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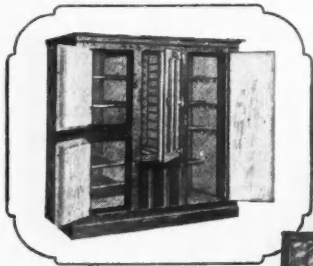
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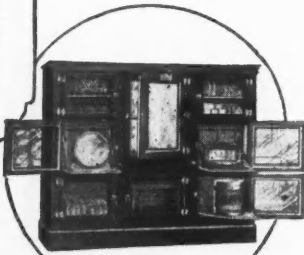
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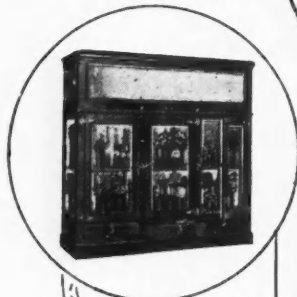
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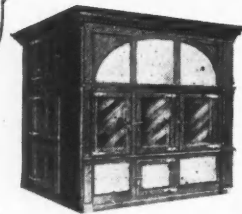
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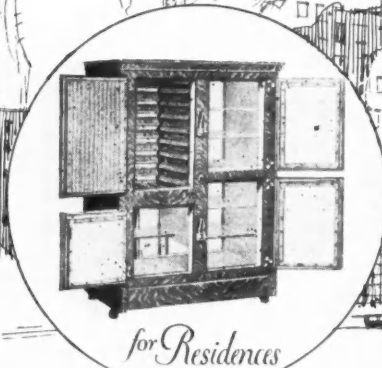
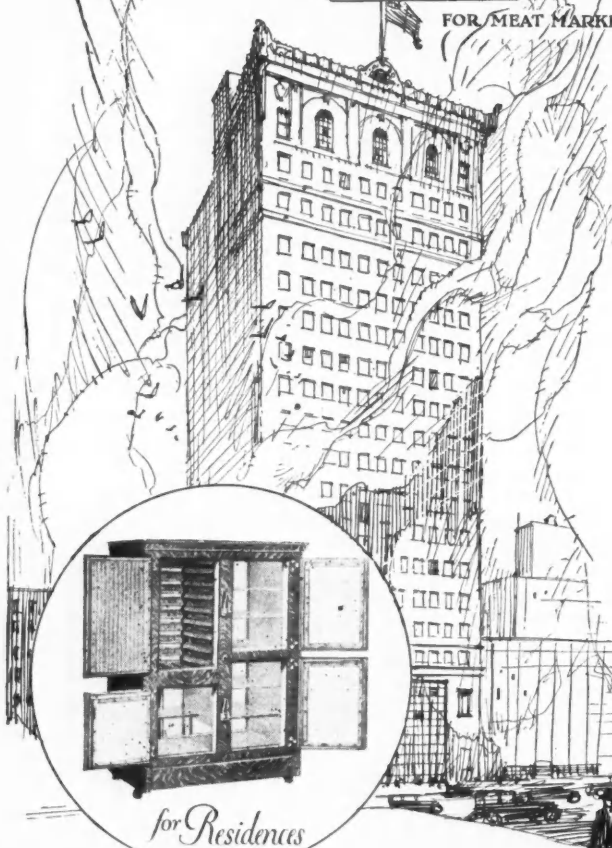
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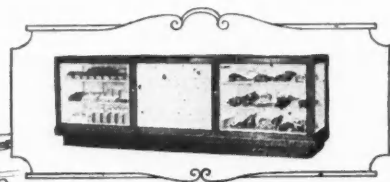
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FOR DELICATESSEN STORES

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Short Talks by the Editor



Buyers' Market

YOU hear the expression going the rounds "It is a buyers' year." So it is. And no where more so than in the building field. Prospective homebuilders must be sold on the idea. In view of cost and other obstacles they are inclined to go very slowly and only when they are conclusively shown that it will be to their advantage to build are they ready to take a chance.

That is why it is necessary for the builder to go out after the business. He cannot get it sitting in his office waiting for the people to come in. The automobile salesman who last year degenerated into an order taker is now hustling, and so are many more. This is a year for hustlers. What are you, as a builder, doing to get business?

Are you showing your clients an attractive lot of plans? Are you explaining to your customers how costs can be reduced by the elimination of freak features? Have you pointed out the space-saving possibilities of built-in furniture, the kitchenette, breakfast nook, kitchen cabinet, wall bed, special clothes closets? Every one of these have helped to cut cost on the modern home. Perhaps it would help you a whole lot.

Are you showing an attractive display in your office by repeatedly bringing the attention of your prospects to the beauties and comforts of a home thru advertising and graphic illustration? Are you making that desire strong enough to culminate in real business?

You are the seller! Nineteen hundred and twenty-one will determine your stick-to-it-tiveness, your grit, and your measure of success.



Art Insert Valuable to Builders

THE boys certainly are pleased with the Street of Beautiful Homes and several were particularly impressed with the April bungalow. One man in Illinois, an expert on bungalow design, writes:

"I have planned and built many bungalows, but can really say the one shown in the April Art Insert is the niftiest I have ever run across."

We agree with you, Brother Minton, it would be a hard task to find a prettier, more comfortable, and a more attractive home. But we have another one in this issue that should make your clients sit up

and take notice.

The special furnishing and decorating articles have also been received with favor. Among the many letters received, is one from a small builder in a rural community who has this very succinct remark to make:

"Allow me to express the wish that you decorate all of these Art Inserts because in my opinion the decorating and furnishing will be a big help to the country builder, because he does not have the opportunity of observation that our suburban and city brothers have."

That is exactly what we had in mind. Moreover, we believe these articles, which are prepared by people who know, will be a great sales aid and especially convincing with the women folk. After reading the AMERICAN BUILDER special feature she can picture that home complete inside and out, just as it will appear. You know that is the important point in getting across the building idea. Make them want it.

The May Art Insert home is a delightful home, one that will especially appeal at this season when so many families are planning to build.



Boom in Building Under Way

CERTAINLY it is the case of the "darkest part of the day being just before the dawn" in the building situation. The dark period has outlasted a north pole night, but at last the glorious dawn is beginning to peek up over the horizon. Judging by reports coming in from various sections of the country, a real revival of building is getting under way and the summer of 1921 promises to be the liveliest in many years for the building industry. From large and small cities comes the news that permits have jumped enormously in the last few weeks. Everywhere there seems to be an undercurrent of restless activity. Many long mooted questions have been threshed out to an amicable understanding, and there seems to be a wholesome spirit of co-operation in the air.

Needless to say, this activity will be welcomed by many thousands of families who have been passing thru a nightmare during the last few months. It will take many years of steady work to catch up for the valuable time lost during these last trying years, and much depends upon the active participation of every member of the building profession.



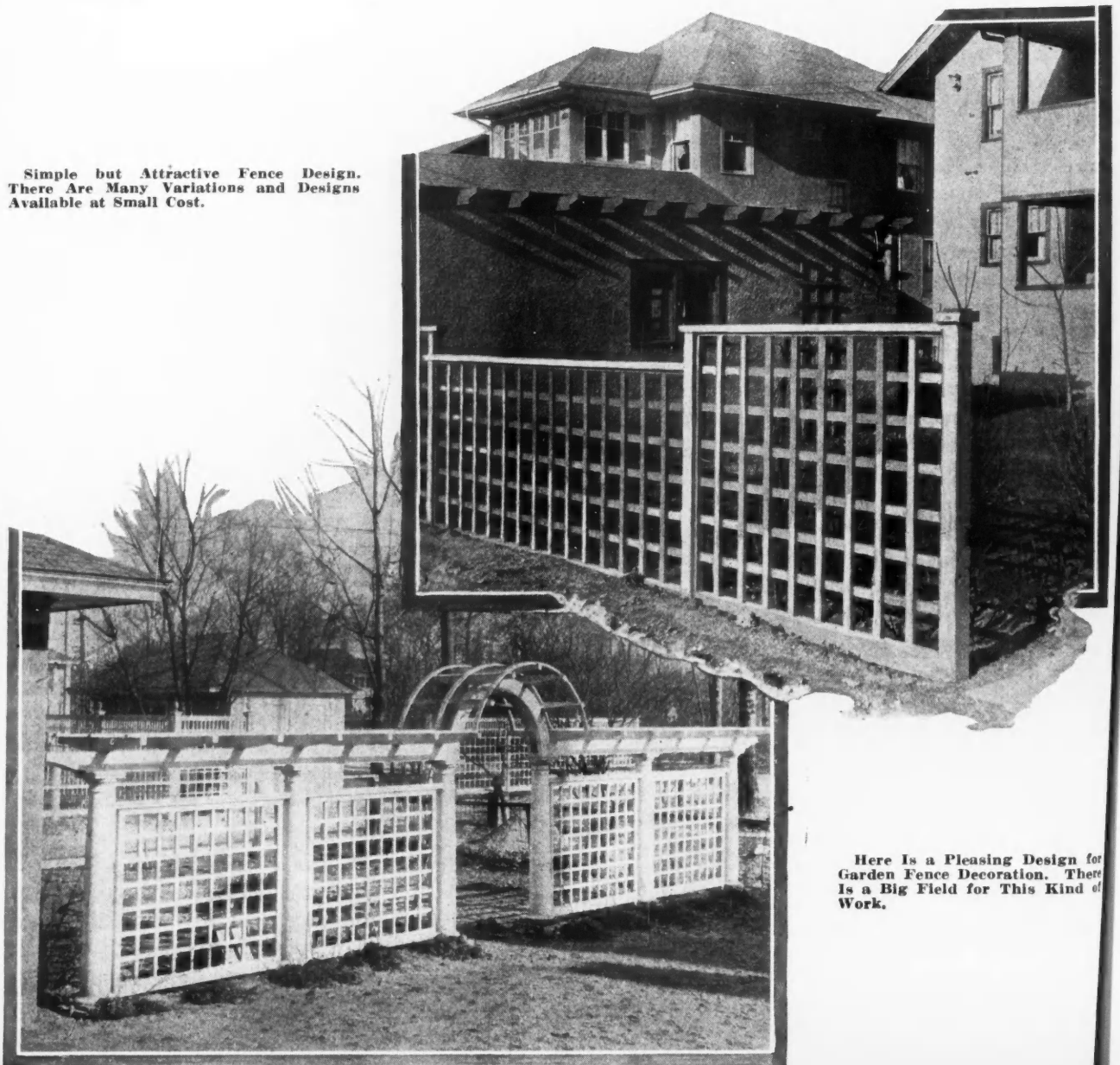
GARDEN FENCES

that are easy to build

NOW that spring is with us and the balmy breezes make life a joy and pleasure, many folks are planning their landscape gardening and back-yard trimmings. If a pretty garden, why not a real artistic and attractive fence that will add to the general beauty? Many charming designs are

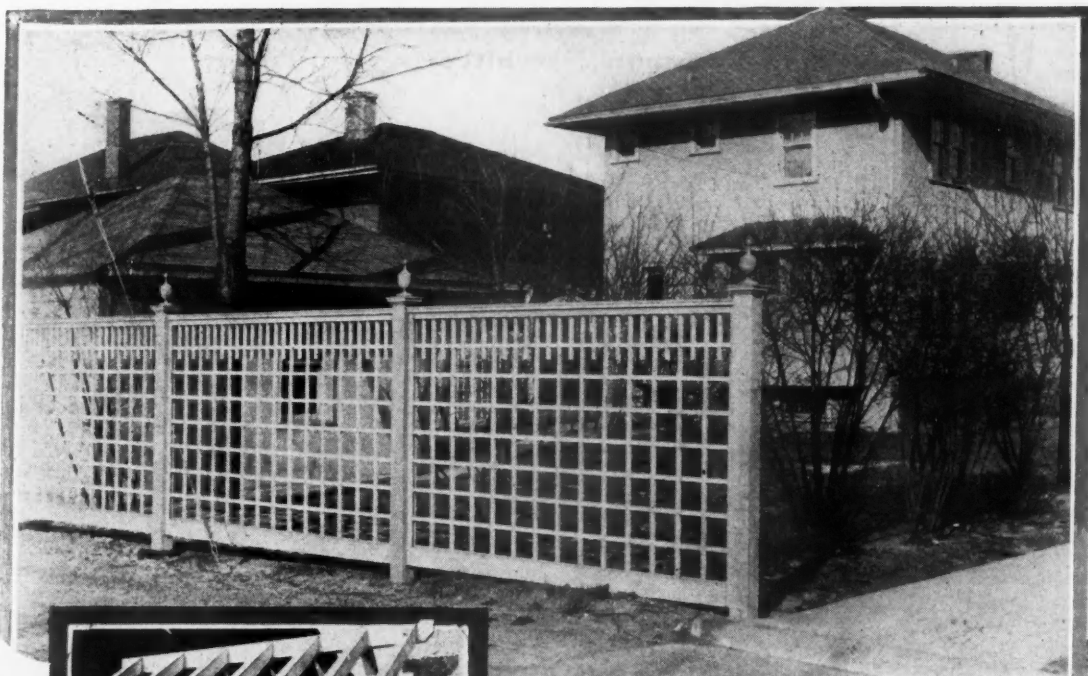
shown on these pages. They can be erected during spare hours at a very reasonable cost and will add immeasurably to the appearance of the home. "What is home without a fence?" is a saying that possesses more significance than most people attach to it. It is the finishing touch to a beautiful picture.

Simple but Attractive Fence Design. There Are Many Variations and Designs Available at Small Cost.

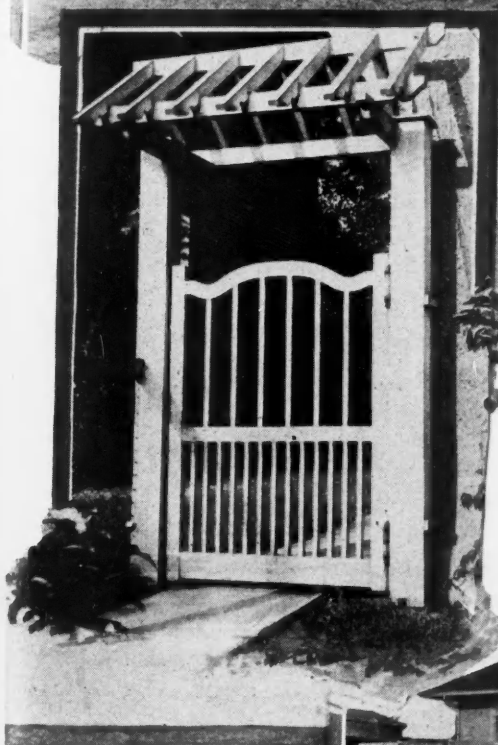


Here Is a Pleasing Design for Garden Fence Decoration. There Is a Big Field for This Kind of Work.

What
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While.



Surrounding Decorations Will Greatly Improve the Value and Appearance of a Home.



Some Charming Designs for Back Yard Decoration. In the Upper Picture Is a Modest but Trim Design Which Looks Quite Attractive. The Quaint, Artistic Gateway (Center) Will Add to Any Garden and Home. Another Variation Is Shown Below.



What Is the Yard Without a Fence? Make it Worth While.

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Building the Summer Cottage

By Will L. Hammons, Architect



O! Man! The Days Are Near When the Soft Summer Breezes Will Cool the Feverish Brow and the Inviting Lakes Will Be Crowded with Happy Throngs. Have You Built That Summer Cottage?

THE summer cottage has a charm and appeal entirely different from the city dwelling. The "near-to-nature" spirit of summer time dictates to a great extent the essential of the summer cottage.

We joyously leave the heat, smoke and noise of the city for the cool breezes, pure air and quiet surroundings of vacationland. Not only do we seek relief from the heat of the city but also change of scenery, environment and mode of living.

When we start for the freedom and charm of the woods and lakes, we leave care and worry behind. Therefore simplicity of design, arrangement and furnishings should be provided in the summer cottage. In design this simplicity results in the cheery, cozy and semi-rural appearance of the cottage. Simplicity of arrangement eliminates hallways and other unnecessary features, provides better ventilation and reduces

the cost of the summer cottage.

Simplicity of furnishings are simply necessary. Otherwise the true objects and desires of the summer home would be lost. Here among the freedom of nature the thick upholstery of velour or tapestry lack the comfort and charm of the easy chair of bent hickory or twisted willow. The dishes on shelving of clean, fragrant pine boards would be out of place in the polished mahogany sideboard. It is the same thruout the cottage—grass rugs instead of oriental, birch bark flower boxes instead of rich pottery, wild flowers instead of carnations and roses, and the clean, knotty boards of the rough interior instead of bright wall papers and gilded frames.

The summer cottage should welcome light, fresh air and sunshine. The more windows, the better the health, and the better view of near-by lake, hills and foliage. The summer cottage easily harmonizes with the many different sites, whether hill top, hill side, "woody" or water edge.

The photographs and plans shown herewith are of cottages recently erected at Portage Park, Michigan, a summer resort with many natural advantages and attractions. The cottages are on rolling, wooded sites between Lake Michigan and Portage Lake, both of which offer many opportunities for boating, bathing, fishing and other summer-time sports.

No other form of dwelling lends itself so readily to the materials most easily obtained in the locality in which the summer cottage is to be erected. Seldom is it necessary to obtain the materials from any



Typical Summer Cottage Interior—the Large, Comfortable, Unconventional Living Room with its Fireplace to Warm Up on Chilly Evenings; Note Rough Finish and Rustic Furniture. The Writer Is a Very Successful Summer Cottage Architect.

great distance.

Of course no summer cottage is complete without a fireplace, to add cheer and comfort on rainy days or chilly evenings. If face brick are not easily obtainable, field stone are usually nearby. What is more charming than a fireplace built of field or cobble-stone, a gift from nature that needs no artificial embellishment to add to its artistic beauty. By careful selection as to color cobble stone offers possibilities in harmonious color treatment unexcelled in any other form of masonry.

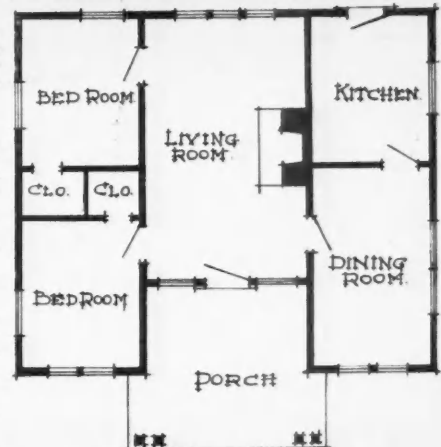
The foundation for the summer cottage is another simple form of construction. Cedar or any other kind of wooden posts are often used, for the weight of the superstructure seldom requires an extra heavy foundation. If the fireplace is constructed of field or cobble stone the effect is more pleasing if the foundation is of the same material. Often the site chosen for the summer cottage is on the site of a hill, as a better view of the nearby lake and surrounding country is obtained. On such a site the foundation should be of concrete, as the construction would better withstand the wind pressure, and the opportunity if afforded for having a basement under a part of the cottage without much additional expense.

Probably the most important feature of the summer cottage is the screened porch, which often answers

for the living room, dining room and sleeping porch. Furnished with porch swing, rustic or reed chairs and grass rugs, the screened porch offers



Nestling Among the Pines Rests "Pine Cone" Cottage, One of a Delightful Score Along the Lake at Portage Park, Mich., a Popular Resort. Many Builders Have Made This Work Very Remunerative.



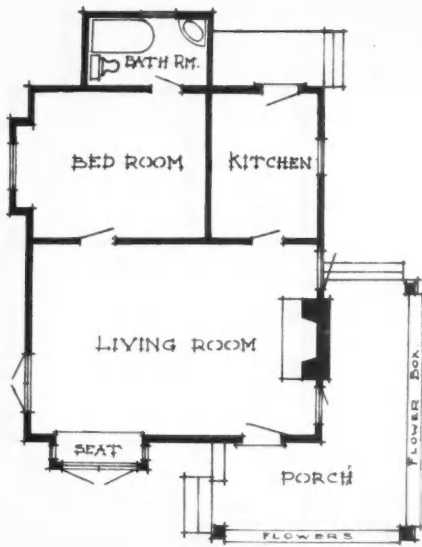
Floor Plan of "Pine Cone" Cottage, Showing Simplicity of Arrangement.



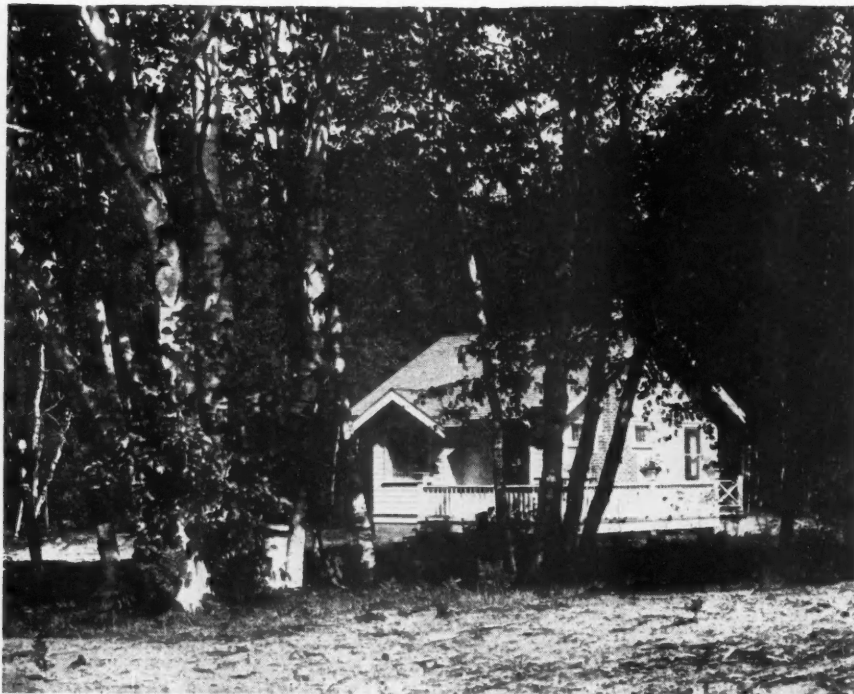
The All-Shingle Cottage Blends Well with the Surrounding Foliage and Gives That "Homey" Atmosphere That Is So Necessary in Summer Cottages. These Vacation Homes Are Generally Built of Material Obtained in the Locality.

comfort, view and fresh air for the entire family.

The outside walls of the summer cottage are usually single construction. The siding is nailed to dressed studding, and forms the outside and inside wall finish. Six-inch tongued and grooved siding with beveled face and straight back is probably the most common. Wide boards, lapped about one inch, are often used, and give a very good appearance, especially on the exterior. Asphalt-slate roll roofing



Floor Plan of "Silver Birch" Cottage.



"Silver Birch" Cottage—An Oasis Among the Tall, Shimmering Trees. It Has Three Spacious Rooms and Bath, and Large Open Porch. The Chemical Closet Is Very Practical in Summer Cottages of This Type.



The Summer Cottage Should Welcome Light, Air and Sunshine. The More Windows the Better the Health, the Better the View of Beauties of Near-by Lake and Hills.

has recently been used with good results on the outside walls of cottages. The better method is to side the cottage with slip-lap, over which the roll roofing is placed, with panel strips about thirty-two inches on centers. If the joints of the

roofing material are vertical, which gives a better effect, the panel strips are placed over them. The green or red slate surface offers a pleasing contrast to the panel strips in white or gray.

No doubt most of us have hoped at some time to own a real log cabin, where we could "rough it" and feel that we were pioneering during our vacation. But log cabin construction is very expensive at present in most localities. The well-to-do may boast of a log cabin for their summer home, but the majority must be satisfied with the cheaper, and really more practical materials obtained at the local lumber yard.

Partitions and ceilings in the summer cottage are usually of beaded ceiling or wall board. Wall board is probably the cheaper, as less labor is required in putting it in place. If wall board is used the joints are covered with ordinary lattice strips, giving the paneled ceiling or wall effect. If beaded ceiling is used for partitions and ceiling it is more attractive without stain or varnish, for glossy varnish suggests too much elegance for the summer cottage. Leave the wood work in its natural finish and beauty. Time will stain it a soft brown before many reasons have passed.

Plumbing in the summer cottage is greatly simplified compared to the permanent home. Usually a cheaper grade of fixtures are used if a complete bath room is installed. The common cast iron sink, with wooden drain board, answers very well for the kitchen. Few summer resorts can boast of a sewer system, so it is necessary for the individual cottage owners to provide their own sewerage disposal system. For this purpose the cesspool or



Charming Lakeside Cottage at Portage Park, Mich. Summer Vacations Are an Important Event in Most Folks' Existence—Hence the Growing Importance of Summer Cottages and Vacation Homes.

septic tank is the most practical and the most sanitary. These are built of brick or concrete, with natural soil bottom, air tight top and tile overflow outlet.

The chemical closet is very practical and economical for the summer cottage. These are made in a variety of styles and sizes. As the chemical closet requires no water supply or soil pipe they are easily installed.

The problem of furnishing the summer cottage is easily solved. The first move is to search the attic and basement of the permanent home for discarded furniture. By the use of paint and enamel the old fashioned furniture takes on a new beauty. The old dresser white enameled and trimmed in blue, the chairs in white or gray with orange trimming, and the table in yellow and black are pleasing color combinations. Even rustic furniture lends a touch of cheer, comfort and beauty to the summer cottage interior. At Portage Park, Michigan, a prominent physician has built all of his furniture of birch bark and poles, chairs, table, settee, mantel shelf, china cupboard, dressers and picture frames all have the birch bark finish.

Fortunate indeed are those who can enjoy a summer cottage away from the noise, dirt and heat of the city, up where the air is always sweet and pure.

New Calendar Plan

CONSIDERABLE agitation is being made to change the present calendar and substitute a new one known as the Liberty Calendar. The calendar plan sets aside New Year Day as an independent legal holiday. It stands between the last day of December and the first day of January and is not included in any week or month. Another independent day, called "Leap Year Day," is provided for leap years. It is placed between June and July and is not included in any week or month. The remaining 364 days are divided into thirteen months of exactly four weeks each.

Every month commences with Monday and there are exactly 24 work days in every month.

In order to retain exactly one-seventh of the time for Sundays, each seventh New Year Day becomes "New Year Sunday," and each seventh Leap Year Day becomes "Leap Year Sunday."

The added month is named "Liberty," and it is placed next after February. Thus the months are January, February, Liberty, March, etc.

Under this calendar, every holiday and every anniversary would always fall on some certain day of the week.



Beautiful Summer Home at White Lake, Mich. This Architecture Is Designed to Blend with the Picturesque Landscape. More Summer Cottages and Homes Are Being Built Each Year.

American Builder in Japan

NOTED IMPORTING AND EXPORTING FIRM INTERESTED IN AMERICAN BUILDING METHODS AND MACHINERY

NO nation takes a keener interest in modern American methods and machinery than the people of Japan.

This fact impressed itself upon William A. Radford, Jr., vice-president of the AMERICAN BUILDER, while he was in Japan recently. Mr. Radford has had an excellent chance to study the effect Americans have upon other nations, having, during the last twenty months, spent considerable time in Europe and in the different countries of the Orient.

While Mr. Radford has been gathering impressions of other nations and their people, these same nations and peoples have been learning much from him, not only about the Radford publications, *Farm Mechanics* and AMERICAN BUILDER, but about the building and farm equipment that these two magazines deal with.

While in Japan during last fall and early winter Mr. Radford made the acquaintance of Mr. T. Kagawa, president of the Central Commercial Company, an importing and exporting concern, the main office of which is in San Francisco. Mr. Kagawa makes his headquarters in Osaka, Japan, and while Mr. Radford was there Mr. Kagawa was very cordial and helped Mr. Radford materially in his investigations.

It was during one of Mr. Radford's visits to Tokyo that the photograph, reproduced in the accompanying illustration, was taken. It shows Mr. Kagawa and

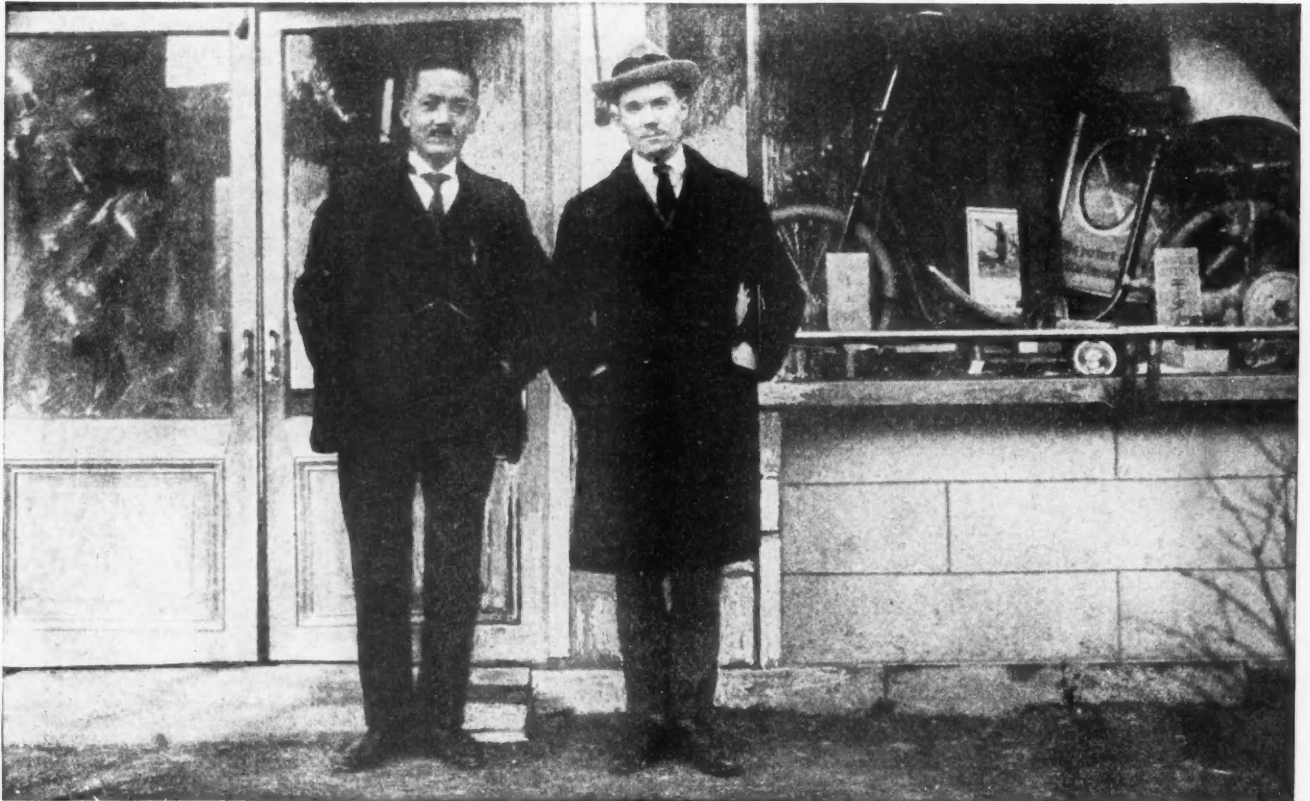
Mr. Radford standing in front of the Tokyo office of the Central Commercial Company. Accompanying the photograph was a letter to the home office of the Radford publications from Mr. Kagawa, which, in part, follows:

"I am very much pleased to inform you that I have had another opportunity of seeing Mr. William A. Radford, Jr., here at Osaka. I introduced him to the secretaries of the Chamber of Commerce at Osaka and the Commercial Museum here. While in Tokyo we dined on several occasions with Mr. E. Sakamoto, of the Nakay Taiyo Do, famous manufacturers of toilet preparations.

"Mr. Radford and I have discussed very thoroly the business opportunities for Americans in Japan and the whole Orient and from him I have secured much valuable information that I expect will be of great service to us.

"We will be glad to have you use our offices as branches for your business and will be glad to serve you in any way we can. Enclosed you will find a photograph of Mr. Radford and myself, taken at our Tokyo office."

After leaving Japan, Mr. Radford revisited Shanghai, China, and then sailed for the Philippine Islands, where he is continuing his investigations. It is expected that he will return to the United States late in June.



Mr. Kagawa and William A. Radford, Jr., in Front of Tokyo Office of Central Commercial Co., of Which Mr. Kagawa Is President. This Concern Does a Large Exporting and Importing Business, Especially in American Machinery.

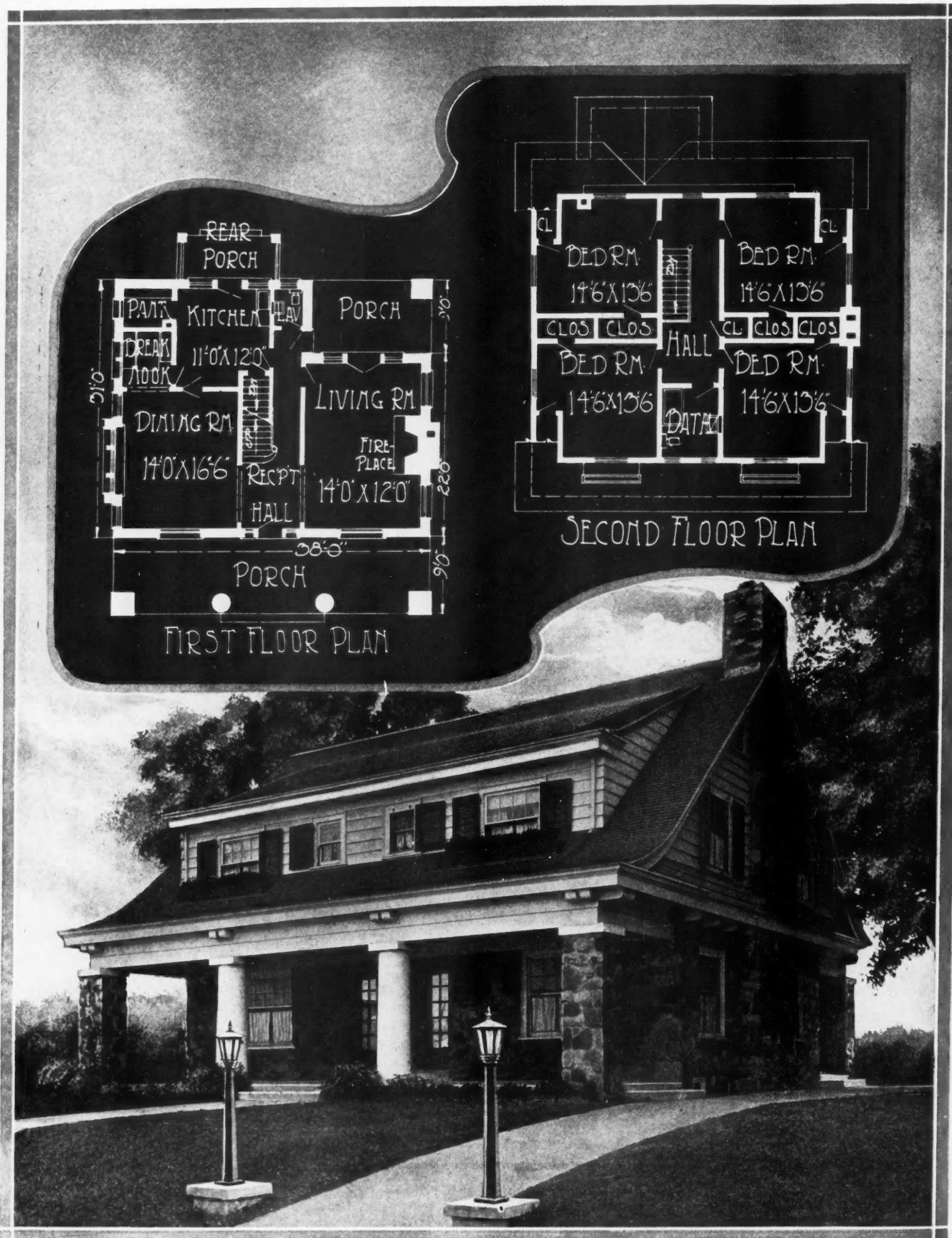


The Heavy Dotted Line Shows the Route Followed by Wm. A. Radford, Jr., During the Past 15 Months, Visiting All the Principal Cities and Producing Areas of the Orient, in the Interests of the American Builder and the American Building Industry.

When Mr. Radford lands in Seattle he will have been away from the United States two years lacking one month. He sailed on July 22, 1919, and spent five months in Western Europe, visiting most of the continental countries as well as the British Isles. In all of these countries he paid particular attention to building conditions, building methods and builders' equipment. In January, 1920, he sailed for the Far East, landing in Colombo, Ceylon, February 15. Since that time he has traveled many thousands of miles, visiting all of the countries of Asia and the island countries, such as Java, Sumatra and Japan. These visits took him from the Equator to the latitude of the boundary between the United States and Canada. The accom-

panying map shows, by the dotted lines, the routes Mr. Radford took and the countries and cities he has visited. As this is written, Mr. Radford is in the Philippines, from which he sails the latter part of May.

Upon his return to the United States Mr. Radford will make the information he has gathered available to both AMERICAN BUILDER readers and advertisers. He has studied particularly the opportunities in foreign countries for American manufacturers and has made some very desirable business connections with importers and merchants in many countries. All of this information will be placed at the service of the AMERICAN BUILDER family.



UNUSUALLY SPACIOUS COLONIAL HOME WITH SPECIAL COBBLESTONE TREATMENT. Aside from the Colonial design which speaks for itself, this beautiful home has many features that will attract the man of family who wants something different, yet not conspicuous. In this home the cobblestone up to the roof eaves gives a very hospitable and comfortable impression as well as an air of bigness and strength, altho the house actually is only 31 by 38 feet. The upper story is frame siding with a shingle roof broken up by a wide dormer. The well placed small windows with their characteristic shutters and small panes are additional embellishments that make the home attractive. On the first floor are three living rooms, all designed to provide the utmost comfort; on the upper floor, the four bedrooms have been located, each of ample size, with large closet space and plenty of light and sunshine.

Concrete Block in Recent Apartment Construction

NOTEWORTHY ADVANCES MADE IN THE USE OF NEW TYPE OF BLOCK IN LARGER SCALE BUILDING—POPULAR BECAUSE OF EXTERIOR BEAUTY

By A. J. R. Curtis

IN VIEW of its remarkable success the apartment building or "multiple family house" has justified its existence sufficiently so that we may now consider it a permanent type of dwelling in our cities, likely to withstand for many a year the most virulent onslaughts of the single-family house advocates. And if we are to have the apartment type with us permanently, we must reduce, if not eliminate, the evils of the apartment as they have been so often pictured and demonstrated. Modern apartment buildings should be so attractive that they will improve rather than depreciate a neighborhood, and the apartments arranged to the idea of making them permanently "homey" as well as financially satisfactory to the owner.

Recent noteworthy advances made by the new type of concrete block in the field of housing developments have been followed by extensive uses of block in apartment construction. In one instance at least a single owner has lately built some fourteen of these buildings (about 200 apartments) with all exterior walls of marble and granite surfaced block; and there is a considerable number of other cases where this construction is being just as successfully altho less extensively employed. In the following paragraphs some of the standard details of construction for these buildings will be described.

The popularity of concrete block in the field of apartment construction may be attributed to a number of quite obvious points. Finished in the gray-white shades with smooth, impervious surfaces which are light without dazzling and retain their newness of appearance indefinitely, these buildings are decidedly attractive. Then it is customary in this construction to face all four sides of the buildings so that every elevation shows off to

as good advantage as the front. Most of these buildings now going up are of absolutely fireproof construction, including concrete floors and stairs, while those in which wood floors are used are especially pro-



Figure 3. Method of Seating Floor Joists. The Joist Block Filling the Space Between Joists on the Inside of the Wall, Are Clearly Shown.

tected by means of cement plaster on metal lath, on ceilings, around stair openings and in similar locations.

Some Construction Details

Concrete block, of both the hollow and two-piece types, are ordinarily produced in widths up to 12 inches. For walls exceeding this width, as ordinarily required in the foundations and lower stories of apartment buildings, the necessary thickness is usually built up as a double wall, by means of hollow and veneer block, as shown in Figure 1, or using two-piece

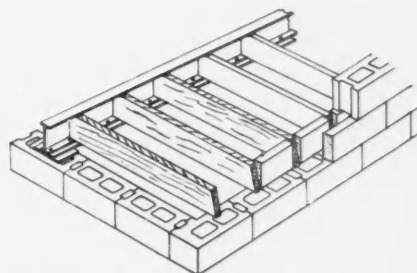


Figure 4. Support for Floor Joists on Both the Block Walls and Steel Beams, Is Shown. A Steel Plate Is Riveted to the Under Side of the Beam to Increase the Bearing for the Joists.

block and veneer block or in certain cases with three or more veneer or special shape block. It will be noticed by referring to Figure 1, that the hollow block are so laid that the solid longitudinal walls of each rest one on the veneer block below and the other on the corresponding solid longitudinal wall of a hollow block below. Where it is required to carry extraordinary weight, the open spaces in these walls may be filled with quaky-wet concrete; quite commonly the block

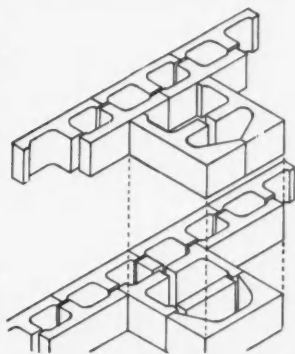


Figure 2. Pillaster Construction with Two-Piece Block, Showing Two Successive Courses. Where Concentrated Loads of Great Weight, Such as Heavy Reinforced Floors of Beam and Slab Construction Are Used, Pillaster Construction Shown Is Sometimes Employed, Often Filling the Open Spaces with Reinforced Concrete.

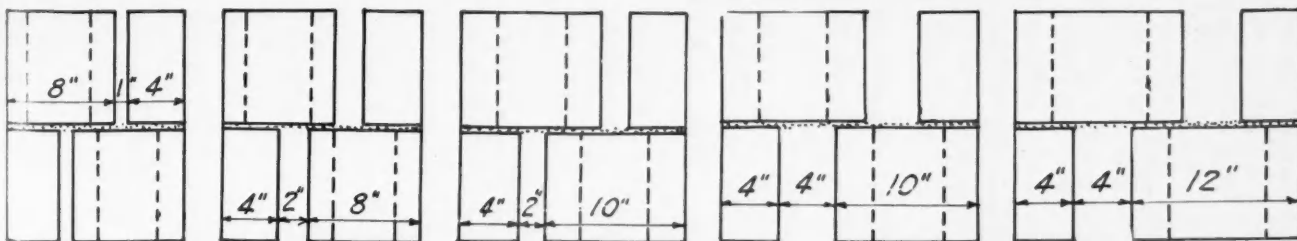


Figure 1. Sketches Showing How Walls Wider than 12 Inches Are Constructed of Concrete Block. The Prevailing Method Is by Combining Air Space Block and Veneer Block as Shown.

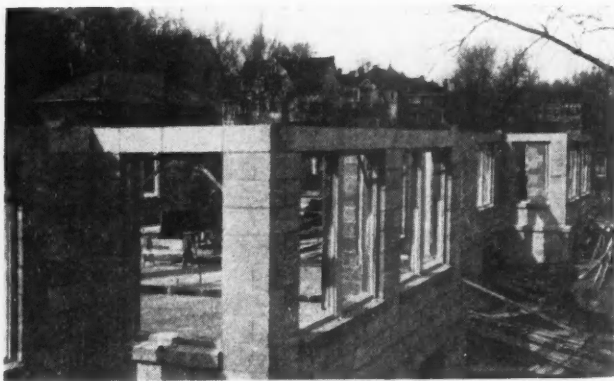


Figure 5 (a). Corner Return and Lintel Details Are Clearly Shown.

are so laid as to make the form for reinforced pilasters and columns. In the latter case only a few feet of concrete is placed in the pilaster or column at a time, in order to avoid the pressure of a deep column of wet concrete against the block. Suggestion for a 24-inch by 24-inch hollow or filled pilaster with a two-piece block system is shown in Figure 2.

The support of the floors is of course a matter requiring careful handling. If the floor be a flat reinforced concrete slab, the method of support is as shown in Figure 5. In such cases the floor usually is allowed to rest on a 5-inch width of wall, the remainder of the wall width being taken up with a veneer block course, leaving a small air space (presumably an inch) between the veneer blocks and the floor slab. Then the next course of block will rest on floor slab and veneer blocks.

Figures 3 and 4 illustrate the manner in which wooden floor joists are carried in approved concrete block construction. For the course above that on which the joists rest, veneer blocks are used on the outside and solid "joist" blocks on the inside. These joist blocks have a length equal to the open distance between joists and are laid in the wall on centers equal

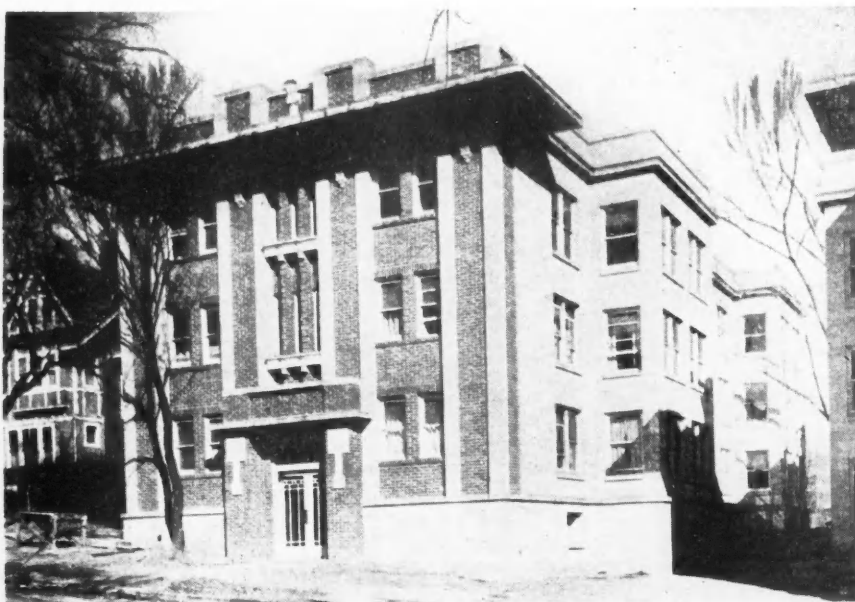


Figure 6. View of Turner Court Apartments, Omaha, Showing Pleasing Contrast Between Brown Tapestry Brick and Main Walls of Concrete Block, Bedford Finish.

to the specified spacing of the joists. Joists are always given a "fire out" and rest on a 5-inch width of wall. The maximum thickness of the veneer block, therefore, is 5 inches less than the thickness of the wall. Where joists are supported on steel beams, as shown, they should have a bearing of 4 inches, this generally requiring the use of a beam plate as shown in Figure 4.

