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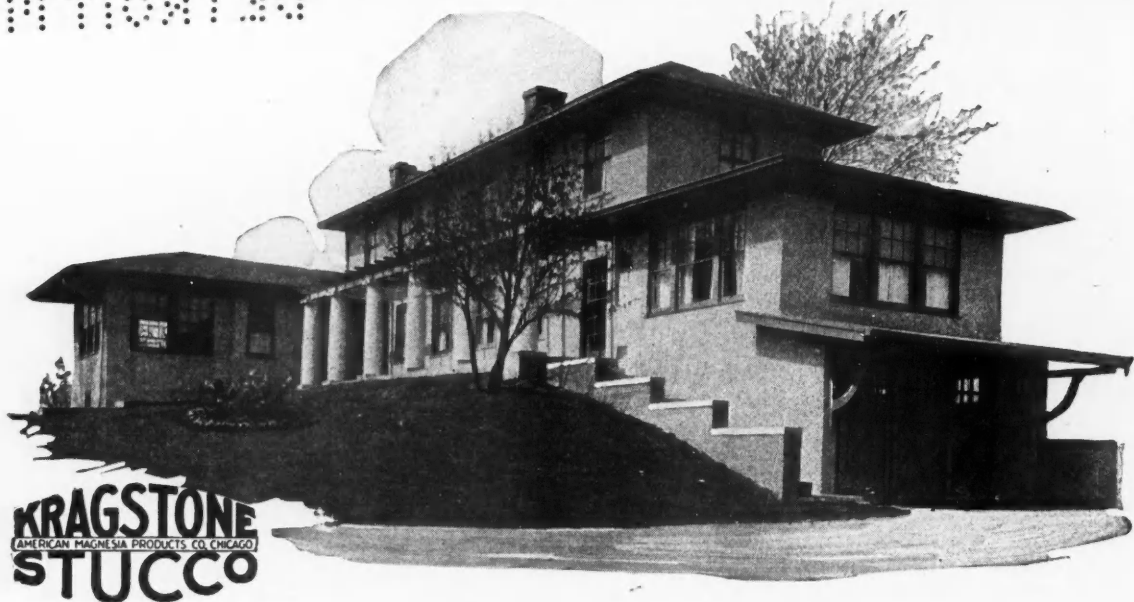
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Short Talks by the Editor

What Is Wrong With City Building Codes?

SECRETARY OF COMMERCE HOOVER recently announced his decision to develop a national building code to govern the design and construction of buildings. With this idea in view, he has appointed a committee of seven well-known engineers and architects to prepare a standard code.

This committee, acting under the direction of the Department of Commerce, will be charged with a great responsibility, but it will have an excellent opportunity to standardize building materials and methods of design and construction. With these objectives accomplished, buildings of the future will be fire-resistive to a much higher degree than at present. They will require less labor and less material in their construction and will, therefore, be more economical in the use of both.

Putting less material into a building does not mean that it will be a weaker structure. It does mean that all parts of the structure will be approximately equal in strength with respect to the loads to be carried by each part. In designing the structural parts of a building it is the aim of the structural engineer to approach as nearly as possible to the principles used in designing the famous one-horse shay, which, as the history goes, was designed equally strong in all parts and consequently lasted a great number of years. This principle applied to the design of a building means that foundations, columns, piers, girders, beams and floors are designed and built sufficiently strong to do their work, without being stronger than necessary. Present building codes, however, are not well balanced in these respects, and even certain parts of our most modern structures are overloaded with tons upon tons of unnecessary material which only adds to the cost. This additional cost is an economic waste for which some one has to pay. Designers of buildings find themselves restricted on every hand by provisions of city building codes which are not abreast of modern practice.

In the matter of fire-resistive construction, most building codes are woefully inadequate and often obstructive. In many cities building departments prohibit the use of building materials of the highest fire-resistive qualities because the building code, adopted years ago before such materials were manufactured, does not provide for their use. In other instances the use of the newer building materials or methods is *apparently* permitted, but the restrictions cast about them prevent their being used economically. The great trouble is that most building codes were originally written in the days when wood frame construction and brick walls with wooden interior construction were about the only types in use in this country. Since those days many other types of construction have been developed, such as structural

steel skeleton buildings, reinforced concrete, portland cement plaster or magnesite stucco on metal lath, various kinds of hollow clay and concrete products, gypsum blocks and other types not dreamed of when the codes were first written. The codes were revised from time to time, but many of the old provisions remain untouched. Minimum wall thicknesses and other restrictions originally applied to one type of material are now forced upon other newer types whose characteristics are entirely different. It has, therefore, been impossible for the building public to obtain the full benefit of the newer materials, many of which were developed primarily as fire-resistants.

If building construction is to be encouraged as other industries are, and if the American people are to be prevailed upon to build fireproof and to eliminate our appalling fire losses, it is high time that the national government adopt a modern building code. Such a code should be of an educational nature, for the benefit of the public as well as for designers and builders. Instead of obstructing and hampering every new idea or invention, as most of our present city building codes do, it should provide for the use of all building materials in accordance with their demonstrated merits.



Burning Up the Pay Check

EVERY one who pays rent or taxes could discover some startling things by analyzing the various fixed charges which go to absorb his pay check. On first thought he may not see any direct connection between Fire Prevention Week and the cost to him of the place in which he lives. He probably blames what he feels to be an unusual and unjustified high rent to individual greed. He probably understands that a certain portion of what he feels is an exorbitant rent expense may be charged to the cost of service rendered him and interest on the increased value of the property.

After all these things and a multitude of others are added up he will begin to understand how his rent would be divided by the landlord if it were credited to every one of the items making up the cost and management of the building. If the renter were the landlord and still retained his attitude about excess profits, he would analyze all costs and add a modest profit to arrive at the proper rent for the tenant to pay. He might or might not, most likely not, give consideration to the contribution of fire loss to the total cost which the renter must pay.

Insurance, of course, is added in an estimate of cost of operating buildings and the assumption is natural that this insurance item covers the chance that loss will be sustained thru fire in the building. The fire insurance item as usually included does not appear to

(Continued to page 63.)

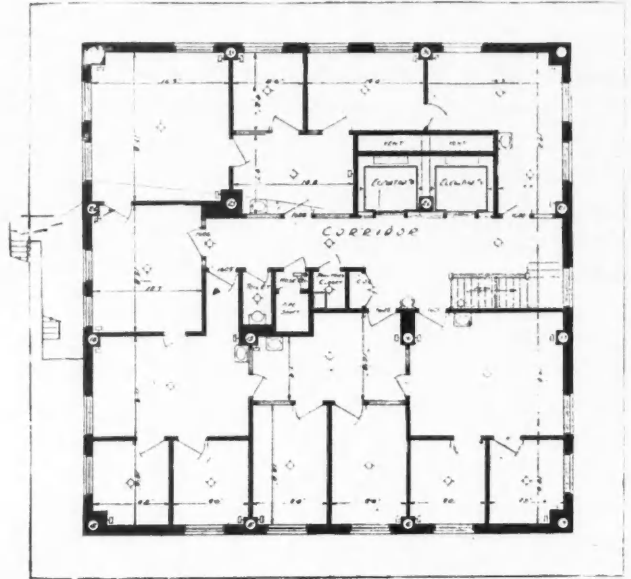
Growing Small City Builds Real Skyscraper

PEORIA (ILLINOIS) MEN DESIGN, BUILD AND FINANCE LARGE OFFICE BUILDING WHICH RANKS WITH COUNTRY'S BEST

By E. E. Pierson

NOT to be outdone by her larger sisters, Peoria, Ill., has built an office building out of the ordinary, even for a metropolitan city. It was constructed for the Peoria Life Insurance Company, at a total cost of \$1,250,000. Designed by Hewitt & Emerson, architects of that city, it was built by Valentine Jobst & Sons, contractors, also of Peoria. The labor was exclusively by Peorians. It is a Peoria made building, owned by a Peoria institution. An extraordinary feature of the construction was the financing. No loans or bonds were placed. Costs were paid out of the current receipts and surplus. Consequently it was recently dedicated without a penny of indebtedness.

There is perhaps, no parallel, at least among the cities of Peoria's size in the middle west. The site of the building is historic, the northeast corner of



Typical Tower Floor Plan Showing Offices and Elevator Shafts. The Building Is Seventeen Stories High, or 302 Feet.

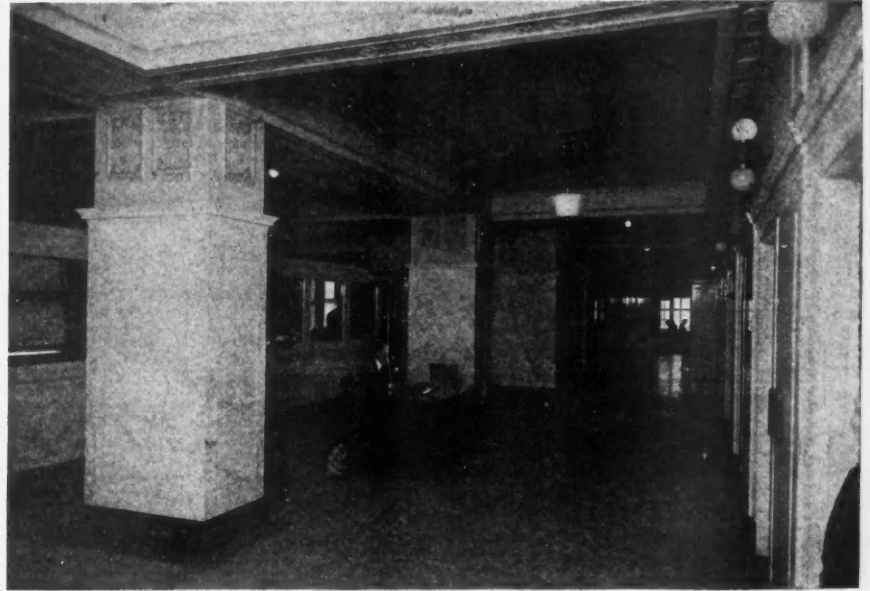


Peoria's Largest Skyscraper. It Was Designed, Financed and Built by Peoria Men and Houses the Offices of the Peoria Life Insurance Co. Heretofore Buildings of This Size Were Considered Only Possible in the Largest Cities. Peoria Does Not Think So.

Main and Jefferson streets, where Rouse's hall stood for many years and where Lincoln, Douglas and many others, prominent in antebellum days, addressed the people. On its stage, nearly all of the prominent actors and actresses of thirty to forty years ago appeared.

In 1917, the Peoria Life Insurance Company purchased the historic building and lot and ordered plans drawn for a structure which would house its offices and business and also be the business homes of many other institutions and firms. This building was to be the finest in the state, if possible not excepting Chicago. It was decided to use granite terra cotta for the exterior construction, in combination with concrete and steel. The plans were presented March 1, 1918, and approved. The contract was let soon after and work started, continuing until July 1, 1918, when the work was stopped with the completion of the foundation, the officers respecting a request to cease all construction of this kind until the war was over.

One week after the armistice was signed, work was resumed and has steadily continued since. The dimensions are 171 feet frontage on Main street and 100 feet frontage on Jefferson street. There are seventeen stories, eleven constituting the main portion of the building and six stories the tower. The total amount of rentable space in the building is 146,657 square feet, averaging about 12,000 square feet to each floor in the main section and about 4,000 square feet in each floor of the tower. The balcony at the extreme peak towers 262 feet above the ground. Surmounting the tower is a huge lantern, 40 feet high, giving a total of 302 feet from the pavement to the top of the lantern.

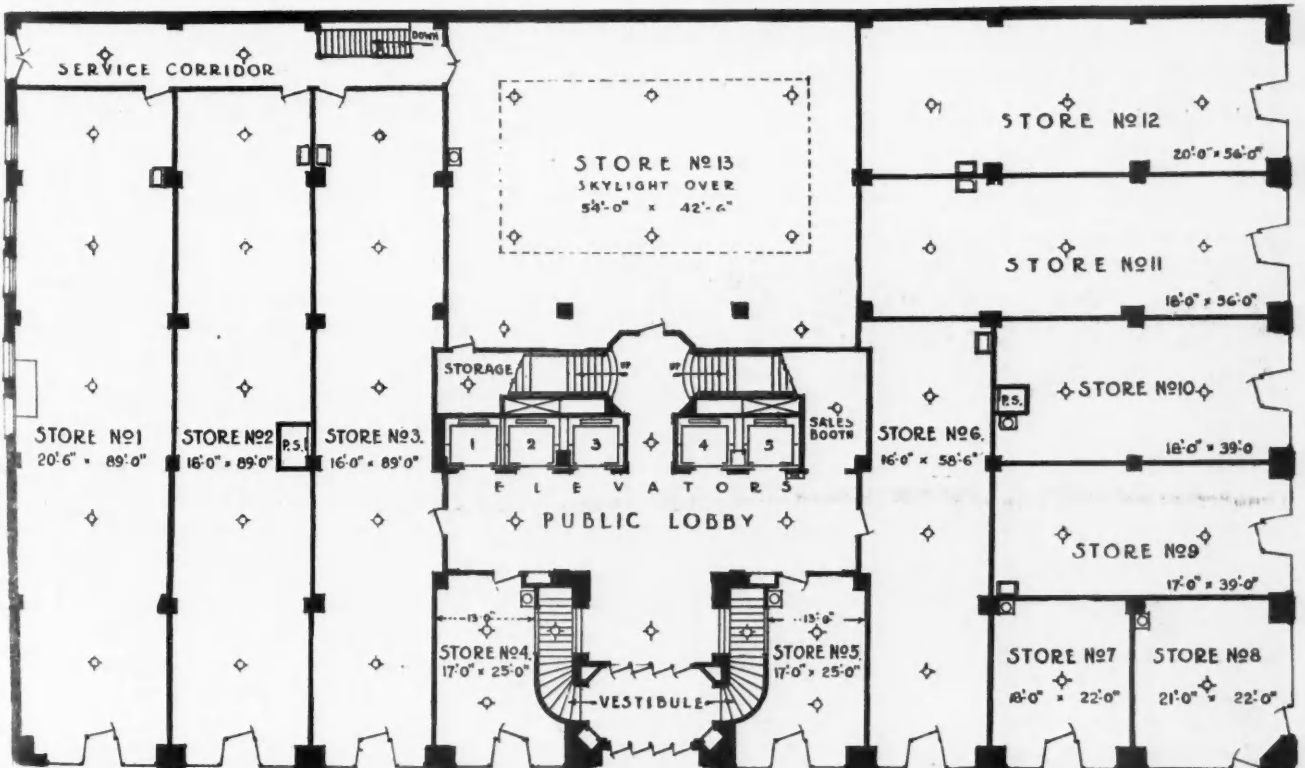


Lobby Near Entrance of Peoria Life Insurance Building. There is Perhaps No Parallel to this Large Structure in Any City of Peoria's Size in the Middle West. White Marble was Used in this Part of the Building.

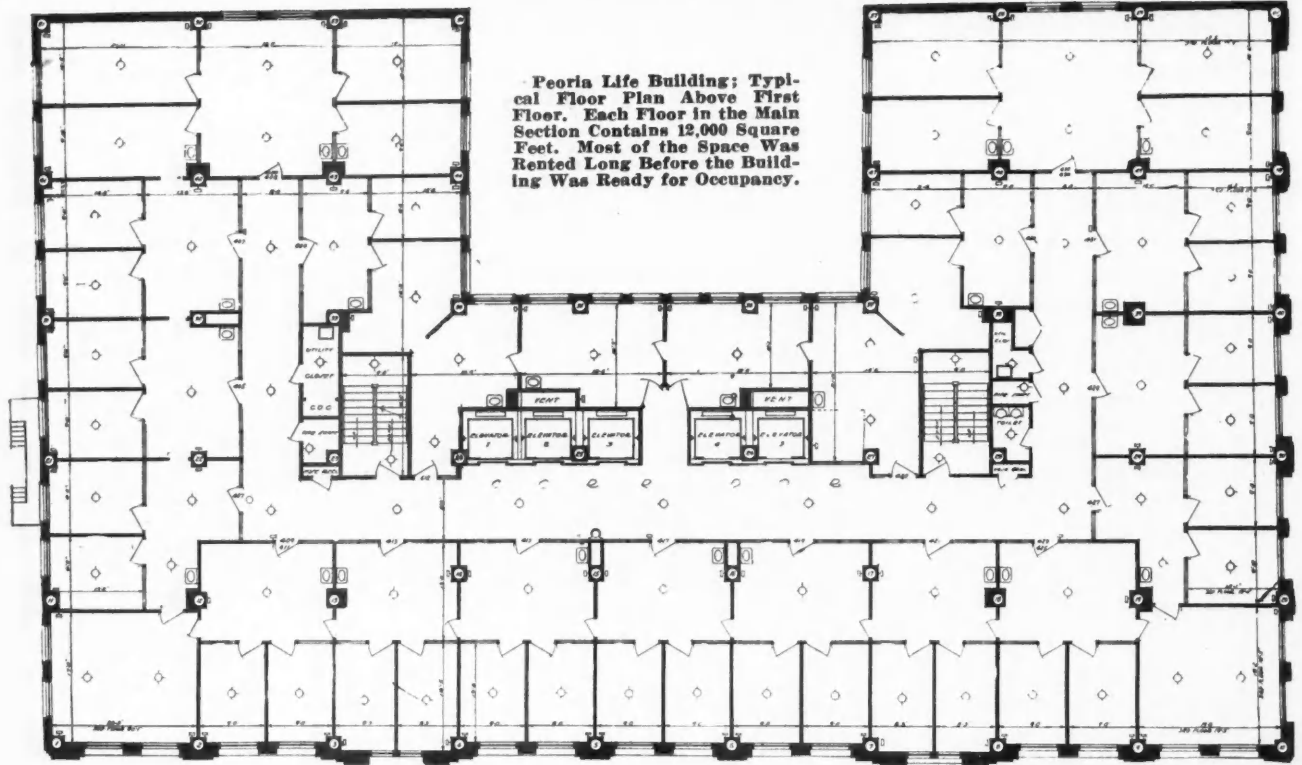
Wood was used only in the construction of the floors and window frames. The hallways are of cream marble to the tops of the doors and the floors in the halls are of terrazzo. The lobby at the entrance on Main street is of exceptional beauty. White Italian marble was used in the construction with a coffered ceiling decorated in various colors. Each floor is equipped with drinking fountains. The elevators are of high speed, those to the right of the entrance, handling passengers from the eleventh to the seventeenth floors, and those to the left from the lobby to the eleventh floors. All of the offices are finished in

marble and mahogany. In the center of the building is a light court, 45 by 56 feet in area and open at the top and one side. The walls of the court are finished in gray face brick, ensuring abundance of soft light. Thus every room in the building has a window facing outside, with excellent light and ventilation.

All modern features have been embodied into the construction so as to make the building especially desirable for mercantile purposes on the ground floor and also for offices. From the tower a remarkable view of the entire city and beautiful bluffs of the Illinois river, but a few blocks away can be had. So



Main Floor Plan of Peoria Life Building, Peoria, Ill., Showing Stores and Main Entrance. A Light Shaft Extends the Full Height of the Building. It is 45 by 56 Feet. The Walls of the Court Are Finished in Gray Face Brick.



Peoria Life Building; Typical Floor Plan Above First Floor. Each Floor in the Main Section Contains 12,000 Square Feet. Most of the Space Was Rented Long Before the Building Was Ready for Occupancy.

great was the demand for space that the first floor was rented many months before the building was completed, and 75 percent of the offices were rented before the building was ready for occupancy. The location is exceptional, being on the public square, every street car line of the city passing its doors. The owners have adopted this slogan, "Service to Tenants." All offices are rented and there is a waiting list. This monumental building is one of which any city might be proud, and certainly is a credit to Peoria. In architectural beauty, handsome equipment, and substantial construction, it has few counterparts.



Killing Molds on Lumber by Steaming

MOLDS thrive on the surface of wood when it is moist and warm. In a dry kiln molds often de-

velop on the surface of the lumber to such an extent that they seriously obstruct the circulation of air thru the pile. This is such a decided hindrance to successful kiln drying that steps must be taken to prevent the mold growth. Various experiments have been made by the Forest Products Laboratory to find a means of accomplishing this result without injury to the lumber.

The safest method found of stopping the growth of mold on lumber in a kiln is to steam the stock at 170 or 180 degrees for a period not exceeding an hour. This treatment heats the surface of the stock sufficiently to kill the mold, and at the same time the saturated air prevents too rapid surface drying, so that the injurious effects which otherwise would be produced on the wood by such high temperatures are avoided.

Unless it is desired to relieve drying stresses at the same time, the interior of the stock should be heated as little as possible. Therefore the steam supply should be sufficient to reach the desired temperature in 25 or 30 minutes. To accomplish this result, plenty of live steam at a pressure of at least 70 pounds gauge must be available. The size of supply line and the number and size of perforations that may be required in the steam jet line will vary with local conditions; it is impossible to make them too large or too numerous, as the quicker the steam is supplied the better the effect.



One of the Many Offices in the Peoria Life Building. They Are Finished in Marble and Mahogany and Well Lighted on Two Sides.

Value of City Zoning

DEFINITE RESTRICTIONS WILL ELIMINATE MANY INCONGRUOUS AND UGLY SIGHTS ON RESIDENTIAL STREETS
CLEVELAND PLAN COMMISSION PROPOSES EXTENSIVE PROGRAM

OWING to haphazard city growth hundreds of perfectly good buildings go to the dump every year. The waste in city building each year is appalling and this in spite of the acute shortage.

Why?

Because there is no systematic plan—no zoning arrangement. In every city in the country, in striking contrast to those of Europe, we find great blighted areas near the heart of the city.

It is incomprehensible yet an existing fact. Because there is no well-considered, definite plan of



This Store on a Residential Street Jars the Eye and Has a Depreciating Effect on the Value of the Adjacent Property.

appearance of the street spoiled, and the value of the houses depreciated.

How often will builders continue to destroy the beauty of a whole street of single family houses with well-kept lawns and a collective harmony that makes the street a sight to be enjoyed, by building an apartment house in the center flush with the sidewalk line? Apartment houses are not condemned nor are single houses commended—each should be built with regard to the other and with regard to the general building scheme of



Another Glaring Case of Incongruity in Building. Carefully Planned Zones Will Eliminate Such Undesirable Features.

building development each man builds without reference to his neighbor. The result is chaotic.

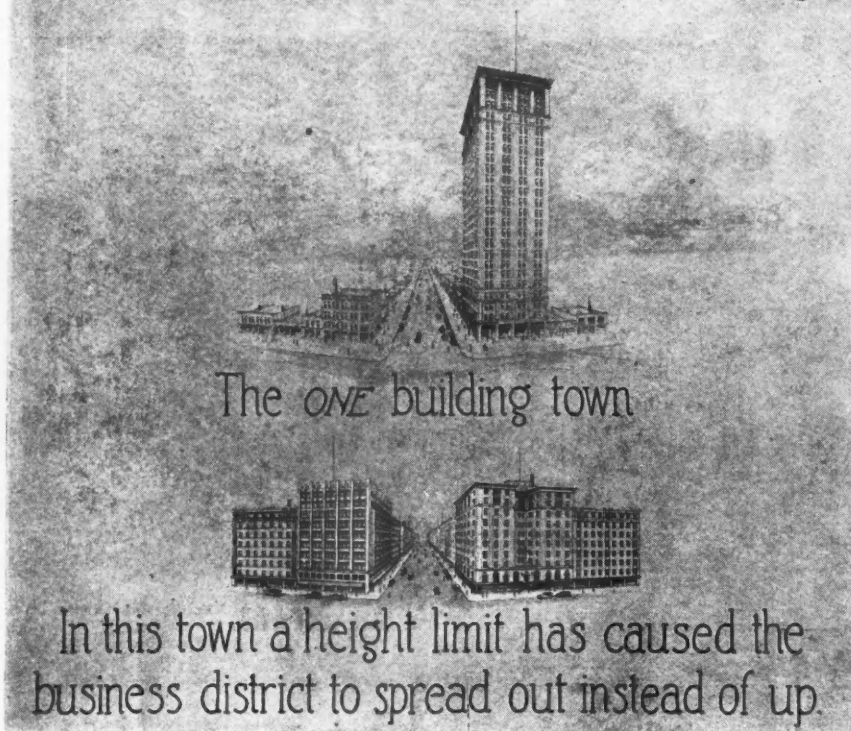
Many evils in the present city arrangement can be traced to this haphazard building which is so inefficient, wasteful, and ugly. Congestion, lack of morale and community spirit, absence of any sense of co-operation or neighborly feelings are some of the most important.

How often have you seen an unsightly store projecting to the sidewalk line in the middle of a residence block like that shown in the illustration? The whole building line thrown out of plumb, the



Apartment House in Single Family House District. Built Flush with the Sidewalk, it Breaks up the Beautiful and Harmonious Row of Residences and Spills the Appearance of the Street.

Which town is the more substantial looking ?



Photostat Prepared by Cleveland Plan Commission to Show Advantages of City Which is Built Up According to a Definite Plan.

the whole neighborhood.

A public garage on a beautiful boulevard between beautiful homes certainly does not enhance the value of the neighborhood nor beautify the street.

In very few cities in this country has any serious-minded attempt been made to keep the various types of buildings in distinctive groups. As it stands today, a factory may be built next to a residence or a store may be built on a boulevard. Unless the protest is strong enough, nothing is done to prevent this objectionable marring of the beauty of the street. Private homes are walled in on three sides by high apartments with a consequent loss of light, ventilation and a depreciation in value. Building lines are not uniform.

Zoning like good housekeeping provides a place for everything and tries to keep it in its place. It divides the city area into residence, business and industrial districts and prevents the erection of industrial buildings in residence districts or industrial buildings in business districts.

Unless some definite limit is fixed to the distance that business may spread out from the central business, one block after another will be abandoned by residence owners

until great areas are affected that will never be used for business. This results in the slum areas which we find around the fringe of the business districts.

By zoning, business is centralized, facilitating the transaction of business and improving values in that section, while at the same time conserving values in the residential districts.

Zoning prevents congestion of population because it confines tenement house construction to certain areas. Each owner is forced to consider his neighbor and it forces a certain degree of co-operation between home-owners for their mutual advantage and protection. A degree of uniformity in the development of a block or area is beneficial to all property owners.

Most important of all zoning will conserve values. The construction of a new building in a neighborhood often means a net loss in the aggregate value of the buildings of

that neighborhood.

The Plan Commission of the City of Cleveland has drawn up some very definite suggestions on zoning for that city. They hope to prevent some of the evils arising from indiscriminate building when the city grows larger. They have laid out the city in zones, residential, apartmental, industrial, commercial and so on. In this way they hope to keep property values from depreciating because of the invasion of undesirable buildings and businesses.



Courtesy Cleveland Plan Commission.
Most Cities Look Like This Conglomerate Group in a Public Street Car. No Similarity—
Nothing but Jarring Association.

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An Eyesore on a Boulevard in Cleveland. This Is the First Invasion of a Fine Residence Street. It Was Built Without Regard to Surrounding Property.

Under the proposed plan the City of Cleveland is to be divided into seven classes of use districts. Two of these are residential districts and five are business or industrial districts. In addition to use districts, there are six classes of height districts and five classes of area districts.

The two classes of residence districts are dwelling house and apartment. A building arranged for more than two families may not be constructed in a dwelling house district and, on the other hand, adequate districts are allowed for apartment house development. Trade and industry are excluded from the residence districts. Churches, schools, hospitals, etc., are permitted in the apartment house districts and with certain limitations in dwelling house districts.

There are five classes of business and industrial districts, viz., local retail, business and light manufacturing, heavy industry, semi-nuisance industry and nuisance industry. The purpose of this classification is to provide locations for all types of business and industrial use with a minimum of inconvenience and waste and a maximum of efficiency. In this way the residence districts will be protected from invasion by all kinds of trade and industry and manufacturers of food products, for instance, will be not liable to injury by a nearby location of a fertilizer plant.



Another Distortion in Building Arrangement, Showing Unsightly Store Building on Private Home Street. Building Lines Have Been Disregarded to the Detriment of the Neighborhood.

The plan report was prepared by Robert H. Whitten and Frank R. Walker, city plan advisors.



Burning up the Pay Check

(Continued from page 57.)

be a large item. However, the actual premium paid for insurance by no means equals the total which the danger of fire exacts.

The portion of the cost of building management which the renter must pay is, of course, represented in the tax item which the renter is willing to assume, because he takes it for granted that the taxes are spent for his protection, comfort and well

being. He does not stop to consider the fact that in this tax item there appears the cost of maintaining an efficient force of fire fighters, expense equipment and facilities in the way of fire stations, alarms, etc., necessary to the operation of any fire department. To this also must be added extra capacity in pumping stations, reservoirs, pipes, etc., which are needed only in case of an emergency brought about by fire, but which must be maintained because sooner or later the emergency confronts each of us. If all of these items could be segregated and summed up so that the renter could see their total amount, he would have a better idea of the meaning of Fire Prevention Week.

Insurance does not replace fire loss, it only distributes it. Furthermore, since certain necessary expenses connected with insurance must necessarily be borne by all classes of buildings alike, those owning fireproof buildings are penalized for the cost of insurance of inflammable construction.

The average citizen thus has a definite interest in Fire Prevention Week because if 90 per cent of our fire loss could be eliminated, a proportionate part of this saving would accrue to him as inevitably as the cost of it is now assessed on him. In other words, a material part of every pay check goes up in smoke.



New York Breaks Record

ALL construction records for New York City will be shattered when the final returns of building activities during 1921 are available, if the present unprecedented boom continues. Already construction work has exceeded building for all of 1920. Building has reached an estimated cost in Greater New York of \$262,613,269, which is comparable with a total of \$237,933,148 for all of 1920, or a lead of \$24,680,121 for this year, with more than four months to go.

The New York building boom is attributed to tax exemptions and other favorable local conditions.



THERE are over 300,000 concrete mixers in use in the United States.

Millions Available For Building Boom

CHICAGO BANKS STAND READY TO RENDER RELIEF TO PROSPECTIVE HOMEBUILDERS BY OFFERING MONEY AT FAIR RATES OF INTEREST

"I WANT to build but I can't get the money," has been a familiar plaint for the last two years.

During the wild industrial boom two years ago and the subsequent deflation, loans were obtainable only at very high rates of interest. The small home-builder was confronted with the prospect of paying a big price for a mortgage on his new home. He was practically "froze out."

But that condition no longer exists, at least in Chicago. With the handing down of the Landis award in the building trades dispute has come the announcement from the big banks of Chicago that they stand ready to loan millions of dollars to the city's building industry. This money will be available at from 6½ to 7½ per cent, including commission on loans from five to fifteen years maturity. Bankers are willing to loan from one-half to two-thirds the total value of the home. They will make loans only to responsible persons and preferably to owners of small homes. This is significant because it offers the individual a chance to build a small home of his own and escape the high rents which are so prevalent in the city.

This action on the part of the Chicago banks is only a forerunner of similar action by banks and

financial firms thruout the country. A loosening of the money market on mortgage loans will give the whole building revival a great impetus. With two obstacles removed there can be no doubt about the biggest boom in the history of the business.



CHINA received 88,706,000 feet of fir lumber from the United States during year ending June, 1921, or a greater quantity than any other country. Japan received 68,988,000 feet; Peru, 57,638,000, and Australia, 49,202,000 feet.



Effective Advertising Medium

IN a home-building campaign, launched to relieve the housing scarcity, a contracting firm of Bloomington, Ill., built a miniature house upon a platform, placed upon the frame of an automobile. This was driven about the business and residence district and proved very effective in arousing interest in behalf of home building. As a result, a large number of houses are being erected, a number of additions to the city being opened in which lots were sold at low figures in order to attract workmen and others of small means.—E. E. PIERSON.



That Is What We Have Been Saying All Along. It Takes a Live Wire Lumber Concern in Bloomington, Ill., the Corn Belt Lumber & Coal Co., to Get the Idea Across in Vivid Style. They Report Satisfactory Results in Their Home-Building Campaign.

Law for the Builder

HOW SUBCONTRACTOR MAY LOSE RIGHT TO ENFORCE LIEN THRU FAILURE TO GIVE NOTICE OF SAME TO BUILDING OWNER

By Leslie Childs

PERHAPS the most important laws, from the standpoint of the contractor and builder, are those pertaining to the filing of liens for material furnished and work done. And it goes without saying that the prudent contractor makes it his business to inform himself relative to the provisions of such laws in the state where he is doing business.

But, regardless of how well a man may be informed, unless he is constantly on his guard he may overlook a point that will cost him money. This for the reason that lien laws, as a general rule, describe specifically the steps necessary to bring oneself within their provisions. It follows that unless the provisions are followed in a careful manner valuable rights, otherwise available under them, may be lost.

Of course the lien laws of the different states vary in their terms, and it would be impossible to state a general rule that would apply in all states. But the provisions in many of them are similar, and in this connection a point well worth keeping in mind has to do with the duty of one claiming a lien to notify the owner. For example, some states provide in effect that to bind the owner, as against other claimants, notice must be given to the owner of the filing of the lien, before the owner has made final payment.

This provision in lien laws is of particular importance to subcontractors for, under it, if the owner in good faith pays the principal contractor in full, without notice of the lien of the subcontractor, the latter may lose his right to enforce his lien against the owner. This point is illustrated in an interesting manner in Snyder vs. Monroe Eckstein Brewing Co. et al, 95 N. Y. S. 144, under the following facts:

Subcontractor Fails to Give Notice of Lien to Owner Before Latter Pays Principal Contractor

The Monroe Eckstein Brewing Co. entered into a written contract with one Penet whereby the latter agreed to construct a building for \$6,000. Payment was to be made in three installments of \$1,400 each and a final payment of \$1,800.

Snyder, it seems, took a subcontract on the job in which he undertook to put in the plumbing at an agreed price of \$900. Under this subcontract payment was not to be made until completion.

The work was completed but it appears payment was not made so the plaintiff, Snyder, the subcontractor, filed a lien against the building. Several days later he

gave the owners, Monroe Eckstein Brewing Co., notice of the filing of this lien, but it seems on the day the lien was filed, and before notice to them, they had mailed checks for final payment of the work, with the exception of a small amount.

Thereafter the plaintiff, subcontractor, attempted to enforce the lien but was confronted with the provisions of the New York lien law which provided in substance as follows: That service of notice upon the owner of the filing of a lien may be made at any time after the lien is filed, but that until "service of the notice has been made, as above provided, an owner, without knowledge of the lien, shall be protected in any payment made in good faith to any contractor or other person claiming a lien."

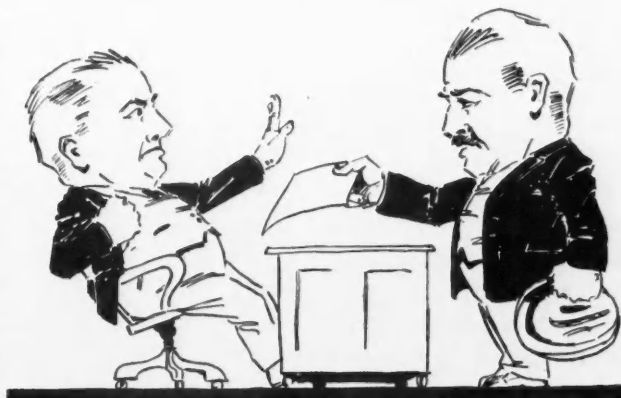
Upon the trial of the case, it seems, the plaintiff, subcontractor, was unable to show that the defendant, Monroe Eckstein Brewing Co., had actual notice of the filing of the lien before they paid the contract price. But it appears the plaintiff, subcontractor, contended that as the other had mailed out the checks the same day the lien was filed, they could have, by the exercise of diligence, found out that the lien had been filed, and protected the plaintiff, it

being claimed that owing to these circumstances the plaintiff was entitled to be protected by the court. The trial in the lower court resulted in a judgment in favor of the defendant, Monroe Eckstein Brewing Co. and the plaintiff, subcontractor, carried the case up on appeal where in disposing of same it was, in part said: **Subcontractor Lost Rights by Failure to Give Timely Notice**

"The plaintiff [subcontractor], in order to succeed, must show either that the defendant brewing company had knowledge of the lien, or that the payments which were made after the filing of such lien were made in bad faith, and in this case there is a complete failure to establish the necessary facts from which these inferences might be drawn. The transactions of the defendant brewing company appear regular upon their face, and all that appear is that the contract price of the building has been paid, and that plaintiff failed to file his lien and to give notice in time to prevent the payment of the funds in the hands of the owner to other contractors or claimants. * * *

In conclusion, the judgment of the lower court was

(Continued to page 87.)



Subcontractor: "Say, how about this bill?"
Owner: "Nothing doing! You failed to file a lien in time. I've paid all the bills."

