manchester, N. H.; the Stephen Austin Hotel, Austin, Tex.; the Hotel Duluth, Duluth, Minn.; a 12-story annex to the Hotel Savoy, Los Angeles; the new Federal Hotel, Charleston, West Va.; and a number of others, all in the million-dollar class, not to mention a dozen new hotels in the million-dollar class now under way in New York, at least half a dozen under way in Chicago and others, in other cities.

The foregoing are certainties. As in other years, doubtless there will be much building of hotels "on paper," hotels that never will materialize, but there is already enough hotel construction actually under way throughout the United States to make it certain that 1924 will be another record year.

Scarcely a week passes without announcement of one or more huge new hotel projects. It is practically certain that another hotel of more than 1,000 rooms will be started in Philadelphia during the coming year. One of the most interesting announcements of new hotel projects within the past fortnight is the announcement from Chicago that the present Congress Hotel is to be replaced by a \$22,000,000 structure, 32 stories high, which will make it one of the largest hostleries in the world.

The following is a list of some of the new million-dollar hotels opened in the United States during 1923, from January

1 to January 1, inclusive:

Name of Hotel	Opening Date	Number of Rooms	Cost
Biltmore, Los Angeles, Calif.	Oct. 1	1,000	\$9,000,000
Hotel Statler, Buffalo, N. Y.	May 19	1,100	9,000,000
Shelton, New York	Nov. 10	1,200	8,000,000
Brown, Louisville, Ky.	Oct. 26	1,000	6,000,000
Windermere East, Chicago, Ill.	May 1	750	5,500,000
Twelve East Eighty-Sixth St., N. Y. C.	Sept. 15	1,000	5,000,000
Kansas City Athletic Club and Hotel, Kansas City, Mo.	Oct. 4	1,000	4,300,000
Alamac, New York City	Nov. 1	600	4,000,000
Pennsylvania, Philadelphia, Pa.	Oct. 15	600	4,000,000
Empire, New York City	Dec. 3	616	4,000,000
Belmont, Chicago, Ill.	Dec. 31	680	4,000,000
Lake Shore Drive, Chicago, Ill.	June 21	450	3,500,000
Belden, Chicago, Ill.	Oct. 15	650	4,000,000
Sylvania, Philadelphia, Pa.	Sept. 12	400	3,500,000
Gibson (Addition), Cincinnati, O.	Feb. 15	400	3,000,000
Greystone, New York City	Oct. 1	494	3,000,000
Garfield Arms, Chicago, Ill.	Nov. 16	210	2,750,000
Coronado, St. Louis, Mo.	Dec. 15	400	2,500,000
New Morton House, Grand Rapid, Mich.	Nov. 3	400	2,500,000
Allerton Club, New York	Nov. 15	450	2,500,000
Park View, Memphis, Tenn.	Nov. 15	450	2,500,000
Claman, New York	April 15	900	2,500,000
Alcazar, Cleveland, Ohio	Sept. 15	300	2,250,000
Pearson, Chicago, Ill.	Nov. 1	310	2,225,000
Hotel Rowe, Grand Rapids, Mich.	Jan. 1	400	2,000,000
Orrington, Evanston, Ill.	Sept. 29	300	2,000,000
Ford, Buffalo, N. Y.	Feb. 10	750	2,000,000
Gladstone, New York	Oct. 1	235	2,000,000
Webster Girls, New York	Oct. 30	400	2,000,000
Broadway View, New York	Oct. 10	308	2,000,000
Forest Park, St. Louis, Mo.	Dec. 1	300	2,000,000
Biltmore, Havana, Cuba	Dec. 31	300	2,000,000
Flanders, Ocean City, N. J.	July 29	232	1,750,000
Standish Hall, N. Y. C.	Oct. 1	304	1,750,000
Carlton Terrace, N. Y.	Nov. 1	250	1,750,000



The New Hotel Statler at Buffalo, Opened Last May 19, With Its 1,100 Rooms and \$9,000,000 Investment. This is one of the two costliest of 1923.

# Making Most of Medium Lot

Residence of O. H. Shoup, Jr., Colorado Springs, Colo., Shows Successful Meeting of Space Limitations, Thomas P. Barber, Architect

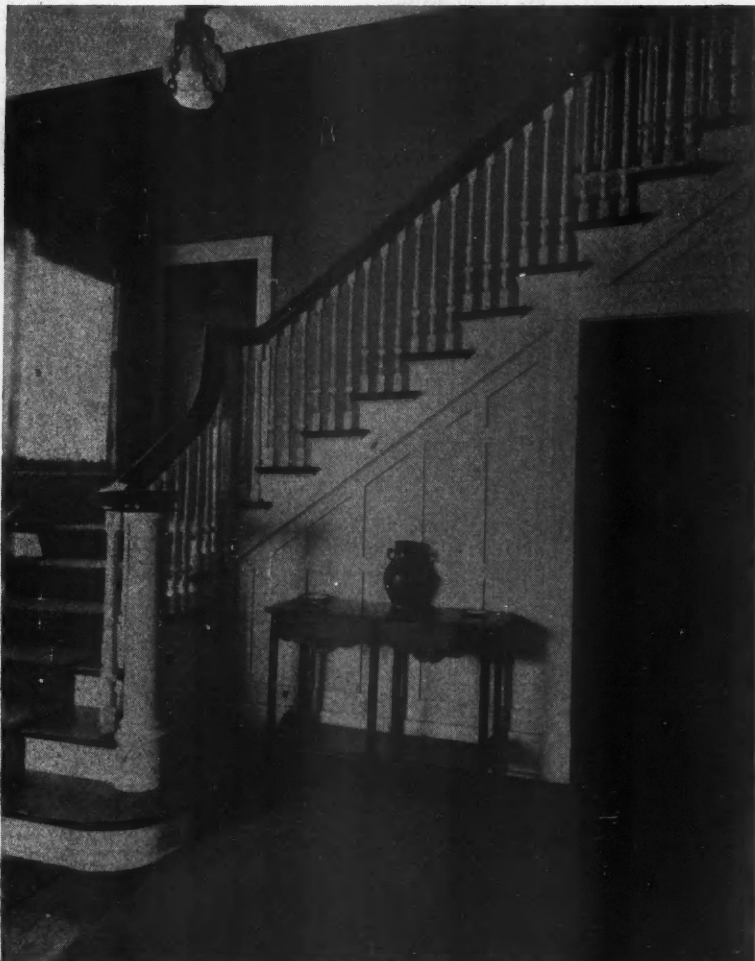
By THEO. M. FISHER

**T**HE problem of utilizing a residence site only 40 x 90 feet in dimensions is a real one for the conscientious architect. The house here shown, in Colorado Springs, which was designed by Thomas P. Barber and is now owned by Mr. O. H. Shoup, Jr., very successfully meets the limitations thus imposed on the architect; the completed structure is both well arranged and so placed on the lot as to afford a bit of room for lawn and garden that is necessary to give real home feeling.

Although the architect was restricted by the smallness of the area, he was favored in that it was a corner lot. As the exposure was with the long side to the north and the shorter to the west, he placed the dwelling right on the north line and as far back from the west front-



The Dining Room in the Shoup Residence Is Exceptionally Pleasant and Well Lighted.



Beautifully Handled Stair Detail in the O. H. Shoup Residence. Thos. P. Barber, Architect.

age as possible, so as to assure on the latter and south sides room for growing things within the privacy of the enclosing wall fence. In this way, too, unobstructed lighting was assured, even though there was a two-story house on the adjoining lot to the south. A glance at the plan indicates how by careful arrangement ample sunlight has been insured for every room.

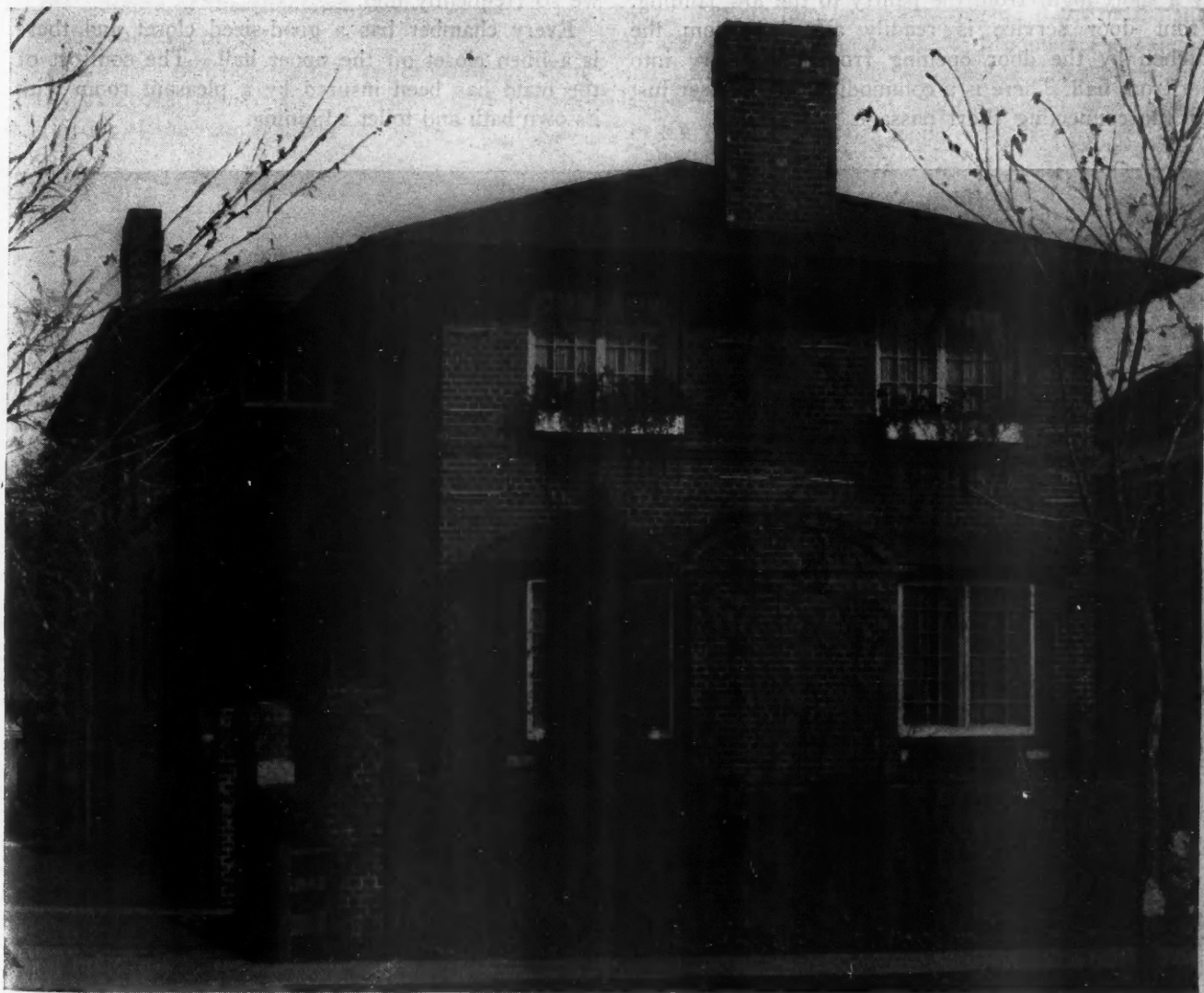
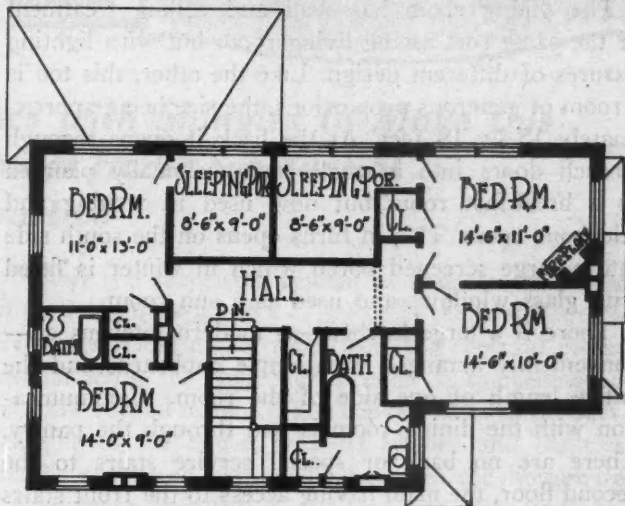
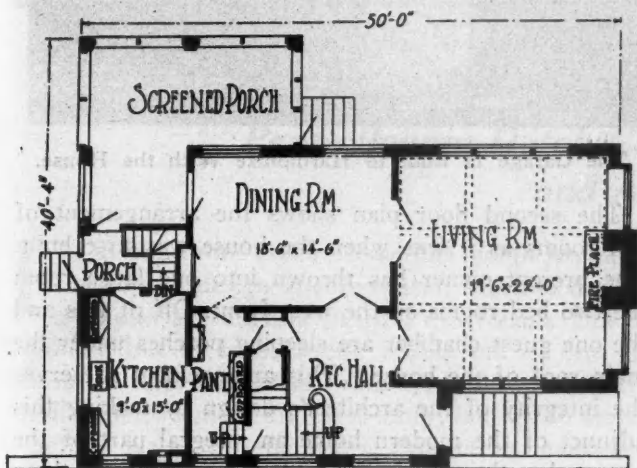
The smallness of the site quite properly suggested simplicity of design and so we have a reliance on carefully studied mass and the substitution of structural emphasis at different points for ornament in the usual sense, together with a careful choice and placing of windows. These elements we discern as the chief sources of the exterior's attractiveness. The windows are mostly casements with fifteen panes, set either in pairs, or strings of four and six as on the same side of the living room and the owner's bedroom. The shingled roof is, appropriately, flat in pitch and wide in overhang.

The material employed was a hard-burned brick, kiln-run, showing a wide variety of color and laid up in a header bond with "raked back" mortar joint. Just below the line of the second-story windows four courses have been set out slightly to give a decorative touch. The

unification of the chimney breast projection on the west front with the shallow bay windows on either side and simple hood over the front entrance should be noted also as agreeable details.

The entrance hall is finished in a paneled trim painted white. White also is the color of the stairway spindles. The latter has a mahogany handrail and wide treads of the same wood.

From the entrance hall one enters through double-glassed or French doors into the living room on one hand and the dining room on the other. The first is about 20 feet square and is especially well lighted as it has exposure on the south, west and north. The walls are treated with a paneled wainscot of Oregon fir, stained dark brown. This is carried to a height of six feet with a tinted plaster wall between it and the



A Brick House Which Utilizes to Excellent Advantage a Corner Lot 40 Feet by 90 Feet, Leaving Room for Lawn and Garden. Designed by Thomas P. Barber, Architect, Colorado Springs, Colo., for Mr. O. H. Shoup, Jr.

cornice of the beamed ceiling. The artificial lighting of the room is, in the main, from electric fixtures of iron and frosted glass pendant from the center of the ceiling and the four intersections of the ceiling beams. There is a simply designed brick fireplace with the front carried to the ceiling and with window seats on either side under which there are small radiator coils.

The dining room has wall and ceiling treatment of the same sort as the living room but with lighting fixtures of different design. Like the other, this too is a room of generous proportions, the size being approximately 15 by 18 feet. At the back it opens through French doors into a small room originally planned as a breakfast room but now used in writing and telephone room. This in turns opens on the south side into a large screened porch which in winter is fitted with glass windows and used as a sun room.

There is a large kitchen—as modern kitchens go—conveniently arranged with ample cupboards and the entire length of one side of the room. Communication with the dining room is had through the pantry. There are no back or special service stairs to the second floor, the maid having access to the front stairs by a short flight from the pantry to the low landing. Front door service is readily afforded from the kitchen by the door opening from the pantry into the front hall. There is a commodious coat closet just off the connecting short passage.



The Garage Is Built to Harmonize With the House.

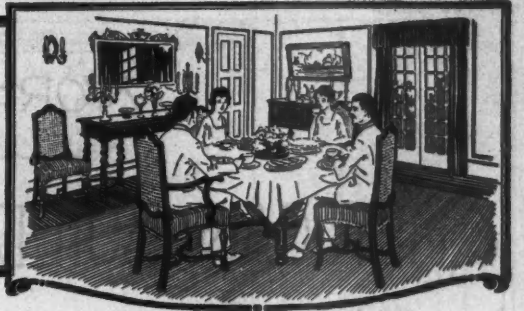
The second floor plan shows the arrangement of bed rooms as it was when the house was first built. The present owner has thrown into one large room the two bed rooms on the west front. Off of this and the one guest chamber are sleeping porches under the main roof of the house. This arrangement preserves the integrity of the architect's design by making this adjunct of the modern home an integral part of the plan rather than the unlovely "stuck on" sort of thing we so frequently find.

Every chamber has a good-sized closet and there is a linen closet off the upper hall. The comfort of the maid has been insured by a pleasant room with its own bath and toilet adjoining.



Spacious Living Room, 19 ft. 6 in. by 22 ft., Looking Through Into the Dining Room and Stair Hall. Residence of O. H. Shoup, Jr. Thos. P. Barber, architect.

# OUR FRONT COVER HOME



## *Stucco on Concrete Tile Combines with Shingles to Make this Pennsylvania Dutch Colonial Home Substantial and Attractive*

**F**OR our Front Cover Home this month we have selected a design of rare charm, which in design follows the old-established Pennsylvania Dutch Colonial, but in construction makes use of one of the latest improved ideas, namely, hollow concrete tile for the basement and first story, laid up to form a hollow wall. So efficient is this as an insulator and damp proofer that the stucco is applied directly to the outside of the tiles and plaster to the inside, without furring or lathing.

The working plans on the four pages following show clearly this construction; also the wonderfully convenient layout of the rooms in this residence.

There is a surprising amount of space in this house, measuring over all 45 x 37 feet. On the first floor the living room and dining room, both big cheerful rooms, extend across the front with French doors opening out onto the roofed terrace. The conveniences of the service side of the house, with its kitchen and pantries, maid's room and bath, will appeal to the housewife. The entrance stair-hall is distinguished, and leads upward to four fine bedrooms, one of them measuring 16 x 22 feet. Two good-size bathrooms are provided, and a multiplicity of clothes-closets. The basement is laid out for real use and efficiency, with ample space for laundry, heater, coal room, etc.



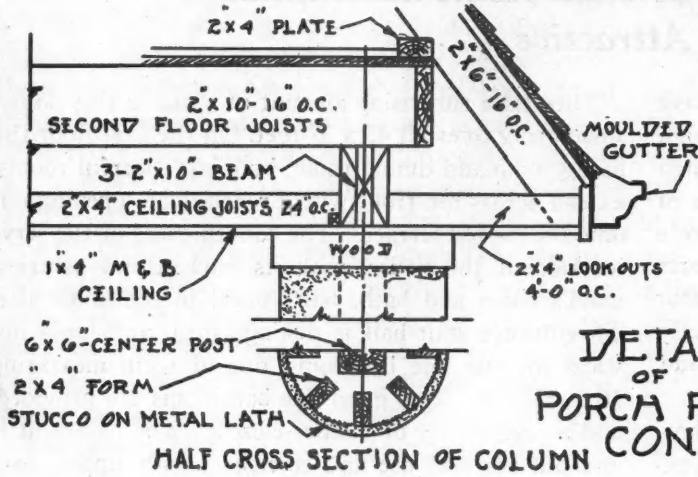
Photograph of Artistic Well-Constructed Home of Pennsylvania Dutch Colonial Design Illustrated on Our Front Cover in Full Colors. Architect's working plans presented on the four pages following.

# WORKING PLANS

OF

# AMERICAN BUILDER FRONT COVER HOME

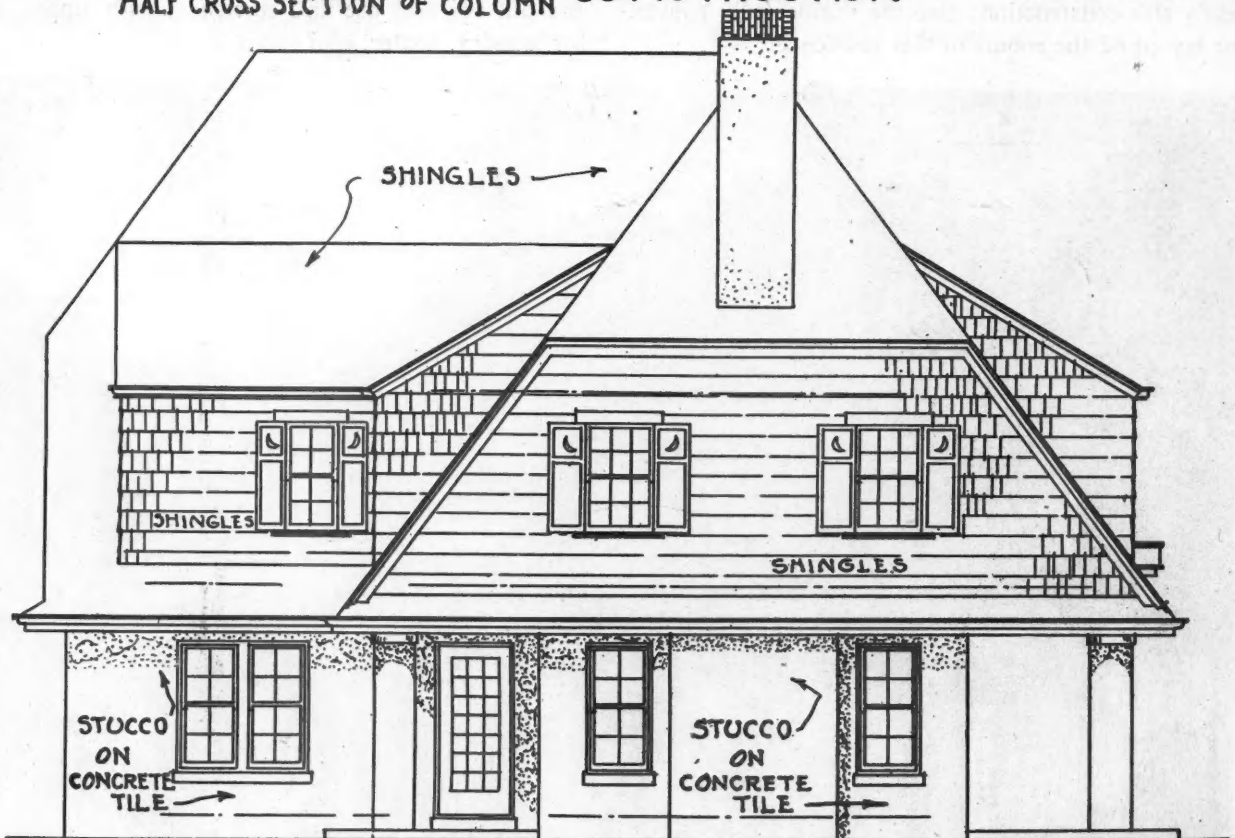
## EIGHT ROOM TWO-STORY RESIDENCE



### CUBICAL CONTENTS

51,360 CU. FT.  
INCLUSIVE OF PORCHES

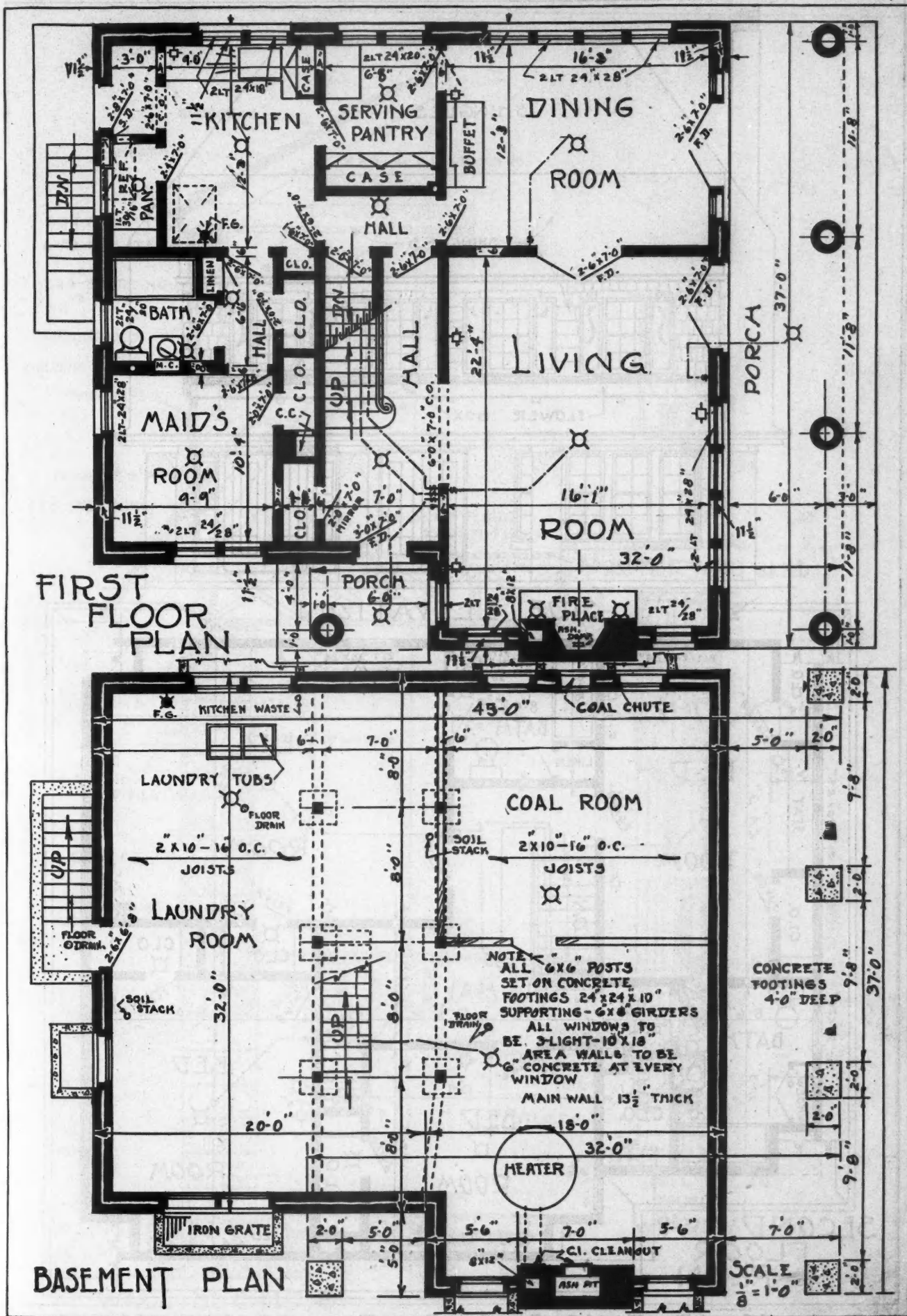
### DETAIL OF PORCH ROOF CONSTRUCTION



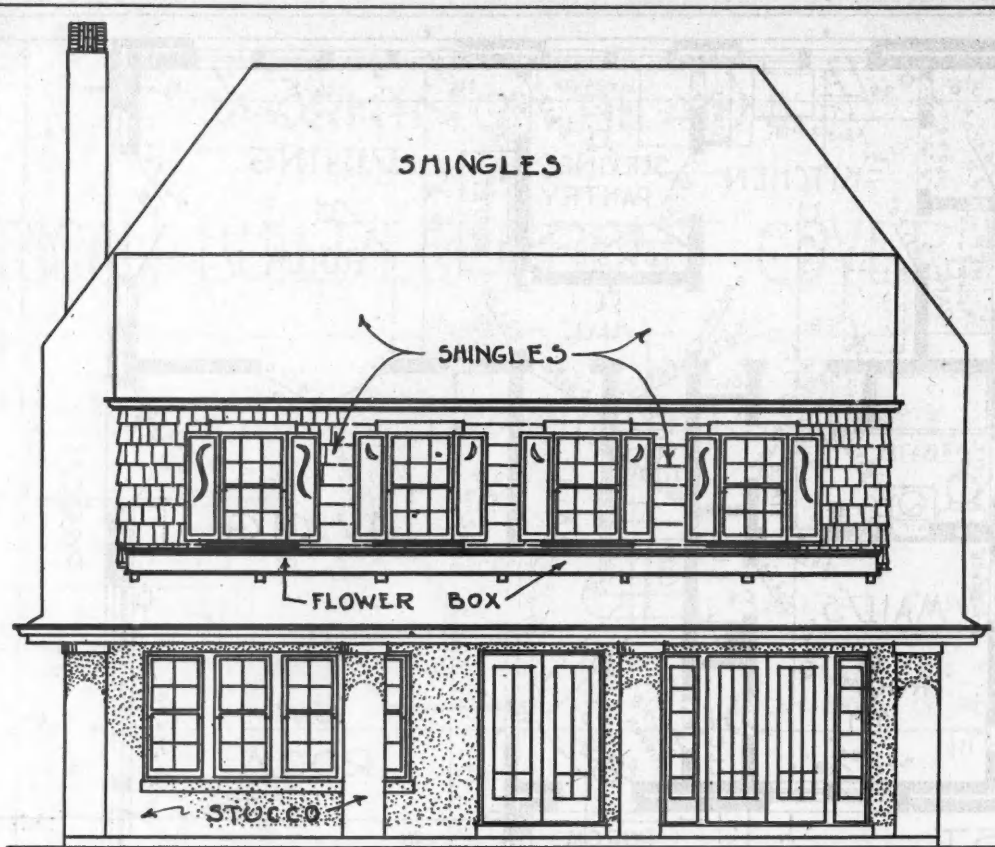
## FRONT ELEVATION

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

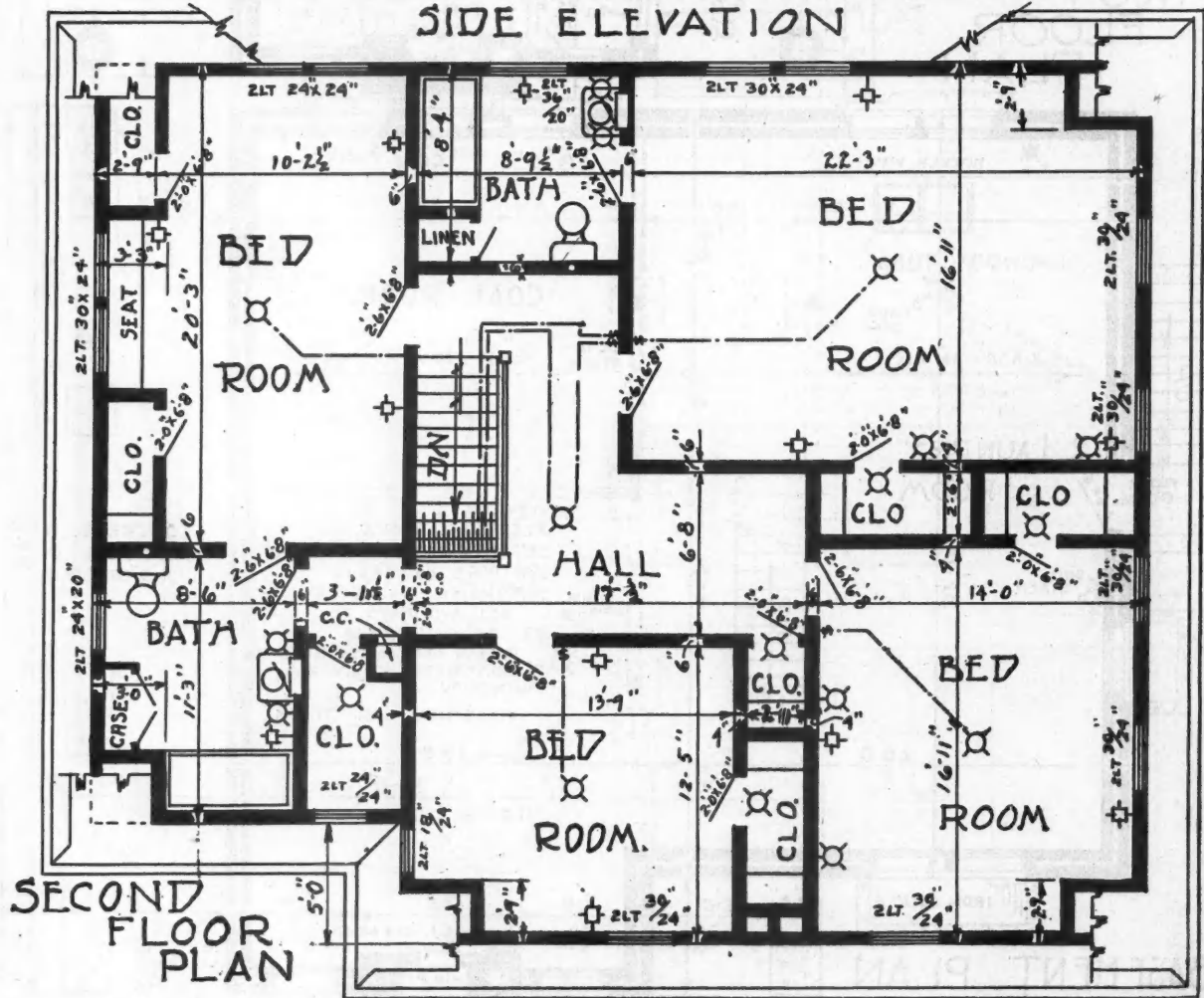
Front Elevation and Details of Porch Construction of Our Front Cover Home.



Arrangement of the Basement and the First Floor of Our Front Cover Home Is Strictly in Line with Present Day Requirements. Over all dimensions, 45 x 37 feet.



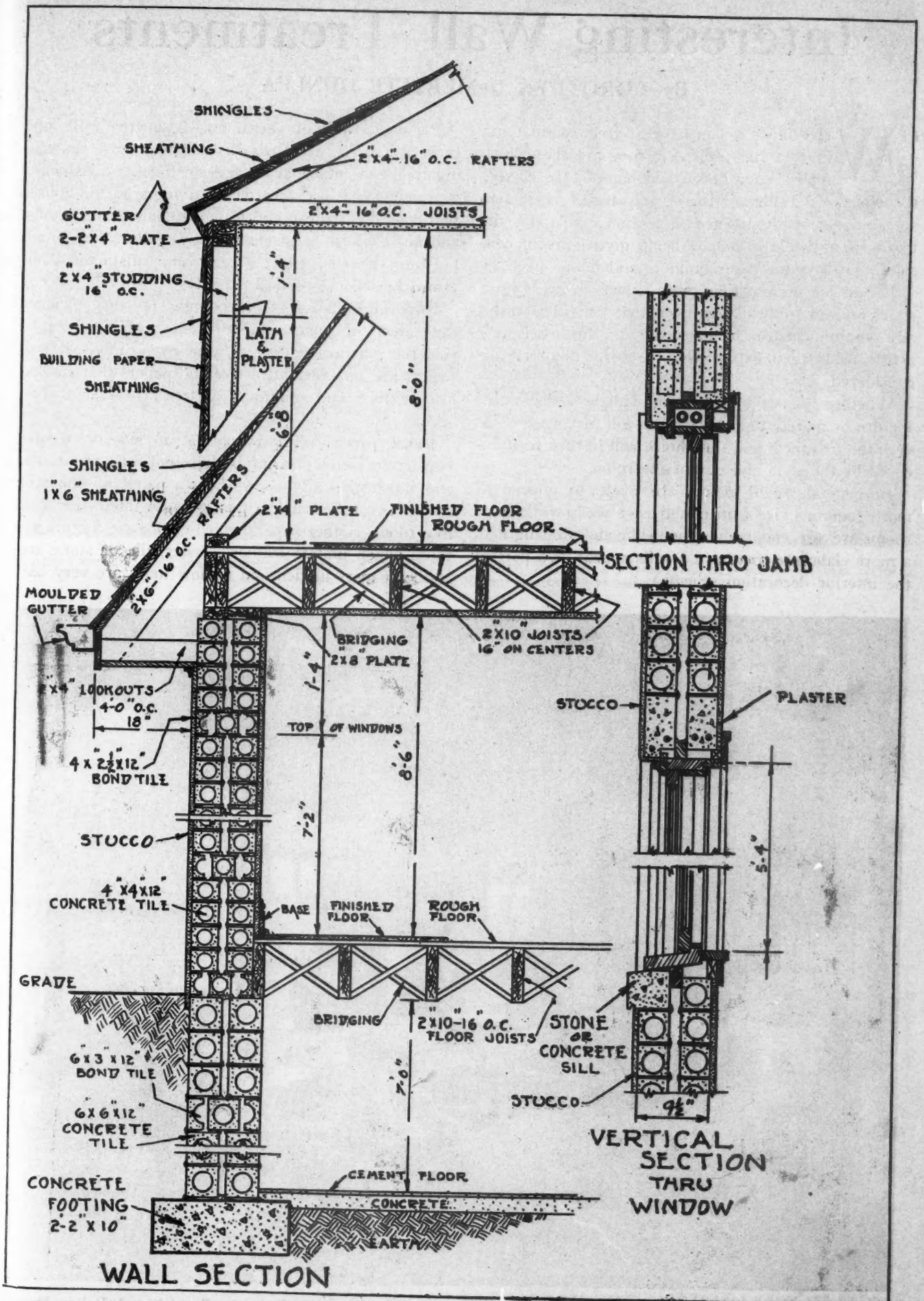
SIDE ELEVATION



SECOND FLOOR PLAN

Side Elevation and Second Floor Plan of Our Front Cover Home. The unusual size of the second floor is due to its projecting out over the side porch.





Type of Wall Construction Suitable for Our Front Cover Home Design Showing How the Concrete Tile Units Are Placed to Make a Triple-Air-Space Hollow Wall. These concrete tiles are now being produced commercially in a great many localities, the number increasing constantly.

# Interesting Wall Treatments

By DOROTHEA DeMERITTE DUNLEA

“**W**HATEVER you have in your rooms think first of the walls, for they are that which makes your house and home”—these were the words of William Morris, the master craftsman and designer, in the nineteenth century, and today the treatment of walls is indeed being given careful consideration by most home builders and home dwellers.

Just at the present time there is such a diversity of styles offered for wall treatment that individual tastes and requirements can be nicely suited. But in selecting artistic wall treatments there are several factors to be considered.

Whether the walls of a room shall be a decorative feature or merely the background will of course influence the treatment and this choice will in turn be influenced by the style and size of the room.

In general, small rooms are made to appear of more generous size with unobtrusive walls while large rooms are often made more homelike and pleasing with a more elaborate treatment (walls appear as a part of the interior decoration scheme).

Plastered walls of varied finish, papered walls and those which are wood panelled halfway or to the ceiling are all acceptable at the present time. Stucco walls of rough finish are very much in vogue in the houses that copy the Spanish and Italian Renaissance Periods, and an oil finish is given to many walls. The rough finish or trowelled effect is even very satisfactorily obtained by the use of wall paper!

Stippled wall papers are popular for they produce the effect of rough finish plaster while giving a smoother surface preferred by many. Embossed wall papers are also very attractive and papers that emphasize texture and minimize pattern are fast finding favor.