Wall Insulation

It is very advisable to make sills and lintels and all special structural pieces of "two-piece" insulated con-

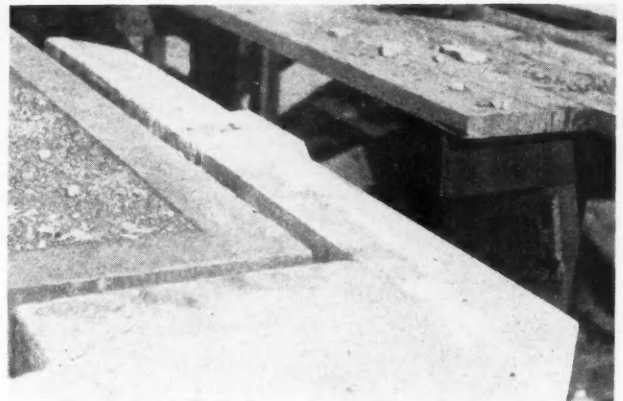


Figure 5 (b). Detail Showing the Water-Table Course at a Corner. The Water-Table Is on a Level with the Floor Slab. Since the Floor Thickness Is Less than the Water-Table Height, That Part of the Floor Which Rests on the Wall Is Built Up to Make a Level Seating for the Next Course of Block.

struction. Good apartment construction requires the use of double or two-piece sills, lintels and specials. No structural connection should exist between inner and outer sections of sills and lintels. There should be an air space an inch wide between them. This will provide effective insulation and absolutely block the passage of water, should window and door frames be so poorly fitted as to permit water to enter. In cold climates some little heat loss may be prevented by stopping off vertical air spaces with felt or tar paper every six or seven courses to prevent convection currents.

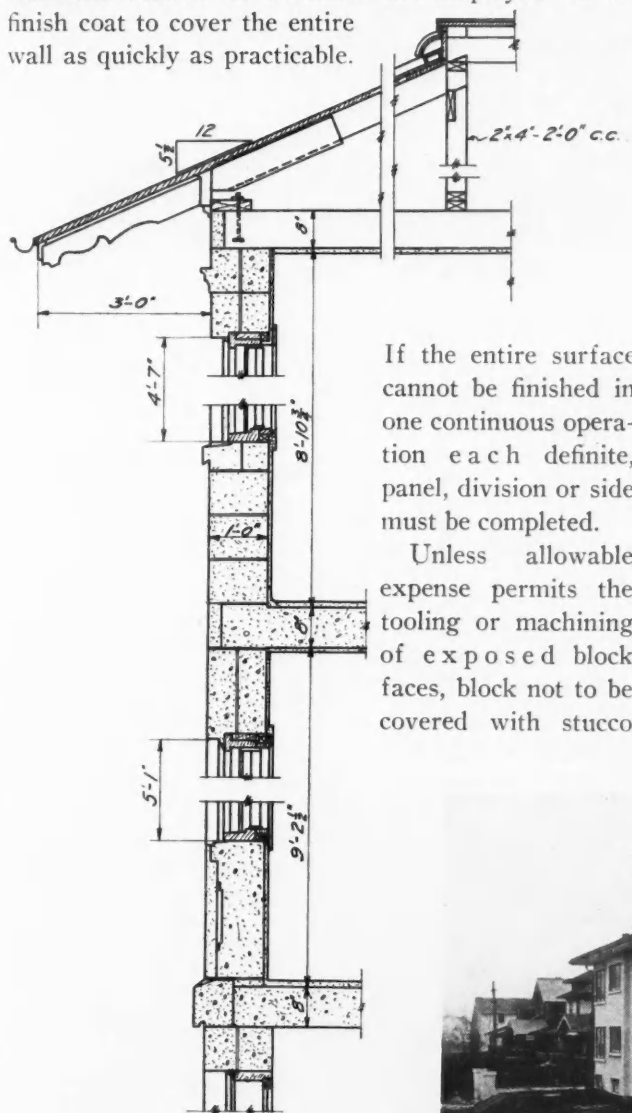
External Surface Treatment

For large apartment buildings stucco surfacing is only occasionally used to good advantage, since the absence of joints and lines is apt to leave the general effect severely plain and, therefore, undesirable. Best stucco effects have been produced on concrete block and concrete tile apartment houses by employing the sand float finish similar to that used on the Indianapolis apartment shown in Figure 9. The ordinary spatter-dash finishes are especially to be avoided, as they collect dirt, and, if made to cover extended areas, almost invariably



Figure 7. The Aberdeen Apartments, Nearing Completion, Have All Exterior Walls of Concrete Block and Concrete Architectural Trim, Using the Bedford Finish. The Rear and Side Elevations Are Practically as Attractive as the Front.

show difference of color at points where successive day's work join. They sometimes show markings at points where work is joined after such a short interval as an hour or two. In any case it is important that a sufficient number of workmen are employed on the finish coat to cover the entire wall as quickly as practicable.



If the entire surface cannot be finished in one continuous operation each definite, panel, division or side must be completed.

Unless allowable expense permits the tooling or machining of exposed block faces, block not to be covered with stucco

Figure 8. Partial Cross-Section of Concrete Block Walls of an Apartment Building with Concrete Floors, Terrazzo Surfaced. The Areas Below the Windows Were Filled with Ornamental Concrete Slabs. This Building Has 12-Inch Hollow Walls of Two-Piece Hollow Block.

should be finished with a flat surface. The flat-faced block is the most practical type because it is not an imitation of hewn stone; sheds dirt and water and presents a most pleasing appearance if color and texture are well handled.

Since it is most important to avoid or entirely conceal hair cracks and similar minor blemishes which are peculiar to smooth surfaces, rather coarse textures should be used on block for apartments and similar high-grade structures. The surfacing mixture must be dense and watertight to prevent penetration of dirt with consequent discoloration and the color tones must be snappy and should have a little warmth. The cements available for these mixtures include white and gray portland cement and a mixture of the two; the small aggregate usually consists of white or buff, marble or light sand or a mixture of the two, and the larger aggregate is usually white or gray granite or white marble or a combination of these, often with just a little black marble and mica spar added to give the surface contrast and add a little sparkle. In certain cases the aggregate consists entirely of white marble and mica spar. The proportions are usually one part cement to two parts of all aggregate combined. No material larger than the Nos. 2 and 4 sizes are regularly used altho a certain amount of No. 2 mica spar crystals usually may be added with good results.

The colors obtained with the materials just described range from a white to a gray or to a blue-gray, unless buff marble or yellow oxide of iron is used to produce colors varying from cream to buff or yellow. Red

(Continued to page 115.)

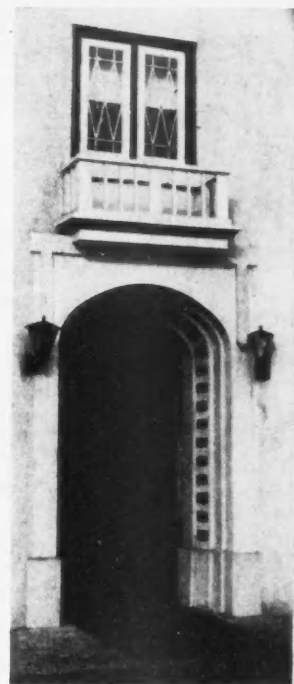


Figure 10. Terraces and Entranceway, Evergreen Apartments, Showing the Unique and Pleasing Design Admirably Adapted to Concrete Surfaces.

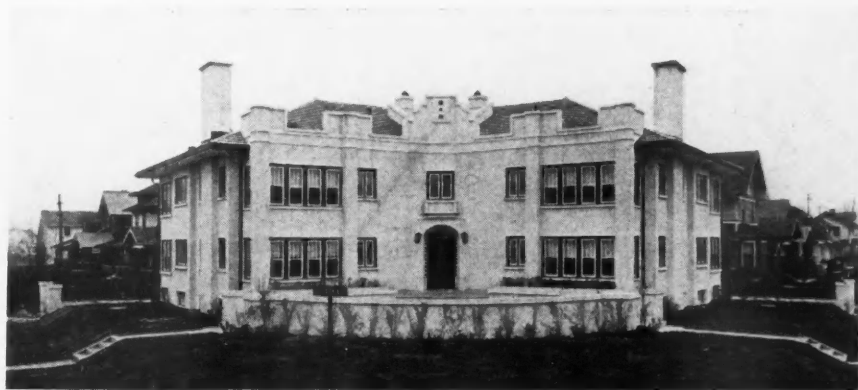
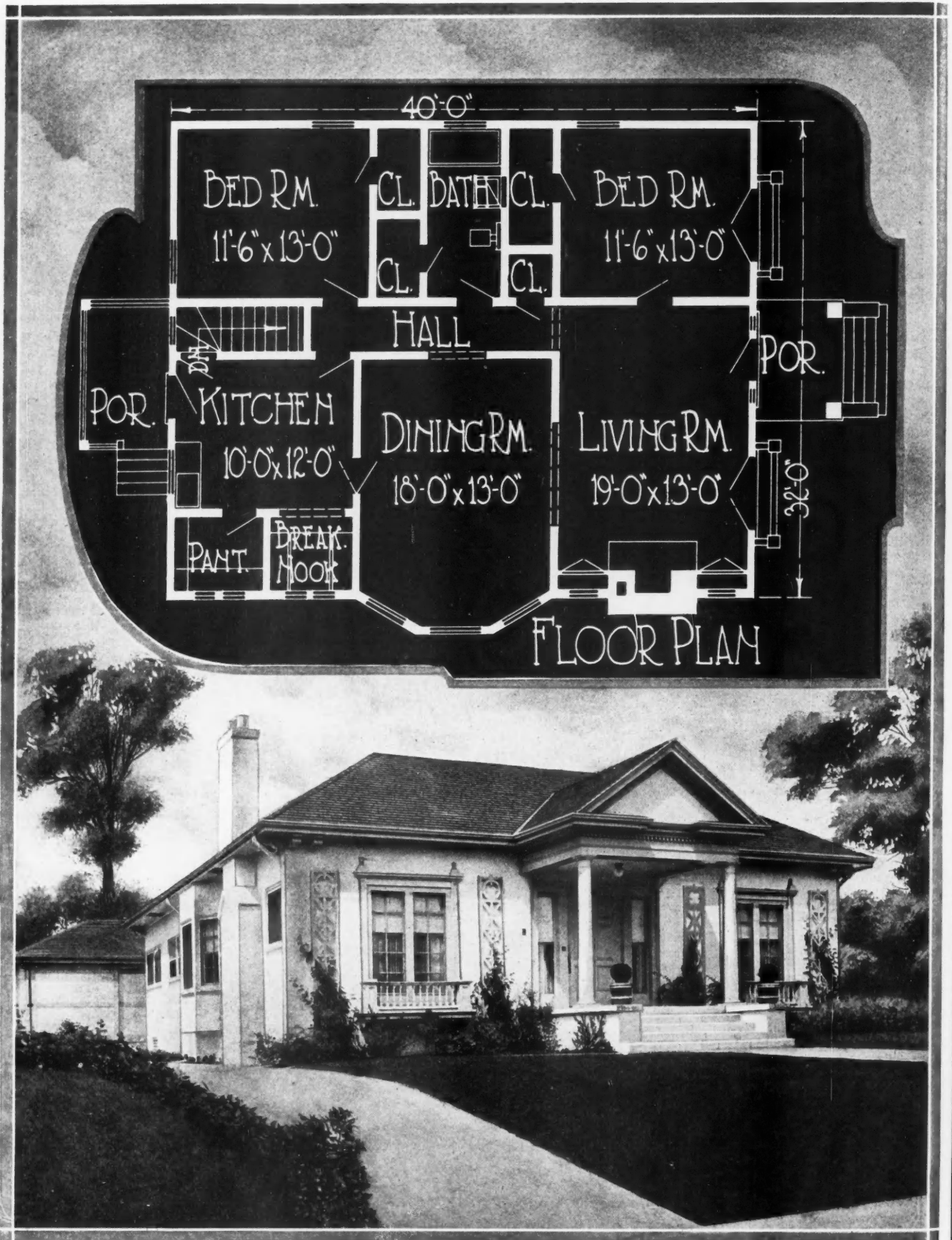


Figure 9. The Completed Evergreen Apartments of Which Construction View Is Shown in Figure 11. The Block Walls Are Covered with White Portland Cement Stucco, Sand Float Finish.



ARTISTIC, COZY BUNGALOW OF FIVE ROOMS. This beautiful little home is doubly attractive because of its immaculate white stucco exterior. The walls can be hollow tile, concrete tile, frame or common brick. The front facade is particularly well-designed with French doors opening out onto small balconies on either side of the well-appointed hooded entrance, semi-colonial in character. Ornamental lattice work here and there for vines adds an artistic and decorative touch. This bungalow contains five rooms: a large living room 19 by 13 feet, with a fireplace and wall bookcases, dining room, 18 by 13 feet, lighted by a large bay window on one side, small well-arranged kitchen, breakfast nook, conveniently adjacent, and two bedrooms, one off the living room, the other at the rear of the house. This cozy little home is 32 by 40 feet.



Street of Beautiful Homes

Home Number Three

HOME No. 3 of the Street of Beautiful Homes which is shown in the Art Insert in this issue is a worthy addition to this impressive panorama. Where last month's Art Insert Home was a frame bungalow of distinctive Western lines, this house is a bungalow of brick of more substantial and reserved appearance. The foundation is a 12-inch concrete wall with the upper walls solid brick with a face brick exterior.

To allow for the large cheerful sunparlor in the front, the porch has been built small at one side. It opens into a small vestibule fitted with a closet and to the right is an open doorway leading into the large spacious and hospitable living room, 21 feet 6 inches by 16 feet 9 inches. Directly in the center in the rear of this room is the fireplace, which was made to warm. French doors lead the way to the sunparlor, one of the most delightful features of the house and one that lends itself very beautifully to furnishing (see article that follows). Its wall are solid, windows insuring plenty of light.

At one side to the rear is the dining room, not over-size, and amply lighted by a series of windows on one side. It opens directly into the small modern kitchen and into a side hall which leads to the various bedrooms conveniently grouped together in that corner of the house, and entirely secluded from the living rooms. At the rear of the house is a large porch divided into sleeping porch at one end and work porch at the other.

The floor plans and construction details of this sub-

stantial and charming house are shown on pages 88-89 in blueprint form.



Suggestions for Furnishing the Art Insert Home

By MARY FARLEY

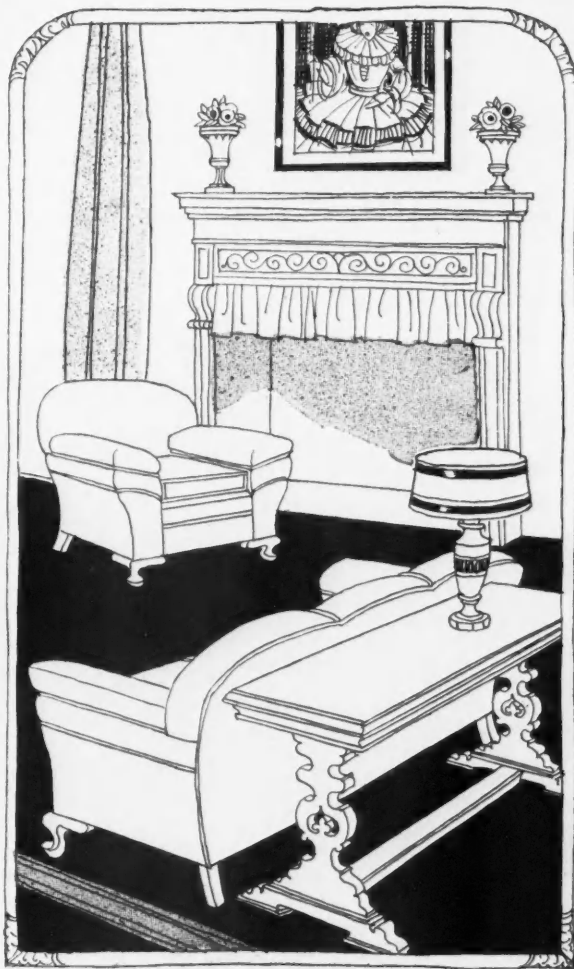
AN artistic home should not be regarded a luxury. Expensive things are not all good, nor cheap ones necessarily bad. It is chiefly a question of selection that plays an important part in producing harmony. Have in mind your ideal of a room, then buy each article with the furnished whole in mind, and gradually you may eliminate the less desirable pieces. If the available money is limited begin with the back-

ground of the room, make the floors, walls, woodwork, and ceiling a suitable background.

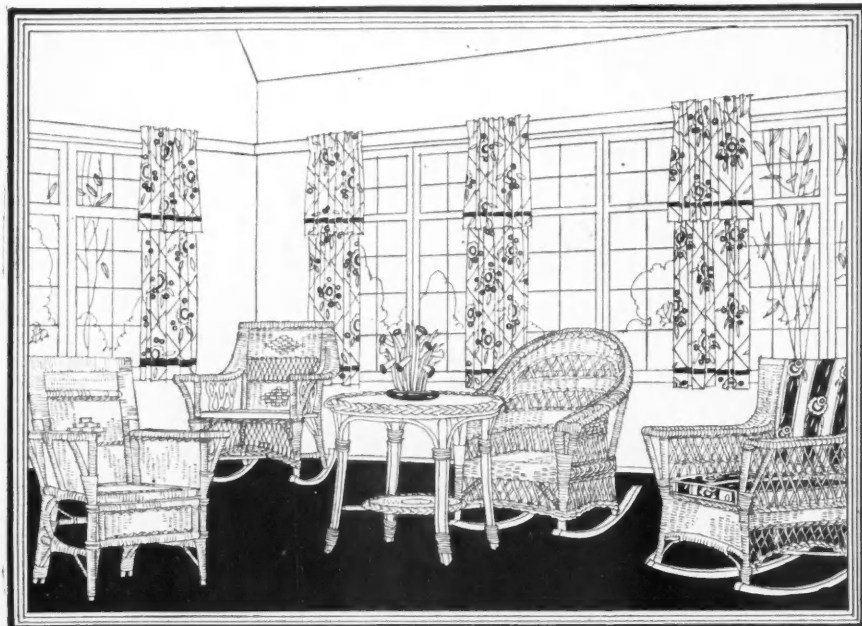
When the entrance is directly into the living room, as in the house shown here, a vestibule is very necessary. It affords a place for the dripping umbrella in rainy weather, an umbrella stand; for the built-in seat wherein to tuck away the rubbers and overshoes, and possibly the children's roller-skates. There is a convenient mirror, too, with some hooks for caps and hats; and on the floor, a small domestic rug that can be cleaned easily.

The Living Room and Living Porch

The living room is a place where the family assembles for comfort, pleasure, or study, and to entertain guests. It has taken the place of the old-fashioned parlor, the sanctum of Sunday callers, weddings, and funerals, and should, therefore, be kept attractive to



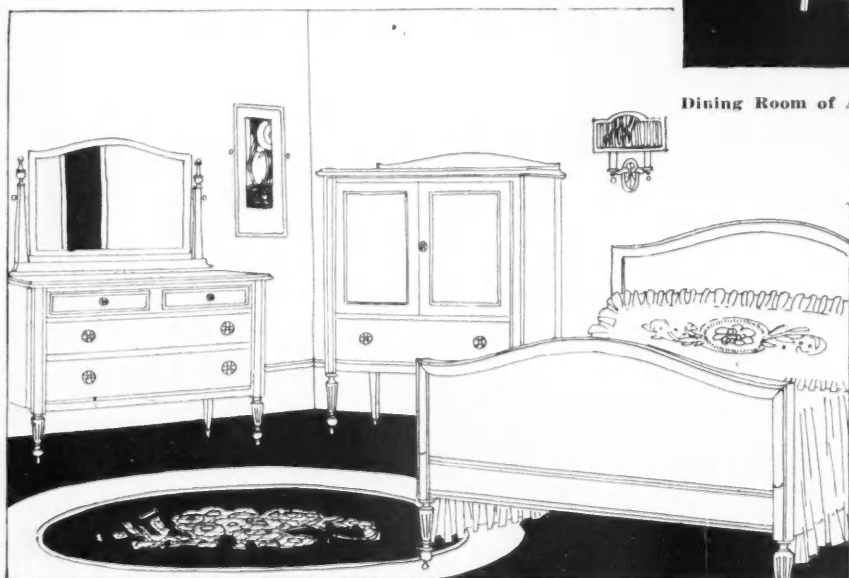
The Living Room Is the Sanctum of the Family. The Fireplace Is the Main Feature. This Is a Suggestion for Furnishing.



Excellent Furnishing Scheme Suggested for Sun Parlor Where Everything Should Be Light and Cheerful.

the younger members of the family as well as comfortable for the grown-ups. In the house planned here the living room and living porch open into each other so that there is a sense of spaciousness in both.

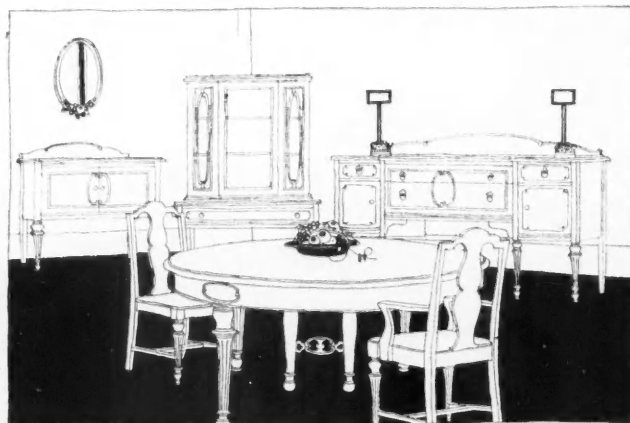
The woodwork is finished in ivory enamel with a dull satin-like lustre; the walls covered with a heavy paper of putty shade having a pinkish caste, or they may be painted. Painted walls have an advantage over papered ones in that they may be cleaned easily with warm water and soap. If painted, the ceiling is tinted to match the walls. The floor is of quartered oak, finished with a dull finish that is not so slippery as a waxed floor. In selecting colors, remember that as in nature, "Earth dark, trees lighter, and sky lightest"; so, too, the floor dark, walls lighter and ceiling lightest.



Special Treatment Is Called for in Bedrooms. Light Colors, Carefully Chosen Hangings and Not Too Much Furniture.

The fireplace is the main feature of the living room—a fireplace that burns. Nothing is less desirable than an elaborately carved mantel; nothing more suited to an attractive home than a mantel with a plain frieze and simple cornice consisting of a classical architrave with a shelf above and a large mirror hung on the wall over it. The predominating ivory color of the room is enlivened and strengthened by the richer and heavier color used in the hangings, furniture coverings, and rug. A cream-colored net with side curtains of figured rep or chintz and valances of the same or velour is used for the smaller windows in living room and the group on the living porch. If rep is used at the windows the furniture covering should be of

plain or striped velour and duplex damask; if velour, the portieres and slip covers for the davenport and easy-chairs and pillows should be figured rep in English style. Mulberry and fawn is a pleasing combination. It is best to have the curtains extend slightly



Dining Room of Art Insert Home as It Will Appear After Being Furnished and Decorated.

below the woodwork under the windows. Then if they shrink after being laundered they will still reach the sill. A simple brass rod is sufficiently strong even for the front group of windows on the living porch, but should be supported at the center by a screw-hook to prevent sagging. The rugs are plain-toned domestic Wilton of a dark fawn color.

In the living room, the built-in seat next to the fireplace has a soft upholstered cushion to harmonize with the hangings. The furniture

does not carry out any particular period style, but with this type of trim Queen Ann, Georgian, or Colonial pieces are in good taste. The piano is placed under the windows at the side of the room, the davenport near the fireplace, and in the opposite corner there is a desk fitted with material for writing and a desk chair. A reading table for magazines, flower-bowl, and lamp; and nearby a comfortable armchair complete the necessary pieces of furniture for this room. The lamp may have a porcelain base and a flaring shade, and carry out mulberry, green and gold colors. For the living porch, which may or may not be separated from the living room by portieres, have a wicker fernery in the windows, a large wicker chair, and a reading table of wicker. The writing desk could be placed here instead of in the living room and a bookcase in the corner of that room if so desired. Have only a few pictures, and these well chosen. Family photographs are for one's own room. Have the fireplace fittings of simple old brasses of the Colonial period.

The most successful way of lighting a room is by side lights, well placed, and by electric lamps distributed judiciously about the room. No one color is always good in all places and under all circumstances. However, soft neutralized tones of rose, yellow, yellow orange, orange, yellow green, green and blue green have great possibilities. The silk shades should be covered not only around the sides, but on the top with the material lined with white—this casts a softer light about the room.

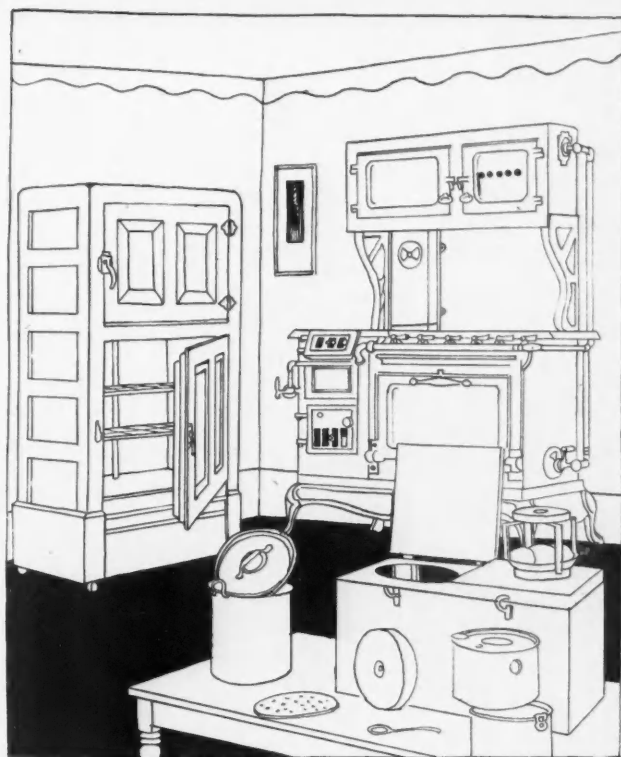
The Dining Room

Here, again, an ivory finish is used. The walls are painted and panels made by the use of narrow moulding of wood; the floor is oak finished in a dull lustre. Across the corner on the side opposite the windows there is a built-in cupboard, a three-cornered arrangement in ivory with glass doors—a place for blue and white Copenhagen or for the odd pieces of English or French china.

Bedroom

In furnishing the bedrooms bear in mind that a bedroom is a place for rest and avoid anything that interferes with this idea. Large carpets or heavy rugs should never be used; they collect dust and are obstacles to frequent and thoro cleaning—small rugs are much better. The walls may be papered with a simple, smooth paper that can be rubbed down with a cloth. Let the color be light, suggesting brightness and cheer. As to hangings, the fewer they are the better, and in all cases be sure to use light-weight material.

There are, of course, certain objects of furniture that are indispensable in a bedroom—bed, dresser, chest of drawers, small table, and several chairs—a lounge, also, if space permits. Beyond these be careful lest the room seem overcrowded. It is false economy to stint the money you spend on comfortable



Carefully Chosen Furniture for the Kitchen Will Gladden the Tasks of the Housewife.

beds; have good mattresses and springs. Closets should be spacious, and if possible shelves and drawers installed. In this cottage the owner's room has white woodwork with a smooth satin-like finish; walls covered with gray fine-striped paper; plain gray domestic rugs on the floor; and hangings of chintz with rose color predominating. The furniture is walnut.

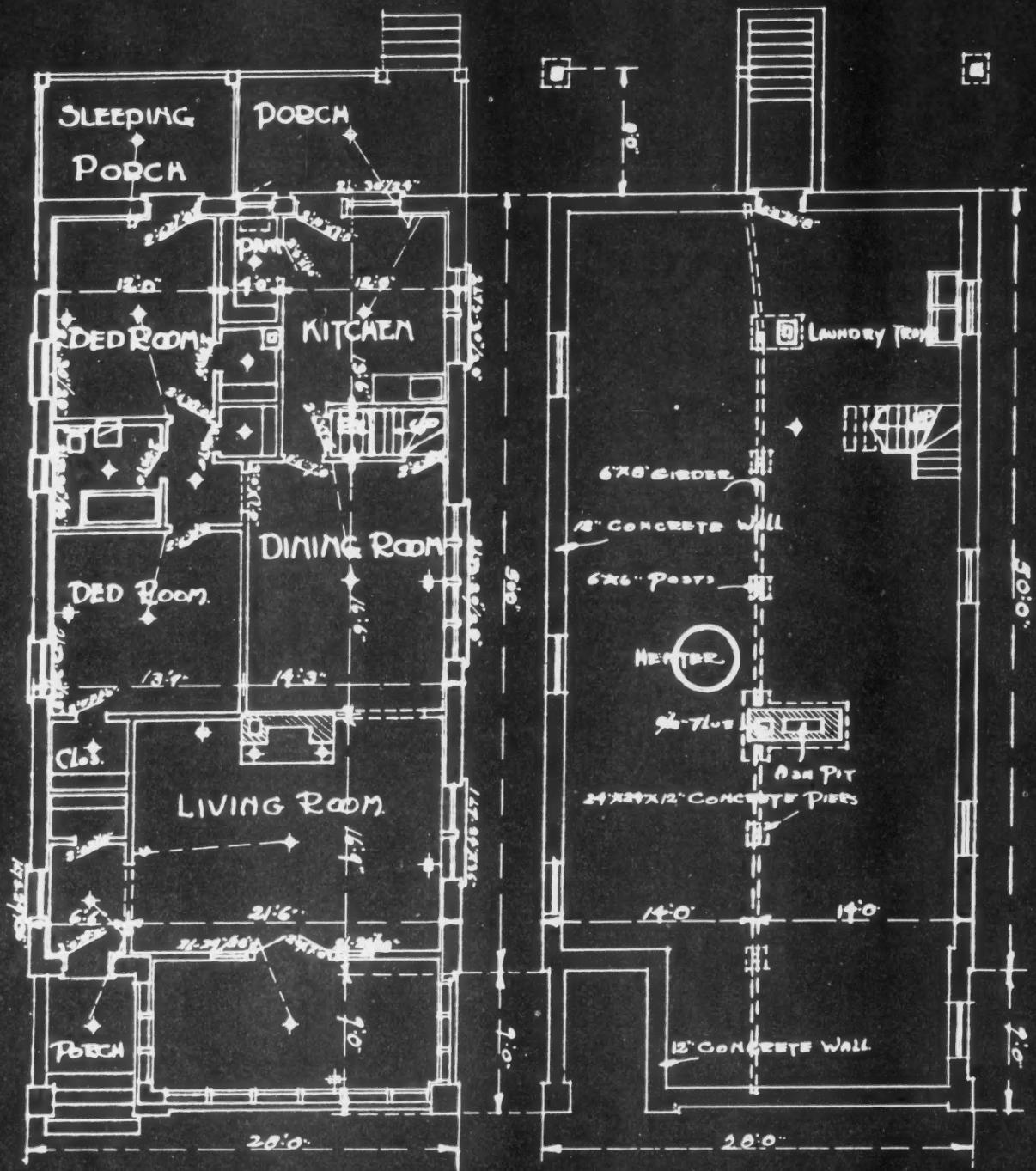
Proper equipment of the guest-chamber need not be a matter of great expense—rather a matter of careful consideration. If there is only one bed have it of full size. Have a small table for a lamp, so placed that the guest may have good light for reading in bed if he so wishes. Glass tops on the bureau and dressing table are most desirable, they are easily cleaned and so far as the guest is concerned he will not have to worry over a spoiled cover or spot on the wood. A writing desk equipped for writing should be included, and so, too, a wastebasket. A few good books and some magazines, not a year old, and a convenient reading lamp completes this group and suggests an easy-chair, which should have a prominent place near the table. In the guest's room the finish of the woodwork is ivory, and ivory furniture is used. The walls are covered with a cheery but not too-colorful chintz paper—with plain ceiling of cream egg-shell; the rugs are plain domestic Wiltons in soft tones of taupe; the curtains of plain ruffled muslin with no overdrapes.

Kitchen

A well-appointed kitchen is essential to make the wheels of domestic machinery run smoothly—an all-white kitchen, the very acme of cleanliness. The floor is covered with linoleum, and there are neat cork mats

(Continued to page 115.)

AMERICAN BUILDER BUILDING PLANS

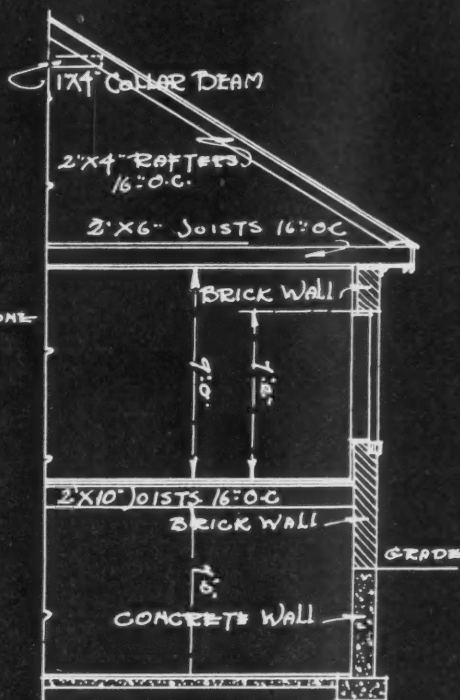
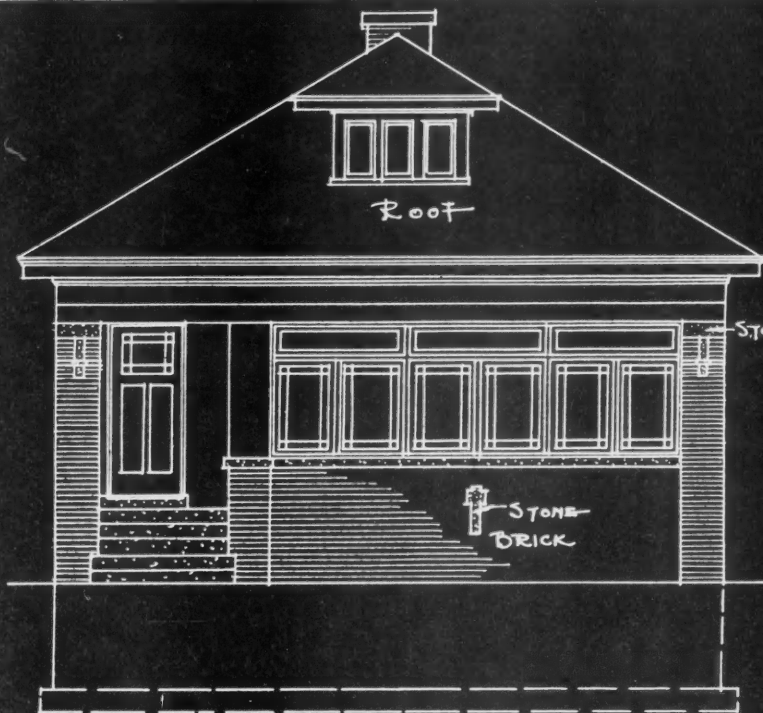


— FIRST FLOOR PLAN —

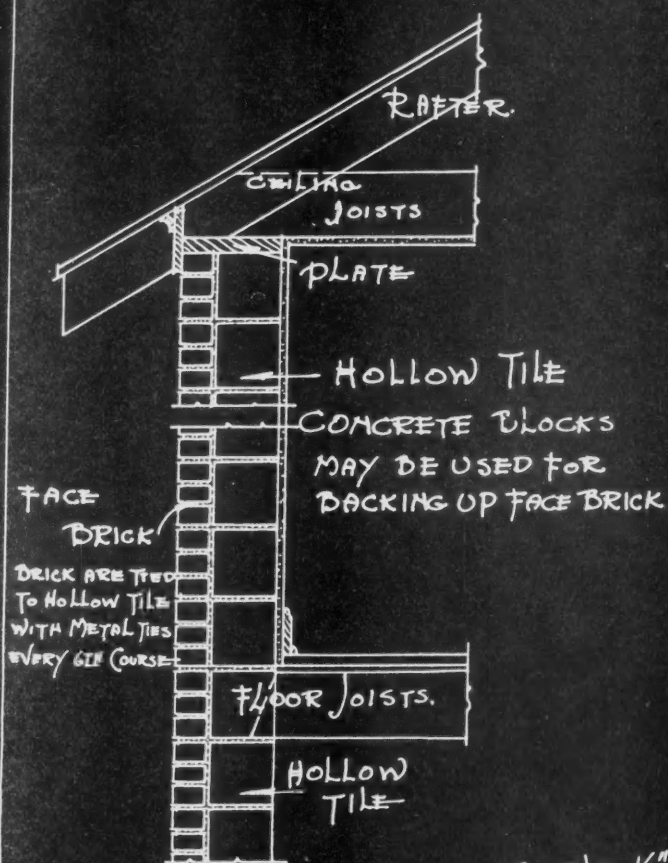
— BASEMENT PLAN —

SCALE $\frac{3}{32}'' = 1'-0''$

AMERICAN BUILDER BUILDING PLANS

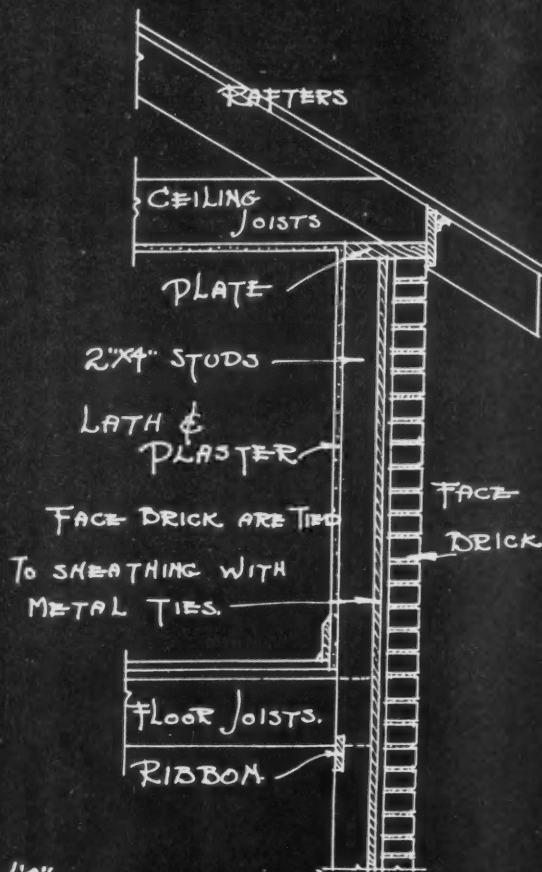


FRONT ELEVATION SCALE $\frac{1}{8}''=1'-0''$ - CROSS SECTION -



HOLLOW TILE WITH FACE BRICK VENEER.

SCALE $\frac{1}{2}''=1'-0''$



BRICK VENEER WALL

Saving Waste Housing Space

HOW ARCHITECTS BROUGHT ABOUT REMARKABLE TRANSFORMATION IN TWO OLD APARTMENT BUILDINGS ON CHICAGO'S NEW BOULEVARD LINK

By Shirley Ware

WHEN Chicago's "boulevard link"—that newly widened portion of Michigan Avenue just north of the Chicago River—became a definite thing the commercial eye of the real estate agent opened to its possibilities. Old buildings that had been deserted on this section of the avenue were quickly purchased and plans made for remodeling until, in rapid succession, one after another, old buildings took on new fronts and offered themselves to an exclusive tenantage.

Then Commerce broadened her view beyond the bridge that was just begun to what is now known as the "north central district" which bids fair to become the Greenwich Village of Chicago.

The first Chicago example of a "building for art's sake" which has been designed and decorated with the needs of the artist constantly borne in mind is the building which now stands on the southeast corner of Michigan Avenue and Ontario Street. Formerly, before the property was acquired by R. C. and A. C. Cook, two old buildings, mid-Victorian in architecture, dilapidated, dirty and lightless, stood, some twenty-five feet apart, looking dejectedly at each other across an unsightly mass of tin cans, rags and broken bottles which filled the sunken yard between them. One was a boarding house with an entrance on Michigan Avenue and five on Ontario Street, the other an antiquated hotel with a shabby, elevated doorway fronting on Michigan. The hotel was set back ten feet from the sidewalk while the other rose directly perpendicular with it. There was a difference of nearly six feet in their respective heights, and while the boarding house had a more or less flat-front style of Victorian homeliness, the other was of the bay-window variety.

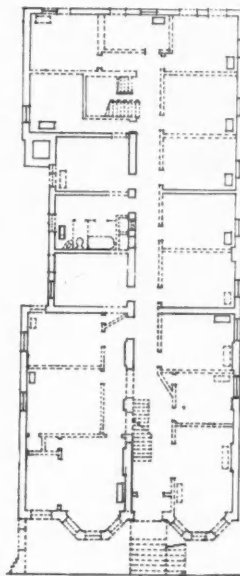
From time to time artists and architects came to the owners and suggested the adaptation of the build-

ings to studio-apartment purposes. Among those with definite, concrete suggestions as to the method were Mr. Fred Hinckens, Mrs. Nancy Cox McCormack and Mrs. Clara B. Wells. Mr. Hinckens made a sketch showing the possibility of turning the unsightly rubbish heap between the two buildings into a courtyard. Other sketches were made and plans discussed.

It was with the combined ideas of the several artists and the architectural co-operation of Robert DeGolyer and the firm of Perkins, Fellows & Hamilton that the

buildings were finally reconstructed. With the raising of the Michigan Avenue street level a few years previous the fenced backyards of the boarding houses had been sunk so that only the tops of the fences were level with the street. These yards, filled with tin cans, ashes and other rubbish, were the first artistic as well as architectural problem. The idea of the courtyard having been advanced early in the plans for remodeling, the fences were removed, the yards filled to street level with rubbish and earth and the whole "floored" with rough-hewn flags.

It was necessary to bring to a certain amount of conformity the two somewhat dissimilar buildings. An additional ten feet was built onto the hotel, making its front elevation even with that of the adjacent building. The roof of the larger building was lifted six feet, producing a windowed clerestory that made the height of the two buildings equal and at the same time gave added light to the studios. The Ontario Street building was constructed with an "L" that widened it across the Michigan Avenue front. This gave opportunity for making the corner studio larger than the rest. In all there are ten studio apartments each consisting of a combined bed and living room, a studio with north light, a kitchenette and a bath. These occupy the Ontario Street building only, while the other is devoted partly to the sales and



Floor Plan of Hotel Fronting on Michigan Avenue Before It Was Remodeled. The Bay Windows in Front Were Removed and Facade Moved Up Flush with Sidewalk on Line with Corner Building. Dotted Lines Indicate Partitions and Walls Removed.



Buildings as They Appeared Before Remodeling. Five Flats Formed a Boarding House on the Corner While the Neighboring Building Was a Ramshackle Hotel. These Two Were Converted by Architects Into Artists' Studios and Exclusive Shops.

manufacturing rooms of a designer of hats and frocks and partly to the use of an architect and interior decorator. There are no living quarters in the latter building, but a restaurant suited to the tastes of the artists fills its basement.

The graceful old black walnut stairways, of which there were five, have been retained in the former boarding house. The original three-step entrance-ways of the five flats contained in the building have been used much as they were previously. The addition of a wrought-iron railing and the painting of the old



Main Floor Plan of Remodeled Court Building Showing Arrangement of Each Building.

black oak doors to a bright French blue are the only concessions to the present architectural scheme, but even this slight change is a welcome improvement. Little partitioning was necessary, the existing arrangement being, in most cases, easily adaptable to the two-room, kitchenette and bath plan.

From the courtyard, whose former purpose was a dump-heap and whose previous existence was an eye-sore, the building derives its present name and its most salient beauty spot. In fact, the courtyard is the feature around which the plan is built and around which the life of the place revolves. With its gray flagged pavement, its red brick steps and iron railings, its wrought-iron lamps and its fountain base, its arbor vitae and Norway pine and the grace of its rounded arches, the visitor is taken almost as far away from Chicago as Rome or Naples with perhaps a

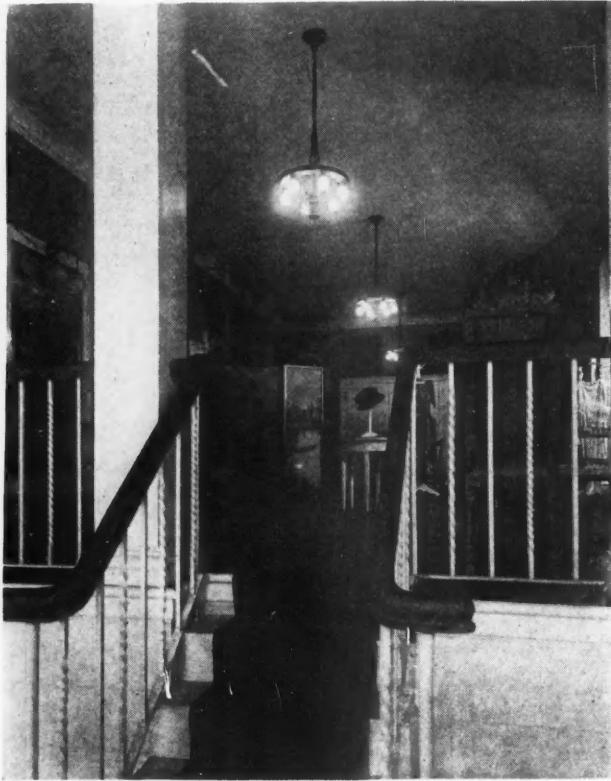


Close-up of Courtyard Whose Archways, Iron Railings and Wrought Iron Lamps Rise to Shame Its Former Debris.

brief visit to Granada, by way of variety. A view of the unsightly buildings and the alley at the back has been hidden by a plaster-covered brick wall against which a necessary but artistically constructed stairway runs in the Italian manner, disappearing and reappearing in a most charming way, partly hidden by an iron-railed balcony that follows, at a level with the second floor, the line of the courtyard. Archways have been used most effectively, as entrance doors, as artistic spacing for a sheltered porchway that extends in front of the ground floor shops along the interior of the



After the Transformation. Here We Have an Attractive Boulevard Building with Unique Court Between—in the Corner Building Are Studios and Shops; in the Companion Structure Is Housed an Exclusive Women's Furnisher. Robert De Golyer, Chicago, Was the Architect.



