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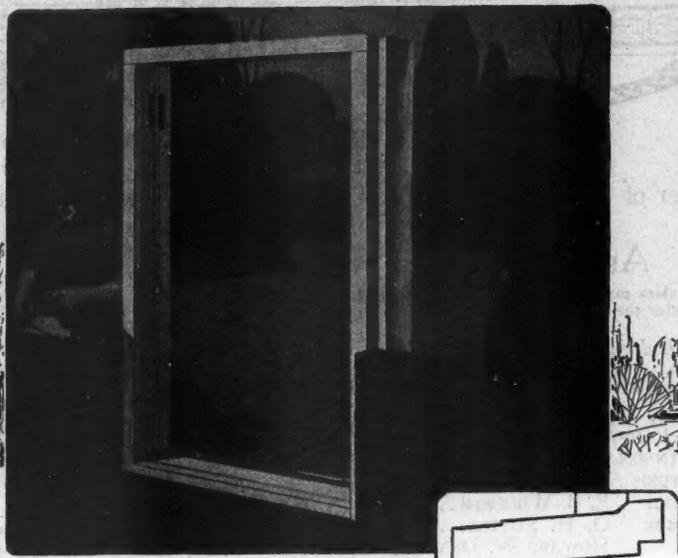
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AN INVITATION TO YOU

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

We have interesting booklets for
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Testing Skyscraper Materials

Strength of Materials and Determination of Load the Building Will Have to Bear Is No Small Part of the Designer's Problem

By W. J. LYNCH

Vice-President, Thompson-Starrett Co.

BUILDING for safety is one of the problems of skyscraper construction. To build a modern skyscraper means the overcoming of many obstacles, the offsetting of possible effects of wind, snow, flood, earthquake and the pressure of great weight. As in other fields of progress, the factor of safety is of prime importance.

The question of safety and durability of skyscraper construction is an absorbing one. To the corporation official the question holds important economic considerations—for instance, he may ask himself:

- (a) Am I receiving standard material?
- (b) Am I paying the best market price for the standard required?
- (c) What assurance have I that materials will outlast the rentable or usable life of the structure?
- (d) Would the work of independent testing engineers guarantee safety and durability?

Within the year 1924, a number of notable skyscrapers will be completed and perhaps one of the most significant of all those now under construction or to be completed this year is the 32-story Straus Building, the new home of S. W. Straus & Co., Chicago. This structure particularly represents the acme of construction, for few buildings have been better built, according to contractors and engineers.

Rising to the height of 475 feet, the Straus Building will dominate Michigan avenue. Its massiveness and beauty will lend future distinction to Chicago's impressive skyline.

The owners of this towering office building have enlisted the aid of leading architectural engineers so that the building will have every possible safety provision.

As in the case of other great projects, the question of safety and stability is paramount. Because of the knowledge gained by the building profession from scientific tests, the public is not so much concerned about safety as in the days when Robert Fulton first experimented with his steamboat, the Clermont, on the waters of the Hudson. It was then the opinion that rapid transportation would be impossible because of safety consideration. Yet today the country has twenty hour transportation between New York and Chicago and

the question of safety is taken as an accepted fact.

This changed attitude on the part of the public is probably due to several causes. However, this changed attitude is no cause for lessening the safety provisions. Dangers and risks must constantly be combated and perhaps in no place more so than in the erection of a great modern skyscraper. Through long practical experience and innumerable scientific tests, builders have been able to overcome such dangers or agents of destruction as fire, rust, wind, snow, flood and live and dead loads. So thoroughly have these difficulties been hedged against, that a great skyscraper today would likely last several thousand years under any use to which it would ordinarily be placed.

First, let us consider the question of fire, one of the most destructive forces known to man. In building



The Straus Building, Michigan Boulevard, Chicago. Graham Anderson, Probst & White, architects; Thompson-Starrett Company, builders. This is one of the progress photographs taken each week as a record of the building's development.

a large structure, men do not want to use materials which have little chance in a fire. But these things which are ordinarily regarded as proof against fire, are, under test, not so sound as may be expected.

Steel was first used for building construction in Germany. Builders thought that a solution of the fire protection problem had been reached. Regulations were passed requiring steel instead of wood construction. But a steel building filled with highly combustible material caught fire and collapsed to the ground. What was the trouble? It had been assumed the steel would not lose its hardness under conditions of fire exposure. Such was not the case.

In this country fire prevention has been placed on a scientific basis and prior to the construction of a building it is known exactly what a certain kind of material will stand.

In one test conducted at the Underwriters' Laboratories in Chicago a steel column under pressure was submitted to a fire test. The steel column gave way in twelve minutes, while a 12 by 12 wooden column stood the lashing flames for more than an hour.

The reason for this extraordinary happening is that wood is not a good conductor of heat and in consequence the flames must raise successive layers of wood to the burning or kindling point. In the case of steel, which is a very good conductor of heat, the transmission of heat is so rapid that the steel quickly reaches its softening point. Through experiment, however, it has been found that if the steel columns such as used in the Straus Building, are surrounded by concrete or

other material of low heat conductivity and so retard the passage of heat, fire has practically no chance of breaking down the member.

Rust is a malady of steel. Steel and iron absorb oxygen from the air, thus bringing about the process of oxidation. In common rather than technical language, rust is formed, which, of course, gradually wears away iron or steel. In studying the effect of rust, it has been found through tests that with proper protection from air contact, steel construction remains unchanged.

By way of explanation it may be noted that the rust flakes formed by oxidation would not in themselves be dangerous if they formed an air tight coating, but if the flakes were chipped off, and the process of oxidation continues, the steel would continually be cut away.

One of the country's leading consulting engineers told of an interesting case the other day. He was called into consultation in which plans were to be made for the remodeling of a skyscraper which housed an athletic club. The steel columns in the room in which the swimming pool was located, were badly rusted away because they were not protected from the air and splashing water, and they had to be reinforced.

Another ever present danger is flood. This is usually combated in advance through the installation of an exceptionally efficient pumping service which would, in case the basements were flooded by the breaking of sewer or water pipes be able to force out the water faster than it would come into the building. The



One of the 68-Ton Girders, 55 Feet Long and $11\frac{1}{2}$ Feet High, That Carry the Weight of All of the Stories Above the Sixth Floor, Including the Weight of the Ten-Story Tower in the Straus Building. This girder, with its companion of like dimensions, makes possible the elimination of two columns.

foundation of a building, especially one with its caissons or wells going down to bedrock, such as is the case with the caissons in the Straus Building, can withstand the effect of flood because of proper engineering equipment.

The danger of wind exerting a pronounced pressure against the tall office building is recognized by engineers. And in constructing steel skyscrapers against any wind contingency, the same precautions are exercised that are used in protecting buildings against earthquakes. Earthquakes and wind both exert a lateral pressure against the building. The tendency here is to push the building over; there is this difference: the wind exerts a pressure against the face of the building, while the earthquake strikes the building below the ground. The protection against both of these contingencies is practically the same except that in an earthquake section the protection must necessarily be such as to withstand a more severe strain.

The recent Japanese earthquakes have proved the sufficiency of American skyscraper construction. The Japanese buildings of recent American design withstood the severe earth tremors and are standing today while Japanese designed buildings are lying in ruins.

To protect a building against lateral shock, columns are placed in straight lines in each direction so that at every panel there will be a maximum number of resistance points. Both columns and girders are latticed or have solid web plates. Diagonal knee braces are used at points where columns and girders join, especially on the outside of the building where the wind at times strikes with a velocity of 100 miles an hour. Such protection offsets entirely the effect of high wind.

Of all tests, those devised to determine accurately the loads which a building will stand, are perhaps most interesting. Inasmuch as steel, concrete and tile are the materials used principally as supporting members, tests for these products are selected for mention.

Steel undergoes two principal tests, chemical and physical, and the analysis of each batch or melt of steel is made by the manufacturer to determine the percentages of carbon, phosphorus, manganese, sulphur and silicon.

This analysis is made from a test ingot, taken during the pouring of the melt. Chemical composition thus determined is reported to the purchaser or his representative, and so must conform to the requirements of specifications.

In large skyscrapers it is of great importance to have steel columns of

such strength that they will not buckle or bend. To determine the yielding point of a steel column or girder, special testing machines of enormous capacity are used.

At the University of Illinois tests have been carried on to determine the strength of webs in I-beams and girders. The tests were made possible through the use of vertical screw testing machines of 200,000 and 600,000 pounds per square inch capacity. These huge steel giants exert enormous pressure, finally causing the members to buckle. In spite of the size of these machines, and their seeming massive crudeness, they are as delicately adjusted as a watch. When the steel member begins to give way in the test the exact yielding strength is indicated and recorded, giving engineers facts for determining the specifications for building operations.

A test piece is taken from each sheet rolled for the purpose of stretching, elongation and bending tests.

These tests are much more severe than any actual test the members would receive in building construction. Structural steel is specified to break at a load of 60,000 or 70,000 pounds to the square inch, although standard specifications provide that the actual load will never be more than 16,000 or 17,000 pounds to the square inch. There is, therefore, a safety factor of 4-in. steel design; and a skyscraper is designed on that basis.

In erecting a large skyscraper, provision must be made in the columns and girders to carry the entire dead weight of the structure, in addition to any other load to which the building must be submitted, for example, the snow load.

Snowfall of a depth of 12 inches on the roof of a building with a surface area of 25,000 square feet would constitute what might seem to be in the public mind, a considerable weight. However, in reality the weight of snow is a very small factor indeed.

As has been noted, the live load to which a building is constantly submitted must be taken into consideration. By live load is meant the load created by the use to which the building is devoted. For example, a large office building frequently has a population of 2,500 to 4,000 occupants, in addition to the weight of regulation office equipment.

While the live load in actual figures is considerable in the aggregate when spread over the area of the entire building, it is a small factor indeed. Investigations have been made in a number of the largest office

(Continued to page 182.)



Screw Testing Machine at the University of Illinois. Capacity from 200,000 to 600,000 pounds per square inch.

ELKS TEMPLE, *Portland, Ore.* Example of Renaissance Design

WITH the completion of a new club building and temple, the Benevolent Order of Elks, of Portland, Oregon, are housed in quarters which will compare favorably with the quarters occupied by any similar body in the United States.

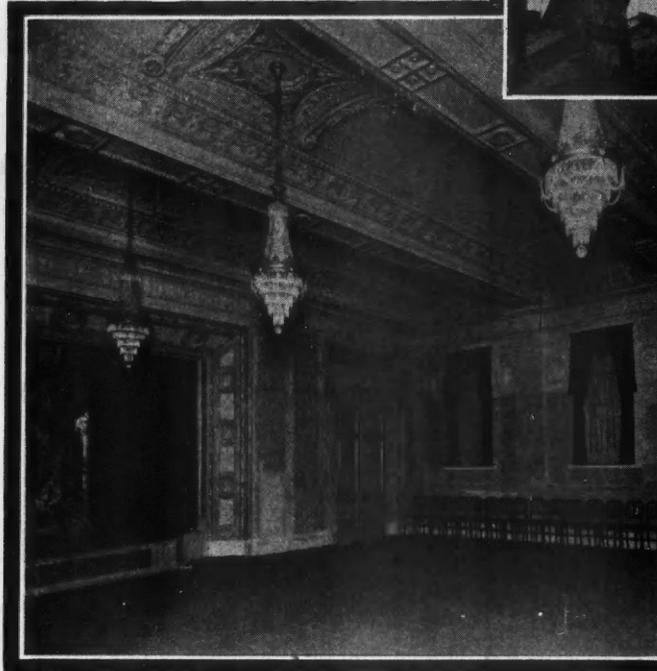
The five-story building, with a full basement, was designed by Houghtaling and Dougan, Architects. It is 100 by 150 feet and was erected at a total cost of \$1,090,000, or 55 cents a cubic foot.



The Elk's Clubhouse, Portland, Ore., Houghtaling & Dougan, Architects.



The Banquet Hall (Above) Is 28 by 84 Feet. The ceiling, 23 feet high, has lunettes formed by extending the windows.



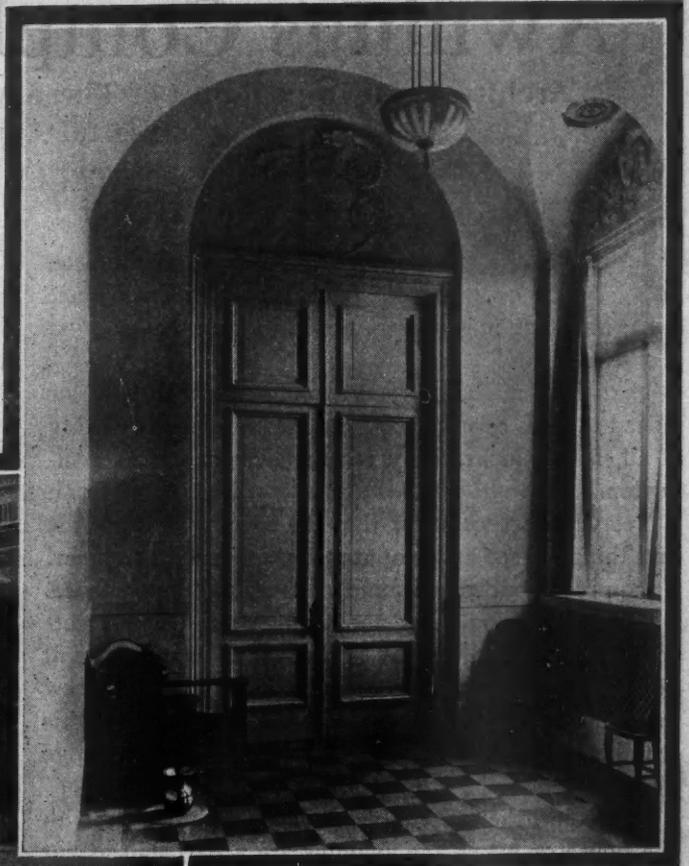
The Ballroom, Shown Above, Has a Total Area of 6,250 Square Feet. It is provided with a 45-foot stage and a complete motion picture outfit.

To the right is the entrance. Behind the columns are three massive bronze doors.



The ground floor is devoted to shops, all with an inside height of 25 feet, providing for a balcony in each one. In the basement are a swimming pool, 25 by 60 feet, a gymnasium, handball court, showers, steam room, barber shop, a bakery, refrigerator and the heating plant. A number of rooms for members are on the top two floors. These, with the shops on the first floor will contribute more than \$4,000 a month to the revenue of the building.

The building is designed after the Italian Renaissance school, and the exterior is finished in pinkish gray terra cotta. It is remarkable for the amount of marble and tile used in the interior finish.



A Detail of the Candidates' Room.



The Women's Room (Above) Is Finished in the Adams Style, One of the Few Deviations from the Renaissance Treatment.



The Lodge Hall (Above) Is 82 by 84 Feet, Unbroken by Pillars. A 72-foot stage is 20 inches above the floor level.



The library, at the left, is 40 feet square. Walls are of gumwood, with a marble base. The ceiling is of ornamental plaster.

Awnings Complete a Building

Architectural Importance of These Always Visible, Highly Useful and Ornamental Appurtenances

By ESTELLE H. RIES

THE season is again with us when, if ever, we think of awnings. We have, most of us, been raised on the assumption that all awnings are alike, and that in summer they are like "the poor"—always with us.

That there might be good awnings and bad ones, or indeed that an awning might possess any individuality at all, is a comparatively recent development in awningdom.

Yet when we consider that the awning is quite the first thing we see as we approach the house in summer, it acquires in our minds some of its rightful importance.

The dominating thing about an awning is undoubtedly its color, and the day is past when anything "will do." The particular house owner knows that the new art and the new science of color has invaded even this detail, and that it is indeed in detail that his knowledge lies revealed.

The color, then, should be in harmony not only with the house of which the awnings are a part, but as far as possible with adjacent buildings and exterior surroundings. Do not put red awnings next to a red brick house; green or buff are more suitable. Green and white stripes are cool looking for homes with little foliage around them. Red and white stripes are festive

looking and may be used advantageously where there is much foliage, to contrast pleasingly with the green, for it is a hot color and does not suggest shade even while providing it. The real white background for an awning is not so good as a faint gray, or buff, or light tone of the dominating color, for it suggests a newness that conflicts with the dignity of the house, making rather an excrescence instead of an integral part.

A pale color in the awning has not enough distinction to give character to the house. Physically, the awning reaches out to one. Psychologically it should also be attractive and striking, not weak. Fairly bright color is possible because not much of it is used.

Ugly, broad stripes of blatant color are no longer essential characteristics of the awning. If stripes are selected, they should scale in with the scale of the house. Narrow stripes for small houses, wider stripes for large windows. But popularity is increasing for awnings of solid color, with a border of contrasting color, or perhaps of the same color in deeper, more concentrated shade. This is dignified and practical for several reasons. It casts an even light inside the room, it fades evenly, and the color cannot "run" because there is nothing for it to "run" to.

The color of awnings must be selected with refer-



The Day Is Past When Awnings Were "Just Awnings." Now they are carefully chosen with relation to the style of the building they are to adorn and make more comfortable. Incidentally, these particular awnings "dress up" this home immensely.

ence to the color of the rooms they open from, and must not cast a new color upon them that changes or distorts the original scheme. This holds good chiefly for the formal room; and then only when something very striking in awnings is being considered. Neutral tones are always safe, if one wants safety, but the awning offers a peculiar opportunity for bright color if it is sparsely used and judiciously selected to conform with the spirit of the surroundings. Few features of the house have better chance to add to the note of refinement than the awnings, just because they are so conspicuous.

It is quite unnecessary to hang awnings if there are shutters present. It is also unnecessary to hang them at such sides of the house as are not exposed to the sun. Further yet, it is not compulsory to select the same type of awning throughout the house, if window conditions are not identical.

For instance, hooded awnings facilitate ventilation and are particularly desirable for bedroom windows when one wants all the night breezes one can get. In this type of awning, the top of the awning is placed several inches below the top of the window. This is done with the object of removing any obstruction to a thorough circulation of air in the interior. A hood is employed in covering the space left open at the top of the window. In form and construction, this hood resembles a miniature awning, having a drop and extension of about twelve inches. It is attached high above the window opening so that it may at night be raised completely out of the way.

Other types with swinging ventilator may be had so arranged that the topmost edge swings out on a



Roller Awnings Operate Like a Window Shade. The illustration shows a modification of the roller type, a cross-bar keeping the upper portion flat against the window.

hinge about five inches from the top.

Casement windows require an awning with an additional rod to support the roof of the awning so that the window sash may swing out freely and without injury to the awning.

A single unit awning over a group of windows is good if the windows are in the same plane and the exposure is identical. This saves time and effort in making it necessary only to move one awning instead of several. If, however, one is providing awnings for bay windows where there are three different exposures, individual awnings for each window will be more satisfactory, as you will want the sun excluded from one while the light and air from another may be freely admitted.

Spring roller awnings are also available. These are without canvas at the sides, operating much like the ordinary window shade. Its advantages are neat appearance and easy manipulation. Since the sun's rays change position constantly, however, and spring roller awnings protect only the front, they are not adequate if one requires real sun exclusion. A modification of this type has a cross-bar about half way up the sides, keeping the portion above it flat against the window and eliminating the fault of the long unprotected triangle through which the oblique sun can enter.

These varied types satisfy most of the ordinary requirements in awnings, and if wisely selected, contribute largely to the comfort of the summer home.



Protecting Blue Prints

TO keep the edges of blue prints from being festooned with ragged ruffles, stick a ribbon of adhesive tape around the edges of each sheet. For ordinary purposes, if the ribbon is stuck on the under side of the sheet it will give the necessary results. If, however, the plans will be subjected to rather rough usage, a wide ribbon should be used and folded over the edge.



Not Only for the Windows. Awnings add to the comfort and liveableness of the porch. Neutral tones are safest but the gaily striped awning lends bright color where there is desired needed contrast.

Distinctive Cinder Block Home

Characteristic Features of Bungalow Construction Are Adapted to Needs of Large Home Built in Pennsylvania

By A. J. R. CURTIS

THE recently completed residence of Mr. Grove Locher, at Neffsville, near Lancaster, Pa., is so distinctive in design and construction as to interest almost everyone seeking good ideas even at the expense of a trip somewhat off the beaten path.

A glance at the front elevation indicates the long low lines of the structure, which is essentially a large bungalow in character. The formally treated terrace, the general structural details, and finally a large enclosed terrace or patio, all contribute to the prevailing Spanish atmosphere. The architect is Mr. Henry Boettcher, of Lancaster.

The bearing walls are constructed entirely of concrete masonry, employing Straub cinder concrete blocks covered with portland cement stucco. All of the masonry walls above grade are 8 inches thick except where brought out to a greater thickness for merely architectural effect. Walls below grade are of similar construction, 12 inches in thickness, plastered inside and out with 1:2 portland cement mortar. Soldier courses and sills of red face brick add pleasing contrast to all exterior surfaces.

Following the successful application of plaster di-

rectly to the inside surface of cinder concrete block walls in numerous other cases in the same locality, plaster was applied directly to the block walls of the Locher residence, with entire satisfaction. From this it must not be inferred that similar methods should be followed with ordinary sand aggregate concrete block unless long experience has demonstrated that plaster may be safely applied directly to brick, tile, stone and concrete block in the particular locality. The first floor is of concrete construction covered with artistic dark colored Dutch floor tile and large square tile slabs, selected for appropriate use in the principal living rooms, bathrooms and halls.

Principal interior partitions are of cinder concrete block, and other of the usual studded construction. The roof is of distinctive red tile of the French style of concrete, placed on a heavy timber frame, flashed with zinc and guttered with copper. A. C. Sheetz, of Lancaster, was the builder and the Lancaster Concrete Tile Company supplied the concrete structural and roofing products.

Inspection of the front terrace and lawns reveals the development of a beautiful formal area surrounded



The Living Room of the Locher Home at Neffsville, Pa., Showing the Treatment of the Fireplace and Entries to the Conservatory Just Beyond. The first door at the right opens into the dining room. Notice the pleasing appearance of the Dutch tile floor.

by low retaining walls. The terrace is approximately 35 feet by 30 feet in dimensions, paved with a 6-inch slab of concrete inlaid with square terra cotta floor tile. It is raised two low steps above the sidewalk in order to add atmosphere and to give a certain amount of privacy. Since accompanying illustrations were taken soon after completion, to show the building as completely as possible, no idea can be gotten of the beautiful decorative effect to be obtained from recent landscapings.

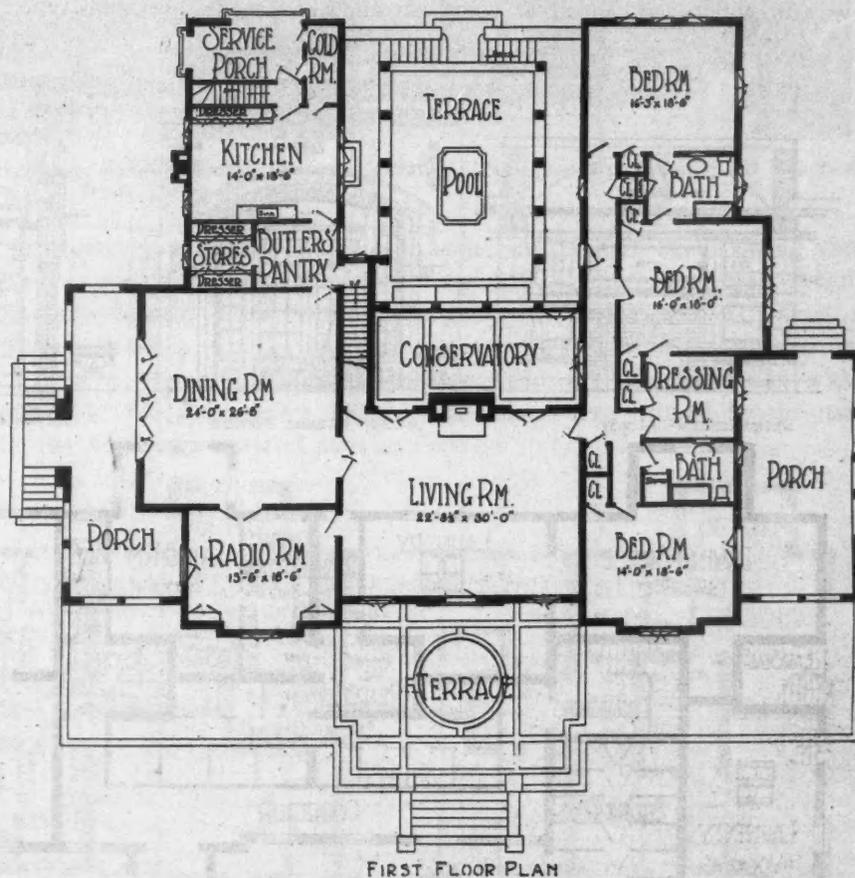
During the past few months there has been a general tendency toward the use of the patio, or small enclosed garden, in moderate sized and even small residences of Spanish and Italian adaptation, just as customary in the examples of pure Spanish and Italian architecture so frequently found in southern California. The patio of the Locher residence is one of its most delightful features—cloistered and shaded, easily accessible from sleeping rooms and reached directly from kitchen and serving room. As casual inspection will readily show, it is really an inexpensive although very much worth while adjunct in a residence of this kind.

The floor plan of the Locher home shows many features which will appeal to those looking for distinction and comfort. The kitchen and dining room are a unit of themselves and separated by the width of the large living room and terrace from the sleeping quarters.

The kitchen, with its service porch and ample storage space is a decidedly efficient unit and the charm of the dining room is increased by the

adjoining porch, which may be reached through French doors. The floor plan shows the delightful proportions of the living room and double French doors on either side of the fireplace lead into the conservatory.

The bedroom arrangement is particularly good. The dressing room and bath are accessible from both of the front rooms without disturbing the occupants of the other and a second bath is provided between the second and third bedrooms. Three bedrooms and a bath on the second floor are not illustrated here.



A Patio or Small Enclosed Garden Has Been Made Part of This Floor Plan. Three rooms and a bath on the second floor are not illustrated here.



The Residence of Mr. Grove Locher at Neffsville, Pa., Henry Goettcher, Lancaster, Pa., Architect; A. C. Sheetz, Builder. The picture was taken immediately after the completion of the home and before the landscaping was effective.

Central Lobby Apartment Feature

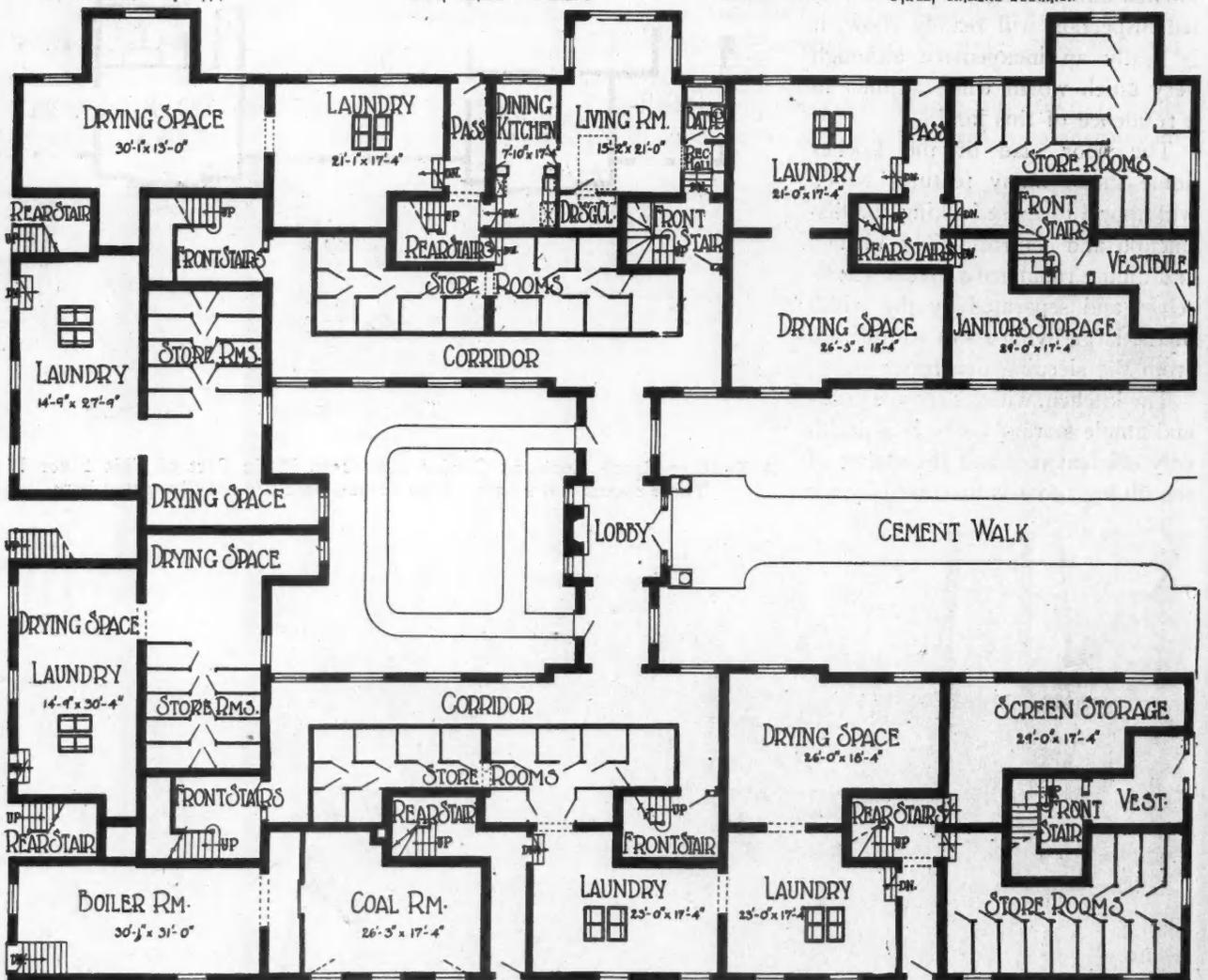
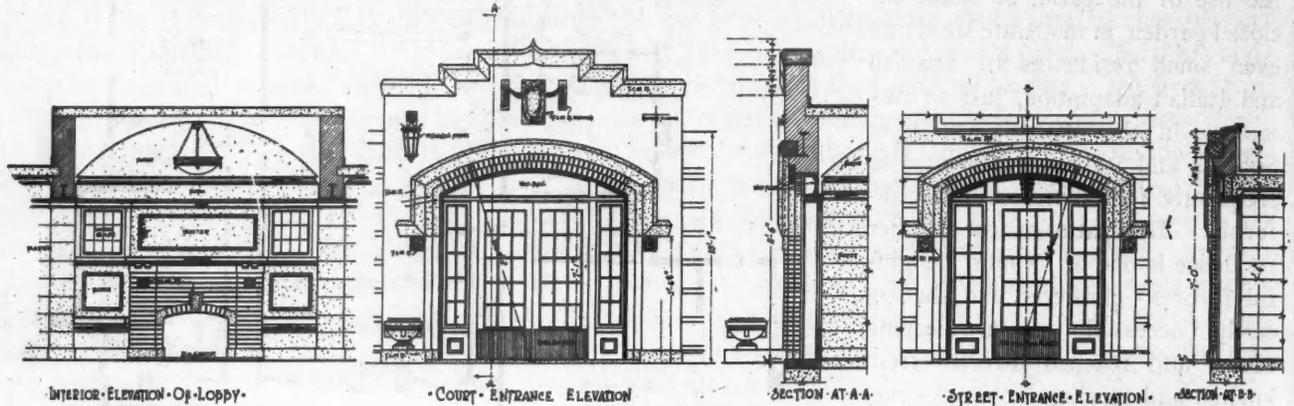
SOARING land values demand that the most economical use of space be a deciding factor in the designing of apartment buildings in large centers of population, and this was one of the determining factors in the planning of the Frederick Apartment, Sixty-seventh street and Clyde avenue, Chicago. The building was planned by John Hocke, Chicago architect, for John S. Smith, the owner and builder.

A novel feature of this structure is the efficient way in which the central or court entrance has been

made to serve for fifty-four of the sixty-seven apartments. By eliminating a number of entrances usual to such a building the architect has been able to make the central entrance more attractive without additional first cost and with a decided increase in effectiveness.

The entrance is to all intents and purposes a lobby of the hotel type. Through this entrance four stair halls to the various apartments may be reached.

The building is of the three-story and English basement type, with the exterior of pressed brick and



The Basement Plan of the Frederick Apartment, Sixty-seventh Street and Clyde Avenue, Chicago. Above are the court entrance details.



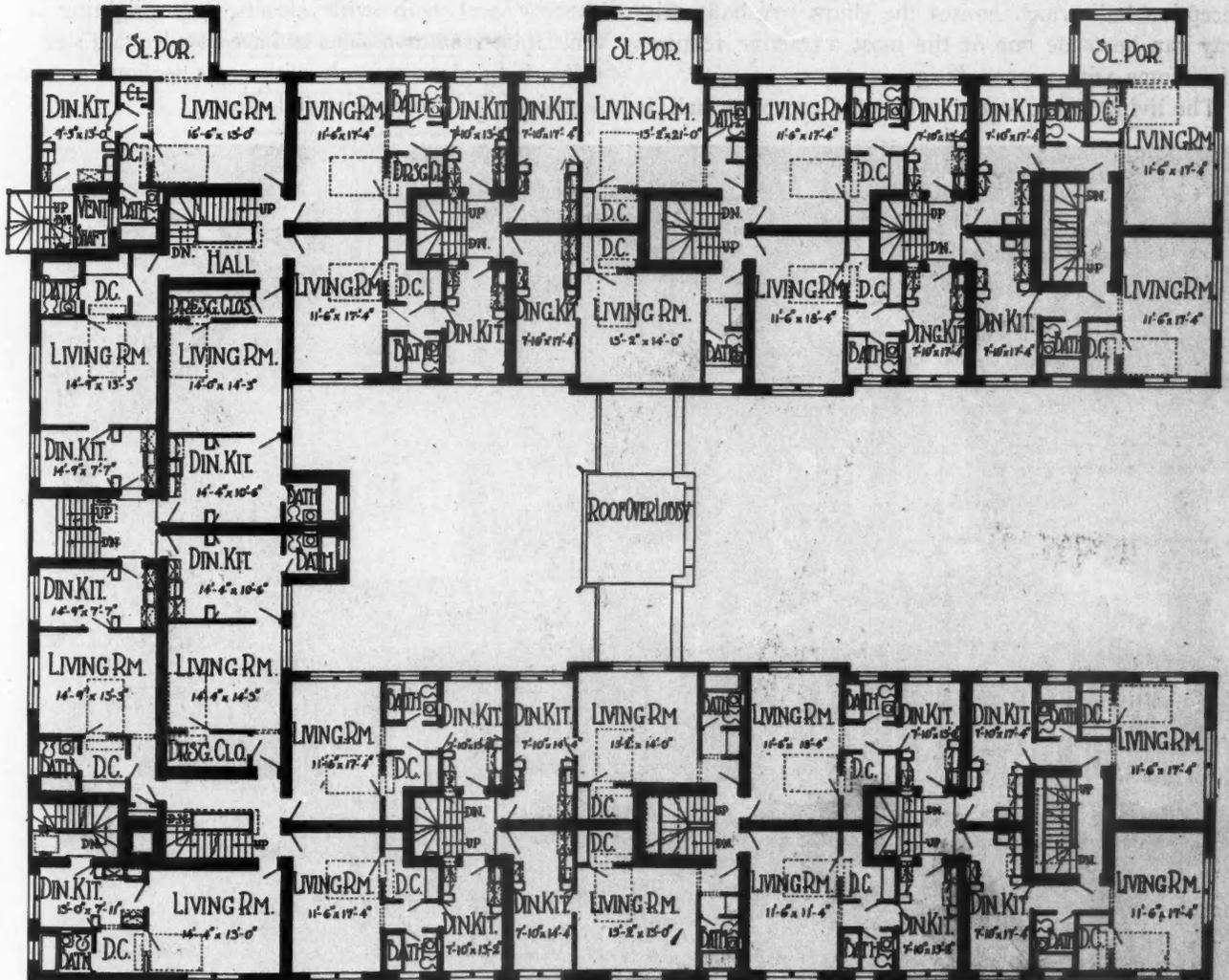
The Frederick Apartment, John Hocke, Architect; John S. Smith, Owner, Contains Sixty-seven Apartments, All Reached from Three Entrances.

stone. The apartments are equipped with disappearing beds. Nine of the apartments have sun parlors. The entrances, corridors and bathrooms are floored with tile and many of the latest conveniences are included in the equipment.

The apartments are rented for from \$65 to \$75 a month, depending on their position in the building,

while those with sun parlors and those facing the park rent for \$90 and \$100. The gross yearly rental is estimated at \$55,000, with expenses of \$15,000.

The fireproof floors in this apartment, required by the Chicago Building Code, are of hollow tile, with concrete joists. The joists were formed by the use of steel pans or forms.



The First Floor Plan of the Frederick Apartment. The court faces Jackson Park, one of Chicago's recreation centers.

OUR FRONT COVER HOME



Dutch Colonial Design Provides Residence of Substantial Beauty with Floor Plans which Insure Efficient Use of Space

HOMES of the Dutch Colonial type owe much of their popularity to the fact that their general shape allows a most efficient planning of the rooms in a home of moderated size.

This month's Front Cover Home offers six major rooms of unusually generous proportions and a sun parlor. The dimensions of the home, without considering the sun porch, are 38 by 24½ feet, which will go nicely on a corner. This design is one which is exceptionally attractive in a setting of trees, as shown in the illustration.

A glancé at the floor plans, on the opposite page, will show that the attractive entrance leads into a reception hall which houses the stairs. A hall stairway can be made one of the most attractive features of a home with proper design.

The living room, to the left of the reception hall, is

one of graceful proportions and well designed lighting. The location of the fireplace will make for attractive grouping of furniture and the doors to the sun parlor will add much additional space to the room when they are open.

The dining room is of adequate size, made larger by the recess provided for the buffet. The kitchen has a large, well-planned pantry. The lavatory on the first floor is a useful feature.

The large bedroom on the second floor, with its fireplace and the dressing and clothes closet in one end of the room, is one of the attractive features of the home. The two additional bedrooms, one with a lavatory and both with closets, have lighting and ventilation from two sides and are of adequate size.

Working plans to scale with cross sections are presented on the four pages following.



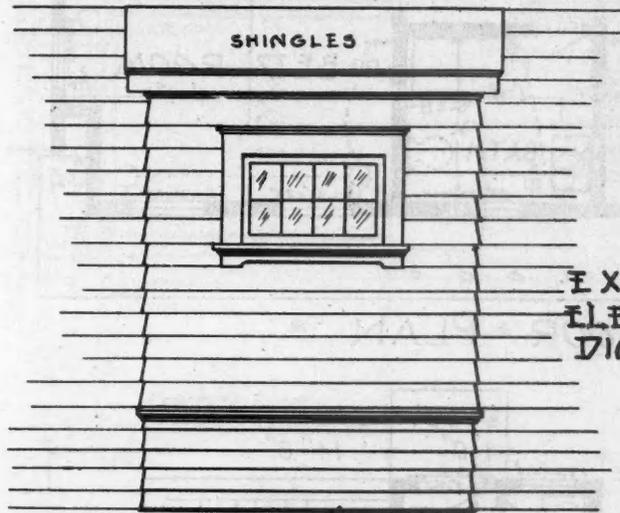
The Attractive Entrance, the Green Wood Shutters and the Placing of the Windows Are Features Which Combine to Make This Month's Front Cover Home Most Attractive. The wide clapboards used here are well adapted to the Dutch Colonial Design. The working drawings of this home are presented on the four following pages.

WORKING PLANS

OF

AMERICAN BUILDER FRONT COVER HOME

A COLONIAL RESIDENCE OF
SIX ROOMS AND SUN PARLOR



CUBICAL CONTENTS

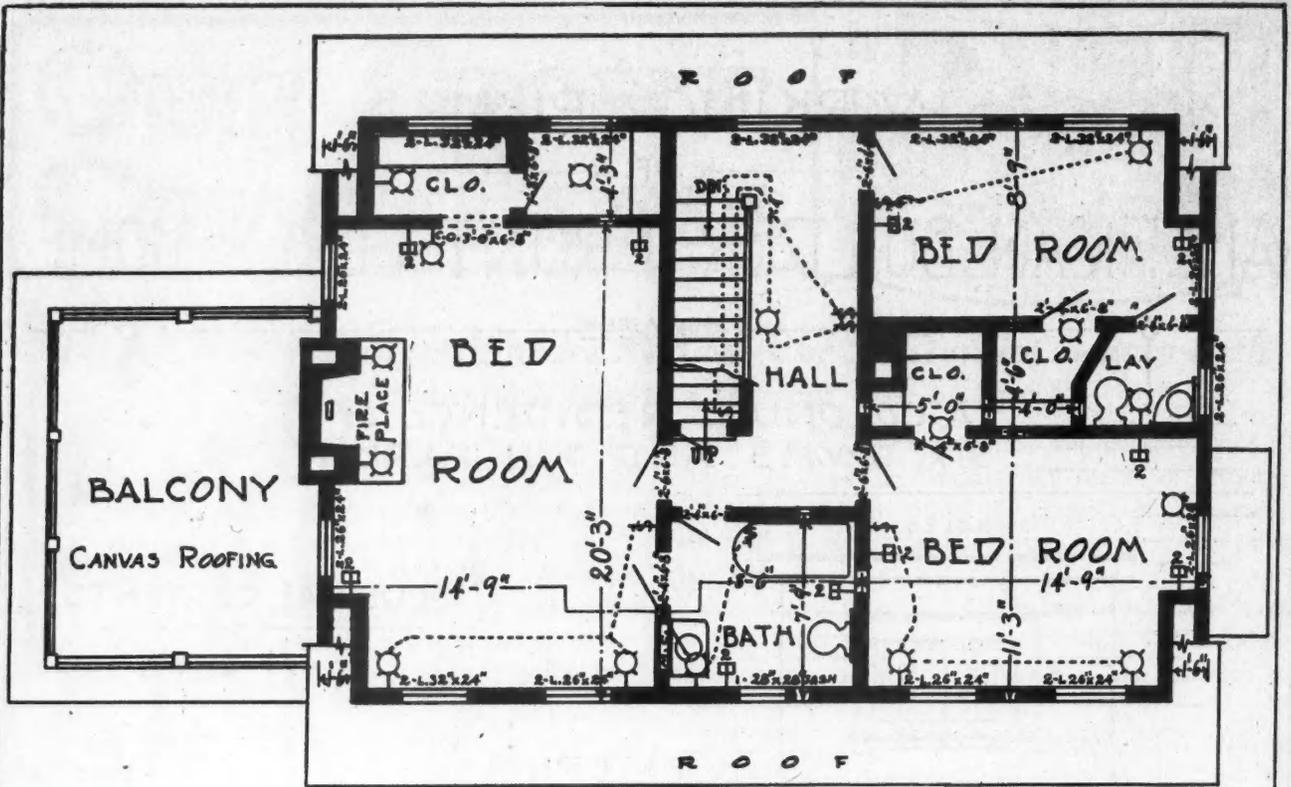
32,693 CU. FT.