Block papers with a coating of silk or woolen powder furnish a pleasing background for many rooms and illustration (2) shows how a paper of one tone but of two different textures gives an interesting note to a room. Other papers which emphasize texture are those which imitate leather, plaster, tile or stone and leather papers in rich and mellow tones are very har-



Stucco Walls of Rough Finish Are Very Much in Vogue in Homes That Copy the Spanish and Italian Renaissance Periods, and It Is the Well-Proportioned Room, as Shown, Which Justifies the Heavy Beaming of the Ceiling.



**Block Papers, i. e., Those Patterned with Silk or Woolen Powder, Furnish a Pleasing Background. In this room a paper of one tone but two different textures has been used.**

monious for use in a living room or library. Oatmeal papers also offer a simple and quiet background and come in most of the plain colors, suitable for use in dining room, breakfast room, den and sunroom as well as in the living room.

Tapestry papers provide more pictorial interest though texture is also a part of their charm. The pattern may tell a story of olden days with castles and forests or merely by a simulation of a woven background give the soft colorings of the Flemish weavers' art.

And for those who like a soft blending of colors that may have a hint of gold there comes the Tiffany finish which is produced by the use of paper or paint and just at the present hour, Tiffany finish walls are found in many of the newer homes.

Gaily patterned papers are not taboo, however, for they come in many delightful designs and color combinations. And very often the gaily patterned paper is just the one to use to give a "happy touch" to the room that has a poor exposure.

One of the most satisfying treatments where rest and repose are desired in the use of panelled wood. It fits very harmoniously into "the scheme of things" and books, paintings and rugs are made more beautiful in contrast to the simple but effective wall treatment. Dull polish or natural finish is equally popular where wood panelling is used.

Elaborate panelling or simple wainscoting is a matter of individual choice and the more simple the treatment, the more restful will be the result.

Dining rooms are given a delightful character with

wood panelled to within a foot or so of the ceiling with a border of gay paper above or rough finish plaster in some contrasting hue.

Colors play an important part in the selection of wall coverings and treatment and it is well to bear in mind that north rooms call for warm tones while the sunshiny rooms may make use of cool colors. Blues and grays are known as receding colors while yellows and tans are advancing colors that give warmth.

The use of a room should largely determine the kind of wall treatment chosen both from the artistic and practical side.



**Rooms That Are Depended on to Give a Gay and Enlivening Note Should Seek the Bright Patterned Papers.**

# Parables of Bildad the Builder

## VII "Why Buy the Baby a Rattle When You Can Live In One of Our Houses?" Is Slogan He Coins for Competitor

ONCE upon a Time there was a Cock-Eyed promoter who Made Negotiations for some River Bottom land in our Vicinity for a Subdivision. Now one Might see this Land in the Fall of the year, when there Had been a Long Dry Spell, but in the Spring when the Freshets Came Down the River the place looked Like Noah's Backyard after the Forty Days Rain.

Howsomever, I took the Plans and went Over Them carefully, and in View of the Moist Condition of the Property I took Care to have As Many Sub-Bidders as I could. And When I had received all the Figures of These I went to Them and Invited them to my House for Lunch, and Sitting Down we All Took Counsel Together.

"Sit Down and Write for Figures to the Manufacturers of Anchors," asked the Mason Contractor, "for Surely no Boat Beating Against the Tide will have a Harder Time of It than These Houses When the Spring Comes." And it was so noted and Done.

"Waterproof all the Basements with Tinder Damp-Proofing, Even if It Add a Few Dollars to the Cost of Each House," said another Cautious One. And it Being a Seemly Suggestion, that was so Done.

"Make every House with an Umbrella Roof, and Suspend Weights from the Eaves to Give Each

Dwelling More Specific Gravity," suggested another Wise Person. And that Was So Done.

Now when we had figured on All these, and added our Figures Together, it Came to a Goodly Figure, God Wot. But when I had Taken my Estimate to the Promoter he Answered me Thusly: "Dost Thou Figure on Retiring and Living on Thy Income, Thou Robber? Thou art Not Bidding upon a Millionaire's Mansion; Thou art Bidding Upon a Plain Man's Home and Fireside. But stay; Thou need figure No More. I have figures here from Pull & Shave, the leading Builders of Rattletown, and as I am Operating on a Close Margin I have let them Land the Job."

As I wended my way Homewards to my Evening Dish of Beans and Lemon Cream Pie I thought sadly over the Lost Contract. Verily, the Figures were Appalling. And as for those Homes, they were not Houses for Plain People, I avowed, but Rather Roosts for Duck-Footed Simps. And I wondered how I would Pay the Last Hat Bill of my Wife's.

Now After Many Days, all through the Fall and Winter, the Houses began to arise upon their Precarious Foundations. Right Seemly they Looked, and the Editor of the Pimpletown Bugler pointed with Pride to the Leading Citizen who was Thus benefiting the Town. And by a Process Known to stockraisers who Load their Cattle's stomach with grain and then Lead them to Water before they Mount the Selling Scales, so did this Promoter Kid Along his prospects until They fought to Get their Names on the Dotted Line of the Mortgages and the Deeds. Nay, some there were that sold their Flivver Coaches and Radio Sets, proving How Strongly he had Hypnotized them.

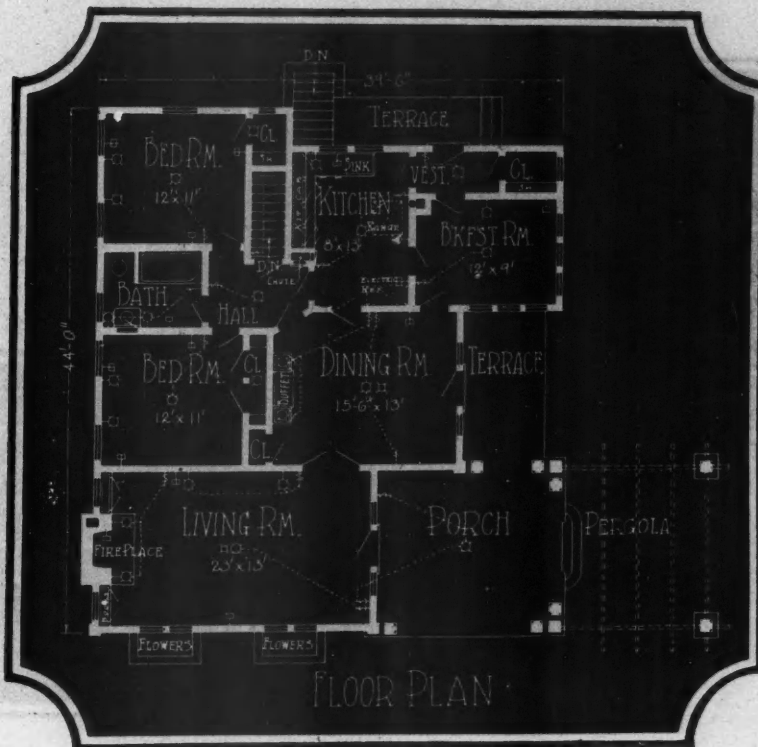
But lo and Behold, the Spring came in Due Course, and with it Rain. And Far upstate the Rivers began to Foam at their Mouths, like a man Who has Waded Into a Cream Puff. And the log jams Not Being there to Hold the Water Back it Came Down Stream like Water from a Duck's Back.

And the Town stopped all Business to Go to the Rescue, but alas, it was Too Late! The Houses saw the Water Rising, and Rattled in their Fear—then Ran with It, Leaving the Former Owners to salvage their Canned Goods and Bread Baskets as Best They Could. And when the Flood Subsided there were loud Cries of Desolation, but I, as I stood by my Wife's side, cried Tears of Joy within Me, for I saw How the Tide would now Turn toward a High Part of Town, Whereon I held an Option.



Bildad and Wife (Upper Right) See Things About to Float Their Way.

BLUE RIBBON HOMES

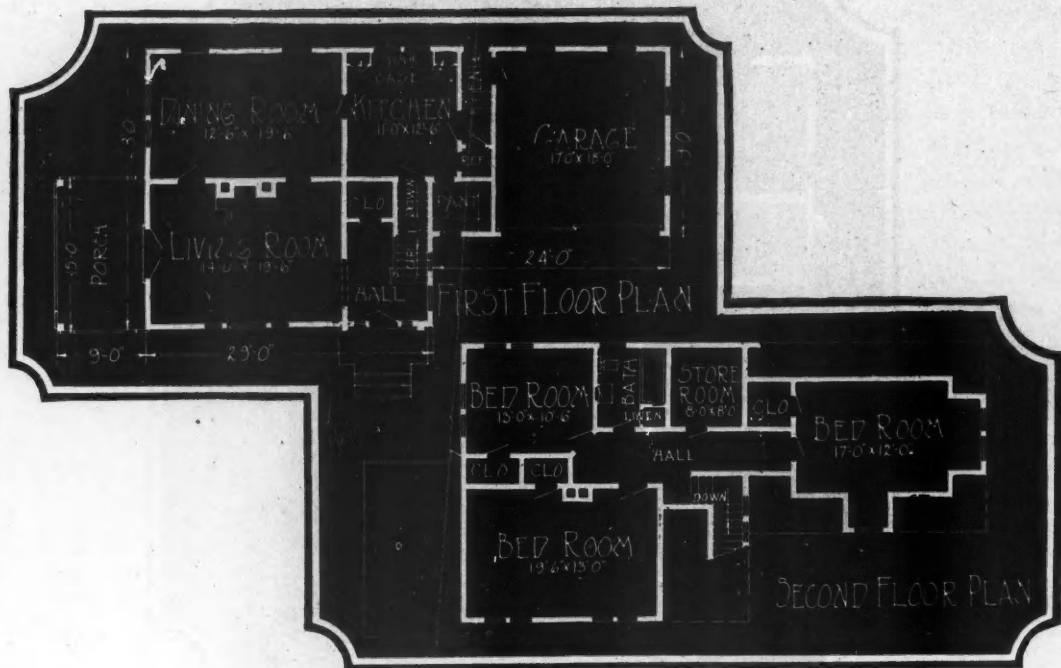


**A THOROUGHLY ADMIRABLE DWELLING.** By a few discreet decorative touches this handsome dwelling becomes lifted from the commonplace; it is distinctive, and thoroughly admirable in every way. Of course the high lot helps, but it would nestle down anywhere and give pleasure to its fortunate possessors. The pergola "dresses up" the place immensely; then there is the wide, welcoming porch, with its perfect balance of length and width and well chosen columns, with the living room opening on to

it; the dining room with its terrace; the breakfast room, also looking on the terrace; the kitchen with its own little outside terrace, and the two bedrooms adjoining the bathroom. You might also note the snubbed off gable, and the arched louvre miniature dormers; don't they set this structure off nicely? Little touches like these cost hardly anything, yet they give a place individuality. But in order to have good taste it is best to have the planning done rightly.

Home Designs That Win

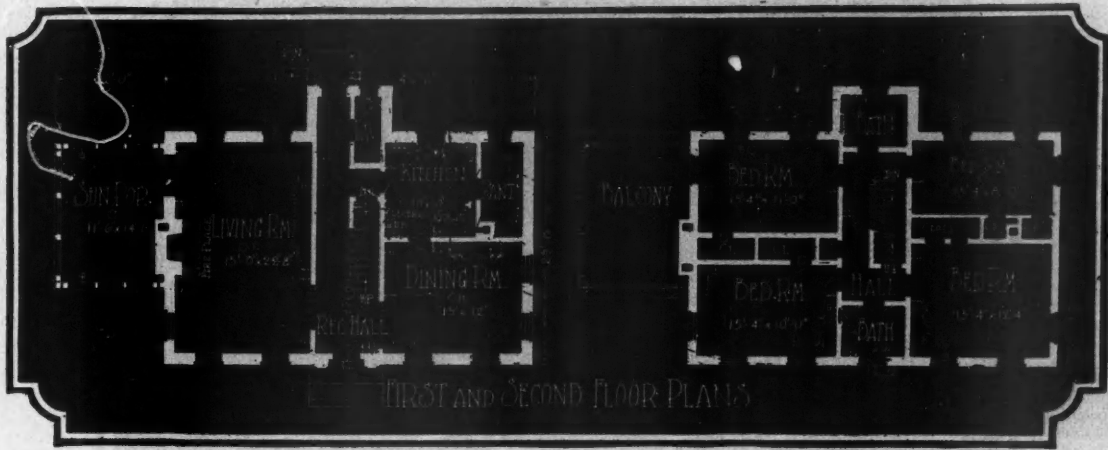
# BLUE RIBBON HOMES



**A HOMEY SORT OF HOUSE.** Looks almost like a relation of the House of Seven Gables, doesn't it? You would have to look to the east, too, for the idea which gave this design existence; it is typical of homes you will find in New England byways. A notable feature is the incorporation of the garage with the house proper, without destroying the well-balanced design of the whole structure. The snubbed off gables slope steeply to the shingled walls; to the cosy recessed porch at the left, and the severely

quaint front entrance. This leads into a staircased hall, with closet at the end, and living room opening off at the left. The latter room and the dining room are nicely proportioned; one might make the fireplace double for the dining room. The kitchen has its own rear entry; the garage proper is well insulated from the house construction. Upstairs are three bedrooms and a store room, with the bath convenient to all the bedrooms across the hall. Over all dimensions are 53 feet by 23 feet.

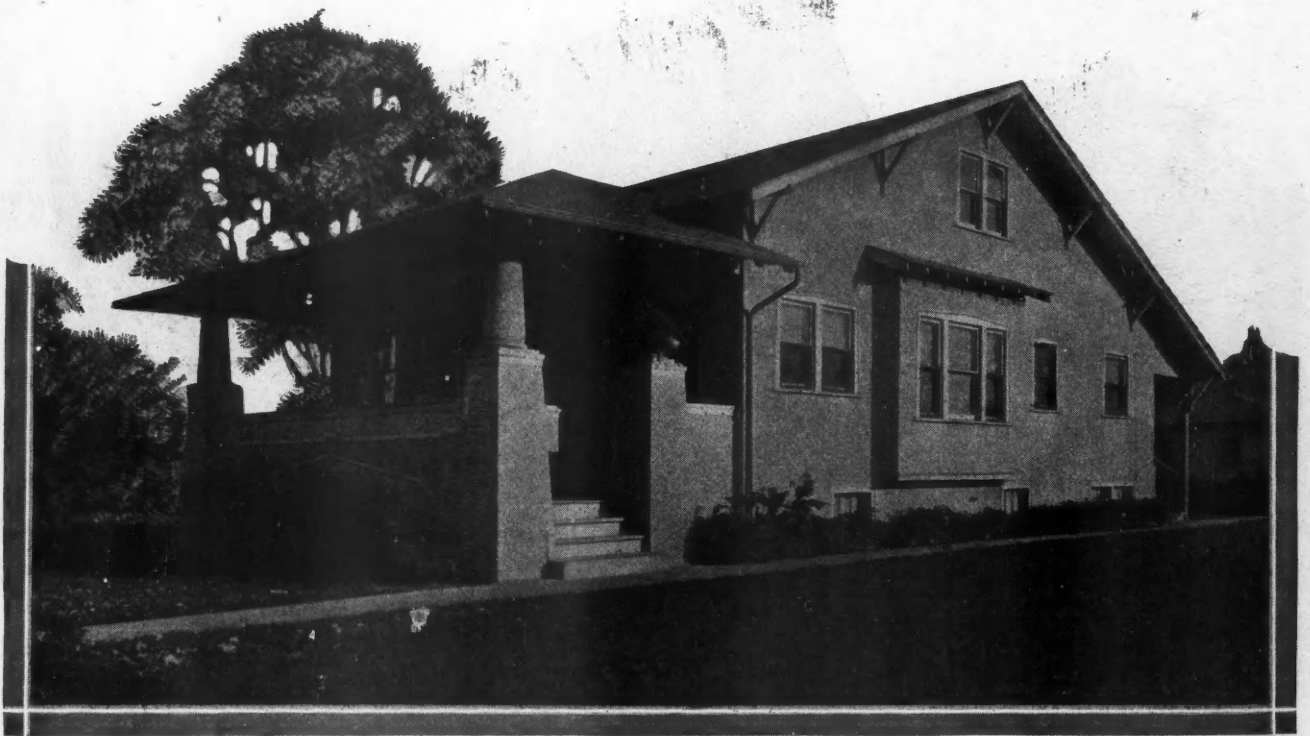
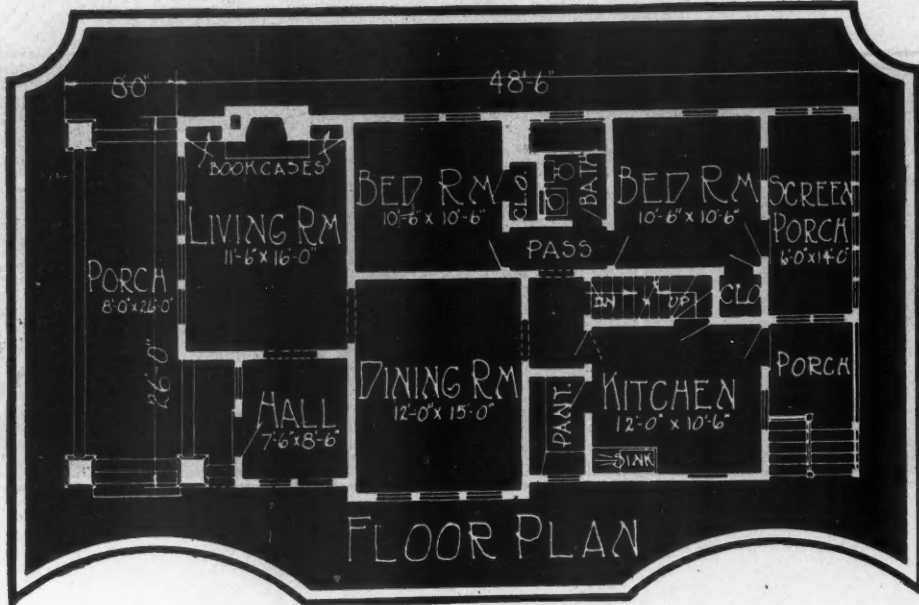
BLUE RIBBON HOMES



**A HANDSOME NEW ENGLAND COLONIAL.** Not all Colonial structures in New England are of frame; many of the best examples are of brick, and one might classify these better to the architect and builder by describing them as of the Georgian period. The distinctive feature of this dwelling is the high pitched, dormered roof, the spacious chimney, and the dignified pedimented entrance, according so well in its white paint with the sun porch and the window trim. We have a reception hall

downstairs, with a Colonial staircase, and opening on the left side into the magnificently proportioned living room, extending the depth of the house. On the right the hall leads to the dining room and thence to the kitchen, with a commodious pantry any woman would welcome. Upstairs are one master's bedroom and three other bedrooms, with two bathrooms. Naturally there is much attic space here, for playroom, billiard room, etc. Over all dimensions are 52 feet 6 inches by 25 feet 8 inches.

BLUE RIBBON HOMES

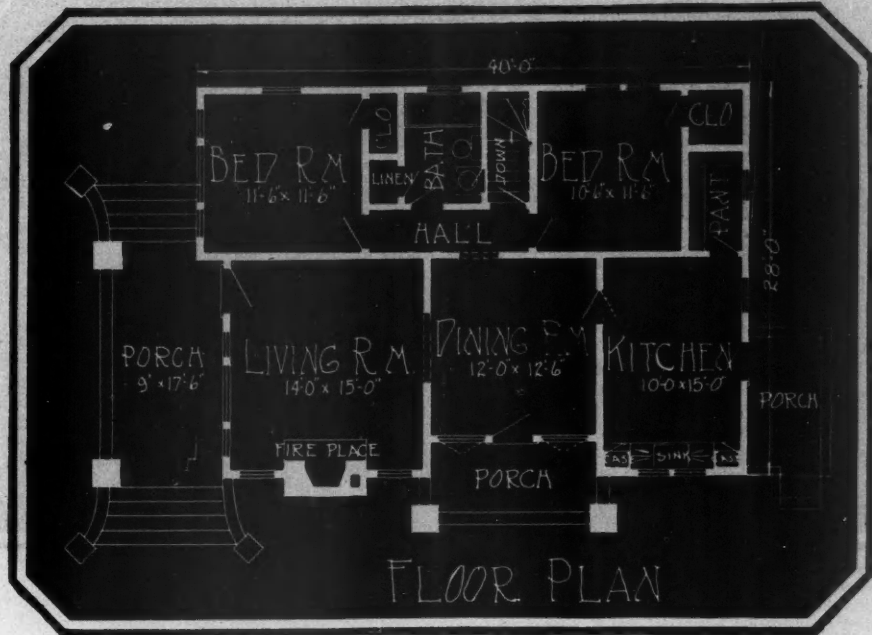


**A COMMENDABLE TYPE OF STUCCO HOUSE.** Observe how sensibly this house fulfills its purpose; it places its rectangular floor plan on a comparatively narrow lot, and proceeds to give the maximum of room, convenience and light, while at the same time presenting an attractive appearance. The exterior is pebble dash stucco, giving a grayish brown effect, relieved by the white trim. The porch is very roomy and inviting, and leads into a pleasant little hall, and thence into the living room. There

is a fireplace at the end of this, with bookcases flanking it on either side. A double door divides it from the dining room—the latter is a well-lit room, with its three-window bay. The kitchen is small, compact, with a windowed pantry and a handy rear work porch. The two bedrooms and the adjoining bathroom are reached from the passage door just off the kitchen. One bedroom has a screened-in sleeping porch. Over all dimensions are 26 feet by 56 feet 6 inches.



BLUE RIBBON HOMES

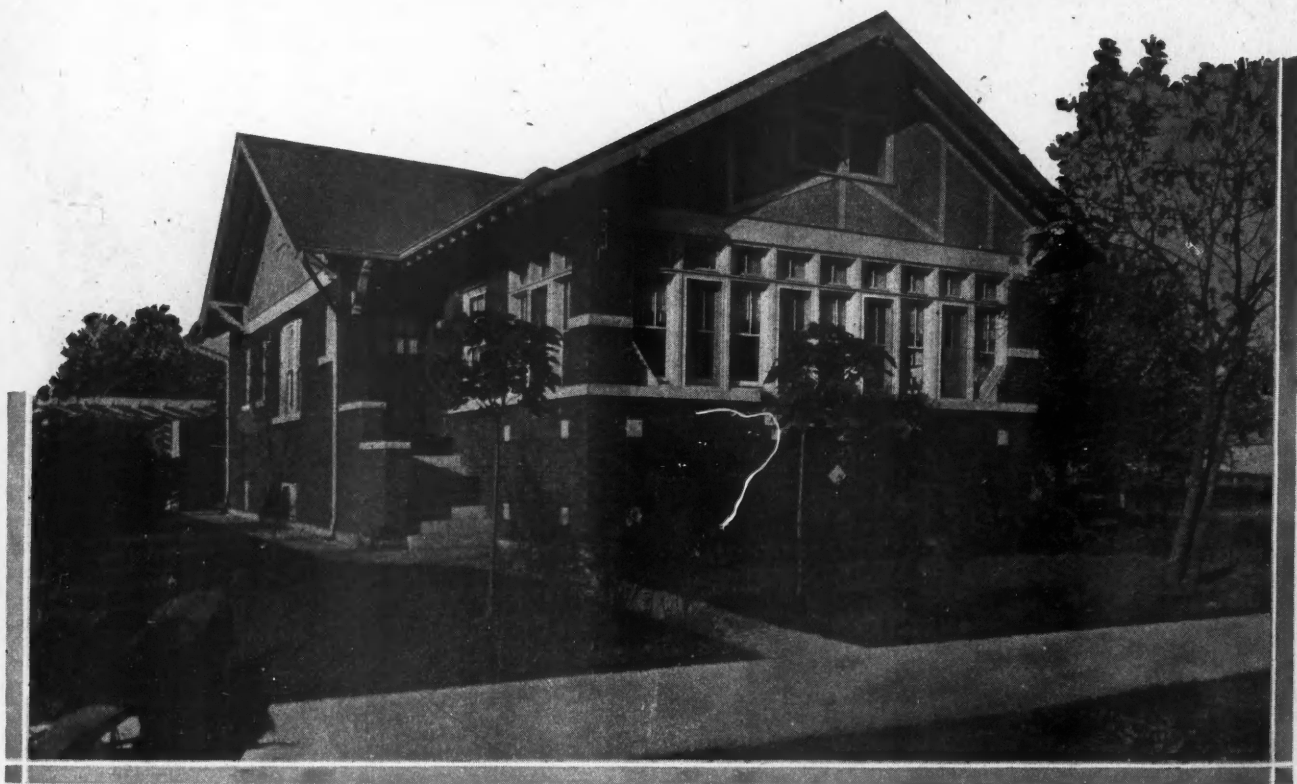
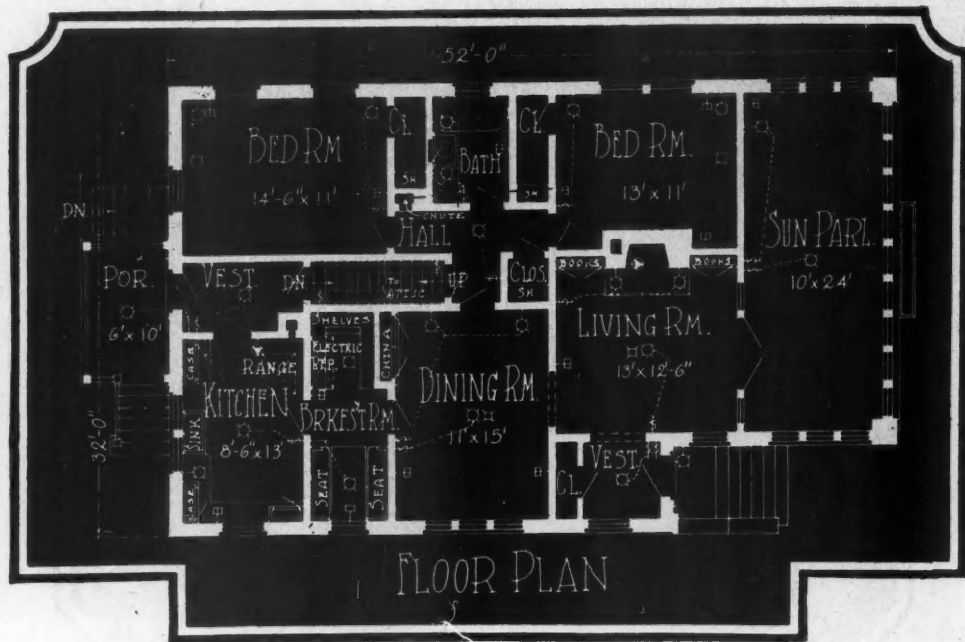


**THE STREAMLINE BUNGALOW.** Very welcoming is the effect of the judiciously used red brick ornamentation on the porch of this bungalow; the curving lines seem to ask one to drop in. The design gives an impression of substantial, massive comfort, and it would be a good plan to consider a narrow lot where larger structures appear on either side. There is a very well arranged floor plan, and we have five rooms, with the bedrooms isolated from the rest of the house and reached through the dining

room only. The living room is almost square, has good light on two sides, and the remaining two walls unbroken so as to give good picture hanging and furniture placing space. A French door divides it from the dining room. The latter has a small porch, and the French windows can be thrown open to give a very pleasant dining place on summer evenings. The kitchen has a window-lit sink, a rear porch, and window-lit pantry. Over all dimensions are 28 feet by 40 feet.

Home Designs That Win

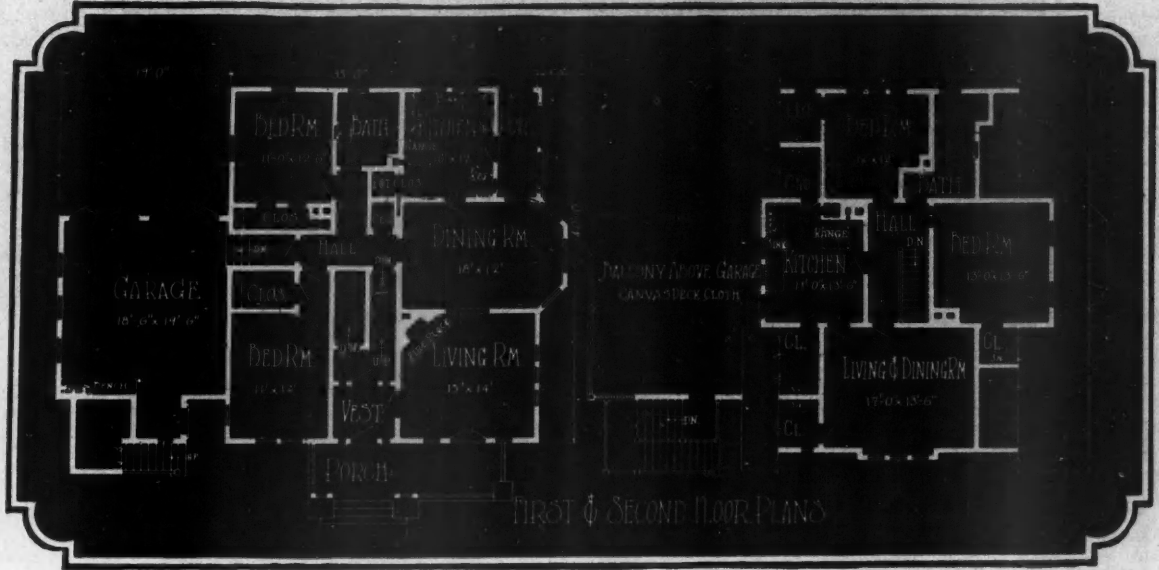
# BLUE RIBBON HOMES



**A SATISFYING DESIGN IN BRICK.** Even such a slight detail as the stucco and timbered construction of the gable ends of this substantial dwelling helps to set off the brick walls and add to the attractiveness of the whole. It is a type of home which naturally appeals to the substantial type of home-owner everywhere. Placing the entrance at the side gives full breadth of room to the handsome sun parlor—a 10 feet by 24 feet room extending across the front of the house. A colonnaded doorway helps to

make it seemingly one with the living room, if such is desired. The whole floor plan in other respects is admirable; the spacious dining room; the breakfast room; the kitchen, with its own rear vestibule; the two amply dimensioned bedrooms which adjoin the bathroom across the small central hall. It is a house which will wear well, and never go out of fashion, and very simple landscaping shows how still more attractive one can make it. Over all dimensions are 32 feet by 52 feet.

BLUE RIBBON HOMES

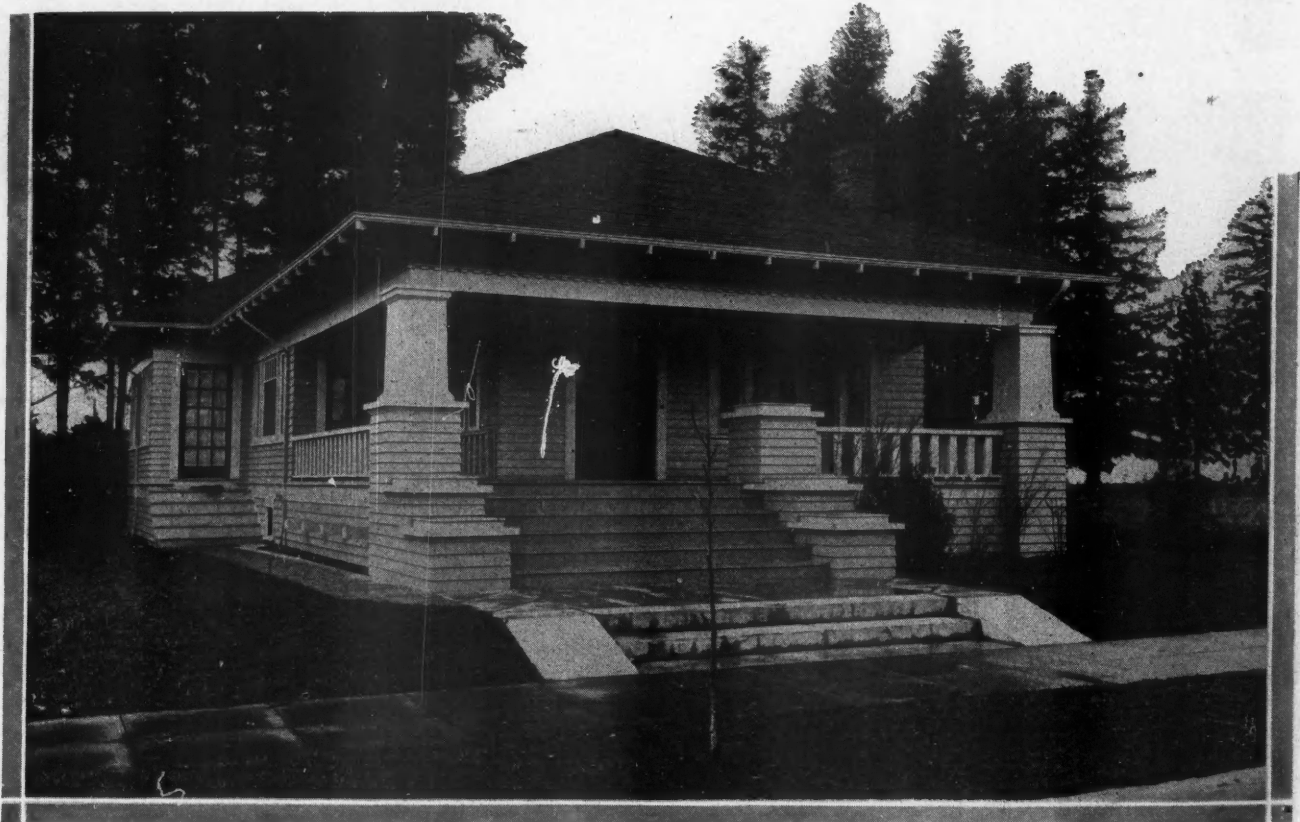
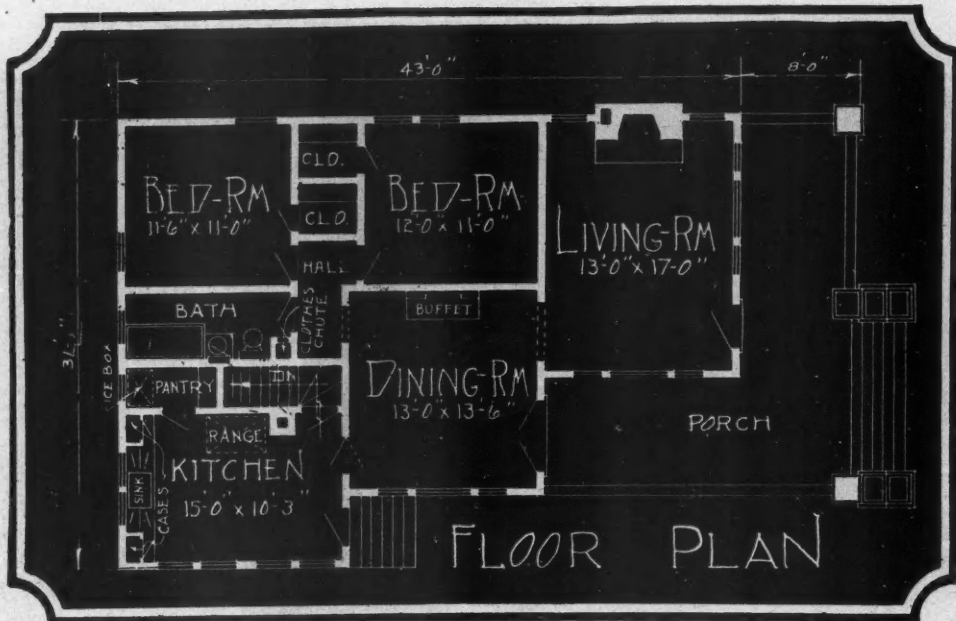


**TRULY A MOST PICTURESQUE DUPLEX RESIDENCE.** First we want you to note how the ordinarily difficult matter of the integral garage has been handled here. Where is the garage? Well, that stairway at the left partly hides it, and the roof of the garage forms a balcony reached from the second floor apartment. The garage, two-car capacity, opens on a driveway at the rear. Another noteworthy feature is that this is a duplex residence, with living room, dining room, kitchen, two bedrooms and bath

on each floor. The second floor apartment has the living and dining room thrown into one. This home owes much of its attractiveness to wise modernization of old Spanish design and modern adaptation of the thatched roof effect of peasant cottages through the use of specially prepared shingles. Ordinarily one would expect a tile roof on a dwelling of this nature, but there is no denying the attractiveness of the other kind used. Over all dimensions are 57 feet by 40 feet, exclusive of porches.

Home Designs That Win

# BLUE RIBBON HOMES



**SPACIOUS, COMFORTABLE BUNGALOW.** Equally adapted to the wider lot of the suburbs or town, or to the narrower city lot, is this spacious, comfortable bungalow. It will appeal to folks living in sections where roomy porches help to pass the hot summers in more comfort, and the porch lends itself to screening and glassing in exceptionally well. The dimensions over all are 31 feet by 43 feet. The structure lends itself to stucco or frame siding equally well. We have a living room amply pro-

portioned, and with large window expanse on three sides, so that the porch overhang does not darken it appreciably. The dining room has its individual entrance from the porch—a suggestion here for many meals outside in summertime. Through the dining room we have access to the two bedrooms, the bathroom, and the clothes chute to basement; also to the kitchen, wonderfully well-lighted, with window-lit pantry, outside icing door, and separate entrance for the delivery man.

# House That Will Need No Repairs

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

**W**HEN building costs are high, one should build well and permanently, that is, sound, substantial construction around an economical plan, so as to avoid the expense of repairs and also to make every foot of floor space count as usable room.

The house herewith illustrated embodies these requirements.

The construction is of hollow tile stuccoed outside and plastered inside, the roof is slate. The only work which will require painting is the small amount of wood trim.

As to the plan arrangement, the architects have worked it out along lines of real economy. The entrance is into a small vestibule with coat closet adjoining, thus the usual hall space is given over to the living room.

The stairs go up from the rear of the living room while also serving the kitchen, giving the advantage of a service stairway without extra cost.

The refrigerator is located in a closet off the rear entry.

On the second floor are three bedrooms, a bath and plenty of closets, all conveniently arranged about the small center hall.

A stairway leads from the second floor hall to a generous attic.

A small balcony over the front entrance connects to the two main bedrooms of the second floor, it is a convenience for these rooms as well as making an attractive feature on the exterior.

A cellar extends under the entire house, except the living porch, and here is the laundry, heater and coal space.