Short Flight of Stairs Leading to Main Shop in Second Building. This Was the Original Raised Floor of the Old Hotel. Without Much Change a Very Delightful Effect Has Been Gained.

court and as a means of hiding the immediate identity of the back stairway.

An arch constructed between the two buildings forms the entrance to the courtyard and its beauty, as well as the beauty of the yard itself, is increased by the use of high wrought-iron entrance gates and lamps that flanked the archway. Entrance is usually effected thru the courtyard where merchants of artistic and costly wares who early foresaw the advantages of opening on the New Boulevard link have established their most attractive display windows.



Interior of One of Studios in Corner Building. The Upper Floors Are Divided Into Five Studios with Kitchenettes. The Interior Decoration Is Quite Unique, the Walls Being Finished in Rough Untinted Plaster.

The second building facing on Michigan Avenue was designed by Mr. De Golyer and was reconstructed especially for an exclusive women's furnisher and is one of the most pleasantly colorful and interestingly arranged of shops. Entering from Michigan Avenue the visitor turns to the left or right as he chooses and opens a door that leads onto what serves as the show-window. From here he climbs a short flight of blue-carpeted, iron-railed cement stairs that terminates in the store itself—the original raised floor of the old Victorian hotel. The effect, thru the barred windows, of the flight of stairs is original and lovely.

In the shops which occupy the ground floor of the Ontario Street building, the narrow, high-barred windows have been retained, shelves built along the dividing lines forming quaint and charming supports on which to rest old china and glassware which is sold by one store, the fine oriental vases shown by another and the Italian art work of a third.

Leases from artists as well as shop-owners were obtained early; in fact the entire space was rented long before its completion. As prospective tenants were known, their preferences were consulted in regard to color and type of decoration, the personal tastes of each tenant being satisfied as far as possible. In this way there is neither lack of harmony nor tiresome repetition as the visitor passes from studio to studio.

The corner studio of the Michigan Avenue and Ontario building is larger than those along Ontario Street owing to the fourteen feet of extra space allowed this frontage by the "L" formation of the building. This extra space has been devoted to the living quarters while that space which is divided into three rooms in the other studios is here given over to the studio proper. This apartment is a splendid example of the co-operation which was brought into play

between the owners and the tenants. As its tenant possessed furniture almost entirely of Italian or Spanish design he had very definite ideas as to how he wanted his apartment designed and decorated.

The walls have been finished in rough, untinted plaster. Archways, supported by pillars of polychrome and black walnut form a division between an entrance hall from the kitchen and the main body of the studio. A narrow stairway, leading up to a spacious balcony gives access to an office and sleeping quarters for a Japanese servant. An embroidered screen, a piece of black laquer and the gorgeous coloring of an Oriental rug thrown across the black walnut railings of the balcony, are all the glimpse of furnishings obtainable to the visitor

who views it from below. High ceilings, formed by the raising of the roof, allow of a windowed clere-story that gives added light and three large windows, the middle one of which runs from floor to the ceiling, all face the coveted north.

An incident which illustrates how great is the sympathy and understanding between the landlords and their tenants and how appreciative they are of the feeling for the artistic, occurred the other day. One of the decorative wrought-iron lamps is attached to the back wall of the courtyard between an archway leading from the alley and one opening on the stairway. When trunks or large pieces of furniture were brought thru from the back the mover invariably collided with the lamp, frequently bending or breaking it. The architect protested its suggested removal, claiming that it was an indispensable decorative feature. So, in order to please both the movers and the architect, the owners have built a rough-hewn stone seat directly beneath the lamp, so that delivery messengers are forced to circle the wall space where it now hangs undisturbed.



Studio—Third Floor Corner—Occupied by Frederic M. Grant. These Rooms Are Quite Large and Are in Demand Among Artists. The Improved Building Brings a Much Higher Rental than the Old Delapidated Structure.

The building is a decorative example of what might be done with others of its original period and condition and the opportunity in any city for the studio building is certainly well worth consideration by those who are allied to the AMERICAN BUILDER.



Clearing Building Lots of Trees

By JAMES A. WILLIAMS, Indiana

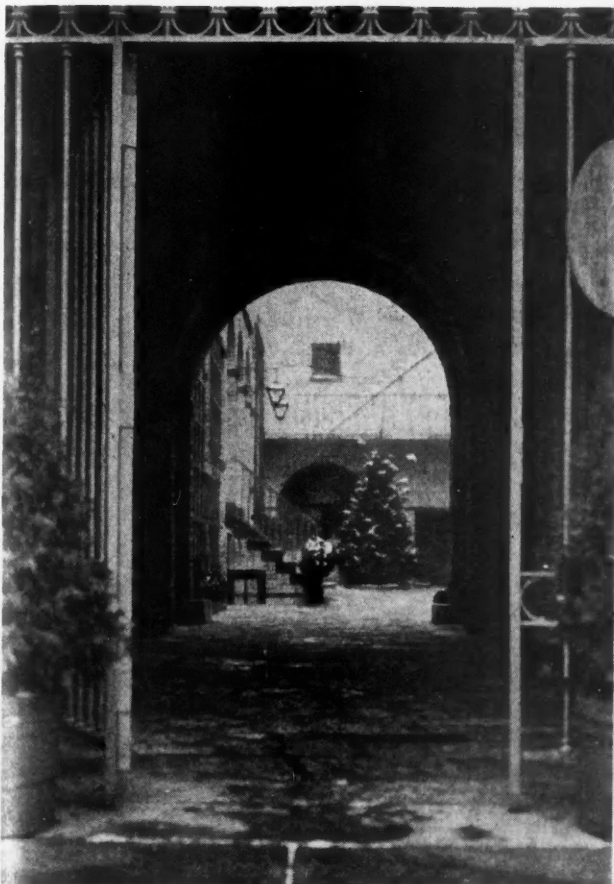
WHEN a building is to be constructed on a plot encumbered by one or more trees, the usual practice is to cut down the trees and grub and chop out the stumps. If the plot is located some distance from other buildings, the stumps are sometimes blasted out.

Grubbing and chopping is expensive and slow. There is a method whereby dynamite may safely be used even in closely built-up localities; that is, blast the standing tree instead of cutting the tree and then blasting the stump.

Unless the charge is closely estimated by an expert, pieces of stump, or even the whole stump, may fly thru the air and cause damage to roofs or windows, but it is very seldom any pieces are thrown in the air when a standing tree is blasted unless the shot is greatly and wastefully overloaded.

The tree may be made to fall at any desired spot by attaching a long rope near the top and pulling it over to the desired landing place when the shot is fired.

I recently blasted twelve standing trees for Ossie Tull, Fairland, Indiana. They were about two and one-half feet in diameter. Forty-two pounds of dynamite, twelve caps and 36 feet of fuse were used. These explosives cost about \$12.00. It is a fair estimate that it would have taken two men fully a week to have cut down these trees and grubbed out the stumps. In other words, it would have cost \$48.00 to \$60.00.



View of Courtyard Thru Boulevard Entrance.

Law for the Builder

FAILURE OF BUILDING OWNER TO PAY INSTALLMENTS WHEN DUE AS GROUNDS FOR EXCUSING THE CONTRACTOR FOR HIS FAILURE TO COMPLETE ON TIME

By Leslie Childs

WHETHER or not the failure of a building owner to pay the contractor installments on a building under construction as they fall due, will furnish a valid excuse for the failure of the contractor to complete the work on time, is a question of interest to builders in general. The point has been before the courts upon several occasions, and as these decisions appear to be fairly in accord a working rule may be deduced from their holdings.

And it appears from these cases that the failure of the building owner to pay the installments when due will not of itself excuse a default of the contractor to complete on time. To have this effect the failure of the building owner to pay must have been the cause of the contractor's failure. This proposition of building law is illustrated in a very apt manner in Chamberlin vs. Booth & McLeroy, 135 Ga. 719, under the following state of facts:

A contract was entered into by which the contractors agreed to construct a building for \$9,241. The contract also stipulated that the building was to be completed on or by a certain date, in default of which the contractors were to forfeit the sum of five dollars per day, for each day consumed after the date named. It was also provided that payment should be made monthly as the work progressed, the building owner retaining ten per cent until completion.

The contractors failed to complete on time, a dispute followed which culminated in the filing of a suit to compel the building owner to pay. The latter answered, and set up a claim for damages based on the five dollars per day stipulation in the contract for the time consumed after the agreed date of completion. The contractors replied to this by saying that the owner had failed to make the monthly payments as agreed, contending that this would excuse them from completing on time.

It will be noted in this case that the contractors completed the building and that they did not contend that the failure of the owner to make the monthly payments was the cause of the delay. They, it appears from the report, merely contended that because the owner had failed to live up to the agreement that they in turn should be excused from a strict compliance with it.

What the Court Decided

The case reached the Supreme Court on appeal and in passing upon the issues raised a carefully considered opinion was delivered. In discussing the construction to be placed upon contracts of this kind, and the force of the contractors' contention in particular it was, among other things, said:

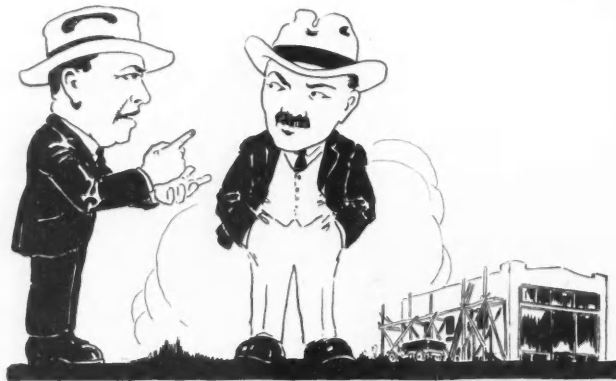
"The time in which the building was to be erected was of the essence of the contract, but that covenant did not contemplate that a violation of it should justify the employer in withholding from the builders all unpaid installments. This is true because the contract reflects the intention of the parties that the redress for the violation of this covenant is not a forfeiture of unpaid installments, but of five dollars per day for the delay. * * * Nor will its violation relieve the builders of damages, unless their performance was prevented or made impossible by the act of

the other party, or by other cause recognized by the law as an excuse for non-performance. The builders did not attempt to rescind the contract because the monthly estimates were not promptly paid, but completed the building. Where a building contract, in which there is a damage clause for non-performance by a certain time, provides for payment by the owner of monthly estimates, any

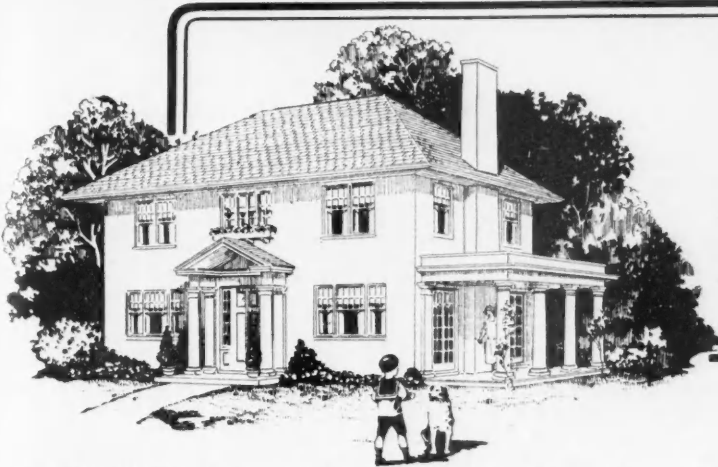
delays caused by the wrongful withholding of the same are excusable. * * *

The court concluded by holding in effect that upon the evidence of record the contractors were not entitled to be relieved from their liability to pay the five dollars per day damages. That the bare fact of the building owner withholding the monthly payments, or estimates, would not relieve the contractors from completing the building on time, unless it were shown that this failure was caused by the failure of the owner to pay. And the contractors did not show that in this case.

It is believed that the foregoing case states the true rule, and is in accord with the weight of authority; tho there are cases to be found in which the courts have used language which might be construed as holding that upon a breach of the contract by the building owner, in not making the payments, the contractor would be relieved from his obligation to complete on time.



Owner: "Here it's the 15th. Why is the building not done? You know it'll cost you \$5 a day for delay."
Contractor: "I can't finish it on time if you won't make your payments."



Our Front Cover HOME DESIGN

“WHAT do you think of Jones' new home?”
 “It's very impressive and all that, but I can't say I am crazy about it. Too much striving for effect. Give me a home like the one shown on the front cover of the AMERICAN BUILDER this month. I'll bet there is plenty of solid comfort there.”

Comfort, not just ornamentation, is the attractive quality of this beautiful home.

It is a commodious, dignified stucco house of rectangular lines with a substantial hip roof. It is one of those roomy, comfortable, yet attractive homes designed to accommodate at least several people and this without a hint of crowding or feeling of crampedness.

Architecturally, it is simple in design and certainly not expensive to construct, because it involves little of the frill, and less of the freak. Today in building a home most people have their eye on the cost and it is shrewd, if not wise, policy for the builder to emphasize this feature in buildings which he is discussing. The front cover home embodies all that the successful home should have and combines an external beauty with a ruggedness of construction that is very satisfactory. Its seven rooms are built with an eye for comfort. There is a wholesome freedom from pretense, everything being delightfully informal and modestly simple. It is built primarily for comfort, not display.

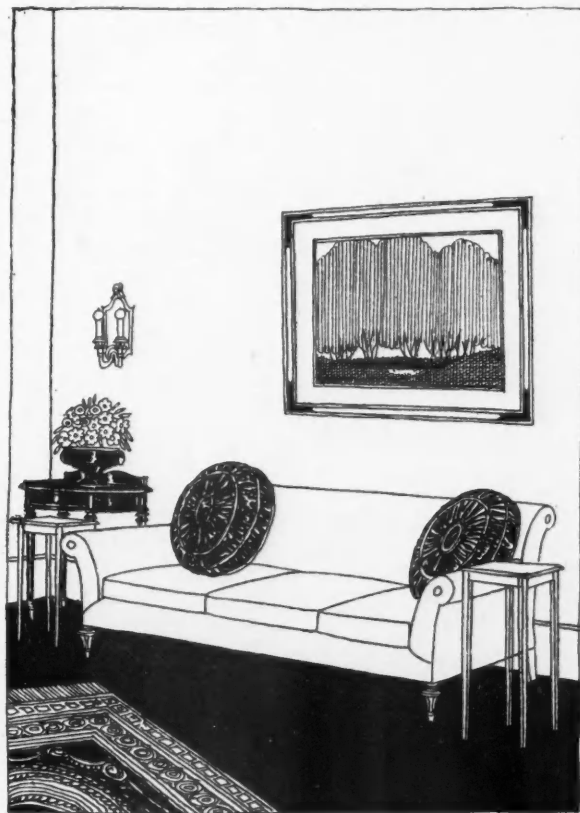
Particularly striking and appealing is the immaculate white stucco exterior which forms such an effective contrast to the picturesque surroundings.

The main entrance is semi-Colonial in style, a gabled hood and small landing taking the place of the usual porch. A porch, however, is provided at one end. It is one of those picturesque low platform porches with roof supported by heavy white columns and balcony above. Two pairs of French doors open out onto this porch from the living room. The windows are well placed, with the lower sash one plate of glass and the upper sash made up of small panes. Large attractively colored shingles have been used on the roof.

At first glance this house appears very large, but the dimensions show it to be of modest size, 26 by 38 feet (see blueprint building plans and construction details, pages 96 and 97). On the first floor are three rooms, living room, dining room, and kitchen,

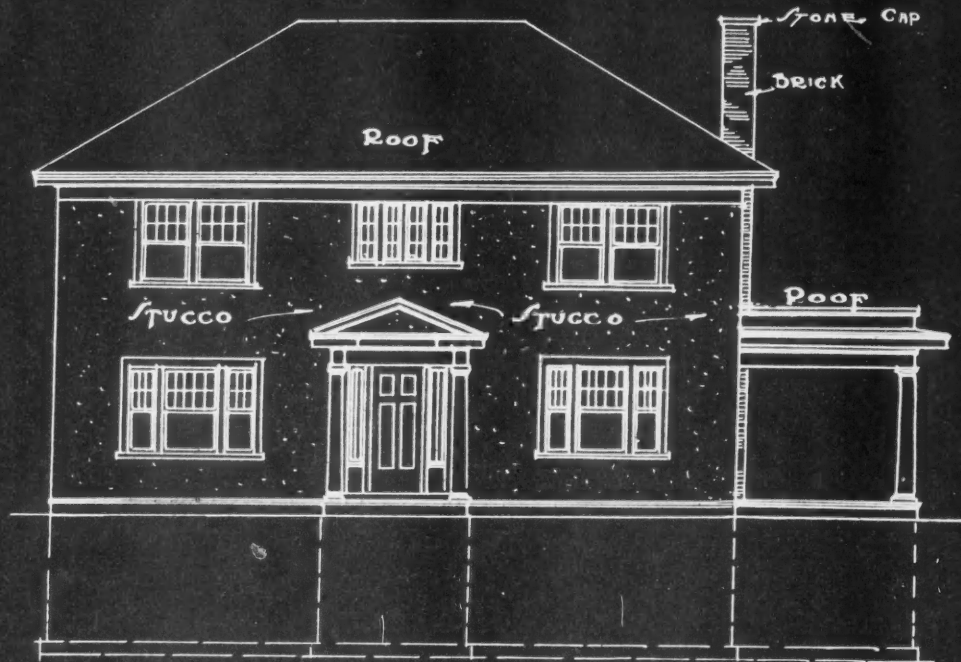
with breakfast nook and piano alcove as supplemental features. The side porch is quite spacious and extends the full length of the house.

The living room is especially alluring because of its spacious comfort, great open brick fireplace, flanked on each side by a pair of artistic French doors. This room extends from front to back, thus allowing for windows on each end in addition to the light from the doors opening onto the porch. The small alcove at one corner forms an ideal setting for the piano. On the other side of the main reception hall is the dining room, 14 by 15 feet, another cheerful and well lighted room. A swinging door connects it with the kitchen, while an open doorway leads the way to the breakfast nook. On the second floor are four bedrooms.



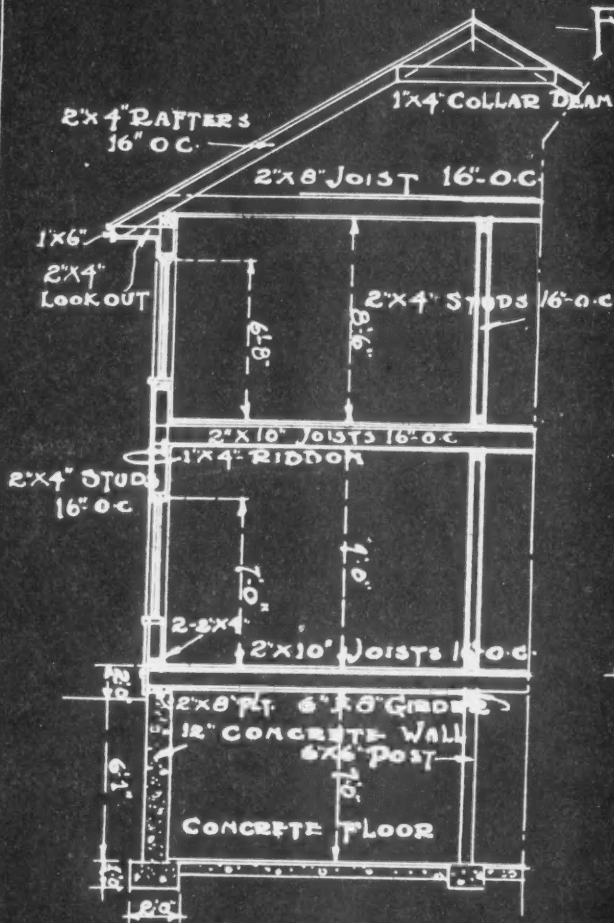
Why Not a Cozy Corner Like This in a Home of Your Own? The Front Cover Home Is a "Star Well Worth Shooting At." See Floor Plans and Details on Following Pages.

AMERICAN BUILDER BUILDING PLANS

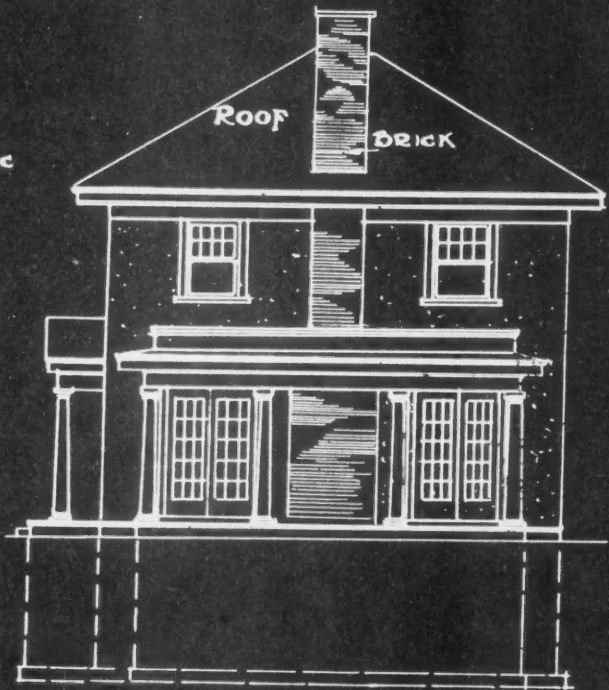


FRONT ELEVATION

SCALE $\frac{3}{32}'' = 1'-0''$



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

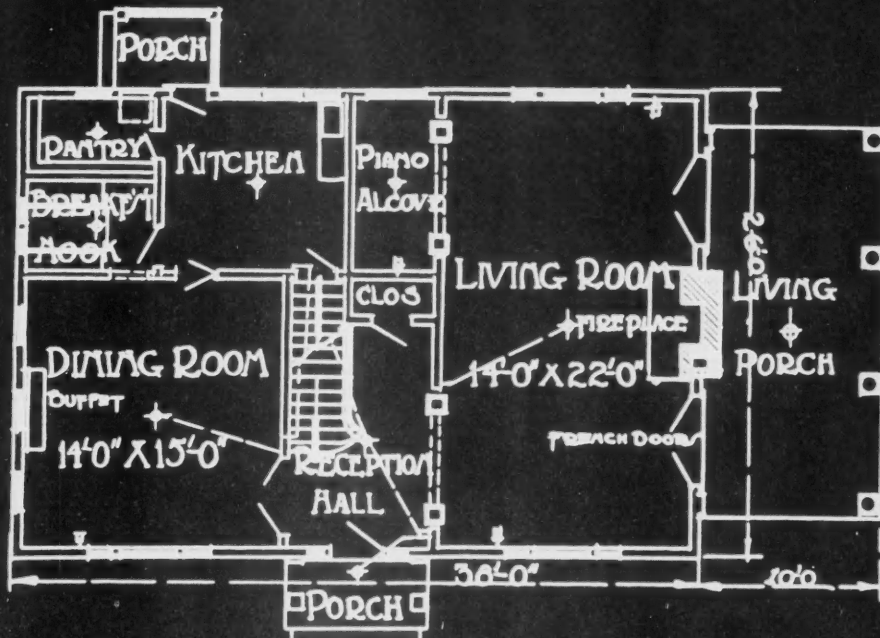


RIGHT SIDE ELEVATION

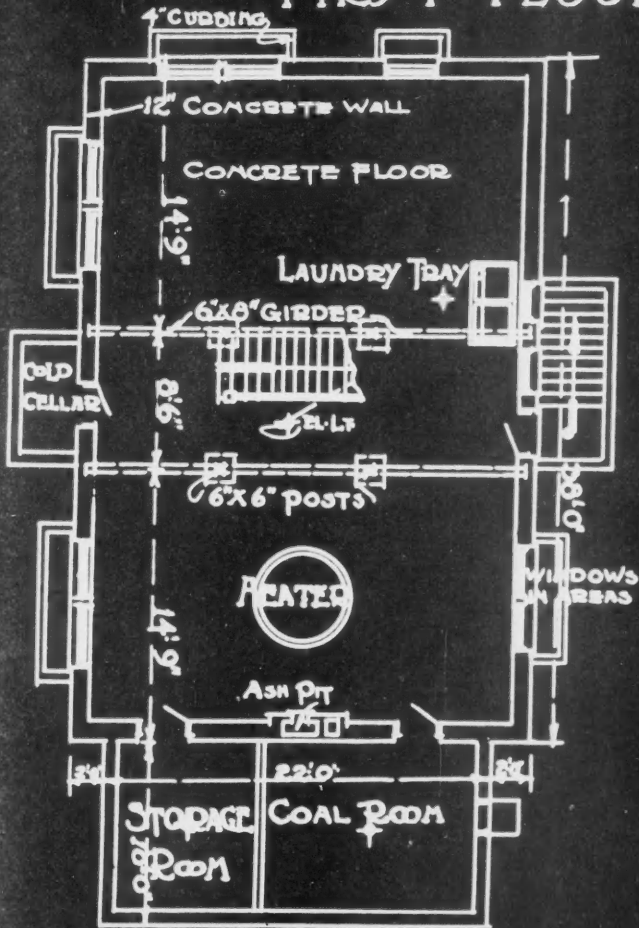
SCALE $\frac{3}{32}'' = 1'-0''$

TWO STORY STUCCO RESIDENCE SHEET N^o 1

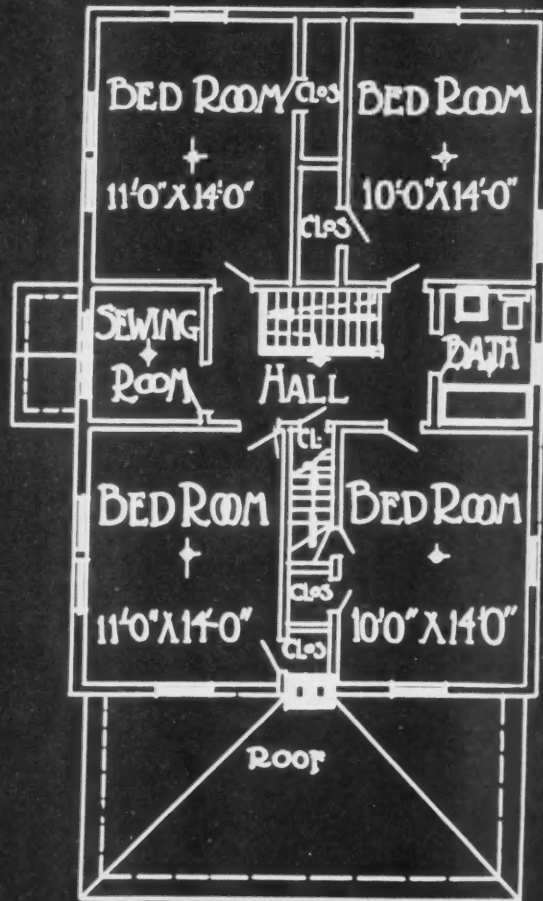
AMERICAN BUILDER BUILDING PLANS



-FIRST FLOOR PLAN-

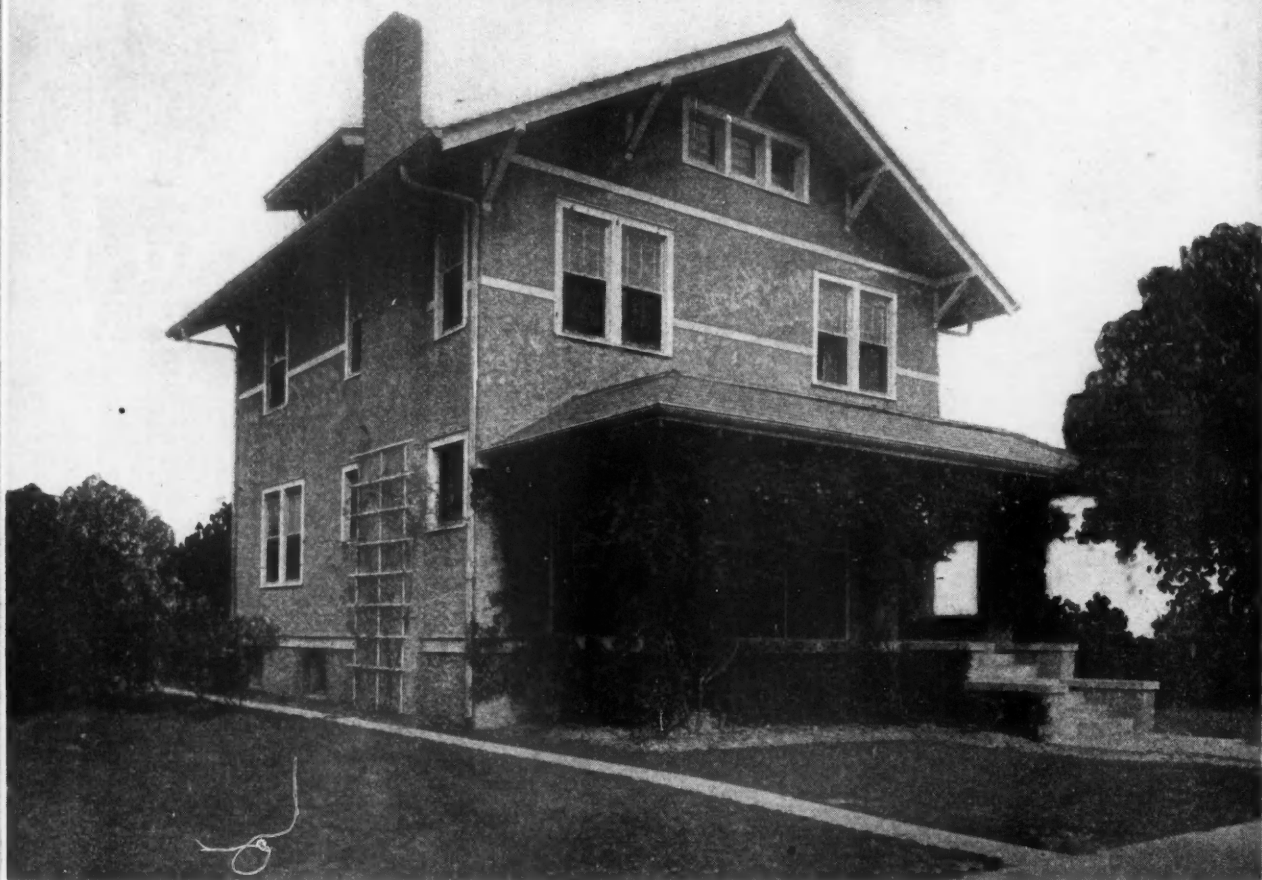
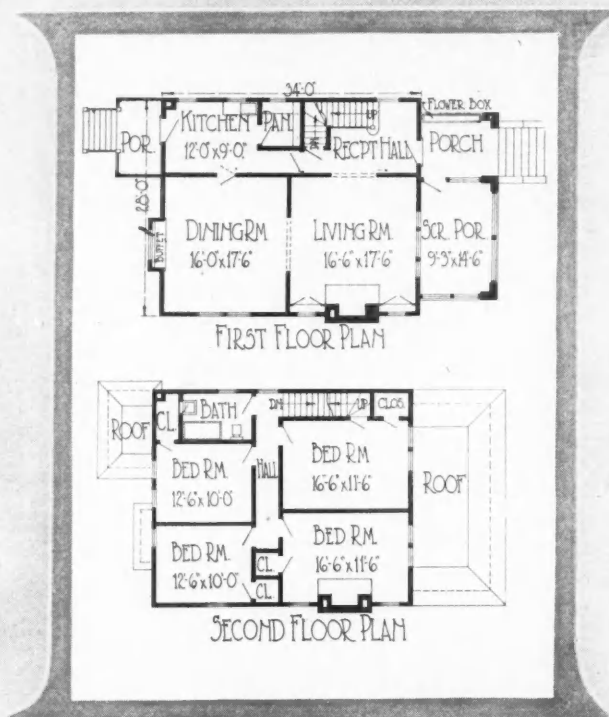


BASEMENT PLAN

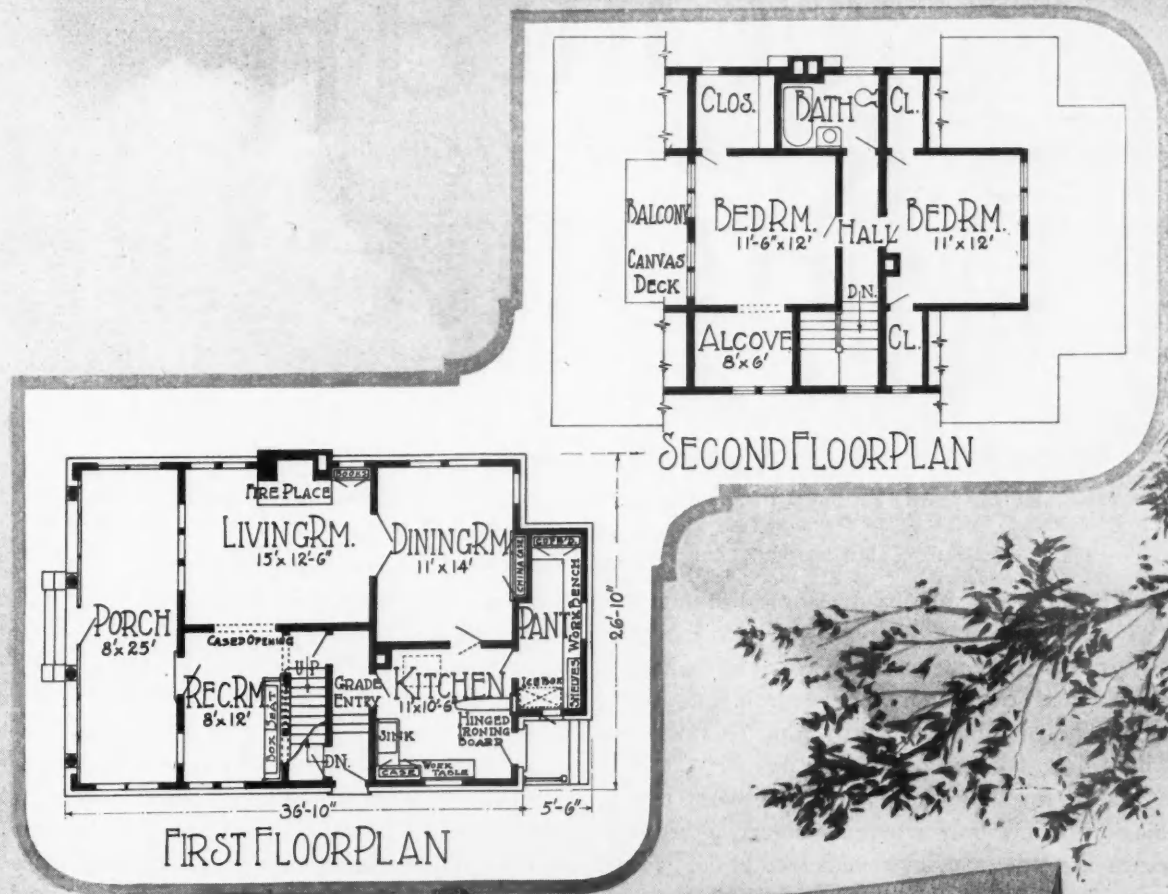


SECOND FLOOR PLAN

SCALE 3/32"=1'-0"



MODEST, SUBSTANTIAL SEVEN-ROOM HOUSE. There is not much of the pretentious about this home, but it radiates comfort, security and a conservatism that will have a powerful appeal for many homeseekers. Its gable roof, stucco exterior and broad, inviting front porch are important features of its exterior design. Part of the porch has been set off by screens and can be used as sleeping porch in warm weather. The living room, dining room and kitchen are located on the first floor. The first two are of the same size, while the kitchen is designed along the small compact lines of present-day architecture. In the living room is a large, cheerful fireplace and wall bookcases. Four bedrooms have been provided for in the second floor plan. They all have ample window space and one bedroom has a fireplace as an extra feature. Size of house, 28 by 34 feet.



COZY STORY-AND-A-HALF HOUSE OF SIMPLE BUT PLEASING DESIGN. This appealing little home is built of brick and stucco, the brick extending about half way above the first floor line. The house is set back on a terrace and reached by concrete steps. The front porch extends the full width of the house and is screened in for the warm months. On the first floor are living room, dining room, kitchen and a large combination pantry and work room. The living room is 15 by 12 feet 6 inches, with brick fireplace and wall bookcase on the outer walls. The kitchen and pantry have been equipped with many modern labor-saving conveniences, such as hinged ironing board and refrigerator for outdoor icing. On the second floor are two bedrooms of good size, well lighted by windows in the roof dormers in front and rear, modern bathroom and a small alcove. The balcony floor has been covered with canvas flooring. Size of house, 36 feet 10 inches by 26 feet 10 inches.



An America of Homes

HOW REAL HOMES CAN BE BUILT SO THAT HOUSEWIFE CAN HAVE SOME LEISURE FOR SEWING

By Grace T. Hadley

Society for Electrical Development Inc.

“WE want an America of Homes, illuminated with hope and happiness, where mothers, freed from the necessity of long hours of toil beyond their own doors, may preside as befits the hearthstone of American citizenship.”—*President Harding's Innaugural Address.*

This leisure for living which the President deems desirable is possible only where drudgery is reduced and homes are put on a more efficient basis. More and more electricity in the home is freeing mothers from the necessity of long hours of toil. Before electricity can be effective in freeing mothers from long hours of toil, it is necessary that the home be adequately wired.

Spring, ushering in the season of building and repairing houses, calls the attention of the architect, builder and householder to the importance of the wiring system. The modern house is not complete electrically when it has merely a sufficient number of sockets for electric lights. It should have an adequate number of outlets for attaching electric irons, toasters, radiant grills, washing machines, big ironers, fans, cleaners, floor machines and domestic appliances.

The wiring of a house is coming to demand much more than a passing thought. It is no longer a question of planning the lighting system only. The numerous domestic power appliances require adequate provision, and thoughtful consideration must be given not

only to present needs but to future requirements. In view of the fact that many buildings are inadequately wired the first point of importance deals with the carrying capacity of the electric wires. Inadequate size of wire means loss of current to the householder, fire risk and inefficient operation of lamps and appliances. It may be well to present a convenient capacity table giving reliable data.

Capacities of rubber-covered copper wires:

Size B. & S. Gauge	Capacity (safe) Amperes	110-volt Circuits Watts
18	3	330
16	6	660
14	16	1,650
12	20	2,200
10	25	2,750

This table gives the safe capacity of the ordinary rubber-covered wires used in interior wiring for 110-volt circuits in watts. As the wattage of all electric lamps and other appliances is known, being



Electricity in the Home Is Freeing Mothers from Long and Arduous Hours of Toil. The Laundry No Longer Holds Any Terrors for the Housewife Who Has a Washing Machine Operated by Power.



Are You Specifying Electrical Outlets to Take Care of the Appliances in Milady's Boudoir? The Limit of Electrical Convenience Depends Upon the Foresight of the Architect and Builder.

marked plainly on the device as is the voltage for which they are intended, there is no excuse for wasting current and inviting risk by overloading any circuit wires. The simple calculation of the total number of watts required for the equipment on the circuit divided by the voltage of the circuit gives the maximum number of amperes which can be safely passed over the wires. A branch circuit is designed to carry 660 watts with safety. While a No. 14 copper wire is safe for 1,650 watts, the use of No. 12 or even No. 10 is preferable where there are a number of heating appliances.

In planning the wiring of the dining room, the number of electrical table appliances that may be used should be kept in mind. The dining room offers great opportunity for the installation of electrical conveniences that are wonderful aids to the housewife in the preparation of meals at table. The provision for power outlets for the dining table and for side tables is a problem that deserves careful attention. There must be an outlet for the electric fan that will furnish refreshing breezes on a warm day, or for the vacuum cleaner to pick up the crumbs electrically after the meal is over.

Kitchen and Laundry Convenience

A great convenience in the kitchen or laundry is the bull's eye wall switch. When the plug of an appli-

ance is pushed in, the red bull's eye lights up indicating that current is on. It serves as a warning to turn off the current when the work is finished. This is an excellent reminder if the maid or the housewife is suddenly called to answer the bell or telephone. The moment she returns the red bull's eye warns her that the current is still on.

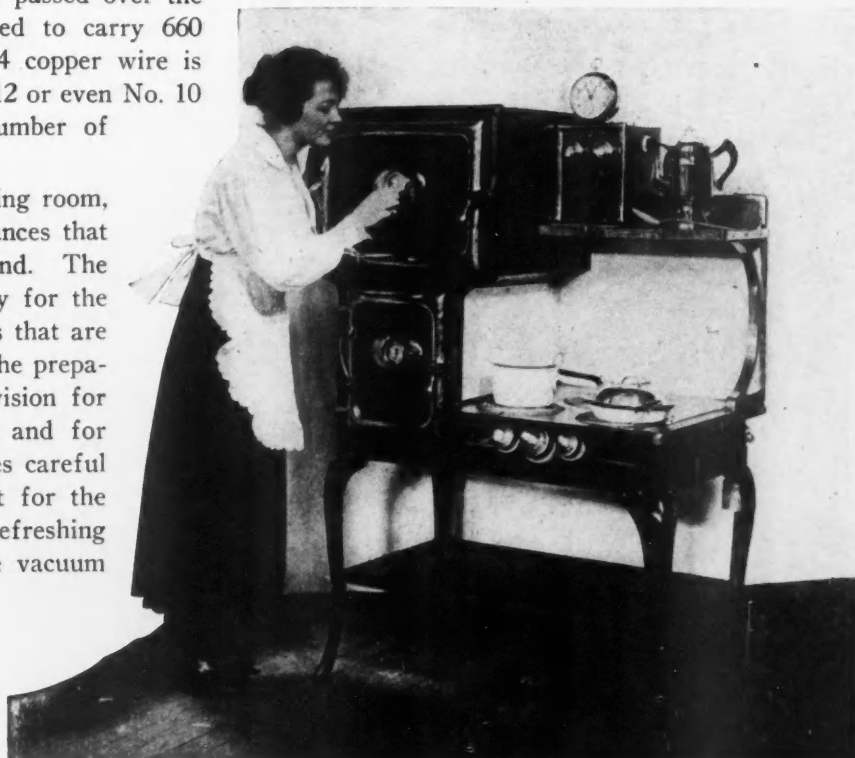
The general lighting of the kitchen from a ceiling fixture should be supplemented by other light sources over the sink, above the range and another in the pantry.

A special heating outlet is required for the electric range if there is a rate in force for the use of such a range. In a large house a special power outlet should be installed for a small motor to operate the electric coffee grinder, bread mixer, meat chopper, metal polisher, knife-sharpener and the ice cream freezer.

In the laundry a special heating outlet is required for the electric iron and one for the big iron that will do 90 per cent of the family ironing, in addition to the power outlet for the electric washer and wringer.

The electrical requirements for a well appointed bedroom include general illumination best secured by a central ceiling fixture supplemented by boudoir lamps. Outlets for reading lamps, or for electric vibrator, hair dryer or curling iron are now considered a necessity, or an outlet in the bathroom may provide for these special conveniences.

The livingroom has ceiling outlet for four 50-watt lamps, an outlet for fan, cigar lighter or portable lamp, an outlet for a motion picture lamp or for a tea table, an outlet for vacuum cleaner or piano player,

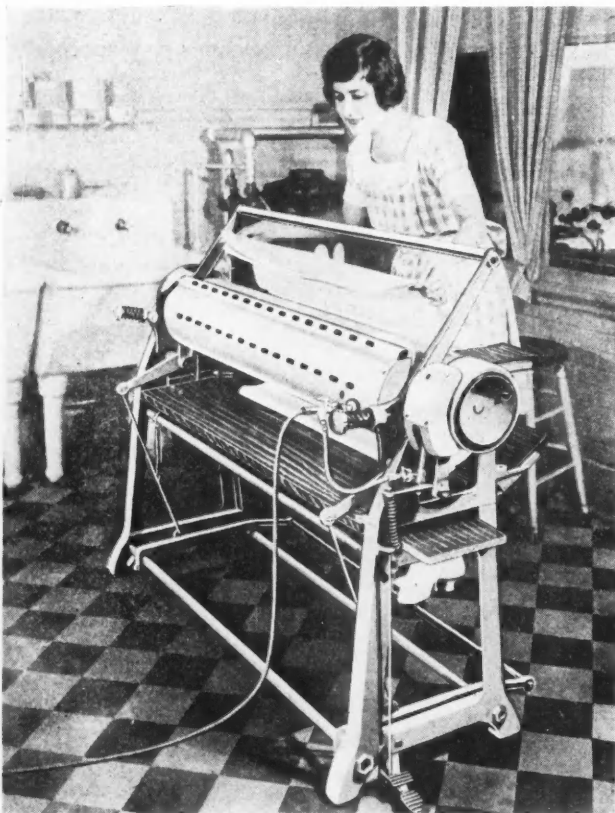


Make the Kitchen a Pleasant Workshop for the Housewife. See To It that Electrical Power Is Readily Available to Take the Drudgery Out of Her Work.

a special floor outlet for the various occasions that may require it such as impromptu entertainments in the livingroom. Should the lady of the house desire to do some sewing with her portable electric sewing machine, it is only necessary to set the machine on a table, connect it with a convenient wall or baseboard receptacle and presto, the work can be done without the fatigue and pedaling incident to oldtime methods. The screened-in porch is a favorite place for reading or for afternoon teas and the porch should be provided with at least one convenient outlet.