EXTERIOR
ELEVATION OF
DINING ROOM BAY
SCALE $\frac{1}{4} = 1'-0"$

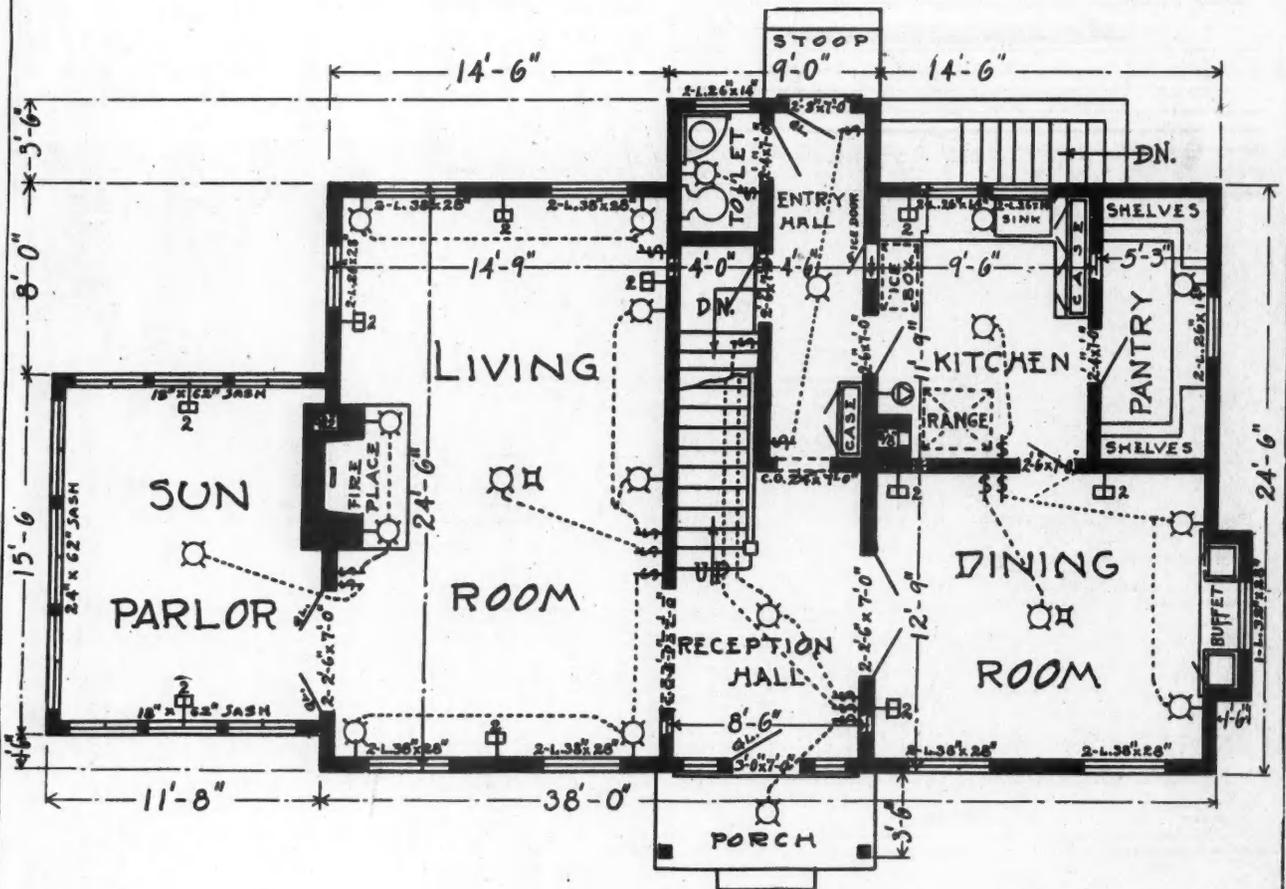


* FRONT * ELEVATION *
SCALE $\frac{1}{8} = 1'-0"$

Front Elevation and Exterior Elevation of Dining Room Bay of Our Front Cover Home. The relation of this bay to the room may be seen in the floor plan on the following page.

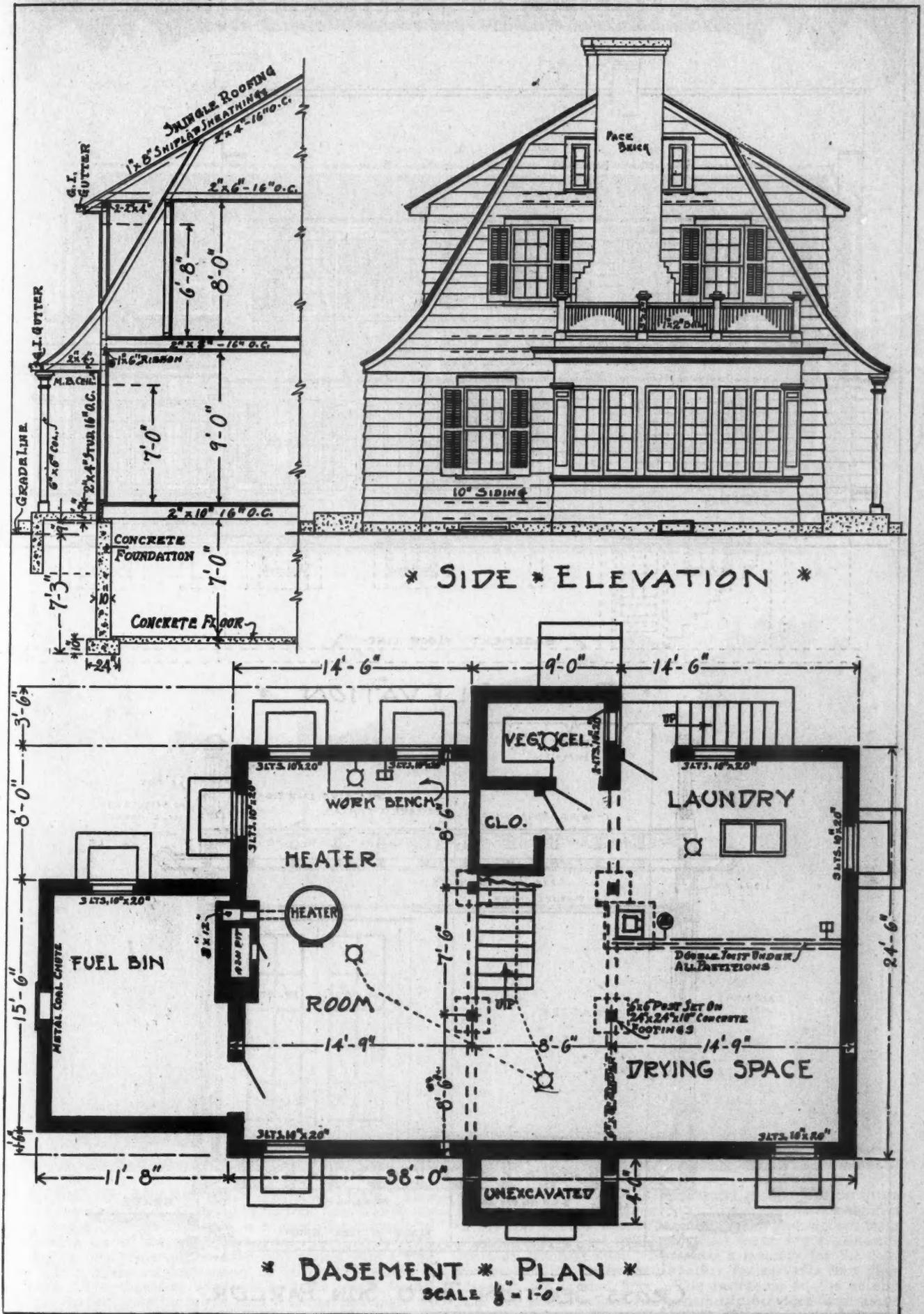


* SECOND * FLOOR * PLAN *

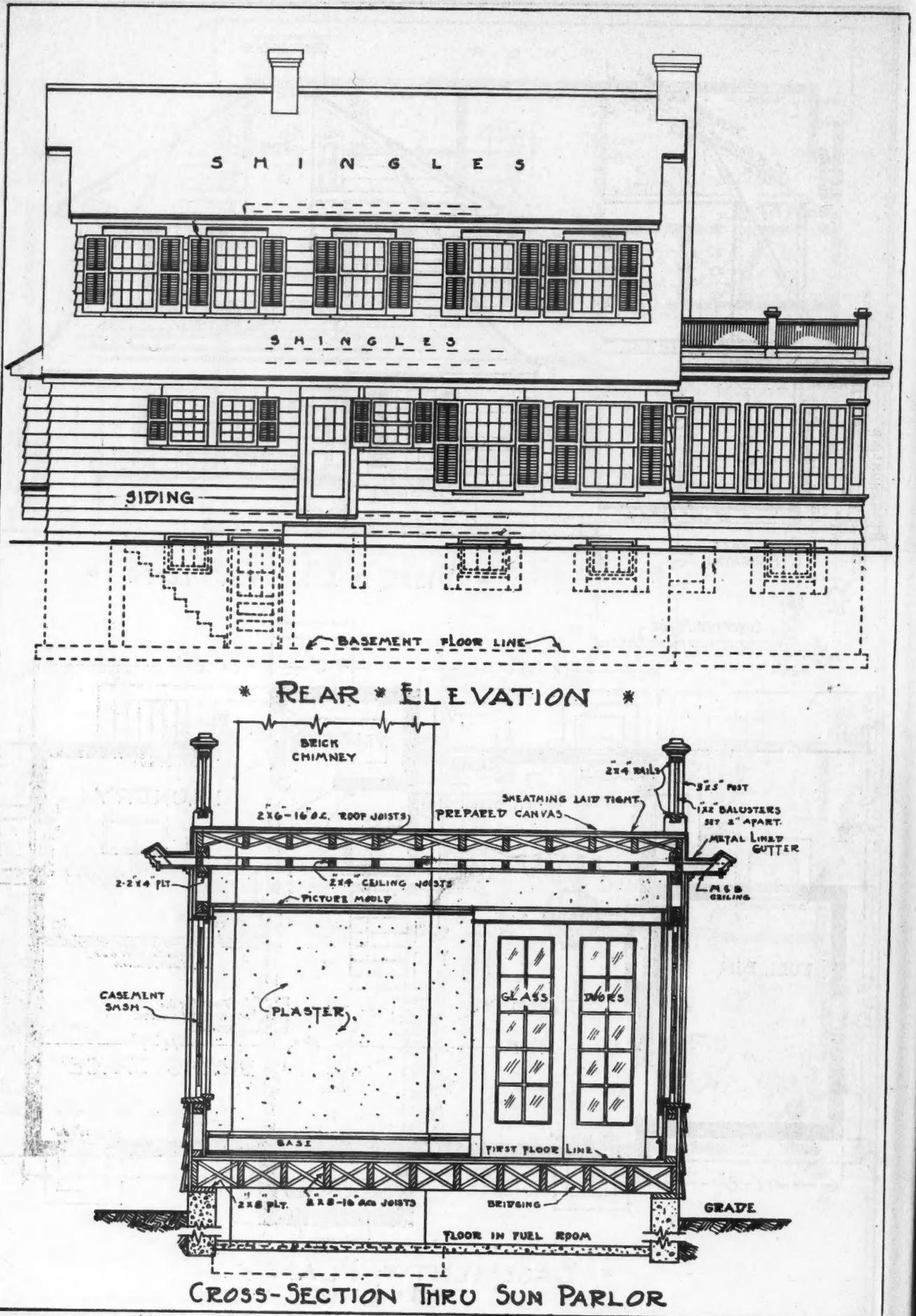


* FIRST * FLOOR * PLAN *
SCALE $\frac{1}{8}$ " = 1'-0"

The Spacious Living Room and Pleasant Reception Hall of the Front Cover Home Will Win Many Friends for the Plan. The floor plan of the basement is shown on the page opposite.

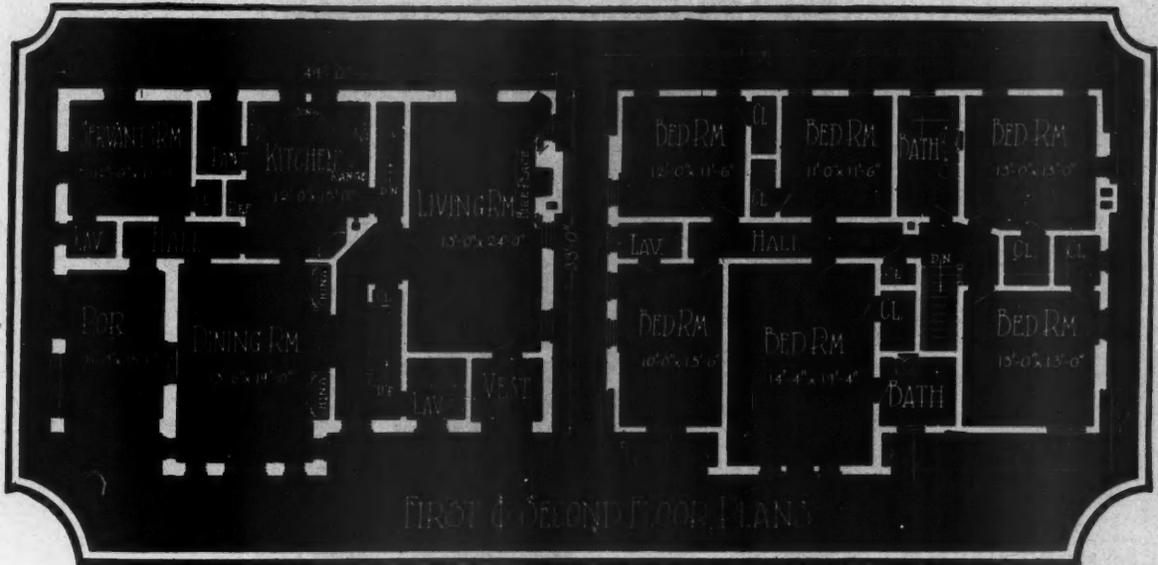


The Basement Plan and Side Elevation of the Front Cover Home, with a Cross Section Giving Many of the Framing and Construction Details. The relation of the basement to the length of the house may be seen in the drawings on the following page.



The Rear Elevation and a Cross Section Through the Sun Parlor of the Front Cover Home. Note the Efficiency of the placing of the windows and that provision is made for daylight lighting of the basement.

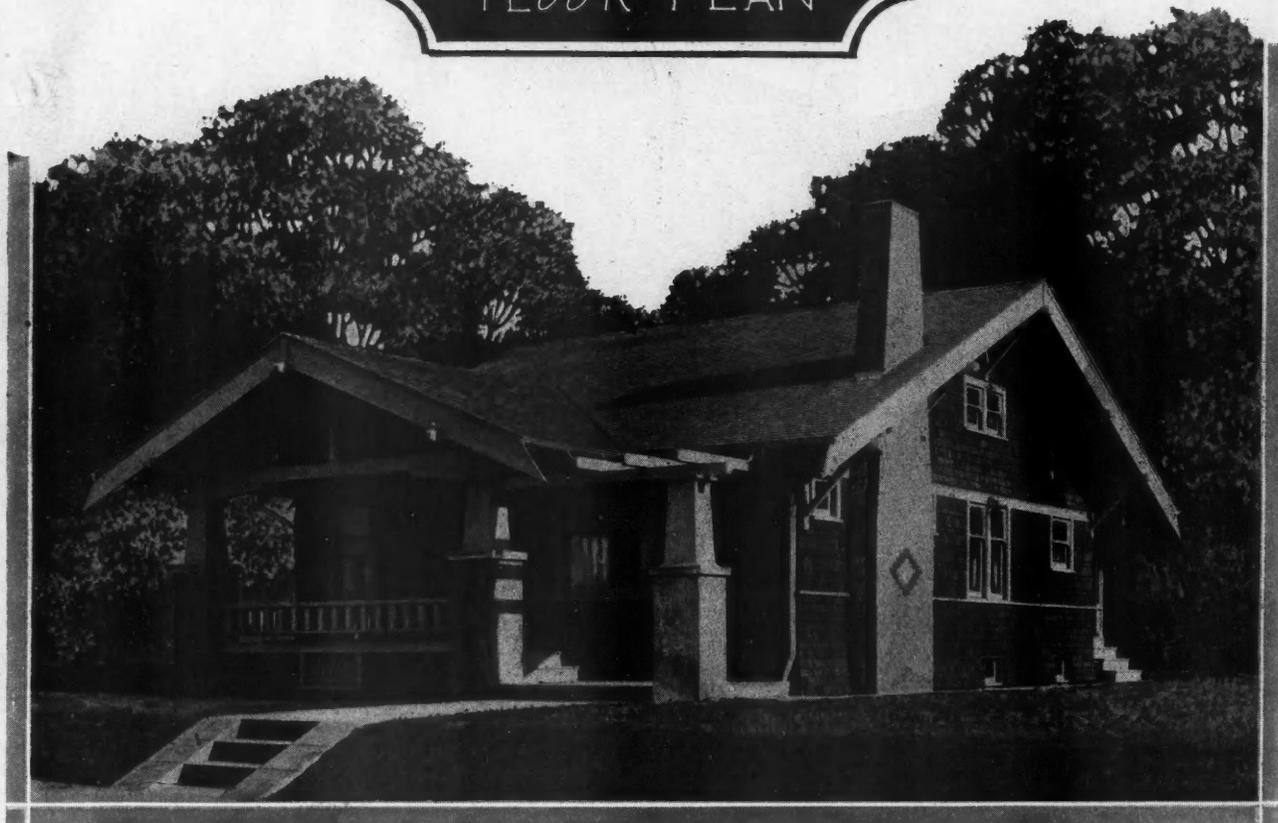
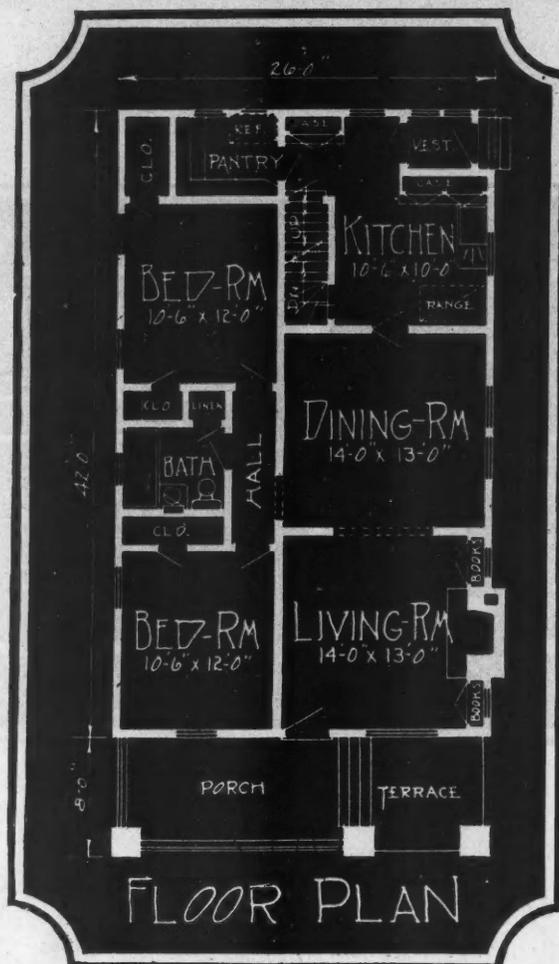
BLUE RIBBON HOMES



A HOME OF CHARM AND DISTINCTION. This ten-room residence, showing in its roof lines something of the English cottage influence, is a charming example of the pleasing use of stucco construction. The broad front, with the dormer projection, broken into panels with a timbered effect, gives an impression of hospitality which is delightful. The casement windows with the small, leaded diamond shaped panes of glass lend themselves readily to the decorative effects of the window boxes. The interior offers a living room of spaciousness, with a fireplace toward

one end of the room so that a natural grouping of furniture is possible about it without detracting from the possibilities of the rest of the room. The dining room and kitchen form a convenient group, with provision made for a servant's room on the first floor. Note that a lavatory for the convenience of the guests and another for servants find their place on the ground floor. The bedrooms on the second floor are well arranged and generously provided with baths and closet room. The width of 49 feet and depth of 33 feet demand a large lot for this home.

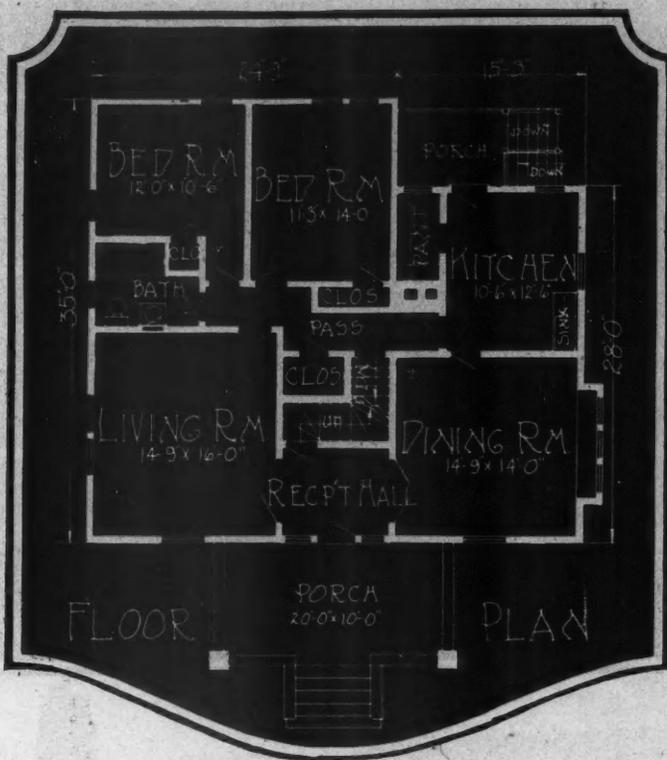
BLUE RIBBON HOMES



BUNGALOW FOR THE WEST AND SOUTH. Requires no deal of explanation to figure out the why and wherefore of this design. The deep overhanging eaves are to deflect high winds and create a maximum amount of shade, and suggest this as a design sure to be popular in sections where these conditions must be taken into account.

Observe how well the siding question has been settled with shingles, laid in varying patterns so as to avoid a monotonous effect. We would say that shingles stained dark green or brown would go well here, with the white of cornice and porch and window trim making a nice contrast.

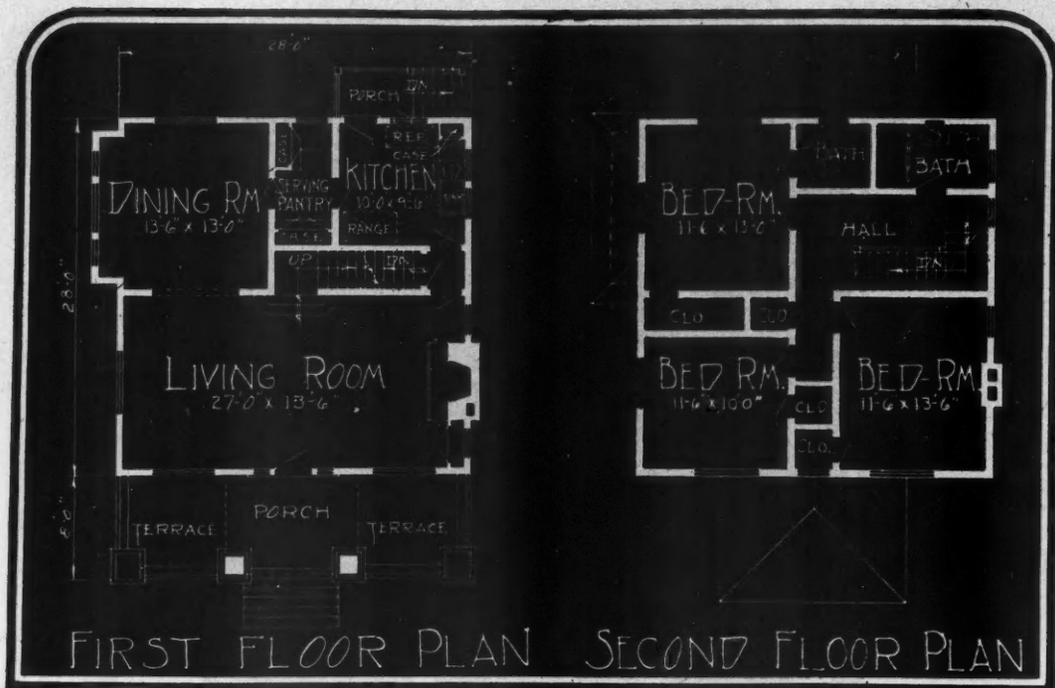
BLUE RIBBON HOMES



A DESIGN THAT WEARS WELL. Style in houses may come and may go, but like good clothes, a neat substantial house design always wears well. Now you take this place, for instance; it cannot classify as any particular period or type of architecture. It is just a good bungalow-styled home, built with the materials most available to hand, with the planning done rightly and the structural work done by carpenters and masons and plas-

terers and painters that knew their business. The combined result didn't bankrupt the owner, and the result is that we have a well-balanced structure which will have a permanent value and a resale value and investment value not always enjoyed by more ambitious places. There are five rooms, all well dimensioned, with the main entrance through a reception hall. Room upstairs for more bedrooms later. The over all dimensions are 40 feet by 35 feet.

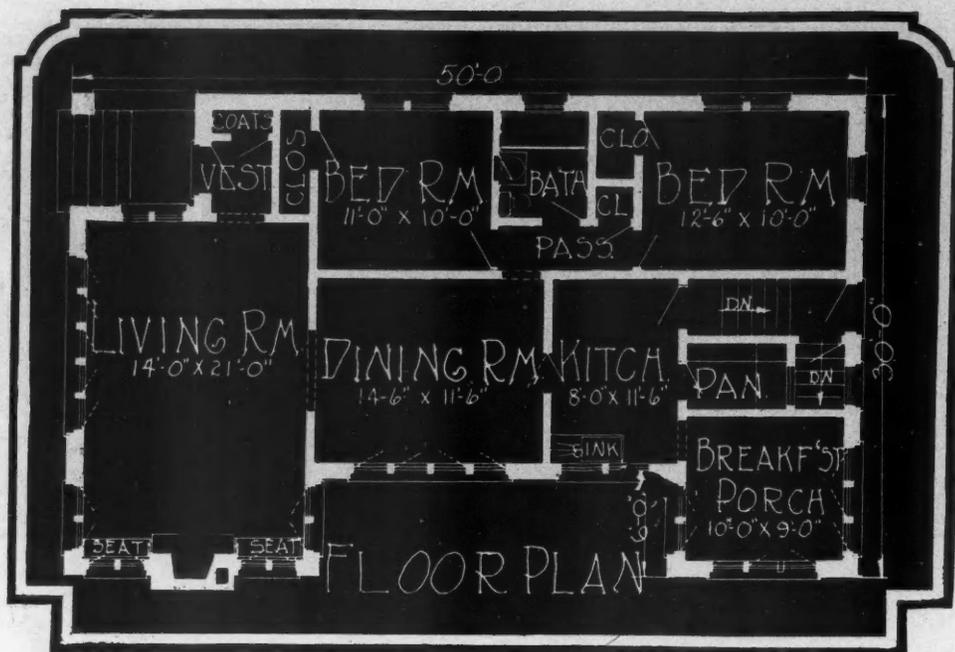
BLUE RIBBON HOMES



A PLEASING SQUARE HOUSE. The square home, long a favorite because of its economy of construction and the possibility of advantageous utilization of all of the available space, has here found an architect who has added to it lines of distinction which make it very attractive. The projecting roof, the interesting combination of the porch and the terrace and the broad windows obliterate the impression of height which made some of the older square houses ungainly. While very roomy the main body of the house is only 28 by 28 feet and it will fit very nicely on the ordinary lot, leaving room for a garage driveway.

The interior presents a large living room with a fireplace at one end and the stairway opposite the entrance. The dining room, relieved of squareness by the alcove, is lighted from two sides and connects with the kitchen through a serving pantry. The kitchen is arranged conveniently, with provision made for delivering ice from the back porch. Three bedrooms of adequate size, all with closets and windows on two sides are on the second floor. One of these chambers has a private bath while the other two are served with a bath in the hallway.

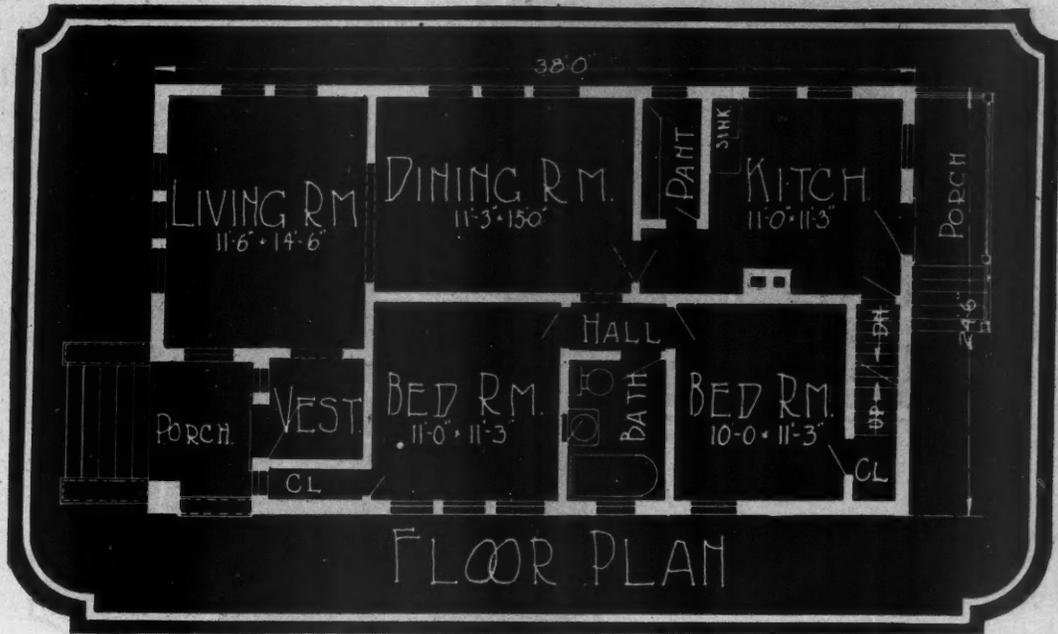
BLUE RIBBON HOMES



A HOME OF BRICK AND STUCCO. The timbered treatment of the stucco portion of this home, with the snubbed gables and the well-balanced use of windows are factors in the attractive exterior. Notice that the first floor is raised high enough to insure an adequate supply of daylight and ventilation for the basement of the home. Entrance is through a vestibule, which is equipped with a cloak closet, a feature which will be appreciated by those who know the value of a place where members of the family and guests may hang their wraps. The living room is made attractive by the fireplace, with its built-in seats and the

generous use of casement windows. Casement windows also are a feature of the dining room. The kitchen is kept conveniently small through the close proximity of the well-arranged pantry. The breakfast porch is inviting, with its casement windows which will bring to it all the delight of summer mornings. This room undoubtedly would prove to be the scene of much of the housewife's work. The bedroom group is well arranged with generous closet space. The width of the house, 30 feet permits its erection on the lot of usual size. The depth is 50 feet.

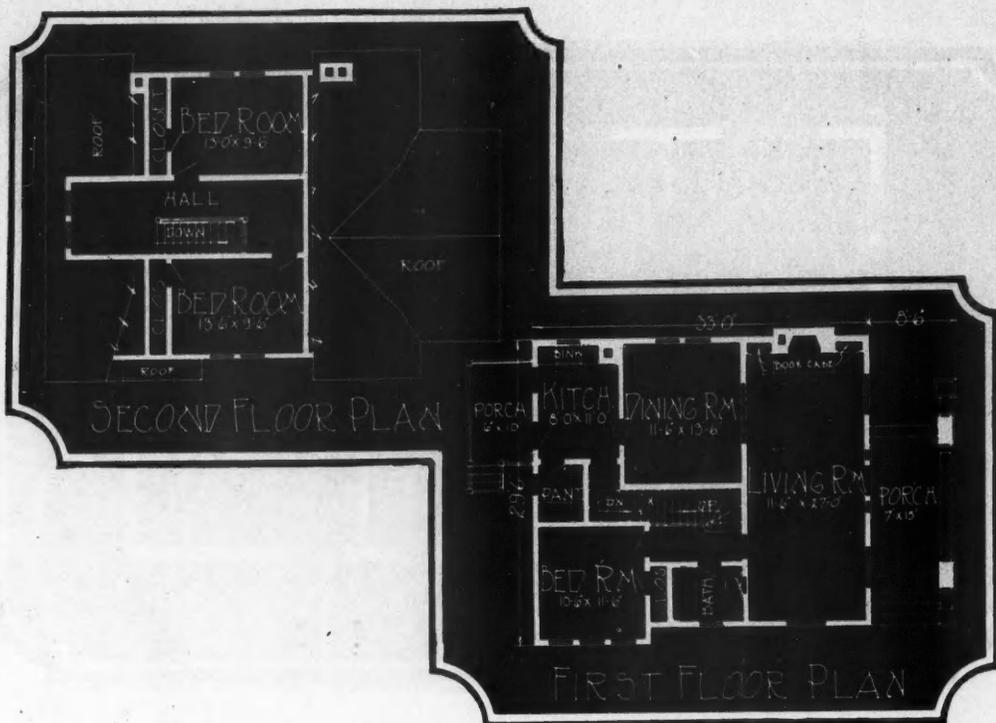
BLUE RIBBON HOMES



INVITING BUNGALOW IN UP-TO-DATE DESIGN.
 This is an excellent plan to use to make the most of the space limitations of a narrow lot. The low roof line and the massive treatment of the brick trimming of the stuccoed exterior combine with the front window and recessed porch archings to give a generous effect of broadness. There are five rooms and an entrance vestibule, whence access is

had to the living room, 11 feet 6 inches by 14 feet 6 inches, and with windows on three sides. Directly adjoining is the dining room, 11 feet 3 inches by 15 feet, with three windows and fine buffet space opposite. Intercepting the dining room and kitchen is a windowed pantry. The kitchen is 11 feet by 11 feet 3 inches. There are two bedrooms. Over all dimensions of the bungalow are 24 feet 6 inches.

BLUE RIBBON HOMES



THATCHED QUAINTESS WITH AMERICAN UP-TO-DATENESS. It is not hard to understand the appeal of the thatched-effect on home roofs; it softens the outlines—gives a moulded look which is very pleasing to the eye. And it is very effective in a roofing way. This roof is of prepared shingles, and its curving slope toward the eaves gives a graceful expression to the entire house. The timbering of the porch gable goes well with this kind

of roof construction; the brick columns and wall of the porch set off the wooden siding of the main structure. It is a five-room dwelling, with living room, dining room, bedroom and kitchen on the first floor, and two bedrooms on the second floor. The setting of this house is well chosen; it makes the most of a rather high lot, with the sidewalk reached by a well-placed set of steps. The over all dimensions of the house are 29 feet 6 inches by 41 feet 6 inches.

Utilizing Nature's Show Window

Lumberman and Builder Discovers Efficient Plan of Merchandising Garden Furnishings Through Clever Display on Crowded Road

By LUELLA B. LYONS

WHILE visiting in a small city this month I was attracted by the front yard of one of the citizens who resided in the suburb, yet on a hard road, which was the principal thoroughfare. I inquired and this is what they told me: "This lumberman and builder had no uptown office so he was at a loss as to how to do some special advertising. He built a beautiful home on this hard road and his clients insisted that the house be built about a quarter of a mile from the road, for they said later when they could afford it they intended to make a picturesque plot of the front yard.

Then it was that this contractor and builder conceived the idea that here was his chance for advertising. He made the owners of this new home a proposition which was this: Let him go ahead and beautify the grounds with his line of arbors, trellises, seats and swings and various other lawn adornments which he manufactured at his shop and they would let him put up a sign as to who the contractor was, etc. He would even furnish the cement for walks, sun dials and pools and platforms. They gladly gave their permission and in less than a month that front yard took on its new attire. A sunken garden furnished the base of his evolutions, also the pool. Then came the seats, retreats, benches, arbors, pergolas, trellises

and summer houses and small bird houses adorned the grounds—a sight that was truly beautiful to behold. Into the pool he placed many goldfish and later he added water lilies. Wild roses were planted and cared for and shrubbery was planted about the grounds which was entirely surrounded with a hedge which had been trimmed perfectly. Then at the back he had erected a fence of lattice work to separate the grounds from the old English garden. The gate was a very artistic one and bore two regular porch boxes, one to each side about half way up. The garden also contained some of his building materials in forms of garden seats and summer houses and many other examples of his trade.

On the gate at the side of the plot at the main road stood a sign about four feet advertising his building and handiwork with the notice that the grounds had been laid out and furnished by him. The public were invited to inspect the garden and grounds and orders would be taken there on the grounds for any of these adornments.

The lady of the house was kept very busy that summer, I was told, taking orders, and even during the winter orders were taken to be delivered the next spring which kept his men occupied in the shops through the winter.



This Attractive Outdoor Showroom and Business Builder Was the Idea of a Firm Making Garden Equipment and Furniture. The display, on a well traveled road, proved a big incentive to purchasers.

Walnut Interior Trim Makes Home Notable

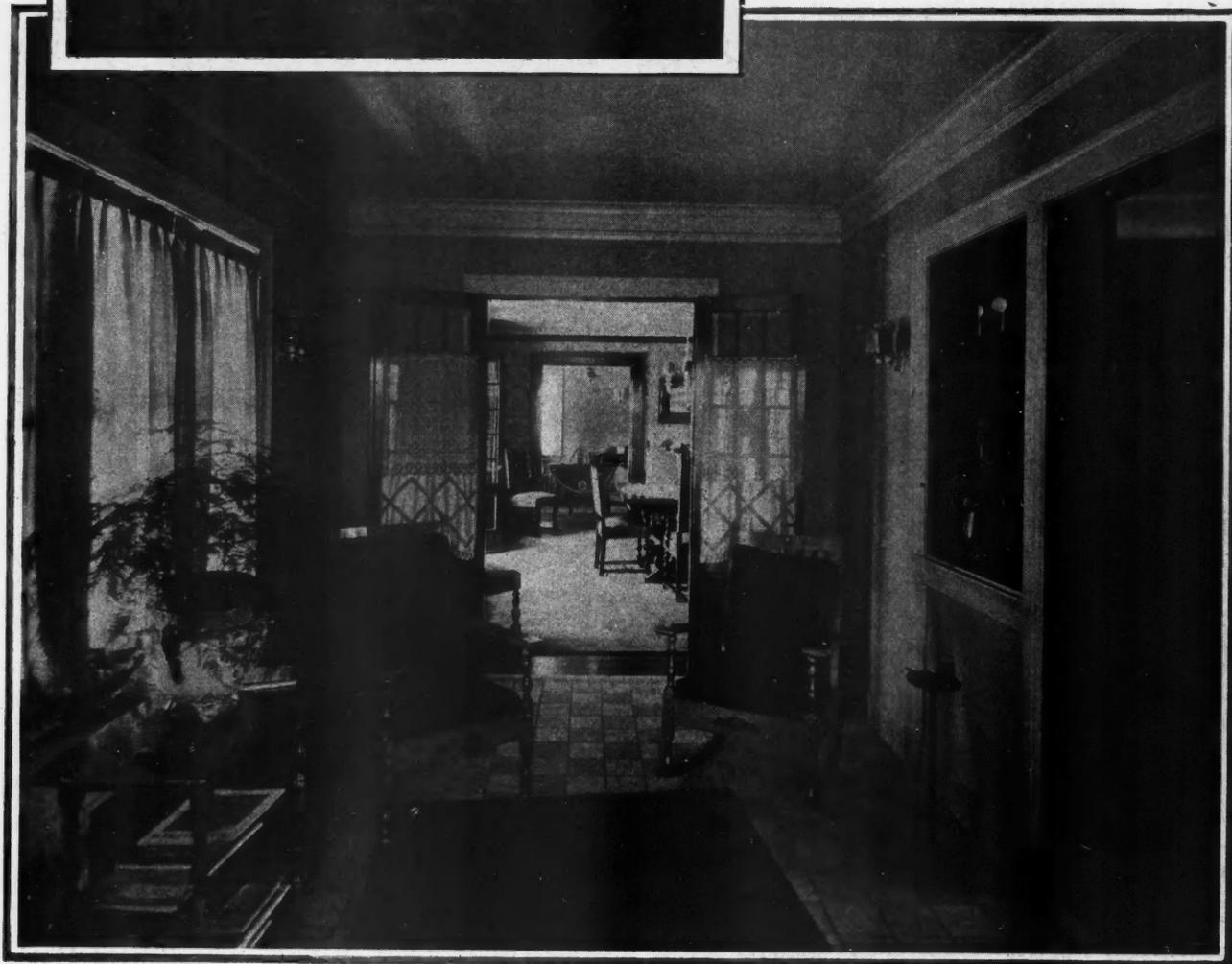
By JUANITA W. PORTER

FOR a number of years, J. N. Penrod of 815 W. 55th St., Kansas City, Mo., has had in mind a vision of the home-to-be of his dreams and this vision has been of a house which was distinctive and unique both in architecture and material.

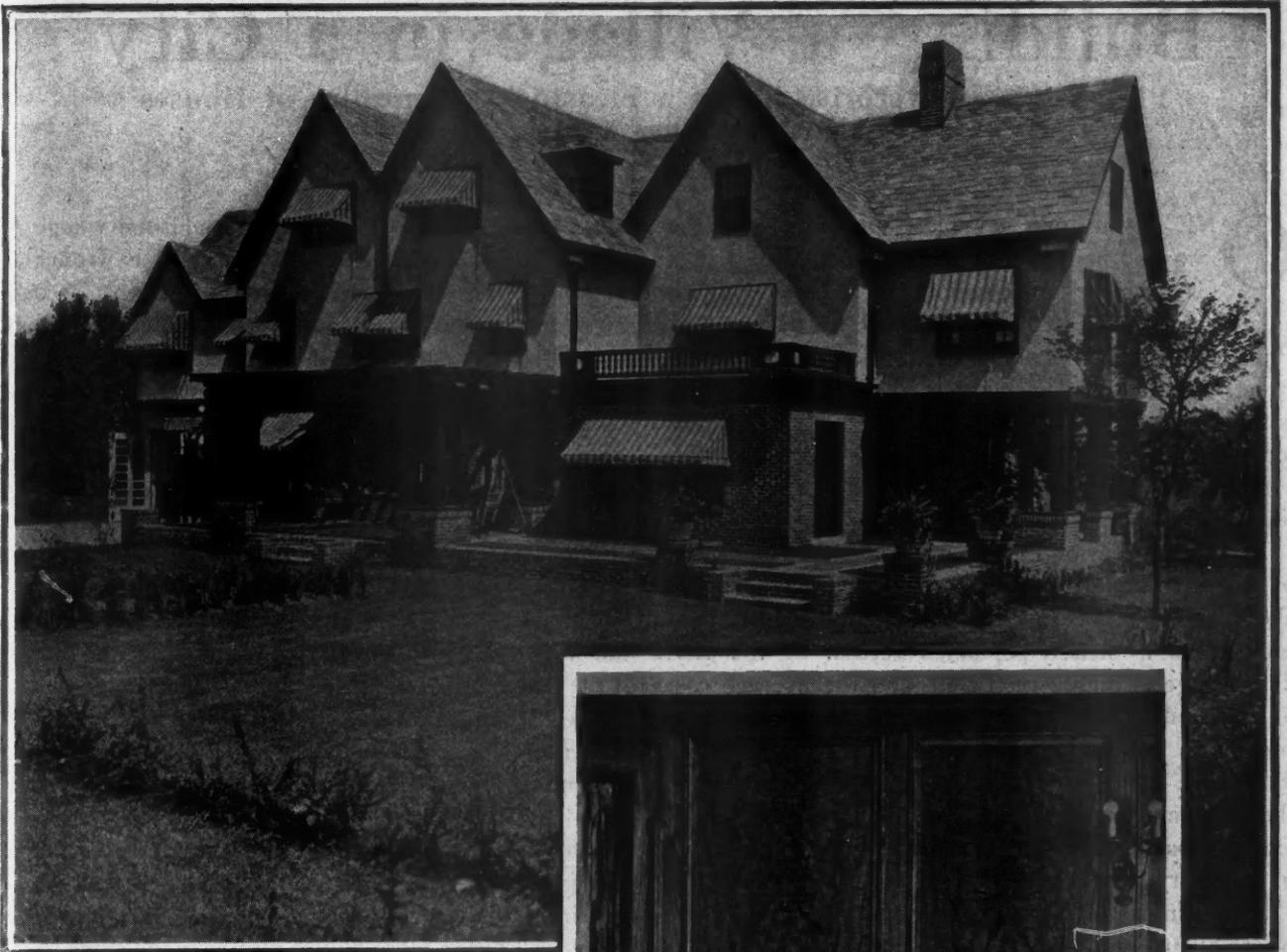
With this in mind, and because his business being that of walnut and veneer, he was able to find unusually beautiful specimens of walnut. Whenever an exceptionally fine specimen came under his notice, he laid it aside against the time when the building of the home became a reality.