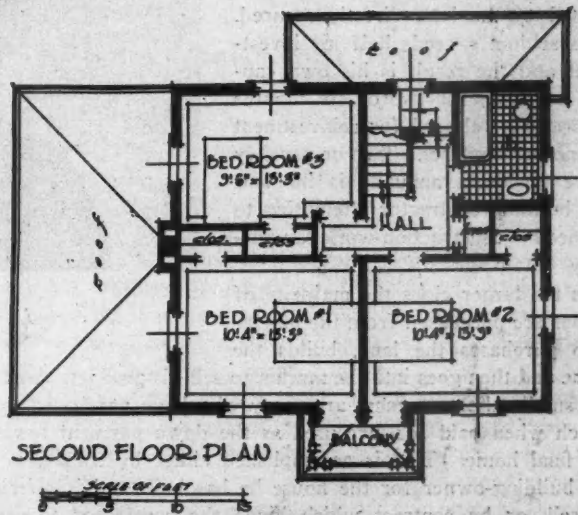
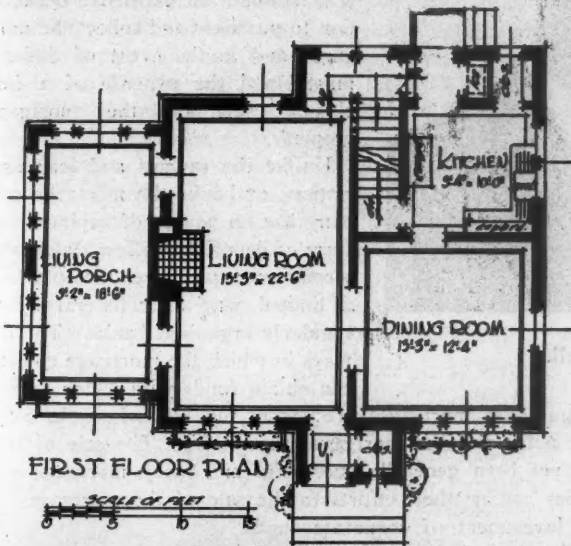


Photo and Floor Plans of Good House Designed Without "Gingerbread" Elements Which Usually Are Causes of Early Repairs.

# The Second Mortgage and the Home

By A. E. CORNELL

*Vice-President of the Plymouth Mortgage Bond Company, Cleveland, Ohio*

**N**O problem the builder has to meet is more harassing, more difficult, or more unsatisfactory than that of financing the home sold on a small down payment.

In proportion to the amount of capital the contractor or speculative builder has invested in his business, few businesses offer such limited turnover. His investment is usually an equity and his bank credit usually is limited to the loan directly secured. This seldom exceeds half his investment and the result is his own capital is frozen for five or six months before it is released for reinvestment in another contract. Two or possibly three turnovers annually is the best any building contractor attempting to finance his construction work can possibly obtain.

In the larger cities the majority of homes are purchased from the builder who purchases the land, builds the home and then goes into the market to sell his product. Among the smaller home owners are many who have purchased lots, which when paid for, are used as the down payment toward the final home. This is accomplished either by trading it to the building-owner for the house he has built and is offering to sell, or by contract which binds the contractor to erect a house of specified design and quality for which he shall receive his price in monthly or other periodical installments.

There are many good reasons why the home-buyer cannot pay cash for his home, or finance it with his own funds and the proceeds of a bank or savings and loan association first mortgage. Usually the money for the home is the result of years of saving. Small amounts are accumulated and the fund grows slowly. Often the prospective home-owner is the owner of a prosperous and growing business that constantly requires additional capital, and it is impossible for him to withdraw the necessary money without impairing the business. It is, therefore, necessary that the buyer purchase on some deferred payment plan or continue to be a renter, which is both socially and economically unprofitable.

On the other hand, no builder or contractor can go on indefinitely erecting properties or contracting for homes for which he is paid in small deferred payments unless he has unlimited capital for investment. In such an event he would be less the builder and more the investor, and eventually would be forced to give up building to look after his investments.

In the few states in which the regularly organized banking institutions may lend up to 80 per cent of the appraised value of a property the problem of financing deferred payments is readily solved. In those states in which financing of 50 to 60 per cent of the appraised value is the limit to which the regularly organized banking institutions may lend, the problem becomes one of discount. The additional capital required is obtained either from some individual money lender or a regularly organized mortgage discount company. In the last instances the mortgages are discounted.

The individual lender of money seeks an unusual yield



A. E. Cornell.

and the mortgage discount company is of necessity in much the same position as the individual lender. An unusual yield is necessary as the mortgage company must pay its stockholders not less than 7 per cent in dividends each year, must pay taxes on each and every mortgage that it holds, must reckon with the income tax, maintain an expensive organization to purchase and collect the mortgages and in the event of difficulty must stand the expense of a foreclosure suit on the mortgaged property.

Unlike the savings and loan associations or banks the mortgage company has no source of capital in the form of deposits. In few states is the second mortgage even acceptable in a limited way as collateral by the regularly organized banks. The only ways in which the mortgage company can obtain funds with which to make

or purchase mortgages are: from the sale of stock, corporate notes and the mortgages themselves. The sale of notes has not been generally successful and many mortgage companies confine their efforts to the sale of the mortgages and the investment of corporate funds.

The investing public purchasing these mortgages, even though the mortgages are guaranteed both as to interest and principal and collections made by the guaranteeing company, do not care to invest in this type of security unless the yield is considerably in excess of that rate offered by high-grade bonds in the open market.

Mortgages offered by the mortgage companies yield 8 to 10 per cent according to the attitude of local investors in the community wherein the mortgage company operates.

It is through the resale of mortgages that a great part of the funds are obtained by the mortgage companies. A mortgage running for 8½ years and payable in 100 monthly installments with interest at the rate of 7 per cent is sold at a discount of 10 per cent from its face to yield the investor 10 per cent on his investment. The mortgage company is put to an expense of 3 to 4 per cent for salesmen and advertising. It is customary to set aside for collections 2 to 3 per cent of the face of the mortgage and no company can maintain and operate its organization on less than 5 per cent on the money handled. This means a mortgage must be discounted approximately 20 per cent by the mortgage company. If the mortgage company operates on its own capital and does merely an investment business, 20 per cent discount would hardly pay a profit warranting a 6 or 7 per cent dividend.

In some communities the real estate builder attempts to discount mortgages representing the difference between the bank loan and the purchaser's down payment, and the selling price of the property. To quote figures, a builder erects a house costing \$5,500.00 on a lot worth \$2,000.00 which property he will sell for \$9,500.00 and receive \$1,500.00 as down payment, leaving him \$8,000.00 to be financed on mortgages. A bank loan of \$4,000.00 will leave him with another \$4,000.00 to be discounted in a second mortgage. Such practices as

this has led to the downfall of more than one builder, the discount taking too much of his profit, as no mortgage company or investor would consider purchasing such a mortgage except at a discount that would leave the investment safe.

Let us analyze the position of the builder. He has invested in money \$7,500.00 in the lot and building and has incurred interest, recording charges, abstract fees and similar expenses amounting to approximately \$225.00, making a total cost of \$7,725.00 to him. His actual investment upon the sale of this property is the difference between \$7,725.00 and the amount received from his customer plus the money obtained by a first mortgage, namely \$5,500.00, which leaves him with \$2,225.00 to be obtained through the sale of a junior mortgage.

Turning to the mortgage company's appraisal we find the lot is worth \$2,000.00. The building, which the contractor has erected at the expense of \$5,500.00 for labor and material, is worth approximately \$6,100.00, at which price a duplicate could be erected for cash by a competent contractor. These figures would be what the mortgage company or investor could consider the building worth for loan purposes. The value of the entire property would thus be \$8,100.00 for loan purposes and the maximum loan a mortgage company would be entitled to make would be 80 per cent or \$6,480.00 or \$6,500.00. The property being already mortgaged for \$4,000.00 a second mortgage of \$2,500.00 would be a reasonable and safe loan. Allowing 20 per cent discount the builder could sell this mortgage for \$2,000.00 net, which would leave him a \$225.00 investment in cash. Tabulating the transaction as it now stands the property sells at \$9,500.00:

Down payment.....	\$1,500.00
First mortgage.....	4,000.00
Second mortgage.....	2,500.00
Third mortgage.....	1,500.00
	\$9,500.00

Tabulating the builder's investment we have:

Lot .....	\$2,000.00
Building .....	5,500.00
Interest, etc.....	225.00
Mortgage discount.....	500.00
	\$8,225.00

The builder has received in cash from this transaction \$4,000.00 in a first mortgage, \$2,000.00 in a second mortgage and \$1,500.00 on down payment, making a total of \$7,500.00 against which he has a cash investment of \$7,725.00. The third mortgage held by himself in the sum of \$1,500.00 represents his profit and \$225.00 in cash. It is poor practice for the builder to make a contract to sell unless he receives 20 per cent, or more, of his selling price in cash. By doing this he will be able to borrow on first and second mortgages enough to give him his working capital and his third mortgage will then represent only his profit. Some builders who have followed this program have considerable incomes from their third mortgages and are not worried by periods of depression or by the failure to obtain an estimate as large as they demand.

The foregoing computations are based on a program of monthly payments covering a period of 8½ years. Many builders discount mortgages for only two or three years. The monthly payments on mortgages of this character are usually 1 per cent per month on the principal with interest extra at the rate of 7 per cent a year. Such financing does not make the third mortgage a secure investment, nor does it meet the requirements of most home owners. Homes sold on the monthly payment plan are purchased by people who usually make only one such investment in a lifetime. The homes must be paid for out of earnings subject to the con-

ditions of the times and while the earnings of the home-owner may increase they cannot be expected, and very seldom do, increase to such an extent that short time mortgages can be met in full when due. The owner of the home then is forced to discount another mortgage, and it is usually necessary to increase the mortgage by the amount of discount charged for the loan.

The third mortgage holder in the event the second mortgage cannot be arranged must step in and refinance the property or foreclose. Since mortgages, by their terms allow the holder of the mortgage to pay taxes, insurance and interest on prior loans and to collect such expenditures as part of the mortgage principal, the third mortgage holder to be safe must have a long maturity second mortgage ahead of him as the expense of refinancing, namely discount, cannot be added to the principal of a junior mortgage. This hazard is one the second mortgagor does not have to meet as there are always facilities for obtaining first mortgage money from banks and savings and loan associations without any expense or discount.

### Home Owners Must Be Considered

Aside from the difficulties into which the short time mortgage is likely to lead the holder of the third mortgage, the investor and the home-owner should be considered. The home-owner, if given ample time, will, by regular monthly payments, pay off the mortgages of all interests centered in the property. It is unfair to make the payments so large that they are a burden to the home-owner because when the payments required are in excess of the buyer's ability to pay the property must suffer for want of repairs and in the event of a foreclosure there is bound to be a deficit which the third mortgage must stand.

Too often the purchaser, in his enthusiasm to own a home, will undertake obligations he neither understands nor can possibly meet. It is not uncommon to find the buyer of a home has assumed a two or three-year second mortgage and is ignorant of the methods of financing by discount. Thus when the mortgage becomes due he is surprised to find the holder of a mortgage expects a fee to renew or extend the time of payment. If the buyer is in position to pay the fee he is at considerable more expense and his property costs him more than he bargained to pay for it.

It is equally as dangerous for the builder to obtain on a second mortgage loan capital to operate his business. The builder is prone to be enthusiastic and to attempt more than he has capital to complete which results in profits being spent in discount before they are made. To employ successfully money obtained at a high discount the builder should know definitely what his properties are costing to build before he starts operations, but he should not depend on the second mortgage money to carry on all his operations. Money obtained at a discount should be used so far as necessary to keep capital liquid and no farther.

The field of the second mortgage is long time financing for the owner who occupies the property as a home. As mentioned at the beginning of this article the contracting business is essentially based on cash transactions. Mortgage discount represents the sum paid for credit. It is like the difference in prices charged by the "cash and carry grocer" and the grocer who carries book accounts and delivers. It is proper for the builder to make this a part of the regular contract price because it is a charge for a service not regularly a part of the contracting business.

Further, the buyer of a home financed by discounting mortgages does not lose by the amount charged in discount. By the conversion of unoccupied land, raw materials and labor into a tenable and useful property there is created a new product of higher utility which has a market or

(Continued to page 188.)

# Weatherstrips Cut Fuel Bills

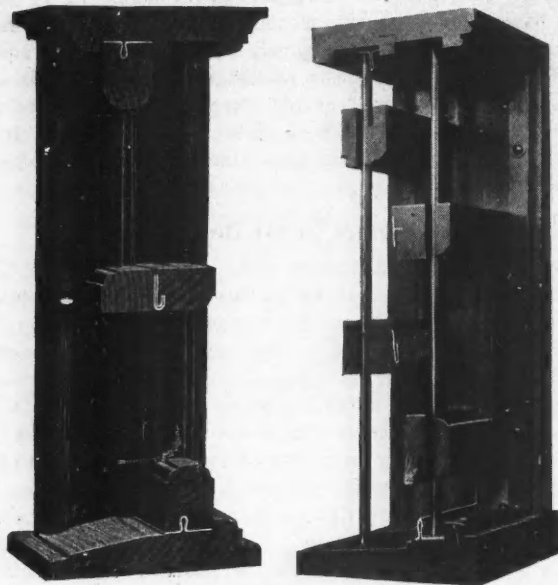
A Clean, Comfortable Interior Possible by Properly Weather-Stripping Doors and Windows—Some Ways and Means

**A**N ALL-WARM house in winter time is a practical impossibility without weatherstripping. Buildings settle, even on the best foundations; doors and windows adjust themselves; air passages appear, and drafts and heat waste result. Realizing this many inventive minds have developed weather

sprung and warped. Few people know how much fuel they needlessly waste under these circumstances. The following tests are interesting:

### Leakage of Air Under Fan Pressures Through Windows

Air pressure in inches	Corresponding wind velocity in miles per hour	2' x 4' ordinary window.		Window equipped with weatherstrip. Cubic feet of air per minute passing through sash
		Clearance 1/16"	Clearance 1/32"	
0.03	7.75	22	7.4	...
0.05	10.78	31	15.0	...
0.08	13.66	...	...	1.4
0.1	15.11	43	24.7	2.8
0.2	21.61	57	37.4	5.3
0.3	26.48	71	47.4	8.4
0.4	30.57	83	57.4	9.6
0.5	34.18	99	65.1	10.7
0.6	37.44	103	73.1	11.7
0.7	40.45	112	80.7	12.4
0.8	43.24	121	88.1	14.0
0.9	45.86	130	95.0	15.6
1.0	48.34	137	101.4	16.1
1.3	55.19	160	124.5	20.7



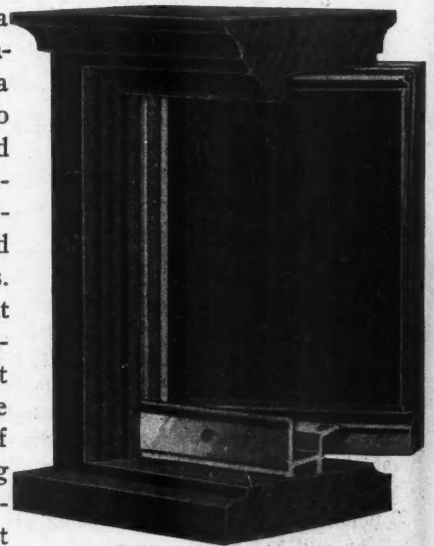
Two Popular Types of Metal Weatherstrip. The illustrations show how they are installed in relation to the window sash.

strips for doors and windows calculated to be practical and efficient, and last indefinitely, and some of the most popular of these are illustrated in this article.

In the old days the weather strip was considered simply a cold weather advantage. Now, however, they have been found as necessary and effective in excluding dust and dirt. Good weatherstripping of doors and windows protects rugs, drapes, wall paper, painting and good furniture against soiling and deterioration from the dust, smoke, soot and dirt sifting in from the outside.

Let us consider the scientific basis of weatherstripping. It is a fact that burning fuel at full blast "spots" heat at certain points. These points are too hot, while exposed places near doors and windows and the areas fairly distant from the heating plant are cold. This is true even of new houses with fairly tight sash, while the problem is more serious in older houses where sash is

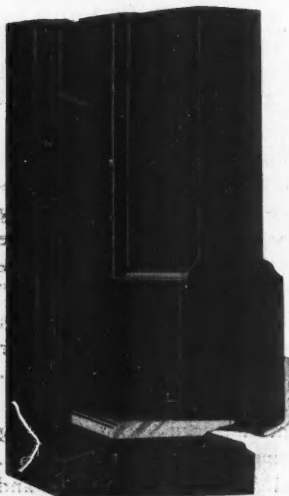
Some time ago a weatherstrip manufacturer sent a questionnaire to over one thousand users of his weather strip and following is a tabulated list of the answers. Note that a great many of those replying were not at all interested in the mere saving of coal. The ending of rattling windows, keeping out of dust, and easier sliding of windows were considered of prime importance.



A Good Way of Weatherstripping the Casement Window.

### Why Building Owners Preferred Weatherstrips

Reasons	No. of Users
Saving in coal.....	237
Eliminates drafts .....	232
Stop rattling windows.....	157
Keep out dust.....	157
Make even heat.....	144
Windows slide easier.....	82
Keep out street noises.....	26
Eliminate storm sash.....	17
Keep out rain.....	15
Add comfort to home.....	7



The Weatherstrip Is Also Tread in This Doorway.



Help poor heating plant.....	5
Keep heat in.....	3
Conserve health .....	2
Keep out snow.....	2

There are many varieties of weather stripping at present on the market. They range from simple wood rib or mould, plain or with felt piping, to the elaborate metal constructed types which are built in and become integral with the sash. Thanks to careful foresight installation has become a very simple process, and many carpenters specialize in weather-



stripping only, doing a business that yields an excellent return all the year round. For it is undeniable that the weather strip ought to be considered as an integral part of the building structure; not thought of merely at the advent of cold weather. It should be figured on at the time other materials are figured, and provision made for its installation while the regular construction of the building is proceeding. In this way most satisfactory results are had, and the cost is less than installation later would entail.

For out and in-opening casement windows there are special weatherstrips which interlock along the sides and top, and leave a channel of either brass or zinc on the sill, providing a trough which is a barrier to wind and rain.

Weatherstripping of doors is best accomplished by the use of interlocking types of weather strips made of metal or metal lined wood ribs. Special strips are designed for the lock plates.

The door bottoms require special treatment, and many of the metal weatherstrips have special wide polished brass or bronze or copper thresholds for this purpose

**Not Much Chance for Wind, Rain or Dust to Get by This Weatherstrip.**

which add a finished touch that is very pleasing. Needless to say, the weatherstrip commends itself generally. Most building owners, and house owners, especially, are already "sold" upon the advisability of

having their places weatherstripped for greater comfort and to save on coal bills. It remains only for the architect and builder to see that an effective kind is specified, and for the carpenter to undertake the comparatively simple work of proper installation.



## Practical Pick-Ups

By H. H. SIEGELE

**N**AIL-SETS and other small tools, when they drop between studdings or into other places where it is impossible to get to them, can be found and lifted out by lowering a magnet into such places with a cord. Hand-axes and hammers can also be lifted in the same way with a strong magnet.

A simple way to get long stretches of siding on straight, is to strike a line for each board, similar to striking a line for shingling.

Small holes in screens can be easily mended by cutting a piece of screen-wire into a square about 2 inches larger than the diameter of the hole. Then remove the wires running parallel to the sides of the square about one-half inch deep. The projecting wires are then bent to a right angle, giving the mender a basket-like shape. The mender is then placed over the hole in such a manner that the projecting ends of the wires will go through the meshes of the screen. Then the projecting ends can be twisted or bent over on the other side, thus holding the mender in place.

With a little practice it is possible to cut flooring, mouldings, 2x4s, etc., square or at a 45-degree angle by holding the saw in such a position that the reflections of the material in the saw will be in exact alignment with the material to be cut, for a square cut, but for a 45-degree cut the relations between the reflections and the material must be at a right angle. This is not a new trick, yet the writer has met many carpenters who have never heard about it.

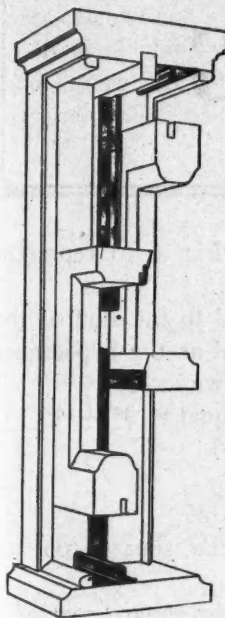
In the same way the eye can be trained to measure the width of margins for door trim, hardware, etc., without using a gauge or rule. Until one is sure of his judgment, however, it is well to test out occasionally with a rule, in order to prevent going above or below the required width.

The best tool for cutting off wood plugs flush with the wall is a wood chisel. Drive the plug in until it is tight, then with a chisel cut in on two sides—one blow with the hammer on the chisel will usually make the cut deep enough—then give the plug a side-blow and it will readily break off. If there are any splinters, smooth them down with the hammer.

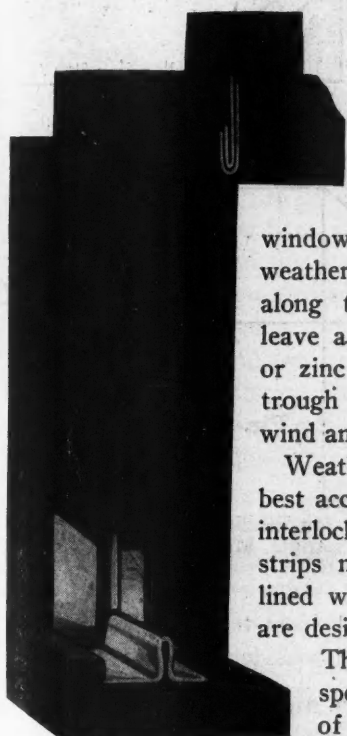
Scraps of ready roofing can be utilized by using them instead of tin shingles. Asphalt roofing also makes good flashing over windows, porches and other places where flashing is needed.



"Southern Pine Barns and How to Build Them," is a book issued by the Southern Pine Association, New Orleans, La. It contains designs and detailed working plans of ten different types of barns and much information regarding barn construction.



**A Skeleton View of a Typical Metal Weatherstrip Window Installation.**



# INSTRUCTIONS IN ROOF FRAMING

LESSON TWO—By JOHN T. NEUFELD

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

## Length of Rafters

**T**HE length of a rafter may be found by several different methods. It may be found by mathematical calculations, by measuring on the square, or by taking the length direct from tables.

In actual practice we can use the shortest method applicable. To become really efficient, we must know various methods and the reasoning that is followed in each. One method may be used as a check on the length obtained by a different method. Again, one way of figuring may be convenient and simple on one roof, while it may not be as simple on another.

### The Square Root Method

From Figs. 4 and 5 we see that the run, rise and length of a rafter form a right triangle. The run and rise correspond to the base and altitude of the triangle as shown, and the length of the rafter corresponds to the hypotenuse.

In arithmetic we have learned that we can find the length of the hypotenuse or long side of a right triangle, if we know the length of the other two sides.

The square of the hypotenuse (long side) is equal to the sum of the squares of the other two sides.

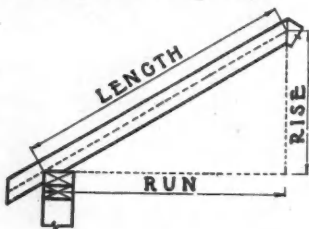


Fig. 4.

The Run, Rise and Length of a Rafter Form a Right Triangle.

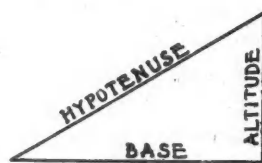


Fig. 5.

Assume the triangle shown in Fig. 6 to represent the run, rise and length of a rafter.

The hypotenuse squared is equal to the sum of the squares of the other two sides and as the hypotenuse represents the length of the rafter we have:

$$(\text{Length of rafter}) \text{ squared is equal to } 3^2 + 4^2$$

$$3 \text{ squared} = 9; 4 \text{ squared} = 16$$

$$9 + 16 = 25$$

Length of rafter squared equals 25

The length of the rafter is the square root of 25 = 5 ft.

This is illustrated in Fig. 8. The square root of a

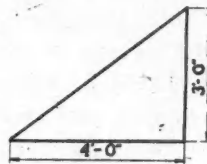


Fig. 6.

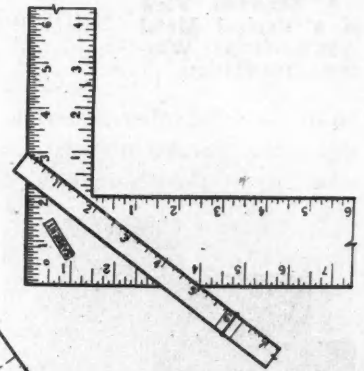


Fig. 7.

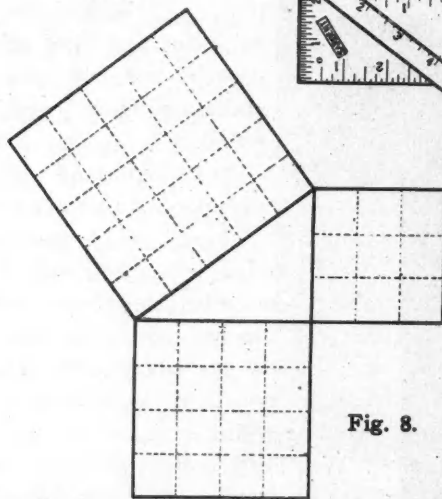


Fig. 8.

Methods That Are Used for Finding the Length of the Hypotenuse of a Right Triangle May Also Be Used to Find the Length of a Rafter.

number may be obtained from tables in hand-books. This shortens this method considerably.

### The Steel Square and Rule Method

The steel square, being constructed in the form of a right angle, does away with much of this figuring. If we let each inch on the square represent one foot, we may get the length of a rafter by measuring on the steel square. We take the run in feet on one arm of the square and the rise in feet on the other arm, and measure across between the two points. In this

case the distance between the points 4 and 3 is found to be 5 inches, and as each inch on the square represents one foot, we have 5 feet for the length of the rafter. This is shown in Fig. 7 and checks with our first calculations.

In using this latter method it is best to use a rule and square that are graduated into twelfths of an inch, as one-twelfth of an inch on the square or rule will

rafters are cut after one pattern. However, it may result in an error of from  $\frac{1}{4}$  to  $\frac{3}{4}$ -inch in the length of the rafter and this would not be accurate enough for hip rafters.

As each inch on the square stands for one foot on the rafter, it means that if an error of one-half of one-twelfth of an inch is made on the square it will be an error of one-half inch on the rafter. This method, however, is very good for a quick check on other methods, as any serious mistake can be found immediately.

Other methods will be discussed in the next article.

### Problems for the Student

- (1) What advantage is there in knowing the square root method for finding the length of rafters?
- (2) A carpenter finds the length of a rafter, with a run of 6 feet and a rise of 5 feet, to be 7 feet and 10 inches, by measuring across the square. Check by the square root method to see if

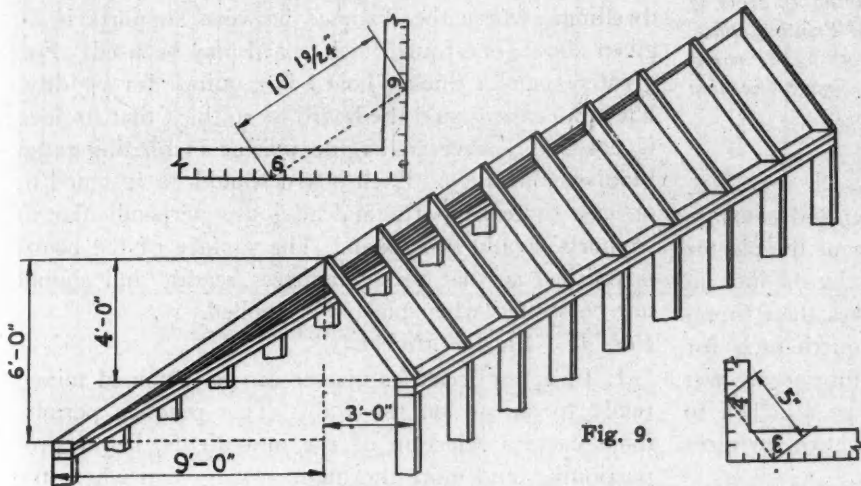


Fig. 9.

The Run and Rise of the Common Rafter on an Uneven Pitched Roof.

then correspond to one inch on the rafter. With this method we can easily find the length of any rafter, even though the roof may be of uneven pitch.

### Special Problem

To further illustrate this we will find the length of the longest rafter shown in Fig. 9. The type of roof shown is often used on farm buildings, such as hog houses, granaries, and poultry houses.

This rafter has a run of 9 feet and a rise of 6 feet. Let 9 inches represent the run of 9 feet and 6 inches the rise of 6 feet, on the square. The distance measured between the two points is 10 and  $\frac{19}{24}$  or nearly  $\frac{10}{12}$  inches. Therefore the length of the rafter is 10 feet and nearly 10 inches. This is as close as can be obtained by measuring on the square.

By the square root method we have: Length of rafter equals the square root of the run squared plus the rise squared.

$$\begin{aligned} \text{Length of rafter} &= \text{square root of } 9^2 + 6^2 \\ \text{Length of rafter} &= \text{square root of } (81 + 36) \\ \text{Length of rafter} &= \text{square root of } 117 = 10.817 \\ 10.817 \text{ feet} &= 10 \text{ feet and } 9 \frac{13}{16} \text{ inches.} \end{aligned}$$

### Comparing the Two Methods

It will be noticed, from the above, that the square root method comes out more accurate than the method of measuring across the square.

The square root method takes more time but can be used with accuracy on any difficult roof. Shorter methods and roof framing tables are based on this method.

The method of measuring on the steel square is accurate enough for common or gable roofs, where all

he was accurate.

- (3) What is the rise per foot run of each of the rafters shown in Fig. 9?

Answers will be found on page 154.



### Story Heights for Garages

“WHAT is the minimum story height that will be satisfactory for a multi-story garage?”

If you are one of the many who are pondering over this question you should find the following information of value:

Garages may be erected to serve three purposes: for passenger car storage, truck storage, or as a service station.

The minimum clear headroom necessary for the different types of garages is as follows:

	Feet
1. Passenger car storage.....	8
2. Truck storage .....	13½
3. Sales and service.....	12

Allowing 2 feet in each case for the thickness of the floor, depth of the beams, and such features as steam pipes, sprinkler system, and lighting system, the figures for story heights, from finished floor to finished floor, become:

	Feet
1. Passenger car storage.....	10
2. Truck storage .....	15½
3. Sales and service.....	14

In efficient modern multi-story garages which house either passenger cars or trucks, it is not necessary to provide more than the minimum clearance. Service stations, however, require more headroom because in some cases monorail hoist systems are specified and in others arrangements for suspending car bodies from the ceiling must be provided for. Allowing 12 feet in the clear should provide sufficient headroom for these features.

# Revising Building Code (Part 9)

## U. S. Government Recommends Minimum Requirement for Small Dwelling Construction with View Towards Simplifying Building Codes

EDITOR'S NOTE: This is the ninth of a series of abstracts AMERICAN BUILDER is making from the Report of the Building Code Committee, Department of Commerce. Readers interested in the full Report can secure it by sending 15 cents to the Superintendent of Documents, Government Printing Office, Washington, D. C., and asking for the Report by its name, "Recommended Minimum Requirements for Small Dwelling Construction."

### Appendix. Par. 44

2. To prevent undue lateral expansion and contraction of wood lath, which shears and loosens the plaster keys, such lath should not be over  $1\frac{1}{2}$  by  $\frac{3}{8}$  inch in section and key spaces should not be less than three-eighths inch for lime plaster or one-fourth inch for gypsum plaster. Wood lath should be thoroughly wet when plaster is applied. Lath should be attached to at least three supports, and good practice requires broken joints at least every eighth lath.

3. Expanded metal lath, weighing 2.2 pounds per square yard, or No. 20 wire cloth, two and one-half meshes to the inch, are sufficiently rigid for plaster supports in small dwellings where timbers are spaced not more than 16 inches for walls and 12 inches for ceilings. Longer spans demand heavier lath or special stiffeners. Ends of sheets should be joined over supports and horizontal edges lapped and laced securely with wire. Continuous sheets bent around corners tend to prevent corner cracks in the plaster. It is recommended that all metal lath be either galvanized or painted.

4. Gypsum plaster boards are essentially squares of gypsum plaster coated on both sides with paper, or, instead of paper, wood fiber or other vegetable fiber is

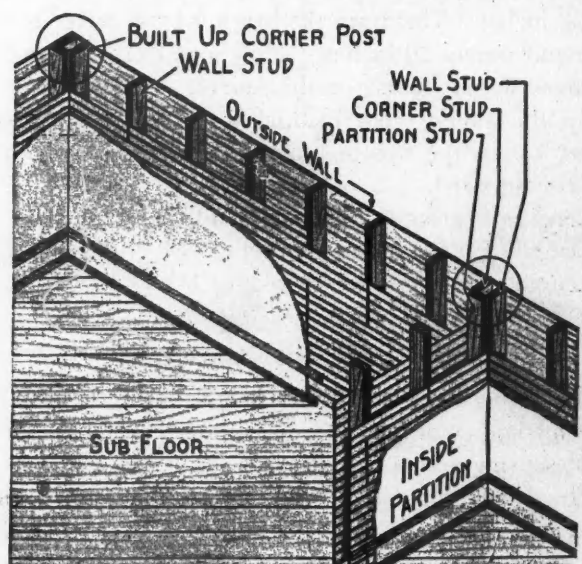
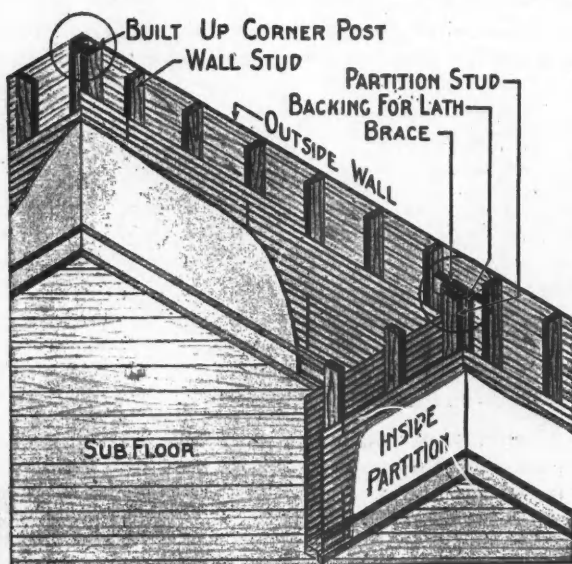
mixed with the material of which the boards are made. They are usually about 32 by 36 inches and supplied in thickness from one-fourth inch up. For small dwellings, where the distance between supports is as given above, one-fourth inch board may be used. For greater spans a thicker board is required for rigidity, but in no case should the board be so thick that its face is not amply covered by the plaster in obtaining the required thickness. Each board should be fastened to at least three supports, and all joints perpendicular to supports should be broken. The surface of the board is finished so that plaster adheres readily and should not be wetted when plaster is applied.

### Par. 45. Plaster Materials

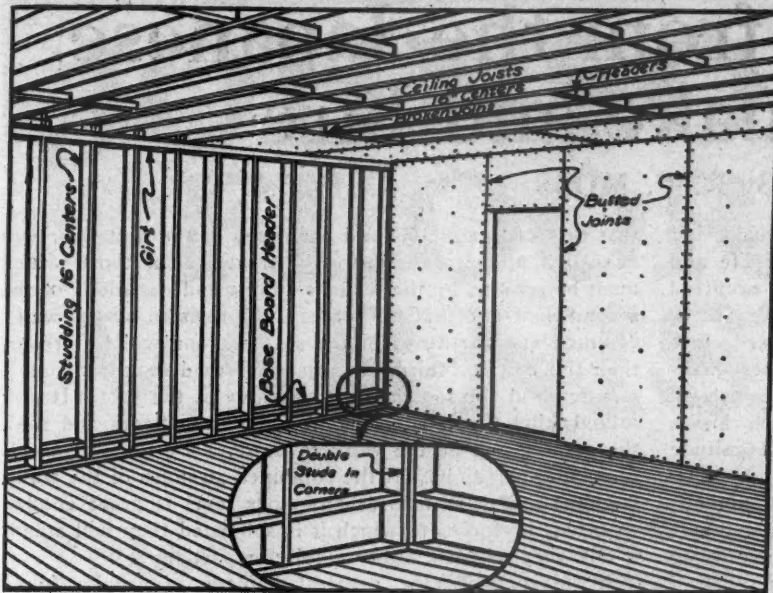
1. In a few localities plaster can be obtained mixed ready to spread on the wall. This practice permits more careful selection of the ingredients, better proportioning, and more thorough mixing than where the plaster is prepared on the job. The use of such plasters is therefore recommended wherever they can be obtained of good quality at reasonable cost.

2. Lime will carry about twice as much sand as gypsum as ordinarily used, but the setting time of gypsum plasters can be more easily regulated. Gypsum plaster has greater inherent strength than lime plaster, and its better fire-resistive qualities are important when fire barriers are to be constructed. Lime plaster can be brought to equal strength by tempering with portland or Keene's cement and is more resistant to moisture than gypsum plaster. Selection of plasters should be made with reference to local practice, better work usually resulting from the use of familiar materials.

3. Gypsum wall board represents the nearest present



Illustrating Proper Methods of Securing Backing for Lath. Where partitions meet outside walls at or between wall studs, construction like this assures that firm backing is afforded for the ends of the lath and no lath extend through from room to room.



Methods of Installing Gypsum Wall Board.

approach to manufacture of completed plaster at the factory, ready to be erected in place. It is supplied in sheets 4 feet wide, usually three-eighths inch thick, in lengths to fit the height of a room, and coated on both sides with paper. It should be erected with no end joints between wall boards and the side joints always over a support. Any openings in joints between boards should be filled with plastic material. For decorative effect they may then be covered with wood or paper strips and the whole surface painted or papered, if desired. Wall board possesses the essential characteristics of rigidity, strength, and finished surface common

*Par. 46. Mixing and Application of Plaster*

1. Proportions of sand and lime or gypsum will vary with each grade or make of materials. Common practice requires the scratch coat to be one part of hydrated lime, or well-slacked lime putty, to three and one-half parts of sand, or one part by weight of gypsum to two parts sand. Corresponding figures for the brown coat are one to four for lime and one to three for gypsum. For best results these proportions must often be intelligently varied, and the old custom of adding sand by guess until it "feels right to the plasterer" cannot be too strongly condemned.

2. The finish coat may be of straight gypsum or of lime. If lime is used, a very plastic lime prepared as putty is required, and in the case of slacked lime putty, aged for about two weeks, after which it is mixed with about half its volume of gypsum or tempered with plaster of Paris, applied to the wall and troweled to a smooth, hard finish. Much skill and care is needed for success. For best method of making lime putty see A. S. T. M. Standard C-5-21-T.

*Par. 47. Number and Thickness of Plaster Coats Necessary*

1. The exposed aggregate method of making colored concrete is equally applicable to plaster, and requires merely a little care in the selection of the sand. Wood fibers used in the brown coat may be dyed and exposed

by washing the plaster after it has set to give effects in color and texture. The ordinary brown coat may be rubbed down to a sand-float finish, which is satisfactory for some purposes, and may be improved by painting.

2. If the finish coat is omitted and a strong (rich) plaster used, the thickness for plaster can safely be reduced to five-eighths inch. This would result in economy with slight sacrifice of desirable qualities. Where rigidity is not important, two coats are sufficient, whether scratch and brown or scratch and finish. Masonry walls and ceilings are plastered almost entirely for decorative reasons, and one coat, properly selected, is entirely sufficient if the surface is not too uneven. Under unfavorable conditions, two coats, totaling five-eighths inch thickness, are all that should be required.