Thus the incidentals in building actually become the requisites to comfortable living in modern homes. The switch at the head of the stairs to insure safe steps in the dark, the reading light alongside the bed, the outlet for the fan on a hot day, or for sewing machine, the electrically equipped tea wagon—all these offer more real human satisfaction than the style of the windows or the design of the roof.

There is another reason in addition to convenience why the wiring of houses should be carefully studied by the architect and house builder—the increasing number of electrical aids to better housekeeping and the number that will doubtless be developed make it absolutely necessary to provide against the overloading of the wiring system. Rules of the underwriters prescribe how heavy a current load a wire can carry. Many houses are wired at present with several circuits—one for lighting and one for the electrical appliances.



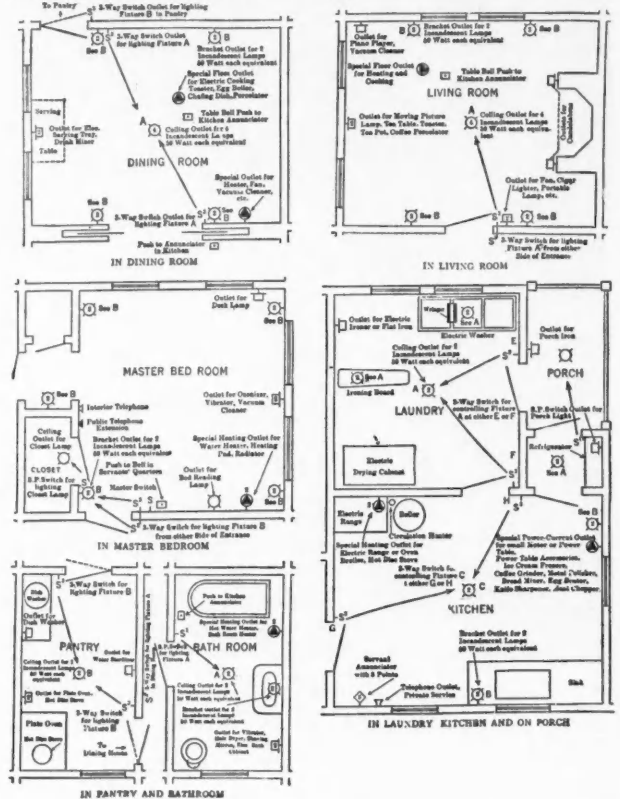
The Ironing Machine or Mangle Shown Here Is Only One of the Many Labor-Saving Devices That Are Making America a Nation of Real Homes, and Freeing Mothers from Long Hours of Hard Toll.

Typical Floor Plans

Showing how additional Convenience Outlets can be located

This sheet shows where Convenience Outlets should be located in any room in any house. No house is too small or too large for Electric Service. Remember your Electric Service will be of value to you in proportion to the U.S. you make of it. Convenience Service Outlets enable you to use it to the utmost in every room, in basement or attic, or on the porch.

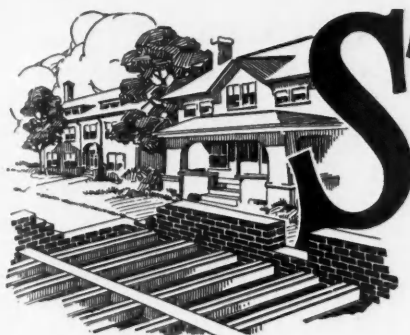
This is NOT a plan of YOUR home, or apartment. It is intended only to show where in an average home the minimum number of Convenience Outlets should be installed. No matter how your kitchen or living room, etc., is arranged you would not should provide at least as many Outlets as are shown on this page.



Safety, which includes a sufficient number of circuits—sufficiently large wire and proper insulation and the convenient placing of the outlets are the main factors to be considered in house wiring. More and more the modern home is dependent upon electricity as the servant in the home to operate the washer on Monday, to help with the ironing on Tuesday, to do the cleaning every day, to operate the electric range or the smaller table appliances, to warm the baby's milk at any hour of the day or night, to run the sewing machine, to cool the air or to supply a modern method of refrigeration. We must, therefore, be forehanded in our plans and preparation. When building a home, foresight is better than future regrets!

✦
PANAMA has many tropical woods. There are estimated to be about 1,000,000 laurel trees in Panama valued at \$60,000,000; about the same number of the guayacan tree worth \$40,000,000, very hard and suitable for shuttles, etc.; about 100,000 of the beautiful cacique trees, whose wood is hard and impervious to insects.

✦
LARGE forests of pines are to be found in the mountains in the interior of Haiti, but lack of transportation makes it impossible to utilize this timber even for domestic needs. Large quantities of pine are imported from the United States. A few small sawmills are located in various sections of the island, but these can not begin to supply the local markets. Dye-woods are plentiful.



STEEL LUMBER Construction

Steel Lumber Construction Comparatively New

INFANT INDUSTRY HAS MADE REMARKABLE STRIDES BECAUSE OF EXPERT SERVICE RENDERED

By Gilbert Canterbury

EDITOR'S NOTE—This is the fifth article of a series on the use of steel lumber in modern construction. Readers are invited to ask questions pertaining to this subject. Answers to all inquiries of general interest will appear each month in this department. Write in your problems now.

ONE of the strong influences bringing about the gradual improvement of American building construction is that exerted by the professional engineering service always associated with the use of steel lumber and rolled structural steel shapes.

The use of rolled structural steel columns, beams, angles, channels, etc., dates back only thirty-five or forty years. Until the development of their associate, the light steel lumber joists and studs, the distributors, known generally as structural steel fabricators, devoted their service exclusively to factory structures and the largest of commercial buildings, skyscrapers, etc.

Of interest to the contractor now is the fact that steel lumber has established a link between himself and structural steel company engineering departments for practically every kind of building including small

stores, garages and dwellings.

Every contractor has faced a situation at some time or other in which he needed engineering service. Engineering holds a position of that importance in the building industry. Not every contractor, however, can afford to keep a graduate engineer on his staff and in consequence the structural details of small buildings are sometimes denied the expert attention they deserve.

During the last twenty years the number of structural steel fabricating concerns in the United States has mounted to over six hundred. They are located in every city. No village, even, is so isolated as not to be able to get promptly in touch with one or more of these companies. Every structural steel fabricating company maintains an engineering department. Some have as many as forty and fifty draftsmen and engineers. Even the smaller companies have as many as six to ten in their engineering departments.

Since steel lumber is fabricated by many of these companies, just as is rolled structural steel, the very best engineering service obtainable is thus made avail-

able for every kind of construction in which joists and studs are used. The hundred or more fabricating companies specializing in steel lumber sections are prepared to take the rough sketches of a contractor and execute blue-printed designs specifying the proper construction and detailing every step of the erection work.

The effect of such service on general construction is rapidly becoming apparent. Materials are being loaded for just what they are capable of carrying; waste of materials is better cut down and the buildings enjoying this service are better prepared to resist destructive elements. Last, but not least, the accurate designing of the structural parts of any building tend always to produce economies.



Telephone Exchange Building, Akron, Ohio. This Building Had Been Guttled by Fire. It Is Being Reconstructed with Structural Steel and Steel Lumber Joists.

Sun Parlors and Sleeping Porches

OLD TENEMENTS TAUGHT LESSON ON CONSTRUCTION OF WELL-LIGHTED AND VENTILATED APARTMENT BUILDINGS

PERHAPS one of the most interesting and beneficial developments in building construction in recent years has been that of the specialized porch or as it is more familiarly known—the sun parlor and sleeping porch.

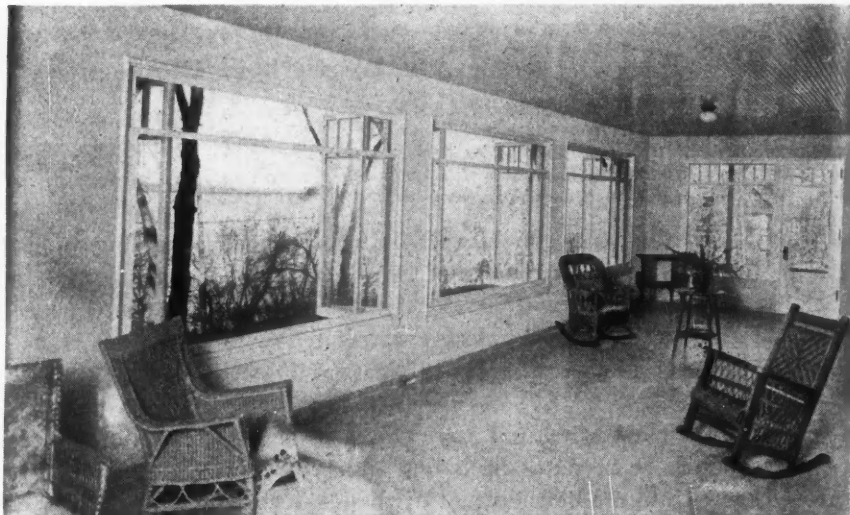
This distinct American innovation in apartment building construction particularly is traceable to the rapid growth of the large cities, the inevitable crowding in large apartment buildings, and last, but not least, the lesson taught by the old tenements. When they were in their heyday little provision was made for light or ventilation, and as a result in their decadence they became the stifling slums which we find in large cities today.

Aware of this regrettable condition the architect of today is providing for the future by making the new apartment buildings well lighted and ventilated. When they in turn travel the down grade and become slums they will be far more sanitary and healthful than their predecessors.

And most prominent in this campaign for better apartments is the porch. It is the instrument in the hands of the architect and builder by which they hope to solve this very important problem. Within the last few years it has developed from a mere wart on the exterior of a building to a point where it is one of the important factors. Today the demand is every insistent for sun parlors and

sleeping porches.

The history of this development is quite interesting. Originally a hood over the front door with a small landing was considered all that was necessary. As the new idea developed this hood also increased in size and gradually the full-sized porch became a regular part of the plans. To screen this in was but another step in the progression of ideas and then came

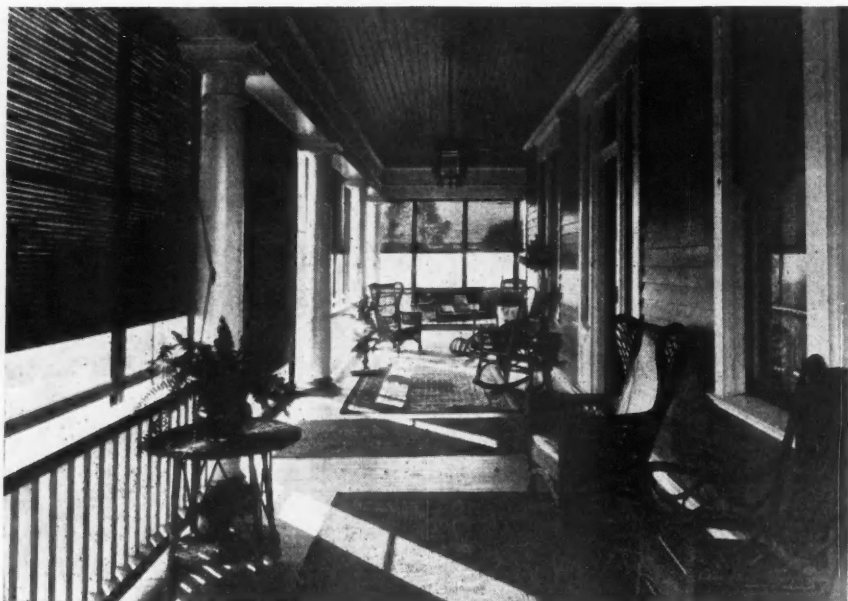


View of Sun Parlor with Special Casement Windows that Can Be Removed if Necessary. The Sun Parlor Is Practically an Additional Room and Is Heated by the Regular Heating Plant.

the glazed-in sun porch or parlor. In residences the screen porch is very desirable because there is plenty of room but in the case of the apartment building it is quite different. Here the demand for space is paramount to most other questions. Why waste this space for a porch?

So it was made into a combination porch and room, heated and finished in harmony with the apartment. In many cases the rear porch has been screened in to provide comfortable sleeping quarters.

But in either case a distinct benefit has been created for not only building construction, but for general health and comfort in the future as well as the present. It would be extremely difficult to try to describe the boundless comfort that has been added to thousands of homes by the construction of a screen porch or sun parlor, or the real satisfaction that has been gained by cool and healthful sleep in the outdoors. An important contribution can be made to the nation's well being by designing homes with an eye to health.



How Porch Can Be Made a Real Oasis and Recreation Center During the Summer Months. The Addition of Screens to the Porch Has Made Possible the Attractive and Healthful Sleeping Porch Which Is Now Built in Modern Homes and Apartments.

DESIGN of SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

Eccentric Loads on Long Columns

ARTICLE SEVENTEEN OF AN EXTENSIVE SERIES ON STRENGTH OF MATERIALS

IN the columns of such structures as bridges the loads are usually carried from the beams to the columns by rivets, plates and pins. They are placed in such a way that the resultant load is axial. If the column is horizontal or inclined to the vertical so that the weight of the column has a bending moment, the resultant load is placed eccentric or off center so that its moment just balances the moment of the weight. But for buildings the beams may be connected to the columns by angle irons and rivets on one, two, three or four sides. This method of loading often produces eccentricities which must be allowed for in the design of the column.

Fig. 1 shows a wooden column, carrying a central column load and an eccentric beam load. Figs. 2 and 3 show typical office building columns and their connections (Carnegie Handbook).

Fig. 4 shows a part of a wooden column carrying load W from a horizontal beam. Now, of course, the end of the beam must have sufficient bearing area, so that the fibres of the column will not be crushed. The load W is then considered as acting at M , the center of gravity of this bearing area, at a distance A from the center line of the column. Now it is proven in mechanics that if two loads W are put in at C , the center of the cross-section, one acting up and the other down, the effect is a direct crushing due to W acting down at C , and a bending moment due to the couple formed by the other two forces W —that is, an eccentric load produces a maximum fibre stress equal to the sum of the two stresses.

But the fibre stress due to compression is $\frac{W}{A}$,

Where A is the area of the cross-section. The bending fibre stress is formed from the equation:

$$\text{Bending Moment} = p \times \text{Section Modulus}$$

For a rectangular section shown in Fig. 4:

$$\text{Bending Moment} = Wa \text{ and Section Modulus} = \frac{Dh^2}{6}$$

Where D is the least dimension of the cross-section, then

$$Wa = p \frac{Dh^2}{6}$$

or

$$p = \frac{6aW}{Dh^2}$$

Then the total compressive fibre stress is

$$\frac{W}{A} + \frac{6aW}{Dh^2}$$

In the February article the Winslow column formula was discussed. It is

$$f = C \left(1 - \frac{L}{80D} \right)$$

Where C is a safe working fibre stress, say, 1,000 pounds.

L the length in inches, D the least cross-section dimension of the column, and f the allowable fibre stress to be developed in the column.

Then the formula for eccentric loads on the column is

$$\frac{W}{A} + \frac{6aW}{Dh^2} = C \left(1 - \frac{L}{80D} \right) \dots \dots (1)$$

The designer will choose the value of C , depending on the kind and quality of timber and the character of the loading as to dead or live loads or shocks. In the problems of this article I will use $C = 1,000$ pounds for wooden columns.

Suppose we wish to find the load that an 8 by 10-inch Georgia pine column, 12 feet long, flat ends, will carry safely, when carried on a bracket as shown in Fig. 1. From the figure it is seen that the center of the bearing area of the bracket is 7 inches from the axis of the column. Then

$A = 7$, $L = 12 \times 12 = 144$, $D = 8$ inches, $A = 80$ square inches, and $h = 10$ inches.

Substituting in Formula (1):

$$\frac{W}{80} + \frac{42W}{8 \times 10 \times 10} = 1,000 \left(1 - \frac{144}{640} \right) = 1,000 (1 - .225) = 775$$

Multiplying thru by 800:

$$10W + 42W = 620,000$$

$$52W = 620,000$$

$$W = 11,920 \text{ pounds.}$$

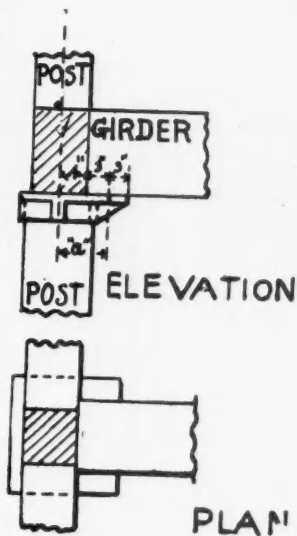


Fig. 1. Long Column Loaded with a Floor Girder on a Side Bracket and Also Carrying Central Load from Another Column on Floor Above.

In order that the reader may get an idea of the effect of an eccentric load, we will find what central load this same column would carry by substituting directly in the Winslow formula.

$$f = 1,000 \left(1 - \frac{144}{640} \right) = 775 \text{ pounds}$$

But $f = \frac{W}{A}$ or $\frac{W}{80} = 775$ pounds.

$$W = 62,000 \text{ pounds}$$

That is, the load is more than five times as great.

Now suppose that in addition to an eccentric load W_1 , the column of Fig. 1 carries a central column load of W_2 pounds. The total compressive fibre stress is $\frac{W_1+W_2}{A}$ and the bending stress $\frac{6 W_1 A}{D h^2}$ as before

Then

$$\frac{W_1+W_2}{A} + \frac{6 a W_1}{D h^2} = C \left(1 - \frac{L}{80 D} \right) \dots\dots\dots (2)$$

Let us assume that the 8 by 10-inch 12-foot column carries a central load of 10,000 pounds. To find the beam load W_1 it will carry when eccentric 7 inches:

Here $W_2 = 10,000$ and all other letters are the same as in the previous example. Substituting in Formula (2):

$$\frac{W_1+10,000}{80} + \frac{42 W_1}{8 \times 10 \times 10} = 1,000 \left(1 - \frac{144}{800} \right) = 775$$

Multiplying thru by 800, there results:

$$10 W_1 + 100,000 + 42 W_1 = 620,000$$

$$52 W_1 = 520,000$$

$$W_1 = 10,000 \text{ pounds.}$$

Suppose we wish to find the dimension of a 15-foot square, wooden column to carry a central load of 20,000 pounds, and an eccentric load of 10,000 pounds 5 inches off center. Here $W_2 = 20,000$ pounds, $W_1 = 10,000$ pounds, and $a = 5$, $L = 15 \times 12 = 180$ inches, $D = h$, and $A = h^2$.

Substituting in Formula (2):

$$\frac{20,000 + 10,000}{h^2} + \frac{6 \times 5 \times 10,000}{h \times h \times h} = 1,000 \left(1 - \frac{180}{80h} \right)$$

Dividing thru by 1,000, there results:

$$\frac{30}{h^2} + \frac{300}{h^3} = 1 - \frac{9}{h^4}$$

Multiply thru by h^3

$$30h + 300 = h^3 - 2.25h^2, \text{ or}$$

$$h^3 - 2.25^2 - 30h - 300 = 0 \dots\dots\dots (3)$$

This leads to a cubic equation and unless the reader is familiar with mathematics, he will not be able to solve it. However, h may be found by assuming values and substituting in (3). When two consecutive values for h are found, one of which makes the left-hand member of (3) positive and the other negative, the larger value is the one to choose.

For example, try $h = 9$. Then

$$9 \times 9 \times 9 - 2.25 \times 9 \times 9 - 30 \times 9 - 300 = 729 - 182.25 - 270 - 300 = 729 - 752.25 = -23.25$$

Now try $h = 10$.

$$10 \times 10 \times 10 - 2.25 \times 10 \times 10 - 30 \times 10 - 300 = 1,000 - 225 - 300 - 300 = 1,000 - 825 = 175$$

The two results are opposite in sign. We then choose the larger or $h = 10$. Then a 10 by 10-inch column 15 feet long will carry the load.

The designer must remember that the length L should not exceed $30 D$.

The formula for bending, produced by a load W_1 placed with its center of bearing area a inches from the axis of the column, is

$$W_1 a = \frac{p I}{e} \text{ or } p = \frac{W_1 a e}{I}$$

Also the fibre stress produced by the direct compressive stress of

$$W_1 \text{ is } \frac{W_1}{A},$$

Then the total stress is

$$\frac{W_1}{A} + \frac{W_1 a e}{I}$$

From the straight line column formulas, the allowable fibre stress is

$$f - K \frac{L}{r}$$

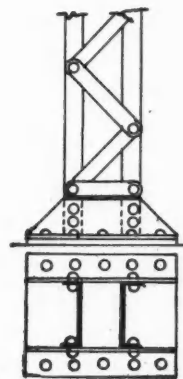
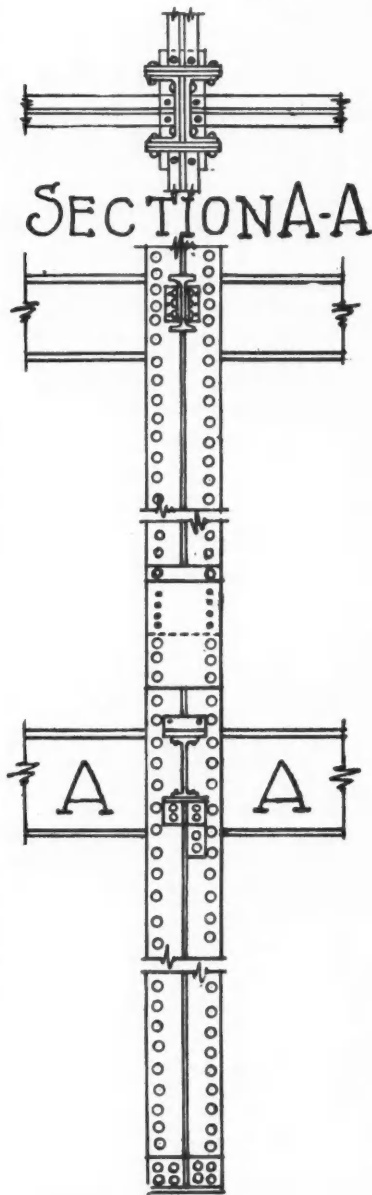
Where f is the safe working stress of the material, K a constant depending on the kind of material, and r is the least radius of gyration. Then

$$\frac{W_1}{A} + \frac{W_1 a e}{I} =$$

$$f - K \frac{L}{r}$$

is a column formula for an eccentric load W_1 .

For steel $f = 16,000$ and $K = 70$ or



Figs. 2-3. Typical Office Building Columns and Connections.

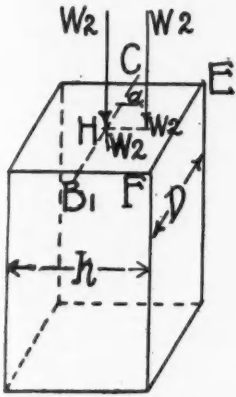


Fig. 4. Showing the Effect of an Eccentric Load on a Column.

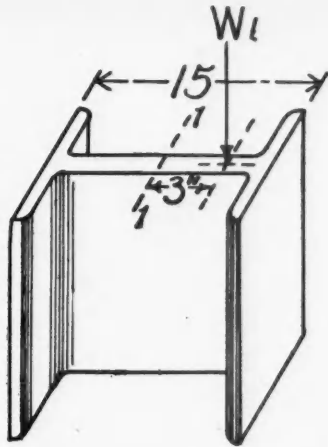


Fig. 5. Showing the Top Section of the Column, and 1-1, the Axis of Bending.

$$\frac{W_1}{A} + \frac{W_1ae}{I} = 16,000 - 70 \frac{L}{r} \dots (5)$$

For cast iron $f = 9,000$ and $K = 40$, or

$$\frac{W_1}{A} + \frac{W_1ae}{I} = 9,000 - 40 \frac{L}{r} \dots (6)$$

Suppose an I-beam 15 inches, 42 pounds is to be used as a column to carry an eccentric load W_1 3 inches off center. To find the load, the load will be placed in two positions to show the effect.

Fig. 5 is a top view of the column with W_1 3 inches off center. Now the axis of bending is 1-1, Fig. 5. In Carnegie, page 176, for a 15-inch, 42-pound, $A = 12.48$, $I_{1-1} = 441.8$, least $r = 1.08$; also $A = 3$ inches, $l = 7.5$ inches, $L = 120$ inches. Substituting in (5)

$$\frac{W_1}{12.48} + \frac{3 \times 7.5 W_1}{441.8} = 16,000 - \frac{70 \times 120}{1.08} = 16,000 - 7,780$$

$$W_1 (.08 + .051) = 8,220$$

$$W_1 = 8,220 = 62,900 \text{ pounds}$$

From Carnegie, page 296, this same beam would carry a central load of 98,500 pounds.

If the load is placed as in Fig. 6, resting on plates so that its center is at B, the bending axis is now 2-2. The I for this axis is 14.6—all other letters remaining the same as before.

Substituting in (5):

$$\frac{W_1}{12.48} + \frac{22.5 W_1}{14.6} = 16,000 - 70 \times \frac{120}{1.08} = 8,220$$

$$W_1 (.08 + 1.54) = 8,220$$

$$W_1 = \frac{8,220}{1.62} = 5,100, \text{ approximately}$$

This result shows that if a load is to be eccentric with reference to the axis of least r , the I-beam should not be used, as it throws direct bending onto the web in addition to the column-buckling effect. In that case a type of built-up columns is the one to choose.

Because of the uncertainty of the

eccentricity of a load on a column, for safe designing, the I is taken about the weaker axis. But $I = Ar^2$. Then

$$\frac{W_1}{A} + \frac{W_1ae}{I} = f - K \frac{L}{r} \text{ becomes}$$

$$\frac{W_1}{A} \left(1 + \frac{ae}{r^2} \right) = f - K \frac{L}{r} \dots (7)$$

Where r is the least radius of gyration.

Suppose we wish to find the load a channel column will carry when 20 feet long and made of two 15-inch channels, weighing 33 pounds, and two 16 by $\frac{3}{8}$ -inch plates. A cross-section is shown in Fig. 7. Assume that the load W is eccentric 6 inches. On page 304 of Carnegie, $A = 31.8$ square inches, $r_{2-2} = 4.85$, $l = 8$ inches, $A = 6$ inches and $L = 240$ inches.

Substituting in (7)

$$\frac{W_1}{31.8} \left[1 + \frac{8 \times 6}{(4.85)^2} \right] = 16,000 - 70 \times \frac{240}{4.85}$$

$$\frac{W_1}{31.8} (1 + 2.04) = 16,000 - 3,450 = 12,550$$

$$W_1 = \frac{12,550 \times 31.8}{3.04} = 130,500 \text{ pounds}$$

Carnegie gives 413,000 as a safe central load. The eccentric loading reduces the safe load to one-third of its value when placed centrally.

If this column carried a central load of 100,000 pounds, what eccentric load in addition could be placed 4 inches off center? The direct crushing load would now be $100,000 + W_1$, while the bending load is W_1 . Then

$$\frac{100,000}{31.8} + W_1 + \frac{W_1 \times 8 \times 4}{I_{2-2}} = 16,000 - 70 \times \frac{240}{4.85}$$

From Carnegie, page 304, $I_{2-2} = 747$

$$\therefore 3,140 + \frac{W_1}{31.8} + \frac{W_1 \times 32}{747} = 12,550$$

(Continued to page 109.)

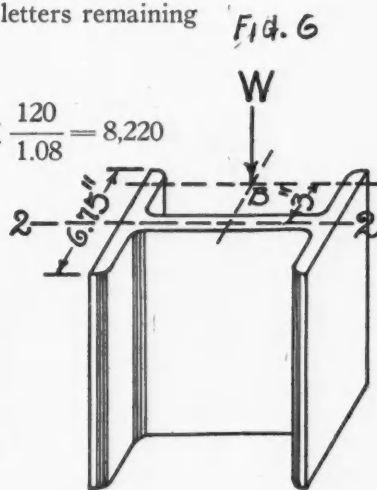


Fig. 6. Showing Axis 2-2 as the Axis of Bending.

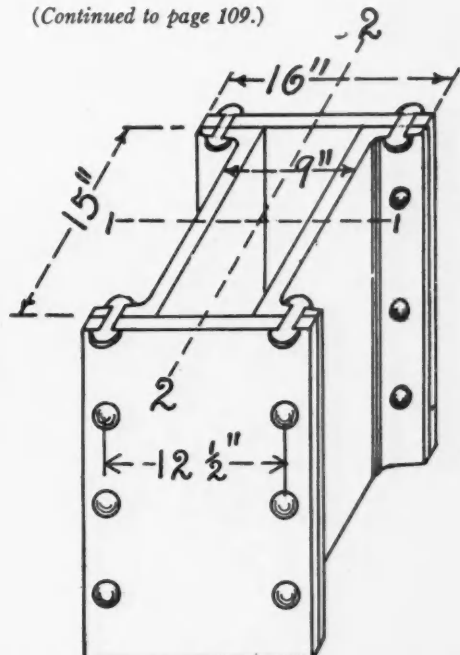


Fig. 7. Showing a Section of a Built-Up Channel Column.



One of the Attractive Streets in New Studebaker Housing Project at South Bend, Ind. This Company Built 204 Houses for Its Employees.

Auto Company Combats Housing Shortage

STUDEBAKER CONCERN BUILDS 204 HOMES FOR EMPLOYEES IN SOUTH BEND, IND.

By H. P. Sigwalt

AN OPPORTUNITY to purchase homes at a "quantity price" is what the Studebaker Corporation at South Bend, Ind., is giving its employes. The company has recently completed 204 homes thru its organization known as the Citizens' Homes Company.

The company recognizes that a good home in pleasant surroundings is absolutely necessary to maintain the high grade of efficiency wanted and to attract the type of men the Studebaker organization desires to employ.

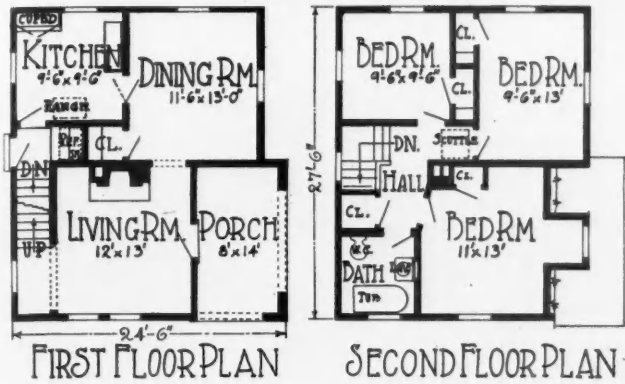
The motto guiding the development of this housing project was "Homes, not Houses." To guarantee the success of the work one of the finest architects

and one of the best engineers obtainable were secured for the planning and supervision of the entire scheme. Special emphasis was given to sanitation and attractiveness. Five distinct types of houses have been used and the exteriors, for the sake of variety, have been given different treatments—veneer frame, siding frame, shingle, stucco on lath, stucco on concrete tile, with combinations of these treatments, as brick-veneer-stucco stucco-siding, etc., so that there is none of the usual sameness in appearance which tends to make projects of this sort more or less undesirable.

Eighty different plans entered into the construction of these homes. No general plan is used on more than three buildings. And when the finishing is done,



Close-up of Two Attractive Designs in Studebaker Park. "Homes Not Houses" Was the Motto of the Organization in Planning These Dwellings. Five Distinct Types of Homes Are Included in This Park to Prevent Monotony of Treatment. N. Roy Shamblean Was Architect.



Typical Floor Plan of One Type of House in Studebaker Project.

each in different style, it might be said that no two houses in the entire Studebaker Addition are alike.

Every utility necessary and desirable in a strictly modern home has been planned upon. Improved streets, water, gas, electric and other facilities, storm and sanitary sewers, concrete curbs, gutters and wide sidewalks have been put in.

The streets are lighted with boulevard lights and no wires of any description cross overhead. Underground conduits are used exclusively. Adequate telephone service has been arranged for.

Particular attention is called to the stucco on tile homes in view of the fact that a special concrete tile plant was constructed by the company to make tile for these buildings. The tile used in these homes is hollow, made of concrete, pressed to form with extreme pressure, with two parallel air chambers. When placed in the wall this tile permits free air circulation from the basement to the roof and acts as preventative for any absorption of moisture thru the wall by condensation. It acts as an insulator against heat in the summer and against cold in the winter.

The plan on which the sale of these homes is made to the employes is very liberal. The selling price has been brought down to \$7,500 and the payments are made over ten or fourteen-year periods, by the month, at less than usual rentals for the same class of homes. On the ten-year payment plan the rental, for instance, is only \$56.25 per month and the interest at 6 per cent, is entirely rebated at the end of that period if the employe remains with the company all of that time. Under the fourteen-year plan the monthly payments are less and the interest rebate applies in the same way.

Design of Safe Construction

(Continued from page 107.)

$$W_1 (.0314 \times .43) = 9,410$$

$$W_1 = \frac{9,410}{.4614} = 20,400 \text{ pounds}$$

For cast iron columns use Formula (6). On page 321 of Carnegie will be found the dimensions of standard round cast iron columns. The effective or safe working lengths are tabulated for the given dimensions. Suppose we wish to find the safe eccentric load that a round cast iron column will carry when the length is 10 feet, outer diameter 7 inches and metal 1 inch thick if the load is 3 inches off center. From Carnegie, $A = 18.85$, $r = 2.15$ and $e = 35$.

Substituting in Equation (6):

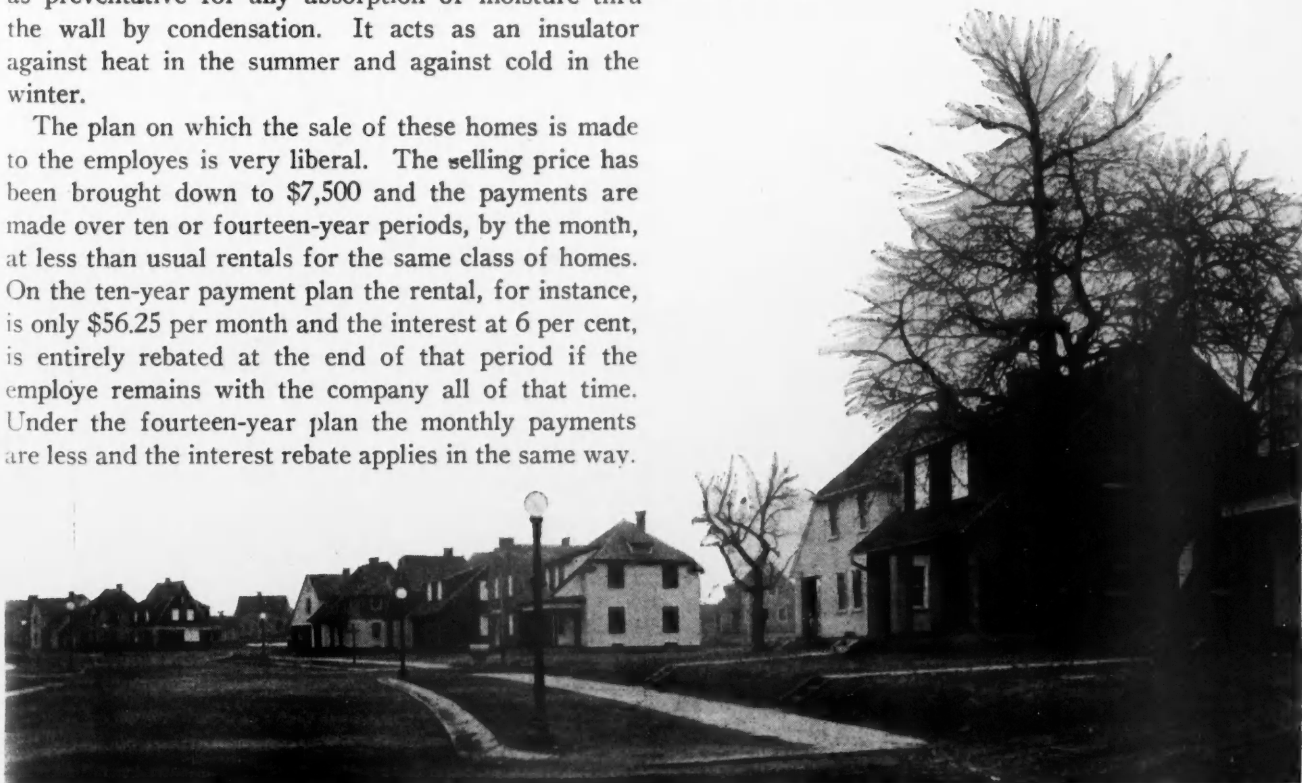
$$\frac{W_1}{18.85} \left[1 + \frac{3 \times 3.5}{(2.15)^2} \right] = 9,000 - 70 \times \frac{120}{2.15}$$

$$\frac{W_1}{18.85} (1 + 2.25) = 9,000 - 3,900 = 5,100$$

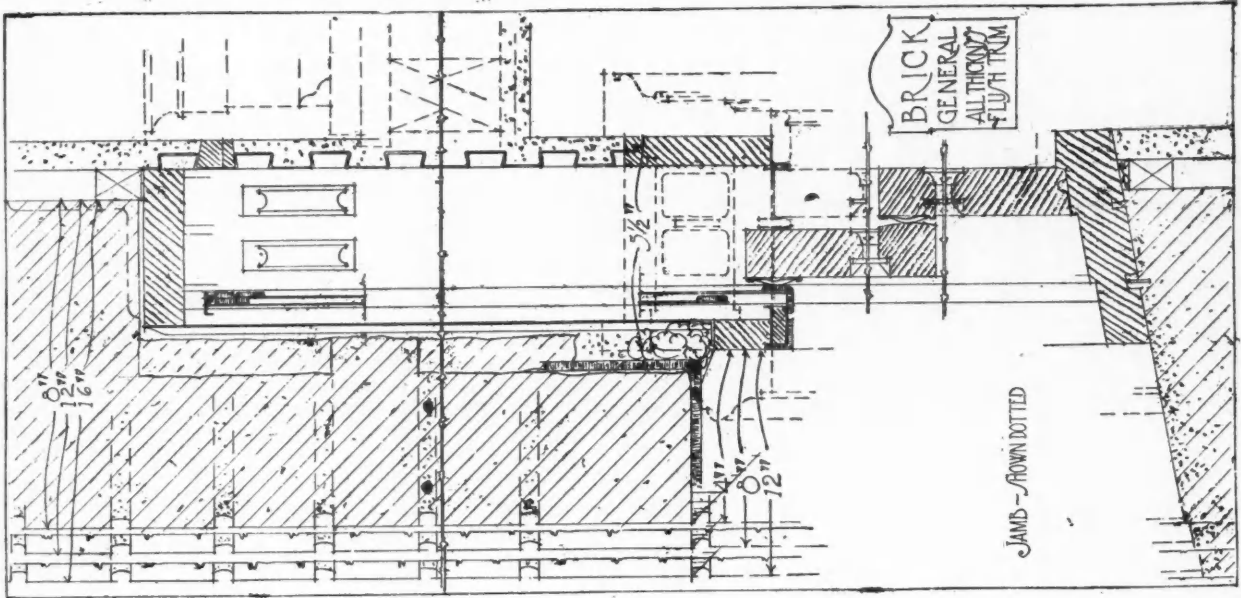
$$\therefore W_1 = \frac{5,100 \times 18.85}{3.25} = 29,500$$

Most of the problems in this article have been solved by slide rule. The results are correct to three figures only.

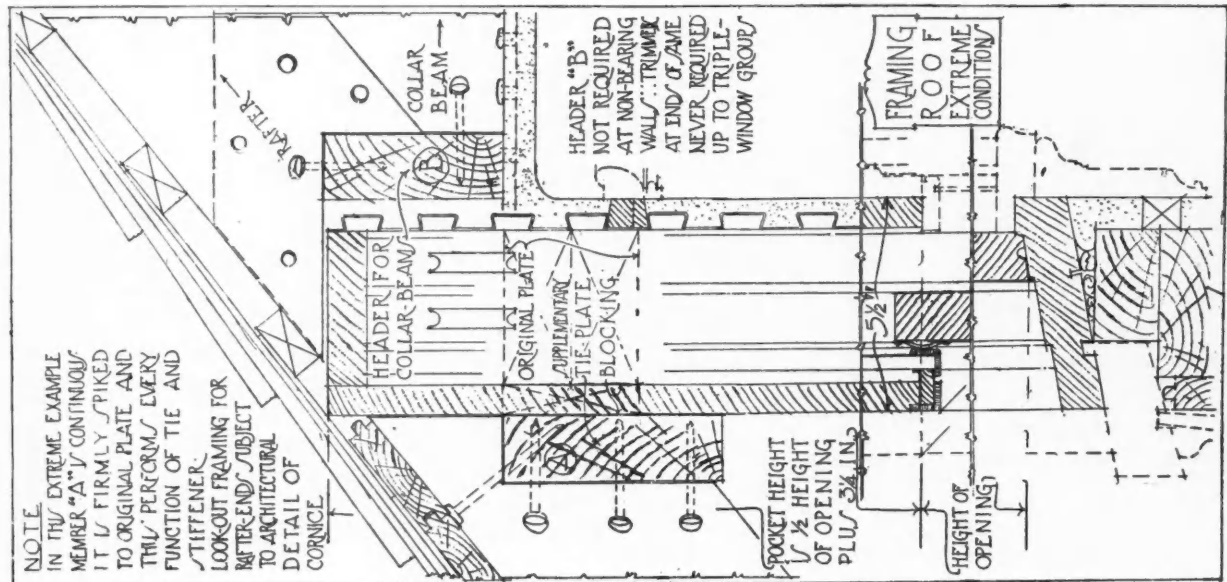
I have tried to illustrate the methods and formulas for figuring the eccentric loads on columns by applying them to a few special cases. By means of these equations and a handbook the reader should be able to handle most cases that arise. I have figured for bending about the axis 1-1 and 2-2, because they represent the axis about which greatest and least bending could take place.



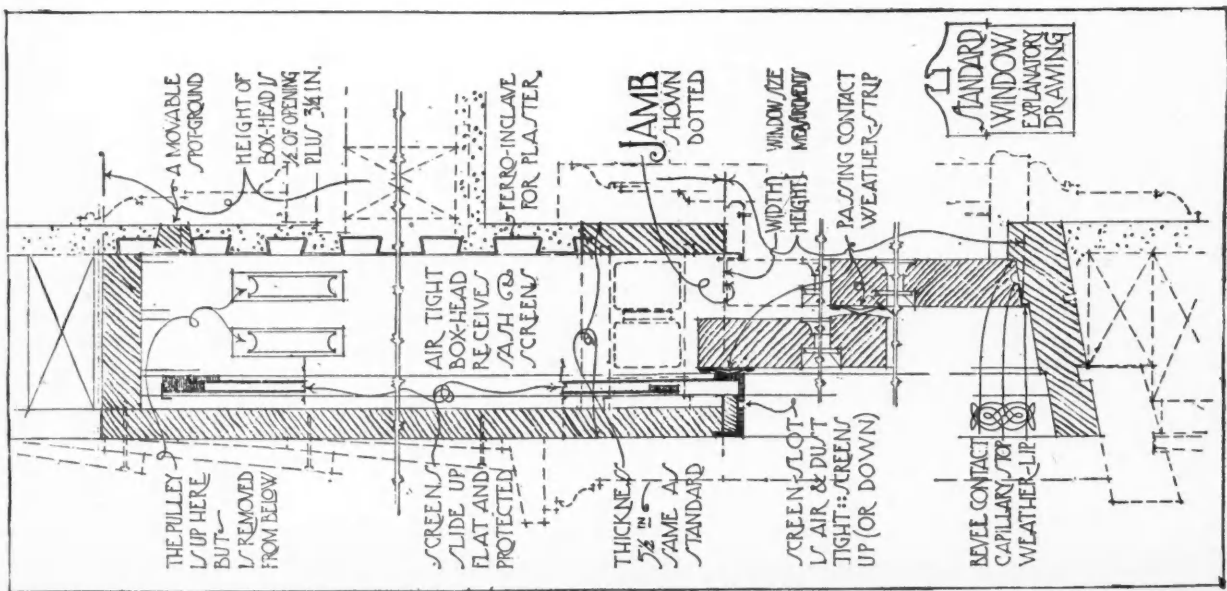
Another Street of Beautiful Homes. Eighty Different Floor Plans Were Used and Veneer Frame Siding Frame, Shingle, Stucco on Lath and Stucco on Concrete Tile Were Used. The Selling Price Amounted to About \$7,500, Payable in 10 to 14 Years. All Streets Have a Parked Effect.



Detail Showing Relationship of Unit Window Core with Typical Case of Standard Brick Construction Furred in Any Thickness, the Frame Being Flush with the Plaster. Note Angle Iron at Window Head. The Window Frame Itself Must Not Carry Any Load.



Detail Showing Relationship of the Unit Window Core to a Typical Case of Roof Framing Under Extreme Conditions of Lack of Head Room. The Window Core Can Be Shoved Up to the Very Under Side of the Slate or Shingles. Note Collar Beams to Take the Place of the Plate Which Is Cut.



Detail Showing Relation of Unit Window Core to Typical Building Construction of Divers Types. This Unit Will Fit Any Architecture or Construction permitting a Wood Frame Non-Casement Type Window.

The How and Why of Unit Windows

IMPROVED WINDOW BRINGS SATISFACTION AND A SAVING TO ANY BUILDING, LARGE OR SMALL

BETTER windows are wanted in these days of enthusiasm for sunlight and fresh air in homes, hospitals and in fact all buildings.

"Give 'em lots of windows," is the word today on every new building project; until it looks as if the present would be known as the "open-faced" period of American architecture.

With this demand for windows, windows, windows, a new type of window—very much improved—has been developed. It is known as the "unit" window, because it comes complete as a unit to the job.