The house is of English architecture, built upon unusually graceful and dignified lines. The lower story is of brick and the upper stories are of concrete. It is the woodwork on the interior of the house, however, which sets the house aside from all its fellows, because all the woodwork on the first floor is of matchlessly beautiful and perfect black walnut.

In the living room the walls are entirely of the wood, beautiful panels reaching the full length of the walls. The figure and grain in these panels is most striking, like a beautiful Florentine vase, or a rare piece of carving filling the space of the panel in perfect proportion. While it is absolutely impossible to cut two pieces of wood to have exactly the same marking, these are so well matched as to make it difficult



The Sunparlor of the Walnut Trimmed Home, Showing the Vista Into the Dining Room. Notice the pleasing contrast of the enameled trim in this room with the dark wood casements from the adjoining living room. Above, the stairway, with carved balusters and newel post and selected panels on the wall.



The J. N. Penrod Home, Kansas City.

to distinguish between them.

Another wonderfully exquisite panel is the one above the mantel in the living room. Perfectly polished and with the rich deep colorings seen only in black walnut, this panel resembles some beautiful mosaic in the brown tones.

Another striking feature of this lovely home is the staircase in which the banister is of the plain wood and richly marked panels are introduced at intervals.



The Entire Living Room of the Penrod Home Is Paneled from Floor to Ceiling with Selected Panels of Walnut. The picture to the right in the center of the page shows the distinctive and beautiful markings of two of these panels.

Building a Village in a City

Philadelphia Enterprise Erects a Pleasing Community of Houses with Apartment Convenience

By ROBERT F. SALADE

ONE of the most notable improvements in the way of home-building ever accomplished in a large city is represented by the new English village which has just been completed "in the heart of Philadelphia," at Twenty-second street below Walnut street. This new village consists of 20 beautiful homes which have been built in the Old English style of architecture, also a quiet, private street, 40 feet wide, with a flagstone highway and on either side of which are terraces, shrubbery and gardens.

By the erection of these houses and the completion of the surrounding improvements, at a total cost of about \$650,000, a touch of the suburbs has been brought to a densely-populated section of the city. The village is highly restricted, and the average cost of each home is \$27,000, although the two main corner properties have already been sold at \$30,500 apiece. There are many unique features about each one of these 20 houses, and the village as a whole possesses extraordinary advantages which will be fully explained in this story.

Surprising as it may seem, every house in this village offers all the advantages of first-class apartments, but at the same time, it gives the privacy and comfort of a real home. The entire group of houses are being sold to individual buyers on such easy terms of payment that the interest on the investment, taxes, and operating expenses will average about half the rental of an apartment in a similar neighborhood.

The private street which runs through the village is practically a continuation of St. James Place from the section of that thoroughfare west of Twenty-second street, and it was necessary for the builders to obtain permission from the city of Philadelphia to construct it according to the new plans. This private street extends through a graceful arch at the eastern end of the village into Van Pelt street beyond. The driveway is wide enough to provide for two automobiles passing one another with ease, and the automobiles may go through the archway, either from Van Pelt street or from the Twenty-second street entrance to the place.

All of the houses are of three stories and basement, and while the floor plans of all are the same, the fronts of the homes are of different styles of architecture.

The two houses at the Twenty-second street corners have a solid stone base which rises above the street level about 4 feet, and either side of the driveway is a stone wall of the same material and style as the base mentioned. At the end of each extension of stone wall is a stone post with a lantern, the wall and posts forming an entrance which at once suggests a private place. All of the other houses also have the stone base, and the foundations are of special water-proof construction so as to protect the basements from dampness. The walls of all the buildings are of brick, the exterior having a stucco finish that adds greatly to the artistic appearance. The roofs are of slate in variegated colors, after the delightful Old English style,



The English Village, with Its Old World Charm and Atmosphere of Quiet and Restfulness, Has Been Built in the Heart of Philadelphia.

and the fancy chimneys have been designed to conform to this feature.

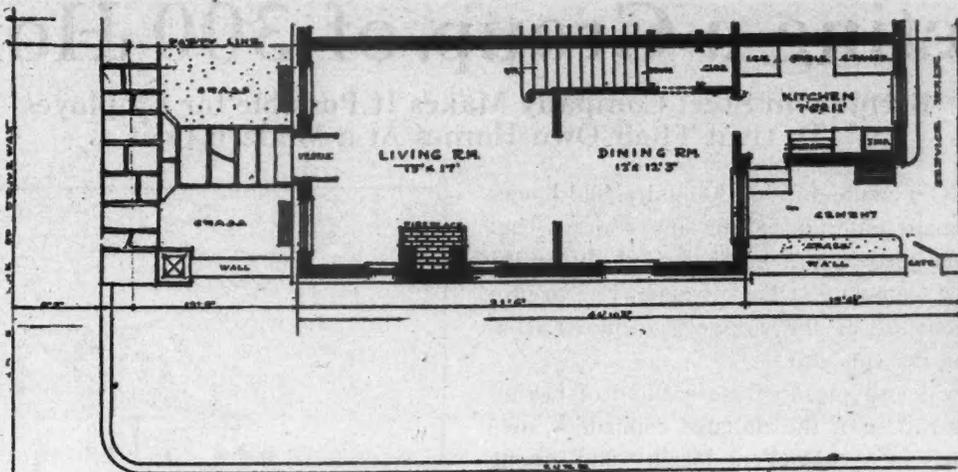
Each home has 11 rooms, including two bathrooms and a recreation room in the basement. This recreation room is a new idea

and one which means great utility, as in this basement room, size 15 by 20 feet, can be held parties, dinners and other social affairs to excellent advantage, and without upsetting the furnishings in the upper rooms. The floor of the recreation room is of concrete, marked off and colored in a checker-board pattern. On the walls of this room, as well as at the rafter ceiling, are a number of English lanterns equipped with electric lights. In the rear of this room, on the basement floor, is a laundry, 9 by 15 feet, which includes stationary wash-trays. In back of this is another space, size 7 by 8 feet, with steps leading up to the yard, and this room contains a toilet and closet. The windows are so placed and are of such proportions as to permit of plenty of fresh air and natural light reaching every nook and corner of the basement.

The first floor plan provides for a living room, 15 by 17 feet; an open fire-place of real English style; dining room, 12 by 12 feet; kitchen, 7½ by 11 feet, and a large closet. In the kitchen is a refrigerator of the most modern type working in connection with an electric refrigeration system that is installed in the basement. This complete refrigeration plant is included in the other regular equipment which is furnished with each house. Also in the kitchen is the usual gas range, dresser and sink.

On the second floor is a bedroom, 13 by 15 feet; another bedroom, 9 by 13 feet; bathroom, 5 feet 9 inches by 7 feet 6 inches; and four closets.

The third floor plan gives a bedroom, 13 by 15 feet; another bedroom, 9 by 10 feet 6 inches; and a bathroom, 5 feet 6 inches by 8 feet. This bathroom is



A Typical First Floor Plan Which Also Shows the Plot Arrangement.

tiled and equipped in much the same way as the one on the second floor.

The owners of these homes do not have to worry over "coal strikes," or a scarcity of coal either, for the reason that the entire

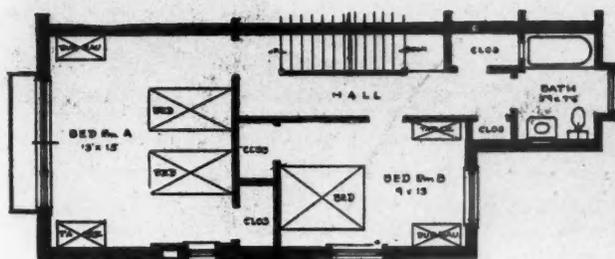
group of buildings is heated by means of a unique central plant consisting of a big boiler, hot water pipes and a newly-perfected furnace which burns crude oil instead of coal.

The other special service features of the English village include a janitor, expert gardener and a private watchman who is on duty every night. At the back of each house is a small yard with a small terrace of grass at one side.

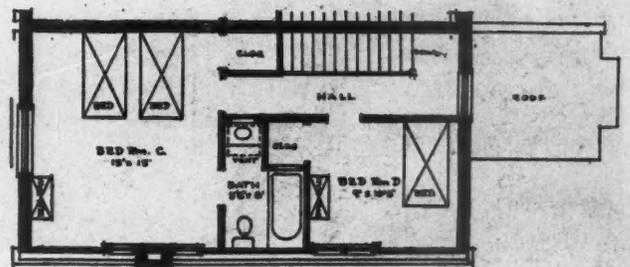
To make space for this remarkable improvement it was necessary for the builders to purchase a number of old, dilapidated buildings which for many years had been standing on the site that is now occupied by the English village. One of these buildings was the old Children's Hospital.

One must understand the general character of this district of Philadelphia to fully appreciate the importance of the new English village. This is a part of the old residential section of "The Quaker City," but in recent years the character of the neighborhood has considerably changed in a way favorable to the better class of people who like to live in apartments. In the immediate vicinity of the village are a number of exceedingly large apartment houses, while on every side are many formerly private dwellings which have been converted into apartments.

Not far away from the English village is beautiful Rittenhouse Square, and within a few blocks further to the northeast is the main business district of Philadelphia. The houses in the village will appeal particularly to the well-to-do class of people who have summer homes in the suburbs, and who like to have a nice apartment in the city during the winter months.



The Second Floor, with Two Bedrooms and Bath.



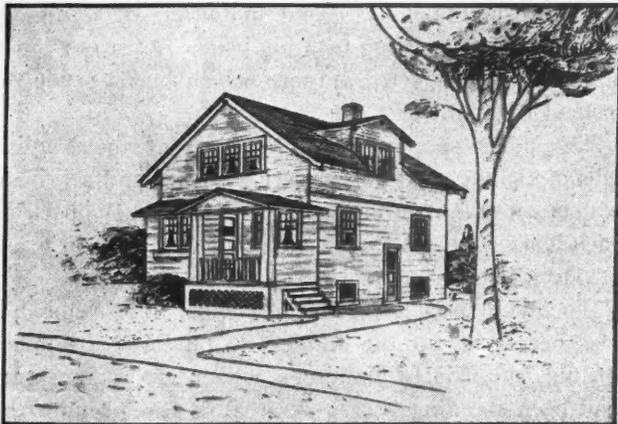
The Third Floor Arrangement Gives a Private Bath to the Larger Room.

Erecting a Group of 300 Homes

Bethlehem Steel Company Makes It Possible for Employees To Own Their Own Homes At a Modern Cost

BUILDING a community of 300 individual homes is no small undertaking for any concern, but this is the project now being carried out by the Bethlehem Steel Company at Lackawanna, Pa., to provide for the housing of the employes of the Lackawanna plant of the concern.

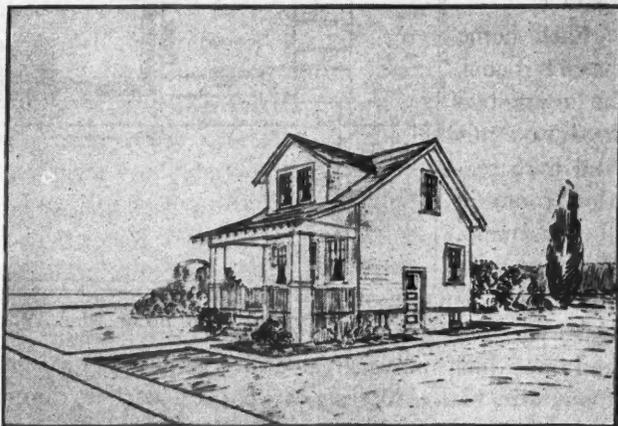
The company is convinced of the wisdom of having its employes and those of the affiliated companies, own their own homes in a convenient locality and among good surroundings. The development, under the man-



This Seven-Room House Has on the First Floor a Combined Living and Dining Room, a Kitchen, Two Bedrooms and a Bath, with Three Bedrooms on the Second Floor.

agement of the Bethlehem Land and Improvement Company, is in the city of Lackawanna, directly south of Smoke's Creek and east of Hamburg turnpike. It will cost approximately \$1,250,000 and will include paved streets, sidewalks, sewers, water, electric lighting, trees and shrubbery and all essential features to make it one of the most attractive and livable sections in the city of Lackawanna. A park and playground has been set aside by the company for their employes, and provision has been made for the necessary stores and amusement places to make it a complete community.

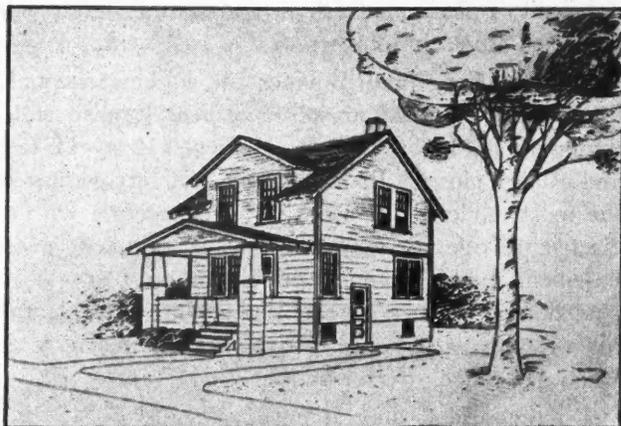
Fifteen different types of houses of various sizes ranging from four to seven rooms have been planned. This not only provides a diversified and harmonious



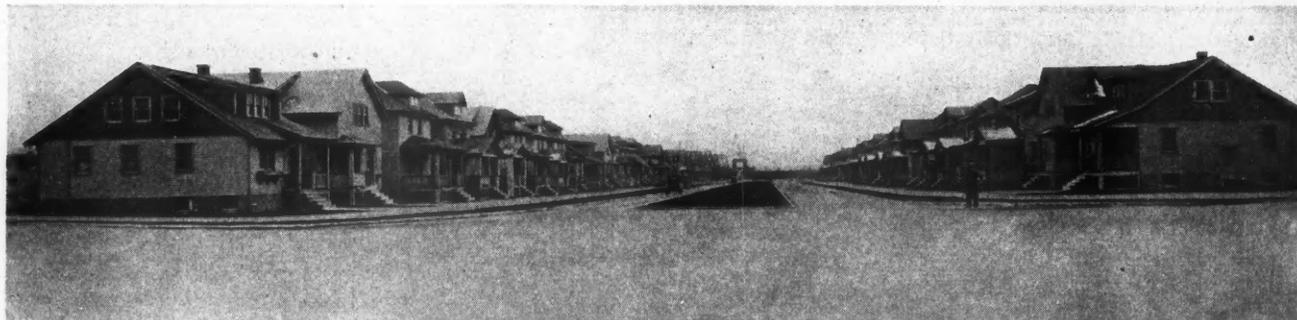
This Type of Five-Room Home Has Two Bedrooms and a Bath on the Second Floor Above the Living Room, Dining Room and Kitchen in the First Story.

appearance to the community but affords a wide selection, according to individual tastes and needs. The size of the lots are 35 by 110 feet, except corner lots which are 40 by 110 feet. All yards in the rear of the houses will be enclosed with a substantial fence, affording each family sufficient room for a garden and garage.

Every house in the development is to be a single



A Living Room, Dining Room and Kitchen Occupy the First Floor of This Six-Room Home. On the second floor are three bedrooms and a bath.



Madison Avenue, in the Bethlehem Steel Company's Development, Is 86 Feet Wide with a Central Boulevard. This, as well as the area in front of the sidewalk, is to be planted with grass and shrubs.



A Typical Group of the Homes Under Construction for the Employees of the Lackawanna Plant of the Bethlehem Steel Company. Notice the wide variety of designs, unusual in a project of this size.

detached house of frame construction; all to have porches, paved cellars under the entire house, and equipped with a warm-air furnace with registers in all rooms. Every house will have a bathroom with bath tub, toilet and wash basin. Electric lights are provided in every room and the bedrooms have ample closets. Each kitchen is equipped with a modern sink, drain boards, cupboard and hot-water tank. Every house has an eight-foot wide porch, and concrete walks to both front and rear entrances.

The houses and lots will be sold to the employes of Bethlehem Steel Company and affiliated companies at actual cost; prices ranging from \$3,600 to \$4,500, depending upon the size of the house and its location.

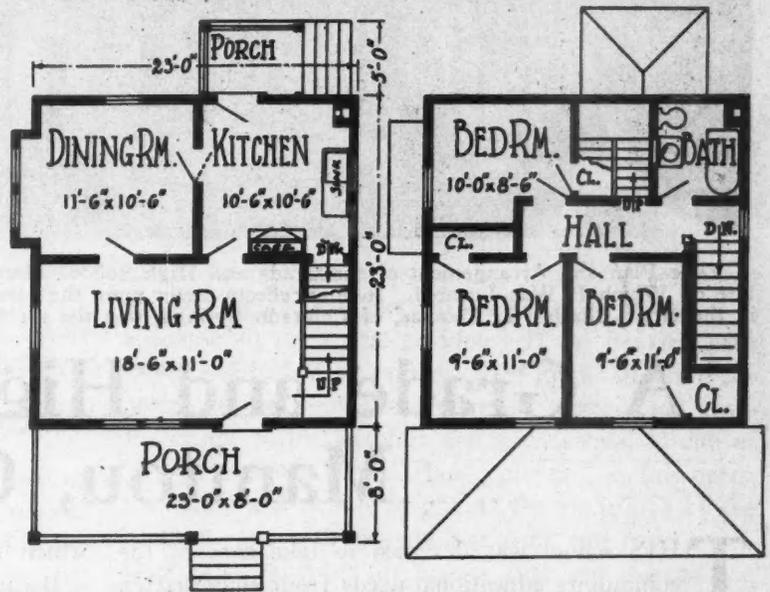
The houses and lots are sold outright to the employes, subject to the necessary mortgages, the company retaining no rights of any kind in the houses or land as long as the mortgage and other obligations are met.

The houses are sold on the basis of an initial cash payment of 10 per cent of the purchase price, and monthly payments ranging from \$30.00 to \$40.00 a month, depending on the type and location of the house. All mortgages will carry interest at 6 per cent. The monthly payments as fixed will cover: Interest on mortgages, fire insurance premium, all taxes on the property, life insurance premium and payment on account of mortgages.

An interesting feature of the plan is that a life insurance policy will be so drawn that, in the event of purchaser's death, his wife or family will be relieved of monthly payments and own the house subject to the customary first mortgage.

The houses are now for sale. A few will be completed by September of this year and all of the three hundred are to be completed by Dec. 31.

All streets, except Madison Avenue, are 50 feet in width, Madison Avenue being 86 feet wide with two 16-foot paved roadways on either side of a 24-foot grass and shrubbery area. All other concrete roadways are 22 feet wide.



This is the Floor Plan of the Home Shown in the Extreme Right of the Picture at the Top of the Page. Such a home is very practical and can be made decidedly attractive.

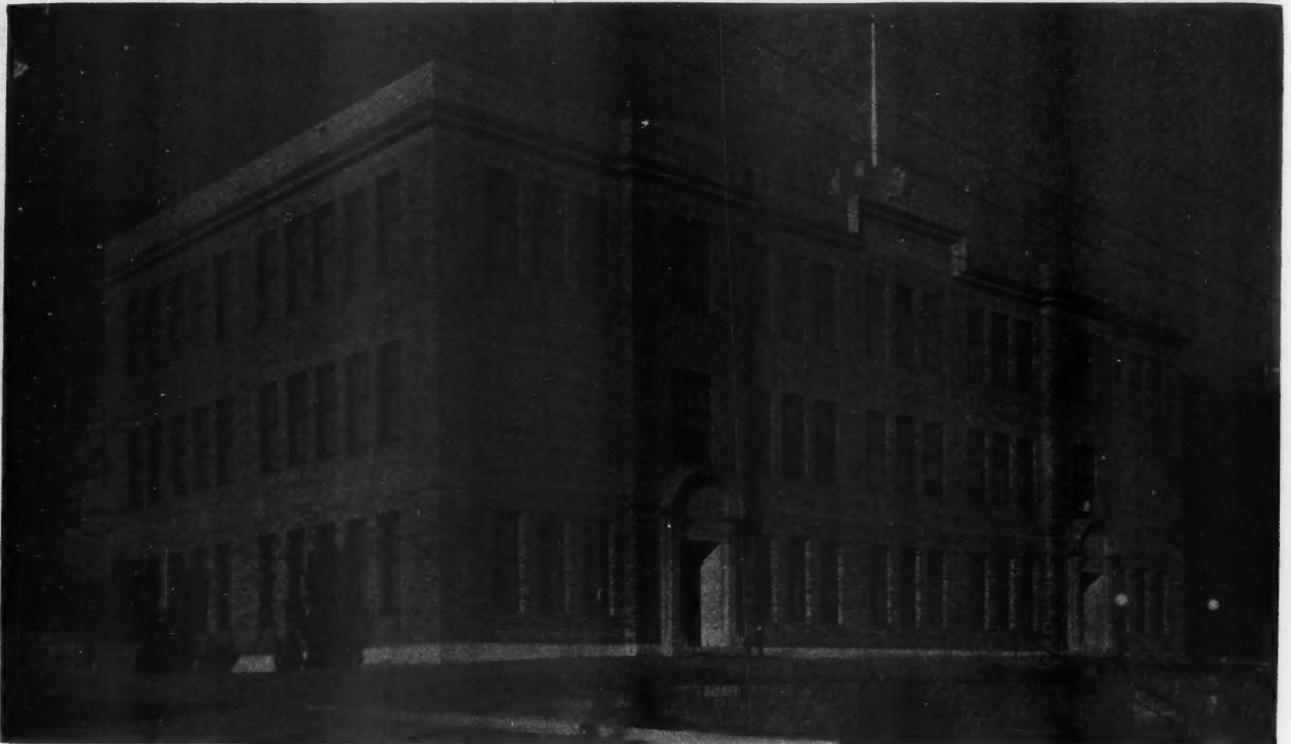
The combined park and playground is centrally located and the business section will be located on Jackson Avenue and Spruce Street.

The entire development will have sewers, water, and electric lights, with trees and shrubbery planted along each street.

Concrete walks, from four to five feet wide, will be built throughout the entire project, the width varying with the amount of traffic the walks will be called on to carry.

A uniformity of line in the houses will result from the building all of the homes 25 feet back from the line of the sidewalk. This also will give an opportunity to make the front yard space adjoining the streets one of grass lawns. This will fit in well with the plans of the development to plant trees and shrubbery along each street. Alleys throughout the project afford access to garages, and all of the lots have room for garages.

The lots also are large enough to allow each family to have a garden where vegetables for the family table may be raised or a formal flower garden may be installed.



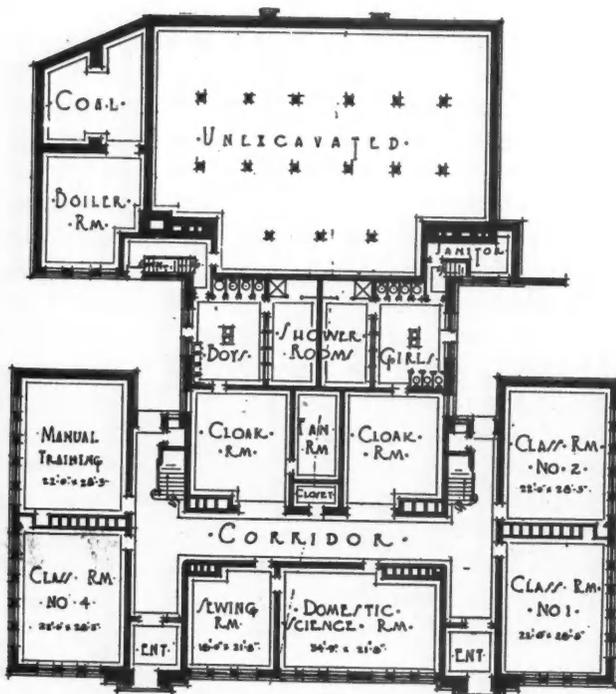
The Plan and Arrangement of the Grade and High School, Manitou, Colo., Was Largely Determined by the Steep Site on Which It Was Located. It now reflects credit upon the community on one of the most commanding situations in the city. Charles E. Thomas, of Colorado Springs, was the architect.

A Grade and High School at Manitou, Colo.

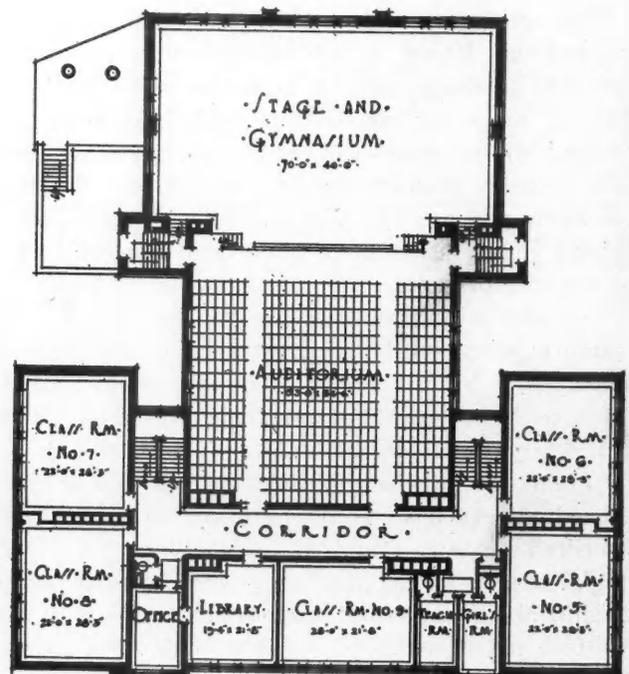
THIS school was designed to take care of the community educational needs from kindergarten through high school, and its plan and arrangement were largely determined by the steep site on

which it was located at Manitou, Colorado.

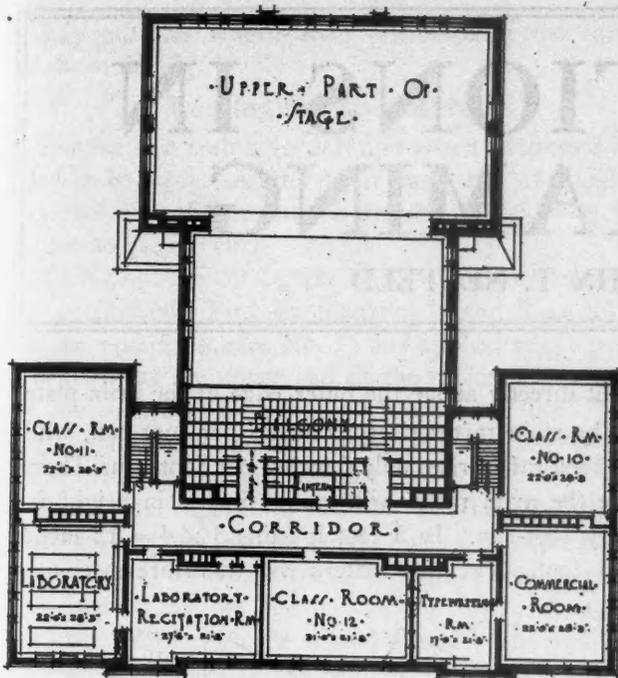
Because of community needs, the auditorium accommodates seven hundred and fifty people, and in order to take care of conventions in the summer time, a



Ground Floor Plan.



First Floor Plan.



Second Floor Plan of the Grade and High School, Manitou, Colo. Charles E. Thomas, architect.

combined stage and gymnasium were employed, giving a capacity for such purposes of one thousand.

The cost of the building, one hundred and twenty thousand dollars. THEO. N. FISHER.



Practical Pick-Ups

TO give your work an artistic touch when putting on hardware, make the slots of the screws all run either straight up and down or in a horizontal direction.

The old reliable 6, 8 and 10 rule for squaring up buildings will work in inches as well as in feet. If you are caught in some out-of-the-way place without a square, do your squaring with your pocket rule, using 6, 8 and 10 inches.

The writer knows of one man who set a door-jamb with the 6, 8 and 10 rule. He was caught without a square or a level—with an emergency plumb-bob he plumbed one of the side jambs. When that was securely nailed, he leveled the head jamb with a line, using the 6, 8 and 10 rule to get his points. The other side jamb was located with a spacing stick.

A brass bound rule will answer for an emergency scriber. Put the material in its position, then with the end of the rule scribe it, holding the rule in such a way that a corner of the end will slightly scratch the material. If the corners become worn, fasten a steel pin into the end for a scratcher.

The most interesting part of a carpenter's work is the compensation. Very often, though, he receives his check when he is without a pocketbook to put it in. Such a predicament can easily be overcome—take a pocket knife, half-open one of the blades and slip one end of the check into the blade-groove—close the blade again and wrap the check about the knife. The weight of the knife will anchor the check into your pocket,

until you have an opportunity to hand it over to your wife.

Steel tapes usually break first between the ring and the 5-foot mark. After a tape has been mended a few times near the end, its appearance becomes patched up; besides, it is unreliable, inasmuch as the figures cannot easily be read. When that is the case (assuming we have a 75-foot tape) detach the tape from the reel and cut it at the 70 foot mark. Take the part that you cut off and rivet it in such a manner that the 75-foot mark and the 5-foot mark will be over each other. Then cut off the bad end—take from it the ring and fasten it to the 5-foot piece taken from the other end, in such a way that the end of the ring will be just 12 inches from the 71-foot mark. With nitric acid or with a file destroy the sevens from 71, 72, 73 feet, etc. This will make your tape read, 1 foot, 2 feet, 3 feet, etc. Thus you will have a 70 foot tape practically as good as new.

A scale for weighing window sash (especially very heavy ones) can easily be made by taking a light straight edge, bore a small hole in the center, through which fasten it to a studding with a nail at a convenient height—drive a nail a few inches from each end about an inch higher than the upper edge, so as to hold it in a somewhat horizontal position. If the heaviest sash to be weighed is 40 pounds, then mark off from the center to the right about 45 equal spaces, and from the center to the left just one space, equal to one of the spaces to the right. Hang your sash at this point, then hang a 1 pound weight on the right arm of the balance. Move the weight out until you have a balance. The number of spaces that you moved the weight will be the number of pounds that the sash weighs. A 1-pound weight will take up a very little space in a tool box, but anything weighing just a pound will do for this weight.

As a rule, many carpenters carry with them a scale that will weigh any ordinary sash, but the extra heavy ones must be weighed in some other way. In such cases the scheme outlined in the above paragraph will solve the problem—the 1-pound weight can be weighed with the small scale—a block of wood, a brick bat, or a bag of sand, etc., will answer. If the sash does not weigh more than twice the number of pounds that your scale will weigh, the small scale will do the trick. Simply hang one edge of the sash on a nail with a string or rest the lower corner of that edge on a block of wood; hook your scale on a nail at the upper corner of the other edge, holding it so the sash will be about level. Double the number of pounds that the scale registers, and you have the weight of the sash.

Beveling the lock-edge of the door is quite frequently carelessly done. This edge should be so beveled that the play between the jamb and the door will be uniform as the door closes. The to-corner of this edge very often will almost strike the jamb as the door is being closed, while the other corner shows plenty of play when the door is shut.

H. H. SIEGELE.

INSTRUCTIONS IN ROOF FRAMING

LESSON FIVE—By JOHN T. NEUFELD

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

Analyzing the Problem

MANY a problem that at first seems rather difficult will change into a simple proposition, if it is carefully analyzed or laid out. The roof shown in Fig. 18 represents such a problem.

The framing for this type of roof has often been discussed by readers of the AMERICAN BUILDER. Some of the solutions given have been very good. Our course, however, would not be complete without a discussion of this problem.

Where Do Rafters Meet

The main part of the roof has a span of 15 feet. The pitch is 5/12 or 10-inch rise per foot run.

The Lean-to or Shed rafter has a run of 4 feet up to the outside edge of the plate of the main building. The pitch for this rafter is 1/4 or 6-inch rise per foot run.

For convenience we use the upper edge of the rafter as the measuring line (in this case).

The vertical distance from the outside top edge of the plate to the edge of the rafter is 3 inches on both rafters. (See A in small detail of Fig. 19.)

The shed rafter starts 1 foot lower than the main rafter. It rises 6 inches per foot. In 4 feet it rises $4 \times 6 = 24$ inches = 2 feet. Therefore the upper edge of the shed rafters is 1 foot higher than the upper edge of the main rafter at a

point directly above the outer edge of the main plate.

The main rafter rises 10 inches per foot run, while the shed rafter rises only 6 inches per foot-run. Therefore the main rafter will gain 4 inches in height for every foot-run. In 3 feet it gains $3 \times 4 = 12$ inches or 1 foot. The two rafters will therefore meet at a

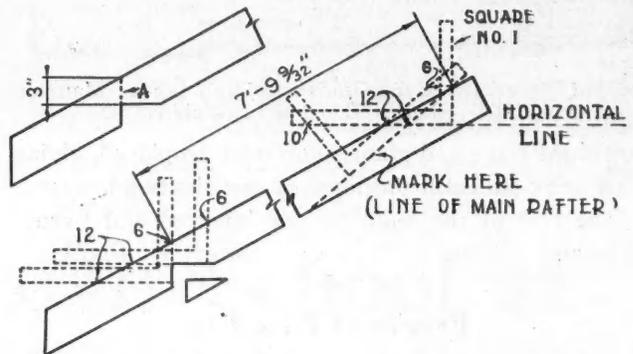


Fig. 19. Details of Rafter Cuts in This Month's Problem.

point 3 feet on the horizontal from the outer edge of the plate.

Length of Shed Rafter

The run of the shed rafter is $4 + 3 = 7$ feet.

The length per foot-run is $13 \frac{5}{12}$ " or 13.42" (taken from tables on the square, or from tables in hand-books.)

The length of the shed rafter therefore is $13.42" \times 7 = 93.94" = 7' 9 \frac{15}{16}"$.

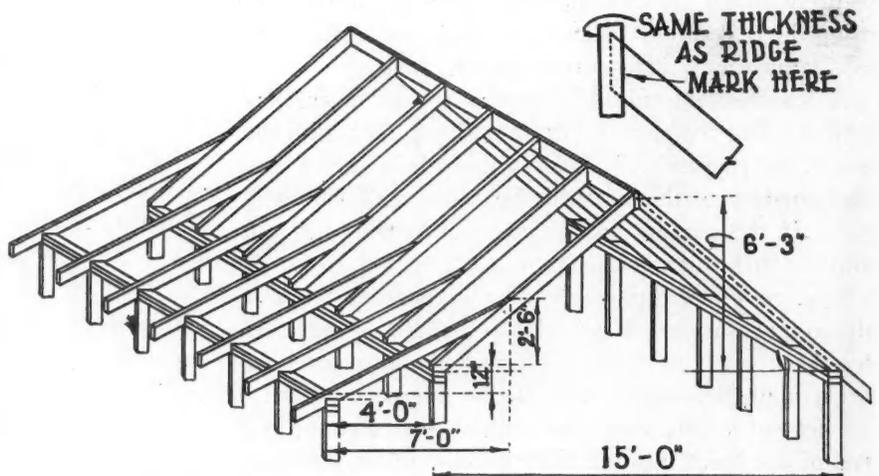


Figure 18—Framing Roof with Lean-to or Shed Attached.

Lay out this length along the edge of the rafter as shown in Fig. 19.

Cutting the Shed Rafter

For the seat both a vertical and also a horizontal cut have to be made. As the rafter has a rise of 6 inches per foot run, the numbers 6 and 12 are taken on the square to get the cuts.

To lay out the cut for the upper end two operations are performed. First the numbers 12 and 6 are taken on one square (square No. 1) and applied at the point which marks the upper end of the rafter. The blade of the square now indicates a horizontal line. This horizontal line is needed to lay out the line of the main rafter on the shed rafter.

The second operation is to lay out the line of the main rafter from this horizontal line. The main rafter has a rise of 10 inches per foot-run. These numbers are used to lay out the line of the main rafter, on the shed rafter, with the second square. The numbers of the second square are held on the horizontal line or the edge of the first square.

Length of Main Rafter

The length per foot run for a 10-inch rise is 15.62" or 15 7/12". The run is 7.5'. The length is:
 $15.62 \times 7.5 = 117.15" = 9' 9 \frac{5}{32}"$.

Deducting for Ridge

From the above length one-half the thickness of the ridgeboard must be deducted. An easy way to do this is to use a piece of lumber of the same thickness as the ridge board. Lay this on the end of the rafter and mark as shown in the small detail of Fig. 19.

Rafters for Barn with Adjoining Shed Roof

A certain barn is 24 feet wide and has a 1/2 pitch roof. It has a shed on one side 12 feet wide, with a 7/12 pitch roof. The outer plate of the shed roof is 6 feet lower than the plate of the main roof.

- (1) Find the rise per foot run of each of the rafters.
- (2) Find the length of the main rafter.
- (3) Where do the two rafters meet?
- (4) What is the run of the shed rafter?
- (5) What is the length of the shed rafter?

The answers to these problems are given on page 182.

A Problem in Structural Strength

Ability of Latticed Columns and I Beams to Withstand Stresses Explained with Formulas for Finding Load Limits

By CHARLES N. LEIGH

Assistant Professor of Mathematics, Armour Institute of Technology

EDITOR'S NOTE—The problem in the comparative strength of materials sent to the AMERICAN BUILDER by William H. Welch, an architect of Corning, N. Y., and its answer by Professor Leigh, as given here, are of such general interest in the building field as to make its publication in these columns desirable. Many builders and contractors will find Mr. Leigh's rule for determining the strength of I-beams highly useful.

The Problem

Editor AMERICAN BUILDER: Corning, N. Y.

ABOUT a year ago I noticed a two-story store and flat building being erected in this city by one of our economical speculative builders. Instead of the customary steel I-beams for a lintel over the store front he used a 10-inch second hand latticed column as a beam to span an opening of 19 feet.

I was expecting to see the thing fail under the load that it was required to carry, but for some reason it seems to stand up with less deflection than there would be if he had used two I-beams of equal weight.

If the question is not entirely out of order, I would be pleased to have a formula for figuring the strength of a beam of that type. Very truly yours,

WILLIAM H. WELCH.

Professor Leigh's Answer

THE heaviest 10-inch channels given in Carnegie are 35 pounds. Then using two I-beams 10 inches

high weighing 35 pounds, the load they will carry is found as follows:

Bending moment = p × section modulus
 Bending moment = 1/8 wl = 1/8 × w × 19 × 12
 Let p = 16,000 pounds per square inch.

Section modulus = $\frac{I}{C} = \frac{2 \times 146.4}{5}$

∴ 1/8 w 19 × 12 = 16,000 × $\frac{292.8}{5}$

w = $\frac{16,000 \times 8 \times 292.8}{19 \times 12 \times 5} = 32,900$ pounds

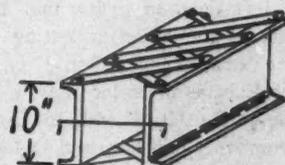
For deflection:

d = $\frac{5}{384} \frac{wl^3}{EI} = \frac{5}{384} \times \frac{32,900 \times (19 \times 12)^3}{29,000,000 \times 292.8} = .6$ inch

A safe deflection is $\frac{19 \times 12}{360} = .633$ inch

That is $\frac{1}{360}$ of the span in inches.

If now two 10-inch 35-pound channels are latticed and used as a beam, assuming that strong enough bars are used to prevent buckling of web, the load it will carry is



Latticed Channels Used as Beam by Builder.

1/8 w × 19 × 12 = 16,000 × $\frac{2 \times 115.5}{5}$

$$W = \frac{16,000 \times 8 \times 231}{19 \times 12 \times 5} = 25,900 \text{ pounds, approx.}$$

Deflection for this load is:

$$d = \frac{5}{384} \times \frac{25,900 \times (19 \times 12)^3}{29,000,000 \times 231} = .6 \text{ inch}$$

This result shows that the latticed beam is deflected to its maximum safe limit by a load 7,000 pounds less than the two I-beams of equal weight.

Had the full load for the I-beams been placed on the latticed beam, the fibre stress and deflection would both have exceeded a safe limit.

For example, place the 32,900 pounds on the latticed beam and solve for the fibre stress.

$$\frac{1}{8} \times 32,900 \times 19 \times 12 = p \times \frac{231}{5}$$

$$p = \frac{32,900 \times 19 \times 12 \times 5}{8 \times 231} = 29,000 \text{ lbs. (slide rule)}$$

This is still well within the elastic limit of 36,000 pounds per square inch, but greater than a safe value.

For the deflection due to 32,900 pounds,

$$d = \frac{5}{384} \frac{32,900 \times (19 \times 12)^3}{29,000,000 \times 231} = .76 \text{ inch}$$

The writer of the letter says that the deflection seems less for the latticed beam than for the two I-beams. This is undoubtedly only apparent, as careful measurements of the two cases would show.

Again the loads placed on the latticed beam is probably well below its allowable load, as well as that of the I-beams, so that there is no danger of failure.

The conclusions are that two latticed channels are not as strong or stiff as two I-beams of equal weight and height.

With spans equal, allowable stresses the same, also the heights of beams equal, the loads two such beams will carry varies with the moment of inertia of the cross-section. A glance at a hand book shows I for the I-beam greater than for the channel of equal weight and height. Then the I-beam carries the greater load.

Similarly the deflection is greater when I is least, as it is in the denominator of the fraction. Then for equal loads and spans, the channel will deflect more than the I-beam.

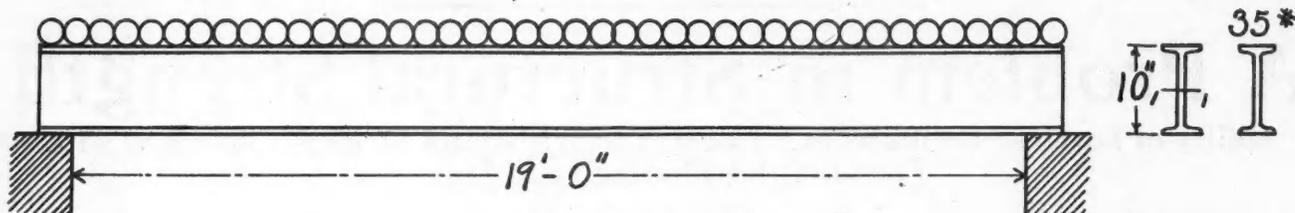


Diagram Illustrating the Load to Be Carried on the Types of Beams Discussed in the Problem Presented to Professor Leigh. At the right is a cross section of the I-beams which are compared with the latticed beam construction.

Simple Template for Jamb Setting

By O. O. SCOTT

OF all the various operations required in finishing a building probably none is of more importance or more difficult than the proper setting of the door jambs. If the frame is well squared, plumbed, leveled and aligned with the wall and then securely fastened in place, much of the trouble of fitting casings and hanging doors is eliminated. Following is a very simple and efficient method that has proved its value on a number of jobs both large and small.

Make two straightedges out of 1 by 4's about 4 inches shorter than the door and nail these together with three cross bars of 1 by 4 in the shape of the letter H with an extra bar at the top and bottom projecting beyond the edges of the straight edges so as to rest against the wall when in use, thus holding the frame in proper alignment. The template should be so made that the outer edges of the straightedges are exactly square with each other, being kept so by cross braces on the upper section only. The bottom space is left open in order that the carpenter may go from one side to the other in setting the frame. The inside edge of one straightedge should be straightened parallel with the work edge in order that a level may be used for plumbing the jamb. It is well to also provide a plumb bob to hang from the top bar and work to a line on the bottom bar if it be preferred. The center cross bar should be set square with the sides so that a level may be used at a convenient height for leveling the frame.