The Rooms in the House

FIRST OF SERIES OF ARTICLES ON THE DESIGN, TRIM, AND DECORATION OF VARIOUS ROOMS IN THE NEW HOME
I—THE LIVING ROOM

As a builder you are interested in the roof construction, or the window spacing or something else of that kind in a house. But as an individual, one of your chief interests is the room arrangement and the comfort they provide for your family. You are vitally concerned in getting just the right kind of a living room where you and your family spend most of your happy hours.

Did you ever stop to think that that is what every homeowner and prospective customer of yours considers first? Of course exterior beauty enters into the discussion, but they are interested in comfort primarily.

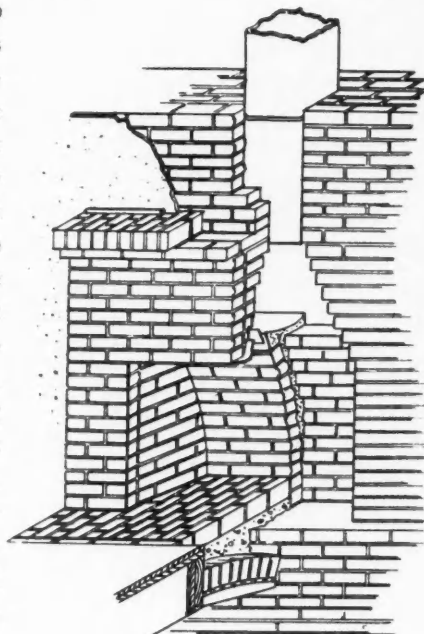
There used to be a time when people considered a house completed when the four walls had been covered by a roof. But no longer. Today the work of the contractor is hardly begun when he has finished the outer walls. Room design, size and arrangement are very vital and necessary parts of the job.

If the exterior is well-proportioned, the windows well-spaced, the impression will be favorable. Shutters, cornice, etc., are all added touches but the *comfort* of the home is found in the rooms.

We must not be confused by the word "comfort." Immediately some one will think of soft upholstered chairs, velvety rugs, and other luxurious furniture, but these are all mere decorative features which can be changed as the whim dictates. The important part of a room, the permanent part that gives it a restful appearance, that makes it soothing, attractive and

delightful, is the architectural design and trim, the woodwork, the background for all setting. Wall panelings, built-in bookcases, fireplaces, ceiling beams and inter room openings are some of the important architectural features that determine the beauty and comfort of the living room.

It is logical to discuss this room first because it is the most important room in the house and upon it depends so much of the general comfort of the entire establishment. A successful living room means a real home. Every home-builder is anxious to have a living room that deserves the name, a room where he and his family can loaf, read, entertain, what not.

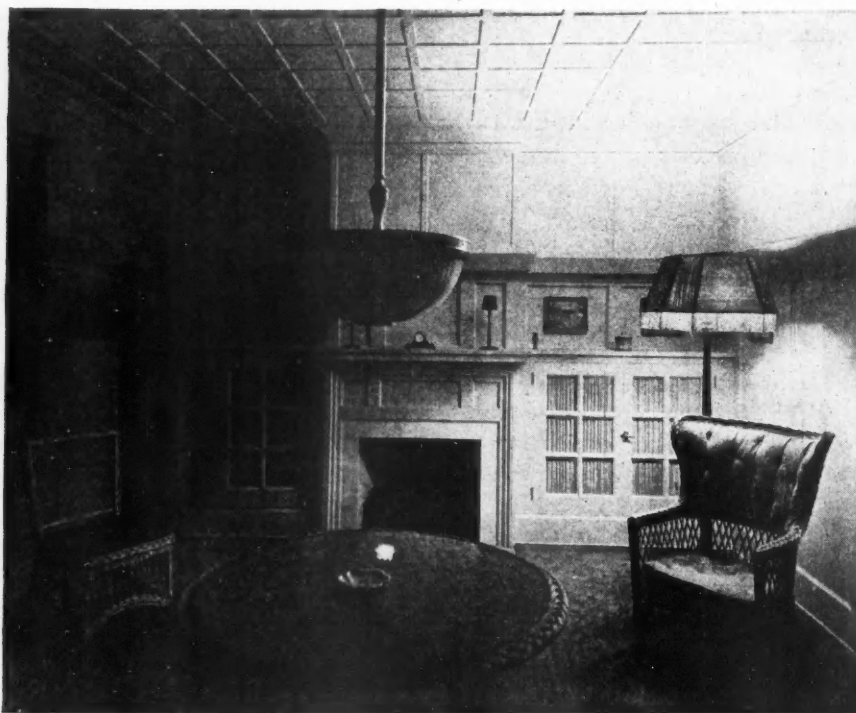


Part Perspective of Fireplace

Without an open fireplace, one that "burns," the living room of the modern home would be like a ship without a rudder. The cheer of a friendly hearth in a living room for the family circle is well worth the expense. In the evening during the cold nights it is an oasis of comfort. Moreover, during the damp days it is an economy, for a hearth fire will always take the damp chill out of the air when the furnace is not going.

Because it is in the center of the living room, the focus as it were of all activity, it is important that this fireplace should be constructed properly.

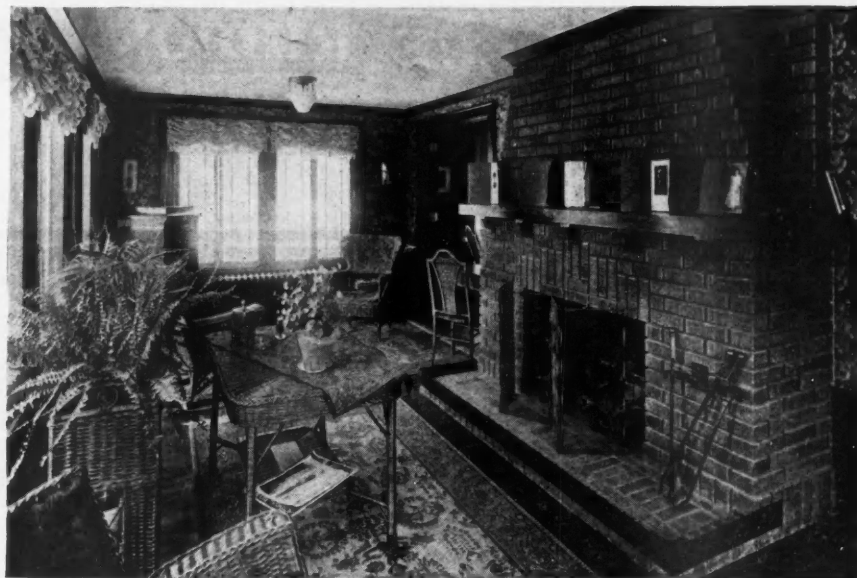
The location of the fireplace in the room is of great importance to its enjoyment. As it is easily the most important feature of the living room it should be given a prominent position but it should not be in line of travel thru the room, near the entrance or where a cross



Interior Design Is an Important Function of the Contractor. Today the Living Room Is the Hub of the Whole Floor Plan and the Fireplace an Essential Part of This Room. This Arrangement Is Quite Pleasing with Flanking Built-In Bookcases. Wall and Ceiling Trim Has Been Well Handled.

draft sweeps it. The far end of the room is one of the best locations. If placed on the broad side of a room it is pretty sure to project so far as to reduce the width of the room and force the rug over the hearth. If placed on an outside wall it is best not to have large flanking windows as people do not like to sit facing very much light, especially a strong sun.

Among the most essential features of fireplace construction are proper proportions for the opening and flue. The larger the opening, the larger the fire may be and the more air required or taken from the room to aid combustion provided the flue is large enough to give sufficient draft. In the average home, the actual inside area of the flue should never be less than one-tenth of the area of the fireplace opening. Each fireplace should have its own individual flue carried full size to the top of the chimney without connections of any kind from other sources. A low, broad opening is preferable to a high narrow one, altho design is a matter of individual taste. Splayed sides afford better draft and radiation.



Here is a Different Type of Fireplace, Not Quite so Refined as That Shown on the Opposite Page, but Perhaps More Comfortable Because It "Burns." Builders Should Know How to Construct a Fireplace That Will Not Prove a Nuisance to the Family Who Operate It.

on the floor above. It should be started as low as possible as this is the hottest part of the chimney. Always build the fireplace in the rough first, leaving the facing and hearth to be finished after the plasterer has completed his work.

Coming as an appropriate adjunct of the fireplace is the built-in bookcase which can be built flanking the fireplace on each side. Bookcases not only add to the general architectural and decorative beauty of the room but they perform a very definite function in the everyday life of the family. Books are the fundamental basis of all refinement, education, and business. In them is found amusement, inspiration and information. They are excellent comrades on a quiet evening before the fireside.

These bookcases are in most cases furnished by manufacturers direct, but can also be built up by carpenters who have a shop of their own. They have attractive glass doors and shelves. Sometimes they are used in conjunction with a permanent window seat. These seats can have hinge covers and serve as a storage chest.

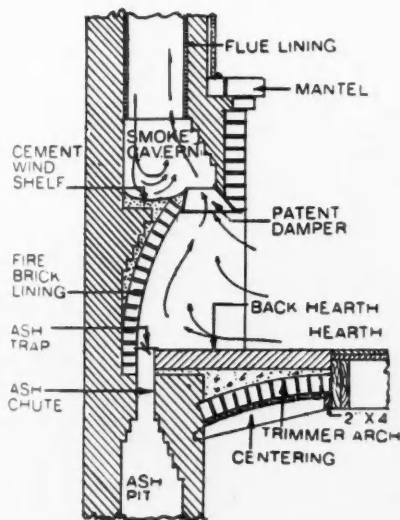
In the small modest home the doorway between the living and dining room is quite an important feature. The wide doorway gives the living room an appearance of greater size. These inter-room openings may contain bookcases, desks or closets that take up not more than partition space.

Ceiling beams are an added decorative feature that can be used in a living room. They add an impression of solidity and substantial comfort.

Lighting

With the necessary furnishings installed, the proper trim and allimportant fireplace, the finishing touch is the lighting. As this is a very important subject, becoming more so each day, it will be taken up in a special article in the next number of the AMERICAN BUILDER.

From the ideal standpoint the cone-shaped fireplace is the best; to approach this ideal in practice the sides of the fireplace are splayed and the back curved forward. This forward curve throws the fire forward to a narrow throat extending the full width of the opening at the front and top of the fire-



Cross-Section of Fireplace

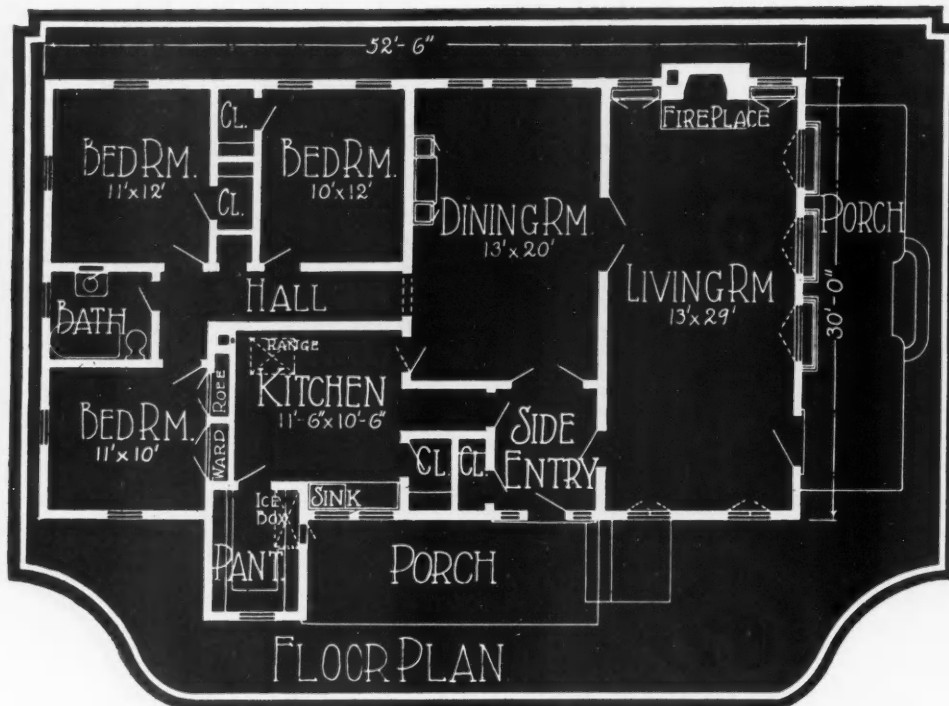
place and at the same time forms a shelf for the deflection of down drafts in the chimney. The rear wall of the fireplace should never be straight, else down drafts would blow smoke and dust into the room.

In this construction the damper is quite important for regulation of the draft. The damper should completely cover the throat. Immediately above the damper the brickwork is corbeled in both ways to the size of the flue lining which should always be started on a line with the middle of the fireplace and run vertically for one length.

It may then be jogged over to the location desired

BLUE RIBBON HOMES

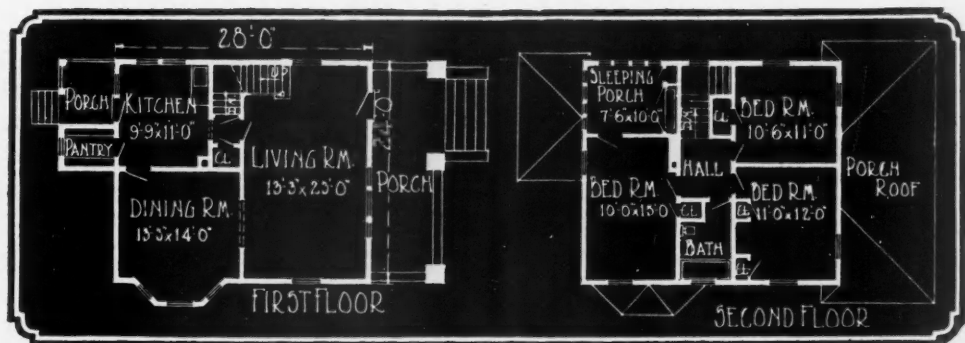
PRACTICAL & ARTISTIC



COZY BUNGALOW OF WESTERN TYPE. Attractiveness is gained in this charming home by an artistic exterior treatment of a design which is quite simple. There is no indication of striving to overdo in this dwelling, no appearance of heavy ornateness or superfluous decoration. The French doors with small balcony rails are neat and well done and the plain but handsome entrance is certainly attractive. A well arranged interior completes the charm and character of this home. There is a spacious living room, 13 by 29 feet, dining room of right size, opening into the kitchen at one side and into the side entry. Grouped at the rear of the house away from the noise and activity of the living rooms are three bedrooms connected by an L-shaped hall which opens into the dining room. The kitchen has several labor and space-saving devices. Size of house, 30 by 52 feet 6 inches.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



WELL-ARRANGED, COMFORTABLE HOME OF ECONOMICAL DESIGN. Simplicity is the keynote of this roomy and substantial house of six rooms and sleeping porch. Stucco forms a very pleasing exterior finish. Extending across the front, parallel to the large living room, is an open porch. The front door opens directly into the living room, which is 13 feet 3 inches by 23 feet. Connecting doors open into the kitchen on one side and the dining room on the other which has the advantage of extra light from a bay window. On the second floor are three bedrooms and a sleeping porch. The bedrooms each have light and air from windows on two sides. Room which ordinarily is wasted in closet space has been used and space saving closets installed. The absence of frills and useless trimmings is the noticeable feature of this comfortable home and is responsible for the economy in cost of construction. Size of house, 24 by 28 feet.

Front Cover Bungalow is Home of Charm

SHOWN IN THREE DIFFERENT MATERIALS—CONTAINS FIVE BEAUTIFUL ROOMS WITH PLENTY OF SUNLIGHT AND CONVENIENCE

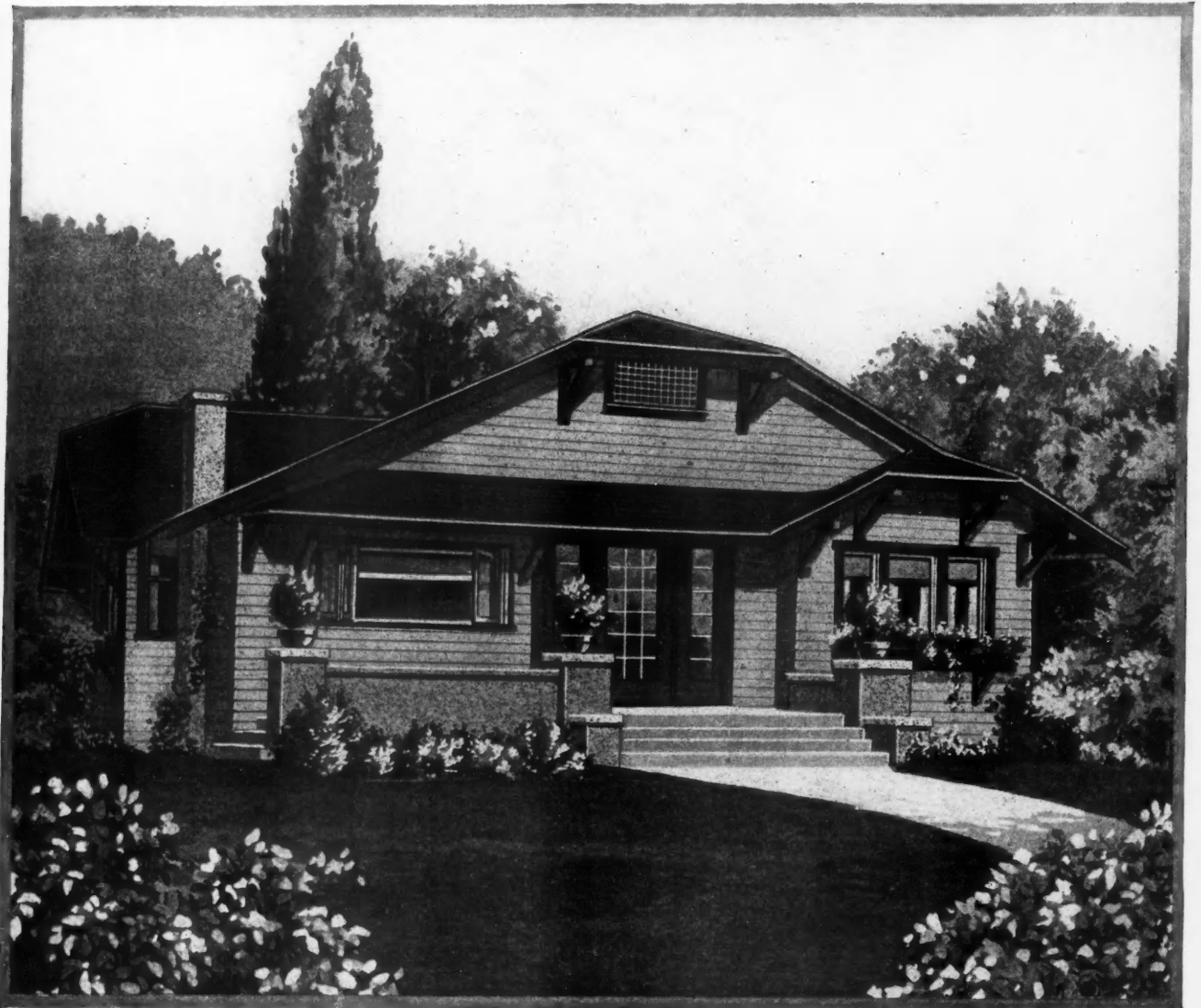
MANY innovations have "come out" of the sunny west in the last ten years, because it is the land of opportunity, pleasure and money. From there came the cafeteria, the restaurant of self-servers; from there comes most of the movies that now entertain millions in this country and abroad, and last, but not least, from the famous climes of southern California came the bungalow, the building triumph of the age. This type of small, attractive, unique and individualistic dwelling struck a new note in American architecture and construction. It was distinctly different from anything that had gone before; it had about it a breezy western air of hospitality that immediately made itself felt.

Conceived in the warm sun-kissed land of the west, it was originally intended to be a pretty decoration to the landscape setting. But with the adoption of the idea by other sections where more hardy structures are needed it has been developed into a full size, sturdy home that will withstand the rigors of a cold

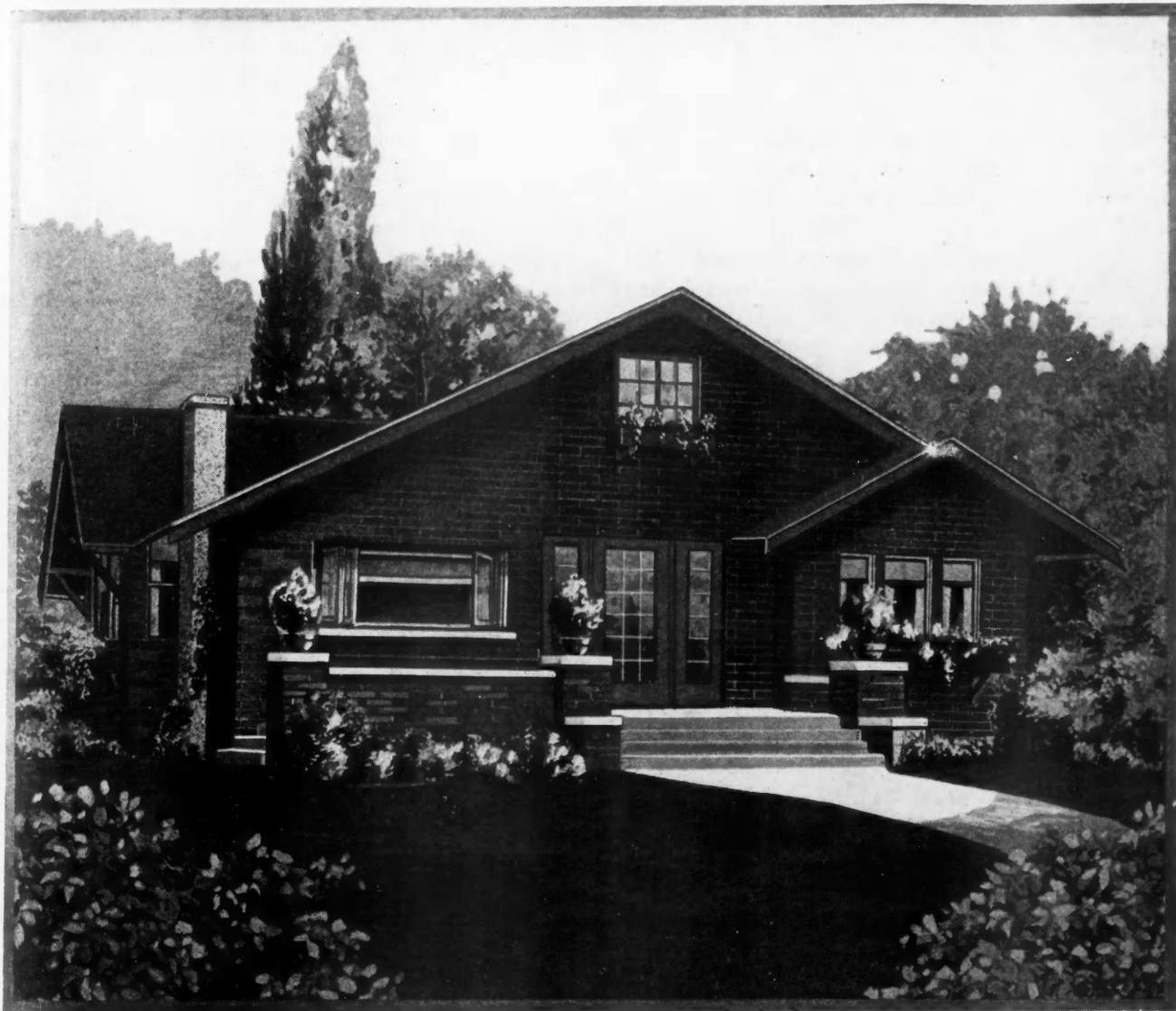
winter and the battering of heavy seasonal storms. The bungalow was taken up with enthusiasm by all localities because of its compactness, privacy and charm. Today it is built of all materials and in all sizes, ranging from the petite four room to the twelve or fourteen room. In short, no community is complete without one.

And because of this universal demand, the AMERICAN BUILDER has picked an attractive bungalow for the front cover design this month. On the cover it appears constructed of frame, but realizing that some people will want this same charming design in brick or some other material, we have arranged to show the same design in brick and in stucco. In some localities brick is the prevailing material because of ready availability, fire restrictions or something else, and consequently prospective home builders will be interested in a home of that type.

In either material the house is charming and appealing. It has a certain daintiness of appearance that



Front Cover Home in Frame. A Delightful Dwelling That Has a Well-Arranged Interior and Well-Proportioned Rooms. There Are Five Rooms and a Sleeping Porch. (See Floor Plan on Opposite Page.) On Following Pages the Same Design Is Shown Built of Brick and of Stucco.

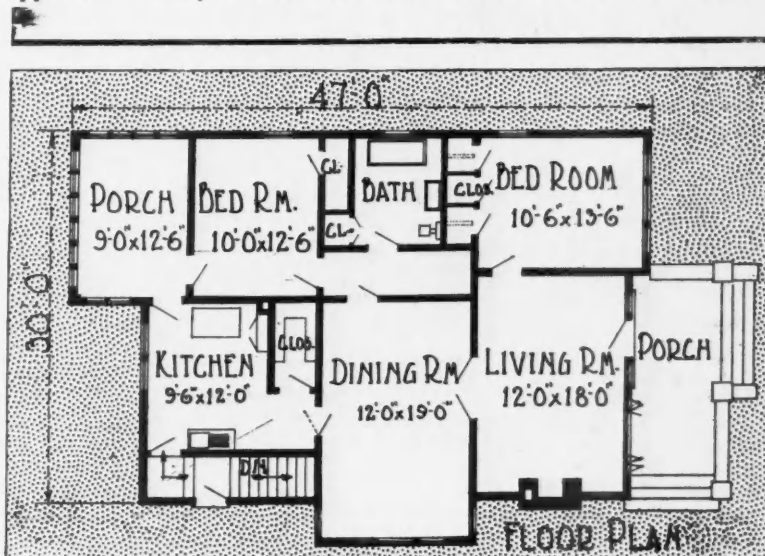


Front Cover Home Built of Brick. The Interior Arrangement Is Identical with That of the Frame House on the Opposite Page, But Slight Modifications Have Been Made in the Interior Treatment. Simplicity in Design Is One of the Appealing Features of This Charming Home.

makes it tremendously alluring. Take the design as it appears built of frame. A broad sweeping front walk leads the way up to an open terrace with short artistic stucco balustrades with artistic roof supported by quaint supports and affording some protection for the door and windows in case of rain or storm. Place for ornamental flower pots on the balustrade corners gives an opportunity for additional decoration that adds charm to the exterior appearance. The front entrance consists of a glass paneled door with flanking panels. Casement windows in the living room are provided.

The impression is rather rakish and cozy with little attempt at formality. The front door opens directly into the living room which is quite large for a house of this size and indicative of the comfort which is built into bungalows. This room is 12 by 18 feet with the inevitable and cheerful open fireplace at the far wall. The large

front window with sliding casements provides an abundance of real sunshine for this room. To the rear of the living room is the dining room, also quite roomy and comfortable. These two rooms combined



Floor Plan of Front Cover Bungalow.

afford a large space for entertainment and give the visitor an impression of great size.

The kitchen is at the rear of this side of the house and is 9 feet 6 inches by 12 feet in size. As the dimensions indicate it is not large but compact and equipped with the essentials. It opens at one side out to the rear porch which can be used very conveniently for a breakfast porch or for a sleeping porch at night. It is enclosed and has plenty of windows on two sides.

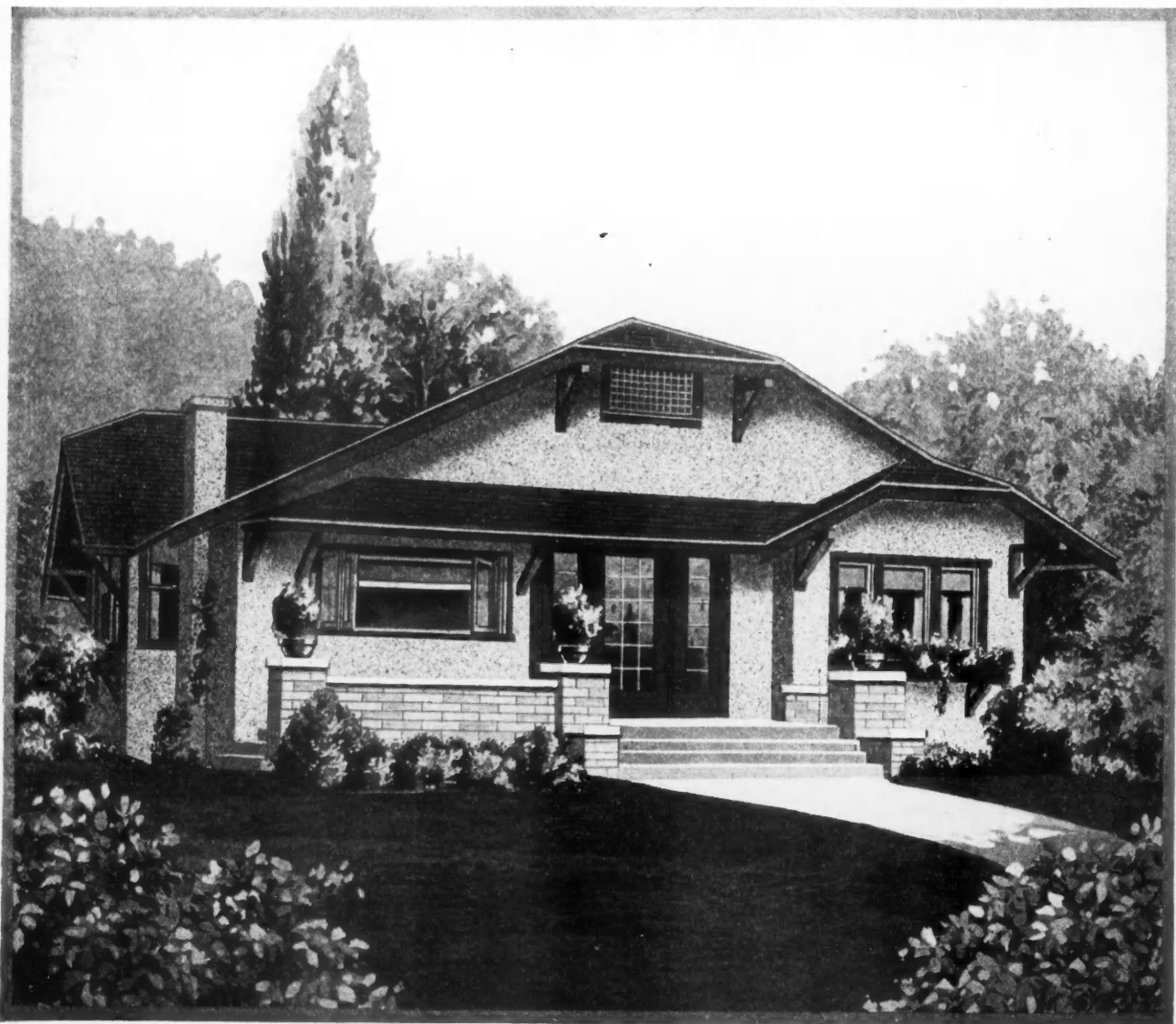
On the other side of the bungalow from front to rear are two bedrooms with bath in between. The front bedroom is entered from the living room, an arrangement which can easily be changed so that that door opens from the hall which runs from the front room to the rear bedrooms.

The house is 30 feet frontage with a depth of 47 feet. Glancing at the design as it is rendered in brick, we find a few minor changes which do not affect the general plan. The hood over the front has been left out, leaving an open terrace with brick ballustrades. The gables of the various roof projections have not

been beveled off and a glass window has been used in the attic above the front entrance instead of the grating in the first design. Inside the rooms are identical with the first plan.

The third illustration shows the house as it appears finished in stucco. Here the exterior design is practically the same as the one of frame, the roof over the porch being restored, the grating above the door and the roof design being treated in the same manner. The porch wall, however, in this design is face brick and of course the wall finish is stucco.

There is no doubt but that each of these designs is very attractive and each will attract certain admirers. In choosing a design for their future home, your clients will not have any illusions about how they will look when completed for the pictures show that very clearly. In a time when costs are such an important consideration it might be well to stress the fact that any one of these designs can be built for a reasonable amount because superfluous trimmings that cost money have been left out.



Front Cover Home with Stucco Exterior. Certainly a Most Attractive Finish. The Brick Porch Rail Is Distinctive and Harmonious. The Low Rakish Appearance Is Not Unbecoming and Reflects an Air of Hospitality and Comfort.



WOMAN AND THE HOME



Duty of Contractor in Providing Electrical Convenience

By Grace T. Hadley

Society for Electrical Development, Inc.

ONE of the most important points to consider in planning the home today is adequate electric wiring, with a sufficient number of properly placed outlets. Properly located switches eliminate searching in the dark for lights, and extra outlets permit the use of labor-saving appliances without loss of time or disturbance of the lighting fixtures. The electric iron, vacuum cleaner, washing machine, the table appliances are now considered as necessary as water or light in the modern home and intelligent provision for their use is as essential as modern plumbing.

In planning the adequate wiring for the home many problems arise which should be solved with the aid of an electrical contractor who is equipped to do this work. The completeness, the comfort value of electric service in the home depends entirely upon the wiring—on how complete, how comfort-providing that wiring is! And the wiring depends more on the contractor than on the owner, for the owner probably has not had a house equipped before. He may not be familiar with many of the fittings for convenience, so the contractor must make the suggestions for full electrical convenience and comfort. He must be the brains to look ahead for his client and foresee the possibilities that will surely arise.

In order to obtain full measure of electrical convenience in the home, there must be a careful and correct installation of the wiring. No one would think of building a nice house without consulting a skillful architect or builder, neither should one wire a house without first seeking the advice of a reliable contractor; if his advice is followed, there will be no switches behind doors, there will be plenty of convenience outlets for the easy opera-

tion of labor-saving appliances. There will be a three-way switch at the foot and at the head of the stairs which will permit turning lights on and off from either point, without running up and down the stairs.

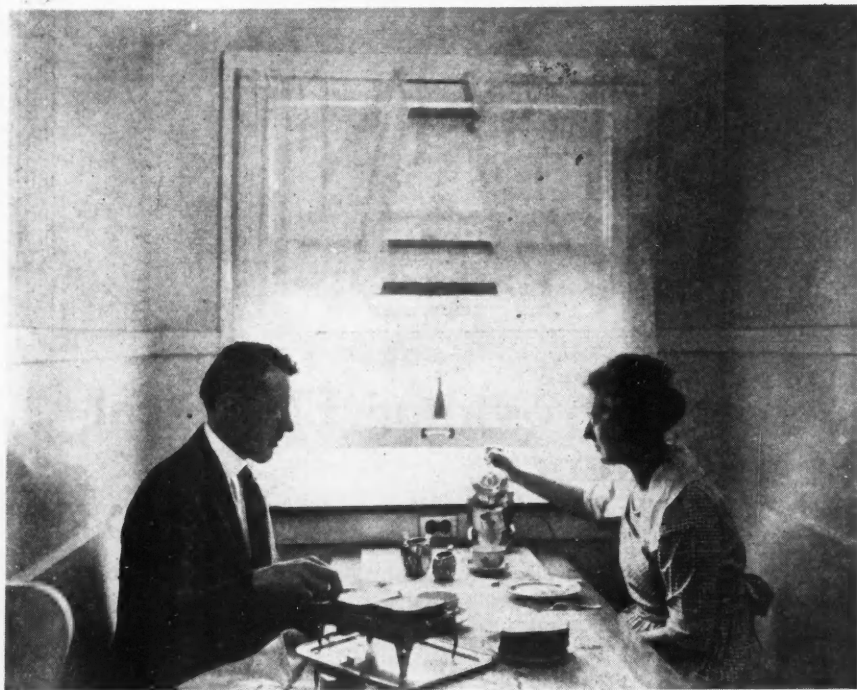
In the livingroom there will be ample provision for the floor lamp, the phonograph, the electric fan, vacuum cleaner, the tea wagon, while in the dining room provision must be made for all the table appliances that are so helpful in the preparation of quick meals, breakfasts with the aid of percolator and toaster, the electric waffle iron, easy luncheons using electric grill and tea samovar, electric chafing dish and silver finish panel percolator sets. Convenient service outlets provide handy places to plug in without disturbing the overhead fixture; they do away with dangling cords that are in the way.

A Liberal Supply of Outlets

It will be the duty of the contractor to see that flush



This Charming Housewife Has Several Reasons for Being Thankful to the Builder of Her Home. He Has Installed Handy Electrical Outlets for the Many Labor-Saving Electrical Devices Which Help Make Her Work a Positive Pleasure.