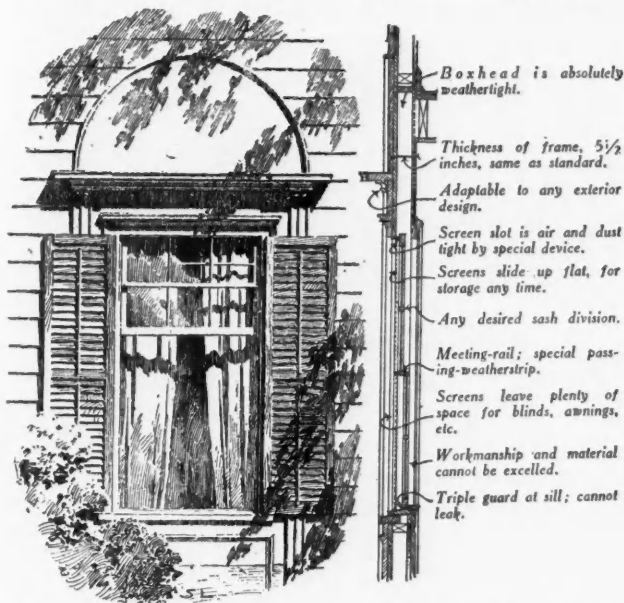
When this window leaves the factory, it is a completed, working unit. The frame contains the glazed and weighted sash and the screens, raised into the box

Less Fuel Needed—Windows are built to a standard tested for leakage under wind velocities up to 90 miles an hour. Because they permit less cold air leakage and heat loss, the radiator surface may be reduced three to four square feet for each unit window replacing the usual weather-stripped variety. With anthracite at \$11.00 a ton, 20 tons ordinarily burned per season, the fuel reduction equals 68 cents a window, or.....\$ 20.40

Smaller Heating Plant—Three to four square feet of radiation less per window means a corresponding reduction in boiler capacity and probably piping values, etc., in all, say, 120 feet at \$1.50 or \$180.00—the annual interest on which is..... 10.80

Heating Plant Depreciation—One hundred eighty dollars saved in heating plant reflects a yearly depreciation charge (twenty-year basis) lessened by..... 9.00

(Continued to page 154.)



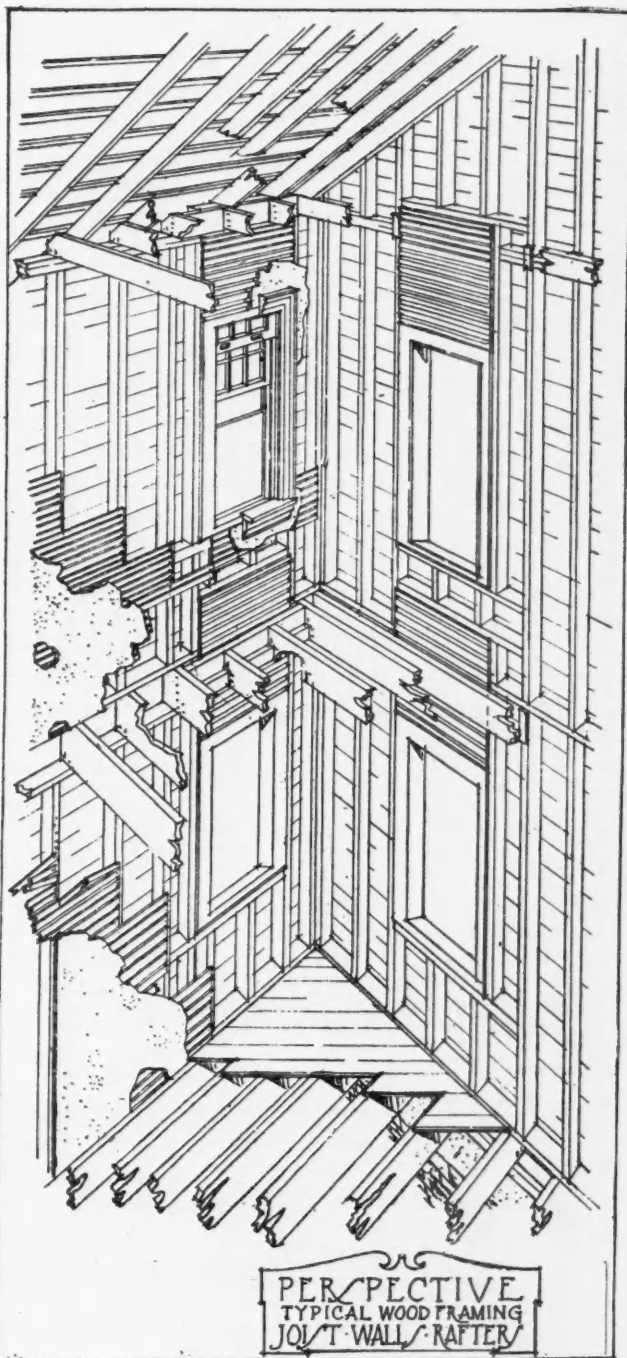
Typical Colonial Window Worked Over Unit Core, Showing How This Lends Itself to Any Architectural Treatment Permitting the Double-Hung Type of Window.

head; the weatherstripping fitted in place, the hardware attached, even the priming coats applied. Crating boards enclose the stiles, sill and top of the window opening and are not removed until after the frame is built into the wall and the use of the window required. When the window arrives at the new building, nothing is left to do except set the frame, add the decorative trim designed by the architect and paint the sash and trim.

Each window is exactly like another in uniformity of material and painstaking workmanship, the nice adjustment of parts, the precise but easy action.

The details on this and the preceding page illustrate the essential features of this new unit window. It is adaptable to any type of construction, light or heavy, and works in connection with any wall material,—frame, stucco, concrete, brick or tile.

These improved windows are cost savers in the long run. The estimates following are based on a typical residence having thirty windows of average size.



Detail Showing in Perspective How the Unit Window Adapts Itself to Frame Construction.

Thickness, the Frame Being Flush with the Plaster. Note Angle Iron at Window Head. The Window Frame Itself Must Not Carry Any Load.
 Core may be subdivided into the Very Under Side of the Sash Sliding Core Collar Beams to Take the Place of the Frame Which is Cut.
 Non-Casement Type Window.

SMALL JOBS FOR RURAL BUILDERS

Concrete Manure Pits

Easily Promotable Business for Rural Contractors

ONE of the best opportunities for the small town or country contractor to extend business lies in the promotion of concrete manure pits. Every farmer should be awake to the value of manure and the economy of storing it under most efficient conditions. Almost every agricultural experiment station in the country has calculated the present annual loss in manural value at fabulous sums and produced the evidence to back its figures. The amount calculated as an average annual loss was \$24,000,000 for Indiana alone.

A ton of manure is worth exactly what it will produce in crop increases, minus the cost of handling. But manure allowed to stand exposed soon loses so much of its value that what is left often times barely covers the cost of carting and spreading. At the New Jersey Experiment Station, five piles of manure exposed to the weather for eighty-two days lost 51 per cent of the nitrogen content, 51 per cent of the phosphoric acid, and 61 per cent of the potash. At the Ohio station it was found that the increased value of manure produced by 1,000 pound steers was sufficient to pay each animal's proportion of the cost of a good concrete manure pit in eight months.

The pit should be located where the manure can be conveniently pitched into it or handled with a litter carrier. In the interests of sanitation around the barn,

the latter method is preferable, permitting the pit to be a considerable distance away. In shape, it should be designed for easy access by the manure spreader, with side walls not more than 4 feet in height. If the pit is small, build it so the spreader may be loaded

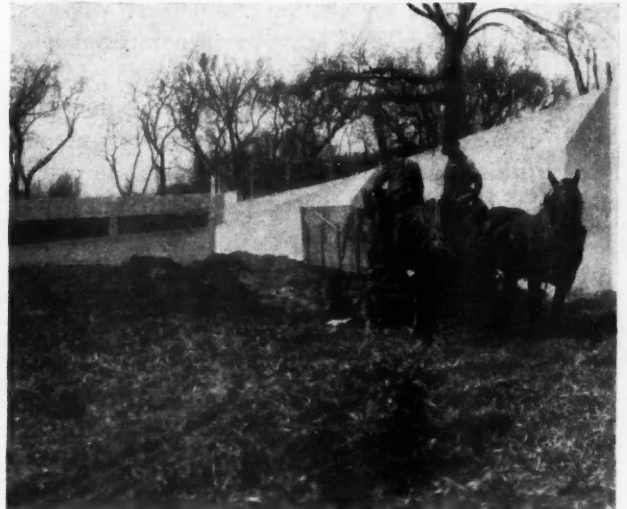


Figure 1. Large Concrete Manure Pit, Which Saves Thousands of Tons of Valuable Fertilizer Annually for One of Chicago's Public Parks.

from the sides; if larger, a passageway for the spreader should be provided, as shown in Figure 3. A very large pit, such as shown in Figure 1, should have driveways conveniently located, to facilitate driving in and out, even when certain portions of the pit are entirely filled.

Accompanying details for a pit of average size (Figure 2) require very little explanation. The sump or cistern into which the liquid manure drains should also be connected with a drain from the dairy barn floor. Interior of this cistern should be troweled smooth. For the cistern and pit floor, use concrete mixed in proportion of one sack portland

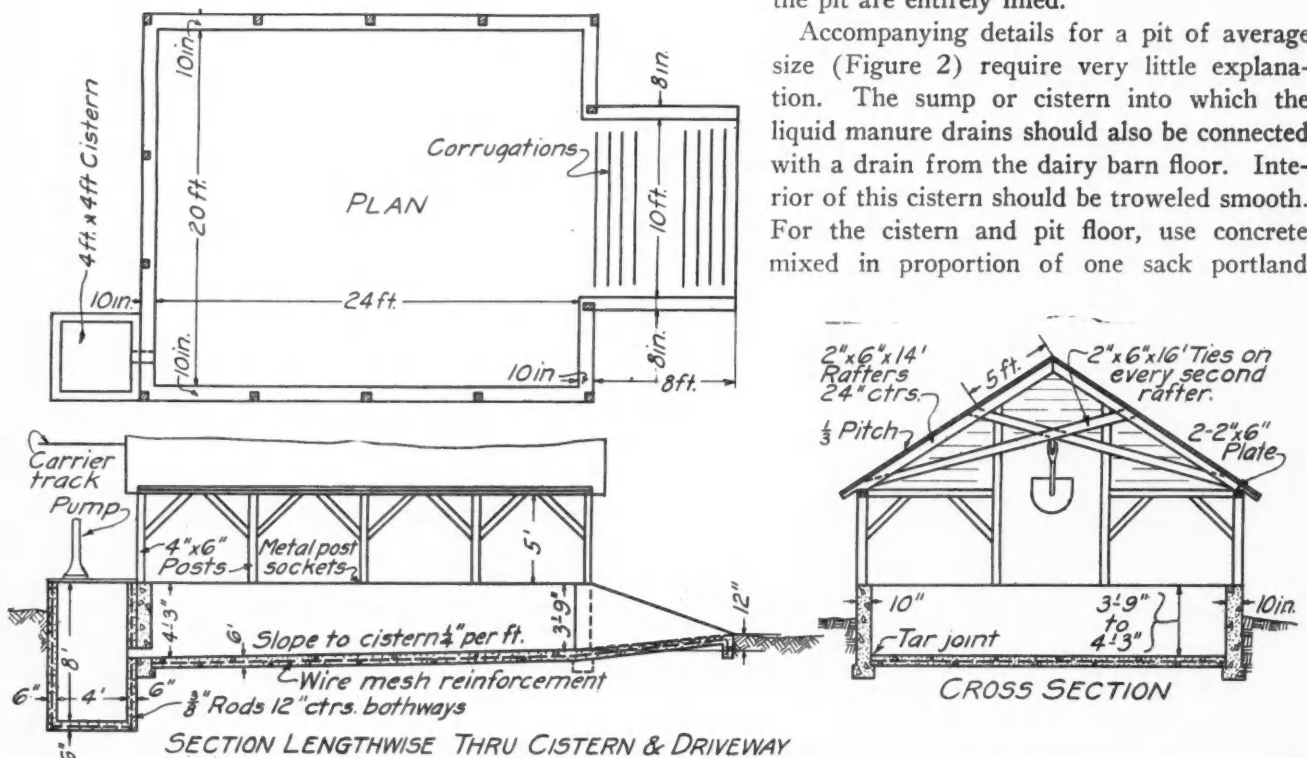


Figure 2. Detailed Design for a Manure Pit with Liquid Manure Cistern, Capacity Suitable for a Farm Keeping 20 to 30 Cows.

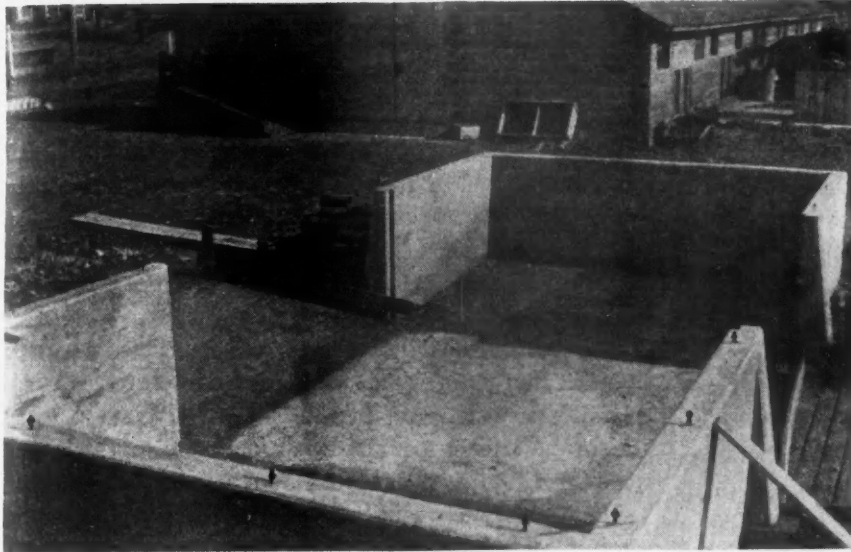


Figure 3. An Ideal Type of Small Manure Pit with Walls and Floor Completed, Frame Upper Work and Roof Yet to Be Built. Notice Bolts Imbedded in the Walls to Anchor Sills, Also Convenient In and Out Drive.

cement to two cubic feet of sand and three cubic feet of pebbles. The proportion for the walls may be 1:2½:4. The walls of the pit should be built first. When the floor is placed, a one-half inch space should be left around the edge, which is later filled with tar to make a water-tight joint. The amount and spacing of reinforcement is indicated on the plans.

The following table will be found convenient in arriving at the proper size of pit for herds of various sizes under average conditions:

No. of Cows	Length	Width	Average Depth
10	16 feet	16 feet	4 feet
20	24 feet	20 feet	4 feet
30	30 feet	24 feet	4 feet
40	40 feet	24 feet	4 feet

These dimensions do not allow for areas used as driveways, and driveway space must be added to the above.



Hog House Partitions and Floors

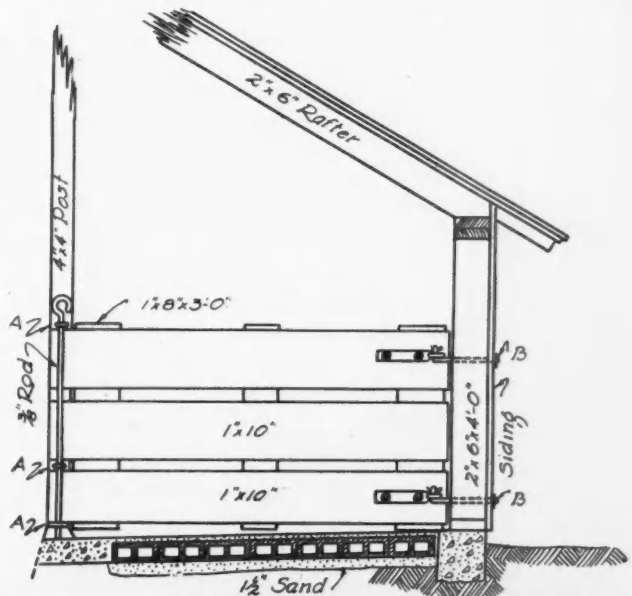
HOG HOUSE floor materials have been a source of many an argument and as yet, perhaps, the best material has not been discovered. Some breeders still argue that the ground is the natural bed for the hog because most any hog will sleep on the ground in preference to clay tile, cork brick or concrete. A small boy will wade knee deep in cold water in the early spring in preference to walking on the sidewalk but it does not follow that the former course is the better for him. The ordinary old milk cow will eat enough green corn to bloat up like a balloon and pass on to the next world in terrible agony but the fact that she has an extreme liking for the green corn does not make it good for her. But to come back to our friend the porker, because he chooses to root around in the dust, to sleep in it and breathe it does not prevent this self-same dust from causing all kinds of lung troubles and does not prevent this

dust from being full of cholera germs left from the last infection of the disease several months before. A careful consideration of the above facts has caused the careful, thoughtful breeder to search for an economical and practical floor material for the breeding pen in the hog house. He found it in clay building tile.

Clay building tile laid on the flat side on a layer of sand and covered with a layer of rich concrete makes a very satisfactory floor. The sand layer allows the tile to be straightened up and fit together properly, also prevents moisture from rising from below. The layer of concrete over the top gives the pen floor a surface which can be cleaned if the

occasion demands it. The alley floor may be of solid concrete and the pen floor may slope toward the alley for drainage.

The partition fastenings sometimes give trouble to the breeder. An old sow is of a very inquisitive turn of mind and in some cases possessed of considerable intelligence when that intelligence is directed along lines which cause trouble. She will solve an ordinary gate fastening in a hurry and will have the pen partition opened in two shakes unless it is fastened with some substantial form of fastener. Light hooks are worse than useless. The gate shown here is used with success on many farms in the Middle West. It consists of a pair of heavy gate hinges run thru the studding and bolted as shown at "B" in the figure. A cotter pin holds the hinges from being lifted from the bolt. The front end of the partition is held in place by a ¾-inch rod resembling an endgate rod on a wagon.



Cross Section of Hog House Showing Details of Efficient Partition and Floor Construction.

How Building Costs Were Reduced \$720.00

Excavating	\$ 46.00
Concrete Walls and Floor	116.00
Lath and Plaster	86.00
Lumber and Millwork	196.00
Carpenter Labor	116.00
Painting	46.00
Roofing	42.00
Miscellaneous Items, Such as Hardware, Sheet Metal Work, etc.	72.00
Total	\$720.00

How \$720 Saving Was Accomplished. These Figures Are Based on Present-Day Costs for Material and Labor

"HOW I Saved \$720.00 for My Owner," is the title of the story the delightful little bungalow shown on this page has to tell to the readers of the AMERICAN BUILDER.

When ordering his new home the prospective owner insisted on living room, dining room, kitchen, and two bedrooms. But when the builder submitted plan No. 1 and his figures, he demurred, loudly.

"All right," agreed the builder, amiably, "follow my advice and I'll build the house you want at a big saving."

The prospective home-owner told him to explain.

Then the builder trotted out the second floor plan shown here.

"Here you have the same conveniences, the same rooms and your house is 24 feet wide by 32 feet long, whereas the other plans called for a house 24 feet wide and 40 feet 6 inches long. In short, this second plan saves 202 square feet. How is it done? Let me show you!

"Your front porch is the same, so is the living room.

From then on it changes. In your first plan there is a big dining room and separate kitchen. Why waste all this space when it can be arranged as per No. 2? The space used by the dining room has been efficiently arranged to accommodate a cute little dining nook, suitable for the needs of the family."

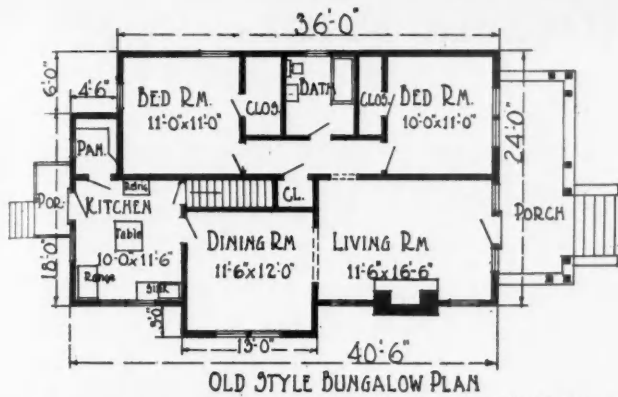
"But I want a big dining room," interjected the customer.

"Good," replied the contractor. "I'll soon satisfy you on that point. This dining nook in all that a small family needs for its private meals. It is separated from the kitchen part of this room by a well designed colonnade with glass doors and a china case in one side. This keeps out all of the offensive odors and noises of the kitchen.

"The kitchen is one of the important features of this economy house. Here is where much of the saving in space is effected. By the introduction of special kitchen units in the rear wall, such as is shown in the floor plan, considerable space is saved without losing one whit in efficiency and convenience. The pantry is no longer needed. There is the range tucked away against the wall with cupboards and shelves above, then a sink under the window in the center, and on the other end an icebox with outside icing arrangement, also more shelves and cupboards for utensils, etc. This is the same idea that has made the modern condensed apartment so popular and so remunerative to the owner. Why not introduce it into the small home? There are so many attractive kitchen unit arrangements that it is not difficult to find what you like.



This Is the House as Built at a Saving of \$720. Space Saving Closets and Kitchen Units Eliminated Much Waste Space and Saved 202 sq. ft. as Shown in the Comparative Floor Plans on the Next Page.



Floor Plan No. 1. The House as It Has to Be Built Under the Old Arrangement. It Called for Five Rooms and is 24 by 40 Feet 6 Inches.

"From the kitchen you step out into the hall which leads to the cellar and across the way into another room, which for the time being we shall call the utility room. We do this because it serves several purposes. Just a short time ago you interrupted me to insist that you wanted a dining room. Well, here is just the place for state occasions. When planning a dinner party, this room is just what you need.

"Yet it can be used as a bedroom if needed. The wall bed tucked neatly away can be drawn out. Or if not needed for either dining room or bedroom, why not a supplemental living room, play room for the children, or den? It is fitted with space-saving closets, as is the bedroom in front. The use of these closets make possible the enlarging the two rooms on this side of the house. The kitchen unit has been responsible for the saving of space on the other. As a result, you save 202 square feet as shown in the shaded portion of floor plan No. 2, and this 202 square feet means an actual saving of \$720.00 as shown in the table above."

Needless to say, the contractor clinched the contract right then and there. Today, when costs are of such paramount importance, the greatest selling point a builder can have is one that emphasizes a definite saving. This can be brought about by the careful planning of the small home to include the space-saving features used so effectively and so profitably in the large apartments. They not only save money in construction by eliminating waste space, but save work for the housewife.

Instead of paying for five rooms, as the first floor plan calls for, the owner is getting practically six rooms for the cost of four.

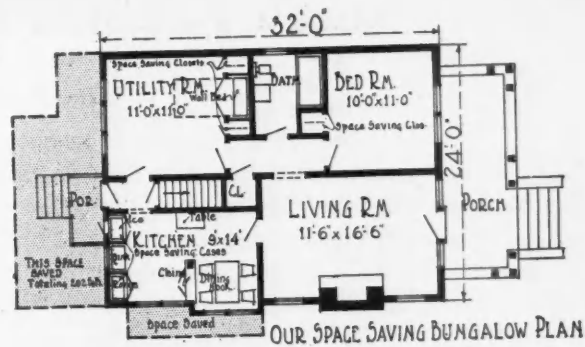
Concrete Block in Apartment Construction

(Continued from page 83.)

granite or red oxide of iron are used to produce pink, while shades from gray to slate are usually obtained by the addition of lamp black. Buff tones resembling buff bedford in color are to be preferred for warmth.

Apartment Buildings in Omaha

A few years ago the Drake Realty Construction Company undertook a definite program of apartment building in Omaha and at the present time has an annual capacity for the construction of 250 apartments



Floor Plan No. 2. The House as the Builder Suggested. Only Four Rooms Which Serve the Purpose of Six. This Plan Calls for a House 24 by 32 Feet. The Shaded Portion Indicates the Space Saved Over the First Plan.

in five or six buildings. After a few months of operation concrete block was selected as the standard material for all walls except front face, for which it had been planned to use brick and terra cotta. The Turner Court Apartments, shown in Figure 6, are of this type; and altho the brick work on the front (in a brown tapestry brick) blends well with the concrete portions of the walls, all of the later apartments are constructed with all elevations of concrete block, as illustrated in Figure 7, showing the Aberdeen Apartments. At the present time the Drake Company manufactures all of its own wall material and its buildings have concrete floors supported on reinforced columns and beams, making the construction absolutely fireproof. The floors and other cast-in-place portions are of concrete mixed at the block plant and conveyed to the job in 6-ton motor trucks.

The Omaha apartments of which the Turner Court Apartments are typical, illustrate a class of construction which has been introduced in perhaps fifteen of the leading centers during the past few months.

Furnishing Art Insert Home

(Continued from page 87.)

in front of the table, sink, and range. The walls have white glazed tiles to the height of the wainscot, and are painted above that. Plain scrim half curtains drawn over rods at top and bottom so that they will not blow back and forth when the windows are opened and probably get in the way of the cook and the cooked, are used on the windows. Above the range there is a hood to carry up the flue all steam and cooking smells. Lighting fixtures are so placed that the cook will not be in her own light at the stove, sink, or table. The sink is as near the range as possible because it is wearing on the cook's disposition to have to trudge back and forth the width of the room. The low zinc-covered table, where pots and kettles may be placed, has a slightly raised rim so that in case of a spill it can be mopped up easily; the larger table, where more elaborate dishes are prepared, is fitted with a rack for the ingredients, knives, spoons, and other requisites the cook wishes at hand. Kitchen cabinets such as are being shown in the stores today are well worth the money; so, too, are the fireless cookers.

Some Factors in Cement Prices

IMPORTANT COSTS THAT GO TO MAKE UP MARKET PRICE OF BUILDING MATERIAL

By B. F. Affleck

PRICE is a prevalent subject of discussion nowadays and any mention of it usually leads at once to comparison between present prices and those of earlier days. Several months ago when general business began to recede in volume it was the habit to make the comparison of prices then existing with "pre-war" prices. Lately, however, the impression prevails that there is little hope of pre-war prices now and perhaps for several years to come, but rather that the new level is being or will be established at some point substantially above the pre-war point. There is a difference of opinion as to what this new level will be, opinions expressed fixing it at anywhere from 50 to 100 per cent higher than the level of 1914 or 1915.

Cement prices come in for their share of the discussion. Years ago cement sold for from \$2.00 to \$3.00 at the mill. From that time until the beginning of the world war prices had their ups and downs and during that period few mills earned a reasonable return on their investment. Many mills either went out of business to avoid bankruptcy or, continuing in business, actually suffered that fate. One cause of these unfortunate experiences was the failure or inability of cement manufacturers to determine accurately their manufacturing costs.

Six or seven years ago the constantly widening uses for cement created a demand that enabled manufacturers to put their mills on a more nearly business-like basis, until the Council of National Defense early in 1917, began assembling for war purposes trade information as to available supplies and prices of cement. This governmental action resulted after an investigation of costs by the Federal Trade Commission in the fixing of prices on cement used by the government. The price so fixed by the government in 1918 averaged \$1.78 per barrel at the mill.

The price of portland cement to the general public was never fixed by the government and it ranged somewhat higher than the price fixed on sales to the government. However, the War Trade Board in its book printed by the Government Printing Office entitled "Government Control Over Prices" is authority for the statement that cement prices rose in the open market less than any other basic building material during the war.

The U. S. Geological Survey Press Bulletin No. 466 states that the average factory price of cement for the whole country in 1919 was \$1.71 a barrel and in 1920, \$2.01 a barrel. The present average mill price for the entire country is not available but in the middle Western section the mill price at a large producing point is \$1.80 per barrel. This price carries with it extended terms of payment, but a discount of

10c per barrel applied when prompt payment is made by the customer; thus the net price is \$1.70 a barrel or 8c below the average mill price fixed by the government in 1918.

All the foregoing relates to the price of cement at the mill. The cost to the user, of course, requires that freight be added to the prices mentioned, and that freight rates have been increased substantially is a matter of common knowledge. A few examples of the effect of higher freight rates on delivered prices for cement are illuminating. From a large producing center in Western Pennsylvania the freight rate to Pittsburgh in 1914 was 6c per barrel and is now 25c; from the same point to Cleveland the rate was 23c and is now 53c; to Cincinnati the rate was 32c and is now 67c.

From a large mill serving the Middle West the freight rate to Chicago in 1914 was 11c per barrel and is now 27c; to Milwaukee the rate was 19c and is now 49c; to St. Louis the rate was 27c and is now 68c; to Indianapolis the rate was 27c and is now 53c; to Cairo the rate was 30c and is now 76; to Springfield the rate was 23c and is now 61c. The present rates mentioned include the Federal War Tax on transportation charges.

It is not only the movement of the finished cement to point of usage, however, that is affected by the large increases in freight rates. Transportation charges affect as well the materials shipped into the mills for use in the manufacturing process. In fact, the manufacturing cost of cement is made up largely of three items, transportation, fuel and labor, and the high costs of the two last named factors are perhaps as well known as the excessive charges for freight movement. With these three items at their cost levels it is easy to understand why cement prices are not lower than they are, but it is difficult to understand why they are now some 8c per barrel lower at the mill than the price of \$1.78 per barrel fixed for government purchases in 1918, and 30 or more cents than in 1920.

A prominent and costly feature of the marketing of cement is the cloth sack in which a very large proportion of the cement output of the country is packed. These cotton duck sacks are charged to the customer along with the cement but are credited at the same charge by the manufacturer when returned to the mill in good condition. For many years prior to our entering the war the charge and credit for cloth cement sacks was 10c each. Later as the price of cotton advanced the charge was increased to 15c and then to 25c, but recently the decline in the cotton market the charge for sacks has been reduced by practically all cement manufacturers from 25c to 10c.

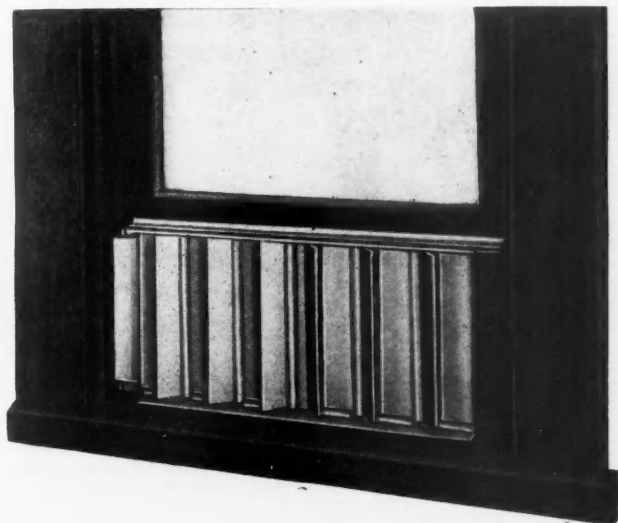


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Handy Ventilator for Homes, Offices, Etc.

IN the home or office one of the important considerations for insuring the health and activity of the occupant is good ventilation. This is especially important in sleeping rooms and in large offices where many people breathing in a limited space soon render the air impure and unfit for breathing.

To provide this ventilation without causing any dangerous drafts, a handy window ventilator has been invented and is now on the market. This ventilator is made up of R-shaped metallic louvers mounted vertically on a frame. While allowing air to pass thru into the interior this louver arrangement also prevents dust, dirt and other materials and pests from passing thru.



Handy Window Ventilator for Homes, Offices, Etc. It Is Made In Many Sizes and Is Adjustable to Various Widths. The Louver Arrangement Allows Fresh Air to Enter But Keeps Out Dust and Dirt.

This ventilator is made so that it can be extended six inches and thus accommodate different window widths. The extension ends telescope over the frame. On account of the changing direction of the wind or air currents the louvers are so arranged as to face in both directions. The device may be placed at either top or bottom of the window. These ventilators are made in stock sizes for openings from 20 to 68 inches in width and in heights of eight to twelve inches.

The edges are zinc, rubber coated, canvas weatherstrip which fit true and snugly against the sash rail when sash is raised. The expanding sash fits into the sash rabbett.



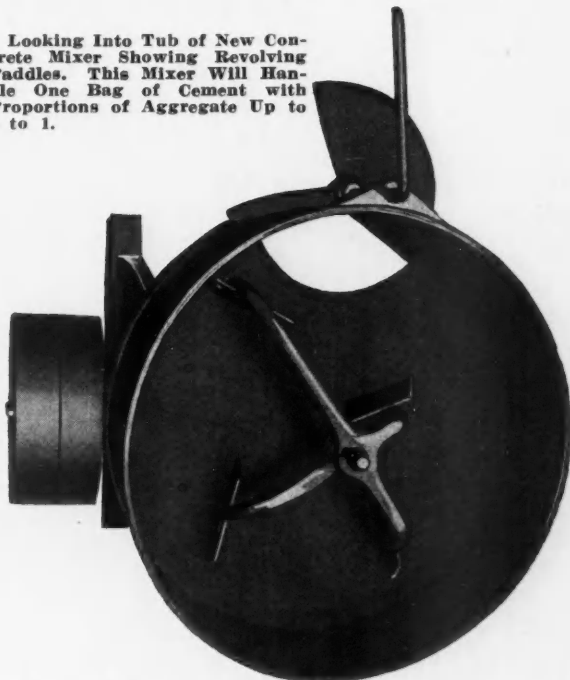
New Mixer for Concrete Products Plants

CONCRETE products manufacturers require a mixer that will turn out a thoroly mixed concrete, yet, at the same

time, be simple in construction, easy to operate, and seldom in need of repair. To fill these requirements a new batch mixer has been devised and placed on the market.

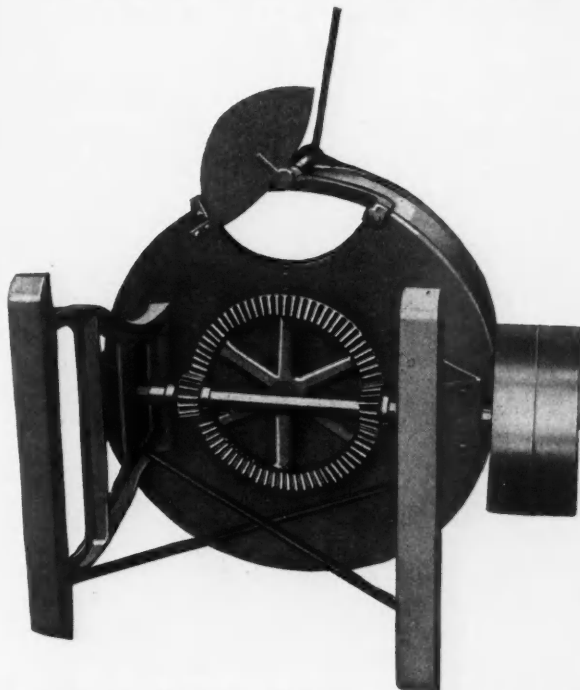
This mixer is of the tub type, 7-foot size, with revolving

Looking Into Tub of New Concrete Mixer Showing Revolving Paddles. This Mixer Will Handle One Bag of Cement with Proportions of Aggregate Up to 6 to 1.

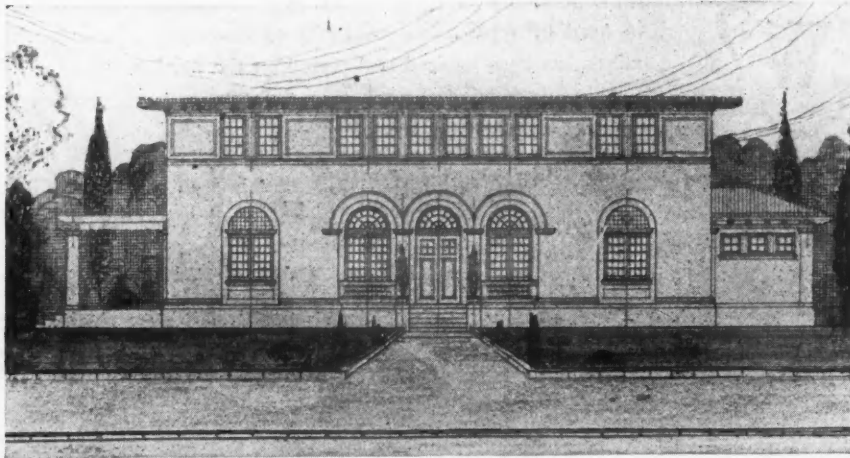


shovels or paddles. These paddles revolve and churn the material into the proper consistency. This mixer can mix one sack of cement at a time with any proportions up to six parts of aggregate to one of cement without overloading the mixer. For smaller plants this mixer is made in 5-foot and 3-foot sizes.

It is set on a base with iron legs, 26½ inches high. There is a circular opening with door in the bottom of the tub thru which the batch may be discharged into a wheelbarrow, chute or elevator hood. The blades are operated by gear and in the case of the large mixer, the power is transmitted thru a tight and loose pulley. The smaller sizes are equipped with two paddles and a friction clutch instead of two pulleys.



View Showing Mechanism and Gears Under Tub of Mixer. Note the Small Door at Upper End of Picture. The Batch May Be Discharged Thru This Door Into Chute or Wheelbarrow.



Design of Home Built of Monolithic Concrete Poured Into Special Forms. One Story Is Cast at a Time, Including Sills, Floors, Etc.

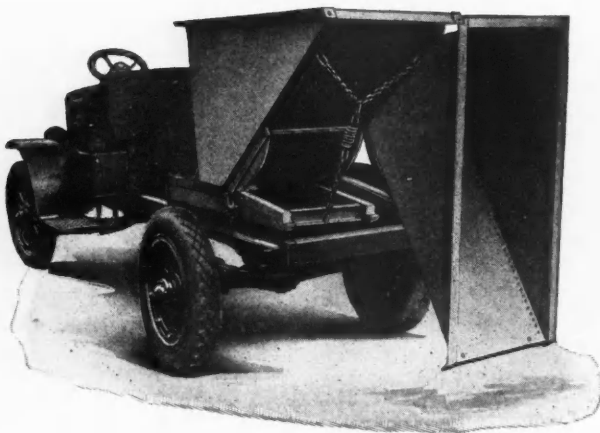
New Steel Forms for Monolithic Houses

SHOWN in the illustration above is a typical design of homes that have been built of monolithic concrete poured into steel forms which have recently been invented. In this system one story is cast at a time, the liquid concrete being poured to form all parts of the structure, including window sills, floor, roofs, etc.

These steel units or forms are 6 feet long by 9 inches wide with flanges on both sides and both ends punched with double rows of clip holes to register accurately in either vertical or horizontal position. These forms are quickly set in place and clipped together.

The first course is laid in horizontal position on the foundation; then the other are laid on top of these in vertical position and on top of these another course is laid horizontally. The top course of units for each story forms the belting course outside while the releasing forms and floor units are carried on top of the course which makes the inside of the house mold. After the house mold has been erected the reinforcing bars and materials are placed in position and the whole steel mold structure spaced and tightened to true alignment.

The door and window frames are set in position inside the mold so that they are cast into the walls and remain fixed when the forms are removed. The concrete is then poured into the forms. Chimney flues are also placed in position in the steel forms and cast monolithic with the structure. Water and drain pipes, etc., may be encased with concrete likewise. In a similar manner porches and other additions may be cast at the same time as the house.



Heavy Truck Equipped with Pair of Special Gravity Dump Bodies. These Bodies Are Used Very Often to Haul Concrete from the Mixer to the Job.

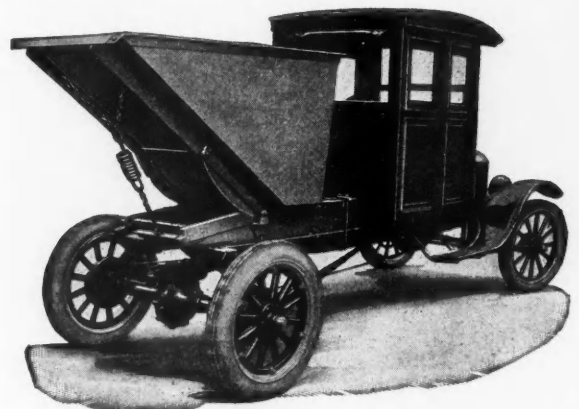
Gravity Truck Body Cuts Hauling Costs

NEXT to the motor truck itself, the important feature of hauling equipment to the contractor, building or road, is the dumping equipment or body. There are many special hoisting bodies on the market operated by the engine, but the latest innovation in this field is a gravity end dump body operated without gears or mechanical devices. Moreover, it is so built that dividing plates can be put in for measuring materials and charging direct into the mixer.

For general contractors a single body of one yard capacity is used on light trucks, the investment amounting to less

than that of a team, yet the truck will cover ninety miles a day. These bodies are made in three-fourths and one yard sizes for light trucks. They are built of steel plate. They are also used in excavating work.

This body is installed singly on light trucks and in pairs on heavier trucks. For paving and heavy construction hauling the double body is used. Where concrete is being hauled from a central proportioning plant as is the case in many states, especially in road building, the body is chosen according to the size of the mixer and two charges are carried in one truck. If a two-bag mixer, a two and one-half yard body is used; if a four-bag, two one-yard bodies are used on a two or three-ton truck, the end dump allowing a direct charge into the hopper of the mixer.



Single Dump Body Fitted on Light Truck. They Have a Capacity of Three-Fourths and One Cubic Yard.

In working on a central mixing plant, one-yard bodies in both single and dual types are used for hauling concrete directly from the stationary mixer to the job. The body is watertight and dumps at a very steep angle, over 60 degrees, so the unloading process is very easy.



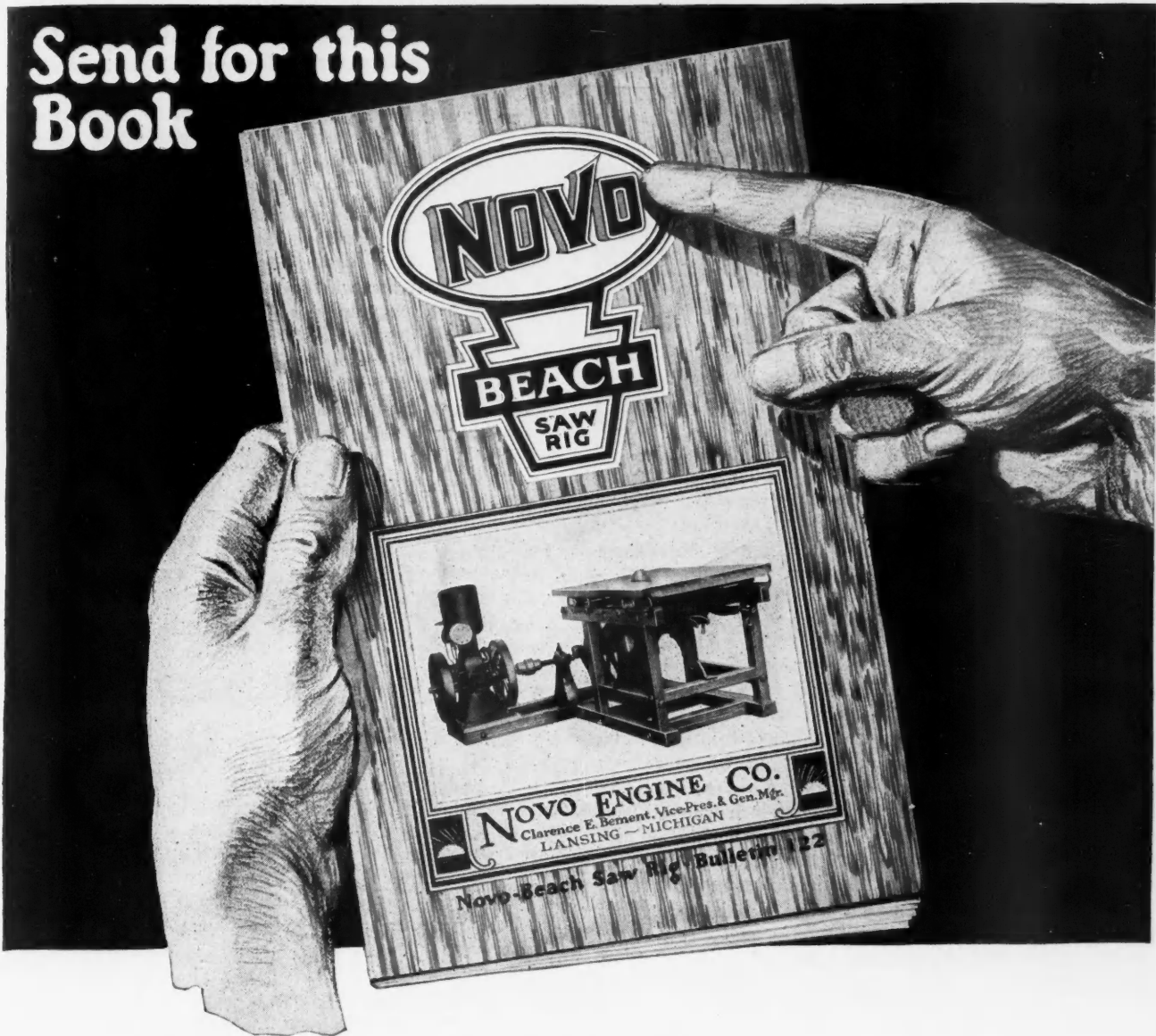
Unique System of Concrete Unit Construction

IN making concrete unit for building construction, the manufacturer is mainly interested in producing a product that is substantial, artistic, inexpensive, dampproof, frostproof, and fireproof. With these qualities the unit is bound to make



Showing How Each Unit Cross Blinds Five Others and Breaks Joints on Both Sides of All.

Send for this Book



Pays for itself on the average job

It was never so important as it is now for you to know that the Novo-Beach Saw Rig is not restricted to the larger jobs. It is just as effective for the smaller contractor. It will earn you money both in time saved as well as reducing labor costs.

Only one operator required for even the longest timbers. The frictionless roller table operating in grooved rollers insures absolutely accurate cuts. Little effort is required to move the table with the material to the saw. The momentum of the table

forces material against the cutting edge of saw.

Double Arbor carries both cut-off and rip saw. Change from rip saw to cut-off saw, or vice versa, can be made without stopping saw. Engine is placed at side of saw rig. Direct connected. No power loss. Out of the way of operator. No dust or dirt can get into working parts of engine.

Let us tell you ALL its advantages. Send us the coupon for free Bulletin No. 122 which fully illustrates and describes equipment and accessories.