After nailing the frame together check the floor for level and if necessary cut off the jamb on the high side so as

to leave the head level. In setting frames over a rough floor or sleepers it is better to leave both jambs the same length and set to the high side, depending on shimming up the floor to fit the frame on the low side. This method will tend to prevent the door dragging in case the floor has been poorly leveled. Next lay the template in the frame so that the top corners fit in the upper corners of the frame and tack it in place with a nail at each end of each cross bar thus holding the jambs straight, parallel and the exact distance apart with the head square. Then place the frame in the wall with the template on the door side of the wall and tack the projecting ends of the cross bars to the wall, grounds or brick, making sure that the bob or level shows plumb, the head shows level and that the jambs rest properly on the block or finish floor. Now examine the frame to see that it is plumb and in proper alignment with the wall, bearing in mind that it is better and easier to keep the top in exact alignment and humor the bottom if necessary, for the lead casings or mitre joints are the hardest to fit to the wall.

With the frame thus held in place it is a simple matter to wedge out the rough work with shingles and nail the jambs with long finish nails or toenail the edges as the quality of the work may require. The template automatically prevents placing nails where they would interfere with the hinges or lock keeper. Much time will be saved in fitting the doors as they need not be scribed to the jambs but may be fitted with a square and straightedge. In using the template it is well to start with the larger sizes and then cut down to fit the smaller sizes. This method saves time and money on the cottage and the apartment house, and will please the most particular architect.

An Attractive, Well-Planned Home

Individuality Is Keynote of Stucco One-Story Dwelling of Five Rooms and Sleeping Porch

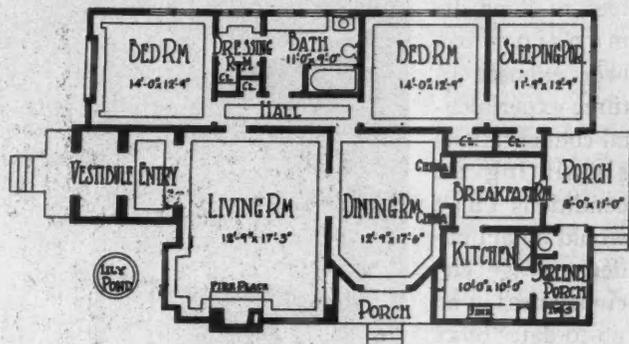
By CHARLES ALMA BYERS

PARTICULARLY charming is the outside appearance of the little one-story house illustrated herewith, by floor plan and photograph. It, in fact, is quite of unusual design, possessing an especially well-developed individuality. Effective indeed are such details of treatment as the turned-over edges of the roof above the gables, the arched and neatly bordered open doorway to the entrance vestibule, the use of full-length windows in the front walls, the entrance lighting fixture comprised of a tall wrought-iron standard and white globe, the little medallion ornamentation of the main front wall, and so forth. In the recessed front corner, before the three French windows of the living room, is also effectively placed a little circular lily pond.

The exterior walls are of light buff-toned cement-stucco over frame construction, with the border of the entrance doorway done in light brown and dull green and the wood trimming painted greenish brown. The shingled roof is green, and the entrance vestibule is paved with red tile, while brick is introduced for edging the lily pond, front walk and otherwise as masonry trimming. Off one end of the dining room, accessible from it thru French doors, and comprising the entrance from the automobile driveway is a small

side porch, floored with cement, and in the rear, with doors opening to it from each the kitchen-entry porch, a small breakfast room and sleeping porch is still another porch, which also is floored with cement.

The interior is exceptionally well planned, as reference to the accompanying floor plan will show, and it



Floor Plan

is also very attractive in finish and decoration. The front door, which is of paneled oak, opens into a small entry, lighted by a tiny arched window, and an open arched doorway leads, in turn, into the living room.

The living room is designed with a chapel ceiling, and a fireplace with a wood and tile mantle.



This Los Angeles House, Designed by the Davis Construction Company, is of Light Buff-Toned Cement Stucco Over Frame. It has no basement or cellar, and is equipped with built-in gas radiators for heating.

Government Fire Tests

Engineers at Washington Solve the Secrets of Office Fires by Burning Test Buildings

By GEORGE H. DACY

LATTERLY, investigations have been begun at the Washington headquarters of the National Bureau of Standards to obtain accurate and comprehensive data on the intensity and duration of destructive fires in modern types of buildings that are fortified as far as possible against serious damage by untoward holocausts. A one-story brick and concrete building 16 by 30 feet in floor dimension has been exposed to three experimental conflagrations simulating the conditions that would obtain under average circumstances in an up-to-date office building that was exposed to ravaging flames. This is probably the first time in the annals of American architecture that a permanent type of building was constructed but to be exposed to the heat and fury of the flames in order that some of the scientific secrets of fire resistive systems of building might be solved.

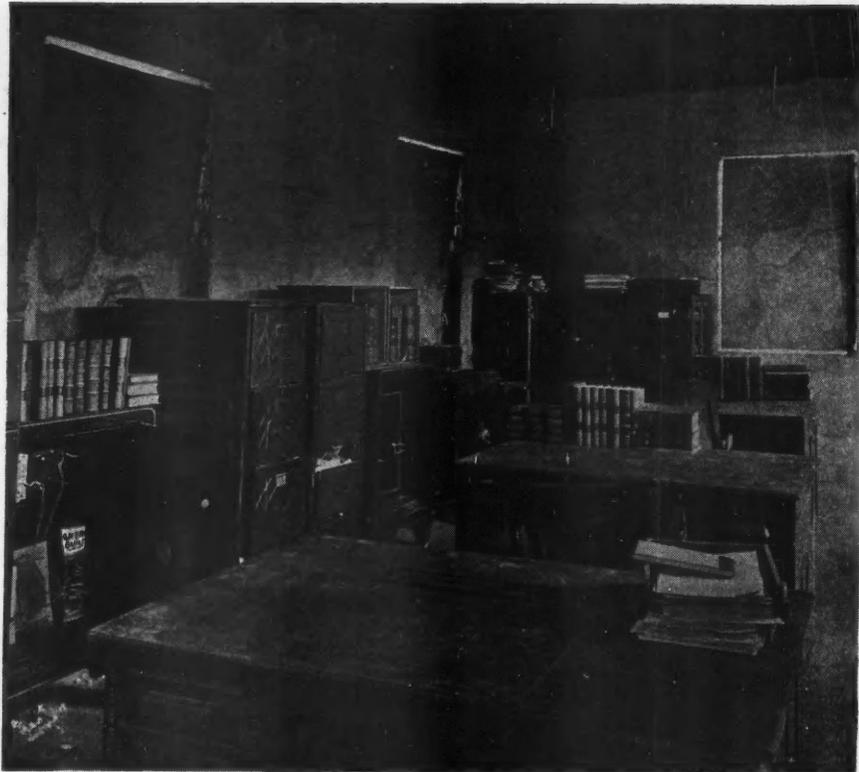
The extraordinary test fires sponsored by Uncle Sam are historical inasmuch as municipal firemen for the once were used as policemen to keep the spectators back instead of endangering their lives and limbs in fighting the flames. A company of the District of Columbia Fire Department was called out to string hose-lines and to consummate all activities that would protect the adjoining buildings from damage and destruction. The fire fighters were on hand merely to confine the fire to the test building.

For the purpose of his investigational incendiarism, Uncle Sam selected the conditions likely to produce maximum intensity and duration of the consuming flames. Generally speaking, the duration of the fire is principally determined by the occupancy, those producing fires of long duration and high intensity being classes of heavy manufacturing, merchandising and

storage, with office and residence occupancies at the other end of the scale, as giving the least duration and intensity.

The fire-resistive building constructed at the Bureau of Standards to be exposed to actual fire conditions in order that technical records of its responses to heat and flames might be secured has a reinforced

concrete slab roof which is 12 inches in thickness at its central point and 5 inches at the eaves. The reinforcing is sufficient to carry the load on the ordinary basis of such design. The sides of the building consist of the ideal all rolock wall method of construction where the bricks are laid on edge with a hollow space in the center. This type of wall was built because the national experts desired to find out what kind of a wall of this description brick-



The Experimental Fire Test Building Was Furnished as an Office, with Discarded Government Fixtures, Desks, Chairs, Filing Cases, Safes and Similar Furnishings, and the Equipment Amounted to Approximately 11 Pounds of Wood Per Square Foot of Floor Space.

layers unskilled in such construction could produce. They also wished to test out the fire resistive qualities of this design of building. Pilasters were put in the side of the building to complicate the work of brick-laying in order to see what kind of work the brick-layers would perform under such difficult conditions.

Fire tests of 8-inch solid brick walls contrasted with similar exposures of 8-inch ideal, rolock walls have demonstrated that the latter transmit more heat and are more easily distorted but not enough to be dangerous when exposed to abnormal temperatures. On the other hand, the all rolock wall features an economy of material. It is worthy of mention that approximately one-half of the brick used in building the fire test structure had previously been exposed to a 6-hour furnace test at the Bureau of Standard's laboratories where the temperature at the conclusion of the test was 2,150 degrees. Since then, these brick have passed success-



This Fire-Resistive Test Building Constructed at the Bureau of Standards Has a Reinforced Concrete Slab Roof. The walls are brick, laid on edge, rolock method. Half the brick was subjected to a preliminary 6-hour furnace test.

fully through three test building fires. However, the temperatures developed in the building fires indicate that these conflagrations were only about equivalent to one hour's exposure in the normal furnace test so far as intensity was concerned. Additional tests of hollow and solid brick walls are under way.

In some of the fire tests, a wooden top floor on sleepers in cinder fill was placed over the concrete base floor, while in others only the cement finish floor was used. The window openings were provided with pivoted, incombustible cement shutters for regulating the draught and air supply so as to engender maximum fire conditions. By increasing or decreasing the openings in the curious windows, the intensity of the fire could be increased or decreased. The interior of the experimental house was protected by an overcoating of ordinary plaster three-quarters of an inch in thickness which to a certain degree increased the fire resistive properties of the building. Thirty-six thermo-couples—electrical heat recording devices—were installed uniformly about the interior of the building in order that count could be kept on the temperatures that developed at different places during the fire. The thermo-couples were placed in the walls at three different levels. Part of them suspended down from the ceiling a distance of one foot. The others, respectively, were placed uniformly around the walls at heights of 2 and 5½ feet above the floor.

The thermo-couples consist of alloys of chromium nickel and aluminum so arranged in porcelain tubes that the junctures were ex-

posed. The ability of the thermo-couples to record readings is dependent on a thermo-electric method. The junctures of two of the metals are heated in such a manner as to develop an electric-motive-force which is then measured by means of a potentiometer. Some differences in temperature were obtained between the upper and lower levels as recorded by the thermo-couples—the temperature was highest near the ceiling—although they are not as large as might be expected.

In several of the test fires, conditions simulating an exposure where fire enters in considerable volume from an adjoining room or building were introduced by igniting a large amount of readily combustible material—in one case the furniture was set on fire—at one point, the first passing from one end of the building to the other in from 10 to 15 minutes. The thermo-couples were so arranged in each instance that they were directly in the line of the fire travel. In the first test fire, a wooden over floor was provided above the concrete. The fire was lighted by means of a large grate which extended from the floor to the ceiling and was heaped full of readily combustible material which then was set off. The same system of ignition was followed in the second test and the conditions were similar except that there was no wooden floor above the cement. In the third conflagration, the furniture was kindled at one end of the room. Under all these conditions the experimental building was furnished as an office with discarded government fixtures.



In Each of a Trial of Experimental Conflagrations Everything of a Combustible Nature Was Totally Destroyed: Desks, Books, Wooden Files. Papers and documents in the insulated steel safes came through unscathed.

Hints on Fireplace Construction

Correct Proportions and Attention to Details Will Assure that the Chimney Receives the Smoke and the Room the Heat

By J. D. COVERT

AN open wood-burning fireplace is today recognized as one of the most important features in the modern home.

It is usually the center of attraction architecturally and a gathering place socially.

As a ventilator and purifier, the fireplace has no equal, constantly withdrawing the air in the room and introducing a fresh supply.

It will radiate a good deal of heat when properly designed and in the cool days of spring and fall takes the place of the furnace.

It is essential that the expenditure for brick, tile, flue lining, labor, etc., going into the construction of a fireplace secures one that will carry *all* the smoke up the chimney and radiate the maximum amount of heat into the room.

built in back of the throat, which is important in checking down drafts.

Smoke Chambers—Above the throat of the fireplace the sides of the chamber thus formed should narrow gradually to the point where the flue proper begins. This is a very important part of the construction, for if this chamber is not properly formed and made smooth the flow of smoke and gases into the flue is retarded.

Flue—The flue should be proportioned to the size of the fireplace opening. In estimating the size of the flue, the area of the cross-section of the flue should be one-tenth to one-twelfth the area of the fireplace opening. It should be taken into consideration that the outside of flue linings are usually given and there is quite a variation in size. For use in figuring the following net areas of flue lining can be used:

8½ by 8½.....	52 square inches
8½ by 13	76 square inches
13 by 13	129 square inches
13 by 18	183 square inches
18 by 18	256 square inches

Great care should be taken to see that the flue is cleaned of mortar droppings and the mortar that squeezes out from the flue lining joints is not allowed to harden and form an obstruction in the flue.

In conclusion, it must be remembered that a certain volume of air will be sucked in the fireplace opening, will be heated and combine with the smoke and force its way upward. If a straight, easy path is not provided for that smoke it will be forced out into the room. Therefore, make everything as smooth as possible, avoid rough corbeling—especially in the smoke chamber sides—and be extra careful to have the flue as clean as possible.

Then, if the proportions are carried out as given above, the fireplace is sure to be a joy to the owner and a feather in the architect's and builder's cap.



WHEN your steel square becomes so tarnished that the figures and marks are hardly distinguishable, clean the indentures for both the marks and the figures thoroughly, and paint the square with white enamel, then lay the square aside, permitting the enamel to dry. After the enamel is thoroughly dry, take a sharp chisel and cut the enamel off. The chisel should be held at an angle of about 10 degrees. An old safety razor blade, held with a pair of pliers, will do the work also. This will bring the figures and marks out on your square as white as they were when the square was new.—H. H. SIEGLE.

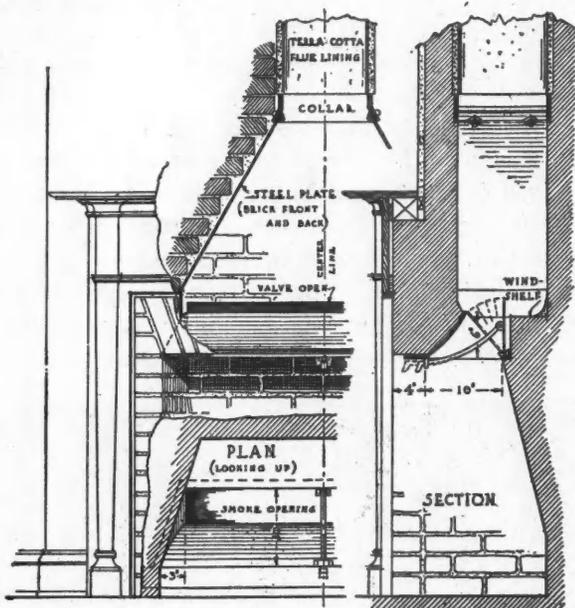


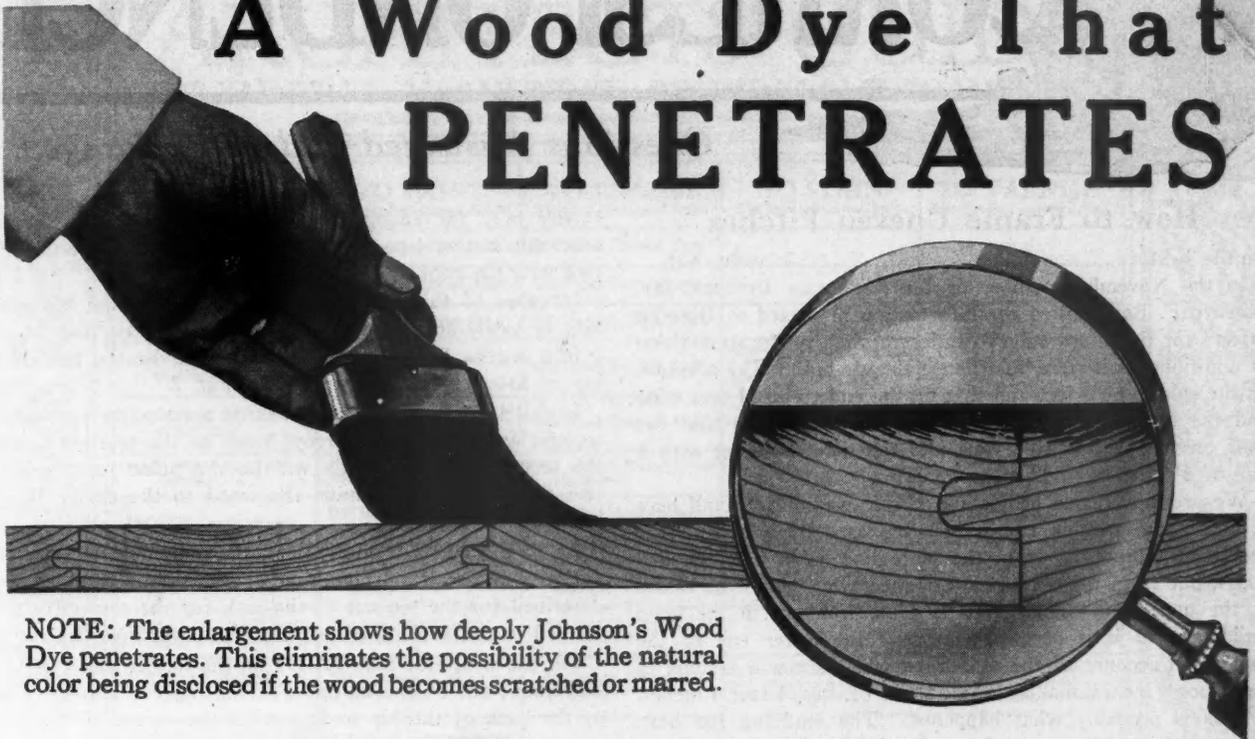
Diagram Gives Details of Approved Construction. To the right is a profile cross section of the installation.

Success has been attained in thousands of fireplaces by adhering to the following proportions:

Opening—A height of 30 inches is ample for fireplaces up to 48 inches wide. The depth should be not less than 16 inches and 22 inches is ample for fireplaces up to 48 inches wide. Start 8 inches from the hearth and slope the back forward under the rear flange of the damper. The sides should be played in about 3 inches on each side.

Throat—The use of a cast iron damper gives a smooth, rounded approach up into the smoke chamber, supports the arch brick and also provides a means of shutting off the flue when it is not in use. The actual throat opening should be about 6 inches above the arch and a wind shelf or ledge of 5 or 6 inches

A Wood Dye That PENETRATES



NOTE: The enlargement shows how deeply Johnson's Wood Dye penetrates. This eliminates the possibility of the natural color being disclosed if the wood becomes scratched or marred.

JOHNSON'S WOOD DYE

Johnson's Wood Dye is entirely different from the many wood stains and tints on the market. With it inexpensive soft wood such as pine, cypress, fir, etc., may be finished so they are as beautiful as hardwood. It brings out the beauty of the grain without raising it in the slightest.

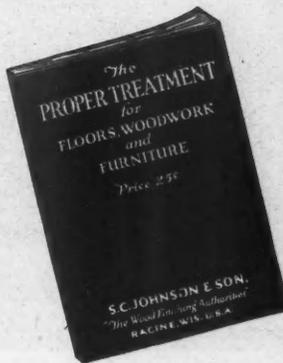
Johnson's Wood Dye is a *dye* in every sense of the word. It contains no finish whatsoever and, like most first class products, it answers one purpose only—it dyes the wood—the finish

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CORRESPONDENCE

Questions Answered—Ideas Exchanged

How to Frame Uneven Pitches

To the Editor:

Lincoln, Neb.

In the November number of the AMERICAN BUILDER, Mr. Edward C. Bates asked for information in regard to framing rafters for the intersection of different pitch roofs, an addition or additions, as it were, to a house already built. The addition on the side to be 8 feet and that on the end to be 14 feet wide and the two intersecting at the corner. He states that the roof on the narrow side runs into the main building with a rise of 6½ inches to 12 inches.

We presume that a projecting cornice was desired and here is where the trouble comes in. In cases of this kind the reckoning cannot be from the plate line as in even pitched roofs, but from the cornice line. The rafter cannot be raised at the upper end on account of some windows in the main building. So it is necessary to raise the lower end of the rafters on account of the projection which we will assume to be 1 foot 6 inches, making in all a rise of, say, 4 feet 4 inches.

This is probably what happened. The studding for both sides were cut the same length and the plates set on the same level for both sides. Then the common rafters were set up in place with the idea of filling in the hip and jack rafters later. Then it was found that the roofs would not member; the cornice on the narrow side would finish lower than on the wide side. Then the question, is it a hip or something else? Yes, it is a hip, all right, but it must be one to meet the existing conditions.

In cases of this kind the hip cannot rest on the corner or intersection of the plates but must run to the intersection of the tail ends of the common rafters at the corner. No attention should be given to the intersection of the plates, as it will be seen by referring to the illustration that the hip swings to the side having the steeper pitch, also this pitch must have a higher plate than that of the wide side and since there is a 1-foot 6-inch cornice, the difference in the level of the plates is governed by the difference in the rise of the roofs in 1-foot 6-inch run. This extra rise in the plate should

extend only far enough to receive the bearing of the hip, otherwise it would be too high at the corner and would interfere with the roof at that point.

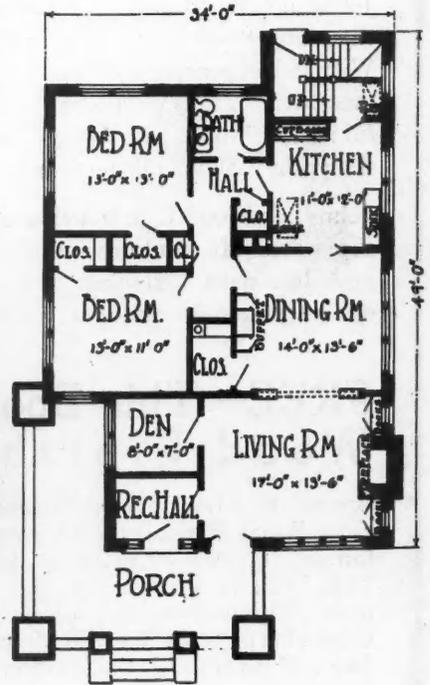
In cases of this kind, it is better to back the hip which may be easily accomplished by laying off a scale plan of, say, 1 inch to the foot for that part covered by the run of the hip as shown in the illustration in Fig. 2.

In this lay off the full thickness of the hip, then set off the amount as shown by the arrow heads on the seat cut line for the respective sides. This will be the point for the gauge line from which to remove the wood to the center line on its back.

As to the cuts for the rafters, the individual run and rise will give the seat and plumb cuts. Take same parts as above described for the top cut of the jack for the respective sides, applied to the backing plane; the blade will give the cut.

For the wide side take (A-D) on the tongue and (D-E) on the blade; cut on the latter. For the top cut into the center of the back of the hip to fit against the corner of the house provided the hip has been backed as before mentioned. Take 9 feet 6 inches (A-D) on the tongue and 15 feet 6 inches (A-B) on the blade and applied to the backing plane. The blade will give the cut for the narrow side. Use the same figures for the wide side, but the cut is changed to the tongue.

Right here is a point that is not generally understood even by many that think they know, because when the hip is not backed the true measurement line is, so to speak, up in the air and not on the rafter at all and when the measurement is taken along the edge of the rafter it is off to one side of the true line one-half of the hip's thickness and the vertical depth of the backing (when set up in place) below it. The same thing



The Exterior of the Home of C. W. Andrews, Waupaca, Wis., Shows a Very Interesting Treatment of the Small House. Notice how the sweeping curves are interspersed with the long straight lines. The floor plan shows efficient planning.

ARCHITECTS' GUIDE

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IMPORTANT: Each of the products specified below bears our name and trade mark

SURFACE	TO PAINT <i>Use product named below</i>	TO ENAMEL <i>Use product named below</i>	TO STAIN <i>Use product named below</i>	TO VARNISH <i>Use product named below</i>
BRICK WALLS (ext).....	S-W Concrete Wall Finish	Old Dutch Enamel, Gloss		
CONCRETE WALLS....	S-W Concrete Wall Finish	Old Dutch Enamel, Gloss		
CEMENT FLOORS.....	S-W Concrete Floor Paint	S-W Concrete Floor Paint		
EXTERIOR WOOD SURFACES.....	SWP (Sherwin-Williams Prepared Paint)	Old Dutch Enamel, Gloss	S-W Preservative Shingle Stain S-W Acid or Oil Stain	Ranger Varnish
EXTERIOR METAL SURFACES.....	Kromik Structural Steel Primer Metalastic (for finishing coats)	Old Dutch Enamel, Gloss		
FACTORY WALLS (interior).....	S-W Eg-Shel Mill White S-W Fume Resisting White	Old Dutch Enamel or Enamoid		
FLOORS (interior Wood)..	S-W Inside Floor Paint (the enamel-like finish)	S-W Inside Floor Paint (the enamel-like finish)	Oil Stain or Floorlac Varnish Stain	Mar-Noc Floor Varnish
GALVANIZED IRON SURFACES.....	S-W Galvanized Iron Primer (Finish with any Paint)	S-W Galvanized Iron Primer and Old Dutch Enamel		
INTERIOR WALLS AND CEILINGS.....	Flat-Tone Wall Finish S-W Semi-Gloss Wall Finish	Old Dutch Enamel or Enamoid		
INTERIOR WOOD TRIM.....	SWP (Sherwin-Williams Prepared Paint)	Old Dutch Enamel or Enamoid	S-W Acid Stain S-W Handcraft Stain S-W Oil Stain	Scar-Net Varnish Velvet Finish Varnish (for imitation rubbed effect)
PORCH FLOORS AND DECKS.....	S-W Porch and Deck Paint			
RADIATORS AND PIPES.....	Flat-Tone Wall Finish or S-W Gold Paint S-W Aluminum Paint	For White—S-W Snow White Enamel For color—Enamoid		
ROOFS—Metal.....	SWP or Metalastic (if Galvanized, prime with S-W Galvanized Iron Primer)			
ROOFS—Wood Shingle...	SWP		S-W Preservative Shingle Stain	
STACKS AND HOT SURFACES.....	Solmaster Smoke-Stack Black			
STRUCTURAL STEEL..	Kromik Structural Steel Primer Metalastic (for finishing coats)			
TO DAMP-PROOF FOUNDATIONS....	S-W Antydamp			
TO DAMP-PROOF INTERIOR WALLS ABOVE GRADE....	S-W Plaster Bond			
WOOD PRESERVATIVE			S-W Carbolic-ol	

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IT IS CLEAR that on paints, varnishes, stains and enamels an architect has every reasonable right to depend upon the maker. The Sherwin-Williams Architects' Guide is designed to relieve the burden of finishing problems.

For details of specifications see: The Sherwin-Williams book of painting and varnishing specifications or Sweet's architectural catalogue.

Write to the Department of Architectural Service
407 CANAL ROAD, CLEVELAND

exists in the case of the valley, but just the reverse—that is, while the measurement line is at the center of the back of the rafter its edges are correspondingly down the vertical height of the backing. So unless these rafters are backed before making the seat and plumb cuts, it is more or less of a cut and try job and more often wrong than right.

A good way to back the valley is to use two fencing planks and back the edge of each one way, then place them together to form the M shape and nail them together from each side with nails to form a good clinch. If it is a large roof it is well to use thicker material because the valley has more to carry than the hip on account of the jacks in the hip serving more as a direct brace.

As to the difference in the length of the jacks this may be found by dividing the length of the common rafter into the number of spacings desired; the quotient will represent the common difference. Or they may be spaced on any desired center with the resultant common difference as shown in Fig. 1.

From this it will be seen that the formula for joining of uneven pitches is the same as in even pitches, but on account

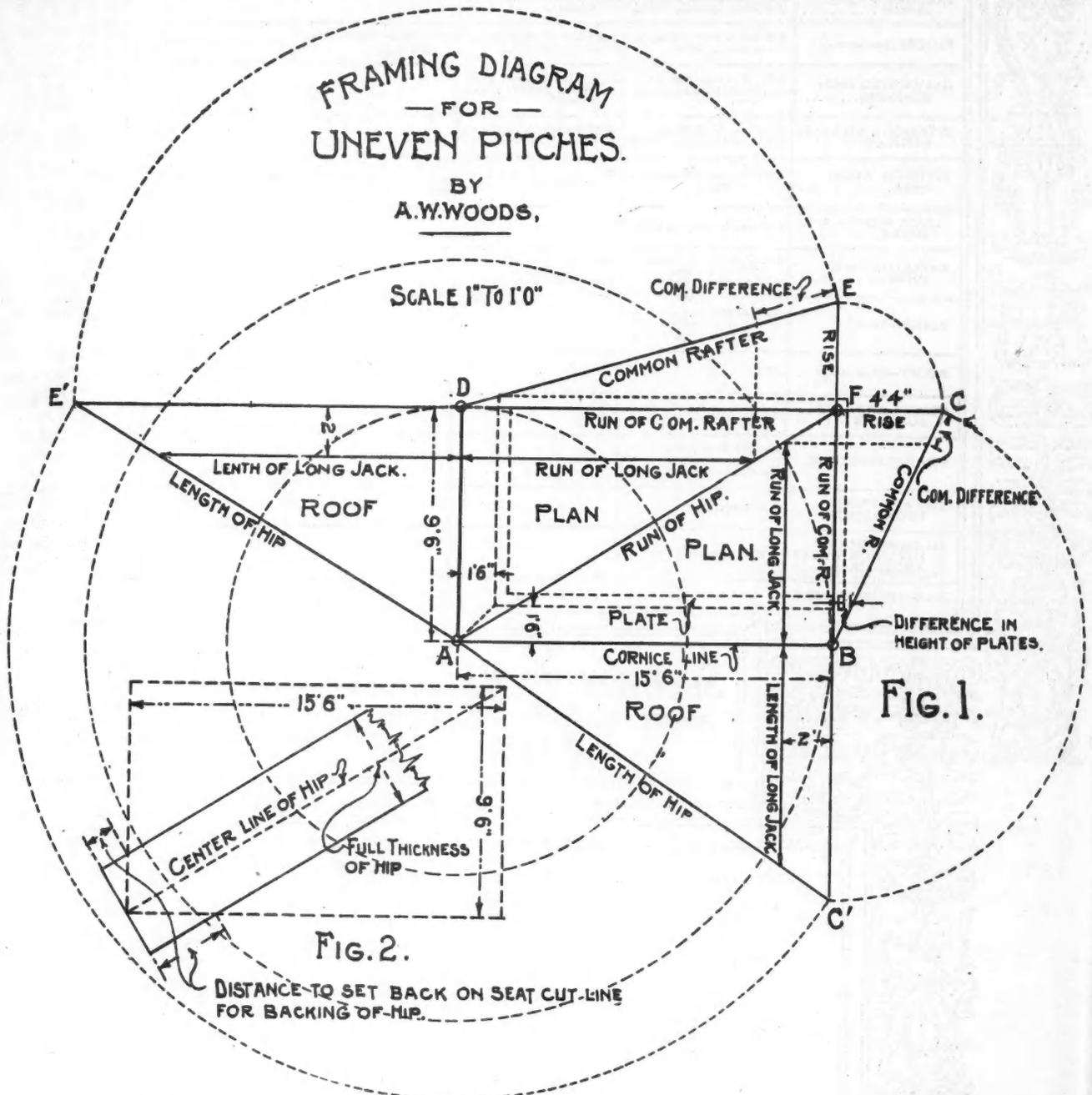
of different dimensions it requires separate solution for each side of the hip as shown in the illustration, which we trust is sufficiently clear to be readily understood.

In our work we avoid uneven pitches where we can and especially where it will show in a prominent part of the house, because it is more or less unsightly, the shingle courses cannot run even. The plancier will not member at the corner unless it be level and this may not admit of finishing up well from an architectural standpoint.

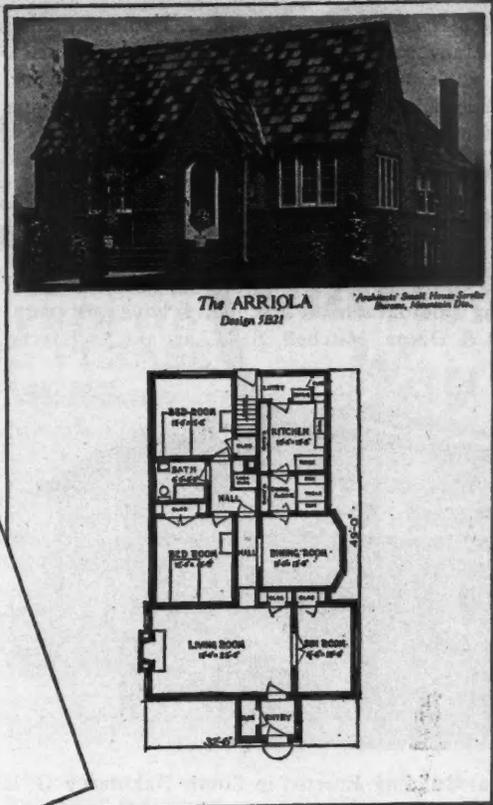
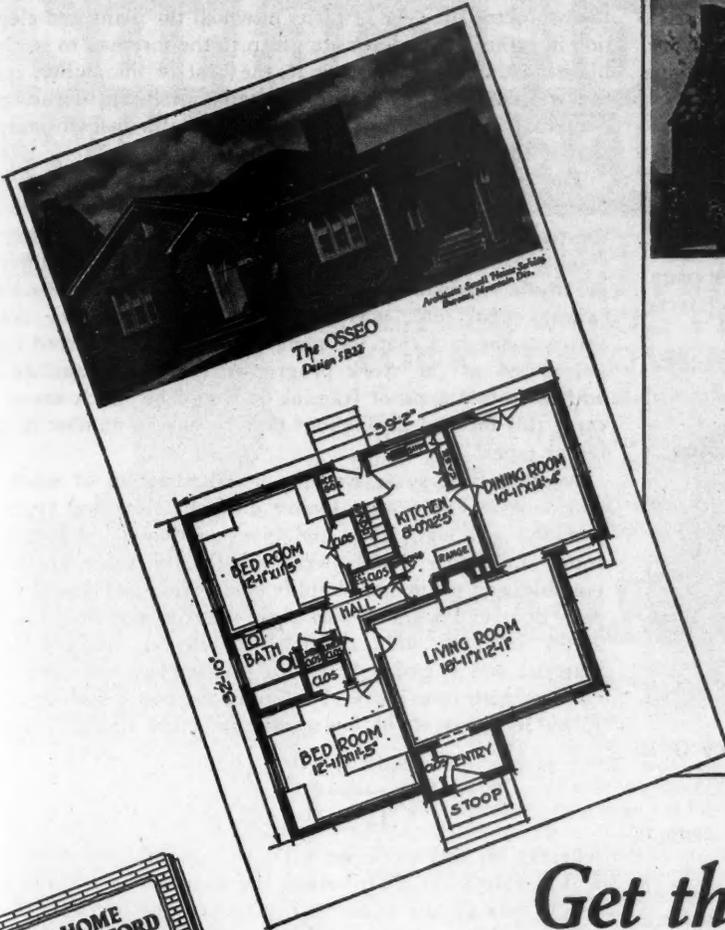
It might have been better to run a 6-foot deck on the wide side. This would have allowed the roof over the narrow side to return around the deck and in that way avoided the uneven pitch in the roofs.

We wish to call particular attention to the circles and parts of circles shown in Fig. 1. The parts of circles are more readily self-explanatory, but what about full circles centered at "A" right on the very tip end of the corner of the roof?

Well, the center of the circle or circles, as in this case is the beginning of the beginning, and their functions do not end



Here is the Diagrammatic Representation of Mr. A. W. Woods' Solution to the Roof Framing Problem Presented in the November American Builder.



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till the whole job is completed. In short, it is the beginning and the end. Many have a wrong idea of the steel square. They think the whole mystery of framing is tied up in its arms, but it isn't. It is only as a reading instrument to something else and that something else is the circle.

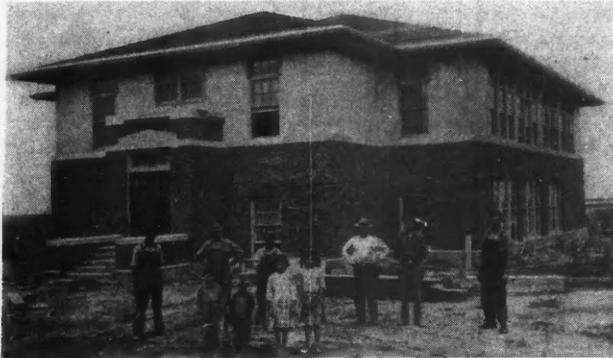
A. W. Woods.



Builds Modern School

To the Editor: Plankinton, S. D.

I am sending photograph of a school I have just completed. Kings & Dixon, Mitchell, S. D., are the architects,



Modern School Building Erected in South Dakota by G. E. Carlson.

I have taken AMERICAN BUILDER from the first copy to date, and have most of them on file.

G. E. CARLSON,
Contractor and Builder.



System Wins

To the Editor: Moncton, N. B., Can.

In the latter part of June, 1923, heavy forest fires raging in Northern New Brunswick, burned out a number of buildings on the Canadian National Railways and in one instance completely wiped out all the buildings along a stretch of line thirty miles long. These buildings, consisting of stations, section men's dwellings, tool houses, etc., had to be replaced with the least possible delay in order to handle traffic and to provide shelter for the section men's families. Designs were immediately prepared for one double dwelling, four bungalows, two single dwellings, one story and a half bungalow, one way station, one shelter station, one bunk house, five tool houses and ten privies. Construction work was started August 8th, and all buildings were complete and ready for occupancy October 1st, forty-five working days being required for the whole job.

The responsibility for design, supply of material and construction being placed in the hands of the writer, an organization was built up to push the work through in record time, and as the work was over a hundred and fifty miles from headquarters, on a branch line of railway very sparsely populated, it was imperative that the job be run smoothly, with no delays through material shortage or lack of information on the plans.

As the gangs were recruited from any source available and with green foremen in several cases, it was considered unsafe to run the risk of the job getting out of hand by reason of any inconsistencies or lack of information on either plans or bills of material. In preparing the drawings and ordering the material, the viewpoint of the carpenter was always kept in mind, or in other words the plans were so made that only one interruption was possible and that

was the right one. This meant departing somewhat from the characteristic type of plans in which the plans and elevation in rather vague form are given to the foreman to scratch his head over and interpret to the best of his ability, with the welcome or unwelcome assistance of half a dozen carpenters. The drawings were so replete with information that nothing was left to the imagination.

The simplest, and to the best of the writer's knowledge, most suitable type of construction was adopted, and all the buildings were designed on the same basis, resulting in standardized construction. Although the buildings differed greatly in size and shape, the same method of framing sills, rafters, joists, etc., was used. Another reason for doing this was the fact that the gangs would be transferred from job to job as the work progressed and once familiarized with a certain type of framing it would be much easier to carry this method throughout than to have a number of different types.

Another time saver was the standardization of windows and doors. There were twelve different sizes and types of windows and eight sizes and types of doors, but the sash, frame and other details were exactly the same as far as possible, and to further simplify the sorting and distributing, each door and window was given a series number, and the series numbers were carried through on plans, bills of material and shipping lists. In this part of the country a window with four 10 by 12 lights in the upper sash and two 15 by 30 lights in the lower sash is called a pair of sashes

10 by 12 top 6 lights

15 by 30 bot. 2 lights

whereas on this work we called it a number one window, and in listing and distributing, the chance of error and confusion was greatly reduced. In order to obtain this clarity it was, of course, necessary to spend some time on the drafting board, and a general sheet of window and door details was prepared, this sheet also giving small scale diagrams of each type of door and window, the number to be shipped to each building and the total number to be ordered from the mill.

Again, in ordering bulk material nothing was left to guesswork, the kind of material, grade, finish, dimension and purpose being clearly shown on the bill. The following is an extract from a bill of lumber for one of the buildings:

Upsalquitch Station

BILL OF MISCELLANEOUS LUMBER

Item	Description	Size	Lgth.	Dress	Material	Quantity
1	Floor beams	10x10	10'	R	Spruce	3 pcs.
2	Floor and ceiling beams	6x 8	11'	R	Spruce	2 pcs.
3	Joists	2x 8	11'	R	Spruce	65 pcs.
4	Under flooring	¾"		RL	T & G Spruce	1100 FBM
5	Dado Cap Detail "B"	1½x2½"		RL	Pine	200 LF

This gives a general idea of the manner in which the bills were prepared, each building list containing from fifty to one hundred items. The time spent in preparing the bills in this complete, and to some, long-winded manner, was repaid a thousandfold by the complete check obtained by the foreman in receiving the material, and, which is still more important, the entire elimination of material shortage so common on many jobs owing to the use of material for one portion of the work that was intended for another portion. It is a frequent practice to lump all sizes and shapes into as few items on the bill as possible, with the result that the material is piled holus polus over the lot and grabbed at random by the carpenters. On this work the material was neatly stacked in separate piles as it was unloaded from the cars, with the result that the carpenters went to one pile for 16-foot joists, another pile for rafters, another pile for studding, and so forth, the work running smoothly as a machine. It did cost a few dollars

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The American Universal (electrically driven) machine not only does as much work as six hand scrapers but it does better work than is possible to do by hand. With it an unskilled, inexperienced man can surface new and old floors perfectly, as smooth and even as plate glass, without tool mark, chatter mark, or blemish anywhere. That means lower costs, bigger profits, enthusiastic customers and increased business.

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If you have not enough floor work of your own to keep one machine busy, you will find a big demand for "American Universal" work among other contractors in your locality. Or you can do as hundreds of others have done—work up an independent and mighty profitable business by specializing in new and old floor surfacing. It need not interfere with your established business in the least and can be made to pay handsome dividends.

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more to pile the material in this manner, but the results proved that the investment was very profitable and the carpenters and foremen to a man were enthusiastic over the arrangement.

The framing material and trim was shipped for each building in one car as far as possible and as the foreman had been given two copies of the bill it was an easy matter to check and sort into piles, the extra copy of bill being kept clean for later reference.

Bulk material, such as shingles, nails, plaster, etc., was billed to a central distributing point and re-shipped in smaller quantities up and down the line, as it would not be possible to stop a car at each point and unload a portion of the material. The bills for this material were prepared in the same complete manner, of which the following shingle bill is an example:

Bill of Shingles

VARIOUS BUILDINGS

179,250 clear cedar shingles—delivered to Upsalquitch, N. B. Distribution:

Mile 13.52	{	Station	33,750
		Dwelling	27,250
Mile 23.3	{	Bungalow "A"....	16,000
		Bungalow "B"....	20,750, etc., etc.

It will be seen that the material man at the distribution point knew just what to ship out to local points and as the foreman also had copies of the bill, he knew just what the shingles were intended for.

This system also worked to perfection and no delay or mixup was caused through over or under supply of material. The windows and doors above mentioned were also handled in the same manner.

A description of material handling methods having been attempted, a little space will be given to the organization. The writer, being responsible for the completion of the whole job, supervised designs, made requisitions and orders for material, traced shipments, and exercised general supervision over construction. It might be noted here that the making of bills of material by the designers of the building is somewhat of a deviation from general practice—the designer generally stopping short upon the completion of the drawings. It is only right, however, when complete design and construction service is rendered that the designer should make the bills of material, otherwise it is left to somebody else to interpret his ideas. A check on the completeness of the plans is also obtained, also upon their accuracy, and again many inconsistencies in design and detail are caught and rectified when the drawings are scrutinized as carefully as is necessary to obtain bills of material. The moral effect upon the designer is also apparent, a howl or two from the field over material shortage or delays due to the specifying of impossible shapes and sizes generally brings him to earth with a thud, and as soon as he learns that murder will out, a consideration for the men on the job and for his own well being prompts him to adopt common-sense methods of construction which are not always in the curriculum of the man at the drawing board.