*Par. 48. Furring*

The committee is of the opinion that a requirement that all plaster surfaces be furred out from masonry walls is not within the scope of a building code. The advisability of this measure is plainly shown, however, by the following summary of experience reported from all parts of the country:

1. In regions subject to low temperature, high winds, heavy rains, or extreme humidity of considerable duration, furring of solid masonry exterior walls is practically a necessity to avoid unwholesome living conditions caused by damp walls, also the danger of ruining wall decorations.

2. In arid localities, where low temperatures are infrequent, furring may be omitted without serious results, but should be used wherever economy in construction cost is a secondary consideration.

3. Waterproofing paints or compounds applied to the interior of solid masonry walls help considerably to prevent moisture penetration, but have little effect in preventing condensation, and make it difficult to bond plaster directly to such treated walls.

4. Furring is somewhat less necessary on masonry exterior walls of hollow units, since the inclosed air cells help to check transmission of heat and moisture. However, mortar joints running through the wall are found to conduct moisture readily when poorly or incompletely made, and walls having such continuous joints require furring.

5. Furring a masonry wall lessens its heat conductivity, thus saving fuel, which saving, of course, continues throughout the life of the structure and may repay many times over the increased cost of furring.

6. Since hollow walls are good heat insulators, it has been found in many places that furring may be omitted and plaster applied directly to the interiors of walls which are built with a continuous hollow space, or in which the mortar joints extend but part way through the wall.

# Six Lessons from the Japanese Earthquake and Fire

By R. F. MOSS

ON the occasion of a disaster like the earthquake and fire of September 1, in which the loss of life and property destruction was greater than has occurred from any similar cause during recorded human history, after the living have been cared for and the dead disposed of, it is incumbent on all thinking men—particularly those qualified by professional training and experience—to give careful thought to ways and means of minimizing such losses should an earthquake and conflagration of equal magnitude be repeated.

Having been responsible for the design of several hundred structures in the earthquake zone, it is natural that I should take advantage of this unprecedented opportunity to study the effect of the quake and fire on various types of building construction, and I desire to set forth my view of the lessons to be learned from the behavior of various types of construction during the earthquake and fire, not as being in any sense final but rather for the purpose of forming the basis of further discussion, by which means alone we may derive the maximum of benefit and acquire the maximum of knowledge regarding the proper design of structures to be erected in an earthquake zone.

In the first place, I desire to state that my observations lead me to believe that, aside from causing settlement in the cases of buildings built on soft ground with insufficient foundations, very little damage was done by the vertical movement of earth during the quake, but that the greater part of the damage was done by the horizontal movement. The action of the horizontal movement in destroying or damaging buildings may be stated in non-technical words as follows: A violent and sudden horizontal movement occurs in the earth and is transmitted to the foundation of the building, the extent to which the movement of the earth is transmitted to the foundation depending on the type of foundation, which I shall discuss later. The inertia of the upper portion of the buildings tends to make it stay in its original position, and the walls, columns and partitions are suddenly called upon for the strength necessary to overcome this inertia and move the building in the direction of the quake. Successive shocks follow, each moving the foundation horizontally forward and backward, the walls, columns and partitions having to perform the work of moving the part of the building that is above them with each horizontal movement of the earth. As the walls, columns and partitions of each floor have only to do the work of moving that part of the building which is above them, it follows

that the walls, columns and partitions of the first floor will be called upon to resist forces greater than those which must be resisted by the walls, columns and partitions of the second floor and that the forces to be resisted by the walls, columns and partitions of the second floor will be greater than those of the third, etc., these forces decreasing from a maximum at the foundation to nothing at the roof. It also follows that the greater the weight of the floors and roof, the greater will be the work to be done by the walls, columns and partitions. If the combined strength of the walls, columns and partitions at any floor level is great enough to resist the forces to which it is subjected they will stand; if not, they will fail, either wholly or partially.

In Marunouchi the greatest damage is usually found between the second and third floors, and the question naturally arises as to why the greatest damage is not in the first floor, if that is where the greatest forces are to be resisted. The answer is that the walls of first floor are usually made of well-laid stone and are strong enough to do the work that they are called upon to do; that is, to move the part of the building above them. But the walls of the second and higher floors, being made of brick or terra cotta, which are much weaker materials, are in some cases not strong enough to move the part of the building above them. In such cases the maximum damage is usually observed just above the junction of the stronger and the weaker wall material.

If the foregoing reasoning is correct, two important lessons follow:

**Lesson 1.** Floors and roofs should be made as light as it is possible to make them, without sacrificing other equally important qualities, such as fire-proofness, permanence, etc.

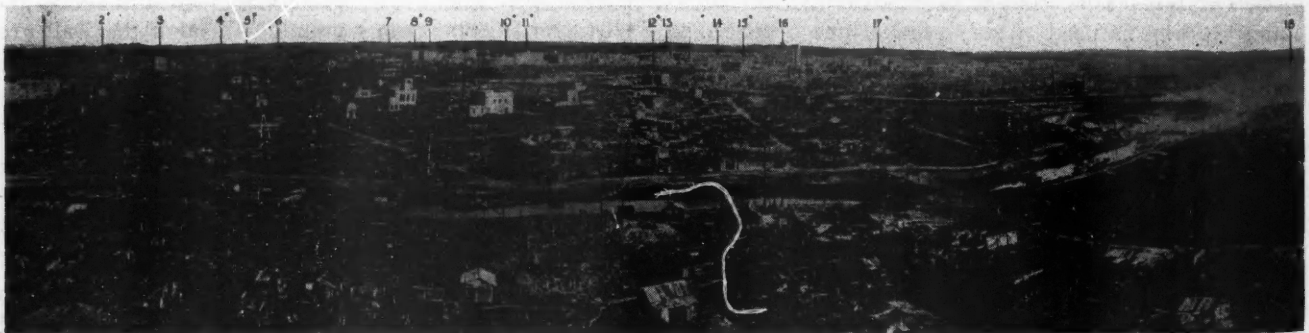
The reason for this is, of course, that if floors and roofs are light the walls and columns will have less work to do in moving them.

**Lesson 2.** Walls and columns should be made strong enough to do the work which they will some day be called upon to do that is, to move the weight of the whole construction above them.

This should be a matter of design and not simply a question of proportioning columns to carry the vertical weight of the structure and then filling in between columns with brick and glass.

Referring to Lesson 1, of the jobs that I have investigated, no building of the reinforced concrete hollow joist

(Continued to page 174.)



Buildings Which Withstood the Earthquake of Sept. 1, 1923, at Yokohama. 1, Kotobuki Primary School; 2, Yokohama Koshin Bank; 3, Nozawaya Department Store; 4, Coal Dealer Association; 5, Yoshida Bridge; 6, Watanabe Bank; 7, Yokohama City Hall; 8, Kawasaki Bank; 9, Yokohama Specie Bank; 10, Y. M. C. A. Building; 11, Mogi Building (The Fifteenth Bank); 12, American Trading Company; 13, Yokohama Memorial Hall; 14, Mitsui Bussan Kabushiki Kaisha; 15, Yuwai Building; 16, Telephone Office; 17, Russo Asiatic Bank; 18, Site of Grant Hotel, entirely demolished.

# JOHNSON'S FLOOR VARNISH

“Made to Walk on”



Johnson's Floor Varnish dries dust-free in two hours and hard over night. It imparts a beautiful, high lustre—has good body—is easy working—will give long wear—is absolutely water-proof—and will stand all reasonable tests.

Johnson's Floor Varnish is tough, elastic and durable. It will not chip, check, mar, blister or scratch white. Is very pale in color so can be used on the lightest floors and linoleum. Splendid for furniture, woodwork and trim of all kinds. May be rubbed if desired.

## FREE TRIAL OFFER

We will gladly send you a pint of Johnson's Floor Varnish, all charges prepaid, if you will test it in comparison with the brand you are at present using. Write us on your business letterhead—there is no obligation whatever attached to this offer.



## FREE---This Book on Wood Finishing

This book is full of practical information on finishing new floors and trim and refinishing old work of this kind. Written by experts—profusely illustrated contains color charts—gives covering capacities, etc. Fill out and mail this coupon.

S. C. JOHNSON & SON  
Dept. AB2 Racine, Wis.

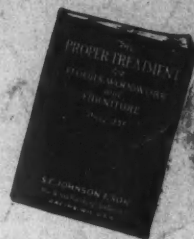
Please send me, free and postpaid, your book on Interior Wood Finishing.

Name.....

Address.....

City and State.....

I Buy Varnish from .....





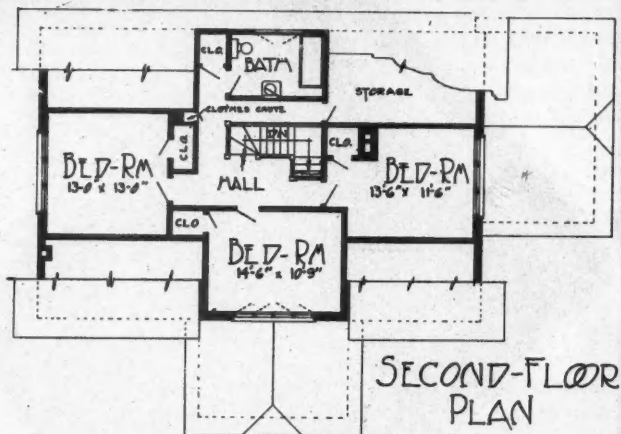
A Good Type of Modern Brick Residence, Given a Cheerful Note by the Use of Colored Glazed Tile Roof, and the Contrasting White of Stone Ornamentation and Cornice and Window Trim.

**A Modern Brick Residence**

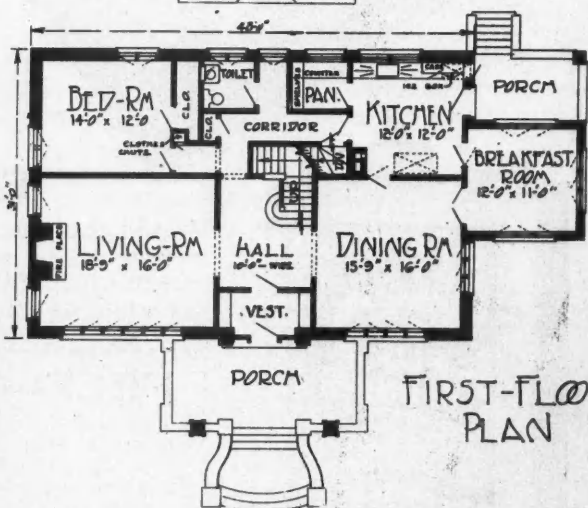
THE proper relieving of a brick residence with white stone trim, and with painting at the windows and eaves, brightens up the whole exterior. Here the stone detail is used to good effect on the porch walls, for the window box rests, and for decorative insets on porch and roof gable ends. A fine textured Bedford buff stone, or cast stone, would be suitable. The



Detail of Entrance, Showing Roomy Porch and Fine Side-Lighted Doorway.



SECOND-FLOOR PLAN



FIRST-FLOOR PLAN

brick itself is a rough design in old brown. It is an eight-room house, with a bedroom and toilet on the first floor supplementing the three on the second floor. With its dull glazed green tile roof this residence has a very pretentious and attractive appearance, and should wear well.





## In Material Alone You Save 7c per square foot

### Sixty Fine Brick Homes

10¢



Photographs and floor plans of 60 unusual brick homes—selected from thousands for beauty and interior arrangement. Every one has been actually built and lived in. A house for every taste and purse. Complete working drawings at nominal cost.

### The Book of Modern Methods

25¢



Valuable tables of material and labor costs. Illustrations and data on modern, money-saving uses of common brick—including the Ideal Hollow Wall. Thousands of these books are in use by architects and builders. Send 25c for it today.

### Send 35c—Get Both Books

The Common Brick Manufacturers' Association of America  
2131 Cleveland Discount Bldg.  
Cleveland, Ohio

Enclosed find \_\_\_\_\_ cents. Please send me the books marked below.

"Your Next Home" (10 cents)

"Brick—How to Build and Estimate" (25 cents)

Name \_\_\_\_\_

Address \_\_\_\_\_

A 12-in. Ideal Hollow Wall, using nine brick to the square foot, costs 15 cents per square foot for material.

A 12-in. hollow tile backup using two 8 x 4 x 12-in. tile per square foot costs 22 cents.

This saving is in material alone. Even when labor and other mason materials are included there is a substantial saving.

Any experienced mason can lay Ideal Wall at less cost than any other type. He racks his brick just as easily as on a solid wall. Also, the small unit is easy to handle—has always been preferred.

### Plaster Right on the Brick

You can lay plaster directly on the wall surface, saving furring and lathing, when you build the Ideal Wall. And, despite the low cost you'll have a wall just as strong and dry as any good construction. Contractors, everywhere, are realizing the economies of the Ideal Hollow Wall made of Common Brick.

Common Brick has so reduced first cost and eliminated the third mortgage of upkeep that now they are using this ancient material for homes, schools, factories, apartments and commercial structures of all kinds. Demand is increasing by leaps and bounds.

Send for list of members. Let us show you how you can cash in on demand for Common Brick.



**The Common Brick Manufacturers' Association of America**  
 2131 CLEVELAND DISCOUNT BUILDING  
 Cleveland, Ohio  
 The Ideal Brick Hollow Wall  
 Made of standard brick—cuts the cost one-third

# Announcing New DeVilbiss



**DeVilbiss**  
**Spray-painting System**

THE introduction of this new Type "A" DeVilbiss Spray Gun gives to every present and prospective user of the spray-painting system the biggest single development ever brought out for painting the modern, improved way.

Type "A" DeVilbiss Spray Gun has many new, exclusive and unparalleled features. It embodies the best points of all the spray guns we have made during the past fourteen years—including dozens of different experimental types.

Thorough and severe laboratory testing and months of actual use by others, in many different fields, PROVE that a wider range of work can be done and far greater results achieved with this perfected Spray Gun.

Type "A" is a DeVilbiss quality product throughout.

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DeVilb



# Spray Gun

## Type "A"

THE new Type "A" DeVilbiss Spray Gun provides for the most advantageous application of any paint or varnish material on any kind of surface—serving in full measure both the industrial finishing room and the portable painting field.... This DeVilbiss Spray Gun

embraces an improvement and a mechanical perfection in design and construction that insure the simplest possible spray gun operation, cleaning and care.

Here are 17 of the leading features and advantages of Type "A" DeVilbiss Spray Gun:

- All nozzle parts SELF-CENTERING, with fluid tip and air cap being held in positive concentricity at all times—impossible for nozzle to get out of alignment even when parts are interchanged.
- Quick detachable spray head.
- Simplicity of design, with fewest number of parts and wearing points—with only 1 pivot bearing—without yokes, links, pins or push rods.
- All moving parts enclosed and protected.
- Rugged, durable, non-complicated, all metal construction.
- Fluid tip made of nickel alloy steel—hardened, heat treated and ground.
- Body and other parts made of special high strength, heat treated alloy aluminum drop forgings—material is as strong as steel and less than half the weight.
- Lightest weight—10½ ozs. complete
- All parts interchangeable.
- Revolving air cap, producing a wide fan spray when placed in horizontal or vertical position, and a round, concentrated spray when placed in any intermediate position.
- Produces perfectly atomized, uniform spray under all conditions, with lowest possible combination of air and fluid pressures without "splitting" of spray or "heavy center."
- Quick fluid needle adjustment—instantaneous, accurate trigger control.
- Positive fluid cut-off at nozzle orifice—no dripping of material from nozzle.
- Shortest possible, unobstructed fluid passage. Only 3 parts—bore of spray head, fluid tip and needle—come in contact with fluid.
- Parts requiring cleaning, all confined to quick detachable spray head—can be disassembled in less than 15 seconds—cleaned in 1 minute—reassembled in 20 seconds.
- Gun rests easily in the hand due to design of handle and perfect balance, which combined with extremely light weight and free trigger action make for easy, non-tiring operation.
- One model for all purposes, including a variety of nozzle sizes for applying materials of all kinds on all classes of work.

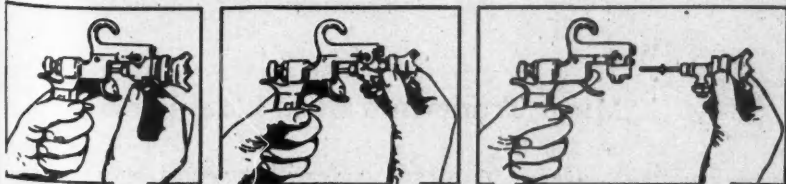
THE thousands of users of the DeVilbiss Spray-painting System—knowing as they do DeVilbiss product and its quality—will be quick to recognize the full importance and value of this latest DeVilbiss development.

And to this sizable group, in its purchase of the Type "A" Spray Gun, it is a pleasure to make available the benefit of the DeVilbiss Special Exchange Offer.

The Type "A" Spray Gun is but one unit of the complete DeVilbiss industrial finishing room and portable painting equipments. To those not acquainted with the advantages and economies made possible by use of the DeVilbiss Spray-painting System, we shall be glad to mail the interesting details. Address—

THE DEVILBISS MFG. CO.  
238 Phillips Ave. TOLEDO, OHIO

—Showing Quick Detachable Spray Head Feature.



**DeVilbiss**  
Spray-painting System



# CORRESPONDENCE

Questions Answered—Ideas Exchanged

## Trade Association Work Helps

To the Editor:

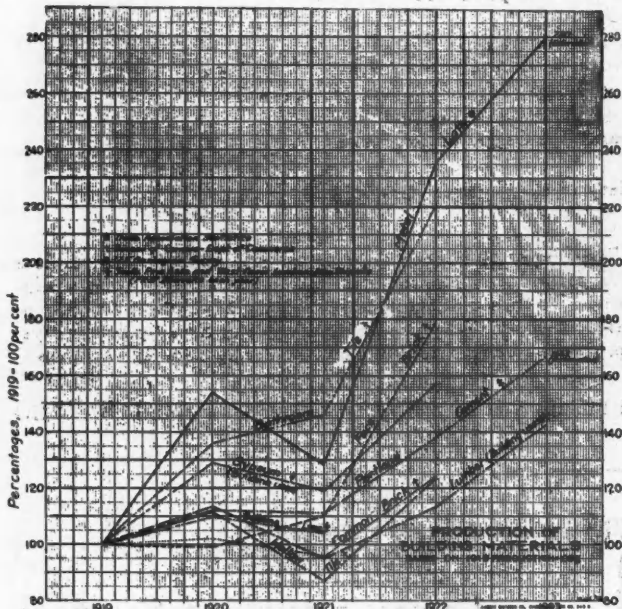
Chicago, Ill.

I thought first of attempting to write a story on the enclosed information but as it is so basic and so interesting to the readers of papers in the building field, I thought it would be better to make a few generalizations and leave for you the matter of further interpreting the very interesting relationship between the developments of the materials plotted.

I feel this is one of the most interesting studies that has ever been made of the trend of building materials, in that it involves many hints as to how one may profit by the success of others.

It is obvious that the use of building materials must increase with the increased consumption, but the statistics show that some materials are having a more rapid increase than others. The accompanying graph provides a comparison on which conclusions as to the reasons therefore can be made. In the graph we have taken the year 1919 as the basis for calculation, this being the first year of domestic consumption after the war. Using this as 100 per cent for all material the best available statistics have been analyzed and the increase or decrease in the use of the various materials have all been plotted.

These curves reflect very eloquently two important points: (1) The increase in appreciation of quality products such as bathroom tile and expanded metal lath; (2) The effectiveness of general trade association activity in promoting the various products. Relative to the latter point, one of the most important comments is found in the fact that bathroom tile and face brick were the only two materials that were not definitely affected by the 1921 slump. In other words, the continuous advertising of these two products not only prevented a decrease in sales, but actually



Increased Production Resulting from Better Quality Through Trade Association Activity.

made a considerable increase. In fact, Portland Cement, which is also well advertised, as an industry, shows but slight falling off during 1921 but being a commodity was naturally more affected by general depression than other materials which could be classed as specialties. It is no wonder that these three industries continue to appropriate large sums of money for carrying on their advertising campaigns. Each of them probably realizes that their industry has been favorably affected by their advertising, but it is doubtful if even their boards of directors have seen the mute evidence of the wisdom of their policy as related to other materials. Much good research and promotional work, other than advertising has been done by all the associations and this is very effective.

The astonishing increase in the use of metal lath without a definite advertising program is due very largely to the better appreciation of the crack and fire prevention features and the more intimate knowledge of this material gained through the research and inside-the-industry work of its trade association. The increase in the use of common brick is more complimentary to the effect of its trade association than is observed in the graph because common brick was on a "slippery toboggan" for the 15 years previous to 1919 when the association took hold. In fact, the average shipments since the organization of the association are already greater than the previous five years' average.

WHARTON CLAY,

Commissioner, Associated Metal Lath Manufacturers.

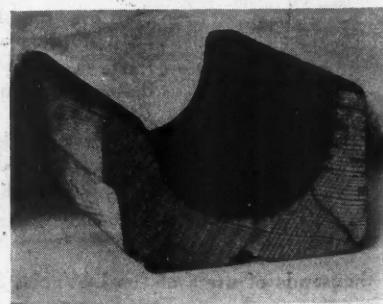


## Long-Lived Fir Gutter

To the Editor:

Palisades Park, N. J.

We are mailing to you under separate cover a section of 3 by 5 fir gutter which was used on our office, having been installed in March, 1909. As we are making alterations to our building at present, this gutter was torn down.



From all appearances, the fourteen years of service have had no affect on this gutter and it was on the east side of the building.

Fourteen Years of Exposure to This Fir Gutter.

This gutter was originally installed by the Steenland Construction Company of Palisades Park, N. J., and the same people are making the present alterations.

STEENLAND CONSTRUCTION CO.,  
Peter M. Steenland.



## Mixer Trade-in Values Established

To the Editor:

Chicago, Ill.

Last summer a series of meetings, sponsored by a joint committee of manufacturers and contractors and whose chair-

# Make \$35.00 a Day

## Re-Surfacing Floors "The American Universal" Way

### Keep the Money Rolling In During the Winter Months

The progressive contractor and builder has found a way to increase his yearly income by keeping busy all the year 'round. When building is at a standstill and there are no profits coming in, he makes \$25.00 to \$50.00 a day re-surfacing old floors with the "American Universal" electrically driven floor surfacing machine. It does the work of six men.

### Big Demand for This Class of Work

The demand for re-surfacing floors is the greatest during the coldest months of the year—during the time when you are not busy building. Think of the great number of public buildings where the floors require re-surfacing. Your prospects consist of residences, schools, colleges, clubs, hospitals, churches, apartment buildings, office buildings, stores, dance halls, auditoriums, roller rinks, bowling alleys, factory buildings—in fact every old floor represents a job for you.

### Work Easy to Get

The beautiful, smooth, uniform work which the "American Universal" floor surfacing machine turns out puts the most expert hand scraper's best efforts to shame. There's absolutely no comparison. You'll find it easy to land big jobs at fancy prices—and it requires absolutely no experience to turn out first class work with the "American Universal."

### Who Stands a Better Chance Than You?

You know the owners of the buildings and homes where the floors require re-surfacing. You are acquainted in your community, and this will make it still more easy for you to land the contracts for re-surfacing the great number of old floors in your locality which are in need of it (and badly so) right now.

### An Investment Worth \$5,000 a Year to You

An "American Universal" floor surfacing machine is always a good investment. It will replace six men on your payroll during the building season—and turn loss into big profits during the dull season.

### One fair sized job pays for the machine

### \$134.35 in 74 Hours!

"Since I have been using my 'American Universal' floor surfacing machine, I have found that it is exactly as you represent it to be. It will do the work of five or six men—and do it well.

"I have not had a dissatisfied customer and my 'American Universal' floor surfacing machine keeps me busy. I have several big jobs ahead such as dance halls and lodge rooms.

"Have actually used the 'American Universal' seventy-four hours, and it has paid me \$134.35 in that time.

"Have three big jobs to do in the next two weeks that will alone pay for the machine. I could not do without my 'American Universal' floor surfacing machine."

F. N. CRAWFORD, Colorado.

### Makes \$400 on One Job!

"I have tested out the 'American Universal' and am very well pleased with it. I am working the machine on the St. Mary's Home for Girls at Cresson, Pa., which has about 42,000 square feet of floor space. The machine will make me on this one job at least four hundred dollars.

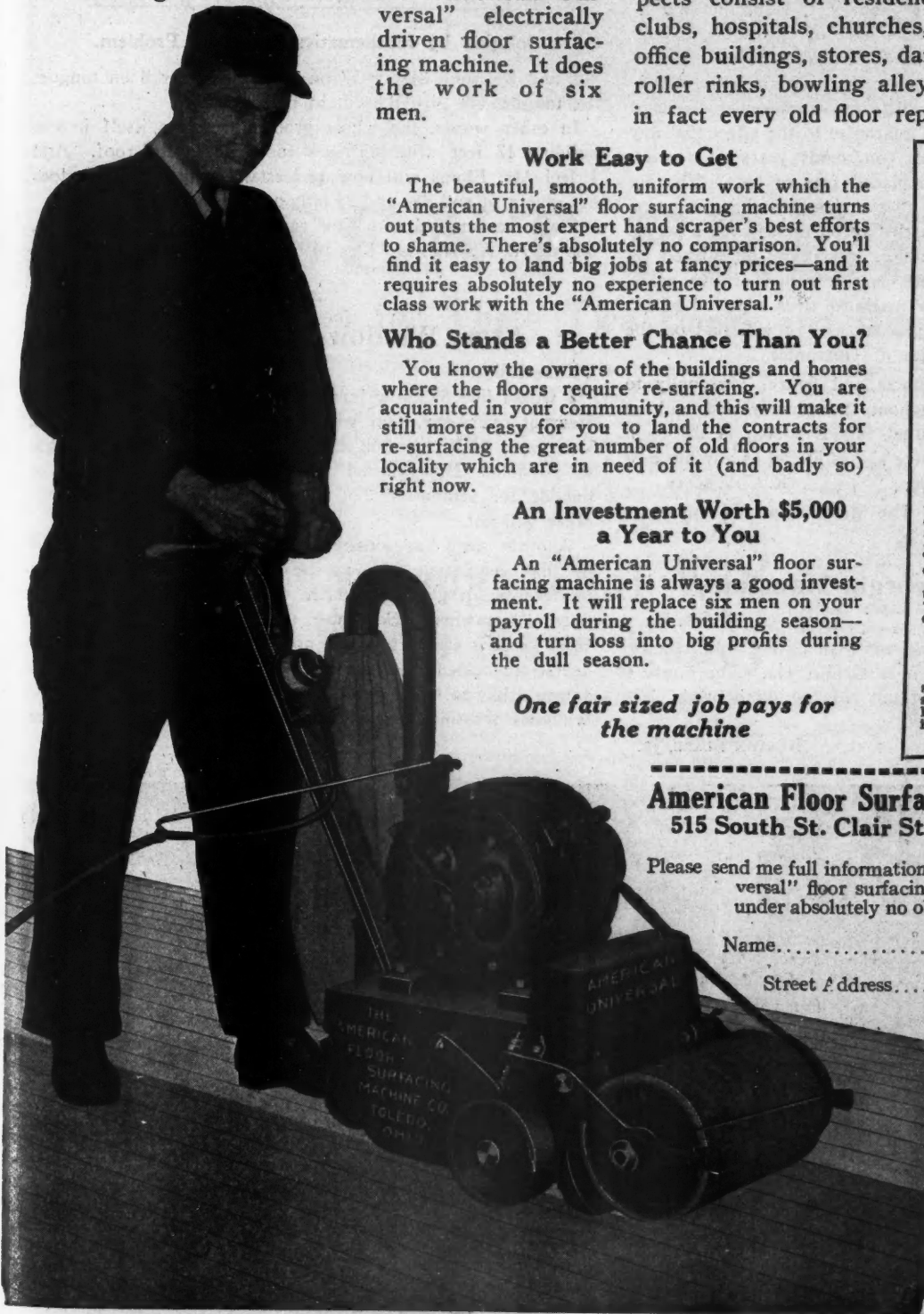
"The owners are well pleased with the smooth, uniform work which my 'American Universal' machine turns out."

J. C. IVORY, Pennsylvania.

### \$75.00 in 12 Hours!

"The 'American Universal' floor surfacing machine is a great labor saver and does excellent work. In learning to operate it I made \$75.00 in 12 hours.

W. H. NORWOOD, Arkansas.



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

Please send me full information on your "American Universal" floor surfacing machine. (This puts me under absolutely no obligation to you whatever.)

Name.....

Street Address.....

City.....

State.....

The following information will assist you in answering my inquiry intelligently. Use (X).

( ) I am a contractor and want to use the machine on my own work.

( ) I am interested in surfacing floors "The American Universal Way" as a business.

man was Mr. C. E. Bement, of the Novo Engine Company, was held in Chicago to consider the standardization of concrete mixers.

Preliminary to one of these meetings, a little group was discussing various matters in the anteroom of the engineers' rooms. One of the men in this group was Mr. R. C. Marshall, Jr., general manager of the Associated General Contractors of America. He outlined the need of establishing in some way a value on used contractors' equipment. The problem was discussed briefly by those present and it was apparent not only that there was a need for such a move, but that there were many obstacles to be overcome. Of course no decision was reached. Since that time, however, the Marsh-Capron Company has taken this problem under consideration with the results outlined below.

On all mixers shipped after January 1, 1924, the Marsh-Capron Company is issuing a Certificate of Guarantee. These certificates contain the usual guarantee against defective materials or workmanship for one year and the guarantee that is implied by our participation in the standardization proceedings. In addition to these there is a guarantee to the effect that any drum wearing out within five continuous years of service, from normal usage, will be replaced free of cost. The big feature, however, is the fact that a definite minimum value is established on any used Marsh-Capron mixer over a period of three years, definite rebuilding costs are established on the small and lighter machines over a period of five years, and on the larger and heavier machines over a period of ten years. The details of these guarantees you will find on the reverse side of our Certificate of Guarantee.

We have presented these facts and figures personally to nearly 200 contractors throughout the country and without exception their opinion was that this is a step in the right direction and that the guarantees are as liberal as any business man could be expected to make.

R. C. WELLER,

President, The Marsh-Capron Company.



### A Modern Georgia Mansion

To the Editor:

Griffin, Ga.

I am enclosing photographs of "Hill Grove," the country home of Burton Slade, Sr., near Griffin, Ga. The house is Dutch Colonial, and built of tan colored-blend brick. The approximate cost was \$12,000.

BURTON SLADE, JR.



Two Views of a Modern Georgia Mansion Built of Tan Colored Blend Brick.

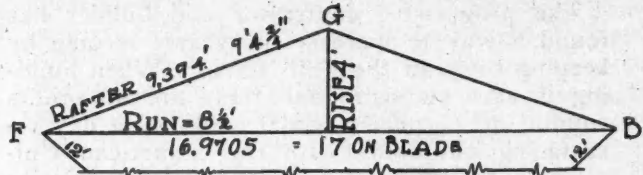
### Urges Study of Mathematics

To the Editor:

Novato, Calif.

In answer to Mr. Eloms and Mr. Spurling. How shall I say it?—I hope all carpenters who read this will look up the Law of Pythagoras. Then take up the study of decimals and evolution sufficient to enable them to extract the square root. Then most of their problems would appear in a new light.

Now, if the gentlemen will treat the problem as they would any ordinary roof the solution is simple, as they will very likely



#### Solution by Mathematics of Rafter Problem.

see, and by using  $8\frac{1}{2}$  or 17 on blade and 4 or 8 on tongue, the tongue will give the cut at meeting point.

In other words, the whole problem resolves itself into a building 17 feet wide with a 4-foot rise in the roof. And I feel Mr. Eloms will now understand why 4 and 12 does not give a fit and  $8\frac{1}{2}$  and 24 only a partial one.

I also recommend as a time saver, and a good companion, one of A. W. Woods' "Key to the Steel Square."

H. W. WARRINGTON.



### Store Windows Frosting Over

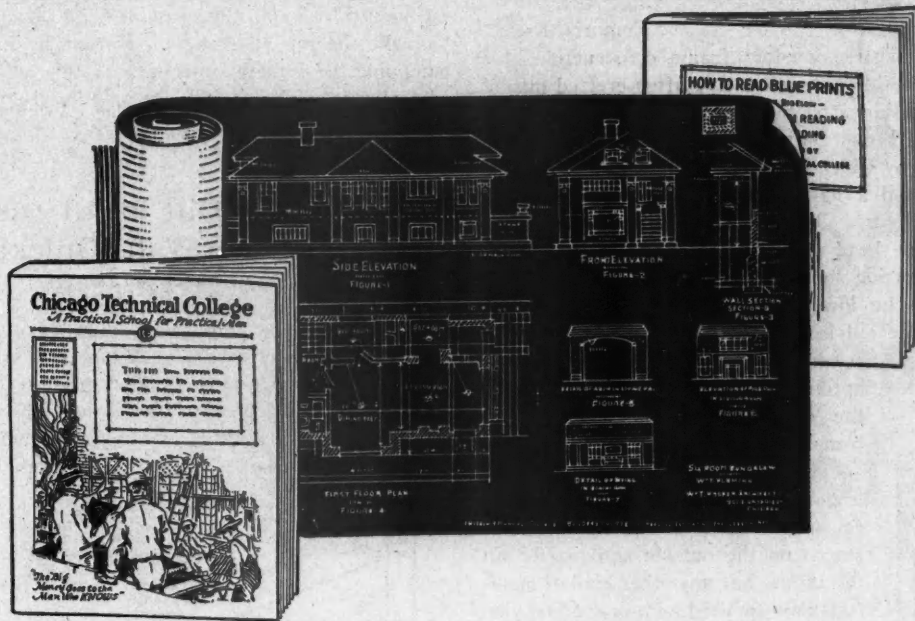
To the Editor:

Moose Jaw, Sask., Can.

I would like to know how to prevent store windows from freezing over—say, two windows in the same store facing same way, both closed in at the back same way, as air tight as possible. Holes bored at top and bottom of glass to outside for ventilation, one window will frost over and the other will not.

Another store has windows backed, but not near air tight, but has ventilation same as the other with holes bored top and bottom of glass to outside. These windows never frost over. Only when back is open to have window dressed, then when back is closed up frost goes off the glass. Both stores are steam heated. Anyone who knows of a remedy for same I would like to see it published in the AMERICAN BUILDER, as windows frosting over in Saskatchewan is quite a problem.

JACK QUIGG.



# SENT FREE

## Mail the Coupon for These Two Books and Blue Print Plans

If you are in any building trade, we want to send you these 2 books and blue prints at our expense. One of these books contains a lesson in Plan Reading prepared by the Chicago Tech. experts; the other explains the Chicago Tech. method of training men by mail in the building trades for the jobs that pay the most money or for businesses of their own. All you have to do to get them is to mail the coupon. Don't send a penny.

## Get the Knowledge That Will Make You Worth More Money

You may be as good a man as there is in the use of tools but as long as you remain a workman you won't earn more than the wage scale. It isn't manual skill that puts a man in big pay class—it's the ability to use his head that brings the fat pay check or enables him to "go in for himself." That has been proved over and over again by workmen who took the Chicago Tech. training in the higher branches of building and are now foremen, superintendents and contractors.

J. B. Woodside of Oklahoma was a carpenter working for \$6 a day when he took a course in training by mail at Chicago Technical College and was advanced to a foremanship in 2 months, became a superintendent 5 months later and then went into contracting.

Carl Testroat of Iowa is another man who got into a successful contracting business through his training, as did J. G. Hart of West Virginia, and C. W. Busch of Kansas.

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

### Train by Mail

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

### Become a Building Expert

*Plan Reading.* Every man who has got very far ahead in any building trade can read blue prints. No man

can expect to be a first rate foreman or superintendent until he knows what every line on a plan means and how to lay out and direct work from the architect's plans. By the Chicago Tech. Method you quickly learn to read any plan as easily as you read these words.

*Estimating.* Of course a man who wants to be a contractor or to hold a big job in a contracting organization must know how to figure costs of labor, material, and everything else that goes into any kind of building. The Chicago Tech. course covers every detail of this important branch—shows you just how it is done from actual blue print plans.

*Superintending.* How to hire and direct men, how to keep track of every detail of construction as it goes on, how to get the work done in the least time at the lowest cost is also fully covered in the Chicago Tech. Builders' Course.

Also special courses in Architectural Drafting for builders, taught by practical men. These explained in Special Catalog "D" sent on request.

### Mail This Coupon—Today

**CHICAGO TECHNICAL COLLEGE,**  
Dept. 236, Chicago Tech. Bldg.,  
118 East 26th Street,  
Chicago, Ill.

Please send me your Free Books and Blue Prints for men in the Building Trades. Send postpaid to my address below.

(Write or print name plainly.)

Name .....

Address .....

Post Office .....

State .....

Occupation .....

## CHICAGO TECHNICAL COLLEGE

Dept. 236, Chicago Tech. Building, 118 East 26th Street, Chicago, Ill.

**A Quick Constructed Window Frame**

To the Editor:

Emporia, Kan.

A quick and inexpensive window frame construction, for temporary or cheap buildings, such as are often erected during mushroom booms, is shown by the accompanying illustrations. The upper section of Fig. 1 shows how the head of the frame is put together. The 2 by 4-inch header forms the head-jamb. The blind-stop, ground and a half parting bead are nailed to it as indicated in this figure. The inside and the outside head-casings complete the head construction. The dotted lines on the outside head-casing show how a cap can be put on very easily, if desired. The lower section of Fig. 1 shows the sill construction. The sill is made of a 2 by 8-inch timber, which at the same time answers for the header. The stool and apron and the cove under the sill on the outside make this construction complete.

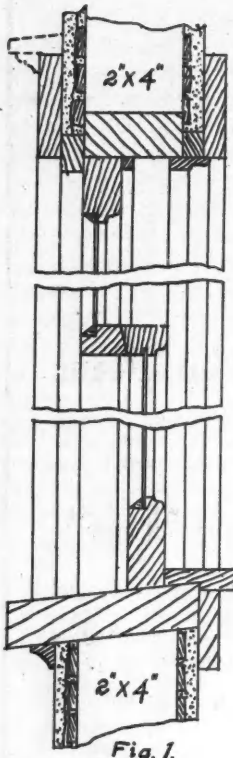


Fig. 1.

Fig. 2 shows the side jamb, which is practically a duplicate of the head construction. The illustrations show stucco on the outside and plaster on the inside, but any other kind of material may be used with as good results. The stucco is reinforced with hail screen—this is indicated by the irregular lines. Fig. 3 shows the frame completed. The 2 by 4's that form the jambs are indicated in this figure by the dotted lines. The casings, however, should not be put on until after

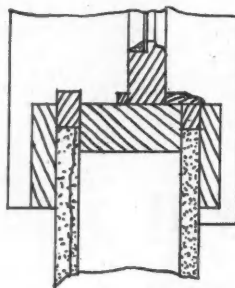


Fig. 2.