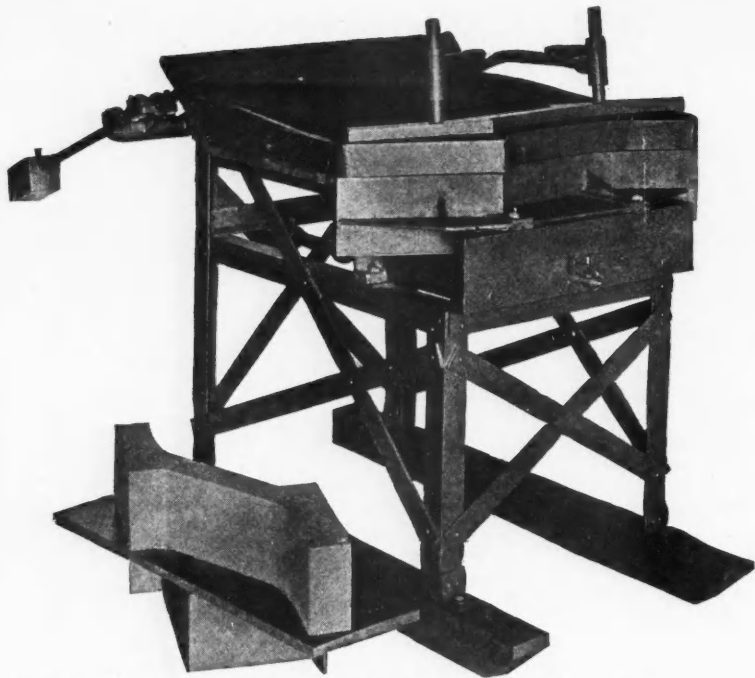
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Tamping Machine Showing All Mold Locked in Position and Finished Wall Unit at Base.

a structure of strength, beauty and comfort.

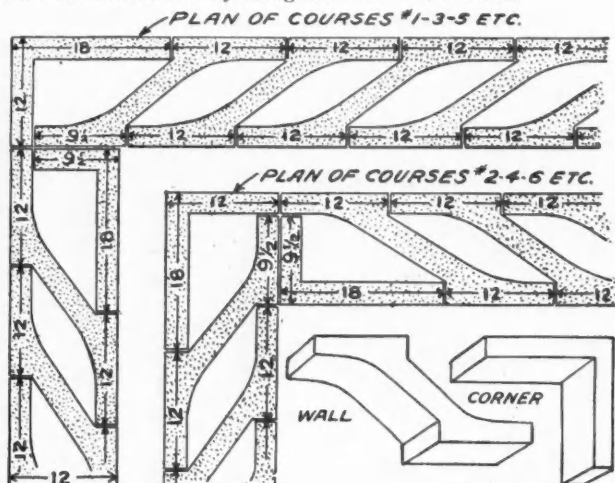
An interesting and rather unique unit for the construction of buildings and silos has been placed on the market. The concrete units are made in a special mold and then tamped by a mechanical tamping machine. The wall unit measures 30 inches from tip to tip and each face member is 6 by 12 inches. The weight of the unit in the 12-inch wall is about 35 lbs. and is 2½ inches thick. The eight-inch wall unit is 1¾ inches thick. The feature of this system is that each unit crossbinds five others as shown in the sketch.

The units for silo construction make a 6-inch wall and each unit crossbinds four others.

In one of the illustrations shown the wall mold is closed and rigidly locked ready for the concrete. At the base of the machine is shown one of the units. Note the peculiar shape.

Special arrangements have been made for the laying of corner units in chimneys and piers. In construction each alternate course is reversed, thus breaking the joints properly. Either or both legs can be reduced in length during manufacture to make smaller openings by inserting a wooden block filler in the mold equal to the required reduction.

The corner unit is very often used to build interior supporting or bearing walls and partitions. They can be made of different thicknesses by using the filler in the mold.



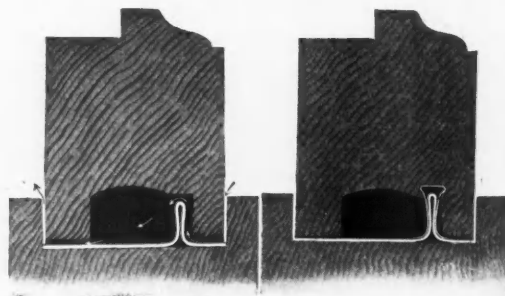
Cross Section of Wall Showing Alternate Course Special Corner Block.

Cutting Down the Coal Bill

WHEN the wind is blowing 20 miles an hour the leakage around a sash 48 by 30 inches with a clearance of 3/32-inch will be approximately 40 cubic feet of cold air a minute where weatherstrip is not used—where the strip is applied the leakage will amount to practically nothing.

At least this was the result obtained where a new metal weatherstrip, embodying an insert feature, was used. This weatherstrip consists of two strips, one made of zinc, which is attached to the window frame, with a tongue or raised portion which forms a track on which the sash slides. This strip, which is called an insert, is made of light bronze and is inserted in a groove in the sash. The contact between these two strips seals the opening, and prevents air gusts from entering the room.

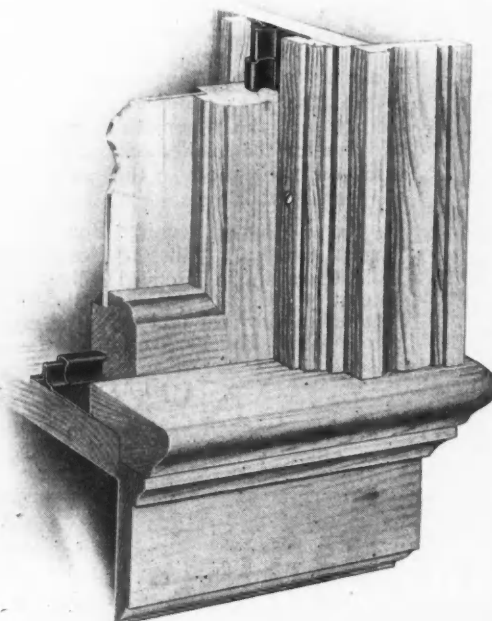
In most windows the opening is at least 1/16-inch by about 21 feet long. If the sash is very loose it may be easily twice that. Naturally this allows a great influx of cold air as well as the escape of



Cross Section of Sash and Sill Showing How Metal Weatherstrip and Insert is Installed.

the warm air within which costs money in the form of fuel. The heating apparatus has to work just that much harder to make up for this leakage. There is also a leakage thru the space cut out for the sash cord. These places are taken care of by the weatherstrip and a consequent saving of 15 to 40 per cent in fuel effected.

In the illustrations shown here the metal weatherstrip has been installed. The track and insert is shown very clearly.



Detail of Window Showing Weatherstrip, Track and Insert in Position.

"The man who knows Asbestos Roofing never bickers about price"

A BUILDER made this remark to one of our distributors the other day, and then went on to say, "Nearly everyone knows that Johns-Manville Asbestos Roofing costs more to make than ordinary roofing and it's worth more."

Johns-Manville Asbestos Roofing is made of strong, everlasting asbestos fibre and the highest grade pure mineral asphalt. Not a particle of rag shoddy or cheap oils in it.

And when you think beyond the manufacturing cost and the purchase price of any article to service actually rendered—that's where you quickly see why Johns-Manville Asbestos Roofing is worth more than other kinds.

For Johns-Manville Asbestos Roofing simply can't dry out, rot or disintegrate in any weather. It is immune to sun, rain, sleet and snow. It should last as long as the building it protects.

Thousands of roofs covered with Johns-Manville Asbestos Roofing are giving satisfactory service for hard-headed, canny business men, demonstrating conclusively that their slightly higher first cost is many times returned in service rendered.

If you want to build up a strong roofing department that is invulnerable to competition, write the nearest Johns-Manville branch for details about our selling plan. Learn of the profits others are making with Johns-Manville Asbestos Roofing.

Johns-Manville Asbestos Roofings are approved by the Underwriters' Laboratories, Inc.

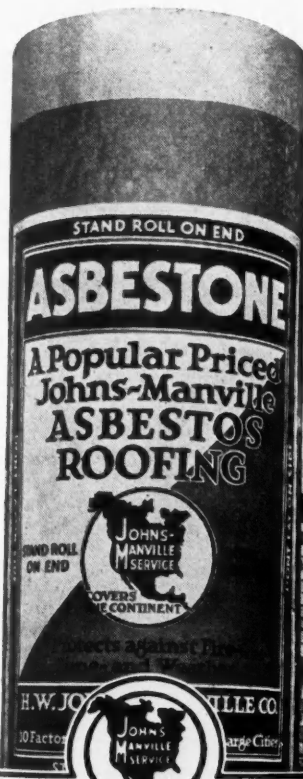
JOHNS - MANVILLE

Incorporated

Madison Ave., at 41st St., New York City

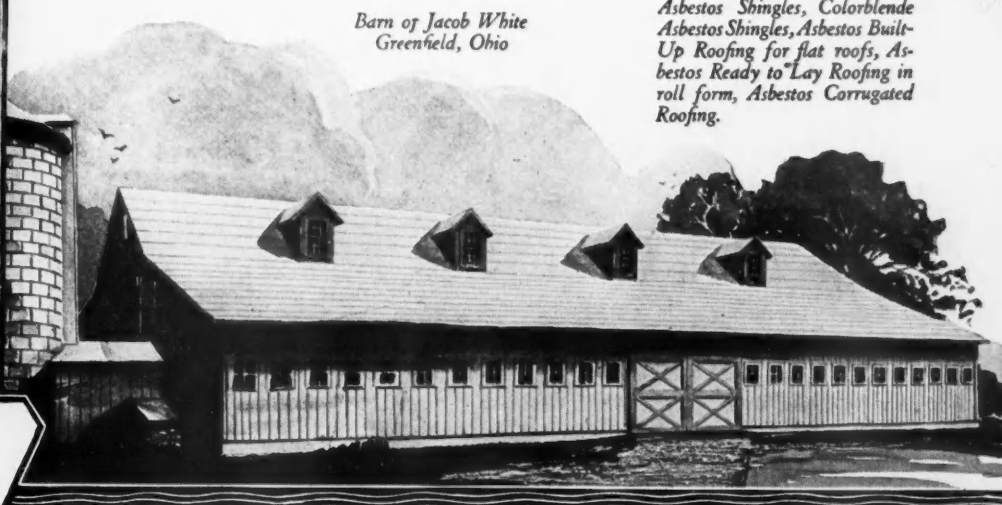
Branches in 63 Large Cities

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto



*Barn of Jacob White
Greenfield, Ohio*

Johns-Manville Roofings
Asbestos Shingles, Colorblende Asbestos Shingles, Asbestos Built-Up Roofing for flat roofs, Asbestos Ready to Lay Roofing in roll form, Asbestos Corrugated Roofing.



Through—
Asbestos
and its allied products
JOHNS-MANVILLE
Serves in Conservation
Heat Insulations, High
Temperature Cements,
Asbestos Roofings,
Packings, Brake
Linings, Fire
Prevention
Products

**JOHNS-MANVILLE
Asbestos Roofing**

Distinctive Brick House Design

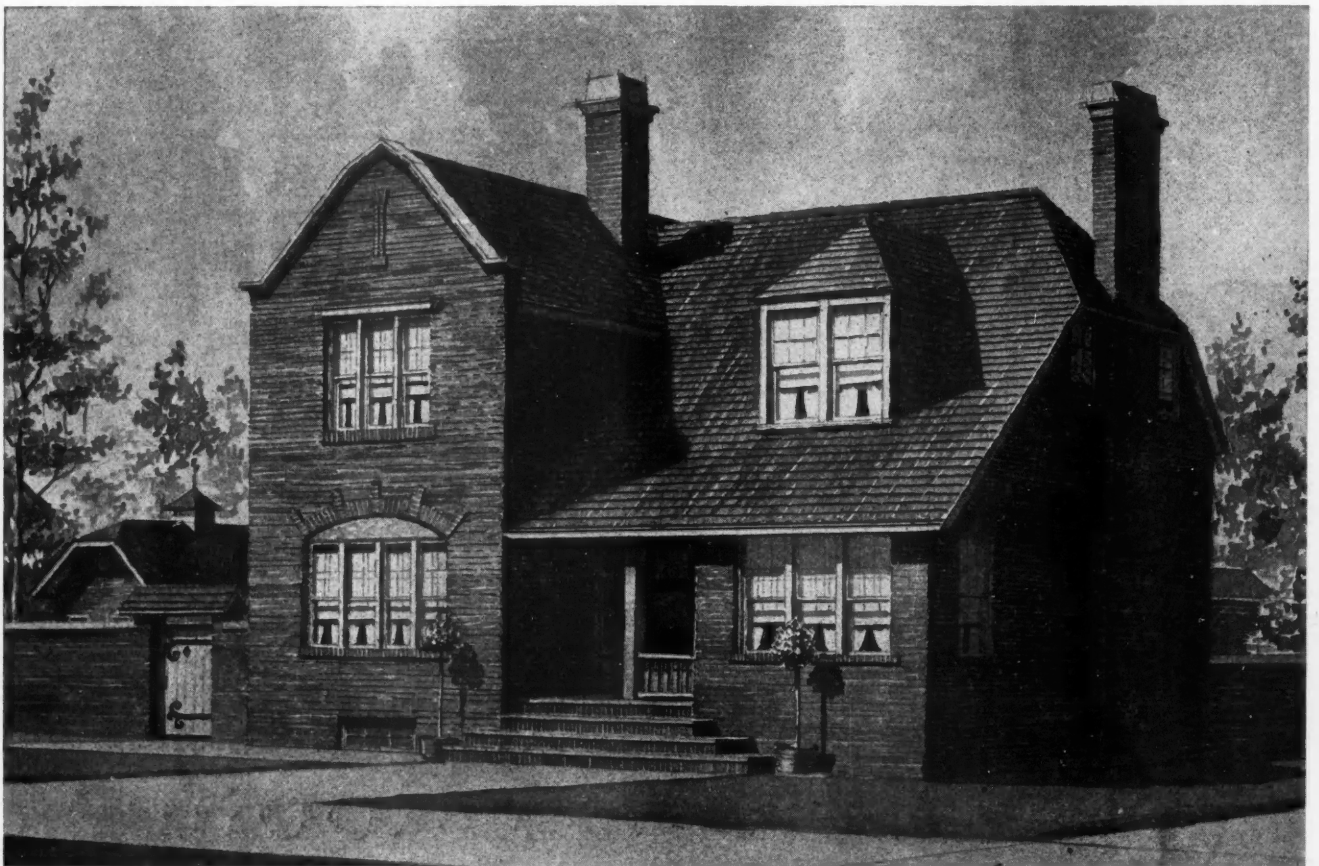
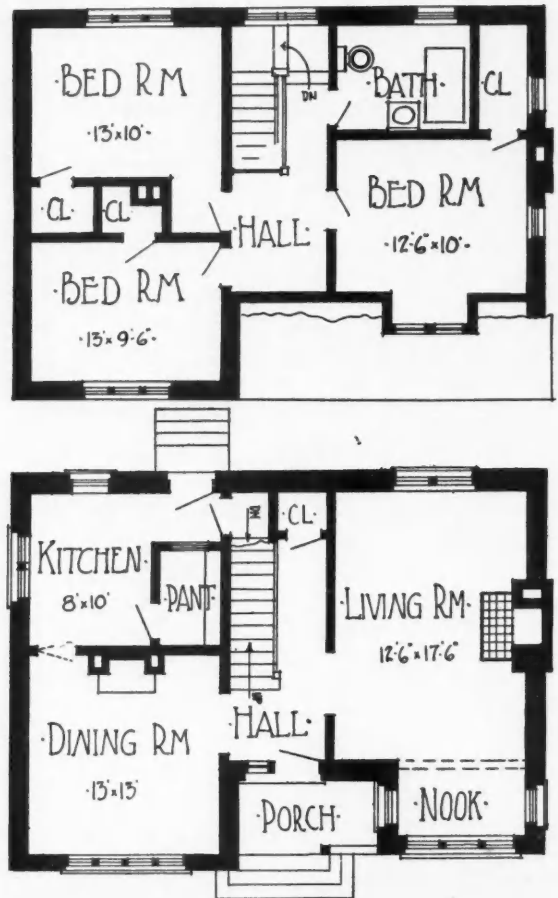
CONTAINS SIX CHEERFUL ROOMS, THREE ON EACH FLOOR—SURROUNDING FENCE AND GARAGE
ALSO BUILT OF BRICK

APPEALING in its simplicity, yet distinctive in design and certainly substantial in construction is the solid brick house shown in the illustration below. It is somewhat English in type with its quaint gables, steep roof and tall stout chimney and suggestive of a modest but comfortable interior. There are six rooms in this dwelling, three on each floor.

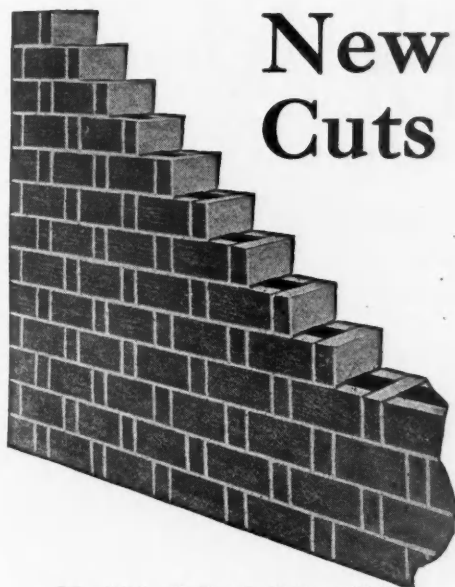
On the lower floor is the living room, large, spacious, and comfortable, an ideal lounging room for the family, the dining room, and kitchen. Adjoining the living room is a nook or alcove which can be used as den or library. A large open brick fireplace in the living room adds a touch of cheer that is quite welcome.

On the second floor are the sleeping rooms, three in number, each well lighted by windows on two sides. This house is ideally adapted for the family of five or six and particularly attractive because of its sturdy construction.

The brick fence in the rear with a quaint heavy wooden gate with old fashioned long hinges and gabled hood is quite unique and impressive. The brick garage of the same architectural type as the main building is located in the rear of the lot. Devoid of frills, yet impressive because of its apparent comfort and hospitality, this house can be constructed at a very reasonable cost.



Brick House of Odd but Pleasing Design. This Home Contains Six Very Convenient Rooms, Three on Each Floor. The Living Room Is Large and Comfortable and There Is an Abundance of Window Space, Insuring Light and Cheerful Rooms. The Floor Plans Appear in the Upper Right-Hand Corner.



The "Ideal" Brick Hollow Wall

New Way to Lay Brick Cuts Cost One-Third

You Can Now Build Permanent, Attractive, Fire-Safe Brick Homes At a Cost No Greater Than for Frame.

The "Ideal" All-Rolok Brick Hollow Wall

is regarded as the greatest development of the century in building construction. It gives you strong, permanent, ventilated, fire-safe brick construction at a cost no greater than frame.

It saves three to four brick every square foot—saves labor; saves mortar. Its self-reinforcing qualities make it absolutely the strongest and simplest hollow wall construction, as well as the driest and cheapest. It will save home owners millions and make money for you by enabling you to build and sell handsome Brick homes at a cost within the means of the average man.

Think What These Features Mean to You

The "Ideal" Wall uses any standard size Brick—face or common.

No special shapes are required.

Greater area of wall per day per bricklayer.

Produces any wall thickness desired with one or more air spaces.

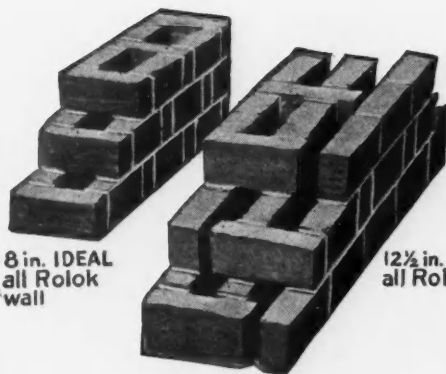
No continuous mortar joint.

An absolutely dry, ventilated wall requiring no furring.

The strongest hollow wall ever built—2½ inches at its thinnest point.

Any pattern or bond desired.

Everlasting construction at the lowest cost ever known.



Send today for free circular describing the "Ideal" Wall in all its various types.

THE COMMON BRICK INDUSTRY OF AMERICA
1306 Schofield Building, Cleveland, Ohio



Board Problem Brings Many Replies

SO many replies have been received in answer to F. C. Drummond's board problem which appeared in the March number that they cannot all be given space. We are showing one and listing the names of other readers who show by their answers that they are acquainted with that fundamental law of matter which says that tho all the matter may be changed in outward form nothing is lost or gained in the transformation. Hence 64 inches of board cannot be made into 65 inches, altho it may appear on the surface that such is the case. The response to the problem demonstrated very clearly that the readers of the AMERICAN BUILDER are very much on the job. Listed below are the names of the readers who submitted solutions:

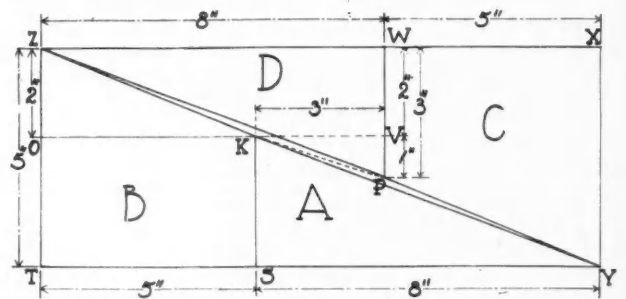
- Frank V. Hill, Hillsboro, Ohio.
- J. P. Russell, Salt Lake City, Utah.
- L. C. Moore, Memphis, Mo.
- W. A. Butterfield, Chino, Calif.
- Gorden Rainey, Johnstown, Pa.
- Volley Keiser, Plainwell, Mich.
- Owen Nickerson, Atkinson, Ill.
- J. A. Engberg, Kiron, Iowa.
- E. W. Thomas, Alexandria, Neb.
- G. A. Lofgren, Lorain, Ohio.
- Samuel Warren, New York City, N. Y.
- Kelly Motherspaugh, Sherwood, Ohio.
- Lon Brooks, Selma, Ind.
- W. T. Griffith, C. E., Pikeville, Ky.
- D. R. Petker, Homer, Neb.
- P. L. Ulrich, Three Rivers, Mich.
- Ben Johnson, Clement, N. Dak.
- Geo. M. Spinney, 519 State St., Portsmouth, N. H.
- Frank Hart, Leola, S. Dak.
- Frank J. Knechtges, Jr., L'Anse, Mich.
- John F. Riehle, Milford, Ohio.
- Jas. A. Ross, Eddystone, Pa.
- G. A. Godbersen, Sacramento, Cal.
- Verne C. Fryklund, Houston, Texas.
- Orville J. Greisier, Rocky Ford, Colo.
- Arthur W. Southern, Miami, Fla.
- J. P. Wells, Lane, Kan.
- D. McGrew, Keeline, Wyo.
- J. T. Hunter, Riverdale, Cal.
- John A. Baer, Donna, Texas.
- Floyd H. Lyons, El Campo, Texas.
- Ellery C. Kilbourn, Waterbury, Conn.
- Howard M. Peters, Douglas, Wyo.
- Emil Gilbert, Ellva, Wis.
- Chas. H. Flynn, Lamar, Colo.
- A. A. Dahlstrom, Weyburn, Sask.
- J. A. Martin, Loveland, Colo.
- J. H. Ferris, Mt. Pleasant, Mich.
- Fred Morrell, Kitterg, Me.
- A. A. Johnson, Scranton, Iowa.

Uses "Logs" to Solve Board Puzzle

To the Editor: Waterbury, Conn.
Enclosed please find solution to F. C. Drummond's problem in the March number of the AMERICAN BUILDER.

In the enclosed figure it will be noticed that when the parts A, B, C and D are arranged as shown there is a quadrilateral formed inside made up of the two equal triangles ZKP and KP Y.

Find the area of $\triangle ZKP$ and multiply it by 2 and the area of the quadrilateral ZKYP will be found.



Sketch Showing Pieces of Board Placed Together After They Have Been Sawed. The Small Gap in the Middle Explains the Discrepancy in the Problem.

In rt. $\triangle ZPW$	In rt. $\triangle OKZ$	In rt. $\triangle KP Y$
$PZ = \sqrt{PW^2 + ZW^2}$	$RZ = \sqrt{OZ^2 + OK^2}$	$RP = \sqrt{PV^2 + KV^2}$
$= \sqrt{3^2 + 8^2}$	$= \sqrt{2^2 + 5^2}$	$= \sqrt{1^2 + 3^2}$
$= \sqrt{9 + 64}$	$= \sqrt{4 + 25}$	$= \sqrt{1 + 9}$
$= \sqrt{73}$	$= \sqrt{29}$	$= \sqrt{10}$
$= 8.54400$	$= 5.38517$	$= 3.16228$

Let $S = \frac{PZ + KZ + KP}{2} = \frac{8.54400 + 5.38517 + 3.16228}{2} = 8.54573$

Area of $\triangle ZPW = \sqrt{S(S - PZ)(S - KZ)(S - KP)} = \sqrt{8.54573 \times 0.00173 \times 3.16056 \times 5.38345} = 0.501545$

Log 8.54573 = 0.9317491
 " 0.00173 = 7.2380461 - 10
 " 3.16056 = 0.4997640
 " 5.38345 = 0.7310607

2 | 19.4006199 - 20
 Log X = 9.7003100 - 10
 X = 0.501545

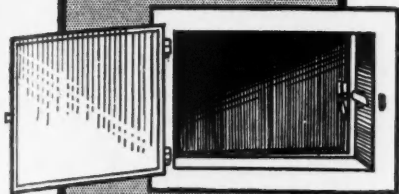
\therefore Area of quad. ZKYP = $2 \times \triangle ZPW = 1.00309$ square inches. Hence this quadrilateral ZKYP accounts for the apparent increase in the area of the board.

Also, it is readily seen in the $2\triangle ZOK$ and SKY we have $OZ = 2$, $OK = 5$, $SK = 3$ and $SY = 8$. If ZKY were a straight line we would have $OZ : OK = SK : SY$, but this isn't true, for substituting the foregoing values in the proportion we get $2 : 5 = 3 : 8$ or $0.4 = 0.375$.

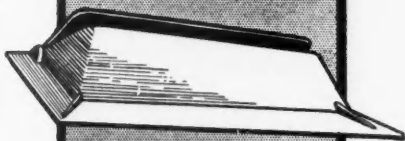
ELLEY C. KILBOURN.

DONLEY DEVICES

Modernize the Home



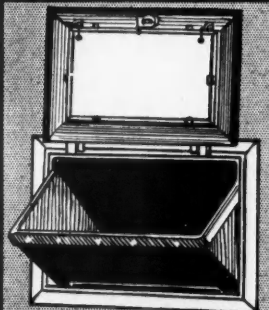
Package Receiver



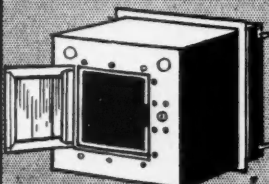
Fireplace Damper



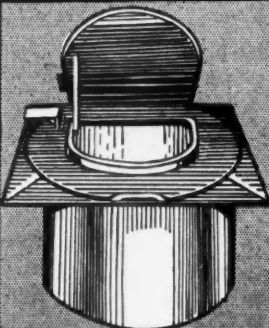
Ash Dumps



Coal Chute



Meter Box



Garbage Receiver



Make This
a Year of

Better Home Building

EVERYWHERE in America, a proud young man and an eager, happy girl will link arms and start out to find the Home of their Dreams. Perhaps their search will bring them to the house *you* built.

Right away it will be found that the girl has much to say in the choice. Then it is mighty gratifying to know that *your* foresight has provided the very things that change her queries to little gasps of admiring delight.

Donley Devices please the one who has a right to be pleased, the wife who spends most of every twenty-four hours within the four walls of the home. They save her steps, lighten her work, reduce dust and dirt, prevent intrusion of delivery men and meter readers.

This year, when owners and buyers are going to be more exacting than for many years, it is just the time to inaugurate a day of better home building—not pretentious building, but genuine, efficient, convenient, common sense building—the kind of building that anticipates every act of the daily routine and makes it as little trouble as can be.

Donley Devices—all of them—belong in every home. Their trifling expense cannot be compared to the big saleable value they add to it. See your building supply dealer for Donley Devices.

The DONLEY BROTHERS Co.
BUILDING SPECIALTIES  7400 AETNARD
CLEVELAND



Home Built from American Builder Plans by Joe C. McCarley, Douglasville, Ga. It Is 28 Feet Square with All Modern Conveniences.

Uses American Builder Plan to Build Home

To the Editor: Douglasville, Ga.
 I enclose a small picture of a home I built last year from the plan published in the January number of AMERICAN BUILDER for 1920. I made some changes both inside and out, but am delighted with the plan. It has hollow tile walls, rough texture brick veneer and stucco gables. The basement is 28 by 28 feet, with furnace, shower on first floor, and bathroom on second, cool cupboard built into pantry, also telephone cabinet built in and brick mantle.

JOE C. MCCARLEY.

How to Find Jack Rafters

To the Editor: Glentworth, Sask., Can.
 I notice in the February issue of the AMERICAN BUILDER that a reader wants to know the difference in length of jack rafters. I am sending the following solution, also a diagram that might help some:

Suppose the run for the common rafter is 10 feet and rise one-quarter pitch. One-quarter pitch would be 12 and 6 on the square. The length of the rafter for a 1-foot run would be the diagonal of 12 and 6. In other words, measure across the square from 12 on the tongue to 6 on the blade to get the length.

The run of the hip rafter would be the diagonal from 12 inches to 12 inches or 17 inches. Place the square on the hip rafter, with 17 on tongue and rise on blade the same number of times as you did on common rafter. If your jack rafters are spaced 16 inches on center the run will be 16 inches for the first jack. To get the length, take 12 on tongue and rise on blade, or 6 inches, and place it on jack rafter two times, but at the last placing put a line across rafter on the tongue side and pull the square back on the line until the 4-inch mark rests on the edge of the rafter, and mark your plumb cut.

To get the side cut, take 12 on the tongue or tangent and the length, mark on length. This cut passes a point thru the center of rafter. You'll have to allow for the thickness of hip rafter taken diagonally.

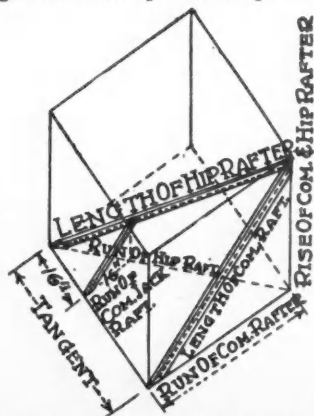


Diagram Drawn by George B. Fands to Show How to Obtain Length of Jack Rafters.

To get the length of sides of an octagon, divide the diameter by 4.97.

The mitre cut is 12 and 4.97, or 5 inches is close enough. The AMERICAN BUILDER is sure some magazine.



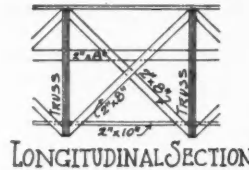
GEO. B. FANDS.

Will This Truss Fill the Bill?

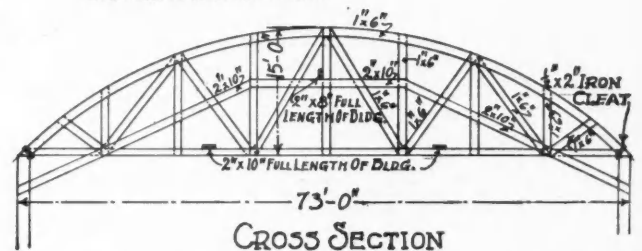
To the Editor: Pense, Sask., Can.
 I am enclosing a sketch of a truss I have designed for a rink building 73 by 170 ft. It is built up of 1 by 6 securely nailed, all parts five-ply of lumber. Would this be an economical truss to build, or could you suggest something better?

I want something as cheap as possible consistent with absolute safety from wind, etc.

This is to cover a roof with a span of 73 feet, or 75 feet if 1 foot is allowed for cornice. The truss is built up of 1 by 6 five-ply, the beam is five courses, three running thru, with upright ties and brace, too, running thru and three butting. Two by 10 boards are spiked on each side after truss is made. The trusses are to be 10 or 12 feet apart and braced between trusses from peak to bottom of truss with two 2 by 8 as



Sections of Truss Proposed by Brother John H. Warner, for Rink. He Wants to Know if It Will Be Strong Enough.



shown in the small sketch. The building is 73 feet wide, 170 feet long. The trusses would be lined with 2 by 6 board on edge, spaced 2 feet, running lengthwise of building, then sheathed on the diagonal and shingled.



JOHN N. WARNER.

Some Problems that Bother

To the Editor: Colon, Mich.
 I am in need of a little help. I would like to know what kind of glue to use to get the best results and where I can get it? The only kind here is LePage's prepared glue. So far it has not given very satisfactory results for some classes of work.

I would also like to know what is used for tuck pointing a brick (red) house? Would you please give in detail, proportions of the different materials used and how to proceed for a first class job?



W. E. WARE.

Several Questions Answered

To the Editor: Atkinson, Ill.
 If Samuel Morris of Middleton, Ill., will enlarge the hole in the slate blackboard until it is the size of the damaged spot in the face of the board, then dig plaster away from behind board enough to make a good clinch and fill opening with any good gypsum plaster colored with mortar color to the desired shade, he will have a fairly satisfactory job.

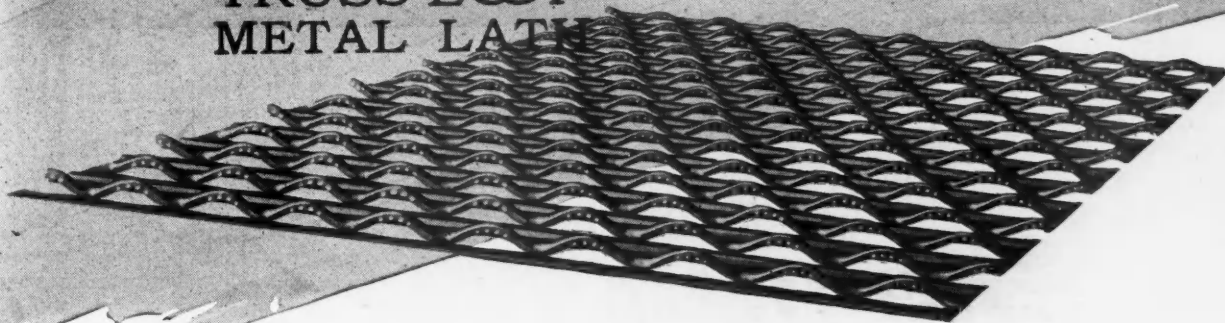
If Elmer Reese, Skidmore, Mo., will install at least two more foul air shafts in his hoghouse and then make more fresh air inlets and have them admit the air about midway between the foul air shafts he will find the air will be decidedly improved.

Thank you for the information I asked for and which was published in the March issue, page 130.

OWEN NICKERSON.

Bostwick

TRUSS-LOOP METAL LATH



Let's Get Down to Bedrock

Re-Metal Lath. Let's Settle This Moot Question of Cost, Once and for All

ALRIGHT. Suppose we call in old John W. Arithmetic and start with the rock-ribbed **FACTS** in the matter. "There's nothing to do with a fact but reckon with it" — as the philosopher said.

Our claim is that if every economy of construction made possible by Bostwick **TRUSS-LOOP** Metal Lath is taken advantage of, "Truss-Loop" does not increase the *finished wall cost* over wood lath and our claim is based on the following *facts*:—

FACT No. 1—PLASTER. "Truss-Loop" saves one ton of waste plaster per 100 square yards—no excess plaster is trowelled through to drop back of the wall.

FACT No. 2—LABOR. No back-trowelling by the plasterer to fill up low places. Also scratch and brown coats can be applied without change or removal or scaffolding.

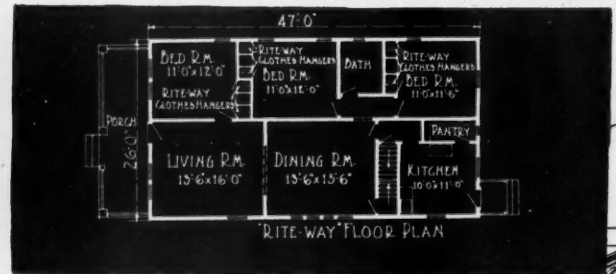
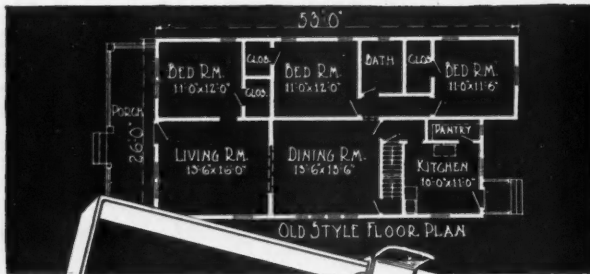
FACT No. 3—STUDDING. Greater strength permits wider spacing of studding or joists—12", 16", 20" or 24" on centers.

FACT No. 4—TIME. Because of its rigidity and stiffness one man can easily nail it on—no lost time in straightening or stretching.

FACT No. 5—LATH. Fewer square yards of "Truss-Loop" required because the nesting rib on each side obviates necessity of overlapping.

That's why Bostwick "TRUSS-LOOP" costs no more, by the job or the house. It more than saves the difference in first cost. Let us send you full details and sample.

THE BOSTWICK STEEL LATH COMPANY
NILES, OHIO



The Rite-way

saved \$168.00

in building this house

Rite-Way three-door wardrobe.
Hangers on either side—shelves in
center—2' doors—center one a mirror.

INSTEAD of the old-fashioned deep closets, dark and inaccessible, the plans were changed to call for the modern space-saving arrangement made possible by the use of Rite-Way Garment Fixtures. There was no change whatever in the size of the rooms, but the length of the house was cut down 6 feet. The saving in material and labor on this small bungalow amounted to \$168.00.

You Can Make a Saving Like This

on your next building. Let us send you the figures in detail, and show you how. On a large apartment or hotel it would amount to thousands of dollars.

Economy in construction is not the only feature of Rite-Way Garment Fixtures. In addition to *reducing closet-space, you increase closet-capacity.* Rite-Way closets will accommodate more clothes than the old-fashioned closets and keep them in better condition.

A touch brings the whole wardrobe out into light and air. No dark places for

moths to gather. No inaccessible dusty corners. The carrier works on fibre rollers, that will not rust or stick. It pulls out easily and noiselessly and will support a surprising weight.

Positive spacing of the hangers is a feature of the Rite-Way. Garments are kept at even distances from each other, making it easy to hang and remove them. No chance of mussing or tearing.

Make Modern Wardrobes of Old Closets

In repairing or remodelling old houses, rooms can be made larger and a better arrangement is made possible by altering the old closets along the lines illustrated above. This modern three door wardrobe takes up about half the space of one of the old-fashioned deep closets, and accommodates double the amount of clothes, all in perfect order and all where they can be reached quickly and easily.

LAWSON

RITE-WAY

GARMENT FIXTURE

Save half your closet space

EQUIP your buildings with these sensibly planned closets. You will be surprised at the economy in building costs. Your clients will be enthusiastic over the compact and convenient arrangement.

Rite-Way Fixtures are strongly made and heavily nickel-plated. They will last a lifetime, and the non-rusting fibre rollers prevent any trouble from jamming or sticking. Their design is neat and attractive and they will fit in with any style of room.

Easy to Install

A screw driver is the only tool needed. Can be fastened to the under side of a shelf, or directly to the ceiling in cases where the three-door closet is used. Made in various lengths to suit any depth of closet.

From the smallest bungalow to the largest hotel or office build-

ing, the use of Rite-Way Garment Fixtures means lowered building costs and pleased clients. This is something YOU can cash in on, Mr. Builder.

We have taken over from the Barney Moore Company, the manufacture and sale of Rite-Way Garment Fixtures. They will continue to be made with the same superiority of design and construction that you now know *you can depend upon in Lawson Spring Hinges*. Your regular dealer will carry them; if he hasn't them in stock, write direct to us.

Rite-Way Fixtures are being advertised in the leading magazines in the building and hardware field. Your clients will begin to ask for them on their work.

Use the Rite-Way on your next job. It's an easy way to please your clients, and once you have used it you will never go back to the old style closets.

Write today for full information

Ask us to send you the plan and detailed figures on the bungalow shown on the opposite page. Let us show you how you can take advantage of this new idea in closet construction. This is something worth while looking into. Write today to—

Lawson Manufacturing Co.

Dept. 7825

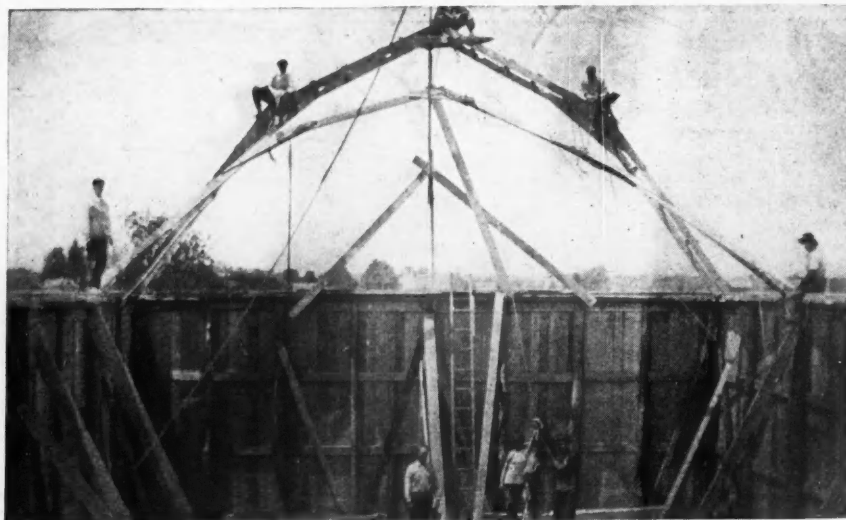
230 W. Superior St.

CHICAGO, ILL.



LAWSON RITE-WAY

GARMENT FIXTURE



Raising Self-Supporting Roof Rafters. Percy L. Love, Barn Expert, Six Lakes, Mich., Describes His Method in the Letter Below.

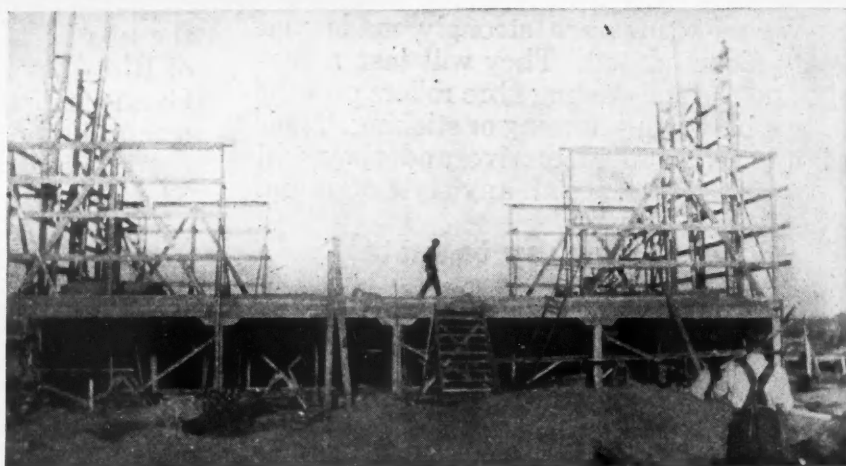
Michigan Barn Expert Has Own Method in Building

To the Editor: Six Lakes, Mich.

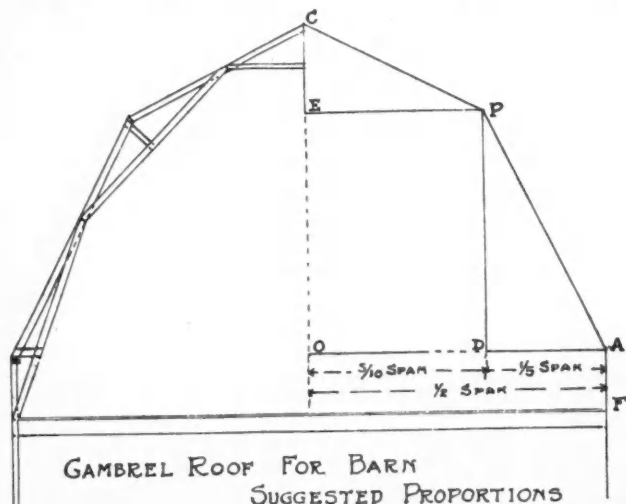
I am enclosing some photos of work I have been doing. One shows a trussed plank frame barn under construction raised by six men, one piece at a time. It shows end braces in place. Instead of making an end bent the same as the center ones, I make three bridges in each end, the center goes to ridge between the third and fourth rafters. I use this type of ends altogether now, as it is so easily built and stiff as we have lots of wind storms here. Another feature is the side plate—first a 2 by 8 flush with top of post, then one flat on top of posts and edge plate, then the bridge piece about 18 inches in center. Fill in behind with scraps, then top 2 by 8.

The other photo shows my method of raising self-supporting roof rafters. I first put up a 2x6, 18 or 20 ft. long, with a rope and pulley on the top and three guy lines put up one rafter on each side of the gin pole. A man with climbers goes up the pole and fastens the first two together, then put the steps on and the gin pole man is ready to ride the ridge, as we call it.

PERCY L. LOVE.



Trussed Plank Frame Barn Under Construction. End Bridges Are in Place. This Construction Is Used Because of the Strong Winds Which Prevail in That Section of Michigan Where Mr. Love Works.



E. H. Green, Kamsack, Saskatchewan, Drew This Sketch to Explain His Method of Constructing Gambrel Barn Roofs. He Invites Criticism from Brother Readers.

Some Remarks on Building Gambrel Roof

To the Editor: Kamsack, Sask.

I should like to get in on this perennial discussion as to proportion of gambrel roofs for barns. I submit herewith a sketch, which, possibly may be useful to someone, and which I hope will elicit some criticism of a constructive nature.