Breakfast Without a Stove. The Mistress of the House Has Prepared the Meal in the Breakfast Nook. That is the Acme of Convenience Which Contractors Can Provide for Their Clients.

outlets are liberally distributed thruout the house; in addition to the lighting outlets installed for reading lamps, there should be one or more convenience outlets in each main room and hall. As an example: One outlet in the living room should be in a suitable location for the Christmas tree so that the tree may be electrically lighted without dangling cords coming from a ceiling fixture. Outlets for electric cleaners should be placed where it is an easy matter to connect the cleaner.

In wiring a new house special attention should be paid to the mechanical execution of the work—careful and neat connections, solderings, taping of conductors, securing and attaching of fittings conducive to safety and efficiency. A careful contractor will so lay out an installation to secure distribution centers located in easily accessible places at which points the cutouts and switches controlling the branch circuits can be grouped for convenience, also safety of operation. The load should be divided as evenly as possible among the branches and all complicated and unnecessary wiring avoided.

A builder should give careful study to the many labor-saving appliances that simplify the work of the home and permit of its operation with fewer servants than formerly. In the laundry there should be a convenient outlet for the electric washer, a special heating outlet for the electric iron which takes 600 watts. Then there is the big ironer and perhaps a water heater to be installed at some future time.

In the cellar or workshop or garage, provision should be made for the following appliances: Power motor for portable drill, grinding machine, lathe, bell ringing transformer, air compressor for tires, a portable cord lamp of 50 watts, glue pot and soldering iron.

There is another reason in addition to convenience why the wiring of houses should be carefully studied by the architect and the house builder—the increasing number of electrical appliances in use and the number that will doubtless be developed, make it necessary to provide against overloading the wiring. This is provided for by the underwriters' rules which prescribe how heavy a current load a wire may carry. While the code prescribes No. 14 wire as the minimum size this limits the branch circuit to 660 watts. The use of No. 10 or No. 12 wire will add very little to the cost and pays for itself in the end. Many houses are now being wired with several circuits—one for lighting and one or more for electrical appliances.

Safety, which requires a sufficient number of circuits, large enough wire and proper insulation and convenience outlets, is an important factor to be considered in providing electrical comfort and convenience in the modern home.

The contractor should direct considerable attention to the study of the latest developments and improvements in the household electrical field so that he can pass on this information to his clients.



Tired People Do Not Smile Like This. Altho She Is "Ironing" She Does Not Mind It a Bit Because Electricity Is Doing the Heavy Work. If the Contractor Who Built the Home Had Not Used Foresight, She Would Not Have Had This Comfort.

Building a Beautiful, Inexpensive Home

CHARMING DUTCH COLONIAL HOUSE HAS SEVEN ROOMS, GENEROUS LIVING PORCH WITH OPEN FIREPLACE

IT costs no more to build houses that are attractive than it does to build those that are ugly.

a bright and cheerful room when the porch is enclosed with sash in the winter months.

First, a good design is required, well proportioned and arranged about a convenient and economical plan, then we must carry out the details to fit the design, and last, but not least, the materials for the house must be selected wisely and properly finished.

Simple inexpensive materials will answer just as well as the most expensive kind, if we but select those that are appropriate to the design and to the intended use.

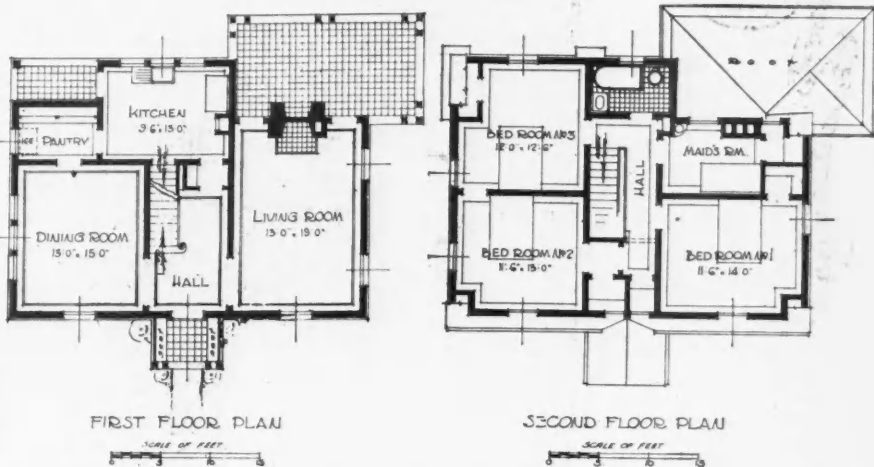
The house of Mr. H. L. Braisted at Englewood, N. J., shows how attractive the small house of simple materials can be made.

The gambrel roof gives a low cottage effect that could be obtained with no other type unless great sacrifice was made of the second floor room space.

The sidewalls and roof are shingled, the walls finished white and the roof green, giving the old Colonial effect. The large single windows with small panes also contribute to this effect and give the house a strong character.

The plans show seven rooms, a bath and a pantry, plenty of closet space thruout and a generous living porch that has an open fireplace.

The fireplace on the porch is rather a novel feature and makes



Floor Plans of Dutch Colonial House Shown Below. Note the Large Living Room and Bedrooms.

20-Room House Cut Into Two Dwellings

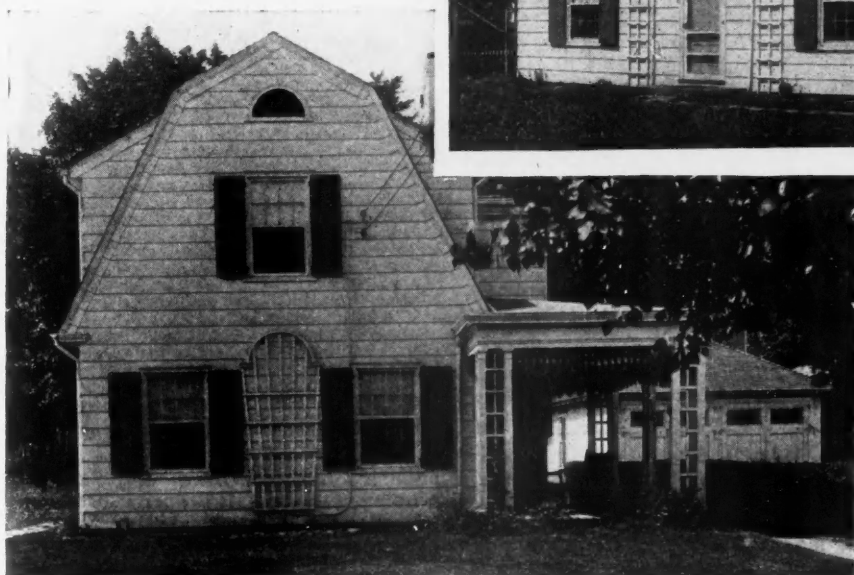
SOME of New England's fine old mansions are being sawed apart to make modern homes. One bit of crosscut saw handiwork was the successful division of a twenty-room house in Pittsfield, Mass., into



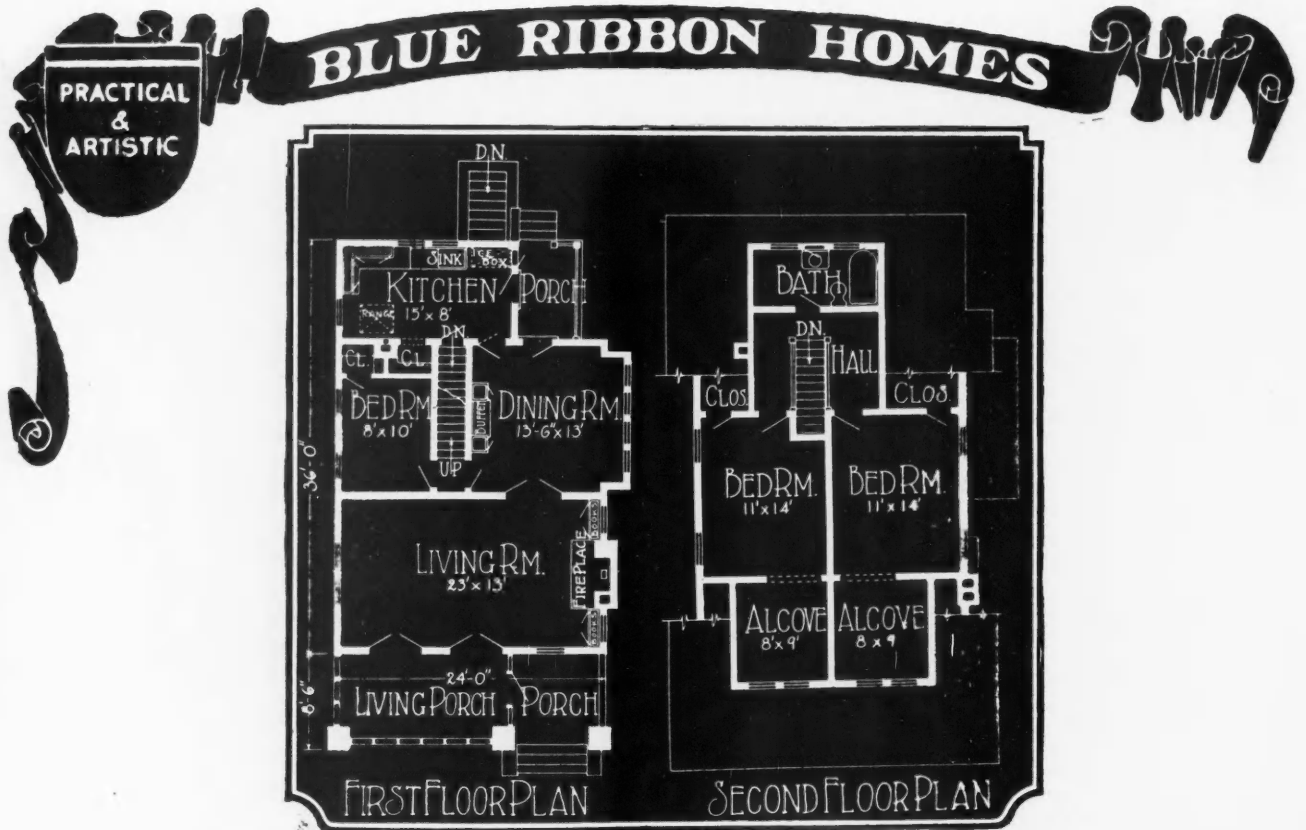
This Home Is Simple in Design Yet Very Pleasing in Appearance and Not Expensive to Build. It Contains Seven Rooms and a Generous Living Porch.

two apartment dwellings. One of the sections was moved to a new site.

"The old Whitehead mansion" of twenty-seven rooms, also in Pittsfield, is to be torn down and made into many small houses. Its three huge chimneys alone are said to contain brick enough to build two modest homes. Thousands of mansions like this were built in New England years ago when materials and labor were inexpensive.

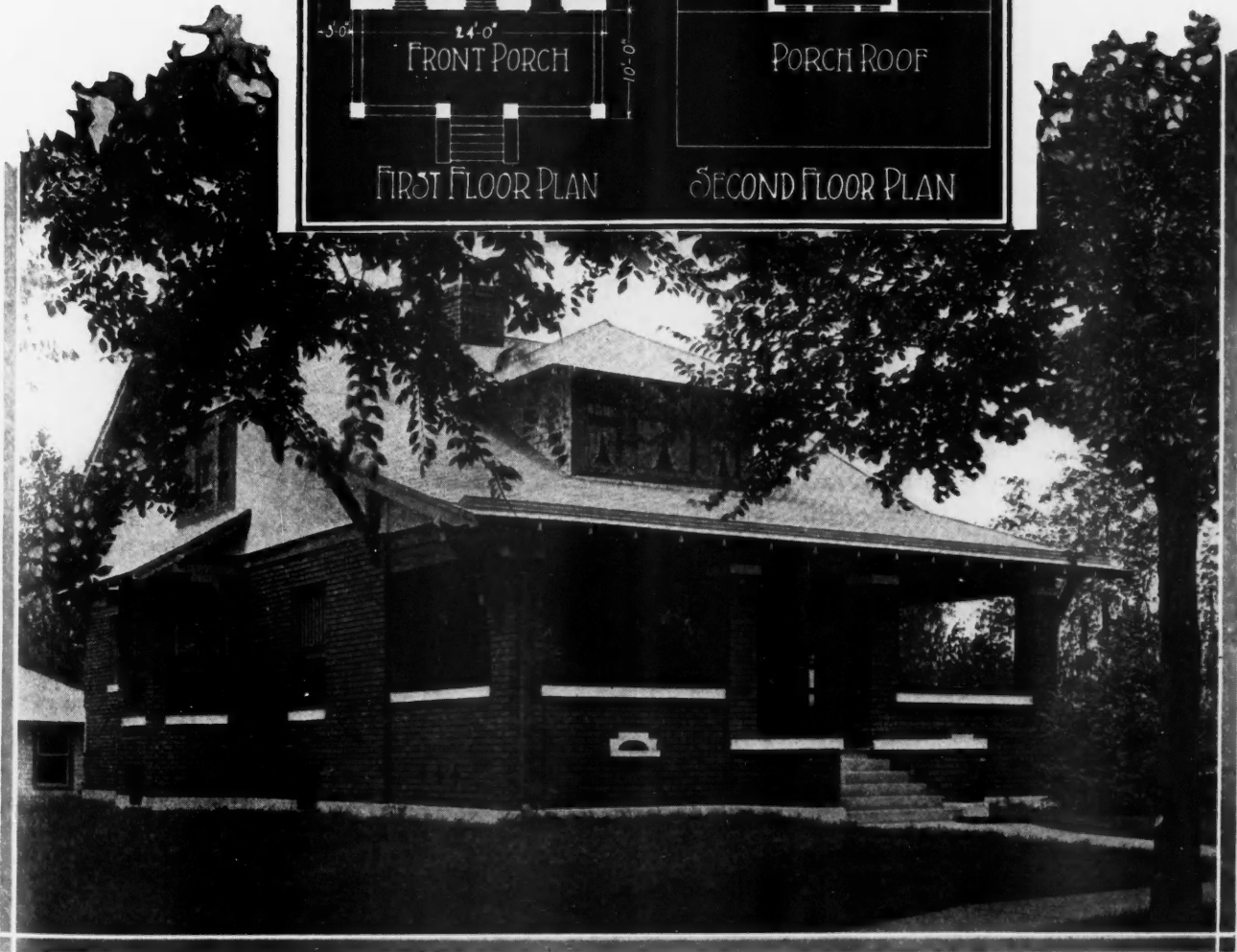
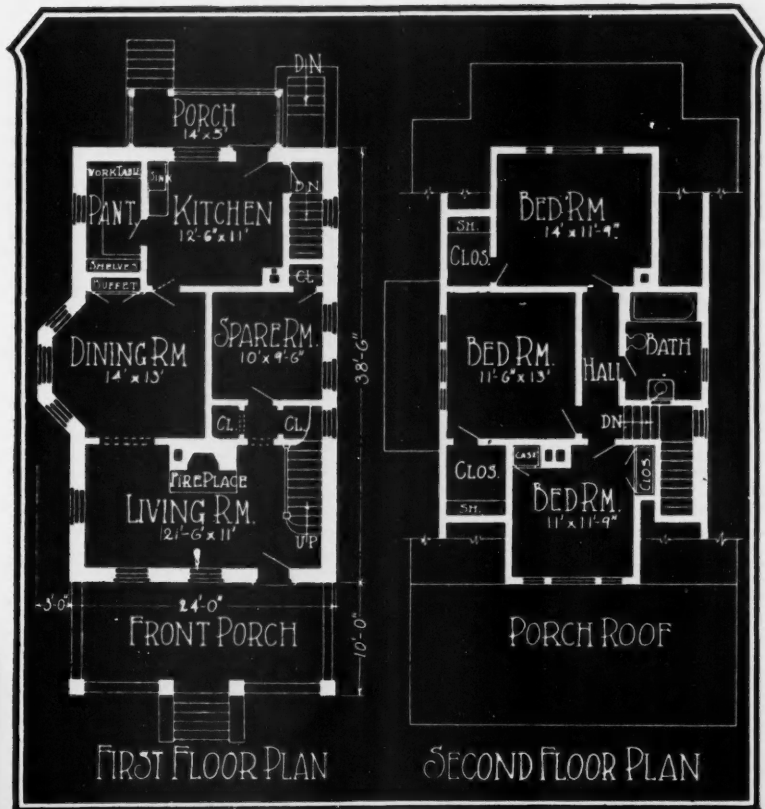


Side View of Attractive Colonial House, Designed by R. C. Hunter & Bro., New York, Architects; H. L. Braisted, Englewood, N. J., Owner.



A TTRACTIVE HOME DESIGN IN STUCCO. This should prove a popular offering because of its charming exterior arrangement, showing a similarity to the old comfortable English home with the half timber effect. People like large porches, and this house has one that will satisfy. It has been enclosed by screens, which can be replaced during the cold months by storm sash, making an ideal sun porch. It is the story-and-a-half type with four rooms on the first floor and two upstairs. The living room is worthy of the name, being a large room, 23 by 13 feet, with fire-place and flanking bookcases. French doors opening out on to the front porch complete the character of this room. French doors likewise open the way to the dining room, which has the advantage of a bay. On the opposite side of the house is a small bedroom and in the rear is a typically modern kitchen. Two comfortable bedrooms with alcoves make up the second floor plan. They are particularly light and cheerful. Size of house, 24 by 36 feet.

BLUE RIBBON HOMES
 PRACTICAL & ARTISTIC



WELL-BUILT HOME OF PLEASING BUT ECONOMIC DESIGN. Brick and stucco form an attractive combination in this hospitable looking dwelling of seven rooms. The brick gives an appearance of solidity and permanency that most people desire, while the open front porch extending across the front of the building parallel to the large living room is another attractive feature. The low sweeping roof with the well designed dormer is an enhancing touch. Lack of frills makes this building an economical proposition. On the first floor are the living room, dining room, spare room, which can be used as bedroom, den, or library, and kitchen. On the second floor are three bedrooms with plenty of closet space and large triple windows. The fireplace has been built in the center of the interior wall of the living room and the usual reception hall dispensed with. The house is 24 feet wide and 38 feet 6 inches long.

Effective Installation of Pipeless Furnace

IMPORTANCE OF INSTALLING SATISFACTORY HEATING PLANT IN NEW HOME—WHAT PIPELESS HAS DONE

WHEN Sir Isaac Newton evolved the law of gravity from the falling apple, he discovered a principle which is fundamentally important in our every day lives in more ways than one. Just now the particular phase of this phenomenon which interests us is that of rising warm air and falling cold air. This action makes the warm air furnace possible. It is the basic principle upon which the pipeless furnace operates and consequently is responsible for the comfort which many families are now able to enjoy during the cold winter months and the damp fall and spring days.

The pipeless furnace is a development of the last decade which has become tremendously popular in that time. Because of the ease with which it can be installed and its economy in cost, it has proved to be a real boon to building contractors as well as the home builders themselves. Investigation has shown that builders specify 60 per cent of the heating plants for the homes they build. Naturally they loom up as an important factor in the pipeless furnace field. That is why many are agents of some furnace manufacturer and get the double profit coming from actual sale as well as installation. This double barreled source of income makes the dull months seem insignificant.

A successful furnace installation in a home is one of the best recommendations a builder can have. It insures the customer comfort, and, invariably, he reflects his appreciation by giving the builder praise when talking to friends who may be contemplating new homes. Reputation, especially in the building game, is built up by praise repetition. The recommendations of one home owner to another are worth more than reams of paper written on the subject. And conversely, the builder can be very easily damned by faint praise. It is important that he enjoy the confidence of his clients. He cannot if he "skins on the job" for the sake of a few dollars extra profit.

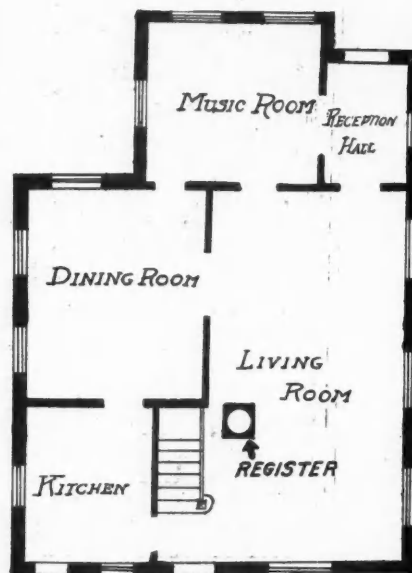
The success of the pipeless furnace depends in large measure upon its location in the home. Usually the

best place is the center of the basement. But each installation should be made in accordance with local conditions. The important fact to keep in mind is that the pipeless furnace heats by circulation of air and the register should be placed where this circulation is unhindered and can reach all parts of the building.

This type of furnace should not be placed too near an open staircase so that it is possible for the entire

volume of warm air to ascend to the upper part of the building. It is best to place this register so that the ceiling will serve as deflector for distributing it around the first floor and to the upper floors.

That is why the pipeless is recommended for homes, schools, stores and small churches where the warm air can circulate



Floor Plan of Shinn Home, Showing Location of Furnace Register. Its Location Near the Open Stairway Allows Good Circulation of the Warm Air to the Room Above as Well as Those Around the Hall.

freely from one room to another. This heater is especially suitable in farm homes where vegetables and other foodstuffs are stored in the cellar, as the cold air chamber which surrounds the furnace keeps the outer casing cool.

To be a complete success the furnace register should be installed in a room which is adjacent to all other downstairs rooms to be heated and which is adjacent to the stairway or hall in which the stairway is located.

If the installation cannot be made adjacent to the stairway the upstairs can be heated if the pipeless furnace register can be installed directly beneath an upstairs room which opens into all the other upstairs rooms. In this case a large grill is installed directly over the pipeless furnace register in the floor of the room above and satisfactory results can be secured.

Grills installed in the ceiling to heat upstairs rooms are not effective unless they are installed directly over the pipeless furnace



Home of Walter Shinn, Peru, Ind., Which Is Equipped with Modern Pipeless Furnace. Building Contractors Have Installed Many Furnaces of This Type During the Last Five Years.



Actual View of Register in Living Room of Shinn Home. The Warm Air Rises and Passes Up the Stairs to the Rooms Above. It Also Circulates Thru the Living Room and Then Into the Other Rooms Connecting.

register. Where there is more than 12 inches between the top of a door and the ceiling it is good practice to install a grill in the wall over the door if the adjacent room is to be properly heated. A simple rule for determining the sizes of the grills to be used is to allow one square inch of free area in the grill for every 20 cubic feet of room to be heated.



Furnace Installed in Basement. The Heat Is Regulated by the Chain Arrangement Which Is Operated from Upstairs.

Stairways with open railings should be guarded against. Where it is evident that returning cold air is likely to drop down into the stairwell thru the open railing on the side of the stair at which warm air is expected to rise, such a condition will result in the stoppage of the warm air current and consequently affect the heating of the room above. There are, of course, exceptions to these simple rules, but careful observance will help the homebuilder in getting complete satisfaction from this type of installation.

Some homes are divided so as to make it difficult to place a register in a room which is adjacent to all rooms to be heated. By installing the register underneath the wall and using a deflector made for that purpose, this defect can be remedied and many homes

thus satisfactorily heated.

The basic principle of operation of the pipeless furnace is quite simple. It depends upon the natural law that warm air rises and cool air falls. The key to the pipeless furnace is a main register located directly over the furnace. The warm air ascends thru the center of this register, while cool air enters the furnace in the cylinder around the outside. This cool air is heated, moistened by vapor, then recirculated thru the register. This operation continues as long as the fire burns. The register is composed of two sections, the central portion where the warm air rises and the outer section for cool air.

When the warm air leaves the register it rises to the ceiling where it is deflected and circulated thru the various doors and transoms. The cool air falls from all parts of the building towards the register. This circulation of air currents equalizes the temperature.

Heat can be shut off in any room desired by closing the doors or transoms. In case a room is cut off from the rest of the building it can be heated by a pipeless furnace by placing grill in transom over the door and taking about two inches from the bottom.

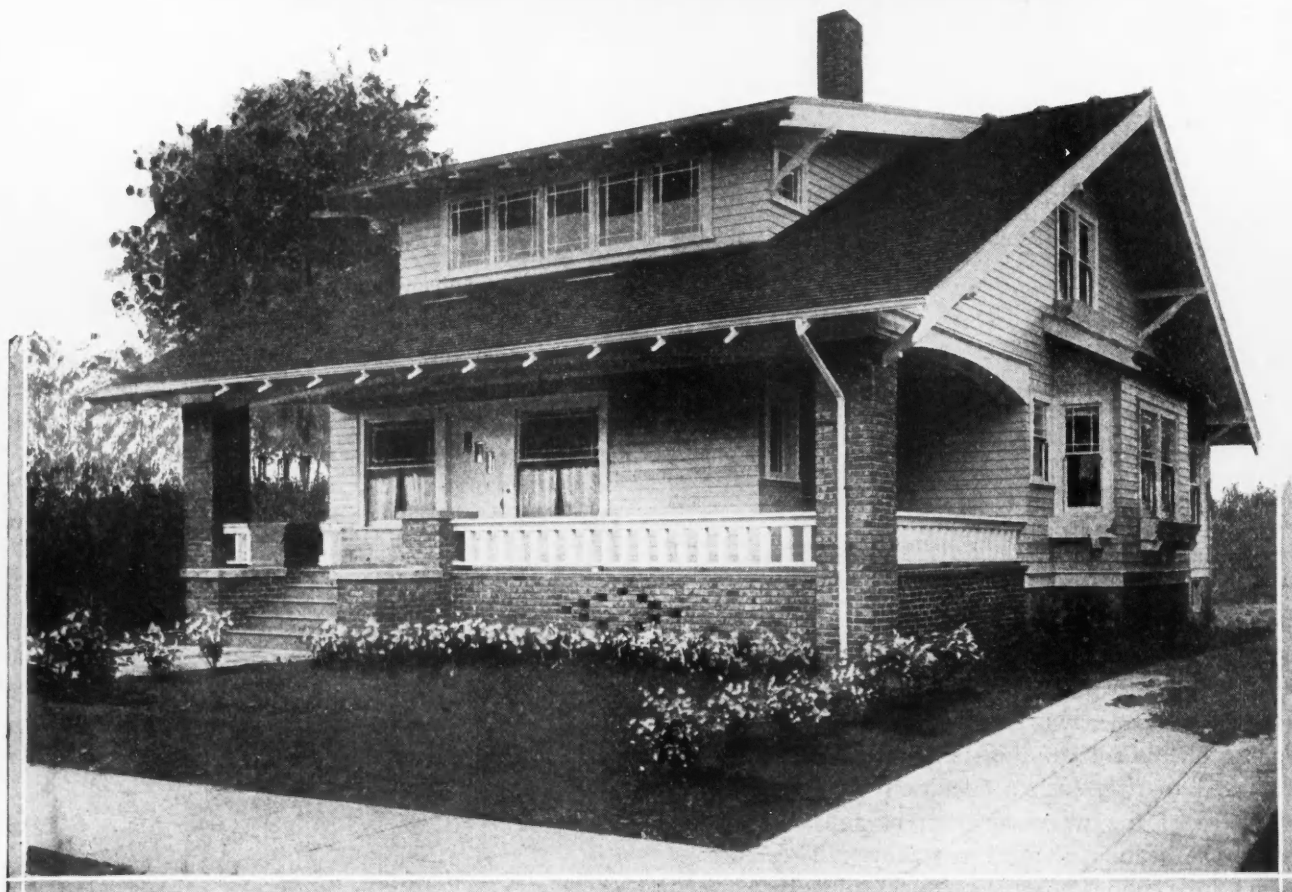
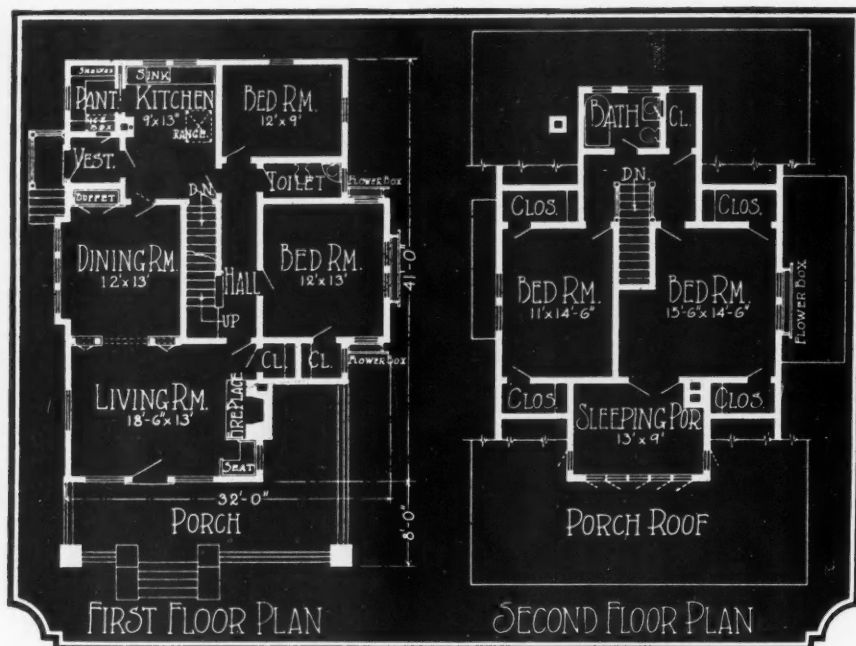
The pipeless furnace has found many friends among the farmers because it is particularly well adapted to the requirements of the average farm home. As a rule the farm home needs a cool cellar in which to keep vegetables, fruit and other perishable food-stuffs. The furnace does not affect the heat of the cellar. Moreover the farm home is so constructed that the pipeless furnace is very easily installed.



Hall in J. L. Ewing Home, Evansville, Ind., Showing Pipeless Furnace Register Properly Located. This Is One of the Important Parts of the Furnace Job.

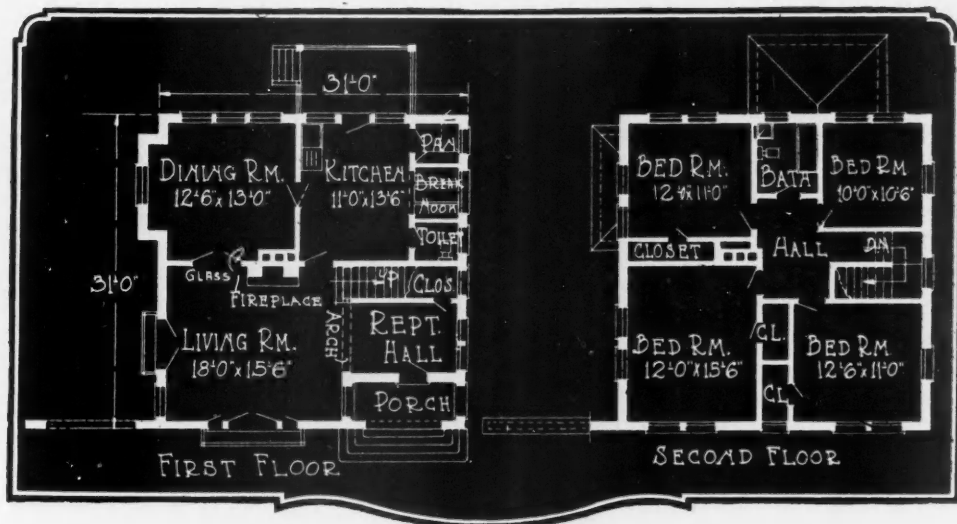
PRACTICAL
&
ARTISTIC

BLUE RIBBON HOMES



PRACTICAL, COMFORTABLE HOME OF GOOD DESIGN. There are many things about this sensible home that recommend it to the prospective builder, but most striking are the broad, open front porch and the sleeping porch in the front roof dormer above. The main foundation is concrete with a frame structure above, while the porch foundation and columns are brick with wooden railing. The porch extends around the front and side of the living room which has windows facing it on two sides. The fireplace is located in the side wall. This house, altho small in appearance, will accommodate a fairly large family, having four bedrooms and sleeping porch. Two are on the first floor and two upstairs. The dining room is a small well-placed room adjoining the kitchen. The house is 32 feet wide and 41 feet deep, exclusive of the front porch which is 8 feet deep.

BLUE RIBBON HOMES
 PRACTICAL & ARTISTIC



PLEASING HOME OF UNUSUAL AND DISTINCTIVE DESIGN. Architecturally, this house is in a class by itself because of its odd lines and arrangement. It is built of hollow tile with a stucco finish, and at first glance looks to be a double house similar to many found in the east. But it is built to satisfy a home owner who wants something out of the ordinary and at the same time substantial. Particularly striking is the extension of the front wall to form an arch over the side driveway. The plans call for seven rooms, three on the first and four on the second floor. The living room is 18 by 15 feet 6 inches with French doors in front and side opening out into small balconies with artistic iron railings. The entrance to the living room is arched similar to the outside front entrance. A breakfast nook and extra toilet on the first floor should be noted. Four bedrooms are located above. Size of house, 31 feet square.

Concrete Products Plant Success in One Year

MILWAUKEE CONCERN MAKES ASTOUNDING GROWTH IN SHORT TIME—BIG PRODUCT IS SMALL CONCRETE TILE.

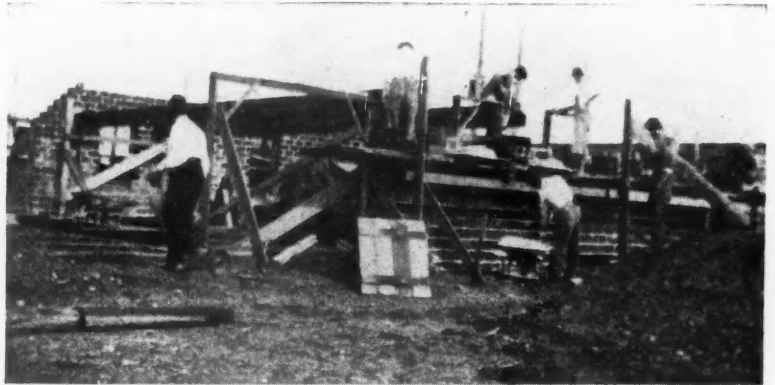
STANDARDIZATION is the typical American method of doing big things in a big way. It is the wonder worker in American industry, permitting automobiles to be sold for less than a thousand dollars, watches and safety razors for a dollar, magazines for a nickel, and at the same time making millionaires of the men who manufacture them. It is an American word, meaning quality produced in quantity, efficiently and economically. Standardization thinks lightly of thousands and millions, but it ponders seriously over slight flaws. The success and prosperity of a manufacturer is in direct proportion to the standardization accomplished in the production of his products.

It is not to be wondered at that the manufacture of concrete products is now being standardized, lifting that industry from its backyard inception to one of front rank. Commercial importance is now attached to concrete products because standardization has simplified the process of making them of higher quality and broader utility and in larger quantities more economically. Their manufacture is being regarded seriously and modern factories are rapidly being established to replace the brickyard block maker.

A good example of what standardization will accomplish is to be found in the plant of the Concrete Products Company of Milwaukee. This company has a modern factory located at Thiensville, just outside of Milwaukee, on an eleven acre tract of high grade quartz gravel, and is turning out a variety of products at the rate of 6,000 per day with only six men employed. Under the able management of A. G. Miexner this company has come to be known during this first year of its operation as one of the foremost and most

successful cement products plants in their state.

The way they constructed their factory building is of interest and can be followed to advantage by others who contemplate entering this business. The plans were laid out and the foundations and flooring put in, one unit of their production machinery then being put in place and temporarily sheltered. Lacking electrical or other power, a Ford car was jacked up and the rear wheels belted to the machine and mixer. In this crude, but inexpensive manner, enough building tile

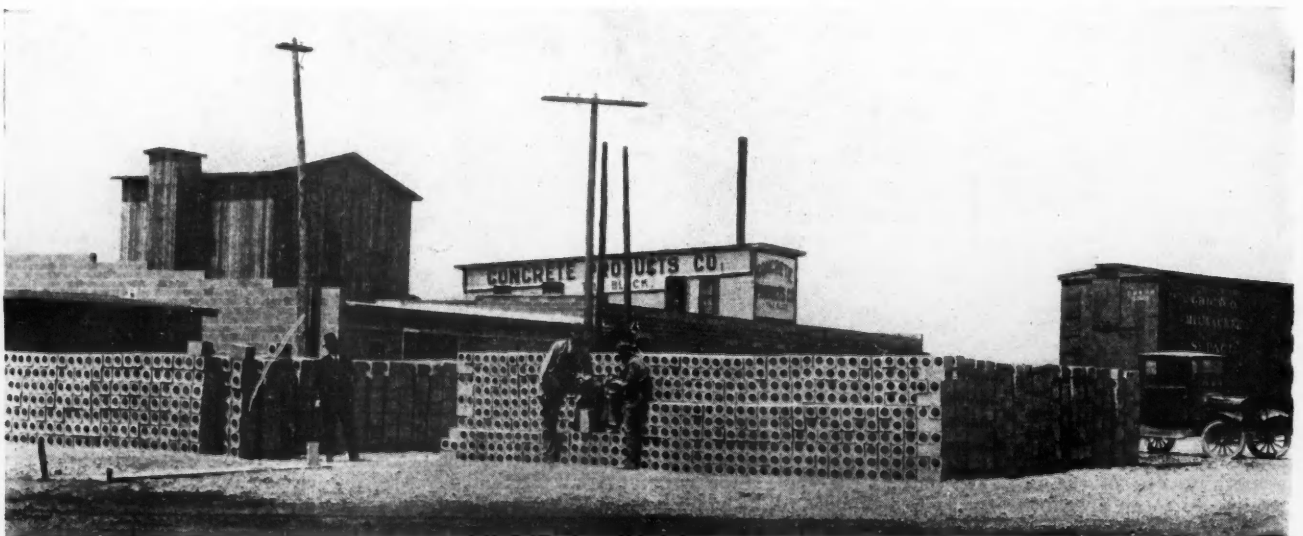


This Progressive Concrete Products Plant Was Built of Concrete Block Made Right on the Job. Here the Workmen Are Shown Building the Walls of the Main Building.