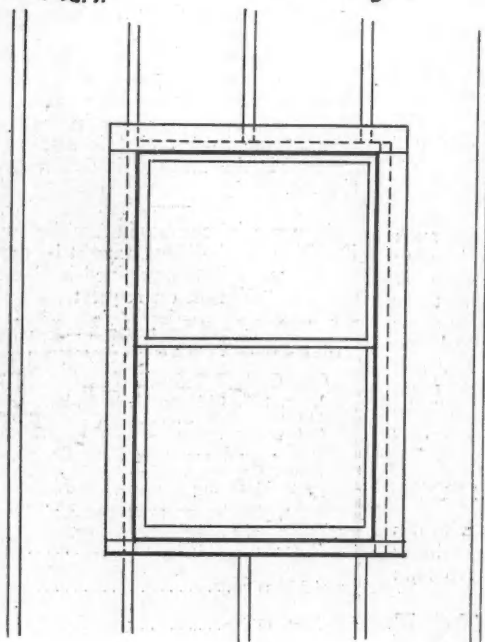


Fig. 3. Quick Window Construction for Temporary Buildings.

the stucco, or whatever is used on the outside, and the plaster on the inside, is on. The outside head-casing should be flashed to make the job water-tight. By putting in sash-pulleys, and equipping the window with weights, this layout will give excellent service. The appearance, too, if the work is done in a workmanlike manner, will be good. H. H. SIEGELE.



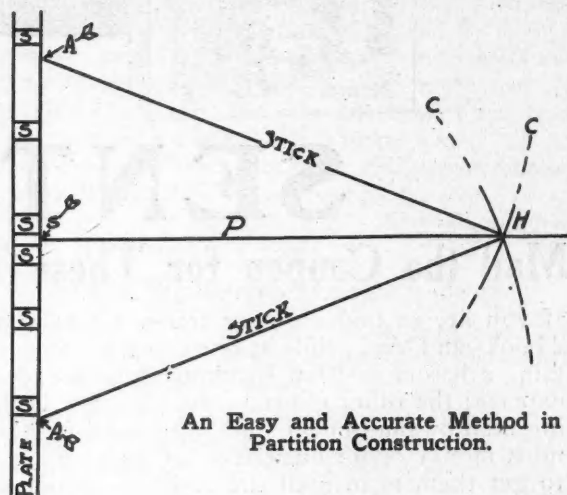
**How to Lay Out Partitions at Right Angles to Walls Quickly and Accurately**

To the Editor:

Wolf Creek, Mont.

This applies not only to placing partitions at right angles to walls, but also to any similar proposition where it is desired to erect a right angle in large measurements.

Take stick any length suitable, but preferably about three-fourths of the length of partition, though less, or more, will



An Easy and Accurate Method in Partition Construction.

do. Point one end so you can hold it firmly against shoe plate and swing it easily. Drive a nail through for scriber near other end.

Make two marks, A, any convenient distance from mark S, which indicates where center of partition is to come against the wall. Each mark, A, must be the same distance from S.

Take stick and with point at A, describe a short arc, C, on floor with nail about where your eye tells you the partition ought to come. Then shift pointed end over to other mark, A, and repeat, making two arcs, C, crossing each other.

Then with straight edge or chalk line, make line from S through intersection of arcs, C, at H and as long as you want it.

This line, P, will be at right angles to wall.

A. J. HARSTAD.



**Who Has the Answer?**

To the Editor:

Auberry, Cal.

I gave a number of copies of the AMERICAN BUILDER to a painter and now I find I want some of the information which was in one of them, namely, "How to Clean Paint Brushes Which Have Dried Hard."

Could I ask you for this? You know when one pays \$5.00 and up for a paint brush and someone sets it in water while full of paint and forgets to add water now and then, the brush will likely need a doctor before anyone can use it except as a hammer.

It seems to me that there are no brushes in this country which are not in this oxidized linseed oil painted condition.

The AMERICAN BUILDER is such a help I just had to add this to your work. EDWARD F. MEGILL.



# A Beautiful Roof and a Lasting Roof . . . .

We are the pioneers in the manufacturing of metal shingles, and our experience gained in over 40 years of specializing in this one line enables us to make a better shingle of greater wearing qualities than other less experienced manufacturers. We began with honest material and workmanship, and courteous treatment of our customers. We have kept up this policy and will continue to do so. The thousands who have used our goods since 1882 can and do testify to this. The Walter's and Cooper's Shingles are known the world over as "The Shingles That Last."

## WALTER'S AND COOPER'S METAL SHINGLES

The most complete line of designs made in painted tin, Genuine Re-dipped Galvanized tin, Sheet Zinc and Copper. Sold at the right price.

May we send you full-size samples and prices?

Can be put on  
over old shingle  
roofs - - -

**NATIONAL SHEET METAL ROOFING CO.**  
339-345 Grand Street

Jersey City, N. J. ←

## NEWS OF THE FIELD

### Lewis Is Now Truscon Advertising Manager

MR. PEIRCE LEWIS has been appointed advertising and sales promotion manager of the Truscon Steel Company, and will have complete charge of this department which is now located at the home office and plant in Youngstown, Ohio. Mr. Lewis has had a wide experience in advertising and sales work, having been connected with Kawneer Manufacturing Company, the Detroit Steel Products Company and as assistant advertising manager of the Truscon Steel Company.



### Standard Sanitary Builds Chicago Warehouse

THE Standard Sanitary Manufacturing Company, one of the largest manufacturers of plumbing fixtures in the world, is building a new warehouse in the Central Manufacturing District, Chicago, at a cost of \$500,000. The new building will be five stories and basement, with facing of pressed brick, trimmed with terra cotta.



### E. E. Helm New Detroit District Manager for Bridgeport Brass Company

THE Bridgeport Brass Company announces the appointment of E. E. Helm as district manager at Detroit. Mr. Helm comes from Akron, Ohio, where he was manager of the Industrial Bureau of the Akron Chamber of Commerce.

### Milwaukee Corrugating Starts La Crosse Branch

THE purchase of three of the buildings of the Gund Brewing Company, La Crosse, Wis., and the establishment in them of a branch plant marks another important advance in the progress of the Milwaukee Corrugating Company, manufacturers of Milcor Sheet Metal Products.

The strategic position of these new Milcor factories will be an important factor in maintaining the company's policy of "same day" shipments on all its standard lines.



### Answers to Roof Framing Problems on Page 139

- (1) The square root method is accurate and can be used on any odd shaped or uneven pitched roof. It can also be used evenings at the fire-side when the square is in the tool box. This is often convenient for checking up on different problems or for figuring bills of material. Other methods and tables are based on this method.
- (2) The length of rafter by the square root method is:  
 $\text{Square root of } (6^2 + 5^2) = 7.81 \text{ feet} = 7 \text{ feet } 9\frac{3}{4} \text{ inches.}$   
 7 feet 10 inches would make the rafter  $\frac{1}{4}$  inch too long.
- (3) The long rafter has a rise of 8 inches per foot run. The short rafter has a rise of 16 inches per foot run.



Alexander Sand, Jr., Son of Chief Engineer of the Pennsylvania Railroad, Has Built a Group of Straub Cinder Block Houses in the Aristocratic Narberth Section of the Philadelphia Suburbs. The house in the foreground was designed by the brilliant young architect, Walter K. Durham, inspired by a visit to Washington's Headquarters at Valley Forge. Those familiar with the old building will readily see the source of the inspiration. These houses are shown in this photograph. Mr. Sands' home is the house shown in the foreground.

# ROCBOND

## Exterior Stucco

*The Variety of Color Combinations of Rocbond gives the builder a wider range of possibilities*

—and there are so many places where Rocbond can be used to advantage. Rocbond Stucco is the herald for better construction. It has an exclusive charm and attractiveness which will lend distinctiveness to any type of building. Rocbond affords economical advantages of low first cost and permanent construction—free from repairs.

Rocbond Stucco is a fixed uniform quality, and is delivered on the job ready for use.

We have sample panels showing combinations and color schemes which will actually sell the job.

This is the strongest Selling Line a Dealer can handle— and our Dealer Service is most complete.



Write our nearest plant  
**The Rocbond Company**  
 Three Plants  
 Van Wert, O. Cedar Rapids, Ia.  
 Harrisburg, Pa.

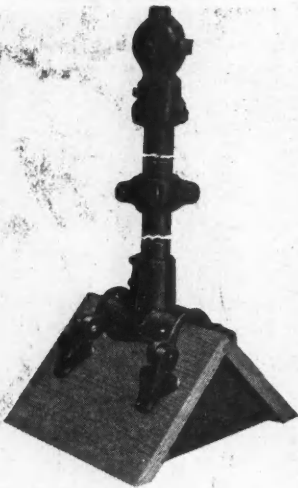
# WHAT'S NEW?



**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.*

## Pipe Fixture for Radio Aerial

**W**ITH everyone radio-mad, an aerial mast pipe fixture like the one illustrated should meet with general favor among architects and builders, since it can be put on when the house is in course of construction, and help the sale of the house.



Neat Roof Support for Aerial.

This set of fixtures consists of a cap with a 2-inch sheave pulley and lugs for guy wires, a collar with lugs, and a universal mast head with loop for securing aerial cable. These fittings use standard 1-inch pipe, and an aerial can be erected in 15 to 30 minutes. Installation may be made on any kind of roof—pitch or flat—and is done without damage to the roofing in any way.

No one can deny the superiority of this to the unsightly, poorly installed wooden pole usually used for aerial supports. A well made, substantial aerial insures the enjoyable, successful operation of the radio receiving set, and the low price of this ought to make it appeal to everyone. The time it will save more than pays for its cost; and it is a handsome and substantial installation which does not detract from the building on which it is used.



## An Air Filter That Is Like the Human Nostril

**T**HE necessity of air, free from dust and impurities, for the use of human beings, as well as its value in numberless manufacturing operations is today very generally appreciated. The ever-expanding effects of industry, together with the increasing use of soft coal and rather general contamination of the air by objectionable and injurious gases, have made it clearly evident that outdoor air is not necessarily clean. Illustrated is one of the most practical methods of removing these impurities. It solves many of the problems involving the elimination of dirt and dust.

It operates on the same principle as the human nostril—air in passing through the steel framed filter impinges on a filter medium saturated with simple chemicals, the dirt and

dust are leached out and deposited on the filter body. As the successive layers of dirt are deposited and bound on the filtering medium additional adhesive fluid is supplied by capillary action; being withdrawn from the minute droplets or reservoirs of the liquid held at the intersections of the media, and in this way binding and keeping the entire system moist for considerable periods. It will be noted that even if the individual fibres of the filter media collect a very thick deposit of dirt, the relative space between the fibres will not be appreciably decreased and the resistance will still remain very low.

It is used for general ventilation work in schools, clubs, restaurants, stores, varnishing, enameling and painting rooms,



The Light Steel Frame Containing the Filtering Medium Is Supplied with Handles Which Enables It to Be Removed and Easily Cleaned as a Unit.

manufacturing plants. It is used in manufacturing processes, such as drying of milk, gelatin, sensitized paper, butter, eggs, fruit, starch, laundry work, glue, paper, wool, yarn, sugar, chemicals, cotton, etc. It is used in hospitals, for bacteria control, and in manufacturing plants for the recovery of valuable dusts and control of injurious dusts and gases.



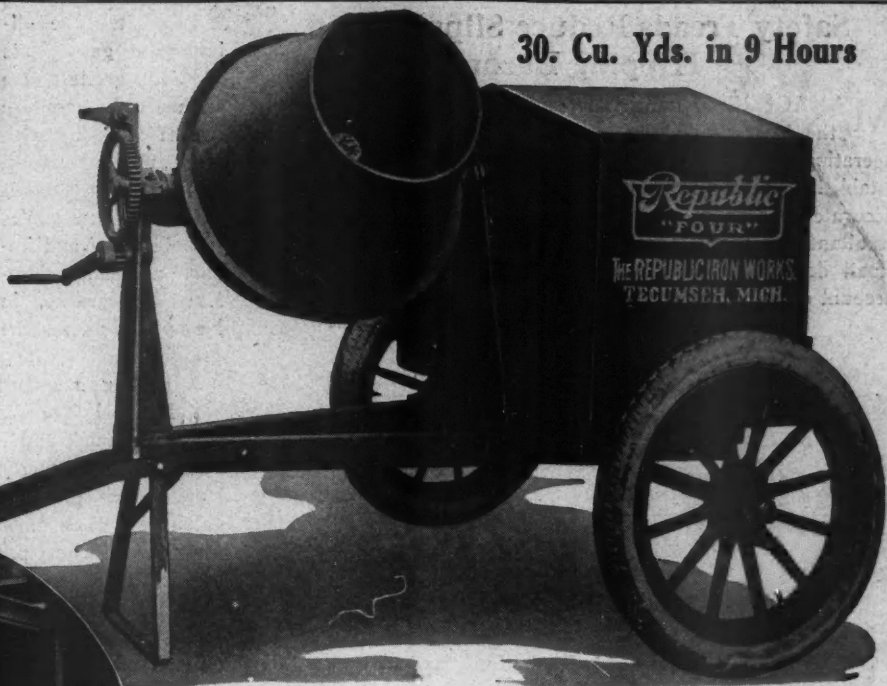
## National Lumber Manufacturers' Association Moves

**T**HE National Lumber Manufacturers' Association announces the removal of its offices from 904, the International Building, to Rooms 402-413, the Transportation Building, 17th and H Streets, Northwest, Washington, D. C.



# Hi-Way Trailer and 4-Wheel Mixers

30. Cu. Yds. in 9 Hours



## Big Performance — Low Price

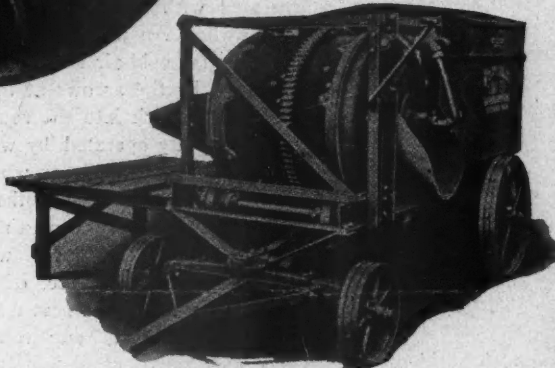
The REPUBLIC "Four" Tilter is a "Big-Little" machine, light to move, always ready, built for speedy operation, and second to none in quality. Read what Mr. Mack of Cayuga, Ind., says:

"The mixer is far beyond my expectations for a small machine. Have turned out \$9,000.00 worth of work and have not spent a dime for repairs, nor had a minute's delay on account of engine. HAVE PUT THRU 30 CU. YDS. IN 9 HOURS WITH IT. I cannot say enough for it."

TWO OR FOUR WHEEL TYPE AS DESIRED. Trailer mixer has regular auto wheels, Timken Bearings. 30x3 1/2 Firestone Tires, and Standard Tread.

### REPUBLIC "Ten"

—A Light Weight, Sack Size Mixer, equipped either with Power Loader or Low Charging Platform. Equipped with the famous Judd Patent which discharges the load in half the time. PRICES LOWEST YOU WILL FIND ON WELL BUILT SACK SIZE MACHINES.



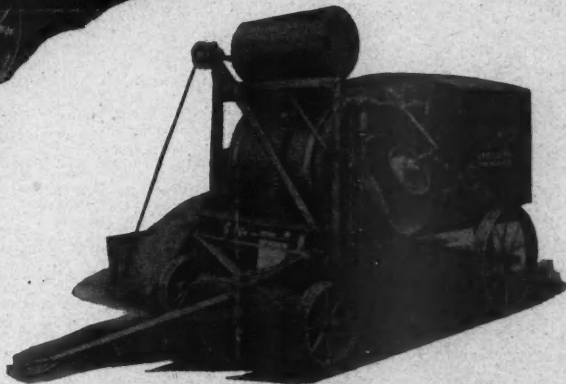
### REPUBLIC "Six"

—The strongest built, medium size mixer on the market. Compares in many respects with ten foot machines. Short turn trucks, self aligning bearings, semi-steel and steel construction, fine durable engine, etc. Any attachments you may want. Get the facts about this splendid machine.

Republic Iron Works  
Tecumseh, Mich.

### Quick Delivery From All Large Towns

REPUBLIC Dealers are located in all principal cities and carry stock for immediate delivery. Write or wire for name of nearest dealer.



### Terms To Suit

You can buy REPUBLIC Mixers on satisfactory terms. No extra charge for time accounts except the usual interest.

## Mail the Coupon

Learn more about these fine, well built, durable and practical mixers. You'll be surprised at the reasonable price.

Republic Iron Works Box 25 Tecumseh, Mich.

Please send information REPUBLIC 4-6-10 Mixer to

Name.....

Address.....

(Wire at our expense if you wish)

### Safety Treads Reduce Slipping and Tripping Hazard

MANAGERS of industrial plants are now keenly alive to the loss entailed by preventable accidents and are co-operating more and more with the safety organizations by establishing safety committees in their own plants and keeping accurate records of all such accidents, their causes and the resultant loss therefrom. This has been brought about in no small degree by the allowances made in insurance rates on account of safe practices employed.



Style "O" Requires No Sub-Tread.



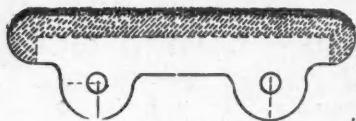
Style "A" with Metal Anchors for Concrete Steps.



"Style "A" with Bevelled Back for Repairing Worn or Slippery Treads.



Hatch Surface.



Style "R" Treads, No Angles or Sub-Tread Required. Bolt direct to stringers.



Plain Surface.

The statistics regarding accidents are now becoming very valuable and indicate clearly where the greatest loss occurs.

Not only in industrial plants but in every structure erected, the architect and builder are called upon to exercise the greatest care in providing the most effective and approved safety devices, otherwise the owner may be called upon later to install the same at greatly increased expense and perhaps after having had a costly experience.

The most recent statistics on industrial accidents come from the Industrial Commission of Wisconsin for the year 1922:

	Injuries	Deaths	Lost time days	Indemnity	Medical aid
All causes .....	16,705	180	2,642,422	\$2,410,529	\$726,429
Machinery .....	2,908	12	637,476	523,148	128,153
Falls of persons..	2,200	34	384,833	408,850	110,507
Handling objects.	3,925	6	228,639	274,002	141,513

From the above it will be seen that next to accidents due to machinery the lost time is greatest in accidents due to falls of persons and the fatalities are three times as great in the latter class. The obvious remedy for such a condition is to make the walkways safe and prevent as far as possible the slipping and tripping hazard.

Safety treads for walkway surfaces are now largely in demand in new structures and also in repair work and are doing much to materially reduce accidents of this class, but at the same time increases the life of stairs and floors and effectively reduce the fire hazard when made of cast iron with an abrasive grit embedded in the surface.

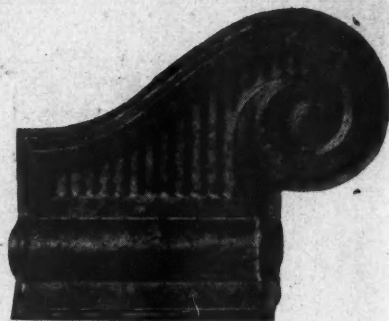
Treads, door saddles and plates are made in many forms, styles and weights to fit all conditions and also for manhole, coal hole and trench covers.



### A New and Better Gable Final

AFTER all it is detail that really gives a home that distinctive, finished appearance. Beautiful flowers, trees and hedges all lend their help, but if the necessary trimming details on the home itself are lacking, much of the beauty association of house and grounds is lost.

Too often the all-important gable ends of houses are left bare and unfinished and are out of harmony with the surroundings. Proper gable finials will set off the gables in bold relief and impart a detailed, finished appearance, in keeping with the premises.



Artistic Galvanized Finial.

A leading manufacturer of sheet metal building products has designed a new gable block finial which is practically a one piece finial, and is formed by a special process from the best copper-bearing terne plate. The seams are carefully lapped, thus giving it unusual strength and rigidity. It is galvanized both inside and out after formation, so as to give it the longest possible life, and has the additional advantage in that it can be used with any size round ridge roll.

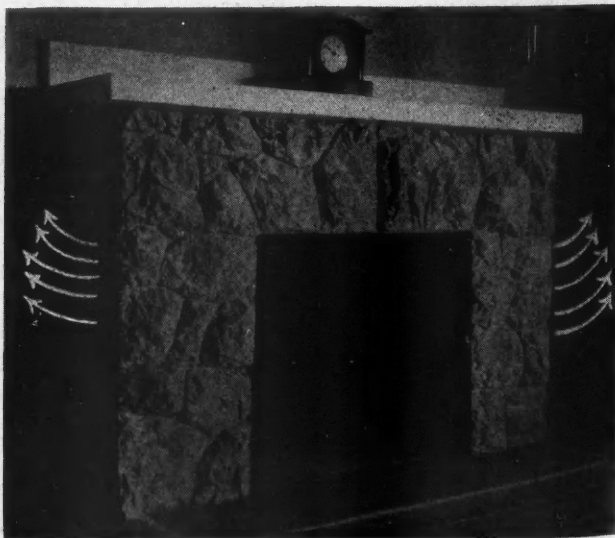
Prominent among the many characteristics of the finial are beauty and distinctiveness. The details are carefully formed and the design carries deep and is very pronounced.



### This Fireplace Hot Blasts Air Back Into Room

ILLUSTRATED is a fireplace with which, by the action of a heat chamber, the cold air of a room is drawn off through a floor or base register, re-heated and repeatedly sent out—hot blast in return.

The firebox is composed of corrugated cast iron walls, of lifetime durability. The heat chamber is a four-inch air space, enclosed within the stone or brick, entirely surrounding the iron walls. An under-floor conduit, leading to this chamber, conducts the cold air from the floor register. The air passages, indicated by the arrows at the side, afford an outlet through the mantle brick into the room. It is equipped with its own damper, easily operated, by which the draft is completely controlled. When other than wood fuel is used specially designed briquette grate will hold the fuel in close contact with the back wall—insuring a maximum conductivity. The peculiar construction of the firebox walls gives an increased efficiency over the usual fireplace, of from 25 to 50 per cent. The vacuum action of the heat chamber and conduit system draws the cold air from any room on the floor, enlarging the fireplace's capacity indefinitely.



Arrows Indicate Warm Air Thrown Out Into Room.



**Building Specialties**

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

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

# Majestic Coal Window

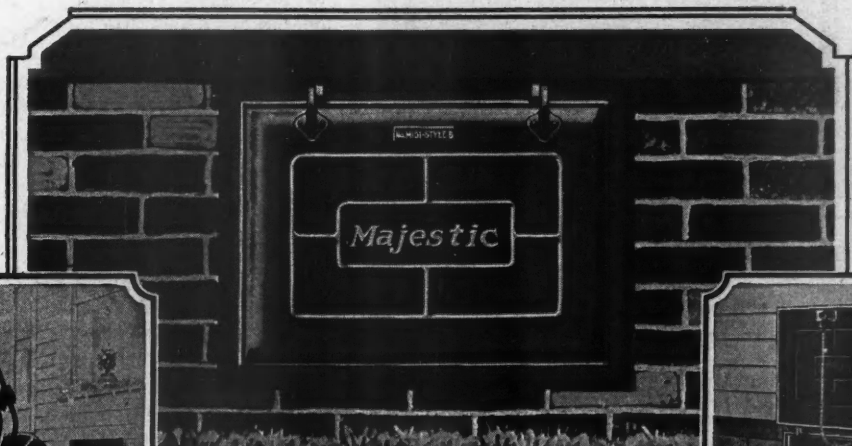
## TO YOU WHO ARE PLANNING A HOME OF YOUR OWN

If you are planning to build a home of your own, see that a Majestic Coal Window is included in your specifications. Majestic leads the world in coal windows and sets the standard of quality. Made of Certified Malleable Iron and Keystone Copper Steel, Guaranteed Break-proof—Superior in quality, design and workmanship at no additional cost.

## TO REALTORS AND ALL WHO BUILD HOMES TO SELL

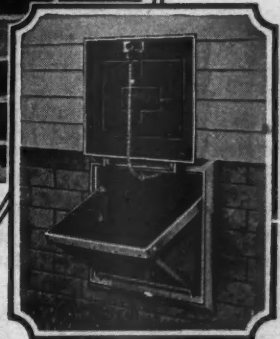
If you are building homes to sell, the Majestic Coal Window is a selling feature you can't afford to omit. The Majestic is known everywhere as the best—the coal window that is self-locking and burglar-proof; protects the entire opening and side walls when the coal is delivered; increases property value; lessens depreciation and saves money.

### *The Majestic is Guaranteed Break-Proof*



### *The Mark of a Modern Home*

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



**THE MAJESTIC COMPANY, HUNTINGTON, INDIANA**

*Branches and Warehouses, 406 Scarritt Arcade Bldg., Kansas City, Mo.—6024 Grove Ave., Chicago, Ill. 816 Security Bldg., Minneapolis—Westlake Ave. and John St., Seattle—3227 Larimer St., Denver*

*Canadian Factory THE GALT STOVE & FURNACE COMPANY, Ltd., Galt, Ont.*



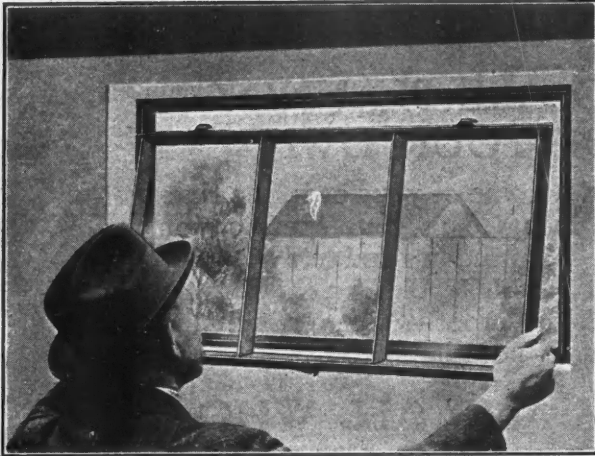
**Costs You No More to Have the Best**



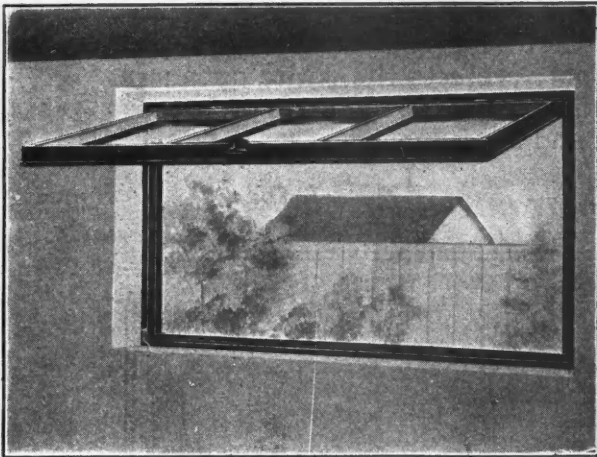
### No Hook or Chain for This Window

THE special feature of this new style of basement window is method of hanging the portion that opens which is known as the ventilator, the frame portion being built in the wall. By means of special attachments at the top of the ventilator is held in the open position as shown, thus eliminating the use of chain or hook to fasten the ceiling above.

These special attachments allow for the easy removal of the ventilator from the frame as shown in the other cut. This



This Steel Sash Easily Removed from Inside.



Will Stay Open Without Hook or Chain.

basement sash is a step forward. In case of any breakage of glass or it is desired to remove the ventilator there are no hinges to take apart or hinge pins to remove. This ventilator, however, can only be removed from the inside of the building. They are made up in three standard sizes.

These ventilators and frames are made complete with hardware attached at the factory and when shipped are a complete unit ready for installation, so that no further work is to be done on them after installation of the sash as fitting and applying hardware. Another special feature of this basement window is its smooth and architecturally correct exterior surface. The steel members forming this sash have a flat exterior, thus eliminating all shadows and giving the most pleasing and attractive appearance.



### Level Saves the Builder's Time

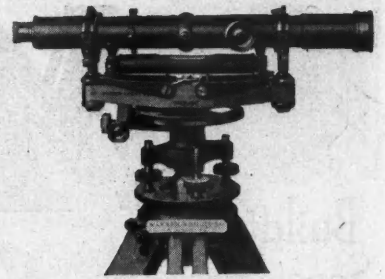
THIS instrument is essentially a high grade level. Its use as a transit is only recommended for short distances in turning angles. However, it is used for reconnaissance work by some of the highway departments. It is absolutely accurate

for projecting a perfectly straight line over the ground or testing the plumb of a building or setting columns, stay bracing, etc. The reason that it is not recommended for turning angles other than on building construction is that the vernier reads to five minutes, which would not be close enough for surveying.

The instrument embodies all of the features necessary on construction work and omits unnecessary features in this connection, which otherwise would unduly increase its cost.

With this instrument, which costs less than either the transit or level bought separately, there is no excuse for a builder wasting time or risking his reputation by using slow and uncertain level boards and awkward methods of "squaring up."

Pays for Itself on the Job.



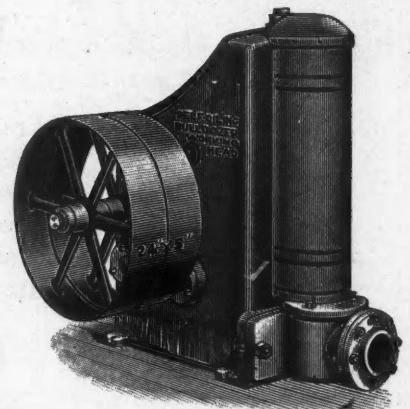
### Self-Oiling, Deep Well Working Head

THIS self-oiling working head, with 18-inch stroke, is stated by the manufacturer to be able to run continuously 24 hours a day without attention. It oils itself. It meets the needs of manufacturing plants, mines, village water works, apartment houses, hotels, etc., where water is required from deep wells.

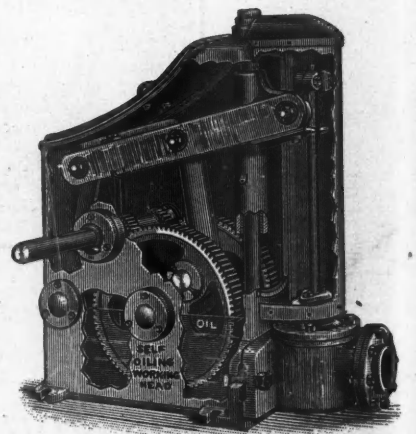
The 18-inch stroke is constructed on the walking beam principle, and with a view to securing safety in operation, long life and economy, all working parts are fully enclosed and run in oil. The main frame which carries all the bearings, forms the oil reservoir. From this reservoir the oil is distributed to all moving parts.

The cross-head sleeve is extra heavy, and babbitted full length. On down stroke it dips into oil, carrying the oil up the post to the top of the cross head. Oil distribution is assisted by a simple pump. The bearing shafts are high grade machinery steel; bearings and working parts are removable; gears and pinions are machine cut. The pinions and shaft are cut integral from a solid steel shaft.

The pipe head, carrying the packing gland, is supported on a flanged projection on the pump head, is accurately machined, and is held with heavy bolts, insuring perfect alignment. The piston rod is recessed and clamped solid to the cross head, and the plunger can be withdrawn without disturbing the suction or discharge pipe. This head is well adapted for operating a double acting cylinder.



Deep Well Working Head.



Cover Cut Away to Show Inner Workings.





*This attractive booklet on window casements will be sent you free. Write for a copy.*

*"The window that adds charm to the home"*

**T**HE charm of the casement window appeals to lovers of the artistic.

Builders with a view to beauty, permanency and economy should not overlook just what the casement window means as an aid to beauty and utility of the home.

Truscon Copper Steel Casements are widely used, first because of their artistic appearance and second, because they allow 100 per cent ventilation.

Truscon Copper Steel Casements are designed by practical builders who realize that beauty and utility go hand in hand. As a result Truscon Casements not only look well but are practical in operation. They open and close easily under all conditions, never sticking, warping or getting out of line. They have continuous double weathering on all sides, and are constructed with copper steel, the metal that resists corrosion and requires no expense for repairs or upkeep.

Through our improved manufacturing facilities and enlarged scale of standardized production, Truscon offers a steel casement which is exceptionally high in quality and low in price.

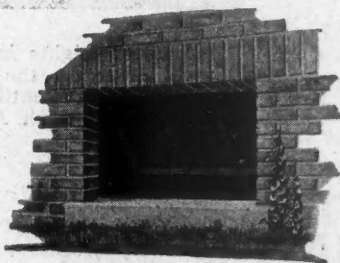
For sale by lumber, hardware and building supply dealers

**TRUSCON STEEL COMPANY,**  
YOUNGSTOWN, OHIO

**TRUSCON**  
COPPER STEEL  
STANDARD CASEMENTS

Truscon Copper Steel Basement Windows give double the light of wooden windows for the same size opening.

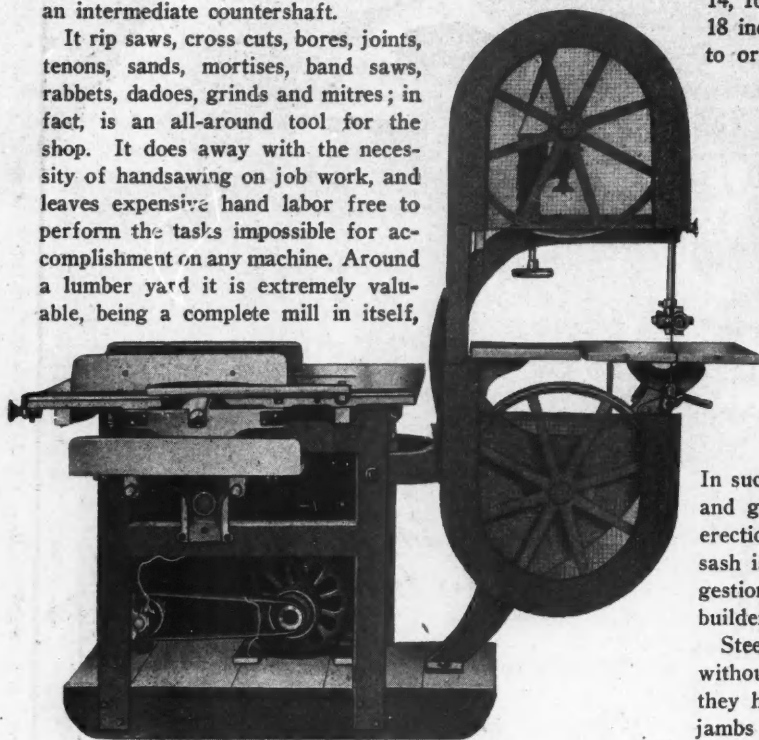
Truscon Basement Windows cannot split or break. They never warp, stick, leak or need repairs. Their actual cost is as little as wood.



### A Portable Saw Table and Band Saw

**H**ERE is an excellent portable saw rig for the job or shop, the rig furnished with a standard 3 horsepower motor which operates the band saw (shown guarded) by means of an intermediate countershaft.

It rip saws, cross cuts, bores, joints, tenons, sands, mortises, band saws, rabbets, dadoes, grinds and mitres; in fact, is an all-around tool for the shop. It does away with the necessity of handsawing on job work, and leaves expensive hand labor free to perform the tasks impossible for accomplishment on any machine. Around a lumber yard it is extremely valuable, being a complete mill in itself,



Portable Saw Table and Band Saw.

and the dealer can furnish the builder with finished stock that otherwise would have to be sent to the mill to be worked. On the single operation of trimming and edging broken and low grade stock it will save its cost in a surprisingly short time.

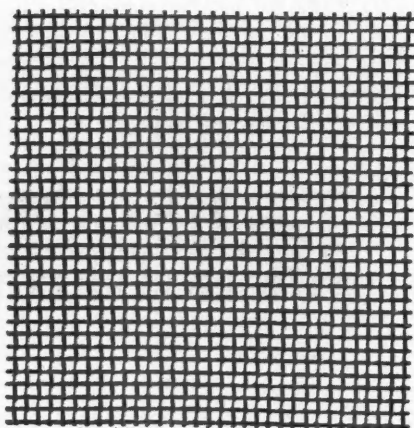
The frame of the saw rig is made of best kiln dried rock maple, is very rigid, and stands 36 inches high. The frame table can be raised or lowered by means of a heavy screw, and is hinged to give access to arbor, engine, etc., for cleaning and making adjustments. Besides the motor, the saw rig comes equipped with gasoline engine, countershaft for separate power, or no power. The one illustrated weighs about 1,400 pounds, and is reasonably priced.



### Unalloyed Copper Wire Makes Ideal Insect Screen

**F**OR insect screen cloth a standard material to use is unalloyed copper. This is more durable than the ordinary cloth made of steel or iron wire, which neither paint nor a metal coating can long protect against rust.

Illustrated is a screen made of 99.8 per cent pure copper wire that is much stiffer than unalloyed copper wire, and compares favorably with steel in strength and resiliency. Every wire used



Close-Up of Copper Screen.

is of a standard high quality, and the whole is woven on automatic power looms that turn out a symmetrical fabric, with selvage edges, free from defect, and of uniform mesh. It is made to meet all requirements: in 16 mesh heavy grade, 14, 16, 18, 24 mesh regular grade. Stock widths include cloth 18 inches to 60 inches, but as wide as 72 inches can be made to order. It has been found that cloth with large openings will not intercept mosquitoes, and the United States Public Health Service does not approve of the use of wire cloth coarser than 16 mesh. It is interesting to note that this cloth—16 mesh, .015-inch wire—has been adopted by the Government for use in the Panama Canal Zone, after tests extending over a period of three years. The price is reasonable, varying no more than 25 to 50 cents a window, and the screen cloth comes in bright or dark finish, as desired.



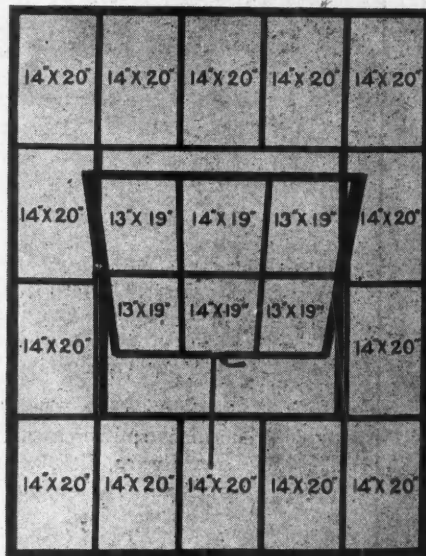
### Puttying in Steel Sash

By N. A. HARRIS

**T**HERE are many construction jobs being erected which require only a few units of steel sash. In such cases, the builder may find it more profitable to install and glaze the sash himself than to turn the job over to an erection company. Since the method of glazing this type of sash is similar to that of steel basement windows, a few suggestions on the subject may prove helpful to contractors or builders who handle this kind of work.

Steel sash units are always shipped from the factory without glass and should be glazed from the inside after they have been installed, hardware attached and the sill and jambs grouted in.

When ordering glass for sidewall jobs from your local glass house, be sure to have the lights of inside ventilator cut to proper dimensions. In the accompanying detail of a steel sash unit, it will be noted that the two center ventilator lights are 14 by 19 inches, while those on either side are 13 by 19 inches. The invariable rule is all glass lights in the ventilator which abut on the top, sides or bottom of the ventilator should be trimmed one inch along the abutting side.