My practice is to divide the span into five parts at the plate line, and to make the run of the lower rafters one of these parts or one-fifth of the span of the building, approximately, see AD in sketch. I say "approximately" because this run, of course, may be varied back or forth a few inches to avoid the use

of cumbersome fractional measurements. The rise is twice the run—that is, DP is equal to two times AD. The triangle formed by the upper rafters is in the same proportion—that is, EC is equal to one-half EP. The advantage of these proportions is that they make a series of cuts on the square that are very accurate and easy to handle, no intricate data with which to cumber your memory. The seat cut at A, and the plumb cut at C are both 12 and 6, cut on 6; the miter cut at purlin joint P is 12 and 4, cut on 4. A purlin plate can be run in at P and the cuts easily obtained for an accurate and strong fit. The length of the rafters are, in each case, 1.118 times the length of the longer leg about the right angle—that is, for example, PA is equal to 1.118 times DP—but use your square. CP is in like manner. Very easy to figure, isn't it? Furthermore, this roof is very strong, as it approaches very closely in contour to a half circle, and has an equality of distribution of the stresses similar to those in the felloes of a wheel. Its lines are in good proportion, dignified and pleasing to the eye. If the bracing is framed similar to that suggested in the left half of the sketch, it gives ample hay room without interference from posts or struts. I would caution the reader, tho, not to take the framing shown for spans of over 28 feet, or where AF is over 3 feet, without first making careful and experienced calculation to determine what additional bracing would have to be provided to withstand the greater stresses that would be involved by an increase of span, or in height, and consequent reduced strength to resist outward thrust of the sidewall AF. I hope this helps someone, or, if it is wrong, I hope it will foster a discussion that will set us all in the right way of sound construction.

E. H. GREEN.

H & C

- Soaring Still Higher Above All Others -

H & C

The Hart & Cooley Line



He didn't believe it

Mr. B. H. Quick of B. H. Quick & Son, Des Moines, Ia., was skeptical of the strength of a grating so finely wrought as the Hart & Cooley No. 260 grating. But when he called at the H. & C. factory a short time ago he was convinced by the test illustrated here.

A stock grating, size 36 x 36, was placed on a rough frame and then the seven men, all heavy weights, stood on the board. Mr. Quick is the gentleman in the middle.

This was a weight of over 1300 lbs., but the grating showed no deflection whatever and Mr. Quick was satisfied.

The cut also shows the H. & C. ceiling register (center) and sidewall register (sides). All may be used with pipeless furnace installations.

We manufacture a complete line of wrought steel registers for warm air heating.

Ventilators

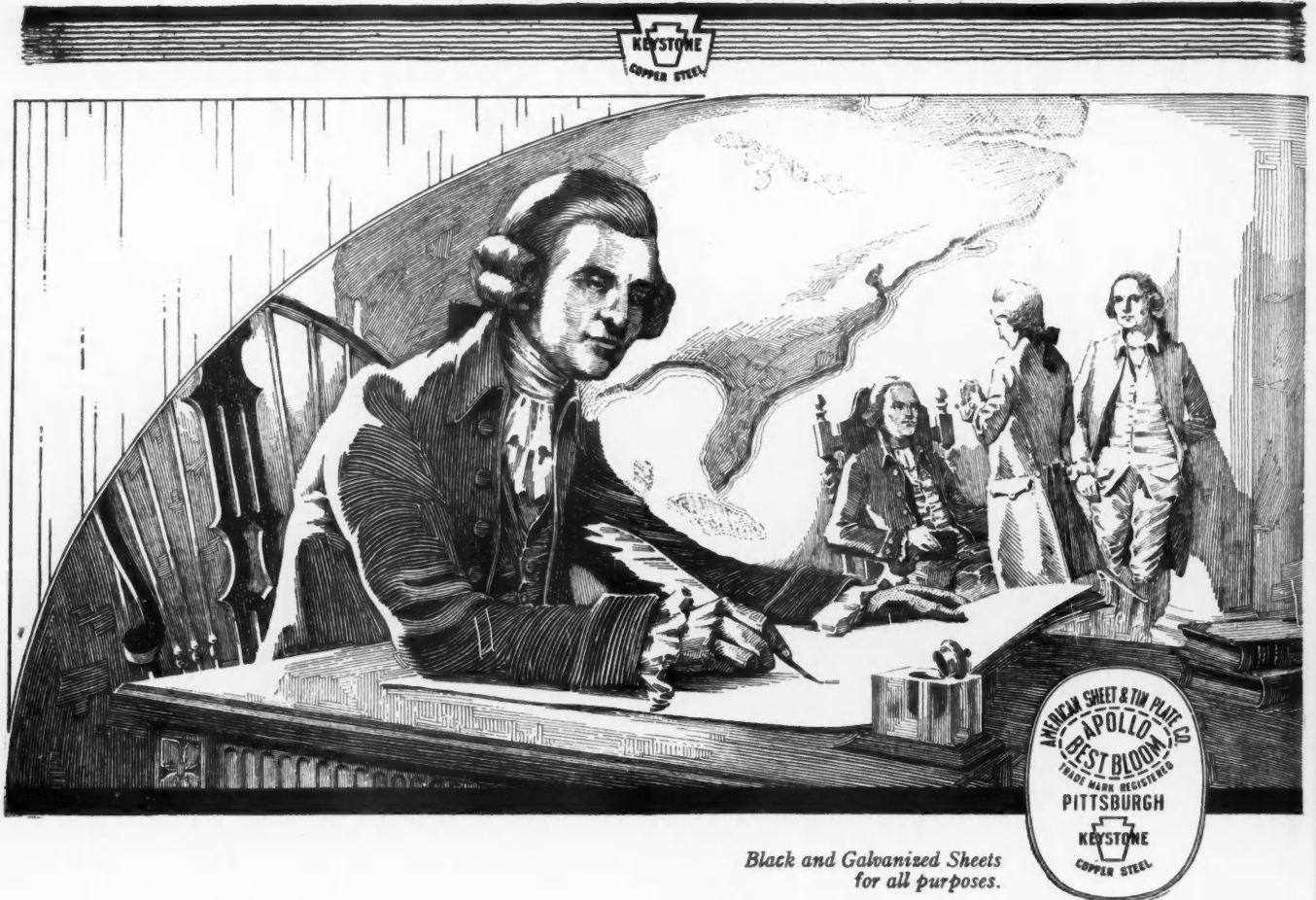
Regulators

Grilles

Rubbish Burners, Etc.

Stop in at your dealer's and ask to see the No. 260 grating or write us for catalog on the complete line.

The Hart & Cooley Company Inc.
100 Lafayette St., New York — New Britain — Conn. — 73 East Lake St., Chicago



Black and Galvanized Sheets for all purposes.

JUST as the honest purpose and action of rugged forefathers resulted in the establishment of our great nation, destined to bless mankind—so has unswerving business integrity enabled us to perform a more economic function for the industrial and building world.

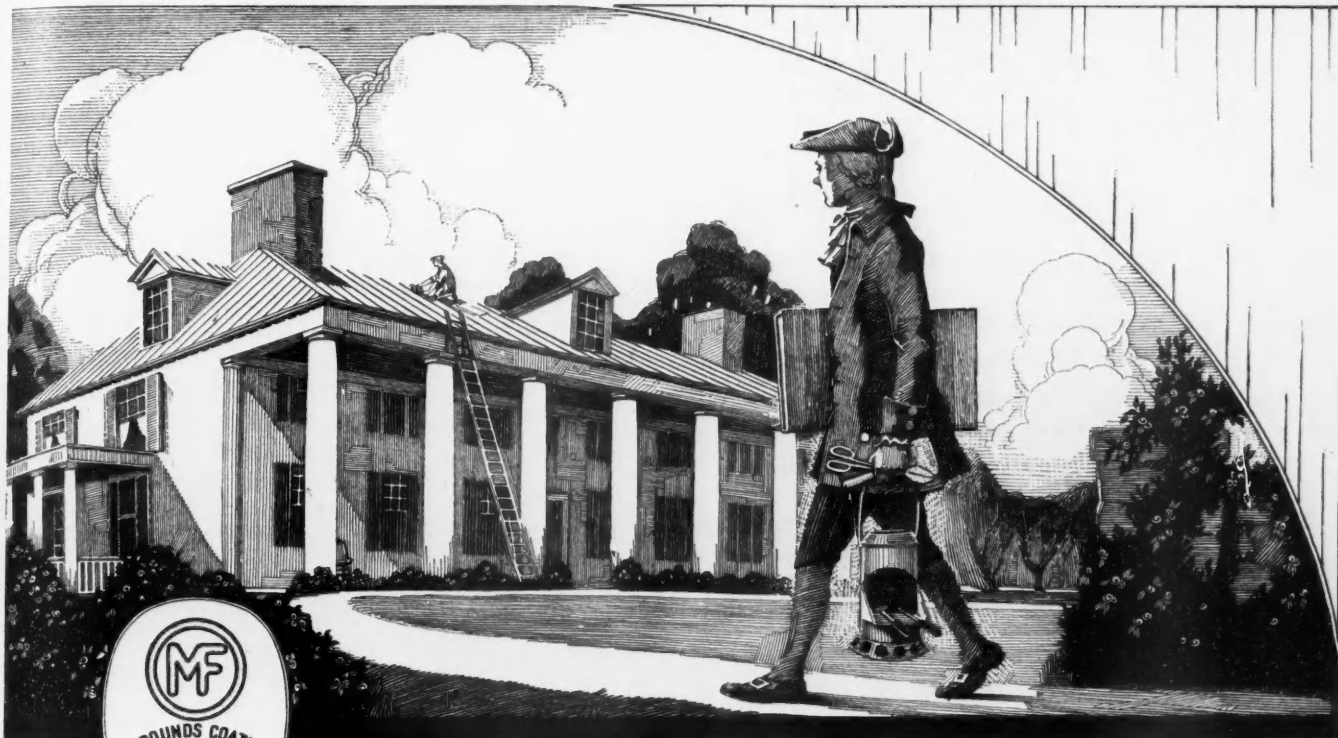
This Company seeks to promote the highest interests of individual

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Roofing Tin Plates—of good old-fashioned quality.

and national life—and its worthy business ambition is being accomplished by maintaining standards of production, by improving conditions of labor, and by serving commerce generally with products of a high degree of excellence.

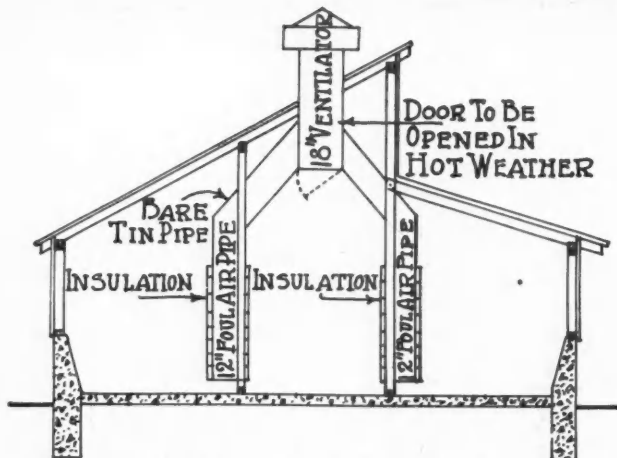
Able and constructive co-operation, welding true thought into action, has wrought this achievement.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

MANUFACTURERS OF

Sheet and Tin Mill Products of every description, including Black Sheets, Galvanized Sheets, Tin and Terne Plates, Electrical Sheets Corrugated and Formed Roofing and Siding Materials, Special Sheets for Stamping, Wellsville Polished Steel Sheets, Automobile Body Sheets, Deep Drawing Sheets, Fire Door Stock, Black Plate, Etc.



This Scheme of Ventilation Has Been Used by Art Sotley, Creston, Neb., with Success on Many of His Jobs. We Hope it Will Help Brother Reese in His Problem.

Some Suggestions on Hog House Ventilation

To the Editor: Creston, Neb.
 Mr. Elmer Reese, of Skidmore, Mo., wishes to know what is wrong with his hog house ventilation. So I am sending a rough sketch of the hog house ventilation system that I have tried and my customers have found very satisfactory. It can be made of a common metal cupola or ventilator connected up with hot air furnace pipe and fittings.

The warm air in the upper part of the building warms the air inside of the pipe causing it to rise and draw the foul air off the floor.

I think that the trouble with his system is that it is not large enough for that size building and that his foul air duct was so constructed that the warm air in the upper part of the building could not warm the air in the duct fast enough to do much good.

ART SOTLEY.

All the Way from Holland

To the Editor: Rotterdam, Holland.
 Answering a question of Mr. F. W. Rieke about the supporting strength of a 7-inch three-part concrete block or tile wall 10 feet high, I have the pleasure to send you a solution by the Euler formula:

$$L = \frac{\pi^2 E. I}{s. l}$$

L is the load over 1'.
 E. is the modulus of elasticity of the used material: for concrete, 1792000 pounds per square inch; for tile, very different.

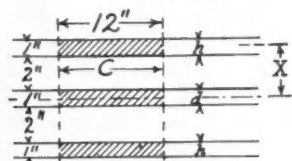
I is the moment of inertia of 1' of wall, not calculating the cross webs.

$$I = 2 \times (1/12 b h^3 + bhX^2) + 1/12 bh^3 = 2 \times (1/12 \times 12 \times 1 + 12 \times 1 \times 3^2) + 1/12 \times 12 \times 1 = 219^4 \text{ inches.}$$

s is the coefficient of safety (10).
 l is the height of the wall.

The supporting strength is

$$\frac{\pi^2 E. I}{s. l^2} = \frac{3.1416^2 \times 1,792,000 \times 219}{10 \times 120^2} = 27,000 \text{ pounds for concrete}$$



Cross-Section of 7-Inch Three-Part Concrete Block or Tile Wall Showing How Supporting Strength is Obtained by Euler Formula.

The compressive stress is 750 pounds per square inch.

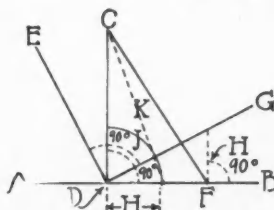
I used the Euler formula because the height of the wall is more than 13 times its thickness. For tile it is necessary to know the specie and its modulus of elasticity.

P. J. VERMAAS.

How to Build Diamond Spout

To the Editor: Lakefield, Minn.
 In reply to Chas. E. Nowels inquiry on how to make a diamond spout, as used in flour mill, I would like to submit the following which is absolutely reliable.

Saw your holes in floor size you want spout and make them perfectly square. Then stretch line from one corner of upper hole to same corresponding corner of lower hole. Then take thin clean board and place it parallel with one side of hole and mark the angle of line on it, and do same to other side of hole. Then determine which is flattest angle or one with the least number of degrees and use that for filler cut, and steepest angle or most degrees for back cuts. After this make a diagram like the accompanying sketch on any clean board. Set A-B the bottom edge of board, with C-D a line at right angles to the base line. E-D is the cover cut, C-F the filler cut, and G-D the right angle cut.



This Sketch Illustrates Geo. D. Tank's Method of Building a Diamond Spout About Which Chas. E. Nowels Inquired in a Recent Number.

Then with divider get distance H and step off this distance on base line to right of center. Draw circle J as shown and then draw line K from intersection of C and F past the radius of circle J. This line K will give the correct level of the diamond.

GEO. D. TANK.

Counting the Nails

To the Editor: Missoula, Mont.
 Here is an answer to problem No. 1 by Mr. P. W. Rinehart in the February issue, page 130:

Number of nails in keg.....	99,995
Number 1—One-fifth + 1 =	20,000
	79,995
Number 2—One-fifth of remainder + 1 =	16,000
	63,995
Number 3—One-fifth of remainder + 1 =	12,800
	51,195
Number 4—One-fifth of remainder + 1 =	10,240
	40,955
Number 5—One-fifth of remainder + 1 =	8,200
	32,755
Remainder in keg.....	5)32,755
	6,551

No. 1 drove	20,000 + 6,551 = 26,551
No. 2 drove	16,000 + 6,551 = 22,551
No. 3 drove	12,800 + 6,551 = 19,351
No. 4 drove	10,240 + 6,551 = 16,791
No. 5 drove	8,200 + 6,551 = 14,751

$$67,240 + 32,755 = 99,995$$

W. H. HOLMES.

How to Build Cistern for Residence

To the Editor: Benton Harbor, Mich.
 Run a pipe to bottom of cistern (less about 2 inches) connecting the top to the overflow drain pipe (or tile) with a tight cement joint. This insures your overflow from the bottom, as it forms a syphon, taking the dead, stale water by gravity off the bottom as the clean fresh water is filling at the top.

O. M. SOUTHWORTH.

Pure White shows on the plan every use for which architects are specifying and recommending Vitrolite—with eminent success.

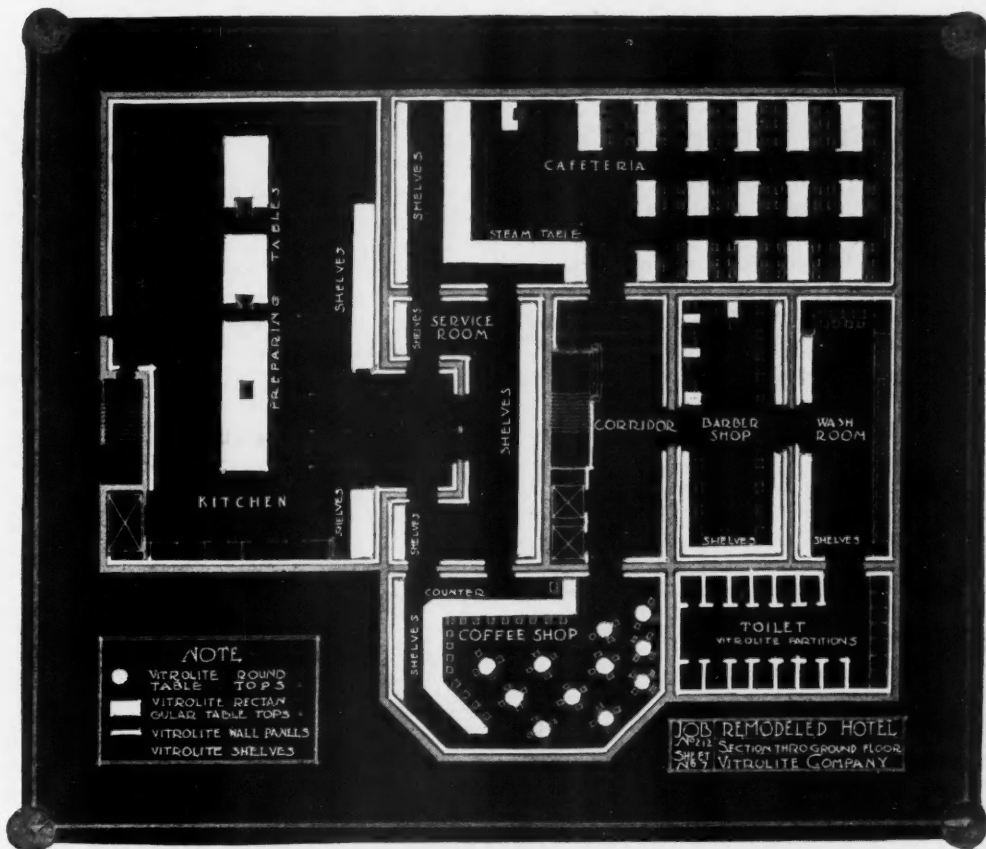
Pure White, therefore, indicates every place where cleanliness is obtained through this hard, non-porous material whose surface is made clean by the mere stroke of a damp cloth.

Pure White indicates abiding cleanliness—without daily drudgery.

Pure White is Vitrolite itself—a fact which adapts it for use in kitchens, eating places, corridors, barber shops, washrooms and toilets.

Pure White Vitrolite is set in a plastic cement which permits its easy removal for remodeling in cases like the below.

Write for samples, specifications, and list of users, addressing the Vitrolite Company, Chamber of Commerce Building, Chicago.

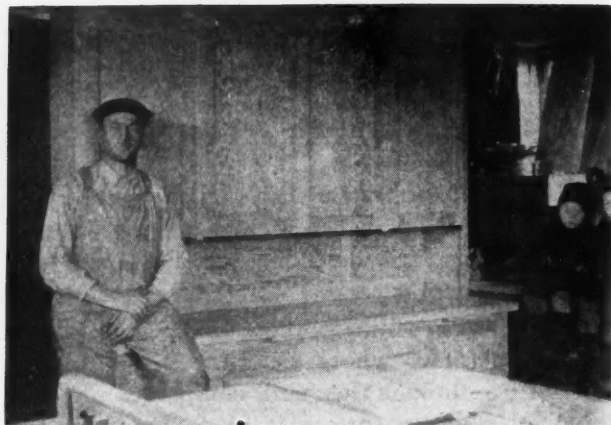


If it's *Pure White* it's **VITROLITE**

Vitrolite is a pure white substance, far harder and stronger than marble, that will not stain. When used for wainscoting or toilet partitions it is set in an ELASTIC CEMENT which provides for expansion, contraction and settling.



Ole Nysetvold, Twin Valley, Minn., Doesn't Know What Depression Means. He Says There Is Plenty of Activity Up in His Country. This Is One of the Houses He Has Built.



View of Brother Ole's Workshop with His Two Young Assistants Who Some Day Will Succeed to the Business. He Has This Shop Fitted Up with Plenty of Modern Machinery and Does Considerable Work in the Winter Months.

No Dull Season Here

To the Editor: Twin Valley, Minn.
 I am sending you a few snapshots of what we are doing here at Twin Valley, Minn. One picture shows one of the houses we have built here in the last few years. Another picture is taken inside my shop, where I spend my time winters. I built a shop 18 by 24 here five years ago, so as to have something to do the long winter months. I have made up a number of built-in furniture, such as kitchen cupboards, kitchen work tables, medicine cabinets and ironing boards. I have also made some desks and office fixtures, counters and shelving for stores, display racks and tables, and lunch and ice cream booths for restaurants. I have also worked up some door and window frames and storm windows, window screens and screen doors, so I manage to keep fairly busy during the winter as well as summer. I use an Oshkosh Eveready saw rig, which I have had for seven years. I like it very much. It is a great help. You can see the top of it on the picture taken in the shop. You can also see my junior partners over on the work bench. They also are great helpers. Best wishes to the BUILDER's staff and readers.

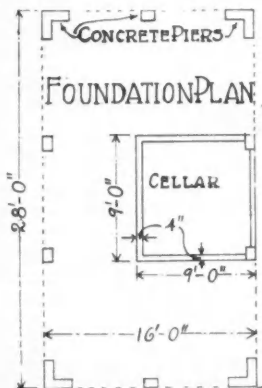
OLE NYSETVOLD.



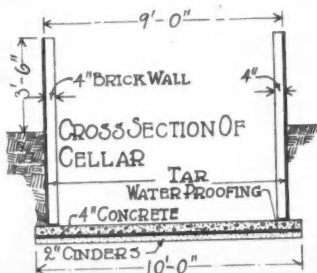
Cellar Problem in Low District

To the Editor: Todmorden, Toronto, Ont., Can.
 I live in a district where there are no sewers. My lot is low and wet in the spring and fall; my house, 16 by 28, is on cement posts 3½ feet out of the ground. I am thinking of putting in a temporary 4-inch brick cellar about 9 feet square for a furnace. What I want to know, is there any danger of water getting thru the brick if I build like the drawing? Will the earth push the wall down when the latter is only 4 inches wide.

F. HOLMES.



There Are No Sewers in Todmorden, Toronto, So Mr. F. Holmes Wants to Know How to Build a Waterproof Cellar for a Heating Plant. Can You Tell Him?



Answers Mr. Loddich's Problems

To the Editor: Mercer, Mo.

I am sending an answer to Mr. J. H. Loddich's questions which appeared in February number of your magazine.

To sharpen a cabinet scraper, it should be filed sharp on one side of the blade only, as a wood chisel is sharpened. Then sharpen on a moderately fine oil stone as you would any other edged tool to produce a keen cutting edge. Then place the blade in a vise and take a tool that is smooth and round, as the part of a wood chisel where the handle fits, and turn the edge of the blade so as to make a claw or hook clear across the edge of the blade. In using the scraper, do not press too hard on the scraper or you will break off the edge at the first few strokes, but press harder as the blade gets dull. A tool is made for the purpose of turning the edge, but as it is used only for the one purpose. I just use the upper part of the wood chisel.

You may get instructions for attaching door checks and adjusting them from the company making them, as the Stanley Works, the Corbin Co., etc. The directions and cross-sectional view are usually packed with the checks at the factory. Sargent & Co., of New Haven, Conn., also make door checks.

If jack rafters are placed 16 in. on center, the difference in length is 16⅞ in. for 1/6 pitch, 17⅞ for ¼ pitch, 19¼ for 1/3 pitch, 20⅞ for 5/12 pitch, 22⅝ for ½ pitch, 21⅝ for ⅔ pitch, and 24⅞ for ¾ pitch.

The cuts for an octagon are made by using the figures 18 and 7½ on the steel square. Of course, the sides may be any length, but all of the eight pieces must be the same length.

I enjoy reading the correspondence department and get much valuable information from it. Keep it going, brother carpenters.

VERNON BELL.



Seeks Advice on Building Problems

To the Editor: Clintonville, Pa.

I have a couple of problems on which I would like some advice. I have an old brick house to repaint. The mortar is the old-fashioned kind and has fallen out in places. What is the best way to do this job, and how would you suggest to make the mortar? The house is to be painted afterward.

Please tell me as near as you can the labor cost at \$5.00 per day of a garage 20 feet square, 8-foot studs, hip roof, covered with slate surfaced roll roofing, studs 16 feet o. c., two rolling doors, six ½ windows, wood floor, joists 24 inches o. c., studding frame, covered on the outside with ⅞-inch siding, box cornice, concrete foundation of about 300 cu. feet volume.

RALPH I. HOVIS.

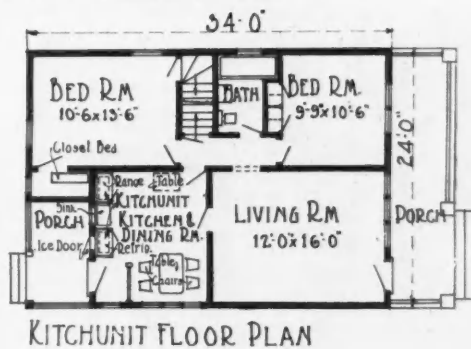
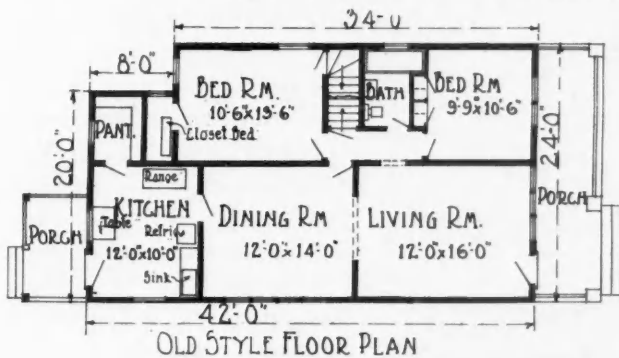


PANTRIES ARE NEEDLESS
 BETZ ALL STEEL STANDARD
“KITCHUNITS”
 SAVE TEN TIMES THEIR COST

Betz Standard Steel “Kitchunits”—space saving steel units for Kitchens—save very materially in the cost of a home by eliminating the pantry. Aside from this space and money-saving feature is the increased convenience and saving of steps for the housewife. Her duties in the kitchen will be a pleasure with Betz “KITCHUNITS”.

Betz “KITCHUNITS” are made of the very highest grade of Sheet Steel specially rolled, welded into a one piece unit—no rattling. Oven-baked enamel finish in any color desired. These units can be supplied with either hot plate or range. “Kitchunits” can be moved about the kitchen to allow the most freedom and are correct in design the same as other furnishings of the home.

“KITCHUNITS” SAVED \$798 ON THIS PLAN



CONTRACTORS & ARCHITECTS WRITE US FOR DETAILS

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HAMMOND, IND.

Manufacturers of better grade steel equipment since 1895

CHICAGO

NEW YORK

Plenty of Light in Modern Print Shop

WALLS OF WINDOWS INSURE PLENTY OF LIGHT AND VENTILATION IN NEW DETROIT BUILDING

“WHY, it's just as light as outdoors, in here,” is the almost invariable comment of a visitor inspecting for the first time the trim new print shop of Anchor Press, in Detroit.

In few industrial buildings is adequate daylight more essential than in a modern printing house. Present-day business demands quick but accurate printing and that requires, first of all, a modern, well-daylighted work shop.

In this building, daylight streams in from large walls of glass in the sides of the building, and from sawtooth windows overhead so that the pressmen, compositors and proofreaders enjoy all the advantages of restful natural light, together with the additional advantages of protection that a modern building affords.

The side-wall windows are in bays of three units each, four panes high. Each bay is equipped with a pivoted ventilator. Ventilation is somewhat curtailed because of the peculiar effect that dampness of atmosphere has on paper stock and presses. Weather-tightness, as provided by steel sash, is a decided advantage in buildings where this requirement is present.

So far as the general run of prominent print shops is concerned, this building—50 feet by 150 feet—is small. It was built in less than

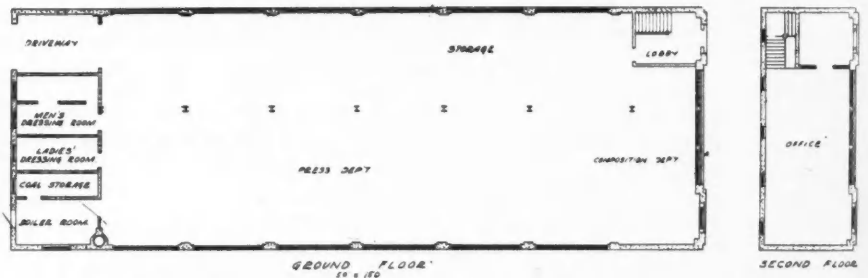
three months—most of the building materials, including even the windows, being supplied economically from local warehouses. Ground was broken in Novem-



There is Plenty of Sunshine in this Print Shop. It Relieves Much of the Heavy Strain on the Workmen's Eyes and Increases Their Efficiency.

ber. In January, the presses were in operation.

In appearance this new and model print shop is a



First and Second Floor Plans of Model Daylight Printing Shop.



New Plant of Anchor Press, Detroit, Mich., Built Along Latest Lines in Factory and Shop Construction. Note the Splendid Natural Lighting Facilities Provided by Walls of Windows. Frederick J. Winter Was the Architect.

decided relief to the policy apparently adhered to by some builders that to be thoroly practical a building must be rugged and unattractive in appearance. Anchor Press has the appearance of a club house or a bank building with a front of ornate Bedford limestone and narrow casement windows with wrought iron balconies. But the interior is just as practically planned as the exterior is inviting. The building is light and open, roomy, and is an ideal working place. Every attention has been given to the consideration of the workmen with the provision of modern rest-rooms with lockers and shower-baths.

The **KNAPE & VOGT** Garment Care System

helps modernize homes



Saves Space, Creates Order, and Cuts Down Construction Costs

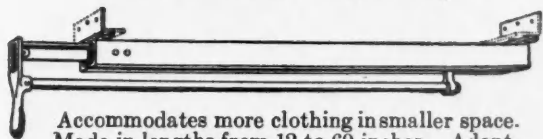
In modern homes the one room most neglected is the clothes closet, but it is now possible to modernize this important part of the house also. The Knap & Vogt Garment Care System is the most efficient method ever devised.

Build smaller closets and provide for larger rooms, or save in construction costs. Knap & Vogt Garment Carriers are strong and practical. Can't get out of order. Fastened to underside of closet shelf or back wall and door casing. Operate smoothly on a telescoping slide. A touch of the fingers brings the wardrobe laden carrier from the closet. Selection of the clothes easy, everything in order.

Home Builders

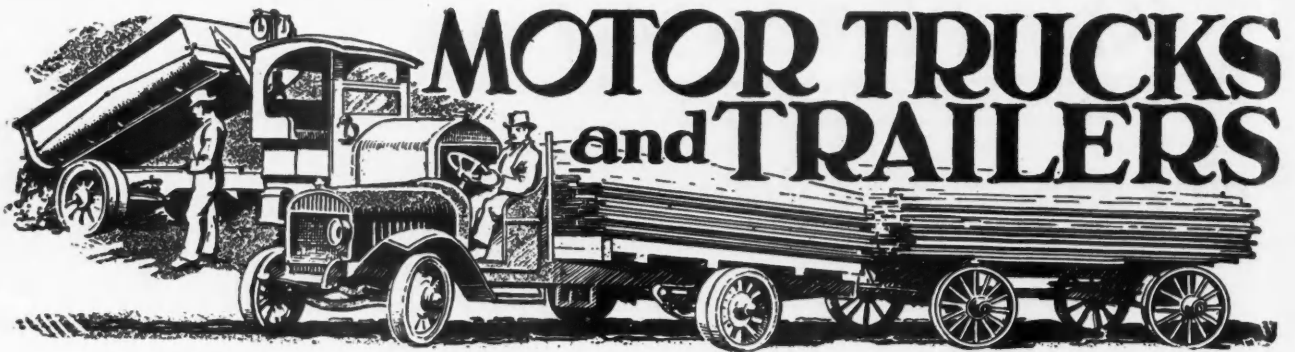
Knap & Vogt Garment Care Closets will give you lasting comfort and convenience. If your architect or builder doesn't know of this money saving system, write us for details, price and complete information.

This is What You Buy



Accommodates more clothing in smaller space. Made in lengths from 12 to 60 inches. Adaptable to new or old closets.

We will gladly assist builders with plans where Knap & Vogt Closets are specified
 WRITE _____ WIRE _____ PHONE _____ CALL _____
KNAPE & VOGT MFG. CO., Grand Rapids, Mich.



Builder Makes Unique Use of Truck

CALIFORNIA CONTRACTOR BUILDS SPECIAL BODY FOR TRUCK TO AID HIM IN BUILDING OPERATIONS

By P. L. Sniffin

INCREASED scope of activity, approximating 300 per cent has been accomplished for Frank P. Pursell, 720 West Sixth Street, Los Angeles, Cal., by the relegation of horses and their supersedence by a specially designed 2-ton motor truck.

Mr. Pursell specializes, among other things, in building construction work and his truck is especially adapted for placing heavy beams and girders as a part of the construction of new buildings. While he uses the truck for this and similar work entirely, the principle of his winch arrangement may be applied by any builder on any truck and at the same time the truck may be used for general hauling with very little decrease in carrying capacity.

The equipment as illustrated consists of a special body of his own design with extensions along the

sides of the hood so that long poles used in his work may be carried, and a vertical winch, driven off the truck's countershaft.

The winch is located directly back of the cab and only about three feet of the truck body's carrying space is taken up.

A trap door in the bed of the body gives access to a ring, located in an additional cross-member of the frame, to which a pulley can be hooked so that when it is necessary to pull at right angles to the truck, the pull on the winch is always horizontal.

Pursell has found his equipment especially satisfactory in lifting girders for new buildings. The old system was to hitch a team of horses directly to the rope running thru a block to the top of the jin-pole.

In that case it was difficult to do this work accurately, but with the power-driven winch absolute accuracy is obtained. The truck can be driven within the structure when this kind of work is being done and there is no need to block the street with a capstan and team of horses, the old style procedure.

Pursell says his outfit speeds up operations remarkably. He carries enough supplies of all sorts so that upon arrival at a job he can be equipped properly no matter what the requirements may be. He can do a job in Pomona in the morning and another in Los Angeles in the afternoon, while if dependent upon teams, two or three days would be required for the same undertaking.



Paint Your Motor Truck

VERY few surfaces are subject to as severe wear and tear by weather conditions as those of the average truck and without a protecting coat of paint the exposed metal parts will rust and corrode quickly, while a wooden body unprotected rapidly checks, cracks and begins to decay.

The little additional expense which a thoro painting entails is repaid not only by insuring a longer life to the parts of the truck exposed to weather, but the improved appearance of the truck pays dividends well worth while. Everyone recognizes the advertising value of a clean-looking, well-painted truck.



Frank P. Pursell, Building Contractor in Los Angeles, Has Effected a Great Saving on His Truck by Adding a Winch for Lifting Girders into Place in a New Building. It Is Driven Off the Truck's Countershaft.



General Motors Trucks

WHEN working on a big job contractors are frequently faced with a penalty clause in their contracts. Delays are costly and must be avoided.

Contractors the country over have learned to rely upon GMC Trucks,

for these trucks are veterans in the building trades and will give steady day after day service.

With dependably GMC Trucks on the job builders know their hauling will be done as planned and in a satisfactory manner.

Ask for booklet showing GMC Trucks in your line of business, also for list of users.

GENERAL MOTORS TRUCK COMPANY
PONTIAC, MICHIGAN

Branches and distributors in principal cities

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Enormous Total for State and County Highways

Amounts proposed and authorized January 1, 1919, to December 31, 1920, including Illinois and Pennsylvania State Bond Issues voted 1918

Those authorized during 1919 are only summarized

ALABAMA									
1920:	State.....	\$25,000,000	Feb. 16	Ford Co.....	80,000	Jan. 21			
	Jefferson Co.....	5,000,000	Feb. 16	Franklin Co.....					
	Morgan Co.....	450,000	Nov. 2	Deming Township.....	70,000	Apr. 6			
	Total.....	\$30,450,000		Iroquois Co.....					
ARIZONA				Chebanse Township.....	60,000	Jan. 17			
1919:	9 Counties.....	\$8,800,000		Martintown Township.....	50,000	Feb. 14			
1920:	Maricopa Co.....	4,500,000	Dec. 31	Kane Co.....	1,500,000	Feb. 10			
	Total.....	\$13,300,000		Total.....	\$71,036,345				
ARKANSAS				INDIANA					
1919:	3 Counties.....	4,900,000		1920:	Tippecanoe Co.....	\$ 860,000	Jan.		
	Total.....	\$4,900,000			Total.....	\$ 860,000			
CALIFORNIA				IOWA					
1919:	State.....	\$40,000,000	July 1	1919:	13 Counties.....	\$18,475,000			
	18 Counties.....	28,435,000			Total.....	\$18,475,000			
1920:	Santa Barbara Co.....			KANSAS					
	Lompoc Dist.....	400,000	Feb. 3	1919:	1 County.....	\$ 50,000			
	Total.....	\$68,835,000			Total.....	50,000			
COLORADO				KENTUCKY					
1920:	State.....	\$ 5,000,000	Nov. 2	1919:	9 Counties.....	\$ 2,730,000			
	Total.....	\$ 5,000,000		1920:	Fayette Co.....	100,000	Jan.		
DELAWARE					Total.....	\$ 2,830,000			
1919:	1 County.....	\$ 500,000		LOUISIANA					
1920:	Kent Co.....	1,020,000	April	1919:	31 Parishes.....	\$11,946,000	Jan.		
	New Castle Co.....	520,000		1920:	Cameron Parish.....	417,000	Jan.		
	Total.....	\$ 2,040,000			Claiborne Parish.....	500,000	Jan.		
FLORIDA					Total.....	\$12,863,000			
1919:	7 Counties.....	\$ 2,615,000		MAINE					
1920:	Escambia Co.....	2,000,000	Oct.	1919:	State.....	\$ 8,000,000	Sept.		
	St. Lucie Co.....	350,000	Jan.	1920:	Oxford Co.....	73,000			
	Total.....	\$ 4,965,000			Total.....	\$ 8,073,000			
GEORGIA				MARYLAND					
1919:	41 Counties.....	\$15,375,000		1920:	State.....	\$ 3,000,000	April		
	Total.....	\$15,375,000			Total.....	\$ 3,000,000			
IDAHO				MASSACHUSETTS					
1919:	21 Counties.....	\$ 7,873,000		1920:	Worcester Co.....	\$ 22,000			
1920:	State.....	2,000,000	Nov. 2		Total.....	\$ 22,000			
	Adams Co.....	125,000	April	MICHIGAN					
	Cassia Co.....	300,000	Feb. 23	1919:	State.....	\$50,000,000	April 7		
	Clearwater Co.....				6 Counties.....	3,100,000			
	Grangemont Dist.....	100,000	April 10	1920:	Sheboygan Co.....	50,000			
	Gem Co.....	200,000	Aug. 13		Montcalm Co.....	500,000			
	Gooding Co.....	100,000	April 10		Ottawa Co.....				
	Jerome Co.....	410,000	June		Fillmore Township.....	100,000			
	Kootenia Co.....	95,000	June		Total.....	\$53,750,000			
	Latah Co.....			MINNESOTA					
	Kendrick Dist.....	107,000	Jan. 10	1919:	17 Counties.....	\$12,800,000			
	Nez Perce Co.....			1920:	State.....	100,000,000	Nov. 2		
	Gifford Dist.....	75,000	Feb.		Anoka Co.....	250,000			
	Twin Falls Co.....				Aitkin Co.....	250,000			
	Buhl Dist.....	220,000	Jan. 15		Beltrami Co.....	100,000			
	Wildier—Canyon Counties.....				Bigstone Co.....	103,000			
	Golden Gate Dist.....	100,000	March		Carlton Co.....	80,000			
	Total.....	\$11,705,000			Cass Co.....	250,000			
ILLINOIS					Chippewa Co.....	100,000			
1918:	State.....	\$60,000,000	Nov. 5		Chisago Co.....	250,000			
1919:	12 Counties.....	8,992,845			Clay Co.....	150,000			
1920:	Bureau Co.....	221,500	Nov. 2		Cook Co.....	50,000			
	Douglas Co., Comargo Township.....	62,000	Jan. 6		Cottonwood Co.....	172,000			
					Dodge Co.....	150,000			
					Houston Co.....	150,000			
					Jackson Co.....	100,000			
					Kanabec Co.....	125,000			
					Koochiching Co.....	30,000			
					Lae qui Parle Co.....	190,000			
					Marshall Co.....	125,000			
					Martin Co.....	50,000			
					Meeker Co.....	107,000			
					Millelacs Co.....	125,000			
					Morrison Co.....	250,000			
					Mower Co.....	135,000			
					Pennington Co.....	40,000			
					Pope Co.....	60,000			
					Red Lake Co.....	135,000			
					Redwood Co.....	245,000			
					Todd Co.....	160,000			
					Winona Co.....	50,000			
					Wright Co.....	150,000			
					Total.....	\$116,932,000			
				MISSISSIPPI					
				1919:	54 Counties.....	\$15,848,000			
				1920:	Lincoln Co.....	400,000	Nov. 2		
					Hinds Co.....	1,000,000			
					Total.....	\$17,248,000			
				MISSOURI					
				1919:	38 Counties.....	\$13,919,800	Nov. 2		
				1920:	State.....	60,000,000	Jan. 20		
					Dunklin Co.....	1,200,000	Jan. 20		
					Mississippi Co.....		Jan. 20		
					Air Line Dist.....	140,000	Nov. 30		
					St. Charles Co.....	1,000,000	March 20		
					Total.....	\$76,259,600			



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(Continued to page 146.)



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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Proper Operation of Power Saw-Rigs

Some Pointers That Will Aid Builder on the Job and in the Workshop

By RICHARD NEWBECKER

THE builder employing a portable saw rig or woodworker on the job should know the proper care and operation of equipment of this machine so as to get the best results from it with the least repairs and expense.

Many builders are inclined to leave their machines exposed to rain and snow for a week or more without protection. How these builders expect to get full efficiency out of a machine treated in this manner is more than I can understand.

The operation of a saw with power, gasoline or electric, is no more dangerous than the use of an ordinary hand saw, that is, provided the proper precaution consistent with the operation of power driven machinery is taken into consideration. As a rule manufacturers of these machines provide all practical safety devices essential in its operation; therefore I shall only touch upon those incidents which occur thru unforeseen defects in the lumber, or thoughtlessness on the part of the operator.

One of the most dangerous things for the saw operator to do, when ripping lumber, is to attempt to remove edgings or slivers which may have become lodged in the saw groove or throat of the saw table while the saw is in operation. When ripping narrow stock use extra precaution, and never attempt to reach over running saw to pick up stock, because if you should slip, you may go home minus some fingers or a hand.

Flying knots or chips from saw should be guarded against. No saw should be operated unless properly equipped with proper guards. The saw guard should always be set low enough to let only the stock pass easily under it, and far enough forward so that the operator cannot see more than about 2 inches of the revolving saw.

Another danger to guard against in the operation of the saw is the so-called "kick-back." To avoid this, a spreader is usually placed directly back of the saw. However, much cross-cutting and ripping is being done alternately on the saw during a day's run. Moreover, the spreader back of the saw does not always work to the best advantage when doing cross-cutting, or mitre-cutting, and some machines are not equipped with this preventative device, therefore the operator must be on his guard constantly.

Kick-backs, while ripping, generally occur when no spreader is used back of the saw, when warped or cupped stock is forcibly thrown back by the centrifugal force of the saw, generally striking the operator in the abdomen and often causing serious injuries. Running cupped stock, however, is not the only cause for accidents of this nature. Some of them are: using spreader that is thinner than the saw; attempting to operate the saw with insufficient set, causing the stock to bind and kick back; using too small a saw; operating with the saw table set too high; leaving too small a portion of the saw exposed.

Another bad practice which I have often seen among men operating power saws on the building job is that of setting the saw so that it just cuts thru the stock. A saw ripping one inch thick stock, when set in this manner, has a tendency to drive the stock back at the operator. This is the case especially if it has teeth of 1 inch pitch. These teeth strike at such an angle that three of them are engaged at one time, making the stock extremely liable to kick back. A saw set at the proper height for ripping, only engages one, or rarely two teeth in the lumber at a time, thus the cut is made with less power, and the tendency to draw the stock thru, rather than drive it back at the operator is helped along.

The setting and filing of the saw is also important. There are two methods of filing in common use, one known as cross filing, as practiced in filing circular, cross-cut or cut-off saws, in which the file is pushed straight across the work; and that known as draw filing as on circular rip saws in which the file is pushed or drawn sidewise across the saw.

When filing a cut-off saw, the end of the file handle should rest in the palm of the right hand, the thumb should be extended along the top of the handle and the index finger

along the side away from the filer. The rest of the fingers should close naturally around the handle, the ball of the thumb of the left hand should be placed on the upper side of the point with the first two fingers pressing upward.

When starting a movement with the file, the left hand should exert all the pressure, while the right hand merely holds the

file in position. As the file is moved forward the pressure from the left hand decreases while the right hand increases. On the return stroke no pressure should be used, the file being lifted clear of the saw.

Practically the same method of holding the file is followed in filing rip saws with the exception that the file is worked in a somewhat slanting movement away from the body of the worker.

By keeping these few precautions in mind when operating the power saw, much of the danger and many accidents will be prevented. The saw will be in better condition, easier to operate, and more productive.