To come back to the organization, the field work was placed in the hands of general building superintendent located at a central point. His duties consisted of receiving and checking material, chasing up slow shipments, supervising construction, maintaining discipline, checking time books, and general duties of a supervising nature. As the territory over which he had to travel extended about thirty miles, he was provided with a gasoline track motor car and generally was able to visit each job once a day.

The working gangs generally consisted of a foreman and eight men—four of these gangs being maintained. They

would be located at a point at or near the building site and would split up so that one portion of the gang would be framing one building while another portion would follow up with trim, sheathing, etc. The plastering and painting were handled by floating gangs working from building to building.

As the country was very sparsely populated, provision had to be made for housing the men, and freight cars were converted to make one sleeping car and one cook car per gang. Each cook was on the gang payroll and the provisions were purchased by the foreman, each man sharing in the cost. To protect the foreman, each man gave him an assignment of his portion of the cost of provisions and this amount was deducted from the workman's pay and turned over to the foreman. No losses occurred by this method.

In general, the work was carried through rapidly and smoothly, the men were satisfied and the foremen happy. To a great extent this was due, in my opinion, to the application of the general rule—divorcing planning from production. The planning in this case was comprehensive in that it not only meant the planning of the buildings, but also the planning of the ways and means for constructing the buildings. The foremen's duties were confined to the duties of foremen; in other words, they were not expected to be architects, engineers, material men, mind readers, labor agents and general superintendents, but they were expected to take the materials that were delivered to them, use the plans and lists prepared for them and devote their energies to helping the carpenters erect the structure—and it worked.

H. J. CRUDGE.



A Two-Way Folding Bed

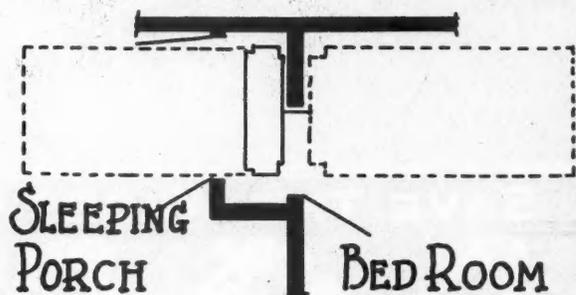
To the Editor:

Emporia, Kan.

A simple arrangement for a bed to be used both in a bedroom and a sleeping porch is illustrated by the drawing. A folding bed, made on the order of a Murphy folding bed can very easily be installed between a bedroom and a sleeping porch. By referring to the drawing it will be noticed that in the sleeping porch a little closet is built with two doors opening into the room. In this closet the bed is kept folded up when not in use. If it is desired to use the bed in the sleeping porch, the two doors are opened and the bed unfolded, which will leave it in the position shown by the dotted lines. If, on the other hand, the occupant wants to sleep in the bedroom the bed is swung out into the room and unfolded. The dotted lines show the location of the bed when it is set up in the bedroom.

There are two great advantages to this arrangement; first, one bed can be used for two rooms, with practically no work to speak of required to change the bed from one room into the other. Second, in case of a blowing rainstorm, a cold wave or an invasion of mosquitos, when it is desirable to get into closer quarters, the bed can be changed in a few seconds of time, thus hardly interrupting the sleeper's night's repose.

H. H. SIEGELE.



Arrangement of Closet Bed to Work Both Ways.



Casement Windows Are No Longer a Luxury

Because of their wide use in exclusive homes of pretentious design, casement windows have heretofore been considered a luxury.

Today, Truscon Standard Casements, due to quantity production, are available for the moderately priced as well as the pretentious home.

With all their refinements, quantity production of standardized sizes has brought the price of the Truscon Steel Casements to a point where they compare favorably with the ordinary wood window.

Truscon Casements open and close easily under all conditions, are fire-proof, rust resisting and never stick, warp, sag or get out of line. They do not interfere with the correct use of drapes and are easily screened.

Ask your local dealer about Truscon Standard Casements. If he does not handle them send us his name. Catalog will be sent on request.

TRUSCON STEEL CO., Youngstown, Ohio

Warehouses and Sales Offices from Pacific to Atlantic.

For addresses see phone books of principal cities.

Canada: Walkerville, Ont. Foreign Division: New York.



**Truscon Casements
Open Wide to the
Outdoors**

TRUSCON

COPPER STEEL
STANDARD CASEMENTS

WHAT'S NEW?



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

A Mechanical Sand Block

A TOOL which smooths around baseboards, corners and other confined places and will produce a fine sandpapered finish of woodwork in a very short time and with the fraction of the manual labor of the sandpaper block method is bound to be welcomed by builders.



A Power-Driven Sanding Machine Speeds Up Wood Finishing.

Such a device is shown in the accompanying illustration. Sandpaper or other abrasive material is mounted on a roller which through a flexible shaft is motor driven at a rate of 1,800 revolutions a minute. This roller is mounted in a guard and provided with smaller wooden rollers as shown in the illustration, although the roller may be dismantled from this guard for special jobs.

The sandpaper or other material is tightly bound around the roller by a pair of interior rollers which draw and clamp firmly the two ends of the sandpaper inserted through the roller slot. Each machine is

furnished with a metal pattern from which the facing for the roll may be cut quickly and accurately. Each machine also is furnished with 25 feet of wire and a plug attachment for a drop light connection.

The makers of this machine are finding their largest market among the finishers of woodwork, but in a number of cases painters and those who refinish old work have adopted it with a great deal of satisfaction.

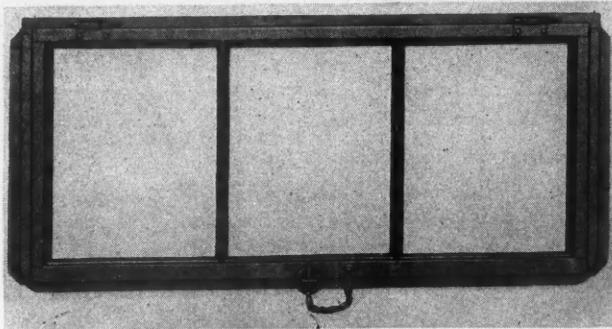


Basement Window Has New Features

GREATER rigidity, improved appearance and double, flat-contact weathering between the frame and sash are some of the distinctive features found in a new steel basement window.

The factor of rigidity has been increased through the use of casement sections, and through a new method of forming jambs and sill all together in one continuous piece. The attractiveness of the new window is made more pronounced through the use of a flared section at the jamb, which not only serves as a guide for the mason in laying up the outside course of brick, but also as a brick mould between sash and masonry. Double flat-contact weathering is obtained through the use of

new frame and sash members, the contour of which is such as to guarantee a close-fitting, weather-tight job. When the

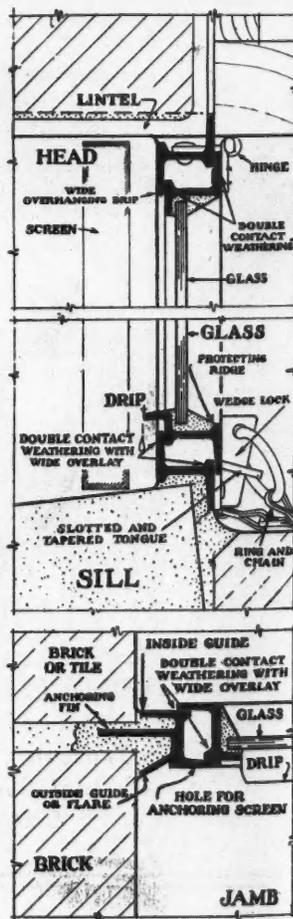


Increased Rigidity, Improved Appearance and Efficient Provision for Weathering Are Features of This New Window for Basements.

window is being closed, a wedge-shaped, self-centering lock guides the sash accurately into place and holds it securely—free from any possibility of rattling.

Several improvements have also been made to simplify installation. The flaring of the outside guide member at the jamb has increased the space in which the mason has to work. At the same time, it has made possible a more solid, workmanlike job.

Installation can be made with ease in any type of construction: cement block, brick, poured concrete, wood, tile or field stone. A number of concrete block manufacturers are now furnishing blocks with slots to receive the anchoring fin at the jamb, as well as grooved sills to receive the sill. In brick construction the anchoring fin is held in the joint, the brick being laid up on both sides of it. It is here that the guides at the jamb are most necessary to the mason, enabling him to lay his brick true and plumb with a minimum of time and effort. In concrete block and brick, the window is set in place and



Cut Shows Cross Section of Window Installation in Masonry Wall.



Fireproof Construction— Costs Less Than Wood

Permanence, fire safety and economy are the most important points in building. When you get these three factors in a construction is there any question as to what to use?

With its advantages of permanence and fire safety, Truscon Steel Joists with cement floor finish actually cost less than wood construction with hardwood floors. Modern offices, stores, hotels, apartments and hospitals are using cement floors in preference to wood.

Saving of 12½% in Indianapolis

Comparative figures in Indianapolis show that Truscon Steel Joists with 2½ inches of concrete on Hy-Rib above and plaster on Hy-Rib Metal Lath below, save 5.67c per square foot over wood joist construction with hardwood floor and metal lath plaster ceiling.

We have analyzed these savings for practically every locality and representative type of building design. Data of interest to architect, contractor and owner will be sent on request. Write us for this information.

TRUSCON STEEL COMPANY, Youngstown, Ohio

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



FENWAY HALL,
Cleveland, Ohio. George B. Post & Son, Architects, New York; John Gill & Sons, General Contractors. Truscon Steel Joists with Hy-Rib Lath, nailing screeds for wood floor finish; concrete between screeds.

TRUSCON

AND NATIONAL

STEEL JOISTS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

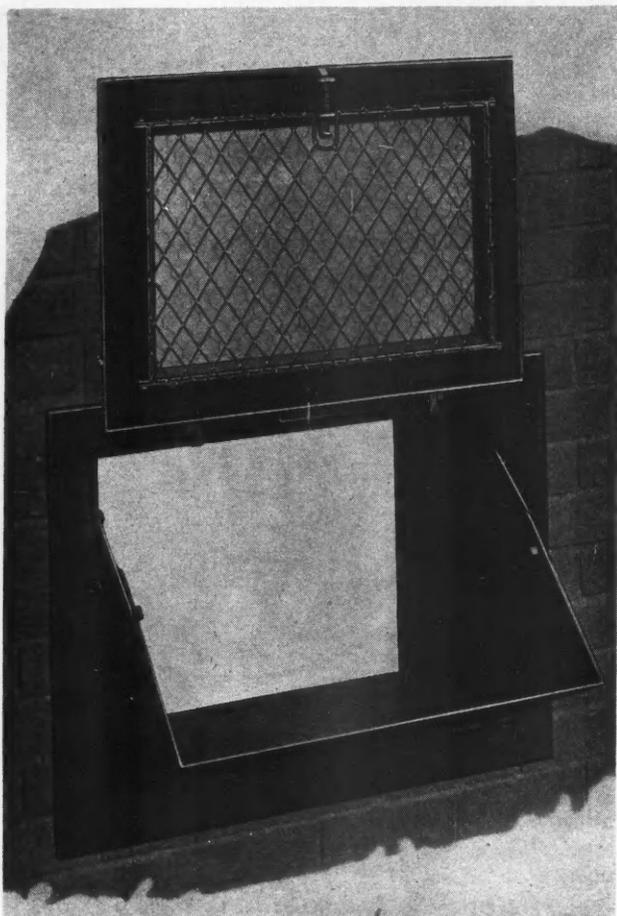
the wall built around it. In poured concrete the opening is first prepared and the window dropped into place. Suitable strips, nailed on the inside of the forms, leave grooves or slots into which the window is slid from the top and then grouted.

Glazing is done on the inside, no glazing clips being needed. The glass is bed-puttied, then face-puttied to a smooth neat finish. The weight of the glass rests constantly on the bars of the sash. Glazing may be done either before or after the frame has been set in the wall, the ventilator or sash being hung on two split hinge pins which make it easily removable. Due to the design of the sash sections, only a comparatively small amount of putty is required.



Coal Chute Made of Rolled Steel

A COAL chute which does not function properly and which looms up like a defect in the side of a building is a major defect often seen in homes which are decidedly modern in all other fittings.



Rollled Steel Is Used in the Building of All Parts of This Coal Chute. The joints and frames are welded electrically.

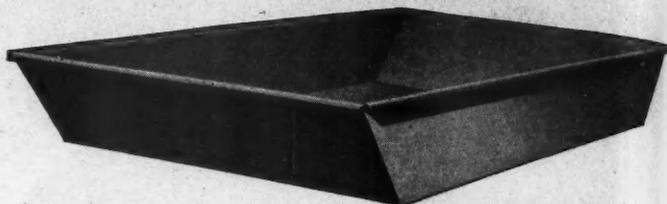
The chute shown in the accompanying illustration is made entirely of rolled steel. The manufacturer declares that the elimination of the use of castings eliminates the probability of breakage. Doors, made both solid steel and glazed, are rolled from a one-piece steel plate. The joints and frames are welded electrically, and the hinges are substantially made of rolled steel.

An automatic spring latch of durable design assures positive locking when the door is dropped. The glazed doors have heavy wire glass which is further protected by a wire grating. The chute is declared to be fire and burglar proof.

Steel Batch Boxes and Mortar Boards

STEEL batch boxes and mortar boards present a number of advantages which bricklayers, plasterers, stone masons and cement workers will be quick to appreciate.

The steel batch box illustrated here is made of a heavy gauge steel with a one-piece bottom and is very rigid in construction. It is welded electrically throughout, so that it is practically one piece and there are no seams or projections.



A Steel Batch Box for Mortar Eliminates Many of the Objections to the Boxes Made of Wood.

A channel formed all around the top of the box helps make the box rigid and prevents sharp edges or projections and at the same time affords a grip on the box which allows it to be handled with ease by two men.

The ends are flared just enough for convenience in scooping out the mortar and the boxes are easily washed. In cold weather a fire may be built under the box to keep the mortar at the proper temperature. It is said that they last indefinitely.

The mortar board is perfectly flat and smooth, without projecting nails for the trowel to catch on. It is easy to keep clean and always is ready for use.



This Steel Mortar Board Can Have No Projecting Nails or Splinters.



Metal Lath is Self-Furring

FIRE resistance, permanence and prevention of cracks have long been credited to the metal lath type of construction. To these advantages a number of new ones have been added by a new form of metal lath, according to the firm making it.

This product, according to the specifications for metal lath construction approved by the Associated Metal Lath Manufacturers and the American Specification Institute, is a combination of expanded metal lath and ribs, of a total depth of approximately three-eighths of an inch, measured from the top side of the lath to the top side of the rib.

The combination of the rib with the lath results in a much stiffer sheet of the material than is the case with the ordinary expanded metal lath. The rigidity makes the handling of the product much easier for the workman and expedites construction. It also allows for a wider spacing of supports.

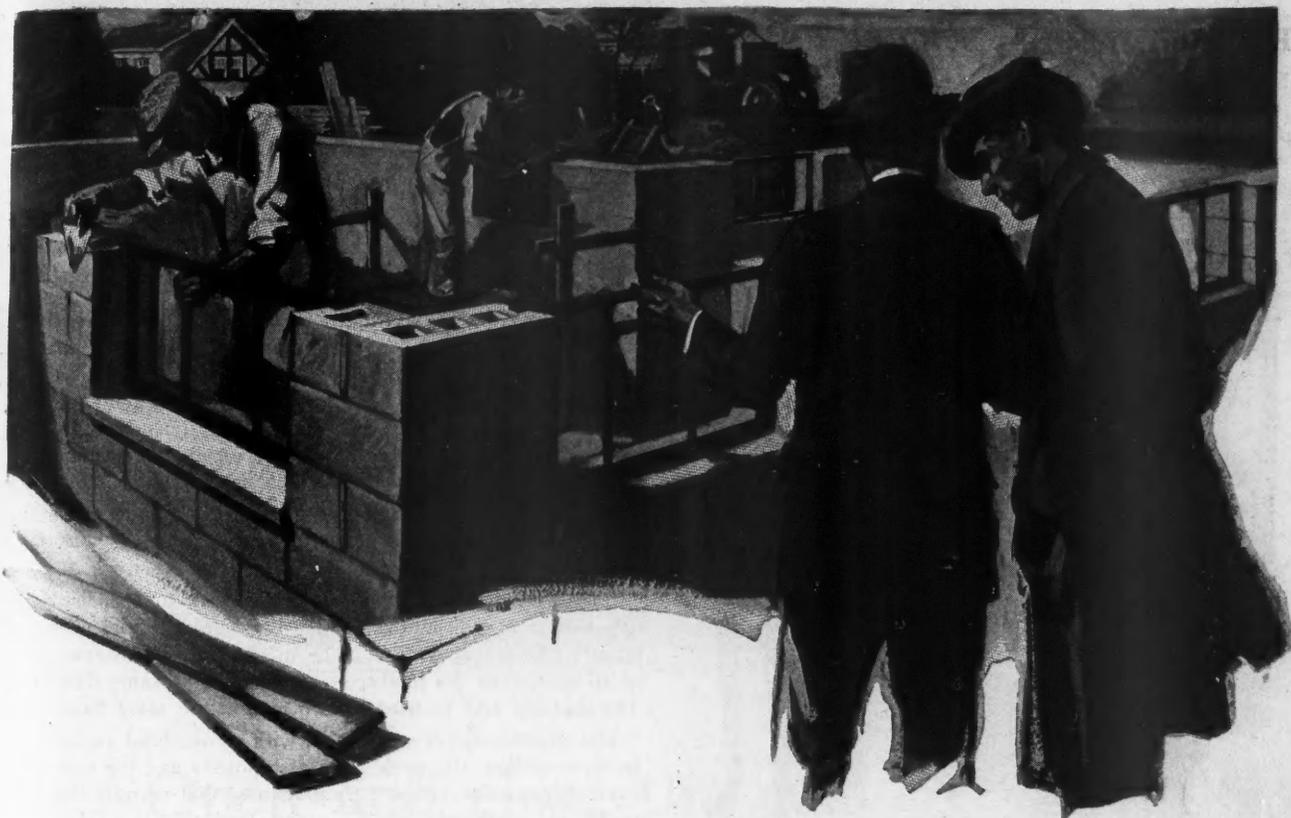
This product gives full 24-inch covering width without allowance for side splices. This feature is credited with a saving of 5 per cent in the amount of lath required for covering a given space.

The ribs are applied against the supports, acting as furring in all work and making better and surer clinches over the supports. This results in the saving of the furring rods.



Pictured Here Is the Combination of Metal Lath with Furring After the Plaster Has Been Applied. The rib, which serves as furring, shows plainly, running at right angles to the studding. This feature makes for strength of the product.

B.



Have You Seen the New, Improved Fenestra Basement Window?

It has all the advantages of the original steel basement windows and many important new ones. It represents the greatest improvement since steel replaced wood in the basement windows of modern homes.

Jambs and sill are one solid continuous piece making the window absolutely rigid. Two point flat contact between sash and frame all around the opening provides a storm tight weathering. A projecting fin at the jamb imbeds in the masonry—a solid anchorage. A self-centering wedge

lock insures that the sash seat properly—prevents rattle. Glazed from the inside, the weight of the glass rests on steel bars. These are only a few of 25 or more advantages, yet the new Fenestra Basement Windows cost no more than before.

These windows will save any builder both time and money. More than that, they will help him complete a more attractive and more useful home *and sell it quickly*. Complete literature, of course, free on request—or if more convenient, ask your lumber dealer.

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

Fenestra

BASEMENT WINDOWS

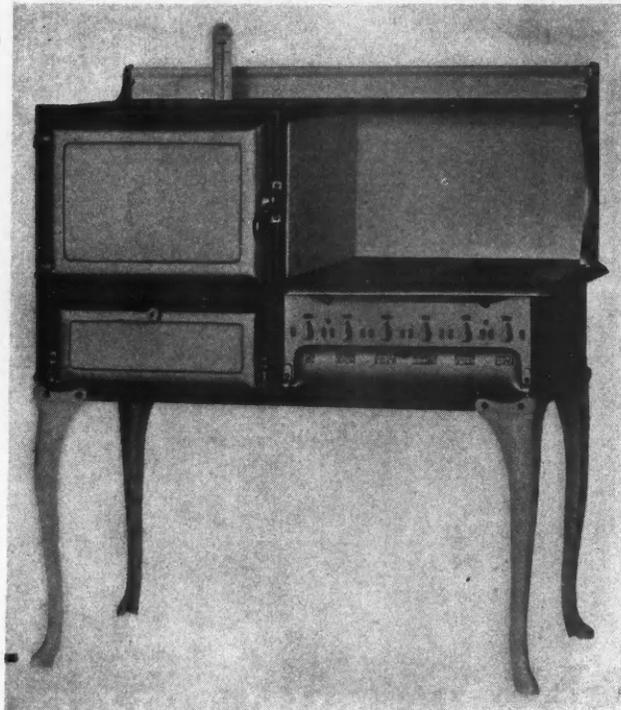
Fenestra

The name of the ORIGINAL steel WindowWall.

The symbol of superior QUALITY in material, patented design, workmanship and service.

Electric Range Has New Heating Unit

IN a new electric range which the makers claim is as rugged as a coal range and as fast as electricity, an entirely new type of cooking element is utilized. This element, the manu-



An Entirely New Type of Heating Unit, Said to Be Rapid and Lasting, Is Incorporated in the Building of This Electrical Range.

facturer states, is so fast that it becomes red hot almost instantly.

One of these elements has been burning in the laboratory of the makers for more than 6,000 hours in the past two years without showing any signs of deterioration.

In use, the cooking vessels rest directly on the cooking element, which enables this range to give the cooking efficiency of a red hot stove. This is the first time this has been achieved in the building of electrical ranges.

The heating elements are of such a rugged construction that they cannot be short circuited or burned out by coming into contact with water. It is said that the range consumes one-third less current than has been used by ranges of ordinary design and is one-quarter faster than previous types.

The oven also is constructed along unique lines. It is lined with "monel" metal, one of the greatest heat-resisting metals known, and one which will not rust or warp.

The president of the concern making the range, in speaking of his product, said:

"It is to be understood that we do not expect electric stoves to replace gas. Electric ranges fill a special field of their own; they are used primarily in communities where gas is not available, and in communities supplied by water power

where the rate is less than 5 cents per kilowatt, and in certain instances where electrical cooking is desired.

"When the time comes that the maximum rate is not more than 2 cents per kilowatt, electric cooking will be quite popular, and with proper efficiency will be equally economical."



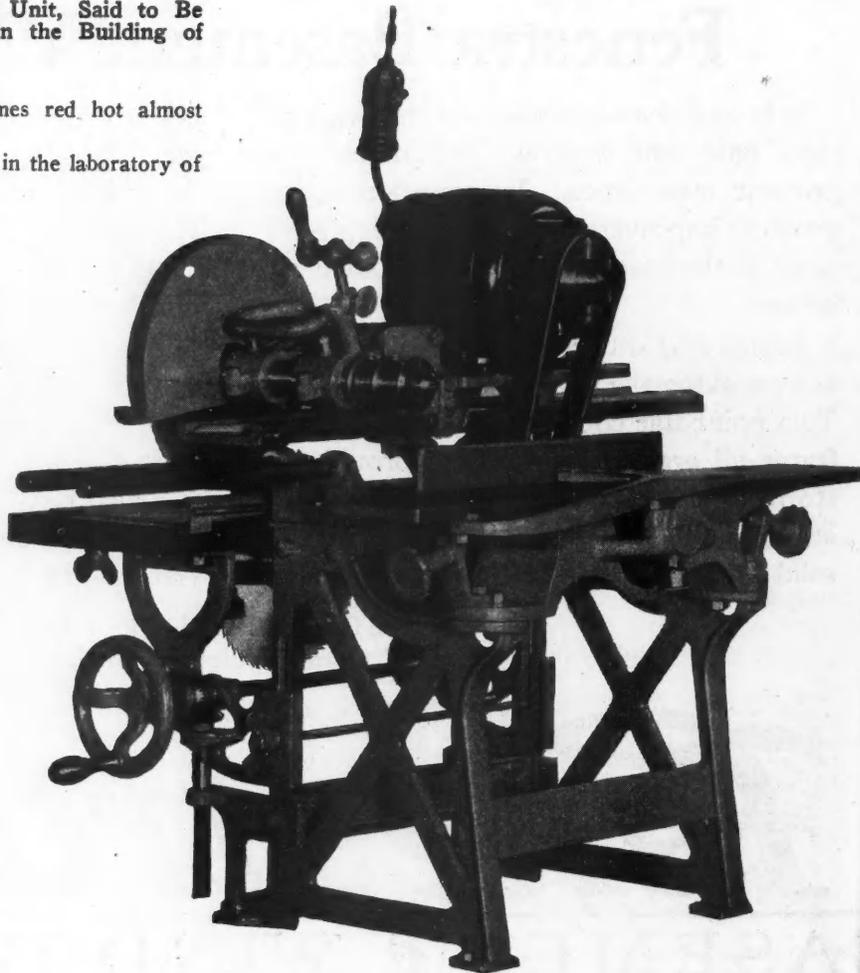
Woodworker Takes Power from Electric Light Socket

A WOODWORKING machine which may be utilized both in the shop and on the job is so constructed that it takes the current for its power from an electric light socket. This feature, with the fact that the complete weight is 160 pounds and that it can be disassembled for transportation into three parts by removing three bolts, makes it particularly attractive to use in interior finishing and framing.

The machine is equipped for cross-cutting, ripping, jointing, boring, planing, grinding, mortising, routing, plowing, mitering, robbing, moulding, stair housing and tenoning work.

The rip saw is always in position to operate independently of the other saw. A heavy, underslung arbor also carries different kinds of moulding dadoes. The machine is so designed that in all operations the lumber is running in the same direction. The machine may be used by two men at the same time.

The woodworker is constructed with an overhead swing saw. In cross-cutting, the work is held stationary and the saw cuts itself through the lumber. A graduated dial permits the saw to be set accurately while running and this is said to be the only machine of its kind which will cut a compound miter in one operation.



Current from the Ordinary Light Socket Furnishes Power for This Versatile Wood Worker, Designed for Use Both in the Shop and on the Job.



Open and close the coal window from inside

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

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

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

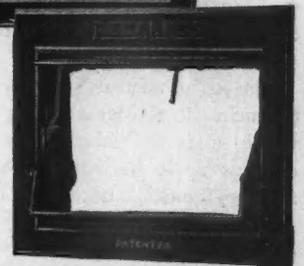
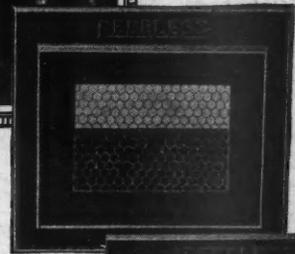
Made with durable fire glass or solid steel panel—with or without hopper. No hinges or locks outside the building. *Send for complete description.*



PEERLESS MANUFACTURING CO.
INCORPORATED
LOUISVILLE, KY. U.S.A.

Largest manufacturers of fireplace equipment in the world

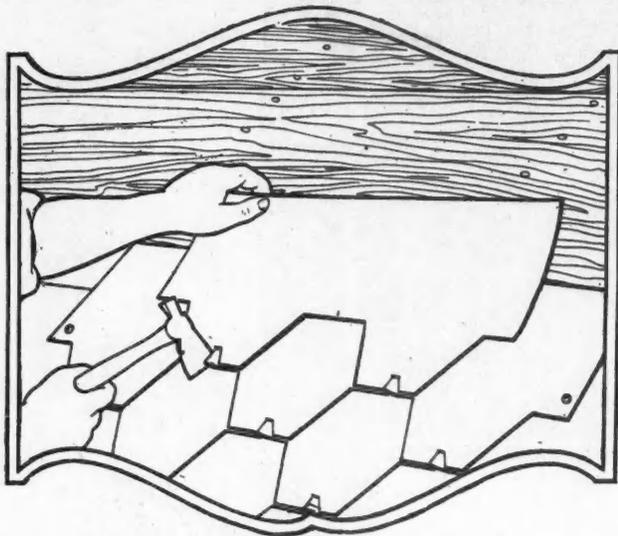
Dealers: Write for proposition.



PEERLESS COAL WINDOWS

A New Two-Shingle Strip Which Locks

A NEW type of locking strip shingle has been perfected and put on the market which has many advantages. It is of the asphalt, rock or slate surfaced type, two shingles to a strip. It produces the effect of large octagonal shingles, with a choice of red, gray-green or peach bottom blue shades.



Ease and Rapidity of Laying Is a Feature of This Shingle Strip, Which Has Each Edge Locked Down to the Roof.

The strip measures 19 by 32 inches over all and is laid 6.2 inches to the weather. It has a very simple, effective lock which holds the shingle tabs down so that they will not curl or blow up in the wind. These shingles are self-spacing and are very quickly and easily laid, there being only 72 strips per square to nail in place, as against 114 four-in-one strip or slab shingles. The economy in time applying these shingles amounts to more than one-half the nailing time required to lay the four-in-one strips. But three nails are required for each of these new strips.

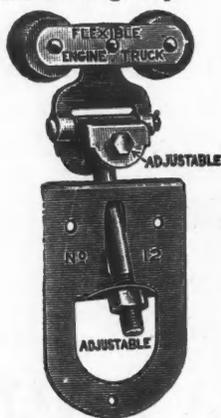
These shingles make a water-tight roof covering which neither snow nor rain can blow through. One feature of this shingle which appeals to builders is that no spot on the roof has less than two thicknesses of shingle over it and a large portion of the roof gets a coverage of three thicknesses. This new shingle is proving exceedingly popular, as shown by a heavy volume of initial orders.

Door Hanger Has Self-Cleaning Track

A TYPE of door hanger for large doors, such as are used on barns, warehouses, garages and other buildings requiring heavy sliding doors, is equipped with a tubular track which is completely enclosed. The hanger and track have met with the approval of builders in many communities where they have been used.

The track is made of extra heavy steel, 2 3/8 by 2 inches in diameter with 3/8-inch girders on the under side to stiffen it and permit the carrying of an unusually heavy load. The track is not a perfect circle, as it has a greater width than depth, which braces it against spreading under a heavy load. The girder not only stiffens the track, but also presents a flat surface instead of a thin edge which would wear rapidly against the hanger bracket.

Any dust or dirt which blows into the track falls out immediately, since there



Adjustable Hanger Showing Track and Apron Details.

is nothing to hold it. Joints in the track are made by the ends of the track meeting in a bracket, making the splice as strong and rigid as other parts of the assembly.

The hanger is hung from two machined steel rollers, in which roller bearings and hard steel axles are utilized. It is pivoted in the center, allowing it to oscillate and adjust itself to any condition. The door, by means of two adjustments, can be moved closer to or farther away from the building, and can be adjusted for height. The lateral adjustment fits the hanger for use with doors of different thicknesses.

The apron is of heavy steel, 4 by 6 inches.

Device Drains Basements Without Attention

AUTOMATIC drainage of cellars or other places where water collects is provided by a device which operates from the pressure of an ordinary city water system.

The drainer requires that a sump be dug in the floor of the cellar or basement so placed that all water will drain into it. In this sump the drainer is placed, with two connections, one to the city water supply and one a discharge pipe to the sewer or wherever the drainage water is to be taken.

After the connections are made and the water pressure turned on, the drainer is entirely automatic in its action. It works on the injector or syphon principle. As the water rises in the pit a float is raised and when a certain height is reached a valve is opened, allowing the city water to flow through the ejector, creating a suction and carrying the sump water with it. As the water falls, the valve closes at the low point, to remain closed until the float is raised to the point where the operation is repeated again. A foot valve seals the suction pipe when the drainer stops working, so that the mechanism is always primed.

All of the parts, except the float, operate above the water.

Saw Selection Simplified

TO make the selection of the type of handsaw easier for prospective customers a firm which is one of the oldest makers of saws in the United States has adopted a novel plan of marking its merchandise before it is placed on the shelves of the hardware dealer.

A new style of label is placed on the saws before they leave the factory. This label gives the style, size, and point of the saw, as well as provides a space for the selling price to be marked by the retail dealer.

One of the big advantages is in time of the sale. When a customer asks a dealer for a saw of a certain type, it can be distinguished at a glance and can be placed on the counter immediately.



Enclosed Track and Double Adjustment Are Features of Hanger.

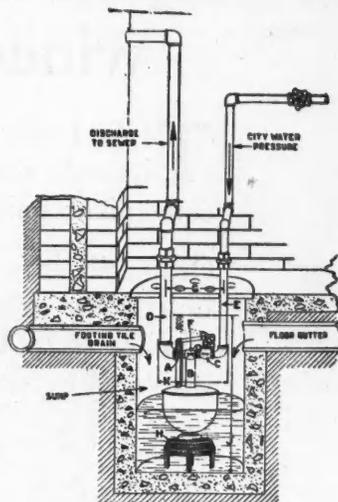
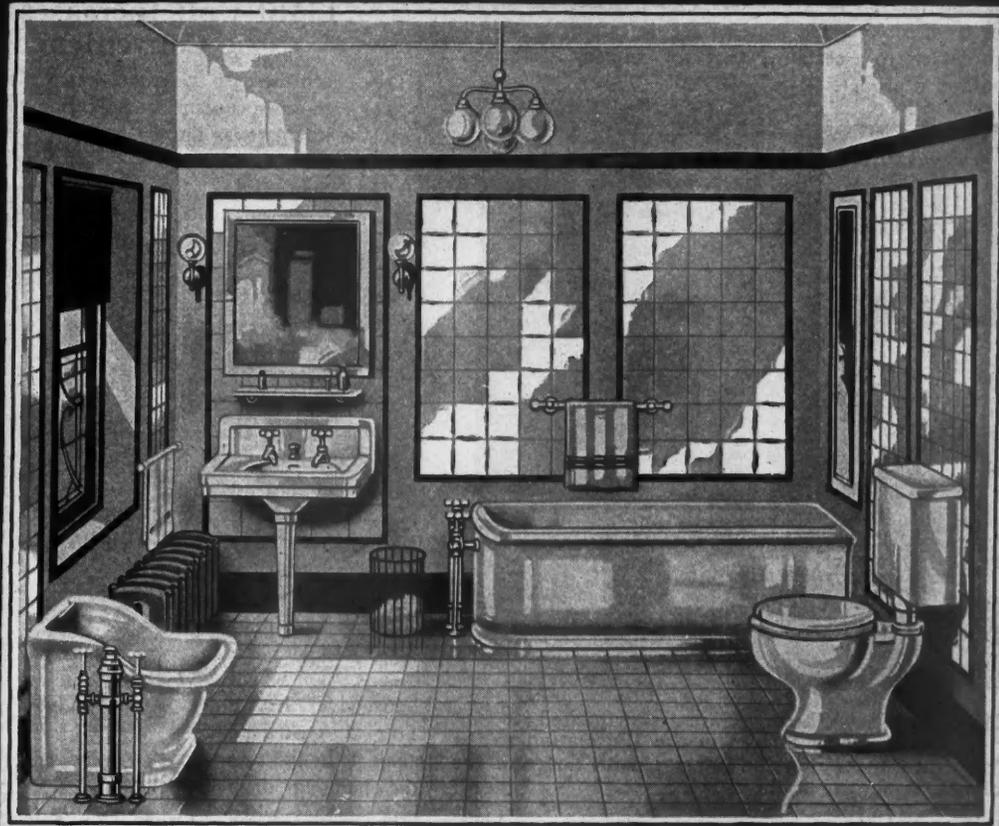


Diagram Shows Method of Installing Automatic Cellar Draining Device.



SANI ONYX

SAVITREOUS MARBLE

A PRODUCT OF THE MARIETTA MANUFACTURING COMPANY

A Typical Black and White
SANI ONYX Installation

Announcing the Tile Pattern Sheets

CONTRACTORS and builders confer a favor on their patrons by recommending Sani Onyx wherever quarried marble, slate or tile were formerly specified.

The new tile pattern sheets of white, blue, gray and black, are especially desirable because they give added possibilities in decoration with no sacrifice of the many desirable and exclusive Sani Onyx advantages. Among these are the uniform structure, resistance to acid, alkali, stains and weather, plus ease and permanence in installation. We co-operate gladly on any size project. Write for complete descriptive literature.

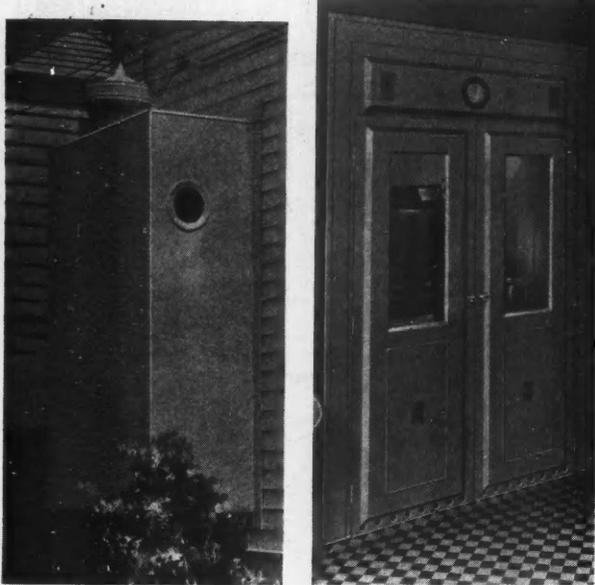
MARIETTA MANUFACTURING COMPANY

Main Office and Works—80 BROOKSIDE, INDIANAPOLIS, IND.

Distributors and Construction Houses throughout the United States and Canada

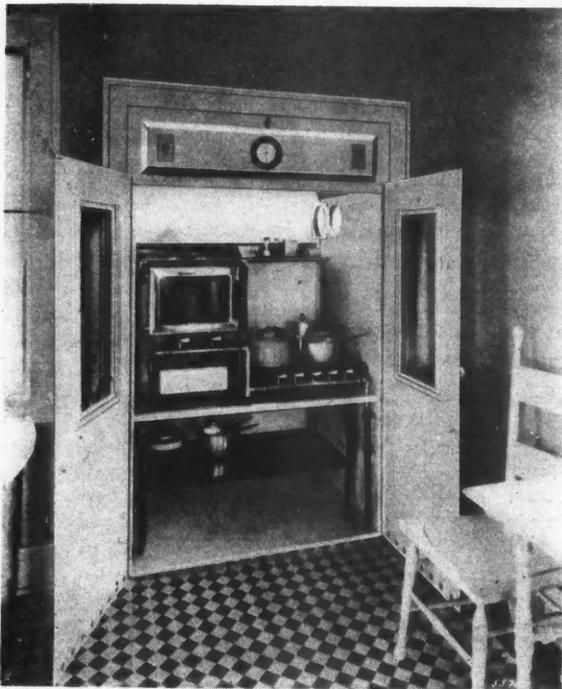
Cabinet Attached to House Provides Space for Stove

SAVING space usually occupied by the kitchen and protecting the household from odors and discoloration of furnishings from cooking are some of the objects of a cabinet designed to detach, to a certain extent, the culinary operations from the house proper.



The Metal Cabinet Shown Here Is Attached to the Exterior of the House as Shown in the Illustration to the Left. The appearance from the interior, with doors of the cabinet closed, is shown at the right.

The cabinet, made to contain the stove, is made of a high-grade metal with double walls, lined sectionally with asbestos. It is attached to the outer wall and supported on ornamental iron brackets. It can be cut off entirely by locking doors from the room into which it opens and is built with a special ventilating system to carry off heat and fumes. The interior finish is in light enamel and the exterior in a grayish buff, readily redecorated.



Doors of the Cabinet Open to Make Accessible the Entire Cooking Necessities of the Family. A ventilator in the cabinet carries off fumes.

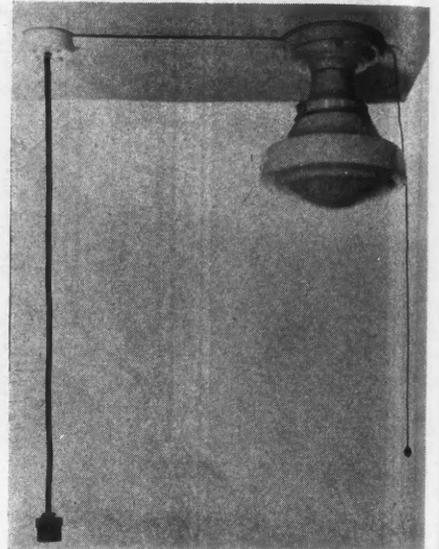
It is made in three sizes, one suitable for a plate and to be attached to windows, one for a four-burner range with a low oven and one for a cabinet range.



Light Unit Increases Kitchen Convenience

IT has been the case too often that while the rest of the home has been given careful consideration as to the proper sort of light, the kitchen was merely equipped with a drop light somewhere in the center of the room and the room considered properly lighted.

Kitchens lighted in this manner are a source of much annoyance to housewives, partly because these lights, usually low enough so that an electric iron or other convenience may be attached, cast shadows which make work at night difficult. And another reason which housewives have for a grudge against the light of the hanging drop type is that when ironing is to be done there is no provision made for connecting the iron without removing the light, which makes work impossible at night.



Shadowless Light for the Kitchen and an Outlet for Electric Iron or Other Convenience Are Combined in This Electric Fixture Designed to Be Attached Directly to the Ceiling.

To meet these objections, the kitchen unit shown in the accompanying illustration has been devised.

It is a law of lighting that the higher the source of light is, the less likely it is to cast shadows. This fixture takes advantage of the extreme height of the room by attaching directly to the ceiling. The light is under a milk colored shade which prevents any of its direct rays straining eyes of the workers and the same time assist in diffusing the light properly.

The same unit is provided with a hanging socket so that an iron or other convenience may be attached readily. The light is turned on and off by a pull-chain socket.

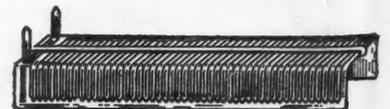


Machines Speed Up Screen Making

THE problem of fastening wire screen on screen door and window frames has been much simplified by a device which tightens the screen cloth over the frames by mechanical means and holds the screen wire in position and tight while it is tacked in place by the workman.

The equipment is attached to one end of the workbench. The screen wire is tightened on the frame by a foot pedal and held in position until the tacking is completed, when it is released by pedal. It will handle wire up to 48 inches in width.

An automatic screen tacker, made by the same firm, tacks screens eight times faster than is possible by hand, it is said. The fasteners are fed to the tacking machine from a clip magazine.



Magazine Clip for Machine Which Speeds Up Screen Door Wire Tacking.

How to Increase Your Painting Profits



Spray-painting

makes it possible for you, with your present force of men, to increase the number of painting jobs you can do in your present working time. Equipped with the DeVilbiss Spray-painting System you will do a volume of painting impossible by any other method.

The complete DeVilbiss Spray-painting System enables you to spray-paint houses, public and factory buildings, and other large and small surfaces of wood, concrete, plaster,



brick or metal. This sprayed coating is evenly and thoroughly applied at the lowest practicable air pressure, and has greater hiding power than the brushed coat.

The big money-making advantages for you in painting with DeVilbiss Spray-painting equipment are: you can paint 4 to 5 times faster than by the hand brush method; less scaffolding is required and the work is cleaner; your men quickly finish a job and are not delayed in getting on to the next one.

Painting this improved and modern way, you do best quality work in less time and have completely satisfied customers.

As the next step toward substantially increasing your painting profits, let us mail you further facts about the DeVilbiss System and the results you can produce with it. Address—

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

DeVilbiss *Spray-painting System*

MOTOR TRUCKS and TRAILERS



The Rules of Truck Maintenance

Machines Need a Square Deal and the Same Sort of Common Sense
Which Is Applied to Living

EVERY time the subject of motor truck maintenance comes up for discussion I recall what a veteran driver once said to me for I believe that his common sense point of view contains more downright helpfulness than any amount of technical or mechanical study. This, in substance, is what he said:

"Taking care of a motor truck requires nothing more than the same common sense we apply to our own daily lives. Above all, we must give the car a square deal. We are careful to eat regularly and to eat only the right kind of food. Likewise we should use the same care in selecting the right kind of lubricating oil and grease and to make sure that lubrication is not neglected. Just as we take extra precautions against the cold in winter and heat in summer, it is necessary to give our truck the same fair chance.