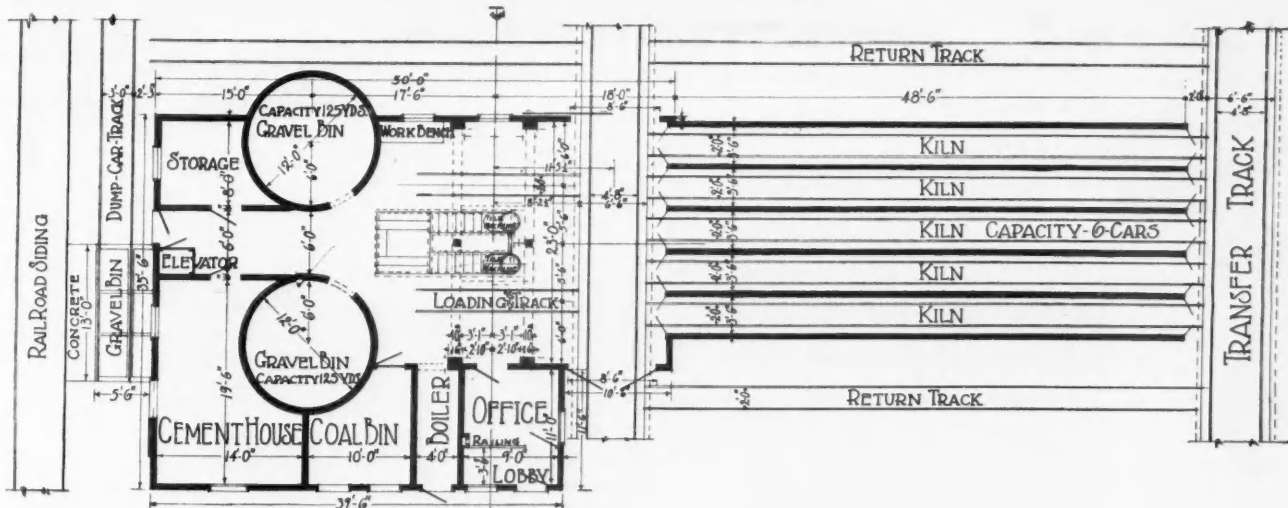
were made to construct the entire building.

During the day a couple of men made tile, averaging about 1,800 units, while a crew of masons were busy erecting the walls of the building about the machines. At night the freshly made tile was sprayed and in 24 hours they were placed in the wall. About 22,000 tile were required to construct a 110 by 40 ft. building and eight 50-ft. steam curing rooms. It is estimated that better than a thousand dollars was saved by following this method.

The manufacturing system employed in this plant



View of Plant of Concrete Products Co., Thiensville, Wis. In the Space of One Year This Plant Has Proved to Be a Remarkable Success. It Specializes in Rectangular Building Tile and Drain Tile.



Typical Plan Layout of Standardized Five-Man Concrete Tile Plant, Showing Arrangement of Automatic Machinery for Mixing, Measuring and Making Tile. The Output of a Plant of This Size Is About 6,000 Tile Daily.

is a standardized process worked out by the company who installed the equipment for them. Not only does it permit quantity production with low labor cost, but it allows for expansion without sacrificing any of the present equipment or in any way throwing the plant out of balance. Every machine is operated at its full capacity and the complete equipment dovetails into a compact manufacturing unit. There is no lost motion, every minute of labor counting for production and the whole system simplified to the point where it works smoothly and continuously without interruption.

Coming in from the pit at one end of the building, the gravel follows a direct line to the mixer, being handled but once. From the mixer the concrete is conveyed by gravity to the feeding hoppers of the production machines, keeping them constantly supplied with material. All of this is done in practically an automatic way, power and gravity being utilized to accomplish what is ordinarily done by labor. This practical and logical system of handling and mixing the materials can be readily understood by reference to the drawing and illustration accompanying this article.

The automatic production machines used eliminate as much of the human element in turning out their products as possible, their capacity output depending only upon the rapidity by which the material is fed into the molds and the finished products carried away. So systematically has this all been worked out that the actual output closely approximates the capacities of the machines, resulting in a daily production of around 6,000 products. Only one man works at each machine while a second man does

the stripping of casings from the finished products, as shown by the accompanying photograph.

The Concrete Products Co. are not only operating a standardized plant, but they are concentrating on the manufacture of standardized products. Hollow building tile and drain tile are the only two products they are making, both of them, in their several sizes, being made without pallets by the same production machines. They have therefore been able to cut down on their investment in equipment and to operate with a minimum of overhead expense. By developing the market for these two products they find that year round operation is necessary in order to fill the demand, demonstrating what can be done by concentrating on a couple of products having high quality and broad utility.

Their hollow building tile is of a recent design, which is enjoying a rapidly spreading popularity

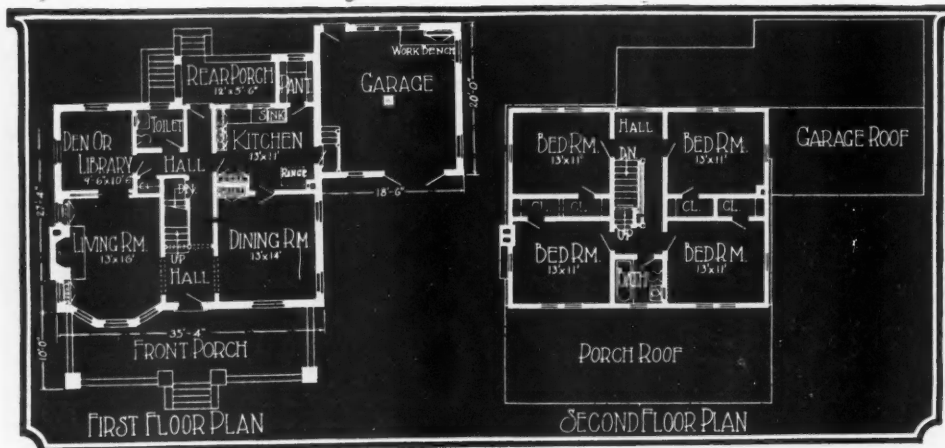
(Continued to page 94.)



Five Men Operating Tile Plant at Thiensville, Wis. Mr. Melxner, President, Believes in Concentrating on a Quality Product and as a Result Has Built Up a Profitable Business in Very Short Time. Note the Chutes from the Material Bins Feeding the Machines.

PRACTICAL & ARTISTIC

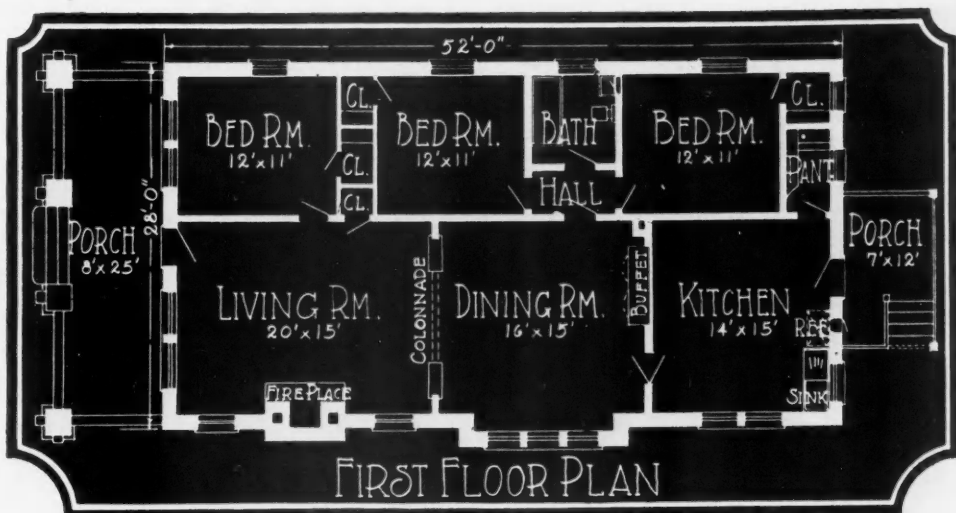
BLUE RIBBON HOMES



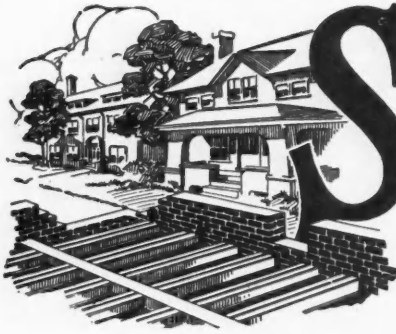
ATTRACTIVE HOUSE WITH GARAGE ATTACHED. Brick and frame have been used in the construction of this dwelling with very pleasing effect. The foundation and lower story are brick while the upper story is frame siding. The feature of the plan is the brick garage built in connection with the house proper and reached from the kitchen without going outside. This is a convenience in cold and disagreeable months. The house has a broad open front porch with substantial brick columns and rail. Four rooms are located on the first floor, viz., the living room with bay window facing the front porch, dining room, also looking out on the porch, kitchen with complete equipment of modern type, and den or library. There is also an enclosed rear porch toilet. On the second floor are located four bedrooms, 13 by 11 feet each, and a bathroom. Each bedroom has double exposure with large windows. The garage will hold one car. Size of house, 35 feet 4 inches by 27 feet 4 inches.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



CHARMING SIX-ROOM BUNGALOW OF BRICK. This beautiful and practical little home makes a particularly attractive and popular offering. The room arrangement is efficient, consisting of a living room of generous size with fireplace. Separating this room from the dining room is an attractive colonnade with side bookcases, a feature that appeals to many people. A large triple window affords light to the dining room. An outdoor icing refrigerator has been installed in the kitchen. There are three bedrooms of equal size. There is nothing wanting in the way of accommodations or conveniences for the housewife. In exterior treatment, this home is well handled, brick up to the eaves with stucco under the gables. The large front porch running parallel to the living room and front bedroom is a welcome feature in any home. The bungalow is 28 feet wide and 52 feet long.



STEEL LUMBER Construction

Building During Cold Weather

WINTER DOES NOT INTERFERE WITH STEEL LUMBER CONSTRUCTION—SUGGESTIONS ON CEILING AND FLOOR JOIST SIZES

By Gilbert Canterbury

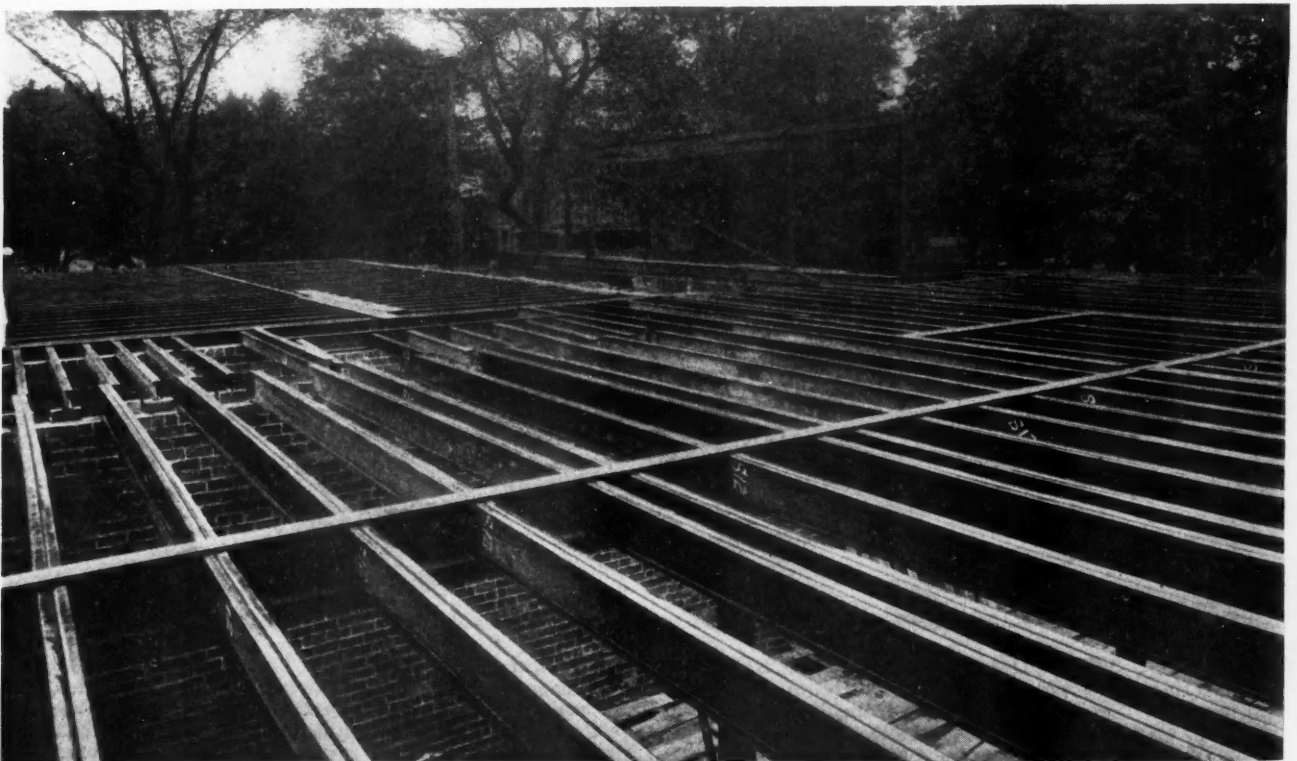
EDITOR'S NOTE—This is the tenth article of a series on the use of steel lumber in modern construction. Readers are invited to ask questions pertaining to this subject. Answers to all inquiries of general interest will appear each month in this department. Write in your problems now.

BUILDING fireproof structures in the winter season presents no unusual problems where structural steel frames and steel lumber floor construction are used. The steel columns, beams and girders can be erected practically regardless of cold weather and low temperatures will, of course, have no influence on the setting of the light-weight steel floor joists. Thus the frame of the building can be completed and floor supports established in any weather.

Brick masonry is not subject to the same dangers from cold weather that apply to wet concrete construction. Brick mortar contains less portland cement

and less water and this mortar "sets" much more rapidly than, for instance, concrete floor slabs. It will also resist freezing to a much lower degree than concrete. Forms for concrete floor slabs or columns or beams should remain in place from one to three weeks, but the mortar in a brick wall will "set" in twenty-four hours. These relative facts indicate that with the steel frame of a building complete and floor joists in place, brick masonry walls can be run up during the winter. The masons work only on mild days or protect the mortar on severe days by warming sand and water or by using salamanders.

With frame complete, floor joists set in place and outside walls finished it is a simple matter to cover the roof and warm up the building for the spreading of the thin concrete floor slab over the tops of the steel joists.



Two-Story Fireproof Store Building Under Construction, Showing Steel Joists Supported by Brick Bearing Walls and Heavy Steel I-Beams. M. H. Miller, Architect; Edgar Harris, Contractor.

This method, it will be seen, differs radically from the methods regularly employed in concrete or concrete and tile fireproof construction in cold weather. Some of the dangers are eliminated and the heavy cost of protection from cold weather is removed.

An unusual utilization of steel joists was disclosed the other day in the plans of an Ohio architect for a single dwelling to cost \$50,000. Steel joists were specified for the second floors over the living room and over the dining room. The first floor was supported on two by twelve wood joists. The architect when questioned regarding this unusual specification said

the steel joists were being used in the second floor panels over the living room and dining room because fancy hand-molded ceilings were to be constructed in these rooms and the steel joists and metal lath as a base for these ceilings would never shrink or warp and thus ceiling cracks would be avoided. An analysis of this job indicated that the entire first floor could have been built with steel joists, metal lath and a thin concrete slab for fire proofing at a cost of less than one-half of one per cent of the total cost of the house. In the basement of that house are being located the open-flame laundry stoves, furnace, hot-water heater, coal bins, ash bins and other hazards which cause seventy-five per cent of the 889 dwelling fires which occur every day in the year in the United States. Costly hand-molded ceilings should be protected, to be sure. But of greater importance is the protection of lives and property thru the establishment of a fire-resistive blanket between the basement and the livable sections of a house.

Floor Joist Sizes

Contractors are constantly writing this department regarding the proper size of steel joists to use in residence construction. Usually the length of spans are not given and without this information it is impossible to give a correct answer. As a general rule, however, the standard six-inch steel joist will handle most residence floor problems. A six-inch steel joist weighing four and nine-tenths pounds per lineal foot has slightly greater carrying strength than the average two by ten wood joist. This statement is based on an allowable working stress of 16,000 pounds per square inch for steel and 1,200 pounds per square inch for wood. As a general rule contractors use larger sized steel joists than are necessary for residence construction and smaller sized wood joists than are necessary. It should be borne in mind that all standard safe loading tables for steel joists are figured on a factor of safety



Steel Joists Supported on Top of I-Beam with Metal Lath in Place for Thin Concrete Floor Slab.

of four to one and that the material itself is of known quality and uniform strength. With wood joists the material is not of uniform quality. Practically no two wood joists going into a building are of equal strength. Many factors affect its strength—kind of wood, age of tree, part of tree from which it was cut, seasoning, knots, etc. Many times contractors have used ten-inch steel joists in floors where they would not have hesitated to use a two by ten wood joist and yet a ten-inch steel joist weighing eight and seven-tenths pounds per lineal foot has a carrying strength greater than that of an eight by eight wood timber weighing sixteen pounds to the lineal foot.



Law for the Builder

(Continued from page 65.)

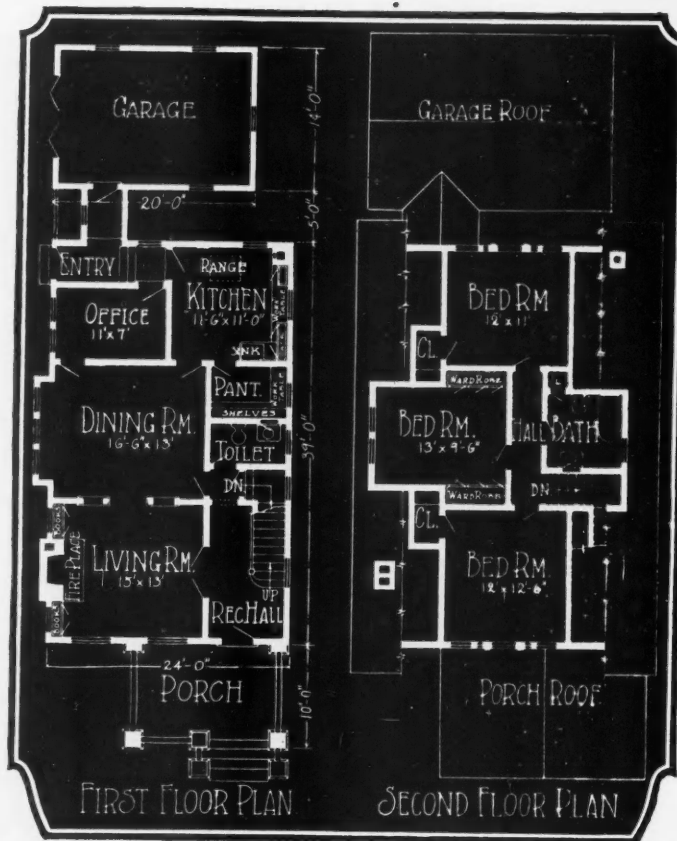
affirmed. The court holding, as outlined above, that as there had been no evidence of bad faith, the subcontractor had lost his right to enforce his lien against the owner, because of his failure to give notice of his lien before the contract price of the building had been paid.

The foregoing New York case is one of great value to contractors and builders, as it illustrates a point in building law that may very easily be overlooked. Of course it was decided under the New York Statute, and the force of its application in another state would depend on whether or not the law of such other state contained a provision similar to the one in New York.

However, this provision, or at least a similar one requiring notice to the owner, is commonly met with in the lien laws of the various states. And in view of this it would seem well worth the time of any contractor to look into the matter and ascertain for certain the law of his state on the point. If he finds such a provision in the laws of his state, he will then be placed on his guard. And if it becomes necessary to file a lien, he will see that the owner is given notice.

BLUE RIBBON HOMES

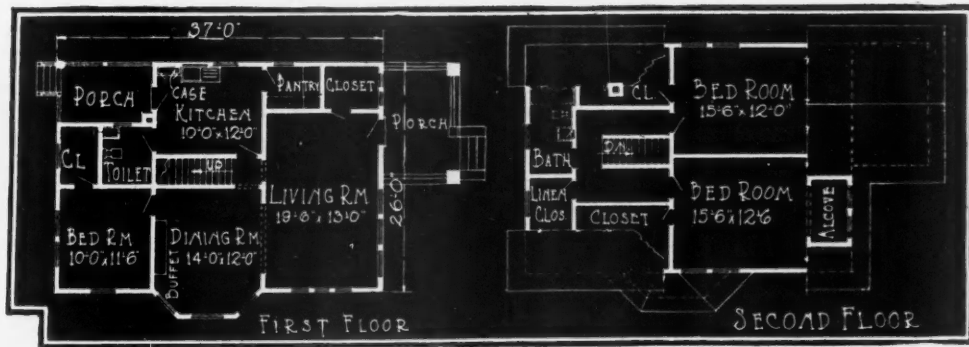
PRACTICAL
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S MALL CHARMING SIX-ROOM HOUSE OF DISTINCTIVE DESIGN. There is individuality about this beautiful little dwelling that makes it attractive. The exterior ornamentation is not overdone, but is different enough to make it stand out among any group of homes. The siding is shingles which form a pleasant contrast against the white trim. Provision is made in the plan for an office where a busy contractor, plumber, or other business man can conduct his business. In addition there are six rooms, three on each floor. The living room and dining room are generous in size and connected by a colonnade. Three bedrooms are located on the second floor. Other features are the extra lavatory on the first floor and a garage joined to the house by a short enclosed passageway. Size, 24 by 39 feet.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



COMFORT AND SIMPLICITY ARE THE ESSENTIAL QUALITIES OF THIS BUNGALOW DESIGN. The small modest home will be in demand for many years to come because it can be constructed to include many comforts without undue outlay. This home is an excellent example of what can be done in a modest way. The exterior of frame with rock-faced concrete block foundation is very pleasing and the oddly divided panes in the windows, exposed rafter roof effect, and porch rail, are added touches that make the home attractive. Of course the interior is important and here we find four rooms on the lower floor and two on the upper. The living room is 19 feet 6 inches by 13 feet. There is also a bedroom on the first floor in rear of the dining room. The upstairs bedrooms are quite large and splendidly lighted by windows on the side and front. Size of house, 26 by 37 feet.

DESIGN OF SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

Truss Reactions for Wind Loads

ARTICLE TWENTY-TWO OF AN EXTENSIVE SERIES OF STRENGTH OF MATERIALS

IN roof truss problems preceding this article the loads have all been considered as acting vertical and symmetrically placed. In such cases the reactions are vertical, acting opposite to the loads, and each one is one-half the total load. If the truss has more load on one side than the other, or in the case of wind loads which act on but one side of the roof at a time, the reactions are not equal. The reactions may be found by algebraic method of moments, but a graphical solution is one that enables the designer to calculate these forces in an easy and sufficiently accurate way. A few illustrations will be given to familiarize the reader with the method of determining reactions before applying it to wind loads.

Fig. 1 shows a beam with loads not symmetrically placed. To find the reactions R_1 and R_2 . The space diagram is lettered as in previous articles. We then draw the force diagram of Fig. 2, A B C D, using $\frac{1}{4}$ of an inch to represent 1,000 pounds. We then choose any convenient point O called the pole and draw O A, O B, O C and O D. In Fig. 1, we extend the lines of the forces for convenience in drawing. Now choose any point P in the left reaction R_1 . From P draw a line parallel to O a to intersect a b to H. From H draw a line parallel to O B to intersect b c at I. From I draw a line parallel to O C to intersect c d at J. From J draw a line parallel to O D to intersect the right reaction d e at K. Join P and K. Then from O draw a line parallel to P J to intersect A D at E. Then D E is the right reaction R_2 , and E. A is the left reaction R_1 .

The reactions for any kind of loading may be determined by the above method, but when they are known to be equal it is unnecessary work to find them graphically.

Now, in the case of wind loads on a roof it is the component or part of the force perpendicular to the roof that causes the stresses in the web members of

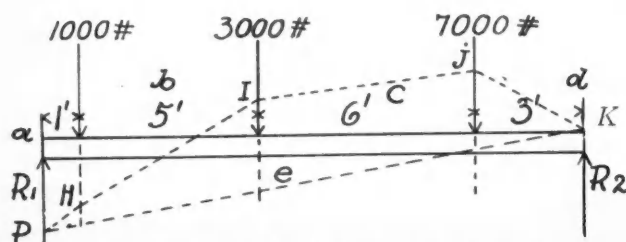


Fig. 1. Showing a Beam with Its Loads and Reactions.

the truss. The wind currents are assumed horizontal. Then the component of the wind perpendicular to the roof depends on the slope of the roof. The maximum pressure of the wind on a vertical surface is usually taken at 40 pounds per square foot. Then the com-

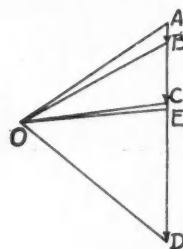


Fig. 2. Showing the Force Diagram of Fig. 1 with the Reactions Determined.

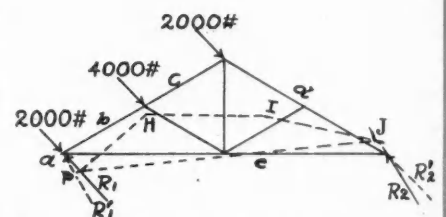


Fig. 3. Showing a Roof Truss with Wind Load and Reactions Parallel.

ponent perpendicular to the roof for various slopes is given in the following table:

Pitch of Roof	1/6	1/5	1/4	1/3	1/2	30°	45°
Pressure to Roof in Pounds Per Square Foot	13	15	19	24	31	32	38

These results are based on Duchemin's Formula.

$$P_n = \frac{2 \sin A}{1 + \sin^2 A} P$$

Where P_n is the perpendicular component of the wind, P is the wind pressure per square foot on a vertical surface,

A is the angle in degrees which the roof makes with the horizontal.

Now the reactions due to a wind load in size and direction depend upon the kind of truss and the manner in which the ends of the truss are fastened. For small trusses or for wooden trusses, the ends are usually fastened to the supports by anchor bolts. For steel trusses of large span, the contraction and expansion due to temperature changes, and to deflection due to the loads would produce large stresses in the truss, if the ends were fixed. The custom is to place one end of the truss upon rollers, or upon a planed base plate.

Now, when both ends of a truss are fixed, the reactions for a wind load cannot be determined unless some assumption is made. If the roof is compara-

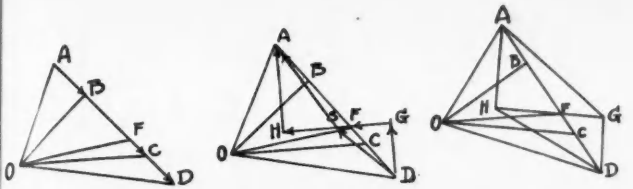


Fig. 4. Force Diagram, Showing the Reactions.
 Fig. 5. Showing the Reactions When the Horizontal Components Are Equal.
 Fig. 6. Showing the Reactions for a Truss with One End on a Roller.

tively flat, the normal components of the wind load is nearly vertical. If the assumption is made that the reactions are in the same direction as the normal component of the wind, the results will be close enough for practical purposes. However, if the slope is large, the assumption is made that the horizontal components of the reactions are equal. It is understood that both supports are equally elastic, and both ends of the truss fastened in the same way.

When a roller is under one end of a truss, the reaction at that end is vertical if we assume that the friction under the roller is very small. The fixed end then takes all the horizontal pressure of the wind.

We will give three illustrations showing how the reactions are computed graphically for the different end conditions.

Fig. 3 is the drawing of a roof truss with the total normal component of the wind load acting at the truss joints. The assumption is made in this case that the reactions are parallel and in the direction of the loads. They are represented by R_1 and R_2 . The diagram is lettered as in previous cases. We now draw the force diagram $A B C D$ parallel to the joint loads. Choose any joint O as a pole and draw $O A$, $O B$, $O C$ and $O D$ as in Fig. 4. Next choose any point P on the reaction R_1 and draw a line parallel to $O A$ to meet the force $a b$. But $a b$ and R_1 coincide in directions, so that the point P is on both forces and no line is really drawn. Now from P draw line parallel to $O B$ to meet $B C$ at H . From H draw a line parallel to $O C$ to meet $c d$ at I . Then from I a line parallel to $O D$ to meet R_2 , the left reaction at J . Join P and J . From O , now draw a line parallel to $P J$ to meet $A D$ at F . Then R_2 is equal to $D F$ and $F A$ is equal to R_1 . These lines may now be scaled and reduced to pounds from the relation $\frac{1}{2}$ inch = 2,000 pounds.

We will now determine the reactions making the assumption that their horizontal components are equal. Authorities seem to agree that for fixed ends this is the condition most nearly realized. We will use the same truss and loads as in Fig. 3. Now the vertical components of the reactions is independent of the ends conditions of the truss, depending only on the load. First assume the reactions parallel and find them as in Fig. 4.

Now the vertical and horizontal components of a force may be found by drawing a vertical line thru one end of the line and a horizontal thru the other end, forming a right triangle. The two legs of this triangle are the two components of the force. Thus

in Fig. 5 the components of $F A$ the left reaction are $F H$ and $H A$. Also the component of $D F$ are $D G$ and $G F$. Assuming that the reactions are parallel, it is evident from the drawing that the horizontal components $G F$ and $F H$ are not equal. If the components are assumed equal we find the center point of $H G$ at S . Join $S A$ and $S D$. $S A$ is the left reaction in magnitude and direction and $D S$ is the right. That this is true is evident, since their sum forms a closed figure with the sum of the loads $A D$. The reactions drawn in dotted lines are represented by R'_1 and R'_2 in Fig. 3. Their magnitude may now be found by measurement.

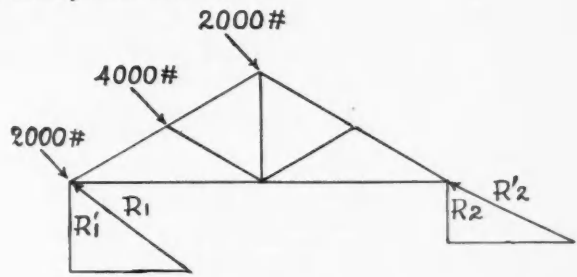


Fig. 7. Showing Position and Direction of Reactions for a Truss on a Roller.

When there is a roller under one end of a roof truss, the reaction at that end is vertical for all practical purposes. As has been said before, the vertical components of the reactions are independent of the end conditions of the truss. We may then proceed as in Figs. 3 and 4, assuming that the reactions are parallel, finding $D F$ and $F A$ as before. Now, if the roller is under the right end of the truss, the reaction R_2 is vertical. Then thru D , of Fig. 6, the end of the force diagram draw a vertical line. Thru F the dividing line of the force diagram, draw a horizontal line to meet the vertical lines thru A and D at H and G . Then $D G$ is the reaction R_2 . But $H A$ is the vertical component of the left reaction R_1 , and $G H$ its horizontal component, since R_1 is to carry the entire horizontal component wind pressure. Then join $G A$ and we have the left reaction R_1 in magnitude and direction.

If the roller is under the left end of the truss, this reaction is vertical and equal to $H A$ of Fig. 6. The right hand reaction R_2 takes the entire horizontal component $G H$ and has a vertical component $D G$. The right reaction is then found by joining $D H$. It is now known in magnitude and direction. Fig. 7 shows the truss and its load. R_1 and R_2 are the reactions for the case when the roller is under the right or leeward side, and R'_1 and R'_2 are the reactions when the roller is under the left or windward side of the truss.

The methods shown in this article, while applied to a special truss, are true for any similar case, and if applied in this way will give good results. The reader should be careful to choose the arbitrary points designated by O and P so that the drawing comes entirely on the paper and acute intersections eliminated if possible.

SMALL JOBS FOR RURAL BUILDERS

Cistern Important Improvement on Farm

BUILDERS who make a specialty of work on farms appreciate the importance of a good concrete cistern. They know that it will give satisfaction because it insures a supply of clean soft water for the housewife and saves her a great deal of labor.

The cistern may be built either above or below ground. An underground cistern has proved the most popular type because the contents does not freeze in winter and the structure does not take up ground space near the house.

An accompanying sketch shows a section of an underground cistern 8 feet square, outside measurements, and 7 feet 6 inches deep, with a capacity of approximately 70 barrels.

Structural Detail

The cistern need not be set as deep as shown in the illustration, but if desired, part of the filter compartment may be built above ground with a covering of 6 to 10 inches of earth on the cistern roof. When the forms for the walls are set, they are blocked up slightly to permit the concrete to settle under them and thus form a footing on the inside. The floor is built separate from the walls. Reinforcing consisting of 1/4-inch round steel rods is used in the floor, walls and roof. The rods are spaced 6 inches apart in both directions.

A filter, altho not absolutely necessary, is a desirable feature. A location above the cistern proper simplifies construction and reduces the amount of material required. The only man-hole necessary is the one in the filter compartment, as the cistern will probably not require cleaning any oftener than it will be necessary to renew the filtering materials.

The Filter

The filter is divided into two compartments. One is provided with a baffle board which retards the flow of water as it enters and allows refuse to settle before it reaches the filter bed. The opening between the two compartments is covered by a screen of copper wire to keep leaves and similar refuse from entering the second one.

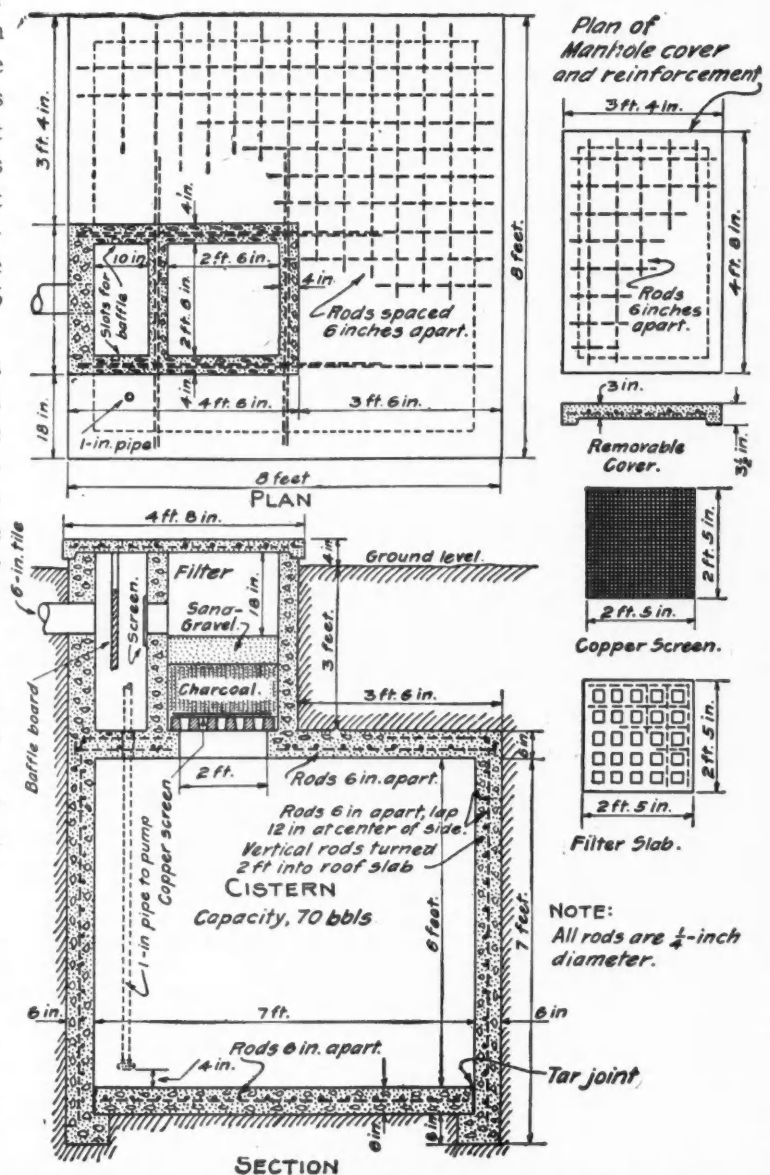
The second compartment contains the filter bed, which is composed of a layer of charcoal covered by a layer of clean, well mixed sand and gravel. This material is supported by a perforated concrete slab 2 feet 5 inches square. The openings in the slab are made by setting tapered square plugs into the concrete while it is soft. On top of the slab is a copper screen with openings about 1/8 inch square.