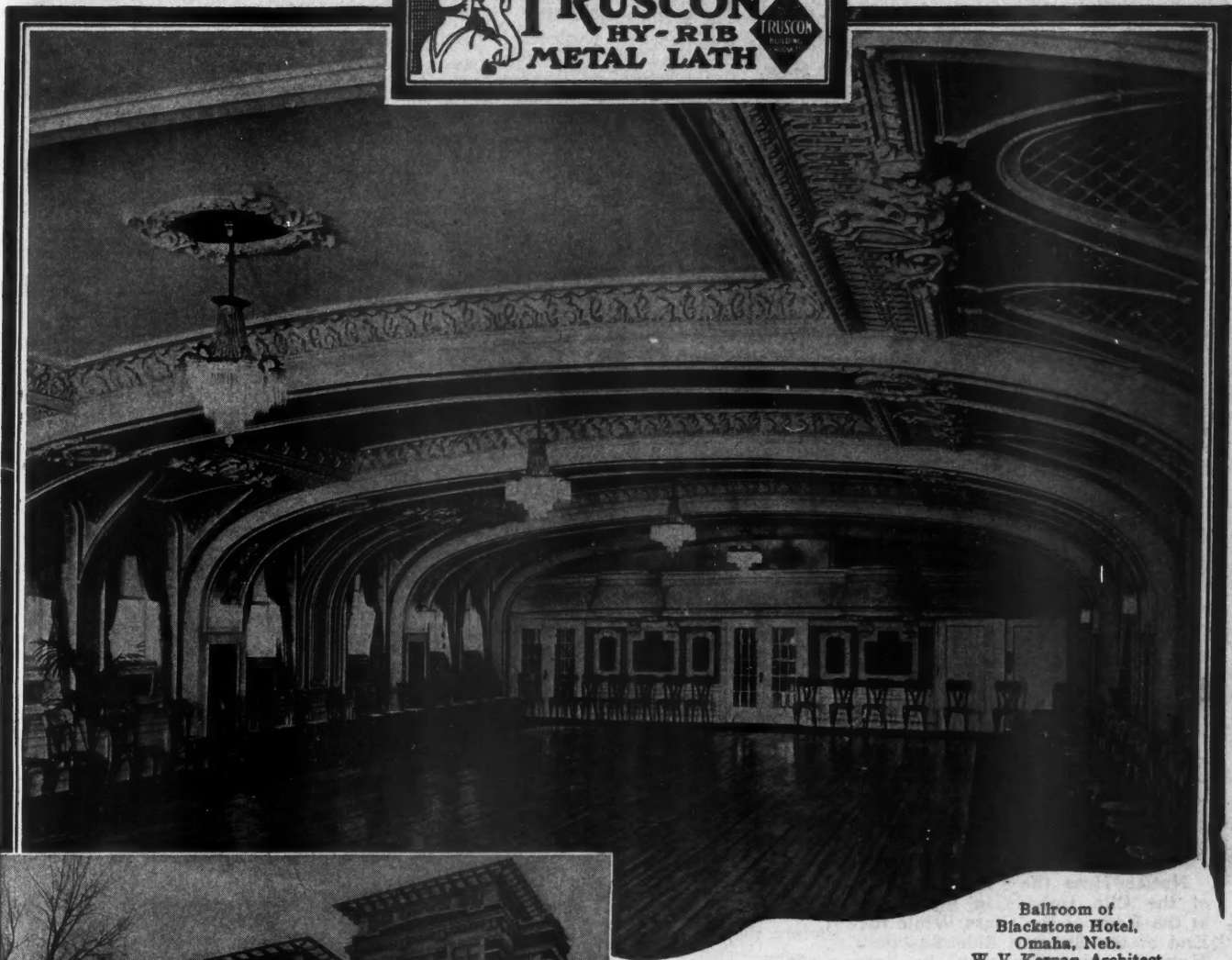


One 14 by 20-inch glass light will require approximately one pound of putty for bed and face-puttying.

**All Glass Lights in the Ventilator Which Abut on the Top, Sides or Bottom of the Ventilator Should Be Trimmed One Inch Along the Abutting Side.**

Although ordinary putty may be used if it is mixed with drier, it is much preferable to use special steel putty. The former takes longer to dry because the steel does not absorb the oils. In case you cannot secure steel sash putty from your local glass house, it can be obtained from any steel sash manufacturer in 25-pound, 50-pound, or 100-pound tubs.

Remember that all steel sash should be bed-puttied before the glass is put in. When this is done, press the glass firmly in place and scrape off the bed-putty that squeezes out on



Ballroom of  
Blackstone Hotel,  
Omaha, Neb.  
W. V. Kernan, Architect



Exterior Blackstone Hotel, Omaha, Neb.

Soundproof qualities of partitions are essential to the successful operation of the modern hotel. Truscon Hy-Rib Metal Lath assures a soundproof, fireproof, crackproof wall. There is genuine economy and satisfaction in its use.

## Permanently Attractive Interiors

The lasting impression of a fine interior goes a long way towards enhancing the reputation of its designer. A building to be a success from both an architectural and owner's standpoint must be permanently attractive.

Where Truscon Hy-Rib Metal Lath is used, there is an assurance of a permanent, fire-resisting, economical structure. The elimination of plaster cracks and the effective use of ornamental plaster work for cornices, balconies, columns, arches and ceilings are some of the reasons why Truscon Metal Lath is so widely used in structures all over the country.

The Truscon Metal Lath Data Book is brimful of useful and interesting information. May we send you a copy?

# TRUSCON STEEL COMPANY

## YOUNGSTOWN, OHIO

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

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

the outside of the glass. This can be used over again.

When the glass is in place, insert the glazing clips, which come with the cam handles and other hardware. These clips consist of small springy wires shaped like the letter "U" that are used to hold the glass securely in place.

Imbed the "wiggly" side of the clip in the putty at the edge of the glass. Hold the straight side of the clip against the steel bar and spring down its end until it snaps into the hole in the bar provided for it. Two clips should be used in each side of each light. When glazing the ventilator lights, insert a clip at the top and bottom in addition to those used at the side. Turn the clips upside down when inserting

them on the left side of the glass light. Just remember that the "wiggly" side embeds in the putty, next to the glass. Notice the illustration showing the glass, bed putty and the glazing clip in place.

Then apply enough face putty to cover the clips and make a nice, workmanlike finish. Remember not to unlock the window until the putty has thoroughly dried, which takes longer for steel sash than wood. Wood absorbs the putty oils and allows it to dry, while steel sash must dry by evaporation.

Steel sash are given a dip coat of red paint before they leave the factory. This is only intended as a protection to the windows

while in transit. Rough handling in cars and on trucks very often scrape away the paint and leaves the steel exposed. It is recommended that all windows be painted after they are installed in the building. This may seem like a useless expense at the time, but it pays for itself in the protection it provides. This painting is usually done after the sash is up and before glazing.

The glazing clips for basement windows will be found in a little sack tied to one of the muntin bars of the sash. They are exactly like those used on sidewall units and are inserted in the same way. Bed-putty must also be applied before setting the glass.

Some builders have other ventilators glazed by the dealer and delivered on the job with other sash. It is a simple matter to remove the unglazed ventilators and insert the glazed units. In this way much of the chance of breakage is eliminated that might result if the ventilators were glazed on the job.

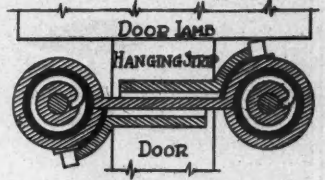


### The Latest in Spring Hinges

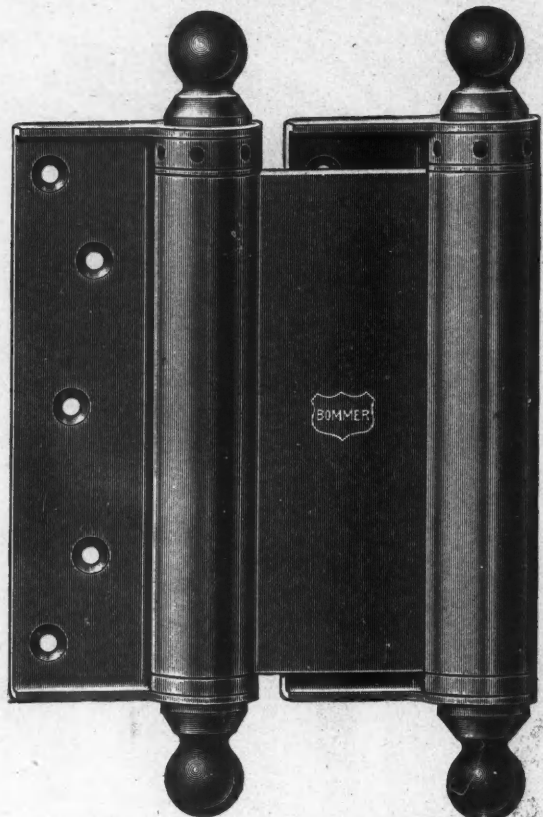
A VERY noticeable improvement has been made in double action three-leaf type spring-butts hinges. The illustrations herewith show the finished hinge itself and the details for hanging. In this double action spring hinge the barrels and their connecting-plate are integral and made of a thick, solid, strong plate of metal of full and even thickness throughout, formed into a contour giving great sur-

plus strength. The web and barrels are made much heavier than heretofore and the barrel itself is much longer. The old type hinge was formerly made of several pieces and a weakness sometimes developed where the barrel joined the web. This has been definitely overcome.

The springs are of large diameter and unusual length, made of the best oil tempered steel wire, have great resilience and power and never go lame. The raised edges of the flanges serve to indicate the depth of the mortise, and because they have a door-aligning mark on the upper and lower edges of each flange, these hinges save considerable time for builders, especially when double acting doors are hung. With these hinges the door can be opened all the way and fastened back to the wall.



The Barrels and Their Connecting Plate Are Integral and Made of Strong Metal.



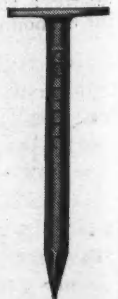
Spring Hinge of Improved Pattern.



### New Roofing Nail Has Large Head

ANNOUNCEMENT has been made by an Illinois nail firm that it has added another special roofing nail to its list. It is a nail for roll roofing, roofing paper, etc., with an extra large head and a small shank. Heads run from  $\frac{1}{2}$  to  $\frac{9}{16}$  inch; shanks with numbers 10, 11 and 12 gauge wire; and all lengths up to 3 inches.

It is claimed that the small shank allows quicker work on the roof, eliminates the danger of split roof boards and at the same time makes such a small hole that the job becomes more weather proof. The extra large head does much to correct the evils of too flexible roofing. The count per pound is considerably more than that of ordinary large head nails with heavy shanks. This nail is being made in three grades—polished, galvanized and zinc coated.





**DAVID KLAGER & SON**  
*Builders*  
 25 CHELTENHAM DRIVE

BUFFALO, N. Y.  
 December 14, 1923

Detroit Steel Products Co.,  
 Detroit, Mich.

Gentlemen:

You will be interested to know that we have just completed fourteen houses in which Fenestra Steel Basement Windows were used.

Our experience with them in this work was highly satisfactory, particularly when we found that the cost of using Fenestra windows was no greater than wood.

Very truly yours,

KLAGER & SON

Per H. L. Klager  
 25 Cheltenham Drive

## Low First Cost Low Installation Cost

Builders familiar with the remarkable advantages of Fenestra Basement Windows are always surprised on learning their low cost. In spite of the fact that they are made of solid steel, that they admit 80% more light, that they are fire-resistant and that they last as long as the building, Fenestra Basement Windows cost little if any more than old-fashioned wood windows.

The first cost of Fenestra windows ranges (depending on the locality) from a little less to a trifle more than wood windows. The installation cost is always much less, because a Fenestra window can be quickly installed by one man—a mason—while a wood window requires the time (and the wages) of a mason, a carpenter and a painter.

Fenestra Basement Windows add to the value and improve the salability of any house in which they are used, without adding to the cost. Hundreds of builders have found this to be true from actual experience. Why not let them help you sell the houses you build?

DETROIT STEEL PRODUCTS COMPANY, B-2260 E. Grand Boulevard, DETROIT, MICH.

# Fenestra

## BASEMENT WINDOWS

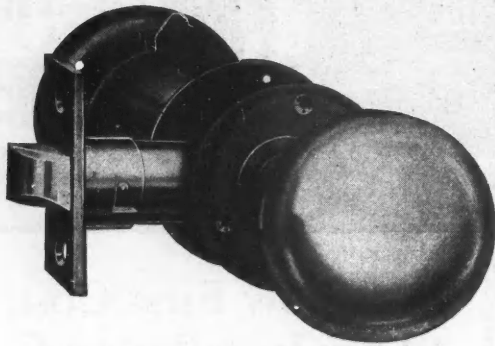


WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

### No Mortising for This Lock

THE outstanding feature of a new tubular lock recently placed on the American market is tubular construction that eliminates the necessity of mortising and gouging to fit, as is the case with the ordinary lock. With this tubular lock, and latch, only four holes need be bored—the lock and latch can then be instantly set. A very ordinary mechanic can install four of these tubular locks per hour.

Due to its ease and rapidity of installation, tremendous savings in time and labor result from their use. Heretofore, setting locks has been a slow, painstaking job calling for



No Mortising Needed for This Lock.

the best mechanics—with the tubular lock, perfect fitting can be done by ordinary mechanics in a fraction of the time formerly required.

An examination of this tubular lock reveals extreme simplicity and unusual cleverness of design. There are but few parts, designed and fitted to insure freedom from trouble.

Both latch bolt and knob have positive acting compression springs which are practically indestructible. This gives a much better action than any flat spring possibly could.

Latch bolts and hubs of cast brass. The latch bolt is longer than that used in the ordinary lock. A slight shrinkage of door and the old style latch will fail to hold, whereas this latch bolt provides for a reasonable amount of shrinkage.

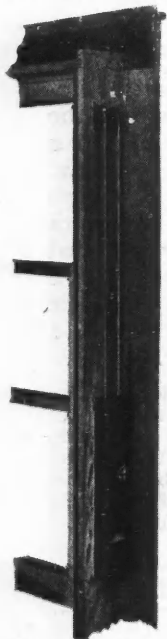


### An Easily Installed, Efficient and Accurate Sash Weight

HERE is an easily installed, efficient and accurate sash weight, the use of which enables a quick and accurate balance of any window with the use of two weights in place of four of the old style. The placing of ½-lb. or 1-lb. counterbalancing units on each weight as may be necessary means that the sizes of the larger units, plus these, are all that contractors need to buy for residence windows. These units are 3½ lb., 7 lb., 10½ lb., 14 lb. and 17½ lb., and larger units than these for office building installation, etc., can be obtained as required on the same plan of assembly.

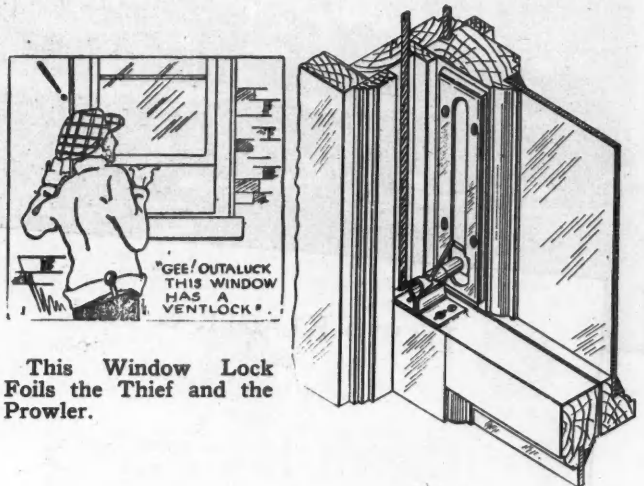
Over 50 per cent of the labor installation is saved, about three feet less cord on each window is required, and the pulley arrangement through which the cords pass assures longer cord life and better balance for both sashes than can be obtained otherwise.

**Method of Installing New Sash Weight.** Notice that one weight and one cord serves both sashes. Half and one-pound balancing units may be used with weight as necessary to adjust different sashes.



### Windows Are Locked, Yet Can Ventilate by Use of This Device

HERE is a lock contrivance which is attached to the window sash to hold the windows open in any desired position. It cannot be forced from the outside, and it removes one prime cause of worry in many localities, where one may wish



This Window Lock Foils the Thief and the Prowler.

to leave the windows open at night, and yet be secure against night prowlers.

The illustration shows how the device bolt pin locks the window. Obviously, if one wishes a window open just a little and fixed so that burglar could not worm his way in from the outside, this would hold the window against any forcing short of actually breaking in the glass.

In addition to its advantages on the score of security, it clamps the window against rattling, and is out of the way when the windows need cleaning.



### New Folding Rule Has Unusual Strength

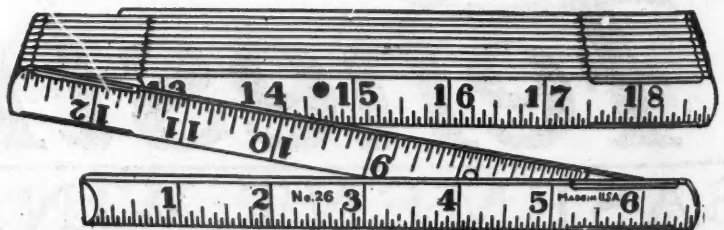
THIS folding concealed-joint rule is, because of its unique construction, probably the strongest and most durable folding rule. It is made of selected, seasoned, flexible hard wood. In the special joint the wooden sections are not weakened by boring at the ends to fit on clamps—a strong point in favor of these folding rules.

The solid brass patented joint makes this folding concealed-joint rule superior. Each joint consists of two parts only, made of solid spring brass. Each part has strong prongs, pressed into wood, making it doubly secure. Through the use of solid spring brass, grinding is absolutely eliminated. There are no springs to rust or break—nothing to get out of order.

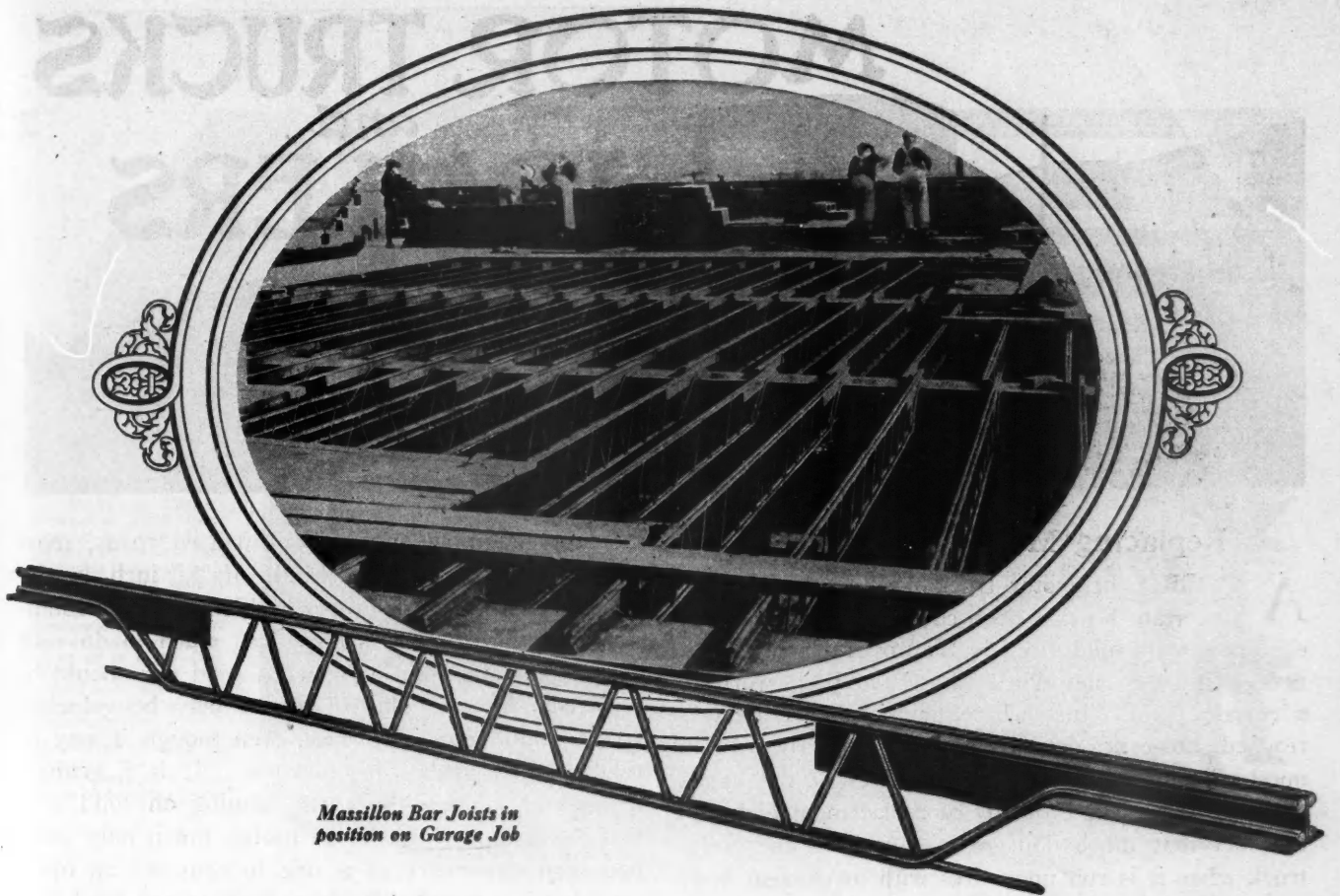
These rules come in all sizes from 3 feet and up and are marked in yellow or in white as desired.



Detail of Joint.



Folding Rule of Great Strength and Long Life.



*Massillon Bar Joists in position on Garage Job*

## Use Bar Joists for Garage Floors and Roof

Garages often house property valued at half a million dollars. Along with this valuable property are stored hundreds of gallons of highly inflammable fuels and oils. Consequently fire safety is of utmost importance in garage design.

For garage floor construction specify Massillon Bar Joists. You will be impressed with their scientific bridge-like design and the fact that from 20 standard sizes you can select joists to meet every span requirement. No cutting is necessary except where joists extend into outside walls far

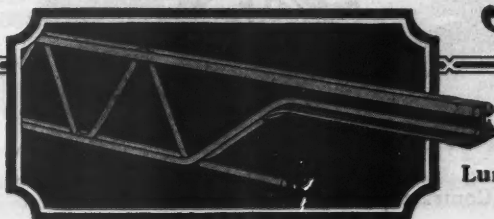
enough to interfere with face brick.

Unequalled opportunity is afforded for the efficient, economical installation of piping and conduits. The joists are light in weight, rugged, easily handled and sustain the imposed loads with absolute certainty.

Massillon Bar Joists are sold by thoroughly reliable concerns located in all principal centers. Write us for complete information and safe loading tables.

**The Massillon Steel Joist Company**  
Massillon, Ohio

**M A S S I L L O N**  
 ● **BAR** PATENTS PENDING **JOISTS**



Also sold by Building Supply Dealers,

Lumber Yards and Hardware Stores

# MOTOR TRUCKS and TRAILERS



## Replacing Motor Truck Tires

A POLICY of motor truck use that has a most important bearing upon costs where vehicles are equipped with solid tires is that of replacing these tires with new ones when they have been worn to a certain point. Just where or when this point is reached, however, depends entirely upon the tire in question and the treatment it receives at the hands of the driver. The economy of replacement is due to the fact that much damage is caused to the entire truck when it is run upon tires with insufficient body or resiliency. Any builder who has ever run a motor truck for any length of time with thinly worn solid tires knows that such truck parts as the springs, axle centers, spindles, steering arm and rear axle shafts are seriously affected in this way. Unnecessary and very destructive strains are inflicted, which, in turn, tend to shorten the life of the entire truck, if the operator fails to replace his tires when their life is gone. It is generally recommended that a truck which is operated on cobblestones or rough pavements should have its tires replaced when they have worn down the rubber to within one inch of the steel base. Under

the best conditions of smooth surfaced roads, most authorities agree that a width of  $\frac{3}{4}$  inch is the minimum required for proper cushioning. The condition of the rubber, of course, has much to do with determining the point at which a solid tire should be replaced, since, if abused, a tire may be valueless from a standpoint of service, even though it may be two or three inches in thickness. It is a genuine temptation to keep the truck running on solid tires that are worn too thin to be useful, but it only takes one such experience as a rule to convince an operator that it is merely "Robbing Peter to pay Paul."



## Why Overloading Does Not Pay

EVERY authority on motor truck operation agrees that the most short-sighted economy in which the builder can engage is that of saving in today's hauling costs by overloading his trucks.

Most builders who overload their trucks do so more through a lack of understanding as to its effect on operating economy than they do through a desire to get "something for nothing." In other words, there are few truck purchasers who deliberately buy a truck with the idea of overloading than there are those who buy, say, a two-ton truck, haul two-ton loads with it for awhile, then, when a rush season comes along, put on an extra ton or two and not noticing any perceptible difference in the truck's performance, make the practice a permanent policy. Where loads are more weighty than they are bulky, as in the building business, it is only natural that the operator should feel that carrying capacity is being wasted if the load is confined to the truck's rated capacity.

The effects of overloading as a deliberate policy may be summed



Special Bodies and Quick Unloading Devices Are Used by Lumber Dealers and Contractors.

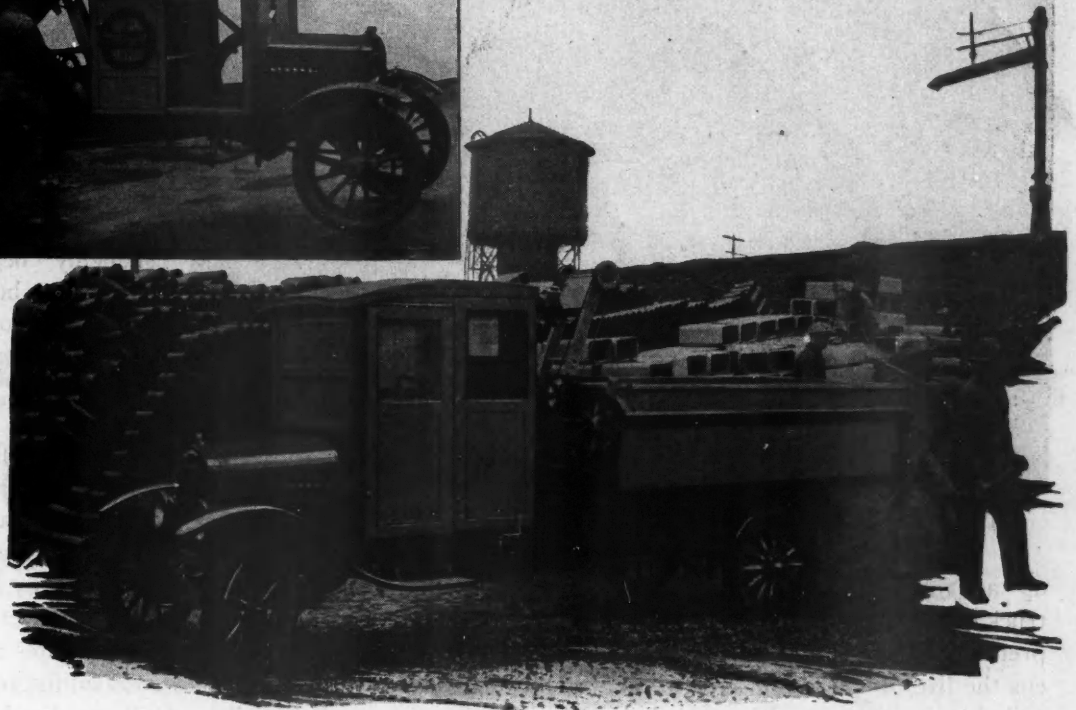




There are thousands of Building Supply concerns that have found in the Ford Worm Drive One Ton Truck a haulage unit that meets their every need.

Because of the light yet sturdy construction of a Ford One Ton Truck, the operation and upkeep costs are surprisingly low.

Another point to keep in mind is the fact Ford Service is to be had everywhere.



## Fordized Building Supply Delivery at 6 Cents a Mile

Here is why the Columbus Consumers Supply Company, dealers in building supplies in Columbus, Ohio, prefer Ford One-Ton Trucks for delivery work.

Their Ford One-Ton Trucks run 250 days a year, each averaging 11,250 miles, hauling 2,500 tons in 2,000 round trips at an average operating cost of slightly over 6 cents a mile, which is remarkably low for this work.

The price of a two-ton truck operated

by this concern will pay for seven one-ton Ford trucks. Because of greater speed and mobility each Ford will deliver as much tonnage as the larger unit, and at half the cost.

Standardized prices of building supplies have made competition in this field a matter of rapid and economical delivery. For this reason Ford Trucks yield greater returns for the capital invested than any other haulage unit.

See Authorized Ford Dealers for further facts about this and other examples of Ford operation.

*To Fordize is to Economize*

# Ford

CARS · TRUCKS · TRACTORS



The Motor Truck Has Proved Its Case in Many a Lumbering Camp.

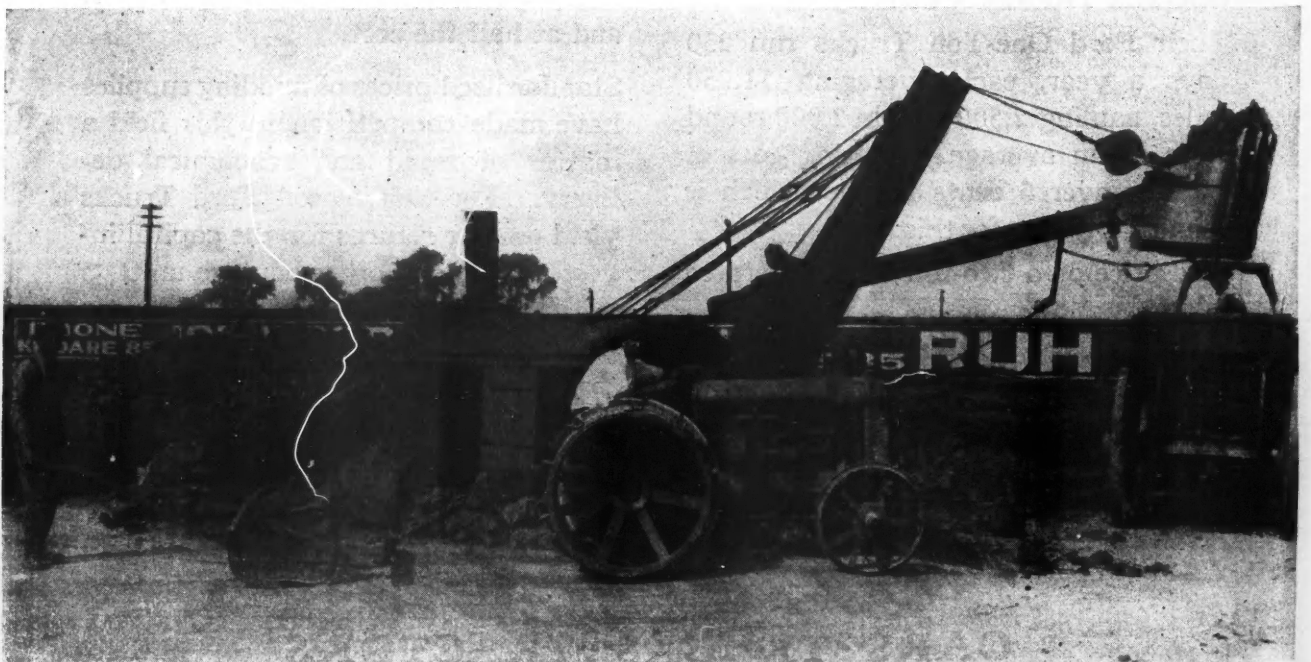
up as follows: (1) The constant strain on the truck's motor in excess of its rated capacity causes premature wear on the various parts and shortens the life of the motor as a whole. (2) Both body and chassis are stressed beyond their natural limits of durability. (3) The effectiveness of brakes and other safety factors is reduced, thereby involving risk of accident and endangering public lives. (4) Springs are overstressed, tending to cause them to settle and lose resiliency. (5) Tires are compressed beyond their elastic limits, lose their resiliency and deteriorate rapidly.

In using trucks for the first time owners may be

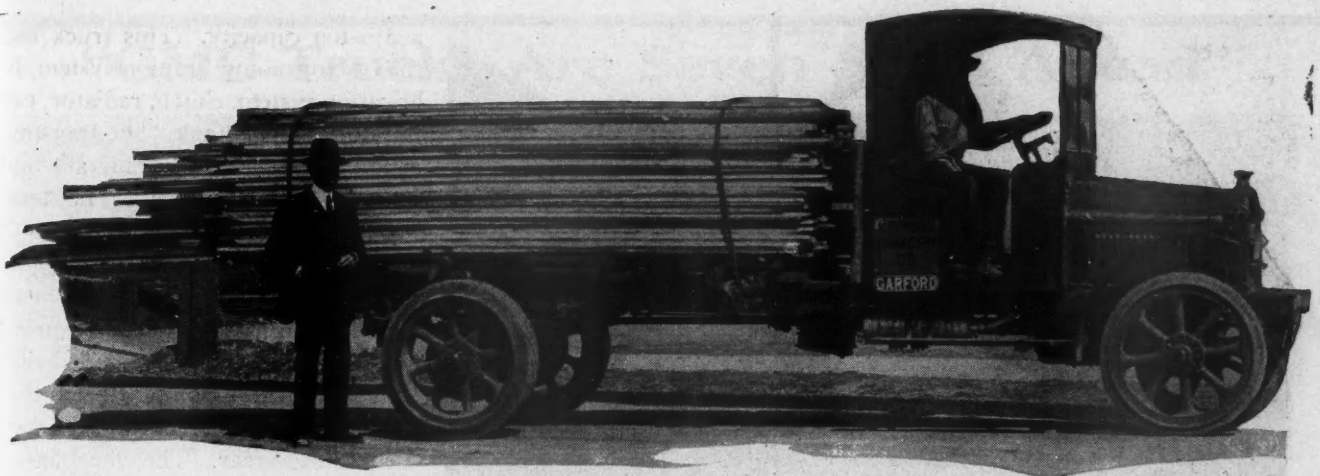
has neither truck nor money.

A good example of the effect of overloading is the case of a builder who operates a 3½-ton dump truck. In this instance overloading resulted in the loss of one-half gallon of oil per day from the oil pump that drives the hoist. It was proved that the trouble was due to gross overloading because when a new hoist was installed and only capacity loads were carried no further trouble was experienced.

A more serious case, caused by overloading, was that of a contractor owning two 5-ton dump trucks of a well-known make. The owner of the trucks thought he could make more money hauling eight tons per trip.



This Portable Power Operated Scraper Busy on Excavating Job in Chicago.



## Deliver Heavy Awkward Loads Of Lumber Quickly

The Garford shown above is one of two operated by the Heywood Lumber Company in delivering lumber about Alameda County, California.

It is equipped with a 4-roller lumber body with four binders and head board. Loading is simple, and varying lengths which are awkward to handle are quickly and easily transported. Similar equipment has proved the satisfactory, economical means of lumber distribution for many concerns. Garfords have plenty of power for unusual ordeals, and the steady, dependability of operation to keep the

truck in constant service month after month, with minimum up-keep cost.

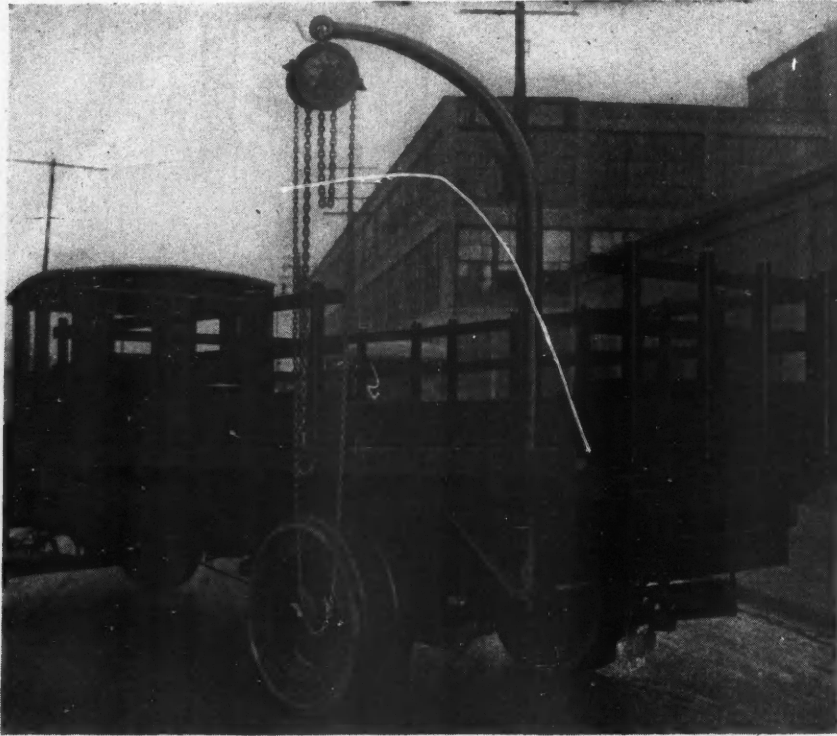
Garford Engineers can recommend and provide units designed and equipped for your specific haulage conditions. Periodical inspections by Garford Service Inspectors insure long, satisfactory performance on the low-cost ton-mile basis. Write for particulars.

**The Garford Motor Truck Company, Lima, Ohio**

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While one of the trucks was descending a hill with an eight ton load, something broke and the truck ran into a large boulder, was almost completely wrecked, and the driver was severely injured. The truck then caught fire and burned. The owner was forced to go out of business because of the accident and he acknowledged that overloading caused it all, not poor material or workmanship. The truck was not built to withstand such abuse.



### Heavy Duty Truck Uses Tractor Engine

**W**HEEL tractors equipped with heavy rubber tires have come into general use among building contractors and material dealers for hauling. Contractors also are using the crawler type tractors on excavation work. The engines of these machines are built to give a maximum of power and usually are run at slow speeds.

With the idea in mind that the tractor engine may serve a double purpose there has been placed on the market a truck chassis that employs the Fordson tractor power plant. Thus the owner of this type of tractor has the tractor and when it is not in use may utilize the engine in a motor truck, thus saving the cost of an engine.

Shown in the illustration is a dump truck with a 2½-ton rating and

a 3½-ton capacity. This truck uses the tractor motor, ignition system, lubrication system, clutch, radiator, carburetor and fuel tank. The transmission and rear axle assembly are built into the truck chassis. The truck develops a speed of from 20 to 22 miles an hour.

The chassis is constructed of heavy channel steel, with strong springs and the artillery type wheels. The tires are of the solid pressed type, 36 by 4 inches in front and 36 by 8 inches in the rear. The wheel base is 144 inches and the chassis weighs 5,100 pounds.

With this combination—the truck chassis and the Fordson power plant—the owner is provided with a speedy, strong truck at a considerable saving. The work of transferring the power plant from the tractor to the truck requires only a short time by the aid of a block and tackle. Experts have accomplished the change in 17 minutes. The bed for the power plant on the truck is so designed that the power plant fits into it snugly and is easily fastened in place. The transferring of the engine back to the tractor requires only the same length of time.