OWNERS of property should see that waste paper and packing material is taken care of and removed regularly, and that rubbish is not allowed to accumulate. They should make it their duty to see that this is done, and should also make certain that inflammables and explosives are properly safeguarded, that the wiring is standard, that smoking is not allowed, and that the general rules of good housekeeping are observed. By doing this they will protect life and property and keep insurance rates down.



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Enormous Total for State and County Highways— (Continued from page 142.)

MONTANA			
1919:	34 Counties.....	\$ 6,283,000	
1920:	Custer Co.....	350,000	April 23
	Mussellshell Co.....	300,000	Jan. 13
	Phillips Co.....	150,000	April 23
	Valley Co.....	200,000	April 23
	Total.....	\$ 7,283,000	
NEBRASKA			
1919:	Douglas Co.....	\$ 3,000,000	June 24
	Total.....	\$ 3,000,000	
NEVADA			
1919:	State.....	\$ 1,000,000	
	Washoe Co.....	200,000	
	Total.....	\$ 1,200,000	
NEW JERSEY			
1920:	State.....	\$29,000,000	Nov. 2
	Gloucester Co.....	1,000,000	
	Total.....	\$30,000,000	
NEW MEXICO			
1920:	Chaves Co.....	\$ 250,000	Sept. 24
	Rio Arriba Co.....	75,000	Nov. 2
	Total.....	\$ 325,000	Nov. 2
NORTH CAROLINA			
1919:	52 Counties.....	\$13,459,635	
1920:	Guilford Co.....	2,000,000	Dec. 14
	Total.....	\$15,459,635	
NEW YORK			
1920:	Herkimer Co.....	\$ 80,000	
	Madison Co.....	44,000	
	Montgomery Co.....	35,000	
	Nassau Co.....	790,000	
	Oneida Co.....	16,000	
	Onondaga Co.....	62,000	
	Orleans Co.....	40,000	
	Seneca Co.....	45,000	
	Steuben Co.....	150,000	
	Suffolk Co.....	180,000	
	Wayne Co.....	42,000	
	Westchester Co.....	14,000	
	Total.....	\$ 1,498,000	
OKLAHOMA			
1919:	3 Counties.....	\$ 1,158,000	
1920:	Bryan Co.....	900,000	March 16
	Choctaw Co.....	350,000	March 9
	Johnston Co.....	380,000	May 4
	McCurtain Co.....	350,000	April
	Oklahoma Co.....	750,000	March 30
	Wagoner Co.....	83,000	Jan.
	3 Townships.....	83,000	
	Total.....	\$ 3,971,000	
OREGON			
1919:	State.....	\$10,000,000	No elec. req.
	State—Roosevelt Highway.....	2,500,000	June 8
	25 Counties.....	9,516,704	
1920:	Clatsop Co.....	100,000	June
	Jackson Co.....	500,000	May 21
	Lane Co.....	2,000,000	May 21
	Wasco Co.....	100,000	
	Yamhill Co.....	420,000	
	Total.....	\$25,136,704	
PENNSYLVANIA			
1918:	State.....	\$50,000,000	Nov. 5
1919:	26 Counties.....	13,320,288	
1920:	Bedford Co.....	200,000	July
	Berks Co.....	1,375,800	
	Blair Co.....	425,000	
	Butler Co.....	1,500,000	May 18
	Cambridia Co.....	4,502,568	May 18
	Carbon Co.....	825,000	
	Clearfield Co.....	1,000,000	May 18
	Clinton Co.....	80,000	
	Franklin Co.....	125,000	
	Indiana Co.....	1,000,000	May 18
	Lackawanna Co.....	1,030,000	May 18
	Lehigh Co.....	30,000	
	Luzerne Co.....	510,000	
	Lycoming Co.....	30,000	
	Monroe Co.....	506,000	May 18
	Northampton Co.....	2,272,000	
	Schuylkill Co.....	1,150,000	
	Susquehanna Co.....	1,000,000	Nov. 2
	Tioga Co.....	300,000	Sept.
	Total.....	\$81,174,856	
SOUTH CAROLINA			
1919:	14 Counties.....	\$ 8,560,000	
1920:	Newberry Co.....	400,000	Aug. 24
	Richland Co.....	3,000,000	Nov. 16
	Sumter Co.....	2,500,000	May 17
	Total.....	\$14,460,000	
TENNESSEE			
1919:	32 Counties.....	\$ 7,385,000	
1920:	Carter Co.....	220,000	
	Dyer Co.....	1,000,000	March 6
	Fentress Co.....	200,000	
	Giles Co.....	350,000	
	Total.....	\$ 9,155,000	

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Enormous Total for State and County Highways—Continued.

State	Year	County/District	Amount	Date		
TEXAS	1919:	110 Counties	\$88,908,000			
		Aransas Co.	100,000	Feb. 10		
	1920:	Atascosa Co. Dist. 2	125,000	March 20		
		Brooks Co.	100,000	May 1		
		Brown Co.	50,000	May 8		
		Calhoun Co.	100,000	Feb. 14		
		Camp Co.	535,000	March 30		
		Chambers Co. Precinct 4	75,000	March 27		
		Coleman Co. Precinct 2	400,000	March 13		
		Collin Co.	60,000	June 28		
		Copeville Dist.	24,000	Aug. 21		
		Lavaca Dist.	60,000	Aug. 21		
		Princeton Dist.	20,000	Sept. 11		
		Comanche Co.	200,000	Oct. 2		
		Road Dist. 3	1,000,000	March 20		
		El Paso Co.	200,000	April 1		
		Fannin Co. Road Dist. 4	300,000	Feb. 28		
		Grayson Co. Whitewright Dist.	50,000	June 12		
		Hill Co. Aquilla Dist.	105,000	Jan. 31		
		Road Dist. 12	105,000	Jan. 1		
		Hood Co. Road Dist. 2	20,000	Sept. 11		
		Houston Co.	150,000	Feb. 5		
		Howard Co.	300,000	June 26		
		Jeff Davis Co.	100,000	Feb. 6		
		Kaufman Co. Road Dist. 4	55,000	Aug. 21		
		Kendall Co. Precinct 4	40,000	March 20		
		Knox Co. Knox City Precinct	100,000			
		Lynn Co.	60,000	Oct. 16		
		Martin Co.	60,000	July 17		
		McLennan Co. Mart Dist.	365,000	June 22		
		Midland Co.	125,000	May 29		
		Milam Co. Dist. 2	25,000	Feb. 24		
		Dist. 21	63,000	March 20		
		Road Dist. 22	10,000	Jan. 31		
		Montgomery Co.	1,500,000	April 24		
		Refugio Co. Road Dist. 2	90,000	March 28		
		Road Dist. 4	50,000	March 28		
		Shelby Co. Road Dist. 1	80,000	July 17		
				Road Dist. 2	100,000	July 17
			Road Dist. 3	350,000	July 17	
			Road Dist. 5	70,000	July 17	
			Road Dist. 6	100,000	July 17	
			Sutton Co.	300,000	May 10	
			Terrell Co.	250,000	Oct. 16	
		Travis Co. Dist. 2	150,000	March 23		
		Littig Dist.	35,000	April 25		
		New Sweden Dist.	225,000	April 23		
		Manor Dist.	230,000	May 15		
		Walker Co. Bedias Dist.	100,000	March 27		
		New Waverly Dist.	100,000	March 13		
		Wilbarger Co. Chillicothe Dist.	50,000	Nov. 2		
		Total	\$97,772,000			
UTAH	1919:	State	\$ 4,000,000			
	1920:	4 Counties	2,766,000			
		Beaver Co.	125,000	May 25		
		Carbon Co.	150,000	Feb. 14		
		Grand Co.	78,500	June 19		
		Iron Co.	125,000	April 27		
		Piute Co.	20,000	March 13		
		San Pete Co.	280,000	April 27		
		Total	\$ 7,544,500			
VERMONT	1920:	Washington Co.	\$ 75,000			
		Total	\$ 75,000			
VIRGINIA	1920:	State	\$50,000,000	Nov. 2		
		Total	\$50,000,000			
WASHINGTON	1919:	8 Counties	\$ 9,535,000			
	1920:	Kitsap	300,000			
		Pacific Co.	168,000	March 9		
		Total	\$10,003,000			
WEST VIRGINIA		Total	\$62,755,500			
WISCONSIN		Total	\$37,391,000			
WYOMING		Total	\$ 2,800,000			
		Total authorized to December 31, 1919	\$594,132,072			
		Total authorized in 1920 to December 31, 1920	404,821,068			
		Grand total authorized	\$998,953,140			

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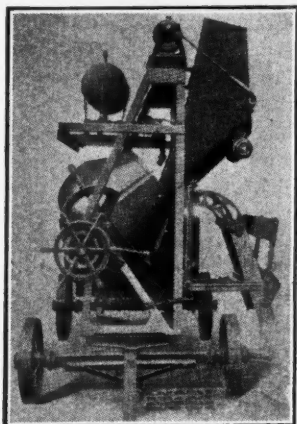
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 April 27
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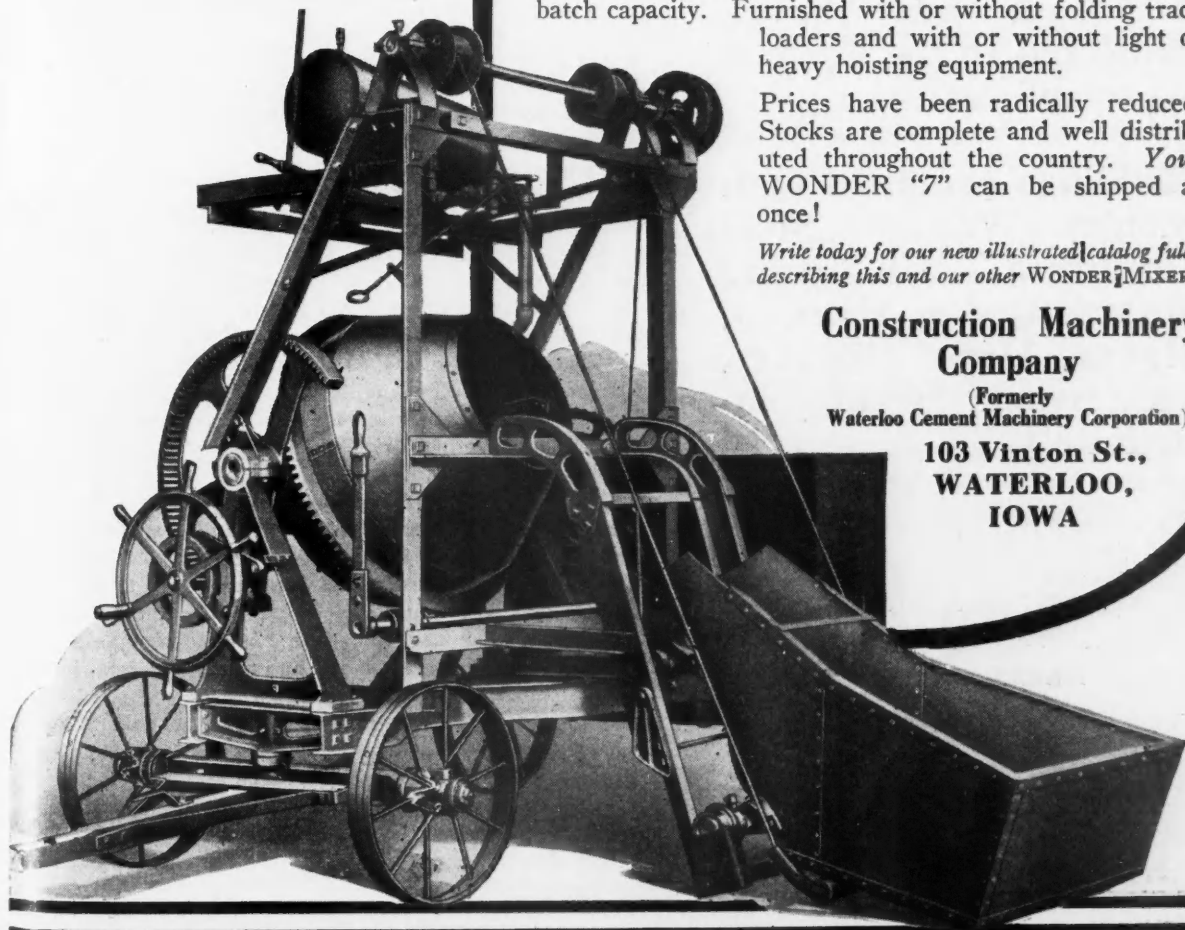
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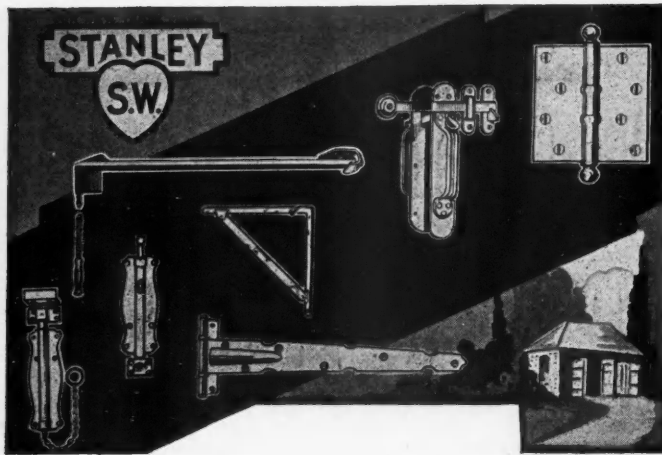
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STANLEY WROUGHT STEEL HARDWARE

Keeps Buildings "Young"

Age first attacks the doors and windows of a building, these being subjected to the greatest wear and tear.

Buildings equipped with Stanley Wrought Steel Hardware—Ball Bearing Butts, Bolts, Hinges, Hasps, Door Holders, etc., remain "young" indefinitely.

Send for catalogs A-5 of the various lines of Stanley Wrought Steel Hardware, including Screen and Garage Hardware.



CATALOGS BULLETINS & BOOKS RECEIVED

The following literature, dealing with subjects of interest to builders is now being distributed.

"Concrete Forms" is the title of a new booklet issued by the Bergendahl & Acher, Inc., contracting engineers, who control the Branson system of concrete forms and joist mold centering. This book contains illustrations of jobs in which this system has been used as well as a very complete description of how the system is worked.

The Stanley Works has issued two new booklets covering Stanley Screen Hardware and Garage Hardware. The screen book contains 24 pages and contains the complete Stanley line of screen hardware for doors and windows. The garage hardware folder illustrates the garage set No. 1780.

"Factory and Warehouse Construction" and "Homewalls" are the titles of two interesting color booklets recently issued by manufacturers of the Denison Interlocking Tile. The first book is distributed by the Interstate Clay Products Co., Cleveland, Ohio, and show the use of this special tile in factory construction. The other book contains many pictures of beautiful homes whose walls are of this material.

"Cozy Home Life" is the title of an attractive cover booklet in colors issued by the Holland Furnace Company, Holland, Mich. It describes and illustrates the Holland heating service and explains in details the various heating plants and furnaces which are included in the Holland line.

"Concrete Houses—How They Are Built" is the title of a new book from the press of the Concrete-Cement Age Publishing Company, Detroit, Mich. The author is Harvey Whipple, editor of Concrete. The book is a compilation of several articles descriptive of various types of concrete houses and details of their construction, which have appeared from time to time in Concrete.

McCray Market Coolers and Refrigerator Counters and Refrigerators for Residences are described and illustrated in two new catalogs Nos. 63 and 95 issued by the McCray Refrigerator Co., Kendallville, Ind. They cover in detail outside icing in modern kitchens and apartment buildings.

"Doric and Gothic Brick" is the title of a new book issued by the Western Brick Co., Danville, Ill. It contains many pictures of homes which have been constructed from either one of these types of brick, also a short account of how brick is stippled.

"Furnishings, Equipment and Supplies" is the title of the new catalog E23 recently issued by the Albert Pick & Co., Chicago. It is a large complete booklet describing and illustrating the restaurant, hotel and apartment furnishings and equipment included in the Pick Line. This catalog also contains the latest price list.

"Fibre-Strong Solid Asphalt Shingles" are described and illustrated in a booklet issued by the Fibrated Products Corporation, Chicago, Ill. Several houses upon which this type of roofing has been installed are shown in this booklet, also cross section of the roof showing how it is actually applied.



Turn Old Buildings Into New

Old, weatherworn buildings—that are out-of-date or past fashion—may be readily transformed to modern style and stateliness—their youth, strength and beauty renewed, by overcoating with

KELLASTONE

IMPERISHABLE STUCCO

An enduring material which affords the modern building contractor a new and profitable field—the rejuvenation of old homes and buildings into models of modern architectural style by applying over the old outer walls an overcoat of KELLASTONE—The Twentieth Century triumph in Scientific stone-making.

KELLASTONE, the original all-mineral magnesite stucco, binds the exterior walls into one solid, seamless, stone-like mass. Warm in winter, cool in summer. Defies age, heat, cold, and the ravages of weather. Applied in any season, without disturbing occupants.

Cash in on the money-making possibilities of KELLASTONE. Link your name with our National advertising campaign. Send for booklet—"The Story of Kellastone."

National Kellastone Company Manufacturers

Room 515 155 East Superior Street
CHICAGO, ILLINOIS



KELLASTONE

IMPERISHABLE STUCCO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

"Shearing Stresses in Reinforced Concrete Beams" is the title of a new book on concrete design written by H. S. Rogers, B. Sc. C. E., and being distributed by the Truscon Steel Company, Youngstown, O. Mr. Rogers is professor of hydraulics in a western university and an authority on reinforced concrete. The book deals with requirements of beam design, cost of steel and handling, stress lines, designing of shear members and anchorage.

"Russwin Hardware" is the subject of a new catalog now being distributed by the Russell & Erwin Mfg. Co., New Britain, Conn. The various types of architecture, from the ancient down to the present, are very beautifully illustrated and explained and prominent buildings showing each type are reproduced. The Russell & Erwin line of locks and builders' hardware are also shown.

"Walls of Worth" is the title of a new color booklet issued by the United States Gypsum Co., Chicago, Ill. This book contains several illustrations in colors of beautiful interiors in which Sheetrock, the wall board manufactured by this concern, has been used.



Desco Has Chicago Distributors

John J. Kinsella & Co., 22nd and Peoria streets, Chicago, Ill., has been announced as Chicago distributors for the full line of Desco copper store front construction, manufactured by the Detroit Show Case Co., Detroit, Mich.

They will take care of building contractors in Chicago and thruout Illinois.



Big Roofing Concern Changes Name

THE name of the Standard Paint Company, manufacturers of Ruberoid roofing and weatherproofing products for nearly forty years, was changed on April 1 to the Ruberoid Company.

This change of name will in no way affect the products nor the personnel of this concern. The offices and plants of the Ruberoid Company will be the ones now operated by the Standard Paint Company.



Concrete Products Association Hold Annual Meeting

THE Concrete Products Association held a very successful convention March 28, 29 and 30 and much constructive work was done. By-laws were revised.

A board of directors of eleven members was elected and the board empowered to elect a president, two vice-presidents, a secretary and a treasurer. It was also decided that the presidents and secretaries of local chapters and state branches

constitute a national advisory committee. The following directors were elected:

Wallace R. Harris, Chicago, Ill.; H. G. Krum, St. Paul, Minn.; C. B. Dutton, Chicago, Ill.; S. H. Wightman, Chicago, Ill.; J. K. Harridge, Chicago, Ill.; E. G. Barnett, Cleveland, Ohio; C. A. Steward, Plano, Ill.; J. H. Gildner, Los Angeles, Cal.; A. G. Swanson, Omaha, Neb.; G. J. Wolf, Hammond, Ind., and J. C. Donaldson, Des Moines, Iowa.

The officers were elected as follows: W. R. Harris, president, Chicago, Ill.; H. G. Krum, first vice-president, St. Paul, Minn.; G. J. Wolf, second vice-president, Hammond, Ind.; J. E. Montgomery, secretary, Chicago, Ill., and J. K. Harridge, treasurer, Chicago, Ill.



Winthrop Shingle Men in Conference

REPRESENTATIVES of the manufacturers of Winthrop Tapered Asphalt Shingles recently met in conference in

STEEL for Quick Construction

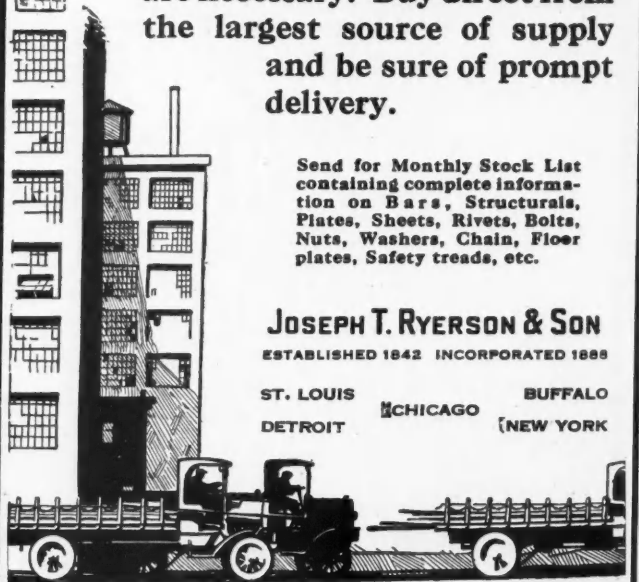
Don't pay higher prices than are necessary. Buy direct from the largest source of supply and be sure of prompt delivery.

Send for Monthly Stock List containing complete information on Bars, Structural, Plates, Sheets, Rivets, Bolts, Nuts, Washers, Chain, Floor plates, Safety treads, etc.

JOSEPH T. RYERSON & SON

ESTABLISHED 1842 INCORPORATED 1888

ST. LOUIS CHICAGO BUFFALO
DETROIT (NEW YORK)



RYERSON STEEL-SERVICE

803-L

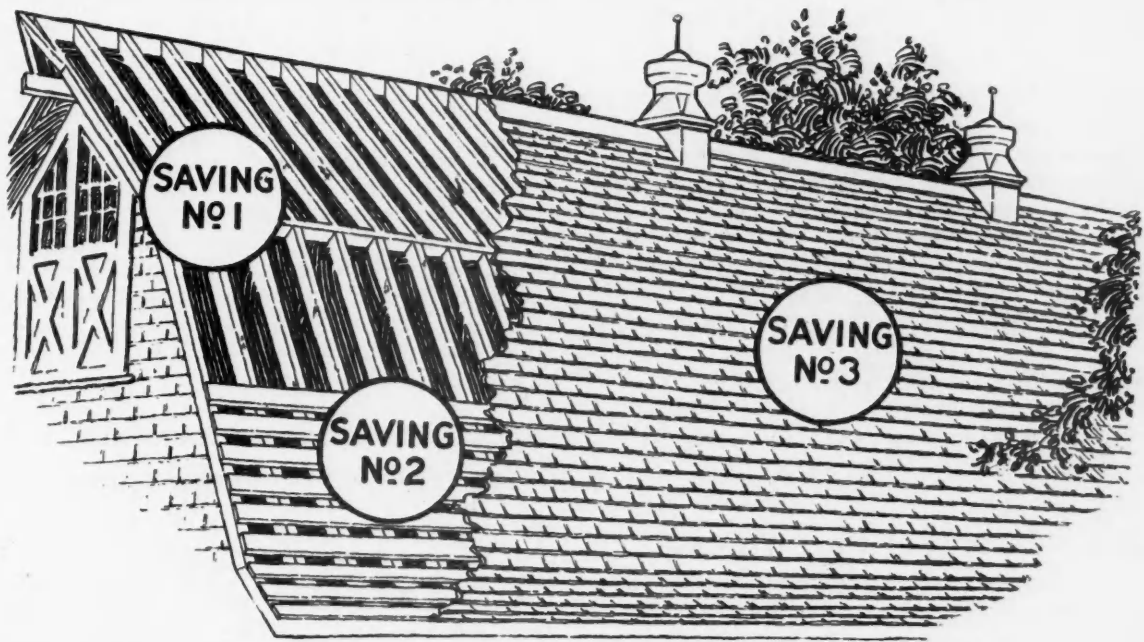
GOOD TERRITORY FOR LIVE AGENTS

DIAMOND

METAL WEATHER STRIPS

THE DIAMOND METAL WEATHER STRIP CO., 632 KERR ST. COLUMBUS, O.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



YOU Save Money When You Build With Red Cedar Shingles

Saving No. 1 Your roof requires fewer rafters when covered with Red Cedar Shingles, because of their comparative lightness. On a building of any size, this saving is considerable.

Saving No. 2 Your roof boards can be liberally spaced—no need for them to be solid. Further, you require no building paper for lining—the shingles are nailed to the roof board.

Saving No. 3 Note the treble overlap on this Red Cedar Shingle roof, which means longer life, greater protection from heat and cold. Such a roof, properly nailed, will remain in good condition from 25 to 40 years. In other words, practically no expense for upkeep.

How to Get Good Shingles

When buying shingles, see that they bear the "Rite-Grade Inspected" trade-mark. This is a co-operative inspection mark, the property of over one hundred associated mills, manufacturing more than 3½ million squares annually. It means that your shingles are guaranteed by official inspection to be up to grade as to thickness, grain, selection and covering capacity.

RITE-GRADE INSPECTED

SHINGLE BRANCH:

West Coast Lumbermen's Association
Henry Building, Seattle, Wash., or,

The Shingle Manufacturers Association of British Columbia
Metropolitan Building, Vancouver, B. C.



the office of Beecher, Peck & Lewis Co., Detroit, Mich.

B. C. Beckman represented the Beckman-Dawson Roofing Co., which company controls the patents for Winthrop shingles. The other companies represented were: Lockport Paper Co., E. J. Weaver; Canadian Roofing Co., and Brantford Roofing Co., C. S. Jackson; Beecher, Peck & Lewis Co., exclusive sales agents for the Peck Asphalt Shingle Co.

The name "Winthrop Tapered Asphalt Shingles," under which the Beckman-Dawson Roofing Co. has manufactured these shingles for years, will continue in use and a sub-title, "The Big Butt Shingle," will be used in conjunction with it.

Manufacturers will sell to one dealer in a community on a regular exclusive agency plan—in large cities where one dealer could not properly distribute, two agents will be permitted.

A standard package, a distinctive fibre carton, was adopted. The shingles will be packed eighty-five to the box, four boxes to the square. The manufacturers decided not to pack any other shingle in similar containers.



How and Why of Unit Window

(Continued from page 111.)

Maid Service Saving—This window is cleaned from a standing position on the floor in 5 to 10 minutes less than an ordinary window, say, 8 minutes. Washed twenty times a year, eighty hours saved. If the maid nowadays will not do the work, somebody must at about 40 cents an hour. A yearly saving here of.... 32.00

Screen Damage—Good quality copper mesh metal-framed screens now cost \$8.00 to \$15.00 per window, say, \$10.00 installed. They are often damaged; 85 per cent of this occurs during storage, taking down and putting up. Estimate on one so broken each year (probably low) at a replacement cost of..... 8.50

Screen Depreciation—Copper wire crystalizes, becomes brittle and breaks at fastening on frame edge in less than 15 years' exposure. Being readily stowed away, these screens suffer considerably less weather exposure. Estimated life—25 years. Saving 10 years on 15 years is two-thirds of replacement charge of \$300.00 or \$200.00; distributed over 15 years—total saving on depreciation per year..... 13.33

Labor on Screens—Ordinary screens must be put up and taken down each year. This means storage space, time, nuisance and work—cost of nuisance, inestimable; cost of man, two days at \$4.00, a saving each year of..... 8.00

Total Annual Saving—In a unit-window equipped residence of thirty windows..... 102.03

This means an annual average saving of \$3.40 per window, which not only pays interest on the slight additional investment in these windows but the actual difference within a few years.

Shock-Defying Glass

ACCORDING to newspaper reports, more people were injured by flying glass on the occasion of the recent Wall Street bomb explosion than were injured by the slugs thrown by the bomb itself.

Altho not yet generally adopted, science has provided a safeguard against injuries caused by broken glass. The comparatively new invention is called laminated glass. It is made in various thicknesses to withstand almost any compact to which glass might be subjected.

Glass especially made for tellers' cages in banks is made of three thicknesses of glass. The middle section, or core, is of plate glass nearly 1/16 of an inch thick. The two outer parts are 1/8 inch thick. Between the core and the outer sheets are imposed pieces of transparent pyroxylin sheeting 2/100 inch thick.



Stained with Cabot's Creosote Stain
C. M. Hart, Architect, Bay Shore, N. Y.

Stained Shingles

The Warmest, Most Artistic and Most Economical of all House Finishes

Wood shingles are two or three times warmer than the gumed paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft, moss-greens, bungalow-browns, tile-reds and silver-grays of

Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them with best results at least expense.

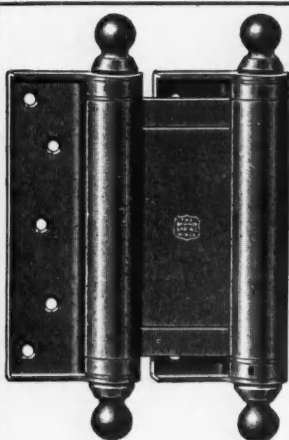
Cabot's "Quilt"

makes floors and partitions sound-proof by breaking up the sound-waves and absorbing them. It makes walls and roof cold- and heat-proof by a cushion of minute dead air spaces that prevents the conduction of heat. From 28 to 50 times as efficient as cheap building paper.

You can get Cabot goods all over the country
Write for samples and name of nearest agent.

SAMUEL CABOT, Inc.

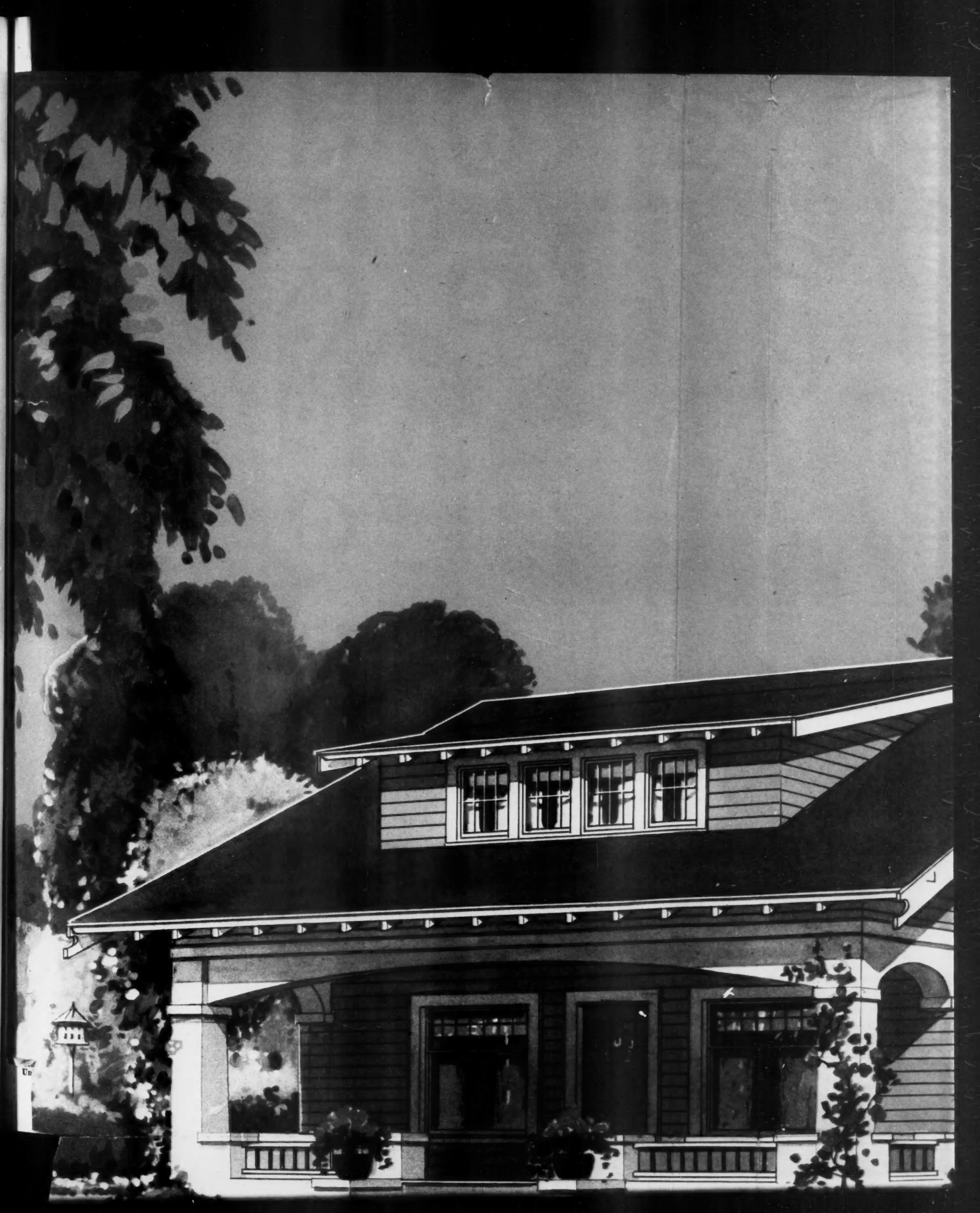
Manufacturing Chemists BOSTON, MASS.
1133 Broadway, New York 24 W. Kinzie St., Chicago
Cabot's Brick Stains, Stucco Stains, Conserve Wood Preservatives, Damp-proofing, etc.

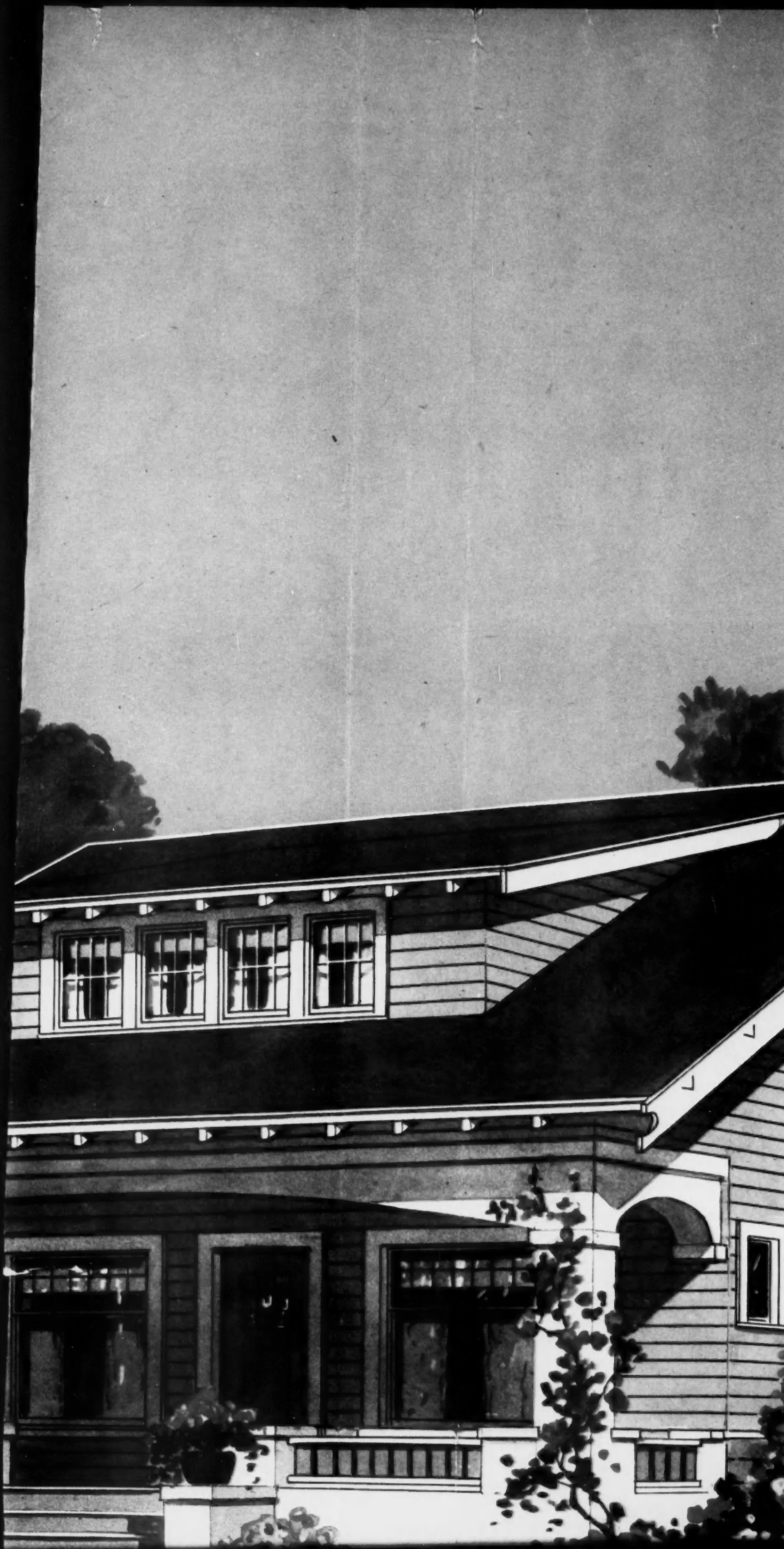


BOMMER SPRING HINGES

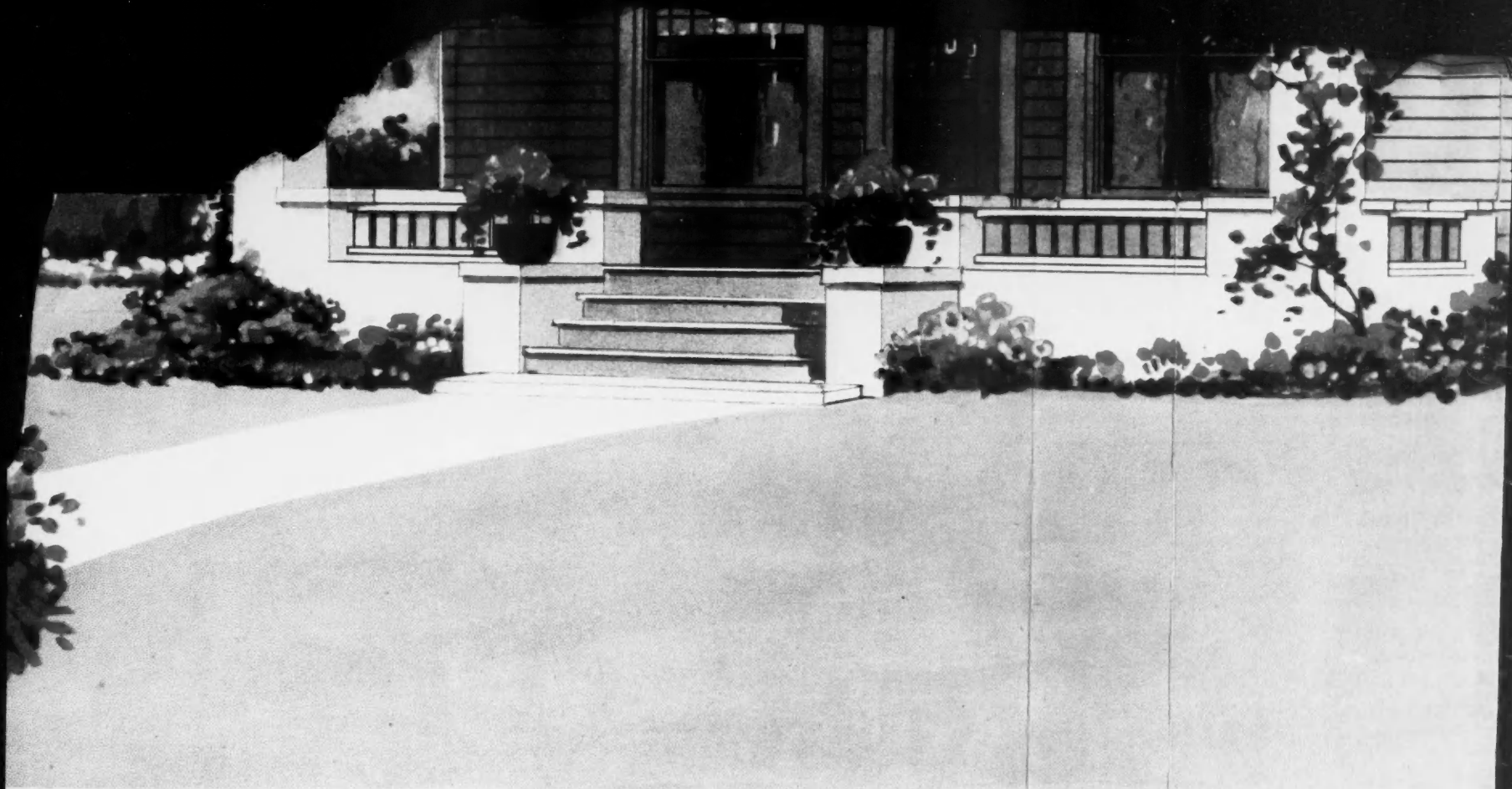
Standard for over 45 years, and steadily improved, retaining superiority over all others. In universal demand. Easiest to apply.

BOMMER SPRING HINGE COMPANY MANUFACTURERS,
BROOKLYN, N. Y.









AMERICAN BUILDER

CHICAGO

Art Insert for June, 1921—Showing a Seven-Room Bungalow

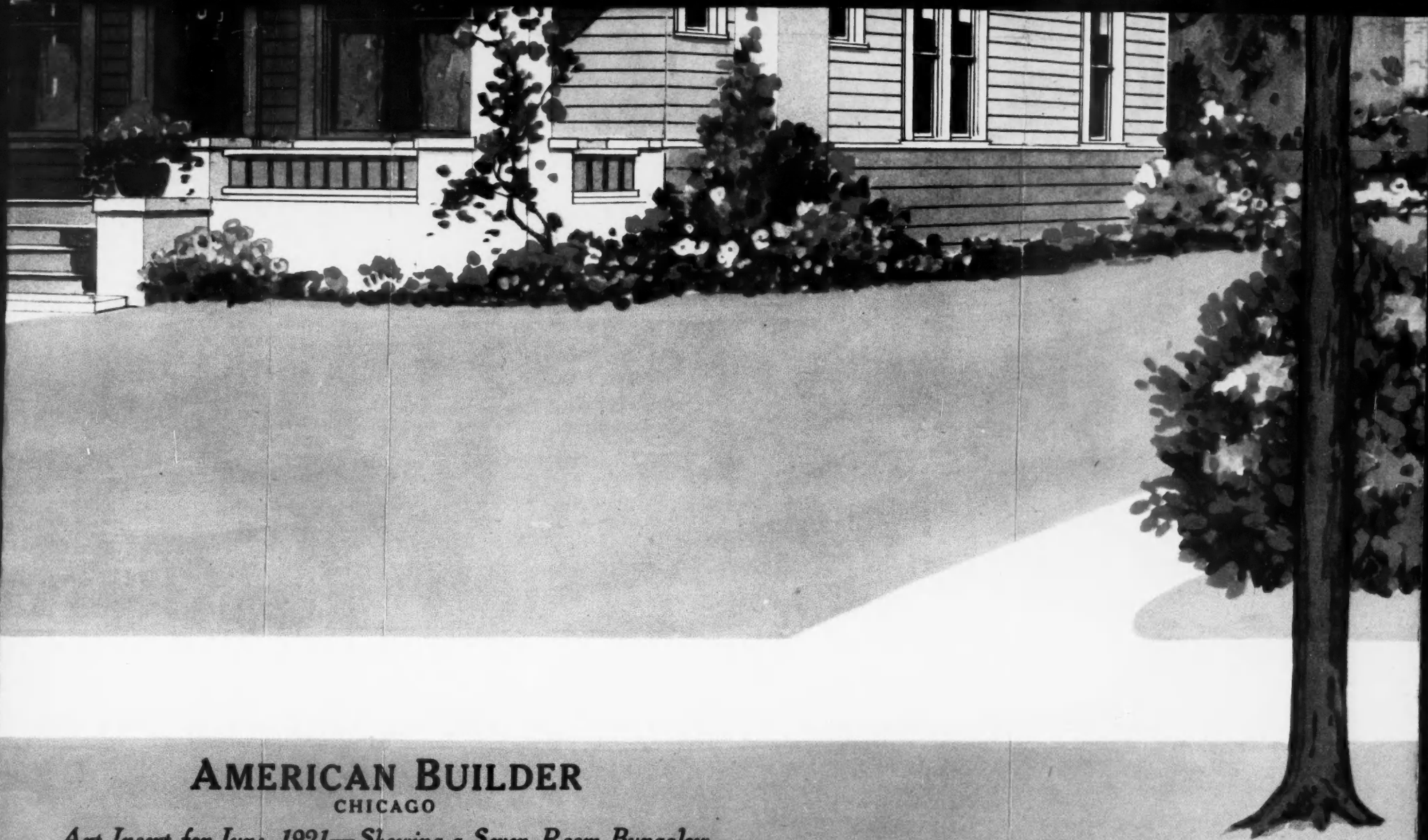
The Planning, Building, Equipping and Furnishing of this modern home is fully described in this issue. It is a homey place, artistic in line and very compact and practical in arrangement. The over-all

dimensions are 28 by 33 feet plus a front porch across the front. The house contains a living room, dining room, breakfast room, kitchen, and one bedroom on the first floor and three bedrooms and bath up

Home Number Four, "Street of Beautiful Homes"

Panorama Patented

MORE HOMES—BETTER HOMES—THRIFT—PROSPERITY—CONTENT



AMERICAN BUILDER

CHICAGO

Art Insert for June, 1921—Showing a Seven-Room Bungalow

The Planning, Building, Equipping and Furnishing of this modern home is fully described in this issue. It is a homey place, artistic in line and very compact and practical in arrangement. The over-all

dimensions are 28 by 33 feet plus the eight-foot porch across the front. There are living room, dining room, breakfast room, kitchen, and one bedroom on the first-floor, and three bedrooms and bath upstairs.

MORE HOMES—BETTER HOMES—THRIFT—PROSPERITY—CONTENTMENT

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