The cover of the filter is a reinforced concrete slab 3 inches thick. If desired, it may be cast in two pieces, one for each compartment. The floor and roof of the cistern are 6 inches thick, using a 1:2:3 concrete mixture.

It is a good policy to talk to the housewife when selling a cistern, for it is a structure in which she is directly interested. Moreover, her wishes usually carry more weight with her husband than would any argument which the contractor might advance.

Send in Pictures of Your Work!

IT is a genuine pleasure to be able to pass along interesting pictures of work being done by our readers. That last job of yours was a pippin. Why not show a picture of it to the other boys? They will be interested because the readers of the AMERICAN BUILDER are one big happy family of workers. Send in those pictures and the facts pertaining to them. This is your paper, so let's get together.



A Concrete Cistern with Filter Is a Labor-Saving Improvement Which Every Farmer's Wife Will Appreciate.

Practical Scaffold for Builders

HOW BRICKLAYER'S SCAFFOLD IS CONSTRUCTED—SOME SAFETY MEASURES THAT SHOULD BE INCLUDED.

ONE of the important details of the construction work of a building is the scaffold. In all kinds of building some rigging must be erected to enable the men to carry on the work safely after they get above ground. One of the most widely used and therefore of most interest to the average builder and contractor is the bricklayer's pole scaffold. It is used more frequently in the construction of brick walls. The platform upon which the workmen stand is supported by horizontal cross pieces that are called putlogs, but more commonly known as "puds" or "spuds." These run perpendicularly to the wall of the building and each is supported at one end of the wall that is being erected, a brick being omitted from the face course for this purpose.

The outer ends of the putlogs rest upon horizontal stringers which run parallel to the wall and are nailed to uprights or poles resting solidly upon the ground. In work in the United States, spruce is generally used for the pole. Hemlock should never be used because it is very brittle and is liable to break under a heavy load without warning.

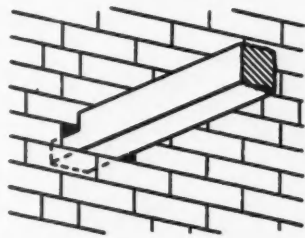
For ordinary work where the wall to be built is not more than four or five stories high, the uprights may be as small as four inches in width. They are commonly made of stock 3 by 4.

It is also advisable to place the poles as near the wall as possible because the cross pieces that hold up the platform should not be made longer than necessary between supports. The standard practice is to set the poles so there is a clear space of 4 feet 6 inches between them and the wall. As a rule the poles are placed 7 feet 6 inches center to center, 16 foot plat-

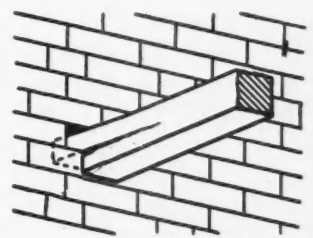
form planks being used.

The upright of a pole scaffold should not be allowed to rest on the surface of the ground. A small hole should be dug in the ground to receive the foot of each pole. If the soil is soft a block of wood a foot square and not less than two inches thick should be placed at the bottom of the hole to distribute the load.

The next thing to be considered is the ledgers or horizontal stringers that run from pole to pole parallel



Correct Way of Inserting Cross-Piece in Brick Wall.



Wrong Way to Insert Putlog of Scaffold in Brick Wall. The Wood Will Split.

to the wall of the building. They support the cross beams upon which the platform rests. They also serve to stiffen the poles and prevent them from bending. These "leggers" are usually made of spruce and should be not less than 1 1/4 inches thick and from 10 to 12 inches wide.

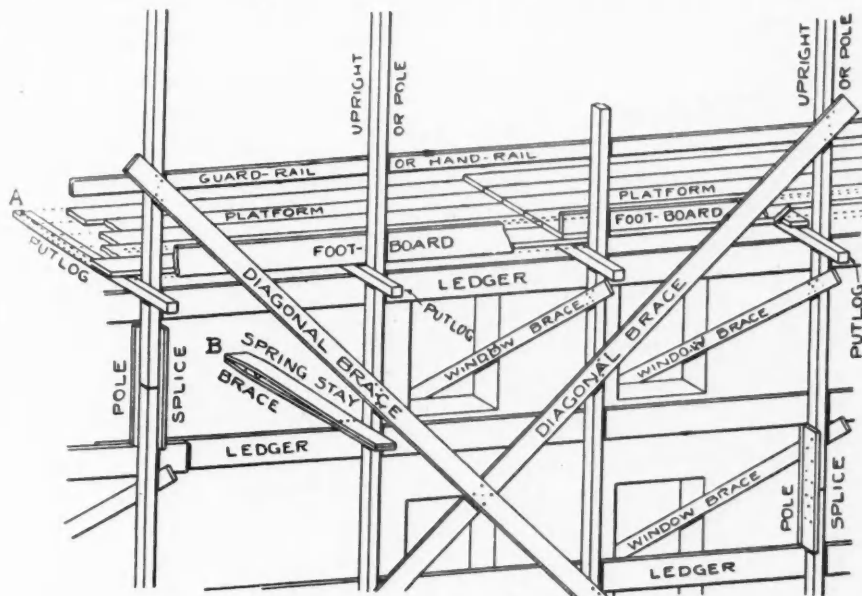
As far as nailing is concerned it is safer to nail the ledgers to the inside of the poles because the span of the cross beams is somewhat less in that respect. The 10d nails should be used in preference to 8d.

The putlogs or cross pieces out from the wall should be selected with particular care as to knots and checks. They are generally at least 4 inches square when the

load to be carried is the usual amount, and larger when the load exceeds this amount. They should be long enough to project over the ledgers by at least a foot. In placing one end of the putlog in the brick wall it is notched as shown in the diagram and inserted in the hole left in the wall by the omission of a brick. The correct and incorrect methods of placing the putlog in the wall are shown in the diagrams.

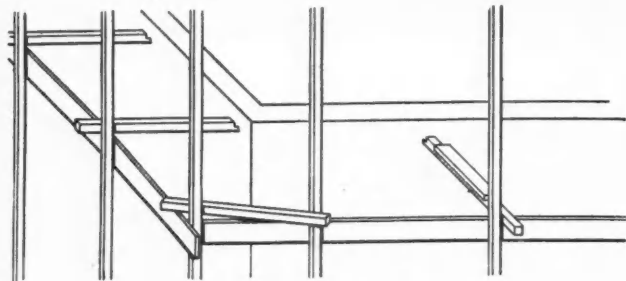
There should be at least three putlogs under each platform, one at each end and one in the middle.

In building the platform as a rule five 9-inch planks are laid side by side. These planks are not nailed to the putlogs as it is necessary to raise the platform at intervals. Special care should be taken to lay

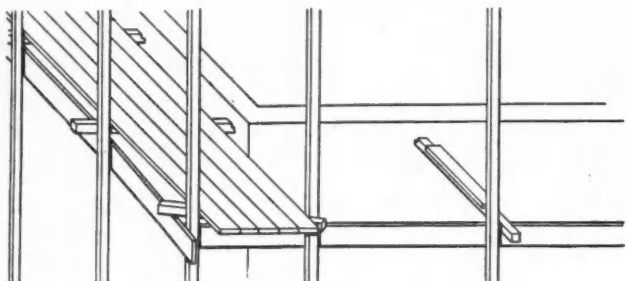


Courtesy Travelers Insurance Co.

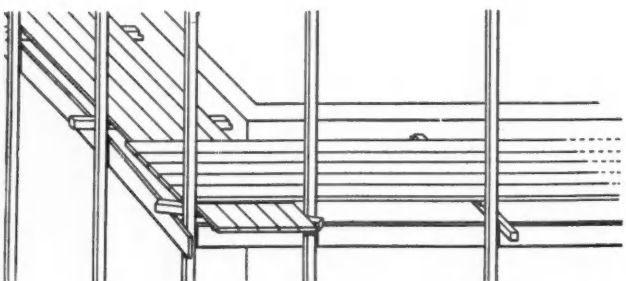
General Scheme of Bricklayers' Pole Scaffold. At A and B, Respectively, the Putlog and the Spring Stay Brace Enter the Wall of the Building. For the Arrangements of Planks at a Corner See Figure on Next Page.



Showing the Corner Putlog in Position.



Showing the First Course of Planks in Position.



Courtesy Traveler's Insurance Co.
Showing Both Courses of Planking in Position.

the planks so that they will not tip up either from workmen stepping on unsupported ends or from materials being deposited at any point.

Bracing is an important feature in any pole scaffold in order to insure stiffness and to prevent the scaffold from falling away from the building. A scaffold may fall away from the building or collapse by moving parallel to the building. Braces can be placed at window openings very handily. They are generally nailed to the window frame. If the window openings are few the scaffold can be braced by shoring it from the neighboring building or from the ground.



Successful Concrete Products Plant

(Continued from page 83.)

among architects, contractors and builders. It is rectangular in shape and of 12-inch length with square ends of 4, 6 and 8 inches. Running horizontally is a cylindrical hollow center which makes a continuous dead-air channel in the wall, affording a more effective insulation than the customary vertical air spaces.

In commenting on this building tile, Mr. Meixner states that a mason can lay the equivalent of 3,500 to 4,500 brick with this unit in a day's time. This means a saving of \$20 per day to the contractor on each mason employed. There is an additional saving in

mortar over brick, running from 30 per cent to 40 per cent.

Numerous tests reveal an exceptional carrying power, the crushing strength never falling below 2,500 pounds to the square inch. Absorption averages around 6 per cent, indicating that the tile are practically waterproof.

The drain tile made by this company have strength and density well above the state's requirements. A recent test at the University of Wisconsin showed that their 4-inch tile carried a weight of 4,050 pounds while the state required but 1,200 pounds. This is believed to be a new record.

Every tile leaving the factory is guaranteed to be frost proof, dry and of full strength. It is this determination to manufacture products of the highest quality and the maintenance of a quality standard which is largely responsible for the success enjoyed by this company.

In fitting out their factory, they simply contracted with a leading manufacturer of concrete machinery to establish one of their complete, standardized plants, placing the responsibility upon them to take care of that end. In other words, Mr. Meixner had at his disposal the services of an organization whose business it is to know what the requirements of this business are, avoiding any costly mistakes and allowing his company to start right in the most economical and efficient way.

The concern which established the modern factory for the Concrete Products Co. has worked out several sizes of standardized plants which are complete in every respect, enabling the beginner in the business to own and operate a plant that fits his particular market or pocketbook. Service and co-operation does not start and end with the sale of equipment, but includes such assistance as the furnishing of plans for the most modern type of factory building, an experienced man to supervise the installation of equipment and to instruct as to its operation, supplying advertising literature, and making periodical inspections.

The success of the Concrete Products Co. is but one instance of what can be accomplished by entering this lucrative business in a large way and at the same time with but a nominal investment of capital. Standardization has not only made it possible to manufacture the products in larger quantities at lowest cost, but is enabling men to profitably engage in the industry more economically and efficiently.



Stick To It

“PLAN for more than you can do,
Then do it.
Bite off more than you can chew,
Then chew it.
Hitch your wagon to a star,
Keep your seat, and there you are.”

Modern Dairy Barn with Silo

EXCELLENT TYPE OF FARM BUILDING EQUIPPED WITH LABOR-SAVING DEVICES AND EFFICIENTLY ARRANGED

“TELL me what kind of a barn he has, and I'll tell you what kind of a farmer he is,” is an axiom well established by experience. Invariably you will find the successful farmer owes much of his success to his dairy barn. Efficient methods, clean sanitary conditions, and labor-saving equipment have enabled him to increase the production of his herd and swell his profits. As there are many old barns still in existence on farms in the country, there is a big field for active work among building contractors in this direction.

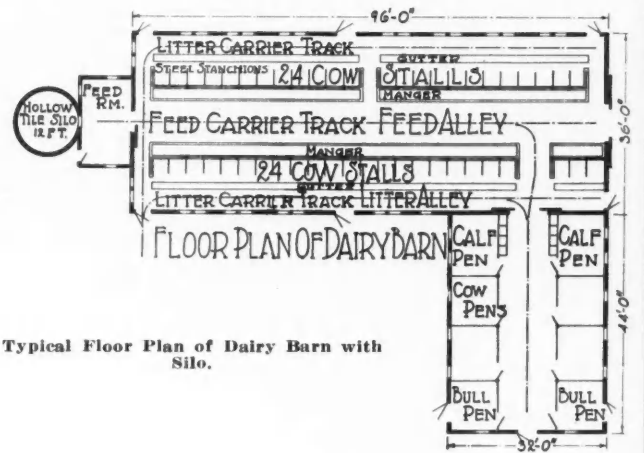
In the illustration shown here, the contractor will find an excellent example of barn construction. This handsome structure embodies all of the latest features. It is substantially built of frame on a solid concrete foundation and has an attractive and utilitarian gambrel roof permitting ample unobstructed space for a hay mow. Ventilation is provided by cupolas, special roof ventilators, plenty of windows, and fresh air intakes. In connection is a large hollow tile silo for food storage.

The main barn is 36 by 96 feet with stalls and stanchions for 48 cows. These stalls are made of steel and each stall has an individual drinking cup. Overhead carrier tracks above the feed and litter alleys provide a means of carrying feed from the feed room to the various stalls and of hauling the litter away to the manure pit. The extension of the litter carrier track out into the yard can be seen very clearly in the picture. This overhead carrying equipment has been found to be one of the best things the farmer

can put in his barn. It has lifted a great burden off the shoulders of the farmer and his help and certainly has done wonders in keeping the help satisfied. The floor is concrete.

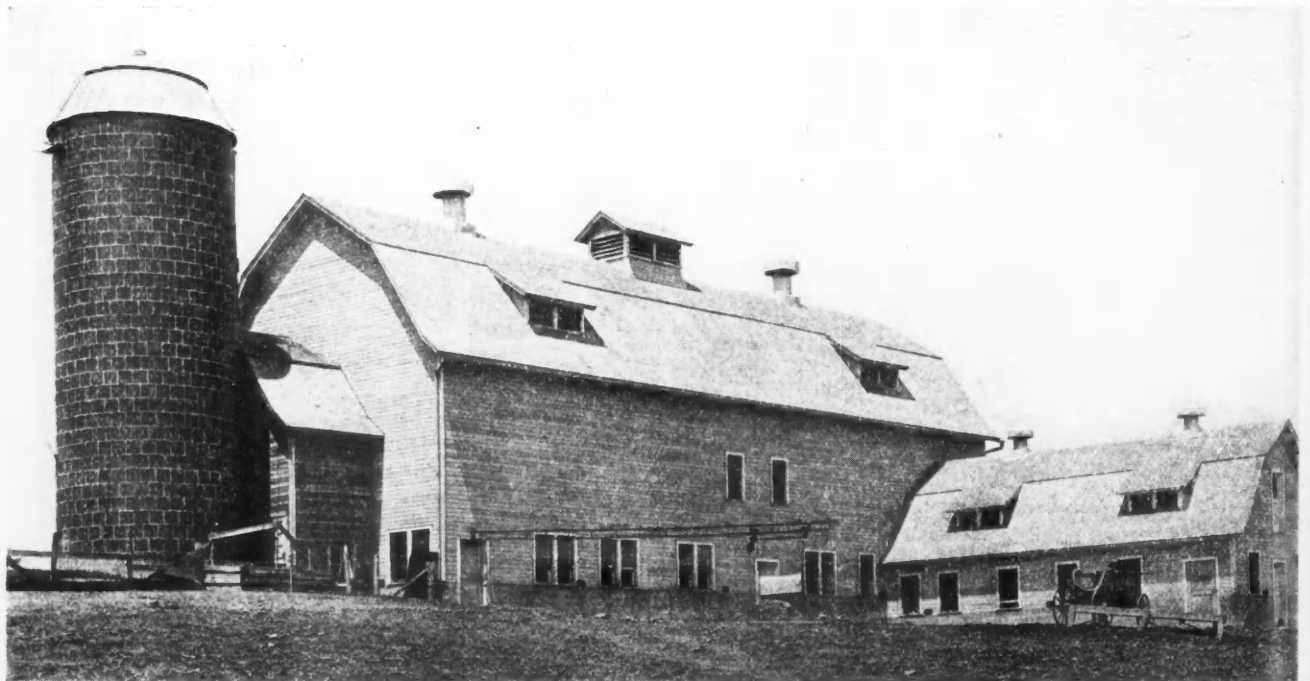
Extending from the side of the barn is a wing 32 by 44 feet, in which calves and bulls are housed. These pens are all of the latest pattern.

There is a steady demand for dairy barns at all times because the herd is an all year proposition.



Typical Floor Plan of Dairy Barn with Silo.

Crops may fail but the good old dairy cow “goes on forever.” Realizing this fact more each day, farmers who, heretofore, have depended on a single crop such as wheat or corn, often to their sorrow, are building up dairy herds that will provide them with an income in case other things do not turn out successfully. In building a barn it is important to provide for the future.



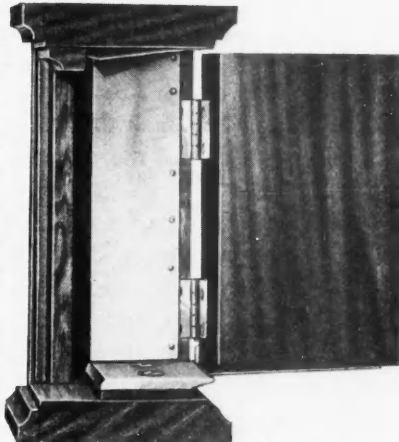
Handsome Dairy Barn with Large Hollow Tile Silo and Wing for Calf Pens. This Building Is Provided with the Special Ventilating Apparatus, Sanitary Steel Stanchions and Drinking Cups, and Carrier Track for Hauling Feed and Litter. It Is 36 Feet Wide and 96 Feet Long. The Wing Is 32 by 44 Feet.

Autumn is Busy Season for Weatherstrip Work

HOW METAL IS INSTALLED TO MAKE HOUSE WARMER DURING COLD DAYS—PROFITABLE SIDELINE FOR BUILDER

A THERMOMETER hanging in the center of a room may register 70 degrees, yet near the windows it will read at least 20 degrees lower. That is caused by the inrush of air thru the openings around the frames at the rate of 180 cubic feet per hour. This opening needs to be only 1/8-inch to allow this draught, when a fifteen mile wind is blowing.

Weatherstripping has proved to be a successful remedy for this defect and most new homes today are being weatherstripped while they are under construction. But there are thousands of old homes that did not have this advantage and are sadly in need of bolstering up in this manner. The wind howls thru the opening around the door and window frames.



Door Equipped with Spring Bronze on Three Sides and Brass Threshold on Bottom. The Brass Ell Strip Interlocks With This Threshold.

This work of installing metal weatherstrip in homes already constructed has been one of the most interesting sidelines developed for the contractor and carpenter.

The season is ripe for the carpenter contractor to make real money as a weatherstrip agent. Buildings are going up while coal prices remain high. Every talking point to sell weatherstrip is in evidence. High rentals make it possible to even sell weatherstrips to owners of apartment buildings.

This business means that the carpenter, contractor or builder can be busy every day of the year.

In the fall and winter months the main work in weatherstrip installation comes from occupied buildings. Spring and summer brings new work and the mid-summer months are especially adapted for school and hospital work.

Everywhere people are talking of owning their own homes. When a man builds his own home, he is a good prospect for weatherstrip because he appreciates a saving of 25 to 40 per cent in coal.

Some successful agents are equipping large hotels. One weatherstrip man is installing weatherstrip on a large institution with 3,000

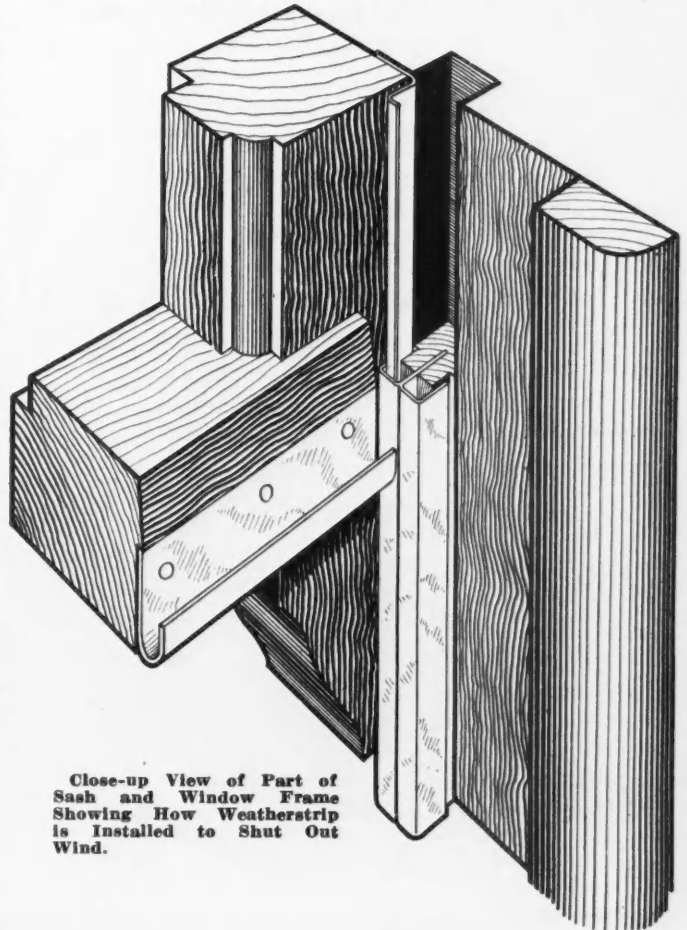
windows. This agent is buying his material the same as other readers of AMERICAN BUILDER, from the companies in this paper and is making a profit on his labor and material and a substantial profit above this. He is able to underbid his competitors on account of his low overhead. His wife is his secretary, his home is his office, his Ford car is his transportation. He is now employing six mechanics and three salesmen. He started by installing strip himself.

The contractor should always try to select his strip with efficiency as a first thought, simplicity, second, and, of course, always to bear in mind durability.

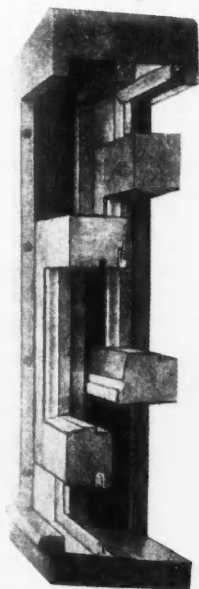
The installation of weatherstrip is not at all difficult for the builder agent because he is furnished with instruction books written in carpenter's terms and receives other installation helps from time to time from the weatherstrip company.

Carefully worked out selling plans bring prospects right within his reach. His literature for distribution to his prospects is planned and furnished by the company he purchases material from. There are any number of ways of producing sales. Some companies furnish moving picture slides, newspaper cuts, and copy and even write form letters for their agents.

The work is simple, profitable, and quickly done. The measuring of the frames, etc., is the first step.



Close-up View of Part of Sash and Window Frame Showing How Weatherstrip is Installed to Shut Out Wind.



Cross Section of Window Showing Weatherstrip Installed.

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To measure double hung windows, it is necessary to get the width of the lower sash from frame to frame, and the height from the bottom edge of the lower rail to the top edge of the check rail. In doors and casement windows the width is found by measuring from frame to frame. Then the height is found and multiplied by two, adding width measurement to get the amount needed for top and sides.

Before taking out the sash close the window and see that the check rails come together properly and the members level up on top. If they do not, plane off either top or bottom rail and see if the bottom rail fits down on sill properly.

The next step is to remove the inside stops and before taking out the sash see that there is clearance enough on sides so as to allow the sash to move freely in the runway after the metal is in place. Then remove parting strip. The parting strip should be cut down on either side with a knife so as to loosen it

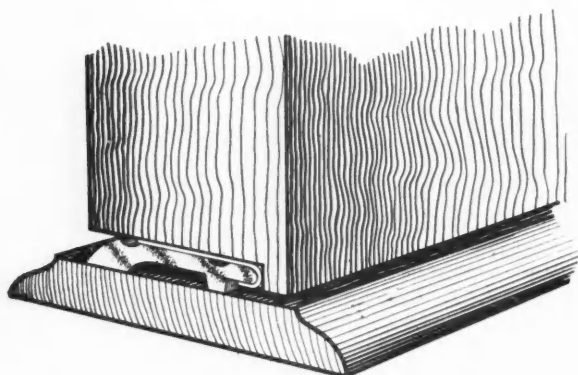
from the paint and prevent splitting out bits of the frame.

Having removed both parting beads or strips the next move is to fit the upper sash and then the lower sash. The sides of the sash should be parallel with the adjoining jambs and there should be not less than

1/16-inch play on

each side. This should be done without throwing the meeting rails out of line or the meeting rail weatherstrip will require extra care to keep them air tight.

Then straighten all edges of the sash next to the parting beads being careful not to plane off a wider strip than is necessary so that it will not show outside of the parting beads. After taking some other minor precautions the sash is ready for the weatherstrip.



Enlarged Diagrammatic View of Bottom of Door Showing Interlocking Strip and Threshold.

Grooves are then cut in the top of the upper sash and the bottom of the lower sash.

Make the cut from rail to check. See that your first cut is straight. The plane works best with a quick light stroke. The reason for planing towards the check rail is to prevent splitting out when you make the next cut. While planing the sash, if the cord hole is not deep enough, bore it deeper.

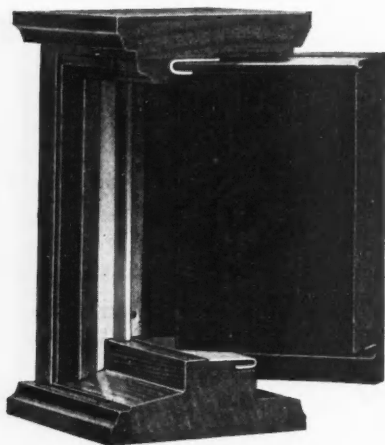
Nail the meeting rail strip on the upper sash, then the Z-bars to the end of the upper sash. Start the strip at the bottom edge of the meeting rail and cut it off 1/2-inch from the top edge. The proper adjustment of the Z-bars is the most important part of the job. There should be room enough between the Z-bars and the sash for the flange of the parting beads to slide easily. By setting the Z-bars too tight to the edge of the sash the flange of the parting strip will be pinched and the sash hard to move.

Then nail the Z-bars to the edge of the lower sash in the same fashion. Hang the upper sash nailing cord thru the knot and fit lower parting beads. If these parting beads are too long cut them off exactly at the center of the meeting rail when the sash is up in place. Pull the sash down and fit the upper parting beads.

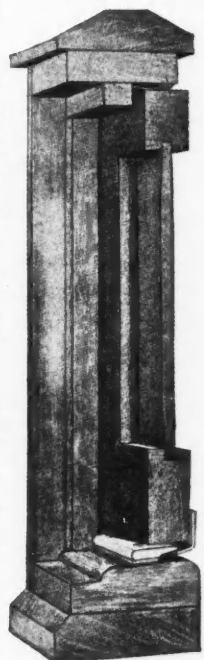
When this much has been completed, the head strip and sill strip are installed, and the job practically completed. Very complete directions and blueprints are furnished by the various weatherstrip manufacturers.

Metal weatherstrip is also installed around doors and a special bronze threshold is used below the door to keep out any wind. The strip is nailed to the jambs of the door. The difficult part of installing this strip is to get it stretched tight enough so that there are no buckles in the contact edge. There is usually a small crevice along the hinge side of a door and a wide crevice along the lock side. Pack out between the hinges to throw the door over and equalize the space. Then put in the head or top strip first. In putting on the bottom strip examine the bottom of the door. If it drags on the threshold plane it off so it will swing free and then cut a groove in the bottom of the door and put in the bottom strip. If a bronze threshold is used it is screwed to the wood threshold and interlocks with the strip on the bottom of the door forming an effective barrier against wind and draught.

Transoms and casements opening outward can be fitted with weatherstrip and there is also a special strip for inward opening casements.



Casement Window Model Equipped With Weatherstrip. This is an Outward Opening Casement.



Cross Section of Door Showing Metal Weatherstrip Installed.

CORRESPONDENCE

Questions answered—ideas exchanged

Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

What Do You Know About This?

To the Editor: Independence, Kans.
 Can you tell me how to construct "the gravity ducts of ventilation" in chimneys? I have read of these but have never seen them. Do you consider it is a good thing to put in when building a new house? This article I read stated that they would "save fuel and remove all cold or foul air from all rooms."
 O. E. Woods.

had been coming and going for some time. The ceiling has been replastered, but the spot comes and goes as before. Now there is no chance for the water to get in. I have taken up the floor upstairs, and there is no stain on joist or lath. Can you give a possible explanation why this should occur.
 J. S. BELL.

Wants to Silver Mirrors

To the Editor: Comanche, Texas.
 In making mirrors, I notice that ammonium aldehyde is the best. Most of the formulas call for immersion, but the latest method is by pouring the solution on the glass. I have been trying to make mirrors for two months but I can't make one that is good enough for me. Can you tell me a method to make them just like large factories do? I have been using nitrate of silver and Rochelle salts but the glass always turns out a brownish color.
 A. B. MASTERS.
 EDITOR'S NOTE—See page 118, August issue. The method for silvering mirrors is given in detail.

Offers Information on "Dead Air Space"

To the Editor: Represa, Calif.
 The article on concrete block walls in a recent issue leads me to enter a bit of personal experience with concrete walls, and especially the often mentioned point—"dead air space."
 When the concrete block first came into general use it was my pleasure to observe the construction of several buildings with the type of block that provided two oval shaped air chambers vertically in the wall. These buildings, where there was no furring for the plasterer's inner surface, showed dampness. This led to a series of experiments to determine the reason, with the following results:
 The air chambers contained what we term "dead air," and which is supposed to be a non-conductor of temperature changes. Thru the porousness of the block this air became saturated with moisture and the natural capillarity of the structural material carried it to the inner surface, this being kept absorbed in a greater or less degree by the heating devices used in the room.

An experiment was made of providing an inlet and outlet for the air chambers in such a manner as to be quite inconspicuous and, in the particular building in mind, the one wall that was provided with this feature was dry when the other three walls showed considerable dampness, and at no time did we find any moisture drawn thru this vented wall.

I am passing this on for the general information of the trade and would be pleased to see comments upon it.

JAMES F. ADAMS,
 Industrial Engineer.

Have You Had a Similar Experience?

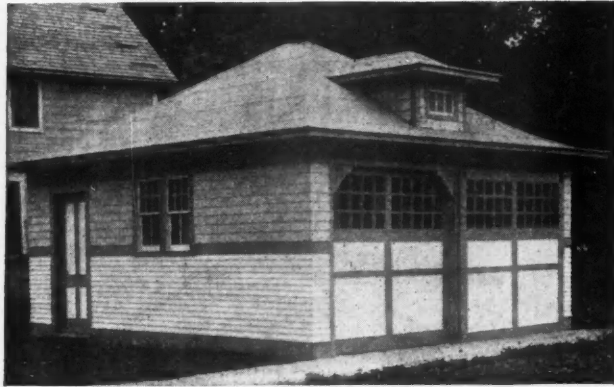
To the Editor: Keosauqua, Iowa.
 I was called in to examine a spot on a ceiling in an old house built at least fifty years ago. It is built of brick. At first I thought it was a leak in the roof, but on examination I found that the second floor ceiling was dry and the roof in good shape. This spot on the ceiling

Considerable Activity in Northern Wisconsin

To the Editor: Argonne, Wis.
 Enclosed please find a photo of our new bank building which I just finished. I thought it might be of some interest to my brother readers to show that northern Wisconsin is progressive. The AMERICAN BUILDER is a great help to the trade.
 A. J. EBERT.



New Bank Building Recently Built by A. J. Ebert, Argonne, Wis. Mr. Ebert Reports Plenty of Building Activity in Northern Wisconsin.



Example of Garage Work Which Ames & Calley Are Doing in Mayville, N. D. This Type Is Quite Popular in That Vicinity.

Builds Attractive Garages

To the Editor: Mayville, N. Dak.

I am sending you a couple of pictures of a type of garage we build here which has become very popular and spoken of very favorably by all who see them.

There are windows on all sides giving plenty of light to work on a car, the light coming in from all angles. The cement floors run out under the sills and the walls inside are boarded up with ceiling, making them very warm for a car in late fall. A small stove with a few hands full of shaving heats them up for a long time.

Small garages can be made at a good profit because small pieces of left-over material from larger jobs can be used up to advantage. In both of these pictures the shingles on the walls were old shingles which had been taken from an old roof, culled over, reversed with the weather side in and given heavy coats of stain.

The doors are all made up in the shop at odd times.

AMES & CALLEY.

We Would Like to—But It Can't Be Done

To the Editor: Albany, Ore.

Being a subscriber to your magazine I shall take the liberty to make a suggestion which seems to me would make the BUILDER of more benefit to you and your subscribers.

In that section of the magazine given over to the illustration of "Blue Ribbon Homes" you go well into descriptive details of the houses but the one thing which most prospective clients wish to know is the approximate cost.

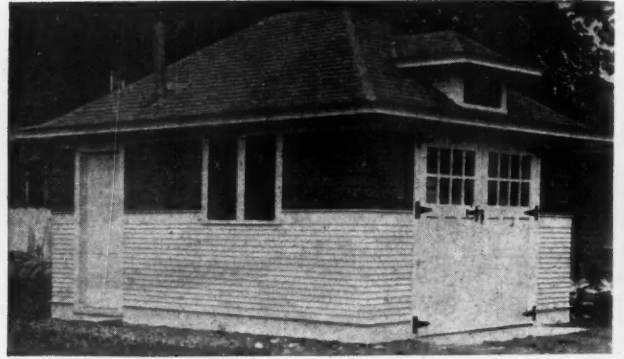
As apparently all of those shown have been built it would seem an easy matter to add this one item to the description and I am sure the information would be appreciated.

Personally I find your magazine helpful in ascertaining the wishes of a client and shall continue to look forward to each new issue.

A. C. JENKINS.

EDITOR'S NOTE—There is only one real way to get approximate costs on a new home—that is, to figure the job with builders and dealers in your own locality. Because of the wide range in wages paid labor in various sections, the difference in cost of material because of freight rates, closeness to source of supply, and other factors entering into the construction of a house, it is impossible to state even approximately what a house shown in the AMERICAN BUILDER will cost. This much we are certain, they can be built as economically as possible because they have been so designed as to eliminate all waste space.

We thank you for your excellent suggestion and only wish it were possible to follow it out. With the adjustment of costs and the return to normalcy, the matter of price will be more easy of solution.



Attractive Doors and Plenty of Windows Feature this Splendid Garage Built by the Same Contractors. Built from Left-over Material, These Garages Are Built at Good Profit.

It Can't Be "Did"

To the Editor: Cottage Grove, Ore.

I noted the inquiry of Gates & Price Co. about a magnetic nail puller. Iron at the point of magnetic saturation has a pull of about 90 pounds per square inch. The area of the head of an 8 D. Com. nail is about 1/20 of a square inch, therefore the maximum pull on such a nail would be about 4½ pounds or far too little to do any pulling.

The next man who tells you about such a magnetic nail puller should be informed that the same firm puts out a left-handed monkey wrench, a hot-box cooler, a meat auger and a full line of brass contours. Don't let him kid you.

OMER MOORE.



Very Good Suggestion

To the Editor: Franklin, La.

I am strong for the advancement of the AMERICAN BUILDER and I take pleasure in stating that an appreciable advancement would be effected if it were to give a little more space and time in considering the electrical details in contracting and building.

If I am not mistaken, I represent thousands when I state that every blue print or plans hereafter printed in the AMERICAN BUILDER should have electrical specifications included and the placing of the symbols should be in accordance with the electrical symbols used on architect's drawings.

Very few prospective builders know exactly what electrical equipment they want, but if they were on the plans they would rely on them.

I am in hopes of seeing the standard symbols used hereafter.

JOHN ALPHA.



Question on Cement

To the Editor: Hornick, Iowa.

I live here in the Missouri bottom. We have to build forms and pour cement for a cistern. Generally I make the concrete 6 inches thick on the outside and then plaster the walls with a rich mixture. The water gets so hard that a person can hardly use it. Now what can I use to put on the cement to keep it from doing this and not damage the cement.

N. J. WEBER.



Welcome, Brother!

To the Editor: Elkhart, Ind.

If there is such a thing as a directory of contractors, please see that our name is included in such a directory. Up until this year we always did our own building, but contracted it to someone else, but now we have our own contracting department.

JOSEPH S. KIES.

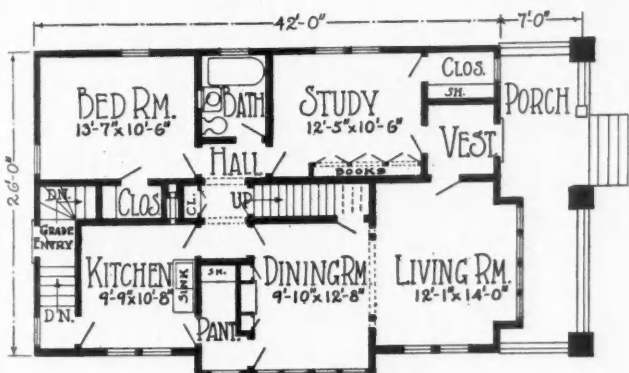


Attractive Parsonage Built by W. Kelbel for Lutheran Church. It is 26 by 40 Feet and Cost \$6,500.

Attractive Parsonage

To the Editor: West Allis, Wis. I am enclosing some pictures of a new parsonage of the Lutheran Church at West Allis. It was built at a cost of \$6,500 and is 26 by 40 feet. The building is suitable for a doctor or lawyer also. The front hall is a waiting room. The house was designed by Andrew Lamp, architect, of this city. There are several built-in features including a bookcase in the study room.

W. KEBEL.



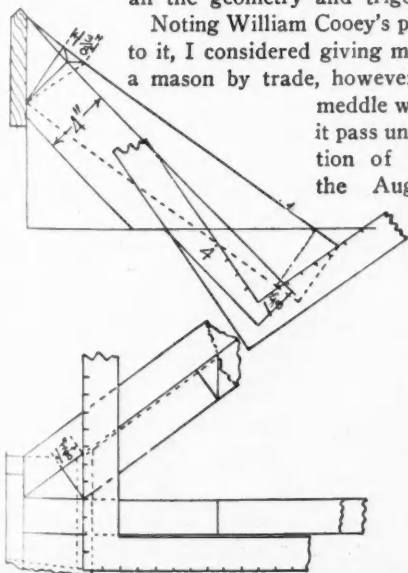
Floor Plan of Parsonage.

Aid for Mr. Cooley

To the Editor: Rockford, Ill. The movement of a hip or valley rafter from horizontal to perpendicular in relation to its connections represents about all the geometry and trigonometry in existence.

Noting William Cooley's problem and the answer to it, I considered giving my own version. Being a mason by trade, however, and not inclined to meddle with family affairs, I let it pass until I read another solution of the same problem in the August BUILDER, after

which I concluded Mr. William Cooley must be a sadly confused man. I hasten to his assistance, hoping I shall not make his confusion worse. The accompanying diagram should explain itself. Note that the cut of the hip rafter does not fit the square cut of the common rafter and should not do



Diagrams Illustrating Oscar Duval's Solution of Cooley's Rafter Problem.



Putting Stucco on New Parsonage at West Allis, Wis. It Is Frame and Stucco.

so where they are laid parallel as the turning movement of the hip rafter should also be considered. If we turn a hip rafter flat, or nearly so, the angle of the cut becomes more acute. It is therefore simply a matter of squaring up from the bottom junction of the common or jack rafter and the hip rafter, then squaring across either of these rafters to the hip, which in this case gives 1 3/8 by 1 3/8 and 4 make the cut. The movement of the hip rafter and its connections are not constant, therefore no other set rule will apply.

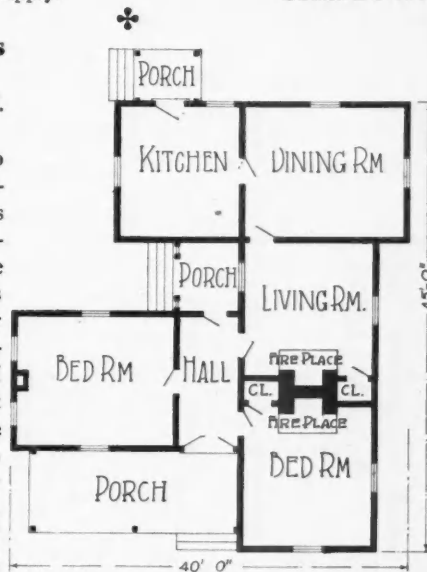
OSCAR DUVAL.

Suggestions Wanted

High Point, N. C. To the Editor:

The man who owns the house pictured here wants the place modernized. You can see for yourself it's quite an old affair as regards architectural lines and I am puzzled about how to tackle the job. Stucco will no doubt answer for the exterior walls, but look at the roof lines, etc. This house shows the exterior of two of the rooms and double-door hall entrance, all rooms 15 by 15 by 10. The advice of any readers will certainly be greatly appreciated. This is the largest five-room house I have seen for some time. The foundation is brick piers with plank cellar. He wants a basement.

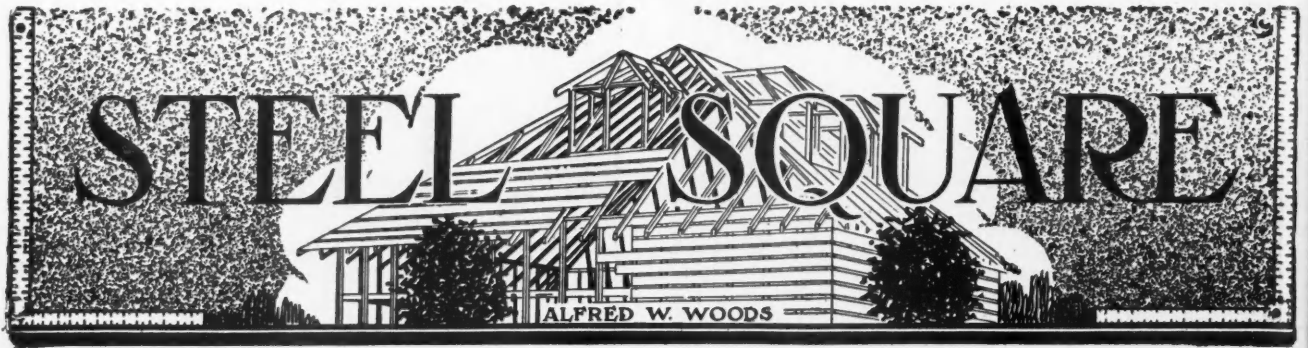
J. J. MANGAN.



Floor Plan of House As It Stands Today.



The Owner of This Home Wants it Modernized. J. J. Mangan Has the Job and Would Like Suggestions From Readers.



How to Use the Steel Square

SHOWING WHAT DETERMINES THE FIGURES TO USE ON THE STEEL SQUARE FOR EQUAL AND UNEQUAL PITCHES—HOW SIDE CUTS MAY BE FOUND

IN our last article we illustrated the long and short valley for a dormer gable where the same and main roof were of like pitch. In this, we will take up the subject again, but using different pitches for that of the gable from that of the main roof. When the pitch is the same, the valleys will rest at right angles to each other, as shown in the plan in Figs. 1 and 2 in our last article, but this is not the case where the pitches are different, which at once complicates the work. If it was hard to understand before, that is, where the pitches are the same for the gable and the main roof, it is doubly so now because the cuts are different for each set of rafters; the side cuts are interchanging because the parts to take on the steel square partake of both roofs or pitches. Yet the same rule applies to both equal and unequal pitches. Others may differ with us, but we claim that there is but the one fundamental rule. When this is once understood, it matters not what the shape of the building is or pitch given the roof. It may contain several pitches, but the one rule applies to them all; of course when different pitches are used it requires a different set of

figures on the steel square for each pitch. Fig 1 is in part a reproduction of Fig. 1 of last month's article but in this we have shown the lines for the one-half and one-fourth pitch in comparison with the three-eighths pitch, which is the same as the main roof. Thus it will be seen that the one-half pitch is steeper

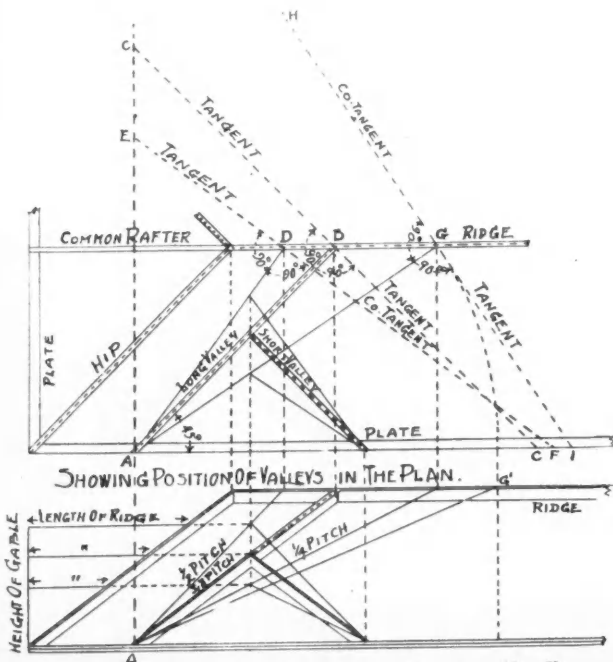


Fig. 1. Elevation of Valleys Shown in Plan of Roof.

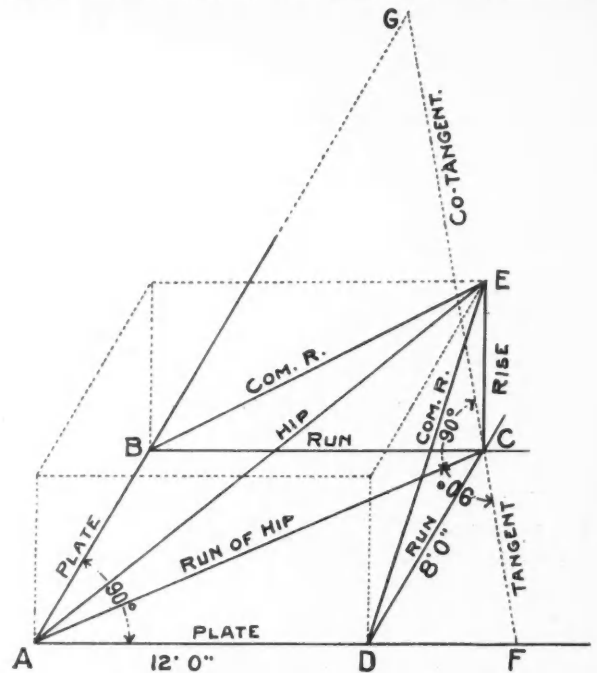


Fig. 2. Showing Angles in the cube. This Diagram Shows True Positions of Rafters, Altho Not to Scale Because of Perspective.

and the one-fourth lower than the main part. The upper part of the figure shows the plan of the different valleys, while the lower part shows them in the elevation. What we wish to bring out in this figure is to show what parts are taken on the steel square to obtain the side cuts of the valleys and jacks.

In Fig. 1 of last month's article we illustrate this cut where the gable and main roof are of the same pitch—that is, for the three-eighths pitch, 17 taken on the tongue and $19\frac{1}{4}$ on the blade. The latter giving the cut. In other words, it is the same as its (the valley's) run and length taken to a scale on the square, the cut will be found on the side of the square that represents the length. This is an old, old rule, but is not

THE DRAKE

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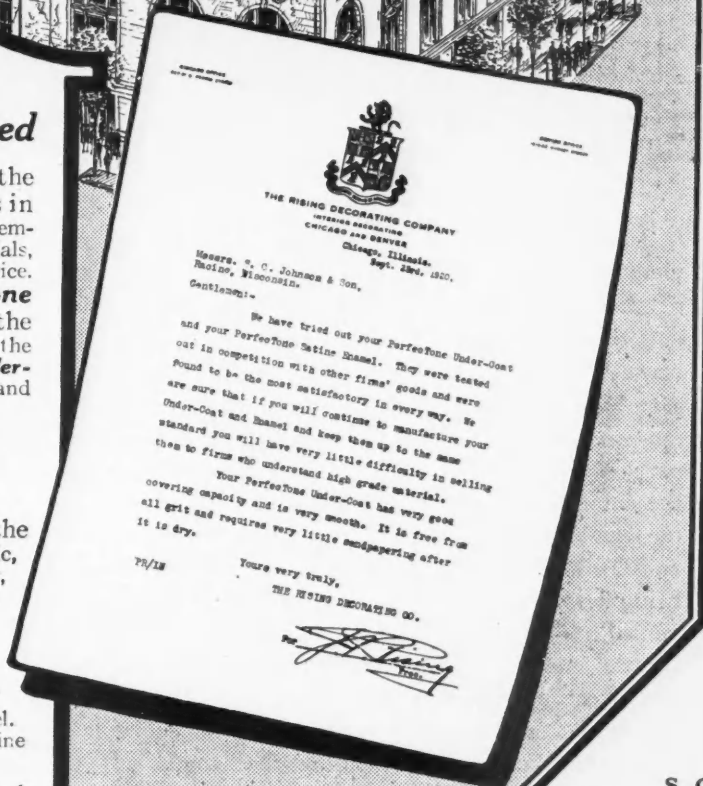
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a general rule—that is, it does not apply to the intersecting of different pitches. It is not the run of the hip or valley that should be taken direct on the square, but it is the tangent to a circle whose radius equals the length of the run. In other words, it is a line at right angles from the run out to a continued line of the plate, as shown in

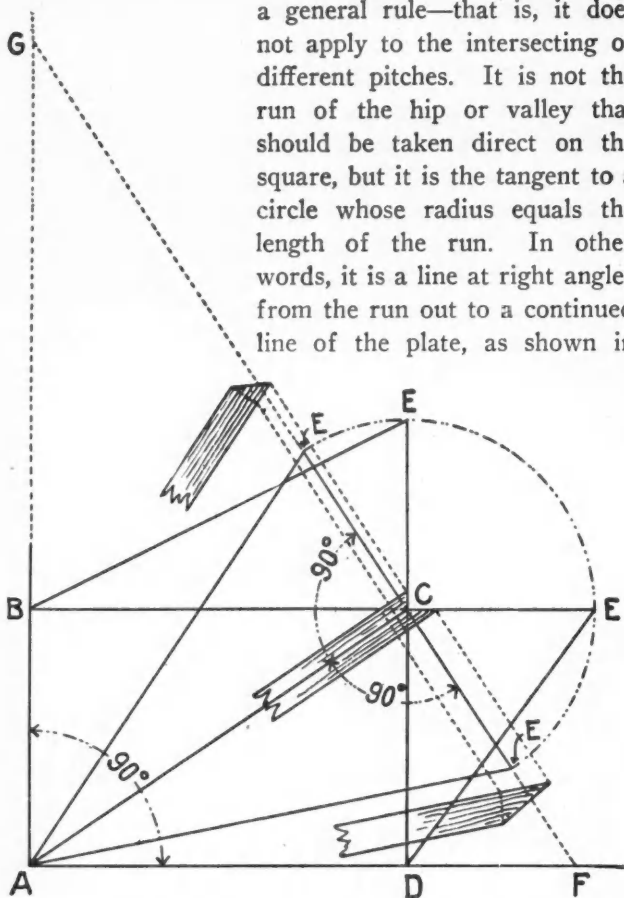


Fig. 3. Same Parts in Fig. 2 Drawn to Scale.

plan at Fig. 1. Here A B represents the run of the valley and B C the tangent on either side, and these lines are of equal length to the run, because the gable and the main roof are of the same pitch. But see the difference in the length of the tangents for the one-half and one-fourth pitch in comparison with their runs. A D represents the run or the intersecting line where the valley must rest for the one-half pitch gable. D E represents the tangent and D F the co-tangent. That for the one-fourth pitch being less than the main roof, the tangents are reversed. Therefore, to find the side cut of the valley for the one-fourth pitch it would be its length as at A G (see elevation of Fig. 1) and the tangent G I taken to a scale on the square and the cut will be found on the side representing the length. If the ridge runs the other way, then the co-tangent G H (which is a continuation out to the intersection of the line A C) should be used instead of the tangent G I. Proceed in like manner for any other pitch. Perhaps we can explain this more clearly by illustrating the angles in the cube, as shown in Fig. 2.

For convenience we will take a hip with a run on one side of 12 feet as B C, and 8 feet on the other, as C D and with rise equal to C E. Then A C represents the run of the hip and A E its length, B C the run of the common rafter for the long side and B E its length. On the other side, C D represents the run of the common rafter for the short side and D E its

length. The tangents for the hip are represented by C F and C G. The tangents for the common rafter are represented by A D for the short side and A B for the long side. In other words, the common rafters simply swap runs. Now for the cuts. It is taken for granted that it is understood the individual run and rise of the rafters will give the seat and plumb cuts and needs no further explanation.

The side cut of the jack for the short side would be to the proportion of A D and D E taken on the square and the cut would be found along the side representing the length. For the other side it would be to the proportion of A B and B E taken on the square. The cut would be found along the side representing the length. For the side cut of the hip, it would be C G and A E on the square, provided the ridge rests in line with the short common rafter. On the other hand, if the ridge rests in line with the long common rafter, then the proportion C F and A E should be taken on the square. The cut in either case would be along the side containing A E. This illustration is given more to show the true positions of the rafters, but being drawn in perspective, their parts to scale are lost.

However, in Fig. 3 are shown these same parts to scale in a plan diagram. Like letters are used to represent the same parts. Compare them and see their relation to one another. We have also shown in the latter figure by a simple diagram method what would be the actual side cuts of the hip to fit against the ridge running either way.

Figure 4 is a diagram for an even pitch roof. Therefore the runs of the common rafter on both sides are of equal length; consequently the tangents are of equal length. Like letters are again used to represent like parts as in the two last illustrations.

In case of the one-half pitch, the rise would equal the run and the angles would all be right angle triangles

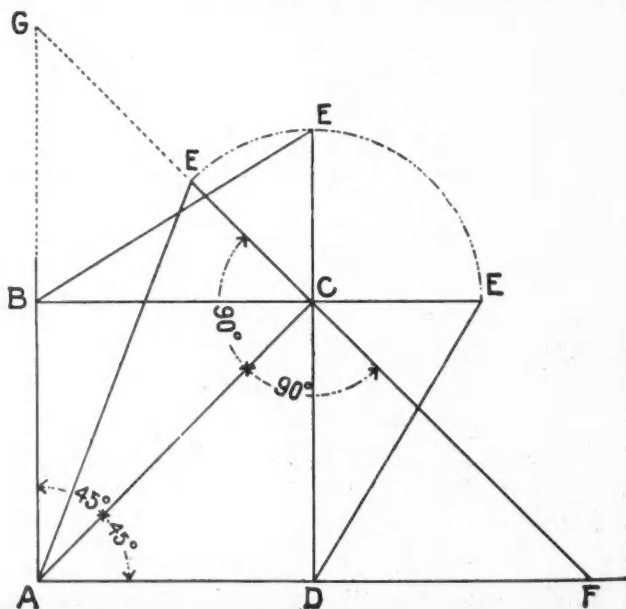
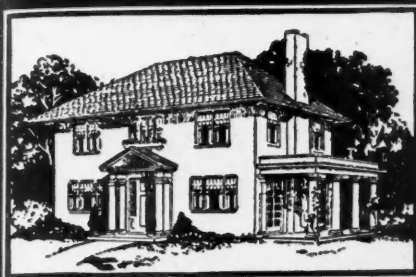


Fig. 4. Diagram of Even Pitch Roof. The Runs of the Common Rafter on Both Sides Are of Equal Length.



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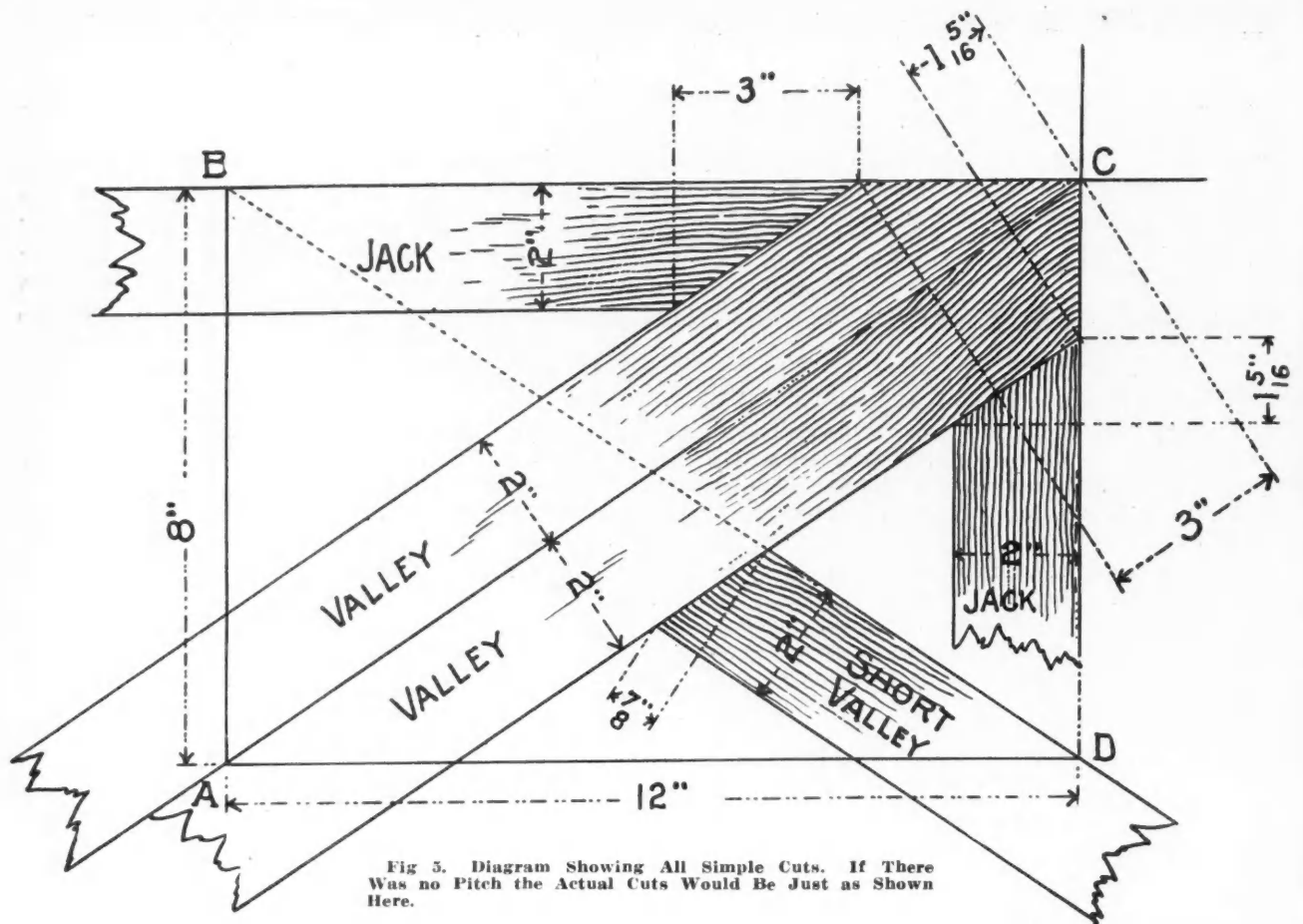


Fig 5. Diagram Showing All Simple Cuts. If There Was no Pitch the Actual Cuts Would Be Just as Shown Here.

of the same size, with the exception of the one representing the hip, which is bounded by A C E.

In the foregoing we have tried to make it clear what establishes the parts to take on the steel square to obtain the cuts, i. e., get back at the beginning, the foundation, as it were, upon which to base the proper proportions and we hope we have in a measure succeeded.

That there are simpler ways of arriving at the same results, we do not question. If the operator does not care to enter into the cause and effect of the problem, then here is one, as shown in Fig. 5, taking the same example as shown in Fig. 3. Here is a simple diagram containing all of the side cuts that are described in the above illustration, as follows:

The runs of the common rafters being 12 and 8 feet, lay off a parallelogram 12 by 8 inches, and in this lay off the full thickness of the rafters, as shown. Lay off the valleys first and then the jacks. Next square out as shown by the dotted lines, from the intersecting points. The rafters are supposed to be two inches thick and the distance between the above mentioned lines will be as shown in figures, and will be the amount to measure "square back" from the plumb cut on the long side. Carry the lines around the rafter and cut diagonally across the back from one plumb line to the other, and the side cut is obtained regardless of the pitch given the roof. The plumb cut being governed by the individual run and rise of the

rafter, and by measuring back, as above described, regulates the proper points at the edge of the rafter for the angle across the back to form the side cut. If there was no pitch at all, then the actual cuts would be just as shown in the diagram. The above amounts to set back would be from the common square cut.

We trust the readers will not confound this last illustration with any so-called "A B C" system, for it belongs to the "P. D. Q." class.

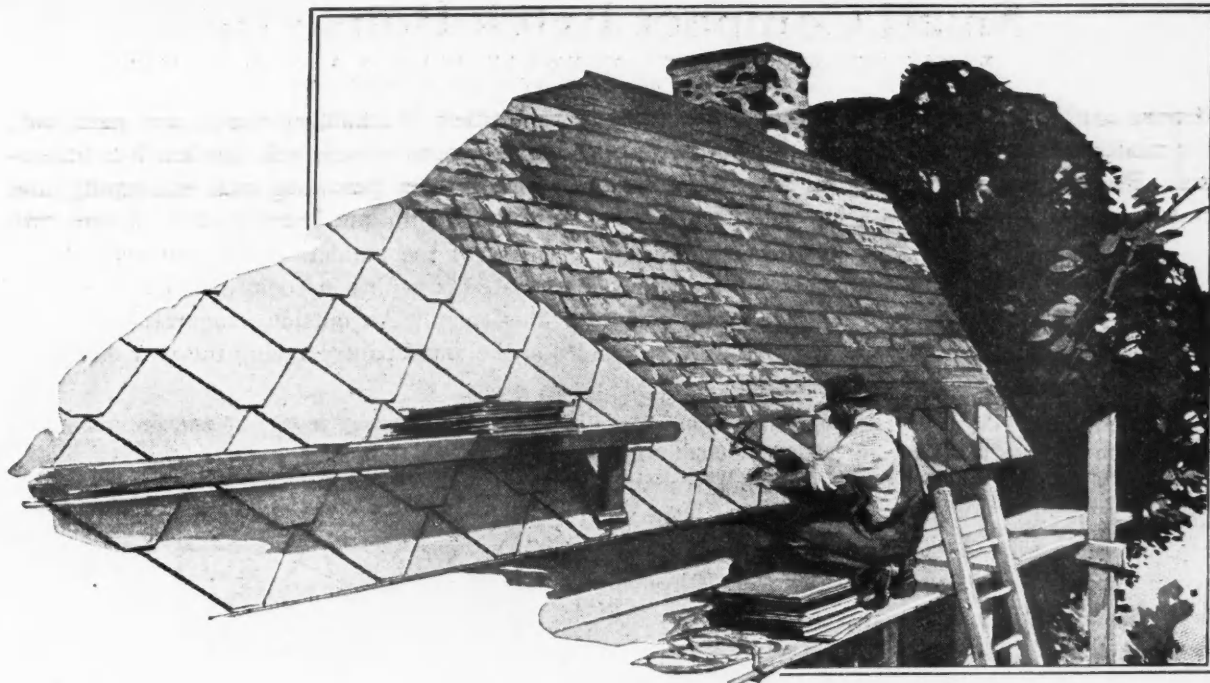


Fire Prevention Week

FFIFTY years ago October 9 Mrs. O'Leary's cow kicked over the lamp that within two days laid Chicago in a mass of ruins. Since that time Baltimore, San Francisco, Salem, and several other large cities have been devastated by fire.

In an effort to awaken the public conscience to the danger of this terrible menace and to the terrific losses each year, the week of October 9-16 has been designated as Fire Prevention Week. Each day in that week calls for some definite program by which fire can be successfully combated and prevented.

Every builder should make it his solemn duty to aid this program. His work is really at stake. Inflammable houses are the product of inferior workmanship. More thought, more care, better materials and better construction will be effective aids in this battle against the apocalyptic demon which consumes thousands of homes and blights thousands of lives yearly.



Are you making enough on re-roofing?

YOU can quote and get the job at a price that will give you a good profit when you figure on using Johns-Manville Asbestos Shingles laid *right over the old wooden shingles*.

Re-roofing this way is profitable and easy for you because it cuts out that tiresome, dirty, time-consuming job of ripping off old shingles and pulling the rusty nails. Moreover, the house owner won't be continually kicking about dirt and litter in his attic or on his lawn.

A better job, too

Besides being profitable and easy to lay, Johns-Manville Asbestos Shingles make a splendid job, even when laid over old wooden shingles that look almost hopeless.

Moreover, the old shingles act as insulation and help keep the upper rooms warm in winter and cool in summer.

Johns-Manville Asbestos Shingles come in two shapes and several colors. They can be laid by the Hexagonal or American methods. Of course they're fire-safe—and absolutely weatherproof. Once laid, they should last longer than the house they cover.

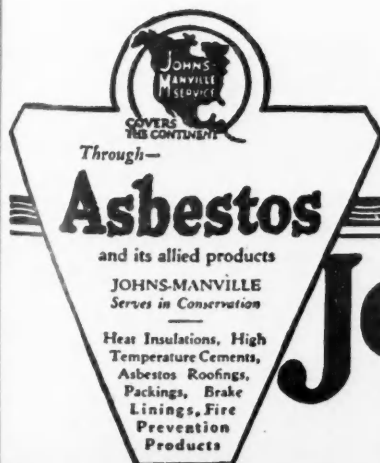
Get in touch with the nearest Johns-Manville branch today. They can show you sample roofs which they have covered with Johns-Manville Asbestos Shingles over the old wooden shingles. Or write direct to the main office for the booklet—"Re-roofing for the last time."

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MODEST DWELLING IS QUITE ATTRACTIVE AND HAS A WELL ARRANGED INTERIOR OF FIVE COMFORTABLE ROOMS

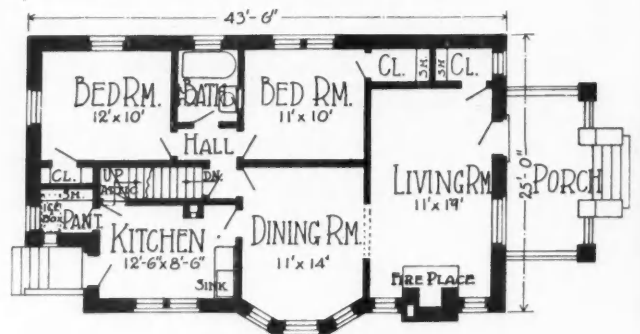
"PARLOR, bedroom and bath" typifies in a way the tendency in modern construction during the past five years. People are now going in for smaller, more compact homes which reduce unnecessary work and solve the servant question. But perhaps the most important cause is the reduction in building costs. The family of average means requires a modest, well-appearing home that is durable, and reasonable in cost.

This design should prove satisfactory because it has a solidity of character, a certain charm in outward appearance and definite room arrangement that make it ideal for the average family. It is of solid brick construction, and has a broad inviting front porch with concrete approach. The gable roof has been modified to make it just a little different by beveling the peak.

An artistically designed front door with glass panels opens from the porch into the living room which is quite comfortable and of generous size, 11 by 19 feet. At the side is an open brick fireplace of the old-fashioned type which burns. It is flanked by two small windows which supplement the large window facing the porch, and provide this room with plenty of sunshine. At the far end of the room opposite the fireplace is a small closet for hanging heavy and outdoor wearing apparel, umbrellas, etc.

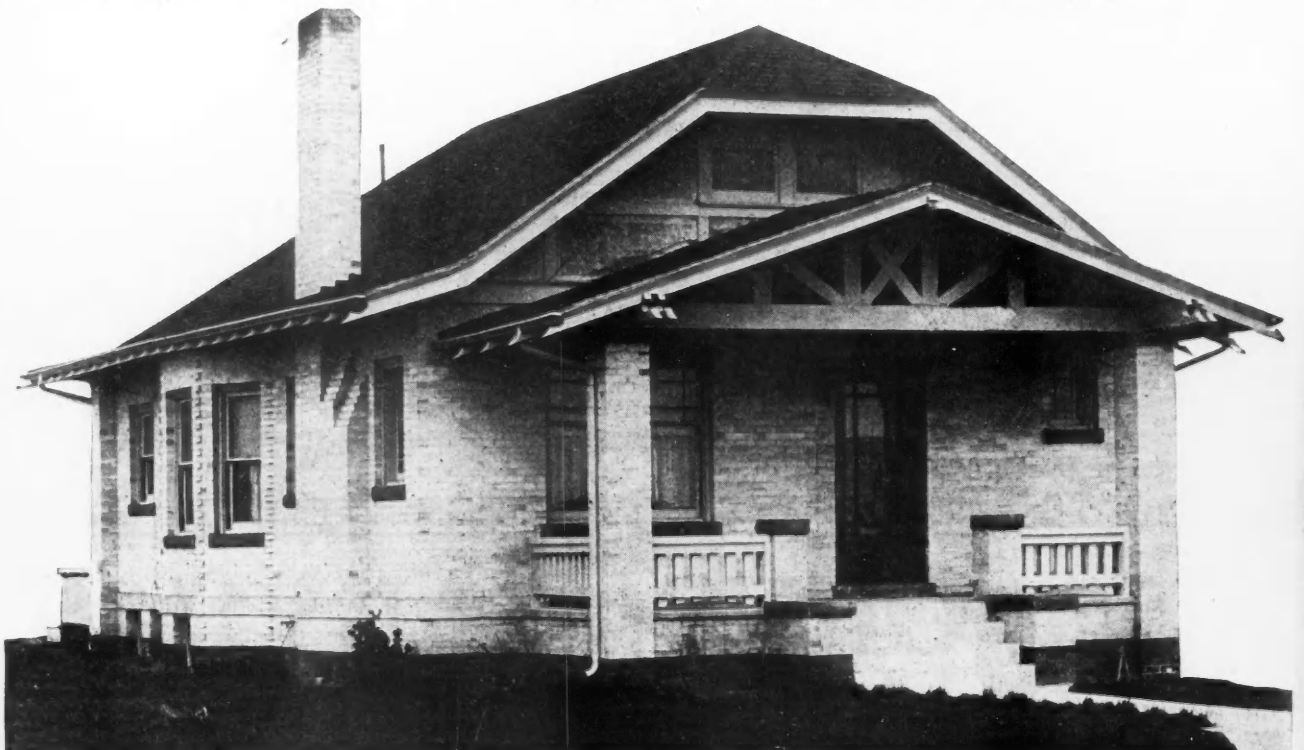
An open doorway leads the way to the dining room, 11 by 14 feet, which includes a spacious bay with three windows. This room is very conveniently situated with regard to the kitchen which is directly to

the rear. The kitchen is small, compact, and equipped with many conveniences which will lighten the housewife's task. The proper planning and equipping the kitchen in the new home has become one of the real tasks of the builder and he can very clearly demonstrate his genius in construction by the way he plans this room. An outside icing refrigerator is installed in the small pantry facing the rear entry.



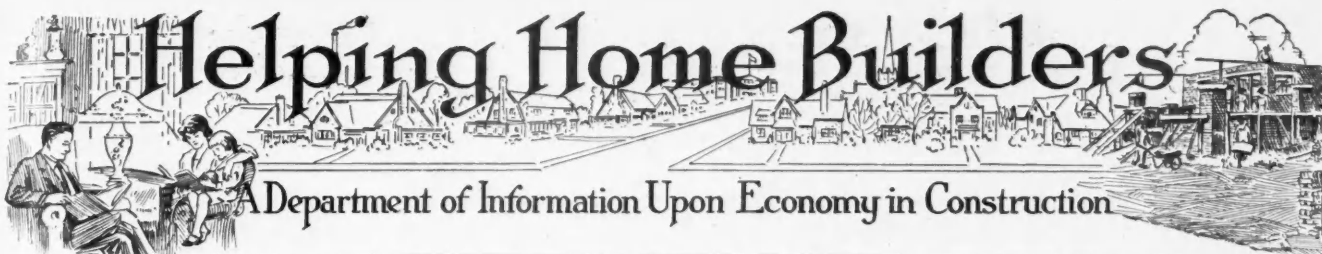
FIRST FLOOR PLAN
Floor Plan of Brick Bungalow.

Just beyond the door opening into the kitchen from the dining room is another door opening into a hall which leads to the bedrooms and bath snugly grouped in the corner of the house away from the distraction of the other rooms. There are two bedrooms, 11 by 10 and 12 by 10 feet, the rear bedroom having windows on side and rear and the side bedroom being lighted by a large double window. The house is 25 feet wide and 43 feet 6 inches long. There is a small attic which can be used for storage space.