### Curfew Wakes 'Em Up

**T**HEY ring the curfew at Harrah, Oklahoma, every night at 9 o'clock, but it wakes too many people up, so they will probably have to stop it. A body of citizens protesting against it have registered a complaint with the county attorney. They say that every night, after the village has settled down for a good rest and the lights are turned out, the clanging of the curfew rouses the citizenry from its slumbers and the situation is becoming well-nigh unbearable.



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Full information on GMC trucks with detailed explanation of exclusive GMC features and what they mean to owners is given in an illustrated booklet "Seven Steps Ahead". Send for one of these books and see how GMC can make and save more money for you. Just fill and send in this coupon and your copy will be mailed immediately.

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## Six Lessons from the Japanese Earthquake and Fire

(Continued from page 142.)

construction has failed, the most serious damage that I have observed being in the case of the seven-story Hoshi Drug Co. Building, where the long span concrete girder over the main show window, as well as some of the interior columns, are cracked. The design of this building, however, violates Lesson 2 in that the front, up to the second floor level, is nearly all glass and has not sufficient strength to properly transmit the horizontal forces above referred to. There are two exceptional circumstances connected with the design of the Hoshi building which no doubt contributed to its partial failure. First, the building was originally built four stories high and, several years later, raised to seven. It was built in three separate sections, not strongly connected together below the fourth floor, and in spite of all this, the building successfully resisted the earthquake shock and the subsequent fire and can be repaired and put back into use at a comparatively small expenditure. I understand that the building is to be destroyed. In my opinion, this is justifiable only because it is in the way of the city planning scheme and not because the building is unsafe.

In Tokyo, the six-story Okawa Tanaka Building, the five-story Kuhara Mining Co. Building, the four-story Seiyukai Building and the six-story Toa Milling Co. Building, as well as many others, all successfully withstood the shock with no apparent damage. In Yokohama, the five-story Y. M. C. A. Building; the four-story Russia Asiatic Bank, the four-story Iwai & Co. Building, the three-story Kotobuki School Building and several others successfully withstood the shock, the only damage being from fire. The floors of all these buildings were of hollow joist construction, the average dead weight of which is about sixty pounds per square foot. The buildings of the Nippon Electric Co. and the Tokyo Electric Co., as well as the Nagai Building, all of which failed, violated the principles of both Lessons 1 and 2, in that the floors were heavy, averaging perhaps one hundred and twenty pounds per square foot in weight, while the walls were either of glass or soft brick work.

Following the reasoning above outlined, and keeping in mind the method by which buildings are destroyed or damaged by an earthquake, from observations of the buildings that stood as well as those that failed:

**Lesson 3. Large open floor spaces unsupported by walls and partitions should be avoided wherever possible and, when necessary, special precautions should be observed in the design of the walls and columns.**

The reason for this is that when floor spaces are large it is difficult to provide sufficient wall strength to move the weight of the floors during an earthquake. The behavior of the Marunouchi Building during the earthquakes of 1922 and 1923 admirably illustrates this principle. In 1922 the building was under construction and all of the interior partitions that had been built were made of hollow tile, which may be considered almost worthless for the purpose of resisting earthquake shocks. Practically the whole work of moving the weight of the vast expanse of floors had therefore to be done by the steel columns and the outside walls, which were not strong enough for this work, and considerable damage resulted. The building was subsequently strengthened by removing the hollow tile partitions and substituting partitions of concrete and cement plaster,

by direct steel bracing and by strengthening the columns. The effect of this was to reduce the large floor areas into small units, each supported as to horizontal movement by strong partitions. This process so greatly strengthened the building that the damage was less during the 1923 earthquake than was caused by the much smaller earthquake of 1922.

The wrecked buildings of the Nippon Electric Co., the Tokyo Electric Co. and the Yokohama Rubber Co. all come under this category. All of these buildings had large expanses of heavy floors and roofs, with only columns to move all of this weight horizontally during an earthquake. In future, owners of such factories will have to arrange their manufacturing processes so as to allow their floor space to be cut up into smaller units by strong partitions. In this way only can safety be assured.

In the case of steel frame buildings, my observations lead me to believe that, for the purpose of resisting horizontal shocks, the design of the steel columns is of secondary importance and that, regardless of whether the steel columns are strong or weak, practically the whole of the work of resisting the horizontal shock (that is, of moving the upper portion of the building when the foundation moves) must necessarily be done by the masonry walls and not by the steel columns. The following reasoning supports these observations: Steel columns, no matter how strong, always

have a certain amount of elasticity, and when a (vertical) column is suddenly called upon to resist a violent horizontal movement, it must necessarily deflect more or less, the amount of the deflection depending on the stiffness of the column. Now, no matter how small this deflection is (if there is any deflection at all), the work of resisting the shock—that is, of moving the upper portion of the building, must necessarily be at once taken up by the masonry walls because the masonry walls are in intimate contact with the steel columns on all sides and are always, necessarily, stiffer than the columns. Once more, observation

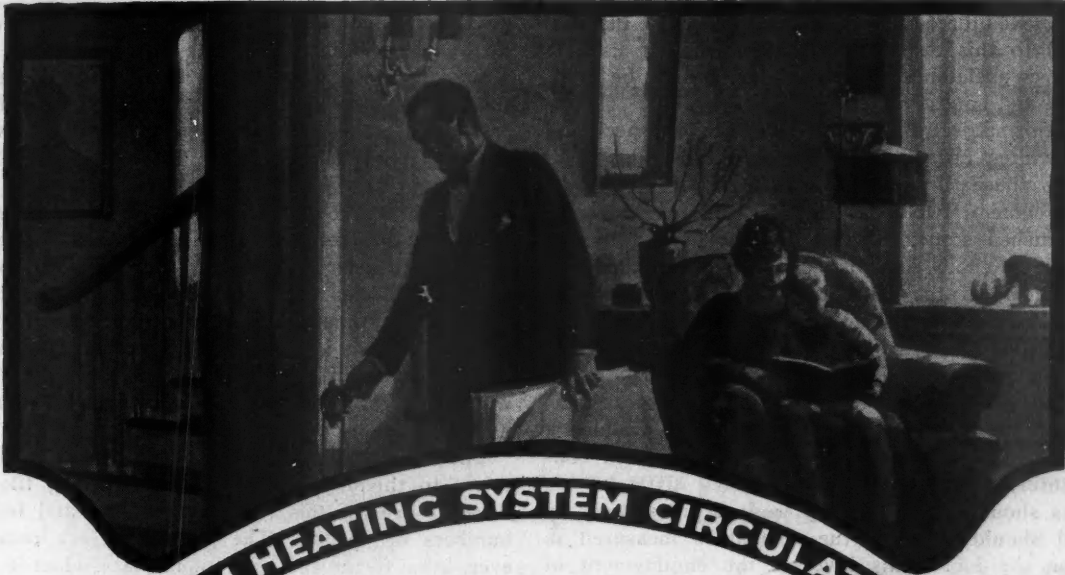
**Reinforced concrete walls, where well executed, came through with practically no damage, as witnessed by the fact that in Yokohama, of all the buildings that now remain standing, at least 75 per cent are of reinforced concrete.**

**When we consider that the practice of measuring cement by loose volume has been the rule rather than the exception in Japan, we marvel that reinforced concrete came through the recent ordeal with the remarkable record that it did.**

supports theory. The Nippon Oil Co. and the Nippon Yusen Kaisha buildings have columns as strong as any I have ever seen, having been specially designed to resist earthquakes, but the walls of these buildings suffered more damage than did the walls of the Tokyo Marine Insurance Co. Building, the Marunouchi Building and others in the same vicinity which were designed and detailed in a much lighter manner. The extent of the damage seems to depend entirely on the strength of the walls and not on the design of the structural steel.

Observation on the behavior of different kinds of wall material seems to show that well laid stone suffered very little—witness the Mitsubishi Bank, the Industrial Bank and the first floor of the Marunouchi and Nippon Oil buildings. The behavior of brick walls seems to depend entirely on the workmanship and quality of the brick and mortar, and it is significant that old brick work stood much better than new, showing how the quality of workmanship has deteriorated in recent years. In Yokohama practically every brick structure came down, and large numbers of people were killed as they collapsed. In Tokyo, where the shock was less severe, brick buildings generally stood if of first-class workmanship. Terra cotta suffered severely, as did hollow tile in partitions.

In my opinion, architects should design walls to secure the maximum of strength with the minimum of weight, always bearing in mind that every pound of weight must be moved by the strength of the structure with every earth-



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quake shock. Reinforced concrete seems to be the material best adapted to this exacting condition, whether used in wall bearing or skeleton construction, but it must be properly designed and honestly executed.

While on this subject a word on the method of specifying concrete mixtures may not be out of place. The usual method is to specify by volume of contents, for example, one part of cement, two parts of sand and four parts of gravel or crushed stone. If measured as packed by the manufacturer, a cubic foot of cement weighs about 95 English pounds. If the same cement is emptied into a box and turned over once or twice with a spade, a cubic foot may not weigh over 75 pounds. A 1-2-4 mixture with 95 pounds per cubic foot of cement will make good concrete but a 1-2-4 mixture with 75 pounds of cement per cubic foot is very much weaker and will produce a concrete which is practically worthless in reinforced concrete structures.

Architects should always specify cement in concrete by weight and should see that the cement is measured in this way on the job. This involves the employment of honest, reliable contractors and it involves a rigid system of inspection by trained inspectors who cannot be bought on every construction job. To secure this kind of inspection it will be necessary to employ higher grade men and to pay higher salaries than has been customary in the past. To do this it may be necessary for architects to increase their scale fees. If this is found to be the case the fees should be increased fearlessly for only by so doing will the true interest of the building owner and the public be served.

I believe that many buildings which otherwise would have stood were wrecked because poor workman ship allowed failure to start at some weak column or wall, thus throwing additional strain on the adjacent parts and allowing failure to proceed progressively until the whole came down.

All this might be summarized as:

**Lesson 4. Honest, first class workmanship is of supreme importance and it is the duty of every architect, contractor and building owner to see that he gets it.**

With regard to foundations, the evidence seems to indicate that buildings on strong pile foundations received more horizontal shock than did buildings on the so-called floating type of foundation but greater vertical settlement is observed in the case of foundations of the latter type. In the case of buildings on floating foundations there is probably a considerable amount of slipping between the foundation and the earth directly beneath it, which would reduce the amount of horizontal motion in the building foundation. The crushing of sidewalks around buildings is evidence of this slipping. If this is correct, it would naturally follow that all foundations in the same building should be connected together with connections strong enough to make all parts of the foundation act and move together. This means that no buildings should be designed with isolated column foundations.

Keeping in mind the violence of the horizontal shocks, prudence would dictate that no spliced piles, that is, piles driven one above the other and connected together with dowel pins or wood splice plates, should be allowed.

Generally I would be inclined to favor the floating types of foundation whenever the character of the soil is such that this type can be used without danger of serious settlement. If the soil is not good enough for this, piles should unquestionably be used. Regardless of the type

used, the building should be designed to receive the full earthquake motion. We thus arrive at:

**Lesson 6. All parts of the foundation of every building should be connected together with connections strong enough to make the various parts act and move together.**

The partial failure of the Fifteenth Bank Building in Yokohama may be laid to this cause. All of the center columns were not connected to the outside walls and the horizontal displacement of the foundations was not uniform.

An exception to this rule is the one-story factory building for foundries and machine shops where wide spans are required for craneways, etc. To connect foundations across such wide spans is impracticable; besides connecting beams would interfere with light roofs which, if properly designed, will successfully resist an earthquake shock equal in intensity to the shock of September 1st.

The last lesson to which I desire to invite attention refers to the behavior of common roofing tile (Kawara). A great deal of this fell down, killing and injuring large numbers of people. The greatest injury occurred, however, because the tile was not in place when it was needed to resist fire and the rapid spread of the fire was due to sparks which fell on wood roofs, either partly or wholly exposed through slipping of roof tiles. The loss of life and property by fire was unquestionably many times as great as it would have been had every roof tile remained in place, and the lesson here is very obvious.

**Lesson 6. Every roof tile should be individually secured in place so that it cannot slip during an earthquake.**

The ordinary roof tile failed utterly and roof construction for dwelling houses, etc., should be revised by law to prohibit the use of the small wooden shingles that are commonly used under roof tile. Here, too, Lesson 1 should not be forgotten. Many buildings collapsed which would have stood had the roof construction not been loaded down with great weights of dried mud and heavy tile. To resist earth-

quakes and fire, asbestos tile and slate are infinitely superior to clay tile.

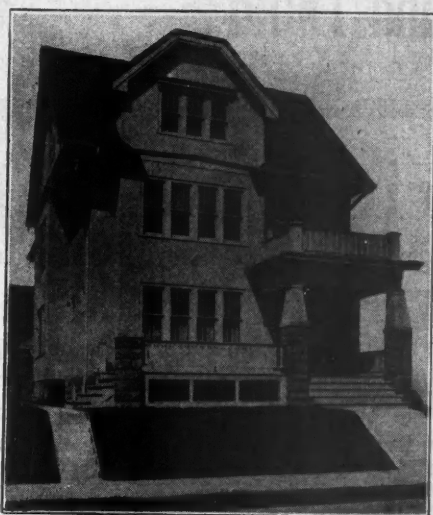
With regard to the question of the maximum height of buildings to be allowed in future, there is already a great deal of talk about limiting height to two or three stories. I regard this as unreasonable for the simple reason that buildings of all heights up to eight stories successfully withstood the earthquake forces. Many buildings only one and two stories high failed. Height, within the reasonable limit of one hundred feet already established by the building code, apparently had nothing to do with it. The proper procedure is: first, to recognize the forces to be resisted; second, to design all structure to resist these forces, and, last but not least, to see that the workmanship is of the quality planned and specified by the architect. We should recognize walls as being an integral part of the structure—not simply an ornamental dress to be hung on after the structural part is finished and make our designs accordingly. We should aim to make our structure as nearly monolithic as possible, remembering that where different kinds of material join we usually have a plane of weakness and therefore of danger. Witness the facing tiles dislodged from walls all over the city, bricks separated from the steel framing of the Palace Hotel, etc., and compare these to the monolithic Okawa-Tanaka and Kuhara Mining Company buildings. If we follow this procedure I see no reason why we should not continue to erect build-

In the immediate future, in the study of methods of design and in the drafting of revised building codes, attention is very apt to be concentrated on earthquake resisting qualities to the exclusion of other equally, if not more, important features, such as fireproofness, permanence and cost. Destructive earthquakes are rare visitors, but fire, rust and decay and the necessity of making every commercial structure pay for itself are things that are always with us and they should by no means be forgotten.



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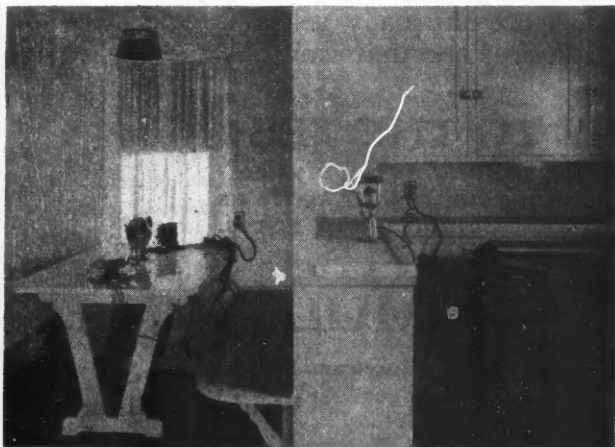
## Our Home Electrical No. 11

Smart Foreign Design Lends Itself Admirably to the Very American Idea of Complete Electrification for Convenience and Utility

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

**T**HIS month we are showing an attractive French chateau style of architecture. It is a two-story dwelling exactly square and when fitted up in the most modern electrical fashion should make a most attractive home. The first floor contains three rooms and a small porch in the rear while four bedrooms and one bath are located on the second floor.

On either side of the doorway of the main entrance there have been indicated two lighting fixtures controlled by a wall switch located inside the door. Placed right next to the switch operating the porch lights is a 3-way switch which controls the light in the lower hall, and its other station is at the head of the stairs on the second floor. This arrangement of control should always be included in an electrical installation where it

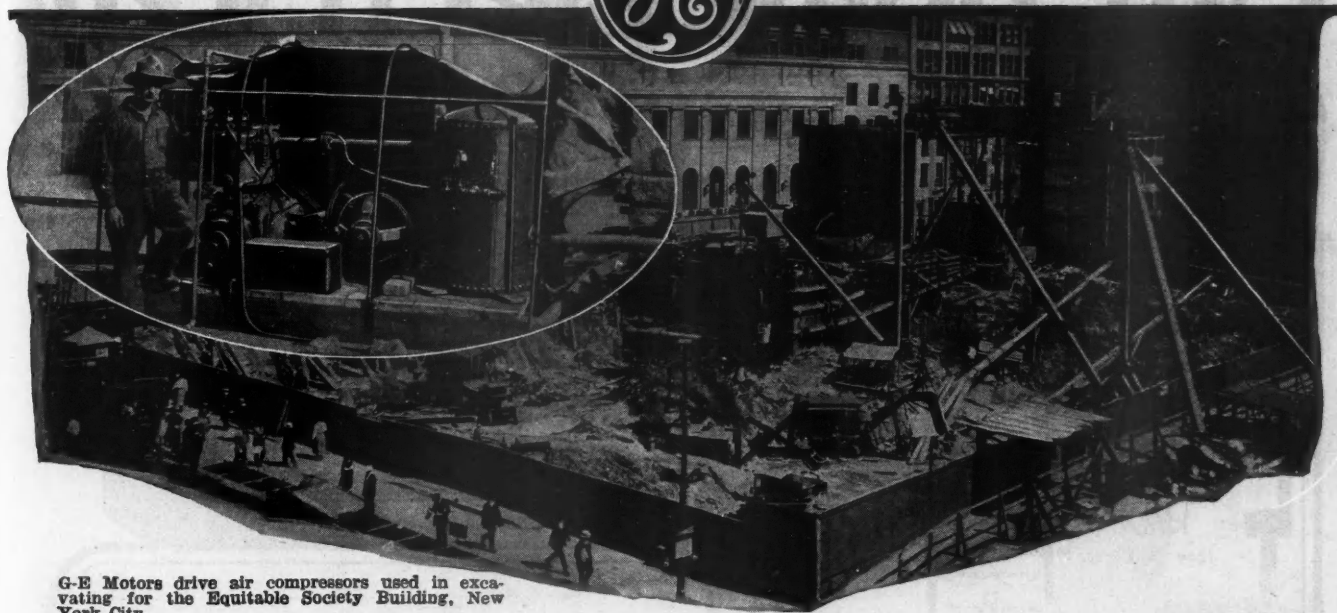


Placing the Socket in an Accessible Position.

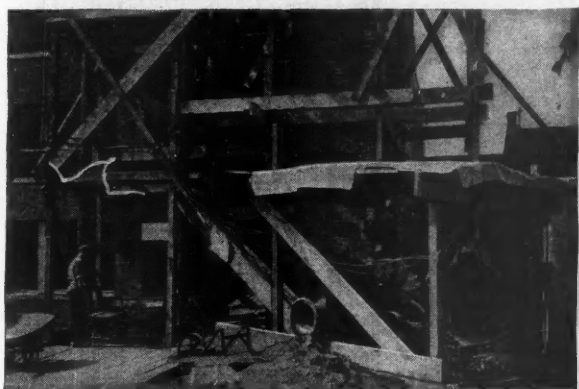
will be most convenient to operate a lighting unit from two different locations. In this particular case the hall light may be lighted and extinguished from the lower hall and from the upper one. The reason for this is obvious. A person about to ascend the stairs should be provided with light, but to come down again to put out the light in the lower hall is an unnecessary trip, and this can be avoided by the introduction of this arrangement. The same thing applies to the light in the upper hall. This can be controlled either from the lower or upper hall. In other words a person ascending the stairs, or descending, can have light on both upper and lower floors and can control the units in both places without taking any unnecessary steps.

The dining room is also equipped with this 3-way switch arrangement for the ceiling lighting fixture. In this instance, too, the introduction of this convenience is almost a necessity, certainly a splendid addition to the equipment of the room. This arrangement makes it possible to operate the lighting fixture either from the main door entering from the reception hall or from the entrance to the pantry. How many times have housewives been forced to grope their way across a darkened room to get to the other side and flash on the light. With the 3-switch, however, she can turn it on from either doorway and eliminate the necessity of crossing the room at all.

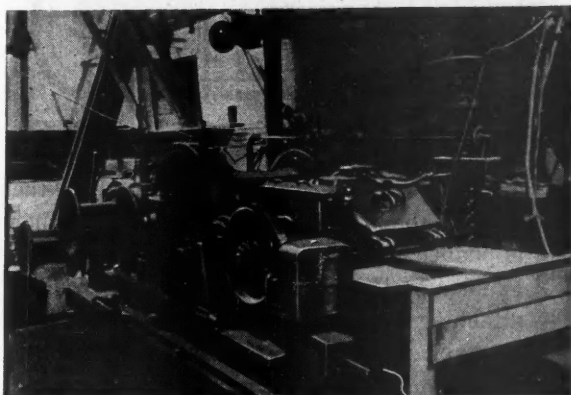
The dining room is also well equipped from the standpoint of convenience outlets, those little devices which make possible the handy use of electricity. Three duplex outlets have been provided on three sides of the room where it is most likely that furniture will be placed. It is almost impossible to indicate with any degree of accuracy just where these outlets should go until the location of the furniture has been made known. With the arrangement specified, however, sufficient means will be available for the use of electrical appliances. In the floor, too, there is an out-



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# Our Home Electrical *The Eleventh*

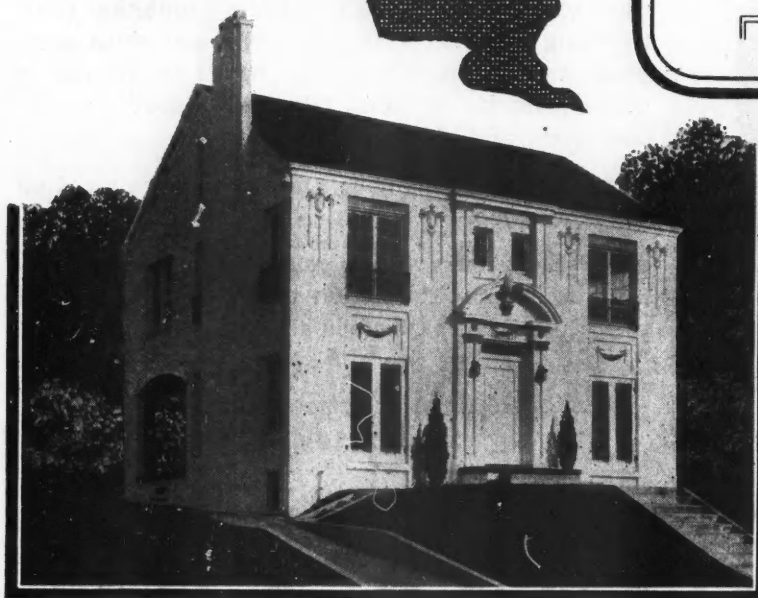
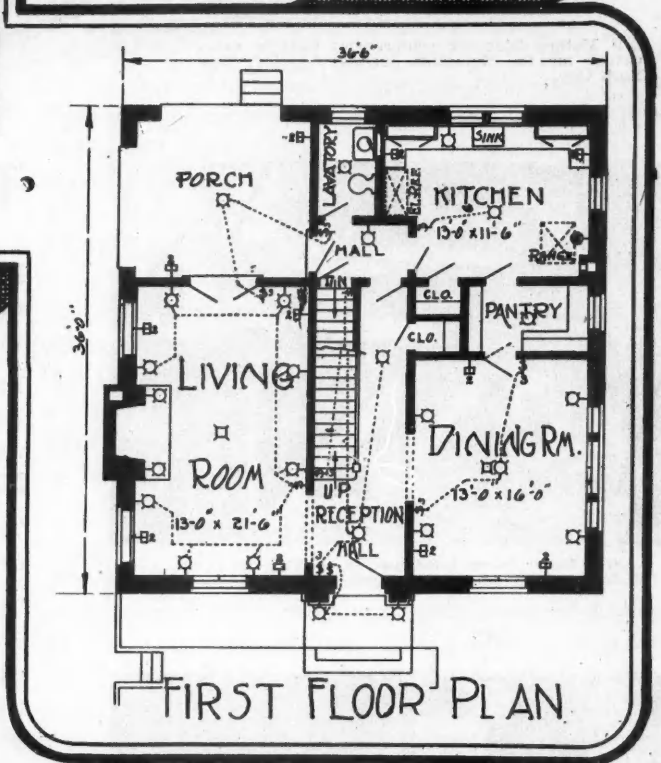
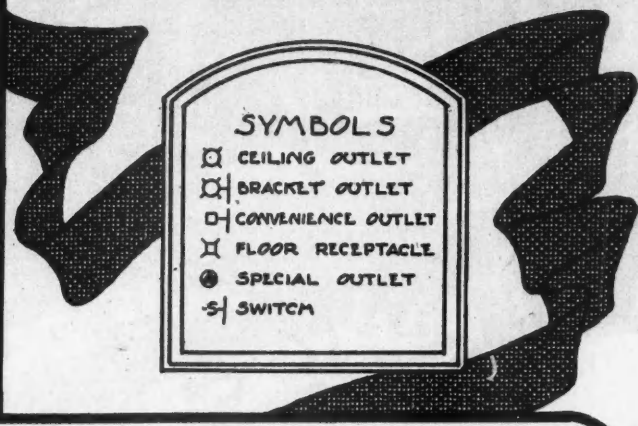
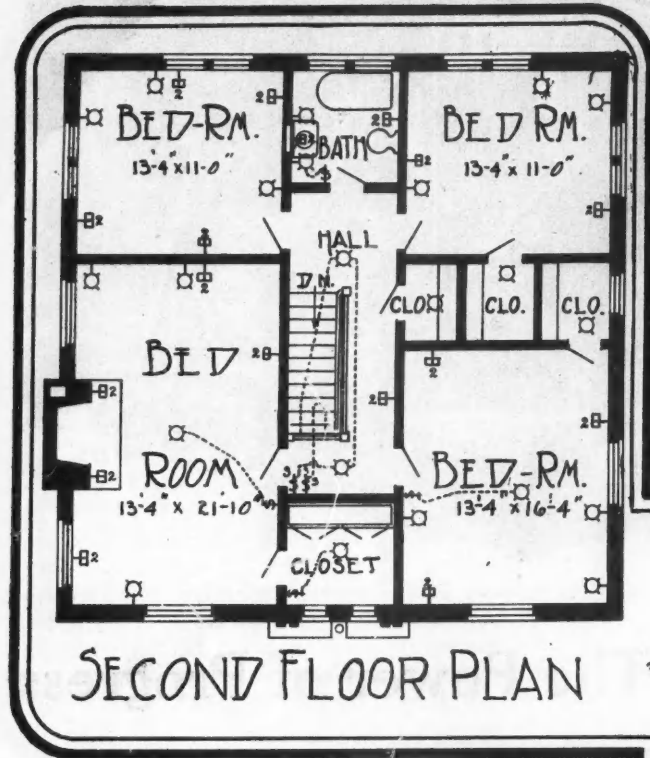
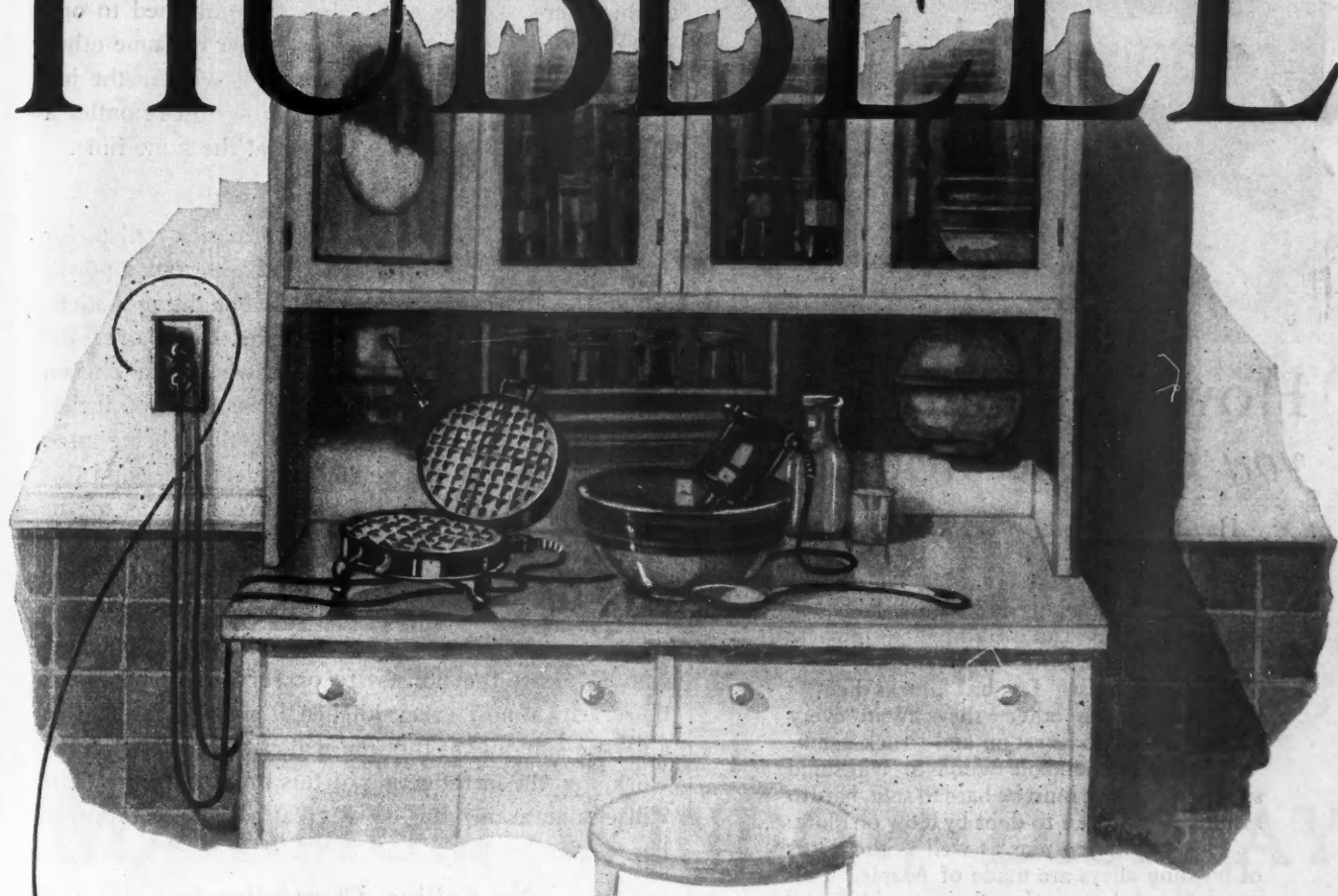


Photo and Plans of Our Home Electrical the Eleventh.

let, this one being designed for use with appliances which are generally used on the dining table, the toaster, grill or some other appliance. It is evident that this is a far simpler and more convenient method than attaching them to the lighting fixture above the table, with the resultant dangling cord, inconvenience of attaching, etc. It should be noted that in every instance with one or two exceptions duplex convenience outlets have been indicated. The reason for this is that these cost but a few cents more than the single variety, and for this additional expenditure of a few cents the occu-

# HUBBELL

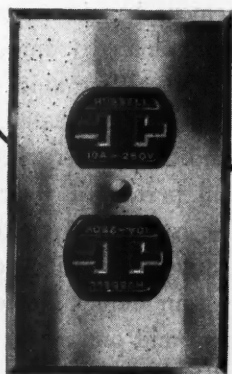


## *For the Kitchen Cabinet —a Duplex Outlet*

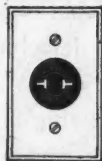
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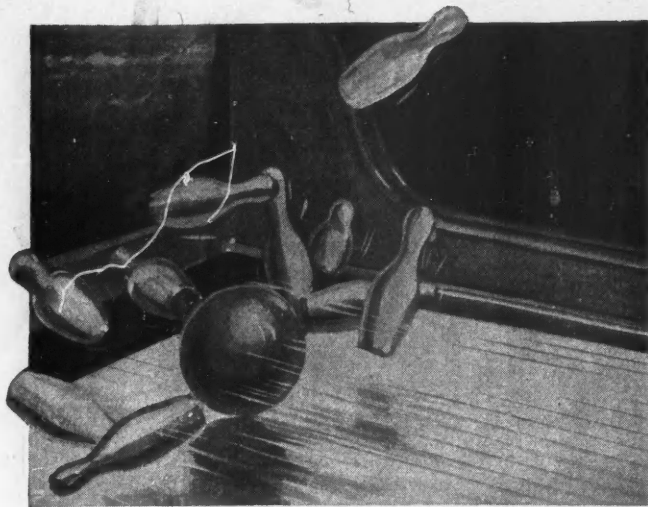
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# Floor with Maple

## Beech or Birch

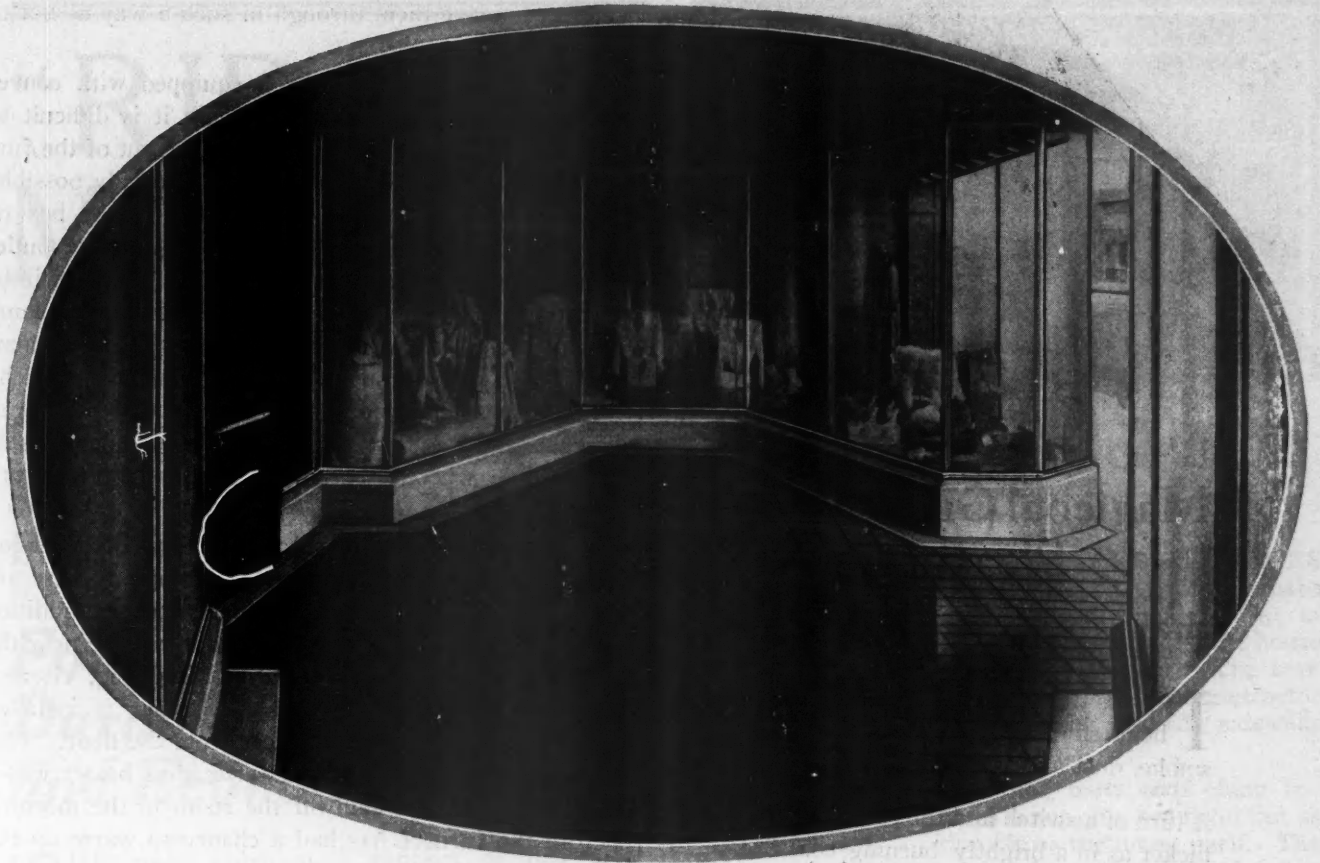
part of the house has what amounts to two outlets. Then, too, he never knows when he will be desirous of using the extra outlet and if the duplex type is installed he always has it at his disposal. In addition to this there may be a portable lamp attached to one side of the outlet and a vacuum cleaner or some other appliance can be used on the other side without the job of disconnecting the lamp. With the duplex outlet a lamp and an appliance can be used at the same time.

### Kitchen Well Equipped

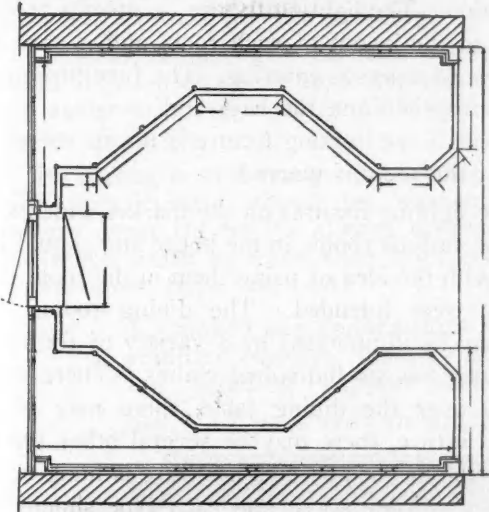
The kitchen is equipped with two duplex outlets for appliances, a single outlet for a ventilating fan, a power outlet for an electric range and two lighting outlets. The duplex convenience outlets are placed over the workboard of the sink and about where the kitchen table will be placed. These should be about 36 inches from the floor and thus permit of their being used without stooping for attaching and detaching, and this height will bring them slightly above the tops of the workboard and the table. The main lighting unit in the kitchen is in the center of the ceiling and is controlled by a switch located near the door. In addition there is an individually operated unit placed over the sink to assist the housewife or servant in her work there. In almost every kitchen it will be found that a person standing at the sink will cast a shadow on her work, and the introduction of this bracket fixture there will eliminate this and be of great assistance to her in her work.