"We are always careful not to overwork ourselves or to attempt to carry more work than nature allows. At least, if we should find it necessary to take on extra work, we try to offset the burden by regularity of our living habits. And with a motor car it is possible to do the same, by careful driving, frequent inspections and adjustments and immediate attention to repairs."

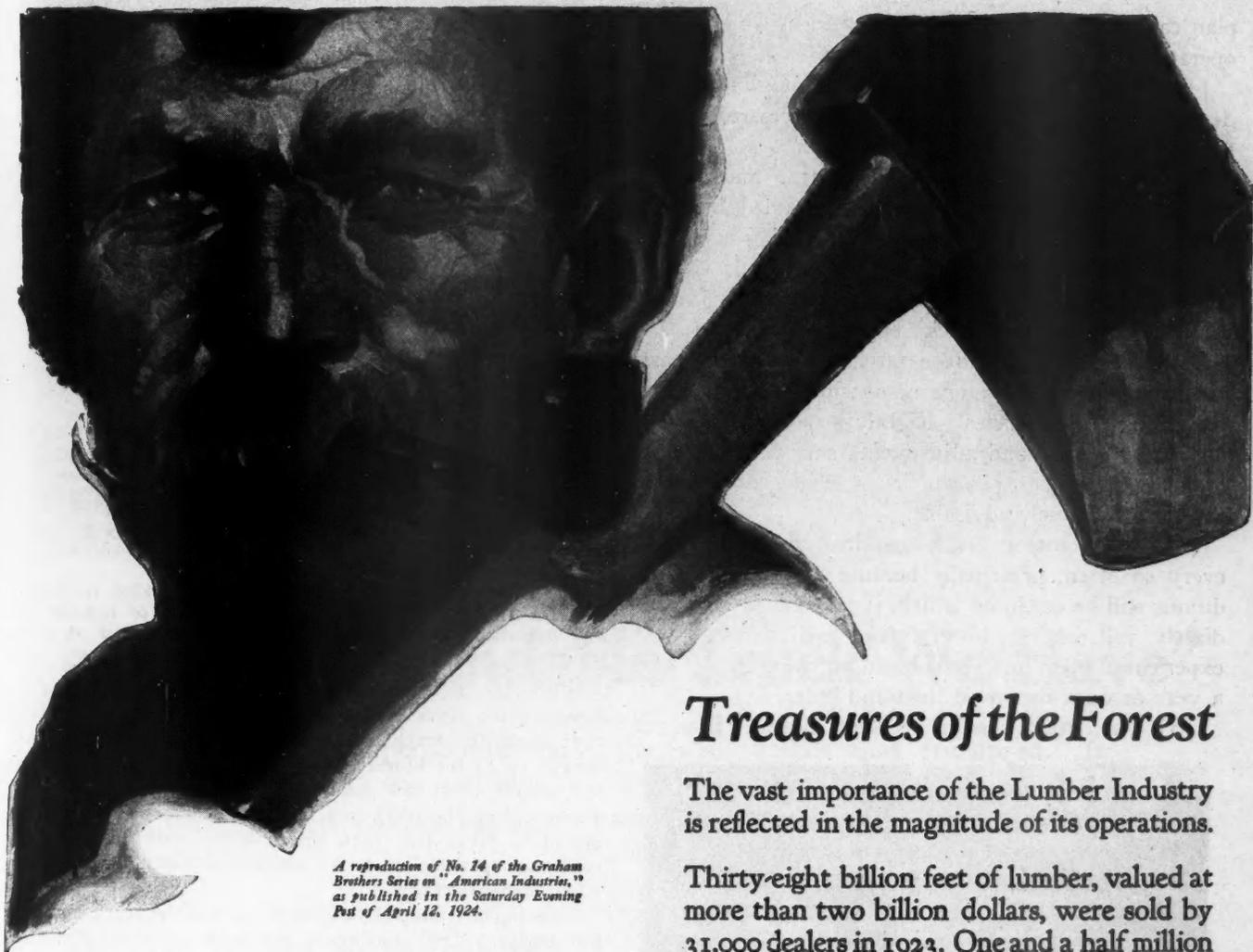
By motor truck maintenance we mean the care which the vehicle receives in operation, the manner in which it is driven and the attention devoted to such subjects as upkeep, inspection, repair and over-

hauling. It is a big subject and an important one because the life of a motor truck can be considerably lengthened and its operating expenses reduced if the maintenance plan under which it works is systematic and adequate.

The points every operator of motor trucks should know about maintenance can be boiled down to the following six paragraphs. With these as a basis a



Builders' Trucks Are Subject to All Sorts of Work Under Hard Conditions. You want good work from them; give them the same square deal you should give yourself. Careful driving, frequent inspections, and adjustments are advocated in this article.



A reproduction of No. 14 of the Graham Brothers Series on "American Industries," as published in the Saturday Evening Post of April 12, 1924.

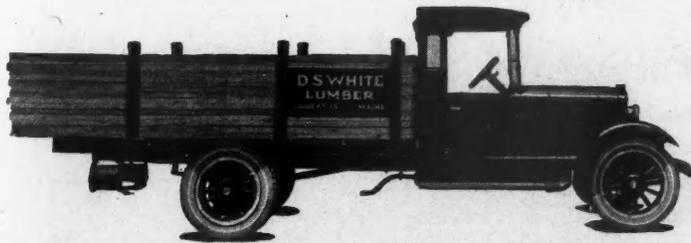
Treasures of the Forest

The vast importance of the Lumber Industry is reflected in the magnitude of its operations.

Thirty-eight billion feet of lumber, valued at more than two billion dollars, were sold by 31,000 dealers in 1923. One and a half million men and women were given employment.

Coupling its amazing energy with that of America's 20,000 Builder's Suppliers, the Lumber Industry has contributed in a notable way to the nation's wealth.

Graham Brothers Truck has proved itself to be admirably suited to the difficult haulage problems of Lumber Dealers and Builder's Suppliers. Its sturdy construction, its dependable Dodge Brothers Engine—and the fact that it is serviced everywhere by Dodge Brothers Dealers—give it a definite and unmistakable advantage in any work that demands exceptional stamina and regularity of performance.



A typical Graham Brothers Truck in the Lumber delivery service.

The Long-Bell Lumber Company's unique experience with five Graham Brothers Trucks in building its famous new city, Longview, Wash., forms a chapter in transportation history which every lumber dealer should know. The story in detail will be supplied upon request.

1 Ton Chassis, \$1265; 1½ Ton, \$1325; f. o. b. Detroit

GRAHAM BROTHERS
Detroit

GRAHAM BROTHERS TRUCKS

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE

plan can be established to meet any individual set of operating conditions.

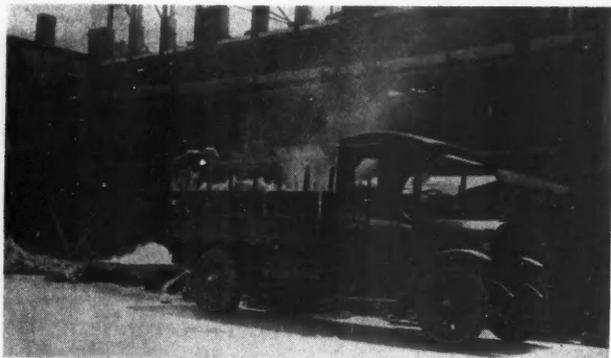
(1) Take care of small troubles before large ones develop—this is the keynote of any successful maintenance plan.

(2) Systematic inspection, adjustment and lubrication are to be emphatically recommended because they will save expensive replacements during overhaul as well as large repair charges.

(3) Unless the driver is a skilled mechanic, forbid him to touch the motor truck's engine. Owners of several trucks should employ a mechanic either on part time or full time to assume responsibility for running condition of the vehicles. Nightly inspections, involving minor repairs and adjustments such as tightening brakes and adjusting spring clips, chains and radius rods, are extremely advisable.

(4) Every motor truck requires an overhauling every so often, principally because in this way conditions will be disclosed which, if taken care of immediately, will result in lower future repair costs. Most experienced operators recommend an overhauling once a year or once in twelve thousand miles.

(5) The truck should be kept clean. Dirt, if



Keep the Truck Clean. Dirt and dust, if they accumulate, may make lubrication difficult or impossible.

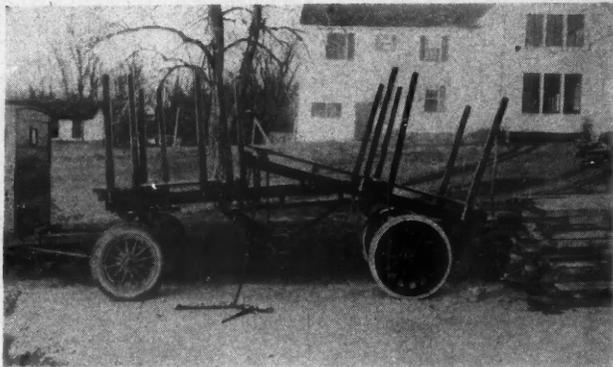
allowed to accumulate, may find its way into many of the bearing surfaces, and in some cases may make lubrication difficult or impossible. The result will be increased wear and reduced life of parts.

(6) Form the excellent habit of examining water, oil and gas supply before starting a day's run.

A final thought worth considering is that a motor truck in its daily operation must encounter severe ridges and depressions on the roadways. The shocks which these produce are converted, together with the constant vibration of the motor, into a continuous shaking of every part of the car's mechanism. It would follow, therefore, that the various parts which are held together by bolts, screws and supports depend for their proper functioning largely upon whether or not they are kept tight and in correct alignment at all times. It is the purpose of the nightly inspections to take care of this. The driver should be questioned on irregularities of running and provision should be made so that minor adjustments and repairs can be made as soon as symptoms of trouble appear.

Trailer Speeds Up Deliveries

A TRUCK trailer which is peculiarly adapted to the handling of lumber and kindred products finds an interested group of investigators in the building field, where the most progressive constantly are on the alert to eliminate any unnecessary handling with its consequent expense.



No Jacks Are Necessary to Keep This Trailer in Position for Loading. It unloads a whole load of lumber at one operation, leaving it piled as it was loaded on the trailer.

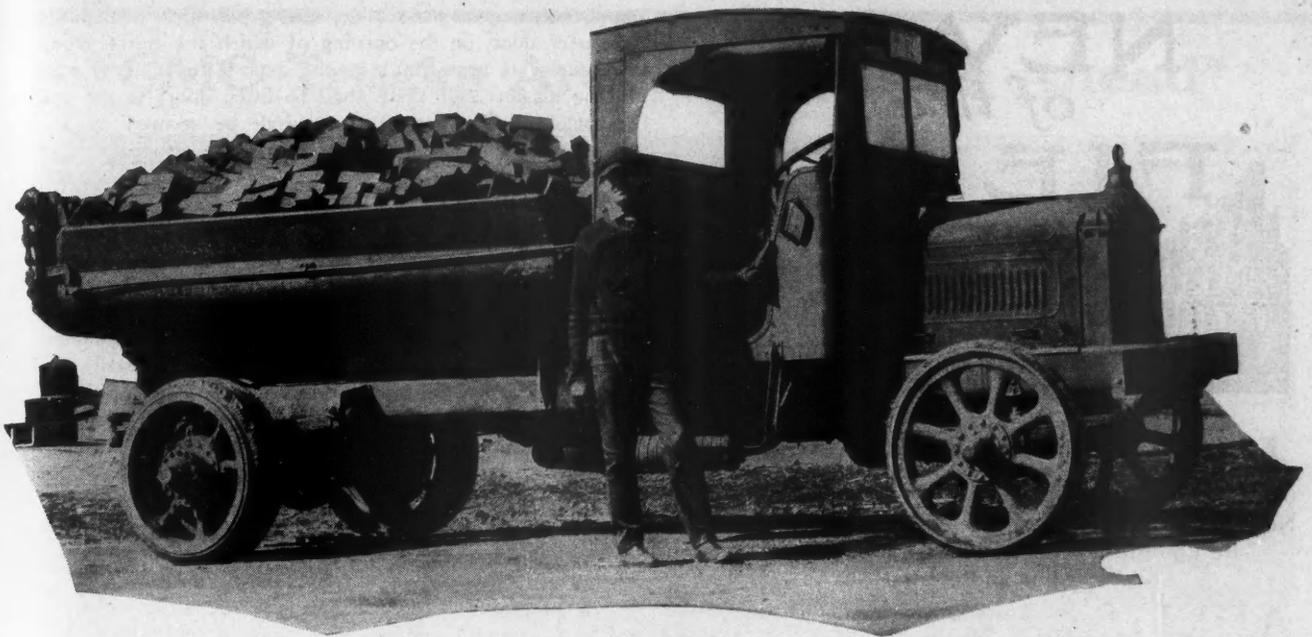
With this trailer there is no necessity for raising and lowering the front end by jacks for connecting and disconnecting the truck. In operation the empty trailer is backed up to the lumber pile; the support is lowered until the wheels touch the ground. The driver pulls a lever disconnecting the truck and trailer and drives away. This operation takes less than one minute and the truck is ready to be attached to another trailer that is assumed to be loaded already.

To connect it only is necessary to back the truck against the trailer. The attachment is made automatically. A binding chain is thrown over the load and is drawn up by a toggle binder. The driver then gives the wheel operating the jack screws a whirl and the supporting wheels are raised clear of the ground, high enough to avoid striking any obstacles in the road.

When the loaded trailer reaches its destination the driver disconnects the toggle binder, rolls the load back until it tips and the load slides until the rear end hits the ground. Then, by driving out from under he leaves the lumber piled on the ground in exactly the position it occupied on the trailer. The final drop is a few inches only, so there is no danger of splintering the ends of the lumber.



Air Brakes Have Controlled the Speed of Trains for Years. Now the makers of the truck shown here have applied the idea to motor vehicles. The truck also is equipped so that the air brakes may be applied to trailers, keeping them from crowding the truck on the road when a stop is made or when going down hill.



“The Most Dependable Truck We Have”

Seventeen trucks are operated by the Southside Brick Works, Inc., of Richmond, Va. Accurate records are kept of operation costs.

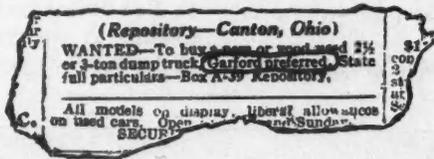
“Our Garford is the most dependable unit we have in service,” says Mr. E. A. Stumpf, Jr., Treasurer of the Company. “Our only regret is that all our trucks are not Garfords.”

Mr. Stumpf's Company uses this Garford to shift coal cars, carloads of brick; to pull

out other trucks that are mired. In fact, he says “when we have an unusual job to do, something extremely difficult, it has become an unwritten law at our plant to assign our Garford to do it.”

The standard of every Garford is dependability and economy of operation. Let Garford Engineers analyze your haulage conditions and recommend the proper size and style of truck to suit your needs. Write today for full information.

Garford Preferred



The Garford Motor Truck Company, Lima, Ohio

Manufacturers of Motor Trucks, 1 to 7½ tons.

GARFORD

DEPENDABLE TRANSPORTATION



Postal Regulations Require New Type of Apartment Mail Box

**New Buildings Housing More Than Three Families Must
Be Equipped with Approved Mail Receptacles,
According to Recent Order**

ARCHITECTS, contractors and builders may save their clients much annoyance through knowledge of a recent regulation of the Post Office Department concerning the installation of mail boxes in apartment houses and like structures now under construction or in the process of alteration.

All apartment houses, family hotels and flats housing more than three families must use a type of mail receptacle approved by the Department, according to the order now in force, which, of course, does not apply to buildings in use before the order was issued. But the Department recommends that all such buildings be equipped with boxes of the new type to afford better co-operation with the mail carriers.

The order provides for the grouping of the mail boxes in units of three or more, the multiple unit to be accessible to the carriers through the use of a master key to be in the custody of the Post Office, and the individual boxes to be opened by individual keys in the hands of the tenants. The master lock is to be furnished by the Post Office Department.

In issuing the order the Department declares that the greater part of the thefts from mail boxes are from those of apartment houses and buildings of that type. This is said to be due in a large measure to mail receptacles inadequate in size and structure to contain properly the mail which is delivered.

The regulations concerning the boxes, as published by the Post Office Department, follow:

"That such receptacles shall be arranged in groups of such

number as may be practicable, each group to be equipped with a master door, on the opening of which the entire group of receptacles is accessible for the deposit of mail by carrier. In the master door there shall be fitted doors to the several receptacles. The master door shall be secured by a lock furnished by the Post Office Department for use so long as mail is delivered by letter carriers, the key of which lock shall be in the custody of postal employes. The doors to the several receptacles shall be secured by satisfactory locks, with a sufficient number of key changes to prevent the opening of other receptacles by the use of the key of any receptacle. The receptacles when closed shall be without slot or other opening.

"The several receptacles shall be identified by a number and shall have affixed to the interior, where it can be easily read by the carrier when the master door is open, a list of the names of the persons receiving mail through such receptacles.

"In determining the size of the receptacle consideration should be given to its being of sufficient capacity to receive long letter mail as well as certain magazines which are approximately 18 inches in length, but in any event they should be of such size as to receive mail matter approximately 12 inches in length.

"That the receptacles shall be constructed of such material, of such strength and thickness, and in such substantial and durable manner as to render the mail deposited therein reasonably safe.

"Persons proposing to construct, manufacture, or supply receptacles under these regulations shall submit a description, accompanied by model or drawings, to the Post Office Department for approval.

HARRY S. NEW,

"Postmaster General."



Richardson and Boynton Sales Executives Meet

PPRICE stability, individual attention, liberality of treatment and constant high quality of product were the factors emphasized as most important steps to be taken for the protection of dealers and customers at the recent convention of the sales executives of the Richardson & Boynton Company, at the Hotel Brevoort, New York.

Among those who addressed the convention were: W. R. Eaton, D. S. Richardson, H. L. Anness of Boston, M. F. Gilbert of Philadelphia and A. H. Richardson of Chicago. D. Rait Richardson, president of the company, expressed his pleasure at the results accomplished by the convention and at the optimistic business outlook.



The Sales Executives of the Richardson & Boynton Company, Seated at a Dinner Given at the Recent Convention in the Hotel Brevoort, New York. Price stability, liberality of treatment, and maintaining a high quality of product were emphasized as important for the protection of dealers and customers.

"GMC Trucks Are Seven Steps Ahead"



Strength—Power—Speed

This GMC two-ton model demonstrates the suitability of GMC to the transportation needs of mill workers and manufacturers of builders' supplies. Strong and powerful beyond rated requirements, GMC has as well a speed on good roads that assures maximum daily mileage.

GMC offers haulers a means of transportation that is unsurpassed for efficiency, endurance and economy. Built on the experience of years of successful truck manufacture, and incorporating seven distinctive features of construction, GMC not

only assures an increased earning power, but also lower operating costs. GMC can show profits under conditions impossible to the average truck and will remain in service for years beyond the normal life of a truck.

These and other special GMC advantages are fully explained and GMC construction described in the GMC illustrated catalogue and booklet "Seven Steps Ahead." They are free and a request for them does not obligate you in any way. The coupon below is for your convenience. Fill it in and send it to us today.

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

General Motors Trucks



Mail This Today

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

Please send me GMC literature including GMC catalogue and booklet "Seven Steps Ahead."

Name
Business
Address

American Calculating Machine Wins in European Contest

BOTH the Commercial Organization Exhibition at Paris and the International Exhibition of Inventions at Turin have awarded their highest prizes to the Monroe Calculating Machine Company of Orange, N. J.

The exhibition at Paris covered a thirty-minute time limit. Twenty-five problems were placed before the contestants, involving addition, subtraction, multiplication and division, based on conditions arising in daily business.

An electrically driven automatic Monroe calculating machine won the contest in 28½ minutes by working 24 of the 25 problems correctly, at the same time breaking all records by accurately performing 99 operations. The second, third and fourth places in the contest were also won by Monroe calculating machines.



Lumber Shipments by Water Increase

THE Pacific Northwest established a new record in 1923 in the shipping of lumber by water, according to a bulletin published by the West Coast Lumbermen's Association. The total of such shipments is given as 4,275,701,025 feet for 1923 as compared with 3,402,316,969 for 1922, a gain of 25.7 per cent.

Building Exhibit Quarters Moved

THE Building Material Exhibit, which for a number of years has occupied the sixth floor of the old Siegel-Cooper Building, State and Van Buren streets, has leased for five years the entire fifth floor of the McClurg Building, 218-222 South Wabash Avenue, Chicago.

The exhibit starts its fourteenth year in its new location in the Loop district, where it will be in a position to serve architects, builders and supply dealers as before.

The exhibit has a complete, up-to-date file of catalogs on construction information, and will endeavor to keep on exhibition a working collection of building material samples.

The exhibit is under the management of L. H. Johnson.



School Ventilating Contract Let

CONTRACT for the ventilating equipment in the new Lewis J. Bennett high school of Buffalo, N. Y., has been awarded to the Buffalo Forge Company. The heating and ventilating contractor is the Power Efficiency Company of Buffalo.

The school, designed to be one of the most modern in the country, will be a fireproof, four-story structure of brick and concrete. Estimated cost is \$2,700,000. The building was designed by the Buffalo Associated Architects with the William B. Ittner Company of St. Louis in consultation.

Amount of Building Permits Issued for March, 1924, Breaks all Records, as Does First Quarter of Year, S. W. Straus & Co. Report Shows

BUILDING permits issued in 311 cities during the first quarter of the present year were 11 per cent ahead of the first quarter of 1923, which was about 49 per cent ahead of the first quarter of 1922. There was also an increase for March in the same cities of 9 per cent over March of last year, when the gain over March, 1922, was 60 per cent. While the March increase this year was not great by comparison with March, 1923, it must be remembered that that month was an abnormal month, being by far the largest in the history of the country in the volume of permits issued.

The 311 cities reported permits issued amounting to \$984,055,102 for the quarter and \$454,897,201 for March.

An enormous gain was made in New York City due to a considerable extent to the filing of new building plans prior to April 1 to take advantage of the State tax exemption law on residential structures. This affected the showing for the entire country. With New York excluded, the gain over the first quarter of last year in 311 cities would be reduced to less than 3 per cent, while March would show a loss of 4 per cent

instead of a gain of 3 per cent.

In connection with the figures for Greater New York, it should be remembered that they are on a basis of plans filed and are therefore somewhat greater than the figures for permits issued.

Labor and Materials

Building labor conditions throughout the country may be epitomized as follows:

(1) Wages generally well stabilized with slight upward tendencies in larger cities where prospective building operations are large.

(2) General employment at peak wages with especially pressing demands for bricklayers and plasterers.

(3) Possible shortage of common labor with the development of activities now indicated by unprecedented volume of building permits.

(4) Successful and significant co-operation of building trades, unions and contractors in establishing building trades apprenticeship schools to help relieve labor shortage.

One of the important factors in the situation has been the unusual amount of employment throughout the building crafts during the winter months. These conditions were partly due to mild weather in some sections of the country, but it is noted that efforts to increase the volume of construction in the so-called off-season have been successful. It is significant that the government through Secretary Hoover has seen fit to take up this important phase of the building situation semi-officially through the formation of the Committee on Seasonal Operations in the Construction Industries.

Despite an increase in demand, building material prices showed but little change during the month. With the exception of common brick, which was somewhat firmer, New York City witnessed a drop in most starting materials. In a few Middle Western cities cement was quoted at slightly higher prices. While the demand for steel has been strong, it has not come up to expectations and as a result there has been some softening in Pittsburgh prices. Except for a slight flurry in the Dallas market, lumber has been unchanged.

SUMMARY OF FIRST QUARTER AND MARCH REPORT BY REGIONS

No. Cities	Regions	1st ¼—1924	1st ¼—1923	March, 1924	March, 1923	Gain or Loss 1st ¼	Gain or Loss In March
92	East	\$559,650,764	\$457,771,453	\$278,015,968	\$232,891,434	\$101,879,311	+\$45,124,434
98	Central	221,229,579	235,823,621	103,715,996	107,372,474	+22 per cent	-3,656,478
45	South	72,714,250	69,807,654	26,810,566	28,239,413	+6 per cent	-1,428,847
76	West	130,460,509	120,759,049	46,354,671	49,977,127	2,906,596	-3,622,456
						+4 per cent	
						9,701,460	
						+8 per cent	
311		\$984,055,102	\$884,161,777	\$454,897,201	\$418,480,498	\$99,893,325	+\$36,416,708
						+11 per cent	



Contractor Saves \$1,500 Yearly With Ford Light Delivery Car

Every contractor and builder is interested in the inexpensive transportation of men, tools and supplies. It is the workman's time on the job, and not in transit, that counts.

The adaptability of the Ford Light Delivery Car to this purpose is demonstrated by the experience of Miner & East, Chicago contractors, who have used this method of transportation for the last nine years. Previously they relied upon hired hauling and much valuable time was wasted waiting for hired trucks.

With the purchase of a Ford Light Delivery Car, this concern estimates they are effecting a saving of \$1,500 yearly, in eliminating non-

productive time through the rapid transportation of men to their work.

"The good service our Ford enables us to give our customers has helped materially to build up our business" says E. J. Miner, "and it is much cheaper for us to own a Ford for this work than to hire our hauling done. According to our records it costs but \$2.06 a day to run our Ford."

Every contracting concern can profitably use Ford Cars and Trucks for this type of work. The low initial cost and correspondingly low operating and maintenance expense reduces the transportation item to a minimum. It will pay you to investigate the possibilities of Ford equipment in your business.

Any Authorized Ford Dealer has facts and figures that will show you how you can profitably Fordise your business

Model "T" Chassis, \$230 F. O. B. Detroit
Starter and Demountable Rims, \$85 Extra

Ford

CARS · TRUCKS · TRACTORS

Parables of Bildad, the Builder

He Receiveth the Broadcast of a Roofless Family and Straightway Furnishes Them with a Radio Cottage Equipped with Loud Speakers and Cute as a Bug's Ear

THE whiles I Was tuning in on KDKAKAD I receives a Battery of Sound that Made my Six Tube Set rattle Like a Window Pane in one of My competitors' Houses. And Listening intently, I Made out the Following:

"To Whom It May Concern:

For the Past five Years my Family and I have Been living in an Apartment whose Landlord is an Esquimaux. My Sixteen children all have Come through the Winter with Pneumonia, Coryza, Eczema and Spinal McGinnis, and the Wife is Sort of Getting Run Down at the Heel, has a Bad Case of Spavin, and gets a bad Carbon Knock on a Hill. I am Curious to Ascertain whether there is Some place I can Immediately Stow my Family, and if There are Any builders Handy who can Mix up Some Mortar and Sawdust and Make me a House before I go Bankrupt at the Undertakers.

I Hate to Put my Family Away, though They Have Coaxed many Thousands of Dollars from My Bank account. But I must Have my Morning Plunge, and We are Wasting Good Money in the River that Should go to the stockholders of some Plumbing Concern. Come to Me at 23 Skadooks Avenue, and come Quickly.

Abraham Pierpont Smith."

"Well, what Do you Make of it?" I snickered to My Wife.

"Bildad, have Nothing to do with It!" she Quavered. "It may be a Japanese Code message Declaring war on California."

"Well, I Snicker to Bust, Maria!" I exhaled. "You Don't know What it Is to be the Father of a Family. No Woman does—and Never will, for that Matter!" I countered Sagely. "You do Not know the Anguish of Mind which Comes to a Tenant who has the Building sold Over his Head for the Tenth Time and His Rent Raised for the Hundredth. That man is Perishing. Switch on the Current to my Trusty Broadcaster," I requested in My usual Gentlemanly manner.

"Abraham Pierpont Smith, 23 Skadooks Avenue, City," I flickered. "Do not Lose Hope. Like the Wiffimpoofs that Fly North in the Early Summer,

Bildad the Builder is Flying straight Toward you with a New Shining Copy of American Builder. Houses for Two, Three, Four, Sixteen children and Upwards. Keep your Ambition up; we are Nothing if Not Alive!"

"The others will Beat you to It!" Cold-watered my Maria.

"Wife," I rebutted, "Bildad is the Flying Jaybird when it Comes to Breezing in on a Prospect. I have no Time Limit; I close a Deal while my Rivals are laying In Bed waiting to Have Their Pants Pressed."

Abraham was in a Parlous State, as the Lawyers parleyvoo. He lived in One of those American Economic nightmares which Seem to Have Shot up as Though they were Honeycomb squeezed in the Middle.



"The Older Children Slept in Hammocks and the Younger Children Were Wild Because the Landlord Had Used Barbed Wire to Keep Them from Scribbling on the Walls."

The Older Children slept in Hammocks and the Younger children were Wild because the Landlord had Used barbed wire to Keep them from Scribbling on the Wall. His wife Was so Busy Getting out of Her Children's way She had had No Time even to Get Her Hair Bobbed.

"Abraham," quoth I, "you see Old Man how you have Let yourself Get into a

Terrible State. The Old Woman who Lived in a Covering for One's Pedal Extremities had Nothing on You. Now, Just as the Minister comes to you with Salvation which can be definitely labeled and tagged from a given Chapter and Verse in Corinthians, so I Come to You with the Home Builder's Bible, wherein are Blue Ribbon Homes that will bring You as Close to Heaven as Most Busy Fathers of Families are Able to Get on This Earth." And he Fell on me Like a Transcontinental Traveler falls on the Town Pump.

So we Gazed and Looked, and Finally we Compromised on the Design of a Dutch Colonial, Because it Could be Both Large and Roomy, and Had a Garret. And as We worked together Over the Plan Abraham felt all the Thrill which Comes to a Man building His First House. And I, seeing I had to Do with a Man of Taste, Exerted myself with my Plans; and if I do Say it Myself, they Were a Knockout. A niftier Dutch Colonial never came Out of the New Netherlands.



Warford Gives Ford Economy To Lumber Hauling

Nowhere in industry has the Warford Auxiliary Transmission found higher favor or wider use than in the lumber and building fields.

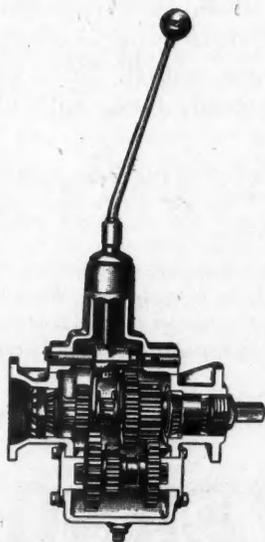
Lumbermen and lumber dealers, builders and contractors, who appreciated Ford efficiency and economy were quick to secure these advantages when the Warford adapted the Ford Truck to their needs.

Warford gives them a Two-ton Truck with speed-wagon fleetness on hard roads and on the return run unloaded. It gives them a truck hauling a full two-tons over the axle and considerably heavier trailer loads at Ford one-ton cost.

More than this, Warford gives them *confidence*, assurance that their loads would be delivered on time, road or no road. Leaders in these allied industries have confirmed every claim made for Warford, the 6-speed selective type transmission. Warford gets their materials to the job whether it is on the concrete highway or in unbroken fields.

They have found that all the Ford Truck offers in the one-ton field the Warford equipped Ford provides in a two-ton high speed unit.

Warford will do as much for you.



"The Two-Ton Transmission"

Warford

AUXILIARY TRANSMISSION

The Warford Corp. • 44 Whitehall St., New York City

The Housebuilder's Tools

By W. S. DAVENPORT

THE non-set panel saw is not used as much as it might be. Men do not carry a heavy and expensive mitre-box and saw to their outside work, and this non-set saw has some striking advantages over the common panel saw. Its teeth are harder in temper and stay sharp longer, they form a much smoother cut than a saw that is set and may therefore be chosen several points coarser, which are easier to file. When a board is cut off flush with the flat surface of a second board, the non-set saw does not score that flat surface more than a very little and it forms a smoother cut too. It saves the use of the plane. In the wooden mitre box it is an excellent saw. The 22-inch 8- or 9-point non-set saw is a faster tool for some work than the common panel saw of 10- to 12-points. There are two disadvantages to this pattern; the saw is slower than the set pattern when the two have the same number of points, and the dull non-set saw is apt to stick in the kerf where the dull set saw will rub its way thru slowly. A panel saw with a full size, close-up handle is easier to guide exactly along a line than the pattern with a reduced handle set well above the line of teeth.

Plane irons and chisels that have simply been blunted by honing can be ground flat and true very quickly on an 8-inch coarse grit stone, but a medium grit or a 6-inch is slower. The blue stones cut fast and wear down thru the whole stone, while the brown stones are

hard in bond and keep their surface flat. Somewhere about the shop or the men's homes there is a hand turned geared bench grinder. A manufacturer takes great pains to choose the right grinder to save time and wear on the stone, but do contractors? There are a number of points to be considered in choosing this grinder. The pattern with a tool holder in addition to the tool rest saves wearing off steel and using up time in correcting an uneven bevel apt to be formed with only one hand to hold the tool. But if the wheel is under six inches, and an 8-inch is better—the bevel is too concave. A too fine grit will burn the ends of edged tools, a coarse grit or 40 to 60 is cooler. It forms a smooth ground surface when the rim is true and it should be kept true with a wheel dresser that also keeps it sharp. The wheel works best when run at a high speed, but the grinding of edged tools should not be forced, hence the grinder should not turn too hard. The brown wheels are made of tough alumina and have a harder bond than the more brittle blue stones made of carbide of silicon.

Of the measuring instruments used by the house carpenter, the sliding blade combination square should be remodeled to have the coarser gradations in use when the square is held in the left hand, and the numbers should begin at the high hand end, top or bottom, but not at the left end. The best makes were designed for metal working, not for woodworking. The steel tape should have a stick pin to save pulling out the hammer to drive in a nail.

Concrete Reinforcing Service for the Local Contractor —

Every contractor uses **bars** and **wire mesh** for concrete reinforcing purposes. To make it easy for you to list bent bars, spirals and accessories, we have prepared a **CONTRACTORS' HANDY FORM**, which shows all standard types of bends, dimensions, etc. A tablet of these forms, in duplicate, will be mailed **FREE** to any contractor upon request. Mail the attached coupon and get some of these handy forms without obligation on your part.

When a concrete job comes up, just fill in the dimensions on one of these forms and send it to us. We will quote you complete prices that will mean big profits to you.

Whether your job requires ten pounds or ten tons, we can make immediate shipment from our stocks. We will ship plain material the same day your order is received; cutting, bending and making up spirals, etc., usually requires more than 24 hours.

Mail the coupon now before you forget it.

RYERSON

CHICAGO ST. LOUIS CINCINNATI DETROIT NEW YORK BUFFALO

JOSEPH T. RYERSON & SON, Inc., Lock Box U, Chicago, Illinois

Without further obligation on my part, please send me the items marked below.

Name.....

Address.....

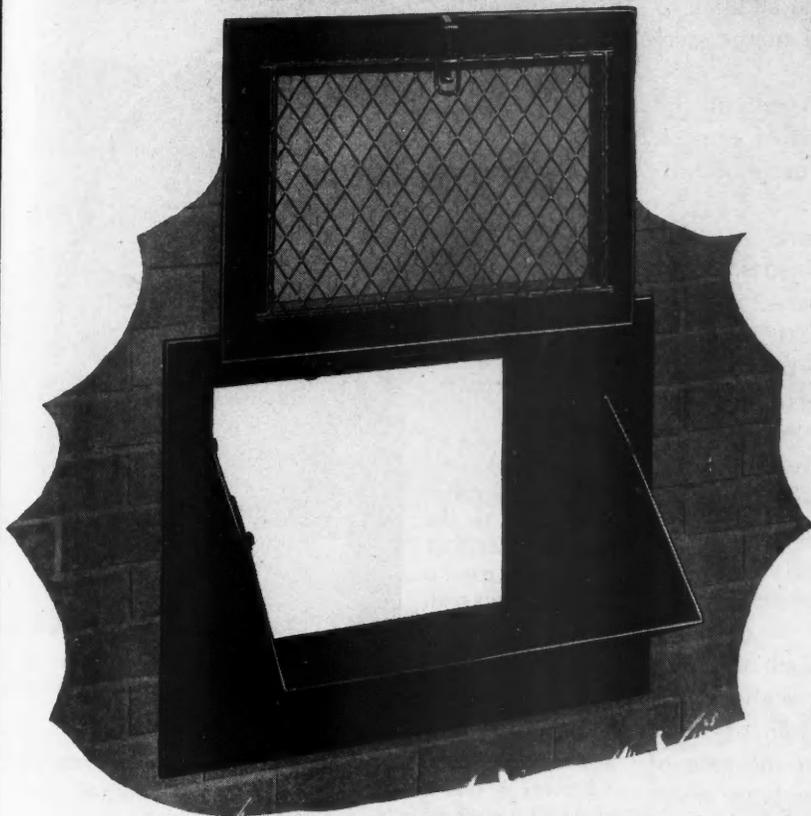
Send Contractors' Handy Forms

Send Reinforcing Booklet

MAIL THIS COUPON TODAY

GABRIEL

ROLLED STEEL
COAL CHUTE



THE COLLAPSIBLE BOOT is an exclusive feature of the Gabriel. The Chute with boot folded is only 3" thick.

More than You Expect for the Price

Don't think all coal chutes are alike—they are not. There are differences in coal chutes just as there are differences in heating systems, hardware and wood finishes.

The Gabriel Rolled Steel Coal Chute is different than others because of outstanding features which make it better. Its attractive appearance lends itself to any exterior design. Its heavy rolled steel frame, electrically welded joints and unbreakable rolled steel hinges insures extra long life and durability.

Heavy wire glass is protected with a wire guard. The collapsible boot—an exclusive feature—folds against the back, making the chute only 3" thick and protecting it from damage in handling. The chute is fire and burglar-proof. The price is low, less than ordinary quality chutes. If your dealer does not have them send us his name.

Gabriel Chutes are furnished with solid steel or glazed doors—with or without hopper—two sizes of wall openings 16"x24" and 22"x32"—collapsible boot for 8", 12½" or 17" wall. Used with equal success in any kind of foundation.

Return coupon for further facts with prices.

GABRIEL STEEL COMPANY
Bellevue Ave. Detroit, Mich.

Send further information and prices on following:

Coal Chute Ashpit Door Fireplace Ash Dump Scaffold Bracket

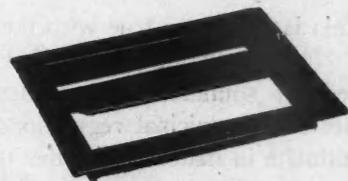
My dealer's name is _____

Name _____

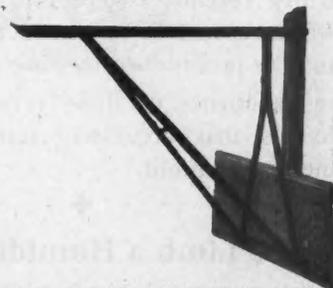
Address _____



ASHPIT DOORS
For the Basement.



ASH DUMPS
For the Fireplace.



SCAFFOLD BRACKET
For General Building.

Testing Skyscraper Materials

(Continued from page 113.)

buildings in the country of the actual weights of the occupants, furniture, radiators, etc., which showed that the actual load which must be provided for is from 12 to 15 pounds per square foot of floor area; while most building codes require the floors to be designed for 50 pounds. This insurance is in addition to that furnished by the safety factor used in the steel design as before mentioned.

Concrete as well as steel must stand chemical and physical tests. Concrete is a composition of cement, sand and stone mixed with water and is made according to certain standard formulae, such as:

Cement, 1 part; sand, 2 parts; stone, 4 parts.

Cement, 1 part; sand, 1½ parts; stone, 3 parts.

Cement, 1 part; sand, 2 parts; stone, 3 parts.

Cement, 1 part; sand, 3 parts; stone, 5 parts.

When the concrete is mixed on a construction job, inspectors are on hand to see that the correct formula is used and that too much water, which has the same effect as taking out cement, is not in the mixture. The physical tests to which concrete must be submitted, are tensile and compression.

Tile arch which is used for flooring, must also undergo several tests before being approved by the testing engineers.

The other materials of a building, such as glass, brick and stone must come up to specifications, but none of these materials, with the exception of brick, present the interesting problem given in the case of steel, tile and concrete, because it is these latter materials which are the bone and sinew of the skyscraper.

"Folks today do not consider the provisions made for their own protection," noted an engineer recently. "The building regulations of our cities have generally been drawn scientifically and they protect the public against faulty construction.

"This is especially true with the largest office buildings. The interesting point is that owners have, in the interest of sound building construction, even gone further than municipal regulations and have provided the ultimate in material in order that depreciation and maintenance may be cut down. A poorly constructed building usually is inadequate and fails to bring in satisfactory revenue except for the first few years, after which repair bills far outrun the customary allowance and the profits therefore are seriously affected.

"The experience of those versed in building construction is that accurately tested materials mean permanence and profit."



Spruce Limb a Humidity Indicator

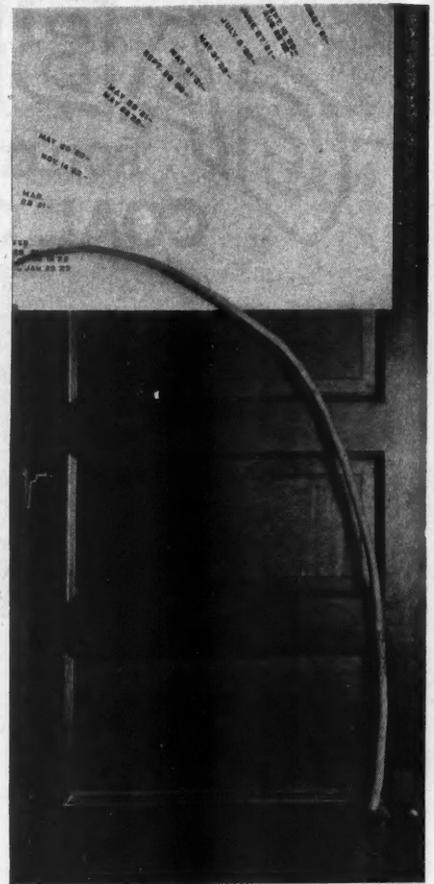
THE accompanying photograph shows a spruce limb which is so sensitive to moisture changes that it might almost serve to indicate humidity in the room where it is located. This limb is fastened to a door in the office of Wood Identification at the Forest Products Laboratory of the U. S. Forest

Service. During the months when artificial heat is in use, the limb bends far over to the left.

During the warmer months, when the windows are kept open it straightens and becomes nearly upright. In the course of its gradual changes the tip moves through a distance of 30 ins., describing an arc of about 80 degrees. The dates along the arc show its position at different times for several years.

The interesting action of this limb cannot be traced to any freak condition of growth, but rather to the normal presence of what is known as "compression wood" along what was originally its under side.

It is, as would be expected, harder and denser than ordinary wood, but the most remarkable difference is that it shows considerable shrinking and swelling along its length with loss or gain of moisture.



The Curve in This Spruce Limb Changes with the Amount of Moisture in the Room.



Write for this Interesting Information

MECHANICAL Rubber Goods for the Building Trades are described in detail in a publication issued by the United States Rubber Company, New York. The booklet lists and describes the uses of rubber tile flooring for public buildings, rubber stair treads, mats and matting, various types of fire, steam, vacuum, pneumatic, welding, water and suction hose, insulated electric cables and portable cords for contractors. Get this book for your files by addressing Department AB, United States Rubber Company, New York.



Answers to Problems on page 145

(1) The rise per foot run for the main rafter is 12 inches. This rise per foot run for the shed rafter is 7 inches.

(2) The length of the main rafter is 16' 11½".

(3) The two rafters meet at a point 2 2/5 feet inside of the main plate. 2 2/5 feet = 2.4 feet = 2' 4 13/16".