Modest Brick Dwelling of Compact and Economical Design Which Will Appeal to Many Small Families of Average Means Who Are Planning on a Home of Their Own for Next Year. The Walls Are Solid, and the House Has Five Delightfully Arranged Rooms.

1921
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Helping Home Builders

A Department of Information Upon Economy in Construction

1st Year

October 1921

Ralph P. Stoddard, Editor

"Life's Darn Funny"



MEDITATED Pat as he laid a brick on edge in an *All-Robk* Brick Wall. "Here I've been laying brick for nigh unto 30 years—thinking they *had* to be laid flat. Now, begorra, I'm after laying them *on their edges*."

"That's the way we're building business for us all" said the contractor-builder coming up and slapping Pat on the shoulder, good naturedly. "We're putting up walls this way which are even now 25 times as strong as they need be for a two-story house and we're using a third less brick in these 8-inch walls. Then, too, you're laying almost as many brick a day as you did in the old way. So you see, Pat, the wall is going up pretty fast—much faster than ordinarily and it requires no furring. We'll cut a third off the total cost of these walls as compared with solid brick walls.

"We're lowering the cost of brickwork so that there'll be lots more of it done," concluded the builder. "We're giving people fire-resistive brick construction at a cost less than for any other type—less even than frame."

As the builder finished speaking Pat looked him squarely in the eye, "I be-

lieve you're after speaking the truth and I'm for it," and Pat *shoved* that he was by the way he speeded up.

Ideal Wall Construction

The Richards Brick Co., Edwardsville, Ill., makes the following report on the cost of laying Ideal Walls in a 6 room brick bungalow 32 feet by 30 feet exclusive of front and rear porches; the first Ideal Wall house built in that district. House built in spring of 1921. Bricklayers were unfamiliar with Ideal construction.

Exterior basement walls to grade—solid walls.

Interior basement partitions—8-inch Ideal *All-Robk* Walls. (These were badly cut up by openings and corners.)

Walls above grade—8-inch Ideal *Robk-Bak* Walls faced with face brick.

Number of face brick used	15,200
Number of common brick used	26,000
Total brick used on job	41,200

Total bricklayers' time	260 hours
Total laborers' time	240 hours

Average number of brick laid by each mason per 8-hr. day on entire job, 1,268

This includes chimneys, piers, porch walls and all brickwork.

With bricklayers' wages \$1.25 per hour, laborers' \$.85 per hour, total cost of masonry labor on entire house are \$529.00 or \$12.84 per thousand brick.

Here's a Cheap Helper



It's a 72-page hand book called "*Brick, How to Build and Estimate*." New, revised, enlarged, third edition. Fully describes and illustrates the Ideal Hollow Brick Wall, with detail working drawings and tables for estimating quantities. The third edition is full of new material, including data on tests of brickwork, thirty estimating tables, nine full page detail drawings. Scores of illustrations.

It's the most helpful and practical book on brickwork ever written. Send 25 cents to the Common Brick Manufacturers Association, 1306 Schofield Building, Cleveland, Ohio and get your copy. If you don't consider it worth the price they will gladly return your money.

A Business Getter



There's a book called "*Brick For the Average Man's Home*" which shows 35 attractive small house designs which will help you secure more business. For all of these complete working drawings can be had at small cost. Bungalows, 1½-stories, 2-families, cottages, 2-stories, garages. Five competent architects designed these houses. This book is mailed postpaid for \$1.



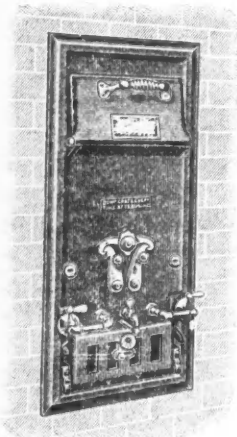
Note the sturdy construction of the Ideal All-Robk Brick Wall, with its 2½ inch webs and ventilated air space



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.

Garbage Incinerator

PROMINENT among the late built-in features for modern homes is the garbage incinerator, one type of which is shown in the illustration.



Built-in Garbage Incinerator Installed in Wall of House.

This incinerator is built in two styles—the portable and the built-in. The portable type is for homes and buildings already built. It is preferably installed in the kitchen near or next the gas range and convenient to the chimney. It can be connected to the range flue without decreasing or interfering with the efficiency of the flue.

In the case of the built-in type which is illustrated, it is installed at the points where the waste originates, or approximately so. As the waste accumulates it can be deposited in this incinerator, the gas lighted, and the garbage or waste burned up. This burning process is done without odor.

This device burns either manufactured, natural or gasoline gas.

The built-in type is especially adapted for small space-saving apartments or in larger sizes for institutions.

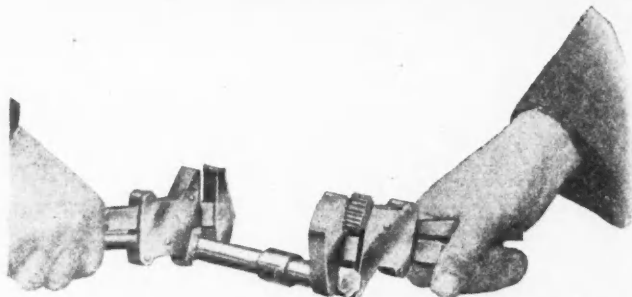
New Self-Gripping Wrench

THE distinctive feature of the wrench shown in the illustration is the divided handle, a slight pressure on which immediately locks the jaws wherever they may be set and holds them firmly as long as pressure is applied. When the grip is released the jaws are unlocked for a new setting.

The picture shows a series of teeth cut in the jaw half of the handle and a similar series cut on the movable portion.

The speed with which this can be handled recommends it to mechanics and builders who are constantly using a wrench of some kind.

The wrench is of heavy construction with the inner pipe jaw pivoted for secure holding and easy release of pipe or rod. The grip is strong enough so that full force can be applied to turn in either



New Gripping Wrench. Pressure on the Divided Handle Provides Gripping Power on Either Half of the Jaw.

direction without reversing the wrench.

Cement Saved By Mechanical Tamping

ONE of the latest developments in road-making is a mechanical tamper shown in the accompanying illustration.

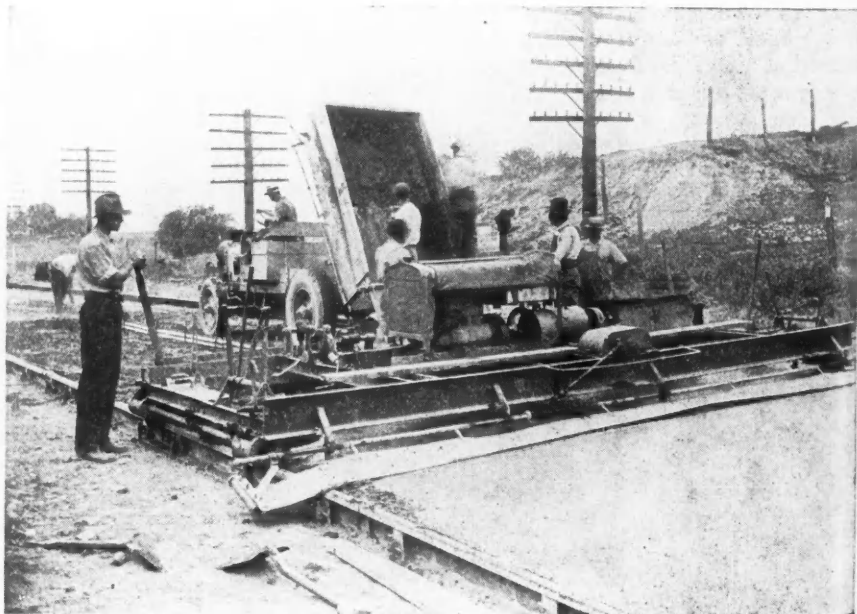
The paving specifications of Lucas County, Ohio, show the difference between hand-tamped cement and machine-tamped cement. A saving of one-quarter of a barrel of cement to each yard of concrete is allowed by Lucas County, Ohio, if machine tamping is used instead of hand. The following two paragraphs are taken from their book of specifications:

"The proportions used, unless otherwise shown on the detail plans, shall be by volume approximately one (1) part of cement, one and one-half (1½) parts of sand, and three (3) parts stone. Concrete of the above-mentioned proportions shall in no case contain less than 1.85 barrels of cement to the cubic yard.

"When machine finishing concrete is employed these proportions may be changed to approximately 1-2-3½, and in this case a cubic yard of concrete shall contain not less than 1.6 barrels of cement."

This photograph shows a truck delivering concrete after a haul of four miles from a central mixing plant. Notice how it is necessary to use a pick to clean out the truck, yet this double tamping bar eccentric drive machine hammered the concrete into a solid road with a perfect finish.

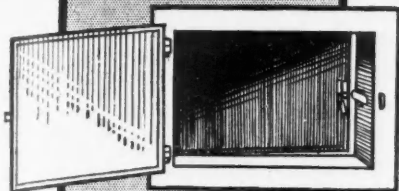
WE invite each reader of the AMERICAN BUILDER to send us a photo and brief description of his most interesting building job of this year.—EDITOR.



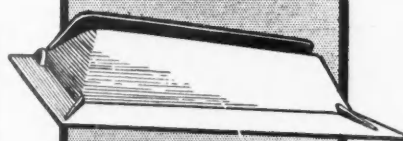
Cement Tamping Machine in Action. The Truck Has Just Brought Up Mixed Concrete from a Central Plant Four Miles Away.

DONLEY DEVICES

Modernize the Home



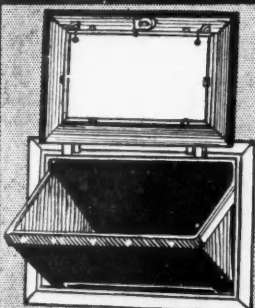
Package Receiver



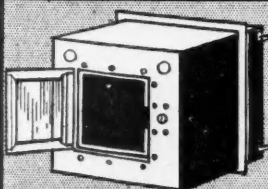
Fireplace Damper



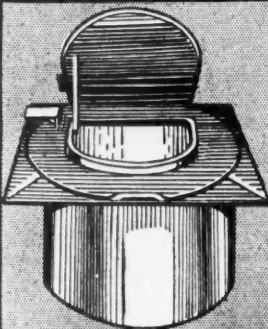
Ash Dumps



Coal Chute



Meter Box



Garbage Receiver



"No! It Isn't Modern"

"MAYBE the house was finished only last week, but it was ten years behind the times as soon as it was built," says the Lady-hunting-a-home.

Where is the Package Receiver? Do you expect me to stay cooped up all day waiting for some delivery boy, or to let him leave the meat and groceries on the doorstep? Must we get up in the night to welcome the milkman?

And that little toy fireplace! It would smoke if you threw a lighted match into it. There is no damper; no way to shut off the soot of the chimney nor the dust of the ashpit. You have an old fashioned coal window and I insist on a Donley Coal Chute. It needs an electric meter box and a Garbage Receiver. In fact, I won't consider a house that does not include all the Donley Devices. It's time for investment builders to learn that the housewife's convenience is the first consideration in every new home."

USE ALL THE DONLEY DEVICES

Donley Dampers mean warm, clean, economical, open fires.

Donley Coal Chutes take the place of marred, unsightly coal windows.

Donley Ash-Dumps keep the dust and odors of the ash-pit out of the house.

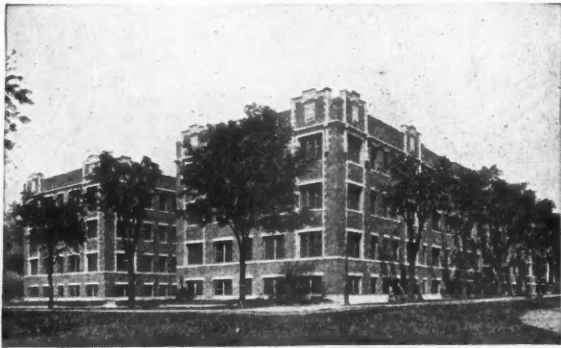
Donley Package Receivers meet the delivery man and hold his packages safe whether you are there or not.

Donley Meter Boxes let the electric meter man do his work outside, without intruding. They rob imposters of a common pretext for gaining entrance.

Donley Garbage Receivers do away with the old inconvenient, unsightly garbage can. They are hidden from view and opened with foot lever.

Send for catalog of these and many other useful Building Specialties.

The **DONLEY BROTHERS** Co.
BUILDING SPECIALTIES  **7400 AETNARD CLEVELAND**



Van Antwerp & McElroy, Architects

Doric and Gothic Stippled Brick

A BEAUTIFUL brick finish is an important element in the renting or selling of property. Tenants and home owners are alike in wanting an unusual and distinctive exterior that every one will admire.

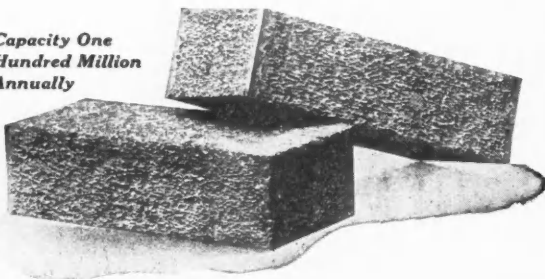
Stippled Brick has a very pleasing texture obtained by stippling the faces with small incisions, which roughen the surface just enough to diffuse light and eliminate glare without calling attention unduly to the roughness.

The six tones of buffs and tans offered in Doric Stippled Brick, and the five tones of reds and browns of Gothic Stippled Brick give you a wide selection of exceptionally delightful colors for carrying out your conceptions.

Write for our booklet "Doric and Gothic Stippled Brick." Address Dept. 510.

**WESTERN BRICK
COMPANY** DANVILLE,
ILLINOIS

Capacity One
Hundred Million
Annually

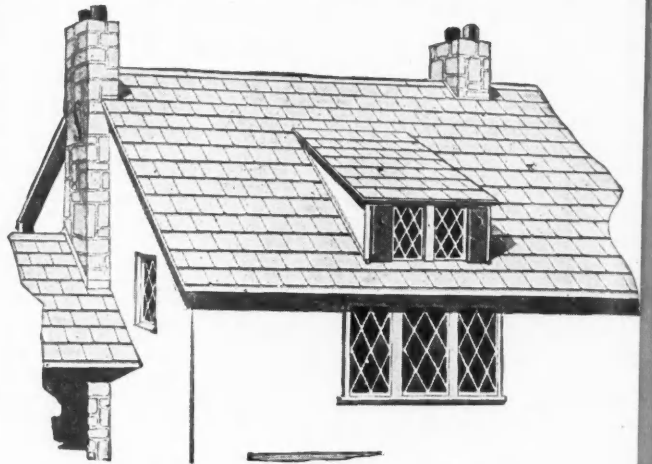


New Zinc Shingle

BEING a non-ferrous metal, zinc does not rust. That is one reason why it has always been the logical material for roofing purposes but only recently has it been manufactured in a form that renders it practicable, namely, the zinc shingle.

For a century or more, zinc has been used for roofing in Europe. The new shingle which is now on the market is pre-oxidized and made in such form that it is possible to build a butt shingled roof like that of wooden shingles. The oxidation process gives a distinct color shade that makes the roof very attractive. In case this natural gray is not desired these shingles can be painted any color.

The exposed part of the shingle is not stamped but is plain with simple square edge. It is built to overlap with $7\frac{1}{2}$ inches exposed to the weather. When assembled each shingle interlocks with the next one in a manner that allows for expansion



Roof of Zinc Shingles of New Design. These Shingles Are Applied Like Other Butt Shingles.

and contraction of the metal. No nails are exposed.

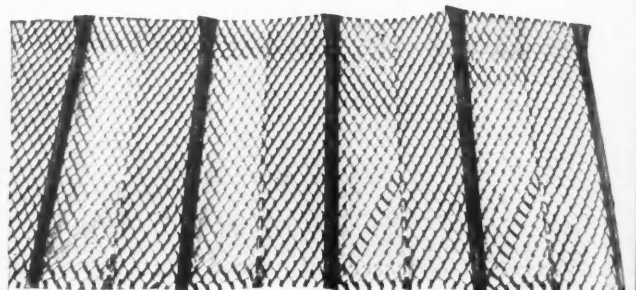
In order to prevent sweating of the roof each shingle is designed to form a ventilating space between it and the roof board on which it is laid. Starting pieces of zinc, valleys, and ridges are made to use on this roofing.



New Diamond Mesh Metal Lath

THE important feature of the new metal lath shown in the accompanying illustration is the diamond mesh which has been found very strong and effective for applying stucco or plaster. This lath is stiffened by cold drawn U-shaped ribs 4.8 inches on centers and about $\frac{3}{8}$ inch in height. These ribs give an extra strength which allows a wider spacing of supports. It is made in sheets 24 inches in width and 8 feet in length.

It is designed especially for use in suspended ceilings or walls and in connection with steel tile and steel lumber floor construction.



New Diamond Mesh Metal Lath with Reinforcing Steel Ribs.

ROCBOND

Exterior Stucco

Then He Took On Rocbond—

Rocbond might well be called the "pinch hitter" among stuccos, judging from the way it is resorted to when unusual situations come up.

If exceptional uses develop, Rocbond is pretty certain to be recommended, or if a stucco experience has proven unsatisfactory Rocbond is likely to be turned to as a saving expediency.

Every industry has at least one line that can be depended upon to meet the—out of the ordinary—requirements and tote the peak loads. Rocbond is fulfilling this mission.

"Rocbond First" is a "safety" measure for your stucco guidance—a powerful restorer of stucco confidence and prestige where a less wise choice has been made.

Dealers are finding Rocbond sales exceptionally active—because Builders are finding Rocbond stucco exceptionally good. If your community is not already represented, a card will bring particulars—mail it today.



The Rocbond Co.

533 Home Guard Building, Van Wert, Ohio
Van Wert, Ohio Plants Cedar Rapids, Iowa

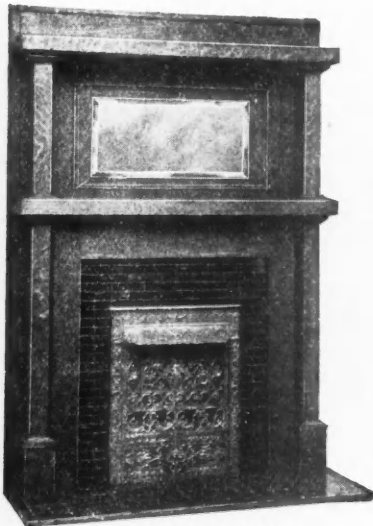


They Can't Last Long

Mantels, Grates and Fireplace Trimmings at Special Prices

Here is an unusual offer on our extensive line of mantels and fireplace goods. There are only a few pieces remaining in each number. That is why we are closing them out. The offer is open just as long as the stock lasts. At the prices we have made, this won't be long.

The Two Mantels Shown Here



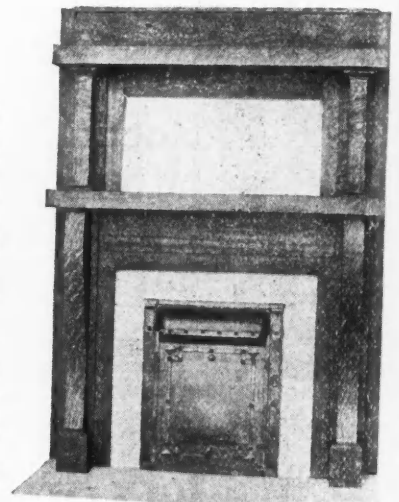
Mantel No. 2035—\$20.00

No. 2035 is a splendid value at its regular price of \$60.00. It is an exceptional value in this sale. A handsome mantel, appropriate for any room in the house. Furnished in birch only with genuine mahogany trim. Height, 7 ft. Width 4 ft., 7 in., to 5 ft. Tile opening, 36 in. wide by 39 in. high. Projection, 3 in. Columns, 3 1/4 in. Mirror 16 in. by 28 in.

Mantel only, including mirror (no tile or grate).....\$20.00
 Enamel Tile, for this mantel, per set..... 13.50
 Grate. See details of our offer of grates below.

No. 2034 has been one of our most popular mantels. It has a dignified, yet warm and friendly appearance. Just ornamental enough to look well in any room. Furnished in imitation mahogany only. Height 7 ft. Width, 5 ft. Tile opening, 42 in. wide by 39 in. high. Projection, 3 3/4 in. Columns and Pilasters, 3 1/2 in. Mirror, 18 in. by 36 in.

Mantel only, including mirror (no tile or grate).....\$25.00
 Enamel Tile, for this mantel, per set..... 13.50
 Grate. See details below of our offer on grates.



Mantel No. 2034—\$25.00

Other Mantels

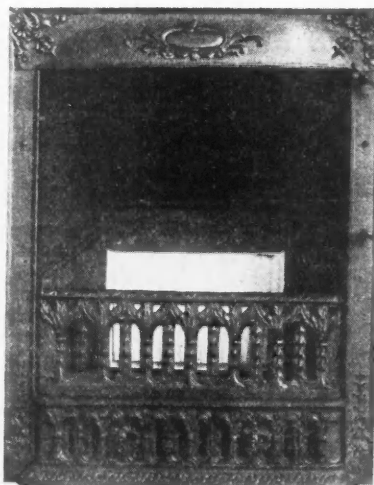
We are offering two other mantel patterns besides the two described above. They are Nos. 2036 and 2037. No. 2036 is ornate but not fancy. Columns extend full length. Most suitable in a good sized room. Made in Birch only, mahogany finish. Has French beveled plate mirror, 16 in. by 26 in.

No. 2037. A substantial mantel with a somewhat simple pattern. Columns extend only to shelf and may be had in round or square style. Made in birch only, mahogany gloss finish. Has French plate glass mirror, 18 in. by 36 in., extending to shelf and beveled on three sides.

We will gladly send illustration and prices of these two mantels together with other information on this special offer. A postal card request for details is sufficient.

Grates

"Favorite" Grate, No. 40, is shown below. It is built in one piece and is complete with frame, summer front, basket, ash screen, fire tile back, and iron lining and damper. Damper permits of perfect control of fire. Suitable for burning hard or soft coal, coke, or wood.



"Favorite" Grate No. 40

"Favorite" Grate, No. 40: Width, 24 1/2 in. Height, 30 1/4 in. Basket, 20 in.\$20.00

Many other grates are included in this offer. It will pay you to write for particulars concerning them.

TILE HEADQUARTERS

The Hornet Mantel Company is headquarters for tile of all kinds. Every block of Hornet Tiling is made in accordance with exact standards and strict tests. Quality is paramount, and satisfaction is guaranteed. Write for our Catalog No. 7 which contains many interesting designs and suggestions in art and building tiles.

HORNET

1126 Market Street, St. L.

At These Low Prices

Attractive Prices on Attractive Fireplace Needs

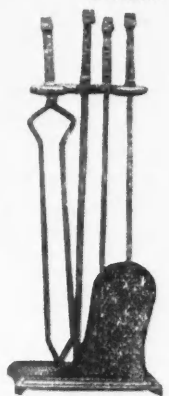
Included in this special offer is a number of desirable grates and fireplace trimmings which make admirable companion pieces for mantels and open hearths.



Basket Grate No. 1504

Basket Grates

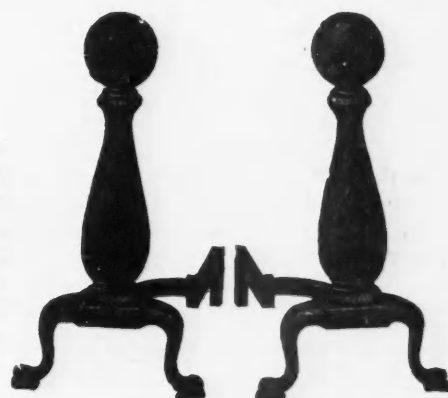
Although only one basket grate can be shown here—No. 1504—a number of others may be obtained at equally low prices. No. 1504 holds either wood or coal. It can be obtained in seven fronts from 18 inches to 36 inches in length. The prices range from \$8.00 for the 18-inch grate to \$12.00 for the 36-inch size. There are seven other wood or coal basket grates in this line, two wood basket grates, and two wood holders—all specially priced.



Fire Set No. 832

Andirons

Twenty-four different types of andiron sets have been reduced in price for this sale. They include Black Bungalow Andirons, hammered effect, Dull Black Andirons, and Brass Andirons. And they range in price from \$3.00 to \$26.50. The set shown here is No. 1919—Black finish. Stands 18½ inches high. Some idea of the remarkable values to be obtained in this collection of andirons may be gained from the price of this set, only \$6.50.

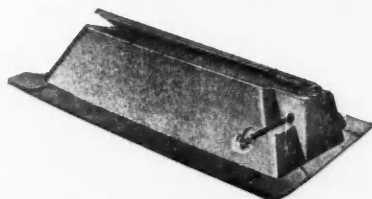


Andiron Set No. 1919

Fire Sets

Of the eight fire sets in this offer, four have an all black finish and four have polished finishes on the tools and base with cast brass handles and arms. Prices are from \$7.00 to \$20.00. No. 832, a three-piece set with stand, is shown. It is 25 inches high. Price \$6.00.

Miscellaneous Trimmings



Dome Damper No. 17

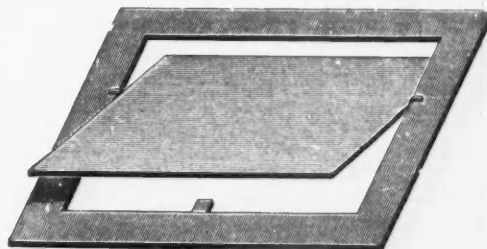
We are showing here three necessary pieces of fireplace equipment. We have a number of others besides those illustrated on which we can quote very low prices.

Dome Damper No. 17. Improved dome damper with sloping top, splayed ends, and solid door. Operated by rod which terminates in brass handle on face of fireplace. Damper rod can easily be adjusted after installation so as to indicate opening of door. Door is removable, giving easy access to the flue for purposes of cleaning. Made in ten sizes. Priced from \$6.75 to \$14.85.

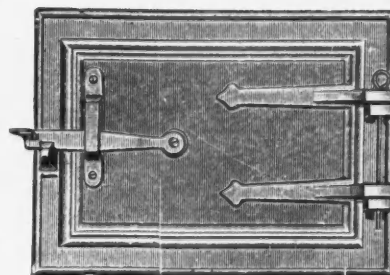
Ash Trap. Made in two sizes: 7x9, 50c; 9x11, 75c.

Ash Pit Hinged Door. Made in five sizes: 12x8, \$2.50; 12x10, \$2.75; 12x12, \$3.00; 16x12, \$3.35; 12x14, \$4.95.

At the time of publication of this advertisement the stock listed is complete but not abundant. If you want to take advantage of the offer, we urge you earnestly not to delay. The illustrations shown here are representative of each line included in the price reduction which we are making. We will gladly answer all inquiries regarding all the goods listed above. A postal card request for details will be sufficient to bring you complete information on the whole offer.



Ash Trap

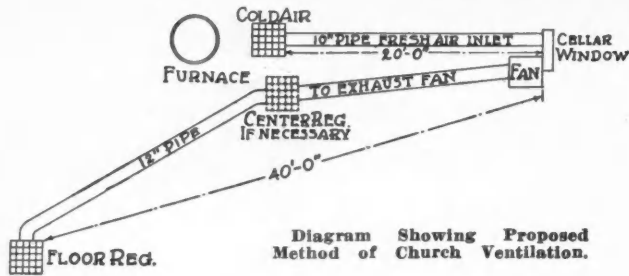


Ash Pit Hinged Door

E. MANTEL CO.

St. Louis, Missouri

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Problem in Ventilation

To the Editor: Pella, Iowa.
 I would like to get some information about ventilating a church in which the circulation is poor. It is heated by a hot air furnace. In cold weather people in the rear of the church and under the gallery are cold, while those in the center of the church are too warm; in the summer time, if you are seated in the center, it becomes so close it is uncomfortable. Can you give me any information on forced ventilation? Would an idea such as the following be of any benefit? In one of the basement windows, construct a box in which you could place an exhaust fan, 24 inches in diameter and connect it by a 12-inch pipe running to the rear of the church and place a floor register there to draw out the foul air.

Then in cold weather, when the furnace is going, it would draw the heat toward the rear of the building. Also from this same window, run a pipe, say 10 inches in diameter, but in no way connected with the other pipe that has the fan in it, to the cold air supply of the furnace for a fresh air inlet.

HERMAN A. VEENSTRA.

Indorses Williams' Method

To the Editor: September 18, 1921.
 Enclosed find copy of letter to Mr. Williams, Pensacola, Fla., in answer to his question in the September issue:
 F. M. Williams,
 Pensacola, Fla.

Dear Sir: I read your letter in the AMERICAN BUILDER on the framing of a roof, and agree with you to a certain extent that most writers do not make their points plain enough for the average builder to understand.

I use the method explained by you to get the length and cuts of rafters and think it the most simple one to use.

To get the cuts for jack rafters there is also a simple rule:

The foot and the plumb cuts of jack rafters are the same as those of common rafters.

The side, or cheek-cut is made to fit the hip of valley rafters; to get this cut take the run of the common rafters on the tongue of the square and the length on the body of the square and make the cut along the body.

This method will work for any pitch.

With best wishes for your success and trusting that the above will prove useful, I remain,

Yours very truly,

W. A. Brown.



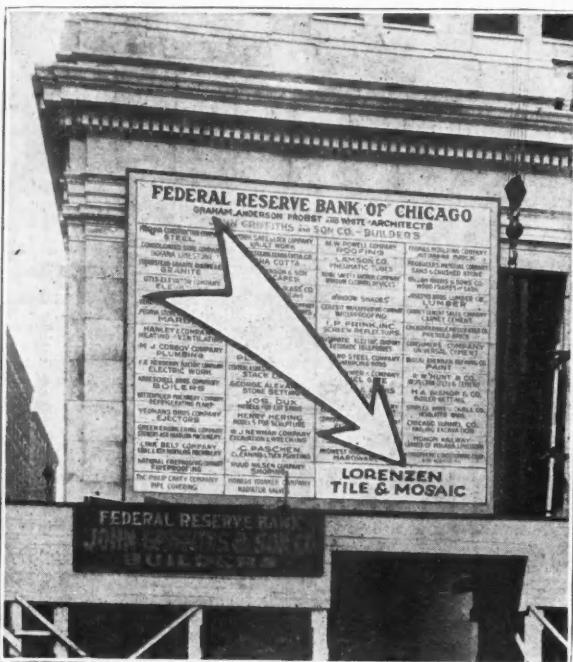
Nail Driving Problem

To the Editor: So. Duxbury, Mass.
 What would be the effect of boring a hole in spruce timber before driving in a round spike? Would it be an advantage, and if so, what size hole would you advise to bore for driving a spike 3/8 inches in diameter?
 GEO. JOSSELYN.

TILE & MOSAICS

Lorenzen Tile

Was Specified in this Super Bank Building



We can supply you with beautiful tiles and mosaics suitable for all types of buildings.

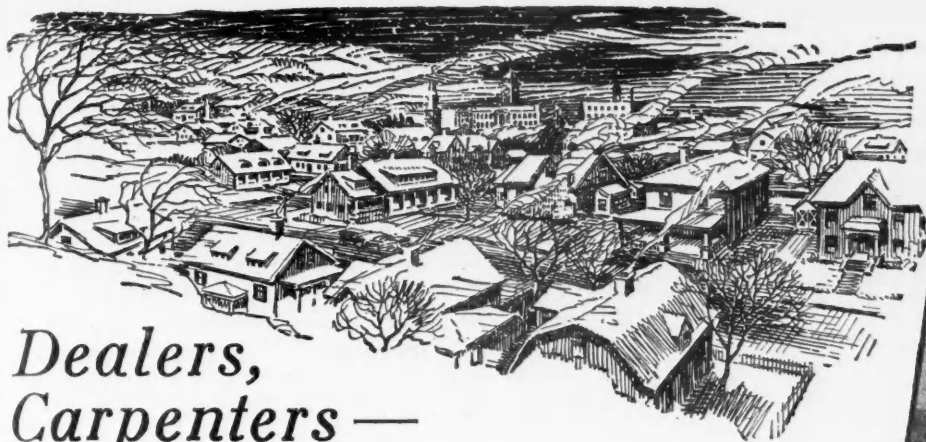
GLAZED and MATT FINISH wall tile in white or colors for **Bathrooms, Kitchens, Restaurants.**

DEEP RED QUARRIES and selected promenade tile for **Sun Porches, Terraces, Lunch Rooms, etc.**

Write for our **FREE** booklet "How to Set Tile"; also our bulletin No. 200. It illustrates the complete line of these materials.

Chas. F. Lorenzen & Co.
 525 West Monroe Street CHICAGO, ILL.

Make up your orders from our chart in the August issue of the American Builder.



Dealers,
Carpenters —

In Every Building There Is a Possible Sale of Weatherstrips

YOU CAN BE OUR DEALER IN YOUR TOWN AND MAKE MONEY SUPPLYING *Ceco* METAL WEATHERSTRIPS

Wherever there is a window or door there stands a possible sale for weatherstrips. In all kinds of buildings, large or small—in homes, stores, hotels, apartments, schools and other public buildings. Old buildings as well as new require them.

If you are wide awake, and are looking for a line that possesses great sales possibilities, one that you can cash in on right now, find out more about *Ceco* Metal Weatherstrips and our attractive dealer plan.

Get Our Proposition

Ceco Metal Weatherstrips like all *Ceco* Products for Permanent Building are identified by their high standing in the building field. They are quality products and carry our absolute guarantee.

Building supply dealers and responsible carpenters and contractors can obtain exclusive agencies for *Ceco* Metal Weatherstrips. We furnish models, advertising, movie slides, prices, estimating information and installation instructions. Easy to sell—easy to install. Write for further facts and our plan for dealers. Don't delay! Be the first in your town to line up this money-maker. Sign the coupon and slip it in the mail today! NOW!

Ceco

METAL WEATHERSTRIPS

"The 100% Efficient Weatherstrip"

CONCRETE ENGINEERING COMPANY

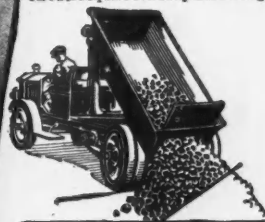
OMAHA

CHICAGO - DETROIT - OKLAHOMA CITY
KANSAS CITY - DES MOINES - MILWAUKEE

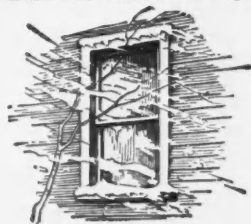


Cut Fuel
Cost 1/3

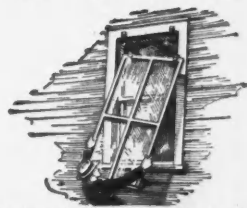
Ceco Metal Weatherstrips save one-third fuel costs. Fuel is expensive and scarce. There is this absolute saving of from twenty per cent to forty per cent on fuel required to keep a building



comfortable. Coal and wood for the winter is being purchased now. Now is the time to take advantage of fuel price and its effect on building owners and sell and install *Ceco* Metal Weatherstrips.



Ceco Metal Weatherstrips are unaffected by any weather conditions. They are self-adjustable. No matter how much the sash may shrink there is not a chance for cold, draft or dust to get through. Also rattle proof.



Ceco Metal Weatherstrips are far more effective than storm sash. Cold and draft come in around windows and doors, not through them. Effective all year. First cost is less than storm sash and there is no bother of placing and removing. For efficiency, simplicity and economy no other strips can equal *Ceco* Metal Weatherstrips.

AB10

CONCRETE ENGINEERING Co.,
General Offices,
OMAHA, NEBRASKA.

I am interested in your dealer proposition. Without obligation on my part, you may send me further facts, about *Ceco* Metal Weatherstrips

Name.....

Address.....

Town.....State.....

A Three Million Dollar Fire Wall

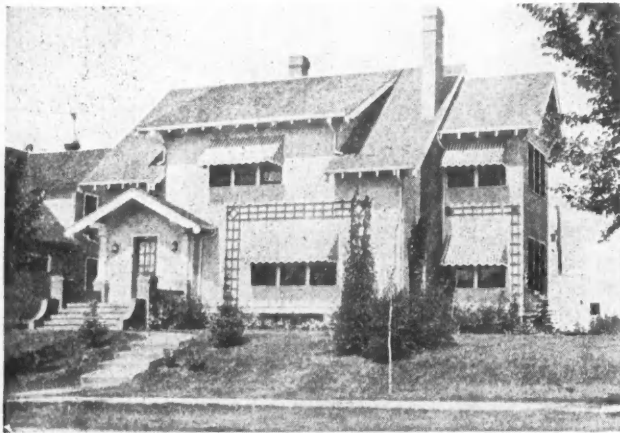
WHAT an insurance agent can do for the protection of his customers and his companies was shown by the recent fire in the tractor plant of the Moline Plow Company at Rock Island, Ill. A fire wall, erected as the result of the persistent urging of the agent who had the line, saved the insurance company over \$3,000,000 and prevented the complete destruction of the plant, with a consequent heavy loss to the owners thru the interruption of their business.