### No Ceiling Chandelier in Living Room

A unique lighting arrangement has been specified for the living room, it being illuminated from a series of eight wall brackets and no main ceiling unit. These are all controlled from a single switch located at the main entrance to the room and can be arranged with individual controls which will permit of their being turned off. In this way if it is not desired to have the whole number lighted, any not wanted can be turned off at will. There are four duplex convenience outlets placed around the room and one in the center of the floor. It has become a practice lately to use portable lamps to a great extent in lighting the living room, and this arrangement of outlets will permit of their use. The extra side is again available to attaching an appliance when desired without detaching the lamp. Generally several comparatively small rugs are sometimes used on the floor of the living room in place of a large rug covering almost the entire floor, and in this case the floor outlet will be found especially handy in lighting a bridge lamp behind a divan placed in front of the fireplace. Even if a large rug is used, it is possible to run the wires between the



How Many Store Fronts in Your Town Can Equal This One For  
**MAXIMUM WINDOW DISPLAY**



**T**HE new Brasco Portfolio of Store Front Designs will enable you to render merchants in your city a valuable service by showing them how to get maximum window display in limited space. Bigger window display space will enable the merchant to increase his business. Installing Brasco windows, like the one pictured above, will pay you a handsome profit.

Select ten merchants in your town and show them the Brasco Portfolio of Designs. Out of the ten it is conservative to say that you will get at least one or two contracts. Our service department will gladly aid you in drawing up special designs. Send for the Brasco Portfolio today.

**BRASCO MFG. COMPANY**  
 5029 South Wabash Avenue  
 CHICAGO, ILLINOIS

Contractors in other localities are using the  
 Brasco Portfolio to get new jobs.  
 You can do the same.

A.B. 24

**BRASCO**  
 Mfg. Company  
 5029 S. Wabash Ave.  
 Chicago, Illinois

Your suggestion for closing profitable jobs of Brasco installations interests me. Please send, without obligating me, your new Brasco Portfolio of Designs.

**Brasco**  
**COPPER STORE FRONTS**

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



## Magicoal Gives More Pleasure

than any other open fire

**I**T gives the beautiful firelight glow and heat so desired—but without the smoke, dust and work of coal or wood.

A turn of a switch and the coals glow and flicker as in a brightly burning coal fire.

And because it is free from the drawbacks of a real fire, a Magicoal-equipped fireplace will be used constantly. It will thus give you the "firelight happiness" you had in mind when you planned it.

In designing any fireplace plan for Magicoal and save the expense of a flue. Just provide for an outlet on the lighting circuit in the rear of the fireplace. If heat is desired, have a heavier wire run from the meter.

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

**Mayer Bros. & Bramley, Inc.**

413 West 28th Street, New York

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

# MAGICOAL

REG. U. S. PAT. OFF.

## ELECTRIC FIRE

"Firelight Happiness" at the turn of a switch

seams or weave them through in such a way as not to injure the rug.

The bedrooms are also well equipped with convenience outlets and in this case again it is difficult to specify a location accurately until the layout of the furniture in the room is known. It is generally possible, however, to approximate the location of the bed or beds and locate the outlets accordingly. One outlet should be placed near where the head of the bed will be placed in order to supply power for a reading lamp and appliances of various kinds. Two of the bedrooms are lighted with ceiling units which are controlled by switches near the door. The other rooms have wall brackets and these are placed right at the opening side of the door where it becomes a simple matter to turn them on.

The bathroom is equipped with two wall brackets on either side of the mirror over the basin, and these are operated by a switch located near the door. In addition there are two duplex convenience outlets, one near the basin for use with an electric shaving mug, vibrator or some other appliance, and the other is installed beside the tub at about two feet from the floor. This is primarily for use with an electric glow heater which is used to take the chill off the room in the morning before the furnace has had a chance to warm up the house.

### The Lighting Installation

Selection of the lighting fixtures for the home should be done with care, both where the ultimate occupant is erecting the house and where it is built for speculation. The lighting fixture occupies a prominent place in the layout of each room and is sure to strike the eye of a person entering. The furniture may be most appropriate and the rugs and hangings most attractive, but if the lighting fixture is not in keeping, the effect of the room is marred.

There are lighting fixtures on the market which are designed for various rooms in the house and should be purchased with the idea of using them in the room for which they were intended. The dining room, for instance, may be illuminated by a variety of fixtures, each of which has its individual claims. There may be a dome over the dining table, there may be a candle-type fixture, there may be several other types. Then again the height at which a fixture is hung must be taken into consideration, and each type should be suspended from the ceiling at its proper height. Care must be taken to see that the unshaded filament of the lamps are not exposed to the view of those sitting at the table, and this condition should be avoided in the other rooms of the house too.

The development of the lighting art has worked wonders in the illumination of the kitchen, sometimes called "the workshop of the home." There are now on the market lighting units for this room which are most efficient and at the same time inexpensive. The



# "RID-GID" Metal Lath

for  
W-I-D-E-R

spacing of  
studding

Self-  
Furring

For  
Durability  
and Economy



THE rigid, substantial support of RID-GID Metal Lath given to all plaster work is well illustrated by the universal demand for it in large buildings of the highest type.

RID-GID has 30% extra strength—with no added weight. It is the best assurance of permanent perfection in plaster work; of protection for the builder and for the building.

This extra strength permits wider spacing of studding—an economy that is obvious in buildings of every size. And RID-GID is a Self-Furring Lath, too.

Its strength and ready adaptability make RID-GID particularly suited for suspended ceilings, where great rigidity is always essential. Weighs no more, costs no more than ordinary metal lath. Saves most, pays you best.

Furnished in standard sizes and standard bundles. Sold by leading building supply dealers.

Send for bulletin on RID-GID Metal Lath



"Steelcrete" Channels and Corner Beads

In fireproof construction, and for convenience and durability, use these handy accessories on every Metal Lath job.

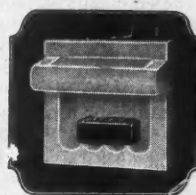
The Consolidated  
Expanded Metal Companies  
BRADDOCK, PA.

PHILADELPHIA: 1075 Germantown Ave.  
CHICAGO: 1234 W. Washington Blvd.

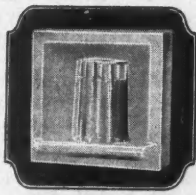
PITTSBURGH: Oliver Bldg.  
NEW YORK: 537 W. 35th St.



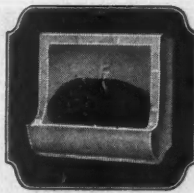
The superiority of china  
for bathroom fixtures



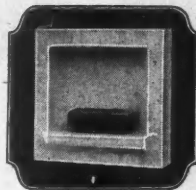
Soap Holder  
with Safety  
Wall Grip



Tumbler Holder



Sponge Holder



Soap Holder

FAIRFACTS FIXTURES are made of snow-white china. They should be put in the walls at the time the house is built or remodeled. The man to do this work is the contractor who also installs tile sidewalls and floors.

A tiled bath with china fixtures is not only beautiful but as durable as the house itself. The perfect harmony that exists between the toilet, tub and the glistening whiteness of FAIRFACTS CHINA FIXTURES lends itself to any color combination or tint of tile and sidewalls that the owner may desire.

FAIRFACTS FIXTURES are made of china because it is the only material that will not become stained, checked or dingy. They may be cleaned simply by wiping with a damp cloth. There is a wide variety to meet every need—soap holders, towel bars, shelves, safety wall grips, sponge holder, paper holders and tooth brush holders, tumbler holders, electric radiators and combinations of wide variety.

For the convenience of tile contractors, all FAIRFACTS CHINA FIXTURES where possible bear standard bases and may be installed in tile sidewalls without interruption of the tile pattern and with a minimum of cutting.

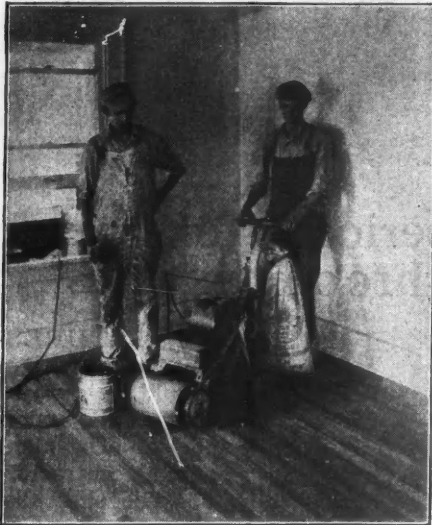
THE FAIRFACTS COMPANY, INC.  
Manufacturers  
Dept. 7  
234-236 West 14th Street  
New York City

Look for this

Trade Mark

Fairfacts Fixtures

## Making \$30.00 and \$35.00 a Day Re-Surfacing Floors



R. E. Waynick, Graham, Texas  
(On right)

There's money in this game for you. The work is easy to get. The "American Universal" machine does the work of six men—it earns one man six men's pay. On his own work, the contractor saves the wages of five men by using this modern machine—and what's just as important to him, he gets much better results.

Mr. Waynick sends in a photograph of himself and the painter right on the job where he is using his "American Universal" floor surfacing machine. (Mr. Waynick is on the right, holding the handle of the machine.)

Here's a letter from him:

"My customers are very well pleased with the work I turn out since buying my 'American Universal,' and I get all the work in this town. I have made \$30.00 in eight hours with my 'American Universal' floor surfacing machine so you can see I am well pleased with my investment.

"(Signed) R. E. Waynick."

Mr. Grimes is a former carpenter. He's finding floor surfacing very profitable.

He has established himself in a nice business in Manistee. He's sure enthusiastic about surfacing floors "The American Universal Way." Here's his letter:



J. M. Grimes, Manistee, Mich.

"I am now making \$35.00 a day in the floor surfacing business.

"A short time ago I was working at the trade making \$8.00 a day (when there was work to do). Last winter when I was out of work, I happened to notice an advertisement in the Carpenter's Journal, telling of the big money to be made in the floor surfacing business with the 'American Universal' floor surfacing machine, which does the work of six men.

"I investigated the matter, sent in an order for an 'American Universal,' and began making big money right from the start.

"In winter months while the carpenter is doing nothing, I am kept busy surfacing old floors at fancy prices."

There's some more interesting things about the "American Universal" method of surfacing floors on page 149 of this issue. The machine is manufactured by the American Floor Surfacing Machine Company, 515 South St. Clair Street, Toledo, Ohio. Write to them. They'll be glad to furnish you with full particulars.

inclusion of one of these will be greatly appreciated by the housewife or servant, and it will prove of great assistance to her in her work.



### Celotex in New Location

THE Celotex Company has leased the property at 645 North Michigan Avenue, Chicago, which is located on the northeast corner of North Michigan and Erie, from the Poole Estate, a five-year lease being negotiated by the Bowes Realty Company. They moved their general offices from their present location, 111 West Washington Street, to their new quarters January 1st.

Phenomenal development and expansion of the Celotex Company has necessitated this move. Realizing the possibilities of North Michigan Avenue development, they are going to convert this residence into their general offices and will later build a bungalow on the vacant half of the property which will exhibit its product—Celotex insulating lumber.



### Fechheimer Heads Agency

S. H. FECHHEIMER, connected with the Truscon Steel Company practically since its inception twenty years ago and for the past fifteen years publicity manager in charge of all phases of their extensive advertising, has opened an advertising agency to specialize in the advertising and industrial and building products. The name will be the Industrial Advertising Company, 615 Wayne Street, Detroit, Mich.

## Install Fresh Air

Pantries, kitchens and bathrooms are made more livable and comfortable. The cost of installation is now surprisingly low.

Easily installed. Send for our bulletin. Engineering advice if needed. Write us today.

The Emerson Electric Mfg. Co.

2018 Washington Avenue

50 Church Street  
New York City

St. Louis, Mo.

# EMERSON

## Residence Ventilators

**"The  
First Tool  
I ever  
owned"**



**A STARRETT Combination Square—31 years in the harness and still doing business at the same old stand—"**

Isn't that the kind of a tool you want—a tool that will be good for a lifetime's work?

That's what you get in a Starrett Tool—long, lasting accuracy. Take this Starrett Combination Square No. 94 for instance. Notice how well it's designed and put together—how smoothly the Head slides along the Blade—how clean-cut and deeply marked the Lines and Figures are—they'll always be easy to read.

And useful! Give a Carpenter a saw, a hammer and his Starrett Combination Square and he's ready to tackle any job. You can use this handy tool as a Rule, a Marking Gage, a Square, a Miter, a Height Gage, a Depth Gage, a Level and a Plumb! All in a single tool that takes up but little room on the work bench or in the tool chest.

Made in two sizes—12 inch (\$1.50) and 9 inch (\$1.35—made especially for inside finishing etc.) You can get it at any good hardware store. Also Starrett Tapes, Dividers, Leveling Instruments, Stair Gages etc.

Write for Catalog No. 22 "6" and the Supplement describing the new Starrett Tools.

**The L. S. STARRETT CO.**

*The World's Greatest Toolmakers  
Manufacturers of Hacksaws Unexcelled*

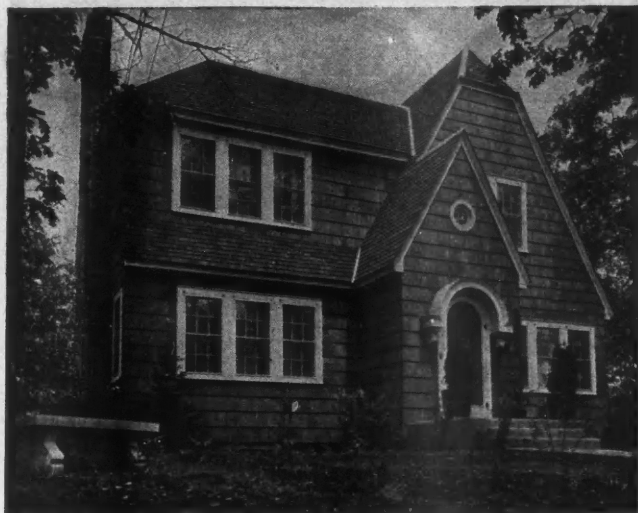
ATHOL, MASS.

**STARRETT COMBINATION SQUARE**

**No.  
94**



**Use Starrett Tools**



One of the many attractive WEATHERBEST Stained Shingled homes erected by the Long Beach Realty Company of Michigan City, Ind., along the southern shores of Lake Michigan. Cream colored WEATHERBEST 24" stained shingles for the sidewalls and WEATHERBEST variegated green (16" length) for the roof make up the artistic color combination of this inviting home.

## Reasons for WEATHERBEST Sidewalls and Roof

**LOW COST.** WEATHERBEST Stained Shingle sidewalls cost from \$150 to \$250 less per house than clapboard siding. WEATHERBEST Roofs last for 50 years and cost less per year of service than other materials.

**APPEARANCE.** There is an attractive home-like atmosphere about WEATHERBEST Stained Shingle sidewalls that other sidings do not have.

**UPKEEP.** Every prospective home-owner likes to know that he won't have a repainting bill on his hands every two or three years as is the case with clapboards. WEATHERBEST Stained Shingles need only a brush coat once every 5 or 6 years to restore their original attractiveness.

*WEATHERBEST Stained Shingles afford endless variety of both color and pattern. Send for color samples and folder showing lower cost of Weatherbest Stained Shingles.*

**WEATHERBEST STAINED SHINGLE CO., INC.**

*Formerly Transfer Stained Shingle Co., Inc.  
North Tonawanda, N. Y.*

*Western Plant, Minnesota Transfer, Minn.*

**Manufacturers of**

**Weatherbest  
STAINED-SHINGLES**

WEATHERBEST STAINED SHINGLE Co., Inc.

143 Main Street, North Tonawanda, N. Y.

Please send me folder of comparative costs and color samples of WEATHERBEST Stained Shingles.

Name.....

Address.....



# birch

is a wood you like to work with; first, because you can do a job with it which means reputation instead of kicks; second, because at its comparatively very reasonable price you can make yourself a good profit; third, because we will supply you free with our handsome and convincing "Beautiful birch" book.

Will send the book to a few of your best prospects and mention your name, if you ask us. Do it. It's "good business."

THE BIRCH MANUFACTURERS  
201 E. R. A. Building Oshkosh, Wis.

*"Beautiful Birch  
for  
Beautiful Woodwork"*



## The Second Mortgage and the Home

(Continued from page 135.)

utility value in excess of the cost of the several elements that were used to produce it.

Whether the property so erected is paid for in cash or by discounting mortgages the real value of the property as a utility includes compensation for the use of money to be saved in the future or for effort put forth or deprivations endured during the earlier period of accumulating the money.

The mortgage company must also be chary in extending credit. Not all purchasers of homes are in financial position to undertake the regular monthly payments and are therefore a poor moral hazard. The builder, if he feels he has unlimited second mortgage funds at his command, is in danger of over-extending his operations, especially if he has obtained a construction loan. When the builder becomes over-extended the result is the mortgage companies must finish his properties and take over the business to protect themselves. The judicious use of second mortgage money can be made an asset of great value, while the injudicious use of second mortgage money, like any other credit, can become an equally great liability.



## Lessons from the Japanese Earthquake

(Continued from page 176.)

ings to the present limit of one hundred feet in height.

If all owners could afford to building structures like the Mitsubishi Bank, the problem would be easy, but this is, unfortunately, not the case. With billions often in property value destroyed, the necessity for economy will be more pressing in future than in past and will demand strict attention in every design.

Fortunately the lessons of the earthquake do not rule out the economically designed structure but rather to the contrary. They tell us, for instance, to avoid all unnecessary ornamentation because it is dangerous when it breaks off and falls down and also because it loads the structures with additional weight which the walls and columns must move. They tell us to avoid all attempts at massive effects but to make our structures light and strong which will also make for economy.

I do not believe that architects will continue to design large steel frame structures in Tokyo. They resist earthquakes very well when the walls are properly designed and built as an integral part of the structure but many steel frame buildings which came through the earthquake intact were so damaged by the fire that they will have to come down. Unless such structures are properly fireproofed with concrete, and I do not believe that any other system of fireproofing stood both the earthquake and the fire, they will very probably fail. If fireproofed with concrete they are uneconomical when compared with the straight reinforced concrete design. The field for structural steel in Japan will be limited to buildings which do not require fireproofing and this field will necessarily be comparatively narrow.

These are some of the lessons as I see them and are submitted to all who are interested, not as being conclusive but for whatever they may be worth.



## Southern Pine Association Has Most Satisfactory Year

NINETEEN TWENTY-THREE has proved one of the most generally satisfactory years for the Southern Pine industry in its history, according to information contained in a statistical and economic review of the last twelve months, made public by H. C. Berckes, secretary-manager of the Southern Pine Association.



The charm of this beautiful Columbus, Ohio, home is greatly enhanced by its Ritter Appalachian Oak Floors—strip pattern.  
Miller & Reeves, Architects.  
E. J. Scarlett, Builder.

## There is a Difference in Oak Flooring

TOO many uninformed people are ready to say, "Oh, the various brands of Oak Flooring are all about the same," or, "Well, Oak Flooring is Oak Flooring, no matter who makes it." But there is a difference which those who know realize is not mere accident.

There is fine grained flooring from Appalachian Mountain Oak. And there is coarser grained flooring from lowland oak.

### Fine Grain, Mild Texture and Uniform Color

Ritter Flooring, manufactured from oak grown in the best producing area of the Appalachian Region, is characteristically of fine grain, mild texture and uniform color. For this reason, as well as the unusual accuracy and painstaking care observed in its manufacture, Ritter Flooring may be easily laid, nailed and finished and presents a most beautiful result in the completed floor.

Let us send you our Oak Flooring Booklet (B-1) which explains in detail why you may be certain of the results you desire by writing Ritter Appalachian Oak Flooring into your specifications.

### W. M. RITTER LUMBER COMPANY

America's Largest Producer of Hardwoods

GENERAL OFFICES—115 E. Rich St., COLUMBUS, OHIO

Branch Offices

Pittsburgh, Philadelphia, New York, London and Liverpool

# RITTER

APPALACHIAN OAK

# FLOORING



Center Ladder Shows Old Way and Outside Ladders Show New Way of Painting  
Patented

## PREVENT LADDER ACCIDENTS

BY USING the new SEAMAN SAFETY LADDER BRACKETS you can keep ladders from sliding, rolling or being blown over by the wind and thus absolutely do away with the common dangers of ladder use.

Because they span windows, overcome the difficulties of wide cornices by holding the ladder out 14 inches, make a 20 foot ladder equal to 24 foot by allowing the user to stand on the top rung, make a safe, handy place for hanging paint and fire pots and can be used to hook over the ridge leaving the ladder lying flat on the roof for work in valleys, at chimneys and around dormers, Seaman Safety Ladder Brackets actually SAVE TWO HOURS PER DAY PER MAN.

They are made of malleable iron, weight 7 pounds a pair, fit any ladder and are put on and taken off in a jiffy.

\$5.00 a set. All hardware, paint and ladder dealers carry them. Ask your dealer to show them to you.

### SEAMAN SAFETY BRACKET CORP.

15 PARSELLS AVE., ROCHESTER, N. Y.

Canadian Distributors, McFarland Mfg. Co., Toronto, Ont.



### The 1924 Calendar Crop

"From Forest to Home Panorama" is the latest offering of William A. Radford, Chicago, publisher of the AMERICAN BUILDER and *Farm Mechanics*, and head of the Radford Poster Calendar Advertising and Architectural Service for retail lumber dealers. The Radford calendars have been famous during the past five years for their striking beauty and practical utility. These calendars are well-known to many of our readers, as each year they are distributed by the one best lumber dealer in each community. For several years past the Radford calendar has been in the form of a panorama, a very novel idea on which Mr. Radford holds the exclusive patent. Each of the 12 sheets in addition to being a perfect pictorial unit by itself, combines with the other sheets when arranged side by side to form a continuous scene of modern building improvements that is very inspiring.

The 1924 "From Forest to Home Panorama" is a double panorama calendar. The pictorial effect across the lower part of the large 17x23-inch sheets, illustrates the forest to home idea—showing the progress of the lumber from the tree to the logging camp, to the saw mill, to the retail lumber yard, and finally onto the construction job, and ending with the completed building. The upper half of these sheets features a selection of beautiful bungalows and other types of home, also some popular farm buildings, garages, poultry houses, etc. These designs are all architecturally correct, and are worked out in great detail so as to be both an inspiration and a real guide to the prospective builder.

Mr. Radford is an enthusiast on the promotion of more and better building. His work through the millions of copies of these beautiful home and farm building posters, distributed by the retail lumber dealers, supplementing the constructive and educational work which the AMERICAN

BUILDER and *Farm Mechanics* magazines are doing, have won for the Radford organization a dominant place in the building industry. Manufacturers of building materials and supplies, and the retail dealers of all lines going into building, recognize the value of this constructive and educational work.

The Forest to Home 1924 calendar sheets are given extra value by the hundred or more illustrations in black and white appearing on the backs of the 12 sheets. These illustrate an additional assortment of bungalows and other types of homes, together with farm buildings, ornamental fences, garages, home interiors, bird houses, gateways, etc.

Ask your retail lumber dealer to show you this Forest to Home Panorama calendar, and get a copy for you. Lumber dealers and manufacturers should address William A. Radford, 1827 Prairie Avenue, Chicago, Ill.

"The Paine Miracle Door Calendar" has been distributed by the Paine Lumber Company, Oshkosh, Wis. It illustrates in giant size the well-known Paine "Miracle" door. In the foreground attractively arrayed are examples of the different kinds of buildings in which these doors are being used, and the contrast between the size of these buildings and the illustration of the door in the background is very striking. This calendar is lithographed in colors on cardboard, measuring 9x25 inches. The calendar pad is stapled on at the bottom.

"Universal Cement" is the title of a 12-sheet poster calendar distributed by the Universal Portland Cement Company, Chicago, Pittsburgh, Duluth, Minneapolis and New York. The 1924 edition follows the style of recent years featuring a large date section with prominent figures on each sheet. Part of the preceding, and part of the month following are given in shaded figures. A pointed and timely slogan pertaining to concrete construction matters makes a footing

## To Use Cameo

is to discover an ease of application, a covering capacity and a perfection of finish you otherwise would not believe possible.

We want you to try it for yourself.

Just pin \$3.00 to the attached coupon and mail it today for one quart each of Cameo White Flat and Cameo White Enamel, Gloss or Matte, as you specify. (Sales price, \$3.55.)

# CAMEO

White Enamels  
and White Flat

*Specifications in Sweet's*

**DENNY, HILBORN & ROSENBACH**  
Chicago, PHILADELPHIA, New York.

*Fill out and mail this coupon today.*

Denny, Hilborn & Rosenbach,  
318 W. Washington St., Chicago

Attached is \$3.00 for which please send me one quart each of  
Cameo White Flat and Cameo White Enamel (Gloss) (Matte)

My Dealer's Name.....

Name.....

Address.....

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

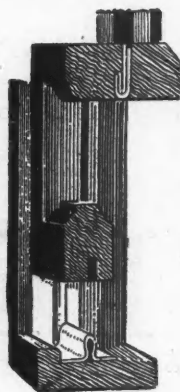
## RIGHT NOW

WE ARE LOOKING  
FOR A CONTRACTOR

or any man in the building field to take care of  
the weatherstrip business in your locality.

*Are you the man to take advantage of this rare opportunity?*

## Allmetal Weatherstrip



is easy to sell, and easy to install. Never gets out of order or needs repair.

*Every new and old building owner is a prospect.*

You make a double profit, one on the sale and one on the installation. Others are making big money, so can you.

Write at once for details of our agency offer.

**ALLMETAL  
WEATHERSTRIP  
COMPANY**

231 W. Illinois St., Chicago, Ill.



# BESSLER

## The Guaranteed Movable Stairway

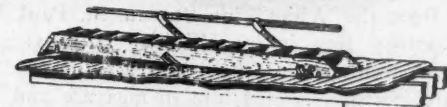
You can recommend and install the Bessler Movable Stairway with the full assurance that it will give complete satisfaction. We guarantee that it will prove satisfactory in every respect or money will be refunded with freight charges both ways.

### Easy of Operation

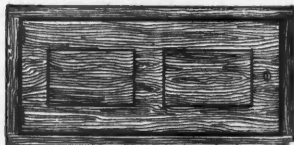
The Bessler is scientifically designed and accurately built, and spring barrels on each side of the stairhorse, together with proper counterbalancing make it exceedingly easy of operation. A child can operate it with greatest ease.

### Easy to Install

Any carpenter can install a Bessler in a new building, where the ceiling has been prepared, in one hour. In buildings where the ceiling must be cut out and opening cased up, not more than 6 or 8 hours' work is necessary.



This is how the Bessler folds up into the attic when not in use.



This panel in ceiling conceals the Bessler when not in use.

Ask your Lumber Dealer or send for booklet

**The Bessler Movable Stairway Co.**  
 1901 E. Market Street  
 Akron, Ohio

**New York Office**  
 103 Park Ave.



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### The 1924 Calendar Crop

(Continued from page 190.)

for each of the 12 sheets. This calendar measure 17½x21 inches; numerous colors are used.

"Lehigh National Cement" is featured in a big calendar of the Lehigh Cement Company, Allentown, Pa., and Chicago, Ill. Similar to the offering of previous years, this is a big wall hanger, 20x34 inches with an 18-inch square 12-sheet date pad stapled on. The figures for each month are very large, and the month preceding, as well as the month following are also given on each sheet for ready reference.

"F. E. Myers & Bro. Co., Ashland, Ohio." The Myers calendar is an old friend of implement and hardware dealers, many of them having received all the calendars that this firm has put out for the past 35 years. This calendar also serves as a sort of catalog, with all the Myers Pumps, Hay Tools and Door Hinges illustrated, to enable a dealer to show any particular item to his particular customer.

"McCray Refrigerator Co., Kendallville, Ind.," is a six-page calendar, with months back to back, showing the complete line of McCray Refrigerators in colors. A very attractive calendar, and one which is sure to add still more to the good opinion architects, builders and owners have of the McCray make of refrigerators.

"Evans Vanishing Door Wardrobe, W. L. Evans, Washington, Ind.," is a calendar which shows the familiar human interest illustration of a little girl opening and closing an Evans Vanishing Door Wardrobe. It proves the ease with which this space-saving adjunct is operated, and with the calendar pad below makes a hanger that has good advertising and date-record value.

"Link Belt Company, 910 S. Michigan Ave., Chicago, Ill." This 1924 calendar adheres closely to those issued in the past. Sixteen by twenty-four inches in size, each of the 12 sheets contain not only a large monthly calendar, but also,

in smaller size, the months preceding and following. The illustrations are by Jeffrey Grant, and while they accurately portray construction features of Link Belt equipment, they have an artistic touch unusual to mechanical subjects.

## BOOKS, BOOKLETS AND CATALOGS RECEIVED

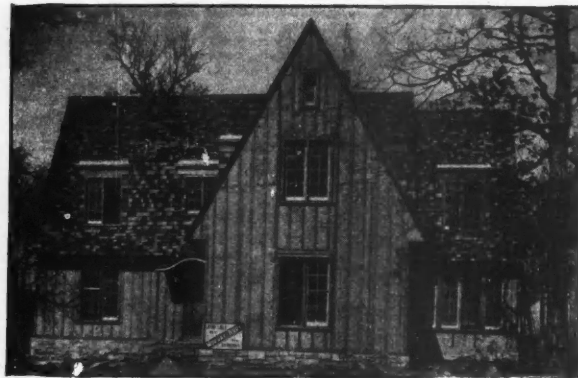
THE literature and publications listed below are now being distributed and the concerns mentioned will be glad to send copies to any of our readers who will write and ask for them.

"Bright Streets Are Busy Streets," by L. A. S. Wood, is obtainable on request from the Westinghouse Electric & Mfg. Co., Department of Publicity, East Pittsburgh, Pa. Discusses city zoning of street lighting; lighting defects and remedies; enhanced property values.

"The River Towns of Connecticut" is Number 2 of the White Pine Series of Architectural Monographs, and is obtainable from the White Pine Bureau, St. Paul, Minn.

The introductory text is by William D. Foster, one of the younger architects of the country, whose interest in Colonial architecture has led him to measure and study examples in various sections of the country. The feeling his well written article and the excellent illustrations from photographs by Kenneth Clark leave with the reviewer is that of valuable work thoroughly well done.

"How to Build a Better Home" is a book issued by the Copper and Brass Research Association, 25 Broadway, New York, N. Y. It contains numerous drawings in which the different parts of a house are detailed and named, and other information of help to prospective home builders.



House near Chicago, showing its "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.

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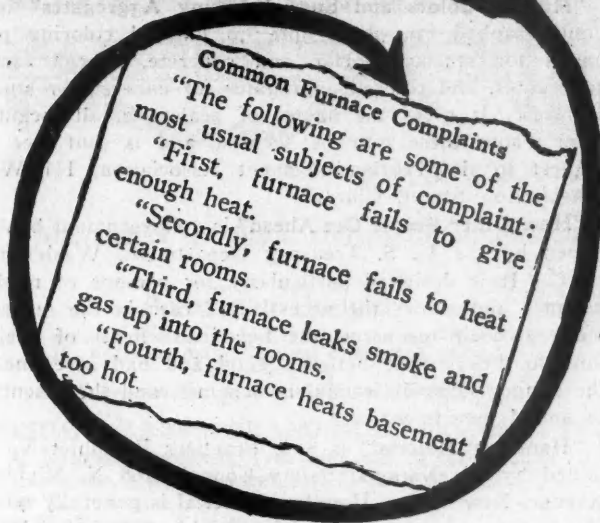
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A large fire-box and ample air capacities insure plenty of heat.

The FarQuar Vent and Return System insures a uniform distribution of heat to every room.

The FarQuar patented electrically welded, seamless steel fire-box absolutely prevents the escape of gases and fire poisons.

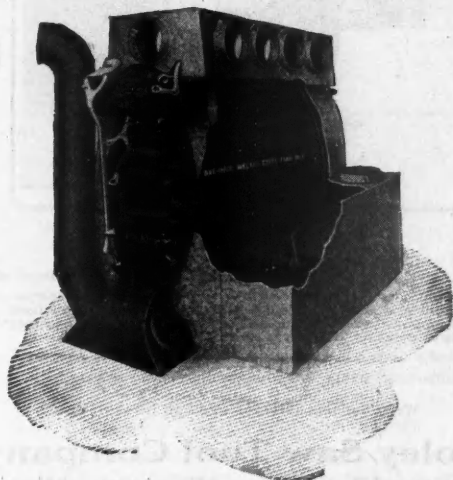
The shape of the FarQuar fire-box makes possible the easy move-

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"I start to-morrow, Mary, at an increase of \$60 a month. It's wonderful how spare-time-study helps a man to get ahead."

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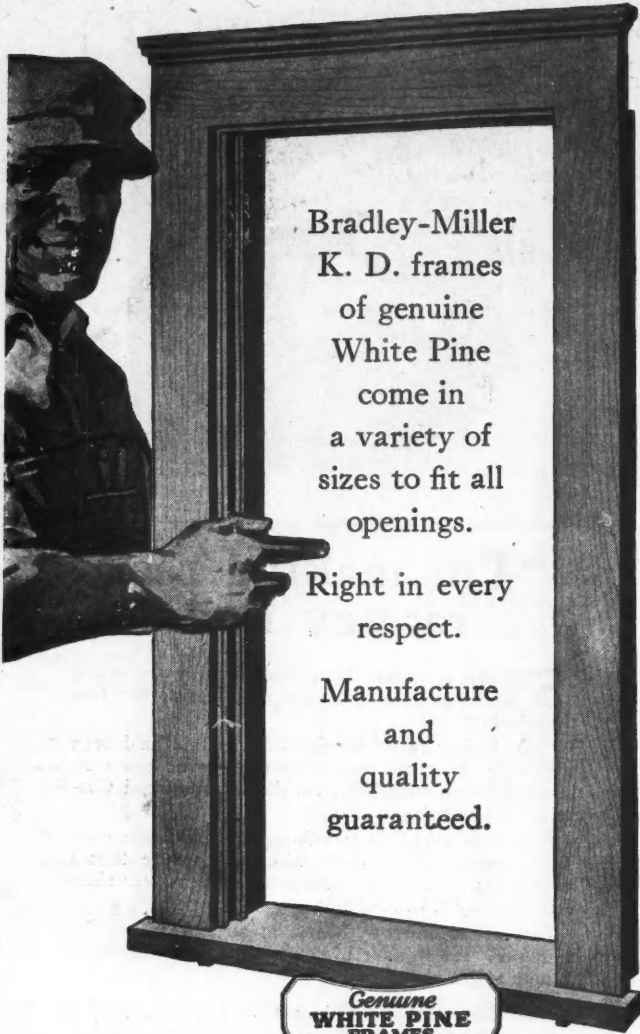
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| <input type="checkbox"/> Architectural Draftsman    | <input type="checkbox"/> SALESMANSHIP              |
| <input type="checkbox"/> Blue Print Reading         | <input type="checkbox"/> ADVERTISING               |
| <input type="checkbox"/> Contractor and Builder     | <input type="checkbox"/> Window Trimmer            |
| <input type="checkbox"/> Building Foreman           | <input type="checkbox"/> Show Card, Sign Painting  |
| <input type="checkbox"/> Concrete Builder           | <input type="checkbox"/> BUSINESS MANAGEMENT       |
| <input type="checkbox"/> Structural Engineer        | <input type="checkbox"/> Private Secretary         |
| <input type="checkbox"/> Structural Draftsman       | <input type="checkbox"/> Business Correspondent    |
| <input type="checkbox"/> Plumber and Steam Fitter   | <input type="checkbox"/> BOOKKEEPER                |
| <input type="checkbox"/> Heating and Ventilation    | <input type="checkbox"/> Stenographer and Typist   |
| <input type="checkbox"/> Plumbing Inspector         | <input type="checkbox"/> Higher Accounting         |
| <input type="checkbox"/> Foreman Plumber            | <input type="checkbox"/> COMMERCIAL LAW            |
| <input type="checkbox"/> Sheet Metal Worker         | <input type="checkbox"/> Common School Subjects    |
| <input type="checkbox"/> CIVIL ENGINEER             | <input type="checkbox"/> Mathematics               |
| <input type="checkbox"/> Surveying and Mapping      | <input type="checkbox"/> GOOD ENGLISH              |
| <input type="checkbox"/> ELECTRICAL ENGINEER        | <input type="checkbox"/> ILLUSTRATING              |
| <input type="checkbox"/> Electric Lighting and Rys. | <input type="checkbox"/> Railway Mail Clerk        |
| <input type="checkbox"/> Electric Wiring            | <input type="checkbox"/> CIVIL SERVICE             |
| <input type="checkbox"/> Telegraph Engineer         | <input type="checkbox"/> Mining Engineer           |
| <input type="checkbox"/> Telephone Work             | <input type="checkbox"/> METALLURGY                |
| <input type="checkbox"/> MECHANICAL ENGINEER        | <input type="checkbox"/> Gas Engine Operating      |
| <input type="checkbox"/> Mechanical Draftsman       | <input type="checkbox"/> Textile Overseer or Supt. |
| <input type="checkbox"/> Machine Shop Practice      | <input type="checkbox"/> TRAFFIC MANAGER           |
| <input type="checkbox"/> STATIONARY ENGINEER        | <input type="checkbox"/> AUTOMOBILES               |
| <input type="checkbox"/> CHEMIST                    | <input type="checkbox"/> AGRICULTURE               |
| <input type="checkbox"/> Pharmacy                   | <input type="checkbox"/> Poultry Raising           |

Name \_\_\_\_\_ Business \_\_\_\_\_  
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**Books, Booklets and Catalogs Received**

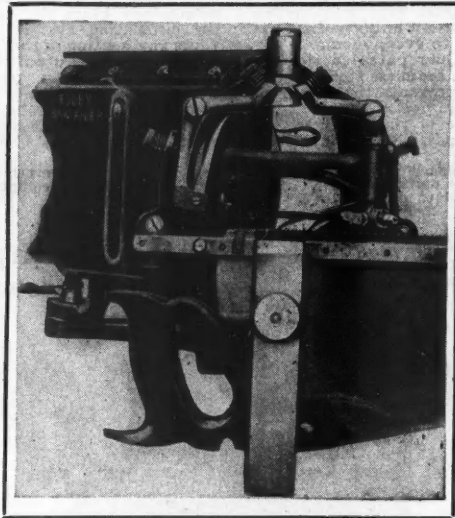
(Continued from page 192.)

"Mineral Colors and Special Facing Aggregates" is a mimeographed four-sheet note on mineral coloring pigments for stucco, mortar and concrete, special facing aggregates, and colored aggregates for concrete or stucco surfaces. It gives the names of dealers in all localities from whom these may be secured, and is sent free on request to the Portland Cement Association, 111 West Washington Street, Chicago.

"How Other People Get Ahead" is a Government booklet issued by the U. S. Treasury Department, Washington, D. C. It is designed particularly for persons of modest incomes and shows the necessity of care in the management of their resources, the beneficial effects of saving, how to differentiate between good and bad investments, the danger signs of fraudulent schemes, and the essentials of sound investment.

"Handling Material" is Safe Practices Pamphlet No. 54 issued by the National Safety Council, 168 N. Michigan Avenue, New York. Handling material is generally recognized as one of the greatest safety problems in industry and according to state reports handling material by hand causes more accidents than all machinery. The pamphlet is divided into the following main divisions: Power Trucks, Hand Trucks, Piling Material, Handling by Hand and Safe Habits of Work, each of which is again subdivided into paragraphs dealing with the different types of equipment used and the different methods employed in handling various types of material. The pamphlet is freely illustrated with photographs and diagrams. A large number of industries are covered.

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