(4) The run of the shed rafter is 16.4 feet or 16' 4 13/16".

(5) The length of the shed rafter is 18' 11 13/16".



The First Choice in Quality Stucco

FOR 17 years the builders of America have known the quality of ASBESTONE, and the service that has enabled contractors to produce maximum results in building. ASBESTONE is always uniform in quality—due to constant laboratory supervision and use of finest materials.

Because of its unusual tensile strength and elastic properties, ASBESTONE will not crack from the ordinary settling of buildings, and is very economical in coverage, both in exterior stucco and interior plaster.

Our new stucco book is ready.

Write for information and samples

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EVERLASTING MAGNESIA STUCCO



FRANKLYN R. MULLER, INC.
208 Madison Street · Waukegan, Illinois

ELECTRIFY ALL BUILDINGS

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

The Electrical Home Efficient

Charming White Colonial Bungalow Is Example of How Careful Planning
of Electrical Equipment Increases Comfort

THE quiet dignity of the distinguished Colonial bungalow shown on page 186 surely deserves nothing less than the best equipment to make the interior as comfortable and as livable as the charming exterior seems to promise that it will be. And no single item of the equipment of such a house, so plainly meant to be a home of charm, is more important than the wiring and the electrical equipment.

All who have given any thought to building a home are aware of the charm that the proper fixtures add to a correctly lighted home and many know of the wealth of conveniences and labor-saving devices which electricity can bring to the help of the housewife. But few know the extent to which the success of the electrical equipment is dependent on the manner in which the house is wired.



In the Dining Room of the Electrical Home Efficient, Illustrated with an Exterior View and Floor Plan in the Following Pages, the Engineers Have Fixed the Height of the Central Fixture at Just 24 Inches Above the Table Top. Notice the utility of the floor outlet.



AMERICAN RADIATOR COMPANY, NEW YORK CITY, RAYMOND M. HOOD, ARCHITECT

FISKE BRICK

Close co-operation between architect and manufacturer resulted in the selection of black brick for the American Radiator Building. The use of this black brick, developed and manufactured by Fiske & Company, Inc., marks a new step in face brick construction.

Fiske & Company

Incorporated
BOSTON

NEW YORK

WATSONTOWN, PA.

Perhaps the test of the efficiency of the wiring in any home is the amount of thought which is given to this major detail of construction both before and after the house is built.

Queer though it may seem, if the wiring is given due consideration and intelligent attention before the home is erected, it will be forgotten when the house is occupied. On the other hand, if the house is wired, with cheapness as the most important consideration, as so often happens, the wiring never can be forgotten while the house is occupied.

Unpleasant things, like inadequate lighting, lack of facilities for utilizing electrical conveniences and all

sorts of limitations will recall the hidden wiring.

Of course, these limitations can be overcome in a home after it is built, just as it is being remedied now in thousands of homes built only a short time ago. But the proper time for the builder to assure himself of the best in electrical equipment is at the time when the home is constructed.

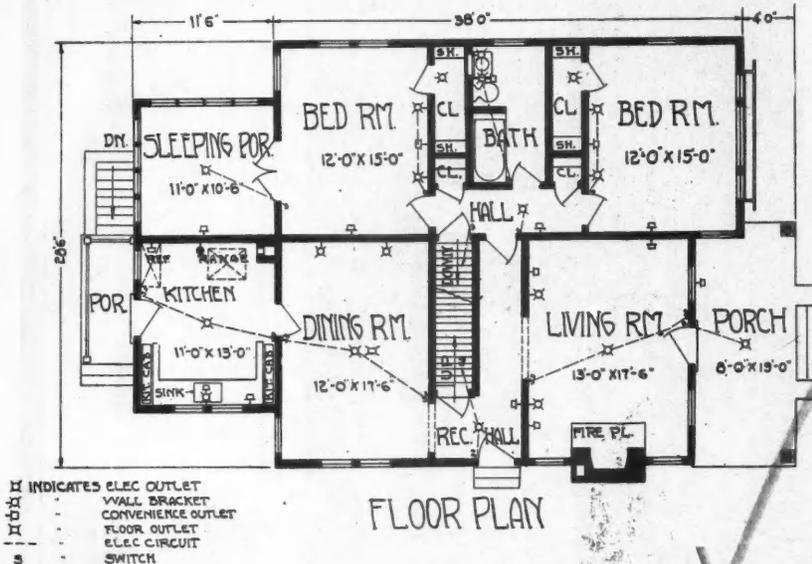
The porch of the charming and practical home illustrated this month is one made to be used. And to make the welcome of the home especially appealing to the after-dinner guests and the late homecomer, a luminaire of type "L" is placed on the porch ceiling, equipped with a 40-watt Mazda B clear lamp.

A convenience outlet is provided under the window so that a pleasant grouping about the subdued light of a floor lamp will be most natural on summer evenings. A fan might be pleasant attached to this outlet on a hot breathless afternoon.

The living room, with its excellent daylight illumination from two sides and its wall spaces well suited to attractive arrangement of furniture, is a room too attractive to be spoiled by improper lighting.

For this room the engineers have specified as the central fixture a luminaire of the type "B" equipped with

(Continued to page 190.)

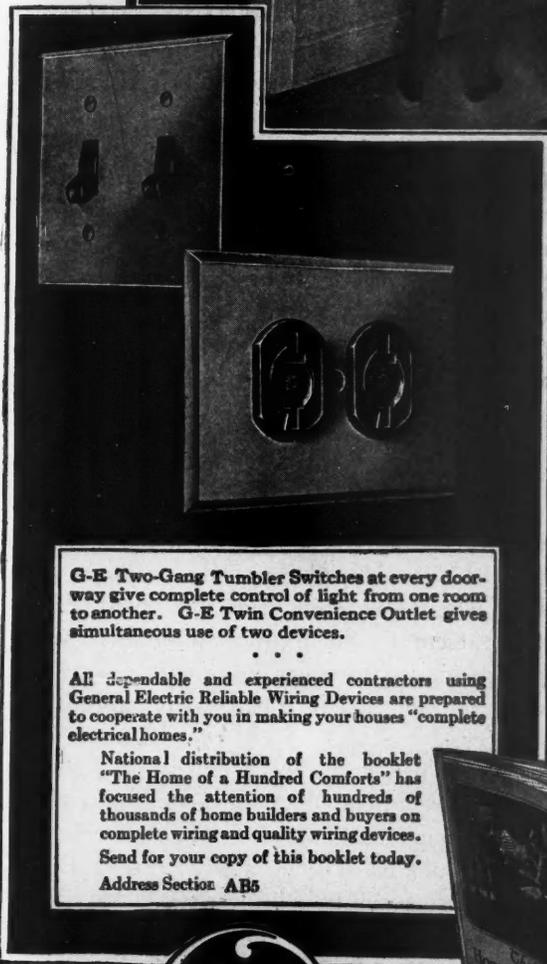


This Beautiful White Colonial Bungalow Was Chosen as This Month's Electrical Home Efficient. The floor plan, shown above, gives a diagrammatic presentation of the electrical wiring as described in the following pages, where the different types of luminaires are illustrated.

When they stop and ask



"How is the stairway lighted?"—you show them how you have provided switches—both downstairs and up—for flooding the steps with light and for turning the lights off as soon as you are up or down.



G-E Two-Gang Tumbler Switches at every doorway give complete control of light from one room to another. G-E Twin Convenience Outlet gives simultaneous use of two devices.

All dependable and experienced contractors using General Electric Reliable Wiring Devices are prepared to cooperate with you in making your houses "complete electrical homes."

National distribution of the booklet "The Home of a Hundred Comforts" has focused the attention of hundreds of thousands of home builders and buyers on complete wiring and quality wiring devices. Send for your copy of this booklet today. Address Section AB5

"Loud Speaker" For Sale Signs

Builders who study methods for making quick sales know the value of the words "Wired for Electrical Housekeeping"—and put them on their "For Sale" signs in big letters.

It has the effect of a loud speaker on a radio set.

Making all their houses—large and small—fit this quick seller sign is only a matter of more outlets and switches, and the quality that will stand up and deliver uninterrupted service day in and day out.

G-E Reliable Wiring Devices, nationally known as the standard of excellence are the home buyer's assurance of dependable electrical service.

Merchandise Department
General Electric Company
Bridgeport, Connecticut



DEPARTMENT

ELECTRIC

four 25-watt Mazda B all-frosted lamps. This is to be hung directly from the ceiling as indicated in the diagram. Three-way switches, one just inside the entrance from the porch and the other adjacent to the opening from the reception hall, allow this light to be controlled from either point, without the necessity for crossing the room in the dark, either before the light is turned on or after it is turned off.

On both sides of the door leading from the living room to the reception hall is placed a luminaire, illustrated here as type "A," equipped with a Mazda B all-frosted 25-watt lamp. These fixtures are to be mounted six feet above the floor, the proper height to insure efficient lighting, and with the type of light and fixture specified, to avoid any eyestrain.

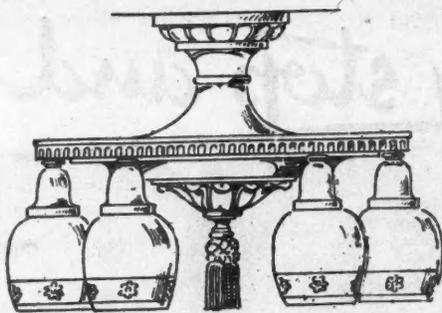
Three convenience outlets are provided in the baseboard of the living room for stand and table lights. Note that these outlets are placed so that they are available for lamps in all positions in the room where such a light might be desired. It is necessary that the wiring should allow such lamps to be placed where they are wanted without the inconvenient and dangerous trailing of cords over long expanses.

The architect who designed this house did so with the idea that additional space would be made available on the second floor if it were desirable. You will notice a stairway to the second floor in the reception hall.

This hall is lighted with luminaire "H," unobtrusive but efficient. The light is a 25-watt, round bulb, all-frosted Mazda B lamp. But you will note that the switch just inside the door is part of a three-way circuit, so that the light may be controlled either from the switch indicated in the floor plan or another installed on the second floor.

The convenience outlet in this hall is placed waist high, where it will be most convenient for use with a vacuum cleaner or in a proper place for attaching a table lamp which might be placed on a console table in the hallway.

The designer of this home has been particularly fortunate in the proportions of the dining room, which is too often considered as the room which may take the left-over space or be adjusted to make the rest of the rooms adequate. This room, 12 by 17½ feet, is one for real entertainment



Luminaire "B" Is Specified for the Central Lighting Fixture in the Living Room. It is attached directly to the ceiling.

all-frosted Mazda C. This is controlled from switches both at the kitchen and hallway entrances.

On the inner wall of the room, two luminaires "D" are placed. These are equipped with 15-watt Mazda C clear lamps. It is almost inevitable that the buffet will occupy a position between these lamps.

One of the features of this room is the floor outlet, placed in the floor below the position which will be occupied by the dining room table. This outlet allows a connection to come up directly under the table which may be attached to a multiple outlet built into the table itself. And this equipment would allow the number of electrical conveniences which are aids in preparing breakfasts and other means to be connected at the same time.

The attachment for the dining room table is quite simple. It is merely an oblong box, attached out of sight, under the top of the table where it is convenient. One cord brings the current to the fixture and outlets such as are known to every housewife are available for the toaster, percolator and other devices.

Kitchens, as is proper, are receiving more attention. This is where a major portion of the housework is done and it should be made more than an efficient workshop; it should be a room where work may be enjoyed. And very recently lighting experts have recognized the demand for efficient and shadowless lighting housewives desire for spotless kitchens.

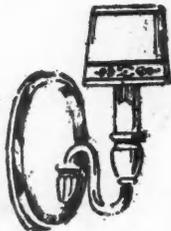
In the kitchen planned in this house the major part of the lighting responsibility is placed on a central fixture, luminaire "K" mounted on the ceiling and equipped with a 100-watt Mazda C clear lamp. Over the sink is a Mazda B all-frosted 40-watt light mounted in luminaire "J" with a pull



This Pendant Lamp, Luminaire "G," Is Placed in the Dining Room. It is shown in place on page 184.



Luminaire "L" for Illuminating the Porch.



The Sidewall Fixture, Luminaire "D" Is for the Dining Room, Above the Buffet.



Luminaire "A" Is for the Walls of the Living Room. It is made to fit well with central fixture.

Old Reliable

"2081" in the Specifications

You'll find it in specifications written thirty years ago, and you'll find it today in the latest specifications of those same builders and architects.

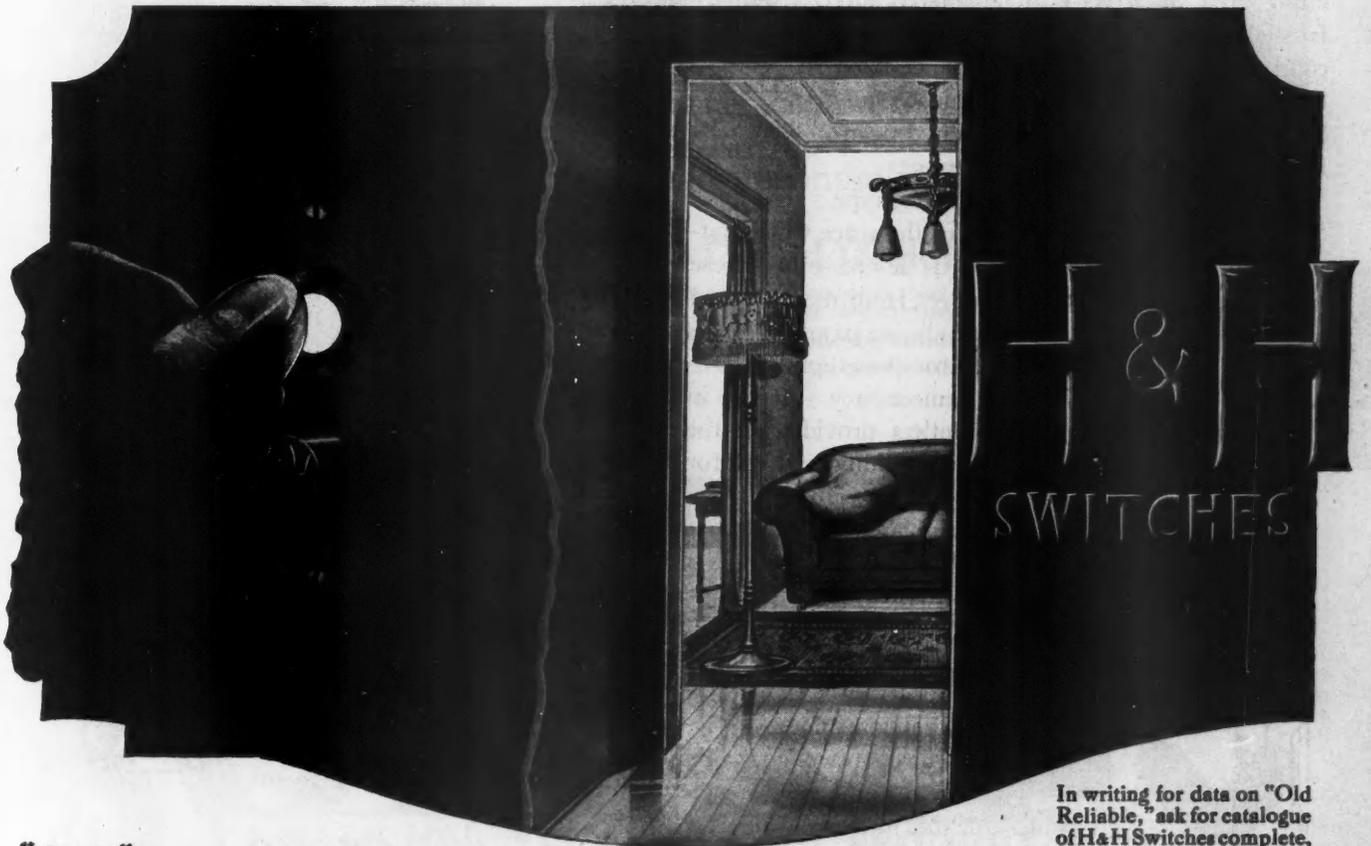
The dean of Push Switches, it was "standard" from the start, and three decades of switch-making have had little improvement to offer "Old Reliable".

New switches have come into the H&H family; fine switches to look upon; costlier switches. But none have replaced "Old Reliable" for quiet, enduring service.

The buttons press with an even tension; there's no more resistance near the end of the stroke than at the beginning. No jar as the spring acts and the contacts meet.

It's one place your customer puts his finger on value he can *feel!* Of all the things in an installation, this *one* puts the owner *in touch* with the quality of the job.

Not so high-priced as some switches; not so low as some others. Just in-between—and *just the switch* for the medium and better-class buildings that concern you most.



"2081" in your specifications

In writing for data on "Old Reliable," ask for catalogue of H&H Switches complete, showing also Convenience Outlets and other devices.

THE HART & HEGEMAN MFG. CO. HARTFORD, CONN.



Luminaire "F" Is to Be Attached to the Ceiling of the Sleeping Porch.

chain switch.

In no place in the home can electricity be of as much service as in the kitchen if the wiring is planned properly. In this plan the engineers have designated a 30-ampere power outlet for the electric range. An outlet is supplied for the electric refrigerator also.

One of the features of this kitchen which will appeal to all cooks is the provision made for the installation of the exhaust fan above the sink. This outlet is placed high enough so that the connection to the fan is short. Such a device insures a cool kitchen and a home free from the odors of cooking. Another outlet, just above the kitchen cabinet level, provides a place where the utility kitchen motor, cooking appliances and an electric iron may be attached.

The bedroom group in this home is particularly happy in its arrangement. It is cut off from the rest of the house to a large extent and insures a privacy which is always desirable in this portion of the house and is not always attained in a house with bedrooms on the first floor.

The bath, while conveniently adjacent to both of the bedrooms, still is isolated from them by means of closets which will prove effective in sound insulation.

The hallway of the bedroom group is illuminated by a 25-watt Mazda B all-frosted lamp, mounted in luminaire H and controlled by a switch at the entrance from the reception hall. The convenience outlet here is waist high to make for convenience in attaching the vacuum cleaner.

Each bedroom has two luminaires, type "C," one mounted on either side of the space which naturally will be occupied by the beds or dressers. These fixtures are to be mounted six feet from the floor and equipped with Mazda B clear bulb lamps of 40 watts capacity. Notice that a switch for these lights is provided at the door to prevent unnecessary searches in the dark. The convenience outlets provided in the bedrooms will find their uses in providing current for curling irons, hair dryers, massage vibrators, heating pads, electrical heaters, boudoir lamps and electric fans.

Closets off both of the bed rooms are illuminated with 25-watt Mazda B clear lamps in pull sockets. These are to be hung directly above the center of the closet floor.

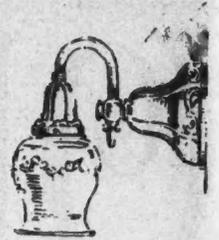
In the bathroom two luminaires of type "E" are mounted on the sides of the mirror. They are equipped with 25-watt Mazda B clear lamps and are five and a half feet from the floor. This insures that the head of the

house will have adequate illumination when he shaves. No arrangement which throws one side of the face in bold light and the other in a shadow correspondingly deep can be considered at all satisfactory.

A convenience outlet in this room is located above the wash bowl, where it will be found useful for the operation of the immersion heater, sterilizer, milk warmer, massage vibrator and other devices.

A sleeping porch of the type shown in the plan for this home virtually adds another bedroom to the home if it is planned and built properly. This room, with its rather generous size, opens from the bedroom with French doors, which often will be thrown open on warm days and nights for ventilation.

The lighting equipment specified for this room is a 75-watt Mazda lamp, mounted in luminaire "F" on the ceiling. A convenience outlet is provided in the baseboard for a reading lamp and for mechanical devices. It is possible that such a room would be used often as a sewing room, when a connection for the electrical sewing machine will be found most desirable.



Two Fixtures of This Type, Luminaire "C," Illuminate Each of the Bedrooms.



The Kitchen Is Lighted with Luminaire "K," Shown Here, to Insure Diffused Shadowless Light.



Home Light Standards

J. W. LOFTS, distinguished illuminating engineer, has recently completed a detailed study of light required for human comfort and health.

The intrinsic brilliancies of the more common forms of artificial light in terms of candle power to the square inch are used as follows:

Modern candle	2	Incandescent mantle.....	40
Flat gas flame.....	4	Electric light	40
Flat wick oil lamp.....	4	Acetylene flame	100

The use of globes, which is recommended to reduce glare and sharp lighting contrasts, was found to reduce the brilliancy of the light source from 5 per cent for clear glass to 40 per cent for heavy frosted glass.

Indirect illumination, the avoidance of glare and of deep shadows and the installation of diffused lighting systems are advocated for the home. The standards of illumination found desirable, as given below, are given in foot-candles; i. e., in multiples of the amount of light thrown upon an object one foot distant by a standard sperm-oil candle. The illumination levels for various rooms are:

	Foot Candles
Dining tables	6-8
Drawing rooms	4-6
Library or study.....	5-8

SAMUEL E. DEVERAUX.



This Fixture, Luminaire "J," Is Placed Over the Kitchen Sink.



Two Luminaires "E," to the Right, Are Used to Light the Bathroom Mirror. Luminaire "H" Is for the Hallways.

Over the Mantel

where you want wiring concealed, the handiest method is with *Ovalflex*. It is a flat $\frac{5}{16}$ " two- and three-wire Flexible Armored Cable complete.

Wherever there is a surface to be plastered, *Ovalflex* can be run over that surface—then the plaster conceals it. Outlets installed anywhere along the run.

On re-wiring jobs, simply run *Ovalflex* in a shallow groove in the plaster. Quick, easy, economical!

National Metal Molding Company



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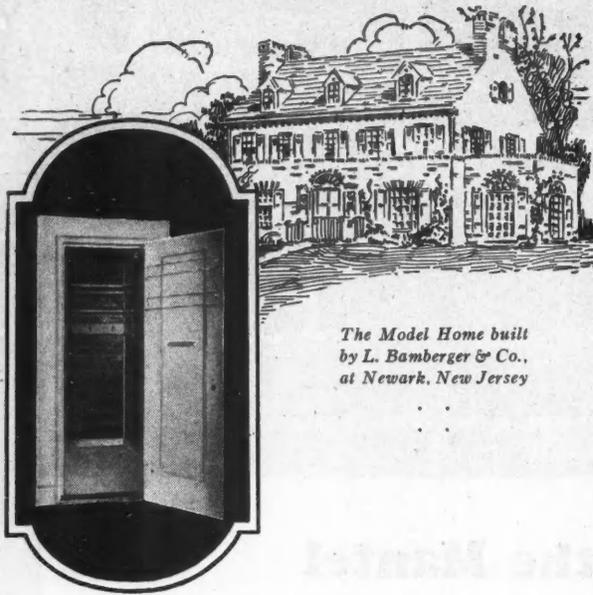


(111)

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A NATIONAL METAL MOLDING PRODUCT

GENUINE AROMATIC RED CEDAR



*The Model Home built
by L. Bamberger & Co.,
at Newark, New Jersey*

Featured in Model Houses —now in EVERY HOME

The selection of the many conveniences featured extensively in model houses, is guided solely by the economical and efficient characteristics of the product.

Kilmoth genuine red cedar has been chosen in answer to these two vital factors.

Recognized as a natural lasting moth preventative of great value. Endorsed by leading architects and builders everywhere as an indispensable aid in the rental or sale of homes, apartments and apartment hotels.

Kilmoth installations cost but little more than lath, plaster and base-board. The sanitary qualities of Kilmoth make it also adaptable to public institutions.

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50-A Union Square, New York.

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I am Architect Builder Realtor Lumber Supply

AROMATIC **KILMOTH** RED CEDAR

New Painters' Stencil Developed

A NOVEL and improved method of making stencils for the use of the painter and decorator has been developed by the New Jersey Zinc Company. The process of making these lace stencils, as well as much other valuable and interesting information for painters, is combined with a memorandum book in Mapaz' Hand Book No. 1, which may be procured without charge by painters who will write the offices of the company, 160 Front Street, New York, N. Y.

In describing the stencils the booklet says:

"Ordinary stencils cut from paper usually are not of very rugged construction. They are soon spoiled by creasing or tearing. Many of them are not of sufficient delicacy of line to produce the most pleasing effect.

"We find now that woven lace, such as is used for curtain material can be prepared readily for use as stencils and the results obtained are much more pleasing than the ordinary stencil work.

"The dry, untreated net or lace should be carefully and evenly stretched over a light but rigid frame and tacked securely in place. When so stretched, apply a generous coat of orange shellac, care being taken to see that no open spaces have been allowed to remain filled or bridged over with the shellac.

"The care with which the stretching and shellacking have been done will largely determine the beauty of the work which can be produced from this stencil. Allow the shellac to dry hard before using and leave the stencil in the stretching frame while using. Use the same as any stencil is used.

"Where it is desired to use the stencil in corners, the lace, treated as above, is rigid enough to be taken from the frame and is flexible enough to bend to the contour of the wall without breaking."

The Sign of the Modern Kitchen

Yesterday a rarity, today a necessity — electric ventilators for homes. They cost little, and are easy to install.

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

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

EMERSON
Residence Ventilators

Kelvinator Automatic Refrigeration a Firmly Established Electric Necessity

Architects everywhere are recommending Kelvinator.

Kelvinator has pioneered the way to successful electric refrigeration since 1914. It is made and marketed by an international organization.

For the last six years it has been sold commercially. Thousands are now installed in homes throughout America.

Everywhere you go you will find Kelvinator owners enthusiastic about the automatic, carefree service.

Kelvinator Owners Our Best Salesmen

One of our recommendations to all Kelvinator prospects is an invitation to consult Kelvinator owners.

Kelvinator owners will tell you about its wonderful convenience. There is no inconvenience, no dirt, no waiting for the ice man.

Kelvinator maintains a dry, even, wholesome temperature, much colder than ice. This perfectly dry refrigeration keeps food better and longer, prevents food waste and safeguards health.

Kelvinator is not a refrigerator—it is *refrigeration*. It is designed to fit any good refrigerator of any good make. Its cooling tank takes the place of a cake of ice—is, in effect, a cake of ice that never melts.



Thousands of Women Demanding Kelvinators

Thousands of women are learning that in addition to its better and healthier refrigeration, Kelvinator is an important aid in the preparation of food,—that in addition to its ice trays it is invaluable in making frozen desserts and salads.

The Investigating Committee of Architects and Engineers of New York city endorses Kelvinator, as do Good Housekeeping Institute, the New York Tribune Institute, The Modern Priscilla Proving Plant;—and best of all, thousands of satisfied owners.

Every Architect who recommends the installation of Kelvinator is

doing a real service to his client. Learn about Kelvinator. Write for your copy of "Specifications and Data" and the name and address of the nearest Kelvinator dealer.

Kelvinator Corporation
2021 W. Fort St. Detroit, Mich.

Established 1914

Kelvinator

Electric Refrigeration

Better Homes Week Planned By National Organization

THE week of May 11-18 has been designated as "Better Homes Week" by a body recently organized under the name of Better Homes in America. This is an educational, non-commercial organization with Herbert Hoover, Secretary of Commerce, as president and Dr. James Ford, now on leave from Harvard University, as executive director. The organization is intended to help the man of small income learn to live with more comfort, more health and more certainty that his children will regard the home as a center of interest. The offices are at 1653 Pennsylvania Avenue, Washington.

For the Better Homes Week, local communities in all parts of the United States are being organized on a nation-wide basis to prepare community exhibits of homes properly planned, built and furnished.

"One definite objective," Dr. Ford has said in outlining the purposes of the movement, "will be the inclusion in high school courses of required courses in home making and the care of the home. The one sure product of every school is an army of men and women who will head homes, yet for this most important function in life there is often not even a pretense of practical training."

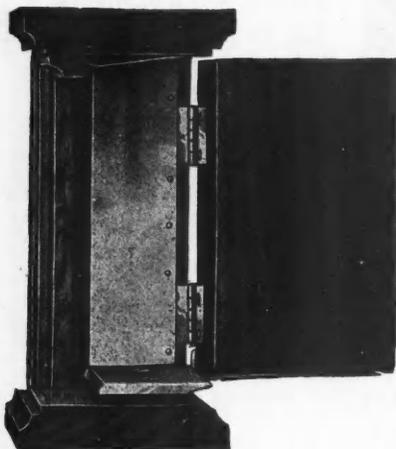
Some of the suggestions of the organization which may prove of particular interest to the builder are:

"Put the kitchen sink under a window so that the home-maker may enjoy fresh air and the beauties of nature while engaged at necessary household tasks.

"Place your bed in relation to the bedroom windows so that you can have plenty of fresh air without a draft.

"Build your house so that the living room and dining room constitute one big room. Then your daughter can have dances, parties and other social events in the home instead of somewhere else."

Keep This In Mind



Illustrating Our Brass Threshold with El Strip-Also Spring Bronze.

Now is the time to get work on new buildings. Building activity will be greater this Spring than ever before.

Every new and old building owner as well is a prospect.

This is your opportunity to make some real money selling and installing ALLMETAL WEATHERSTRIP.

"The Strip that's hard to beat"

-----Mail the Coupon-----

ALLMETAL WEATHERSTRIP CO.

231 West Illinois Street

Chicago, Illinois

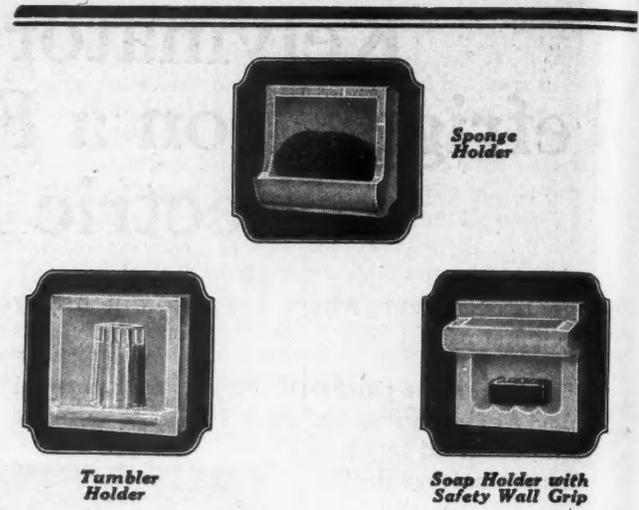
Gentlemen: Without obligation tell me of your plan.

Name

Address

City

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Beauty—Convenience —Durability

THREE Features that account for the popularity of Fairfacts Fixtures among architects not only for residence, but for hotel or apartment house use as well. Installed in bathroom walls they are as durable as the building itself. Made of solid china, they will not stain, crack or chip.

There is a complete line to meet every bathroom need—soap holders, sponge holders, paper holders, shelves, towel bars, tumbler holders, tooth brush holders, and a wide variety of combinations.

Fairfacts Fixtures are installed by tile contractors—the only trade that does this work—and should be included in the tile contract.

Send for catalog F. Details and specifications also appear in Sweet's Architectural Catalog.

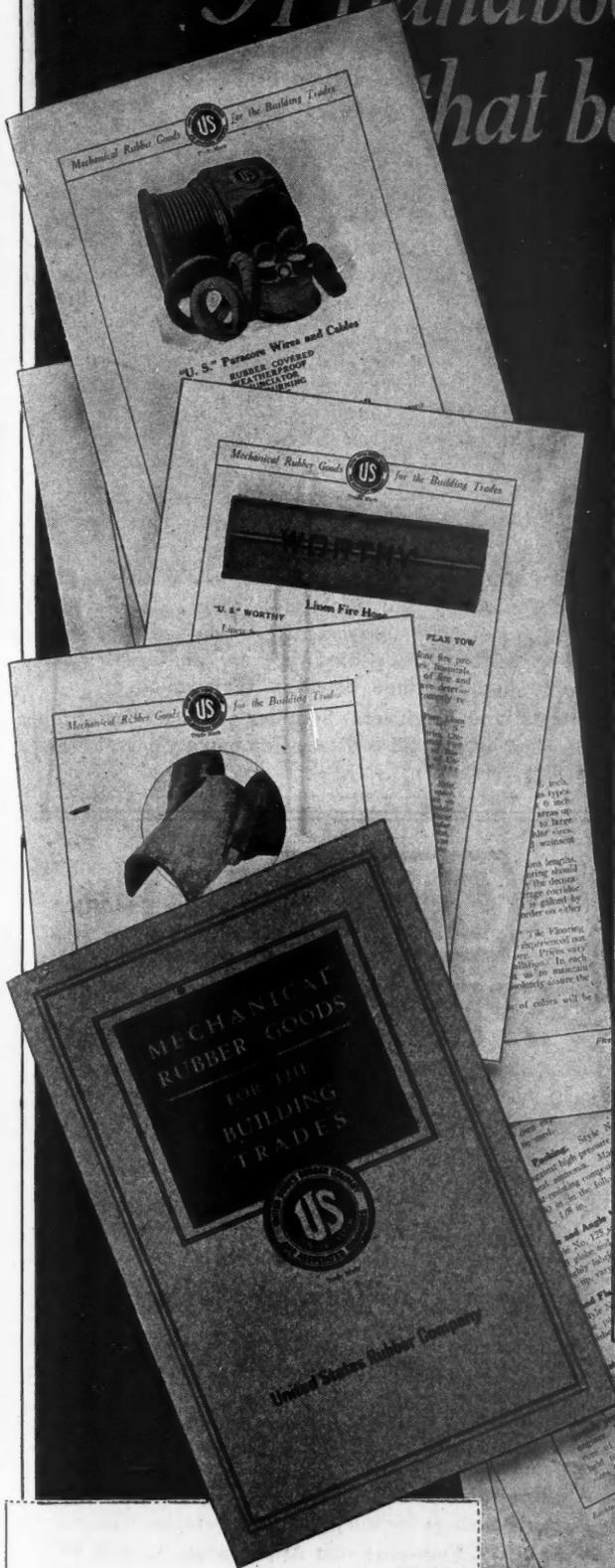
THE FAIRFACTS COMPANY, INC.
Manufacturers

Dept. Y, 234-236 West 14th Street
New York City

Look for this Trade Mark

Fairfacts Fixtures

A Handbook of Rubber Goods that belongs in your files!



THERE are a lot of places between foundation and cornice where good rubber products are important to every construction man, even if he is only putting up a taxpayer on a twenty-foot lot.

At the start of the job good suction hose and water hose are needed for pumping out the excavation and wetting down his concrete mix. Every step in the average building operation involves some item of mechanical rubber goods or of the allied products included in our line. And to finish off a good job "U. S." Paracore wire cannot be surpassed for the wiring, nor "U. S." Rubber Tile for the flooring of public rooms and corridors.

We have gathered all these items together in this compact catalog of "Mechanical Rubber Goods for the Building Trades," so that we can give to the builder and contractor in the most convenient form a knowledge of just what the United States Rubber Company has to offer HIM in HIS business. Simply fill in the coupon below and mail it in for your copy.

The "U. S." trade mark on the material he uses is a seal of quality for any contractor's work.

UNITED STATES RUBBER COMPANY
1790 Broadway New York City

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1790 Broadway, New York City

Please send me your catalog of "Mechanical Rubber Goods for the Building Trades."

Name

Address
ABMay



Books, Bulletins and Catalogs for You

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

The **Thirty-Second Annual Report** of the American Radiator Company, 104 West Forty-second street, New York, N. Y., gives the consolidated profit figures for the American and European units of the company for the year ending December 31, 1924. Increased business activity of the past year is reflected in the company report which shows the largest volume of business in the history of the concern.

Graham Brothers Trucks are listed in the latest catalog of Graham Brothers, Detroit, Mich. A number of models and bodies suitable for the use of contractors, builders and lumber dealers are shown.

"Heating Comfort" is the title of a booklet on Rybolt Reliable Furnaces issued by the Rybolt Heater Company, Ashland, Ohio. The booklet illustrates the features of the Rybolt furnaces and gives tables of their capacities and dimensions.

"Ideal-Arcola Heating Outfits," issued by the American Radiator Company, 822 South Michigan avenue, Chicago, describes and illustrates in detail the heating system recommended by the company for smaller homes, store buildings, garages and like buildings.

"A Glance Will Help You Decide" is the title chosen for an attractive two-color folder issued by the Warren-Knight Company, 136 North Twelfth street, Philadelphia, to show the Sterling Precision transits, contractors' transits and convertible level.

"Building Codes in City Development," issued by the National Lumber Manufacturers' Association, Conway

Building, Chicago, and Transportation Building, Washington, D. C., is a detailed study of the effect of building regulations on the development of buildings in cities. Particular attention is paid to fire hazards and retarding development of certain areas through faulty building codes. The booklet is issued in a size convenient for filing.

Kirsch Curtain Rods and many other accessories for properly draping windows are listed in the catalog number of the Kirsch Sales Booster, published by the company at Sturgis, Mich. Valuable suggestions for handling drapery problems will be found in this publication.

"The Beaver Plan Book," issued by the Beaver Products Company, Inc., Buffalo, N. Y., is a thirty-two page book showing a number of the practical uses of Beaver Wall Board in the home, garage, store, factory, on the farm and a number of other places. It is attractively illustrated in colors and gives practical instructions for planning a Beaver Wall Board room.

"White" Door Beds and space-saving devices are illustrated and described in an interesting catalog issued by the "White" Door Bed Company, 130 North Wells street, Chicago. The catalog gives full working diagrams of the spaces necessary for the installation of the various types and sizes of beds and shows dressing cabinets, built-in dressing tables and other space-saving devices manufactured by the company.

"Modern Hardware for Your Home" is the title of catalog A-33 issued by the Richards-Wilcox Manufacturing Company, Aurora, Ill. Casement window fittings, sliding door hangers and garage hardware are among the many varieties of home fittings listed in the catalog.

Architects' and Engineers' Supplies are listed in Catalog No. 36, issued by Keuffel & Esser Company, General Offices and Factory, Hoboken, N. J.

A Special Inducement

to enable you to discover the ease of application, economy and lasting beauty of Cameo. We want you to try it for yourself.

The attached coupon and \$2.00 will bring you 1 quart each of Cameo White Flat and Cameo White Enamel. Specify whether you wish Gloss or Matte (Satin Finish) (Regular Sales price \$3.55).

CAMEO

**White Enamels
and White Flat**

Specifications in Sweet's

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

Fill out and mail this coupon today.

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

Attached is \$2.00 for which please send me one quart each of Cameo White Flat and Cameo White Enamel Gloss or Matte.

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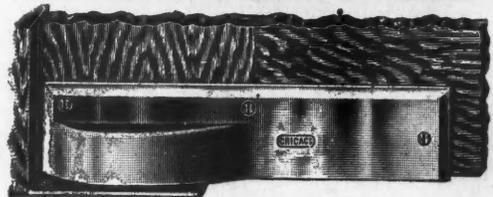
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City..... State.....

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Appearance — Economy — Durability

The "AJAX"

In the "Ajax" we offer a Floor Spring Hinge with Ball Bearings at top of the Hinge, away from dust and moisture.

Alignment Adjustment that is easily accessible.

Roller Bearings for the piston, to overcome friction.

Durability, Economy and Appearance, backed by our **REPUTATION.**

Send for Catalogue C 39.

Chicago Spring Hinge Company.

CHICAGO

NEW YORK



Inexpensive Conveniences like Knapé & Vogt Clothes Closet Fixtures Will Win Many a Contract for YOU

When you show prospective builders how easily Knapé & Vogt Clothes Closet Fixtures can be made of the plans for their homes—show them the added comfort and convenience, the lower build-
ing costs and the unlimited capacity with half the space—you can close many a contract which may otherwise slip by.

Home builders know that the contractor or architect who is ever seeking out greater conveniences for their comfort is a safe person in whose hands to place the building of their new homes.

Knapé & Vogt Clothes Closet Fixtures provide more closet space with half the usual size. Provide better storage and save building costs. Prevent wrinkling, sagging, crowding, tearing or soiling of garments. Permit instant inspection and selection in the light and air of the open room.

KNAPÉ & VOGT MANUFACTURING CO.
GRAND RAPIDS, MICHIGAN



GET THIS FREE FOLDER

To contractors, builders and architects, and to others interested in building, we will gladly send, on request, our blue print folder of Clothes Closet plans, showing how easily Knapé & Vogt Clothes Closet Fixtures can be included in your building plans.



Knapé & Vogt Mfg. Co.,
Grand Rapids, Mich.

Please send me your free folder of blue prints showing how easily K. & V. Clothes Closet Fixtures can be installed and included in any building plan.

() Architect () Builder () Contractor

NAME

STREET AND NO.....

CITY..... STATE.....

Books, Bulletins and Catalogs for You

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

Removing Scale and Rust from Iron and Steel Products newly fabricated is treated at length in bulletin No. 15 of the American Chemical Paint Company, Ambler, Pa. The title of the booklet is "Pickling Made Efficient with Rodine Extract." Rodine extract is a chemical which is added to the ordinary acid pickling bath to control the action of the acid.

Pyrobar Gypsum Tile and how to use the various types of the partition and furring tile made of the material are discussed in a booklet recently issued by the United States Gypsum Company, 205 West Monroe street, Chicago. Characteristics of the material, its value as a fire resistant and instructions for its use are contained in the bulletin.

"Portland Cement Prices, Their Basis, Character and Present Position," by Henry Parker Willis and John R. B. Byres (The Ronald Press Company, N. Y. C., Price \$1.25), is a scientific investigation of conditions in the cement industry which treats the question of the fairness and reasonableness of price and gives an analysis of cement company earnings.

The **Sandusky Tool Company**, 68 Murray street, New York, N. Y., has issued its illustrated and descriptive catalog No. 24 covering planes, plane irons, chisel and file handles and a number of other needs of the woodworker. This catalog replaces all others issued by this company.

"Standardization—What It is Doing for Industry" is the title of a booklet issued by the American Engineering Standards Committee, 29 West Thirty-ninth street, New

York, N. Y. It describes how standardization is being carried on, first in the individual plant, second in the industry as a whole, third nationally on an inter-industrial basis and fourth and last, internationally.

"Better Homes from Old Houses" is the title of an interesting book issued by the Barrett Company, 216 West Monroe street, Chicago, Ill. This gives floor plans and sketches to guide in the remodeling and modernizing of a number of types of old homes. The book suggests an interesting field for builders.

The Use of Solvay Calcium Chloride in concrete is discussed in a booklet issued by the Solvay Process Company, Syracuse, N. Y. It tells of the use of this accelerant, gives tables of comparative strength and cost and lists the advantages of the use of the product.

"Lumber and Its Uses" by R. S. Kellogg and Franklin H. Smith has been published in an entirely revised and enlarged edition, price \$4, by the U. P. C. Book Company, Inc., 239 West 39th street, New York, N. Y. The book explains in a non-technical manner the properties and uses of the principal American woods which are manufactured into lumber. It covers the structure and physical properties of wood, standard grades and sizes of lumber, seasoning of timber, wood preservation, the uses of lumber in various industries and paints and wood finishes.

"Practical Accounting and Cost Keeping for Contractors" by Frank R. Walker, price \$2.50, is the most recent book from the press of the Frank R. Walker Company, publishers, 536 Lake Shore Drive, Chicago, Ill. The book deals entirely with accounting, bookkeeping, cost finding and time keeping methods for the building trade. It emphasizes the practical nature of the work. All of the methods offered are illustrated by reproductions of practical uses of the accounts recommended. The book was published for the contractor rather than for the professional accountant.

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To Live Weatherstrip Men

WHY be content to handle an ordinary weatherstrip that you must sell in competition with every other strip on the market? You can sell

Burrowes Metal Weatherstrips

more easily, make more money and build up a business of your own that will become more profitable every year.