As originally erected, the tractor plant was one great open area, the building being 1,200 feet long. The values involved were enormous, the insurance carried being over \$4,000,000, with a property value even larger, and with no cut-offs a fire once started was almost sure to sweep thru the entire plant. The building was constructed in this way at the instance of the efficiency engineers, who wanted to see the whole works at once and to facilitate the progress of material thru the manufacturing processes. It violated the cardinal principles of fire protection, as large open area is one of the principal factors in the spread of fire, and the insurance rate was materially higher for that reason.

The agent in charge pointed out to the owners of the property the first risk they were running, the danger of losing the entire plant instead of one section, the fact that the reduction in insurance cost because of the construction of fire walls would pay for them

within two years, and that there need be no interference with manufacturing processes. As a result of his persistency two fire walls were erected, cutting the plant into three sections, the walls being equipped with large automatic fire doors thru which the material could pass. When the fire came it destroyed the contents of the 464-foot section in which it started, but the wall held perfectly and over three millions of values in the other sections were uninjured. This also made possible the much earlier resumption of production. The insurance loss paid on the burned section was \$966,955.47, with total insurance on the building and contents of \$4,134,722.

This was real service, not only to the property owner and the insurance companies, but also to the general public, which ultimately pays the fire losses and is interested in the reduction of the preventable fire waste of the country. There are thousands of risks in which other agents can render a similar service. The erection of fire walls, the segregation of the worst fire hazards, and general observance of fire protection and fire prevention principles, are desirable from every standpoint, and the property owners expect their insurance agents to look out for that feature of their risks. The wide-awake agent who does that is giving service to his customer, safeguarding the interests of his companies, protecting his community and the public generally, and justifying his job.



*Residence, Dr. D. K. Woods, Great Falls, Montana.
Bruce Frazier, Plastering Contractor.
Exterior and interior plastering on E-Cod Fabric.*

STUCCO on E-COD FABRIC is really a reinforced plastered slab with the galvanized wires completely embedded and proof against rust. The felt background of E-COD FABRIC prevents the usual loss of plaster that goes to form the key on the ordinary open-mesh lath, saving from 40% to 60% of the scratch coat. The felt, also, acts as additional protection against weather. It is fire-retardant and fully water-proof.

E-COD FABRIC is specified for every exterior and interior use. Full details on application.



MacAdams & Call

111 WEST WASHINGTON STREET, CHICAGO, ILLINOIS



General Motors Trucks

Former Price	\$1995
<u>Reduction</u>	<u>500</u>
New Price	\$1495

At \$1495—a cut of \$500—GMC Model K-16, One Ton Truck, is undoubtedly the biggest dollar for dollar value in the history of the truck industry.

We not only feel that way, but we can prove it by a comparison part by part with other one ton trucks, and by the records of economical operation and long life.

While this truck is a better truck than it ever was, it has been brought to a popular price. Add to this its low operating cost in city delivery, farm work, bus service and for police and fire patrol and you can get a conception of its remarkable dollar for dollar value.

Here is a one ton truck built from the ground up of real truck parts. There's not a passenger car part in it.

Electric lights, starter, and cord tires are standard equipment. It has removable Cylinder Walls, Removable Valve Lifter Assemblies, Dual Cooling, Super-heated Carburetion, Centrifugal Fly-ball Governor and many other distinctly GMC features.

See dealers for further details and for price reductions on all other GMC models.

GENERAL MOTORS TRUCK COMPANY

A Unit of General Motors Corporation

PONTIAC, MICHIGAN

(847)

New Wood Lighter Than Cork

BALSA wood has about the same insulating value as cork. It weighs about one-half as much as cork installed and roughly speaking has about one-half the strength of spruce. It is therefore structurally self supporting. It is a Central American wood and in its natural state is too susceptible to rot to be of much commercial value. A process or treatment, has, however, been developed which counteracts this tendency to decay. By this treatment the wood is impregnated with a substance that renders it water-resisting and at the same time does not materially increase its weight or change the appearance of the finished lumber. This wood is white, soft and easy to work. The cell walls are extremely thin and there are practically no woody fibers. The cellular structure is such that about 92 per cent of the total volume of the wood is "dead" air.

Until comparatively recently practically the entire supply of treated balsa was used for life preservers and similar equipments and for the insulation of refrigerators, refrigerator cars and cold storage insulation. There is a supply of the wood now available, however, for such uses as the insulation of buildings, especially for floors over open porches, ceilings near rafters, and for lining floors, walls and ceilings of cold pantries.

Several months ago the American Balsa Company consulted with the Structural Service Committee of the American Institute of Architects as to the most effective means of developing the proper use and avoiding the mis-use of balsa in building construction. It was decided that the most effective means would be for the company to conduct an extensive investigation of these possible uses, and before advertising the product, to prepare a technical bulletin, describing in detail the proper uses, results to be expected, methods of installation and treatments of the finished sur-

faces when exposed. Much of this data has been collected and it is thought that in a short time this booklet will be ready for distribution.

Treated balsa, as manufactured for general commercial use, is cut into strips from about 2 inches to 4 inches wide. These strips are dovetailed and glued together into panels from eight to ten feet long. The maximum width of the panel is 27 inches. The usual commercial width is 24 inches. The panels are manufactured in the following finished thicknesses: 1 inch, 1½ inches, 2 inches and 3 inches.

The edges of the panels are made straight for butt joints, rebated for shiplap joints or splined. The spline, however, is not recommended for use in connection with a panel thinner than 1½ inches. The weight of commercial balsa wood varies from about 6 to 15 lbs. per cubic foot. The lighter weights have the greater insulating value, and the heavier weights the greater strength. For such uses as the insulation of ceilings, the 15 lb. balsa would be the best, since the slight loss in insulating value would be more than offset by the advantages of the increased strength. For general refrigeration purposes, 10 lbs. is usual. For special refrigeration, and where strength is relatively unimportant, weights as low as 6 lbs. are used.

Where the panels are to be attached directly to wood studs or joists, slender, flat-head nails should be used. The use of cement-coated nails is strongly recommended. There is no danger of the wood splitting, but since the unpainted wood is comparatively soft, care must be taken not to allow the hammer to dent the finished surface. A nail-set should be used for driving the nails home, and if the finished surface is to be left exposed or painted, the nail-holes should be puttied. The panels may also be secured in position by covering the joints between the panels with a wood mould and securely nailing the mould to the framing.

SAGER

METAL WEATHERSTRIP

It is easy to install and easy to sell at a good profit because it

Cuts Coal Bills
Increases Comfort

Home owners appreciate warm and comfortable homes on cold days and you will find them interested in an inexpensive improvement that will cut their coal bill and make their home more comfortable.

We offer the Sager Weatherstrip agency to one man in each community at a price that will allow you a profit on the sale as well as the installation.

Write for Our Offer and Get Started

SAGER LOCK COMPANY
NORTH CHICAGO, ILLINOIS





The Shingle
that never
curls—

Carey
ASFALTSLATE
SHINGLES

IT is a well known fact that shingles which stay flat in Maine curl in Florida and that shingles which give satisfactory service on the Atlantic Coast do not do so on the Pacific Coast. Carey Shingles give the same service in all sections and under all climatic conditions.

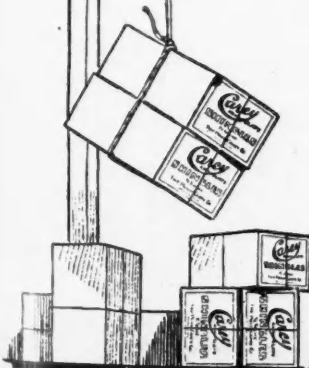
It is true they are made of asphalt, felt and slate the same as similar appearing shingles. But there is just as much difference between the texture of the felt, the refining of the asphalt and the pressing in of the slate, as there is between the baking of light biscuits and soggy ones, although both are made of the same materials.

There is a knack in making shingles—and Carey has it. For best results insist on CAREY Shingles.

Sample On Request

THE PHILIP CAREY COMPANY

510-530 Wayne Ave., Lockland, Cincinnati, Ohio



Balsa may be painted or enameled, and any paint or enamel suitable for use on white pine may be used. Painting or enamelling materially hardens the surface, and thereby increases its resistance to denting. For the inside walls of refrigerators, where a cement finish is required, dovetail channels are cut on the face of the panels, to form a key for the cement mortar. It is possible that a similar construction might be developed for plastered walls and ceilings; it is understood, however, that the use of balsa panels as a base for plaster is as yet largely in an experimental stage. The price of balsa wood in a recent quotation is given at fifteen to twenty cents per board foot f.o.b. plant. The 15 lb. wood is cheaper than the lighter woods.

It would appear from the data collected that for the insulation of a ceiling, such as described, the proper kind of balsa to use would be 24 inches wide, 1 inch thick, shiplap panels of the 15 lb. wood.

Balsa should not be left exposed to the weather before use. Since it has been especially dried and prepared for insulating purposes, it should be stored under cover and protected the same as cork board or any other insulating material.



Forest Fire Destruction

FOREST fires in the United States annually destroy more than 2,000,000,000 feet of timber or material enough to build a five-room frame house every 100 feet on both sides of a road extending from New York to Chicago, according to a recent statement attributed to the Forest Service of the United States Department of Agriculture.

Maine has suffered enormously this year from forest fires, due to the early dry spring and absence of

rain in the summer. Fires have occurred in all parts of the state, the timber loss running up into the millions.

Oregon has had few forest fires so far this year, according to a report of the deputy United States forester, at Portland, made the first of August. A few fires started by lightning were quickly extinguished. This favorable situation is attributed, in part at least, to the better fire-prevention education of campers and forest visitors.

The fifth forest fire of the season in the Sequoia National Forest was reported early in August, when 1,800 acres of underbrush and timber were said to have been destroyed. The redwood forests of King's Canon and the Grant and Sequoia National Parks were threatened.



More than half the yellow pine exported during year ending June, 1921, went to Cuba and Mexico, the former receiving 158,563,000 feet and Mexico, 113,757,000 feet.



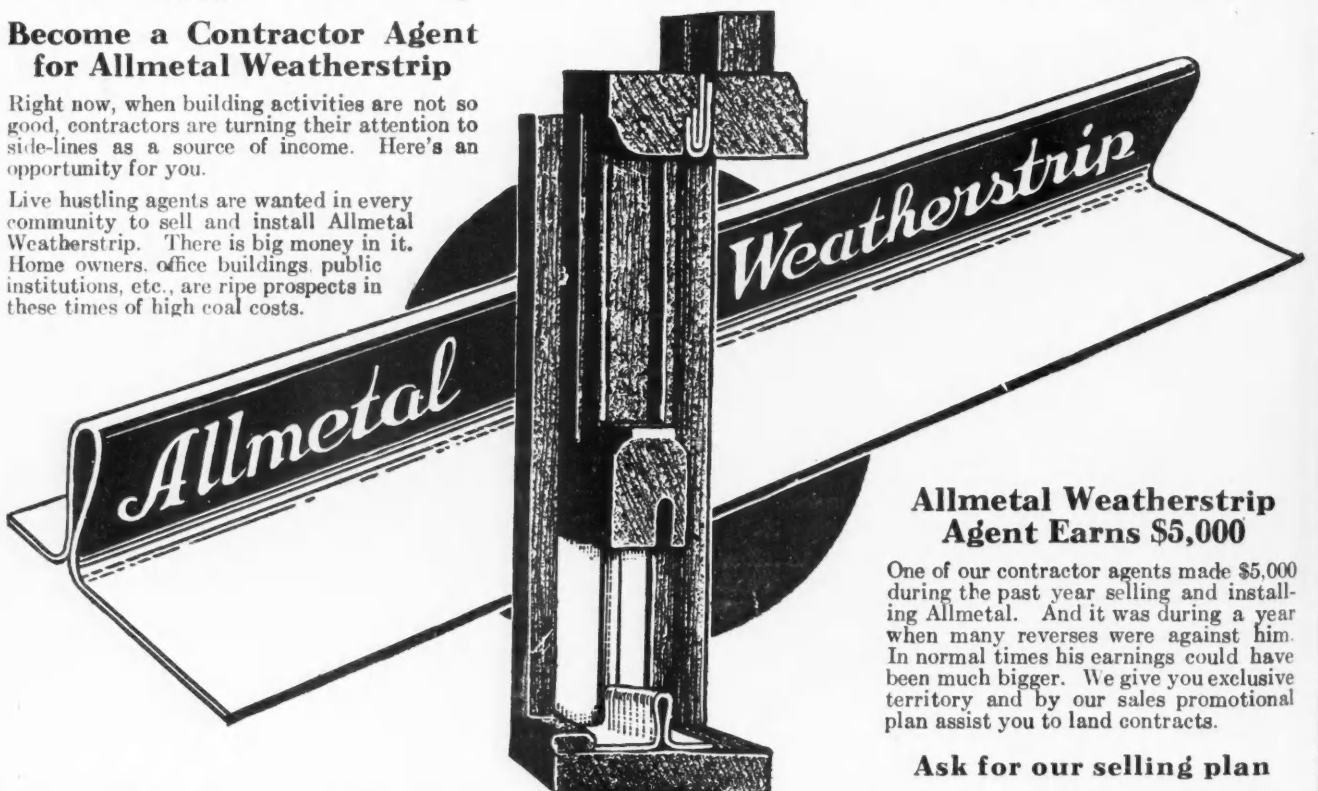
More railroad ties, 1,598,114, were exported to United Kingdom in year ending June, 1921, than to any other country. Canada was a close second, receiving 1,519,996 and to Cuba was sent the next largest number, 660,193.

An Opportunity to Increase Your Income

Become a Contractor Agent for Allmetal Weatherstrip

Right now, when building activities are not so good, contractors are turning their attention to side-lines as a source of income. Here's an opportunity for you.

Live hustling agents are wanted in every community to sell and install Allmetal Weatherstrip. There is big money in it. Home owners, office buildings, public institutions, etc., are ripe prospects in these times of high coal costs.



Allmetal Weatherstrip Agent Earns \$5,000

One of our contractor agents made \$5,000 during the past year selling and installing Allmetal. And it was during a year when many reverses were against him. In normal times his earnings could have been much bigger. We give you exclusive territory and by our sales promotional plan assist you to land contracts.

Ask for our selling plan

ALLMETAL WEATHERSTRIP CO. 124 WEST KINZIE STREET CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

KELLASTONE

IMPERISHABLE STUCCO

Transform Those Scare Crow Buildings To Modern Beauty

Alert contractors have found a rich vein of profit in renewing the youth and value of run-down, scare crow buildings. In every town there are dozens of these time-worn eyesores that can be revived, beautified and brought up-to-date by overcoating with

KELLASTONE

IMPERISHABLE STUCCO

It goes on over any surface, and with a little remodeling the house of an ancient day is transformed into a typical model of modern design and beauty.

KELLASTONE, the scientific man-made stone, surrounds the house with a seamless wall of giant strength—proof against Time, frost, weather and heat—even fire cannot penetrate KELLASTONE.

KELLASTONE will not crack like ordinary stucco. It is mixed with a chemical solution—not with water. It may be safely applied in zero weather. It has rescued untold numbers of buildings from shabby old age. Send today for free booklet, "The Story of Kellastone", and get in on this profitable field.

NATIONAL KELLASTONE COMPANY
Manufacturers

Room 515 155 East Superior St.,
Chicago, Ill.



New Process of Gypsum Plaster Manufacture

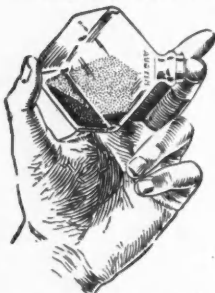
A RECENT discovery of interest to the building field is a new process for making gypsum wall plaster known as syanized plaster. This process consists of sealing each minute particle of gypsum against atmospheric moisture and was developed after twelve months' tests at the laboratories of the United States Gypsum Co. Great importance is attached to the success of this method by officials of the company, who point out that the new plaster overcomes difficulties which have been encountered by workmen for many years.

The process is intended to keep the plaster continually fresh while in storage. Previous to this discovery little advance had been made in the manufacture of gypsum wall plaster since 4,000 years ago when the Egyptians first used the material in their temples and pyramids.



Austin Sends Out Novel Paper Weight

THE Austin Machinery Corporation, Chicago, is sending out to prospective customers a very novel paper weight in the way of a glass reproduction of their "Cube" mixing chamber. This, together with a card of instructions and a small muslin bag of white sand, is contained in a paper box. The glass "Cube" contains red sand and a brown bean. The instruction card explains the unusual action that takes place in the cube-shaped chamber as it is rotated, the idea being to show exactly how the concrete is mixed. The brown bean illustrates the folding action as the bean comes right up thru the mixture three times with every turn of



Glass Model of Austin Mixer Showing How Contents Are Mixed.

the cube. It also demonstrates how the concrete changes shape twelve times with every complete turn.



New Set of Weight Cards

THE American Sheet and Tin Plate Company have issued a new and revised set of weight cards covering black sheets, galvanized sheets, and formed products. These cards are 14 by 20 inches in size, and are clearly printed. They are of particular value to all architects and builders and can be obtained upon request. The company will also gladly send one of their perpetual calendars upon request.



Hungerford Company Expands

U. T. HUNGERFORD Brass & Copper Company, 510 Arch Street, Philadelphia, Pa., has absorbed the A. P. Swoyer Company on September 1st and they intend to carry a full line of brass, copper, Tobin bronze, nickel silver and Monel metal products in Philadelphia, in sheets, rods, tubes, wire, nails, tacks, etc.



Johns-Manville in "Movies"

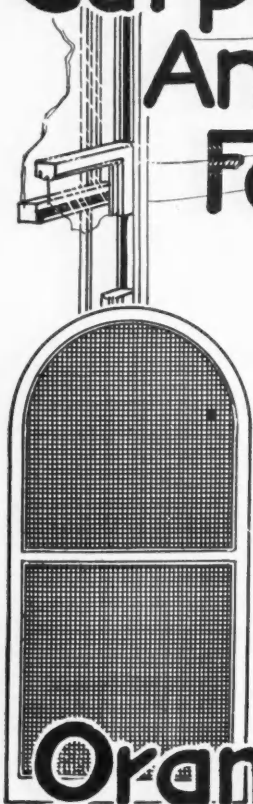
THE Bureau of Mines, Washington, has recently completed a motion picture film showing the asbestos mines of the Johns-Manville Company and the various factories and processes in the mining, refining and manufacture of asbestos into its numerous products, such as roofings, insulations, packings, brake linings, asbestos textiles, papers and asbestos woods and other products.

The picture is in four reels and runs a little less than an hour. It is available for presentation by clubs, engineering societies, Y. M. C. A.'s, etc., and can be obtained by application to the advertising manager, Johns-Manville, Inc., Madison Avenue at 41st Street, New York City.

Carpenters!—Builders! An All Year Business For You—

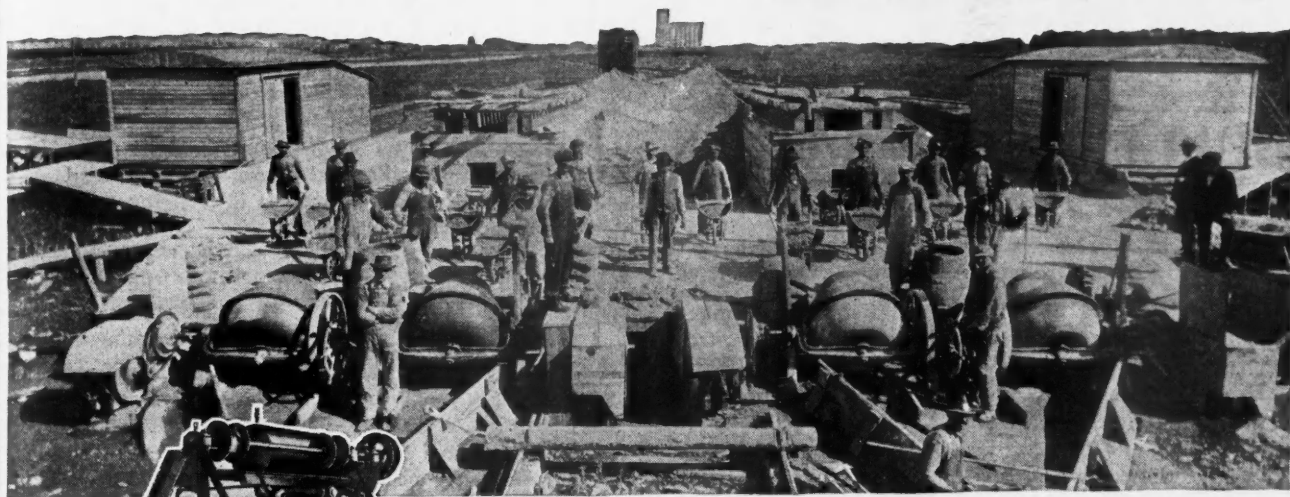
BIGGER Profits—Better Business—Steady Income—Furnishing needed ORSCO products to the homes in your community. Every house a prospect that will materialize thru our proven plan of advertising and solicitation. One sale creates another for the comfort and convenience of the customers causes them to create a desire by others in the neighborhood.

Get in line for your territory before another progressive carpenter or builder beats you to it. No competition as we allow only one man in each city to sell ORSCO products. Write for Booklet outlining proposition. It does not obligate you in any particular.



Orange Screen Co. VALLEY ST. MAPLEWOOD, N.J.

WONDERS ARE DEPENDABLE



ON THE JOB!

The Lock Joint Pipe Company operates 60 Wonder Mixers on the most exacting class of work that a Mixer is called upon to do.

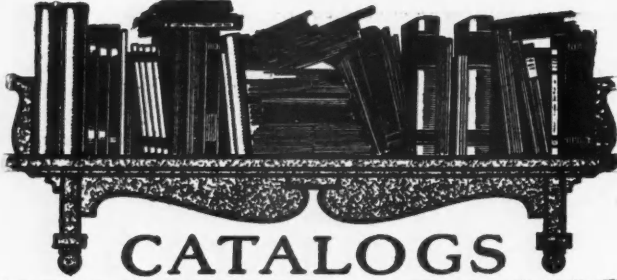
Miles of pipe are laid, and the pipe are made on the job. Thousands of dollars are invested on plant equipment, a small army of men are engaged, and Wonder Mixers pour the perfectly mixed material that spells the success or failure of the day's operation. No time here to coax a complicated set of buckets and shovels to discharge the mixed aggregate.

Here no chances can be taken on "sight and unseen" mixing action. The mixture must be visible and under complete control at all times. The pipe must stand up under a terrific water pressure so each batch must be right before discharge.

Although your work may not be so exacting as above, nevertheless when you buy a Wonder you, too, will have these same features of Wonder dependability and Wonder durability. *And the price? Ask us.*

ASK THE
LOCK-JOINT PIPE CO.
EAST ORANGE N.J.
WHO ARE STILL OPERATING
WONDER MIXERS
PURCHASED IN 1912

CONSTRUCTION MACHINERY Co.
FORMERLY WATERLOO CEMENT MACHINERY CORPORATION
103 Vinton Street Waterloo, Iowa



**CATALOGS
BULLETINS & BOOKS
RECEIVED**

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

"Modern Building Superintendence and the Writing of Specifications" is the title of a new building book from the press of Chas. Scribner's Sons, New York. It was written by David B. Emerson and takes up in detail the various steps of the building job from excavation to heating. The book is available at \$1.75 a copy.

New lighting data bulletins recently issued by the Edison Lamps Works of General Electric Co., Harrison, N. J., include these subjects: Lighting for indoor recreations, railway system lighting buildings and yards, ship lighting, lighting for outdoor sports, lighting of printing plants, and reflectors for incandescent lamps.

"Natco Walls Construction, Bulletin 174," and "Fireproof Buildings of Natco Hollow Tile," are the titles of two books recently issued by the National Fireproofing Co., Pittsburgh, Pa. The first book deals with various types of load-bearing tile and is designed to be a practical text book for architects and builders. The second book deals with the

fire-proof home and shows house designs with floor plans built of Natco hollow tile.

GF Allsteel Shelving is the subject of a new catalog issued by the General Fireproofing Co., Youngstown, O. In it is described and illustrated shelving for storing goods in stock rooms, and tools and parts in manufacturing plants; for displaying merchandise in retail stores; for holding books, tires, phonograph records, or other goods requiring special storage and for office vaults.

"Banks and Office Buildings" is the subject of No. 2 of the Brascolite Bulletin architectural series. This book shows brascolite installations in various bank and office buildings thruout the country. It is well illustrated with views of exteriors and interiors.

"Ideal Elevator Motors" are described and illustrated in a new bulletin, 101, just issued by the Ideal Electric & Manufacturing Co., Mansfield, Ohio. These motors are built for all types of elevators and for direct and alternating currents.

"Billiard, Bowling, and Club Room Equipment and Supplies," is the subject of the latest catalog issued by Albert Pick & Co., Chicago, Ill. Some of the lines described are billiard and pool tables, poolroom equipment of all kinds, bowling alley equipment display cases, special flooring and drapery and vending machines.

Chapter 9 of a Series on Structural Slate is now ready. It was prepared by the Structural Service Bureau, D. Knickerbocker Boyd, architect advisor, and deals with the use of slate for caps, bases, wainscots and floors.

"On the Job with Smith Paving Mixers," is the title of a new catalog, No. 409-B, issued by the T. L. Smith Co., Milwaukee, Wis. Actual photograph taken on various jobs thruout the country are featured. These pictures also illustrate auxiliary equipment, such as railroad equipment, batch boxes, dump body trucks, etc.

CONTRACTORS AND BUILDERS — INSTALL A HARDIN-LAVIN PIPELESS FURNACE IN YOUR NEXT BUILDING

Our Pipeless Furnaces are Superior Because —

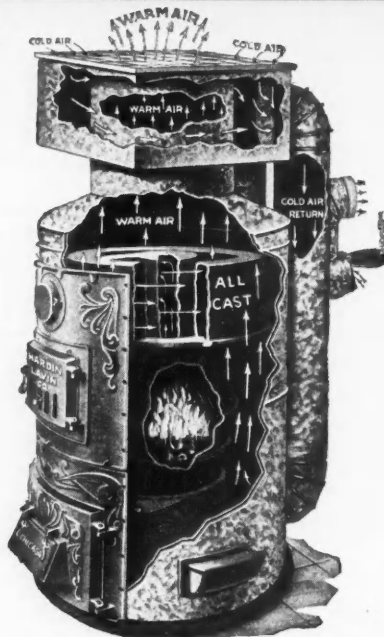
The interior and large front are all heavy cast.

Long circular fire travel saves fuel.

Improved air cleaning humidifier eliminates dust.

Reinforced dumping grates, burns hard coal, soft coal or wood economically.

Has adjustable throat to fit any basement.



Our Improved Pipeless Furnaces "Beat Them All"

Other furnaces take the cold air down inside an outer casing. Notice we take the cold air down through two large separate cold air ducts outside of casing at rear of furnace. This distinctly better method of cold air circulation prevents back draft, warped casings, dust in your home, etc.

SPECIAL ATTRACTIVE PRICES TO BUILDERS

Send today for our pipe and Pipeless Furnace Catalog

\$500,000 PLANTS BEHIND OUR GUARANTEE

SEE OUR FULL PAGE ADV. ON PAGE 178

HARDIN-LAVIN CO. 50 Years at 4522-34 F Cottage Grove Ave., CHICAGO

UNION METAL COLUMNS

Beauty and Permanence Go Hand in Hand

Nothing adds so much to the beauty of a home or public building as the dignified use of classical columns.

With Union Metal Columns, it is possible to obtain that beauty together with a permanence not possible with wood.

Union Metal Columns are made of enduring, copper-bearing steel, and last as long as the building itself. All designs and sizes from 8" to 36" diameters, and from 5' to 32' high.

Immediate shipments and reasonable prices.

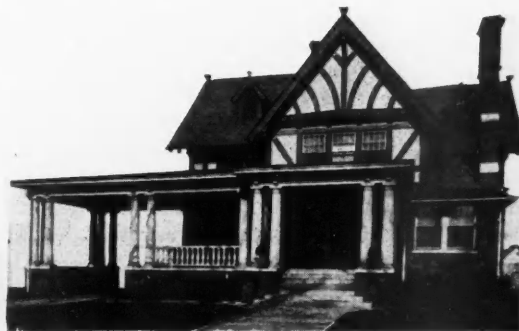
Send for catalog on Union Metal Columns or Union Metal Pergolas.

THE UNION METAL MANUFACTURING CO., Canton, Ohio

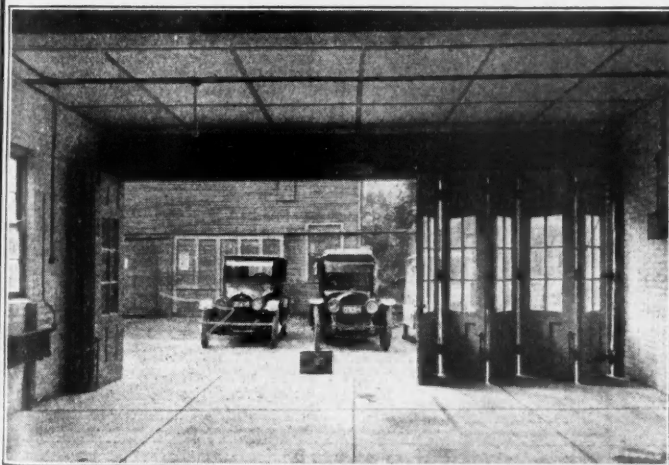
Design No. 237
Modern Ionic

16 Union Metal Columns Design No. 224 Roman Doric, on residence of Dr. J. E. Watson, Anderson, S. C.

Casey & Fant, Architects
Anderson, S. C.



"The Ones That Last A Lifetime"



Slidetite Garage Door Hardware

Whenever the subject of garage door hanger hardware comes up you can be sure of satisfying your customer by recommending "Slidetite." It is giving genuine satisfaction on thousands of installations. The sliding-folding arrangement not only gives an easily operated door, but is a time, money and worry saver. There are no joints to obstruct "Slidetite" operation. Increase your prestige as a builder by installing the one and only "Slidetite" door hanger.

No other to equal it

"Slidetite" hardware has a host of imitations. They may look like the real thing, but service tells the real story. For equipping one opening with from seven to ten individually operated doors only "Slidetite" will answer the purpose. There is only one "Slidetite."

Hung on "Slidetite"
"Means they'll work right"

*Write Now For Our
Catalog QA-22*

Richards-Wilcox Mfg. Co.
A Hanger for any Door that Slides

CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA
AURORA, ILLINOIS, U.S.A.
BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO
LONDON, ONT.

"Concrete Handling on the Small Jobs," is the title of a new pamphlet issued by the Insley Manufacturing Co., Indianapolis, Ind. It explains and illustrates the use of the Insley Masy Hoist Bucket equipment on various small jobs thruout the country. The complete installation is also shown.

Anchor Concrete Machinery is completely described and illustrated in a catalog recently issued by the Anchor Concrete Machinery Co., Rock Rapids, Iowa. Complete description and specifications for the use of the Hobbs block machine, the Anchor, and the Post Economy punch are included.

Cabot's Old Virginia White and Tints for shingles, siding, brick, stone, and stucco are described in a new well illustrated booklet just issued by Samuel Cabot, Inc., manufacturing chemists, Boston, Mass. Many beautiful homes painted with these materials are shown.

Wagner Garage Door Equipment is the subject of catalog No. G-21 being distributed by the Wagner Manufacturing Co., Cedar Falls, Iowa. The principal item featured in this booklet is the Wagner Clozite hanger for all kinds of garage doors. Pictures of various types of door are shown with specifications as to the set of hardware that is needed.

The **Stuart Line of fixtures and chandeliers** manufactured by the St. Louis Brass Mfg. Co., St. Louis, Mo., is very attractively set forth in a new twenty-four page book with covers. The Stuart line is a condensed selection of lighting fixtures designed to harmonize with home furnishings of today.

DeVilbiss Portable Spray Painting System is described in a new folder issued by the DeVilbiss Manufacturing Co., Toledo, O. This folder contains illustrations showing the equipment used for spray painting houses, building interiors and exteriors, etc., etc. Complete specifications for the different types of machines are included in this folder.

Insley Steel Derricks for Industrial and Construction Purposes are described and illustrated in a new catalog No. 43 issued by the Insley Manufacturing Co., Indianapolis, Ind. Some of the types listed are guy derricks, stiffleg derricks, erectors' derricks, gin poles and other derricks of special construction. Special pictures of this equipment on the job are reproduced in this book.

Detailed Plans and Specifications for Recievador Cabinet Installations are contained in a new loose leaf folder prepared by the Hardwood Products Co., Neenah, Wis. These specifications cover installations in doors, in studs and brick walls, and in windows.

The **1921 edition of the Book of A. S. T. M. Standards** issued triennially, is now available. This volume of 890 pages contains the 160 standards adopted by the society, as follows:

- 61 relating to steel and wrought iron
- 7 relating to pig and cast iron and finished castings
- 31 relating to non-ferrous metals

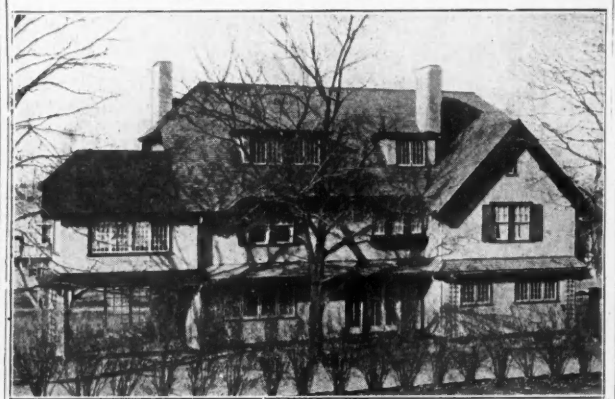
- 18 relating to cement, lime, gypsum and clay products
- 10 relating to preservative coatings and lubricants
- 19 relating to road materials
- 4 relating to coal and coke
- 6 relating to timber and timber preservatives
- 2 relating to rubber
- 2 relating to miscellaneous subjects

The book is available at \$10.00 in cloth binding and \$11.50 in half-leather binding. Address Am. Soc. for Testing Materials, Washington, D. C.



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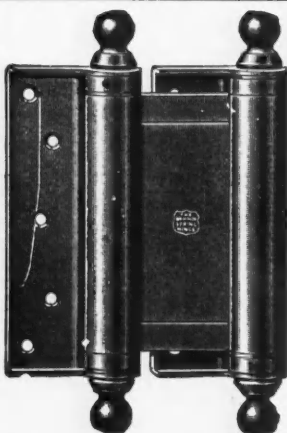
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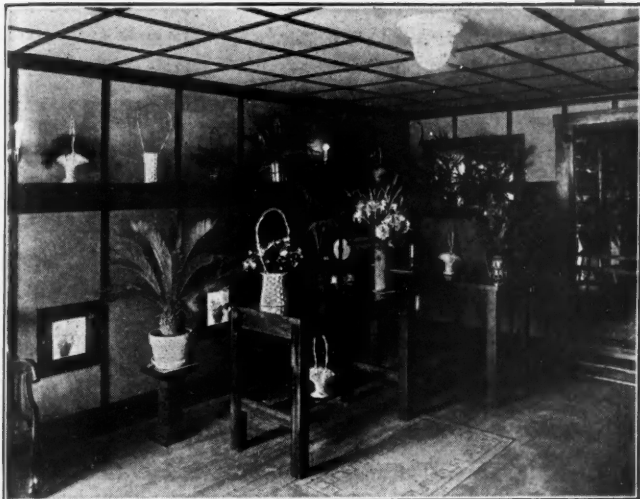
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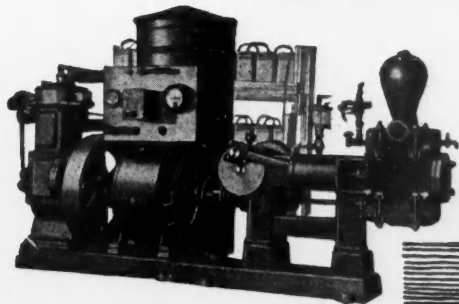
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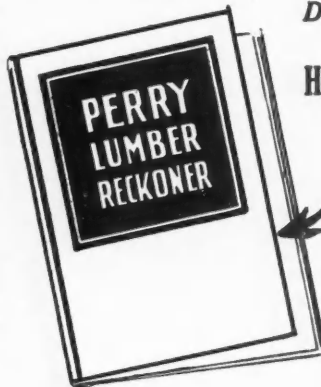
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