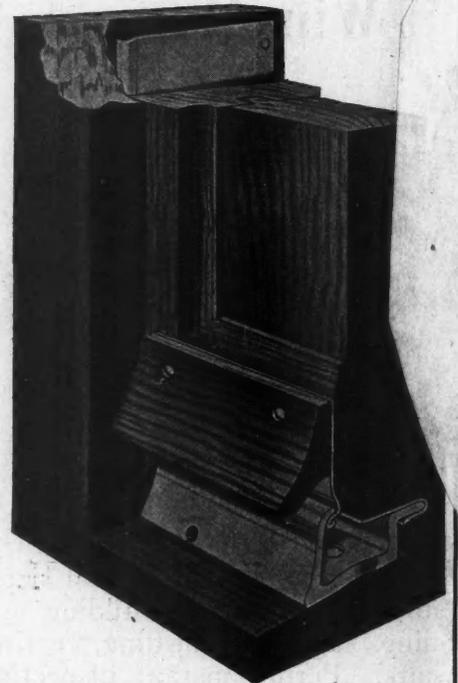
Burrowes Improved Weatherstrips are admitted to be the finest weatherstrips made. They have features which place them above "price cutting" competition. They are strong favorites with architects and contractors. This is your chance to make real money.

In Writing for Information Please Mention Territory Desired.

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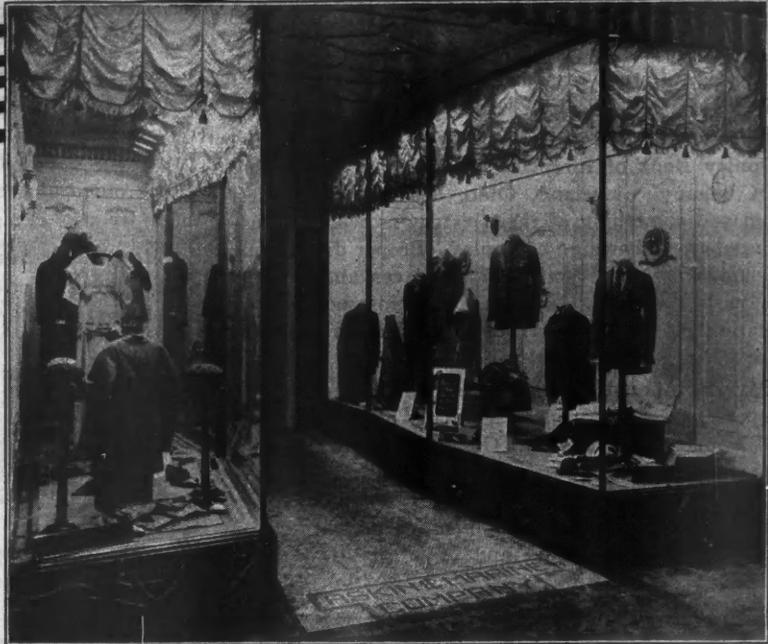
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WHEN you put in a Brasco store front you install an attractive money maker for the merchant, do a job that gets you more business of the same kind, and make a good profit on every contract.

We stand back of your job—help you with the finest designs to get the most out of the location, size and shape of store. Brasco construction gives the flexible grip that prevents glass breakage—assures strength—offers a front that will last as long as the building. It is easy to install.

Brasco has specialized in store front construction for years, has built up an enviable reputation for quality material, fair prices, and unusual cooperation. Contractors, builders and architects all over the country have found Brasco designs and material absolutely the best in store fronts. Send in the coupon now and find out how Brasco can make money for you.

BRASCO MANUFACTURING CO.
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We would like to find out (without obligation) how Brasco can help us get more out of store front work.

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AB524

Books, Bulletins and Catalogs for You

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

"Selling a Brand New Idea" is the title given by the Knappe & Vogt Manufacturing Co., Grand Rapids, Mich., to their description of the marketing methods used in bringing their space saving closet fittings and clothes hangers to the attention of the building public and architects. The booklet is comprised largely of reproductions of advertisements in prominent magazines. Many of these advertisements for architects show the space and money-saving features of the Knappe & Vogt Garment Care System. Catalog No. 10, just issued by the same firm, lists their entire line of store, show case and fixture fittings.

The "Donley Book of Fireplaces," issued by the Donley Brothers Company, Cleveland, Ohio, describes fireplaces, their charm and something of their history as well as illustrating a number of charming examples. Proper dimensions and proportions for the erection of fireplaces and hearths are given, with a working diagram. Full instructions for the installation of the Donley Damper and other fireplace fittings are given.

"The Milcor Manual," a data book, published by the same company, gives full technical details of the products of the Milwaukee Corrugating Company, with detailed description of the products, standard specifications for fire-proof structures, in convenient form for embodiment in architectural specifications and engineering tabulations on Milcor steel dome construction and other practical information.

Products of the C. Pardee Works, Inc., are listed in detail in three descriptive catalogs of filing size issued by the Pardee Works at Perth Amboy, N. J. The titles of the three publications are White Wall Tile and White Ceramics; Flint Tile and Ceramics and Grueby-Faience. Each gives color representation of the products it describes with full size or scale-drawn drawings of their architectural details.

Invisible Joint Metal Ceilings and Side Walls are described and illustrated in Catalog XXX issued by the Milwaukee Corrugating Company, Milwaukee, Wis. A number of different period designs of the material are shown with specifications of each type.

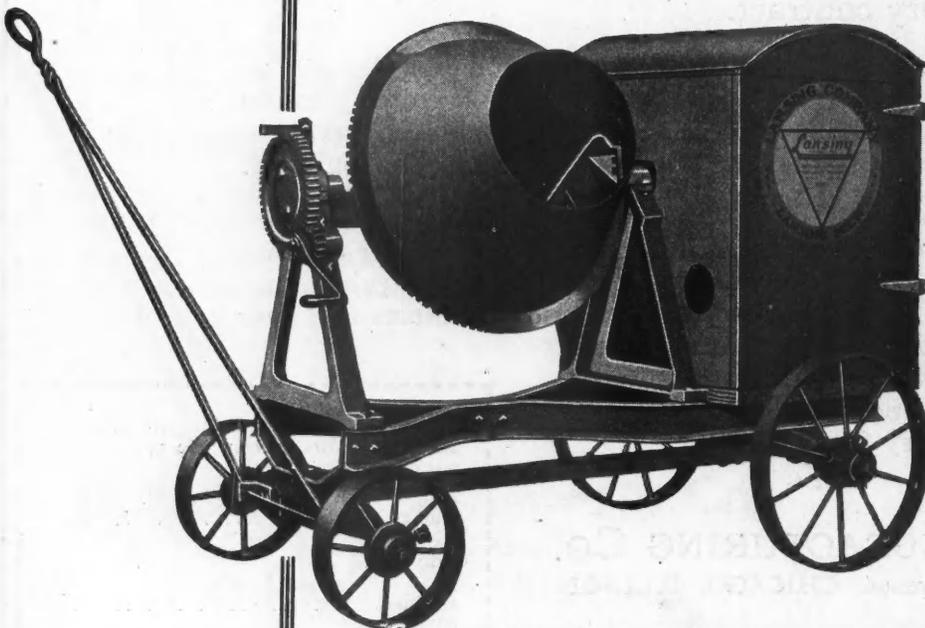
Door Hangers and Hardware Specialties are listed and described in the 384-page catalog issued by the Richards-Wilcox Manufacturing Company, Aurora, Ill., as General Catalog No. 30. The catalog is generously illustrated and shows much of the detailed operation of the extensive line made by this company.

"Ideal" Ball-Bearing Elevator Door Hangers, elevator door controls and electric safety interlocks are shown in full architectural detail in the Architectural Detail Folio issued by the Richards-Wilcox Manufacturing Company, Aurora, Ill. Detailed scale drawings of the many possible installations of these products are given.

"Duntile Manufacturers' Manual," published by the W. E. Dunn Manufacturing Company, Holland, Mich., shows in a permanent and attractive form the advantages of manufacturing Duntile, the utilization of the material, and gives blueprint representation of Duntile construction features. The publication is very attractively arranged in six sections.

THE LANSING LINE of Concrete Mixers is Most Complete

*A Mixer for
Every Need*



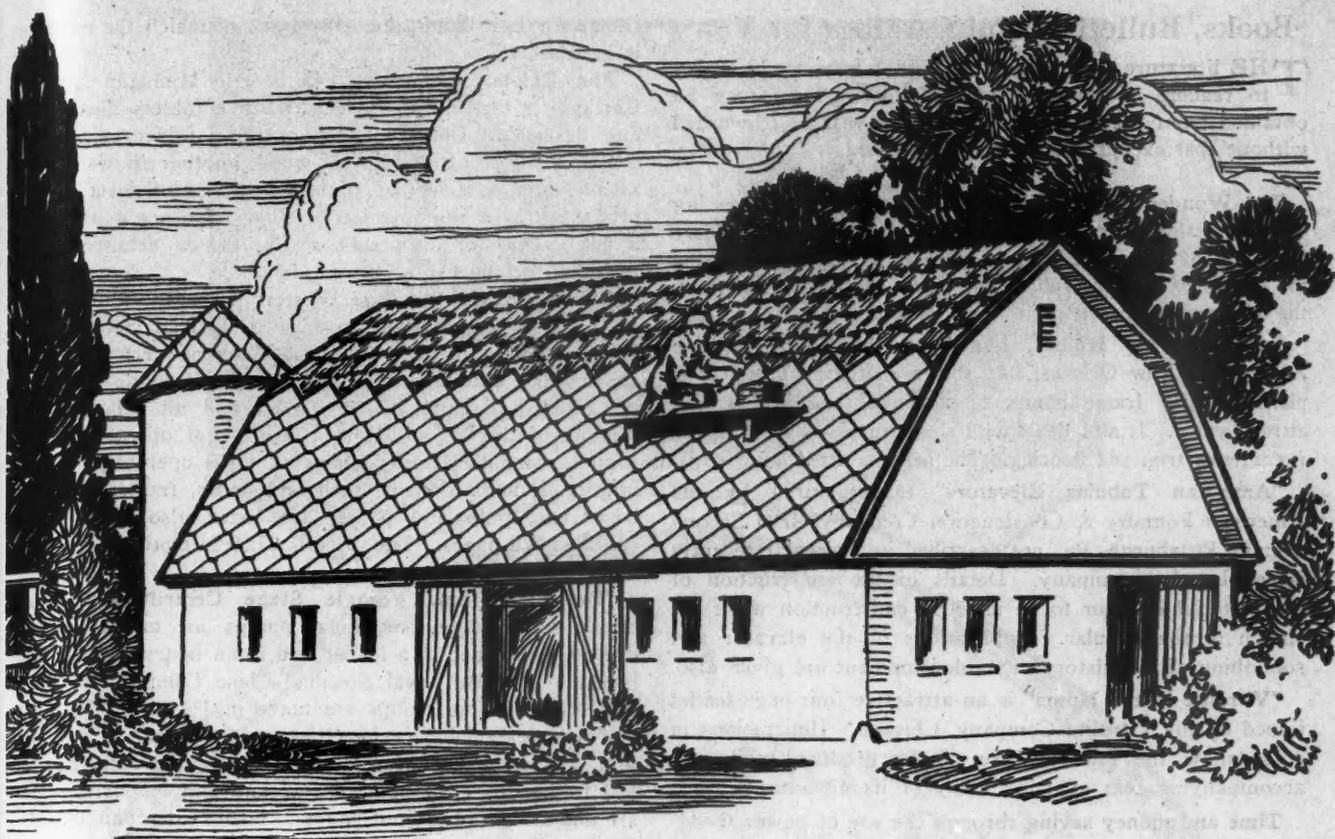
Our No 5 Broncho Mixer is popular with wide awake builders and contractors because of its compact, sturdy construction, speedy mixing, rapid charging and discharging and mobility.

**You pay less for
Lansing Mixers
and get more for
your money.**

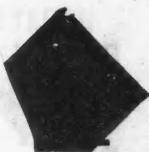
It will pay you to study the **Lansing Line** before you buy.

*Write today for our
catalog*

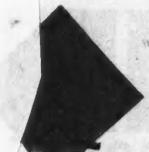
**LANSING CO.
LANSING, MICH.**



Reroof this Springtime for all time!



View of a Genasco Shingle. In three fading colors—green and blue—



View of a Genasco Shingle showing "Key" that locks it firmly and flatly to the roof deck.

Give your clients the benefit of Genasco Latite Shingles—a roofing that lasts for years—that stays leak-proof, storm-tight and fire-safe as long as the building stands.

Genasco Latite Shingles lock on the roof. No curling—no bulging—no flapping in the wind. A metal strap at each shingle butt locks them fast to the roof deck.

Heat can't blister—cold can't crack—moisture can't rot them. That's because they're made with Trinidad Lake Asphalt Cement—*nature's everlasting weather-proofer.*

Artistic in shape—attractive in coloring—they conform to any style of architecture. And you can lay them over old wooden shingles just as easily as over new boards.

Builders in all parts of the world are enthusiastic over Genasco Latite Shingles. Write at once for illustrated folders.

The Barber Asphalt Company

New York Chicago PHILADELPHIA St Louis Kansas City
Pittsburgh San Francisco

Genasco Latite Shingles

Books, Bulletins and Catalogs for You

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

The Wonder Tilting Mixer is the title of an interesting 48-page catalog recently issued by the Construction Machinery Company, of Waterloo, Iowa. The catalog not only represents the details of construction of the mixer, but shows views of the mixers on operation in many localities.

Southern Pine Homes, issued by the Southern Pine Association, New Orleans, La., shows photographs and floor plans of fifty frame homes of moderate size and proven attractiveness. It also deals with southern pine as a material for interior trim and flooring. The price is listed at 25 cents.

"American Tubular Elevators" manufactured by the American Foundry & Construction Company, 4700 Second avenue, Pittsburgh, Pa., are described in a circular recently issued by that company. Details of the construction of the material elevator to be used on construction work are shown in the circular. Applications of the elevator and something of the history of its development are given also.

"Vitrolite in the Home" is an attractive four-page leaflet issued by the Vitrolite Company, Chicago. Illustrations in color show the practical use of the product, while the accompanying text explains many of its advantages.

Time and money saving through the use of power wood-working machinery is illustrated in the folder "Don't Let the Dollars Slip Through Your Fingers," just off the press for Richards & Co., Inc., Battery Wharf, Boston, Mass. The folder, besides listing the possibilities of "The Beaver," one of the woodworking machines made by the company,

shows through illustrations the work of which the machine is capable.

The Celotex Company, 645 North Michigan avenue, Chicago, is distributing three attractive folders illustrating and describing Celotex. One of these folders shows its use as a sheathing in place of wood, another shows its use as a plaster base instead of lath and a third described its properties as a roof insulator. They also are distributing a publication for architects, giving fifteen detailed specifications for the use of the product.

Abbey's Register of the Western Lumber Industry, by P. L. Abbey, published by The Industrial Service Co., Portland, Ore., in the 1924 edition, covers every branch of the logging and lumbering industry in Oregon, Washington, British Columbia and Alaska and all other timber regions of the West. It is a register of operations, personnel, machinery and equipment of the operators. Allied industries, book shelves, sash and doors, frames, veneers, cooperage, pulp and paper, are listed also. The book contains 328 pages. The price is \$3.50 in cloth binding and \$2.85 bound in paper.

"De Laval Small Single Stage Centrifugal Pump." Small single-stage centrifugal pumps for motor or belt drive are described in a leaflet and in an instruction manual issued by the De Laval Steam Turbine Company of Trenton, N. J. These pumps are made in 1½ and 2 in. sizes, and are designed for capacities ranging from 5 gal. per min. against 10 ft. head up to 130 gal. per min. against 150 ft. head. They contain few and simple parts, which are manufactured to limit gages to insure interchangeability. The publications before us give very complete tables and instructions for selecting pumps for different conditions, and explain how to determine the proper speeds and how to select piping, valves, fittings, and driving pulley or motor to secure an efficient and satisfactory installation.



House near Chicago, showing its "underclothing" of Cabot's Quilt, with furring strips over the Quilt, on which the outside finish is laid. Roo also insulated. Leon E. Stanhope, Architect, Chicago

Underwear for Houses

Underclothing makes people warm because it prevents the heat of their bodies from escaping. You can make your houses warm in the same way.

Cabot's Insulating Quilt

prevents the house heat from escaping. It insulates the whole house and saves the heat from the heater—that costly heat. It keeps the house warm on the smallest amount of coal; saves one-quarter to one-half of the coal bill. Makes the house comfortable for all time. Preserves health and saves doctor's bills. Makes the house cooler in summer. Quilt is not a mere felt or paper, but a scientific insulator that makes the house like a thermos bottle.



Sample of Quilt with full details, and references to dozens of users, sent FREE on application.

SAMUEL CABOT, Inc., Mfg. Chemists
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Cabot's Cresote Stains, Conserve Wood Preservative, Stucco & Brick Stains, Damp-Proofing

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THE BEST
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DURABILITY
BEAUTY
IN THE
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SPRING HINGES
ARE THE BEST**

Your DEALER handles them,
Get New Catalog 47, you need it.

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MANUFACTURERS BROOKLYN, N. Y.**



FROM THE SUNBEAM HEATING SYSTEM CIRCULATES HEALTH AND COMFORT THROUGHOUT THE HOME

SELL Warmth a-Plenty in the Houses You Build

Sell the *whole-house* comfort that is insured by the installation of Sunbeam Furnaces (Pipe or Pipeless)—and you will sell each house more quickly, while you are building a good advertisement that will help you profitably dispose of the next one.

Sunbeam equipment insures "warmth a-plenty" for the owner when he wants it and where he wants it. That's because Sunbeam Warm-Air Heating is direct, quick-action heating. It takes pure fresh air, warms it abundantly and sends it *directly* to the rooms where it is wanted.

And Sunbeam Furnaces will do more for the owner. They will give him, (1) Economy (2) Health (3) More Floor Space (4) Control (5) Comfort (6) besides Quick Action.

Then again there are distinct advantages for you. Sunbeam Furnaces are low in first cost as well as in installation cost. On the next house you build let our Sunbeam Engineering Department prepare a plan for you. Write today.

THE FOX FURNACE COMPANY, ELYRIA, OHIO

Largest Makers of Heating Equipment

Boston Atlanta Cleveland Chicago Denver San Francisco

There is a Sunbeam Dealer near you who is prepared to give you quick deliveries and quick installation service. Let us send you his name.

See Page 1796 in Sweet's Architectural Catalog

SUNBEAM
WARM-AIR HEATING

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Announcing A New and Better Jimmy-Proof Lock

*—That Has the Fullest
Measure of Security and
Protection Built Into It*

THE Keil Burglar-Proof, Jimmy-Proof Lock, combines the most advanced principles in design and construction, and affords a measure of safety and utility heretofore unapproached by any other lock.

Experts' reports prove conclusively that the Keil Lock has withstood sawing, jimmying and other severe tests.

In Your Plans Specify

The Keil Jimmy-Proof Lock

See to it that your client has adequate protection in his home, through the installation of the Keil Lock—specify it in your next building plan.

Sample submitted upon request.

FRANCIS KEIL & SON, Inc.
407 East 163rd Street, New York, N. Y.

552 Keil Burglar
and Jimmy-Proof
Locks installed for
protection in the
Lewis - Morris
Apartment, Grand
Concourse and
175th St., New
York.
A. J. Schwarzler,
Builders, New
York.



Bolts shoot out perpendicularly
—turn and rest horizontally in
locked position.



Dadoing

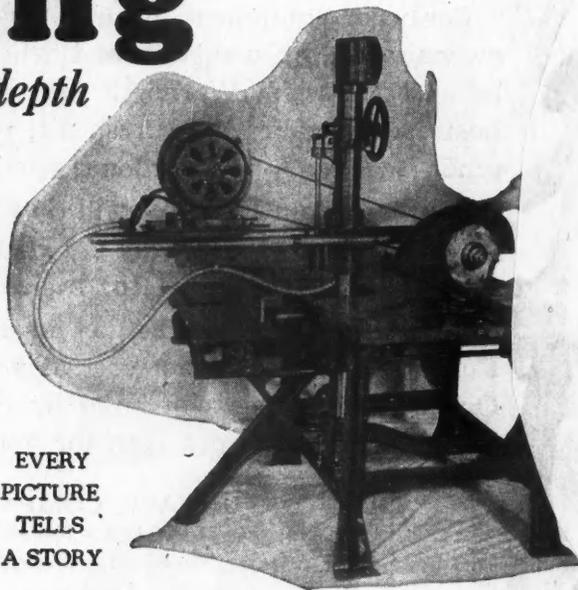
any width and any depth

THE Speed Marvel will dado one pair 16" stringers [12 risers and 12 treads] in 32 minutes. Just think what a *saving* in time and wages this would mean to you. The cutting tool *moves through the lumber* in the natural way, and is at all times visible. By a simple adjustment this same machine will RIP PLANKING, CROSS CUT RAFTERS, STUDS and BRACES, BORE and SAND, MITER, PLOUGH, RABBET and BEVEL. A complete mill work shop in itself, this marvel of a power tool will make every straight cut known to the trade and reduce labor costs to one fifth.

Hundreds of carpenters testify to the money saving, efficient Speed Marvel, and the demand for this portable, mechanically correct machine increases day by day.

During this month we are fortunately able to make immediate shipments, and we urge you to write at once for our free descriptive folders.

EVERY
PICTURE
TELLS
A STORY

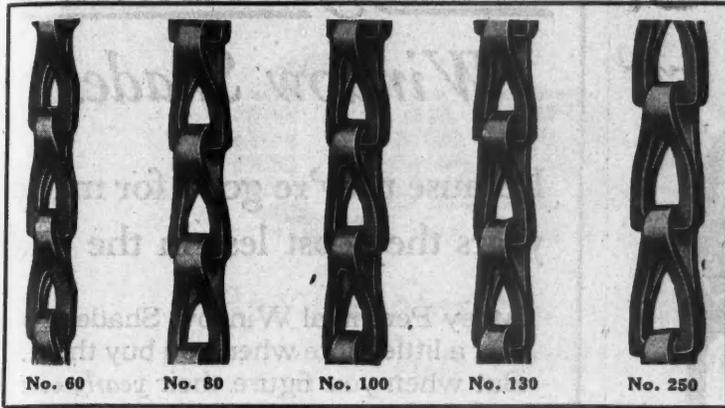


Richards & Company, Inc.

**Battery Wharf
Boston, Mass.**



American Sash Chain



AMERICAN Sash Chain represents the maximum in strength and wearing qualities. It will outwear any other type of sash suspension material and always sustains its load.

We have standardized the sizes of chain to correspond with the weights of sash for which they are intended. This important feature is not the result of haphazard estimates, but of painstaking laboratory investigation.

No. 60,	for	60	pound	double-hung	Sash
" 80,	"	80	"	"	"
" 100,	"	100	"	"	"
" 130,	"	130	"	"	"
" 250,	"	250	"	"	"

American Chain Company



INCORPORATED



BRIDGEPORT, CONNECTICUT

In Canada: Dominion Chain Company, Ltd., Niagara Falls, Ontario

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Largest Manufacturer of Welded and Weldless Chains and Makers of the Famous WEED Automobile Accessories

3 Reasons why you should
MAKE YOUR BLOCKS THIS SPRING WITH THE IDEAL HAND BLOCK MACHINE

1. *Quality of Blocks*
2. *Quantity of Blocks*
3. *Service of Ideal Co.*



long until you will use our complete Power
 sting of a Core Actuator, Conveying Feeder,
 nisher, Block Machine and Tamper.



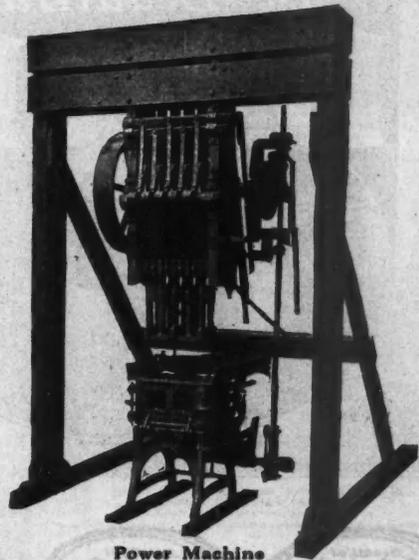
Hand Block Machine

The Ideal Roll-Over Stripper

Produces good Stripper Block or Tile rapidly.

The Ideal Concrete Machinery Co.

5014 Spring Grove Avenue
Cincinnati, Ohio



Power Machine



birch interior trim

"COME-BACKS"

from a first class birch job are "pleasant to take." Just one boost after another for good contractors and builders—you're one—who do good work with good lumber.

"Beautiful Birch for Beautiful Woodwork." Our advertisements are reaching millions every month. Many good prospects among them.

Our Birch Book FREE—will help you land those that come your way. Send for it, TODAY.

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for Beautiful Woodwork
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THE VIEWS SHOWN

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Athey Perennial Window Shades

Because they're good for many years they cost less in the end

Athey Perennial Window Shades do cost a little more when you buy them. But when you figure their *yearly cost*—their first cost divided by the number of years they are good—you'll realize they really are the most economical shades you can buy.

Many of the first Athey Shades manufactured—ten years ago—are still in use and in excellent condition. Contrast that with the life of ordinary shades, which must usually be replaced every few years.

And aside from their long life there is no other shade that will give the full measure of satisfaction which you always get from the Athey. They raise from the bottom, or

lower from the top—folding like a fan. So you can shade just the part of the window that needs shading, without shutting out the light and And when your windows are open they won't flutter or rattle.



Detail drawing showing construction and operation of Athey Perennial Shades. Because of their extremely long life and consequent low cost—because they permit shading any part of the window—and because there is nothing to get out of order, Athey Shades are being installed in the finest schools, hospitals, hotels, office buildings and factories throughout the country. Also in many of the finest homes.

There's nothing else like them to get out of order—no ratchets, latches, springs to stick. And even if they won't ruin themselves they are made of indestructible materials—thoroughly enamelled and water-proof—and can be cleaned.

Write for complete information and price

Athey Company

6054 West 65th Street - Chicago, Illinois

CARNEY

for Brick and Tile Mortar

Has Greater Sand Carrying Capacity —Thus Saving You Money

Carney Has These Exclusive Merits:

It can be used directly after mixing or left in the box over night. There is no waste to Carney. It requires no lime which saves time and labor in mixing. It prevents loss and waste through carelessness. Each barrel contains five sacks (cloth or paper) 4.75 cubic feet. It has a four parts sand carrying capacity which means nineteen cubic feet of smooth mortar to one barrel cement. It lays the maximum number of brick to the barrel. Being more plastic and smoother working, the mason can work faster and easier on the wall. It does not harden in the box. It can be used immediately after mixing and does not require soaking. It works perfectly in cold weather. It is ideal for all wall-bearing buildings. It becomes harder than the brick and tile it binds, continuing to harden indefinitely. It sets a creamy white, contrasting beautifully with brick and tile. Contractors bid lower, do better work and make more profit with Carney. The final cost of a Carney wall is always lower.

Carney is the perfected cement for brick and tile mortar.

The Carney Company
Cement Makers Since 1883
Mankato, Minn.

Mills: Mankato, Minn., Carney, Minn.

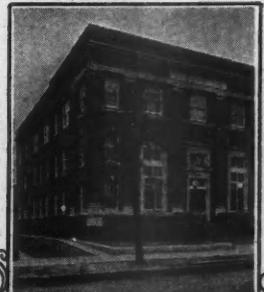
District Sales Offices:

Leader-News Building, Cleveland; Chamber of Commerce Building, Chicago; Omaha National Bank Building, Omaha; Syndicate Trust Building, St. Louis; Book Building, Detroit; Builders' Exchange, Minneapolis.

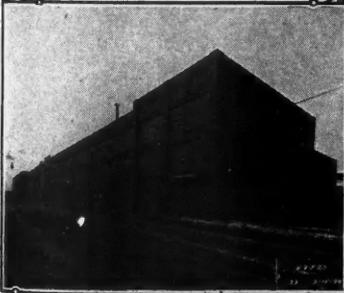
Specifications: 1 part Carney to 4 parts sand.



ALCAZAR HOTEL, Cleveland, Ohio
Architect, H. T. Jeffery
Contractor, Geo. W. Hale



CLINIC BUILDING, Council Bluffs, Ia.
Architects, Anderson & Spooner
Contractor, John E. Wakefield Co.



HUFF MOTOR CAR COMPANY, Detroit, Mich.
Private Plans
Contractor, Everett Winters Co.



UNIVERSITY OF VA. GYMNASIUM, Charlottesville, Va.
Architect, Fiske Kimball
Contractor, King Lumber Co.

TOWER BUILDING, Chicago, Ill.
Architects, Holabird & Roche
Contractor, Krahl Construction Co.



NORTH JUNION HIGH SCHOOL, Sioux City, Ia.
Architects, Beuttler & Arnold
Contractors, Risché & Sanborn



JOSEPH G. CANNON SCHOOL BLDG., Danville, Ill.
Architects, Lewis & Dougherty
Contractor, Clark Construction Co.

Remarkable Development of the Standard Frame Industry

By H. L. ROTHSCHILD

THE idea of standard frames may be new to a few people, but a canvass among architects, carpenters and builders would quickly show how dependent they have become upon such products. One concern alone, the Andersen Lumber Company, at Bayport, Minnesota, has produced more than 4,000,000 standard frames—enough to supply 200,000 twenty-frame homes or commercial buildings.

a frame plant in connection with his lumber yard, with a view to producing better frames in standard sizes and designs.

There were many problems to be met with at the start, and as the business grew these problems multiplied. Obviously the frames could not be made by hand, else they would be little improvement over the carpenter's. The ordinary machinery afforded by the



An Inside View of the Andersen Factory.

The Andersen Lumber Company and the industry as a whole owes its success largely to Mr. H. J. Andersen, Sr., originator of the standard frame. Twenty years ago no concern had ever attempted to carry a stock of parts for frames or to confine itself to standard designs. The work was left entirely to the carpenter. He would go to his local lumber dealer, order whatever long length lumber he thought was needed, wait for it to be delivered and then saw it up, cut the parts and fit the frame together. The entire process was naturally slow, and the work had to be started well in advance of the time the frames were needed. This method was so entirely unsatisfactory that Mr. Andersen conceived the idea of installing

market at that time was not easily adaptable to frame cutting; neither was it accurate or fast enough for the purpose. The only course was to either buy standard milling machines and rebuild or reconstruct them for speed and accuracy, or to invent special machines and have them built at comparatively great expense. Both of these things were done, and the Andersen factory today is a marvel from the standpoint of efficiency. Most machines perform two or more operations at one time, and the plant is operated entirely by electricity.

After the earlier problems of production were settled, many details in connection with the frame itself had to be worked out. One was the number of sizes

to be made. Investigations were undertaken to determine what sizes would fill most requirements in building. An ingenious method was arrived at whereby a dealer would only need to stock 11 standard Andersen Frames, and by interchanging heights and widths of these sizes he could furnish 121 different openings. This was appreciated by dealers and contractors alike. The dealer had less money tied up in stock, less storage space was required, fewer orders came in that he could not fill, and on the whole he gave a much quicker service on a better product. The builder appreciated the promptness with which he could get deliveries, the quality of the frames, and the fact that he was giving satisfaction to those he built for.

Simplification in frame construction was another problem. Instead of having to deal with 57 different parts, as was the case in an ordinary frame, the builder can get an Andersen Frame in two compact bundles containing only seven units. These seven units can be nailed up in the building in 10 minutes or less. This saving of time and labor on a twenty-room house counts up, and the builder has come to insist upon it.

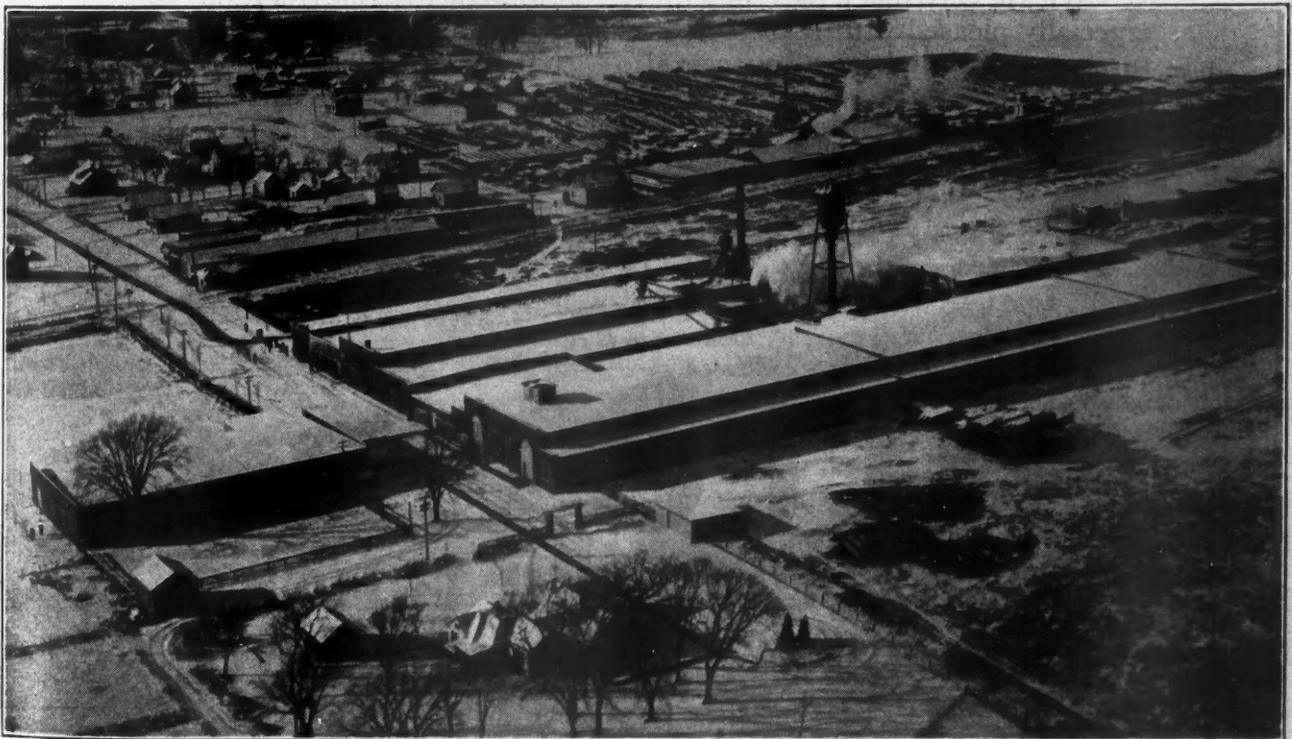
The original Andersen Frame was made of genuine White Pine. White Pine is still used in all exposed portions. Thus the frame is given a greater degree of permanency, and its original accuracy is preserved. Proof of this was brought out in an interesting way about two months ago, when the Andersen Lumber

Company decided to trace back some of its first shipments of frames. It was found that the Andersen Window Frames sold more than 19 years ago are still in place, still snug fitting, yet smooth running, and good for many more years of uninterrupted service.

Later developments were made, and two types of Andersen Window Frames are now in use. The Andersen Box Window Frames are especially for brick, tile and concrete buildings, and fully as serviceable and profitable to use as the regular frame building frame.

It is interesting to note some of the features which were unknown in the frame industry a few years ago. Andersen Window Frames today have a groove beneath the outside edge of the drip cap which prevents water from running back into the building. All sills have two shoulders; the inside sash rests in front of one and the storm sash or screen fits against the other, thus making it impossible for wind or rain to enter the building at any point along the sill. Andersen Cellar Sash Frames, instead of having flat sills, are provided with sloping sills just like those of their brothers. These and other more technical features have made the Andersen Frame a form of insurance for the architect and builder.

In view of the improvements which experts have brought about, it is little wonder that the standard frame is as essential to the builder as any product with which he works.



Aeroplane View of the Andersen Factory at Bayport, Minn.

Autocars Operate Efficiently with underloads as well as overloads



4-CYLINDER, 4 TO 6 TON AUTOCAR; 156 INCH WHEELBASE; CHASSIS PRICE \$4800

The pair of 4-cylinder 4 to 6 ton Autocars owned by the West Lumber Co. of Atlanta lead a varied existence in hauling lime, cement, paints wallboard, glass and lumber—whatever the day's orders demand. Mr. S. J. West has recently written the Atlanta Autocar Branch:

"We purchased from you in the first part of 1923 a 4-cylinder 4 to 6 ton, 156-inch wheelbase Autocar. We have been operating this truck ever since on a most economical basis for both maintenance and repairs.

"We are very much pleased with the performance of this truck and are especially pleased with its short wheelbase flexibility which allows it to turn conveniently in small spaces; also with its ability to haul underloads as well as overloads very efficiently because of lack of excess weight.

"We have recently purchased a second Autocar of the same type and feel sure that this truck will render a similar service."

The Autocar Company

ESTABLISHED 1897

Ardmore, Pa.

Branches in 45 cities

Autocar

gas *and* electric trucks

EITHER OR BOTH - AS YOUR WORK REQUIRES

Capacities from 1 to 6 tons

AROUND THE FAMILY TABLE



Effect of Educational Publicity Upon Building

A Tribute to the Advertising Craft and Their Great Service in Forwarding the Interests of the Building Trades

THE world's thinkers, scientists and inventors pass on their ideas to the capitalist and manufacturer. They, in turn, prepare for marketing and production, but, if the public is not ready for the improved device, there is no demand.

Here the advertising expert steps in to prepare and educate the public and assist the salesman in selling the device.

Practically every improvement in our modern life has gone through these stages of development. The public is naturally conservative—they have not progressed beyond the status quo. When electric lights and telephones were first offered to home owners, they seemed luxuries to the average man which he could very well do without. Today, they are considered necessities.

Even after the pleasure automobile had become popular, a long and persistent advertising campaign was necessary before merchants and manufacturers were sold on the superior efficiency of the motor truck over the horse. The government in time of war found advertising a potent force in raising funds to prosecute the war, to conserve resources and keep patriotism at full tide.

In no field has the advertising man been a greater factor than in the popularizing of better building methods and equipment for all classes of buildings—public buildings, industrial buildings and homes. This is especially true of the latter group, because consumer advertising has been necessary to the great general public. A like education, however, has been necessary within the building trades and among manufacturers and dealers.

The advertising men who serve the manufacturers of building material and equipment, the architect and contractor, are today preaching the gospel of better buildings of all kinds, including homes—better living

conditions—more time and labor saving conveniences—more music and entertainment. In this work, they are promoting the public welfare and public morals because the home is one of the greatest forces for good in the nation.

And the public is certainly responding. The homes of today are far different from those of yester-year. To one of the pilgrim fathers, a modern home would seem like heaven, unless, to his puritan ideas, it might appear extravagant.

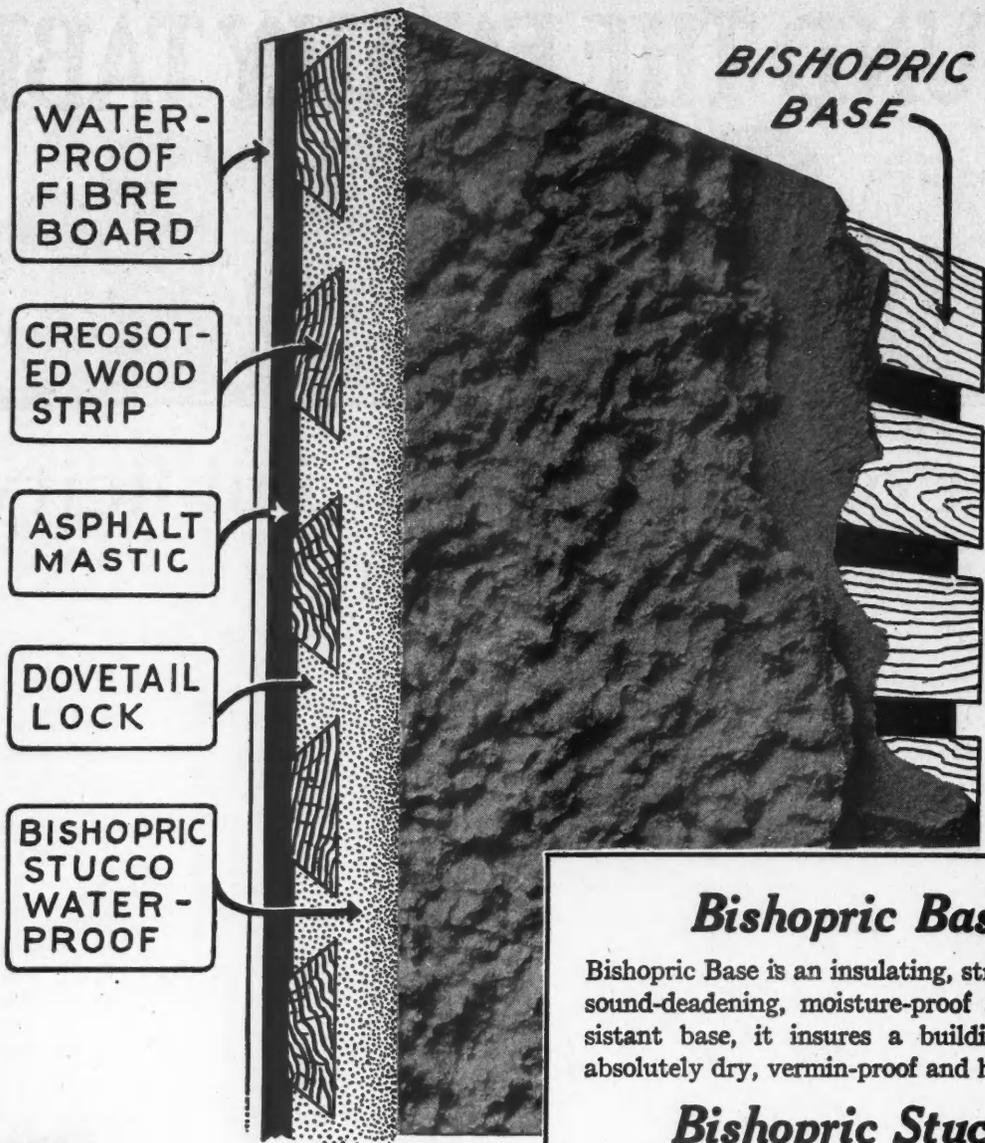
Where will it all end? We cannot look even twenty years ahead. Today, we have automatic heat and music, clothing laundered and ironed by machinery, vacuum cleaning, electric cooking and ventilating and a thousand and one refinements and conveniences, to say nothing of more lasting, artistic and better built houses.

What of the future? We may be sure that the need for the advertising man will be even greater in the future than in the past.

It is with a full sense of appreciation to the advertising craft who co-operate with us daily in our great task that we urge a careful study of the advertising in this issue. It is, in the best sense, informative—a liberal education in modern building materials, machinery and equipment. The manufacturer is a specialist and knows more about his product and competitive methods than any textbook author. He is preaching the gospel of efficiency for the builder and you owe him a careful hearing.

We are indeed proud of the advertising carried in this issue of AMERICAN BUILDER. It sets a new mark in the building field—both as to volume and quality of copy. It shows the confidence of advertisers in the dominant leadership of AMERICAN BUILDER in its chosen field. Help the advertiser to help you; read the advertising pages. They are worthy of study.

—Editor AMERICAN BUILDER.



The Roll and the Drum

Bishopric Base is shipped in rolls 100 square feet to the roll. It is easily handled, quickly cut to desired size and there is no waste.

Bishopric Stucco is packed in air-tight metal drums preventing deterioration and loss, either in transit or storage, or on the job.

Bishopric Base

Bishopric Base is an insulating, strengthening sound-deadening, moisture-proof and fire-resistant base, it insures a building that is absolutely dry, vermin-proof and healthy.

Bishopric Stucco

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

Free—"Bishopric For All Time and Clime," beautifully illustrated booklet sent on request.

PLAN BOOK containing many attractive designs with floor plans will be sent upon receipt of 25c, coin or stamps.

Bishopric is Sold by Dealers Everywhere

The BISHOPRIC MANUFACTURING CO.
5 ESTE AVE. CINCINNATI, OHIO.
NEW YORK CITY CINCINNATI OTTAWA, CANADA

The BISHOPRIC MFG. CO. OF CALIFORNIA
LOS ANGELES

BISHOPRIC

Stucco Over Bishopric Base

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER